

### 1.1 PURPOSE OF INSTRUCTION BOOK

This instruction book contains information for installation, operation, and maintenance of the IC-6A and IC-10A Consoles (figure 1-1). The consoles are similar in construction; this instruction book covers the IC-10A Console, with differences noted for the IC-6A.

### 1.2 PURPOSE OF EQUIPMENT

The IC-10A is a 10-channel stereo, monaural, or dual-channel audio console, intended for use in AM and FM broadcast applications or other audio custom installations. The console can amplify and mix up to 10 stereo or monaural audio inputs to drive a telephone line or radio transmitter. The consoles can transmit AM monaural and FM stereo programs simultaneously, or dual monaural programs. The IC-6A Console, is similar except that only six mixing channels are available for use.

### 1.3 PHYSICAL AND MECHANICAL DESCRIPTION

The IC-10A Console is assembled in an aluminum cabinet approximately 11.76 cm (44 inches) wide, 50.8 cm (20 inches) deep, and 25.4 cm (10 inches) high. The IC-6A Console is assembled in an aluminum cabinet approximately 91.44 cm (36 inches) wide and has the same height and depth as the IC-10A.

The console consists of a basic console shell with the following assemblies listed in table 1-1.

Another version of the console shell is available with a program/audition vu meter switching system and program/audition key switch for monaural output.

Various types of plug-in modules are supplied with the console which plug into A1, A2, and A4 assemblies.

#### CAUTION

Care should be taken to ensure that these plug-in modules are plugged into the correct sockets on A1, A2, and A3 assemblies. Refer to the basic plug-in modules listed in table 1-2.

The top cover and the front control panel open to expose components and wiring for maintenance. Air vent holes in the chassis allow for convection cooling. Connecting cables enter the console either from the rear or through the bottom of the chassis.

### 1.4 FUNCTIONAL DESCRIPTION

The IC-10A Console, as normally configured, consists of 10 stereo mixing channels, a stereo program channel, a stereo audition channel, and a monaural program channel. All audio panel mixers control right and left channels simultaneously. The IC-6A Console, as normally

Table 1-1. IC-10A and IC-6A Basic Assemblies.

ASSEMBLY	NAME
A1	Input chassis (located on rear of front panel)
A2	Output amplifier chassis
A3	Front panel
A4	Power supply chassis assembly
A5	Input terminal board chassis
A6	Output terminal board chassis
A7	Mixer network (located underneath A2)
A8	Left channel vu board assembly
A9	Right channel vu board assembly
A10	Monaural vu board assembly

Configured, consists of six stereo mixing channels, a stereo program channel, a stereo audition channel, and a monaural program channel.

All input channels can be adapted for use with low-level balanced microphone inputs, high-level balanced line inputs, or equalized phono inputs by selecting the appropriate input accessory module. An equalized phono amplifier is available that is remotely located at the phono turntable with power supplied from the IC-10A or IC-6A Console.

Audio input terminals are located on the A5 input, terminal board chassis assembly of the console. Program, audition, and mono output feeds are located on TB3 of the A2 output amplifier chassis assembly. Monitoring and cue outputs are located on TB2 terminals of the A4 power supply chassis assembly. Channel program mute, on-air warning lights, relay contacts, mute relays, and pushbutton remote controls are terminated on the A6 output terminal board chassis assembly.

Cassette input jacks are provided on the front panel which are wired directly to the mixer 6 input SELECT B on the IC-6A Console, and terminated in wiring pigtailed located inside the IC-10A Console. Mono and stereo headphone jacks are also provided on the front panel of the console. Optional input connectors such as the XLR type can be supplied for up to four plug-in connections.

Each stereo mixer position consists of a 2-position A or B input select switch, a rotary stereo MIXER attenuator (level control) with CUE position, an AUDITION/PROGRAM key switch mounted on the front panel, and two input accessory modules with associated circuitry mounted on the A1 input chassis assembly located on the rear of the front panel.

Table 1-2. IC-10A and IC-6A Consoles, Basic Plug-in Modules.

EQUIPMENT	MODEL	PART NUMBER	CHARACTERISTIC
<b>Input Accessory Modules:</b>			
Microphone preamplifier	MPA-1A	124-3015-326	Matches microphone impedance and amplifies low-level output of microphone.
Matching transformer	MT-1	124-0052-894	Input device that isolates input from console when input level is high enough to drive console directly.
Bridging transformer	BT-1	124-0052-893	Nonloading input accessory used when input audio level is high enough to drive console directly.
Jumper plug	JP-1	124-0052-863	Passive connection.
<b>Output Amplifiers:</b>			
Line amplifier	LA-1B	124-3015-329	Amplifier to drive isolation transformer.
Cue amplifier	CA-1	124-0052-861	Amplifies cue bus audio to drive cue speaker.
Headphone amplifier	HA-1	124-0052-860	Amplifies monitor audio to drive headphone (IC-10A only).
Monitor amplifier	MA-1A	124-3015-330	Amplifies monitor audio to drive monitor speakers.
Monaural audio pad	MAP-1	124-3015-001	Attenuates input to line amplifier.
Mixer Amplifier	MXA-1A	124-3015-328	Active combining network amplifier.

General description

Table 1-2. IC-10A and IC-6A Consoles, Basic Plug-in Modules (Cont).

EQUIPMENT	MODEL	PART NUMBER	CHARACTERISTIC
Power Supply	PS-1A	124-3015-331	Bipolar 24-V dc rectifier/regulator.
External Accessory Modules: Phono preamplifier	PA-1A	124-3015-327	RIAA equalized preamplifier.

Front-panel pushbutton control switches associated with each mixer position provide remote starting of cartridge machines or other remote control functions requiring a momentary contact closure. These switches will also initiate the elapsed time mode of the digital clock on consoles supplied with the optional DET digital elapsed time clock assembly.

Two stereo inputs are provided to each stereo mixer channel for channels 1 through 8 on the IC-10A, and channels 1 through 8 on the IC-6A. The 2-position INPUT SELECT switch on the front panel connects either of the two stereo inputs, input A or input B, to two input accessory modules on the A1 assembly. The input accessory modules may be microphone preamplifiers, high-level input bridging transformers, jumper plugs or high-level input matching transformers, but identical modules must be used on the left and right channels of a mixer. The outputs of the two input accessory modules are connected through a stereo/monaural switch and balance control. The signal is then returned to the A3 assembly where it is fed to a stereo MIXER level control attenuator. The outputs from the MIXER level attenuator are applied to an AUDITION/PROGRAM key switch that connects the mixer channel output to the stereo audition mixer network (AUDITION) to the program mixer network (PROGRAM) or disconnects the outputs (OFF).

Mixer network A7 is a passive network and is located underneath the A2 output amplifier chassis. Signals from the mixer network are fed over the Program and audition buses to the A2 output amplifier chassis. Signals placed on the program buses are amplified by mixer amplifiers MXA-1A and line amplifiers LA1-B. The outputs of the left and right channels of the program feeds are controlled by program level controls on A2 and provide 600-ohm balanced stereo program outputs to output terminal block TB3. These output levels are monitored by signals fed via J1/P1 on A2 to left- and right-channel vu board assemblies A8 and A9, and then to left-channel and right-channel vu meters M1 and M2, mounted on the A3 front panel assembly.

Signals placed on the audition mixer buses are amplified by an additional set of amplifiers in the same manner as the program channels except that vu meters are not provided to meter the outputs.

The IC-6A and IC-10A can also be provided with program/audition keying system PAK-1, which allows the vu meters to be switched from program output to audition output. The consoles can also be provided with program/audition system PAK-1M, which allows the stereo program or audition outputs to be switched to the mono output line. Other wiring changes which allow the IC-6A and IC-10A to be used for either mono or stereo dual-channel operation are listed in the operations section.

REMOTE LINES SELECT switches are located on the front panel of the consoles. One 6-position REMOTE LINES SELECT switch is provided in the IC-6A Console and is connected to the A input of mixer channel 6. The B input of mixer 6 is connected to the cassette input jacks on the front panel. Two 6-position selector switches are provided to switch stereo inputs to mixer channels 9 and 10 of the IC-10A Console. The stereo outputs from the REMOTE LINES SELECT A switch are connected to stereo input A of mixer channels 9 and 10. The outputs from the REMOTE LINES SELECT B switch are connected to stereo input B of mixer channels 9 and 10. The input to mixer channels 9 and 10 may thus be switched to any one of the 12 stereo inputs to the remote line selector switches.

The front-panel MIXER level control attenuators provide a CUE position in the maximum counterclockwise position of the control. In this position, the mixer channel stereo outputs are combined and applied to a monaural cue bus. The CUE AMPLIFIER, CUE LEVEL CONTROL, and CUE OUTPUT TERMINALS (13, 14, and 15) of TB2 are located on the A4 power supply chassis assembly. The unbalanced cue output can be used to drive a cue

## general description

speaker or headphone. The outputs of monitor amplifiers are connected through three muting relays (mounted on the A4 assembly) to allow connection to audio, lobby, and/or control room speakers. Relay contacts can also be used to operate studio warning lights, etc. Muting is provided for the cue output on relay K1.

The IC-10A Console includes two headset amplifiers mounted on the A-4 assembly, a front panel PHONES SELECT and stereo PHONES LEVEL control, and front-panel STEREO PHONE JACK. The PHONES SELECT switch provides monitoring of the program channel outputs, the audition channel outputs, off-the-air stereo channel, and external stereo headphone monitoring of the front-panel MONITOR SELECT signals.

The muting relays do not affect the monitor outputs to the front-panel STEREO PHONE JACK or MONO PHONE JACK.

A monaural line level output is fed through a monaural audio pad MAP-1 level control and line amplifier and transformer on the A2 assembly to give a 600-ohm balanced mono output. This signal, which is the sum of the left and right program channels or the left and right audition channels, depending on strapping within mating connector P2 to the A2 output amplifier chassis assembly. Outputs from the left and right channels (PROGRAM or AUDITION), are fed to TB2 of the A2 assembly, and to front-panel monaural headset jack J1. The monaural output signal is also fed through the monaural vu board assembly, permitting output level to be monitored on the front-panel vu meter M3.

Two monitor amplifiers MA-1A are located on the A4 power supply chassis assembly, and their outputs are terminated on TB2 of A4 in the IC-6A and IC-10A. A front-panel MONITOR SELECT switch routes signals from the stereo program channels, the stereo audition channels or external stereo channels via a front-panel MONITOR LEVEL control to the monitor amplifier. In the IC-10A the front-panel monitor selector switch is also fed with a stereo off-air signal.

## 1.5 TECHNICAL CHARACTERISTICS

### 1.5.1 Power Source

115 or 230 V ac  $\pm 10$  percent  
50 to 60 Hz, single phase  
170 watts (IC-10A)  
150 watts (IC-6A)

### 1.5.2 Input Characteristics

#### IC-10A:

Eight stereo mixer channels with two selected stereo inputs.

Two stereo mixer channels with 12 stereo remote line inputs available to either mixer channel.

Mixer channel inputs may be balanced or unbalanced microphone or high-level line input levels. All inputs to a mixer channel must be the same type of input.

#### IC-6A:

Five stereo mixer channels with two selectable stereo inputs.

One stereo mixer channel with six remote line inputs and a cassette tape input.

Mixer channel inputs may be unbalanced or balanced microphone or high-level input levels. All inputs to a mixer channel must be the same type of input.

**Mixer Inputs:**

**High-Level Inputs**

-10 dB mW, 600 ohms balanced (terminating)

**Microphone Inputs**

-50 dB mW, 200 ohms balanced (factory wired)

-50 dB mW, 50 ohms balanced (strappable)

**Monitor Amplifier Inputs:**

**External Monitor**

-10 to +10 dB mW

10,000 ohms balanced (bridging)

**Off-the-Air Monitor)**

-10 to +10 dB mW

10,000 ohms balanced (bridging)

**1.5.3 Output Characteristics**

**Stereo Program Channel Outputs:**

+18 dB mW nominal, +24 dB mW maximum

600 ohms, balanced load

**Stereo Audition Channel Outputs:**

+18 dB mW nominal, +24 dB mW maximum

600 ohms, balanced load

**Monaural Program Output:**

+18 dB mW nominal, +24 dB mW maximum

600 ohms, balanced load

**Stereo Monitor Channel Outputs:**

15 watts rms maximum into 8-ohm load

8- to 16-ohm load, unbalanced

**Cue Output:**

1 watt rms into 8-ohm load

**Stereo Headphone Outputs (IC-10A):**

1 watt rms maximum into 8-ohm load

8-ohm to 50,000-ohm load, unbalanced

headphone jack

**Stereo Headphone Outputs (IC-6A):**

Headphone jack connected across monitor amplifier outputs

**Monaural Channel Headphone Output:**

Headphone jack connected to monaural line output

## general description

### 1.5.4 Frequency Response

Stereo Program, Stereo Audition, and Monaural Channel Outputs:  
±1 dB, 50 Hz to 15 kHz

Monitor Amplifier Outputs:  
±1.5 dB, 50 Hz to 15 kHz

### 1.5.5 Distortion Characteristics

Stereo Program, Stereo Audition, and Monaural Channel Outputs:  
Less than 0.5-percent total harmonic distortion at +18 dB mW

Monitor Amplifier Outputs:  
Less than 1.5-percent total harmonic distortion at 15 watts rms

### 1.5.6 Equivalent Input Noise

Stereo Program, Stereo Audition, and Monaural MIC Inputs:  
-120 dB mW

### 1.5.7 Gain

Program and Monitor Gain:  
100 dB minimum

### 1.5.8 Service Conditions

Ambient Temperature:  
+15° to +40°C (60° to 100°F)

Humidity:  
0 to 95% relative humidity

Altitude:  
3,048 m (10,000 ft) maximum

Vibration and Shock:  
Normal handling and shipping

### 1.5.9 Interface Connections

Power:  
Power connector located on power supply

Input Signal Cables:  
Terminal boards or optional XL connectors

Cassette Input:  
Terminal board or jacks on the front panel



**Headset Outputs:**

Monaural headset jack - front panel, standard 2-ckt 0.635-cm (1/4-in.) phone plug  
Stereo headset jack - front panel, standard 3-ckt 0.635-cm (1/4-in.) phone plug

**Cue Output:**

Terminal board

**Program Outputs:**

Terminal board

**Monaural Output:**

Terminal board

**Audition Outputs:**

Terminal board

**Control Signals:**

Terminal board

**1.6 EQUIPMENT AVAILABLE**

Table 1-3 lists the optional equipment available for installation with the console.

Table 1-3. Optional Assemblies for IC-10A and IC-6A Consoles.

ASSEMBLY	PART NUMBER	DESCRIPTION
PMA-1	124-0052-892	Phono mounting assembly for two PA-1A phono preamplifiers
DET	124-3015-045	Digital elapsed time clock assembly (can be controlled from customers on IC-6A/10A remote start pushbuttons)

## 2.1 UNPACKING AND INSPECTING THE EQUIPMENT

Remove all packing material and carefully lift the console from the package. Retain the packing list. Inspect the console for damaged or missing components. Check all controls for ease of operation. Any claims for damage should be filed promptly with the transportation agency. If such claims are to be filed, all packing material must be retained.

## 2.2 INSTALLATION

The arrangement of studio and control room facilities determines the location of the console in a particular station. Carefully plan the placement of equipment and wiring before beginning installation. Placement of the unit is not critical but approximately 10.16 cm (4 inches) should be left at the rear of the unit to allow for adequate ventilation. For access to all internal terminal boards, lift the front edge of the unit top and fold back; the front panel can then be pulled forward and down. The top and front panels are held in the fully open position by retaining cables. Approximately 81.12 cm (28 inches) front to back is required for the fully open unit.

During installation the following rules should be followed to eliminate grounding problems.

- a. Ground input and output cable shields at console end only.
- b. Use standard audio shielded twisted pair with insulated cover.
- c. Low- and high-level audio leads should be separated from power and control wiring.
- d. Use 1- to 2-inch ground strap to connect console chassis to common ground.
- e. Use shielded power leads if noise level is high.

**CAUTION**

Be sure that cable shields do not come in contact with anything but grounding terminals.

## 2.3 WIRING INSTRUCTIONS

Console location and type of installation determine the position of the input, output, and primary power wiring. Refer to figures 2-1 and 2-2 for access hole locations. Openings at the rear and bottom of the console provide access to terminal boards for incoming and outgoing leads. If the wiring is to enter from the bottom of the console, corresponding holes must be drilled through the table top for wiring access.

**CAUTION**

Connect primary power only after all other connections are made.

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Refer to tables 7-1 through 7-6 for a list of input/output and control function terminal boards, and terminal functions. To ensure proper phasing of stereo signal lines, it is important to connect each twisted shielded pair to the terminals the same way. For example, if a twisted pair is used with red and white wires, always wire the red wire to  $\pm$  terminal, the white wire to the C (common) terminal, and the shield to the S (shield) terminal. The S terminal connects directly to the console chassis. No separate grounding is necessary.

### 2.3.1 Input Connections

Terminal boards TB1 through TB12 provide input audio connections for the IC-10A Console. TB1 through TB7 provide audio input connections for the IC-6A Console. Each audio connection contains a  $\pm$  terminal, a common terminal C, and a shield terminal S. The S terminal is connected to the console chassis ground.

#### 2.3.1.1 Mixer Channels 1 Through 10 (Mixer Channels 1 Through 6 for the IC-6A Console)

The audio input impedance and level characteristics of a mixing channel are determined by the input plug-in modules. The input may be a low-level input, bridging high-level input, or terminating high-level input. Multiple switched inputs are provided for each mixer channel, and all inputs to a mixer channel must be the same type; for example, low-level, high-level bridging, or high-level terminating. The input module sockets are designated on the A1 input chassis assemblies as A1 through A20 for the IC-10A, and A1 through A12 for the IC-6A.

#### 2.3.1.2 Low-Level Inputs

The microphone preamplifier MPA-1A plug-in module is used for the low-level mixer channel. The MPA-1 preamplifier is factory wired with a 200-ohm input impedance and accepts input levels of -65 to -50 dB mW. The input impedance may be changed to 50 ohms by making wiring changes on the console-mounted accessory socket. To change the mixer channel input impedance to 50 ohms, remove the connection between terminals 2 and 3 of the console-mounted accessory socket, install a connection between terminals 1 and 2, and install a connection between terminals 3 and 4. The input connections must remain on terminals 1 and 4.

#### 2.3.1.3 High-Level Inputs - Bridging

The bridging transformer, BT-1, plug-in module provides a bridging input for the mixer channel. The bridging input provides a 10,000-ohm input impedance, which will accept input voltage levels corresponding to +6 to +24 dB mW across a 600-ohm terminated line (1.55 to 12.46 volts rms).

#### 2.3.1.4 High-Level Inputs - Terminating

The matching transformer, MT-1, plug-in module provides a 600-ohm terminating line input for the mixer channel. The terminating input will accept input levels of -10 to +10 dB mW (0.246 to 2.46 volts rms).

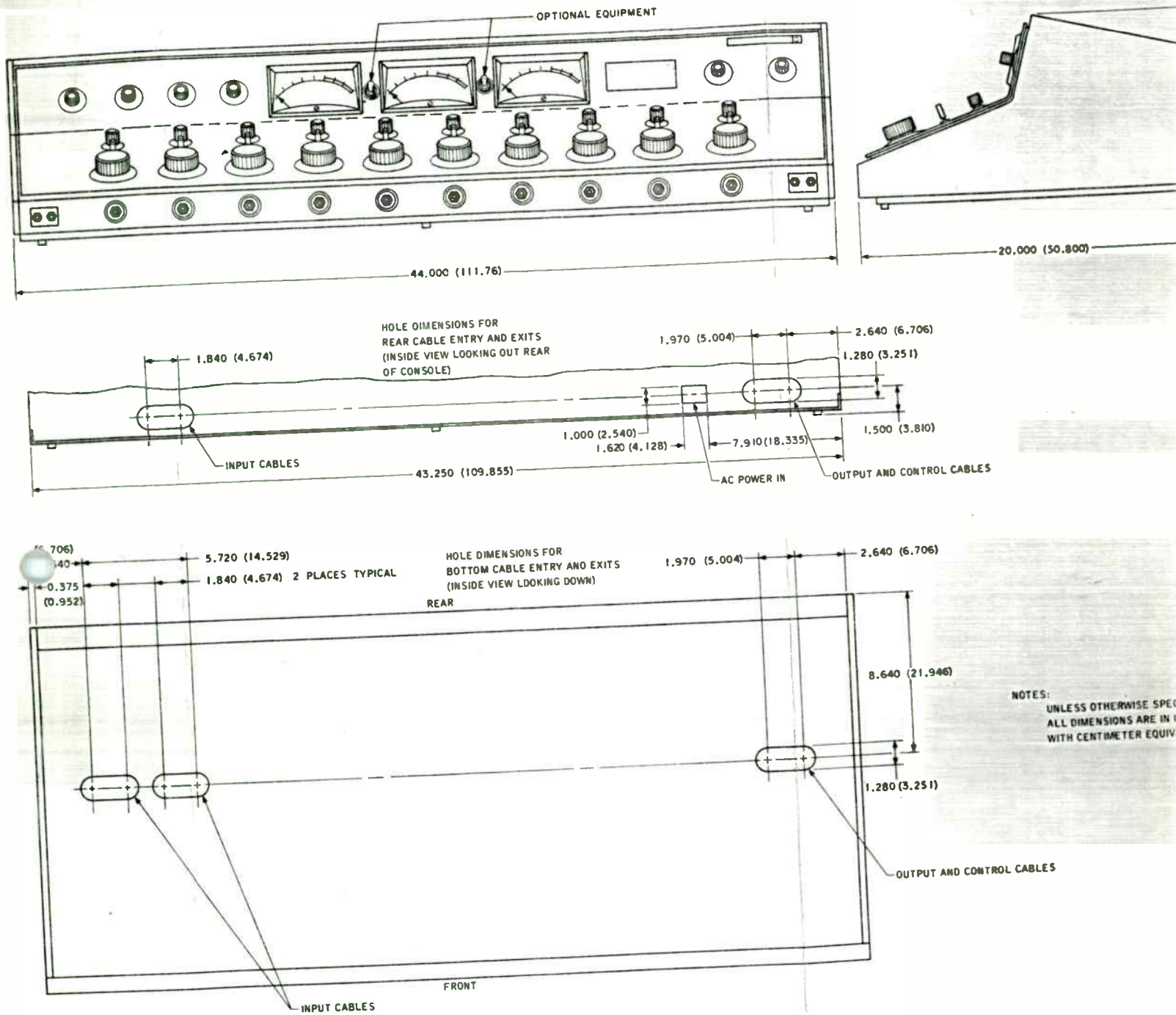
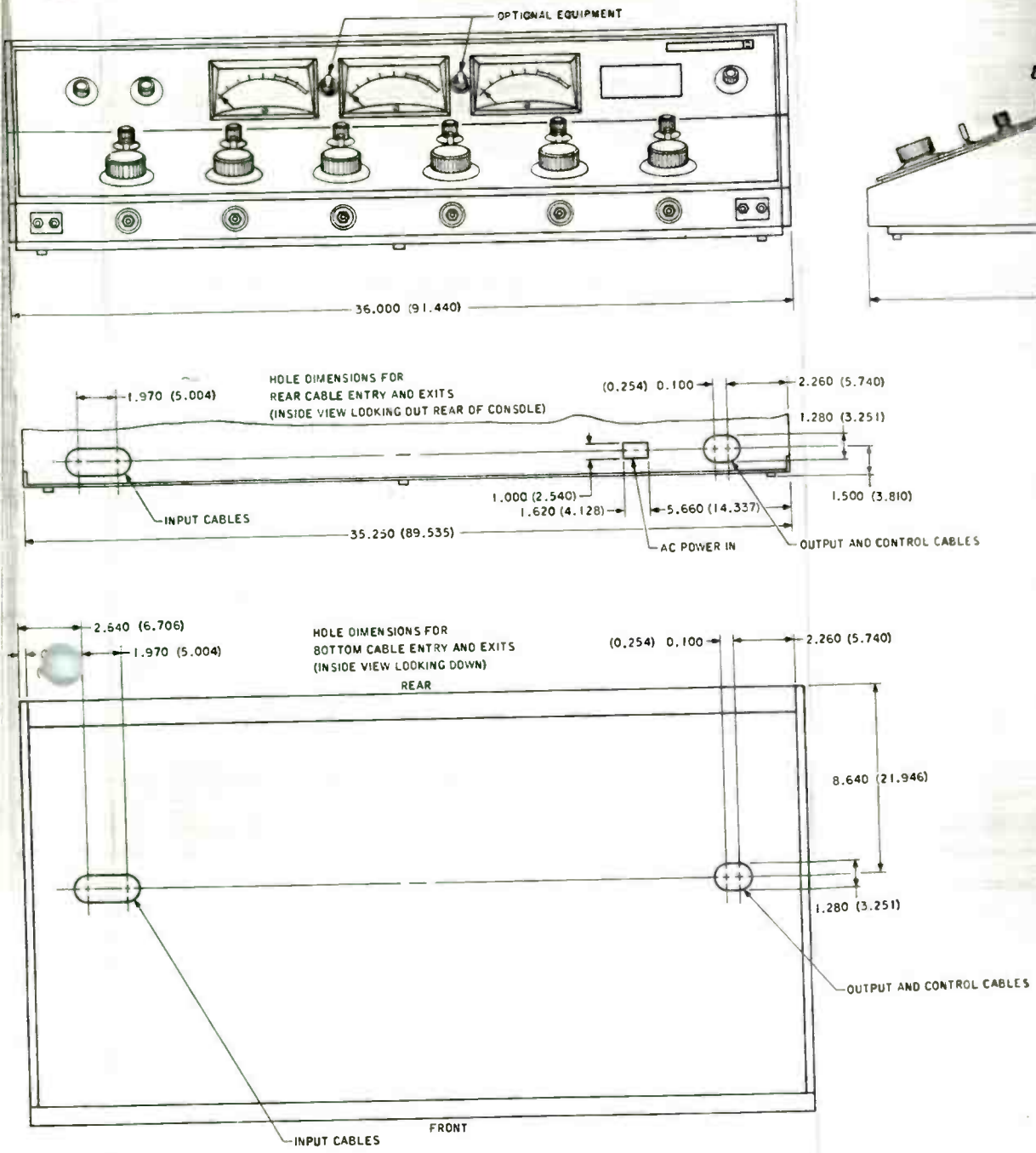


Figure 2-1. IC-10A Console, Dimension Drawing



NOTES:  
UNLESS OTHERWISE SPECIFIED,  
ALL DIMENSIONS ARE IN INCHES  
WITH CENTIMETER EQUIVALENTS IN ( ).

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Figure 2-2. IC-6A Console, Outline and Dimension Drawing.

### 2.3.1.5 Equalized Phono Inputs

Equalized phono inputs are provided by a remote phono preamplifier, PA-1A, plug-in module (located near the turntable) and a matching transformer, MT-1, plug-in module in the console. The phono mounting assembly PMA-1 provides mounting and interconnection facilities for two PA-1A phono preamplifiers.

Equalized stereo phono inputs are provided by mounting a PMA-1 phono mounting assembly and two PA-1A phono preamplifiers at the turntable. Power for the preamplifiers is supplied from the IC-10A or IC-6A Console.

**NOTE**

The output of the phono preamplifier must be connected to the appropriate terminals on the A5 input terminal board chassis assembly. Two MT-1 matching transformer input modules must also be connected to the stereo mixer channel to be used for turntable inputs.

The following steps are required to connect the phono preamplifiers to the console.

- a. Mount the PMA-1 phono mounting assembly at the turntable a maximum of 30.5 cm (12 inches) from the pickup arm rear mount, and connect the pickup outputs to the PMA-1 assembly. Refer to table 2-1 for connections.
- b. Connect the PMA-1 assembly phono jacks to the selected mixer audio inputs using standard audio shielded twisted pair cable. Ground the cable shield only at the console end. The phono jack common connection is to be connected to the terminal board C terminal. Refer to tables 7-1 or 7-4 for terminal board connections.
- c. Connect power to the PMA-1 assembly by connecting the plus and minus 24-volt terminals in the console to the power input terminals of the PMA-1 assembly. Refer to table 2-1 for connections. Shielded twisted 3-wire cable with a minimum wire size of 20 gauge should be used, and the shield should be grounded only at the console end.

**CAUTION**

Do not use the plus and minus 24-volt output of the console for other purposes.

- d. Insert the PA-1A phono preamplifier plug-in modules into the PMA-1 assembly. If monaural output is desired, use only the left channel socket.

### 2.3.1.6 Remote Inputs

Two 6-position selector switches are provided for switching stereo inputs to mixer channels 9 and 10 of the IC-10A console. Any one of the 12 stereo inputs may be switched to mixer 9 or mixer 10. All inputs switched into a mixer channel must be the same type. Normally mixer channels 9 and 10 will employ the MT-1 matching transformer or the BT-1 bridging transformer plug-in modules. Table 7-1 or 7-4 provides the input terminal connections. One 6-position selector switch is provided for switching stereo inputs to mixer 6 INPUT SELECT position A of the IC-6A Console.

Table 2-1. Phono Preamplifier Power Connections.

ASSEMBLY NO.	TERMINAL	FUNCTION	ASSEMBLY NO.	TERMINAL	FUNCTION
A2	1	+24 volts	A2	5	+24 volts
A2	2	-24 volts	A2	6	-24 volts
A2	3	Ground (audio)	A2	7	Ground (audio)
A2	4	Chassis gnd	A2	8	Chassis gnd

### 2.3.1.7 External Monitor Inputs

The IC-10A Console contains provisions for an external stereo monitor input and off-the-air stereo monitor input. The IC-6A Console contains provisions for only an external stereo monitor input. Each of these inputs has a 10,000-ohm balanced input impedance.

### 2.3.1.8 Cassette Input

The IC-10A Console contains two miniature phone jacks located in the lower right-hand corner of the front-panel area. These jacks terminate in wiring pigtailed located inside the console adjacent to the mixer input area. These cables enable the console installer to connect the cassette inputs to any suitable mixer input during the installation. The wires are labeled for identification. Care should be taken to properly phase the left and right channels to the selected input. The IC-6A Console cassette inputs are wired directly to MIXER 6 INPUT SELECT position B.

### 2.3.1.9 Stereo/Monaural Input Switching

A stereo/monaural input switch for each mixer is located on the back of the front panel adjacent to the plug-in input accessory module sockets. This switch must be placed in either the S (stereo) or M (monaural) position as dictated by the type of input selected for the applicable mixer. In the monaural position, the output of the right channel is disconnected and the left channel input is connected to both left and right channel outputs of the mixer.

## 2.3.2 Output Connections

The IC-10A and IC-6A Consoles provide 600-ohm isolated outputs for the stereo program lines, the stereo audition lines, and the monaural output line. The stereo monitor amplifiers provide unbalanced outputs of 15 watts each into 8 ohms and are suitable for driving loads of 8 to 16 ohms. The cue output amplifier provides an unbalanced output of 1 watt into a load of 8 ohms.

### 2.3.2.1 Program and Audition Line Outputs

Connections to the 600-ohm isolated program and audition line outputs are made through terminal board TB2 on the A2 output amplifier chassis assembly. Refer to table 7-2 or 7-5 for connections.

### 2.3.2.2 Monitor Speaker Outputs

Three separate stereo monitor speaker output connections are provided through three separate muting relays for studio and/or remote speaker connections. Refer to table 7-2 or 7-5 for audio connections. Muting relay controls are connected as described in paragraph 2.3.2.

**NOTE**

Do not ground either conductor of the monitor speaker lines. Use twisted pair shielded cable 18 gauge or larger.

### 2.3.2.3 Cue Output

A single cue output is provided to drive a customer-furnished cue speaker. Refer to table 7-2 or 7-5 for connections.

**NOTE**

Do not ground either conductor of the cue speaker line.

### 2.3.2.4 Mono/Stereo Headphone Outputs

The consoles contain two jacks located in the lower left-hand corner for headphone monitoring. The stereo output will accept headphone impedances of 8 ohms to 50 kilohms, eliminating the need of special headphones or impedance-matching transformers. One jack is for mono headphones, the other is for use with stereo headphones. The mono jack requires headphones of 2000 ohms or greater impedance.

### 2.3.3 Muting Relay Connections

Three muting relays are provided for silencing monitor speakers when a program/audition switch is placed in the PROGRAM or AUDITION position. The relays must be strapped to the selected program/audition switch for operation. Refer to table 7-3 or 7-6 for control connections. For example, to mute the speakers with the PROGRAM/AUDITION MIXER 1 switch in the PROGRAM position, connect the mute-key-ground line for the mute-relay-to-ground terminals of the relay to which the monitor speaker is connected. If the monitor speakers to be muted are connected to relay K1, TB18 terminal 1 to TB19 terminal 13 on the IC-10A, or TB11 terminal 1 to TB11 terminal 13 on the IC-6A.

When the relay circuits are energized by the program/audition key switches, the studio monitor loudspeakers are disconnected from the monitor amplifier. Output from the cue amplifier is also disconnected via K1 relay contacts. The ON AIR warning light circuits are completed when K1, K2, or K3 are energized. The ON AIR circuits should be applied to other 24-volt relays which have 115-volt ac rated contacts for switching on and off the ON AIR warning lights.

### 2.3.4 Monaural Output Strapping

The monaural output can be connected to either the stereo program outputs or to the stereo audition outputs. The connection is made through the Jones plug, P2, located near the left center of the A2 output chassis assembly. Straps on the male Jones plug are moved as



## installation

necessary to make the audio connections. When the console is received, the monaural output is strapped to the stereo program outputs. The strapping connections on P2 for the monaural output circuit are as follows:

- a. As normally supplied with the stereo program lines connected to the monaural output, pin 1 strapped to pin 3, pin 4 strapped to pin 9.
- b. With stereo audition lines connected to the monaural output, pin 7 strapped to pin 3, pin 10 strapped to pin 10.

These straps connect the signal lines only. It is not necessary to strap ground lines.

### 2.3.5 Pushbutton Control Functions

The front panel momentary pushbutton controls are wired to terminal boards and are used to start externally located equipment. They may also be wired to start the count-up of the optional digital elapsed time clock. The pushbuttons are to be used only with contact closure dc switched equipment. No ac should be wired through the pushbutton switches. Refer to table 7-3 or 7-6 for connections to the pushbutton switch contacts through the terminal boards. Each pair of connections represents a single set of normally open contacts. Contact rating is 1 ampere, 28 volts dc maximum.

## 2.4 INPUT POWER CONNECTIONS

### CAUTION

Check all console wiring for loose shields, bare wire, loose terminals, and shorts before power is applied. Before connecting the console power cord to primary power, open the top of the console and set the power supply OFF/ON switch to OFF.

The IC-10A and IC-6A Consoles are strapped for 115-volt, 50- to 60-Hz operation but can be strapped for 230-volt, 50- to 60-Hz operation. To strap for 230-volt operation, refer to schematic diagrams, figure 7-1 or 7-2 and perform the following steps.

- a. Open console top, and set power supply OFF/ON switch to OFF.
- b. Remove the power cord from the console.
- c. Turn power supply chassis A4 over and note the location of the barrier strip terminations connecting the input power connector to power transformer T1.
- d. Remove the following 115-volt ac strap connections:
  1. Connection between the brown transformer lead and the orange transformer lead.
  2. Connection between the red transformer lead and the yellow transformer lead.
- e. Connect a strap between the orange transformer lead and the red transformer lead.
- f. Replace the power supply chassis.
- g. Replace the 2-ampere ac line fuse with a 1-ampere fuse.

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- h. If a 110-volt type plug is used on the power source end of the power cord, it should be changed to a 230-volt type ac plug.
- i. Install the power cord. The console is now ready for 230-volt ac, 50- to 60-Hz operation.
- j. Switch power supply OFF/ON switch to ON.
- k. Close the console.

### 3.1 GENERAL

This section contains a list of operating controls and indicators and operating instructions for both the IC-10A and IC-6A Consoles. Since both consoles are similar, only IC-10A Console operation will be covered with differences noted.

### 3.2 OPERATING CONTROLS AND INDICATORS

Table 3-1 describes the operation of all controls and indicators on the IC-10A Console. The locations of the controls and indicators are shown in figure 3-1.

### 3.3 TYPICAL OPERATING PROCEDURES

The following procedures are presented as examples only. The exact operating procedure depends on the operational needs of the user.

#### 3.3.1 Example 1, Phono Input

First assume the following conditions; then, proceed to operation.

##### 3.3.1.1 Conditions

- a. Left and right stereo inputs are connected to input A channel of MIXER 1.
- b. Stereo program line is final output.
- c. Audio output is monitored with stereo studio speakers.
- d. All MIXER AUDITION/PROGRAM switches are set to center position.
- e. MONITOR LEVEL control is fully ccw.
- f. MONITOR SELECT switch is set to OFF.
- g. MIXER attenuator controls are fully ccw, but not in detent (CUE) position.

##### 3.3.1.2 Operation

- a. Set MIXER 1 INPUT SELECT switch to input A. Set AUDITION/PROGRAM switch to PROGRAM.
- b. Set MONITOR SELECT switch to PROGRAM.
- c. Press remote start switch to start turntable (if connected).

Table 3-1. IC-10A and IC-6A Console Front-Panel Controls and Indicators.

DESIGNATION	NAME	FUNCTION
PHONES		
LEVEL	Headphone level control	Adjusts audio volume at console stereo headphone jacks. Audio volume at stereo headphone jacks on IC-6A controlled by MONITOR LEVEL control.
SELECT	Headphone select control	Connects console stereo headphone amplifier input to signal to be monitored [ PROGRAM, AUDITION, EXTERNAL, AIR, or MONITOR (output of MONITOR SELECT switch)]. MONITOR position not used on IC-6A.
MONITOR		
LEVEL	Monitor level control	Adjusts the output level of the monitor amplifiers.
SELECT	Monitor select	Connects console stereo monitor input to the signal to be monitored (PROGRAM, AUDITION, EXTERNAL, or AIR). AIR position not used on IC-6A.
Left Channel, Right Channel	Left channel and right channel vu meters	Indicates output level of the left and right program output lines. A 0-vu reading indicates a nominal +8 -dB mW signal output on sine-wave sources.
Monaural	Monaural vu meter	Indicates output level of the monaural line output. A 0-vu reading indicates a nominal +8-dB mW sine-wave signal output. The monaural output is a composite of the left and right program or audition line amplifier outputs.
REMOTE LINES (IC-10A)		
SELECT A	Remote select switch mixer 9A and mixer 10A	Selects one of six remote input lines. MIXER 9 or 10 attenuator adjusts the audio level of the selected line.

Table 3-1. IC-10A and IC-6A Console Front-Panel Controls and Indicators (Cont).

DESIGNATION	NAME	FUNCTION
SELECT B	Remote select switch mixer 9B and mixer 10B	Selects one of six remote input lines. MIXER 9 or 10 attenuator adjusts the audio level of the selected line.
REMOTE LINES (IC-6A)		
SELECT A	Remote select switch for mixer 6A	Selects one of six stereo remote input lines for the mixer 6A input.
	Monaural headphone jack	Headphone jack for monitoring the output of the monaural line output. This signal is a composite of the stereo program or audition line amplifier outputs. The headphone level is not adjustable.
	Stereo headphone jack	Headphone jack for monitoring the output of the headphone amplifiers. Input to these amplifiers is connected by the PHONE SELECT switch. The headphone level is adjusted with the PHONES LEVEL control. (Headphone jack on IC-6A connected to output of monitor amplifiers.)
	Pushbutton controls	Pushbuttons connected through the mixer INPUT SELECT switches used to start remote tape recorders, cart-ridge machines, turntables, etc.
MIXER AUDITION/PROGRAM	Mixer audition/program switches	Connects the output of the MIXER in use on the stereo program or audition buses. When in the center position, the mixer output is disconnected from the buses. Also used when in PROGRAM or AUDITION position if internal speaker mute relays are connected.
INPUT SELECT	Input select switches 1 through 10 (1 through 6 for IC-6A)	Connects either the A or B input audio to the mixer input.

Table 3-1. IC-10A and IC-6A Console Front-Panel Controls and Indicators (Cont).

DESIGNATION	NAME	FUNCTION
Mixer level	Cassette stereo input jacks  Mixer input attenuator	Cassette stereo input jacks may be internally wired to any of the mixer inputs on the IC-10A. (Wired to MIXER 6 INPUT SELECT B position on IC-6A console.  Adjusts stereo output levels of mixer channel. In maximum ccw position, applies both left and right channels to monaural cue bus.

- d. Advance MIXER 1 attenuator until audio peaks on vu meters indicate approximately 0 vu.
- e. Adjust MONITOR LEVEL control until the sound on the studio speakers is at a comfortable level.

### 3.3.2 Example 2, Microphone Input

Assume the following condition; then proceed to the operation.

#### 3.3.2.1 Conditions

- a. Left and right microphone inputs are connected to the input A channel of MIXER 2.
- b. Stereo program line is final output.
- c. Audio output is monitored with stereo headphones.
- d. All MIXER AUDITION/PROGRAM switches are set to center position.
- e. MONITOR LEVEL control is fully ccw.
- f. MONITOR SELECT switch is set to OFF.
- g. MIXER attenuator controls are fully ccw, but not in detent (CUE) position.

#### 3.3.2.2 Operation

- a. Set IC-10A PHONES SELECT switch to PROGRAM. (Note: IC-6A does not have PHONES SELECT switch.)
- b. Set MONITOR SELECT switch to PROGRAM.
- c. Set MIXER 2 INPUT SELECT to input A. Set AUDITION/PROGRAM switch to PROGRAM. Studio speakers should be muted.

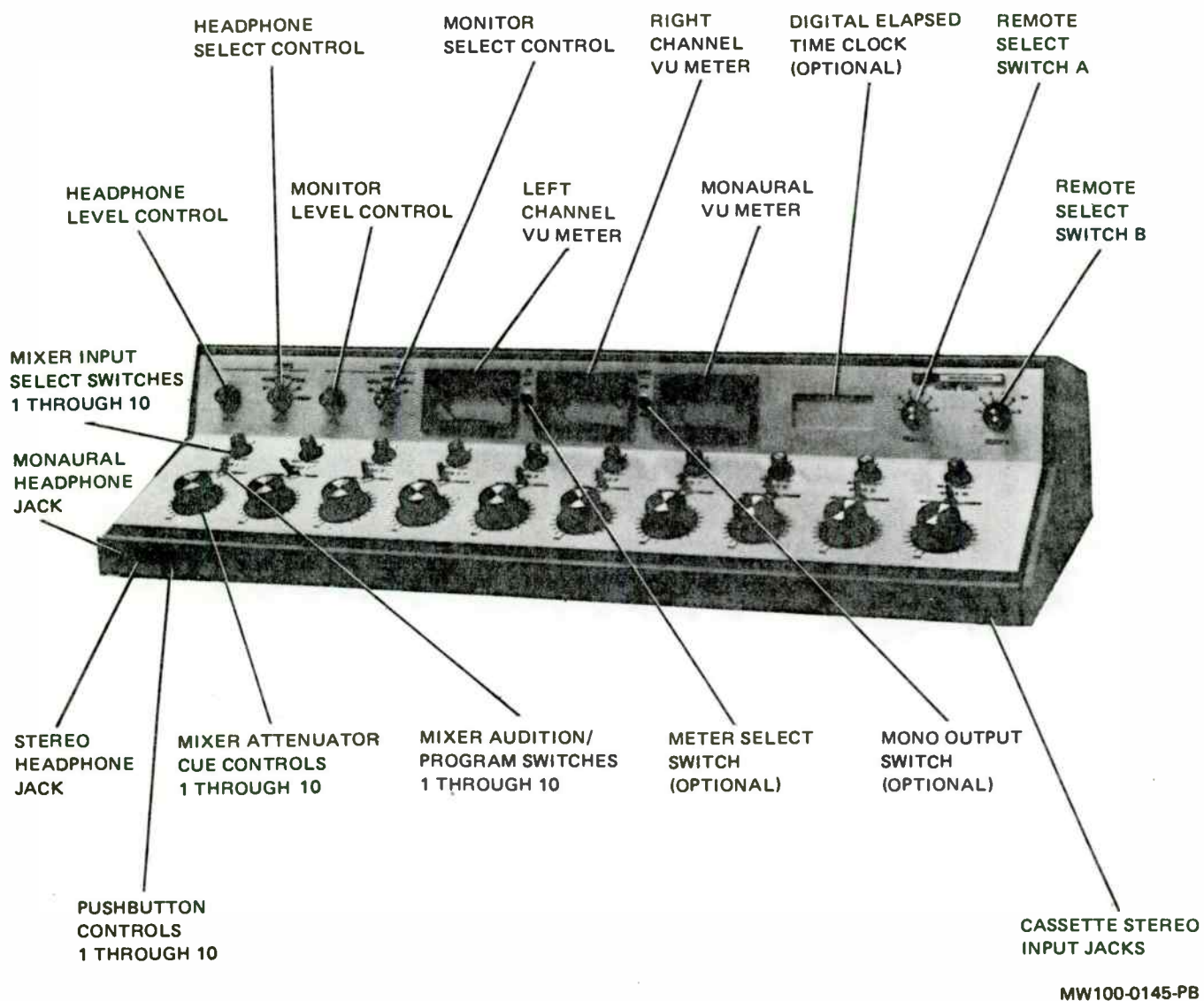


Figure 3-1. IC-10A Console, Controls and Indicators.

## operation

- d. Advance MIXER 2 attenuator until audio peaks on vu meters indicate approximately 0 vu.
- e. Adjust the IC-10A PHONES LEVEL control until the sound on stereo headphones is at a comfortable level. (On the IC-6A Console the headphone level is controlled by the MONITOR LEVEL control.)

### 3.3.3 Dual-Channel Operation

The IC-10A and IC-6A Consoles may be used in a dual stereo channel mode or a dual monaural mode by using the stereo audition channel as one channel and the stereo program channel as the second channel.

#### 3.3.3.1 Stereo Dual-Channel Operation

For stereo dual-channel operation, each stereo mixer channel is equipped with two input accessory modules and the stereo/monaural switch is set in the stereo (S) position. The left and right program channels and the left and right audition channels are each equipped with a mixer amplifier and line amplifier. Stereo mixers are switched to either the stereo audition channel (channel 1) or to the stereo program channel (channel 2). If a monaural channel output is required, the monaural channel is equipped with a line amplifier and its input strapped via J2 to the program channel outputs or the audition channel outputs. The vu meters monitor only the program (channel 2) channel outputs.

#### 3.3.3.2 Monaural Dual-Channel Operation

For monaural dual-channel operation, each mixer channel is equipped with one input accessory module installed in the right channel, and the stereo/monaural switch is set to the stereo (S) position. Inputs are connected to the right channel input terminals. The right program channel and the right audition channel are each equipped with a mixing amplifier and line amplifier. The left channel vu meter is disconnected from the left program channel line output and connected to the right audition channel line output. Inputs to each monaural mixer channel are switched by the INPUT SELECT switch and REMOTE LINES SELECT switches in the normal fashion. The output of each monaural mixer channel is switched to the audition channel (channel 1) or the program channel (channel 2) by the AUDITION/PROGRAM key switch. The audition channel (channel 1) line output appears on the left channel vu meter, and the program channel (channel 2) line output appears on the right channel vu meter. If an additional monaural line output is required, the monaural channel is equipped with a line amplifier and the monaural input is strapped to either the audition channel (channel 1) or the program channel (channel 2).

#### 3.3.3.3 Optional Program Audition Meter Keying System (PAK-1) and Program Audition Key Switch (PAK-1M) for Mono Output

The IC-6A and IC-10A can be provided with a PAK-1 and PAK-1M kit (Figure 3-2). In this configuration, the PAK-1 provides front-panel switching of the left and right channel vu meters to read either the output levels of the program channel or the audition channel.

The PAK-1M provides front-panel switching to the mono output from the program channel or the audition channel, thus eliminating the requirement to change jumpering on J2 of A2.



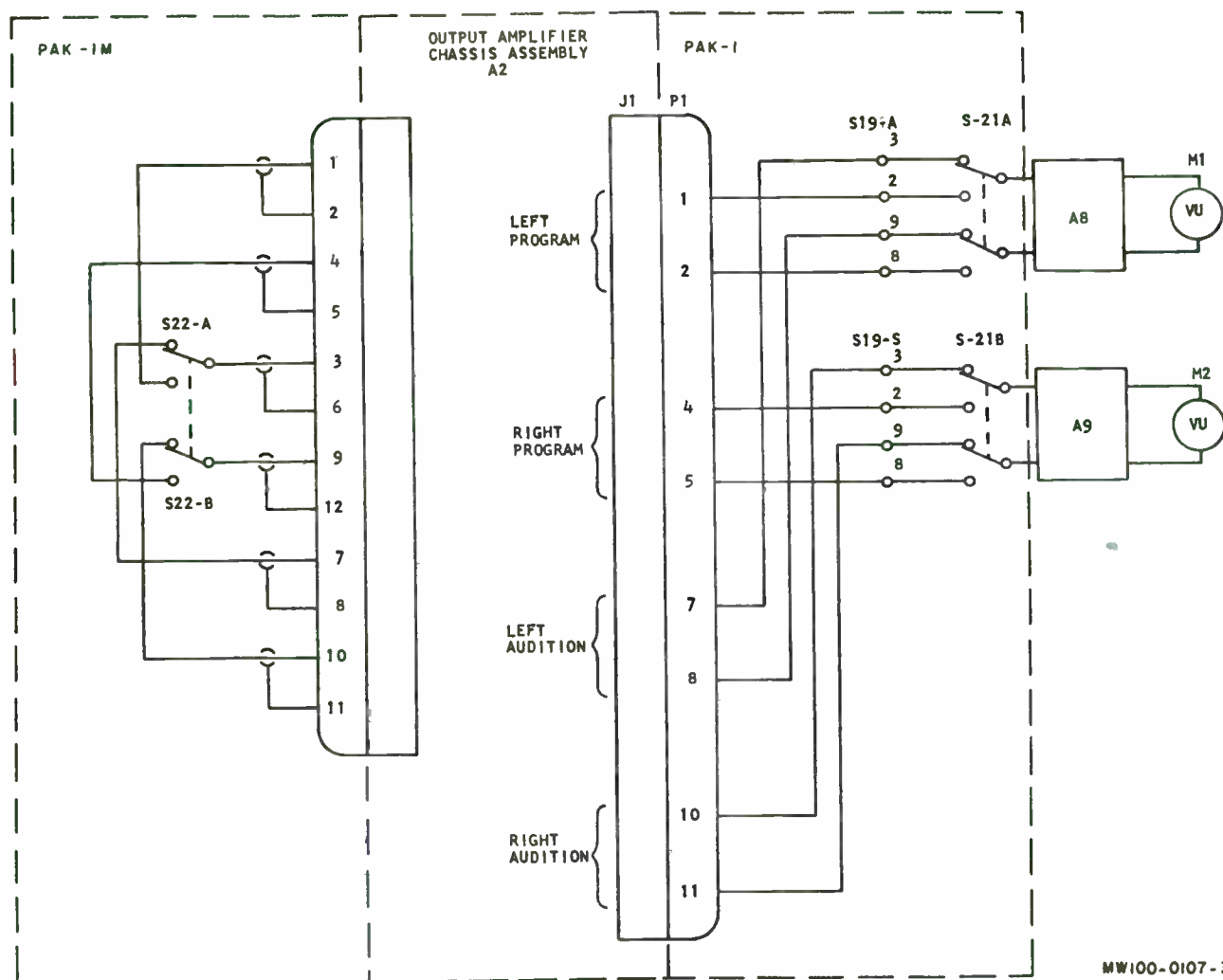


Figure 3-2. Optional Program Audition Meter Keying System (PAK-1) and Program Audition Key Switch (PAK-1M) Connections.

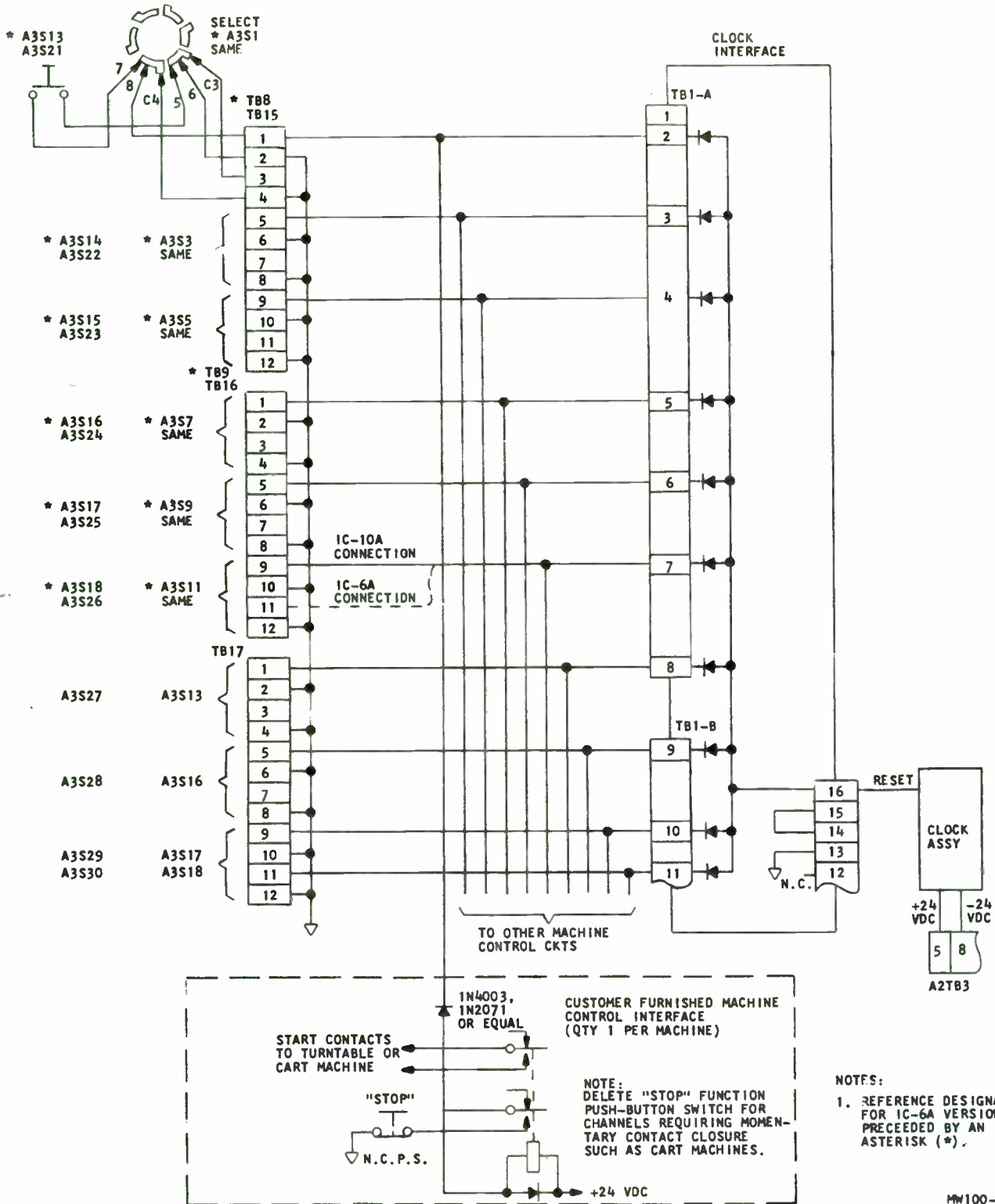
#### 3.3.3.4 Optional Digital Elapsed Time Clock

The optional Collins digital elapsed time clock may be used in conjunction with the machine control pushbuttons, located on the console housing, to automatically reset the timer as a machine is started. The reset function may be connected to operate reel-to-reel tape playbacks, cartridge tape, or turntables.

The control circuits of the equipment being controlled may be either momentary or maintained contact-closure circuits. An interfacing relay between the console pushbuttons and the equipment control circuits is necessary in most applications to isolate the clock and the control circuits from one another.

Refer to figure 3-3.

The elapsed-time section of the clock requires a momentary ground to reset the timer to zero. The count begins when the reset bus is allowed to rise from ground. An interface assembly is supplied with the clock system to allow proper interface of the timer reset function to the control pushbuttons on the console.



MW100-0159-3

Figure 3-3. IC-6A/IC-10A Console, Digital Elapsed Time Clock/Timer Interface Connections.

To start the associated equipment, all pushbuttons are returned to ground and diode coupled to the reset bus of the timer and to a relay. If the equipment being controlled is a turntable or other equipment requiring a maintained contact closure, the associated relay must be connected to lock through its own contacts. The stop button may be connected in series with the holding contacts and mounted on or near the equipment being controlled.

The stop button and associated holding contacts are not required for equipment requiring only momentary closures for the start function. All interfacing relays must be 12- or 24-volt dc relays, and must be connected to a power supply capable of handling the maximum load anticipated during operation.

#### 4.1 GENERAL

This section describes the principles of operation of the IC-10A Console. The IC-6A Console is similar in operation and will only be discussed if there are differences in operating principles. Refer to figure 4-1, a block diagram of the IC-10A Console, and figure 4-2, a block diagram of the IC-6A Console.

#### 4.2 INPUT CIRCUITS

The input circuits of the console include terminal board interconnect for inputs, a 2-position mixer input select switch, an input accessory module, a monaural/stereo switch, a balance control, a stereo MIXER level attenuator with CUE position, an AUDITION/PROGRAM key switch, and output connections to the stereo program buses, the audition program buses, and the monaural cue bus. There are two stereo input sources to mixer channels 1 through 8 (1 through 5 on the IC-6A). Mixer channel 9 and 10 have two 6-position REMOTE LINES SELECT switches that allow the six SELECT A remote lines to be switched to the A inputs of channel 9 or channel 10, and the six SELECT B inputs to be switched to the B inputs of channel 9 or channel 10. The input accessory module provides gain and/or matching for the input to the MIXER level attenuator inputs. All mixer positions are wired to accept two of the input accessory modules. The types of accessory modules available are shown in table 1-1. The outputs of the input accessory modules are switched for stereo or monaural operation by a stereo/monaural switch adjacent to the accessory sockets. In the stereo (S) position, the output line from each accessory socket is connected directly to one section of the stereo balance control. In the monaural position, the right channel output line from the accessory socket is disconnected and the left channel output line is connected to both the left and right channel inputs to the balance control. The balance control for each mixer is located adjacent to the stereo/monaural switch and the two accessory module sockets for the mixer channel. The balance control balances the gain of the left and right channels before the signals are applied to the stereo MIXER level attenuator. A detent CUE position is available in the maximum counterclockwise position of the MIXER level attenuator. Left and right channels are combined to form a monaural cue output. The outputs from the stereo MIXER level attenuator are switched to either the stereo program buses or the stereo audition buses by an AUDITION/PROGRAM key switch.

#### 4.3 LINE OUTPUT CIRCUITS

The line output circuits consist of mixer amplifiers, line level controls, line amplifiers, isolation transformers, and vu meters. The output circuits of both the program and audition circuits are identical except the audition circuits do not contain vu meters. The monaural line output channel does not require a mixing amplifier and contains a headphone jack connected to the output line. With the PROGRAM/AUDITION switch in the PROGRAM position, the left and right program buses are connected to the program mixing amplifiers where the audio levels are amplified and applied to a line level control on each channel located on the output amplifier chassis. The line level controls allow a constant output gain to be set for an average input level. The output of each level control is fed to a line amplifier for final amplification. The line amplifier output is connected to the monaural mixing network

## principles of operation

and the output isolation and impedance-matching transformers. Outputs from the output transformers are connected to the line outputs, to program channel vu meters, and to the MONITOR SELECT switch.

### 4.4 MONITOR CIRCUITS

The monitor circuits on the IC-10A allow the operator to select one of four circuits to be monitored on the studio or remotely located speakers. Three circuits may be monitored on the IC-6A. The monitor circuits consist of the MONITOR SELECT switch and LEVEL control, monitor amplifiers, and mute relays.

The audio to be monitored is selected by the MONITOR SELECT switch and is connected to the MONITOR LEVEL control and to one position of the PHONES SELECT switch for headphone audio monitoring. The stereo signals from the MONITOR LEVEL control are amplified by the 15-watt monitor amplifiers and connected through mute relays to the monitor speakers. These speakers are muted as necessary through use of the PROGRAM/AUDITION switches. Internal strapping determines which switch or switches mute the speakers.

### 4.5 HEADPHONE OUTPUT CIRCUITS

A PHONES SELECT switch, a stereo PHONES LEVEL control, and two headphone amplifiers on the IC-10A allow stereo headphone monitoring of the program channels, audition channels, off-the-air stereo, an external stereo source, or the output of the MONITOR SELECT switch. The outputs of the headphone amplifiers are connected to the stereo headphone jack. The IC-6A Console provides a stereo headphone monitoring of the stereo monitor amplifier outputs.

### 4.6 PUSHBUTTON CONTROLS

The pushbutton control on each mixer allows the operator to start or otherwise control equipment located externally to the console. This circuit consists of a momentary dc contact closure connected to terminal boards through the mixer INPUT SELECT and REMOTE LINES SELECT switches. For example, with the mixer INPUT SELECT switch in position A, the pushbutton contact closure is connected to a separate set of terminal board contacts than when the switch is in position B. There are also separate terminal board connections for each of the REMOTE LINES SELECT switch positions. Refer to tables 7-3 or 7-6 for terminal board connections, and to figures 7-1 and 7-2 for typical schematic diagrams.

### 4.7 POWER SUPPLY

The console power supply converts a 115-V ac or 230-V ac, 50- to 60-Hz input to multiple dc outputs. The dc outputs include plus and minus 24 volts for operation of the input accessory module amplifiers, the mixer amplifiers, the phono preamplifiers, and the line amplifiers. A +30-volt output is provided for operation of the cue amplifier and the headphone amplifiers. A +55-volt output is provided for operation of the two monitor amplifiers and a +28-volt output is provided for operating the mute relays and lamps. Individual fuses are provided in each dc output and in the ac input line. A line power switch is located on the A4 power supply chassis assembly.

All critical program circuits are powered by the plus and minus 24 volts. Rectifiers and regulators used for the plus and minus 24-volt supply are mounted in the PS-1A plug-in module which is located on the A4 socket of the A4 power supply chassis assembly.

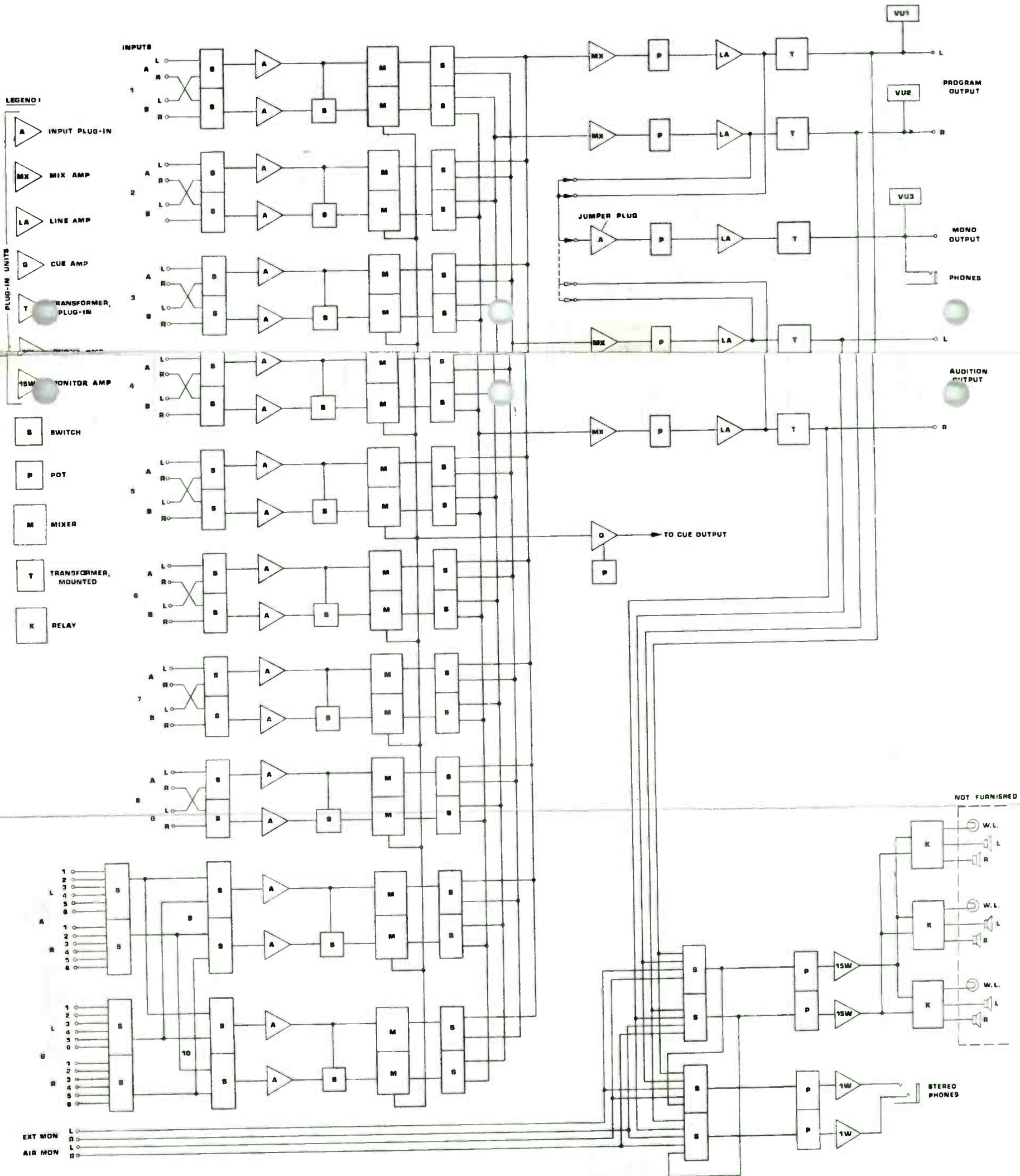


Figure 4-1. IC-10A Console, Block Diagram.

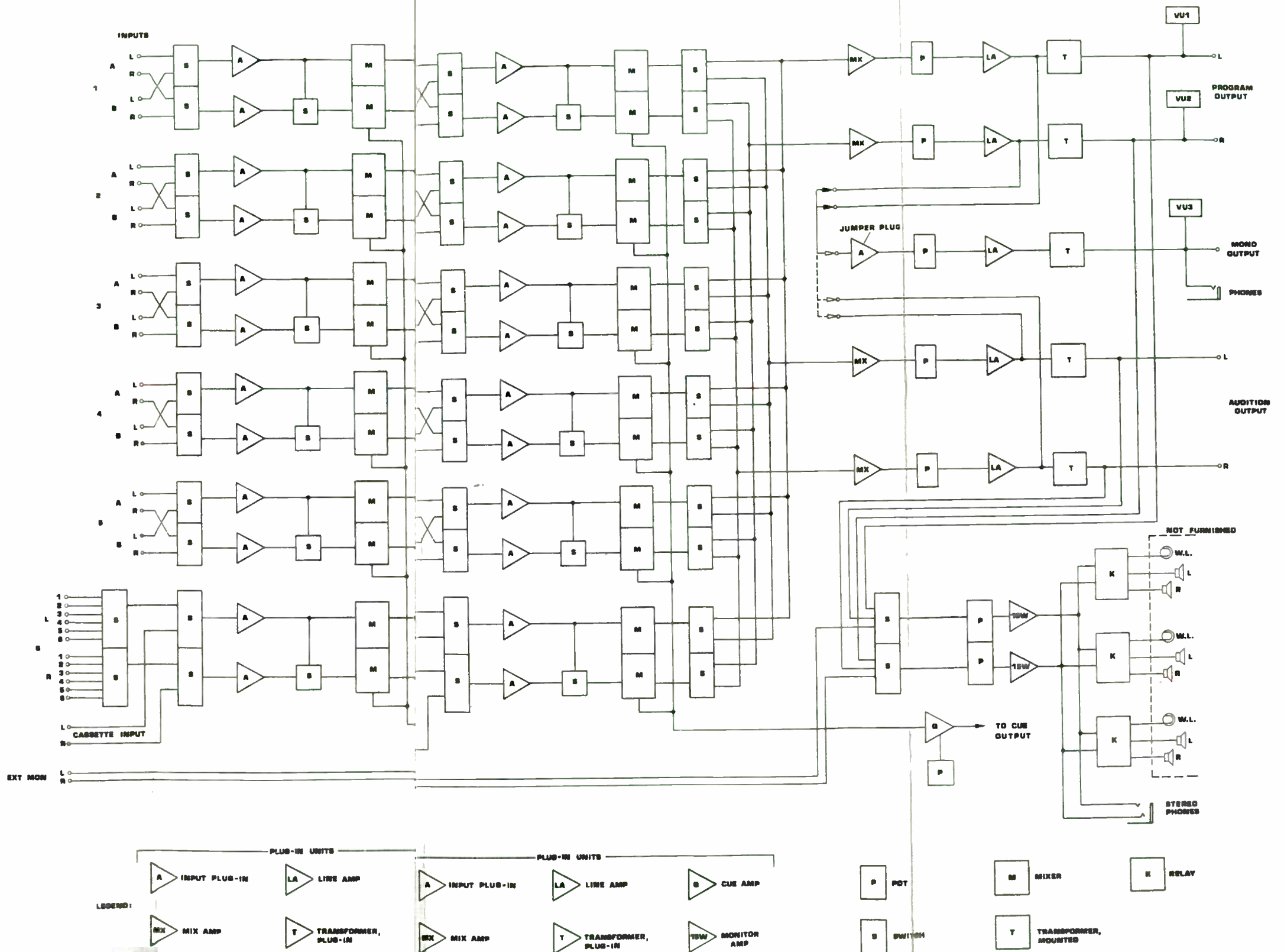


Figure 4-2. IC-6A Console, Block Diagram.

### 5.1 GENERAL

The following paragraphs contain maintenance information for the IC-10A and IC-6A Consoles.

### 5.2 SPARE PARTS

Spare parts may be ordered from the following address:

Collins Radio Group  
Rockwell International  
Broadcast Service Parts,  
1225 North Alma Rd.  
Richardson, Texas 75080

#### NOTE

It is recommended that the customer purchase additional plug-in accessory modules to be used as maintenance spares. If warranty repair of accessory modules is necessary, return modules to Collins Radio Group per instructions listed on the inside front cover of this manual.

### 5.3 PREVENTIVE MAINTENANCE

The following preventive maintenance procedures should be followed periodically.

- a. Clean the MIXER controls when noisy.
- b. Clean level switches only when absolutely necessary; contacts are easily bent or damaged. Use only an acceptable cleaning agent to prevent contact corrosion caused by a corrosive cleaning agent.
- c. Periodically check for loose or damaged terminals and frayed insulation.
- d. Check plug-in accessories and modules for secure seating in sockets and clean contacts if required.

### 5.4 TEST EQUIPMENT

Tables 5-1 and 5-2 list the suggested test equipment and load devices needed for trouble analysis and adjustments. Other test equipment with similar characteristics may be used if the items listed are not available.



Table 5-1. Test Equipment.

EQUIPMENT	MANUFACTURER AND MODEL
Volt-ohm-milliammeter	Triplett, 630-A
Oscillator	Hewlett-Packard, 206A
Oscilloscope	Hewlett-Packard, 130C
Ac voltmeter	Hewlett-Packard, 403B
Distortion analyzer	Hewlett-Packard, 334A

Table 5-2. Load Devices.

LOADS	DESCRIPTIONS	COLLINS PART NUMBER
619-ohm resistor (2)	$\pm 1\%$ , 1/2-watt, fixed-film	705-7086-000
8.2-ohm resistor (2)	$\pm 5\%$ , 26-watt, wire-wound	747-1816-000

## 5.5 ADJUSTMENTS

The IC-10A and IC-6A Consoles are adjusted for correct operation under normal operating conditions before shipping. If user requirements or operating conditions differ from those used in the factory, or if part replacement is required, minor adjustments may be necessary. Input balance controls are located on the input plug-in accessory chassis behind the front panel. Output line level controls are located on the output amplifier chassis. The following paragraphs describe these adjustments and how to change them if necessary.

### 5.5.1 Input, Program, Audition, and Monaural Level Adjustments

The input, program line, and audition line levels are adjusted to obtain uniform gain and output between channels. The program output is first adjusted for +8 dB mW as seen at the program output terminals. The vu meters are then adjusted to 0 vu for the +8-dB mW sine-wave output. The input balance potentiometers are then adjusted to compensate for unbalanced input levels and slight gain variations between input left and right channels. Adjust the circuits according to the following procedures.

Input balance adjustments for each of the input channels are identical. If the signal source is from a tape player or turntable, a monaural test tape or record should be used. Identical types of plug-in modules should be placed in the left and right channels of the mixer to be adjusted. The following procedures use an oscillator as the signal source.

Detailed adjustments should be done according to the following procedures.

- a. Terminate the left and right program and audition channel line output terminals and the monaural line output terminals with 619-ohm resistors if the outputs are not otherwise terminated into a 600-ohm load.
- b. Connect an ac voltmeter across the left channel program line output termination of step a.
- c. Connect an oscillator to the input A left channel terminals of the mixer circuit to be balanced; in this case, mixer 1. Adjust the oscillator to 1 kHz and set the output level to -60 dB mW for a low-level microphone preamplifier input, -10 dB mW for high-level matching transformer input, or +8 dB mW (1.94 volts rms across input) for a high-level bridging transformer input.
- d. Set the mixer internal stereo/monaural S-1 switch to M (monaural).
- e. Set the MIXER level attenuator AT-1 of the mixer circuit at 1 o'clock (30° past mid-scale).
- f. Set the mixer INPUT SELECT switch of the mixer circuit to input A.
- g. Set the MIXER AUDITION/PROGRAM switch to PROGRAM. All other mixer AUDITION/PROGRAM switches should be in the center (off) position.
- h. Adjust the input balance control R1 (located on the input accessory chassis behind the front panel for the mixer channel being adjusted) to the center position.
- i. Adjust the left program channel line output level R1 control on the A2 amplifier output chassis assembly for +8 dB mW as indicated on the ac voltmeter connected in step b.
- j. Move the ac voltmeter to the right program channel line output termination made in step a.
- k. Adjust the right program channel line output level R2 control on the A2 amplifier output chassis assembly for +8 dB mW.
- l. Repeat steps i. through k. until both program line output levels are equal to the desired level.
- m. With the test equipments still connected, adjust the left and right channel vu meters for 0 vu at the desired output level using the potentiometer located on the meter terminal boards.
- n. Set the AUDITION/PROGRAM key switch to AUDITION. Do not readjust MIXER level control.
- o. Connect an ac voltmeter across the left audition line output.
- p. Adjust the left audition channel line output level R4 control on the A2 amplifier output chassis assembly for +8 dB mW as indicated on the ac voltmeter connected in step o.

NOTE

If +8 dB mW is not the desired audition line level, adjust the output for the desired level.

- q. Move the ac voltmeter to the right audition line output terminals.
- r. Adjust the right audition channel line output level R5 control on the A2 output amplifier chassis assembly for +8 dB mW as indicated on the ac voltmeter connected in step q.
- s. Move the ac voltmeter to the monaural line output terminals.
- t. Set the AUDITION/PROGRAM switch to the PROGRAM position if the monaural output is connected to the program channels, or to the AUDITION position if the monaural output is connected to the audition channels.
- u. Adjust the monaural line output level R3 control on the A2 output amplifier chassis assembly for +8-dB mW output as indicated on the ac voltmeter connected in step s.
- v. Adjust the monaural vu meter to indicate 0 vu at the desired output level using the potentiometer located on the meter terminal board.
- w. Connect the output of an oscillator to both the input A left channel terminals and the input A right channel terminals of the mixer. Adjust the oscillator to 1 kHz and set the output level to -60 dB mW for a low-level input channel with microphone preamplifiers, -10 dB mW for high-level matching transformer inputs, or +8 dB mW (1.94 volts rms across the input) for high-level matching transformer inputs. The oscillator output levels will be lower than indicated on the meter. The next adjustment is not sensitive to absolute level but requires left and right channel inputs to be identical.
- x. Set the internal stereo/monaural switch to S (stereo position).
- y. Set the mixer INPUT SELECT switch of the channel to be balanced to input A.
- z. Set the AUDITION/PROGRAM key switch to PROGRAM.
- aa. Adjust the MIXER level control to provide approximately a 0-vu reading on the left channel and right channel vu meters.
- ab. Adjust the mixer balance control until the outputs of the left and right channels are equal as indicated on the left channel and right channel vu meters.
- ac. Return the AUDITION/PROGRAM switch to the center (off) position and return all other mixer controls to normal.

NOTE

The above procedure balances the program line output channels, the audition line output channels, the monaural output channel, and the mixer channel used in the procedure. If the remaining mixer channels are to be balanced, proceed with the remaining steps, connecting the oscillator to the left and right inputs of the mixer channel to be balanced. Return all mixer channel controls to normal after balancing is completed. Do not readjust the line output level controls.

- ad. Repeat steps w. through ac. for each mixer channel to be balanced.
- ae. Remove test equipment and return all controls to normal.

### 5.5.2 Audition Line Output Level Adjustment

The adjustment of the audition line output level controls is described in paragraph 5.5.1 in conjunction with the program line output level adjustment. The adjustment procedure outlined in 5.5.1 ensures that the program line outputs and audition line outputs are adjusted for the same mixer output level. The following procedure may be used to adjust the audition channels without use of the program channels by omitting step g. Since the output of the MIXER level control is determined by approximate positioning of this control, the audition channel line outputs may be plus or minus 2 dB of the program channel line outputs for the same input levels if step g. is omitted.

**NOTE**

The mixer channel used in this procedure must have been balanced previously. This procedure includes only adjustments to the audition line output level controls.

- a. Terminate the left and right audition channel line output terminals with 619-ohm resistors if the outputs are not otherwise terminated into a 600-ohm load.
- b. Connect an ac voltmeter across the left channel audition line output termination of step a.
- c. Connect the output of an oscillator to the left channel of input A position of the mixer to be used for adjustment of the audition line output level controls. Adjust the oscillator to 1 kHz and set the output level to -60 dB mW for a low-level input channel with microphone preamplifiers, -10 dB mW for high-level matching transformer inputs, or +8 dB mW (1.94 volts rms across the input) for high-level bridging transformer inputs.
- d. Set the internal stereo/monaural switch to S (stereo).
- e. Set the MIXER level attenuator at 1 o'clock (30° past midscale).
- f. Set mixer INPUT SELECT switch to input A of the mixer channel being used.
- g. Set the MIXER AUDITION/PROGRAM key switch to the PROGRAM position. Make minor adjustments of the input level and MIXER level control to set a 0-vu reading on the program channel output vu meter.
- h. Set the MIXER AUDITION/PROGRAM switch of the mixer circuit to AUDITION.
- i. Adjust the left audition channel line output level control for +8 dB mW as indicated on the ac voltmeter connected in step b.

**NOTE**

If +8 dB mW is not the station audition level, adjust the output for the desired level.

## maintenance

- j. Move the oscillator output connection to the right channel input A position. Do not readjust oscillator output or MIXER level attenuator control.
- k. Move the ac voltmeter to the right audition line output termination made in step a.
- l. Adjust the right audition channel line output level control for +8 dB mW (or other desired output level).
- m. Remove test equipment and return switches to their normal position.

### 5.5.3 Monaural Line Output Level Adjustment

The monaural line output level adjustment is described in paragraph 5.5.1 in conjunction with the program line output level adjustments. The adjustment procedure outlined in 5.5.1 ensures that the program line outputs, audition line outputs, and monaural line outputs are adjusted for the same mixer output level. The following procedure may be used to adjust the monaural channel without use of the program channels or the audition channels by omitting step g. Since the output of the MIXER level control is determined by approximate positioning of this control, the monaural line output may be plus or minus 2 dB of the program or audition channel outputs for the same input level if step g. is omitted.

#### NOTE

The program or audition channel connected to the monaural channel must be balanced before this adjustment can be made. This adjustment includes only the adjustment of the monaural line output level control.

- a. Terminate the left and right program or audition channel line outputs and the monaural channel line output with 619-ohm resistors if the outputs are not otherwise terminated in a 600-ohm load.
- b. Connect the output of an oscillator to both the input A left channel terminals and the input A right channel terminals of the mixer. Adjust the oscillator to 1 kHz and set the output level to -60 dB mW for a low-level input channel with microphone preamplifiers, 0 dB mW for high-level matching transformer inputs, or +8 dB mW (1.94 volts rms across the input) for high-level bridging transformer inputs. The oscillator output will be double-terminated for the low-level and matching inputs so that absolute input levels will be lower than indicated on the meter. The next adjustment is not sensitive to absolute level but requires left and right channel inputs to be identical.
- c. Set the internal stereo/monaural switch to S (stereo position).
- d. Set the mixer INPUT SELECT switch of the channel to be balanced to input A.
- e. Set the AUDITION/PROGRAM switch to the PROGRAM position if the monaural output is connected to the program channels or to the AUDITION position if the monaural output is connected to the audition channels.
- f. Set the MIXER level attenuator at 1 o'clock (30° past midscale).
- g. Adjust the output of the oscillator to provide 0 vu on the left and right vu meters if the program channels are used as input to the monaural channel. If the audition channels are used as input to the monaural channel, connect an ac voltmeter across the terminated line output of the left audition channel and adjust the oscillator output to provide +8-dB mW line output (or other desired reference level).

- h. If step g. is omitted, adjust the oscillator output to provide the following input voltages across the input terminals:

Low-level 200-ohm input: 0.446 millivolt rms  
Low-level 50-ohm input: 0.223 millivolt rms  
High-level matching input: 0.772 volt rms  
High-level bridging input: 1.94 volts rms.

- i. Connect an ac voltmeter across the monaural line output terminals.
- j. Adjust the monaural line output level control for +8-dB mW output (or other desired level).
- k. Adjust the monaural vu meter to indicate 0 vu at the desired output level using the potentiometer located on the meter terminal board.

#### 5.5.4 Cue Level Adjustment

The cue level is best adjusted by connecting a live audio signal to a mixer channel input, placing the mixer in CUE (detent) position, and adjusting the cue level control for a comfortable listening level. Adjust the cue level as follows:

- a. Connect an audio input to a mixer input. Rotate the MIXER to the CUE position.
- b. Set the MONITOR SELECT switch to OFF.
- c. Adjust the cue level control, R9, on the A4 power supply chassis assembly for a comfortable listening level.
- d. Return controls to normal.

#### 5.6 TROUBLE ANALYSIS

Trouble analysis for the IC-10A and IC-6A Consoles consists of making input/output measurements of circuits that can be reached by connecting the test equipment to existing terminal board connections. When the faulty module is isolated, the malfunctioning module can be replaced. Refer to tables 7-1 through 7-6 for terminal board connections.

**NOTE**

Before troubleshooting, make sure a malfunction exists. Check the security of input and output connections, input levels, and switch and MIXER level control positions. A quick check of these items could eliminate the problem.

**CAUTION**

When replacing any module on the monitor amplifier/power supply chassis, always turn the power supply switch to OFF before the module is removed or installed. If the switch is not turned off, surge currents will blow the console fuses.

General trouble analysis procedures are as follows:

- a. Isolate the trouble to the left or right channel by observing the appropriate vu meter. If the trouble is in the left, right, or both channels, check power supply voltages.

maintenance

- Isolate the trouble to an input or output circuit by monitoring the signal on program and audition buses through the monitor channels.
- c. Isolate the trouble to a portion of the circuit, that is, preamplifier, attenuator, switch, etc, by testing the suspected circuit for improper operation.
- d. Repair or replace the defective item.

### 6.1 GENERAL

This section contains a list of all repairable/replaceable electrical, electronic, and critical mechanical parts for the IC-6A and IC-10A consoles.

### 6.2 SYMBOL

This column contains the electrical symbols of all parts that have been assigned to schematics or wiring diagrams, and/or index numbers for all parts for which symbols have not been assigned. When a symbol, within a series of symbols, has not been assigned a part number, the unassigned symbol will be reflected as "NOT USED" in the DESCRIPTION column.

### 6.3 DESCRIPTION

This column contains the identifying noun or item name followed by a brief description. The description for electrical/electronic parts includes the applicable ratings and tolerances. For consecutively listed identical parts within an assembly, "SAME AS - - -" is reflected in the description of subsequent listings, referencing to the first listing within the assembly.

### 6.4 MANUFACTURERS PART NUMBER

The part number for each item not manufactured by Collins Radio is reflected in the column.

### 6.5 MFR CODE

The manufacturers codes, in accordance with Federal Supply Codes for Manufacturers Handbook H4-1, are reflected in this column. Manufacturers not listed in Handbook H4-1 are assigned a 5-letter code. This column is left blank for items manufactured by Collins Radio.

### 6.6 COLLINS PART NUMBER

The Collins Radio Specification or drawing number, for each item in the parts list, is reflected in this column.



parts list

SYMBOL	DESCRIPTION	MFR PART NO.	MFR CODE	COLLINS PART NO.
IC-6A CONSOLE IC-10A CONSOLE				
A1	IC-6A INPUT CHASSIS SEE BREAKDOWN ON PAGE 6-3			
A1	IC-10A INPUT CHASSIS SEE BREAKDOWN ON PAGE 6-3			
A2	OUTPUT AMPLIFIER CHASSIS SEE BREAKDOWN ON PAGE 6-6			
A3	IC-6A FRONT PANEL SEE BREAKDOWN ON PAGE 6-10			
A3	IC-10A FRONT PANEL SEE BREAKDOWN ON PAGE 6-12			
A4	POWER SUPPLY CHASSIS ASSEMBLY SEE BREAKDOWN ON PAGE 6-14			
A5	IC-6A INPUT TERMINAL BOARD CHASSIS SEE BREAKDOWN ON PAGE 6-21			
A5	IC-10A INPUT TERMINAL BOARD CHASSIS SEE BREAKDOWN ON PAGE 6-22			
A6	IC-6A OUTPUT TERMINAL BOARD CHASSIS SEE BREAKDOWN ON PAGE 6-22			
A6	IC-10A OUTPUT TERMINAL BOARD CHASSIS SEE BREAKDOWN ON PAGE 6-22			
A7	IC-6A MIXER NETWORK SEE BREAKDOWN ON PAGE 6-23			
A7	IC-10A MIXER NETWORK SEE BREAKDOWN ON PAGE 6-23			
A8	LEFT CHANNEL VU BOARD ASSEMBLY SEE BREAKDOWN ON PAGE 6-23			
A9	RIGHT CHANNEL VU BOARD ASSEMBLY SEE A8 FOR BREAKDOWN			
A10	MONAURAL VU BOARD ASSEMBLY SEE A8 FOR BREAKDOWN			
REMOTE EQUIPMENT				
	PHONO PRE-AMPLIFIER SEE BREAKDOWN ON PAGE 6-23	PA-1A		124-3015-327
	PHONO PRE-AMPLIFIER MOUNTING ASSEMBLY SEE BREAKDOWN ON PAGE 6-25	PMA-1		124-0052-892

SYMBOL	DESCRIPTION	MFR PART NO.	MFR CODE	COLLINS PART NO.
IC-6A INPUT CHASSIS ASSEMBLY, A1				
A1 THROUGH A12	SELECT A1 THROUGH A12 FROM THE FOLLOWING:  MATCHING TRANSFORMER SEE BREAKDOWN ON PAGE 6-4 BRIDGING TRANSFORMER SEE BREAKDOWN ON PAGE 6-4 JUMPER PLUG SEE BREAKDOWN ON PAGE 6-4 MICROPHONE PRE-AMPLIFIER SEE BREAKDOWN ON PAGE 6-4	MT-1  BT-1  JP-1  MPA-1A		124-0052-894  124-0052-893  124-0052-863  124-3015-326
R1	DUAL POTENTIOMETER 1000 OHMS	70C4M032S102U	01121	
R2 THROUGH R6 R7	SAME AS R1  RESISTOR 1000 OHMS			
R8 THROUGH R18	SAME AS R7			
S1 S2 THROUGH S6	SWITCH  SAME AS S1	46206LR	82389	
XA1 XA2 THROUGH XA12	SOCKET, CONNECTOR  SAME AS XA1	77M1P9	03554	
IC-10A INPUT CHASSIS ASSEMBLY A1				
A1 THROUGH A20	SELECT A1 THROUGH A20 FROM THE FOLLOWING:  MATCHING TRANSFORMER SEE BREAKDOWN ON PAGE 6-4 BRIDGING TRANSFORMER SEE BREAKDOWN ON PAGE 6-4 JUMPER PLUG SEE BREAKDOWN ON PAGE 6-4 MICROPHONE PRE-AMPLIFIER	MT-1  BT-1  JP-1  MPA-1A		124-0052-894  124-0052-893  124-0052-863  124-3015-326

parts list

SYMBOL	DESCRIPTION	MFR PART NO.	MFR CODE	COLLINS PART NO.
R1	SEE BREAKDOWN ON PAGE 6-4 DUAL POTENTIOMETER 1000 OHMS	70C4M032S102U	01121	
R2 THROUGH R10 R11	SAME AS R1 RESISTOR 1000 OHMS			
R12 THROUGH R30	SAME AS R11			
S1 S2 THROUGH S10	SWITCH SAME AS S1	46206LR	82389	
XA1 XA2 THROUGH XA20	SOCKET CONNECTOR SAME AS XA1	77 M1P9	03554	
MATCHING TRANSFORMER		MT-1		124-0052-894
	TRANSFORMER MISCELLANEOUS PARTS HEADER 9 PINS SHIELDED CAN	027-0174 682 MU-4570-125ST	31740 91833 02875	
BRIDGING TRANSFORMER		BT-1		124-0052-893
T1	TRANSFORMER MISCELLANEOUS HEADER 9 PINS SHIELDED CAN	0270172 682 MU-4570-125ST	31740 91833 02875	
JUMPER PLUG		JP-1		124-0052-863
	PLUG 9 PINS CAP	86-CP9 3-10	03554 03554	
MICROPHONE PRE-AMPLIFIER		MPA-1A		124-3015-326
C1	CAPACITOR 5 MF, 50 VDCW			

SYMBOL	DESCRIPTION	MFR PART NO.	MFR CODE	COLLINS PART NO.
C2	CAPACITOR 680 PF			
C3	CAPACITOR 10 PF			
C4	SAME AS C3			
C5	CAPACITOR 0.01 UF, 25 VDCW			
C6	SAME AS C5			
C7	CAPACITOR 100 UF, 25 VDCW			
C8	SAME AS C7			
C9	SAME AS C7			
C10	CAPACITOR 100 PF			
Q1	TRANSISTOR	T1S97	18667	
Q2	TRANSISTOR			
Q3	TRANSISTOR	2N4062	18667	
Q4	SAME AS Q3			
Q5	TRANSISTOR	2N3704	18667	
Q6	SAME AS Q5			
Q7	TRANSISTOR	T1S92	18667	
Q8	TRANSISTOR	T1S93	18667	
R1	RESISTOR 1,500 OHMS			
R2	RESISTOR 100 KILOHMS			
R3	RESISTOR 8,200 OHMS			
R4	RESISTOR 39 KILOHMS			
R5	RESISTOR 120 OHMS			
R6	RESISTOR 2,000 OHMS			
R7	RESISTOR 22 KILOHMS			
R8	RESISTOR 91 OHMS			
R9	RESISTOR 82 KILOHMS			
R10	RESISTOR 5,600 OHMS			
R11	RESISTOR 18 KILOHMS			
R12	SAME AS R5			
R13	RESISTOR 360 OHMS			

parts list

SYMBOL	DESCRIPTION	MFR PART NO.	MFR CODE	COLLINS PART NO.
R14	RESISTOR 75 OHMS			
R15	RESISTOR 6.8 OHMS			
R16	RESISTOR 8.2 OHMS			
R17	SAME AS R16			
R18	SAME AS R15			
R19	RESISTOR 470 OHMS			
R20	SAME AS R19			
R21	SAME AS R11			
R22	NOT USED			
R23	RESISTOR 330 OHMS			
T1	TRANSFORMER	027-0169	31740	
	MISCELLANEOUS PARTS			
	HEADER	682	91833	
	9 PINS			
	SHIELDED CAN	HU-4570-3- 125ST	02875	
OUTPUT AMPLIFIER CHASSIS, A2				
A1	MIXING AMPLIFIER	MXA-1A		124-3015-328
	SEE BREAKDOWN ON PAGE 6-7			
A2	LINE AMPLIFIER	LA-1B		124-3015-329
	SEE BREAKDOWN ON PAGE 6-8			
A3	SAME AS A1			
A4	SAME AS A2			
A5	MONAURAL AUDIO PAD	MAP-1		124-3015-001
	SEE BREAKDOWN ON PAGE 6-9			
A6	SAME AS A2			
A7	SAME AS A1			
A8	SAME AS A2			
A9	SAME AS A1			
A10	SAME AS A2			
J1	CONNECTOR, ELECTRICAL	S3312AB	10651	
	12 CONTACTS			
J2	SAME AS J1			
P1	CONNECTOR	P3312CCT	10651	
	12 CONTACTS			
R1	POTENTIOMETER	70A4M032S103A	01121	
	10 KILOHMS			
R2 THROUGH R5	SAME AS R1			
T1	TRANSFORMER	027-0171	31740	

SYMBOL	DESCRIPTION	MFR PART NO.	MFR CODE	COLLINS PART NO.
T2 THROUGH T5	SAME AS T1			
TB1	TERMINAL BLOCK	7200-4	10651	
TB2	TERMINAL BLOCK	7200-15	10651	
TB3	TERMINAL BLOCK	7200-8	10651	
XA1	CONNECTOR SOCKETS	77M1P9	03554	
XA2 THROUGH XA10	SAME AS XA1			
MIXING AMPLIFIER, A2A1, A2A3, A2A7, A2A9		MXA-1A		124-3015-328
C1	NOT USED			
C2	CAPACITOR 680 PF			
C3	CAPACITOR 10 PF			
C4	SAME AS C3			
C5	CAPACITOR 0.01 UF, 50 VDCW			
C6	SAME AS C5			
C7	CAPACITOR 100 UF, 25 VDCW			
C8	SAME AS C7			
C9	SAME AS C7			
C10	CAPACITOR 100 PF			
CR1	DIODE	1N914		
CR2	SAME AS CR1			
Q1	TRANSISTOR	T1S97	18667	
Q2	SAME AS Q1			
Q3	TRANSISTOR	2N4062		
Q4	SAME AS Q3			
Q5	TRANSISTOR	2N3704		
Q6	SAME AS Q5			
Q7	TRANSISTOR	T1S92	18667	
Q8	TRANSISTOR	T1S93	18667	
R1	NOT USED			
R2	NOT USED			
R3	RESISTOR 8.2 OHMS			
R4	RESISTOR 39 KILOHMS			

parts list

SYMBOL	DESCRIPTION	MFR PART NO.	MFR CODE	COLLINS PART NO.
R5	RESISTOR 120 OHMS			
R6	RESISTOR 2,000 OHMS			
R7	RESISTOR 22 KILOHMS			
R8	RESISTOR 91 OHMS			
R9	RESISTOR 82 KILOHMS			
R10	RESISTOR 5,600 OHMS			
R11	RESISTOR 18 KILOHMS			
R12	SAME AS R5			
R13	RESISTOR 360 OHMS			
R14	RESISTOR 75 OHMS			
R15	RESISTOR 6.8 OHMS			
R16	SAME AS R3			
R17	SAME AS R3			
R18	SAME AS R15			
R19	RESISTOR 470 OHMS			
R20	SAME AS R19			
R21	SAME AS R7			
R22	NOT USED			
R23	RESISTOR 10 KILOHMS			
	MISCELLANEOUS PARTS			
	HEADER	682	91833	
	9 PINS			
	SHIELDED CAN	HU-4570-3- 125ST	02875	
LINE AMPLIFIER, A2A2, A2A4, A2A6, A2A8, A2A10		LA-1B		124-3015-329
C1	CAPACITOR 100 PF			
C2	CAPACITOR 5 UF, 50 VDCW			
C3	CAPACITOR 50 UF, 25 VDCW			
C4	CAPACITOR 22 PF			

SYMBOL	DESCRIPTION	MFR PART NO.	MFR CODE	COLLINS PART NO.
C5	CAPACITOR 10 PF			
C6	CAPACITOR 910 PF			
C7	CAPACITOR 250 UF, 50 VDCW			
C8	SAME AS C7			
Q1	TRANSISTOR	2N2222A		
Q2	TRANSISTOR	2N2907A		
Q3	TRANSISTOR	T1P29B		
Q4	TRANSISTOR	T1P30B		
R1	RESISTOR 68 KILOHM			
R2	RESISTOR 2,200 OHM			
R3	RESISTOR 3,300 OHM			
R4	RESISTOR 4,700 OHM			
R5	RESISTOR 150 OHM			
R6	SAME AS R4			
R7	SAME AS R3			
R8	RESISTOR 10 OHM			
R9	SAME AS R8			
R10	RESISTOR 470 KILOHM			
R11	SAME AS R1			
R12	RESISTOR 22 OHM			
U1	OPERATIONAL AMPLIFIER MISCELLANEOUS PARTS HEADER 9 PINS SHIELDED CAN	NE531V 682 HU-4570-3- 125ST	18324 91833 02875	
MONAURAL AUDIO PAD, A2A5		MAP-1		124-3015-001
R1	RESISTOR 10 KILOHMS			
R2	SAME AS R1			
R3	RESISTOR 330 OHMS			



parts list

SYMBOL	DESCRIPTION	MFR PART NO.	MFR CODE	COLLINS PART NO.
	MISCELLANEOUS PARTS HEADER 9 PINS SHIELDED CAN	682 HU-4570-3- 125ST	91833 02875	
IC-6A FRONT PANEL ASSEMBLY, A3				
AT1	ATTENUATOR	320Q2B3-600-	28057	
AT2		600		
THROUGH	SAME AS AT1			
AT6				
DS1	LAMP	1819	08806	
DS2				
THROUGH	SAME AS DS1			
DS6				
J1	JACK (HEADSET) MONO	N111	82389	
J2	JACK (HEADSET) STEREO	N112B	82389	
J3	JACK, CASSETTE	41	82389	
J4	SAME AS J3			
M1	METER, VU	561-200	LFECO	
M2	SAME AS M1			
M3	SAME AS M1			
P1	NOT USED			
P2	CONNECTOR	P3312CCT	10651	
	12 CONTACTS			
R1	RESISTOR			
	560 OHMS			
R2	RESISTOR			
	10 KILOHMS			
R3	SAME AS R1			
R4	SAME AS R2			
R5	SAME AS R1			
R6	SAME AS R2			
R7	SAME AS R1			
R8	SAME AS R2			
R9	SAME AS R1			
R10	SAME AS R2			
R11	SAME AS R1			
R12	SAME AS R2			
R13	SAME AS R1			
R14	SAME AS R2			
R15	SAME AS R1			
R16	SAME AS R2			
R17	SAME AS R1			
R18	SAME AS R2			

SYMBOL	DESCRIPTION	MFR PART NO.	MFR CODE	COLLINS PART NO.
R19	SAME AS R1			
R20	SAME AS R2			
R21	SAME AS R1			
R22	SAME AS R2			
R23	SAME AS R1			
R24	SAME AS R2			
R25	DUAL POTENTIOMETER 10 KILOHMS	70C4N100S103A	01121	
R26	SAME AS R1			
R27	SAME AS R1			
R28	SAME AS R1			
S1	SWITCH	399/433K	76854	
S2	SWITCH 24 CONTACTS	1E12763-1937	01548	
S3	SAME AS S1			
S4	SAME AS S2			
S5	SAME AS S1			
S6	SAME AS S2			
S7	SAME AS S1			
S8	SAME AS S2			
S9	SAME AS S1			
S10	SAME AS S2			
S11	SAME AS S1			
S12	SAME AS S2			
S13	SWITCH	4001	25435	
S14	SAME AS S13			
S15	SAME AS S13			
S16	SAME AS S13			
S17	SAME AS S13			
S18	SAME AS S13			
S19	SWITCH	399/429K	76854	
S20	SWITCH	399/431K	76854	
S21	SWITCH, METER SELECT (OPTIONAL)	1E10240-89	01548	
S22	SWITCH, MONO OUTPUT (OPTIONAL)	1E 3450-89	01548	
XDS1	LAMP SOCKET	7-20	LEECR	
XDS2 THROUGH XDS6	SAME AS XDS1			
	MISCELLANEOUS PARTS			
	KNOB	RB67-4SKMLD	86797	281-0628-050
	-QTY 6-			
	KNOB	RB67-1SKMLD	86797	281-0628-020
	-QTY 6-			

parts list

SYMBOL	DESCRIPTION	MFR PART NO.	MFR CODE	COLLINS PART NO.
IC-10A FRONT PANEL ASSEMBLY, A3				
AT1	ATTENUATOR	320Q283-600-	28057	
AT2		600		
THROUGH AT10	SAME AS AT1			
DS1	LAMP	1819	68806	
DS2				
THROUGH DS6	SAME AS DS1			
J1	JACK MONO HEADSET	N111	82389	
J2	JACK STEREO HEADSET	N112B	82389	
J3	JACK CASSETTE	41	82389	
J4	SAME AS J3			
M1	METER, VU	561-0266-0050	LFECO	
M2	SAME AS M1			
M3	SAME AS M1			
P1	NOT USED			
P2	CONNECTOR 12 CONTACTS	P3312CCT	10651	
R1	RESISTOR 560 OHMS			
R2	RESISTOR 10 KILOHMS	70C4N100S103A	01121	
R3	SAME AS R1			
R4	SAME AS R2			
R5	SAME AS R1			
R6	SAME AS R2			
R7	SAME AS R1			
R8	SAME AS R2			
R9	SAME AS R1			
R10	SAME AS R2			
R11	SAME AS R1			
R12	SAME AS R2			
R13	SAME AS R1			
R14	SAME AS R2			
R15	SAME AS R1			
R16	SAME AS R2			
R17	SAME AS R1			
R18	SAME AS R2			
R19	SAME AS R1			

SYMBOL	DESCRIPTION	MFR PART NO.	MFR CODE	COLLINS PART NO.
R20	SAME AS R2			
R21	SAME AS R1			
R22	SAME AS R2			
R23	SAME AS R1			
R24	SAME AS R2			
R25	SAME AS R1			
R26	SAME AS R2			
R27	SAME AS R1			
R28	SAME AS R2			
R29	SAME AS R1			
R30	SAME AS R2			
R31	SAME AS R1			
R32	SAME AS R2			
R33	SAME AS R1			
R34	SAME AS R2			
R35	SAME AS R1			
R36	SAME AS R2			
R37	SAME AS R1			
R38	SAME AS R2			
R39	SAME AS R1			
R40	SAME AS R2			
R41	DUAL POTENTIOMETER			
R42	SAME AS R41			
R43	SAME AS R1			
R44	SAME AS R1			
R45	SAME AS R1			
R46	SAME AS R1			
S1	SWITCH	399433K	76854	
S2	SWITCH 24 CONTACTS	1E12763-1937	01548	
S3	SAME AS S1			
S4	SAME AS S2			
S5	SAME AS S1			
S6	SAME AS S2			
S7	SAME AS S1			
S8	SAME AS S2			
S9	SAME AS S1			
S10	SAME AS S2			
S11	SAME AS S1			
S12	SAME AS S2			
S13	SAME AS S1			
S14	SAME AS S2			
S15	SAME AS S1			
S16	SAME AS S2			
S17	SAME AS S1			

parts list

SYMBOL	DESCRIPTION	MFR PART NO.	MFR CODE	COLLINS PART NO.
S18	SAME AS S2			
S19	SAME AS S1			
S20	SAME AS S2			
S21	SWITCH	4001	25435	
S22				
THROUGH S30	SAME AS S21			
S31	SWITCH	3991/429K	76854	
S32	SAME AS S31			
S33	SWITCH	3991/431K	76854	
S34	SAME AS S33			
S35	SWITCH METER SELECT (OPTIONAL)	1E10240-89	01548	
S36	SWITCH MONO OUTPUT (OPTIONAL)	LE3450-89	01548	
XDS1	LAMP SOCKET	7-20	LEECR	
XDS2				
THROUGH XDS6	SAME AS XDS1			
	MISCELLANEOUS PARTS			
	KNOB			
	-QTY 10- <i>CA</i>	RB67-4SKMLD	86797	281-0628-056
	KNOB			
	-QTY 16- <i>Sml</i>	RB67-1SKMLD	86797	281-0628-020
		<i>281-0628050</i>		
		<i>281-0628-020</i>		
POWER SUPPLY CHASSIS ASSEMBLY, A4				
A1	MONITOR AMPLIFIER SEE BREAKDOWN ON PAGE 6-17	MA-1A		124-3015-330
A2	SAME AS A1			
A3	NOT USED			
A4	POWER SUPPLY SEE BREAKDOWN ON PAGE 6-18	PS-1A		124-3015-331
A5	CUE AMPLIFIER SEE BREAKDOWN ON PAGE 6-19	CA-1		124-0052-861
A6	HEADPHONE AMPLIFIER - USED ON IC-10A ONLY - SEE BREAKDOWN ON PAGE 6-20	HA-1		124-0052-860
A7	SAME AS A6			
C1	CAPACITOR 1,100 UF, 50 VDCW	39D118G050HP4	56289	

S.S.

SYMBOL	DESCRIPTION	MFR PART NO.	MFR CODE	COLLINS PART NO.
C2 THROUGH C5	SAME AS C1			
C6	CAPACITOR 1,000 UF, 75 VDCW	39D108G075JP4	56289	
C7	SAME AS C6			
C8	CAPACITOR 250 UF, 50 VDCW	TVA1312	56289	
C9	NOT USED			
C10	NOT USED			
C11	CAPACITOR 2,200 UF, 25 VDCW	39D228G025HP4	56289	
C12	SAME AS C11			
C13	CAPACITOR 1100 UF, 50 VDCW -USED ON IC-10A ONLY-	39D118G050HP4	56289	
C14	CAPACITOR 1100 UF, 50 BDCW -USED ON IC-10A ONLY-	39D118G050HP4	56289	
C15	CAPACITOR 10 PF			
C16	CAPACITOR 10 PF			
CR1	DIODE	1N5552		
CR2 THROUGH CR4	SAME AS CR1			
CR5 THROUGH CR10	NOT USED			
CR11	DIODE	1N4005		
CR12	SAME AS CR11			
CR13	SAME AS CR11			
F1	FUSE CARTRIDGE 2 AMPS, CURRENT RATING	AGC-2	71400	
F2	FUSE CARTRIDGE 1 AMP CURRENT RATING	AGC-1	71400	
F3	SAME AS F2			
F4	FUSE CARTRIDGE 2.5 AMPS CURRENT RATING	MDL2.5	71400	
F5	SAME AS F2			
F6	SAME AS F2 --NOTE FOR 230 VAC OPERATION, VALUE OF F1 IS SAME AS F2--			

parts list

SYMBOL	DESCRIPTION	MFR PART NO.	MFR CODE	COLLINS PART NO.
J1	CONNECTOR, ELECTRICAL 12 CONTACTS	S3312AB	10651	
J2	SAME AS J1			
J3	SAME AS J1			
K1	RELAY	MAT-4CR	SIEME	
K2	SAME AS K1			
K3	SAME AS K1			
L1	INDUCTOR 10 UH		LCIND	
L2	SAME AS L1			
P1	CONNECTOR 12 CONTACTS	P3312CCT	10651	
P2	SAME AS P1			
P3	SAME AS P1			
R1	RESISTOR 1 OHM, 5 WATT	4530	44655	
R2 THROUGH R4	SAME AS R1			
R5	RESISTOR 1 OHM, 5 WATT -USED ON IC-10A ONLY-	4530	44655	
R6	SAME AS R5			
R7	RESISTOR 4.7 OHMS -USED ON IC-10A ONLY-			
R8	SAME AS R7			
R9	POTENTIOMETER 10 KILOHMS	70A4M032S103A	01121	
S1	SWITCH, POWER	8280K16	27191	
TB1	TERMINAL BOARD	7200-4		
TB2	TERMINAL BOARD	7200-15		
T1	TRANSFORMER	020-0460	31740	
XA1	SOCKET, CONNECTOR 8 PINS	77MIP-8	03554	
XA2	SAME AS XA1			
XA3	NOT USED			
XA4	SOCKET, CONNECTOR 11 PINS	77MIP-11	03554	
XA5	SAME AS XA4			
XA6	SOCKET, CONNECTOR 8 PINS	77MIP-8	03554	
XA7	SAME AS XA6			
XF1	FUSEHOLDER	HTA	71400	
XF2 THROUGH XF6	SAME AS XF1			

SYMBOL	DESCRIPTION	MFR PART NO.	MFR CODE	COLLINS PART NO.
XK1 XK2 XK3 XP1	SOCKET, CONNECTOR SAME AS XK1 SAME AS XK1 CONNECTOR, POWER 3 PINS MISCELLANEOUS PARTS STRAP, BAR -QTY 4-	AD-28   4014	78277   91833	
MONITOR AMPLIFIER, A4A1, A4A2		MA-1A		124-3015-330
C1	CAPACITOR 5 UF, 50 VDCW			
C2	CAPACITOR 100 UF, 25 VDCW			
C3	SAME AS C2			
C4	SAME AS C1			
C5	CAPACITOR 470 PF			
C6	CAPACITOR 100 UF, 6 VDCW			
C7	CAPACITOR 1000 UF, 50 VDCW			
C8	CAPACITOR 0.02 UF			
Q1	TRANSISTOR	2N2222		
Q2	SAME AS Q1			
Q3	TRANSISTOR	2N3710		
Q4	TRANSISTOR	T1P29B		
Q5	TRANSISTOR	T1P30B		
Q6	TRANSISTOR	2N6471		
Q7	SAME AS Q6			
R1	RESISTOR 18 KILOHMS			
R2	RESISTOR 10 KILOHMS			
R3	RESISTOR 1000 OHMS			
R4	RESISTOR 3,300 OHMS			
R5	RESISTOR 27 KILOHMS			
R6	RESISTOR 3,900 OHMS			



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SYMBOL	DESCRIPTION	MFR PART NO.	MFR CODE	COLLINS PART NO.
R7	RESISTOR 4,700 OHM			
R8	NOT USED			
R9	RESISTOR 270 OHMS			
R10	RESISTOR 220 OHMS			
R11	SAME AS R3			
R12	RESISTOR 10 OHMS			
R13	SAME AS R9			
R14	SAME AS R3			
R15	RESISTOR 1 OHM, 5 WATT			
R16	SAME AS R15			
R17	RESISTOR 5,600 OHMS			
R18	RESISTOR 470 OHMS, 1 WATT			
T1	TRANSFORMER	027-0174	31740	
	MISCELLANEOUS PARTS			
	HEADER	681	91833	
	8 PINS			
	HEATSINK CHASSIS		LCIND	
	PERFORATED COVER		LCIND	
POWER SUPPLY, A4A4		PS-1A		124-3015-331
CR1	DIODE			
CR2	SAME AS CR1			
CR3	SAME AS CR1			
CR4	SAME AS CR1			
Q1	TRANSISTOR	2N4914		
Q2	TRANSISTOR	2N4902		
R1	RESISTOR 330 OHMS, 1 WATT			
R2	SAME AS R1			
VR1	DIODE, ZENER	1N2986B		
VR2	SAME AS VR1			
	MISCELLANEOUS PARTS			
	HEADER	683	91833	
	11 PINS			
	HEAT SINK CHASSIS		LCIND	
	SCREEN		LCIND	

SYMBOL	DESCRIPTION	MFR PART NO.	MFR CODE	COLLINS PART NO.
	CUE AMPLIFIER, A4A5	CA-1		124-0052-861
C1	CAPACITOR 25 UF, 25 VDCW			
C2	CAPACITOR 50 UF, 25 VDCW			
C3	NOT USED			
C4	SAME AS C1			
C5	CAPACITOR 20 UF, 50 VDCW			
C6	CAPACITOR 100 PF			
C7	CAPACITOR 330 UF, 25 VDCW			
C8	CAPACITOR 0.01 UF			
Q1	TRANSISTOR	2N3710		
Q2	TRANSISTOR	2N2222		
Q3	SAME AS Q1			
Q4	TRANSISTOR	T1P29B		
Q5	TRANSISTOR	T1P30B		
R1	RESISTOR 15 KILOHMS			
R2	RESISTOR 100 KILOHMS			
R3	RESISTOR 2,200 OHMS			
R4	RESISTOR 390 OHMS			
R5	RESISTOR 1000 OHMS			
R6	RESISTOR 270 OHMS			
R7	SAME AS R5			
R8	RESISTOR 560 OHMS			
R9	RESISTOR 820 OHMS			
R10	NOT USED			
R11	RESISTOR 1 OHM			
R12	SAME AS R11			
R13	RESISTOR 10 OHMS			

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SYMBOL	DESCRIPTION	MFR PART NO.	MFR CODE	COLLINS PART NO.
R14	RESISTOR 120 OHMS			
R15	SAME AS R5			
R16	RESISTOR 15 KILOHMS			
R17	RESISTOR 18 KILOHMS			
R18	SAME AS R5			
R19	SAME AS R5			
R20	SAME AS R6			
R21	RESISTOR 360 OHMS			
R22	RESISTOR 82 KILOHMS			
T1	TRANSFORMER	027-0175	31740	
U1	OPERATIONAL AMPLIFIER	741		
VR1	DIODE	1N4744A		
VR2	SAME AS VR1			
	MISCELLANEOUS PARTS			
	HEADER	683	91833	
	11 PINS			
	SHIELDED CAN	HU4570-3- 125ST	02875	
HEADPHONE AMPLIFIER, A4A6, A4A7		HA-1		124-0052-860
C1	CAPACITOR 25 UF, 25 VDCW			
C2	CAPACITOR 100 UF, 25 VDCW			
C3	NOT USED			
C4	SAME AS C1			
C5	CAPACITOR 100 PF			
C6	CAPACITOR 20 UF, 50 VDCW			
C7	CAPACITOR 330 UF, 50 VDCW			
Q1	TRANSISTOR	2N3710		
Q2	TRANSISTOR	2N2222		
Q3	SAME AS Q1			
Q4	TRANSISTOR	T1P29B		
Q5	TRANSISTOR	T1P30B		

SYMBOL	DESCRIPTION	MFR PART NO.	MFR CODE	COLLINS PART NO.
R1	RESISTOR 15 KILOHMS			
R2	RESISTOR 100 KILOHMS			
R3	RESISTOR 2,200 OHMS			
R4	RESISTOR 390 OHMS			
R5	RESISTOR 1000 OHMS			
R6	RESISTOR 270 OHMS			
R7	SAME AS R5			
R8	RESISTOR 560 OHMS			
R9	RESISTOR 820 OHMS			
R10	RESISTOR 10 OHMS			
R11	RESISTOR 1 OHM			
R12	SAME AS R11			
R13	RESISTOR 1,500 OHMS			
R14	RESISTOR 120 OHMS			
R15	RESISTOR 1,500 OHMS			
R16	RESISTOR 82 KILOHMS			
R17	RESISTOR 15 KILOHMS			
T1	TRANSFORMER	027-0174	31740	
	MISCELLANEOUS PARTS			
	HEADER	681	91833	
	8 PINS			
	SHIELDED CAN	HU-4570- 3-125ST	02875	
IC-6A INPUT TERMINAL BOARD CHASSIS, A5				
TB1	TERMINAL BOARD	7200-15	10651	

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SYMBOL	DESCRIPTION	MFR PART NO.	MFR CODE	COLLINS PART NO.
TB2 THROUGH TB7	SAME AS TB1			
IC-10A INPUT TERMINAL BOARD CHASSIS, A5				
TB1 TB2 THROUGH TB12	TERMINAL BOARD SAME AS TB1	7200-15	10651	
IC-6A OUTPUT TERMINAL BOARD CHASSIS, A6				
TB1 THROUGH TB7 TB8 TB9 THROUGH TB11	NOT USED TERMINAL BOARD SAME AS TB8	7200-15	10651	
IC-10A OUTPUT TERMINAL BOARD CHASSIS, A6				
TB1 THROUGH TB12 TB13 TB14 THROUGH TB19	NOT USED TERMINAL BOARD SAME AS TB13	7200-15	10651	

SYMBOL	DESCRIPTION	MFR PART NO.	MFR CODE	COLLINS PART NO.
IC-6A MIXER NETWORK, A7				
R1 R2 THROUGH R24	RESISTOR FIXED COMPOSITION 10 KILOHMS, 5% TOL, 1/4 WATT  SAME AS R1	RCR07A103JR		
IC-10A MIXER NETWORK, A7				
R1 R2 THROUGH R40	RESISTOR, FXD, COMPOSITION 10 KILOHMS, 5% TOL, 1/4 WATT  SAME AS R1			
LEFT CHANNEL VU BOARD ASSEMBLY, A8				
R1 R2 R3	POTENTIOMETER 5 KILOHMS RESISTOR 2,200 OHMS RESISTOR, FXD, COMPOSITION 3,600 OHMS	3007P1-1-502	80294	
PHONO PRE-AMPLIFIER		PA-1A		124-3015-327
C1 C2 C3 C4 C5 C6	CAPACITOR 5 UF, 50 VDCW CAPACITOR 100 PF CAPACITOR 0.1 UF SAME AS C3 CAPACITOR 0.01 UF CAPACITOR 0.0033 UF, 5% TOL			

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SYMBOL	DESCRIPTION	MFR PART NO.	MFR CODE	COLLINS PART NO.
C7	CAPACITOR 750 PF, 5% TOL			
C8	CAPACITOR 100 UF, 30 VDCW			
C9	SAME AS C8			
C10	CAPACITOR 100 UF, 10 VDCW			
C11	CAPACITOR 680 PF			
C12	SAME AS C8			
CR1	DIODE	1N914		
CR2	SAME AS CR1			
Q1	TRANSISTOR	T1S-92		
Q2	TRANSISTOR	T1S-93		
R1	RESISTOR 47 KILOHMS			
R2	RESISTOR 1 MEGOHM			
R3	RESISTOR 1,200 OHMS			
R4	POTENTIOMETER 5,000 OHMS	ET25P502	80031	
R5	SAME AS R2			
R6	RESISTOR 97.6 KILOHMS, 1% TOL			
R7	RESISTOR 33 OHMS			
R8	RESISTOR 1000 OHMS			
R9	RESISTOR 10 KILOHMS			
R10	NOT USED			
R11	RESISTOR 4,700 OHMS			
R12	RESISTOR 8.2 OHMS			
R13	SAME AS R12			
R14	RESISTOR 470 OHMS			
R15	SAME AS R14			
U1	OPERATIONAL AMPLIFIER	739 PC	27014	
	MISCELLANEOUS PARTS			
	HEADER 8 PINS	682	91833	
	SHIELDED CAN	HU-4570- 3-125ST	02875	

SYMBOL	DESCRIPTION	MFR PART NO.	MFR CODE	COLLINS PART NO.
	PHONO PRE-AMPLIFIER MOUNTING ASSEMBLY	PMA-1		124-0052-892
J1	JACK	3501FR	81389	
J2	JACK			
TB1	TERMINAL STRIP	7200-8	10651	
XA1	SOCKET 9 PINS	77M1P9	03554	
XA2	SAME AS XA1			
MANUFACTURERS CODES				
CODE	NAME AND ADDRESS			
LCIND	LC INDUSTRIES 1005 BUSINESS PARKWAY RICHARDSON, TX 75080			
LEECR	LEECRAFT MFG CO INC 21-16 44TH ROAD L1 NEW YORK, NY 11101			
LFECO	LFE CORP, PROCESS CONTROL DIV 1601 TRIAPELO ROAD WALTHAM, MA 02154			
SIEME	SIEMENS CORP. COMPONENTS GROUP SCOTTSDALE, ARK			
01121	ALLEN BRADLEY CO 1201 2ND ST MILWAUKEE, WI .53212			



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SYMBOL	DESCRIPTION	MFR PART NO.	MFR CODE	COLLINS PART NO.
01548	CAPITOL MACHINE AND SWITCH CO 87 NEWTOWN ROAD DANBURY, CT 06810			
02875	HUDSON TOOL AND DIE CO., INC. 18 MALVERN NEWARK, NJ 07105			
03554	AMPHENOL CANADA LTD, DIV OF THE BUNKER RAMCO CORP 44 METROPOLITAN RD SCARBOROUGH ONTARIO, CANADA			
07389	CLAIR CORP 10085 WINDSTREAM DR COLUMBIA, MD 21043			
07688	MILITARY STANDARDS			
08806	GENERAL ELECTRIC CO. MINIATURE LAMP DEPT. NELA PARK CLEVELAND, OH 44112			
10651	VERNITRON CORP 175 COMMUNITY DR GREAT NECK, NY 11021			
16428	BELDEN CORP P. O. BOX 341 RICHMOND, IN 47374			
18324	SIGNETICS CORP 811 E. ARQUES SUNNYVALE, CA 94086			
18667	TEXAS INSTRUMENTS, INC. SERVICES GROUP P. O. BOX 5621 13536 N. CENTRAL EXPRESSWAY DALLAS, TX 75222			
25435	GRAYHILL MOLDTRONICS, INC. 703 ROGERS ST DOWNERS GROVE, IL 60515			

SYMBOL	DESCRIPTION	MFR PART NO.	MFR CODE	COLLINS PART NO.
27014	NATIONAL SEMI-CONDUCTOR CORP 2950 SAN YSIDRO WAY SANTA CLARA, CA 95051			
27191	CUTLER-HAMMER INC 4201 N. 27TH ST MILWAUKEE, WI 53216			
28057	SHALL-CO INC HIGHWAY 301 SOUTH P O BOX 55 SMITHFIELD, NC 27577			
31740	LEIGHTNER ELECTRONICS INC P O BOX 314 PLANO, TX 75074			
44655	OHMITE MFG CO 3601 W HOWARD ST SKOKIE, IL 60076			
56289	SPRAGUE ELECTRIC CO NORTH ADAMS, MA 01247			
71400	BUSSMANN MFG, DIV OF MCFRAW-EDISON CO 2536 W UNIVERSITY ST ST LOUIS, MO 63017			
75382	KULKA ELECTRIC CORP 633-643 S FULTON AVE MT VERNON, NY 10550			
75915	LITTLEFUSE INC 800 E NORTHWEST HWY DES PLAINED, IL 60016			
76854	OAK MFG CO S MAIN ST CRYSTAL LAKE, IL 60014			
78277	SIGMA INSTRUMENTS, INC. 170 PEARL ST. SOUTH BRAINTREE, MA 02185			

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SYMBOL	DESCRIPTION	MFR PART NO.	MFR CODE	COLLINS PART NO.
80031	MEPCO, INC. COLUMBIA RD MORRISTOWN, NJ 07960			
80294	BOURNS INC 1200 COLUMBIA AVE RIVERSIDE, CA 92507			
81349	MILITARY STANDARDS			
82389	SWITCHCRAFT INC 5555 N ELSTON AVE CHICAGO, IL 60630			
86797	ROGAN BROS INC 8031 N MONTICELLO SKOKIE, IL 60076			
91833	KEYSTONE ELECTRONICS CORP 49 BLEECKER ST. NEW YORK, NY 10012			
99942	CENTRALAB SEMICONDUCTOR 4501 N. ARDEN DR EL MONTE, CA 91734			

This section contains input, output, and control terminal board connection tables and chassis and accessory module schematic diagrams for the IC-6A and IC-10A consoles.

The following is a list of input, output, and control terminal board connection tables contained in this section:

Table No.	Title
7-1	IC-10A Audio Input Connections
7-2	IC-10A Audio Output Connections
7-3	IC-10A Control Function Connections
7-4	IC-6A Audio Input Connections
7-5	IC-6A Audio Output Connections
7-6	IC-6A Control Function Connections

The following is a list of schematic diagrams contained in this section:

Figure No.	Title
7-1	IC-10A Console Chassis, Schematic Diagram
7-2	IC-6A Console Chassis, Schematic Diagram
7-3	Bridging Transformer BT-1, Schematic Diagram
7-4	Cue Amplifier CA-1, Schematic Diagram
7-5	Headphone Amplifier HA-1, Schematic Diagram
7-6	Jumper Plug JP-1, Schematic Diagram
7-7	Line Amplifier LA-18, Schematic Diagram
7-8	Monitor Amplifier MA-1A, Schematic Diagram
7-9	Microphone Preamplifier MPA-1A, Schematic Diagram
7-10	Matching Transformer MT-1, Schematic Diagram
7-11	Mixer Amplifier MXA-1A, Schematic Diagram
7-12	Phono Preamplifier PA-1A, Schematic Diagram
7-13	Phono Mounting Assembly PMA-1, Schematic Diagram
7-14	Power Supply PS-1A, Schematic Diagram

Table 7-1. IC-10A Audio Input Connections.

FUNCTION			ASSY NO.	INPUT TB( )	TERMINAL NO.			
CONTROL	SW POS	CHAN			±	C	S	
MIXER	1	A	L	A5	1	2	3	
	1	A	R	A5	1	2	3	
	1	B	L	A5	1	2	3	
	1	B	R	A5	1	2	3	
	2	A	L	A5	5	1	2	3
	2	A	R	A5	6	1	2	3
	2	B	L	A5	7	1	2	3
	2	B	R	A5	8	1	2	3
	3	A	L	A5	9	1	2	3
	3	A	R	A5	10	1	2	3
	3	B	L	A5	11	1	2	3
	3	B	R	A5	12	1	2	3
	4	A	L	A5	1	4	5	6
	4	A	R	A5	2	4	5	6
	4	B	L	A5	3	4	5	6
	4	B	R	A5	4	4	5	6
	5	A	L	A5	5	4	5	6
	5	A	R	A5	6	4	5	6
	5	B	L	A5	7	4	5	6
	5	B	R	A5	8	4	5	6
	6	A	L	A5	9	4	5	6
	6	A	R	A5	10	4	5	6
	6	B	L	A5	11	4	5	6
	6	B	R	A5	12	4	5	6
	7	A	L	A5	1	7	8	9
	7	A	R	A5	2	7	8	9
	7	B	L	A5	3	7	8	9
	7	B	R	A5	4	7	8	9
	8	A	L	A5	5	7	8	9
	8	A	R	A5	6	7	8	9
	8	B	L	A5	7	7	8	9
	8	B	R	A5	8	7	8	9
REMOTE A (MIXER 9A, MIXER 10A)	1	L	A5	1	10	11	12	
	1	R	A5	2	10	11	12	
	2	L	A5	3	10	11	12	
	2	R	A5	4	10	11	12	
	3	L	A5	5	10	11	12	
	3	R	A5	6	10	11	12	
	4	L	A5	7	10	11	12	
	4	R	A5	8	10	11	12	
	5	L	A5	9	10	11	12	
	5	R	A5	10	10	11	12	
	6	L	A5	11	10	11	12	
	6	R	A5	12	10	11	12	

Table 7-1. IC-10A Audio Input Connections (Cont).

FUNCTION			ASSY NO.	INPUT TB( )	TERMINAL NO.		
CONTROL	SW POS	CHAN			±	C	S
REMOTE B (MIXER 9B, MIXER 10B)	1	L	A5	1	13	14	15
	1	R	A5	2	13	14	15
	2	L	A5	3	13	14	15
	2	R	A5	4	13	14	15
	3	L	A5	5	13	14	15
	3	R	A5	6	13	14	15
	4	L	A5	7	13	14	15
	4	R	A5	8	13	14	15
	5	L	A5	9	13	14	15
	5	R	A5	10	13	14	15
	6	L	A5	11	13	14	15
	6	R	A5	12	13	14	15
MONITOR/PHONES SELECT	EXTER-	L	A5	9	7	8	9
	NAL	R	A5	10	7	8	9
	AIR	L	A5	11	7	8	9
		R	A5	12	7	8	9

Table 7-2. IC-10A Audio Output Connections.

OUTPUT	CHANNEL	ASSY NO.	OUTPUT TB( )	TERMINAL NO.		
				±	C	S
Program out	L	A2	2	1	2	3
	R	A2	2	4	5	6
	MONO	A2	2	7	8	9
Audition out	L	A2	2	10	11	12
	R	A2	2	13	14	15
Monitor K1	L	A4	2	1	2	-
	R	A4	2	3	4	-
K2	L	A4	2	5	6	-
	R	A4	2	7	8	-
K3	L	A4	2	9	10	-
	R	A4	2	11	12	-
Cue audio	-	A4	2	13	14	15

Table 7-3. IC-10A Control Function Connections.

CONTROL	ASSY NO.	CONTROL TB( )	SWITCH TERMINALS		TERMINAL
<b>Pushbutton</b>					
1A	A6	15	1	2	-
1B	A6	15	3	4	-
2A	A6	15	5	6	-
2B	A6	15	7	8	-
3A	A6	15	9	10	-
3B	A6	15	11	12	-
4A	A6	16	1	2	-
4B	A6	16	3	4	-
5A	A6	16	5	6	-
5B	A6	16	7	8	-
6A	A6	16	9	10	-
6B	A6	16	11	12	-
7A	A6	17	1	2	-
7B	A6	17	3	4	-
8A	A6	17	5	6	-
8B	A6	17	7	8	-
9	A6	17	9	10	-
10	A6	17	11	12	-
<b>Remote A Pushbutton</b>					
A1	A6	13	1	2	-
A2	A6	13	3	4	-
A3	A6	13	5	6	-
A4	A6	13	7	8	-
A5	A6	13	9	10	-
A6	A6	13	11	12	-
<b>Remote B Pushbutton</b>					
B1	A6	14	1	2	-
B2	A6	14	3	4	-
B3	A6	14	5	6	-
B4	A6	14	7	8	-
B5	A6	14	9	10	-
B6	A6	14	11	12	-
<b>Mute key Ground</b>					
1PGM	A6	18	-	-	1
1AUD	A6	18	-	-	2
2PGM	A6	18	-	-	3
2AUD	A6	18	-	-	4
3PGM	A6	18	-	-	5
3AUD	A6	18	-	-	6
4PGM	A6	18	-	-	7
4AUD	A6	18	-	-	8
5PGM	A6	19	-	-	1
5AUD	A6	19	-	-	2
6PGM	A6	19	-	-	3

Table 7-3. IC-10A Control Function Connections (Cont).

CONTROL	ASSY NO.	CONTROL TB( )	SWITCH TERMINALS		TERMINAL
Mute key Ground (cont)					
6AUD	A6	19	-	-	4
7PGM	A6	19	-	-	5
7AUD	A6	19	-	-	6
8PGM	A6	19	-	-	7
8AUD	A6	19	-	-	8
9PGM	A6	19	-	-	9
9AUD	A6	19	-	-	10
10PGM	A6	19	-	-	11
10AUD	A6	19	-	-	12
On-air warning light connections					
K1	A6	18	9	10	-
K2	A6	18	11	12	-
K3	A6	18	13	14	-
Mute relay to ground					
K1	A6	19	-	-	13
K2	A6	19	-	-	14
K3	A6	19	-	-	15

Table 7-4. IC-6A Audio Input Connections.

FUNCTION			ASSY NO.	INPUT TB( )	TERMINAL NO.		
CONTROL	SW POS	CHAN			±	C	S
MIXER 1	A	Left	A5	1	1	2	3
1	A	Right	A5	2	1	2	3
1	B	Left	A5	3	1	2	3
1	B	Right	A5	4	1	2	3
2	A	Left	A5	1	4	5	6
2	A	Right	A5	2	4	5	6
2	B	Left	A5	3	4	5	6
2	B	Right	A5	4	4	5	6
3	A	Left	A5	1	7	8	9
3	A	Right	A5	2	7	8	9
3	B	Left	A5	3	7	8	9
3	B	Right	A5	4	7	8	9
4	A	Left	A5	1	10	11	12
4	A	Right	A5	2	10	11	12
4	B	Left	A5	3	10	11	12
4	B	Right	A5	4	10	11	12



Table 7-4. IC-6A Audio Input Connections (Cont).

FUNCTION			ASSY NO.	INPUT TB( )	TERMINAL NO.		
CONTROL	SW POS	CHAN			±	C	S
MIXER 5 (cont) 5	A	Left	A5	1	13	14	15
	A	Right	A5	2	13	14	15
5	B	Left	A5	3	13	14	15
	B	Right	A5	4	13	14	15
REMOTE (MIXER 6A)	1	Left	A5	5	1	2	3
	1	Right	A5	5	4	5	6
	2	Left	A5	6	1	2	3
	2	Right	A5	6	4	5	6
	3	Left	A5	7	1	2	3
	3	Right	A5	7	4	5	6
	4	Left	A5	5	7	8	9
	4	Right	A5	5	10	11	12
	5	Left	A5	6	7	8	9
	5	Right	A5	6	10	11	12
	6	Left	A5	7	7	8	9
	6	Right	A5	7	10	11	12
MONITOR SELECT	EXTERNAL	Left	A5	5	13	14	15
		Right	A5	6	13	14	15

Table 7-5. IC-6A Audio Output Connections.

OUTPUT	CHANNEL	ASSY NO.	OUTPUT TB( )	TERMINAL NO.		
				±	C	S
Program out	Left	A2	2	1	2	3
	Right	A2	2	4	5	6
	Mono	A2	2	7	8	9
Audition out	Left	A2	2	10	11	12
	Right	A2	2	13	14	15
Monitor K1	Left	A4	2	1	2	-
	Right	A4	2	3	4	-
K2	Left	A4	2	5	6	-
	Right	A4	2	7	8	-
K3	Left	A4	2	9	10	-
	Right	A4	2	11	12	-
Cue audio	Mono	A4	2	13	14	15

Table 7-6. IC-6A Control Function Connections.

CONTROL		ASSY NO.	CONTROL TB( )	SWITCH TERMINALS		TERMINAL
<b>Pushbutton</b>						
	1A	A6	8	1	2	-
	1B	A6	8	3	4	-
	2A	A6	8	5	6	-
	2B	A6	8	7	8	-
	3A	A6	8	9	10	-
	3B	A6	8	11	12	-
	4A	A6	9	1	2	-
	4B	A6	9	3	4	-
	5A	A6	9	5	6	-
	5B	A6	9	7	8	-
	6A	A6	9	9	10	-
	6B	A6	9	11	12	-
<b>Remote lines pushbutton</b>						
	1	A6	10	1	2	-
	2	A6	10	3	4	-
	3	A6	10	5	6	-
	4	A6	10	7	8	-
	5	A6	10	9	10	-
	6	A6	10	11	12	-
<b>Mute key ground</b>						
	1PGM	A6	11	-	-	1
	1AUD	A6	11	-	-	2
	2PGM	A6	11	-	-	3
	2AUD	A6	11	-	-	4
	3PGM	A6	11	-	-	5
	3AUD	A6	11	-	-	6
	4PGM	A6	11	-	-	7
	4AUD	A6	11	-	-	8
	5PGM	A6	11	-	-	9
	5AUD	A6	11	-	-	10
	6PGM	A6	11	-	-	11
	6AUD	A6	11	-	-	12
<b>On-air warning light connections</b>						
	K1	A6	8	13	14	-
	K2	A6	9	13	14	-
	K3	A6	10	13	14	-
<b>Mute relay to ground</b>						
	K1	A6	11	-	-	13
	K2	A6	11	-	-	14
	K3	A6	11	-	-	15

S.I.

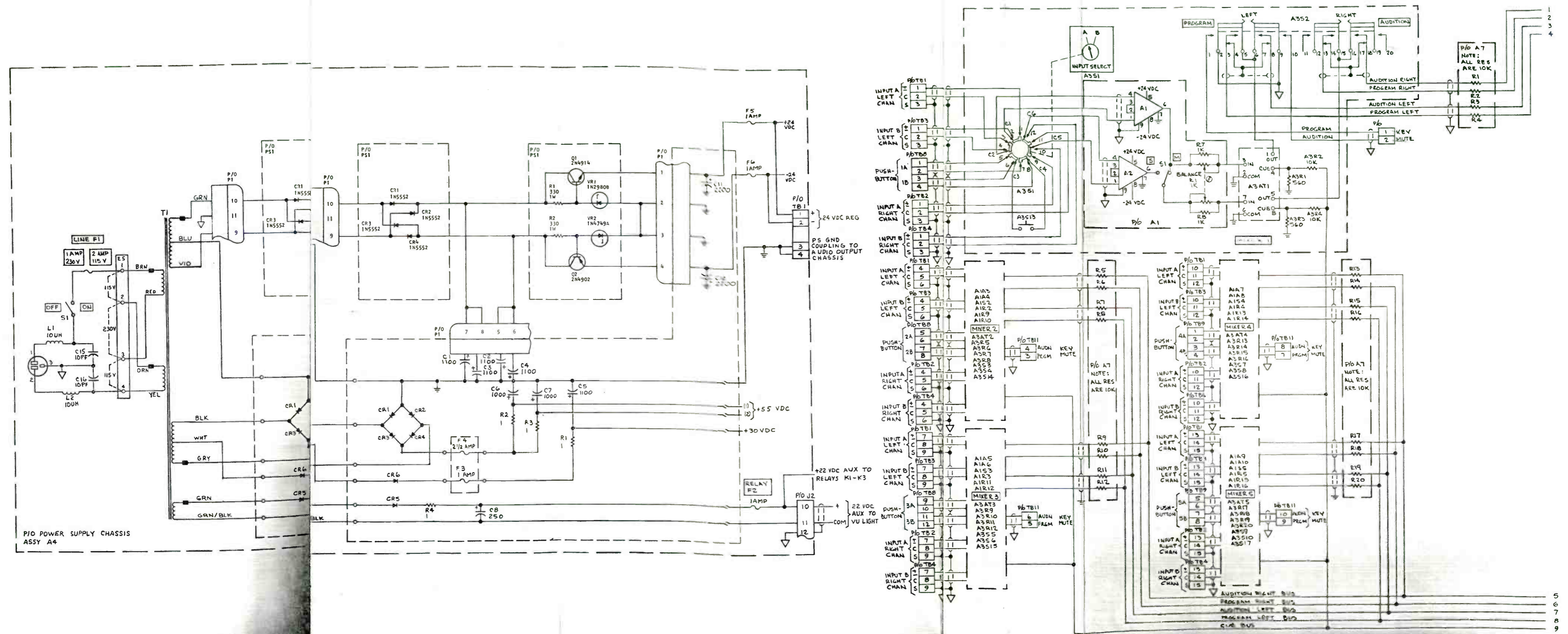


Figure 7-2. IC-6A Console Chassis, Schematic Diagram (Sheet 1 of 3).

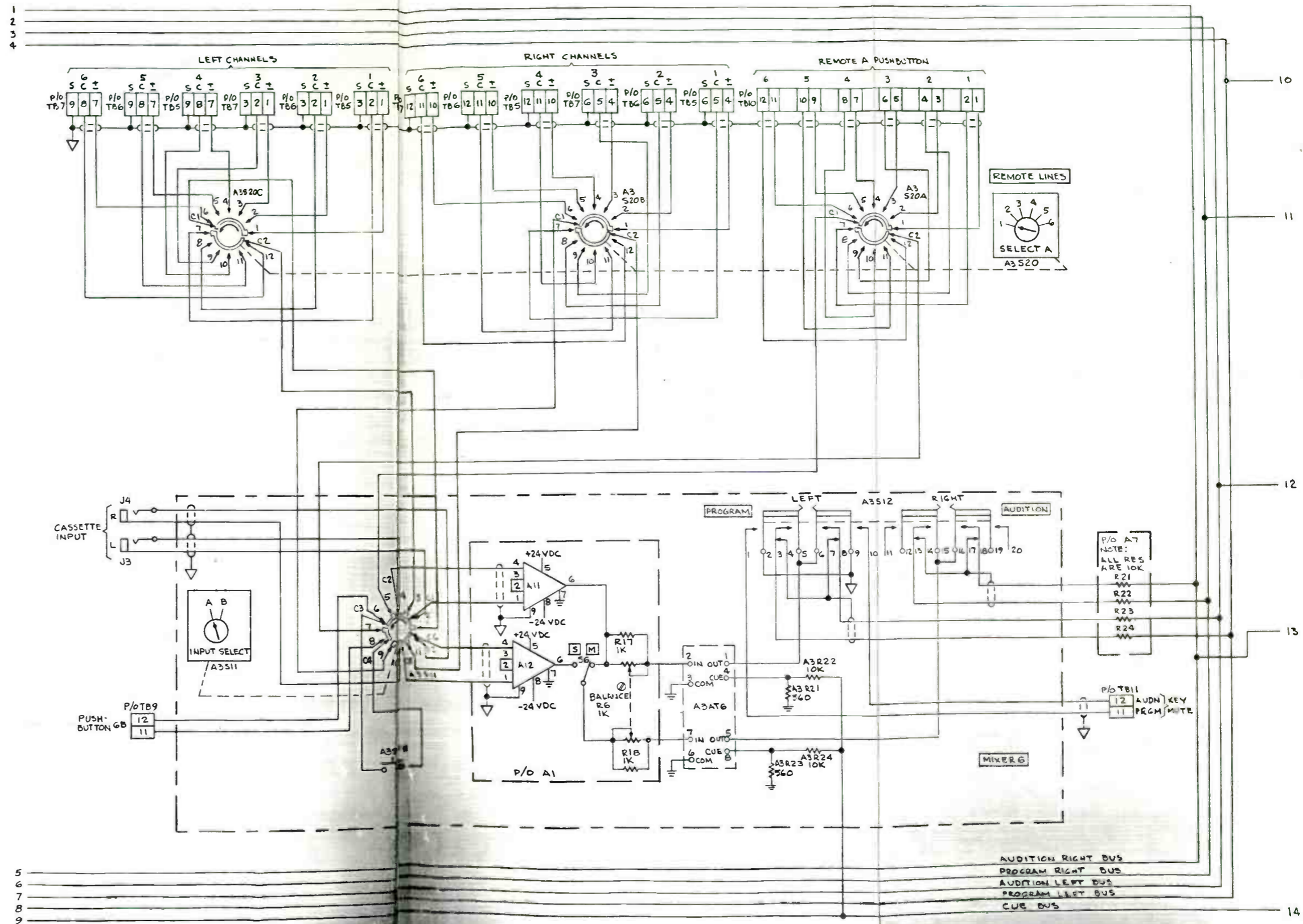


Figure 7-2. IC-6A Console Chassis, Schematic Diagram (Sheet 2 of 3).

S-5

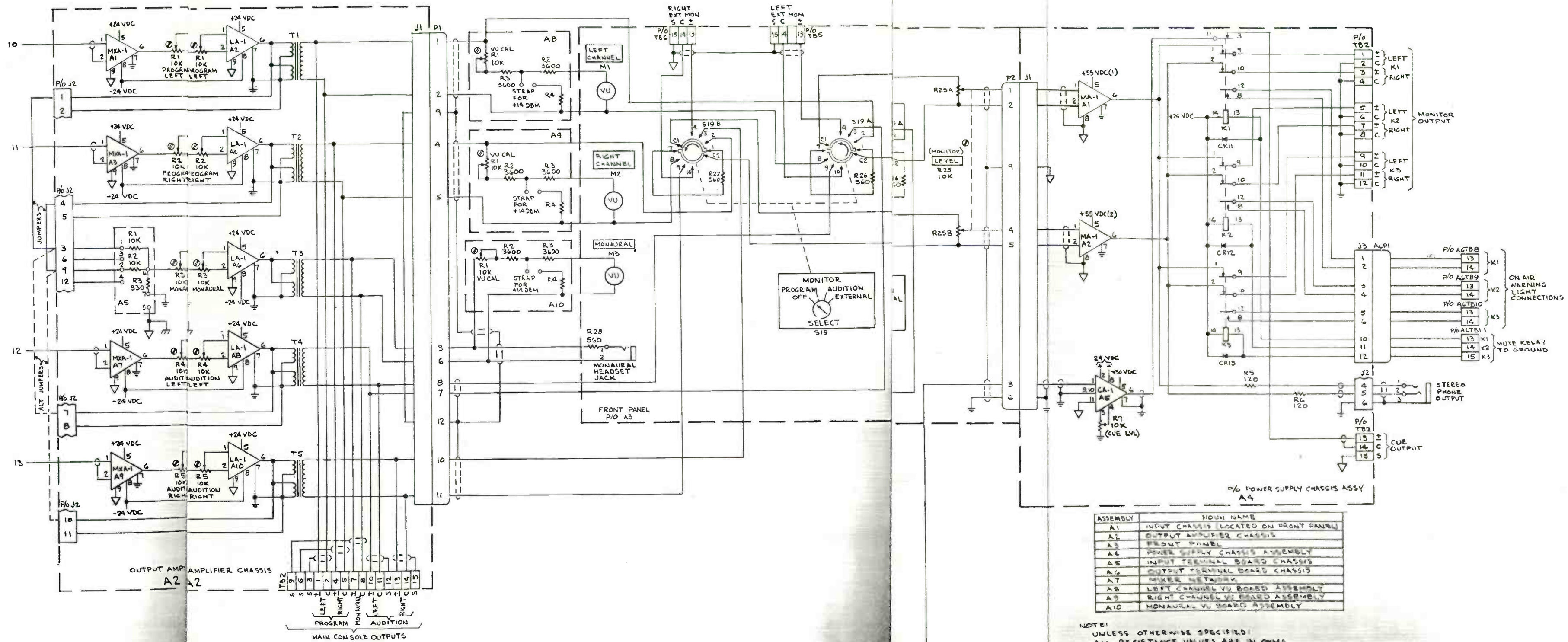


Figure 7-2. IC-6A Console Chassis, Schematic Diagram (Sheet 3 of 3).

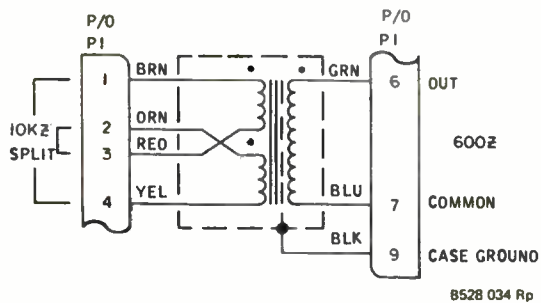
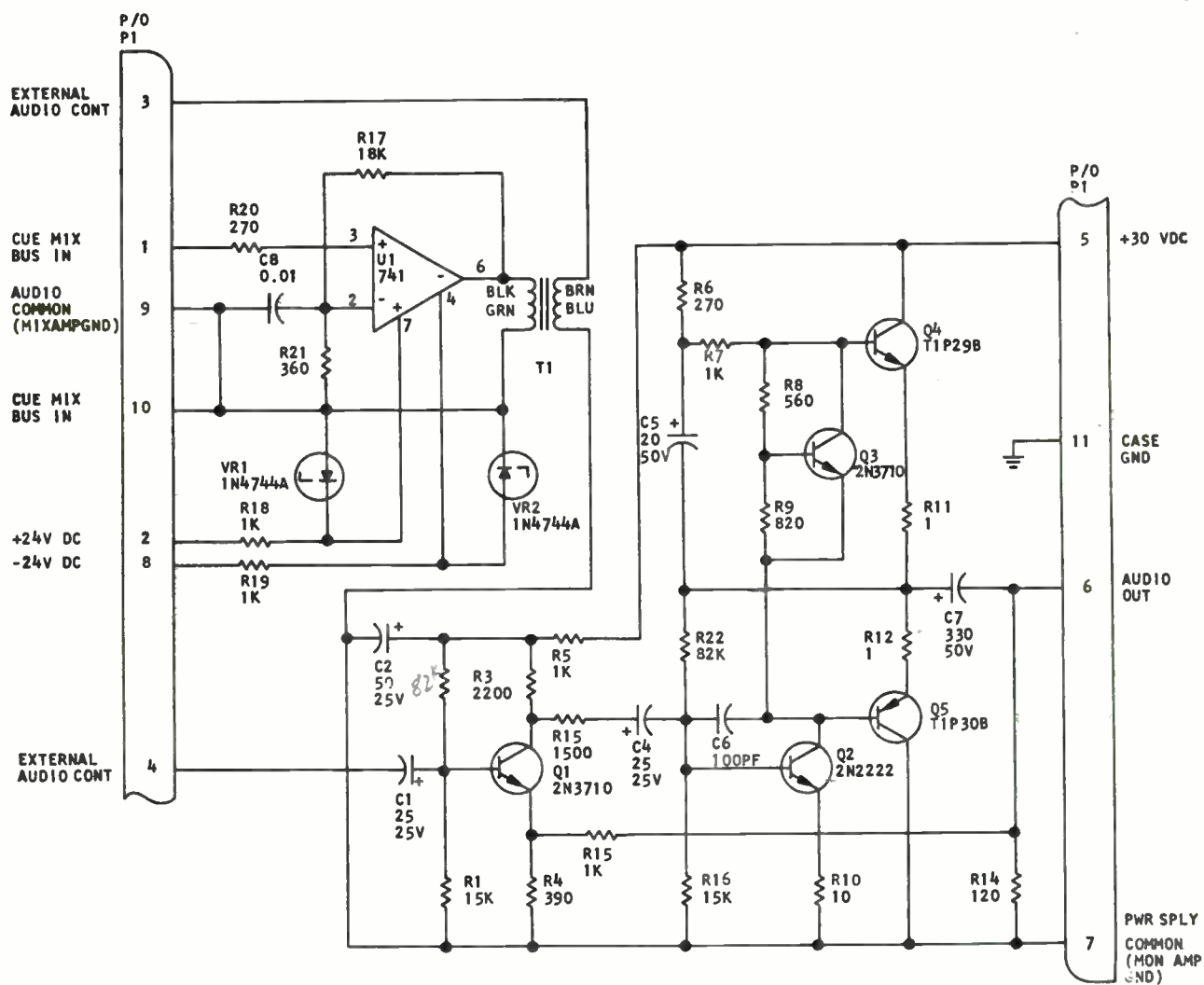


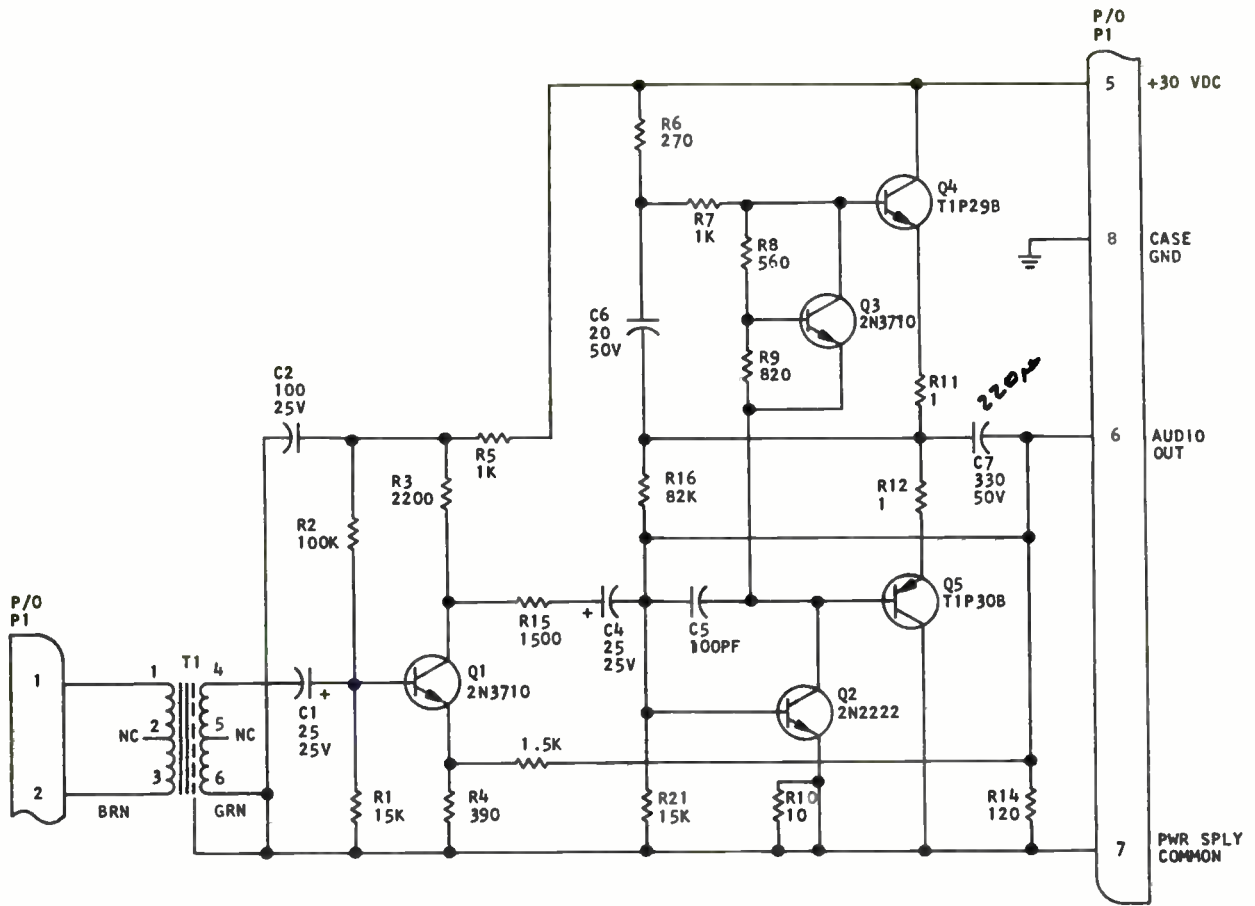
Figure 7-3. Bridging Transformer BT-1, Schematic Diagram.



NOTE:  
UNLESS OTHERWISE SPECIFIED;  
ALL RESISTANCE VALUES ARE IN OHMS  
ALL CAPACITANCE VALUES ARE MICROFARADS

MW100-0100-3

Figure 7-4. Cue Amplifier CA-1, Schematic Diagram.



NOTE: .  
 UNLESS OTHERWISE SPECIFIED,  
 ALL RESISTANCE VALUES ARE IN OHMS  
 ALL CAPACITANCE VALUES ARE IN MICROFARADS

MW100-0101-3

Figure 7-5. Headphone Amplifier HA-1, Schematic Diagram.

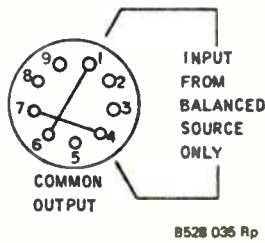
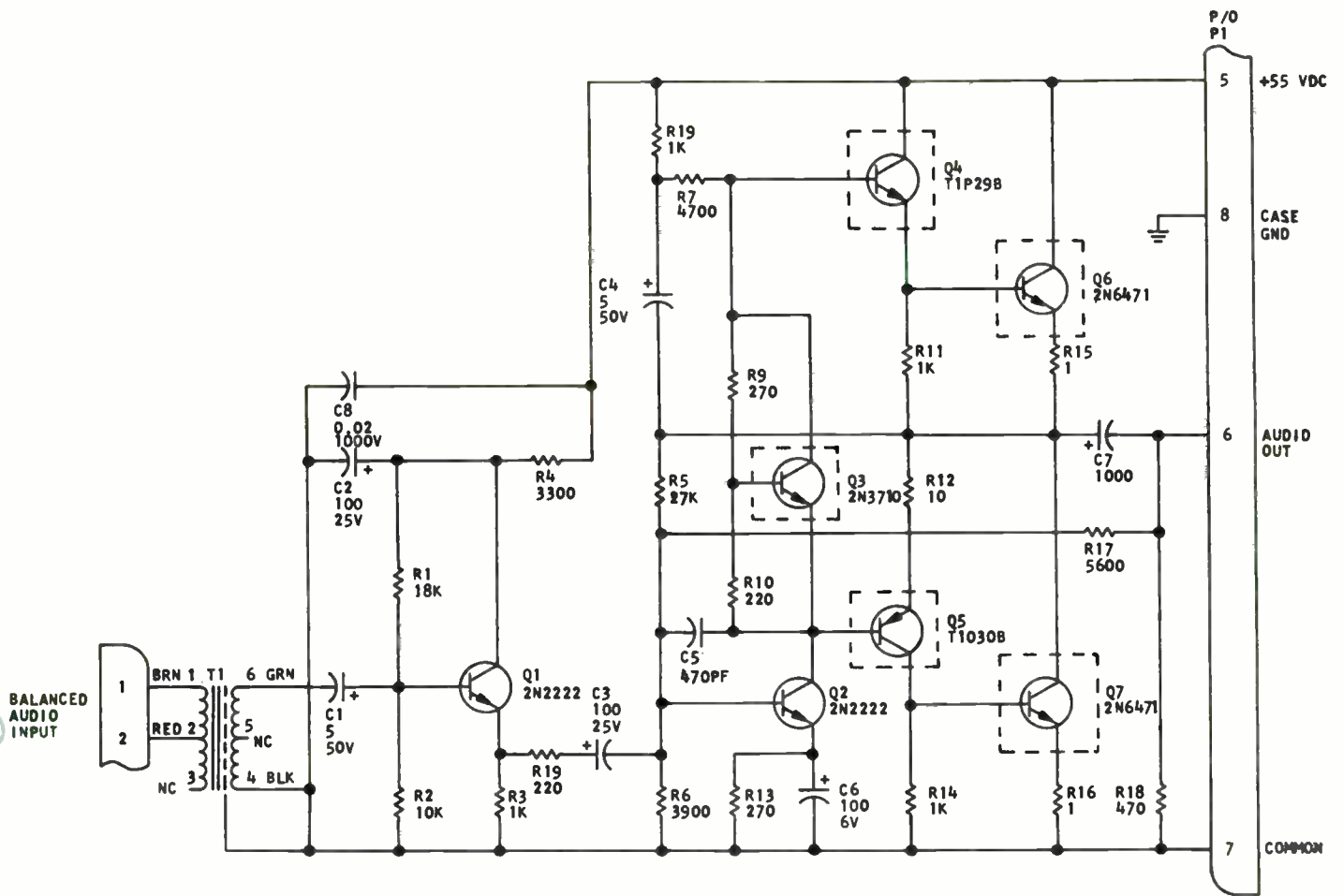


Figure 7-6. Jumper Plug JP-1, Schematic Diagram.

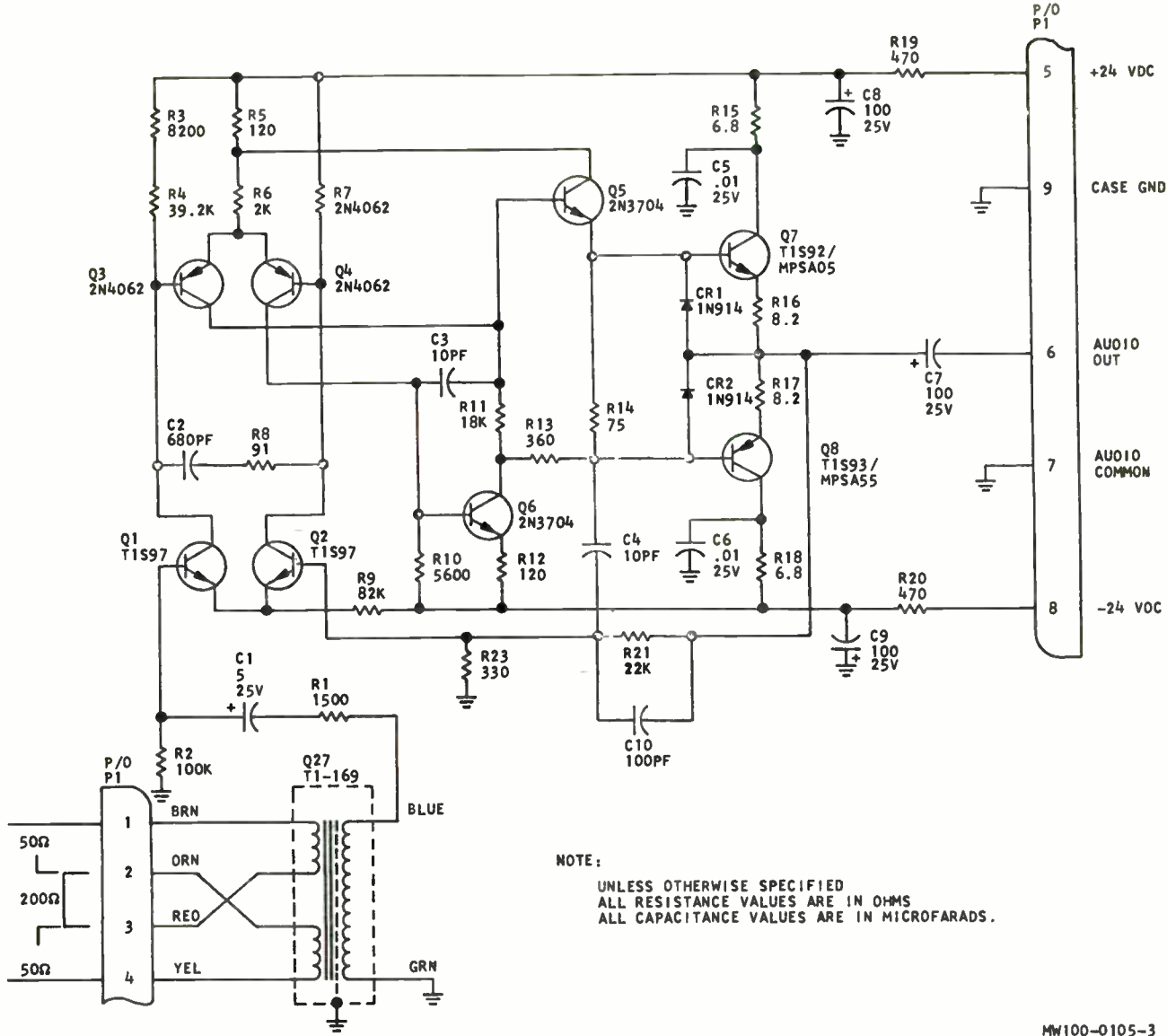


NOTE:  
 UNLESS OTHERWISE SPECIFIED:  
 ALL RESISTANCE VALUES ARE IN OHMS  
 ALL CAPACITANCE VALUES ARE IN MICROFARADS

MW100-0099-3

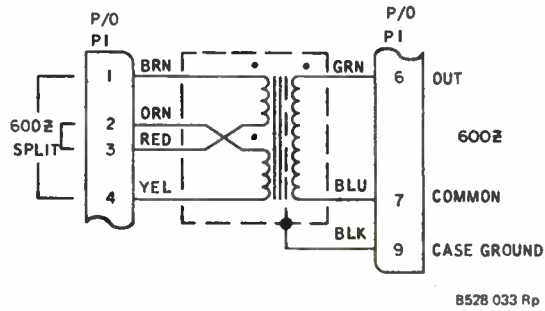
Figure 7-8. Monitor Amplifier MA-1A, Schematic Diagram.





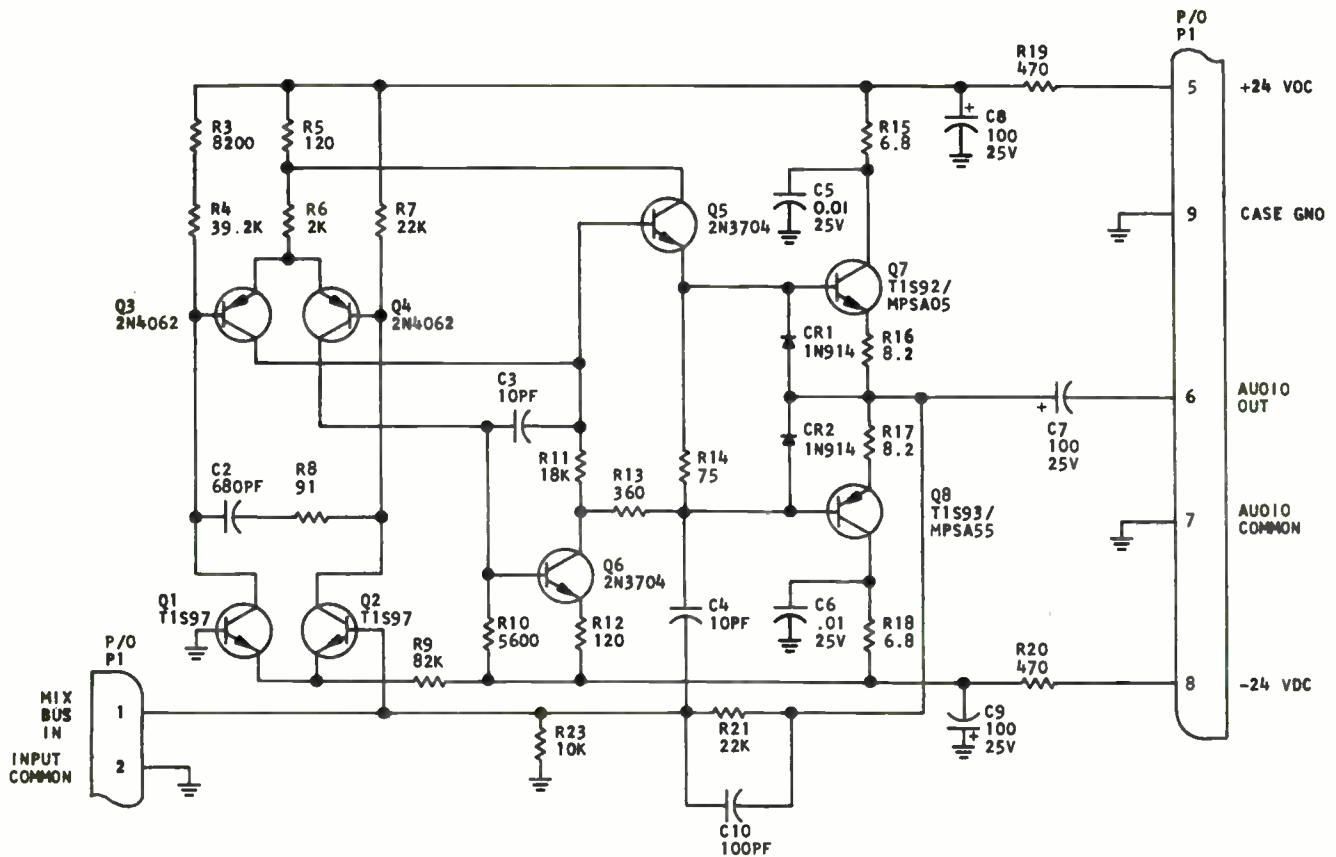
MW100-0105-3

Figure 7-9. Microphone Preamplifier MPA-1A, Schematic Diagram.



B528 033 Rp

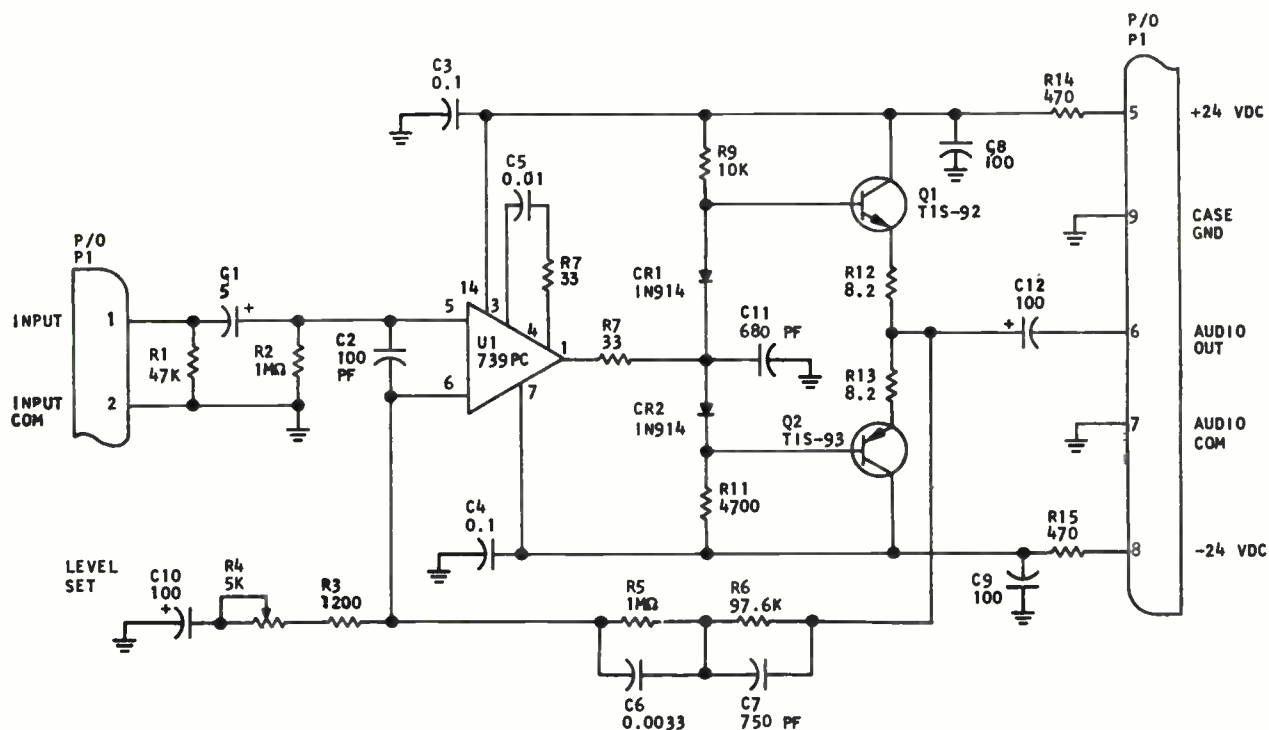
Figure 7-10. Matching Transformer MT-1, Schematic Diagram.



NOTES:  
 1. UNLESS OTHERWISE SPECIFIED  
 ALL RESISTANCE VALUES ARE IN OHMS  
 ALL CAPACITANCE VALUES ARE IN MICROFARADS.

MW100-0106-3

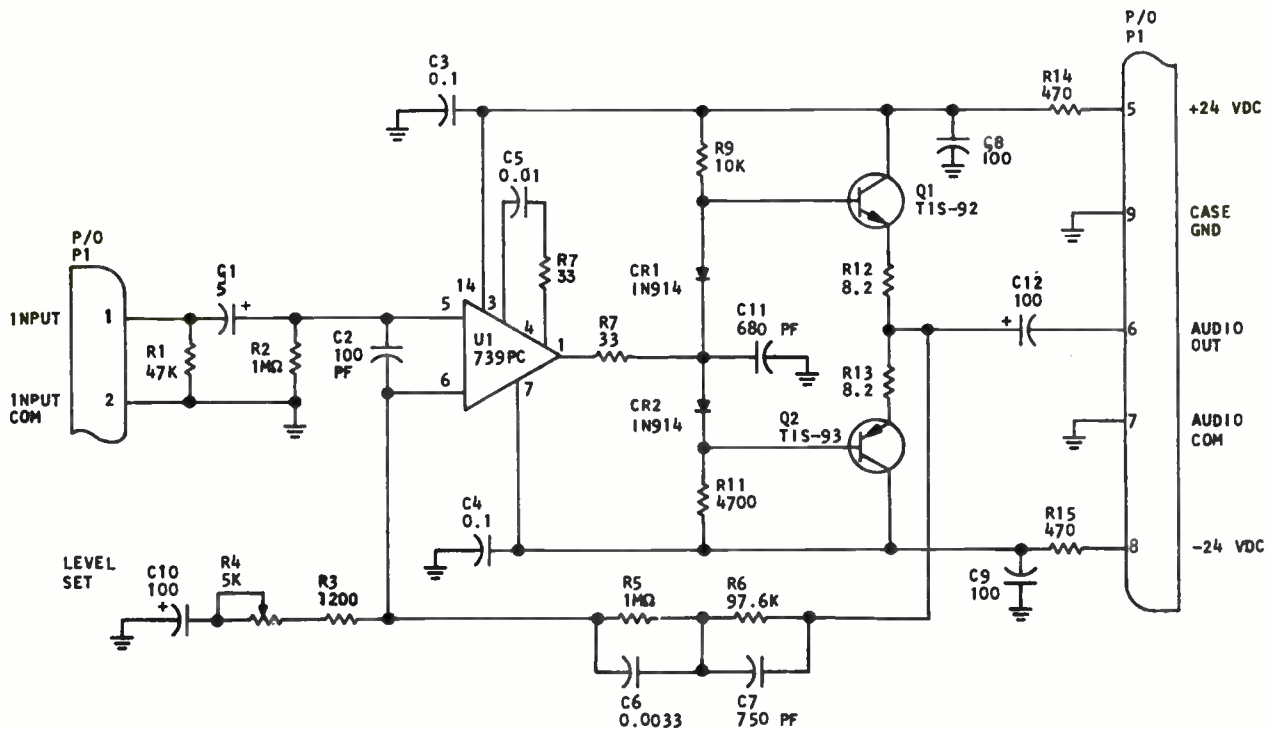
Figure 7-11. Mixer Amplifier MXA-1A, Schematic Diagram.



NOTE:  
 UNLESS OTHERWISE SPECIFIED:  
 ALL RESISTANCE VALUES ARE IN OHMS  
 ALL CAPACITANCE VALUES ARE IN MICROFARADS

MM100-0104-3

Figure 7-12. Phono Preamplifier PA-1A, Schematic Diagram.

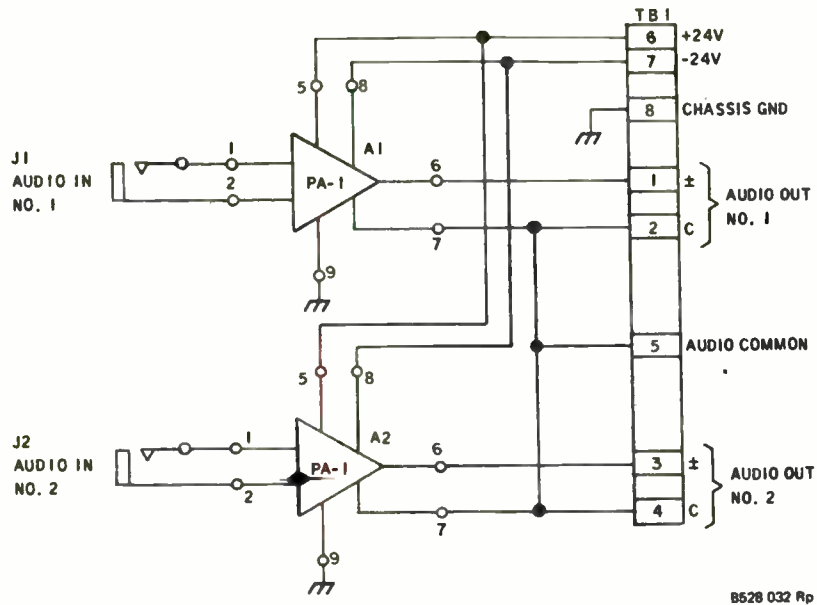


NOTE:  
 UNLESS OTHERWISE SPECIFIED:  
 ALL RESISTANCE VALUES ARE IN OHMS  
 ALL CAPACITANCE VALUES ARE IN MICROFARADS

MW100-0104-3

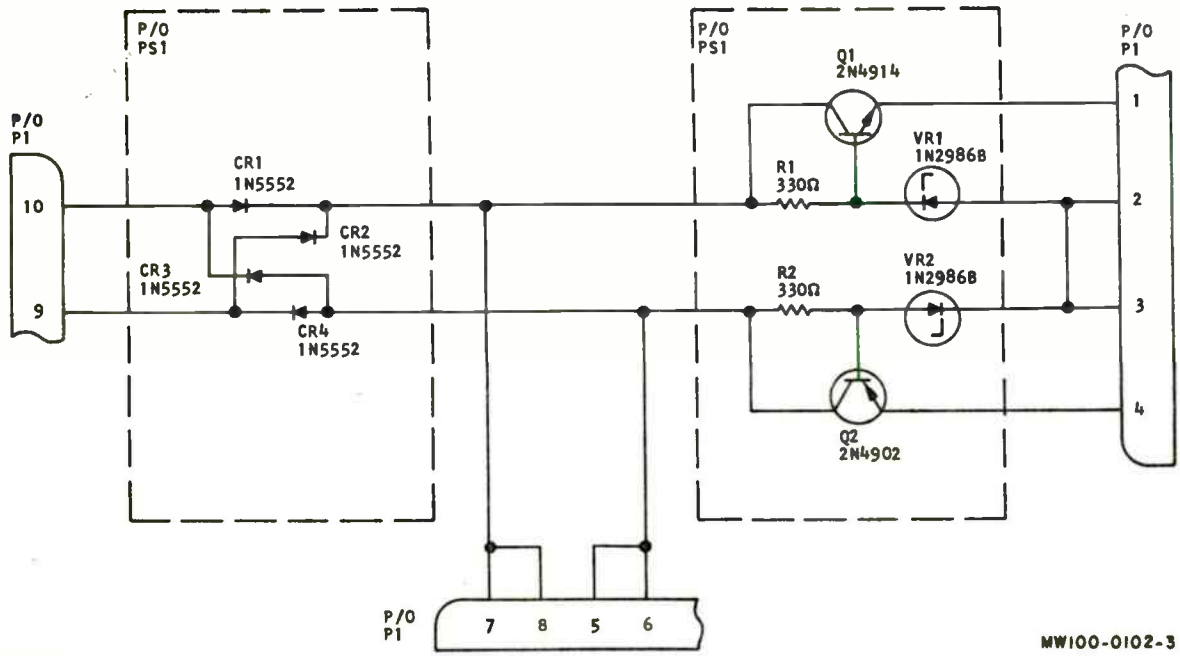
Figure 7-12. Phono Preamplifier PA-1A, Schematic Diagram.

S.T.



B528 032 Rp

Figure 7-13. Phono Mounting Assembly PMA, Schematic Diagram



MW100-0102-3

Figure 7-14. Power Supply PS-1A, Schematic Diagram.

AUTOGRAM INSTRUCTION MANUAL ERRATA  
IC-10 CONSOLE

1. On Specification Sheet under Distortion:  
Program/Audition less than 0.5% THD
2. Page 3, pp 4 last sentence should read:  
The panel-mounted monaural channel VU meter is connected across the monaural line output. The monaural headphone jack is connected to the left channel headphone amplifier output.
3. Page 5, Block Diagram  
NOTE: Monaural headphone jack is now connected to left headphone amplifier, not the monaural output as shown.
4. Page 15 Cue Muting K2: Change A6-18-111 to A6-18-11
5. Power Supply Chassis A-4, Figure 2, Sheet 1 of 3 Schematic:  
Transformer T-1 wire color codes:  
Brown/White should read Yellow/Black  
Red/White should read Green/White
6. Figure 2, Sheet 3 of 3 Schematic:  
Monaural headset jack is moved to output of left channel headphone amplifier. R-47 560ohm is deleted. Change 4.7ohm R7 R8 to 1ohm.

ADDENDUM

To mute cue speaker either K1, K2, or K3 can be used. Keep in mind that the relay used to mute the cue speaker cannot be used to turn on a warning light. Connect a jumper from the cue amplifier output assy A4 TB2-Terminal 13 to the relay to be used:

ASSY A6

K-1 TB18 term. 9  
K-2 TB18 term. 11  
K-3 TB18 term. 13

Connect the cue speaker to relay used.

ASSY A6


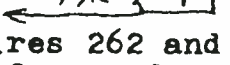
K1 TB15 term. 13  
K2 TB16 term. 13  
K3 TB17 term. 13

## ADDITIONAL CONNECTIONS FOR AC-6, AC-8, AND IC-10

Terminal strip TB1-A is located in the floor of the console in front of Assy. A-4 (Power Supply Chassis). This terminal is used as a tie-point for internal connections for optional counter or clock. This terminal strip is also used for connections to allow external signals to drive the VU meters on the AC-6 only. A small R-C timing circuit is included to give the optional counter a one-shot pulse for resetting when any front panel pushbutton is depressed.

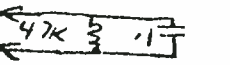
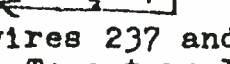
### TB-1A CONNECTIONS

#### AC-8/ IC-10

1. NO CONNECTION
2. BLACK (wire 265)  -to pushbutton
3. BLACK (wire 262)  -to clock
4. Tie point (red wires 262 and 265)
5. To external transformer for clock (wire 261)
6. " " " " " "

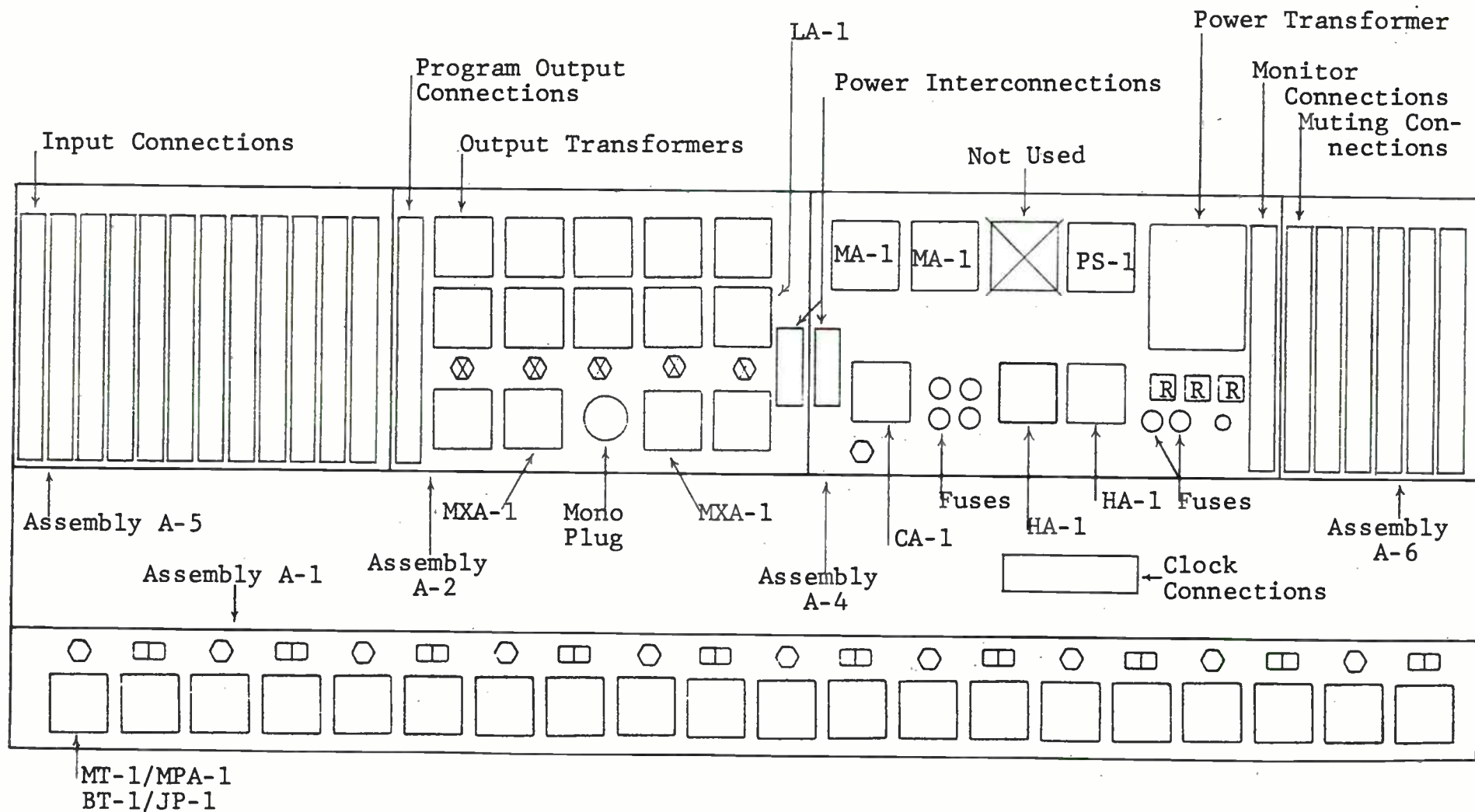
Note: Wires 261 and 262 are tied off in the wiring bundle near the remote line select switch "A" if a clock was not ordered with the console.

#### AC-6 Only

1. No Connection
2. Black (wire 265)  -to pushbuttons
3. Black (wire 237)  -to clock
4. Tie Point (red wires 237 and 265)
5. Black (wire 236) To external transformer
6. Red (wire 236) To external transformer
7. Black (wire 144) RIGHT CHANNEL EXTERNAL METER INPUT
8. Red (wire 144)
9. Black (wire 143) LEFT CHANNEL EXTERNAL METER INPUT
10. Red (wire 143)

Note: Wires numbered 236 and 237 are tied off in the wiring bundle near the VU meter switch if no clock was ordered with the console.

# IC-10



- Balance Pots
- ▭ Stereo/Mono
- ⊠ Relay
- Power Switch
- ⊗ Gain (Factory Adjusted)



S.J.

INTRODUCTION

The Autogram Module Upgrade system consists of four basic modules:

1. IA-1, Input Amplifier.
2. MXA-2, Mixer Amplifier
3. LA-3, Line Amplifier
4. MPA-2A, Microphone Pre-amplifier.

The modules are designed as replacements for the similar modules in Autogram IC-10, LC-10, AC-8, and AC-6 consoles as well as Collins/Rockwell IC-10 and IC-6 consoles.

SYSTEM IMPROVEMENTS

FOR MAXIMUM IMPROVEMENT TO THE CONSOLE AUDIO QUALITY, ALL MODULES IN THE PROGRAM CHANNELS MUST BE REPLACED. IF DESIRED, THE AUDITION MIX AMPS AND LINE AMPS MAY ALSO BE REPLACED.

Signal to noise ratio improvements are accomplished by raising the level of the mix bus inputs to 1 volt r.m.s. thus, MPA-2A as well as IA-1 modules must be used.

With a complete compliment of new modules installed in the program channels of the console, various improvements will be obtained:

1. Elimination all audio transformers for more transparent sonic quality.
2. Improved signal to noise ratio.
3. Lower distortion (IM and THD).
4. Modern Integrated circuit design using NE5532 and TL072 type operational amplifiers.

TYPICAL SYSTEM PERFORMANCE FIGURES:

## FREQUENCY RESPONSE:

+ or - 0.1 dB 20hz to 20khz (all levels)

## DISTORTION:

Less than .05% THD and IMD.

## NOISE:

Better than -82 dB (20hz-20khz) with +8 dBm console output level. Using -10 dBm input to IA-1.

The following pages will explain each module as well as installation procedure.

A U T O G R A M   C O R P O R A T I O N  
M O D U L E   U P G R A D E   I N S T R U C T I O N   M A N U A L

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The following pages will explain each module as well as installation procedure.

## IA-1 INPUT AMPLIFIER

The IA-1 Input Amplifier will replace existing MT-1, BT-1, and BA-1 modules. Sources between -15 dBm and +15 dBm can be easily accommodated using the built-in 3 position attenuator and convenient trim pot. A 600 ohm precision termination is also switch selectable.

Either balanced professional or unbalanced consumer equipment may be used with the IA-1.

### INSTALLATION:

1. Remove the existing line level modules (MT, BT, or BA).
2. Install new IA-1 modules.
3. Adjust range switches and trim pots for nominal level.

### \*\*\*NOTE\*\*\*

If you are also installing LA-3 Line amplifiers, follow calibration procedure outlined in that section.

### USE WITH CONSUMER EQUIPMENT:

When using unbalanced consumer equipment, Use FORWARD REFERENCED grounding techniques: Use balanced shielded audio cable; connect the shield at the console only; connect the + input to the output of the source; connect the - input to the source audio ground. Typically an RCA type phono plug is used with the consumer equipment therefore, connect the + input to the pin and the - input to the shell. DO NOT connect the shield to the source equipment. A star ground system should be used if high RF or hum fields are present.

### SPECIAL CONSIDERATIONS:

When using the IA-1, the gain will be the same for both A and B input positions (all positions of remote line switches).

If the input source has a DC voltage present (some telephone lines, etc.), an external audio transformer may be required.

## MPA-2A MICROPHONE PRE-AMPLIFIER

The MPA-2A is a integrated circuit device using a ultra low noise audio amplifier with true differential inputs for high common mode rejection consistent with low distortion.

The MPA-2A is designed to accept typical 150 ohm balanced professional microphones.

A 10 db attenuator is available on-board; however, the circuit board must be modified. Refer to the MPA-2A schematic diagram for details.

### INSTALLATION:

Remove existing MPA-1 and replace with MPA-2A. Proceed with installation of MXA-2 and LA-3 line amplifiers.

## MXA-2 MIXER AMPLIFIER

The MXA-2 Mixer Amplifier is designed as a replacement for the MXA-1 Mixer Amplifiers. The MXA-2 uses an NE5532 amplifier for low-noise performance.

### INSTALLATION:

1. Remove MXA-1 amplifiers on channels to be upgraded.
2. Install MXA-2 modules.

Note: The MXA-1 can be used with the LA-3 and IA-1; however best performance is obtained with the MXA-2 amplifiers installed.

## LA-3 LINE AMPLIFIER

The LA-3 Line amplifier is designed as a replacement for existing LA-1 line amps. The LA-3 has two outputs: A balanced transformerless differential driver and a high-current unbalanced driver. The LA-3 will replace a LA-1 with no modification; however, if the balanced output is desired (no transformers) then the A-2 Output Chassis must be modified.

### INSTALLATION:

Installation for all console are similar except that there is no mono output in the AC-6 console.

1. Remove power cord from console power supply.
2. Open lid and remove all mounting screws from the A-2 output chassis.
3. Remove Power bars between output chassis and power supply chassis.
4. Remove 12 Jones connectors from front of A-2 chassis.
5. Remove output connections on A-2 chassis.
6. Turn chassis over.
7. Refer to enclosed installation drawing.
8. Remove transformer wires from pins 6 and 7 of Line Amplifier sockets of channels to be upgraded.
9. Remove the Blue and Green transformer wires (only on channels to be upgraded) on the small terminal strips across the back of the chassis.
10. Note the red and the black wires on the small terminal strips.
11. Connect a short jumper wire between pin 2 on the Line Ampl. socket and the red wire on the small terminal strips. Do this on each channel to be upgraded.
12. Connect a short jumper wire between pin 3 on the Line Ampl. socket and the black wire on the small terminal strips. Do this on each channel to be upgraded.
13. Turn the chassis back over and reinstall reversing steps 5-1.
14. Remove LA-1 in modified channels and replace with LA-3 module:

Proceed to next page for calibration.

## CALIBRATION:

1. Connect an audio oscillator to the input of a channel with an IA-1 input amplifier installed. If the oscillator is not stereo then bridge between left and right channels at the input. If the oscillator does not have a balanced output then connect to the + input and ground. Connect the - input to ground.
2. Set the IA-1 amplifiers to NO Termination and -10 dBm input range.
3. Adjust the oscillator for 1 khz and 245 mv r.m.s. (-10 DBM) as measured across the + and - input connections to the console.
4. Set the associated fader to the calibration point.  
One o'clock for rotary pots.  
Fourth mark down for slide pots.  
Be sure the indicator on the rotary pot knob is aligned with the engraved dot at one o'clock. Put key switch to PGM.
5. Open the front panel of the console.
6. Be sure the associated balance pot is centered and the MONO/STEREO switch is in STEREO.
7. Connect an accurate ac voltage meter (r.m.s.) to the output of the associated fader (left channel first).
8. Adjust the IA-1 trim pot to give 100 mv on the meter.
9. Repeat for the right channel (skip if this is a mono application).
10. Adjust the associated left channel master gain pot for +8 dBm console output (into 600 ohms). About 1/4 turn will be required.

\*\*\*\*\*NOTE\*\*\*\*\*

DO NOT GROUND EITHER OUTPUT CONNECTION!!!

11. Repeat for the right channel.
12. With both left and right channels operating, adjust the MONO master gain pot to give +8 dBm on the mono output (does not apply for AC-6 and mono only consoles).
13. If the Audition channels were modified then place the key switch to AUD.
14. Adjust the Audition master gain pots as above.