

#### INSTALLATION INSTRUCTIONS MODEL PAMX-125 PAGING AMPLIFIER

#### GENERAL:

The PAMX-125 combines an eight channel mixer with a 125 Watt RMS amplifier in a single unit. The PAMX-125 amplifier 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 PAMX-125 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 amplifier 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 a 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 (See Figure 7). All inputs and outputs are connected at 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 audio power output is connected via screw terminals (See Figure 8).

The amplifier operates from 115VAC, 60Hz and has a power consumption of 175 Watts. <u>There is no external fuse or circuit breaker</u>. IN THE EVENT THE AMPLIFIER 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  $\triangle$ . All warnings are printed in bold capital letters.

# $\triangle$ warning: to reduce the risk of fire or electric shock, do not expose this unit to rain or moisture.

# 1. UNPACKING:

4.

The amplifier 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):

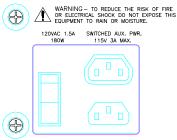
The 115VAC line cord has a three-prong plug which should be plugged into a three wire grounded electric outlet. It is very important to maintain the amplifier ground for safe and trouble-free operation. If there is no grounded electric outlet, connect a wire from the GND terminal on the OUTPUT terminal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

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**POWER SWITCH AND RECEPTACLE (SEE FIGURE 1):** The ON/OFF power switch located on the rear panel controls both the internal power of the amplifier 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:

			Table: 1					
Description		PAMX-125		Tolerance	Comments			
1. Power Output					90-132VAC			
at 1KHz		125 Watts RMS		±1dB	50Hz/60Hz			
2. Total Harmonic					Rated Output			
Distortion	1% at Fi	ill Rated Output	at 1KHz	±1%	8 Ohms			
3. Outputs		125 Watts at		±1dB	Do Not Operate at			
	8 Oh	ms, 25V, 70.7V,	100V		NO LOAD			
Inputs	(1) Telephone	(4) MIC	(3) AUX					
4. Impedance	600 Ohms	600 Ohms	47K Ohms	N/A	at 1KHz			
				TEL ± 2dB	To Produce			
5. Sensitivity	(-18dBM)	4mV	175mV	MIC ± 1.0mV	Rated			
	100mV			AUX ± 20%	Output			
6. Frequency					Ref. 1KHz at 1W			
Response	150Hz-15KHz	50Hz-20KHz	50Hz-20KHz	± 2dB	-3dB Roll-Off			
7. Signal to Noise								
Ratio	65dB	65dB	70dB	- 3dB	No "Hum"			
	Transformer	Balanced or						
8. Type of Input	Isolated/Bal.	Unbalanced	Unbalanced					
	Le		) TEL/MICS (4) M		Front			
9. Controls			EBLE, MASTER GAI		Panel			
			Switch, LO-CUT		Front Panel			
	Т	EL/MIC 5 Select,	C LINE OUT	Rear Panel				
10. Indicators	_	Green Iput Peak Indica		Front				
		Panel						
11a. Treble Control		lB to +12dB at 1		± 3dB	Ref. 1KHz at 1W			
11b. Bass Control	+120	B to -12dB at 1	00Hz	± 3dB	Ref. 1KHz at 1W			
12. Lo-Cut Switch		-6dB at 250Hz		± 2dB				
Automatic		it Level Maintai						
13. Limiter		g, Even While Ex		± 1dB				
for Paging	Rated .	Input Level Up t	o 20dB.					
Automatic 14. Mute		and a first 1 Out			Mute of Music			
0peration		ing of AUX 1 Out Nominal Page I			Output While Page is Activated			
Outputs from			-		LINE OUT Selectable			
15. Mixer			L = 150 Ohms	± 20%	PRE/POST-EO			
15. MIXEL		OUT: $\geq$ 1V at R		± 20%	PATCH OUT = PRE-EQ			
	TAPE (	OUT: -10dB fro	M PATCH OUT					
Input to Power				Input from Mixer	Gain Control On			
16. Amplifier	$\geq$ 1V, into 10k Ohms Isolated $\geq$ 1500V			to Amplifier	Input			
17. Regulation	No Load to Full Output				Amp			
		Less than 2dB			Stability			
18. RFI Protection		Use CB Transmit						
		oom - Minimum 20						
		lifier - No Pick						
19. Environmental		egrees C-49 Degr						
	85% R.H. Noncondensing							
20. Input Power	90V-132VAC 50/60Hz			Power Factor Corrected				
21. Consumption	175 Watts Max							
22. Weight	18.5 lbs.							
23. Dimensions	3.5"(H	I) 17"(W)	14"(D)		Rack Mount 19"(W)			
24. FCC	,	Part 15						
25. UL		813						
		CSA C22.2 No. 1						

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# 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 (-). The shield must be connected to the GND screw 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 the GND screw terminal.

Note: To avoid possible interference, the microphone input cable should be a shielded cable, with the shield connected to the input GND terminal.

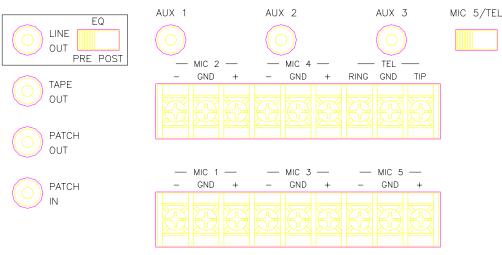


Figure 2: Input Connections

#### 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. The LIMITER circuit does not affect any of the AUX inputs.

#### 9. LINE OUT (SEE FIGURE 2):

The LINE OUT is the mixed audio signal which can be selected either before the TREBLE/BASS controls (PRE-EQ), or after TREBLE/BASS controls (POST-EQ). The LINE OUT (PRE-EQ/POST-EQ) select is on the rear of the unit adjacent to the LINE OUT phono jack. The LINE OUT signal is pre-master and is unaffected by changes in 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 to the amplifier. 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 amplifier 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 phono jack will disconnect the internal mixed audio from the TREBLE/BASS and the MASTER gain controls.

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#### **OUTPUT CONNECTIONS (SEE FIGURE 3):**

#### 11. AUDIO OUT:

Connect (2) output wires from the speaker load, to the COM screw terminal and the selected constant voltage terminal, (i.e. 25V, 70.7V or 100V). The constant voltage distribution method facilitates the use of multiple speakers in parallel with a single amplifier. Note that each speaker must have its own 25V, 70.7V or 100V line-matching transformer. Select the wattage tap on the line matching transformer of each speaker, for the power (gain) desired. An 8 Ohm speaker load may be connected to the COM and the 8 Ohm terminals. The audio output is available at the rated output of 125 Watt for an 8 Ohm load, for a 25V, 70.7V or 100V. The GND and COM terminals of the AUDIO OUT terminal block are chassis ground. The shield of audio output shielded cable should be terminated to this GND (if applicable).

Note: The wattage rating of the speaker loads should not exceed total power rating of the amplifier. The following Table 2 below will provide the appropriate line loss that should be calculated on to those expected speaker loads.

CAUTION: Do not operate amplifier without a proper load attached to audio out terminals.

**CAUTION:** Do not connect / dissconnect wiring or cabling with power applied.

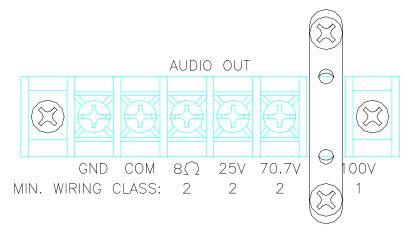
#### 12. PROPER WIRE SIZE/LENGTH:

To minimize power loss in the system cabling, use a wire gauge suitable for the power being distributed and the length of cable. Use the following table as a guide.

Table 2: 2 Wire Copper Cable Lengths for Speaker Lines at 0.5dB Loss in SPL         (12.5% Power Loss in Watts)														
AWG Size	Max Power	Low Impedance Speaker Line								AWG Size				
	AWG	8 Ohms	10W	15W	20W	40W	60W	100W	125W	200W	250W	400W	500W	
10	Per NEC	240	15,000	9,900	7,500	3,750	2,500	1,500	1,180	730	590	370	290	10
12	Per NEC	150	9,100	6,200	4,680	2,340	1,560	940	730	460	370	230	180	12
14	1,060W	95	5,600	3,800	2,880	1,440	960	600	450	280	220	140	110	14
16	420W	60	3,600	2,400	1,870	930	620	370	290	180	140	90		16
18	210W	40	2,300	1,500	1,150	570	380	230	180	110				18
20	70W	25	1,400	960	730	360	240							20
22	35W	15	900	600	460									22

#### Notes:

1) For 25V line divide all 70.7V lengths by 8. 2) For 100V line multiply all 70.7V lengths by 2.0. 3) To allow for future expansion and distribution cable line loss, it is recommended that the total system wattage should not exceed 85% of the amplifier's rated output. (i.e. 106 watts for the PAMX-125). 4) The total system wattage requirement is the summation of the wattage tap selections of all system speakers and horns. 5) In no case should the wattage rating of the speaker loads exceed the total power rating of the amplifier.



### Figure 3: Output Connections

WARNING: THE COVER FOR THE 100V AUDIO OUTPUT TERMINAL MUST BE ATTACHED AT ALL TIMES. THE POWER CORD MUST BE DISCONNECTED BEFORE CONNECTING TO THE 100V TERMINAL. THE COVER MAY BE REMOVED TO CONNECT A WIRE TO THE TERMINAL, BUT IT MUST BE REATTACHED AFTER CONNECTING THE WIRE(S). FAILURE TO MAINTAIN THE TERMINAL COVER IN PLACE COULD EXPOSE YOU AND/OR OTHERS TO ELECTRICAL SHOCK WHICH COULD RESULT IN SERIOUS INJURY AND/OR DEATH.

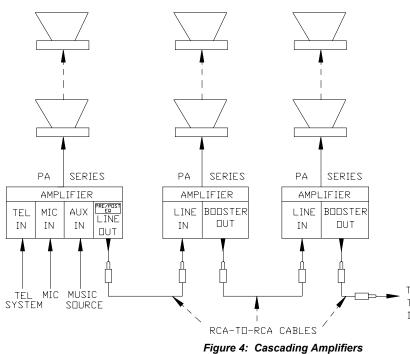
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# 13. CASCADING AMPLIFIERS (SEE FIGURE 4):

The LINE OUT of the PAMX-125 amplifier, which is the resultant mixed audio signal of the eight input channels, can be used as an AUX or PATCH IN input to another PAMX-125, a program source for professional level recording formats, or as a LINE IN input to a PA-250 or PA-500 to expand existing systems or, to distribute large speaker loads.

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).



TO LINE IN OF NEXT PA-250 OR PA-500, OR TO AUX INPUT IF AN ADDITIONAL PAMX-125 IS USED TO EXPAND SYSTEM AUDIO INPUTS.

#### 14. TO CONNECT A TAPE RECORDER (SEE FIGURE 5):

A tape recorder can be connected to record live programs (microphone inputs), or all of the amplifiers activities (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.

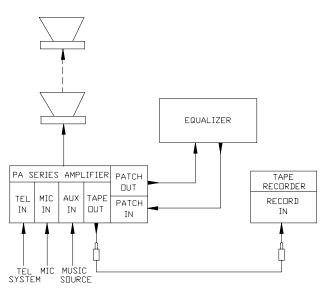
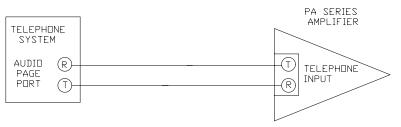


Figure 5: Connecting a Tape Recorder

**CAUTION:** Do not block air flow. Do not stack. Do not operate vertically. When rack mounting, it is necessary to have a minimum of 1.75 above and 1.75 below unit to allow for adequate air flow. Failure to do so could result in excessive heat which could damage the amplifier.

## 15. TELEPHONE PAGING ACCESS CONNECTIONS:



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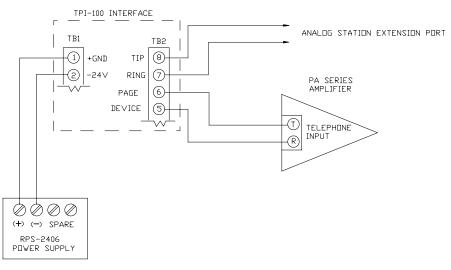


Figure 6B: Analog Station Extension Port

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

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

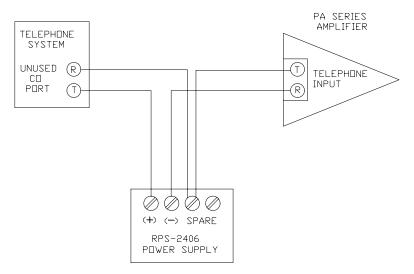


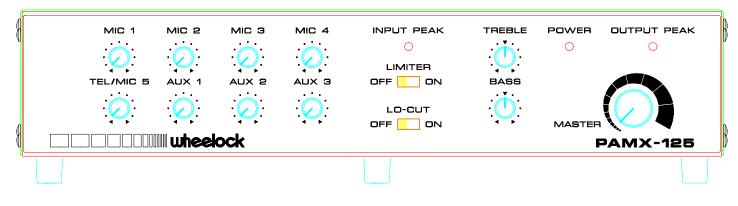
Figure 6C: Unused Co Line/Trunk Port or Stand Alone Telephone

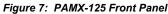
**Note:** Maximum primary DC current not to exceed 10mA for telephone input. **CAUTION:** Connect only to PBX or KSU incorporating isolation from public telephone network.

#### **OPERATION:**

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

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# 16. POWER INDICATOR:

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

#### 17. MASTER GAIN CONTROL:

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

## 18. OUTPUT PEAK INDICATOR:

The indicators, as the amplifier output is increased, illuminates within 2dB of full rated output.

## 19. 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 Mixer set at Max, the INPUT PEAK indicator will illuminate. When the INPUT PEAK indicator illuminates, the Mixer is approaching clipping of the audio signal.

## 20. 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.

# 21. TREBLE AND BASS CONTROLS:

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

#### 22. LIMITER OFF/ON SWITCH:

LIMITER switch in the ON position prevents clipping of the paging 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.

# 23. 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.

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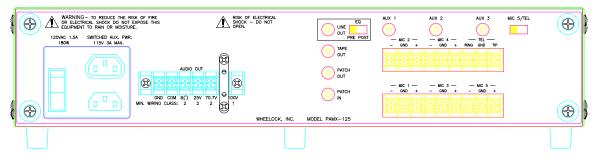


Figure 8: PAMX-125 Rear Panel

## 24. POWER ON/OFF SWITCH AND RECEPTACLE:

The amplifier 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.

#### 25. 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.

## 26. 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.

# 27. 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.

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

The LINE OUT is the mixed audio signal that can be used to drive booster amplifiers when additional audio power is required. 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 control (POST-EQ). The switch position to the left selects PRE-EQ, and to the right selects POST-EQ.

# 29. 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 PAMX-125 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 control should be centered.

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

#### 30. SPEAKER OUTPUTS:

The audio output is available at the rated output of 125 Watts for an 8 Ohm load, for a 25V, 70.7V or 100V. The GND and COM terminals of the AUDIO OUT terminal block are chassis ground. The shield of the audio shielded cable is to be terminated to this GND. Connect (2) output wires from the speaker load, to the COM screw terminal and the selected constant voltage terminal, (i.e. 25V, 70.7V or 100V). The constant voltage distribution method facilitates the use of multiple speakers in parallel with a single amplifier. **Note:** Each speaker must have its own 25V, 70.7V or 100V line-matching transformer. Select the wattage tap on the line matching transformer of each speaker, for the power (gain) desired. An 8 Ohm speaker load may be connected to the COM and the 8 Ohm terminals.

# 31. TROUBLESHOOTING:

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

**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 ministère des Communications du Canada.

# **Limited Warranty**

Wheelock products must be used within their published specifications and must be PROPERLY specified, applied, installed, operated, maintained and operationally tested in accordance with these instructions at the time of installation and at least twice a year or more often and in accordance with local, state and federal codes, regulations and laws. Specification, application, installation, operation, maintenance and testing must be performed by qualified personnel for proper operation in accordance with all of the latest National Fire Protection Association (NFPA), Underwriters' Laboratories (UL), Underwriters' Laboratories of Canada (ULC), National Electrical Code (NEC), Occupational Safety and Health Administration (OSHA), local, state, county, province, district, federal and other applicable building and fire standards, guidelines, regulations, laws and codes including, but not limited to, all appendices and amendments and the requirements of the local authority having jurisdiction (AHJ). Wheelock products when properly specified, applied, installed, operated, maintained and operationally tested as provided above are warranted against mechanical and electrical defects for a period of three years from date of manufacture (as determined by date code). Correction of defects by repair or replacement shall be at Wheelock's sole discretion and shall constitute fulfillment of all obligations under this warranty. THE FOREGOING LIMITED WARRANTY SHALL IMMEDIATELY TERMINATE IN THE EVENT ANY PART NOT FURNISHED BY WHEELOCK IS INSTALLED IN THE PRODUCT. THE FOREGOING LIMITED WARRANTY SPECIFICALLY EXCLUDES ANY SOFTWARE REQUIRED FOR THE OPERATION OF OR INCLUDED IN A PRODUCT. WHEELOCK MAKES NO REPRESENTATION OR WARRANTY OF ANY OTHER KIND, EXPRESS, IMPLIED OR STATUTORY WHETHER AS TO MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR ANY OTHER MATTER.

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