

MTH-24

INSTALLATION INSTRUCTIONS  
 MULTI-TONE HORN

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


**MODEL NUMBER: MTH-24**

**GENERAL:**

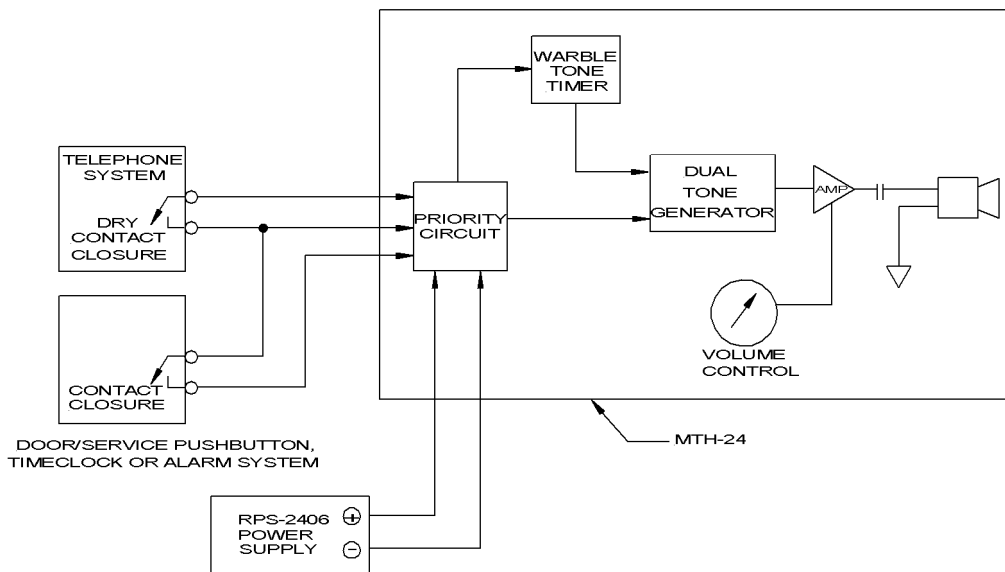
The MTH-24 Multi-Tone Horn is a loud, attention getting alert designed for use in noisy and/or large locations where two different audible appliances are required at one location.

The MTH-24 functions as a telephone extension alert because it provides a pulsed warble tone (1 second on and 7 seconds off) which can be activated by a telephone systems interrupted or continuous dry contact closure. Additionally, it functions as an auxiliary alert because it also provides a steady tone which follows the contact closure of a door/service push-button, time clock, alarm systems, etc. When both alerting tones are activated, the steady tone will take priority over the warble tone.

If required, the warble tone can be used as the auxiliary alert, and the priority tone can be used as the telephone alert. As shown in Figure 1, the MTH-24 consists of dual tone generator, amplifier, timer for the warble tone, priority circuit and volume control built-in to a weather resistant speaker horn for indoor and outdoor use. A Wheelock RPS-2406, 24VDC power supply is included to power the MTH-24. Multiple units can be connected in parallel where required.

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

**⚠ WARNING: READ THESE INSTRUCTIONS CAREFULLY. FAILURE TO COMPLY WITH ANY OF THE FOLLOWING INSTRUCTIONS, CAUTIONS AND WARNINGS COULD RESULT IN IMPROPER APPLICATION, INSTALLATION AND/OR OPERATION OF THESE PRODUCTS IN AN EMERGENCY SITUATION, WHICH COULD RESULT IN PROPERTY DAMAGE, SERIOUS INJURY OR DEATH TO YOU AND/OR OTHERS.**



*Figure 1: Circuit Block Diagram*

Table 1 shows the sound pressure level performance of the MTH-24, and Table 2 provides a guide to horn spacing, area coverage, and sound pressure level.

<b>Table 1: Sound Pressure Level Performance</b>			
Sound Pressure Level (dB at 24 VDC)			
Feet On Axis	Full Power (10 W)	1/2 Power (5W)	1/4 Power (2.5W)
4	115	112	109
8	109	106	103
16	103	100	97
32	97	94	91
64	91	88	85
128	85	82	79

<b>Table 2: Horn Guide</b>									
Noise Level	Full Power (10W)			Half Power (5W)			Quarter Power (2.5W)		
	*Spacing & Distance	**SPL	Area	*Spacing & Distance	**SPL	Area	*Spacing & Distance	**SPL	Area
Quiet 50-65dB	N/A	N/A	N/A	120 Ft.	83dB	14,400 Sq. Ft.	120 Ft.	80dB	14,400 Sq. Ft.
Moderate 65-75dB	110 Ft.	88dB	12,100 Sq. Ft.	110 Ft.	85dB	12,100 Sq. Ft.	110 Ft.	82dB	12,100 Sq. Ft.
Noisy 75-85dB	90 Ft.	89dB	8,100 Sq. Ft.	90 Ft.	86dB	8,100 Sq. Ft.	90 Ft.	83dB	8,100 Sq. Ft.
	60 Ft.	92dB	3,600 Sq. Ft.	60 Ft.	89dB	3,600 Sq. Ft.	60 Ft.	86dB	3,600 Sq. Ft.
Very Noisy 85-95dB	30 Ft.	98dB	900 Sq. Ft.	30 Ft.	95dB	900 Sq. Ft.	30 Ft.	92dB	900 Sq. Ft.
	25 Ft.	100dB	600 Sq. Ft.	25 Ft.	97dB	600 Sq. Ft.	25 Ft.	94dB	600 Sq. Ft.
	16 Ft.	103dB	250 Sq. Ft.	16 Ft.	100dB	250 Sq. Ft.	16 Ft.	97dB	250 Sq. Ft.

\* Spacing between horns (side-to-side), and distance in front of horn at which a clear audible tone will be heard.

\*\* Horn sound pressure level (SPL) should exceed the locations noise level by **at least** 6dB.

**SPECIFICATIONS:**

<b>Table 3.</b>	
Nominal Input Voltage	24VDC
Input Voltage Range	21.6VDC TO 26.4VDC
Input Current at 24VDC with Maximum Volume	0.6A
Sound Pressure Level (On Axis at 24VDC at Full Rated Output)	117dB at 1 Meter
Contact Closure Current Requirement	0.01A
Amplifier Rated Power Output	10 Watts
Speaker Voice Coil Impedance	8 Ohms
Tone Appliances	Warble and Single Tone
Operating Duty Cycle	See Table 4 and Notes

<b>Table 4: Operating Duty Cycle</b>		
Contact Closure Duty Cycle	Warble Tone	Priority Tone
Continuous (Minimum 5 Seconds On)	1 Second On 7 Seconds Off	Follows Contact Closure (Takes Priority Over Warble Tone)
Interrupted	Follows Contact Closure (See Notes Below)	Follows Contact Closure (Takes Priority Over Warble Tone)

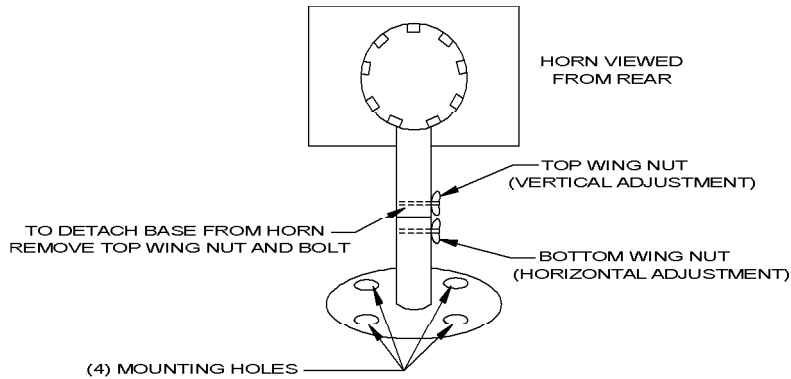
**NOTES:**

- 1) A continuous closure duty cycle is defined as having a minimum "On" time of 5 seconds.
- 2) Maximum warble tone "on" time, during any "On-Off" cycle, is 1 second. For interrupted contact closure duty cycles, warble tone will operate as follows:

<b>Table 5.</b>	
Interrupted Closure Duty Cycle "On" Time	Warble Tone Operation
1 second	Follows closure
Less than 1 second	Follows closure
More than 1 second (and less than 5 seconds)	1 second on

### MOUNTING INFORMATION:

The MTH-24 may be surface mounted by simply using the holes in the swivel base to locate and drill mounting holes. The mounting base is also fully adjustable in both the vertical and horizontal planes; See Figure 2.



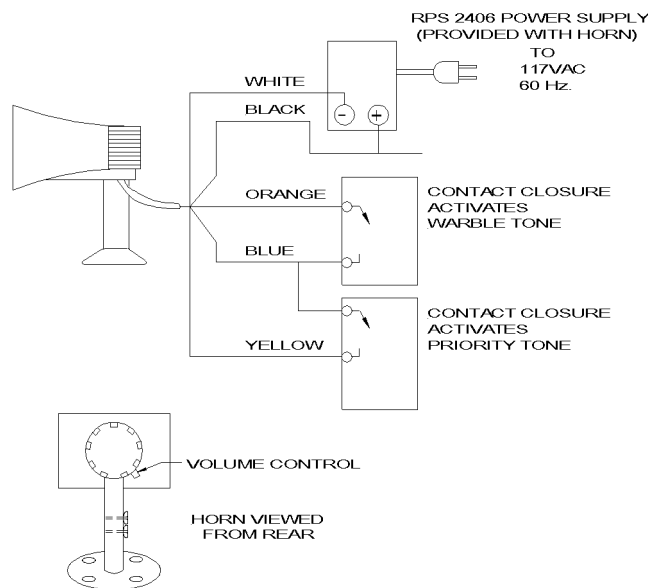
**Figure 2: Mounting And Adjustments**

**CAUTION:** When removing horn from base, be careful not to lose adjusting hardware. Mount RPS-2406 Power Supply (provided with horn) as shown on its Installation Instructions.

### WIRING INFORMATION: (As shown in Figure 3.)

1. Connect orange and blue leads to the contact closure which will activate the warble tone.
2. Connect yellow and blue leads to the contact closure which will activate the steady priority tone.  
**Note:** If only one tone appliance is used, then cut off and insulate unused wire (orange or yellow) to prevent shorting.
3. Be sure the power cord of the RPS-2406, 24VDC power supply is not plugged in.
4. Connect grey lead to power supply positive (+) terminal and white lead to power supply negative (-) terminal.
5. Plug the power supply cord into a 117VAC outlet.
6. Be sure volume control is turned all the way down (counter clockwise).
7. Check for operation by activating appropriate contact closures. If both tone appliances were connected, check that priority tone takes precedence over warble tone when both are activated.
8. Adjust volume control (clockwise) to desired sound level.

**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). Contact Wheelock Inc. for information on explosion-proof devices designed for hazardous locations.



**Figure 3: Wiring Diagram**

**TROUBLESHOOTING CHART:**

PROBLEMS	POSSIBLE CAUSE AND CORRECTION
No Sound	1) Check presence and polarity of -24VDC and GND at the unit. 2) Check connections to contact closures. 3) Check the external contact closure for continuity.
Low Volume	1) Check that volume control is turned up (clockwise). 2) Be sure at least 21.6VDC is present at the unit (white and black leads) during operation.

**⚠ CAUTION:** If these appliances are operated within 15 inches of a person's ear, they can produce a sound pressure level that exceeds the maximum 120dBA permitted by ADA and OSHA rules. Exposure to such sound levels can result in damage to a person's hearing.

**⚠ CAUTION:** Check the installation instructions of the manufacturers of other equipment used in the system for any guidelines or restrictions on wiring and/or locating Notification Appliance Circuits (NAC) and notification appliances. Some system communication circuits and/or audio circuits, for example, may require special precautions to assure immunity from electrical noise (e.g. audio crosstalk).

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**IMPORTANT: READ SEPARATE "GENERAL INFORMATION" SHEET FOR INFORMATION ON THE PLACEMENT, LIMITATIONS, INSTALLATION, FINAL CHECKOUT, AND PERIODIC TESTING OF NOTIFICATION APPLIANCES.**