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INSTALLATION INSTRUCTIONS MULTITONE STROBE APPLIANCES

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

GENERAL:

The Multitone Strobe Appliances are UL Listed under Standard 1971 for Signaling Devices for the Hearing Impaired and UL Standard 464 for Audible Signal Appliances. The 15cd model strobe is listed at 15 candela under UL Standard 1971 and meets 75 candela intensity on axis with low current draw. The 24MCW model strobe can provide 4 selectable candela settings (15, 30, 75, 110). The Multitone MT-241575W and MT-121575W Appliances are also ULC Listed under Standard CAN/ULC-S526-02 for Visual Signaling and under Standard CAN/ULC-S525-99 for Audible Signal Devices for Fire Alarm Systems. The MT Strobes can provide a non-synchronized strobe appliance when connected directly to a fire alarm control panel (FACP), or provide a synchronized strobe appliance when used in conjunction with a Sync Module (SM), Dual Sync Module (DSM) or Wheelock power supplies. All models in the MT Series are listed for *wall mount only*, with the backboxes specified in these instructions (See wiring and mounting information). The Multitone Strobe Appliances use a xenon flashtube with solid state circuitry enclosed in a polycarbonate lens to provide maximum visibility and reliability for effective visible signaling.

Multitone Strobe Appliances can be field set to produce any one of eight commonly used alarm tones. Sound output can be field set to provide either HIGH (HI) dBA or STANDARD (STD) dBA sound output level.

All Multitone Strobe models are designed for use with either filtered DC or unfiltered full-wave-rectified (FWR) input voltage. The Multitone Strobe Appliances have separate input terminals for alarm tone activation and strobe activation. Shunt wires are provided to operate both the alarm tone and the strobe simultaneously on a single input circuit (See Wiring Diagram). All inputs are polarized for compatibility with standard reverse polarity supervision of circuit wiring by a fire alarm control panel (FACP).

NOTE: All Canadian installations should be in accordance with the Canadian Standard for the Installation of Fire Alarm Systems, CAN/ULC-S524-01 and the Canadian Electrical Code, Part 1. Final acceptance is subject to authorities having jurisdiction (AHJ).

A WARNING: PLEASE READ THESE INSTRUCTIONS CAREFULLY BEFORE USING THIS PRODUCT. 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 AND SERIOUS INJURY OR DEATH TO YOU AND/OR OTHERS.

SPECIFICATIONS:

Table 1: UL/ULC Listed Models and Ratings										
		ULC Ratings								
Model	Regulated Voltage (VDC/VRMS)	Voltage Range (VDC/VRMS)		Reverberant dBA At 10 Feet	Voltage Range (VDC/VRMS)	Strobe Candela (cd)	Anechoic dBA at 10 Feet			
MT-121575W	12	8.0-17.5	85-100		10.5-15.6	75	85-100			
MT-24MCW	24	16.0-33.0	15/30/75/110	76-94						
MT-241575W	24	16.0-33.0	15 *	76-94	20.0-31.0	75	85-100			

* 15cd models are UL Listed at 15cd and meet 75cd on axis.

NOTES:

1. Strobes will produce 1 flash per second over the "Regulated Voltage" Range.

2. The strobe meets the required light distribution patterns defined in UL 1971 and ULC-S526-02.

3. All models are UL Listed for indoor use with a temperature range of $+32^{\circ}$ F to $+120^{\circ}$ F (0°C to $+49^{\circ}$ C) and maximum humidity of $93\% \pm 2\%$ RH.

A WARNING: THESE APPLIANCES WERE TESTED TO THE REGULATED VOLTAGE LIMITS OF 16.0-33.0 VOLTS FOR 24V MODELS AND 8.0-17.5 VOLTS FOR 12V MODELS USING FILTERED DC OR UNFILTERED FULL-WAVE-RECTIFIED VOLTAGE. DO NOT APPLY VOLTAGE OUTSIDE OF THIS RANGE.

AND WARNING: CHECK THE MINIMUM AND MAXIMUM OUTPUT OF THE POWER SUPPLY AND STANDBY BATTERY AND SUBTRACT THE VOLTAGE DROP FROM THE CIRCUIT WIRING RESISTANCE TO DETERMINE THE APPLIED VOLTAGE TO THE STROBES. THE MAXIMUM WIRE IMPEDENCE BETWEEN STROBES SHALL NOT EXCEED 35 OHMS.

CAUTION: These notification appliances are UL Listed as "Regulated". They are intended to be used with FACPs whose notification circuits are UL Listed as "Regulated." These appliances shall not be used on UL Listed "Special Application" notification circuits unless the appliances are identified to be compatible in the installation instructions of the FACP or unless the FACP is identified to be compatible in this instruction manual.

Use Tables 2, 2A, 3, and 3A to determine the highest value of "Rated Current" for an individual Multitone strobe (across the expected operating voltage range of the Multitone strobe). Add strobe current from Table 3 or 3A to audible appliance current from Table 2 and 2A to obtain total current for each unit, if the strobe and audible are wired to operate in unison on a single circuit. Be sure to add the currents for any other appliances, including audible signaling appliances, powered by the same source and include any required safety factors.

NOTE: The maximum number of strobes on a single notification appliance circuit shall not exceed 50.

A warning: Make sure that the total rmsurrent required by all appliances that are connected to the system's primary and secondary power sources, appliance circuits, sm, dsm sync modules and wheelock power supplies does not exceed the power sources' rated capacity or the current ratings of any fuses on the circuits to which these appliances are wired. Overloading power sources or exceeding fuse ratings could result in loss of power and failure to alert occupants during an emergency, which could result in property damage and serious injury or death to you and/or others.

Table 2: UL Current Ratings for Multitone (AMPS)										
Tone	Tone	Maximum RMS Current								
	Description	24VDC		24VRMS		12VDC		12VRMS		
		HI	STD	HI	STD	HI	STD	HI	STD	
Horn	Broadband Horn (Continuous)	0.108	0.044	0.087	0.045	0.177	0.034	0.172	0.034	
Bell	1560 Hz Modulated (0.07 Sec. ON/Repeat)	0.053	0.024	0.051	0.028	0.095	0.020	0.095	0.023	
March Time Horn	Horn (0.25 Sec. ON/0.25 Sec. OFF/Repeat)	0.104	0.087	0.087	0.045	0.142	0.034	0.142	0.039	
Code 3 Horn	Horn (ANSI S3.41 Temporal Pattern)	0.091	0.035	0.087	0.045	0.142	0.034	0.142	0.039	
Code 3 Tone	500 Hz (ANSI S3.41 Temporal Pattern)	0.075	0.035	0.056	0.029	0.105	0.021	0.105	0.023	
Slow Whoop	500-1200Hz Sweep (4.0 Sec. ON/0.5 Sec. OFF/Repeat)	0.098	0.037	0.092	0.042	0.142	0.035	0.142	0.038	
Siren	600-1200Hz Sweep (1.0 Sec. ON/Repeat)	0.104	0.036	0.092	0.040	0.152	0.030	0.152	0.034	
HI/LO	1000/800 Hz (0.25 Sec. ON/Alternate)	0.057	0.025	0.058	0.032	0.114	0.026	0.114	0.029	

Ta	Table 2A: ULC Average Current Ratings for 24VDC and 12VDC Multitone (AMPS)									
	HI/LO	24VDC Models			12VDC Models					
Tone	Volume	20VDC	24VDC	31VDC	10.5VDC	12VDC	15.6VDC			
	HI	0.036	0.040	0.050	0.090	0.100	0.125			
Horn	STD	0.021	0.023	0.029	0.018	0.020	0.025			
	HI	0.013	0.014	0.018	0.028	0.031	0.039			
Bell	STD	0.011	0.012	0.015	0.009	0.010	0.013			
	HI	0.036	0.040	0.050	0.090	0.100	0.125			
March Time	STD	0.021	0.023	0.029	0.018	0.020	0.025			
	HI	0.036	0.040	0.050	0.090	0.100	0.125			
Code 3 Horn	STD	0.021	0.023	0.029	0.018	0.020	0.025			
	HI	0.025	0.028	0.035	0.054	0.060	0.075			
Code 3 Tone	STD	0.015	0.017	0.021	0.014	0.015	0.019			
	HI	0.043	0.048	0.06	0.090	0.100	0.125			
Slow Whoop	STD	0.023	0.026	0.033	0.023	0.025	0.031			
	HI	0.032	0.036	0.045	0.074	0.082	0.103			
Siren	STD	0.021	0.023	0.029	0.018	0.020	0.025			
	HI	0.018	0.020	0.025	0.040	0.044	0.055			
HI/LO	STD	0.013	0.014	0.018	0.011	0.012	0.015			

\triangle warning: candela setting will determine the current draw of the product.

16-33VRMS

Table3: Current Ratings for 24MCW Models (Strobe only)									
	Maximum RMS Current (AMPS)								
Voltage 15cd 30cd 75cd 110cd									
DC	16-33VDC	0.060	0.092	0.165	0.220				
FWR 16-33VRMS		0.102	0.155	0.253	0.347				
	Table 3A	: Current Ratings	for 1575W M	lodels (Strobe Only)					
	Maximum RMS Current (AMPS)								
	Voltage 241575W UL Voltage 121575W								
DC	16-33VDC	0.090	DC	8-17.5VDC	0.255				

FWR

8-17.5VRMS

0.335

0.145

i													
	Table 4: dBA Ratings												
T HI/LO		dBA Reverberant Ratings Per UL 464						dBA Anechoic Ratings Per CAN/ULC S525-99					
Tone Volume	UL 24VDC			UL 12VDC			ULC 24VDC			ULC 12VDC			
	volume	16V	24V	33V	8V	12V	17.5V	20V	24V	31V	10.5V	12V	15.6V
Horn	HI	89	92	94	89	92	94	97	99	100	97	99	100
Hom	STD	84	87	90	84	87	90	91	93	94	91	93	94
Bell	HI	83	86	88	83	86	88	90	92	93	90	92	93
Bell	STD	76	80	83	76	80	83	85	87	88	85	87	88
March	HI	86	89	91	86	89	91	97	99	100	97	99	100
Time	STD	80	84	87	80	84	87	91	93	94	91	93	94
Code 3	HI	85	88	90	85	88	90	97	99	100	97	99	100
Horn	STD	79	83	86	79	83	86	91	93	94	92	93	94
Code 3	HI	81	85	86	81	85	86	93	95	96	93	95	96
Tone	STD	76	80	82	76	80	82	88	90	91	88	90	91
Slow	HI	87	90	92	87	90	92	97	99	100	97	99	100
Whoop	STD	81	85	87	81	85	87	92	94	95	92	94	95
Siren	HI	86	89	92	86	89	92	96	98	99	96	98	99
Siren	STD	81	84	87	81	84	87	91	93	94	91	93	94
HI/LO	HI	83	86	89	83	86	89	91	93	94	91	93	94
ni/LO	STD	77	81	84	77	81	84	86	88	89	86	88	89

ULC Directional Characteristics:

FWR

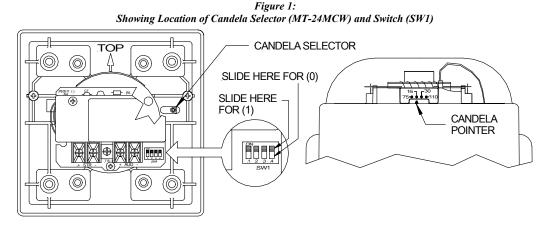
Voltage range of 20.0-31.0VDC for 24VDC or 10.5-15.6VDC for 12VDC. -3 dBA at 48 degrees left, 41 degrees right, -6 dBA at 50 degrees left, 58 degrees right.

A warning: the multitone strobe appliances must be field set to the desired dba sound output level and alarm tone before they are installed. This is done by properly inserting a jumper plug and adjusting a four position switch in accordance with these instructions. Incorrect settings will result in improper performance and may damage the product, which could result in property damage and serious injury or death to you and/or others.

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

MT MULTITONE SETTINGS:

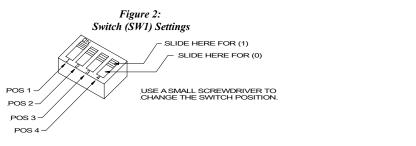
The Switch (SW1) of the Multitone Appliance, shown in Figure 2, is used to set the dBA sound output level and alarm tone. The factory settings are shown below. **Read these instructions carefully before changing any of these factory settings**.



STEP 1

Factory setting is on 15 Candela. Move the candela selector to the desired setting.

A WARNING: THE CANDELA SELECT SWITCH MUST BE FIELD SET TO THE REQUIRED CANDELA INTENSITY BEFORE INSTALLATION. WHEN CHANGING THE SETTING OF THE CANDELA SELECT SWITCH, MAKE CERTAIN THAT IT "CLICKS" IN PLACE. AFTER CHANGING THE CANDELA SETTING, THE APPLIANCE MUST BE RETESTED TO VERIFY PROPER OPERATION. IMPROPER SETTING OF THE CANDELA SELECT SWITCH MAY RESULT IN OPERATION AT THE WRONG CANDELA, WHICH COULD RESULT IN IN A CURRENT DRAW EXCEEDING THE POWER SUPPLY'S CAPACITY.



The factory settings for 24VDC models are: HIGH dBA

SW1 POS 1 set on 1 HORN TONE SW1 POS 2, 3, 4 set on 1, 1, 1

STEP 2:

Set desired dBA sound output level as follows (Refer to Figure 2):

Multitone Strobe Appliances cannot be field set for input voltage. Multitone Strobe Appliances are field set for dBA sound output level by adjusting a four position Switch (SW1) as shown in Table 5 and Figure 2. Use SW1 Position 1 to select the dBA sound output level.

Table 5: dBA Sound Output Level Settings						
Input Voltage and Decibel Level	SW1 Settings					
HIGH dBA:	Set SW1 POS 1 on 1 (Factory Setting)					
STD dBA:	Set SW1 POS 1 on 0					

A WARNING: DOUBLE CHECK THE SWITCH (SWI) SETTINGS TO MAKE SURE THEY ARE CORRECT. IMPROPER SETTINGS CAN DAMAGE THE UNIT OR RESULT IN NO SOUND OUTPUT OR A dBA SOUND OUTPUT LEVEL THAT IS BELOW THE MINIMUM CODE REQUIREMENTS FOR PUBLIC MODE FIRE PROTECTION. THIS COULD RESULT IN PROPERTY DAMAGE AND SERIOUS INJURY OR DEATH TO YOU AND/OR OTHERS.

<u>STEP 3:</u>

Set desired alarm tone as follows (refer to Figure 2 and Table 6).

Multitone Strobe Appliances are field set for any one of eight alarm tones by setting a four-position switch (SW1) as shown in Figure 2 and Table 7. Use SW1 POS 2, 3, 4 to select the desired alarm tone.

Table 6: Switch Settings								
Tone	POS 2	POS 3	POS 4					
Horn	1	1	1					
Bell	1	0	1					
March Time Horn	0	0	1					
Code 3 Horn	1	1	0					
Code 3 Tone	0	1	1					
Slow Whoop	0	1	0					
Siren	1	0	0					
HI/LO	0	0	0					

NOTE: The Code 3 Horn and Code 3 Tone (set on HIGH dBA) incorporate the temporal pattern specified by ANSI/NFPA for standard emergency evacuation signaling. They should be used only for fire evacuation signaling and not for any other purpose.

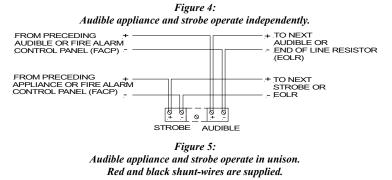
The Horn and Bell Tones can be used on coded systems with a minimum On-Time of 1/4 second if the audible and strobe are wired to operate independently. All other tones are recommended for use only on continuous (non-coded)

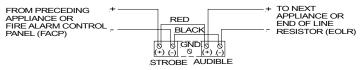
CAUTION: Strobes are not designed to be used on coded systems in which the applied voltage is cycled on and off.

WIRING DIAGRAMS:



- 1. Multitone Strobe models have in-out wiring terminals that accept two #12 to #18 American Wire Gauge (AWG) wires at each screw terminal. Strip leads 3/8 inches and connect to screw terminals.
- Break all in-out wire runs on supervised circuits to assure integrity of circuit supervision as shown in Figure 3. The polarity shown in the wiring diagrams is for operation of the appliances. The polarity is reversed by the FACP during supervision.



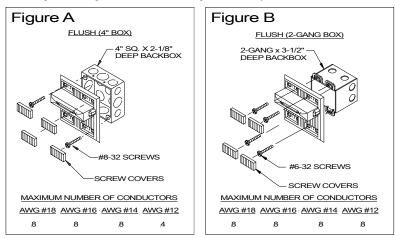


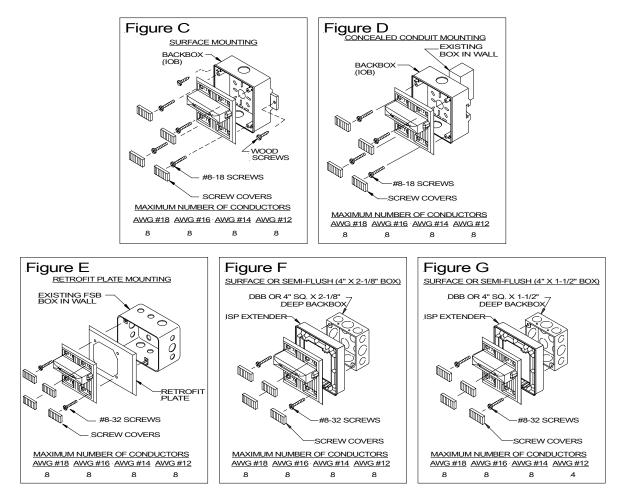
MOUNTING OPTIONS:

CAUTION: The following figures show the maximum number of field wires (conductors) that can enter the backbox used with each mounting option. If these limits are exceeded, there may be insufficient space in the backbox to accommodate the field wires and stresses from the wires could damage the product.

CAUTION: Check that the installed product will have sufficient clearance and wiring room prior to installing backboxes and conduit, especially if sheathed multiconductor cable or 3/4" conduit fittings are used.

Although the limits shown for each mounting option comply with the National Electrical Code, Wheelock recommends use of the largest backbox option shown and the use of approved stranded field wires, whenever possible, to provide additional wiring room for easy installation and minimum stress on the product from wiring.





MOUNTING PROCEDURES:

3

- 1. The MT can be flush mounted to a 100mm backbox (Fig. A) or double-gang backbox (Fig. B). It can also be surface mounted to a indoor/outdoor backbox (Figs. C & D). It can also be used with a retrofit plate (Fig. E) or with an ISP extender (Figs. F & G). Mounting hardware for each mounting option is supplied.
- Conduit entrances to the backbox should be selected to provide sufficient wiring clearance for the installed product. Do not pass additional wires (used for other than the signaling appliance) through the backbox. Such additional wires could result in insufficient wiring space for the signaling appliance.
 - When terminating field wires, do not use more lead length than required. Excess lead length could result in insufficient wiring space for the appliance.
- 4. Use care and proper techniques to position the field wires in the backbox so that they use minimum space and produce minimum stress on the product. This is especially important for stiff, heavy gauge wires and wires with thick insulation or sheathing.
- 5. Connect field wires to the MT terminal block (polarity must be observed). Bend the field wires up 90° at the connection to the terminal block.
- 6. Carefully push the field wires into the backbox by hand. Press the MT to the backbox, verifying that it is seated and aligned correctly.
- 7. Fasten the MT to the backbox using the screws supplied.

${}^{ extsf{M}}$ warning: the multitone strobe appliance is a "fire alarm device – do not paint".

A WARNING: WHEN INSTALLING STROBES IN AN OPEN OFFICE OR OTHER AREAS CONTAINING PARTITIONS OR OTHER VIEWING OBSTRUCTIONS, SPECIAL ATTENTION SHOULD BE GIVEN TO THE LOCATION OF THE STROBES SO THAT THEIR OPERATING EFFECT CAN BE SEEN BY ALL INTENDED VIEWERS, WITH THE INTENSITY, NUMBER, AND TYPE OF STROBES BEING SUFFICIENT TO MAKE SURE THAT THE INTENDED VIEWER IS ALERTED BY PROPER ILLUMINATION. FAILURE TO DO SO COULD RESULT IN PROPERTY DAMAGE AND SERIOUS INJURY OR DEATH TO YOU AND/OR OTHERS.

The MT-24MCW's 110cd setting is Listed for use in sleeping or non-sleeping areas when installed in accordance with appropriate NFPA Standards and the Authority Having Jurisdiction.

A WARNING: INSTALLATION OF WHEELOCK 110 CANDELA STROBE PRODUCTS IN SLEEPING AREAS SHOULD BE WALL MOUNTED AT LEAST 24" BELOW THE CEILING AS FOLLOWS: (1) THE ON-AXIS (CENTER OF LENS) LIGHT OUTPUT SHOULD BE DIRECTED AT THE EYELIDS OF THE SLEEPING PERSON, E.G. PILLOW END OF BED, BED HEAD; (2) NO PART OF THE BED SHALL BE MORE THAN SIXTEEN (16) FEET FROM THE STROBE NOTIFICATION APPLIANCE. INSTALLERS MUST ADVISE OWNERS AND OPERATORS OF BUILDINGS WITH SLEEPING OCCUPANTS, E.G. HOTELS AND MOTELS, TO WARN GUESTS, RESIDENTS AND EMPLOYEES TO NOT MOVE THE BED LOCATION TO A POSITION VIOLATING POINTS (1) AND (2) ABOVE OR SERIOUS INJURY AND/OR LOSS OF LIFE MAY OCCUR DURING A FIRE EMERGENCY.

A WARNING: A SMALL POSSIBILITY EXISTS THAT THE USE OF MULTIPLE STROBES WITHIN A PERSON'S FIELD OF VIEW, UNDER CERTAIN CIRCUMSTANCES, MIGHT INDUCE A PHOTO-SENSITIVE RESPONSE IN PERSONS WITH EPILEPSY. STROBE REFLECTIONS IN A GLASS OR MIRRORED SURFACE MIGHT ALSO INDUCE SUCH A RESPONSE. TO MINIMIZE THIS POSSIBLE HAZARD, WHEELOCK STRONGLY RECOMMENDS THAT THE STROBES INSTALLED SHOULD NOT PRESENT A COMPOSITE FLASH RATE IN THE FIELD OF VIEW WHICH EXCEEDS FIVE (5) Hz AT THE OPERATING VOLTAGE OF THE STROBES. WHEELOCK ALSO STRONGLY RECOMMENDS THAT THE INTENSITY AND COMPOSITE FLASH RATE OF INSTALLED STROBES COMPLY WITH LEVELS ESTABLISHED BY APPLICABLE LAWS, STANDARDS, REGULATIONS, CODES AND GUIDELINES. NOTE: NFPA 72/ANSI 117.1 conform to ADAAG Equivalent Facilitation Guidelines in using fewer, higher intensity strobes within the same protected area.

These appliances can produce a distinctive three pulse Temporal Pattern Fire Alarm Evacuation Signal for total evacuation in accordance with NFPA 72.

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.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures: 1) Reorient or relocate the receiving antenna, 2) Increase the separation between the equipment and receiver, 3) Connect the equipment into an outlet on a circuit different from that to which the receiver is connected, and 4) Consult the dealer or an experienced radio/TV technician for help.

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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IN NO CASE WILL WHEELOCK'S LIABILITY EXCEED THE PURCHASE PRICE PAID FOR A PRODUCT.

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