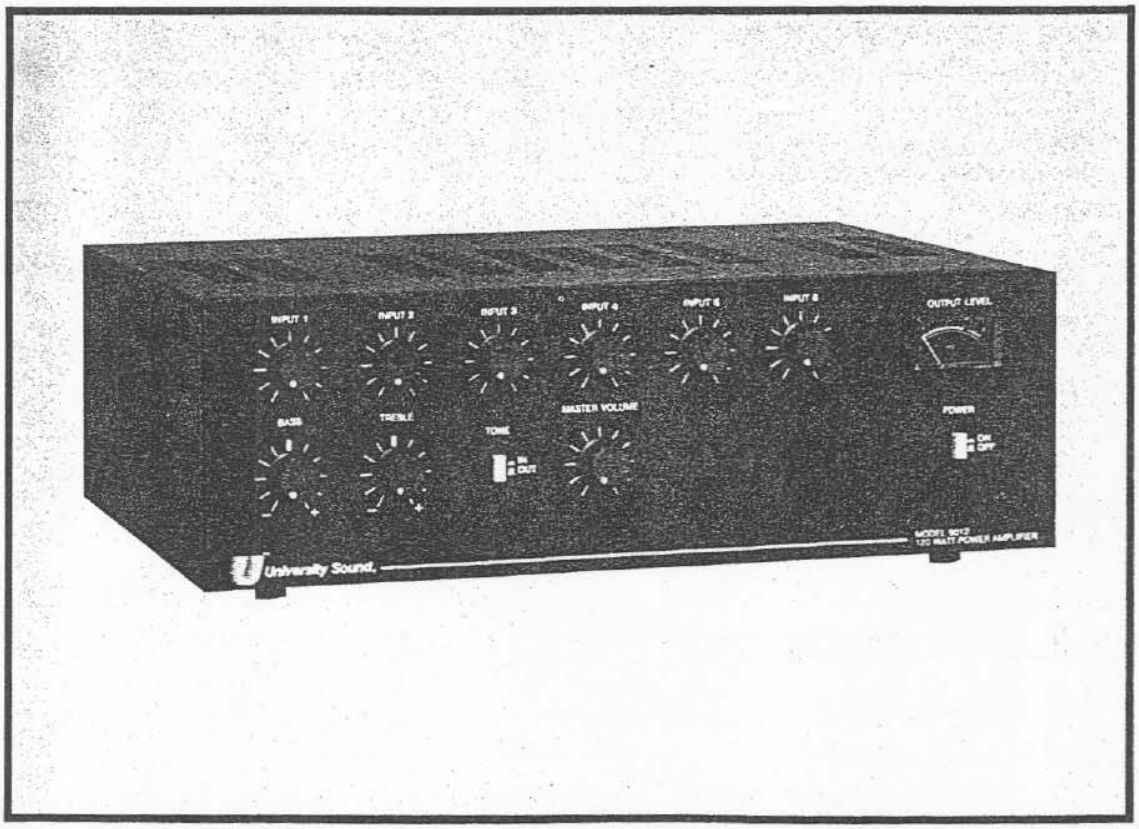
University Sound™

ELECTRONICS

OWNER'S MANUAL



9003 MIXER/AMPLIFIERS

TABLE OF CONTENTS

WARNING: "TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE."

FEATURES

Mainframe

- (9003) 30—watt mixer/power amplifier with six input ports.
- (9006) 60-watt mixer/power amplifier with six input ports.
- (9012) 120-watt mixer/power amplifier with six input ports.
- A broad range of input modules is available from University; also will accept TOA 900-series input modules (with some limitation on features specific to University 9000 products)
- A direct output from the amplifier is provided for speaker loads of 4 ohms or greater.
- Transformer-isolated amplifier outputs are provided for 25- or 70-volt constant-voltage speaker systems or 8-ohm low-impedance speakers.
- Separate mixer/preamplifier and power amplifier sections allow insertion of external signal processing devices into the mixer/amplifier signal chain.
- True shelving-type tone controls with a defeat switch and rear-panel adjustable EQ bypass control.
- Bridging input/output allows interconnection of mix-busses of mixer/preamplifier sections of multiple 9006/9012 units.
- Two separate mute busses allow flexible control of the mute functions for the installed input modules.
- Remote-controllable VCA (voltage-controlled amplifier) following the mixer/preamplifier section allows remote volume control or limitation of the maximum range of the front panel master volume control.
- Auto-reset thermal overload protection of the power transformer.
- Electronic protection circuitry and an output fuse protects both the power amplifier and speaker loads.
- Two independent signal-processing busses for mic- and line-level input modules.
- Front panel rotary controls are supplied standard with shaft-locks.
- An illuminated meter indicates the power amplifier output level.
- Units are rack-mountable with optional CRMB-931 bracket kit.

DESCRIPTION

The University 9000-series mixer/power amplifiers provide wide frequency response, low noise, low distortion and extremely flexible user-configurable features. They are ideal for use in sound systems for churches, schools, auditoriums, business/industrial environments, backgound/foreground music systems and paging systems of any type.

As many as six optional modules may be installed in the ports in the rear panel. Front panel controls are used to adjust the signal level of each input and a master volume control adjusts the overall output level of the combined input signals. Bass and treble tone controls allow tailoring of the frequency response of the unit. A front panel pushbutton switch allows defeating the tone controls (a rear panel adjustable EQ bypass control permits setting the maximum range of tone control).

Two mute busses give the user great flexibility in determining which signals should be muted when paging or other mute-related functions are used. The mute busses are accessible via terminals located on the rear panel; bus selection is accomplished by installing or removing internal jumpers in the 9000-series modules.

A MASTER VOLUME control, combined with the OUTPUT LEVEL meter, permits ease of adjustment of the combined input signal levels to the power amplifier for optimum output.

The power amplifier includes thermal, dc-offset and current-limiting short-circuit protection to help prevent amplifier or speaker damage due to mis-wired, open or shorted speaker lines or amplifier overheating. The amplifier is muted when switched on to prevent speaker damage from "turn-on thump."

MAINFRAME

POWER OUTPUT -

9003: 30 watts RMS
9006: 60 watts RMS
9012: 120 watts RMS

TOTAL HARMONIC DISTORTION AT RATED OUTPUT, 1,000 Hz -

Less than 0.02%

FREQUENCY RESPONSE -

20 Hz - 20,000 Hz, +/- 1dB (direct)
20 Hz - 15,000 Hz, +/- 1dB (xfmr)
20 Hz - 20,000 Hz, +1/-3dB (xfmr)

TONE CONTROLS -

Bass: +/- 10dB at 100 Hz (shelving)
Treble: +/- 10 dB at 10,000 Hz (shelving)

SIGNAL-TO-NOISE RATIO,

(tone controls defeated, 20-20,000 HZ) -

Master (at Max): 77dB
Master (at Min): 90dB
Power amp only: 105dB

INPUT SENSITIVITY/IMPEDANCE -

Input Ports: 100mV/10,000 ohms
Bridging: 100mV/3300 ohms
Power Amp: 1V/10,000 ohms

OUTPUT LEVEL/IMPEDANCE -

Preamp: 1V/600 ohms
Aux: 1V/10,000 ohms
Transformer: 25V, 70V, 8 ohms
Direct: 4 ohms

OUTPUT REGULATION -

Transformer Output: 1.0dB, no load to full load
Direct Output: 0.5dB, no load to full load

PROTECTION -

Amplifier: Short-circuit current limited, Thermal cut-out
Load: DC offset, Turn-on/turn-off transients (delay), Output fuse
Transformer: Auto-reset thermal protection
Mainframe: AC line fuse

FRONT PANEL CONTROLS -

(all rotary controls are lockable)

6 Input Level, Bass, Treble, EQ Defeat pushbutton switch, Master Volume, Power On/Off pushbutton switch

METER -

Output Level Meter

FRONT PANEL INDICATORS -

Output Level Meter is illuminated when power is on

REAR PANEL CONTROLS -

Preamp Out/Power Amp In Link Switch, Lo-cut switch, EQ Bypass (variable)

REAR PANEL CONNECTORS -

Input Ports 1 thru 6: card edge-connector (for modules)
Preamp Out: RCA phono jack
Aux Out: RCA phono jack
Power Amp In: RCA phono jack
Bridging In/Out: RCA phono jack
Mute: Screw terminals
Speakers: 7 screw terminals on barrier strip
(ground, 4 ohms, output transformer in, common, 8 ohms, 25V, 70V)
Remote Master Volume: Screw terminals
AC Power Cord/Plug: 2 conductor with ground/3-prong grounded
AC Receptacle: 3-pin grounded

FUSES -

9003: OUTPUT FUSE -3AG 250V 5A
LINE FUSE -3AG 250V 2A
9006: OUTPUT FUSE - 3AG 250V 5A
LINE FUSE - 3AG 250V 3A
9012: OUTPUT FUSE - 3AG 250V 10A
LINE FUSE - 3AG 250V 5A

POWER REQUIREMENTS -

9003: 120 VAC, 60Hz, 50 watts
9006: 120 VAC, 60 Hz, 100 watts
9012: 120 VAC, 60 Hz, 180 watts

OPERATING RANGE -

-10°C to +60°C
(12°F to 140°F)

DIMENSIONS -

Height: 13.2 cm (5.2 in.), without feet
14.5 cm (5.7 in.), with feet
Width: 42.0 cm (16.5 in.)
Depth: 31.5 cm (12.4 in.)

ENCLOSURE -

Black-painted steel chassis, black-anodized brushed aluminum front panel, white graphics

WEIGHT -

9003: 7.8kg (17 lbs)
9006: 11.8 kg (26 lbs.)
9012: 15.4 kg (34 lbs.)

OPTIONAL MODULES -

CRH-31X: Transformer-coupled Lo-Z mic module with muting. XLR connector, gain control, tone controls. Internal jumpers select phantom power, muting options.

CRH-31S: Transformer-coupled Lo-Z mic module with muting. Screw terminal connections, gain control, tone controls. Internal jumpers select phantom power, muting options.

CRL-12S: Transformer-coupled line input module with muting. Screw terminal connections, gain control, tone controls. Internal jumpers select muting options.

CRFM-01: FM tuner module with muting. 75 Ohm "F" connector for antenna, AFC switch, tuning control. Internal jumpers select muting options.

CRX-11R: Auxiliary (line-level) preamplifier with muting. Internal jumpers select muting options.

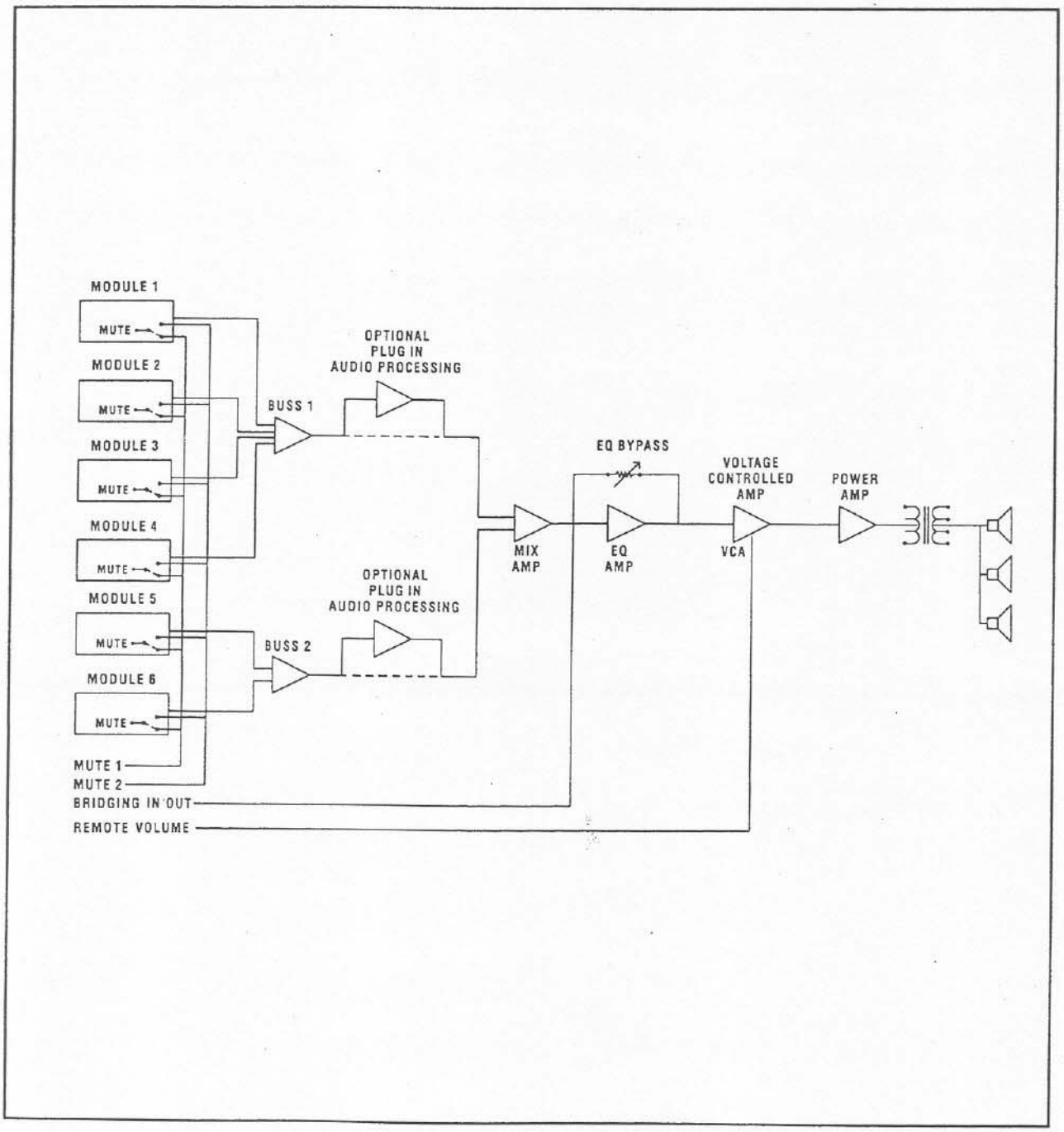
CRT-01S: Transformer-coupled line output module. Provides isolated, line-level output from mixing bus. Screw terminal connections, gain control.

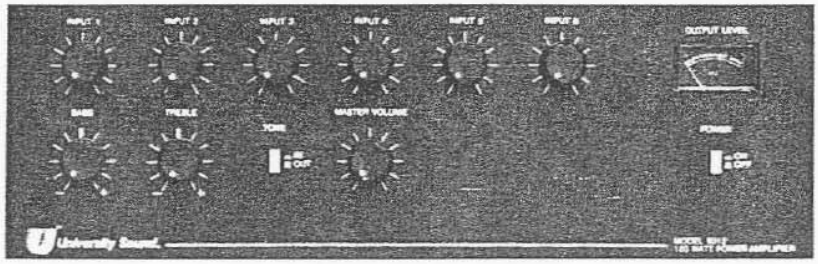
MEC-01: Module extension card. Allows ease of access to all components and circuit board of a standard 9000-series module.

CRS-03S: Chime module. Module produces either a "single-strike" or repeating chime tone. Selection is via screw terminals on module. Output level, pitch, oscillation controls.

MAINFRAME

BLOCK DIAGRAM





Pictorial 1.1 - Front Panel Diagram

OPERATION

FRONT PANEL CONTROLS (Refer to Front Panel Diagram, Pictorial 1.1)

1. POWER ON/OFF: A two-position pushbutton switch that applies ac mains to the unit.

2. INPUT 1-6: Potentiometers which adjust the output signal level from the corresponding input module.

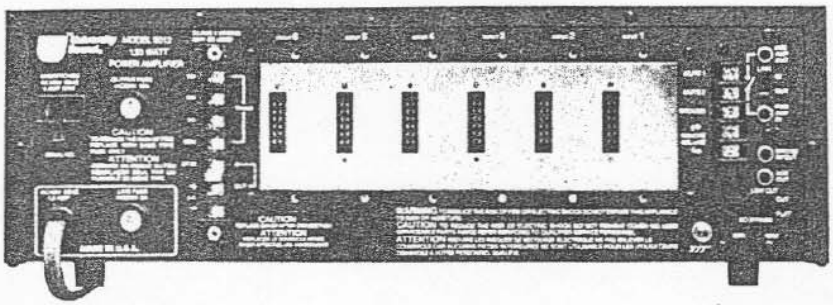
3.OUTPUT LEVEL: This meter indicates the output signal level of the power amplifier. The meter will read "0" when a sine-wave input signal is amplified to the rated output power of the amplifier.

4. BASS: Provides boost or attenuation of the bass (low) frequencies. Obtain normal or "flat" response by setting the dot on the knob at "12 o'clock." Rotate the control clockwise to increase bass output, or counter-clockwise to decrease bass output. This is a "shelving" tone control, which means all frequencies below the nominal corner frequency (in this case, 100 Hz) are raised or lowered equally as the control is adjusted.

5. TREBLE: Provides boost or attenuation of the treble (high) frequencies. Obtain normal or "flat" response by setting the dot on the knob at "12 o'clock." Rotate the control clockwise to increase treble output, or counter-clockwise to decrease treble output. This is also a shelving-type tone control.

6. TONE IN/OUT: A two-position pushbutton switch that allows use of the bass and treble (EQ) controls or to bypass them. With the switch in the "IN" position, the bass and treble controls equalize the audio signal. With the switch in the "OUT" position, the controls are bypassed and no equalization is added to the signal.

7. MASTER VOLUME: Adjusts the overall level of the combined signals of the six input channels. Clockwise rotation of the control increases the signal level.



Pictorial 1.2 - Rear Panel Diagram

OPERATION

REAR PANEL CONTROLS AND CONNECTORS
(Refer to Rear Panel Diagram, Pictorial 1.2)

A description on how to use these controls and connectors may be found in the "Installation" section of this manual.

1. PREAMP OUT: The output signal (1V/600 ohms) from the mixer/preamplifier is available at this RCA phono jack. This signal may be used to drive an additional external power amplifier or signal processing device. The MASTER VOLUME is used to adjust the signal level.

2. LINK IN/OUT: When this switch is "IN," the PREAMP OUT signal is connected to the POWER AMP IN. When the switch is in the "OUT" position, the connection between the mixer/preamplifier and power amplifier is removed. This allows the insertion of external signal processing devices into the signal path. Typical processing devices would be a 1/3-octave equalizer, compressor/limiter, or filter.

3. POWER AMP IN: This RCA phono jack allows direct access to the power amplifier input when the LINK switch is in the "OUT" position. The LOW CUT filter (60 HZ, 6dB/octave) may still be switched in to remove the extreme low-frequency portion of the signal. A device used to drive the power amplifier input should have an impedance less than 10,000 ohms and a nominal signal level of 1 volt.

4. BRIDGE IN/OUT: This RCA phono jack may be used as an input, an output, or to interconnect the mixing bus of the mixer/amplifier with the mixing bus of another mixer/amplifier that has the same input signal and impedance specifications. Nominal signal level is 100mV with an impedance of 3300 ohms.

5. AUX OUT: This RCA phono jack is in parallel with the POWER AMP IN jack, thus has the same signal. It would typically be used to drive an external "booster" power amplifier, as the signal level is controlled by the MASTER VOLUME and the LOW CUT filter may be switched in the signal path.

6. LOW CUT: When switched in, the LOW CUT filter removes low-frequency signals below 60 Hz at 6dB/octave. The filter does not affect the signal at the PREAMP OUT or BRIDGE IN/OUT jacks. It is in the signal path if an external signal is applied to the POWER AMP IN jack, or if the output signal from the AUX OUT jack is used for an external device.

7. EQ BYPASS: This control sets the maximum range available to a user on the front panel tone controls. When the control is turned fully counter-clockwise, the tone controls function normally. When the control is turned fully clockwise, adjusting the front panel tone controls has no effect on the signal. Intermediate settings of the EQ BYPASS control affect the adjust range available on the tone controls in a proportionate manner.

8. MUTE 1, MUTE 2: The mute functions of the plug-in modules are activated by shorting these terminals to ground. Grounding the MUTE 1 terminal activates the mute function on both TOA modules as well as one of the two mute functions available on University modules. Grounding the MUTE 2 terminal activates the second mute function presently available exclusively on University modules.

The availability of two mute functions on University modules allows greater flexibility in the design of sound systems requiring various zones of paging. Shorting these terminals to ground is normally accomplished by use of external switches, often part of paging microphone assemblies.

9. CHASSIS GROUND: This binding post allows use of stripped wire, spade lugs, or a banana plug to connect the chassis ground of the unit to an external grounding point. A good ground may usually be made to a cold water pipe, if the pipe throughout the building is made of copper. In many newer buildings, the pipe is made of PVC or other plastic, so it is advisable to ensure that the entire run of pipe being used as a ground is metallic. Use of an external ground rod, driven at least 6 feet into the earth is a way of ensuring a good ground.

10. BARRIER TERMINAL STRIP: Both direct and transformer outputs of the amplifier are located on this terminal strip. The direct output of the amplifier is rated for a 4-Ohm load. When this output is linked with the OT IN terminal, using the supplied shorting strip, the transformer outputs may be used. These are rated for 8 ohms, 25V and 70V, with the connection from the speaker system made using the appropriately marked terminal and the COM terminal.

11. OUTPUT FUSE: This fuse protects the speaker system from excessive current which might occur under unusual operating conditions, as well as protecting the amplifier from a short circuit or other problem in the wiring to the speaker system which would cause high current flow.

CAUTION: Replace this fuse only with one of the same type and rating!

12. LINE FUSE: This fuse protects the mixer/amplifier circuitry from current overload.

CAUTION: Replace this fuse only with one of the same type and rating!

INSTALLATION

UNPACKING

Inspect the unit carefully upon receipt for possible hidden damage which may have occurred in shipping. Notify the freight company and University Sound if any damage is discovered. The nature of the damage, the date of receipt and the freight waybill number will all be required to make a claim with the shipping company.

NOTE: The shipping container/box, packing materials and the damaged unit must be retained for inspection by the shipping company representative.

VENTILATION

The mixer/amplifier may be mounted on a shelf or in a rack. For shelf or countertop mounting, rubber feet are provided to protect the surface and to provide elevation for air flow underneath the unit. For rack or cabinet mounting, remove the four rubber feet from the bottom of the chassis and install the CRMB-931 rack-mount bracket accessory kit to the unit.

If the unit is mounted in a rack or cabinet with other heat-producing equipment, provide a space of approximately 1-3/4" (4.45 cm) between the front panel edges for ventilation.

If the unit is placed on a countertop or a shelf, separate it from other heat-producing equipment with enough space for good airflow. The unit should not be placed in an area where the temperature will exceed 60°C (140°F).

If there is any question about the temperature of the environment where the unit is installed, a bulb-type thermometer should be used to measure the ambient temperature after the system has been in operation for several hours. The thermometer should not touch any of the units and should be near the bottom of the upper-most unit, if they are rack mounted. If the temperature exceeds 60°C (140°F), the units will have to be separated even more and it may be necessary to add a cooling fan to provide additional air movement.

CAUTION: Do not block the air intake holes in the bottom of the chassis or the exhaust holes in the top cover.

SPEAKER OUTPUT CONNECTIONS

Either low-impedance (4- and 8-ohms) or high-impedance constant-voltage speaker loads (25V and 70V lines) may be used with the mixer/amplifier.

For low-impedance speaker loads, either the direct output or the 8-Ohm transformer output may be used. The direct output has slightly better frequency response, as there is no transformer between the power amplifier and the load. In order to use the transformer outputs, the shorting strap must be installed between the terminals marked "+" and "OT IN." See Figure 1 for wiring information.

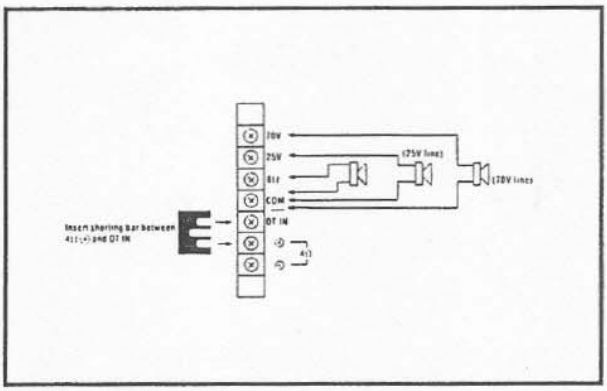


Figure 1 - Speaker Output Connections

NOTE: The LOW CUT switch should be in the CUT position if the transformer outputs are used. The frequency response of the amplifier must be limited in the low-frequency range for proper operation with the transformer. See Figure 2.

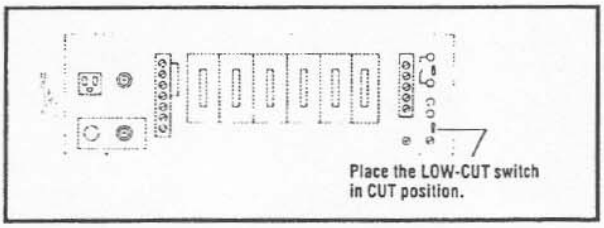


Figure 2 - LOW.CUT switch in CUT position

There are important considerations to make before connecting the speaker(s) to the amplifier output:

1. Matching speaker impedance to the amplifier's rated impedance.

Power amplifiers are designed to deliver the rated power output into a specific load impedance. Lower impedances may reduce the maximum available power at the rated distortion. Significantly lower impedances may cause the one or more of the amplifier protection fuses to open, especially at high output power levels. Avoid operating this equipment under such circumstances!

2. Power loss in speaker cable.

Ideal cable would have no resistance, thus could deliver all the power from the amplifier to the speaker. However, all wire has inherent resistance, therefore causing some power loss. The longer the wire, the greater the resistance and power loss which will occur. Cable resistance is related to the wire gauge (diameter) and length; as the wire diameter decreases and the length increases, the resistance of the cable will increase, causing increased loss between the amplifier and load.

Table 1 shows the 2-conductor copper-wire cable lengths and gauges which may be used with various load impedances in order to avoid a loss of more than 0.5 dB SPL in output.

For a 1 dB loss (basically imperceptible), cable lengths may be doubled. For a 2 dB loss, the lengths given in the table should be multiplied by 4.4. In general, higher load impedances will allow the use of longer runs of smaller gauge wiring.

Low-Impedance Systems				High-Impedance Systems				
AWG Size	Resistance (ohms/1000 feet)	4 Ω	8Ω	100W/70.7V 24.5W/35V 12.5W/25V (50 Ω)	50W/70.7V 12.25W/35V 6.25W/25V (100 Ω)	25W/70.7V 6.13W/35V 3.13W/25V (200 Ω)	5W/70.7V 1.23W/35V .63W/25V (1000 Ω)	1W/70.7V .25W/35V .13W/25V (5000 Ω)
10	1.00	120	240	1,500	3,000	6,000	30,000	150,000
12	1.59	75	150	940	1,900	3,800	19,000	94,000
14	2.50	48	96	600	1,200	2,400	12,000	60,000
16	4.02	30	60	370	750	1,500	7,500	37,000
18	6.39	19	38	230	470	940	4,700	23,000
20	10.1	12	24	150	300	590	3,000	15,000
22	16.2	7	15	93	190	370	1,900	9,300

Table 1 - 2-Wire Copper Cable Lengths In Feet for 0.5dB Loss in SPL

3. Balancing relative speaker levels.

There is no electrically efficient way to balance and adjust the sound levels among multiple speakers in a low-impedance installation. Constant-voltage, high-impedance systems ease this process because they employ speakers equipped with transformers which have multiple input taps that are marked in watts.

The "University Sound Guide to Commercial Sound Reinforcement and Public Address Systems" (available at no charge from University Sound) covers this subject in detail, but to quickly summarize:

Low-Impedance Speakers.

The 4- and 8-ohm output terminals on the back of the unit are appropriate for connection to one or more low-impedance loudspeakers or speaker systems. For example, a single 8 Ohm speaker may be connected to the COM and 8 Ohm terminals, or if more than one speaker, as shown in Figure 3.

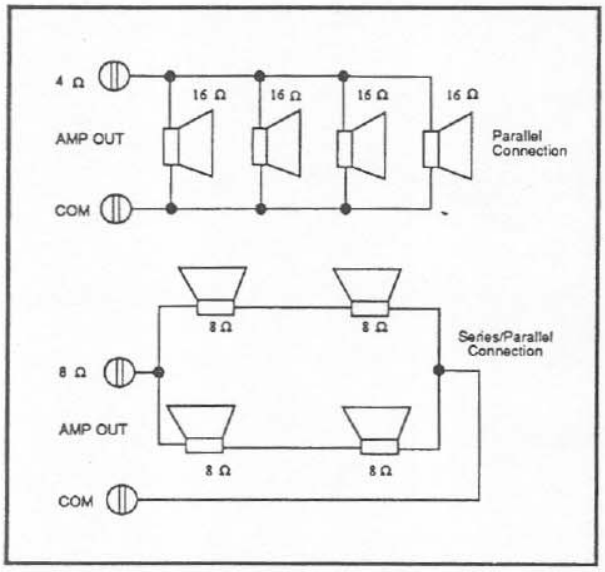


Figure 3 - Speaker Configurations

When several low-impedance speakers are used, ensure that the rules of proper series and parallel impedance summation are followed. This subject is also covered in the "University Guide."

High-Impedance/Constant Voltage Systems.

When high-impedance speaker loads are connected to an amplifier, smaller diameter wire may be used, as the resistance of the cable will be small compared to the load impedance. Usually, low-impedance speakers are used in such systems, but matching transformers are used at the speaker locations to increase the load impedance to the desired value. Multiple transformer taps, labeled in watts, permit easy adjustment of the individual speaker power levels. Connection of the transformer primaries (inputs) is shown in Figure 4.

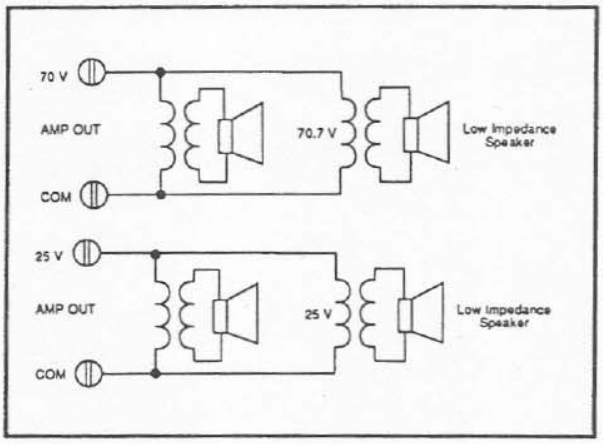


Figure 4 - High-Impedance/Constant-Voltage Speaker Configurations

For proper operation, the speakers should be equipped with transformers of the correct voltage rating (25V or 70V). The total of all the power taps of the transformers used in a system should be equal to or less than the rated output power of the amplifier.

Avoid power totals that are greater than the rated output power of the amplifier, since the total load impedance will be too great for normal operation. This may cause distortion or may activate some or all of the protection circuitry of the amplifier.

USING 9000-SERIES PRODUCTS WITH EXTERNAL ELECTRONICS

The 9000-series mixer/amplifiers may easily be used in systems requiring signal processing devices such as 1/3-octave equalizers or compressor/limiters. The mixer/amplifiers may easily be interfaced with additional mixers or amplifiers to increase the number of input channels available, or for additional power output requirements for larger systems.

If the external device to be used with the mixer/amplifier is used to modify or control the signal (signal processing), the external device(s) can easily be inserted into the audio signal path by using the PREAMP OUT/PWR AMP IN jacks and switching the LINK switch to the OUT position. The nominal signal output level of the PREAMP OUT (1V/600 ohms) is appropriate for use with all professional electronic equipment. The external devices should be adjusted so that unity gain is maintained.

The output signal of the external device connects to the PWR AMP IN jack.

Refer to Figure 5 which shows a mixer/amplifier with a 1/3-octave equalizer inserted into the audio signal path of the mixer/amplifier.

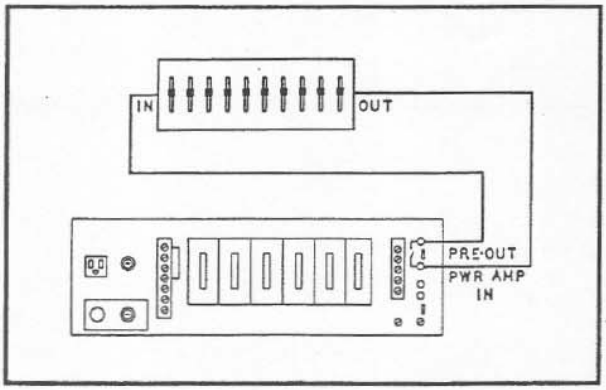


Figure 5 - External Equalizer Connections

NOTE: The PREAMP OUT signal level is affected by the MASTER VOLUME control setting.

The BRIDGE IN/OUT jack allows the mix bus of multiple mixer/amplifiers to be tied together. Any signals present on the mix bus of one unit will be present on the mix buses of all the other units. A common use for this feature is where more inputs are required than are present on one mixer/amplifier. The MASTER VOLUME control on each unit will control the signal level going to the power amplifier in that unit, allowing ease of setting the level for different zones with one amplifier per zone.

Refer to Figure 6 which shows used of bridged mixer/amplifiers in a sound system.

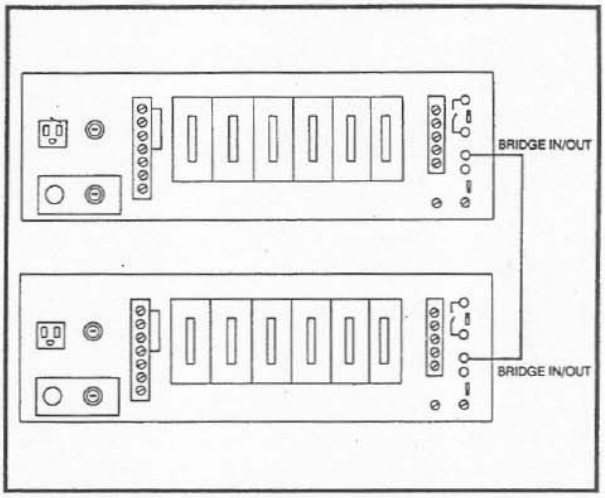


Figure 6 - Bridged Mixer/Amplifier Connections

The AUX OUT jack is in parallel with the AMP IN jack. This jack may be used to connect to an external power amplifier or other devices, such as tape recorders.

MUTING and REMOTE MASTER VOLUME

Activation of the muting circuits is normally accomplished by using switches to short the MUTE 1 and/or MUTE 2 terminals to ground. See figure 7 for the wiring diagram.

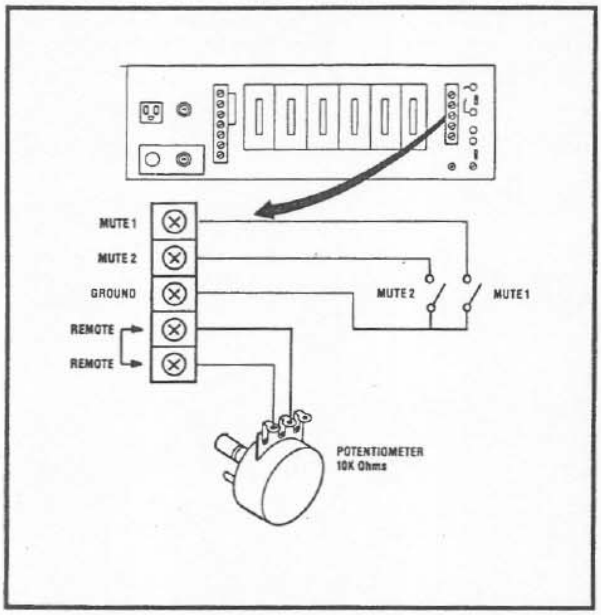
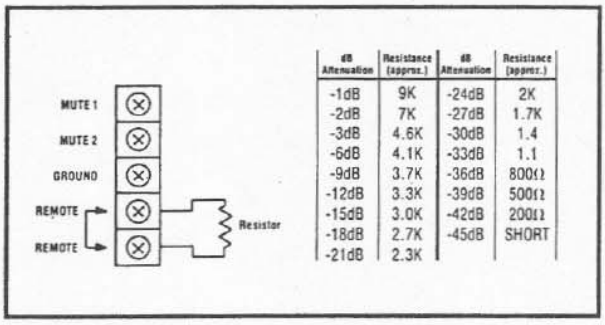


Figure 7 - Muting and Remote Volume Control Connections

The REMOTE VOLUME terminals allow use of a potentiometer or fixed resistors to remotely control the overall volume of the mixer/amplifier. To obtain the maximum range of control possible with a potentiometer, a resistance value of 10,000 ohms or greater should be used. The potentiometer should be of the "linear" type, for proper operation. If fixed values of attenuation are desired, resistors may be used to remotely set the amount of attenuation.

See Table 2 for the amount of attenuation with various resistors.



dB Attenuation	Resistance (approx.)	dB Attenuation	Resistance (approx.)
-1dB	9K	-24dB	2K
-2dB	7K	-27dB	1.7K
-3dB	4.6K	-30dB	1.4
-6dB	4.1K	-33dB	1.1
-9dB	3.7K	-36dB	800Ω
-12dB	3.3K	-39dB	500Ω
-15dB	3.0K	-42dB	200Ω
-18dB	2.7K	-45dB	SHORT
-21dB	2.3K		

Table 2 - Fixed Resistor Values and Connections for Remote Volume Control

RACK MOUNTING

To mount the 9000-series mixer/amplifiers in a standard 19" rack, the optional CRMB-931 mounting kit should be used. If multiple units are mounted in the same rack, vent panels should be installed between the units to allow space for ventilation. See Figure 8 for information on installing the rack-mount bracket kit.

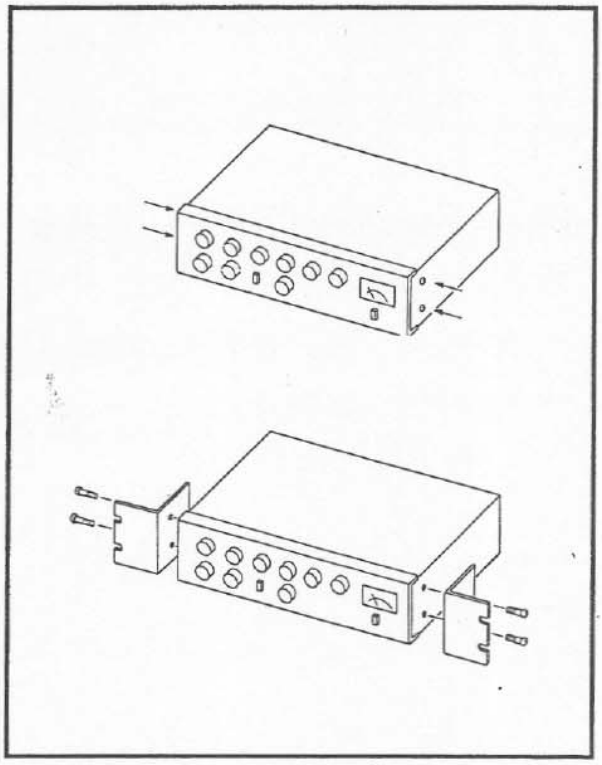


Figure 8 - Installing Rack-Mount Bracket Kit

INSTALLING INPUT MODULES

Input modules are easily installed into the mainframe. Carefully slide the module into the appropriate input port, making sure that the circuit board of the module is within the guide rails.

Secure the module with the supplied screws. See Figure 9 for reference. All unused input ports should be covered with the blank panels supplied with the mixer/amplifier.

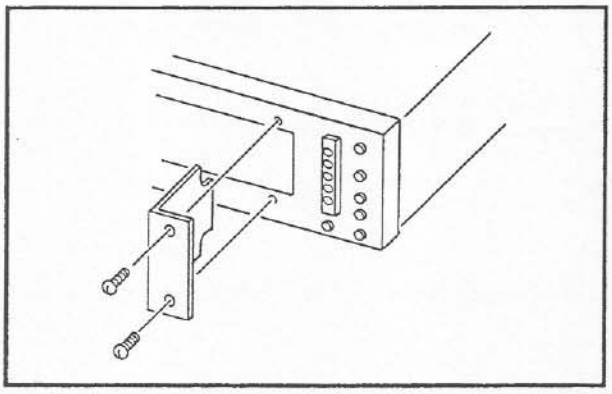


Figure 9 - Installing Input Modules

NOTE: Input modules should not be inserted or removed while the unit is turned on!

MAINTENANCE

OUTPUT FUSE REPLACEMENT

A fuse is provided in series with the output of the amplifier to protect the load. If you need to replace this fuse, use only a fuse of the proper type and rating. The proper output fuse for the units are:

9003 - 3AG 250V 5A
9006 - 3AG 250V 5A
9012 - 3AG 250V 10A

If the fuse continues to open after it is replaced, check the speaker wiring for a short circuit, or a speaker system wattage requirement that exceeds 30 watts (9003), 60 watts (9006) or 120 watts (9012).

If there are no apparent problems in those areas, take the unit to the nearest qualified service/repair facility where the unit may be checked for proper operation, or repaired if necessary.

LINE FUSE REPLACEMENT

If the line fuse opens, the OUTPUT LEVEL meter will no longer be illuminated and ac mains power to the internal circuitry will be interrupted. If this happens, turn the power switch off and remove the line cord plug from the AC outlet. Remove the defective fuse from the back panel holder and replace it with a fuse of the proper type and rating. If the fuse continues to open when power is applied to the unit, take the unit to the nearest qualified service/repair facility for repair. **Use of improper substitute fuses which causes damage to the unit will void the warranty.**

SERVICE AND WARRANTY

Replacement Parts

Most of the components used in the mixer/amplifier are standard and available from electronic parts stores. If you replace transistors, use those made by the specified manufacturer. Parts from another manufacturer, or parts which are of the "universal replacement" variety may not work properly or as reliably.

WARRANTY (Limited) University Electronic Components are guaranteed for one year from date of original purchase against malfunction due to defects in workmanship and materials. If such malfunction occurs, unit will be repaired or replaced (at our option) without charge for materials or labor if delivered prepaid to University Sound. Unit will be returned prepaid. Warranty does not extend to finish, appearance items, or malfunction due to abuse or operation under other than specified conditions, nor does it extend to incidental or consequential damages. Some states do not allow the exclusion of limitation of incidental or consequential damages, so the above exclusion may not apply to you. Repair by other than University Sound will void this guarantee. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Service and repair address for this product:

University Sound, Inc.

13278 Ralston Avenue

Sylmar, CA 91342-7607

Phone: (818)362-9516

Fax: (818)367-5292

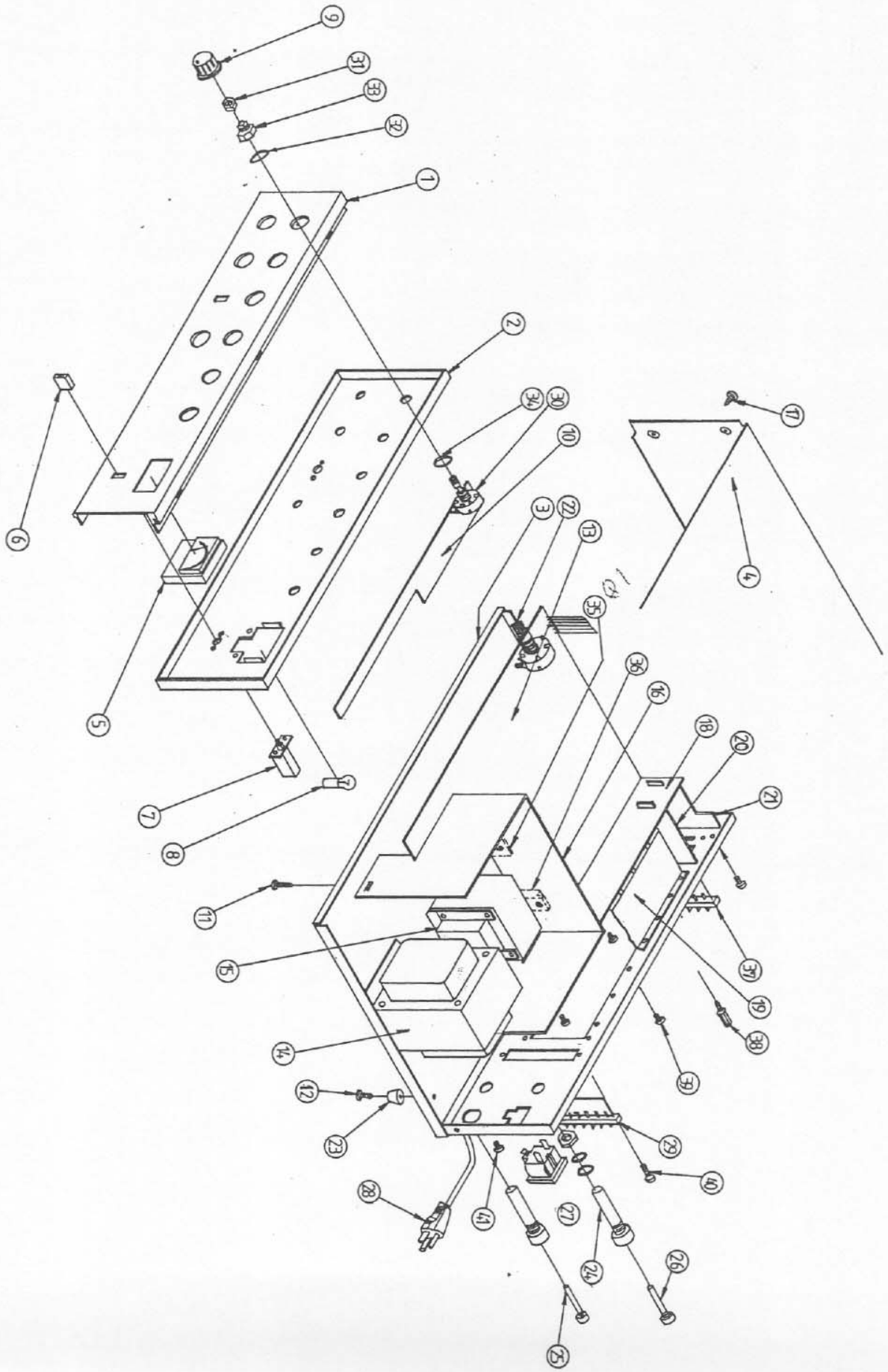
Specifications subject to change without notice.

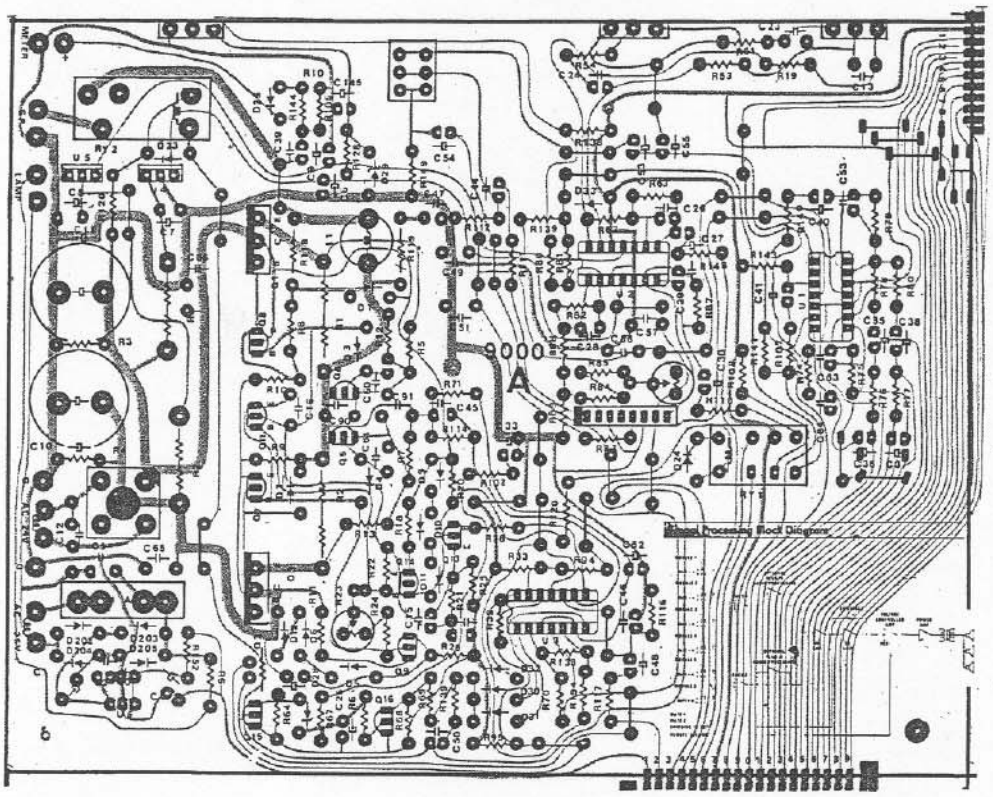
PARTS LIST

NO	DESCRIPTION	PART NO.
1	FRONT PANEL	700−0011−00
2	FRONT CHASSIS	700−0012−00
3	MAIN CHASSIS	700−0013−00
4	TOP COVER	700−0014−00
5	VU METER	160−6000−00
6	PUSHBUTTON	080−6001−00
7	POWER SWITCH	090−6002−00
8	LAMP	160−6012−00
9	KNOB	080−6002−00
10	VR CONTROL P. C. B.	800−9555−00
11	T3×12 SCREW BLK	170−6018−03
12	T3×12 SCREW	170−6018−02
13	MAIN P. C. B.	800−9556−00
14	POWER TRANSFORMER	050−6007−00
15	OUTPUT TRANSFORMER	050−6008−00
16	HEATSINK	700−0015−00
17	T3×6 SCREW BLK	170−6018−04
18	MOTHERBOARD P. C. B.	800−9557−00
19	MODULE CARD BOX	700−9502−00
20	MUTE/REMOTE P. C. B.	800−9558−00
21	IN/OUT P. C. B.	800−9559−00
22	POT LINEAR 50K	070−6009−00
23	PLASTIC FOOT	160−6001−00
24	FUSE HOLDER	120−6006−00
25	FUSE 2A AG 250V	120−0515−00

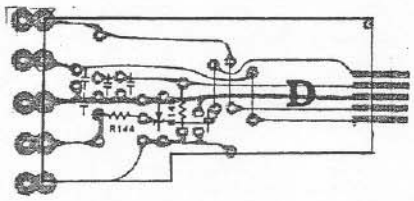
PARTS LIST

NO	DESCRIPTION	PART NO.	
26	FUSE 5A AG 250V	120—0446—00	
27	ACCESSORY OUTLET	120—6007—00	
28	LINE CORD	120—0454—09	
29	OUT TERMINAL P. C. B.	800—9560—00	
30	POT TAPER 10K	070—6010—00	
31	LOCKING NUT	170—6017—00	
32	3/8 INT TOOTH WASHER	173—38IT—00	
33	MOUNTING NUT	170—6017—01	
34	WASHER	173—38DW—00	
35	POWER TRANSISTOR	100—6018—00	B688
36	POWER TRANSISTOR	100—6019—00	D718
37	BARRIER STRIP (5 POS)	110—6030—00	
38	#6—32×3/4 SPACER	175—6002—00	
39	#6—32×1/4 SCREW	170—6000—00	
40	T3×12 SCREW BK	170—6018—00	
41	T3×6 SCREW BK	170—6018—01	

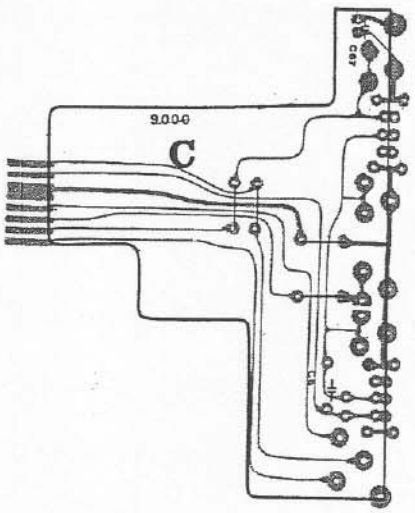




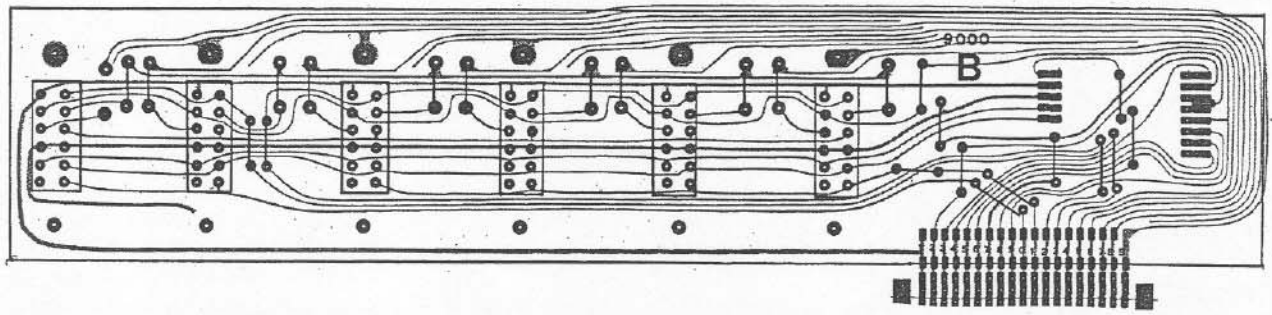
MAIN BOARD 9003



MUTE REMOTE PCB 9003

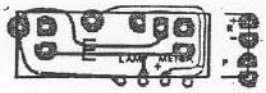


IN/OUT PCB 9003

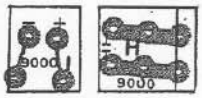


MOTHER BOARD 9003

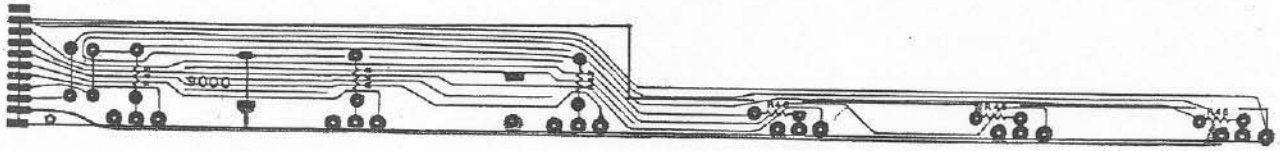
OUT TERMINAL 9003



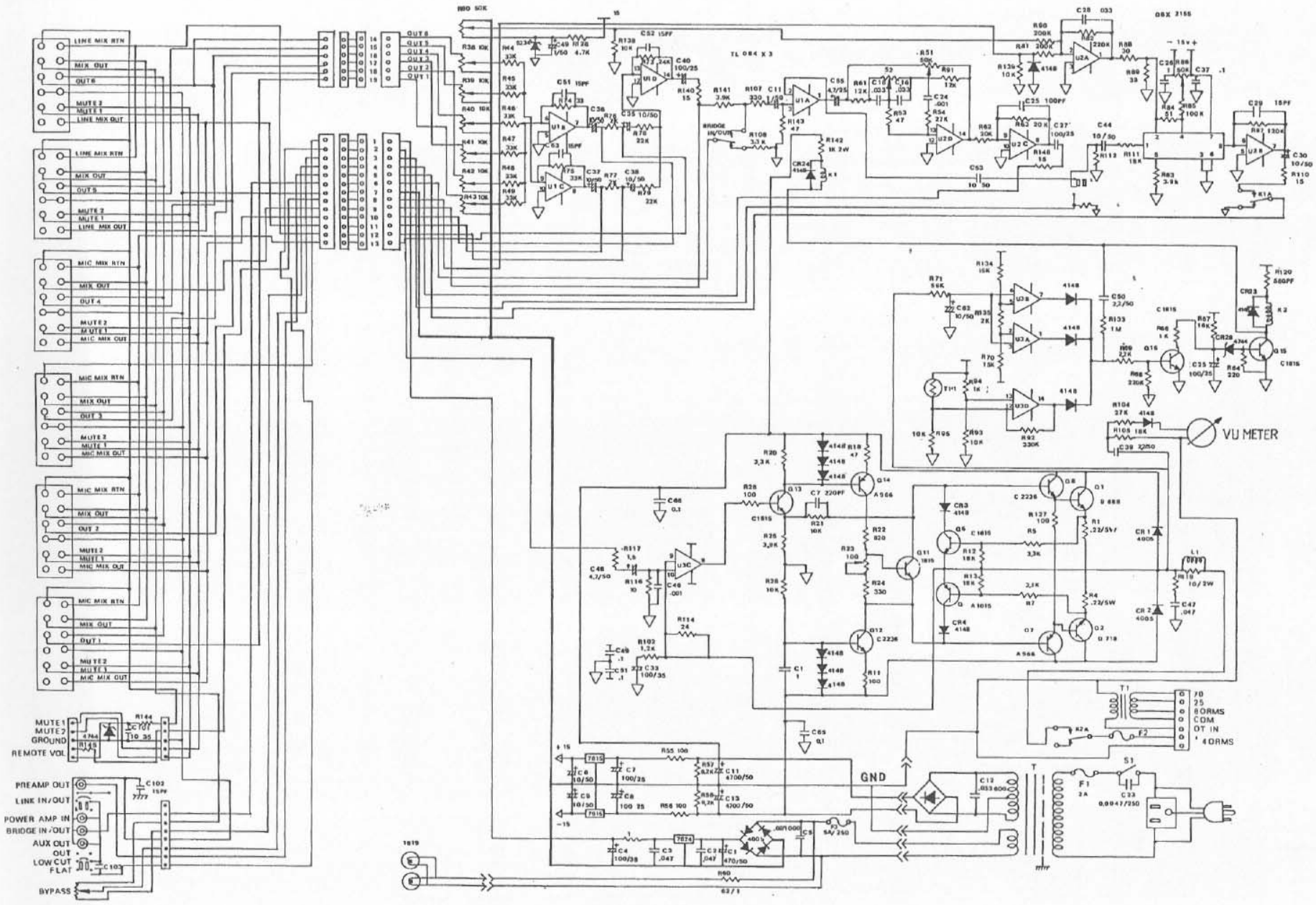
LAMP METER PCB 9003



POWER S/W PCB 9003



VR CONTROL PCB 9003


LINE MIX RTN
MIX OUT
OUT 6
MUTE 2
MUTE 1
LINE MIX OUT
LINE MIX RTN
MIX OUT
OUT 5
MUTE 2
MUTE 1
LINE MIX OUT
MIC MIX RTN
MIX OUT
OUT 4
MUTE 2
MUTE 1
MIC MIX OUT
MIC MIX RTN
MIX OUT
OUT 3
MUTE 2
MUTE 1
MIC MIX OUT
MIC MIX RTN
MIX OUT
OUT 2
MUTE 2
MUTE 1
MIC MIX OUT
MIC MIX RTN
MIX OUT
OUT 1
MUTE 2
MUTE 1
MIC MIX OUT
MUTE 1
MUTE 2
GROUND
REMOTE VOL
PREAMP OUT
LINK IN/OUT
POWER AMP IN
BRIDGE IN/OUT
AUX OUT
OUT
LOW CUT
FLAT
BYPASS
OUT 6
OUT 5
OUT 4
OUT 3
OUT 2
OUT 1
TL 084 X 3
BRIDGE IN/OUT
VU METER
GND
70
25
8OHMS
COM
OT IN
4OHMS