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888 1081001

TECHNICAL MANUAL



STEREO STATESMAN CONSOLE

HARRIS
INTERTYPE
CORPORATION

GATES[®]
A DIVISION OF HARRIS-INTERTYPE

WARRANTY

Seller warrants new equipment manufactured by Gates Radio Company against defects in material or workmanship at the time for delivery thereof, that develop under normal use within a period of one year (6 months on moving parts) from the date of shipment, of which Purchaser gives Seller prompt written notice. Other manufacturers' equipment, if any, including electron tubes, and towers shall carry only such manufacturers' standard warranty.

Seller's sole responsibility for any breach of the foregoing provision of this contract, with respect to any equipment or parts not conforming to the warranty or the description herein contained, is at its option, (a) to repair or replace such equipment or parts upon the return thereof f.o.b. Seller's factory within the period aforesaid, or (b) to accept the return thereof f.o.b. Purchaser's point of installation, whereupon Seller shall either (1) issue a credit to Purchaser's account hereunder in an amount equal to an equitable portion of the total contract price, without interest, or (2) if the total contract price has been paid, refund to Purchaser an equitable portion thereof, without interest.

If the Equipment is described as used, it is sold as is and where is. If the contract covers equipment not owned by Seller at this date it is sold subject to Seller's acquisition of possession and title.

Seller assumes no responsibility for design characteristics of special equipment manufactured to specifications supplied by or on behalf of Purchaser.

Seller shall not be liable for any expense whether for repairs, replacements, material, service or otherwise, incurred by Purchaser or modifications made by Purchaser to the Equipment without prior written consent of Seller.

EXCEPT AS SET FORTH HEREIN, AND EXCEPT AS TO TITLE, THERE ARE NO WARRANTIES, OR ANY AFFIRMATIONS OF FACT OR PROMISES BY SELLER, WITH REFERENCE TO THE EQUIPMENT, OR TO MERCHANTABILITY, INFRINGEMENT, OR OTHERWISE, WHICH EXTEND BEYOND THE DESCRIPTION OF THE EQUIPMENT ON THE FACE HEREOF.

RETURNS AND EXCHANGES

Do not return any merchandise without our written approval and Return Authorization. We will provide special shipping instructions and a code number that will assure proper handling and prompt issuance of credit. Please furnish complete details as to circumstances and reasons when requesting return of merchandise. Custom built equipment or merchandise specially ordered for you is not returnable. Where return is at the request of, or for the convenience of the customer, a restocking fee of 15% will be charged. All returned merchandise must be sent freight prepaid and properly insured by the customer. When writing to Gates Radio Company about your order, it will be helpful if you specify the Gates Factory Order Number or Invoice Number.

WARRANTY ADJUSTMENTS

In the event of equipment failure during the warranty period, replacement or repair parts may be provided in accordance with the provisions of the Gates Warranty. In most cases you will be required to return the defective merchandise or part to Gates f.o.b. Quincy, Illinois for replacement or repair. Cost of repair parts or replacement merchandise will be billed to your account at the time of shipment and compensating credit will be issued to offset the charge when the defective items are returned.

MODIFICATIONS

Gates reserves the right to modify the design and specifications of the equipment shown in this catalog without notice or to withdraw any item from sale provided, however, that any modifications shall not adversely affect the performance of the equipment so modified.

INSTRUCTION BOOK
M-6540C STEREO STATESMAN CONSOLE

INTRODUCTION

The Stereo Statesman Console is a 5 channel stereo console providing all the necessary functions and facilities for the station that broadcasts stereophonic programs during the operational day.

Channel One is a stereo microphone input channel. Input switching is provided for utilizing stereo control room and studio microphones. Channels Two, Three, Four and Five are medium level inputs and can be used for turntable, tape, network and remote inputs.

All the medium level inputs except network, remote and auxiliary are switchable into two separate input channels to allow sequel operation.

Stereo monitoring facilities are provided from both right and left program channels, right and left audition channels and an external source. Crystal headphone monitoring is provided on the front panel along with a selector switch for PGM, net and cue monitoring. A stereo headphone jack is located on the right end of the console and connected to the output of the monitor amplifier for use with high Z headphones.

IB 888 1081 001
PRICE: \$10.00

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SAFETY NOTICE

WARNING: THE CURRENTS AND VOLTAGES IN THIS EQUIPMENT ARE DANGEROUS AND UNDER CERTAIN CONDITIONS, COULD BE FATAL.

This Manual is intended as general guidance for trained and qualified installation, operating, maintenance and service personnel who are familiar with and aware of the dangers inherent to handling potentially hazardous electrical and/or electronic circuits. It is not intended to contain a complete statement of all safety precautions which should be observed by personnel in using this or other electronic equipment.

THE INSTALLATION, OPERATION, MAINTENANCE AND SERVICING OF THIS EQUIPMENT INVOLVES RISKS TO BOTH PERSONNEL AND EQUIPMENT, AND MUST BE PERFORMED ONLY BY PROPERLY TRAINED AND EXPERIENCED PERSONNEL EXERCISING DUE CARE. PERSONNEL MUST FAMILIARIZE THEMSELVES WITH SAFETY REQUIREMENTS, SAFE HANDLING AND OPERATING PRACTICE, AND RELATED FIRST-AID PROCEDURES (E.G., FOR ELECTRICAL BURNS AND ELECTRICAL SHOCK).

Gates shall not be responsible for injury or damage resulting from improper installation, operation, maintenance or servicing, or from the use of improperly trained or inexperienced personnel in the performance of such tasks, or from the failure of persons engaged in such tasks to exercise due care.

As with all electronic equipment, care should be taken to avoid electrical shock in all circuits where substantial currents or voltages may be present, either thru design or short circuit. Caution should also be observed in lifting and hoisting equipment, especially regarding large structures, during installation.

LIABILITY LIMITATION

The procedures outlined in this Manual are based on the information available at the time of publication and should permit the specified use with minimum risk. However, the manufacturer cannot assume liability with respect to technical application of the contents and shall, under no circumstances, be responsible for damage or injury (whether to person or property) resulting from its use.

The manufacturer is specifically not liable for any damage or injury arising out of failure to follow the instructions in this Manual or failure to exercise due care and caution during installation, operation, maintenance and service of this equipment.

CAUTIONARY NOTICE

Always disconnect power before opening covers, doors, enclosures, gates, panels or shields. Always use grounding sticks and short out high voltage points before servicing. Never make internal adjustments, perform maintenance or service when alone or when tired.

Never remove, short-circuit or tamper with interlock switches on access covers, doors, enclosures, gates, panels or shields. Keep away from live circuits, know your equipment and don't take chances. Proper training of experienced personnel and observing the above guidelines will help assure safe and continued operation of this equipment.

MINIMIZING RADIO-FREQUENCY
INTERFERENCE IN AUDIO CONSOLES

In general, RFI at AM broadcasting frequencies may be eliminated by normal grounding and shielding techniques during installation of the console:

- a) Connecting the console ground stud to the station ground;
- b) Connecting the shields of the signal cables only to the ground busses in the console (one-point ground system);
- c) Keeping the console panel and cover closed.

RFI at FM/TV frequencies presents a special problem, and may be minimized or eliminated by making short connections and direct dressing of the cables during installation;

- a) Route the external cables through the individual holes in the bottom of the console which are closest to the required connections on the terminal boards.
- b) Connect each cable shield to the nearby heavy ground-bus wire where the cables pass this point.

Note - Cable shields should not protrude into the console cabinet for more than two inches. Each connection from the shield to the ground-bus wire should not be more than one inch long. Do not allow slack shielded cables to lie in the console cabinet.

- c) Twist the exposed (unshielded) portion of each pair of signal wires and dress them directly to their required connections on the terminal boards.

6/25/73

Gates Division

Harris Intertype Corporation

Quincy, Illinois

ADDENDUM

CAUTION — To prevent severe ground loops, all wiring connected to this console must be free from ground connections in the source and load equipment (microphones, turntables, tape players, recorders, speakers, etc.). An ohmmeter check is necessary to be certain that each wire is not grounded before connecting it to the console. If any source or load equipment has a grounded connection wire, an isolating transformer must be used between that equipment and the console.

A final ohmmeter check is recommended: After all system connections are made, temporarily disconnect the station ground from the console and measure the resistance (ohms) from the console ground stud to the station ground. A very high resistance is normal — a low reading indicates a ground loop. All ground loops must be eliminated before operating the console. Be sure to re-attach the station ground to the console after testing.

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Gates Radio Company
Quincy, Illinois

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SECTION 1 - SPECIFICATIONS

1.1 MICROPHONE TO REGULAR PROGRAM LINE OUT

- Maximum Gain: 101 dB \pm 2 dB at 1,000 Hz.
Response: \pm 1.0 dB from 20 Hz to 20,000 Hz.
Distortion: 0.5% or less, from 20 Hz to 20,000 Hz @ +18 dBm out.
Noise: 72 dB below +18 dBm output with -50 dBm input. The equivalent input noise is -122 dBm or better. (20 Hz to 20 kHz).
Crosstalk: Less than 10 dB above the noise with normal levels and control positions.

1.2 MEDIUM LEVEL INPUTS

(Auxiliary, Turntable, and Tape Inputs to Regular Program Line Out)

- Maximum Gain: 60 dB \pm 2 dB at 1,000 Hz.
Response: \pm 1.0 dB from 20 Hz to 20,000 Hz.
Distortion: 0.5% or less, from 20 Hz to 20,000 Hz @ +18 dBm output.
Noise: 83 dB below +18 dBm output with -10 dBm input.

(Remote and Network Inputs to Regular Program Line Out)

- Maximum Gain: 55 dB \pm 2 dB at 1,000 Hz.
Response: \pm 1.0 dB from 30 Hz to 20,000 Hz.
Distortion: 0.5% or less, from 30 Hz to 20,000 Hz @ +18 dBm output
Noise: 83 dB below +18 dBm output with -5 dBm input.

1.3 MONITOR CIRCUITS

- Maximum Gain: 115 dB \pm 2 dB from microphone to audition monitor out.
50 dB \pm 2 dB from external input to monitor out.
Response: \pm 1 dB from 20 Hz to 20,000 Hz at +30 dBm.
Distortion: 1% or less from 20 Hz to 20,000 Hz at +40 dBm (10 watts).

1.4 POWER REQUIREMENTS

- Primary Power: 105/125 Volts rms, 50/60 Hz, 60 Watts (approx.)

1.5 MECHANICAL SPECIFICATIONS

- Console: 36" Long, 8-1/2" High, 17" Deep.
Transformer Panel: 5-1/4" x 19" Panel, 4" Overall Depth.

SECTION 2 - INSTALLATION

2.1 UNPACKING INSTRUCTIONS

The console is shipped in several boxes or cartons. The following main items will be enclosed.

1. Stereo Statesman Console with all amplifiers installed.
2. Transformer Panel.
3. Decal Kit.
4. Stick-on Labels.
5. Instruction Book.
6. Six Speaker Transformers.

The shipping container should be unpacked carefully and inspected for shipping damage. If damage is found, contact the shipper immediately. After he has approved the damage report, which indicates he will accept your billing for the damage, order new parts from Gates Radio Company. Our billing of these parts plus transportation expense will be your claim to the Transportation Company.

The Stereo Statesman Console is covered under the Standard Gates Warranty, which is found on the back of the front cover.

2.2 AUDIO SYSTEM INSTALLATION INFORMATION

Before any actual installation is started, the following points should be studied carefully, physical location of all components should be decided and cable routing should be determined. Only after these plans have been completed, may installation be made in an orderly manner.

The transformer panel is 5-1/4" x 19" and can be rack mounted. If desired, it may be mounted in a small wall box or under the base of a desk. Ample ventilation must be provided since the unit generates some heat. When rack mounted, the panel is designed for natural convection cooling. If the ambient temperature of the rack is below 50°C. (122°F.) the rack does not need forced air ventilation.

Cable routing of external connections of various signal levels is of prime importance. The low level microphone input cables should be cabled separate from all the other level cables.

If it is necessary to use cables of different levels in a common conduit, the difference between the lowest and the highest level in the two cables should not be greater than 40 dB.

Physical isolation is the best way to avoid trouble between parallel cables. Six inches or more spacing is preferred.

The console grounding system is based on the one point ground. Different circuit grounds are insulated from the chassis and go directly to the ground stud located at the right end of the cabinet. Connect the station ground to the cabinet ground stud. External grounds connected to circuit grounds in the console will destroy this system.

A shield ground bus is provided by the side of each of the input and output terminal blocks of the console. All incoming and outgoing shields must be connected to these busses.

2.3 INSTALLATION PROCEDURE

a. Power Connections

See installation drawing at rear of this book.

Input power connections are made on the transformer panel block TBX-1, Terminal 1 for 117 volts AC RMS and Terminal 2 for 117 volts common.

Interconnecting power cables, between console and transformer panel are supplied with the transformer panel. Connections can be made by following wire color code shown on Installation Drawing.

b. Warning Lights

117 VAC for the warning lights should be connected as follows. Terminals 11 and 12 of the TB-3 are for the control room warning lights and Terminals 7 and 8 are for Studio A warning lights. Warning light circuits should not be grounded at any point and should not draw more than 2 Amps. of current.

c. Input Connections to Console

1. See Installation Drawing at rear of this book.
2. A shield ground bus is provided at the side of the input terminal block of this console. All incoming shields must be connected to this bus.

Twisted shielded pairs are to be used for all circuits, balanced or unbalanced. The shields are to be grounded at the shield bus in the console and nowhere else.

Channel #1 has provisions for a pair of stereo microphones via front panel switching.

Channel #2 has provisions for stereo input from the auxiliary, Turntable 1 and Tape 1 input.

Channel #3 can be used with either Turntable 1 and 2 or Tape 1 and 2.

Channel #4 can be used with either Turntable 2 and 3 or Tape 2 and 3.

Channel #5 can be used with either Turntable 3, Tape 3, remote or network.

For operating impedances, levels, modes and other associated information see Table 1.

Turntable and tape inputs are unbalanced and the common side is grounded. Therefore, only use circuits with ungrounded outputs. If the external source has an unbalanced output, an isolation transformer, such as, Gates A-21 must be used.

NOTE: *When using either the network or remote channels in the stereo mode of operation, it will be necessary to remove the connections between 14A, B, C & D; 15A, B, C & D and AT10 and AT11 respectively. This must be done to prevent a loss of separation due to the combining action of AT10, AT11 for monophonic use.*

Correct phase relationship is maintained within this console for stereo programming. It is therefore, up to the installer to make certain that all incoming signals are correctly phased to assure proper stereo perspective.

d. Output Connections to Console

1. See Installation Drawing at rear of this book.
2. A shield ground bus is provided by the side of the output terminal block of this console. All outgoing shields must be connected to this bus. Do not ground them at any other point.

The output line cables from this console are medium level and should be routed carefully to prevent crosstalk back into low level input circuits.

Again, observe correct phase relationship between output lines to insure proper sound perspective between the left and right channels.

All speaker wiring is high level and must be run in separate conduit away from low level program circuits. Stereo monitoring is provided for all studios as well as external lobby speakers. 45 to 16/8/4 Ohm speaker matching transformers are supplied for matching 16, 8, or 4 Ohm speakers to the output of the monitor amplifier. Speaker connections are shown in the Installation Drawing.

CAUTION - GROUNDING

NOTE: *To prevent severe ground loops, all wiring connected to this console must be free from ground connections in the source and load equipment (microphones, turntables, tape players, records, speakers, etc.). An ohmmeter check is necessary to be certain that each wire is not grounded before connecting it to the console. If any source or load equipment has a grounded connection wire, an isolating transformer must be used between that equipment and the console.*

A final ohmmeter check is recommended; After all system connections are made, temporarily disconnect the station ground from the console and measure the resistance (ohms) from the console ground stud to the station ground. A very high resistance is normal - a low reading indicates a ground loop. All ground loops must be eliminated before operating the console. Be sure to re-attach the station ground to the console after testing.

SECTION 3 - OPERATION

On the upper front panel, above the five channel mixers are switches that perform input switching function for each channel. The selector switch on the extreme left is used to switch between stereo microphones in the control room and studio. Lever keys are located above each of the input channel mixers. With the Channel #1 lever key in the right position, the microphone preamplifiers feed the left and right program busses. These same microphones will be switched to the left and right audition busses when the mixer key is placed to the left. The switch to the upper left of Channel #2 is used to switch the auxiliary input into this channel. The pairs of switches located above and between the channel mixers #2 and #3, #3 and #4, and #4 and #5 are switchable into these channels. The pair of switches above and to the right of the Channel #5 mixer is used for switching the remote and network lines into Channel #5. When in the left position, the remote switch provides pre-hear and cueing facilities. In the center position, the inputs are terminated. When in the right position, the remote line feeds the cue amplifier for pre-hear cueing. The pre-hear cueing is also available on the network input switch. The head phones can also be used to listen to the network when the phone selector is switched to the net position.

The monitor input selector is located on the right lower section of the panel. Input switching allows stereo monitoring of the audition busses, the program output lines, and an external signal source. The gain of both the "left" and "right" monitor amplifiers is controlled by the dual gain control located just below the monitor input selector.

The gain controls for the left and right program channels are located on the lower right section of the panel.

3.1 CHANNEL BALANCE

Once the gain of the left program channel has been adjusted to the desired level, the inter-channel (left-right) balance can be set by switching the channel balance switch to the "null" position. This switch is located on the meter pad printed circuit board fastened to the back of the VU meters. With the switch in the "null" position, the left channel VU meter is connected between the FM left and FM right program channels, and thus reads the difference in signal levels between channels. Feed a monophonic recording into the stereo medium level channel and adjust the level of the FM right program gain control until the VU meter "nulls". This indicates that the program lines are balanced within ± 0.5 dB. After the balancing procedure is completed, the switch should be returned to the "operate" position.

3.2 CUE SYSTEM

The cue amplifier is used to pre-hear the remote and network lines and for cueing of the medium level inputs such as, turntable, tape, etc.

The gain control is located between Channel #1 and Channel #2 mixer. The cue speaker on the console is set up to be muted when the control room microphones are turned on, however, this muting does not disable the cue position on the phone selector switch, so it is possible to cue a record by monitoring the cue circuit with headphones.

The muting has been pre-assigned for the control room and studio speakers. Muting is accomplished by the two relays mounted on the amplifier chassis and is selected by microphone input switch.

SECTION 4 - MAINTENANCE

4.1

TROUBLESHOOTING

When troubleshooting, it will be necessary to make voltage measurements. These are given on the schematic diagrams of the various amplifiers. It is recommended that, after the console is installed and operating satisfactorily, these readings should be checked and recorded on the schematic. This will provide the station engineer with a record of the actual voltage readings in his installation, using his meter. If trouble later develops, he will then be better able to judge whether or not a particular circuit is operating properly since he will have available a record of the various readings of his particular equipment. DC readings were taken with a 20,000 ohm/voltmeter as indicated on the schematic. RMS signal voltages are shown in parenthesis and must be measured with a vacuum tube voltmeter. If a VTVM is used to measure DC voltages, slightly higher readings may be obtained.

TROUBLESHOOTING GUIDE

1. No indication on either or both of the VU meters and the monitors only operate from the audition channel and the external input.
 - a. Interchange the program amplifiers with monitor amplifiers.
 - b. Check for 30 volts between terminals #3 and #5 of the booster board and terminals #3 and #9 of the output board.
2. No signal on either or both of the program output lines, but indication on the VU meters.
 - a. Check external cable connections on TB2.
 - b. Check S18 and output pad board.
3. No signal can be heard from any of the monitor speakers but the program channels operate O.K.
 - a. Interchange the monitor amplifiers with the program amplifiers.
 - b. Check for 30 volts between terminals #3 and #5 of the booster board and 43 volts between terminals #3 and #9 of the output board.
4. No signal can be heard from the cue speaker.
 - a. Interchange the cue amplifier with either the program or monitor amplifier.
 - b. Check for 30 volts between terminals #3 and #5 of the booster board and terminals #3 and #9 of the output board.
 - c. Check cue speaker.
5. No indication can be seen on VU meter when talking into the control room or studio microphones, but the medium level channels operate O.K.
 - a. Interchange preamplifiers if only one channel shows no indication.
 - b. Check for 30 volts between terminals #7 and #8.
 - c. Check contacts on switch S1.
6. No indication can be seen on the VU meter when feeding one of medium level inputs.
 - a. Check the input switch, the channel mixer, and program/audition lever key.

7. Monitor speakers will not mute.
 - a. Check relays K1 and K2.
 - b. Check contacts of switches S1 and S11.
8. Headphones will not operate in either or both of the channels when plugged into headphone monitor on the front panel.
 - a. Check the contacts on switch S17 and the phone jacks.
 - b. Check the headphones.

4.2 ATTENUATOR CLEANING INSTRUCTIONS

1. Use lint free cloth or Ken-Wipes when cleaning or lubricating attenuators. Use each cloth once and discard.
2. Use denatured alcohol as a cleaning agent.

WARNING: DO NOT use carbon tetrachloride. It causes noise and the fumes may cause injury to personnel.
3. Use a soft clean pencil eraser to remove spots or noisy areas not cleaned in Step 2.
4. Lubricate with a pure, high grade vaseline.
5. Clean and lubricate each control on a regular schedule. This function should be performed every 50,000 cycles of operation or every three months, whichever occurs first.

CHANNEL	1	2	3	4	5 (4)
NORMAL IMPEDANCE	(1) 150 OHM bal	150 OHM Unbal	150 OHM Unbal	150 OHM Unbal	150 OHM (A) Unbal (B) 600 OHM Bal
OPERATING MODE	STEREO	STEREO	STEREO	STEREO	STEREO STEREO or MONO
MAXIMUM INPUT LEVEL	-17 dBm*	-4 dBm**	-4 dBm**	-4 dBm**	-4 dBm** +2 dBm
NOMINAL INPUT	-60 dBm	-20 dBm	-20 dBm	-20 dBm	-20 dBm -14 dBm
SPECIAL IMPEDANCE	(2) 37.5 OHM	AS REQUIRED	AS REQUIRED	AS REQUIRED	AS REQUIRED
REQUIRED MODIFICATION	UNSOLDER RED & YELLOW WIRE RESOLDER RED TO BLUE YELLOW TO BROWN	PAD OR TRANSFORMER	PAD OR TRANSFORMER	PAD OR TRANSFORMER	PAD (3)

NOTES:

- * Overload point of microphone pre-amplifier.
- ** End of linear portion of level control. (approximately 9 o'clock)
- (1) Nominal input impedance 150 ohm will accommodate 150 to 200 ohm microphones.
- (2) Nominal input impedance 37.5 ohm will accommodate 30 to 50 ohm microphones.
- (3) This pad should be located between S10 and T1 to prevent attenuating the outgoing program cue. It will affect both net and remote inputs.
- (4) Channel 5 Condition A is tape or turntable. Condition B is NET or REMOTE.

**SECTION 5 - PARTS LIST
STEREO STATESMAN CONSOLE**

SYMBOL	DESCRIPTION	GATES PART NO.	SYMBOL	DESCRIPTION	GATES PART NO.
994 6549 004 PREAMPLIFIER					
C1, C6	Cap., 25 uF., 6 V.	522 0178 000	Q1	Transistor, 2N3391A	380 0099 000
C2	Cap., 250 uF., 3 V.	522 0164 000	Q2	Transistor, 40314	380 0053 000
C3	Cap., 25 uF., 25 V.	522 0242 000	Q3	Transistor, 40317	380 0050 000
C4	Cap., 75 pF., 500 V.	500 0822 000	Q4	Transistor, 40319	380 0044 000
C5	Cap., 35 uF., 25 V.	522 0243 000	R1	Res., 8.2K ohm, 1/2 W. 5%	540 0071 000
C7	Cap., 330 pF., 1 kV.	516 0038 000	R2	Res., 12K ohm, 1/2 W. 5%	540 0075 000
C8	Cap., 250 uF., 25 V.	522 0387 000	R3	Res., 82 ohm, 1/2 W. 5%	540 0023 000
C9	Cap., 18 pF., 500 V.	500 0807 000	R4	Res., 9.1K ohm, 1/2 W. 5%	540 0072 000
C10	Cap., 470 pF., 1 kV. 10%	516 0043 000	R5	Res., 15K ohm, 1/2 W. 5%	540 0077 000
C11	Cap., .01 uF., 600V.	516 0080 000	R6	Res., 1200 ohm, 1 W. 5%	540 0334 000
C12, C13	Cap., .002 uF., 1 kV.	516 0063 000	R7, R22	Res., 220 ohm, 1/2 W. 5%	540 0033 000
Q1, Q2	Transistor, TN323	380 0092 000	R8	Res., 130 ohm, 1/2 W. 5%	540 0028 000
Q3	Transistor, 2N697	380 0042 000	R9	Thermistor, 500 ohm	559 0014 000
Q4	Transistor, 40319	380 0044 000	R10, R12	Res., (Selected)	
R1	Res., 36K ohm, 1/2 W. 5%	540 1108 000	R11, R14, R15, R16	Res., 150 ohm, 1/2 W. 5%	540 0029 000
R2	Res., 6200 ohm, 1/2 W. 5%	540 1106 000	R13	Res., 18 ohm, 1/2 W. 5%	540 0007 000
R3	Res., 20K ohm, 1/2 W. 5%	540 1107 000	R17, R18	Res., .51 ohm, 2 W. 5%	542 1072 000
R4	Res., 110 ohm, 1/2 W. 5%	540 1103 000	R19	Res., 680 ohm, 1/2 W. 5%	540 0045 000
R5	Res., 510 ohm, 1/2 W. 5%	540 0042 000	R20	Res., 3900 ohm, 1/2 W. 5%	540 0063 000
R6	Res., 9100 ohm, 1/2 W. 5%	540 0072 000	R21	Res., 15 ohm, 1/2 W. 5%	540 0005 000
R7, R11	Res., 1000 ohm, 1/2 W. 5%	540 0049 000	XQ1, 2, 3, 4	Transipad	404 0198 000
R8	Res., 3000 ohm, 1/2 W. 5%	540 0060 000	992 2224 001 BOOSTER AMPLIFIER		
R9	Res., (Selected)		C1	Cap., 25 uF., 6 V.	522 0178 000
R10	Res., 100 ohm, 1/2 W. 5%	540 1102 000	C2, C3	Cap., 500 uF., 3 V.	522 0167 000
R12	Res., 2000 ohm, 1/2 W. 5%	540 1104 000	C4	Cap., 25 uF., 25 V.	522 0242 000
R13	Res., 5100 ohm, 1/2 W. 5%	540 1105 000	C5	Cap., .001 uF., 1 kV.	516 0054 000
R14, R15	Res., 10 ohm, 1/2 W. 5%	540 0001 000	C6	Cap., 100 uF., 6 V.	522 0185 000
R16	Res., 51 ohm, 1/2 W. 5%	540 0018 000	C7	Cap., 100 uF., 25 V.	522 0246 000
T1	Transformer, Input	478 0285 000	C8	Cap., .0015 uF., 1 kV.	516 0059 000
XQ1, XQ2	Transistor Socket	404 0066 000	C9	Cap., 24 pF., 500 V.	500 0810 000
XQ3, XQ4	Transipad	404 0198 000	C10, C11	Cap., 470 pF., 1 kV. 10%	516 0043 000
Z1, Z2	Ferrite Bead	414 0087 000	C12, C13	Cap., .025 uF., 500V.	516 0393 000
994 6550 004 OUTPUT MODULE					
Q5	Transistor, 40310	380 0062 000	Q1, Q2	Transistor, TN323	380 0092 000
Q6	Transistor, 2N3740	380 0066 000	Q3	Transistor, 2N697	380 0042 000
XQ5, XQ6	Power Transistor Socket	404 0206 000	R1	Res., 30K ohm, 1/2 W. 5%	540 1131 000
992 2225 001 OUTPUT AMPLIFIER					
C1	Cap., 25 uF., 6 V.	522 0178 000	R2	Res., 6200 ohm, 1/2 W. 5%	540 1106 000
C2	Cap., 25 uF., 25 V.	522 0242 000	R3	Res., 20K ohm, 1/2 W. 5%	540 1107 000
C3, C4, C5	Cap., 250 uF., 6 V.	522 0188 000	R4	Res., 68 ohm, 1/2 W. 5%	540 1110 000
C6	Cap., 150 pF., 500 V. 5%	500 0761 000	R5	Res., 1300 ohm, 1/2 W. 5%	540 0052 000
C7	Cap., 270 pF., 500 V. 5%	500 0755 000	R6	Res., 9100 ohm, 1/2 W. 5%	540 0072 000
C8	Cap., .1 uF., 100V	516 0456 000	R7	Res., 5600 ohm, 1/2 W. 5%	540 0067 000
C9	Cap., 35 uF., 50 V.	522 0257 000	R8	Res., 100 ohm, 1/2 W. 5%	540 1102 000
C10	Cap., 2500 pF., 500 V. 5%	500 0879 000	R9	Res., 1000 ohm, 1/2 W. 5%	540 0049 000
C11	Cap., 500 pF., 1 kV.	516 0045 000	R10	Res., 11K ohm, 1/2 W. 1%	548 0171 000
			R11	Res., 10 ohm, 1/2 W. 5%	540 0001 000
			R12	Res., 1200 ohm, 1/2 W. 5%	540 0051 000

SYMBOL	DESCRIPTION	GATES PART NO.
R13	Res., 620 ohm, 1/2 W. 5%	540 0044 000
R14	Res., 1000 ohm, 1/2 W. 5%	540 0912 000
XQ3	Transipad	404 0198 000
Z1, Z2	Ferrite Bead	414 0087 000

994 6551 002-30 V.
REGULATED POWER SUPPLY

C1	Cap., 25 uF., 25 V.	522 0242 000
C2	Cap., 50 uF., 50 V.	522 0258 000
C3	Cap., .002 uF., 1 kV.	516 0063 000
CR1, CR2, CR3, CR4	Diode, 1N2069	384 0018 000
CR5	Zener Diode, 6.8 V. 10%	386 0019 000
CR6	Zener Diode, 20 V. 10%, 1 W.	386 0109 000
Q1, Q2	Transistor, 40310	380 0062 000
Q3	Transistor, 40319	380 0044 000
Q4	Transistor, 2N697	380 0042 000
R1	Res., 8200 ohm, 1/2 W. 5%	540 0071 000
R2	Res., 2 ohm, 20 W. (WW)	542 1105 000
R3	Res., 680 ohm, 1/2 W. 5%	540 0045 000
R4	Res., 1500 ohm, 1/2 W. 5%	540 0053 000
R5	Res., 1000 ohm, 1/2 W. 5%	540 0049 000
R6	Potentiometer, 750 ohm	550 0300 000
R7	Res., 3000 ohm, 1/2 W. 5%	540 0060 000
XQ1, XQ2	Transistor Socket	404 0206 000
XQ3, XQ4	Transipad	404 0198 000

994 6552 001 - 43 V.
REGULATED POWER SUPPLY

C1	Cap., 500 uF., 50 V.	522 0346 000
CR1, CR2, CR3, CR4	Diode, 1N2069	384 0018 000
CR5	Diode, Zener, 1.5R43B	386 0075 000
Q1, Q2	Transistor, 40310	380 0062 000
R1	Res., 1500 ohm, 1 W. 10%	540 0470 000
R2	Res., 50 ohm, 5 W. 10%	542 1067 000
R3	Res., 2 ohm, 20 W. 5%	542 1105 000
XQ1, XQ2	Transistor Socket	404 0206 000

BASIC STEREO STATESMAN CONSOLE

AT1	Meter Lamp, 28 V. Attenuator, Dual, 150/300 ohm	396 0168 000 554 0281 000
AT2, AT3, AT4, AT5	Attenuator, Dual, 150/300 w/Cue	554 0280 000
AT6, AT7, AT9	Control, 10K ohm	550 0215 000
AT8	Dual Control, 10K ohm	550 0283 000
AT10, AT11	Pad Ass'y.	992 2966 001
C1, C2, C4, C5	Cap., 2500 uF., 50 V.	524 0113 000
C3	Cap., 35 uF., 25 V.	522 0243 000
C6, C7, C8	Cap., 1000 uF., 75 V.	524 0123 000

SYMBOL	DESCRIPTION	GATES PART NO.	Qty.
	Cap., .01 uF., 1 kV.	516 0081 000	(6)
	Cap., .22 uF., 3 V.	516 0386 000	(2)
	Cap., 1 uF., 35 V.	526 0004 000	(2)
	Cap., 5 uF., 25 V.	522 0236 000	(2)
	Cap., .008 uF., 600 V.	508 0291 000	(2)
	Cap., .0056 uF., 1 kV.	516 0076 000	(1)

CR1, CR2, CR3, CR4	Diode, 1N2069	384 0018 000
J1, J2	Phone Jack	612 0281 000
K1, K2	Relay, 4 PDT, 24 V. d.c.	574 0103 000
LS1	Speaker, Cue 2"	722 0049 000
	R.F. Choke, 1 mH.	494 0114 000
M1, M2	Meter, VU, "B" Scale, 4.5"	630 0121 000
Q1, Q2	Transistor, 2N3440	380 0058 000

	Res., 1.5K ohm, 1/2 W. 5%	540 0053 000	(2)
	Res., 270 ohm, 1/2 W. 5%	540 0035 000	(10)
	Res., 150 ohm, 1/2 W. 5%	540 0029 000	(16)
	Res., 620 ohm, 1/2 W. 5%	540 0044 000	(6)
	Res., 2000 ohm, 1/2 W. 5%	540 0056 000	(4)
	Res., 220 ohm, 1/2 W. 5%	540 0033 000	(2)
	Res., 180 ohm, 1/2 W. 5%	540 0031 000	(1)
	Res., 1.1K ohm, 1/2 W. 5%	540 0050 000	(2)
	Res., 3.3K ohm, 1/2 W. 5%	540 0061 000	(2)
	Res., 620 ohm, 2 W. 5%	540 0606 000	(2)
	Res., 15K ohm, 1/2 W. 5%	540 0077 000	(2)
	Res., 150 ohm, 12 W.	542 1122 000	(1)
	Res., 3600 ohm, 1/2 W. 5%	540 0062 000	(2)
	Res., 1000 ohm, 1/2 W. 5%	540 0049 000	(2)
	Res., 16K ohm, 1/2 W. 5%	540 0078 000	(1)
	Res., 910 ohm, 1/2 W. 5%	540 0048 000	(2)
	Res., 10K ohm, 1/2 W. 5%	540 0073 000	(2)
	Res., 3000 ohm, 1/2 W. 5%	540 0060 000	(2)

S1	Lever Switch, 6 Cir. 2 Pos.	602 0060 000
S2	Lever Switch, 4 Cir. 2 Pos.	602 0007 000
S3, S4, S5, S6, S7, S8, S16	Lever Switch, 3 Cir. 3 Pos.	602 0069 000
S9, S10, S17	Lever Switch, 4 Cir. 3 Pos.	602 0068 000
S11	Lever Switch, 3 Pos.	602 0084 000
S12, S13, S14, S15	Lever Switch, 3 Pos.	602 0085 000
T1, T2 T3, T4	Output Transformer Transformer	478 0276 000 478 0286 000
TB1	Terminal Block, 80 term.	914 5208 001
TB2	Terminal Block, 40 term.	914 5209 001
TB3	Terminal Board	614 0034 000

SYMBOL	DESCRIPTION	GATES PART NO.	Qty.
	Lamp Socket (Meter Lamp)	406 0366 000	(4)
XK1, XK2	Relay Socket	404 0160 000	
XQ1, XQ2	Transistor Socket	404 0263 000	

TRANSFORMER PANEL - 994 6556 001

C1, C2	Cap., .05 uF., 600 V. d.c.	516 0087 000	
CB1, CB2	Circuit Breaker, 1 Amp. 125 V.	606 0116 000	
F2, F3, F4	Fuse, 1.0 A. Visual Indicating	398 0326 000	
T2	Power Transformer	472 0570 000	
T3, T4	Power Transformer	472 0569 000	
TBX1	Terminal Board	614 0010 000	
XF2, XF3, XF4	Fuseholder	402 0103 000	

**EQ1, EQ2 EQUALIZER PAD
992 1871 001**

C1	Cap., .0033 uf., 600 V.	508 0077 000	
C2	Cap., 3.9 uf., 35 V.	526 0012 000	
R1	Res., 2.7K ohm, 1/2 W. 5%	540 0059 000	
R2	Res., 2000 ohm, 1/2 W. 5%	540 0056 000	
R3	Res., 10 ohm, 1/2 W. 5%	540 0001 000	
R4	Res., 300 ohm, 1/2 W. 5%	540 0036 000	

SYMBOL DESCRIPTION GATES PART NO.

**MIXING BUS - P.C. BOARD
992 1874 001**

R1, R2, R4, R5, R7, R8, R10, R11, R13, R14, R16, R17, R19, R20, R22, R23, R25, R26, R28, R29	Res., 620 ohm, 1/2 W. 5%	540 0044 000	
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R3, R6, R9, R12, R15, R18, R21, R24, R27, R30	Res., 300 ohm, 1/2 W. 5%	540 0036 000	
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T5, T6	Input Transformer	478 0285 000	
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METER PAD ASSEMBLY - 992 2210 001

R1, R3, R11, R13	Res., 2700 ohm, 1/2 W. 5%	540 0059 000	
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R2, R5, R9, R12	Res., 2000 ohm, 1/2 W. 5%	540 0056 000	
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R4, R10	Res., 3000 ohm, 1/2 W. 5%	540 0060 000	
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R6, R8	Res., 5600 ohm, 1/2 W. 5%	540 0067 000	
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R7	Res., 3900 ohm, 1/2 W. 5%	540 0063 000	
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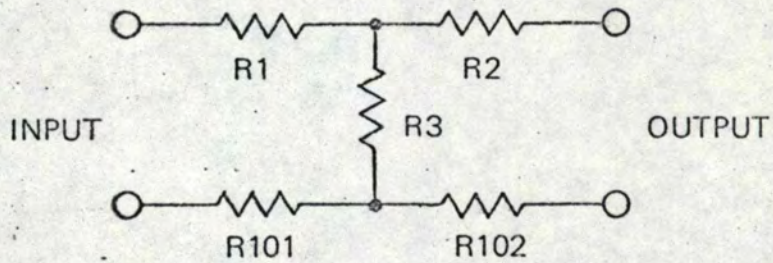
R14, R15, R17, R18, R19, R20, R22, R23	Res., 100 ohm, 1/2 W. 5%	540 0025 000	
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R16, R21	Res., 820 ohm, 1/2 W. 5%	540 0047 000	
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Slide Switch, D.P.D.T. (with P.C. terminals)	604 0348 000		
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NOTE: The following chart may be used for H pads by halving R1 and making R101 equal to half of R1, and by halving R2 and making R102 equal to half of R2. For T pads, simply short out R101 and R102 and use R1 and R2 values directly.

LOSS PAD CHART



600/600 ohms "T" pads

dB loss	R1-R2 ohms	R3 ohms
2	68	2700
4	130	1200
6	200	820
8	270	510
10	330	390
15	430	220
20	470	120
25	510	68

150/150 ohms "T" pads

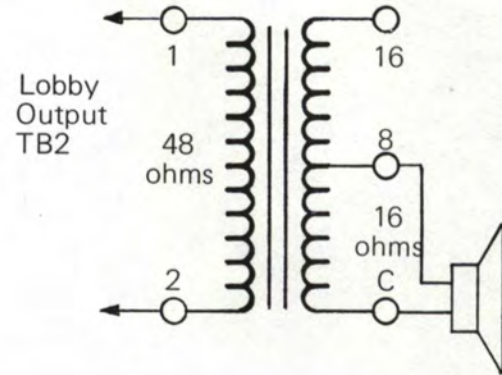
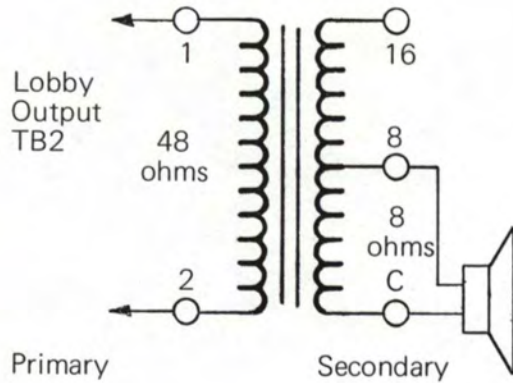
dB loss	R1-R2 ohms	R3 ohms
2	18	750
4	36	330
6	51	200
8	62	120
10	82	100
15	110	56
20	120	30
25	130	16

600/150 ohms "T" pads

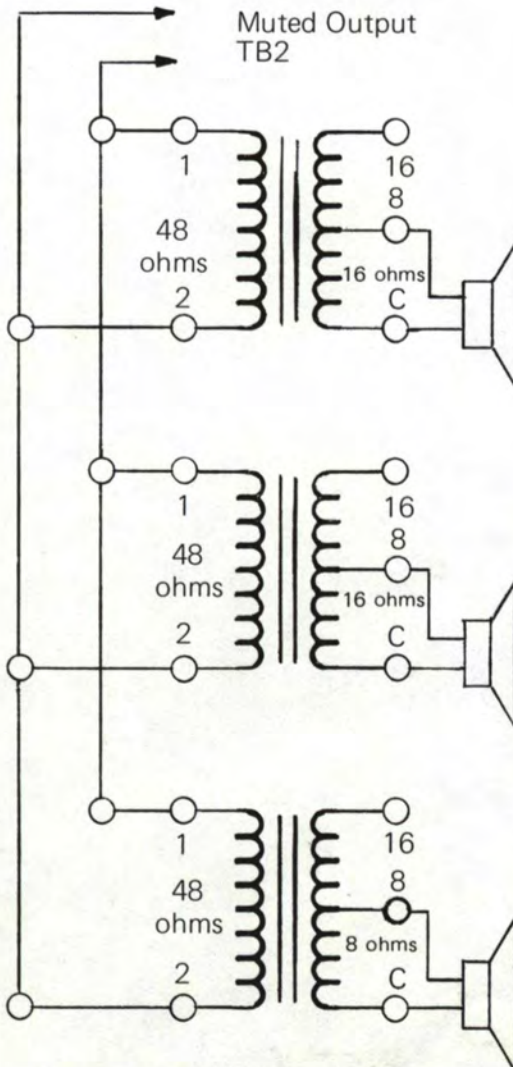
dB loss	R1 ohms	R2 ohms	R3 ohms
12 (min)	510	6.8	160
15	510	51	110
20	560	100	62
25	560	120	33

Speaker matching transformer information using Gates 478-0291-000 transformer. Shown below are some typical installations.

(A) Lobby speakers, 8 or 16 ohms.



(B) Muted outputs, using 8 and 16 ohms speakers.

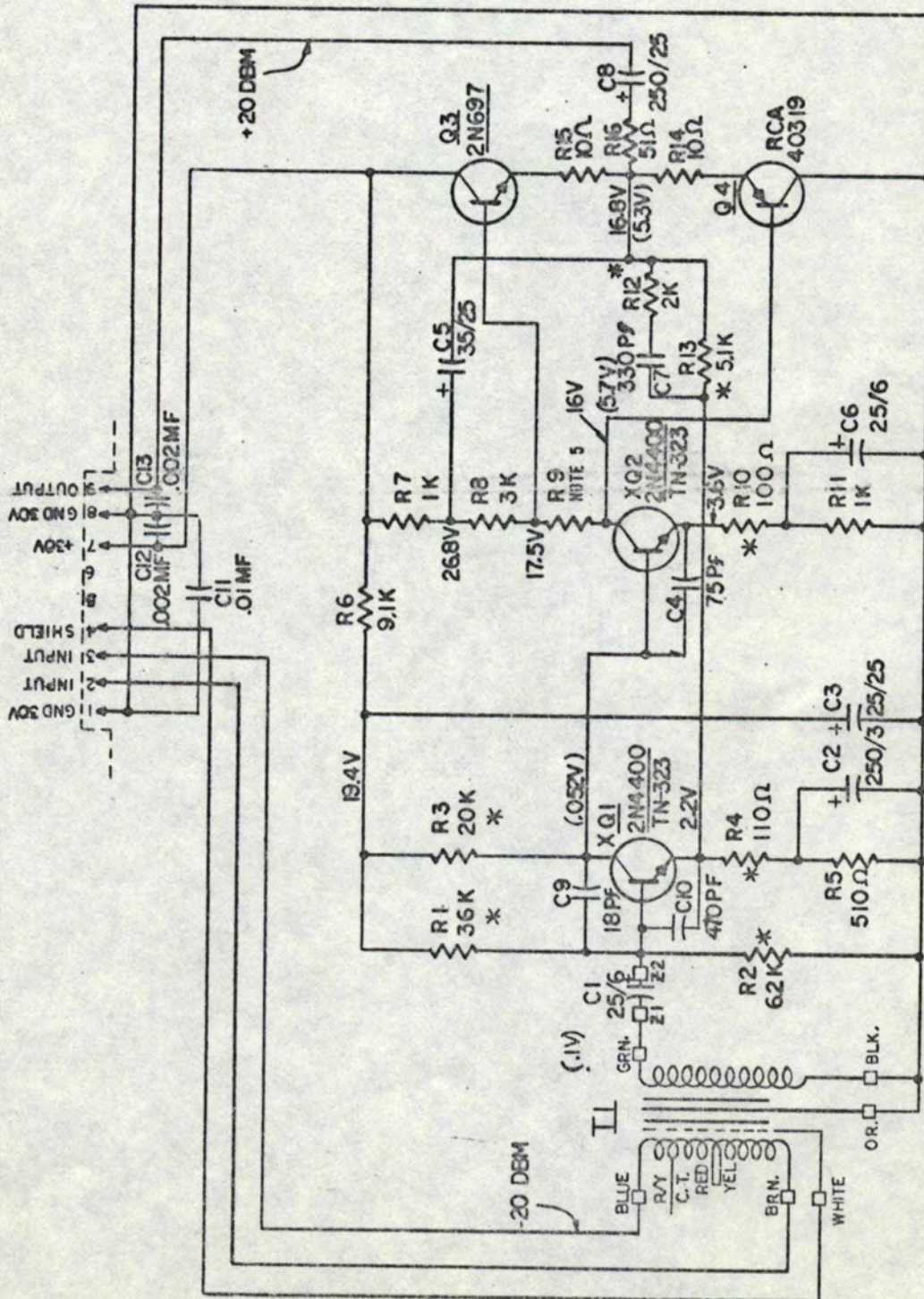


(C) Amplifier Loading

The load impedance of the monitor amplifier is 8 ohms. Speaker loads of 4 to 16 ohms may be used. Loading the amplifier lower than 4 ohms may damage the unit. Some suggested loads are listed below.

1. One 8 ohms speaker.
2. Two 16 ohms speakers connected in parallel.
3. From one to six speakers using Gates 478-0291-000 speaker matching transformers.

CAUTION: *It is extremely important to the proper operation of this console that the external wiring between TB2 and the speaker/matching transformer not be grounded.*



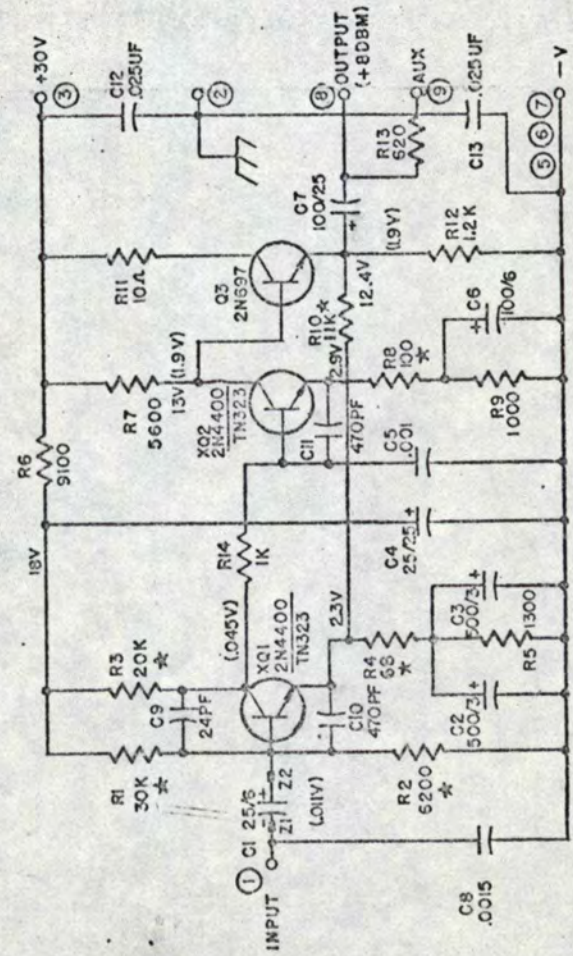
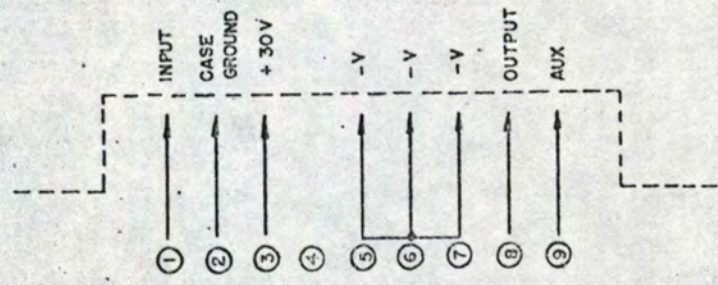
NOTES:

1. PIN CONNECTIONS COMPONENTS SIDE, LEFT TO RIGHT.
2. ALL RESISTORS 1/2 WATT 5%
3. CAPACITORS IN UF WITH D.C. RATING, UNLESS SPECIFIED.
4. * DENOTES LOW NOISE RESISTORS.
5. R9 SELECTED FOR TOTAL AMPLIFIER CURRENT TO BE 10-18 MA (NO SIGNAL). PARTS REPLACEMENT MAY REQUIRE CHANGE OF R9 VALUE.
6. D.C. VOLTAGES ARE NOMINAL, MEASURED WITH A VVM, NO SIGNAL.
7. VOLTAGES IN (V) ARE SIGNAL LEVELS FOR +200dbm (1500) OUTPUT, 1000HZ.
8. PHASING-INPUT/OUTPUT TERMINALS "3" AND "9" ARE IN-PHASE

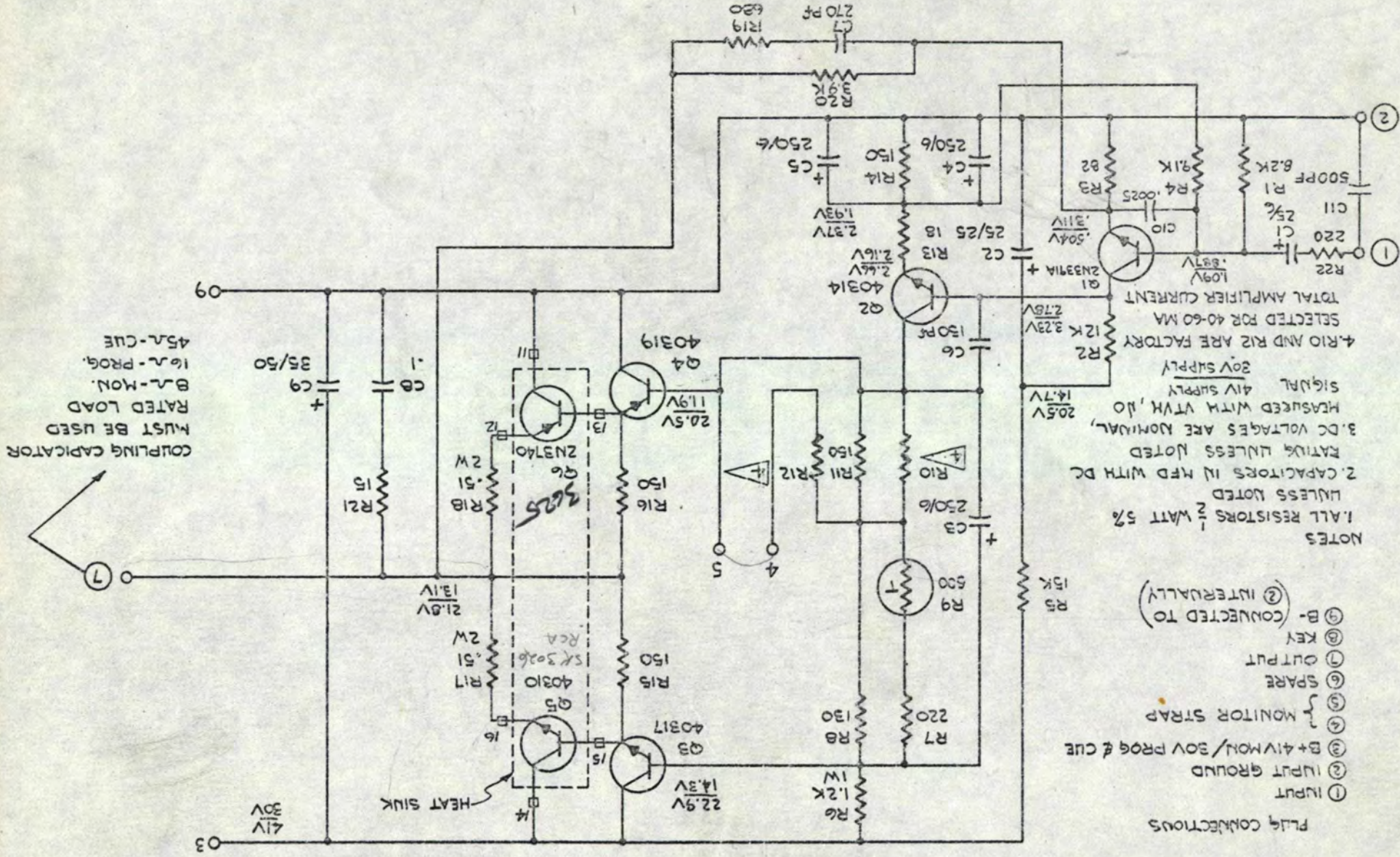
II. PRIMARY CONNECTIONS

IMP	CT	JOIN	CONNECT TO
37.50	R/Y	RED & BLU YEL & BRN	BLU & YEL
1500	-	YEL & RED	BLU & BRN

1. PIN CONNECTIONS COMPONENTS SIDE, LEFT TO RIGHT.
2. ALL RESISTORS 1/2 WATT 5%, * DENOTES LOW NOISE.
3. CAPACITORS IN MFD WITH D.C. RATING, UNLESS SPECIFIED.
4. COMPONENT VALUES SHOWN ARE NOMINAL VALUES. SLIGHT CHANGES MAY BE NECESSARY TO COMPENSATE FOR PRODUCTION TOLERANCES.
5. THE BOOSTER AMPLIFIER IS PHYSICALLY LOCATED IN THE EXTRUDED HOUSING OF THE OUTPUT MODULE.
6. D.C. VOLTAGES ARE NOMINAL, MEASURED WITH A VTVM, NO SIGNAL.
7. VOLTAGES IN (V) ARE SIGNAL LEVELS FOR +8DBM(500Ω) OUTPUT, 1000HZ.



SCHEMATIC BOOSTER AMPLIFIER EDO 94479-5



COUPLING CAPACITOR
MUST BE USED
RATED LOAD
B.L.-MON.
16A.-PROG.
45A.-CUE

- Plug connections
- ① INPUT
 - ② INPUT GROUND
 - ③ B+ 41V MON/30V PROG & CUE
 - ④ MONITOR STRAP
 - ⑤ SPARE
 - ⑥ SPARE
 - ⑦ OUTPUT
 - ⑧ KEY
 - ⑨ B- (CONNECTED TO ② INTERUALLY)

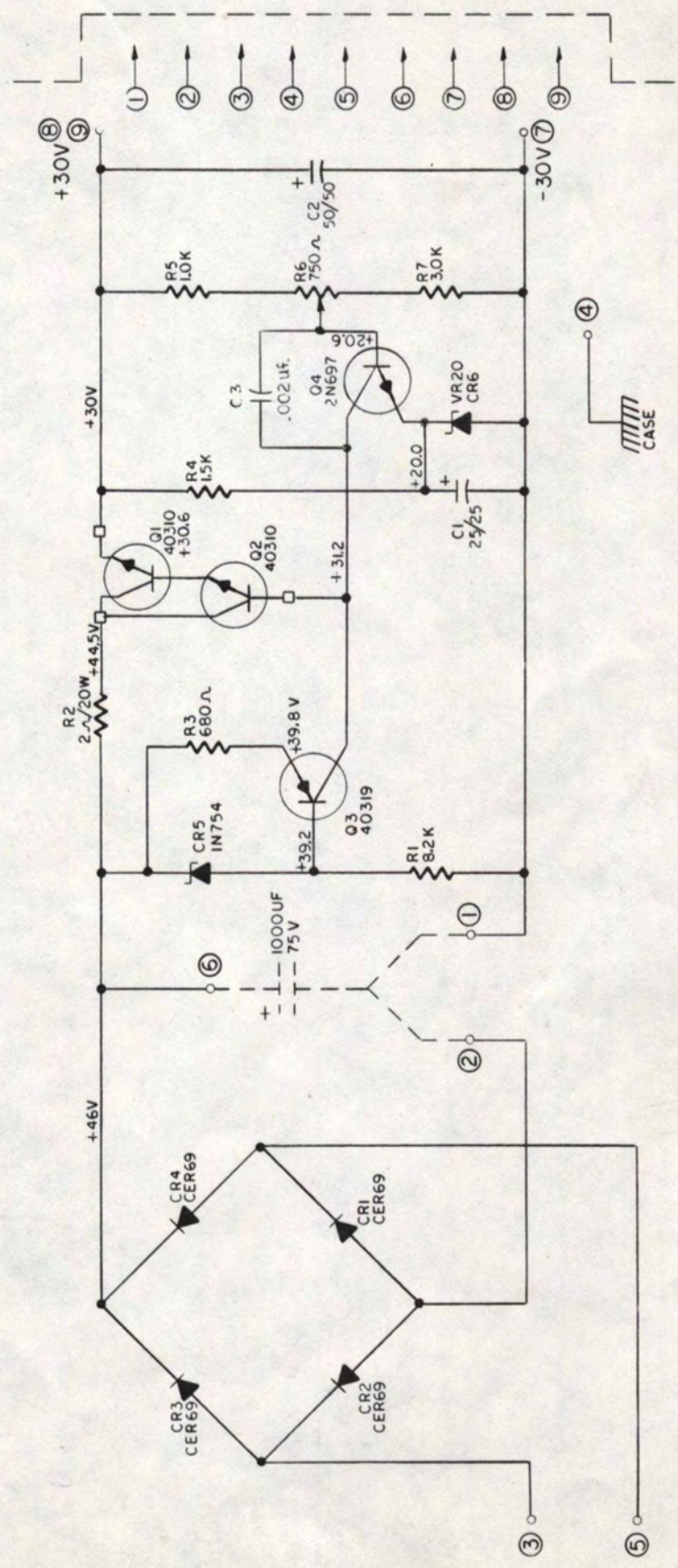
NOTES

- 1. ALL RESISTORS 1/2 WATT 5%
- 2. CAPACITORS IN MFD WITH DC RATING UNLESS NOTED
- 3. DC VOLTAGES ARE NOMINAL, NO MEASURED WITH VTVM, NO SIGNAL 41V SUPPLY 30V SUPPLY
- 4. R10 AND R12 ARE FACTORY SELECTED FOR 40-60 MA TOTAL AMPLIFIER CURRENT

SCHEMATIC PROGRAM-MONITOR-CUE AMP.

- 1 C2 OUTPUT GND
- 2 C2 INPUT GND
- 3 36 VAC
- 4 CASE GND
- 5 36 VAC
- 6 C2 B+ CONNECTION
- 7 DC GND
- 8 REGULATED
- 9 30VDC

- NOTES
1. PIN CONNECTIONS COMPONENTS SIDE, LEFT TO RIGHT
 2. CAPACTORS IN MFD. WITH DC-RATING
 3. RESISTORS ALL 1/2W UNLESS NOTED
 4. VOLTAGES TAKEN WITH VOM 20,000 Ω PER VOLT SUPPLY LOADED FOR 780 MA. LINE VOLTAGE 120V ALLOW ± 10% VARIATION
 5. 1000 UF/75V CAP IS EXTERNALLY MOUNTED

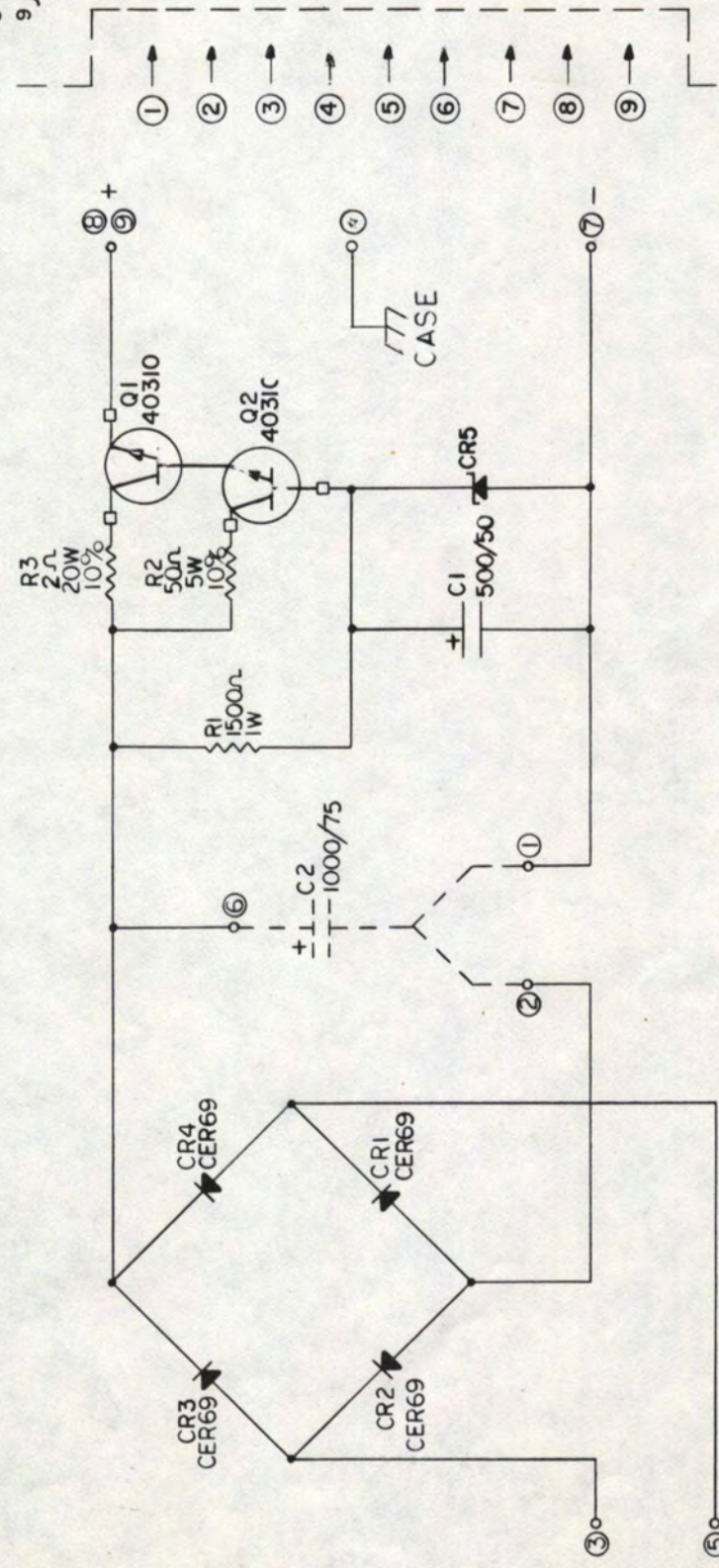


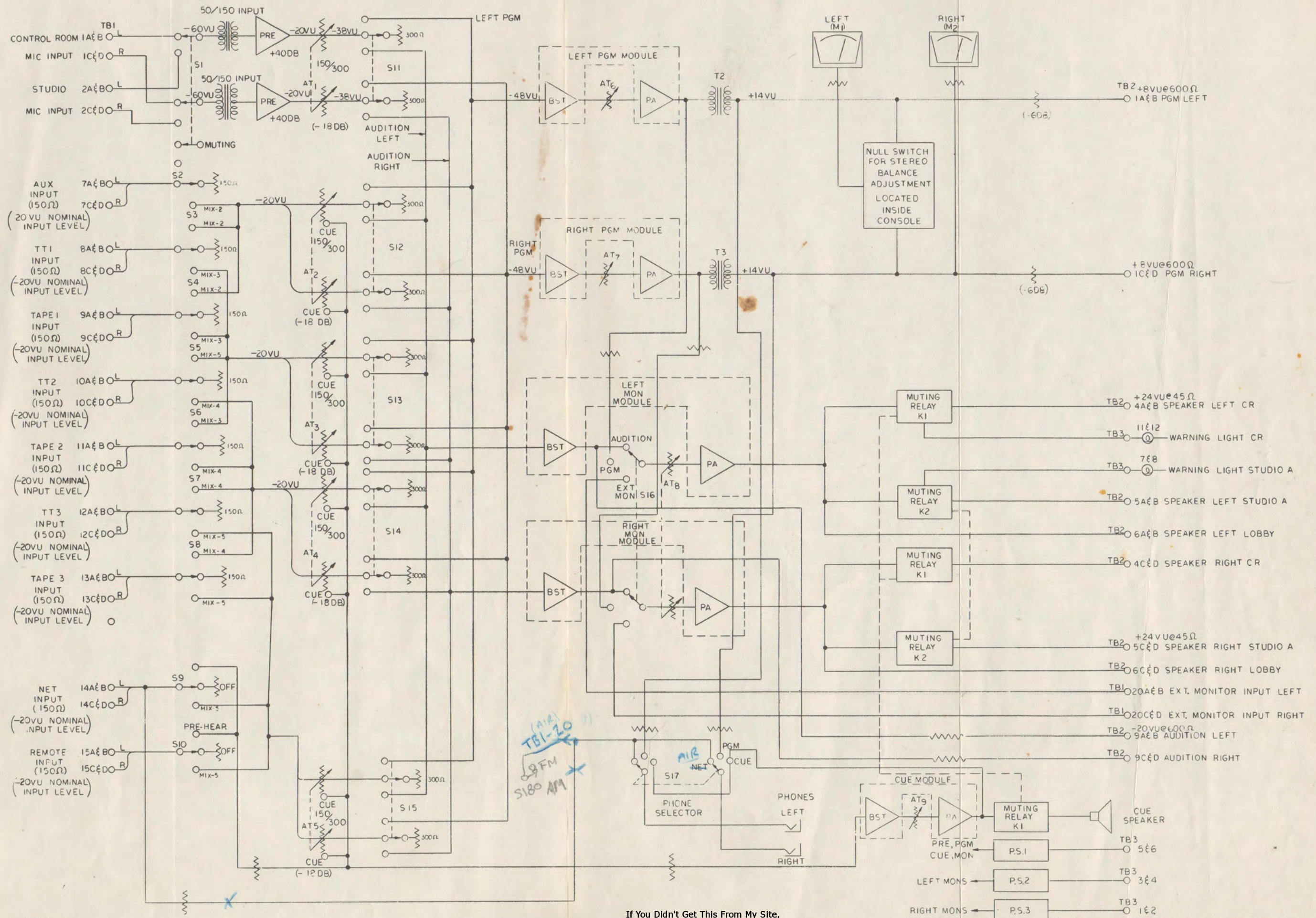
SCHEMATIC POWER SUPPLY-M6551A

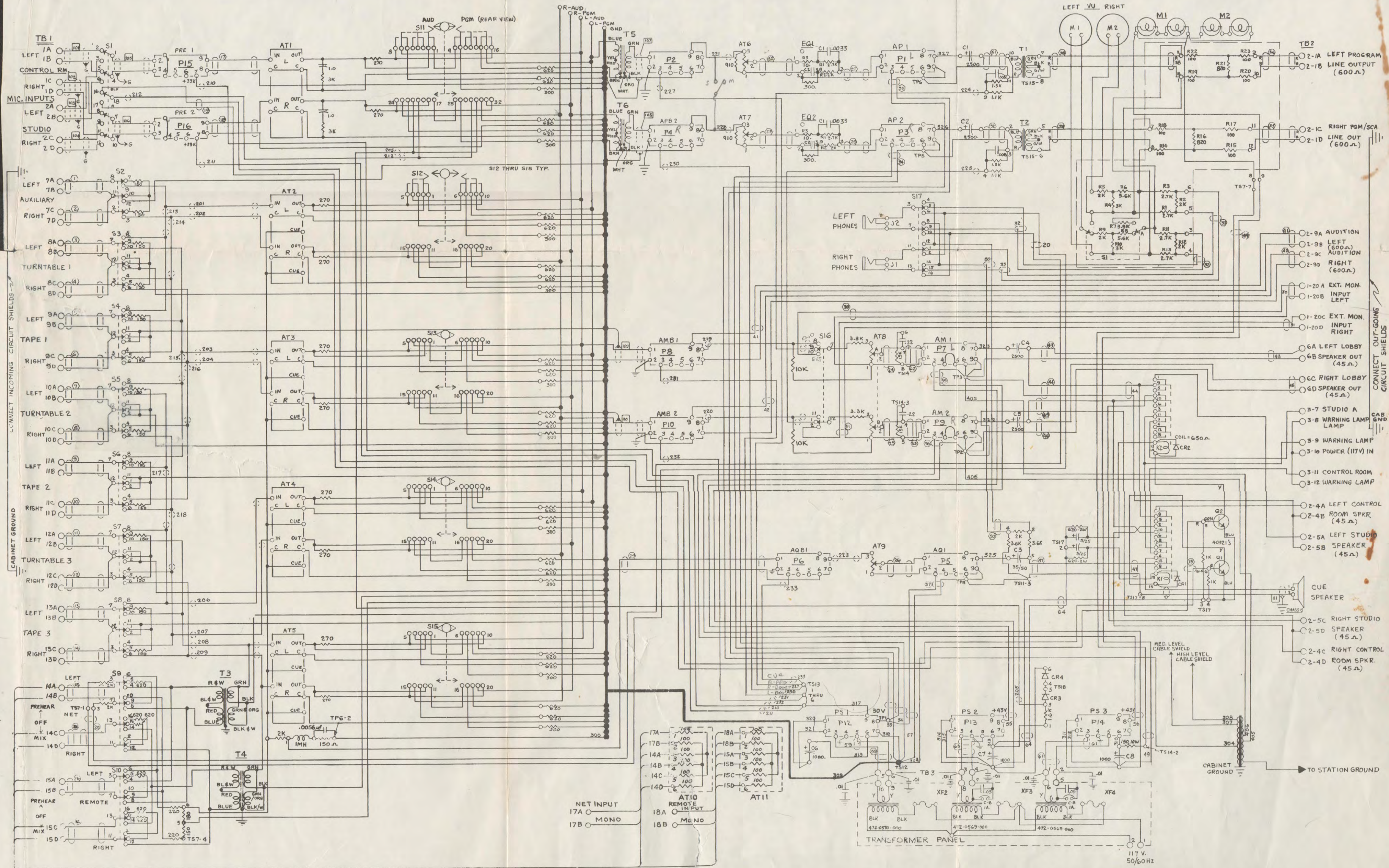
NOTES:

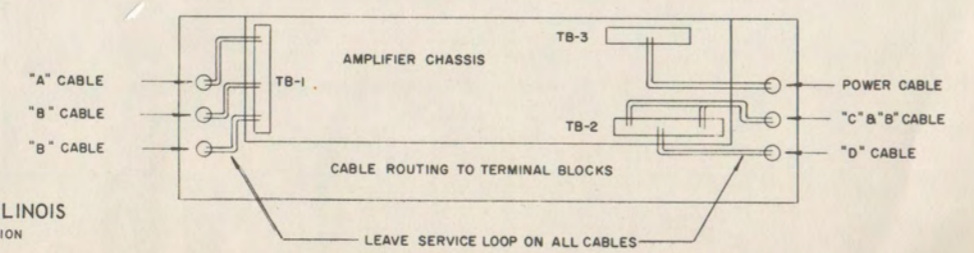
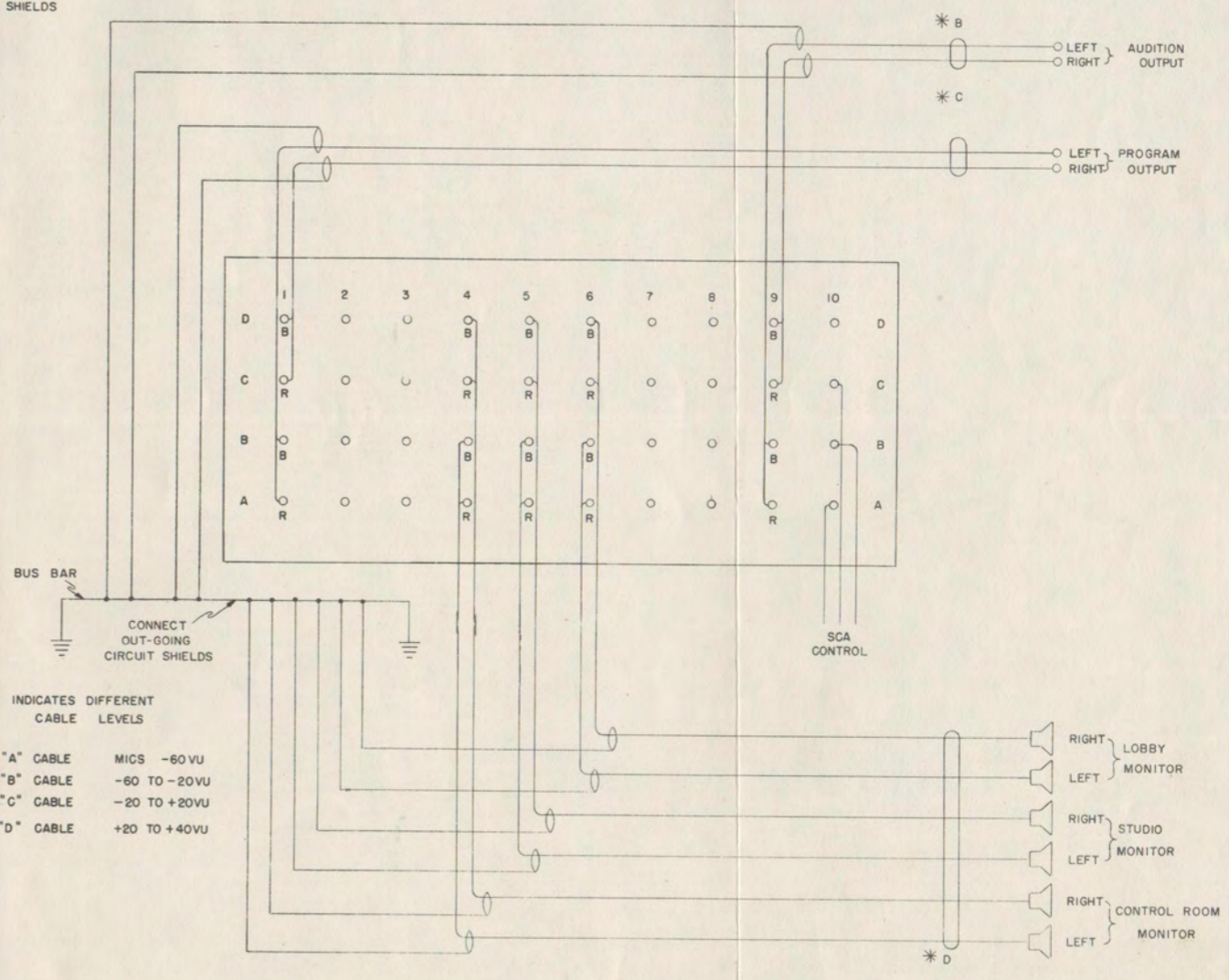
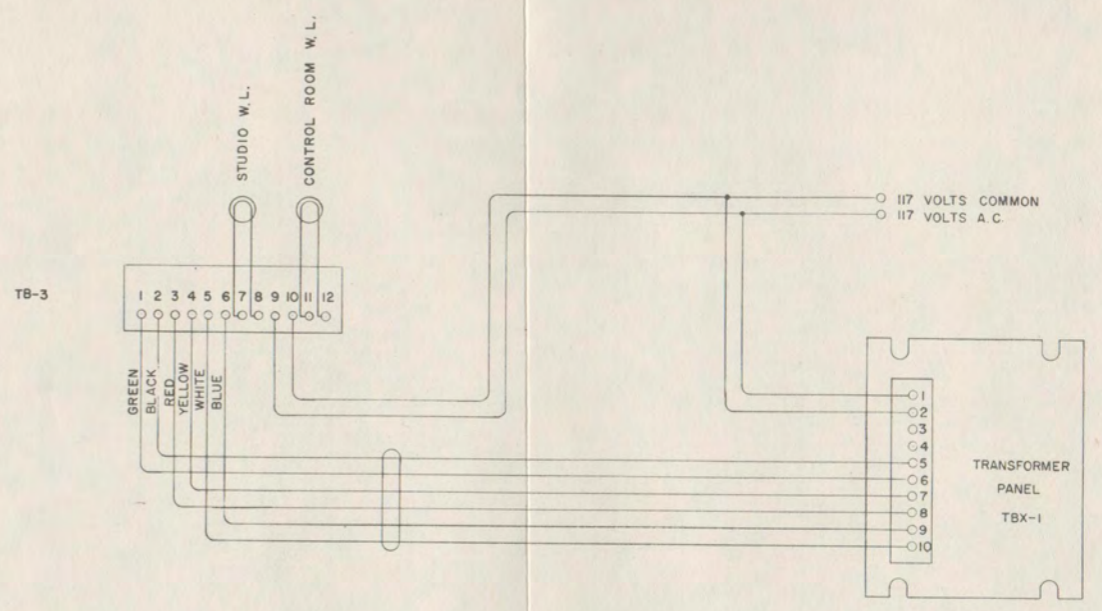
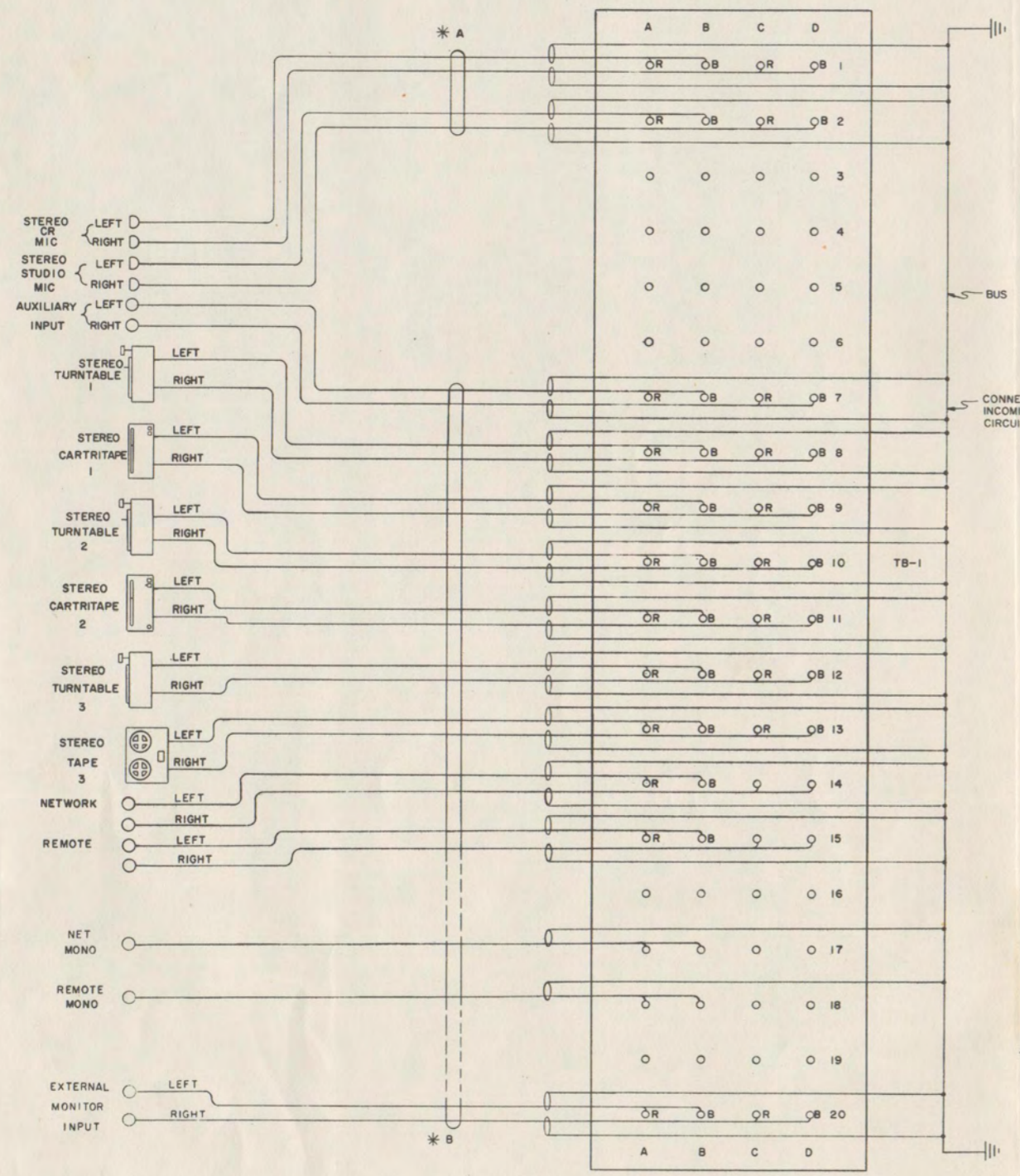
1. PIN CONNECTIONS COMPONENTS SIDE, LEFT TO RIGHT.
2. CAPACITORS IN MFD. WITH D.C. RATING.
3. COMPONENT VALUES SHOWN ARE NOMINAL VALUES. SLIGHT CHANGES MAY BE NECESSARY TO COMPENSATE FOR PRODUCTION TOLERANCES
4. C2 IS EXTERNALLY MOUNTED.

- 1 - C2 OUTPUT GND.
- 2 - C2 INPUT GND.
- 3 - 36VAC
- 4 - N.C.
- 5 - 36V AC
- 6 - C2 B+ CONNECTION
- 7 - DC. GND.
- 8 } REGULATED
- 9 } 43V D.C.









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