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INSTALLATION INSTRUCTIONS
MODEL TPA-20/TPA-35
PAGING AMPLIFIER

GENERAL DESCRIPTION:

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Wheelock's models TPA-20 and TPA-35 paging amplifiers are rated at 20 watts and 35 watts, respectively.

These amplifiers can accommodate three different inputs: a low-impedance microphone input (both balanced or unbalanced), a transformer isolated 600 ohm telephone input and a high-impedance music input. The background music will automatically be muted whenever a page is generated.

The amplifiers feature individual tamper resistant volume controls, tone control, a low-cut horn-protect switch and two LED's: power on and peak level indicators.

Both models operate from 120V, 60Hz and have a power consumption of 59 watts (TPA-20) and 112 watts (TPA-35). A circuit breaker, enclosed in the power transformer, protects the unit against excessive AC current which could cause damage to internal components. The circuit breaker is self-resettable, however, in the event it does not reset, have the trouble investigated by an authorized service technician or return unit to the factory.

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

INSTALLATION:

Unpacking

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.

Mounting

The amplifiers are designed for either shelf or wall mounting. For surface wall mounting, use the 2 keyhole slots in the chassis base, and the mounting template on page 5.

Power Grounding

The 120 VAC 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 grounded for safe and trouble-free operation. If there is no grounded electric outlet, connect a wire from the GND terminal of the unit to a water or steam pipe.

POWER CORD:

CAUTION: To prevent electric shock do not use this (polarized) plug with an extension cord, receptacle or other outlet unless the blades can be fully inserted to prevent blade exposure/Attention: pour prevenir les chocs electriques ne pas utiliser cette fiche polarisee avec un prolongateur, une prise de courant ou une autre sortie de courant, sauf si les lames peuvent etre inserees a fond sans en laisser aucune partie a decouvert.

TECHNICAL SPECIFICATION:

#	Parameters	TPA-20		TPA-35
1.	Power Output @ 1 KHz	20 Watts Rms	-----	35 Watts Rms
2.	Total Harmonic Distortion	Less Than 2% THD		Less Than 2% THD
3.	Outputs	20W @ 8 Ohms 12.5V 25V & 70V		35W @ 8 Ohms 12.5V 25V & 70V
	Inputs	Telephone	Mic	Music
4.	Impedance	600 Ohms	LO-Z	HI-Z
5.	Sensitivity	-20dBm	1mV	220mV
6.	Frequency Response	Shaped For Maximum	Intelligibility	90Hz-14kHz
7.	Signal To Noise Ratio	61dB	55dB	75dB
8.	Type Of Input	XFRMR Isolated/Bal.	Balanced Or Unbal.	Unbalanced
9.	Controls	Page Output Volume, Music, MIC And Tel Input Level, Tone, Lo-Cut Switch		
10.	Indicators	Green LED - Power On, Red LED - Peak Level *		
11.	Protection	AC Automatic Resettable Therm. Breaker & Therm. Overload Protection On Output		
12.	Tone Control Operation	-9dB @ 12KHz		
13.	Lo-Cut Switch Operation	-6dB @ 250 Hz		
14.	Automatic Limiter/Paging	± 1dB Output Level Maintained Without Clipping, Even While Exceeding Rated Input Level Up To 40dB Minimum. 40dB Muting At any Output Level		
15.	Automatic Mute Operation	No Load To Full Load Output Less Than 2dB.		
16.	Regulation			
17.	Additional Features	Ability To Double Output Power Into A 25V Line, RFI Protection And Shelf Mount Or Wall Mount.		
18.	Consumption	0.49A, 59W		0.93A, 112W
19.	Size	11-1/2"W X 4-3/8"H X 7 1/4"D	-----	11-1/2"W X 4-3/8"H X 7-1/2"D
20.	Weight	(29.2 X 11.1 X 18.4 cm) 6lbs. 2 oz. (2.78kg)		(29.2 x 11.1 X 19.1 cm) 8lbs. 6 oz. (3.8kg)

* If TPA-35 is subjected to a continuous tone signal input for more than four minutes at full rated output, then the current limiting circuit may be activated. In that case, the unit will shut off and then automatically reset.

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INPUT CONNECTIONS: (See Figure 1.)

Figure 1.

Telephone: Connect telephone wires to the input screw terminals marked TIP and RING. For connection to unused CO trunk port, see Figure 4. For connection to CO line, Centrex line, or Analog Station port, a Wheelock TPI-100 is required.

Microphone: Connect balanced low-impedance microphone wires to the input screw terminals marked LO-Z. The shield must be connected to the GND screw terminals. An unbalanced microphone may be connected to either one of the LO-Z screw terminals and GND.

CAUTION: To avoid possible interference, the microphone input cable must be a shielded cable with the shield connected to GND.

Music: To connect an FM tuner, CD player or cassette to the MUSIC/Hi-Z input jack, use a single conductor shielded cable terminated in a standard RCA type phono plug.

OUTPUT CONNECTIONS: (See Figure 2.)

Figure 2.

Connect output wires to the COM screw terminal and the selected mode for constant voltage distribution, i.e. 25V or 70V. 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 line-matching transformer. The tap on the line matching transformer is selected to give the power desired for each speaker.

It is recommended for long distances to use a wire as heavy as possible in order to minimize a consequent power loss on the distribution line.

NOTE: To allow for future expansion. It is recommended that the total system wattage requirement should not exceed 85% of the amplifiers rated output (i.e. 17 watts for the TPA-20 and 30 watts for the TPA-35) the total system wattage requirement is the summation of the wattage tap selections of all system speakers and horns.

A single 8 ohm speaker may be connected to the COM and 8 ohm screw terminals. Be sure that the wattage rating of the speaker exceeds that of the amplifier, i.e. 25 watts or higher for the TPA-20 and 40 watts or higher for the TPA-35.

CONNECTING AMPLIFIERS IN SERIES: (See Figure 3.)

In some instances where an expansion of the listening area would necessitate a number of speakers that would exceed the maximum recommended quantity, two amplifiers may be connected in series. This hook-up will in effect double the output power (i.e. 40 watts for two TPA-20 and 70 watts for two TPA-35) for a 25V constant voltage system.

The input wires must be arranged to parallel the inputs of the two amplifiers, and the volume and tone controls of both amplifiers must be at the same setting to assure that each amplifier will share the load equally.

Figure 3.

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PLUGGING IN UNIT TO 120 VAC:

The TPA amplifiers have no power on/off switch. Before plugging in the AC cord to 120 VAC, make sure that all connections are proper and that the front panel controls marked PAGE and MUSIC are turned to minimum (counterclockwise).

UNUSED CO TRUNK PORT CONNECTIONS: (See Figure 4.)

When connecting a TPA Amplifier to an unused CO trunk port, install as shown using an RPS-2406 power supply to provide talk battery to the CO port.

Figure 4.

OPERATION: (See Figure 5.)

Figure 5: Front Panel Indicators And Controls

POWER (INDICATOR): The green LED will light when the AC cord is plugged into a 120 VAC source.

PAGE (LEVEL CONTROL): The Page level is used to adjust the volume of both the microphone and telephone inputs. Turn the control shaft clockwise to increase volume and counterclockwise to decrease volume.

MIC & TEL (LEVEL CONTROLS): Access to these controls is from the bottom of the unit. The MIC level control is set at the factory in the minimum position. The TEL level control is set at the factory in its maximum position. If no microphone is used in the system, there is no need to change these control settings.

However, should a microphone be used, comply with the following procedure:

1. Adjust the Page level control (on the amplifier front) clockwise to its middle position.
 2. Adjust the MIC level control clockwise to attain the desired sound level while speaking into the microphone.
 3. Switch the microphone off and make a telephone page.
 4. Adjust the TEL level control counterclockwise to match the sound level of the microphone for the same setting of the PAGE control.
- NOTE: This is a one time adjustment for specific microphone and telephone inputs.

MUSIC LEVEL: The Music control is used to adjust the volume of the background music source. Turn clockwise to increase volume and counterclockwise to decrease volume.

NOTE: The background music level should be kept at a lower level than the page level.

MUSIC MUTE: Music is automatically muted when paging. After completion of the paging message the music will gradually return to its original level. Note that pausing for too long a period while making an announcement may result in the gradual return of music, until speaking again.

TONE LEVEL: Use the Tone control to adjust the tonal balance of the output signal. The amplifier frequency response is flat with the tone level in the maximum clockwise position.

PEAK INDICATOR: Flickering of the LED at maximum levels is a proper indicator of the amplifier level. If the LED stays on permanently, this should be a sign that an overdrive condition exists.

HORN PROTECT/LO-CUT: This switch is located on the amplifier apron. Turn the switch ON whenever HORNS are used in the system. This will protect the horns from damage from low frequencies.

TAMPER RESISTANT CONTROLS: All control shafts may be extracted after controls are set to desired level. This will prevent any unauthorized tampering with controls. Subsequent adjustments can be made by inserting the control shaft, or using a 5/64" hex (allen) head wrench.

MAINTENANCE:

CAUTION: There are no user-replaceable parts within the unit. Have all internal servicing done by a qualified technician.

TPA-20/35 MOUNTING TEMPLATE

NOTE: Mounting hardware should be appropriate for surface to which the amplifier is to be installed.

CAUTION: These devices are not intended for use in hazardous locations as defined by the National Electrical Code (NEC) and by the National Fire Protection Association (NFPA).

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