TECHNICAL MANUAL

HARRIS

HARRIS CORPORATION Broadcast Group
P.O. Box 4290 Quincy, Illinois 62305-4290

INSTRUCTION BOOK

FOR

DUALUX II

GATES M6542-A MONO/STEREO

TRANSISTOR CONSOLE

888 1089 001

GATES RADIO COMPANY

QUINCY, ILLINOIS

WARNING

THE CURRENTS AND VOLTAGES IN THIS EQUIPMENT ARE DANGEROUS. PERSONNEL MUST AT ALL TIMES OBSERVE SAFETY REGULATIONS.

This manual is intended as a general guide for trained and qualified personnel who are aware of the dangers inherent in handling potentially hazardous electrical/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 service of this equipment involves risks both to personnel and equipment, and must be performed only by qualified personnel exercising due care. HARRIS CORPORATION shall not be responsible for injury or damage resulting from improper procedures or from the use of improperly trained or inexperienced personnel performing such tasks.

During installation and operation of this equipment, local building codes and fire protection standards must be observed. The following National Fire Protection Association (NFPA) standards are recommended as references:

- Automatic Fire Detectors, No. 72E
- Installation, Maintenance, and Use of Portable Fire Extinguishers, No. 10
- Halogenated Fire Extinguishing Agent Systems, No. 12A

WARNING

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 FATIGUED.

Do not 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.

WARNING

IN CASE OF EMERGENCY ENSURE THAT POWER HAS BEEN DISCONNECTED.

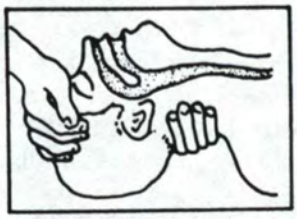
Treatment of Electrical Shock

1. If victim is not responsive follow the A-B-Cs of basic life support.

PLACE VICTIM FLAT ON HIS BACK ON A HARD SURFACE

(A) AIRWAY

IF UNCONSCIOUS,
OPEN AIRWAY



LIFT UP NECK
PUSH FOREHEAD BACK
CLEAR OUT MOUTH IF NECESSARY
OBSERVE FOR BREATHING

(B) BREATHING

IF NOT BREATHING,
BEGIN ARTIFICIAL
BREATHING

TILT HEAD
PINCH NOSTRILS
MAKE AIRTIGHT SEAL

4 QUICK FULL BREATHS

REMEMBER MOUTH TO MOUTH RESUSCITATION
MUST BE COMMENCED AS SOON AS POSSIBLE

CHECK CAROTID PULSE

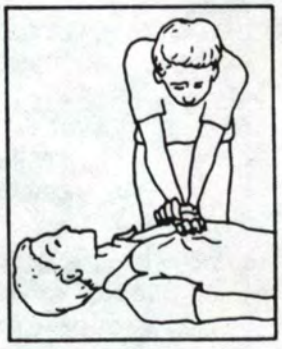
IF PULSE ABSENT,
BEGIN ARTIFICIAL
CIRCULATION

(C) CIRCULATION

DEPRESS STERNUM 1 1/2" TO 2"

APPROX. 80 SEC. { ONE RESCUER, 15 COMPRESSIONS, 2 QUICK BREATHS

APPROX. 60 SEC. { TWO RESCUERS, 5 COMPRESSIONS, 1 BREATH



NOTE: DO NOT INTERRUPT RHYTHM OF COMPRESSIONS
WHEN SECOND PERSON IS GIVING BREATH

Call for medical assistance as soon as possible.

2. If victim is responsive.

   a. keep them warm
   b. keep them as quiet as possible
   c. loosen their clothing
      (a reclining position is recommended)

FIRST-AID

Personnel engaged in the installation, operation, maintenance or servicing of this equipment are urged to become familiar with first-aid theory and practices. The following information is not intended to be complete first-aid procedures, it is brief and is only to be used as a reference. It is the duty of all personnel using the equipment to be prepared to give adequate Emergency First Aid and thereby prevent avoidable loss of life.

Treatment of Electrical Burns

1. Extensive burned and broken skin

   a. Cover area with clean sheet or cloth. (Cleanest available cloth article.)
   b. Do not break blisters, remove tissue, remove adhered particles of clothing, or apply any salve or ointment.
   c. Treat victim for shock as required.
   d. Arrange transportation to a hospital as quickly as possible.
   e. If arms or legs are affected keep them elevated.

NOTE

If medical help will not be available within an hour and the victim is conscious and not vomiting, give him a weak solution of salt and soda: 1 level teaspoonful of salt and 1/2 level teaspoonful of baking soda to each quart of water (neither hot or cold). Allow victim to sip slowly about 4 ounces (a half of glass) over a period of 15 minutes. Discontinue fluid if vomiting occurs. (Do not give alcohol.)

2. Less severe burns - (1st & 2nd degree)

   a. Apply cool (not ice cold) compresses using the cleanest available cloth article.
   b. Do not break blisters, remove tissue, remove adhered particles of clothing, or apply salve or ointment.
   c. Apply clean dry dressing if necessary.
   d. Treat victim for shock as required.
   e. Arrange transportation to a hospital as quickly as possible.
   f. If arms or legs are affected keep them elevated.

REFERENCE: ILLINOIS HEART ASSOCIATION

AMERICAN RED CROSS STANDARD FIRST AID AND PERSONAL SAFETY MANUAL (SECOND EDITION)

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.

1-15-71

Gates Radio Company
Quincy, Illinois

MAINTENANCE SUPPLEMENT

Attenuator Cleaning Instructions

1. Use lint free cloth or Kem-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.

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SPECIFICATIONS

MICROPHONE TO REGULAR PROGRAM LINE OUT

Gain:	100 dB ±2 dB at 1,000 Hz, FM Channels 98 dB ±2 dB at 1,000 Hz, AM Channel
Response:	±1.0 dB from 20 to 20,000 Hz
Distortion:	0.5% or less from 20 to 20,000 Hz at +18 dBm out
Noise:	74 dB below +18 dBm output with −50 dBm output (20 to 20,000 Hz). The equivalent input noise is −124 dBm or better
Crosstalk:	In the noise with normal levels and control positions

MEDIUM LEVEL INPUTS

(Remote, Tape, Net and Turntable Inputs to regular program Line Out)

Gain:	60 dB ±2 dB at 1,000 Hz, FM Channels 58 dB ±2 dB at 1,000 Hz, AM Channel
Response:	±1.0 dB from 20 to 10,000 Hz
Distortion:	0.5% or less from 20 to 20,000 Hz at +18 dBm output
Noise:	74 dB below +18 dBm output with −10 dBm input

MONITOR CIRCUITS

Gain:	101 dB minimum dB from microphone to monitor out 73 dB ±2 dB from ext. to monitor out
Response:	±1 dB from 20 to 20,000 Hz at +30 dBm
Distortion:	1% or less from 20 to 20,000 Hz at +40 dBm (10 watts)

POWER REQUIREMENTS

Primary Power:	105/125 volts RMS, 50/60 Hz 80 watts (approximately)

MECHANICAL SPECIFICATIONS

Console:	51−3/4" wide, 17" deep, 11−1/2" high
Transformer Panel:	5" x 19" Panel, overall depth
	Output and Power Supply Modules

INTRODUCTION

The Dualux II console is a stereo/mono console providing all the necessary functions and facilities for the radio station that broadcasts stereophonic and/or monophonic/SCA programs. The console is capable of feeding a stereo or mono/SCA signal to an FM stereo transmitter and a monophonic signal to the AM transmitter simultaneously. A special mode switch is provided for setting up these various modes of operation.

Input channels ONE and TWO are monophonic microphone channels switchable into the AM or FM program channels. Input selection is provided for control room and studio microphone feeds. Channel THREE is a stereo microphone input channel switchable into the AM or stereo FM program channels. Stereo input selection is provided for control room and studio microphone feeds. Channels FOUR, FIVE, SIX, and SEVEN are medium level inputs used for turntable and tape programming. Channel EIGHT has four remote inputs and one net input.

Monitoring is available for the AM program channel, the stereo FM program channels or an external source such as an air monitor. Headphone monitoring is provided by an external jack plate mounted at a location suitable to the user. A selector switch is provided for AM, FM, CUE, and NET monitoring. In addition, a stereo headphone jack is located on the right end of the console and connected to the output of the monitor amp.

INSTALLATION

A. UNPACKING INSTRUCTIONS

The console will arrive in several boxes or cartons with the following items enclosed:

1. Dualux II Console with amplifiers and power supplies installed.
2. Power Transformer Panel.
3. Knob Decal Kit.
4. Stick–on Labels.
5. This Instruction Book.
6. Eight Speaker Transformers.
7. Jack Plate.

These boxes 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 Dualux II console is covered under the Standard Gates Warranty, a copy of which may be had on request from Gates Radio Company, 30th and Wisman Lane, Quincy, Illinois 62301.

B. 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 ventilaton.

Cable routing of external connections of various signal levels is of prime importance. The low level mic 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 left 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 buss is provided beside both the input and output terminal blocks of the console. All incoming and outgoing shields must be connected to these busses.

C. INSTALLATION PROCEDURE

1. Power Connections

See installation drawing No. 852-6263-001 at rear of this book.

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

2. Warning Lights

117 V AC for the warning lights should be connected as follows:

Terminal Nos. 5 and 6 of TBX—1 are for the control room warning lights.
Terminal Nos. 7 and 8 of TBX—1 are for Studio A warning lights.
Terminal Nos. 9 and 10 of TBX—1 are for Studio B warning lights.

Warning light circuits should not be grounded at any point and should not draw more than 2 amps of current.

3. Input Connections to Console

a. See installation drawing No. 852-6263-001 ar rear of this book.

b. A shield ground buss is provided beside the input terminal block of this console. All incoming shields must be connected to this buss.

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

Channel ONE has provisions for two different mono microphone inputs. Front panel switching is provided.

Channel TWO has provisions for two different mono microphone inputs. Front panel switching is provided.

Channel THREE has provisions for two different pairs of stereo microphones. Front panel switching is provided.

Channel FOUR has provisions for any of four different stereo turntable and/or tape inputs. Front panel switching is provided.

Channel FIVE has provisions for any of the same four inputs that are available to Channel FOUR and are not being used by Channel FOUR. Front panel switching is provided.

Channel SIX has provisions for any of four different mono turntable and/or tape inputs. Front panel switching is available.

Channel SEVEN has provisions for any of the same four inputs that are available to Channel SIX and are not being used by Channel SIX. Front panel switching is provided.

Channel EIGHT has provisions for any of four different remote lines and one network line. Front panel switching is provided.

For operating impedances, levels, modes and other associated information see Table 1, page 12.

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.

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.

4. Output Connections to Console

   a. See installation drawing No. 852-6263-001 at rear of this book.

   b. A shield ground buss is provided beside the output terminal block of this console. All outgoing shields must be connected to this buss. Do not ground then 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 a separate conduit isolated from the low level program circuits. Stereo monitoring is provided for all studio as well as external lobby speakers. 45 to 16/8/4 ohm speaker matching transformers are supplied for paralleling 16/8/4 ohm speakers to the output of the monitor amplifier. Intercom speakers should present a 600 ohm load to the console terminals. These are available from Gates by ordering the M-6424 Studio Cue/Intercom Speaker Unit. Order one unit for each studio position. The 600 to 45 ohm transformer (only) is available as Gates 478-0274-000. Speaker connections are shown in the Installation Drawing.

The muting has been preassigned as indicated on the block diagram and shown on page 9. For reassignment of muting, please see page 9 of this book for instructions.

The earphone jack for both the cue-intercom and the line monitoring circuits is mounted externally on a jack panel. The panel should be mounted in a convenient location in the room and shielded twisted pairs should be used to connect to the console.

OPERATIONS

The switches with red knobs located above the channel keys for Channel No. 1, No. 2, and No. 3 are for selection of two sets of microphones into these channels. Two sets of mono microphones are selected into Channel No. 1 and No. 2, while two sets of stereo microphones are selected into Channel No. 3.

The output of Channel No. 1 and No. 2 feeds the AM buss in the normal manner when the channel key is in the AM position. With the channel key in the FM position, these channels feed both the Left and Right FM busses with an equal and in-phase signal. Channel No. 3 contains stereo preamplifiers which are combined to feed the AM buss in the AM position, or are split to provide a stereo feed into the FM buss in the FM position. Channel No. 3 also has a mono-stereo switch which bridges the input of the Right preamp across the output of a single microphone source.

The four switches above Channel No. 4 and No. 5 select the desired stereo input to each mixer. When the input switches above mixer No. 4 are in the "OFF" position, the inputs are normalled through to the Channel No. 5 switches. The switching is arranged so that a turntable or tape cannot be switched into mixer No. 5, if it is already switched into mixer No. 4. This prevents loading the turntable or tape output by paralleling it into two console inputs. Cueing facilities are provided by turning either mixer fader fully counterclockwise. This connects the turntable or tape into the cue-intercom amp. Cueing can be accomplished by using the panel mounted speaker or headphones.

The four switches above Channel No. 6 and No. 7 select the desired mono input to each mixer. When the input switches above mixer No. 6 are in the "OFF" position, the inputs are normalled through to the Channel No. 7 switches. The precedence and cueing on Channel No. 6 and No. 7 are similar to those explained for No. 4 and No. 5. When the channel keys for Channel No. 6 and No. 7 are thrown to the FM position, the program is fed to the FM Left Buss only.

The first four lever switches located above Channel No. 8 control the four remote inputs. The remote switches provide talkback and cueing facilities to the remote operator. In the center position, the remote operator receives the program cue signal from the monitoring amplifier. The lower position is the "mix" position and connects the remote program into the AM or FM Left program buss through Channel No. 8. The upper position of the switches have a terminating load for the remote lines and provides talkback functions. The remote lines are not tied together when any or all of the remote keys are in the "talkback" position.

The network input is connected to Channel No. 8 when the net input switch is in the "mix" position. Preview monitoring of the network is provided by either turning the mixer control fully counterclockwise into the "cue" position or rotating the cue selector switch to the "net" position.

The monitor input selector is located on the lower center of the panel. Input switching allows stereo monitoring of the FM program or an external signal source, and mono monitoring of the AM program. 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 inputs and outputs of the program amplifiers are selected by the 8–station selector switch located on the upper center of the panel. The following are the 8 different selections of this switch – AM normal, FM programs AM, AM automation, FM Mono, AM programs Mono FM, FM automation, stereo FM, and SCA programming.

See Figures 1 and 2 which show 10 different combined modes of operation for the program output selector.

a. Master Gain Adjustment

The gain controls for AM, FM Left, and FM Right program channels are located on the upper center section of the panel.

Once the gain of the FM 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 board fastened to the back of the FM Left Meter. With the switch in the "null" position, VU meter No. 2 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 a stereo turntable channel and adjust for normal output level, then adjust for normal output level, then adjust the level of the FM Right program gain control until VU meter No. 2 nulls. This indicates the lines are balanced within $\pm$0.5 dB at +8 VU output. After the balancing procedure is completed, the switch should be returned to the "operate" position.

b. Cue-Intercom System

The controls are located on the lower center section of the panel.

The cue-intercom input selector switch is provided with 8 input positions. The first position "net" is used for monitoring the input network line. Talkback is not possible in the "network" position. Next, the "remote 1", "2", "3", and "4" positions tie the cue-intercom to the individual remote lines. For talkback facilities, the intercom selector is switched to the desired remote line and the corresponding remote input switch is placed in the "TB" position. The incoming remote signal line will then be heard on the cue-intercom speaker. When the control room operator desires to talk to the remote operator, he simply pushes the red "Talk" button in the center of the panel and speaks into the panel speaker. "ST–A" and "ST–B" positions allow listening and talkback into Studio A and Studio B, if suitable intercom units have been installed in them.

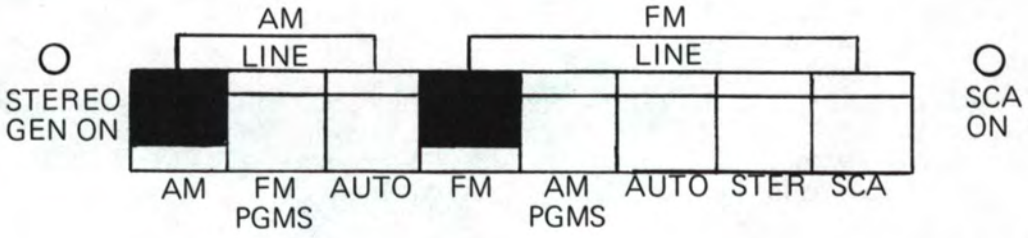
Turntable and tape cueing circuits are connected directly to the input of the cue-intercom amp and may be used regardless of the position of the cue-intercom input selector. However, in the "cue" position nothing else is connected to the input of the cue-intercom amp.

The cue-intercom speaker on the console is set up to be muted by the Channel No. 1 lever key, however, this muting does not disable the cue phone jack, so it is still possible to cue a record by monitoring the cue circuit with headphones.

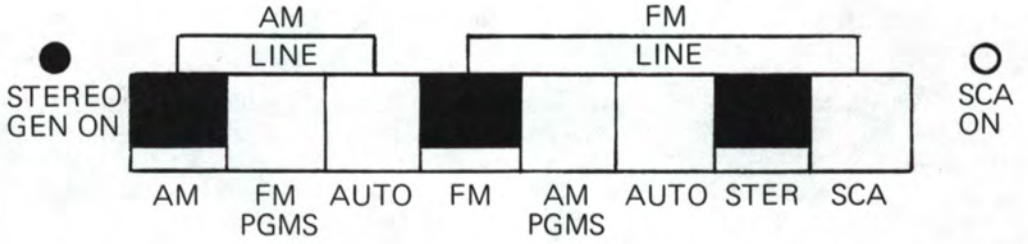
Another headphone jack is located on the right end of the console cabinet. This jack is connected to the monitor output for stereo headphone monitoring.

Speaker muting is accomplished by using a microsecond solid state muting circuit. Since no relays are used for muting, the chance of feedback between the monitor speaker and microphone is practically non-existent.

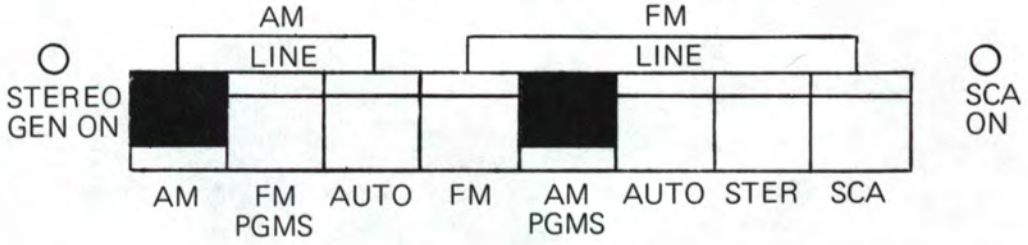
MODE 1 - - Separate AM and FM Monophonic



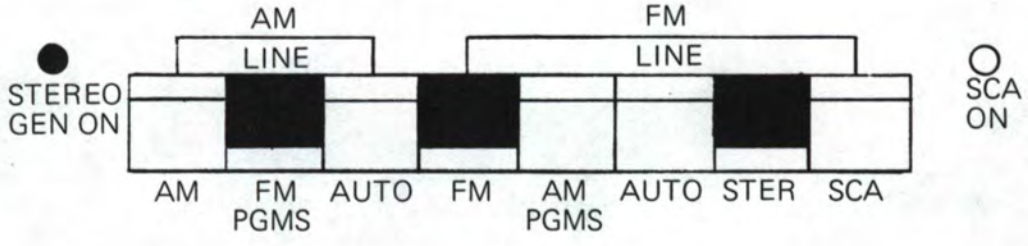
MODE 2 - - AM Mono with Separate FM Stereo



MODE 3 - - Combined Programming from AM



MODE 4 - - Combined Programming from FM Stereo



MODE 5 - - Separate Programming with SCA

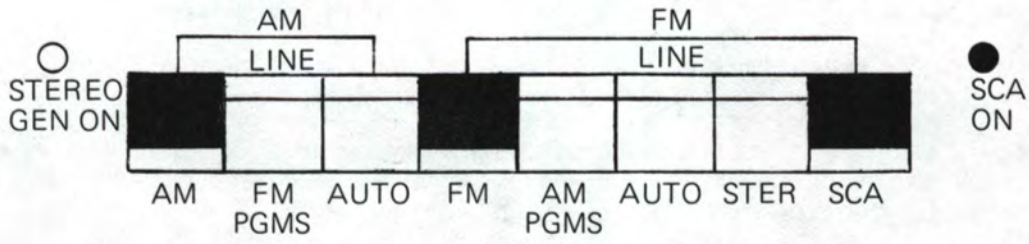
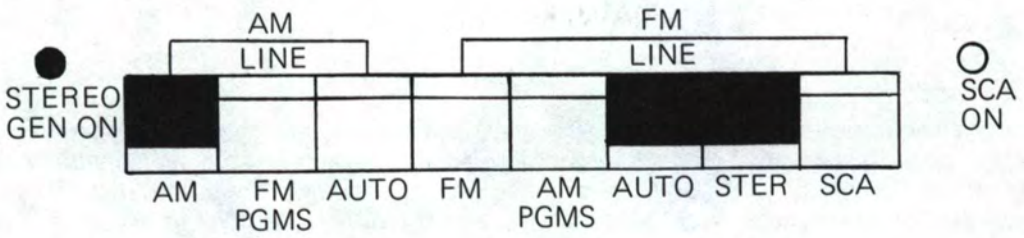
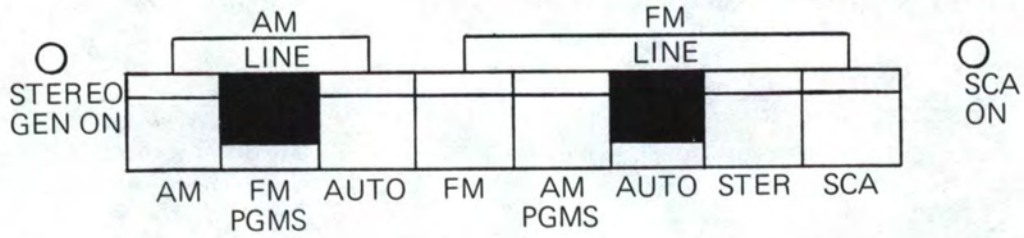


FIG. 1

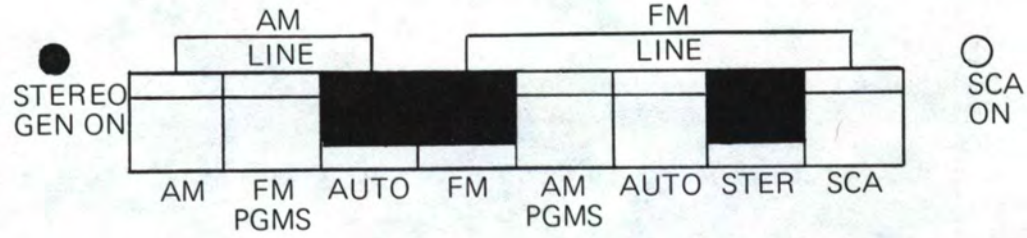
MODE 6 - - AM Mono, FM Stereo Automation



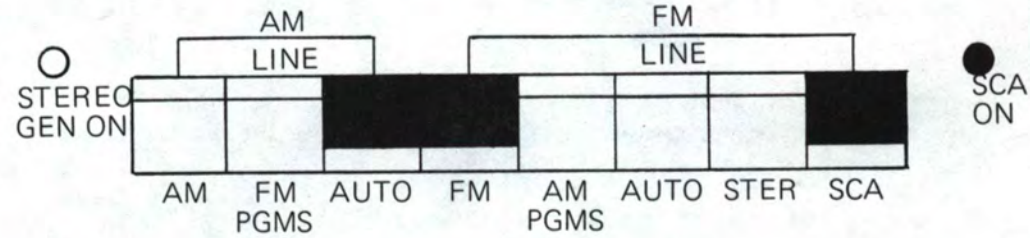
MODE 7 - - AM from FM PGMS, FM from FM Automation



MODE 8 - - FM STereo with AM Automation



MODE 9 - - AM Auto, FM Mono and SCA



MODE 10 - - Combined Programming with SCA

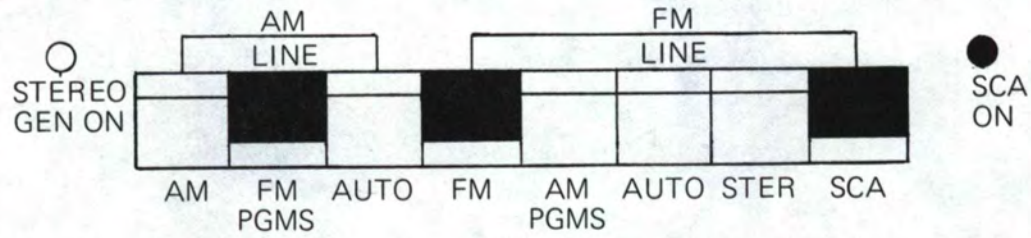


FIG. 2

MAINTENANCE

TROUBLESHOOTING

Voltage measurements are invaluable for troubleshooting and are given on the schematic diagrams of the various amplifiers. It is recommended that, after the console is installed and operating satisfactorily, these readings 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 can be seen on any one of the VU meters and the monitors will only operate from the external input.

   a. Interchange the program amps with the monitor amps.
   b. Check for 33 volts between terminals No. 3 and No. 5 of the booster board and terminals No. 3 and No. 9 of the output board in the program amps.

2. No signal can be measured on any one of the program output lines, but indication can be seen on the VU meter.

   a. Check external cable connections on TB2.
   b. Check switch contacts on the program output selector.

3. No signal can be heard from any of the monitor speakers but the program channels operate O.K.

   a. Interchange the monitor amps with the program amps.
   b. Check for 33 volts between terminals No. 3 and No. 5 of the booster board and 43 volts between terminals No. 3 and No. 9 of the output board in the monitor amps.

4. No signal can be heard from the cue speaker.

   a. Interchange the cue amp with either the program or monitor amp.
   b. Check for 33 volts between terminals No. 3 and No. 9 of the output board.
   c. Check cue speaker with an ohmmeter.

5. No indication can be seen on the VU meter when talking into the control room or studio microphones, but the medium level channels operate O.K.

   a. Interchange preamps if only one or two channels show no indication.
   b. Check for 33 volts between terminals No. 7 and No. 8 of the preamp.
   c. Check contacts on switches, S1, S2, S3, S4, S26, S27, and S28.

6. No indication can be seen on the VU meter when feeding one or more of the medium level inputs.

   a. Check the input switches, the channel mixer, and the channel lever key.

7. Control room or studio monitors will not operate but the lobby speakers operate O.K.

   a. Check for 33 volts between terminals No. 7 and No. 9 on power supply No. 4.
   b. Check contacts on switches S1, S2, S3, S26, S27, and S28.
   c. Check each transistor on all three of the muting module boards.

8. Headphones will not operate when plugged into the headphone monitor jack.

   a. Check the contacts on switch S34 and the phone jack.
   b. Check the headphones.

MUTING ASSIGNMENT

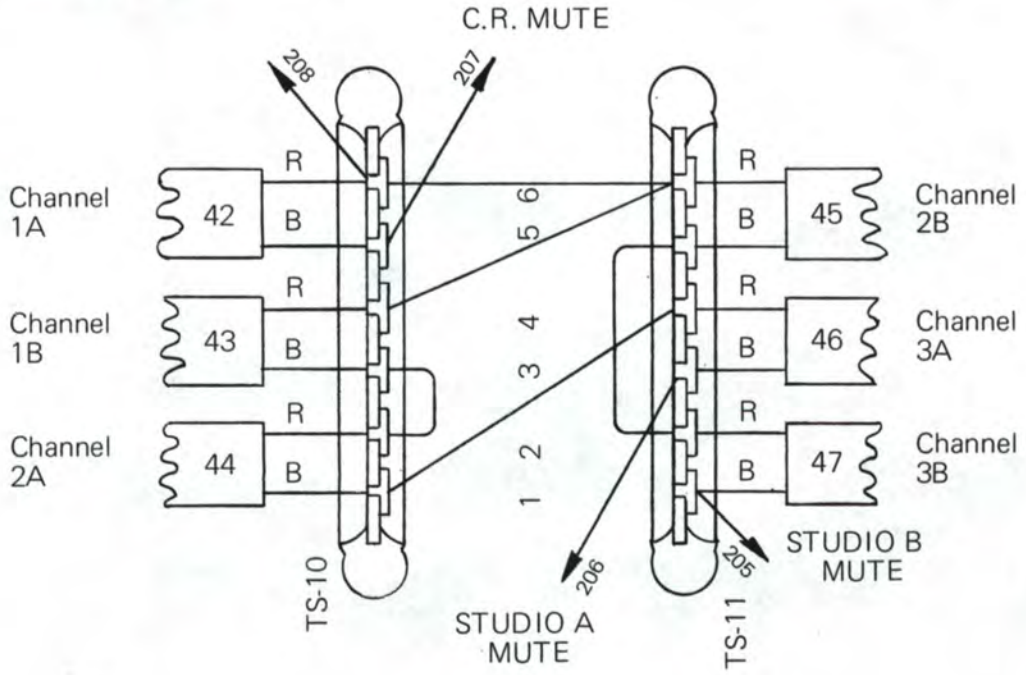


FIG. 3

The tie strips shown above are located on the back of the front panel between S4 and S5. These are pre-wired to mute the control room in Channel No. 1 – position A; to mute the studio "A" speakers in Channel No. 1 – position B, Channel No. 2 – position A, and Channel No. 3 – position A; and to mute the studio "B" speakers in Channel No. 2 – position B, and Channel No. 3 – position B. The channel A and B designations show the muting switch connections for position A and B of the input selector switch for each MIC channel.

Before attempting to reassign the muting, a complete understanding of the wiring diagram shown is necessary.

PRINCIPLE OF MUTING:

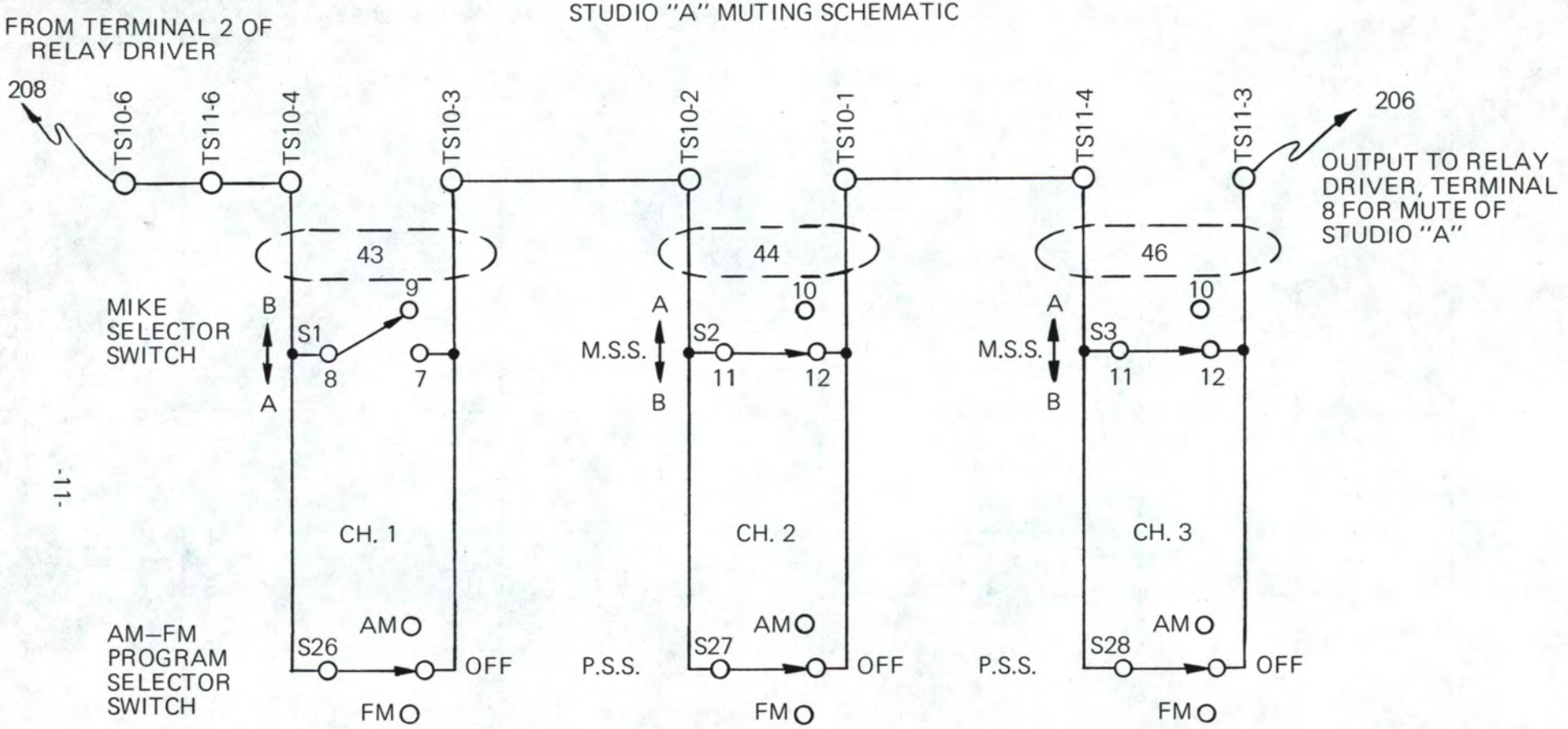
Anytime there is a break in the circuit due to the positions of an Input Selector Switch or a Channel Key Switch between the incoming drive signal on wire No. 208 and any of the outgoing control wires (No. 205, 206, or 207), muting will occur in that control area.

Thus, if there is a break between No. 208 and No. 206, this will cause Studio "A" to be muted since No. 206 is the control wire for Studio "A".

Primary selection of muting is done by the microphone selector switches. Since it is not necessary to have muting if the channel is not on the air, each microphone selector switch is in parallel with the AM–FM program selector switch. As soon as this switch is placed in either the AM or FM position, it opens and returns control to the mike selector switch.

Although these two switches are in parallel, it is important to note when you desire a given location to be muted by more than one mike position, you must series the desired locations as shown on the following page.

STUDIO "A" MUTING SCHEMATIC



MIKE SELECTOR SWITCH CONDITION

CHANNEL 1	B
CHANNEL 2	B
CHANNEL 3	B

CONDITIONS FOR MUTING PROGRAM SWITCH AM OR FM MIKE SELECTOR:

CHANNEL 1	B
OR	
CHANNEL 2	A
OR	
CHANNEL 3	A

FIG. 4

CHANNELS	1	2	3	4	5	6	7	8
NORMAL	150 OHM BAL (1)	150 OHM BAL	150 OHM BAL	150 OHM UNBAL	150 OHM UNBAL	150 OHM UNBAL	150 OHM UNBAL	600 OHM BAL
TYPE	MONO	MONO	STEREO/MONO	STEREO	STEREO	MONO	MONO	MONO
MAXIMUM INPUT LEVEL	–17 dBm*	–17 dBm*	–17 dBm*	–4 dBm**	–4 dBm**	–4 dBm**	–4 dBm**	–4 dBm**
NOMINAL INPUT LEVEL	–60 dBm	–60 dBm	–60 dBm	–20 dBm	–20 dBm	–20 dBm	–20 dBm	–20 dBm
SPECIAL IMPEDANCE	37.5 OHM (2) See Preamp 1	37.5 OHM See Preamp 2	37.5 OHM See Preamp 3	AS REQUIRED	AS REQUIRED	AS REQUIRED	AS REQUIRED	200 OHM (3) 50 OHM See T1
REQUIRED MODI–FICATIONS	XFORMER UNSOLDER Red & Yellow Wire SOLDER Red to Blue Yellow to Brown	XFORMER UNSOLDER Red & Yellow Wire SOLDER Red to Blue Yellow to Brown	XFORMER UNSOLDER Red & Yellow Wire SOLDER Red to Blue Yellow to Brown	PAD OR XFORMER	PAD OR XFORMER	PAD OR XFORMER	PAD OR XFORMER	200 OHM Change T1 incoming wires from 1&3 to 1&2 50 OHM Change T1 incoming wire from 1&3 to 2&3

TABLE 1

NOTES:

* *Overload point of microphone preamp.*

** *End of linear portion of level control (approximately 9 o'clock).*

1. *Nominal input impedance of 150 ohm will accommodate 150 ohm to 200 ohm mikes.*
2. *Nominal input impedance of 37.5 ohm will accommodate 30 ohm to 50 ohm mikes.*
3. *Nominal input impedance of 200 ohm will accommodate 150 ohm to 200 ohm sources and 50 ohm nominal impedance will accommodate 30 ohm to 50 ohm sources.*

PARTS LIST

BASIC DUALUX II CONSOLE

SYMBOL	DESCRIPTION	GATES PART NO.
	Knob, Red (Lever Sw.)	650 0134 000
	Knob, Black (Lever Sw.)	650 0129 000
	Top Hat Knob, Red	650 0133 000
	Top Hat Knob, Black	650 0128 000
	Attenuator Knob	650 0130 000
	Dial Dish	648 0045 000
A1, A2	Lamp, 28 V	396 0161 000
A3 thru A8	Lamp, 28 V	396 0120 000
AT1, AT2	Attenuator, 150/300 ohm	554 0188 000
AT3	Attenuator, Dual 150/300 ohm	554 0281 000
AT4, AT5	Attenuator, Dual 150/300 ohm	554 0280 000
AT6, AT7, AT8	Attenuator 150/300 ohm, w/cue	554 0182 000
AT9	Cue Gain Pot 10K ohm, ½ W	550 0282 000
AT10	Monitor Pot, Dual 10K ohm, ½ W	550 0283 000
AT11, AT12, AT13	Master Gain Pot 10K ohm, ½ W	550 0284 000
C1, C2, C3, C5, C6	Cap 2500 uF 50 V	524 0113 000
C4	Cap 35 uF 50 V	522 0257 000
C7, C8, C9, C10	Cap 1000 uF 75 V	524 0123 000
Qty. (1)	Cap 25 uF 25 V	522 0242 000
(1)	Cap 470 pF 1 kV 10%	516 0043 000
(2)	Cap .22 uF 3 V	516 0386 000
(1)	Cap .025 uF 200 V 20%	516 0393 000
(8)	Cap .01 uF 1 kV 20%	516 0081 000
(4)	Cap 1 uF 35 V 10%	526 0004 000

SYMBOL	DESCRIPTION	GATES PART NO.
Qty. (1)	Cap 22 uF 15 V 10%	526 0014 000
(1)	Cap .22 uF 100 V 10%	508 0287 000
(1)	Cap .015 uF 100 V 10%	508 0210 000
(1)	Cap .008 uF 600 V 10%	508 0291 000
(1)	Cap .0056 uF 1 kV	516 0076 000
CR1	Diode 1N2069	384 0018 000
F1,F2	Fuse ¼ A 250 V	398 0011 000
EQ1,EQ2, EQ3	Equalizer Pad	992 2123 001
J1	Phone Jack	612 0280 000
K1	Relay 4 PDT 24 V DC Plug-In	574 0103 000
	R.F. Choke 1 mH	494 0114 000
LS1	Cue Speaker	722 0049 000
M1,M2, M3	VU Meter	630 0121 000
P1 thru P23	Printed Circuit Connector	612 0428 000
Qty. (4)	Res 3000 ohm ½ W 5%	540 0060 000
(5)	Res 560 ohm ½ W 5%	540 0043 000
(2)	Res 100 ohm ½ W 5%	540 0025 000
(5)	Res 300 ohm ½ W 5%	540 0036 000
(13)	Res 150 ohm ½ W 5%	540 0029 000
(11)	Res 270 ohm ½ W 5%	540 0035 000
(2)	Res 11K ohm ½ W 5%	540 0074 000
(11)	Res 620 ohm ½ W 5%	540 0044 000
(2)	Res 2000 ohm ½ W 5%	540 0056 000

PARTS LIST

BASIC DUALUX II CONSOLE - CONT'D.

SYMBOL	DESCRIPTION	GATES PART NO.
Qty. (1)	Res 51 ohm ½ W 5%	540 0018 000
(16)	Res 5100 ohm ½ W 5%	540 0066 000
(1)	Res 2700 ohm ½ W 5%	540 0059 000
(2)	Res 47 ohm 1 W 5%	540 0300 000
(2)	Res 680 ohm 2 W 5%	540 0607 000
(2)	Res 150 ohm 10 W Pigtail leads	542 0061 000
(1)	Res 8200 ohm ½ W 5%	540 0071 000
(1)	Res 200 ohm ½ W 5%	540 0032 000
(1)	Res 390 ohm ½ W 5%	540 0039 000
(2)	Res 3300 ohm ½ W 5%	540 0061 000
S1,S2, S4 thru S20	Lever Sw. 4 Pole 2 Pos.	602 0007 000
S3	Lever Sw. 6 Pole 2 Pos.	602 0060 000
S21 thru S25, S39 thru S42	Lever Sw. 2 Pole 3 Pos.	602 0005 000
S26, S27, S28	Lever Sw. 3 Pos.	602 0084 000
S29 thru S33	Lever Sw. 3 Pos.	602 0085 000
S34,S35	Selector Sw. 2 Pole 5 Pos. (Mod.)	914 8509 003
S36	Selector Sw. 4 Pole 11 Pos. (Mod.)	914 8509 001
S37	Multi-Slide Sw.	604 0349 000
S38	Red Pushbutton Sw.	604 0230 000
T1, T9	Line Transformer A-21 UTC	478 0009 000
T5, T6, T7	Program Output Transformer	478 0276 000
T8	Remote Cue Transformer	478 0274 000

SYMBOL	DESCRIPTION	GATES PART NO.
TB1	Terminal Block 80 Terminals	914 5208 001
TB2	Terminal Block 40 Terminals	914 5209 001
TB3	Terminal Board	614 0034 000
	Lamp Socket	406 0381 000
XF1, XF2	Fuseholder	402 0024 000
XK1	Relay Socket	404 0160 000

PARTS LIST

994 6549 004 PREAMPLIFIER

SYMBOL	DESCRIPTION	GATES PART NO.
C1,C6	Cap 25 uF 6 V	522 0178 000
C2	Cap 250 uF 3 V	522 0164 000
C3	Cap 25 uF 25 V	522 0242 000
C4	Cap 75 pF 500 V	500 0822 000
C5	Cap 35 uF 25 V	522 0243 000
C7	Cap 330 pF 1 kV	516 0038 000
C8	Cap **220 uF 25V**	**522 0505 000**
C9	Cap **100 pF 500V**	**500 0759 000**
C10	Cap 470 pF 1 kV	516 0043 000
C11	Cap .01 uF 600 V	516 0080 000
C12,C13	Cap .002 uF 1 kV	516 0063 000
Q1,Q2	Transistor TN323	380 0092 000
Q3	Transistor 2N697	380 0042 000
Q4	Transistor 40319	380 0044 000
R1	Res 36 K ohm ½ W 5%	540 1108 000
R2	Res 6200 ohm ½ W 5%	540 1106 000
R3	Res **24K ohm** ½ W 5%	**540 1143 000**
R4	Res 110 ohm ½ W 5%	540 1103 000
R5	Res 510 ohm ½ W 5% Comp.	540 0042 000
R6	Res 9100 ohm ½ W 5% Comp.	540 0072 000
R7,R11	Res 1000 ohm ½ W 5% Comp.	540 0049 000
R8	Res 3000 ohm ½ W 5% Comp.	540 0060 000
R9	Res (Selected)	
R10	Res 100 ohm ½ W 5%	540 1102 000
R12	Res 2000 ohm ½ W 5%	540 1104 000
R13	Res 5100 ohm ½ W 5%	540 1105 000
R14,R15	Res 10 ohm ½ W 5%	540 0001 000
R16	Res 51 ohm ½ W 5%	540 0018 000
T1	Transformer Input	478 0285 000
XQ1,XQ2	Transistor Socket	404 0066 000
XQ3,XQ4	Transipad	404 0198 000
Z1,Z2	Ferrite Bead	414 0087 000

WARNING, disconnect primary power prior to servicing.

PARTS LIST

M6550C OUTPUT MODULE

SYMBOL	DESCRIPTION	GATES PART NO.
Q5	Transistor 40310	380 0062 000
Q6	Transistor 2N3740	380 0066 000
XQ5, XQ6	Power Transistor Socket	404 0206 000

OUTPUT AMPLIFIER

SYMBOL	DESCRIPTION	GATES PART NO.
C1	Cap 25 uF 6 V	522 0178 000
C2	Cap 25 uF 25 V	522 0242 000
C3 thru C5	Cap 250 uF 6 V	522 0188 000
C6	Cap 150 pF 500 V 5%	500 0761 000
C7	Cap 270 pF 500 V 5%	500 0755 000
C8	Cap .1 uF 75 V	516 0357 000
C9	Cap 35 uF 50 V	522 0257 000
C10	Cap 2500 pF 500 V 5%	500 0879 000
C11	Cap 500 pF 1 kV	516 0045 000
Q1	Transistor 2N3391A	380 0099 000
Q2	Transistor 40314	380 0053 000
Q3	Transistor 40317	380 0050 000
Q4	Transistor 40319	380 0044 000
R1	Res 8.2 K ohm ½ W 5%	540 0071 000
R2	Res 12 K ohm ½ W 5%	540 0075 000
R3	Res 82 ohm ½ W 5%	540 0023 000
R4	Res 9.1 K ohm ½ W 5%	540 0072 000
R5	Res 15 K ohm ½ W 5%	540 0077 000
R6	Res 1200 ohm 1 W 5%	540 0334 000
R7	Res 220 ohm ½ W 5%	540 0033 000
R8	Res 130 ohm ½ W 5%	540 0028 000
R9	Thermistor 500 ohm	559 0014 000
R10,R12	Res (Selected)	
R11	Res 150 ohm ½ W 5%	540 0029 000
R13	Res 18 ohm ½ W 5%	540 0007 000
R14 thru R16	Same as R11	
R17, R18	Res .51 ohm 2 W 5%	542 1072 000
R19	Res 680 ohm ½ W 5%	540 0045 000
R20	Res 3900 ohm ½ W 5%	540 0063 000
R21	Res 15 ohm ½ W 5%	540 0005 000
R22	Same as R7	
XV1 thru XV4	Transipad	404 0198 000

BOOSTER AMPLIFIER

SYMBOL	DESCRIPTION	GATES PART NO.
C1	Cap 25 uF 6 V	522 0178 000
C2,C3	Cap 500 uF 3 V	522 0167 000
C4	Cap 25 uF 25 V	522 0242 000
C5	Cap .001 uF 1 kV	516 0054 000
C6	Cap 100 uF 6 V	522 0185 000
C7	Cap 100 uF 25 V	522 0246 000
C8	Cap .0015 uF 1 kV	516 0059 000
C9	Cap .24 pF 500 V	500 0810 000
C10,C11	Cap 470 pF 1 kV	516 0043 000
C12,C13	Cap .025 uF 500 V	516 0393 000

WARNING, disconnect primary power prior to servicing.

PARTS LIST

M6550C OUTPUT MODULE - CONT'D.

SYMBOL	DESCRIPTION	GATES PART NO.
Q1,Q2	Transistor TN323	380 0092 000
Q3	Transistor 2N697	380 0042 000
R1	Res 30 K ohm ½ W 5%	540 1131 000
R2	Res 6200 ohm ½ W 5%	540 1106 000
R3	Res 20 K ohm ½ W 5%	540 1107 000
R4	Res 68 ohm ½ W 5%	540 1110 000
R5	Res 1300 ohm ½ W 5%	540 0052 000
R6	Res 9100 ohm ½ W 5%	540 0072 000
R7	Res 5600 ohm ½ W 5%	540 0067 000
R8	Res 100 ohm ½ W 5%	540 1102 000
R9	Res 1000 ohm ½ W 5%	540 0049 000
R10	Res 11 K ohm ½ W 1%	548 0171 000
R11	Res 10 ohm ½ W 5%	540 0001 000
R12	Res 1200 ohm ½ W 5%	540 0051 000
R13	Res 620 ohm ½ W 5%	540 0044 000
R14	Res 1000 ohm ¼ W 5%	540 0912 000
XQ3	Transipad	404 0198 000
Z1,Z2	Ferrite Bead	414 0087 000

SYMBOL	DESCRIPTION	GATES PART NO.

WARNING, disconnect primary power prior to servicing.

PARTS LIST

994-6551-002 - 30 V. REGULATED POWER SUPPLY

SYMBOL	DESCRIPTION	GATES PART NO.
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 thru CR4	Diode, 1N2069	384 0018 000
CR5	Zener Diode	386 0019 000
CR6	Zener Diode	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 ½ W 5%	540 0071 000
R2	Res 2 ohm 20 W	542 1105 000
R3	Res 680 ohm ½ W 5%	542 0045 000
R4	Res 1500 ohm ½ W 5%	540 0053 000
R5	Res 1000 ohm ½ W 5%	540 0049 000
R6	Pot 750 ohm	550 0300 000
R7	Res 3000 ohm ½ W 5%	540 0060 000
XQ3, XQ4	Transipad	404 0198 000

994-6552-001 - 43 V. REGULATED POWER SUPPLY

SYMBOL	DESCRIPTION	GATES PART NO.
C1	Cap 500 uF 50 V	522 0346 000
CR1 thru CR4	Diode, 1N2069	384 0018 000
CR5	Diode, Zener 1N4755A	386 0361 000
Q1,Q2	Transistor 40310	380 0062 000
R1	Res 1500 ohm 1 W 10% Comp.	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

994-6553-002 - MUTING MODULE

SYMBOL	DESCRIPTION	GATES PART NO.
Q1,Q2, Q3	Transistor Special Tested	914 5419 001
R1 thru R3	Res 1000 ohm 5 W 10%	542 1102 000
XQ1 thru XQ3	Power Transistor	404 0206 000

WARNING, disconnect primary power prior to servicing.

PARTS LIST

992-2049-001 RELAY & SOLID STATE MUTING DRIVER

SYMBOL	DESCRIPTION	GATES PART NO.
CR1, CR2	Diode, 1N2069	384 0018 000
Q1 thru Q4	Transistor 40319	380 0044 000
R1	Res 1600 ohm 1 W 5%	540 0337 000
R2,R4, R6,R8	Res 470 ohm ½ W 5%	540 0041 000
R3,R5, R7,R9	Res 100 ohm ½ W 5%	540 0025 000
R10	Res 300 ohm 2 W 5%	540 0598 000
XQ1 thru XQ4	Transipad	404 0198 000

994-6556-003 TRANSFORMER PANEL

C1,C2	Cap .05 uF 600 V	516 0087 000
CB1, CB2	Circuit Breaker	606 0116 000
CR1 thru CR6	Diode, 1N2069	384 0018 000
F1,F2, F3,F4	Fuse 1 A Visual Indicating	398 0326 000
K1,K2, K3	Relay 2500 ohm	574 0140 000
T1,T2	Power Transformer	472 0570 000
T3,T4	Power Transformer	472 0569 000
TB1,TB2	Terminal Board	614 0010 000
XF1 thru XF4	Fuseholder	402 0103 000

RIGHT MIXING BUS - 992-1877-001

R21,R24, R27,R31, R35	Res 300 ohm ½ W 5%	540 0036 000
R22,R23, R25,R26, R28,R29, R30,R32, R33,R34, R36,R37, R38	Res 620 ohm	540 0044 000

LEFT MIXING BUS - 992-1878-001

R1,R5, R9,R12, R15,R18	Res 300 ohm	540 0036 000
R2,R3, R4,R6, R7,R8, R10,R11, R13,R14, R16,R17, R19,R20	Res 620 ohm ½ W 5%	540 0044 000
T2,T3, T4	Input Transformer	478 0285 000

METER PAD BOARD - 992-1880-001

R1,R5, R10	Res 2000 ohm ½ W 5%	540 0056 000
R2,R7, R9	Res 3000 ohm ½ W 5%	540 0060 000
R3,R6, R8	Res 5600 ohm ½ W 5%	540 0067 000
R4	Res 3900 ohm ½ W 5%	540 0063 000
S1	Switch Slide DPDT	604 0348 000

PARTS LIST

SYMBOL	DESCRIPTION	GATES PART NO.
PAD BOARD - 992-1879-001		
C1,C2	Cap 1 uF 35 V 10%	526 0004 000
C3,C6, C7	Cap .01 uF 100 V 10%	508 0215 000
C4	Cap .0012 uF 500 V 10%	516 0362 000
C5	Cap .005 uF 500 V 10%	516 0370 000
R1,R8, R15	Res 1100 ohm ½ W 5%	540 0050 000
R2,R7, R16	Res 1500 ohm ½ W 5%	540 0053 000
R3,R6	Res 47 K ohm ½ W 5%	540 0089 000
R4	Res 8200 ohm ½ W 5%	540 0071 000
R5,R14	Res 3000 ohm ½ W 5%	540 0060 000
R9,R10, R12,R13, R17,R18, R20,R21, R22,R23, R25,R26	Res 100 ohm ½ W 5%	540 0025 000
R11,R19, R24	Res 820 ohm ½ W 5%	540 0047 000
EQUALIZER PAD - 992-2123-001		
C1	Cap .0033 uF 600 V 10%	508 0077 000
C2	Cap 3.9 uF 35 V 10%	526 0012 000
R1	Res 2700 ohm ½ W 5%	540 0059 000
R2,R3	Res 2000 ohm ½ W 5%	540 0056 000
R4	Res 300 ohm ½ W 5%	540 0036 000

SYMBOL	DESCRIPTION	GATES PART NO.

600/600 ohms "T" pads

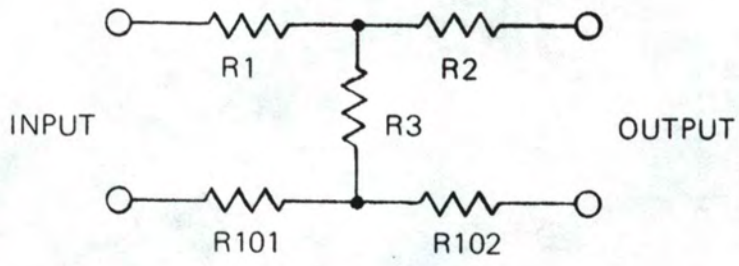
dB loss	R1–R2 ohms	R3 ohms
2	68	2700
4	130	1200
6	200	820
8	270	510
10	330	390
15	430	220
20	470	120
25	510	68

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

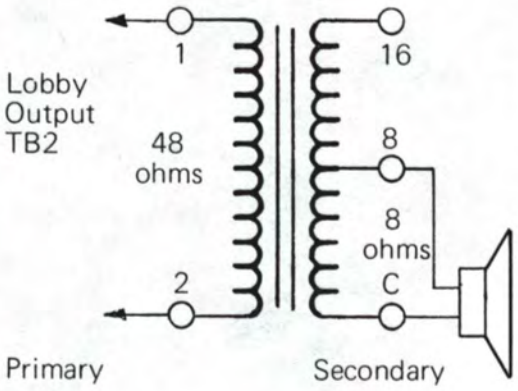


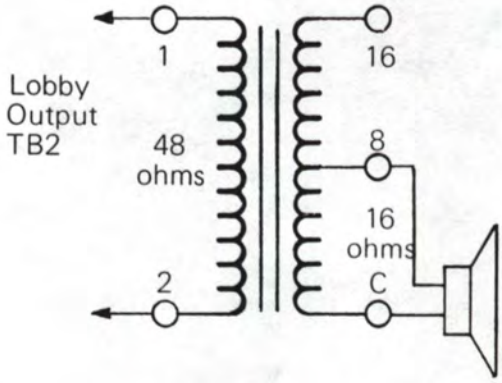
NOTE: This chart may be used for H pads by halving R1 and making R101 equal to half of R1, and by halving R2 and making R102 equal to half of R2. For T pads, simply short out R101 and R102 and use R1 and R2 values directly.

LOSS PAD CHART

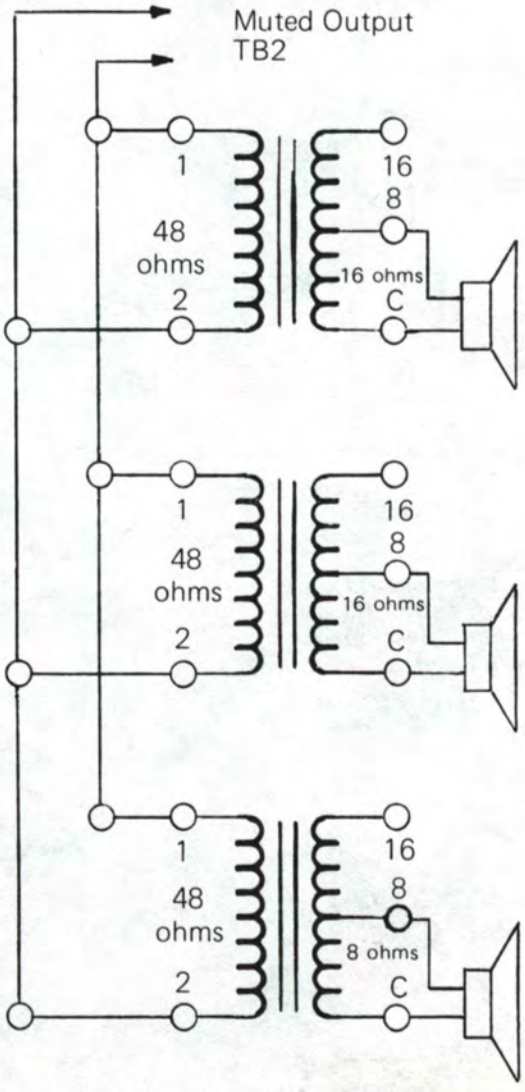
Speaker matching transformer information using Gates 478-0291-000 transformer. Shown below are some typical installations.

(A) Lobby speakers, 8 or 16 ohms.





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



(C) Amplifier Loading

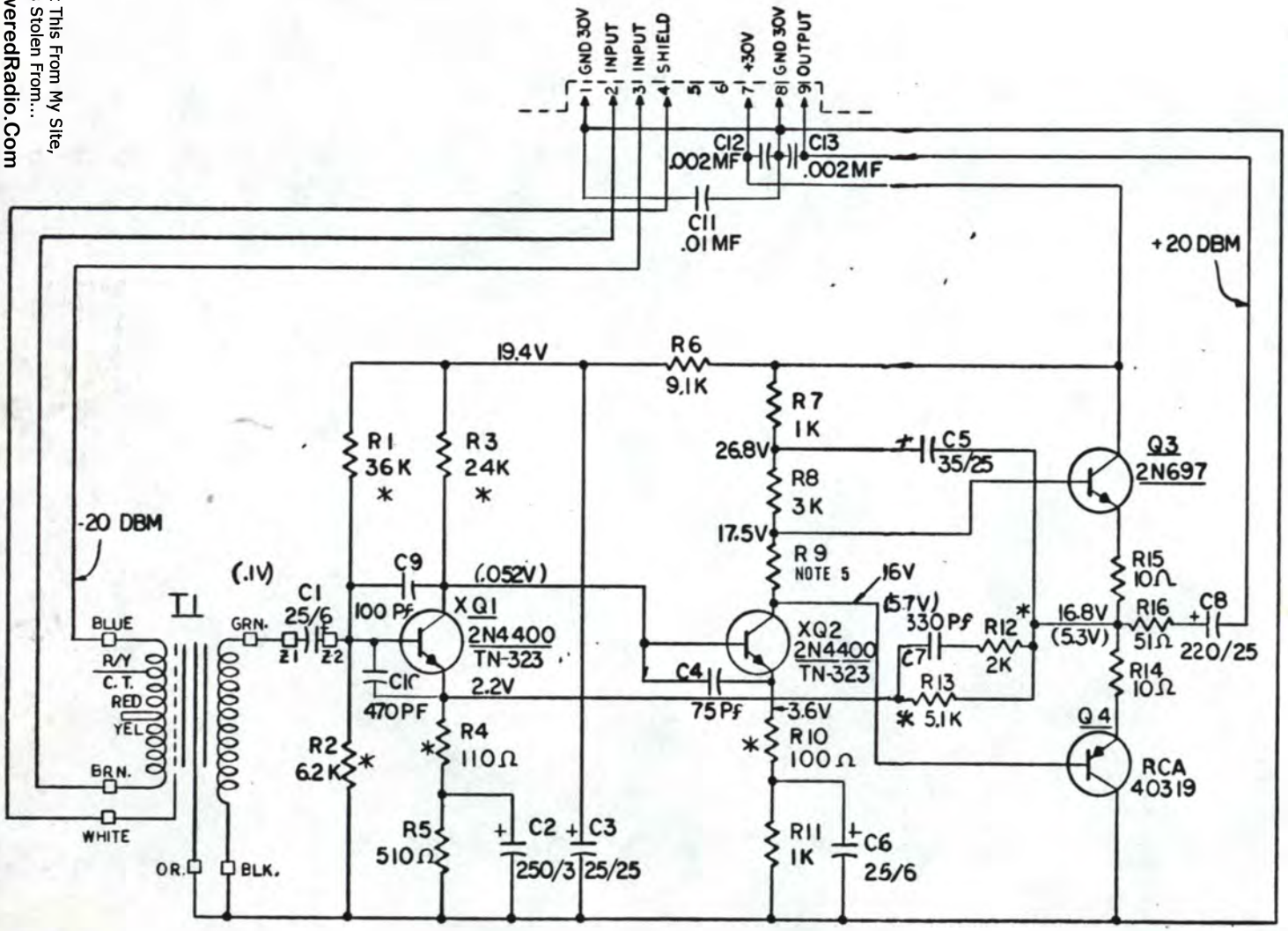
The load impedance of the monitor amplifier is 8 ohms. Speaker loads of 4 to 16 ohms may be used. Loading the amplifier lower than 4 ohms may damage the unit. Some suggested loads are listed below.

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.***

827-3822-001

NO.	DATE	REVISION	DFTM	ING	ECN
1	7/12/67	REDRAWN	[illegible]		
2	7/21/67	C1 & C6 WAS 25/3	WF		[illegible]
3	2/29/68	DELETE CONN. FROM T1-GR TO PLUG UNLESS DESIGN AUX INPUT & "NC 7 PLUG	DL		[illegible]
A	2/24/70	REVISED	WF		[illegible]
B	1/9/71	CIC C11, C12, & C13 ADDED	[illegible]		[illegible]
C	10/19/71	ADDED NOTE #8	[illegible]		
D	" 72	R3-24K WAS R3-20K	KN	[illegible]	[illegible]
E	9/4/74	C9 - 100 PF WAS C9 18 PF	RW	[illegible]	16133
F	9.17.74	C8 WAS 250 uF	MB	[illegible]	[illegible]



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 VTVM, NO SIGNAL.
7. VOLTAGES IN (V) ARE SIGNAL LEVELS FOR +20dBm (150Ω) OUTPUT, 1000Hz
8. PHASING-INPUT/OUTPUT TERMINALS "3" AND "9" ARE IN-PHASE

T1 PRIMARY CONNECTIONS

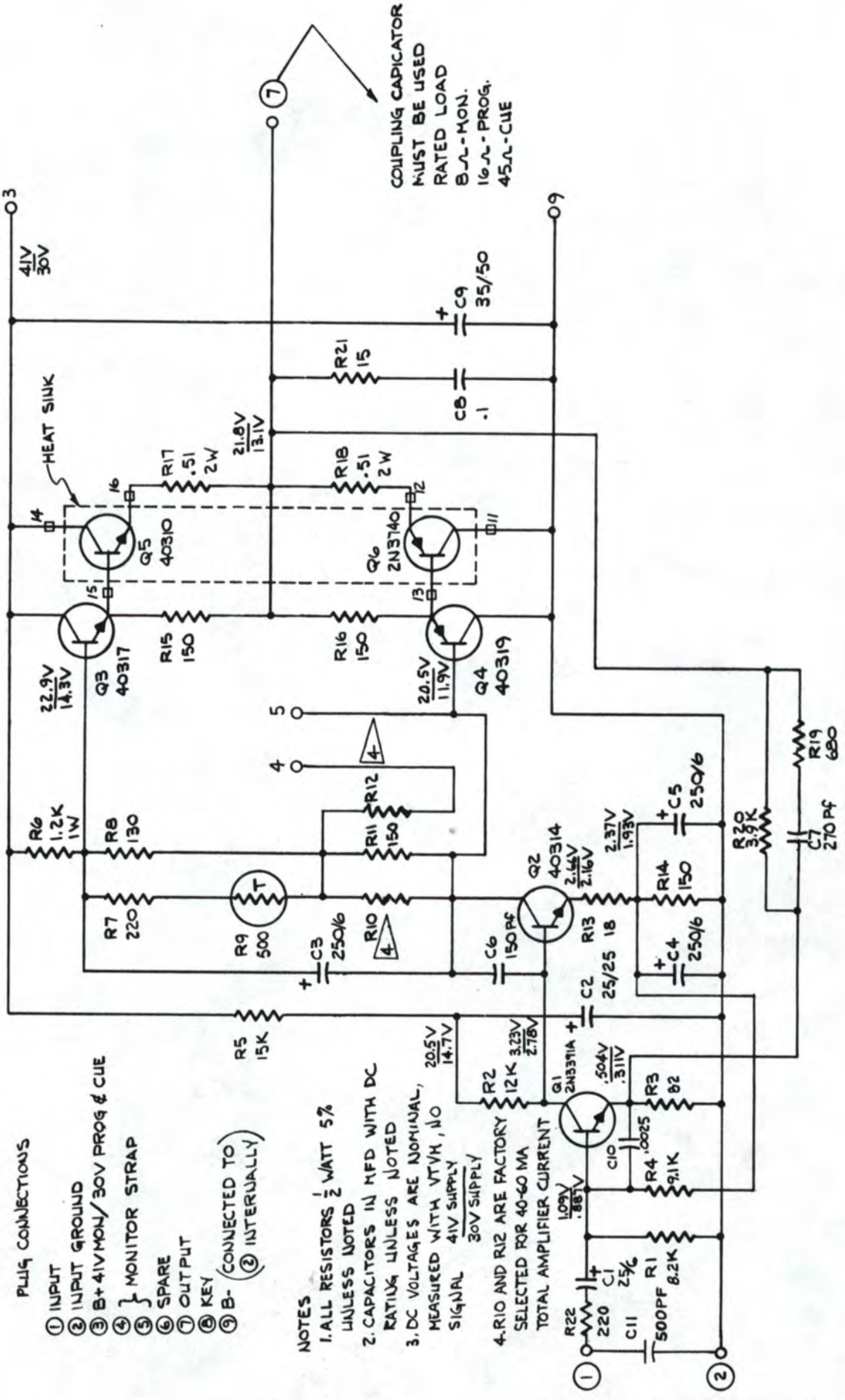
IMP	CT	JOIN	CONNECT TO
37.5Ω	R/Y	RED & BLU YEL & BRN	BLU & YEL
150Ω	-	YEL & RED	BLU & BRN

QTY	ITEM	PART NUMBER	DESCRIPTION
TOL. UNLESS NOTED FRACTIONS ± 1/64 DECIMALS ± .005 ANGLES ± 1°			GATES RADIO COMPANY QUINCY, ILLINOIS
DFTM DL 5-29-67			SCHEMATIC - PRE AMP SOLID STATE CONSOLES 994-6549-004
CHK CA. 18 n			
NEXT ASSY			827-3822-001

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 AMPLIER 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.

SCHEMATIC BOOSTER AMPLIFIER EDO 94479-5

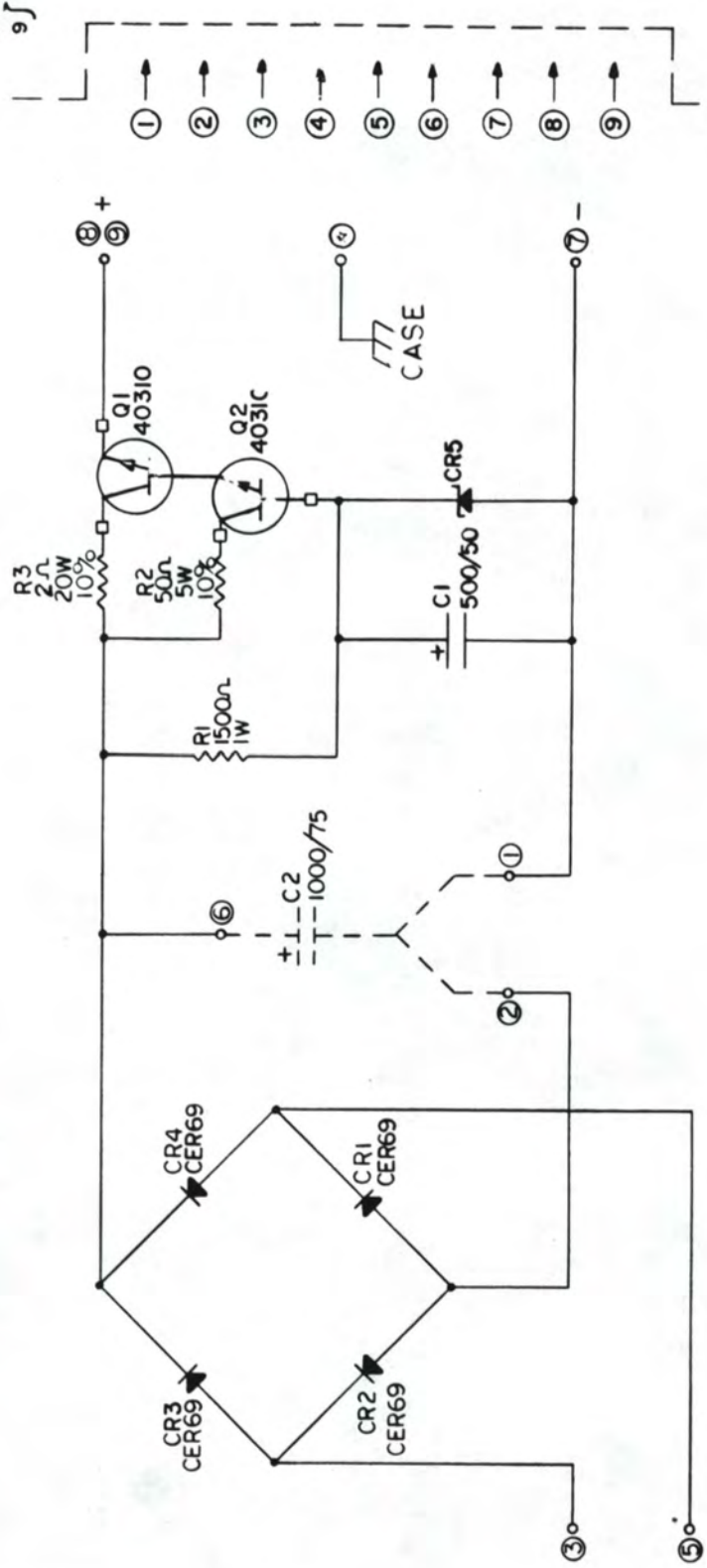
827 3823 001



SCHEMATIC PROGRAM-MONITOR-CUE AMP.

GATES RADIO COMPANY - QUINCY, ILLINOIS
A DIVISION OF HARRIS-INTERTYPE CORPORATION

827 4088 001



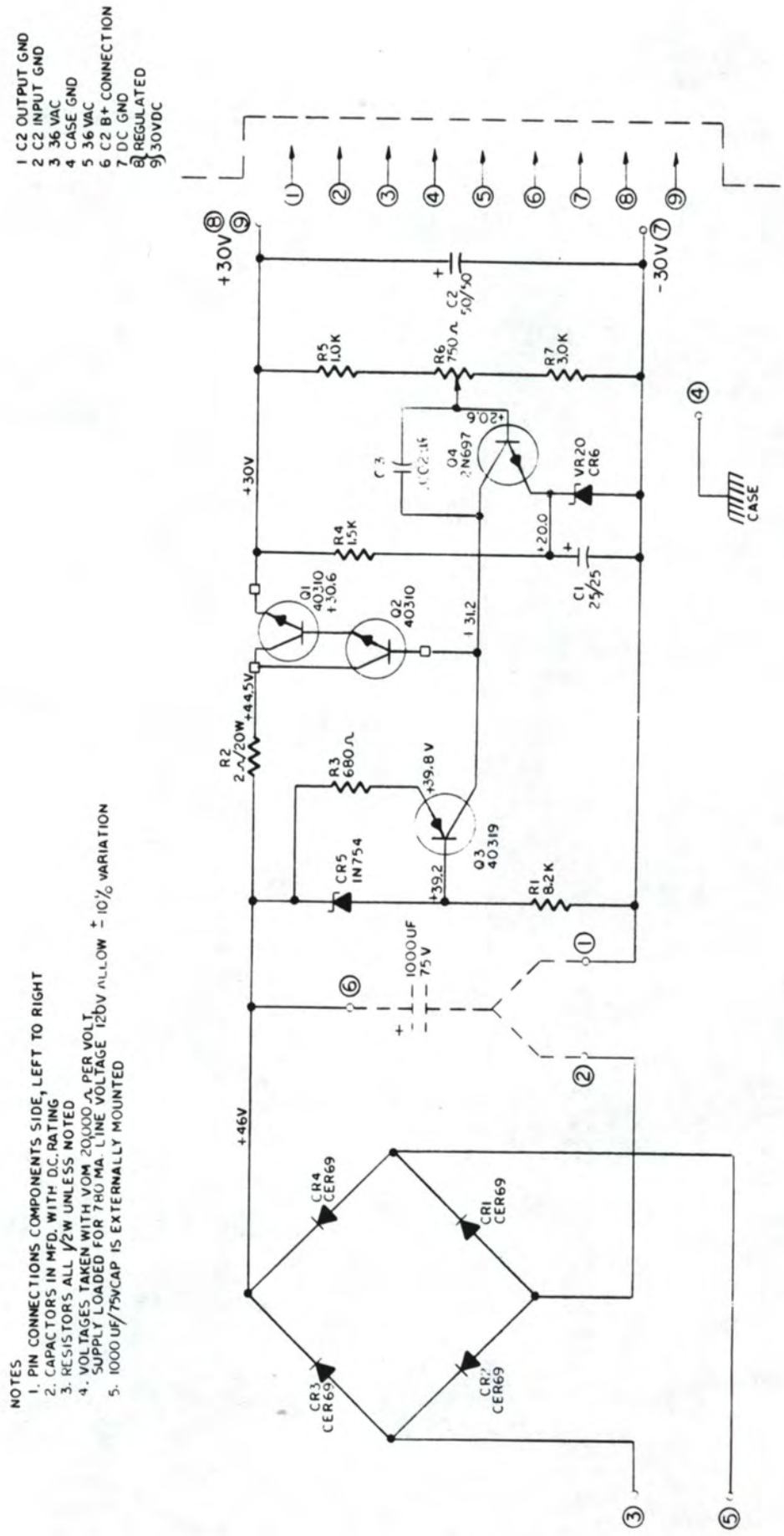
NOTES:

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.

GATES RADIO COMPANY - QUINCY, ILLINOIS
A DIVISION OF HARRIS-INTERTYPE CORPORATION

SCHEMATIC POWER SUPPLY PROGRAM-MONITOR-CUE AMP. M6552

827 2385 001

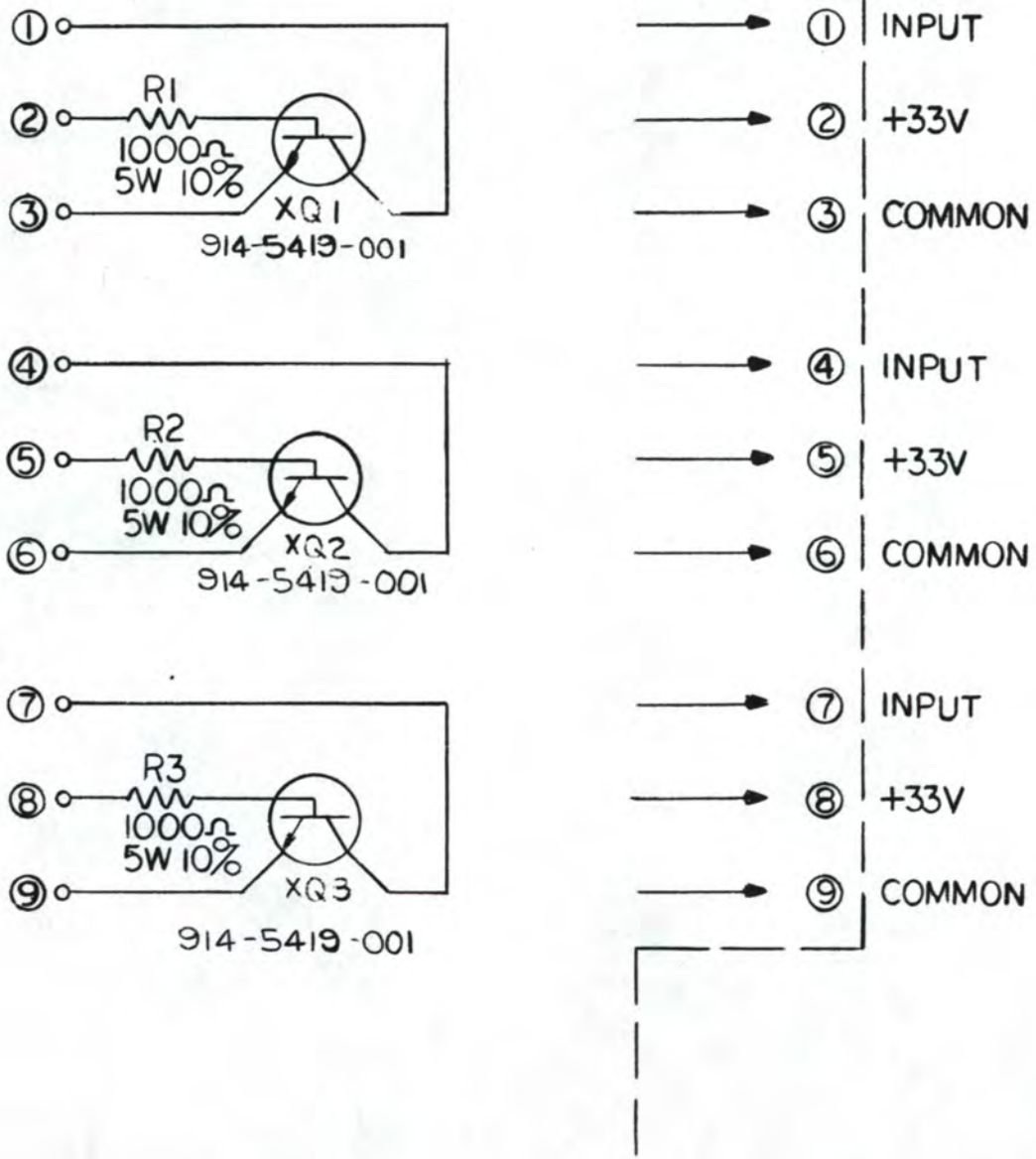


NOTES
1. PIN CONNECTIONS COMPONENTS SIDE, LEFT TO RIGHT
2. CAPACITORS IN MFD. WITH D.C. RATING
3. RESISTORS ALL 1/2W UNLESS NOTED
4. VOLTAGES TAKEN WITH VOM 20,000Ω PER VOLT SUPPLY LOADED FOR 780 MA. LINE VOLTAGE 120V ALLOW ± 10% VARIATION
5. 1000 UF/75VCAP IS EXTERNALLY MOUNTED

SCHEMATIC POWER SUPPLY-M6551A

827 3890 001

GATES RADIO COMPANY - QUINCY, ILLINOIS
A DIVISION OF HARRIS-INTERTYPE CORPORATION

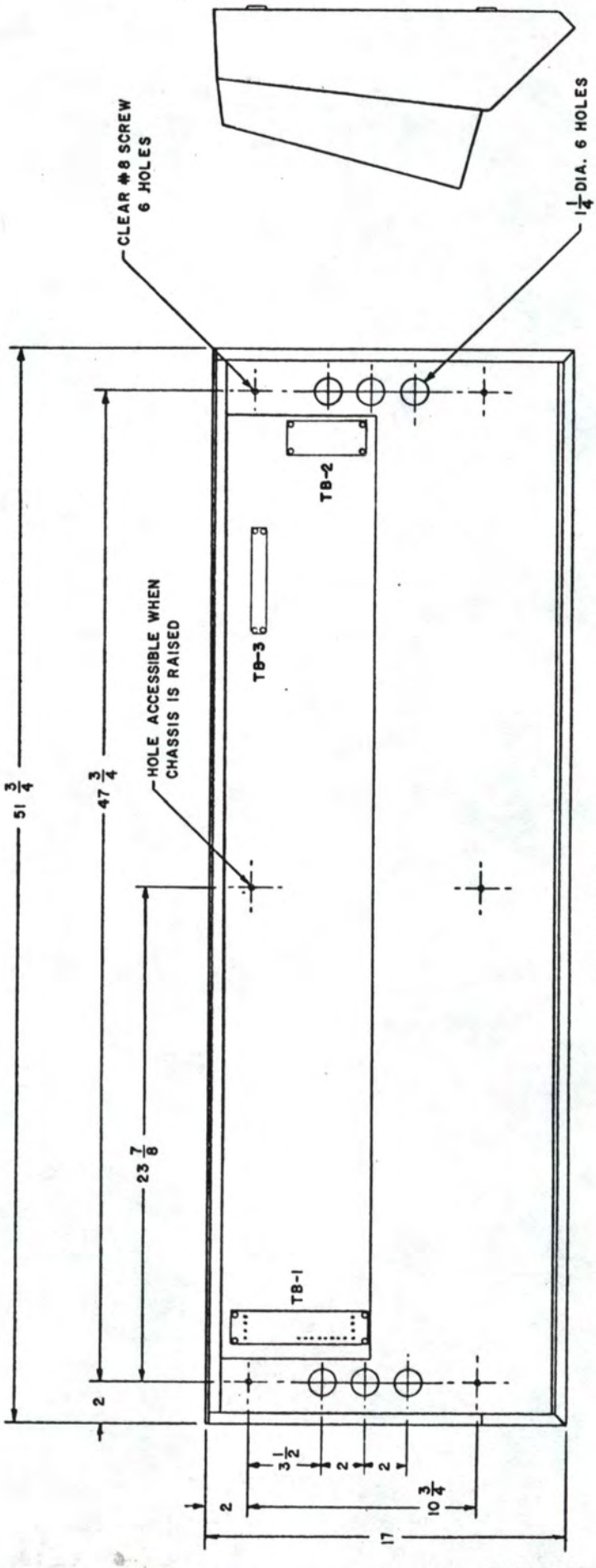


NOTES:

1. SINGLE SOLID STATE MUTING MODULE IS COMPOSED OF ONE BOARD IN ONE EXTRUSION ASS'Y. (M6553A)
2. DOUBLE SOLID STATE MUTING MODULE IS COMPOSED OF TWO BOARDS IN ONE EXTRUSION ASS'Y. (M6553B)
3. +33VOLTS IS APPLIED TO TURN ON THE MUTING DEVICE, TO TURN OFF, VOLTAGE IS REMOVED.
4. CURRENT PER MUTING DEVICE IS 50ma. MAX.
5. COMPONENT VALUES SHOWN ARE NOMINAL VALUES. SLIGHT CHANGES MAY BE NECESSARY TO COMPENSATE FOR PRODUCTION TOLERANCES.

GATES RADIO COMPANY - QUINCY, ILLINOIS
A DIVISION OF HARRIS-INTERTYPE CORPORATION

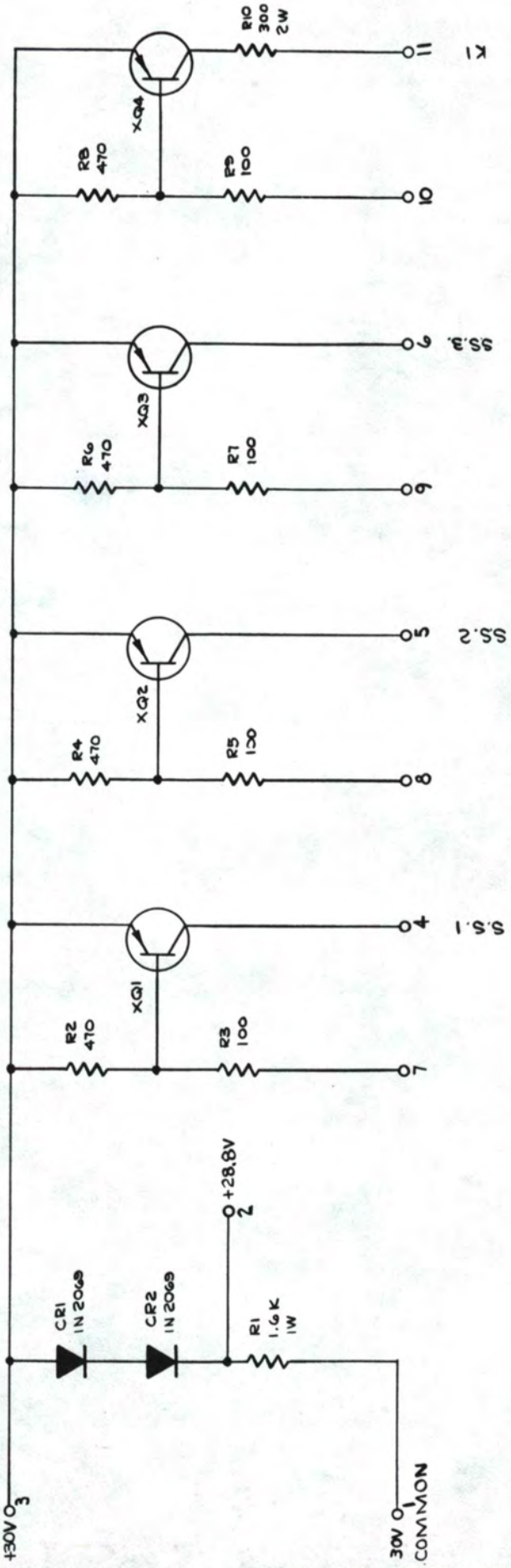
SCHEMATIC MUTING MODULE
SOLID STATE M6553A, M6553B
814 4614 001



TOP VIEW (SHOWN WITH TOP & FRONT PANEL REMOVED)

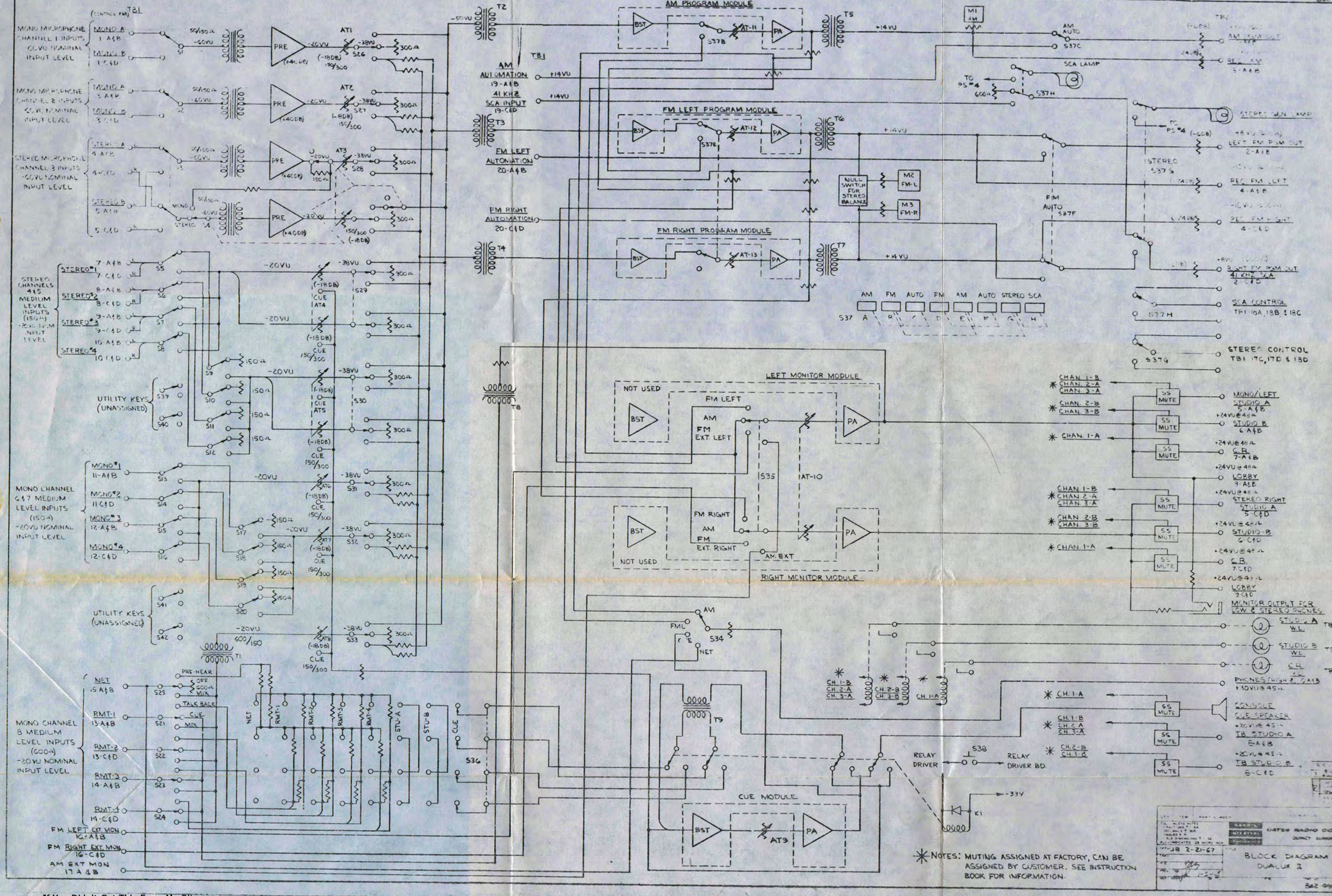
GATES RADIO COMPANY - QUINCY, ILLINOIS
A DIVISION OF HARRIS-INTERTYPE CORPORATION

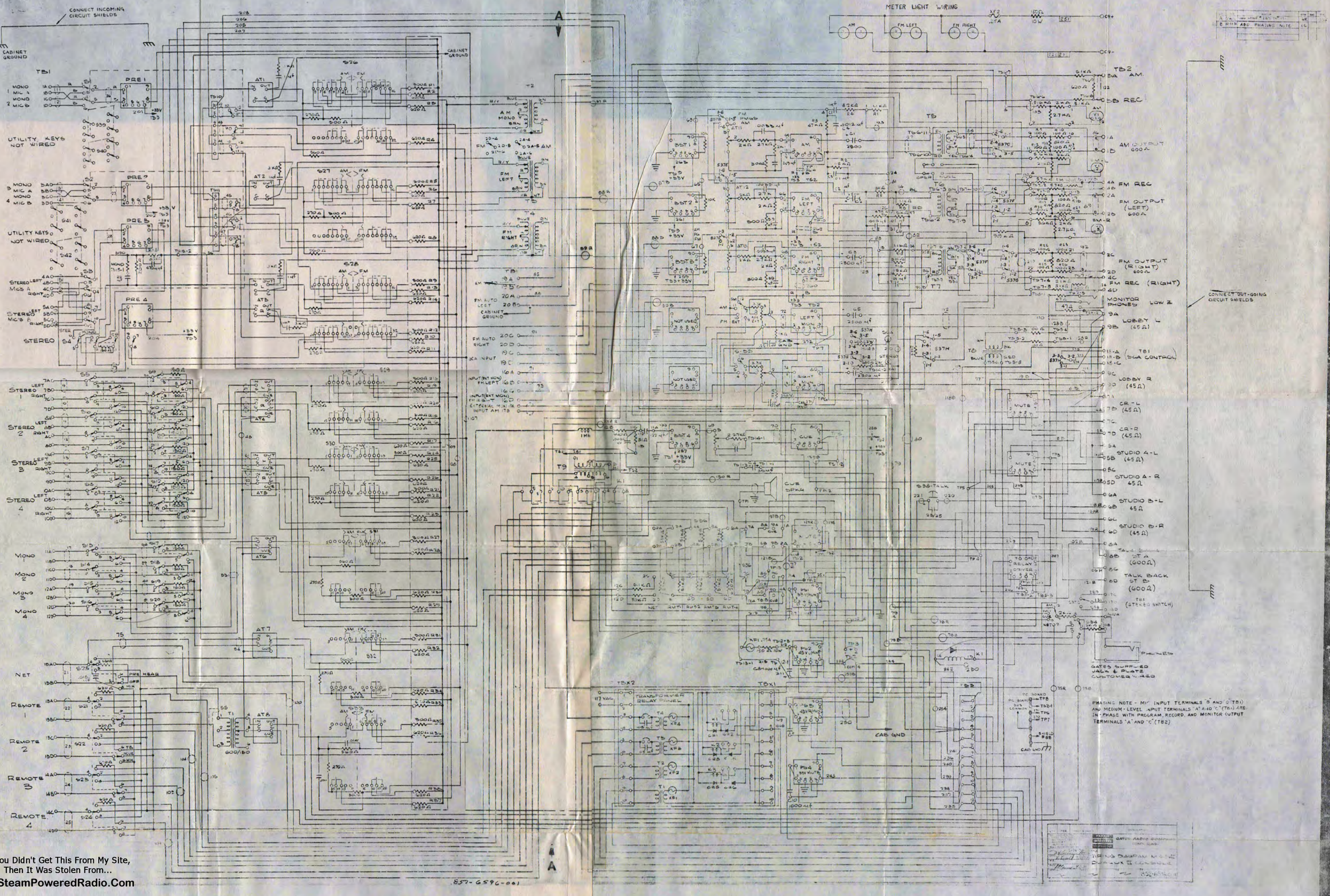
CABLE INLET & MOUNTING DIM.
DIALUX II CONSOLE M-6542
838 2670 001

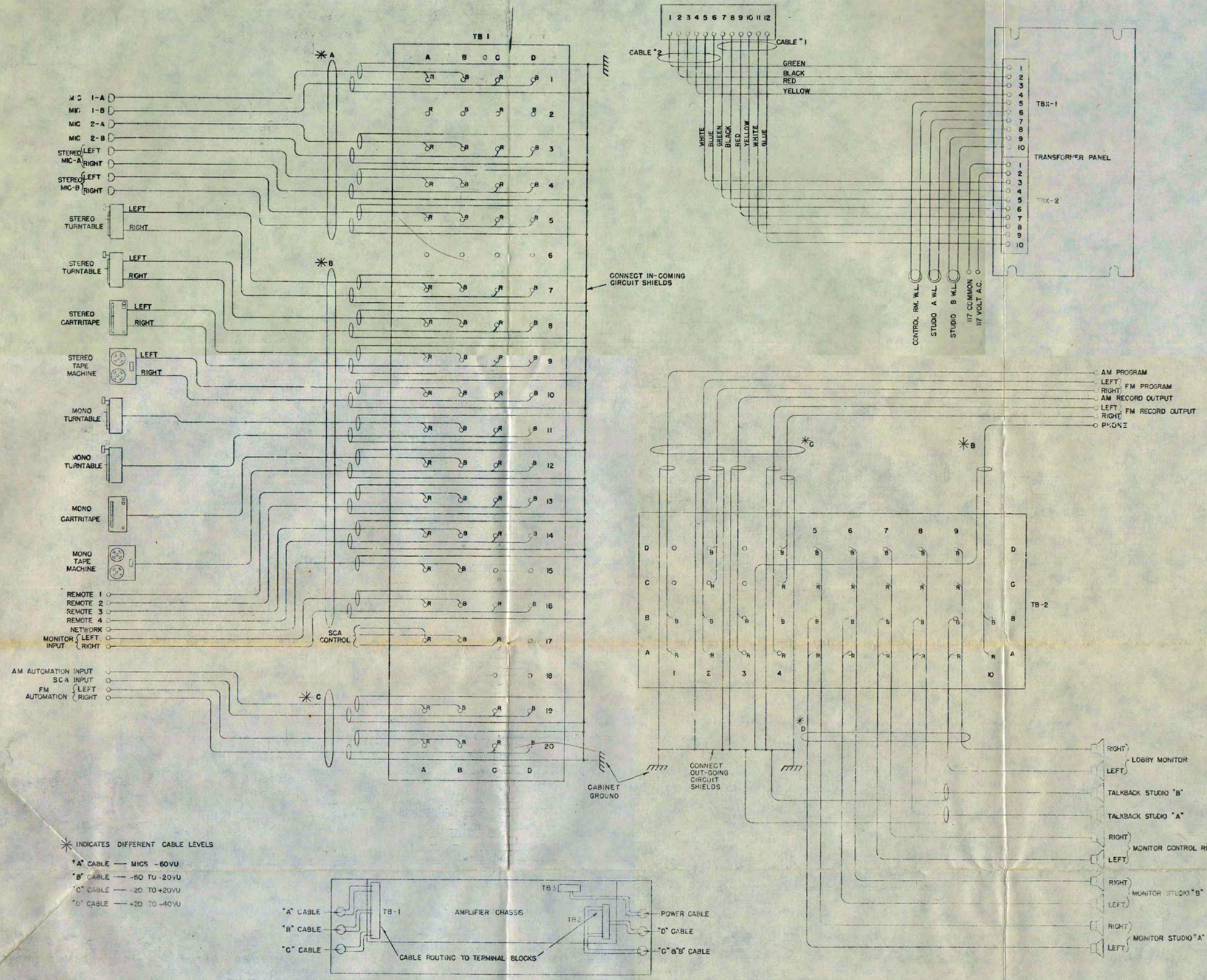


ALL TRANSISTORS 40319

SCHEMATIC - DRIVERS FOR SS. MUTING AND RELAY
DUALUX II GATESWAY II 94479-1







✳ INDICATES DIFFERENT CABLE LEVELS

"A" CABLE — MICS -60VU
"B" CABLE — -60 TO -20VU
"C" CABLE — -20 TO +20VU
"D" CABLE — +20 TO +40VU

INSTALLATION DRAWING
DUALUX II CONSOLE
M 6542
832-5263-001