

## 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.

**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.

## TABLE OF CONTENTS

SECTION		PAGE
	INTRODUCTION	i
	TABLE OF CONTENTS	ii
1.	SPECIFICATIONS	1-1
2.	INSTALLATION	2-1
	2.1 Unpacking Instructions	2-1
	2.2 Audio System Installation Information	2-1
	2.3 Installation Procedure	2-1
	a. Power Connections	2-1
	b. Warning Lights	2-2
	c. Input Connections to Console	2-2
	d. Output Connections to Console	2-2
3.	OPERATION	3-1
	3.1 Channel Balance	3-1
	3.2 Cue System	3-1
4.	MAINTENANCE	4-1
	Table 1	4-3
5.	PARTS LIST	5-1
	DIAGRAMS - *Loss Pad Chart	
	*Speaker Matching Transformer Information	
	827 3822 001 M6549C Preamplifier	
	827 3823 001 M6550C Booster Amplifier	
	827 4088 001 M6550C Output Amplifier	
	827 3890 001 M6551A 30V. Regulated Power Supply	
	827 2385 001 M6552 43V. Power Supply	
	838 2669 001 Cable Inlet & Mounting Diagram	
	842 5348 001 Functional Diagram	
	842 6207 001 Wiring Diagram	
	852 6262 001 Installation Diagram	

## 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: 64 dB below +8 dBm output with -60 dBm input. The equivalent input noise is -124 dBm or better. (20 Hz to 20 kHz).  
Crosstalk: In 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: 64 dB below +8 dBm output with -17 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 50 Hz to 20,000 Hz.  
Distortion: 0.5% or less, from 50 Hz to 20,000 Hz @ +18 dBm output.  
Noise: 64 dB below +8 dBm output with -17 dBm output.

### 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.

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  $\pm 0.5$  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.



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 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	37.5 OHM (2)	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.
<b>994 6549 004 PREAMPLIFIER</b>							
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	<b>992 2224 001 BOOSTER AMPLIFIER</b>			
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		Cap., 470 pF., 1 kV. 10%	516	0043 000
Z1, Z2	Ferrite Bead		414 0087 000		Cap., .025 uF., 500V.	516	0393 000
<b>994 6550 004 OUTPUT MODULE</b>							
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
<b>992 2225 001 OUTPUT AMPLIFIER</b>							
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., 75 V.		516 0357 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.	Qty.
	Lamp Socket (Meter Lamp)	406 0366 000	(4)
XK1, XK2	Relay Socket	404 0160 000	
XQ1, XQ2	Transistor Socket	404 0263 000	
<b>TRANSFORMER PANEL - 994 6556 001</b>			
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	
R3, R6, R9, R12, R15, R18, R21, R24, R27, R30	Res., 300 ohm, 1/2 W. 5%	540 0036 000	
T5, T6	Input Transformer	478 0285 000	

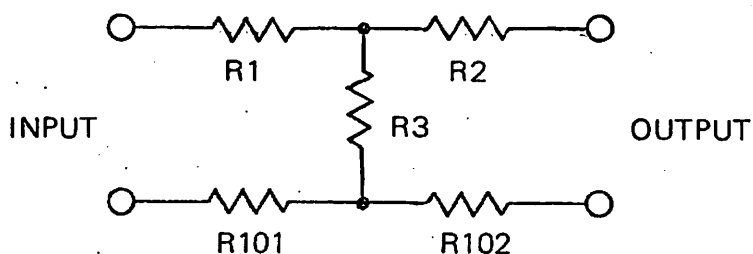
**METER PAD ASSEMBLY - 992 2210 001**

R1, R3, R11, R13	Res., 2700 ohm, 1/2 W. 5%	540 0059 000	
R2, R5, R9, R12	Res., 2000 ohm, 1/2 W. 5%	540 0056 000	
R4, R10	Res., 3000 ohm, 1/2 W. 5%	540 0060 000	
R6, R8	Res., 5600 ohm, 1/2 W. 5%	540 0067 000	
R7	Res., 3900 ohm, 1/2 W. 5%	540 0063 000	
R14, R15, R17, R18, R19, R20, R22, R23	Res., 100 ohm, 1/2 W. 5%	540 0025 000	
R16, R21	Res., 820 ohm, 1/2 W. 5%	540 0047 000	

Slide Switch, D.P.D.T.  
(with P.C. terminals) 604 0348 000

**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

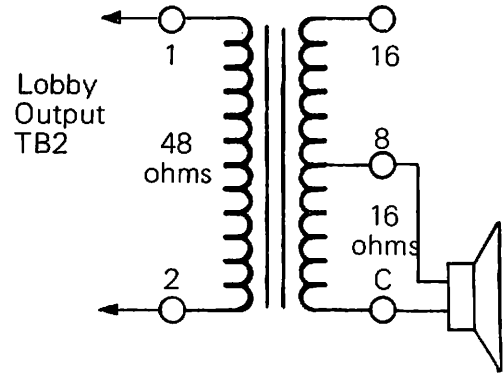
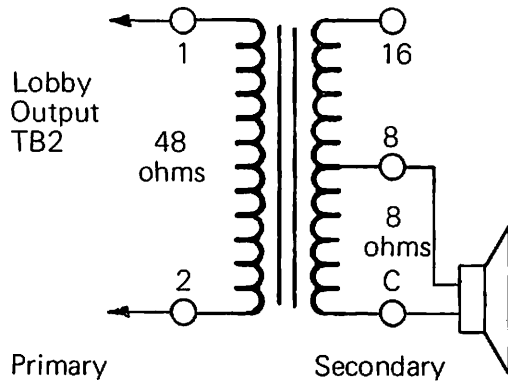
dB loss	R1-R2 ohms	R3 ohms
2	18	750
4	36	330
6	51	200
8	62	120
10	82	100
15	110	56
20	120	30
25	130	16

#### 600/150 ohms "T" pads

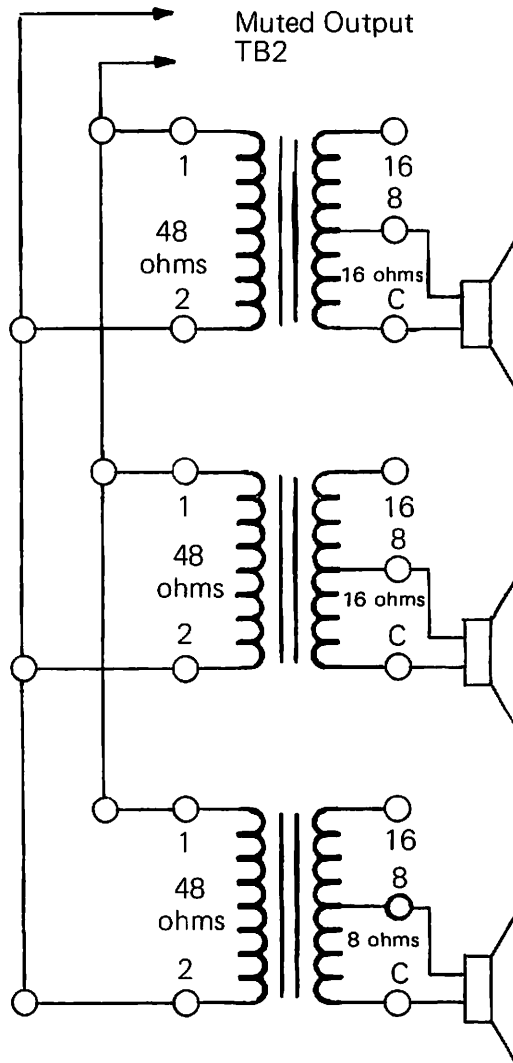
dB loss	R1 ohms	R2 ohms	R3 ohms
12 (min)	510	6.8	160
15	510	51	110
20	560	100	62
25	560	120	33

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.

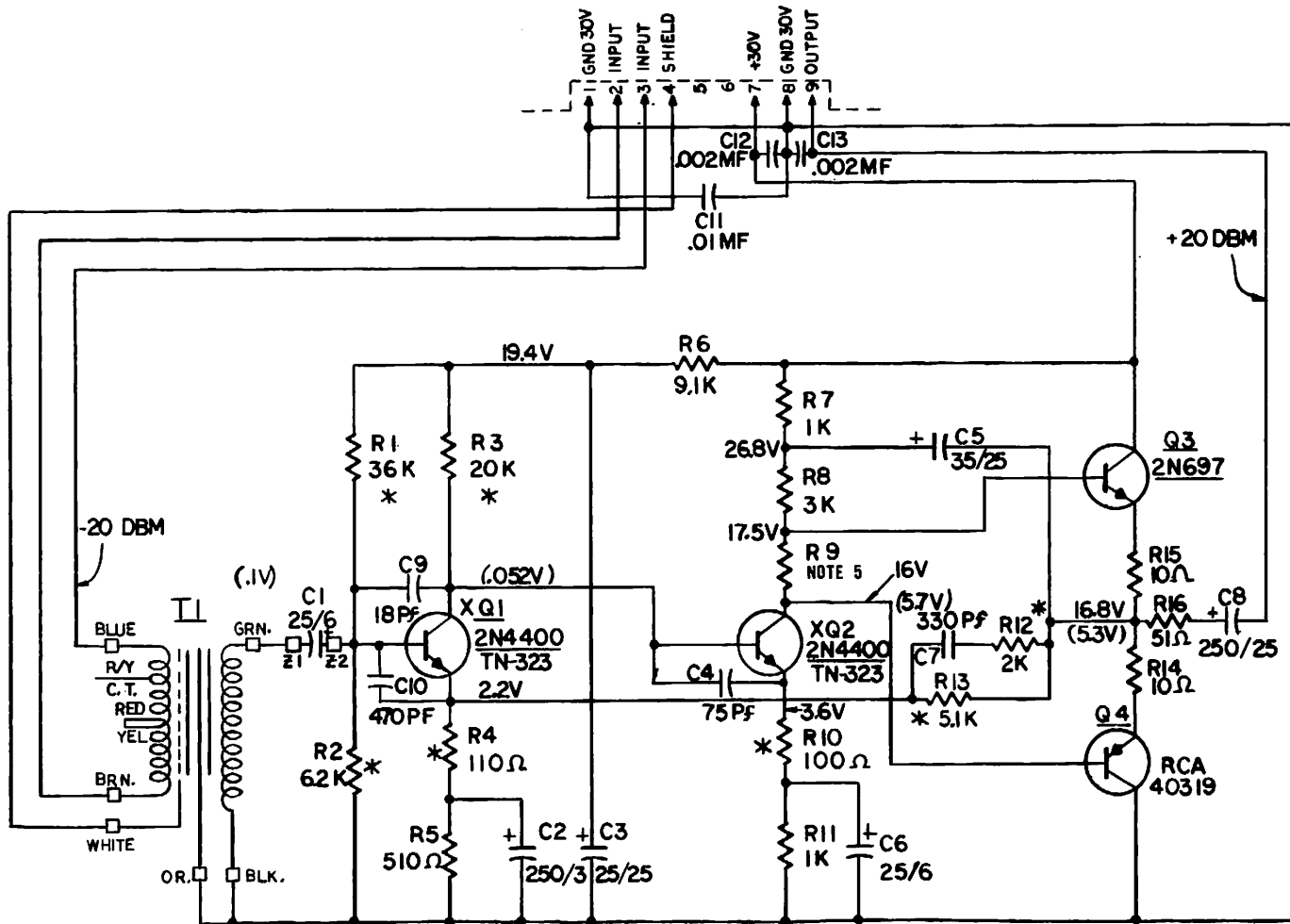


(C) Amplifier Loading

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.*



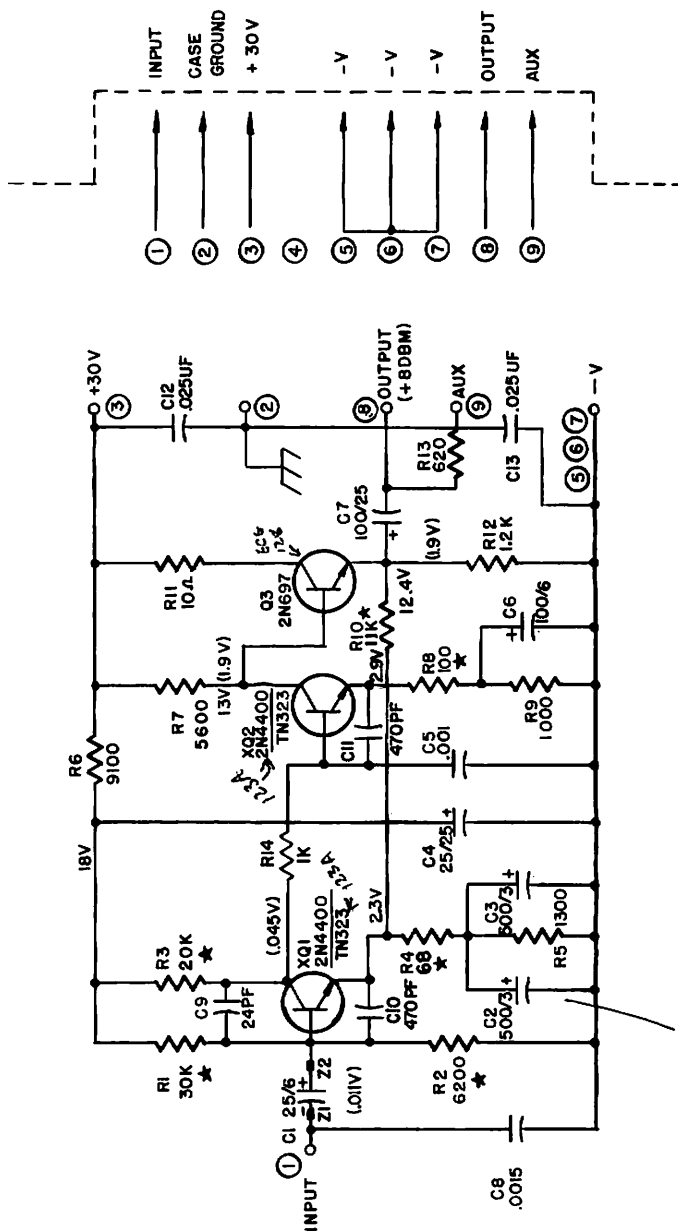
NOTES:

1. PIN CONNECTIONS COMPONENTS SIDE, LEFT TO RIGHT.
2. ALL RESISTORS 1/2 WATT 5%
3. CAPACITORS IN  $\mu$ F 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 VTVM, NO SIGNAL.
7. VOLTAGES IN (V) ARE SIGNAL LEVELS FOR +20dBm (150 $\Omega$ ) OUTPUT, 1000Hz.

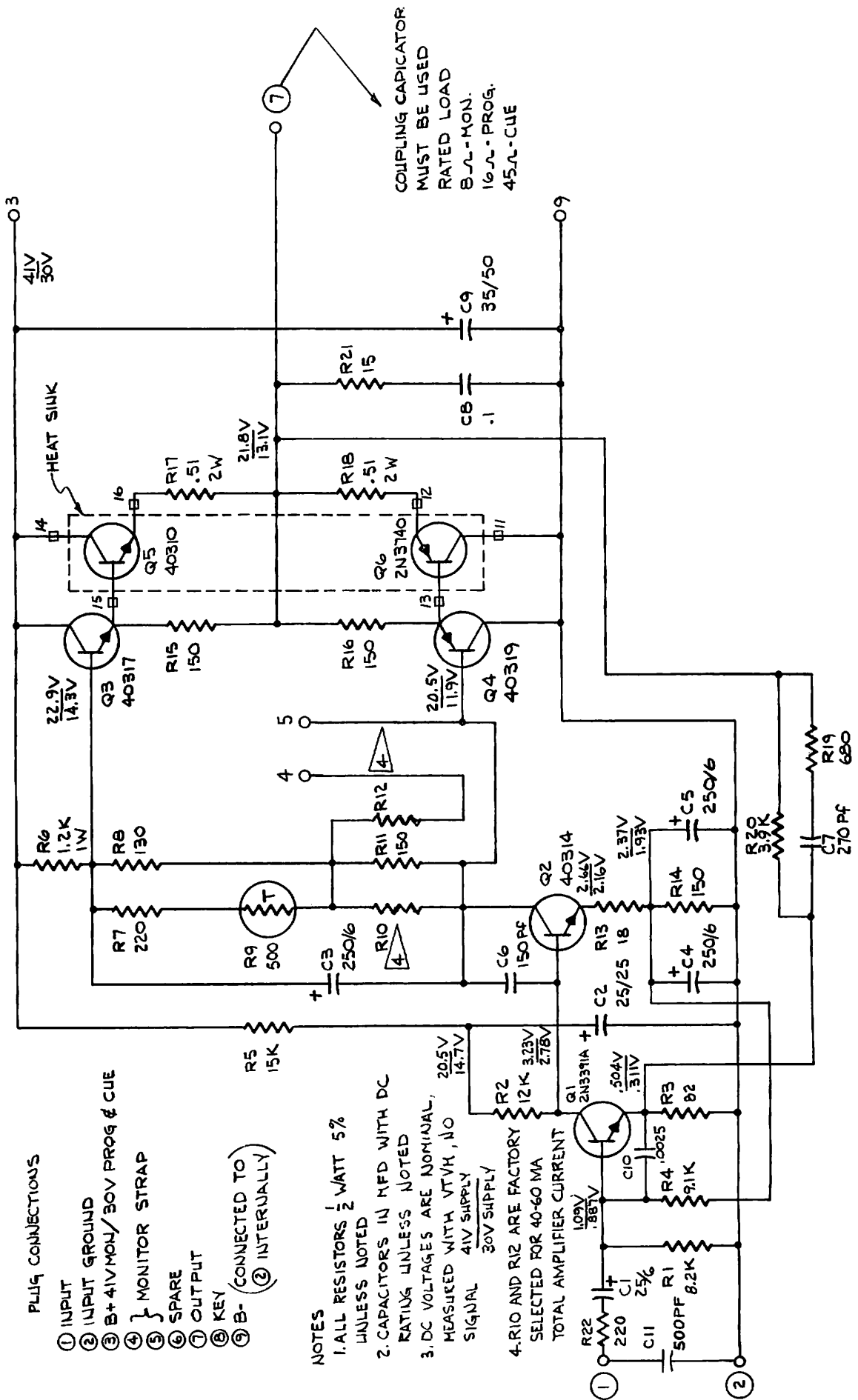
T1 PRIMARY CONNECTIONS

IMP	CT	JOIN	CONNECT TO
37.5 $\Omega$	R/Y	RED & BLU YEL & BRN	BLU & YEL
150 $\Omega$	-	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(600Ω) OUTPUT, 1000HZ.



REPLACED C-2 SHORTED  
 REPLACED Q-1 EB OPEN  
 REPLACED Q-2,3 LOW GAIN  
 LIMBSTRON 12-80  
 2N4400 EQUIV. 656-123A  
 2N2222



PL114 CONNECTIONS

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

NOTES

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

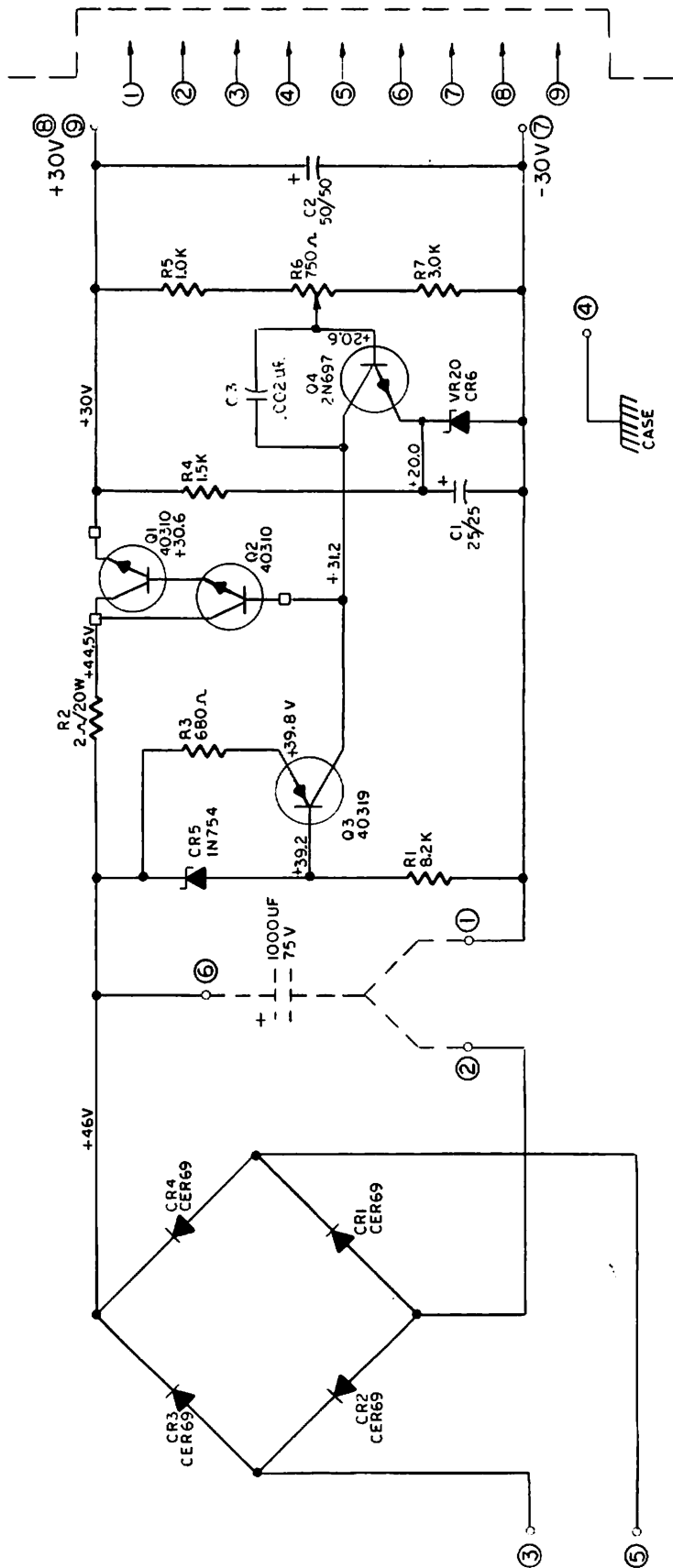
COUPLING CAPACITOR MUST BE USED RATED LOAD 8-16 OHM. PROG. 45-160 OHM. CUE

SCHMATIC 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

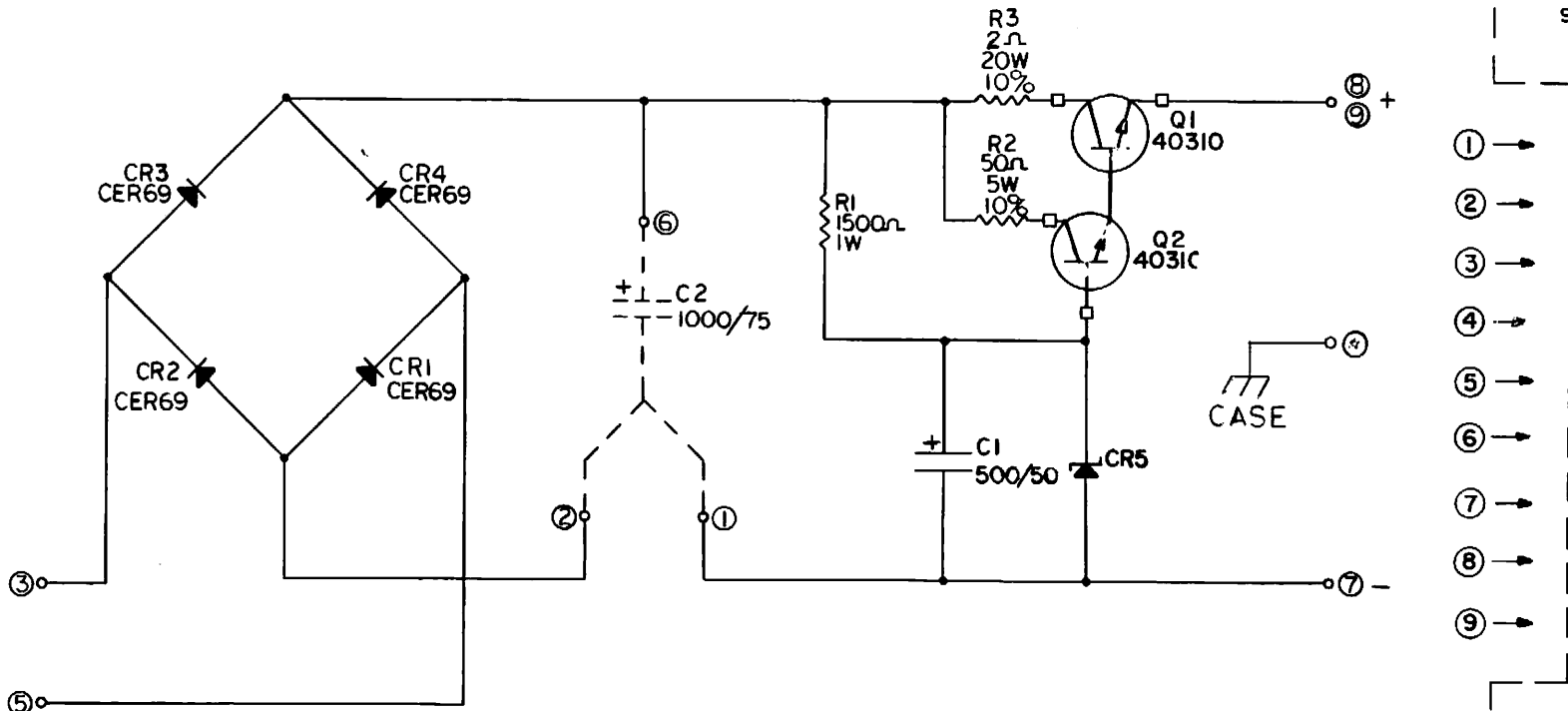
- NOTES
1. PIN CONNECTIONS COMPONENTS SIDE, LEFT TO RIGHT
  2. CAPACTORS IN MFD. WITH D.C. RATING
  3. RESISTORS ALL 1/2W UNLESS NOTED
  4. VOLTAGES TAKEN WITH VOM 20000 Ω PER VOLT
  5. SUPPLY LOADED FOR 780 MA. LINE VOLTAGE 120V ALLOW ± 10% VARIATION
  6. 10000 μF/75V CAP IS EXTERNALLY MOUNTED

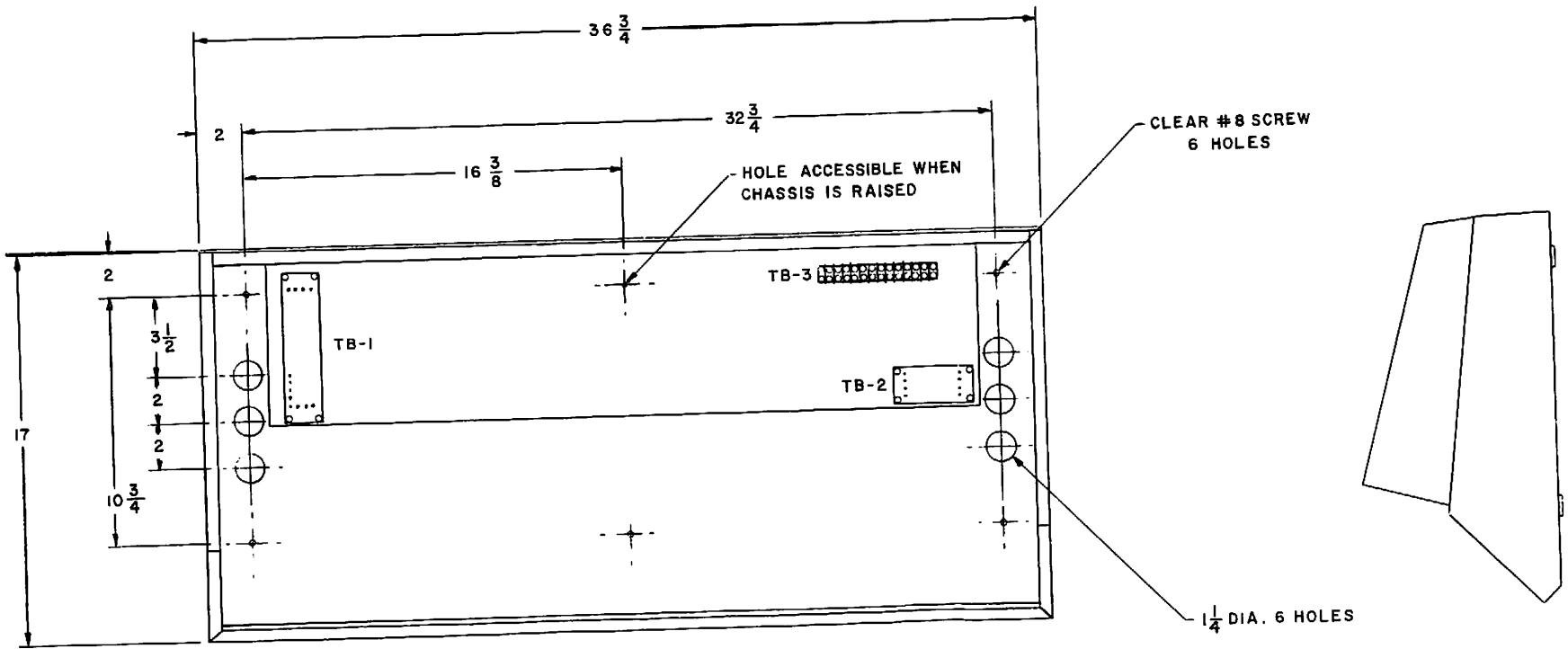


**NOTES:**

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 - 36 VAC
- 4 - N.C
- 5 - 36 VAC
- 6 - C2 B+ CONNECTION
- 7 - DC. GND.
- 8 } REGULATED
- 9 } 43V D.C.





FRONT OF CONSOLE

TOP VIEW (SHOWN WITH TOP & FRONT PANEL REMOVED)