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Thank you for using our products.

INSTALLATION INSTRUCTIONS MODEL MX-8 MIXER

Use this product according to this instruction manual. Please keep this instruction manual for future reference.

GENERAL:

The MX-8 Mixer is an eight channel audio mixer designed to drive power amplified speakers in a telephone paging application or as the input mixer for a commercial PA system. The MX-8 offers a choice of ten different inputs: five low impedance microphone inputs, one telephone paging input, three high impedance auxiliary inputs and one PATCH IN input. The MX-8 allows eight of these inputs to be used simultaneously: four microphone inputs, a choice of a telephone paging input or a fifth microphone input, and three auxiliary inputs.

The front panel of the mixer features individual input level controls; as well as, MASTER gain and TREBLE / BASS controls, LO CUT horn protect switch, LIMITER (ALC) ON/OFF switch, power ON indicator, INPUT PEAK indicator for the eight input channels, and an OUTPUT PEAK indicator.

A built-in LIMITER circuit compensates for the varying voice levels and paging styles of the people who have access to telephone paging or a microphone input. The LIMITER maintains rated output without distortion when input level exceeds rated input by as much as 20dB. The LIMITER circuit affects only the MIC and TEL inputs.


Note that (AUX 1) auxiliary input (i.e., background music, tone generator, etc.) will automatically be soft muted whenever a telephone page or a microphone page is generated. After completion of the page, the music will return to its original level.

On the rear panel, there is a power ON/OFF switch with a switched auxiliary AC receptacle, as well as a MIC 5/TEL select switch and a PRE/POST EQ select switch for the LINE OUT.

All inputs and outputs are connected to the rear panel. Screw terminals are used for the Microphone and Telephone Inputs. Phono jacks are used for auxiliary inputs, LINE OUT, TAPE OUT, PATCH OUT and PATCH IN.

The mixer operates from 115VAC, 60Hz and has a power consumption of less than 25 watts. **There is no external fuse or circuit breaker.** IN THE EVENT THE MIXER DOES NOT POWER UP, HAVE THE TROUBLE INVESTIGATED BY AN AUTHORIZED SERVICE TECHNICIAN OR RETURN UNIT TO FACTORY.

NOTE: READ THESE INSTRUCTIONS CAREFULLY. FAILURE TO COMPLY WITH ANY OF THE FOLLOWING INSTRUCTIONS, CAUTIONS AND WARNINGS COULD RESULT IN RISK OF ELECTRICAL SHOCK, IMPROPER APPLICATION OR INSTALLATION.

NOTE: All CAUTIONS and WARNINGS are identified by the symbol . All warnings are printed in bold capital letters.

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

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1. UNPACKING:

The mixer was carefully checked before leaving the factory. Inspect shipping container and unit carefully for indication of improper handling. If the unit has been damaged, make an immediate claim to the carrier.

2. MOUNTING INSTRUCTIONS:

The mixer is provided with five mounting feet for placement on a shelf. An optional Rack Mount Kit (PA-RMK) is available for mounting in standard EIA 19" racks. Refer to PA-RMK installation instructions (P83258) for mounting.

⚠ CAUTION: These devices are not intended for use in hazardous locations as defined by the National Electrical Code (NEC).

3. POWER AND GROUNDING (SEE FIGURE 1):

The 115VAC line cord has a three-prong plug which should be plugged into a three wire grounded electric outlet. It is very important to maintain the mixer ground for safe and trouble-free operation. If there is no grounded electric outlet, connect earth ground of the AC line cord to a water or steam pipe.

4. POWER SWITCH AND RECEPTACLE (SEE FIGURE 1):

The ON/OFF power switch located on the rear panel controls both the internal power of the mixer and the accessory IEC female outlet.

Note: The accessory to be attached and controlled by the ON/OFF switch must not exceed 3 Amps at 115VAC.

Figure 1: Power Connections

5. SPECIFICATIONS:

<i>Table: 1</i>					
<i>Description</i>	<i>MX-8</i>			<i>Tolerance</i>	<i>Comments</i>
<i>Inputs</i>	<i>(1) Telephone</i>	<i>(4) MIC</i>	<i>(3) AUX</i>	-----	-----
1. Impedance	600 Ohms	600 Ohms	47K Ohms	-----	at 1KHz
2. Sensitivity	(-16dBm) 125mV	5mV	225mV	TEL ± 2dB MIC ± 1.0mV AUX ± 20%	To Produce Rated Output
3. Frequency Response	150Hz-15KHz	20Hz-20KHz	20Hz-20KHz	±2dB	Ref. 1KHz at .1V -3dB Roll-Off
4. Signal to Noise Ratio	65dB	65dB	70dB	- 3dB	“No Hum”
5. Type of Input	Transformer Isolated/Bal.	Balanced or Unbalanced	Unbalanced	-----	-----
6. Controls	Level Control: (1) TEL/MIC5 (4) MIC (3) AUX BASS, TREBLE, MASTER GAIN				Front Panel
	LIMITER Select Switch, LO-CUT Switch				Front
	TEL/MIC5 Select, PRE/POST EQ Switch				Rear Panel
7. Indicators	Green LED - Power On, Red LED - Input Peak Indicator Output Peak Indicator				Front Panel
8a. Treble Control	-12dB to +12dB at 10KHz			± 3dB	Ref 1kHz at .1V
8b. Bass Control	+12dB to -12dB at 100Hz			± 3dB	Ref 1kHz at .1V
9. Lo-Cut Switch	-6dB at 250Hz			± 1dB	-----
10. Automatic Limiter for Paging	± 2dB Output Level Maintained Without Clipping, While Exceeding Rated Input Level Up to 20dB.			-----	-----
11. Automatic Mute Operation	40dB Muting of AUX 1 with Nominal MIC or TEL Input			-----	Mute of Music Output While Page is Activated
12. Total Harmonic Distortion (THD)	1%			± 1%	Rated Output at 1KHz
13. Outputs from Mixer	LINE OUT: ≥ 1V at RL = 150 Ohms PATCH OUT: ≥ 1V at RL 150 Ohms TAPE OUT: -10dB from PATCH OUT			± 10%	Line Out - Selectable PRE/POST-EQ PATCH OUT = PRE-EQ
14. RFI Protection	RFI Test: Use CB Transmitter Output in Same Room - Minimum 20 Ft. from Amplifier - No Pickup			-----	-----
15. Environmental	0 Degrees C-49 Degrees C 85% R.H. Noncondensing			-----	-----
16. Input Power	90V-132VAC 50/60Hz			Power Factor Corrected	Universal Input
17. Consumption	25 Watts Max			-----	-----
18. Weight	12.6 lbs.			-----	-----
19. Dimensions	3.5"(H) 16"(W) 14"(D)			-----	Rack Mount 19"(W)
20. FCC	Part 15			-----	-----
21. UL	813			-----	-----
22. CSA (Pending)	CAN/CSA C22.2 No. 1-M-90			-----	-----

6. TELEPHONE PAGING INPUT (SEE FIGURE 2):

Connect telephone paging interface wires to the input screw terminals marked TIP (+) and RING (-). Set MIC 5/TEL Switch (rear panel) to TEL position. For Tip and Ring connections to various types of telephone paging access, see Figures 6A, B & C. For Tip and Ring connections to Wheelock Zone Controls, refer to the specific zone control installation instructions.

7. MICROPHONE INPUTS (SEE FIGURE 2):

- (A) Connect balanced low-impedance microphone wires to the input screw terminals marked (+) and (-). To avoid possible interference, the microphone input cable should be a shielded cable, with the shield connected to the input GND terminal.
- (B) An unbalanced microphone may be connected to the same screw terminals; the signal to (+) and the shield to (-). The (-) input terminal must be connected to the adjacent screw terminal marked GND. Install a jumper wire between the unused screw terminal and the GND screw terminal.

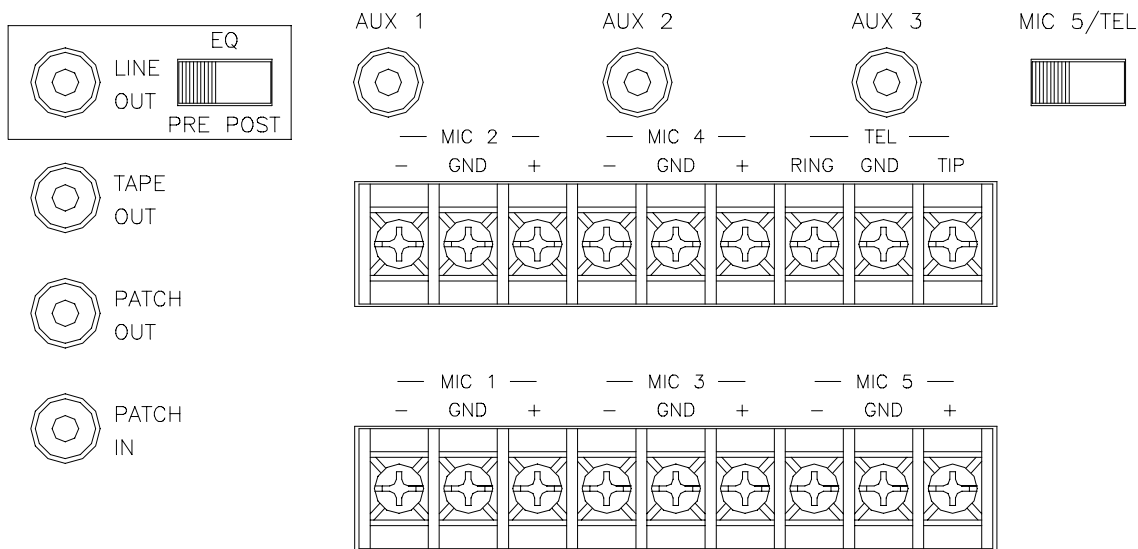


Figure 2: Input Connections

8. AUXILIARY INPUTS (SEE FIGURE 2):

To connect an FM tuner, CD player, tape player, tone generator, or any other line level program source to AUX 1, 2 or 3 input jack on the rear panel, use a single conductor shielded cable terminated in a standard RCA type phono plug. Note that AUX 1 is automatically soft muted by any active MIC or TEL input. Neither AUX 2 nor AUX 3 is muted by paging inputs.

9. LINE OUT (SEE FIGURE 2):

The LINE OUT is a mixed audio signal which can be selected either before the TREBLE/BASS controls (PRE-EQ), or after TREBLE/BASS and MASTER gain controls (POST-EQ). The LINE OUT is the main mixer output and the LINE OUT level is controlled by the MASTER gain control.

10. PATCH OUT - PATCH IN AND TAPE OUT (SEE FIGURE 2):

The PATCH OUT signal is the mixed audio signal before the TREBLE/BASS and MASTER gain controls of the mixer. The TAPE OUT signal is the same as the PATCH OUT but reduced 10dB for line matching to various recording formats. The PATCH OUT signal is available for external audio processing, for example, an outboard graphic equalizer. If external audio processing is used, the resultant signal is to be returned to the mixer at PATCH IN. The insertion of a phono plug at PATCH IN will replace the internal mixed audio signal with an external audio signal. The insertion of an RCA phono plug into the PATCH OUT will also disconnect the mixed audio signal from the tone and gain controls, requiring the external processed audio to be applied at PATCH IN. When using external audio processing, the TREBLE/BASS controls should be set to the center or balanced position.

Note: The insertion of a phono plug in either the PATCH OUT or PATCH IN will disconnect the internal mixed audio from the TREBLE/BASS and the MASTER gain controls.

11. TO CONNECT A TAPE RECORDER (SEE FIGURE 3):

A tape recorder can be connected to record live programs selected (all inputs). A separate phono jack is available for TAPE OUT. The TAPE OUT signal is the same as the PATCH OUT signal but reduced in level by 10dB. Both the PATCH OUT and the TAPE OUT signals are the mixed audio signal prior to the TREBLE/BASS and MASTER gain controls.

Note: Use shielded cable for interconnection.

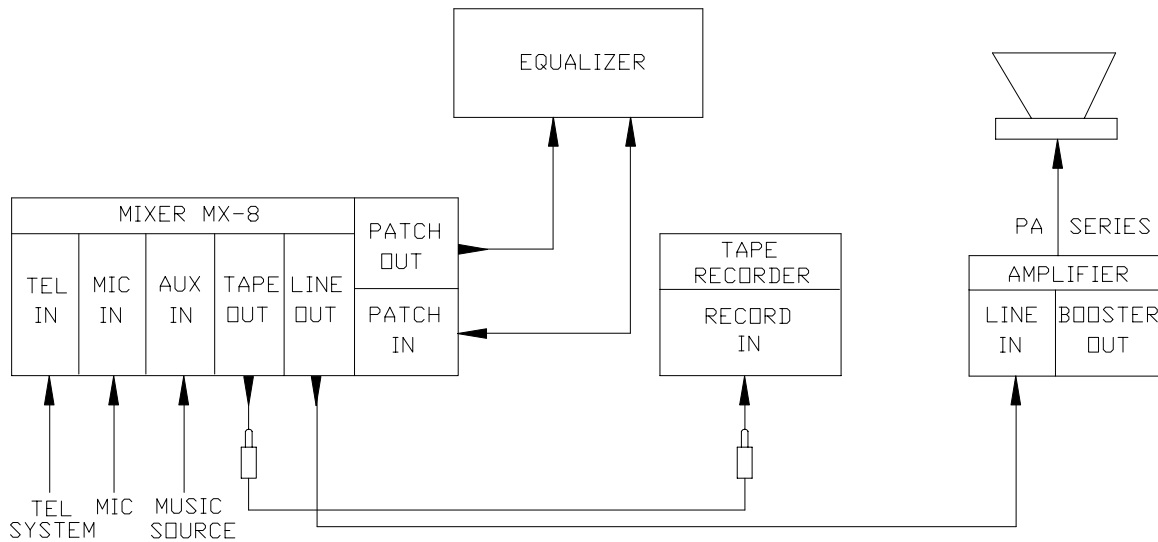


Figure 3: Connecting a Tape Recorder

12. CASCADING AMPLIFIERS FROM MIXER (SEE FIGURE 4):

The LINE OUT of the MX-8 can be used to feed an AUX input of a PAMX-125 for additional inputs with 125 Watts of power.

Note: Use shielded cable for all interconnections.

Note: The LINE OUT signal can be selected to be output prior to, or after, the TREBLE/BASS controls, (PRE/POST EQ).

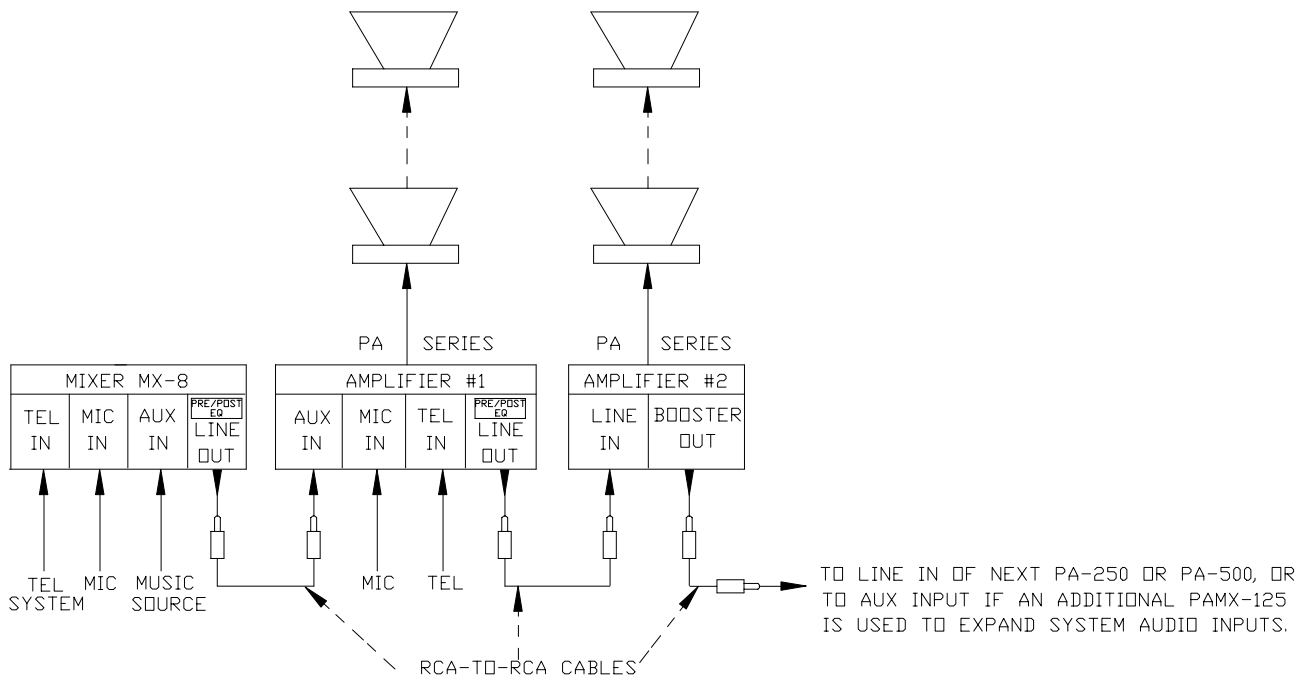


Figure 4: Cascading Amplifiers

13. SELF AMPLIFIED SPEAKERS (SEE FIGURE 5):

The LINE OUT signal can be used to drive self amplified speakers. MX-8 output impedance is 150 Ohms.

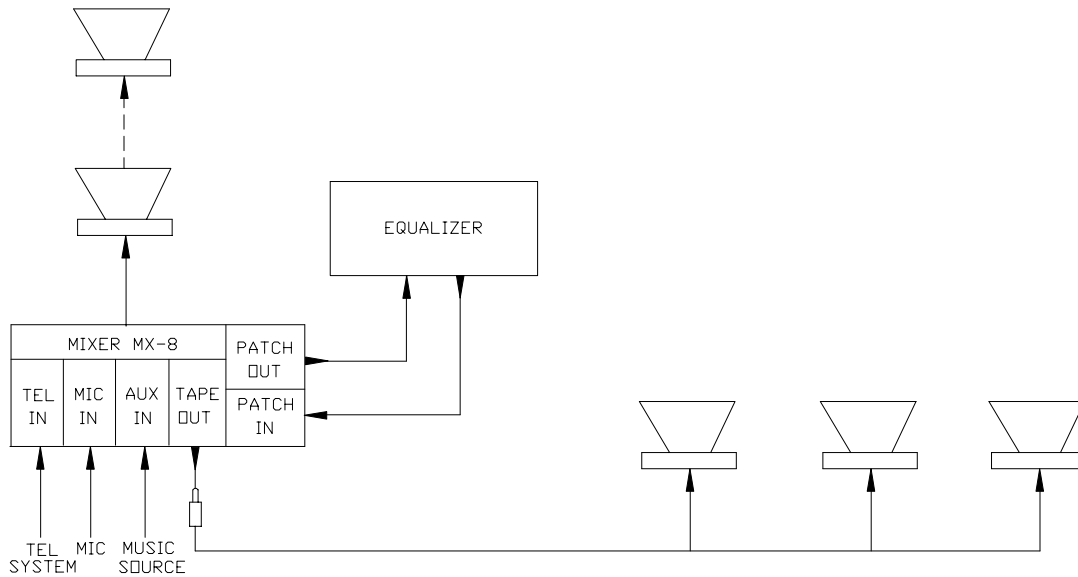


Figure 5: Connecting SA Series Self Amplified Speakers

14. TELEPHONE PAGING ACCESS CONNECTIONS:

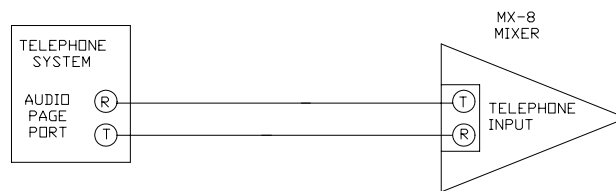


Figure 6A: Audio Page Port

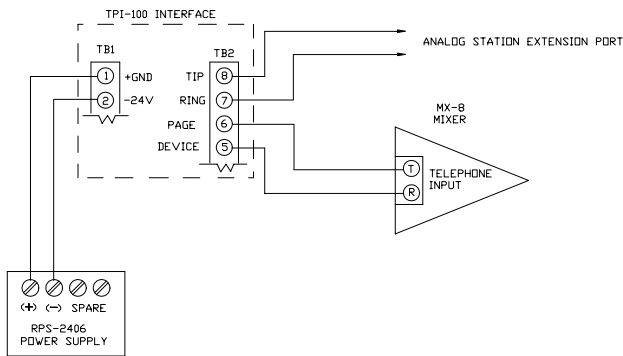


Figure 6B: Analog Station Extension Port

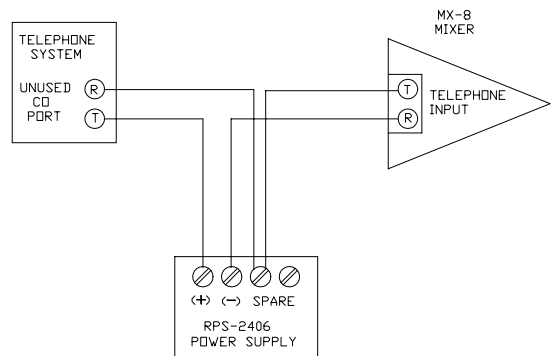


Figure 6C: Unused Co Line/Trunk Port or Stand Alone Telephone

Note: Maximum primary DC current not to exceed 10mA for telephone input.

Refer to Wheelock TPI-100 installation instructions (P82030) for internal control settings and adjustments.

CAUTION: Connect only to PBX or KSU incorporating isolation from public telephone network.
OPERATION:

WARNING: DO NOT OPEN COVER! RISK OF ELECTRICAL SHOCK. NO USER SERVICEABLE INTERNAL COMPONENTS! REFER TO QUALIFIED SERVICE TECHNICIAN. IF UNIT IS OPENED, WARRANTY IS VOIDED.

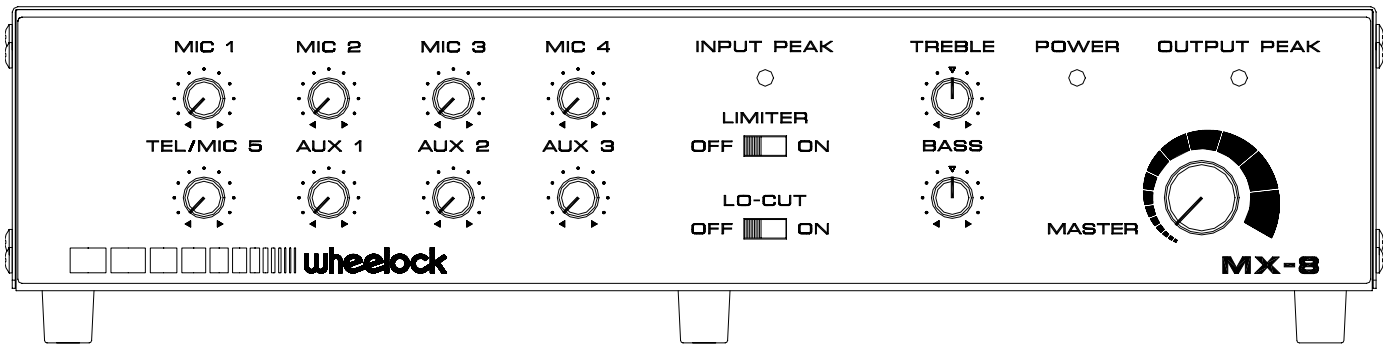


Figure 7: MX-8 Front Panel

15. POWER INDICATOR:

Green LED indicator illuminates when AC power is applied to the mixer.

16. MASTER GAIN CONTROL:

Adjusts the total output level of the mixer without disturbing the individual settings of the microphone, telephone and auxiliary input LEVEL controls (set at factory in minimum position).

17. OUTPUT PEAK INDICATOR:

The indicator illuminates as the mixer output is increased to within 2dB of full rated output.

18. MIC 1 THROUGH MIC 4, TEL/MIC 5, AND AUX 1 THROUGH AUX 3 LEVEL CONTROLS:

Adjusts the input level of each audio channel. If the level of any individual audio channel or the level of any combination of audio channels mixed, would exceed the rated output of the mixer with MASTER set at Max, the INPUT PEAK indicator will illuminate. When the INPUT PEAK indicator illuminates, the mixer is approaching clipping of the audio signal.

19. INPUT PEAK INDICATOR:

The INPUT PEAK indicator will illuminate as the input of any of the eight audio channels approach clipping. If any of the paging inputs approaches clipping, activate the LIMITER to allow paging inputs up to 20dB overdrive.

20. TREBLE AND BASS CONTROLS:

Adjusts TREBLE and BASS for optimum tonal balance of the output signal. The mixer frequency response is flat with the knob indicators pointing straight up (centered).

21. LIMITER OFF/ON SWITCH:

LIMITER switch in the ON position prevents clipping of the paging (MIC or TEL) audio inputs when the paging inputs exceed the rated input by as much as 20dB. The LIMITER circuit does not affect any of the AUX inputs.

22. LO CUT (HORN PROTECT) SWITCH:

Turn the switch ON whenever horns are used in the system. When LO-CUT is active, the low frequency cut-off is 6dB down at 250Hz. This will protect the horn voice coils from damage by filtering out excessive bass energy which can cause damage to horn drivers at high power settings.

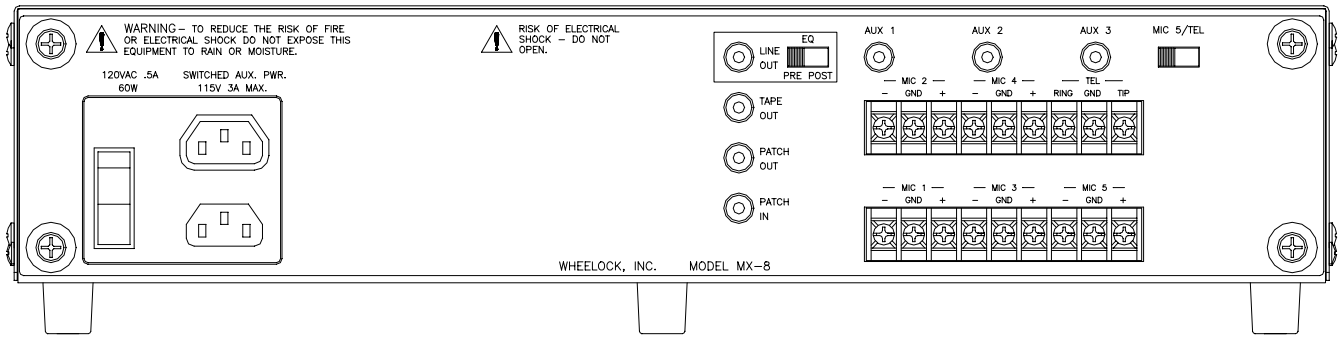


Figure 8: MX-8 Rear Panel

23. POWER ON/OFF SWITCH AND RECEPTACLE:

The mixer is designed to operate from a line voltage of 115VAC at 50/60Hz. The IEC 320 receptacle has a male input to connect a grounded line cord and female output for attaching a switched external auxiliary load. The external auxiliary load is not to exceed 3 Amps at 115VAC.

24. MIC 1, MIC 2, MIC 3, AND MIC 4 AND MIC 5, TEL TERMINAL BLOCKS:

Three terminals are used for each MIC or TEL input. The center terminal for each input allows for the attachment of the shield for that input cable. To maintain proper signal polarity, the plus signal should be attached to the (+) terminal and the minus signal should be attached to the (-) terminal. **Note:** To prevent the input overdrive from clipping, the LIMITER must be active.

25. MIC 5/TEL SELECT SWITCH:

This switch allows the selection between the MIC 5 and TEL (Balanced transformer-isolated) inputs for the fifth paging audio input. Switch position to the left for MIC 5, and to the right for TEL input.

26. AUX 1, AUX 2, AND AUX 3 PHONO JACK INPUTS:

AUX 1 is a high impedance input, automatically MUTED by any paging input, for an FM tuner, CD player, tape player, tone generator, or any other line level program source (i.e., MIC/LINE mixer). The AUX 2 and AUX 3 are the same as the AUX 1 without the MUTE. The AUX inputs are not affected by the LIMITER circuit.

27. LINE OUT (PHONO JACK) WITH PRE/POST EQ SELECT:

The LINE OUT is the mixer main output for driving system amplifiers. The LINE OUT can also be used to drive self-amplified speakers at line level. The LINE OUT can be selected as an output either before the TREBLE/BASS control (PRE-EQ), or after the TREBLE/BASS and POST MASTER gain control (POST-EQ). The switch position to the left selects PRE-EQ, and to the right selects POST-EQ.

Note: Set PRE/POST EQ in POST-EQ position to ENABLE MASTER gain control.

28. PATCH OUT, TAPE OUT AND PATCH IN PHONO JACKS:

The PATCH OUT is the mixed audio signal at line level prior to the TREBLE/BASS control. This signal is available to drive an external audio processor. The resultant processed audio signal is to be reapplied to the MX-8 at the PATCH IN. The TAPE OUT is the same signal as the PATCH OUT but is reduced 10dB. When an external audio processor is used, both the TREBLE and BASS controls should be centered.

Note: When a phono plug is placed in the PATCH OUT phono jack, the mixed audio signal is disconnected before the TREBLE/BASS and MASTER gain control. The outboard processed signal may then be reinserted at the PATCH IN jack.

29. TROUBLESHOOTING:

<i>Symptom</i>	<i>Possible Solution</i>
No Output	- Verify unit is receiving AC power.
	- Check input source functionality and level.
	- Output may not be connected or connected incorrectly.
Low, High, or Distorted Level	- Input signal may be too high or too low.
	- Check gain control on unit.
	- Input or output impedance may be mismatched.

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference when this equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his/her own expense.

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la class A prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministre des Communications du Canada.

Limited Warranty

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