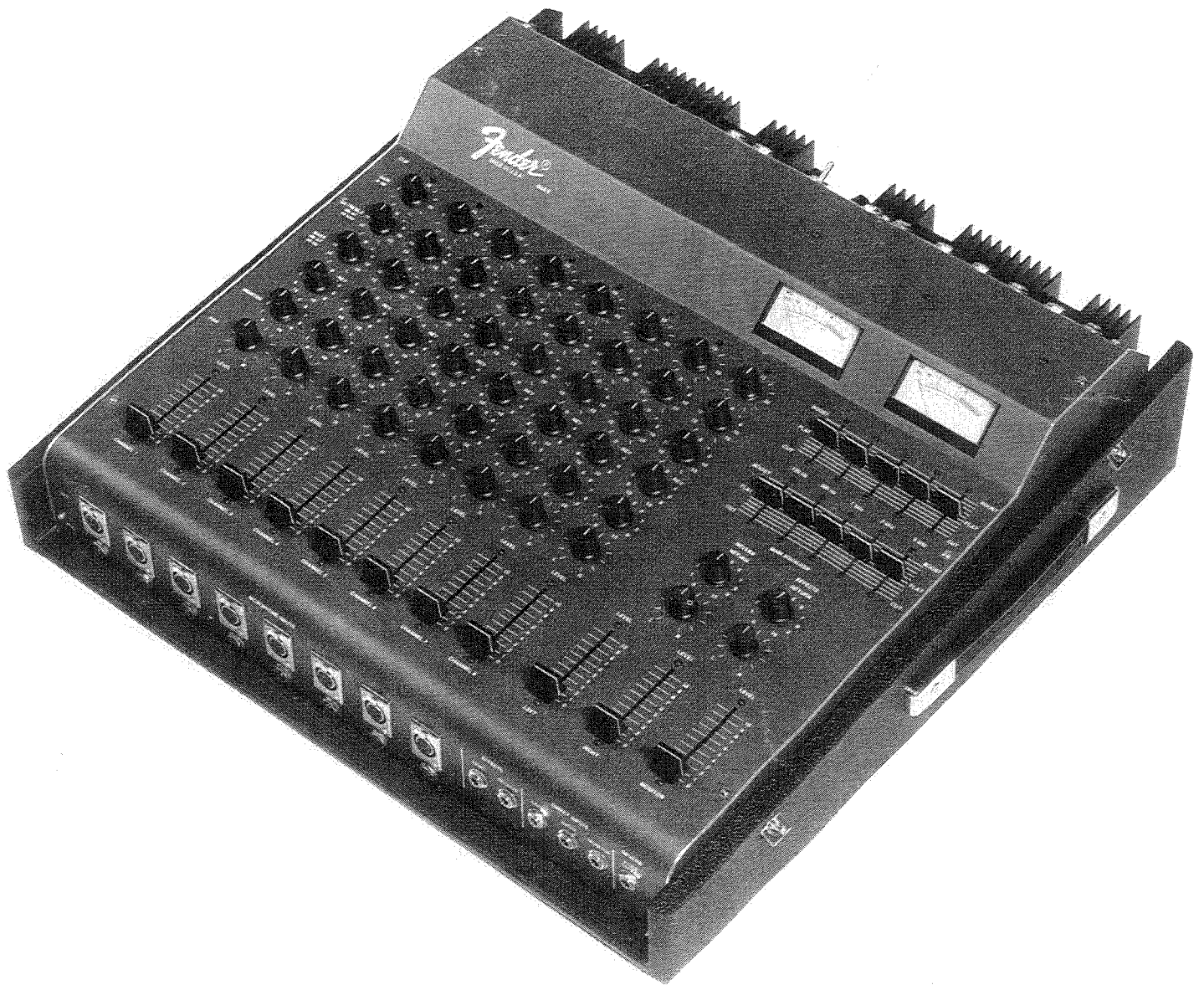


Fender[®]
Made in U.S.A.

MA8S MIXER STEREO AMPLIFIER
(Professional Stereo Sound System)



OPERATION INSTRUCTION MANUAL

MANUAL NO. 015209 (REV. A)

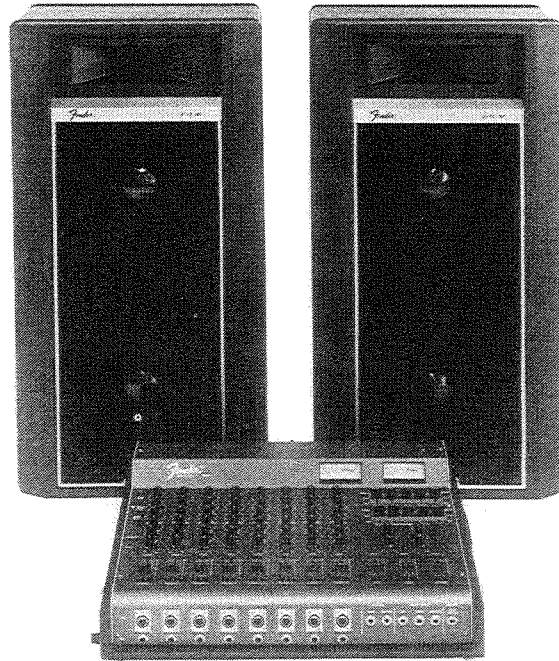
WARNING
TO REDUCE THE RISK OF FIRE
OR SHOCK HAZARD, DO NOT
EXPOSE THIS APPLIANCE TO
RAIN OR MOISTURE

P/N 016637

MA8S
MIXER STEREO AMPLIFIER
OPERATION INSTRUCTION MANUAL

BY

Fender[®]
MADE IN U.S.A.



PHYSICAL DIMENSIONS (APPROXIMATE, FOR SHIPPING PURPOSES)

	MIXER AMPLIFIER		SPEAKER COLUMN	
	U.S. System	Metric System	U.S. System	Metric System
Weight	50 Pounds	22.67 kg	62 Pounds	28.0 kg
Width	25 Inches	63.0 cm	19 Inches	48.0 cm
Depth	23 Inches	58.0 cm	13.5 Inches	34.0 cm
Height	7.5 Inches	19.0 cm	36.5 Inches	93.0 cm

P.O. BOX 4137 • 1300 EAST VALENCIA DRIVE • FULLERTON, CALIFORNIA 92634

NOTE: See accompanying limited warranty folder.

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INTRODUCTION

The Fender MA8S System consists of a powered mixer with eight input channels and three output channels, reverb, 200 watts RMS power, (100 watts per channel), into 8 ohm load, and two speaker enclosures. The mixer, reverb, and power amplifiers are contained in one compact package, hereafter referred to as the "Mixer." Each speaker enclosure contains two 12" special design cone speakers and a high frequency compression driver with associated horn and crossover network mounted in a Thiele aligned vented enclosure.

The remaining pages of this Manual detail the functions of the various controls and jacks (in total, the unit has 74 controls and 30 connectors and jacks). **BEFORE ATTEMPTING TO USE THE SYSTEM, FAMILIARIZE YOURSELF WITH THE INFORMATION CONTAINED IN THIS MANUAL.**

SECTION I

CONTROL FUNCTIONS

FUNCTIONAL BLOCK DIAGRAMS

The architecture of the System is explained most easily with the accompanying functional block diagram which is divided into two sections, the Preamplifier (Fig. 1) and the Master Control (Fig. 2). Although only one preamplifier is shown, the actual System has eight which are identical.

INPUT CHANNEL CONTROL FUNCTIONS

Gain Control (Fig. 3 - Item 2)

This adjusts the gain of the microphone preamplifier, allowing adjustment of the Mixer to provide the optimum signal-to-noise ratio for the particular input

source to that channel. With a normal input signal, when the red clip (overload warning) light (Fig. 3 - Item 1) is just flickering, the control is properly set. If the light glows continuously, the control should be turned down until the light just flickers, to avoid audible distortion.

The gain control affects both the Main and the Monitor mixes. Normally, once the Gain Control has been set, it will not need to be changed.

Treble Control (Fig. 3 - Item 3)

This boosts or cuts the high frequency content of the input signal. See Figure 4 for frequency response curves.

1

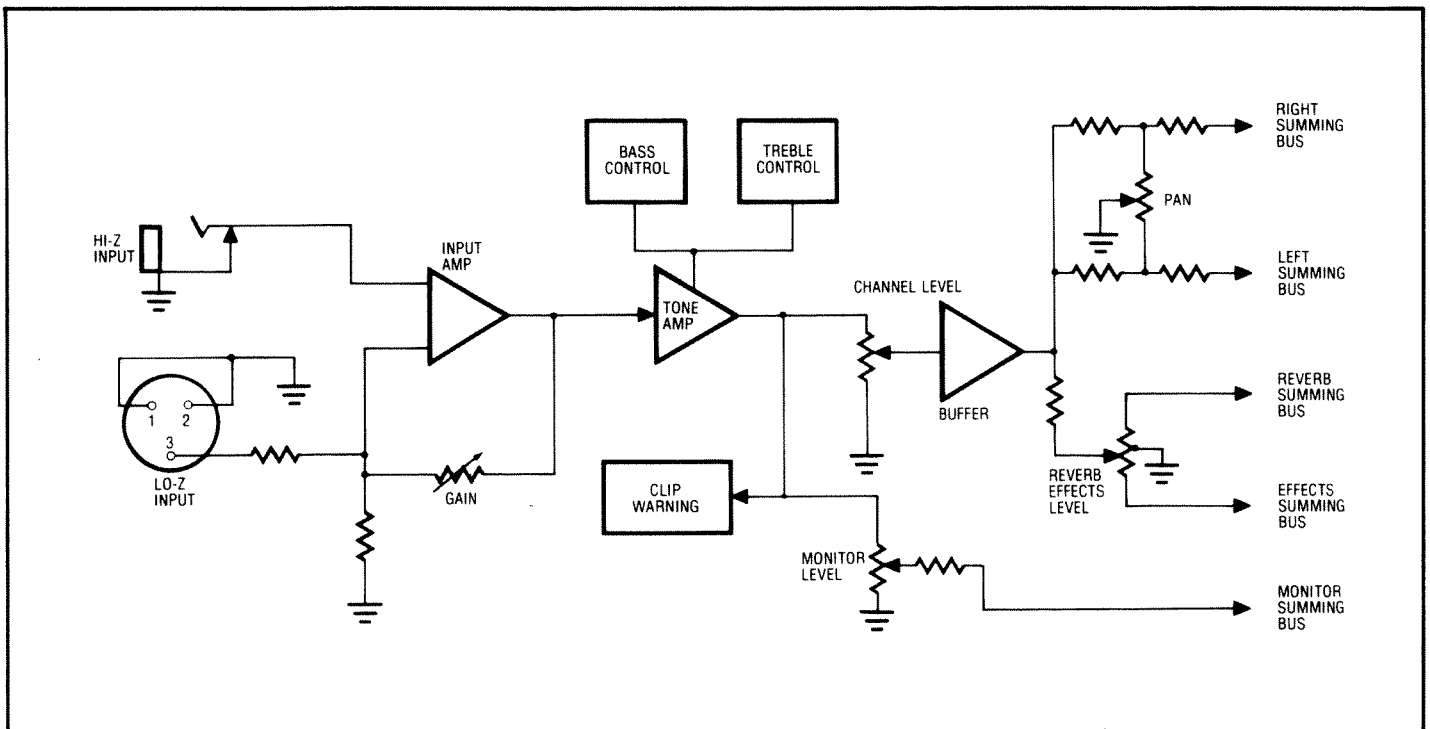


FIGURE 1 — Pre-Amp, Input Section (one channel of six) Block Diagram

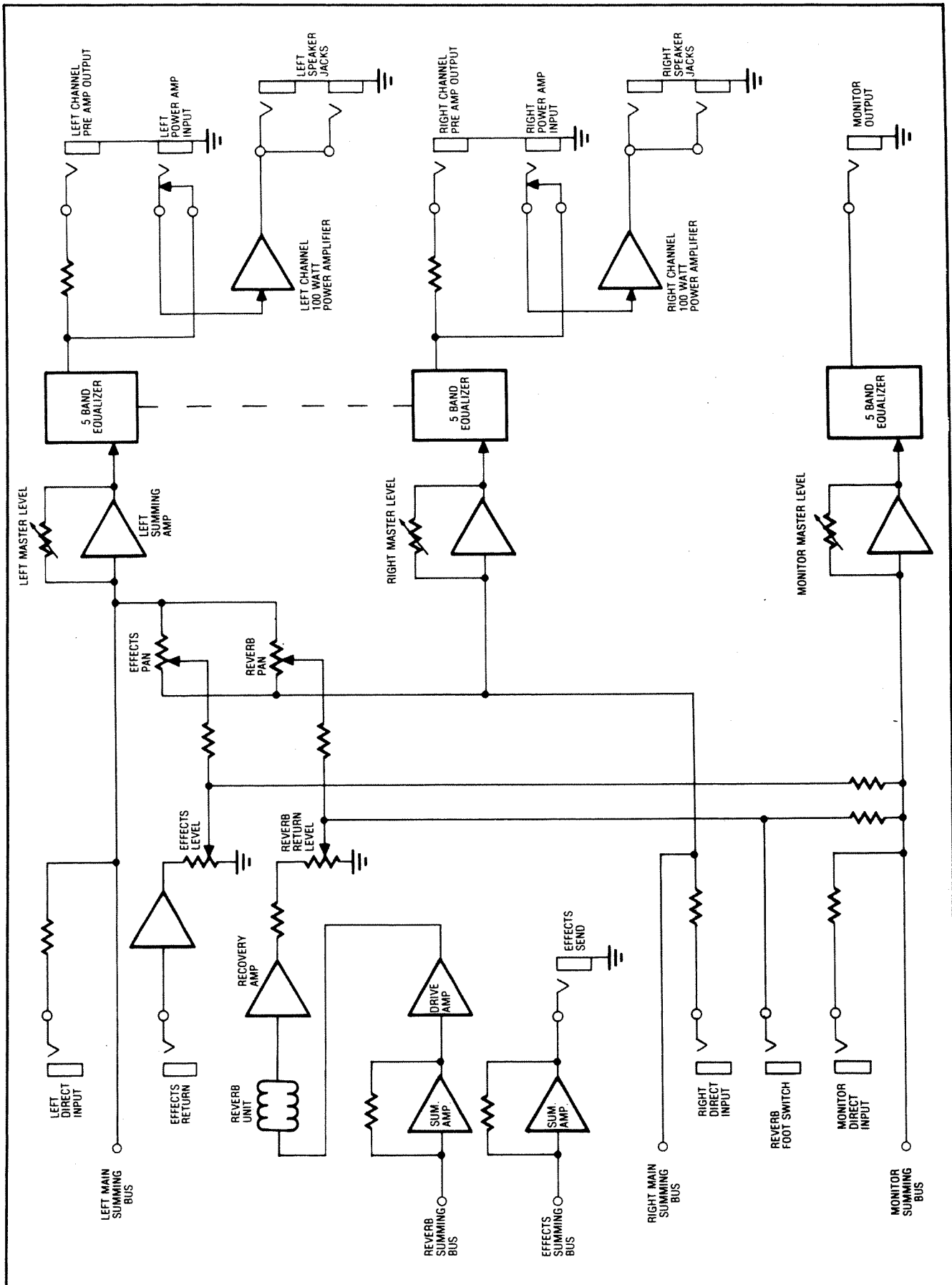


FIGURE 2 — Master Control Block Diagram

Bass Control (Fig. 3 - Item 4)

This boosts or cuts the low frequency content of the input signal. See Figure 4 for the frequency response range of this control.

Effects/Reverb (Eff/Rev) Control (Fig. 3 - Item 5)

Turning this control clockwise from the center detented position sends the signal from that channel to the internal reverb unit.

Turning the control counterclockwise sends the signal to the Effects Send jack located on the lower portion of the control panel.

This is a post-fader control, that is, the level of the signal is a function of the Channel Level Control.

Monitor Control (Fig. 3 - Item 6)

This control establishes the monitor mix in the same way as the Channel Level control establishes the main mix. It is independent of the Channel Level control so that the monitor mix will not be changed by changes in the main mix. The monitor signal, however, is a function of the channel Bass and Treble controls so that a more representative monitor mix can be obtained.

Pan Control (Fig. 3 - Item 7)

This control allows positioning of the channel input signals in the stereo perspective. Turning the control counterclockwise will move the signal to the left channel, clockwise will position the signal on the right. With the control at its center detented position, the input signal is divided equally between the left and right output channels.

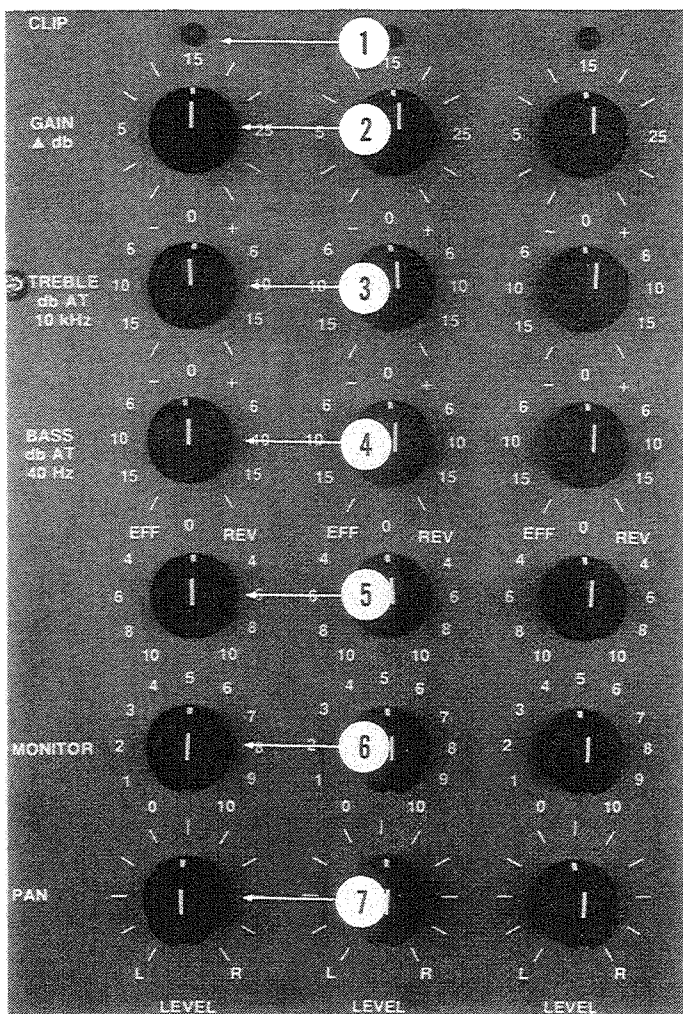


FIGURE 3 — Input Channel Controls

Channel Level Control (Fig. 5 - Item 1)

This controls the level of the signal going into the main stereo mix and the level going to the Effects/Reverb control.

MASTER SECTION CONTROL FUNCTIONS

(Located on the right side of the control panel)

Left and Right Channel Master Level Controls (Fig. 6 - Item 5)

These adjust the composite level for the Left and Right channel outputs. They actually control the gain of the summing amplifiers, thereby preventing them from overloading. This means that the Channel Level controls can be operated at higher levels while the Master Levels can be operated to lower levels, improving the useable signal-to-noise ratio. Loudness of the Left and Right Channels is indicated by the respective VU Meters (Fig. 7 - Item 1).

Monitor Channel Master Level Control (Fig. 6 - Item 6)

This provides the same control for the Monitor output that the Left and Right Level controls do for their channels. It is independent of the Left and Right Master Channel Controls.

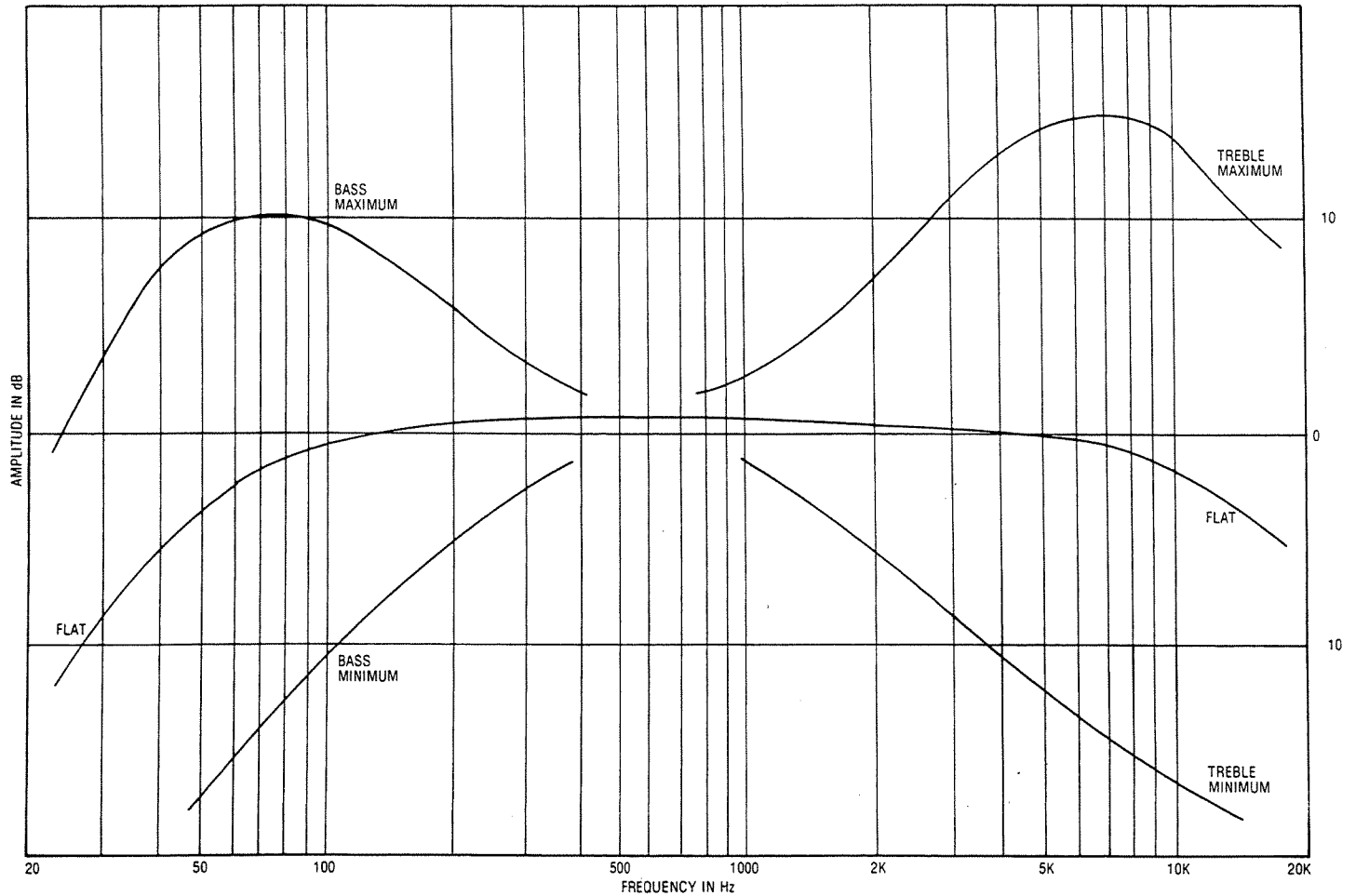


FIGURE 4 — Pre-Amp Input Channel Response Curves

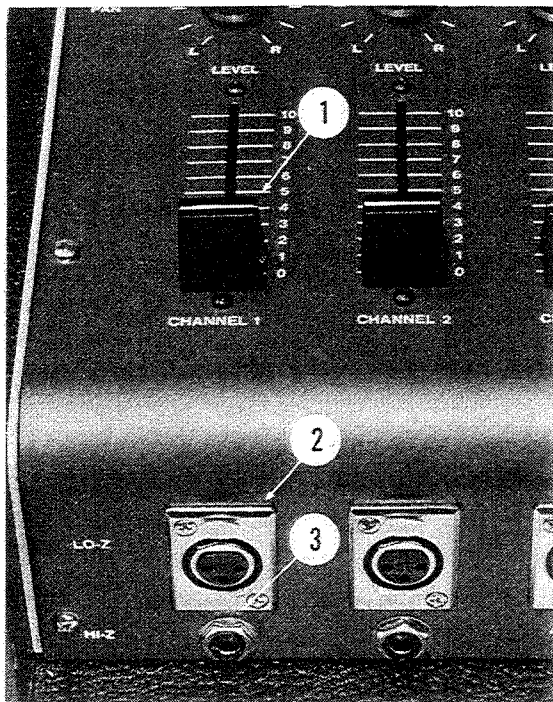


FIGURE 5 — Channel Level Control

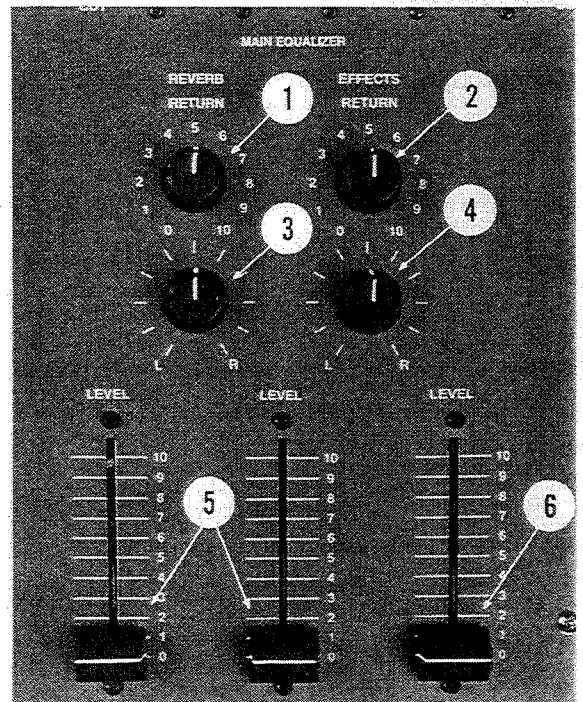


FIGURE 6 — Main Section Controls

Reverb Return Control (Fig. 6 - Item 1)

This controls the amount of Reverb Return signal added to the Main Stereo and Monitor mixes. It adjusts the amount of reverb that is heard.

Reverb Pan Control (Fig. 6 - Item 3)

This control positions the reverb return signal in the stereo perspective. It operates in much the same way as the individual input channel Pan controls. If you are using reverb on only one channel the return Pan control should be positioned the same way as the input channel pan control. If reverb is being used on several channels, the return Pan control should be at its center position.

Effects Return Control (Fig. 6 - Item 2)

Controls the amount of effects signal added to the Main and/or Monitor mixes. It adjusts the amount of Effects that is heard.

Effects Pan Control (Fig. 6 - Item 4)

This control positions the effects return signal in the stereo perspective. It operates in much the same way as the individual input channel Pan controls. In most cases if you are using effect on only one channel the return pan control should be positioned the same way as the input channel Pan control. If effect is being used on several channels, the return Pan control should be at its center position.

Main Equalizer (5 Slide Controls) (Fig. 7 - Item 3)

Controls frequency response, boost and cut for both the left and right output channels. The response of the five controls is indicated in Figure 9.

Monitor Equalizer (5 Slide Controls)

(Fig. 7 - Item 2)

Controls frequency response, boost and cut for the Monitor output channel. The response of the five controls is indicated in Figure 9.

Left and Right VU Meters (Fig. 7 - Item 1)

Indicate the relative output of the internal power amplifiers. For a clean output signal, the meter should not exceed "0" VU, other than on extreme transients.

PRE-AMP INPUT CONNECTORS

Each channel is provided with a three pin low impedance (Lo-Z) microphone connector (Fig. 5 - Item 2) designed to be used with a low impedance microphone in the range of 50 to 250 ohms. The input is unbalanced and pin 3 is the signal input pin.

A high impedance (Hi-Z) phone jack is also provided for each channel (Fig. 5 - Item 3). This jack allows use of a high impedance (50K to 150K ohms) microphone, and will also accept most line level signals by reducing the channel Gain control.

NOTE:

Only one input should be used at any one time on each channel. While both inputs are active simultaneously, the gain balance for a low and high impedance input will most likely be unsatisfactory.

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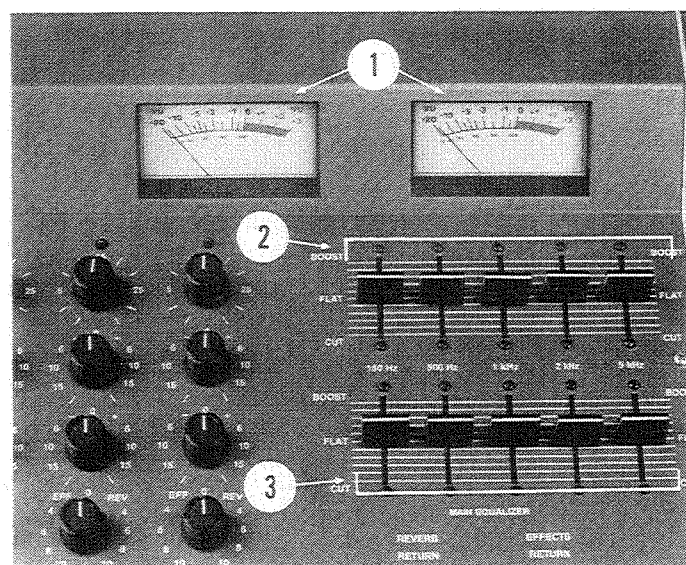


FIGURE 7 — Main, Monitor Equalizer Also VU Meters

AUXILIARY CONNECTORS (Front Panel)

DIRECT INPUTS

Left (Fig. 8 - Item 4)

This jack allows connection of a signal directly into the Left summing amplifier. It is useful for chaining additional mixers. Chaining is discussed in Section II under "MIXER USE."

Right (Fig. 8 - Item 5)

This jack allows connection of a signal directly into the Right summing amplifier. It is useful for chaining additional mixers. Chaining is discussed in Section II under "MIXER USE."

Monitor (Fig. 8 - Item 4)

- 6 This jack allows connection of a signal directly into the Monitor summing amplifier. It is useful for chaining additional mixers. Chaining is discussed in Section II under "MIXER USE."

EFFECTS

Send (Fig. 8 - Item 2)

This jack is used to send the signal from the 8 channels to an external effects device (minimum 2K ohms load impedance) providing that the Eff/Rev knob (Fig. 3 - Item 5) is in the "Eff" position as noted in "Effects/Reverb Control."

Receive (Fig. 8 - Item 3)

This jack receives the output signal from the external effects device and routes the signal to the Effects Return control. The nominal input impedance for this jack is 40K ohms. The signal level should be at least 100mV rms.

Reverb Foot Switch Jack (Fig. 8 - Item 7)

Provides connection for the Reverb Foot Switch which turns the reverb on or off. It functions only if the front panels "Reverb" controls are set to provide reverb.

AUXILIARY JACKS (Rear Panel)

Power Amp Input Jacks

Left Channel (Fig. 10 - Item 3) and Right Channel (Fig. 10 - Item 1)

Each of these jacks is used to connect an external signal directly to the internal power amplifier (input impedance 100K ohms), disconnecting the internal signal.

Pre-Amp Output Jacks

Left Channel (Fig. 10 - Item 4) and Right Channel (Fig. 10 - Item 2)

Each of these jacks provides the Main channel mixer output (just ahead of the power amplifier) for use in external devices. The load impedance on this signal should not be less than 5K ohms.

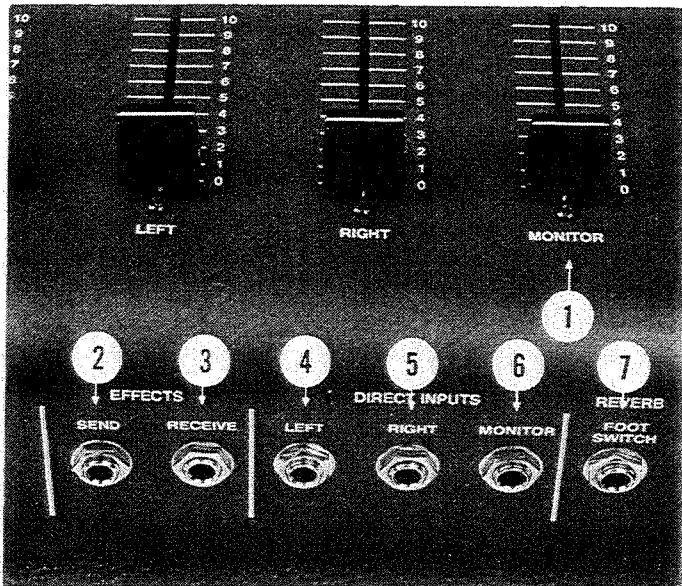


FIGURE 8 — Direct Inputs

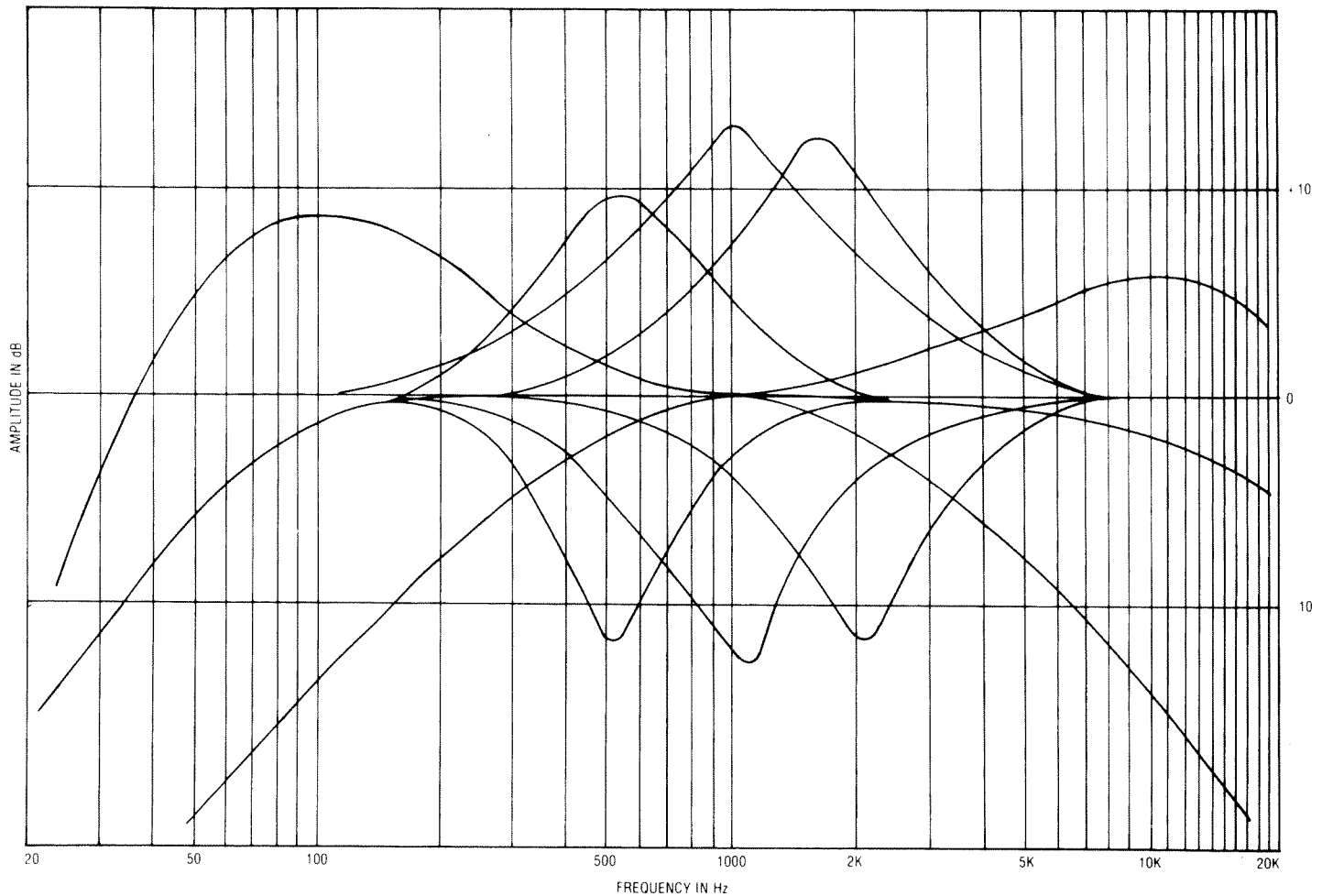


FIGURE 9 — Equalizer Response Curves

Monitor (Pre-Amp) Output Jack (Fig. 10 - Item 5)

The Monitor channel output is present at this jack. It should be connected to an external power amplifier (minimum 2K ohms impedance) and monitor speakers.

ADDITIONAL REAR PANEL CONTROLS AND CONNECTIONS

Power On/Off Switch (Fig. 10 - Item 7)

This switch turns the power on/off in the system. VU Meters light up, indicating that power is turned on.

Left Output Jacks (Fig. 10 - Item 8) **and Right Output Jacks** (Fig. 10 - Item 6)

Each two jacks are wired in parallel and serve to connect each speaker enclosure to its respective channel. Total impedance of the speakers in each channel should not be less than 8 ohms.

Speaker Fuses (Fig. 10 - Items 9, 10)

These fuses are connected in series with their respective speaker jacks. They protect the speakers in the event of amplifier failure and protect the amplifier from low impedance loads. Each fuse is rated at 3 amperes and should be replaced only with the same rating and type.

Accessory AC Outlet (Fig. 10 - Item 11)

This can be used for connecting other electronic devices which do not require more than 400 watts input power.

Line Cord Receptacle (Fig. 10 - Item 12)

Connection for the detachable 120 VAC power cord.

Cord wrap brackets are provided in the mixer cover for storage of the cord.

Circuit Breaker (Fig. 10 - Item 13)

The circuit breaker provides protection in the event of internal amplifier failure. The breaker is reset by pushing in the red button.

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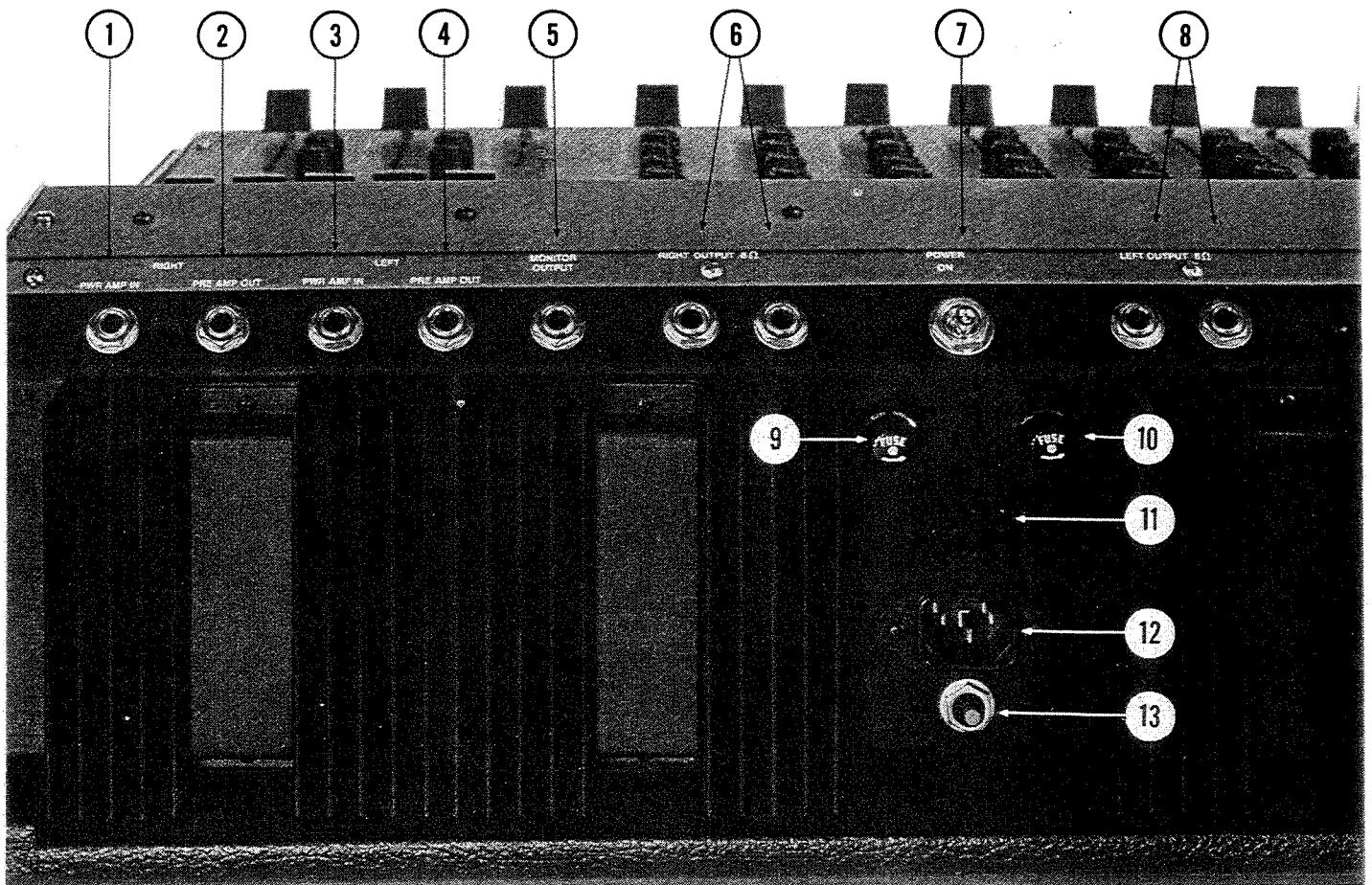


FIGURE 10 — Back Panel

SECTION II SETTING UP THE SYSTEM

Normal Stereo Sound System Connections

The MA8S is a stereo (two channel) system and special care must be taken in setting it up. The unit contains two channels of power amplification and offers some special connections which may be advantageous under certain conditions. The normal setup and some of the special connections are detailed in the following section.

Speaker Placement

In order to minimize feedback, the speakers should be placed between the performers and the audience, directed toward the audience, but in front of and facing away from the microphones (See Fig. 11). The speakers should be used in their normal up-right position (not turned on their side) in order to take advantage of their inherent directional quality.

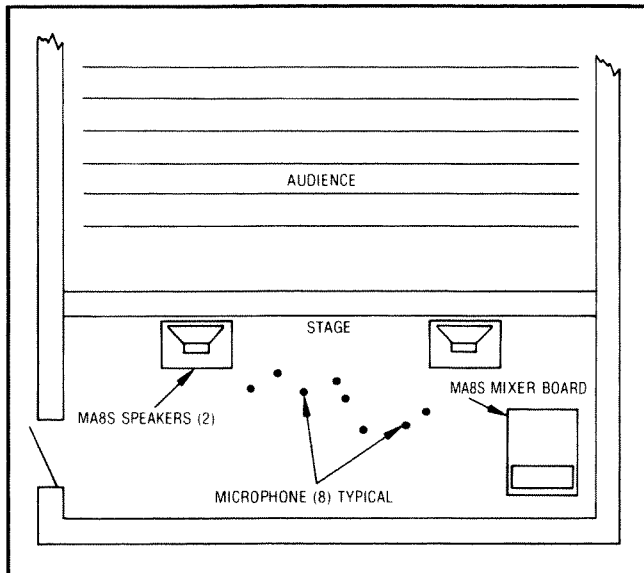


FIGURE 11 — Typical Stage Setup

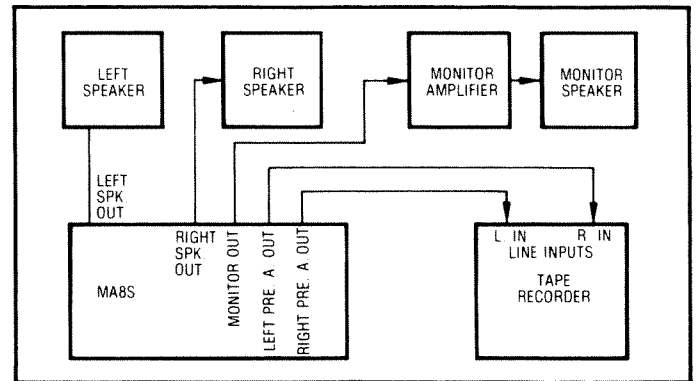


FIGURE 12 — Typical Speaker, Monitor, and Tape Recording Connection

Speaker Connection (Fig. 12)

Connect the speaker cabinets to the mixer using the speaker cables ("zip cord") supplied with the unit. The speaker on the left side of the stage should be connected to one of the left (speaker) output jacks on the back of the mixer. The speaker on the right side should be connected to one of the right (speaker) output jacks.

NOTE:

While the use of a shielded guitar cable to connect the speakers will not damage the equipment, a loss of volume or damage to the shielded cable may result. Only 18 AWG unshielded wire (or larger) should be used for the speaker connection.

Microphones (Fig. 12)

Place the microphones as necessary on stage for the desired vocal or instrument pickup. Both high impedance and low impedance types may be used, but not simultaneously in the same channel. Plug

high impedance microphones into the Hi-Z phone jacks (Fig. 5 - Item 3) and low impedance microphones into the Lo-Z three pin connectors (Fig. 5 - Item 2). The microphone cables should be kept as short as possible and not placed close to wires containing house AC power or lighting cables.

The choice of the proper type of microphone can sometimes be a very involved process, but for starters, selecting good quality dynamic or electret (condenser) microphones with a cardioid pickup pattern is recommended.

AC Power Cord

Remove the 120 VAC power cord from the inside of the Mixer cabinet top and plug it into the line cord receptacle in the rear of the Mixer (Fig. 10 - Item 12). An accessory AC outlet (Fig. 10 - Item 11) is provided directly above the power cord socket. DO NOT remove the grounding prong of the AC plug because it prevents hum and possible electric shock. If necessary, use a three-prong to two-prong adapter.

Preliminary Control Settings

1. Set all Channel, Main, and Monitor Level controls ("faders") to their minimal positions (Fig. 6 - Items 5, 6) (Fig. 5 - Item 1).
2. Turn all Gain controls to "25" (Fig. 3 - Item 2).
3. Set all Bass and Treble tone controls (Fig. 3 - Items 3, 4) to the "Flat" (center) position.
4. Set both Main and Monitor equalizers (Fig. 7 - Items 2, 3) to their "Flat" (center) positions.
5. Set both the Effects/Reverb controls and the Pan controls (Fig. 3 - Items 5, 7) to their center positions.
6. Turn the power switch on (Fig. 10 - Item 7). The two VU Meters should light up. If they do not, check the power cord connections and the circuit breaker (Fig. 10 - Item 13).
7. Set the Main Left and Right Level controls (Fig. 6 - Item 5) to "4" or "5".

Final Control Adjustments

Gain — While someone is singing or playing into the microphone at a performing level, adjust the Input

Channel Gain Control (Fig. 3 - Item 1) until the red Clip light is barely flickering.

NOTE:

High level devices, such as tape recorders, etc., may require that the Gain control be set at a very low level. Conversely, a very quiet voice may require a very high setting.

Tone — The tone controls (Fig. 3 - Items 3, 4) are "ahead" of the overload warning light. This means that boosting the Treble and/or Bass may cause the red light to glow, indicating overload of the Channel. Simply turn the Gain control counterclockwise until the light flickers.

If reverb is desired, turn the Pre-Amp Effects/Reverb control (Fig. 3 - Item 5) to the right (clockwise). If external effects devices are to be used, turn the channel Effects/Reverb control to the left. The center position is "0", (no effects or reverb).

NOTE:

Also adjust the Master Section Reverb or Effects Return controls (Fig. 6 - Items 1, 2) as necessary. The reverb footswitch, when plugged in, switches the internal reverb on or off in both the Main and Monitor speakers.

Channel Level — Set the Channel Level controls (Fig. 5 - Item 1) to "7" first, and then adjust them for the proper mix or "blend."

Master Section Level Controls — Use the Master Section Level controls (Fig. 6 - Item 5) to set and "balance" the overall volume level.

Pan Controls — The Reverb and Effects Pan controls (Fig. 6 - Items 3, 4) are used to set the Stereo Perspective of the finished mix (Pan is short for Panoramic). By using these controls, each channel's signal may be directed to only the left speaker, only the right speaker, or any combination of left and right. The center position divides the channel signal equally between the left and right speakers.

SOME EXTRA FEATURES AND OPERATING NOTES

Reverb and Effects Return Controls

Some special consideration must be given to the Reverb and Effects Return controls. Since the internal reverb and the external effects systems are single channel (monophonic) devices, the amount of the signal returned to the final mix must also be proportioned between the left and right output channels. This is done by use of the Pan control provided for each of the return signals. In general, it will be a good idea to leave these Pan controls in their center positions (equal reverb or effects signals to both left and right outputs). It should also be noted that adding reverb, either through the Main outputs or the Monitor output increases any systems tendency to feedback or ring. The operation of the reverb is discussed in the section on the Monitor System.

Equalizers

The MA8S has three 5 band graphic equalizers (Fig. 7). One for the Left output, one for the Right output and one for the Monitor output. The Left and Right equalizers are controlled simultaneously by common control knobs, labeled "Main Equalizer" on the front panel. These equalizers are used to adjust the tonal quality to suit the acoustics of the room and to give more volume before feedback occurs. Example: If the room has a resonance around 120 Hz, simply lower the 150 Hz equalizer control until the feedback disappears. The center position indicates "flat" response.

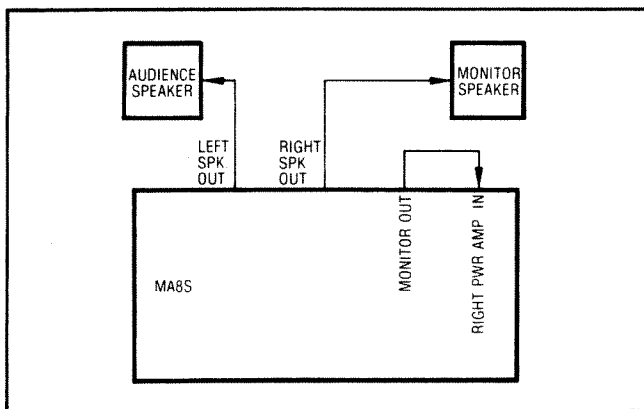


FIGURE 13 — Monophonic Connection to Use MA8S for Monitor

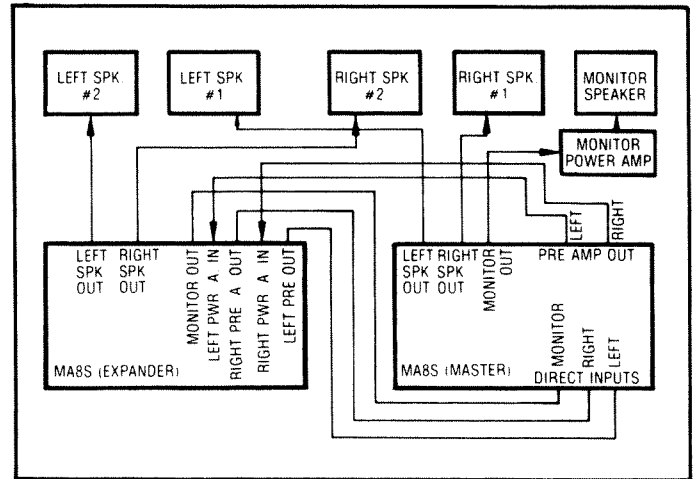


FIGURE 14 — MA8S Used as Master Mixer with Expander (Chaining)

Explanation of the Equalizer Controls

150 Hz — This is a shelving-type control and acts like a bass tone control. Too much boost and the System will sound muddy. Cutting this control a bit will help eliminate feedback from a miked acoustic guitar, as well as "cleaning up" the vocals by minimizing bass frequencies from bass drums, basses, and foot-tapping.

500 Hz (Peaking) — Important vocal range. Don't touch unless you have to — and then be judicious about it. Boosting can cause any singer to sound like a horn.

1 kHz and 2 kHz (Peaking) — Very important, as most instruments have harmonics in this range. Boosting these frequencies causes the System to sound nasal or "tinny". Sometimes cutting 2 kHz slightly can bring the vocals "on top" of the music.

5 kHz — This is a shelving-type control and acts like a treble tone control. Maximum shelf is at 10 kHz. A slight boost with this control adds presence or better definition to voices. Too much boost and the System will "ring".

Monitor System Setup

To use the Monitor output, a power amplifier and monitor speakers must be connected (Fig. 12). The Monitor mix is produced by using a Monitor control on each channel. This is a "pre-fader" control, that is, the monitor signal level is independent of the Main Channel Level control. However, the channel Gain control effects both the Main and Monitor signal levels.

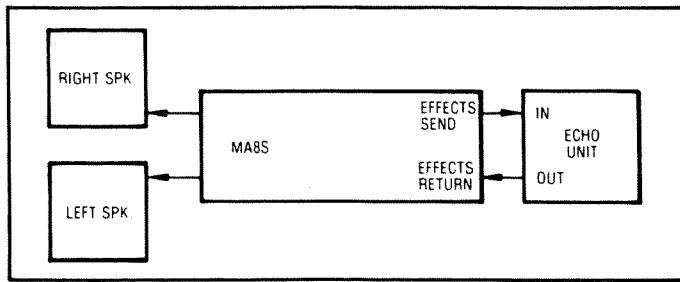


FIGURE 15 — Effects Jack Connections

The reverb and effects return signals are added into the Monitor mix at the same level as the Main mix but since the direct portion of the signal is a function of the channel Level control (Fig. 5 - Item 1) for the Main output and also a function of the Monitor control (Fig. 3 - Item 6) for the Monitor output, the resultant reverb (or effects) sound may be different in the Monitor output than it is in the Main output. To avoid this, (sometimes the difference may be desirable), the channel Level control and the channel Monitor control should be at approximately the same setting.

If Stereo output is not necessary, one of the internal power amplifiers and its speaker can be used as a Monitor System as shown in Figure 13. This is done by connecting a guitar cord from the Monitor Output Jack to the Left (or Right) power amplifier input jack on the back of the Mixer. When using the System this way, all Pan controls should be in their center positions.

MIXER USE

Use of an Additional Mixer (Fig. 14)

The Fender MA8S can be used either as a Master unit when chaining another mixer to gain additional input channels, or as an expander. If it is used as the master unit, connect the Left channel pre-amp output of the other mixer to the Direct Inputs Left jack, (Fig. 8 - Item 4), Right channel pre-amp output to the Direct Inputs Right jack (Fig. 8 - Item 5), and the Monitor channel to the Direct Inputs Monitor jack (Fig. 8 - Item 6). This allows control of the entire System with the Master Section controls of the MA8S.

If the MA8S is to be used as an expander with another Master unit, the left and right Pre-Amp Out jacks (Fig. 10 - Items 2, 4) and the Monitor Out jack (Fig. 10 - Item 5) should be connected to the Master unit. Use the Master section controls of the MA8S as Submasters.

Effects Send and Receive Jacks

(Fig. 8 - Items 2, 3)

The mix at the Effects Send jack can be used for several functions. If two different monitor mixes are required, this jack can be used for the second monitor mix and can also be used for tape recording.

Phasers, Flangers, Delay Lines, or other signal processors may be used in the effects loop. The Effects Send jack should be connected to the input of the signal processing device and the output of the device to the Effects Receive jack (Fig. 15).

Monitor Out Jack (Fig. 10 - Item 5)

This jack is usually connected to an external power amp for the Monitor speakers. It can also be used for tape recording.

Pre-Amp Output Jacks (Fig. 10 - Items 2, 4)

Both Left Channel and Right Channel Pre-Amp Output jacks are provided on the rear panel. These may be used to connect additional amplifiers and speakers (Fig. 16) or used as described above in chaining the Mixer.

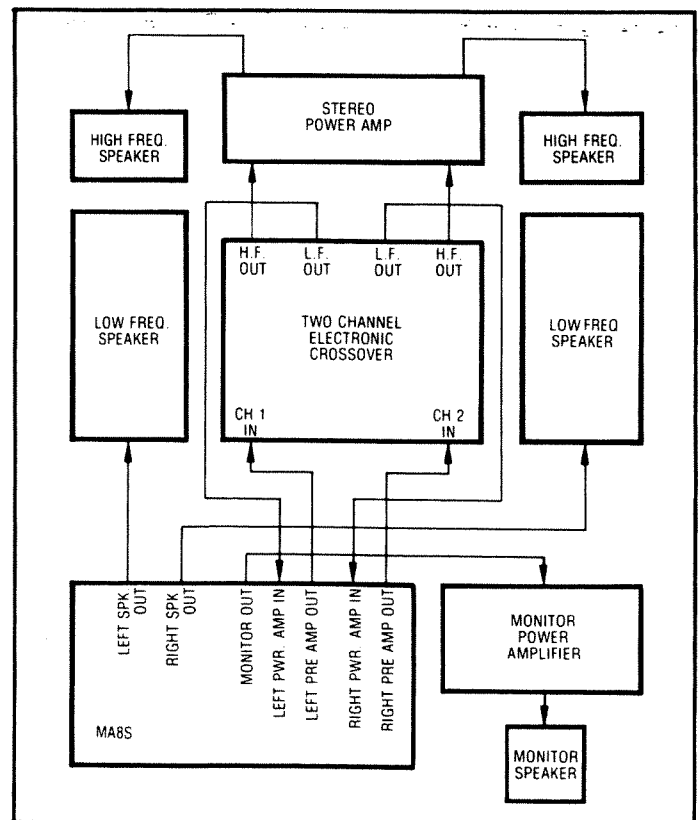


FIGURE 16 — Two Channel Crossover with Monitor Amp and Speaker

Bi-Amping with an additional P.A. System

(Fig. 17)

Connect the Left and Right Pre-Amp Output jacks (Fig. 10 - Items 4, 2) to a two channel electronic crossover. If the MA8S is to be used for bass, use bass speaker enclosures and connect the Left and Right Power Amp In jacks (Fig. 10 - Items 1, 3) to the respective "low" outputs of the crossover, and connect the "high" outputs of the crossover to the additional two channel P.A. amplifier which is connected to the high frequency speakers. If the MA8S is to be used for highs, reverse the System connections.

Speaker Output Jacks and Speaker Systems

Each of the Left and Right Power Amps will supply 100 watts into an 8 ohm load through a 3 amp fuse mounted on the rear panel. The fuse protects the amplifier from damage which could be caused by speaker loads of less than 8 ohms. Replace the fuse only with the same type. Each speaker system (enclosure) is 8 ohms.

Pre-Recorded Tapes

To play back pre-recorded tapes, connect the tape recorder to the Left and Right Direct Input jacks for Stereo (Fig. 8 - Items 4, 5) or to the Effects Receive jack for Mono (Fig. 8 - Item 6), if it is not already in use. The Effects circuit has its own level control.

Tape Recording (Fig. 12)

To record the Main Channel signal, connect the tape recorder to the Left and Right Pre-Amp Output jacks (Fig. 10 - Items 2, 4).

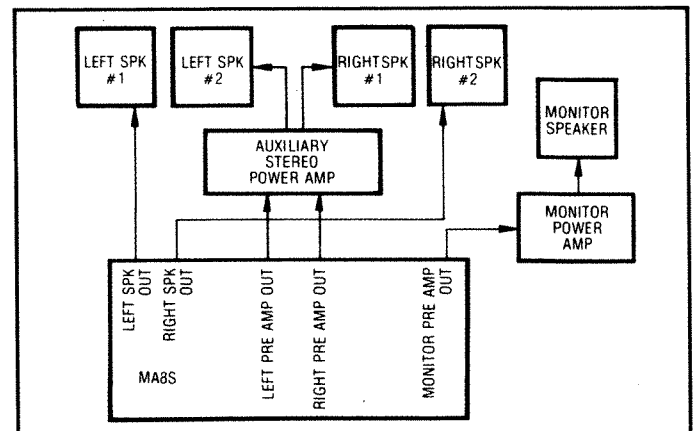


FIGURE 17 — MA8S System with Auxiliary Speakers and Monitor Speakers

SECTION III 8 CHANNEL PA SPEAKER SYSTEM

12 HF Speaker Enclosure System

The Fender MA8S Stereo Public Address System is supplied with two speaker enclosures. Each enclosure contains two high efficiency 12" low frequency speakers mounted in a Thiele aligned vented box enclosure and a compression driver mid and high frequency horn. An internal crossover network provides the correct frequency input to the horn and the

bass speakers. The electrical connection to the speakers is achieved through either of the two 1/4" phone jacks, connected in parallel, on the rear of the cabinet. The nominal impedance of each speaker system is 8 ohms. The two speaker systems connected in parallel will provide a 4 ohm amplifier load.

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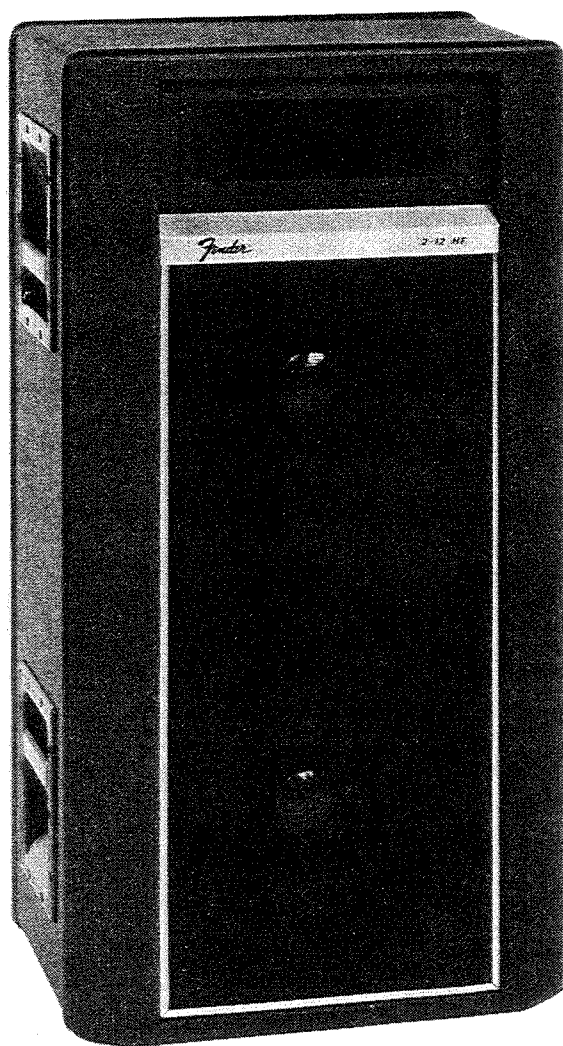


FIGURE 18 — Speaker Column

NOTE: SEE ACCOMPANYING LIMITED WARRANTY FOLDER



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