



UNITROL

A Unit of Federal Signal

22-UTM-00
ECO# 104-06-MAN

INSTALLATION MANUAL TOUCHMASTER™ SIREN/P.A. SYSTEMS



Model Number Appears on Bottom of Chassis

**FS UNITROL • 1108 RAYMOND WAY • ANAHEIM, CA 92801
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LIMITED WARRANTY

FS Unitrol warrants each new product to be free from defects in material and workmanship under normal use and service for a period of five years on electronic / non-electronic parts and one year labor from date of purchase.

During this warranty period, the obligation of FS Unitrol is limited to repairing or replacing, as Unitrol may elect, any part or parts of such product which, after examination by Unitrol, is found to be defective in material and/or workmanship.

Unitrol will provide warranty for any unit, which is delivered, transported prepaid, to the Unitrol factory for examination when such examination reveals a defect in material and / or workmanship.

This warranty does not cover travel expenses, the cost of specialized equipment for gaining access to the product, or labor charges for removal and re-installation of the product. Labor costs incurred outside the factory are not covered by warranty. Lamps, flash tubes or batteries are not covered under warranty.

Wires extending from units that have been cut off flush to the faceplate, or too short for connection will be considered user preference. They will not be replaced under warranty.

This warranty does not extend to any unit which has been subjected to abuse, misuse, improper installation or which has been inadequately maintained, nor to units which have problems relating to service or modification at any facility other than the Unitrol factory or authorized warranty service centers.

THERE ARE NO OTHER WARRANTIES EXPRESSED OR IMPLIED INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT SHALL UNITROL BE LIABLE FOR ANY LOSS OF PROFITS OR ANY INDIRECT OR CONSEQUENTIAL DAMAGES ARISING OUT OF ANY SUCH DEFECT IN MATERIAL OR WORKMANSHIP.

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SECTION I

GENERAL INFORMATION

STANDARD SIREN SOUNDS

Unless otherwise requested, the Touchmaster is shipped with five (5) operational siren sounds:

MAN: Manual **WAIL**

WAIL: **WAIL** plus 5-second **YELP**, Continuous **YELP** (LOCK) or **WAIL/YELP/HETRO** (SWEEP) all by pressing horn ring once.

HI-LO: Choice of 2-tone or Ultra HI-LO® plus 5-second **HETRO** II, Continuous **HETRO** (LOCK) or HI-LO/HETRO/YELP (SWEEP) all by pressing horn ring once.

RE-PROGRAMMING SIREN SOUNDS

There are five (5) sub-miniature slide switches inside the cabinet at the front-right side. Moving a switch to its opposite position changes a sound. Switches are numbered left to right. NOTE: HI-LO is deleted (UOP09) on sirens for use in the state of CA.



SWEEP WAIL Choices:

- a) **WAIL/YELP**/Ultra **HI-LO** 9#5Up)
- b) **WAIL/YELP**/2-Tone **HI-LO** (#3 Down)
- c) **WAIL/YELP** Only (#1 Down)

SWEEP HI-LO Choices:

- a) 2-Tone **HI-LI/HETRO/YELP** (#3 Down)
- b) Ultra **HI-LO/HETRO** Only (#2 Down)
- c) 2-Tone **HI-LO/YELP** Only (#3 and #4 Down)
- d) Ultra **HI-LO/YELP** Only (#4 Down)

ASSISTANCE

Technical help is available by phone 8:00 AM to 4:30PM Pacific Standard Time, Monday through Friday, except holidays.

(800) 854-3375 is toll free within the United States and Canada. Phone (714) 871-3336 from other areas.

If it is necessary to return a unit, please observe this procedure:

- a) Pack to prevent damage in transit.
- b) Include brief description of problem.
- c) Include name and phone number of a person who can be contacted in the event bench test does not reveal problem experienced in vehicle.

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All rights reserved. Touchmaster sirens are made under U.S. Patents 3,868,684 and 4,040,050 with others pending. **YELP** Override, **HETRO**, Ultra **HI-LO**, **SWEEP** and **LOCK** are registered trademarks Printed in U.S.A.

SECTION II SPECIFICATIONS

	Height		Width		Depth		Ship Weight		Input Voltage	Operating Current	Standby Current
	in.	cm.	in.	cm.	in.	cm.	lbs.	kg.			
All Models	2.4	6.2	6.5	16.5	5.4	13.8	5.0	2.3	11-16 VDC	0-205 amps	0 amps

Input voltage_____11-16 VDC
 Standby current_____0 amps
 Operating current (amplifier)_____7.5 amps (one 100 watt speaker)
 _____14 amps (two 100 watt speakers)
 Operating temperature range_____ -30°C to 65°C
 Frequency range_____500Hz to 1650 Hz
 Nominal cycle range
 Wail_____11 cycles per minute
 Yelp_____240 cycles per minute
 Nominal voltage output_____64V peak-to-peak (siren tones)
 Audio frequency response_____300 Hz to 3,000 Hz (± 3 dB)
 Input Impedance_____4,000 ohms (nominal)
 Current ratings:
 Slide bar outputs (progressive):
 Position 1_____20 amps
 Position 2_____20 amps
 Position 3_____20 amps
 Progressive total_____60 amps
 Toggle switches_____15 amps each

SECTION III

SAFEETY MESSAGE TO INSTALLERS OF UNITROL SYSTEMS

WARNING

The lives of people depend on your safe installation and servicing of UNITROL products. It is important to read and follow all instructions shipped with the products. In addition, listed below are some other important safety instructions and precautions you should follow.

Before Installation

Qualifications

- ❖ To properly install an electronic siren you must have a good understanding of automotive electrical procedures and systems, along with proficiency in the installation and service of safety warning equipment.

Sound Hazards

- ❖ Your hearing and the hearing of others, in or close to your emergency vehicle, could be damaged by loud sounds. This can occur from short exposures to moderately loud sounds. For hearing conservation guidance, refer to federal, state, or local recommendations. OSHA Standard 1910.95 offers guidance on “Permissible Noise Exposure”.
- ❖ All effective sirens and horns produce loud sounds, which may, in certain situations, cause permanent hearing loss. You should minimize your exposure times and wear suitable hearing protection.

During Installation

- ❖ **DO NOT** connect this system to the vehicle battery until ALL other electrical connections are made, mounting of all components is complete, and you have verified that no shorts exist.
- ❖ Be sure the siren amplifier and speaker(s) in your installation have compatible wattage ratings.
- ❖ Wire size range from 10 ga (largest) to 20 ga. (smallest). Do not use wire that is smaller than any vehicle wire being cut

- ❖ Sound output will be severely reduced if any objects are in front of the speaker. If maximum sound output is required for your application, you should ensure that the front of the speaker is clear of any obstruction.
- ❖ Install the speaker(s) in a location which provides maximum signaling effectiveness and minimizes the sound reaching the vehicle’s occupants.
- ❖ DO NOT install equipment or route wiring or cord in the deployment path of an air bag.
- ❖ Locate the siren so the vehicle controls can be operated safely.
- ❖ In order for this electronic siren to function properly, the ground connections must be made to the NEGATIVE battery terminal.
- ❖ When drilling into a vehicle structure, be sure that both sides of the surface are clear of anything that could be damaged.
- ❖ If wiring is shorted to vehicle frame, high current conductors can cause hazardous sparks resulting in electrical fires or flying molten metal.

After Installation

- ❖ After installation, test the electronic siren and speaker system to ensure that it is operating properly.
- ❖ Test all vehicle functions, including horn operation and vehicle light systems, to ensure proper operation.
- ❖ After testing is complete, provide a copy of these instructions to the instructional staff and all operating personnel.
- ❖ File these instructions in a safe place and refer to them when maintaining and/or reinstalling the product.

Failure to follow all safety precautions and instructions may result in property damage, serious injury, or death to you or others.

SECTION IV INSTALLATION SIREN/P.A. CONNECTIONS

ALARM

Applying ground (-) to the ALARM terminal triggers the siren to a distinctive 2KHz sound. This function may be used as a burglar alarm or high-temperature alarm for K9 carriers. A motion-detector or switches at the trunk, doors, etc. may be used for a burglar alarm. A temperature switch (Part #UTAS) is available at extra cost for a temperature alarm. A key switch or concealed On/Off switch must be installed in-line with the ALARM terminal.

FOOT SWITCH

A foot switch or any manual switch may be used in lieu of, or in addition to, the horn ring. If the switch is used alone, connect one switch terminal to ground (-). Connect other switch terminal to RNG. If switch is used with horn ring connections, connect one terminal to RNG. Connect other to (-) or (+) to match horn ring polarity.

HORN RING CONNECTIONS

Optional Use – Model TM1. MAN position of the SIREN toggle switch supplies siren control. Connections may be made if wanted.

Mandatory – Models TM3 and TM4. Connections are mandatory for siren controls unless a foot switch or external switch is installed.

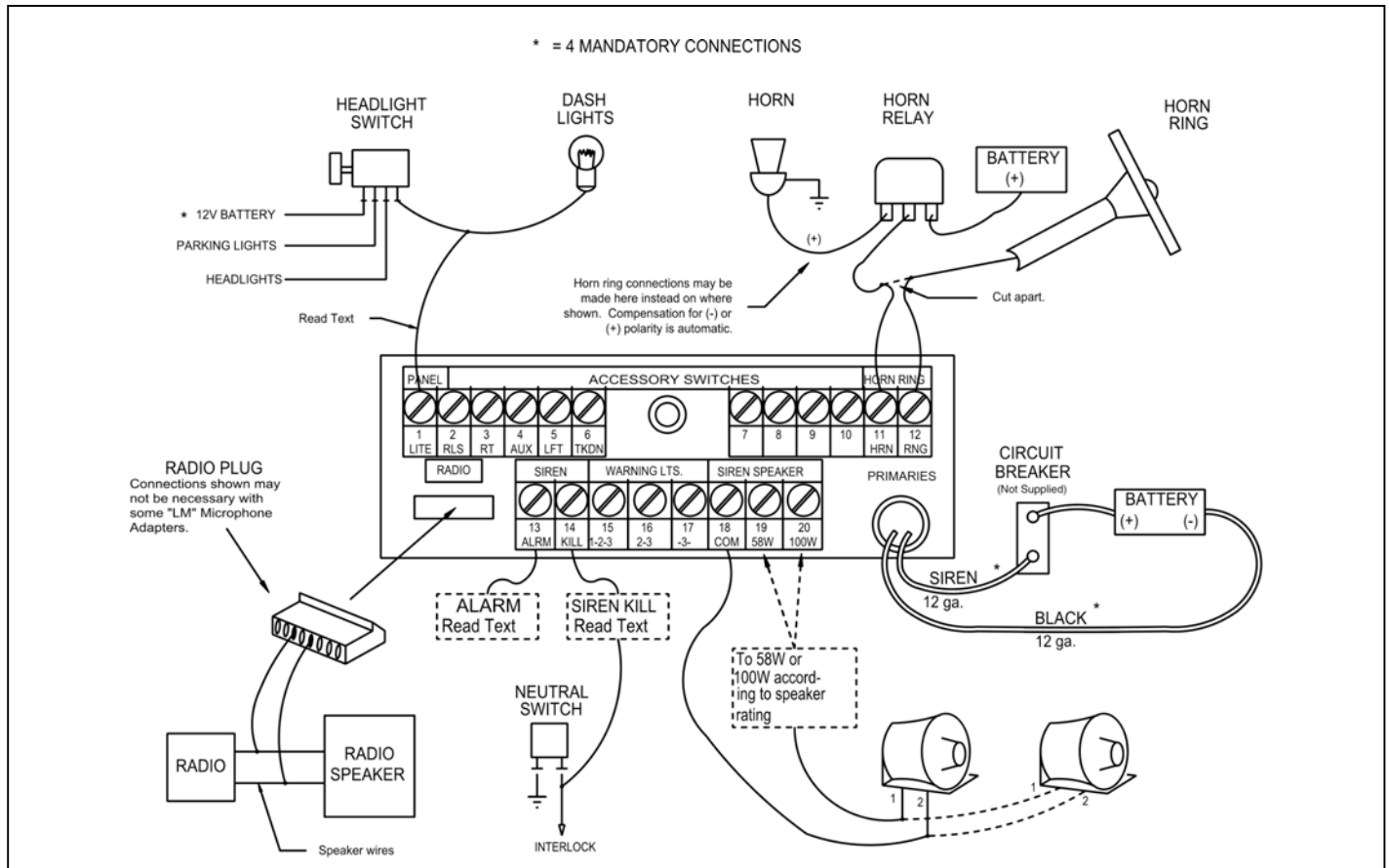
PANEL LIGHTING

For satisfactory lighting, it is recommended that the panel lights (terminal #1) be connected to the vehicle light circuit as shown.

SIREN DEACTIVATION

The park kill feature of the Touchmaster uses the Neutral Safety Switch to stop all siren sounds except P.A., Alarm, and Radio Rebroadcast. The Neutral Safety Switch must be hooked up to the Park Kill input using Terminal #14. A UPKM-1 must be installed as an interface between the vehicle and the Touchmaster. (The UPKM-1 is available at an extra cost). The UPKM-1 will protect both the vehicle and the Touchmaster from damage caused by transient voltages.

NOTE: The only wire connected to Terminal #14 should be the GRAY wire of the UPKM-1. When testing this feature, put the emergency brake on and verify siren sounds in Reverse and Drive and no sounds in Park or Neutral.



SECTION IV (CONTINUED)

ACCESSORY SWITCH CONNECTIONS

MODEL TM4

Six (6) switching functions are standard. Functions are marked on front faceplate (see hook – up below).

MODEL TM4-0

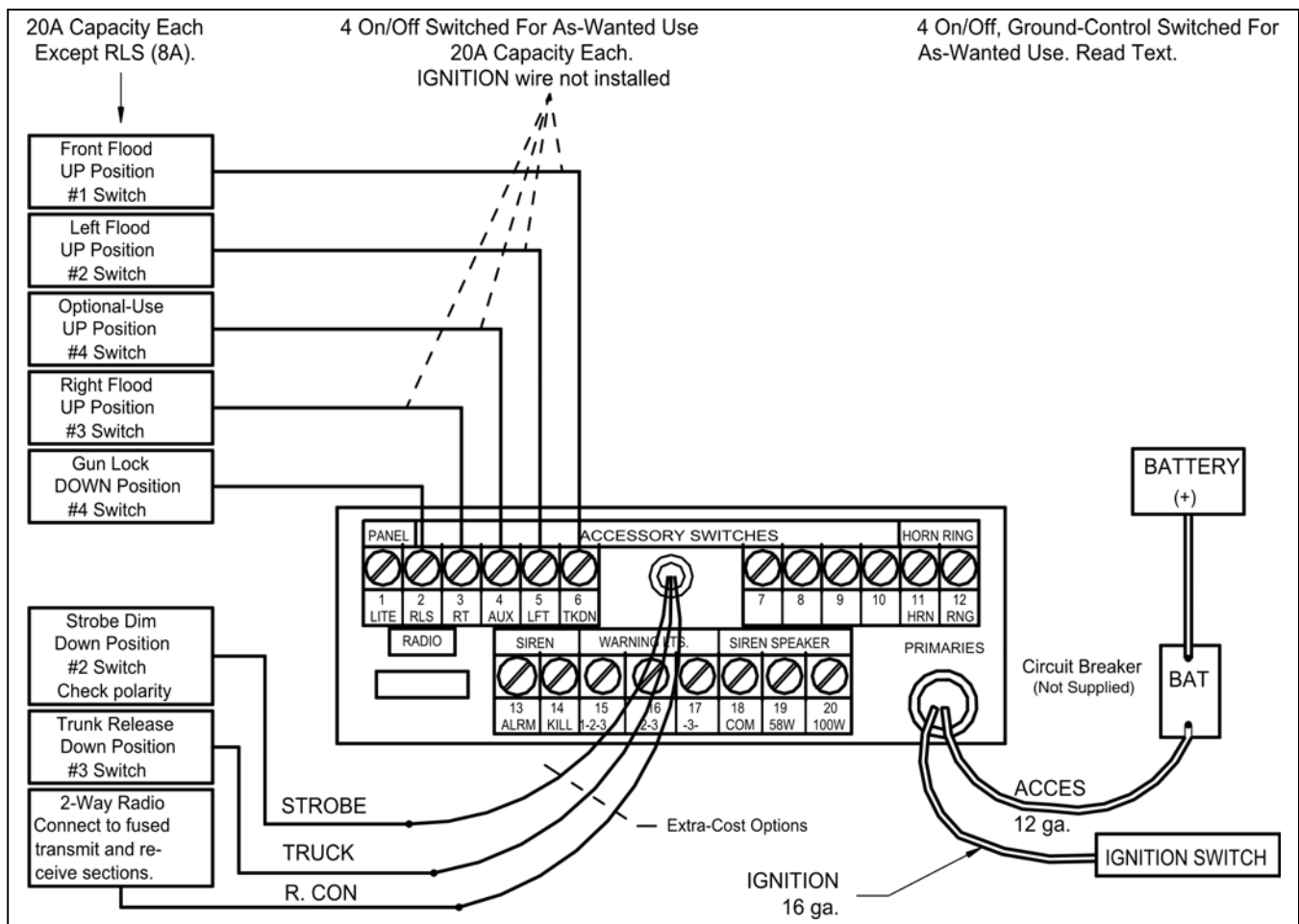
Same switching functions as above, but faceplate is not marked (see hook – up below).

MODEL TM4-1

Model has four (4) ON/OFF switches. Switching is performed by UP toggle positions. DOWN positions are not functional. For reference, switches are numbered one (1) through four (4), left to right. Numbers do not appear on faceplate (see hook – up below).

MODIFIED MODELS

All models can be modified to accommodate special requests. A number of modifications are available and are designated by option numbers.



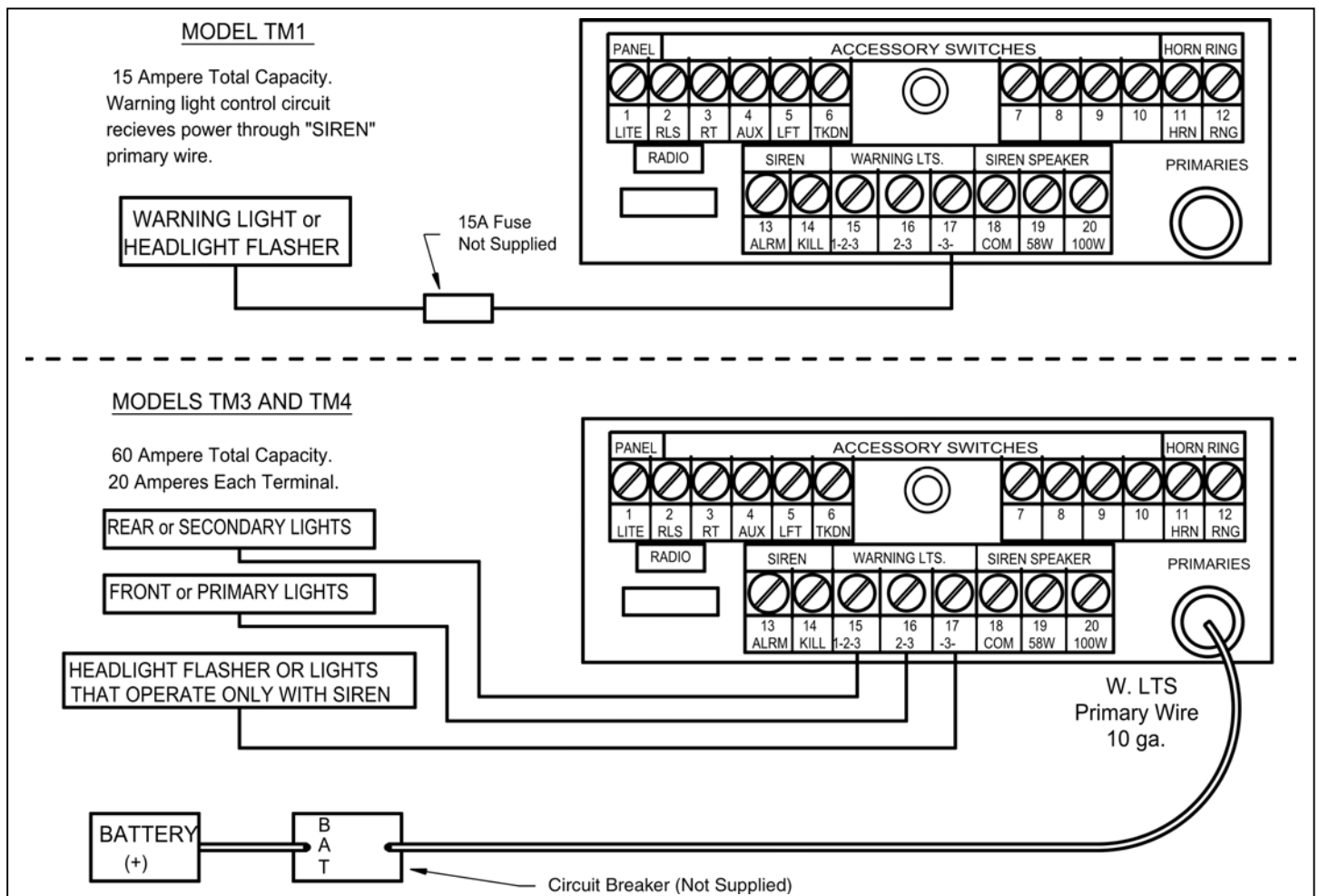
SECTION IV (C) WARNING LIGHTS

MODEL TM1

The ON position of the Siren toggle switch may be used to turn on a warning light or headlight flasher at the same time the siren is turned on. Connect as shown to Terminal #17 using a 15-ampere fuse (not supplied) in line.

MODELS TM3 and TM4

Terminals #15, 16 and 17 are identified by numbers indicating positions of the slide-bar switch that make terminals functional. All terminals emit + 12 V. Follow guidelines illustrated for connecting warning lights.



SECTION V

SAFETY MESSAGE TO OPERATORS OF UNITROL SYSTEMS

WARNING

The lives of people depend on your safe operation of Unitrol products. It is important to read and follow all instructions shipped with the products. In addition, listed below are some other important safety instructions and precautions you should follow:

Qualification

- ❖ To properly use a light system you must have a good understanding of general vehicle operation, a high proficiency in the use of safety warning equipment and thorough knowledge of State and Federal Uniform Traffic Codes.

Sound Hazards

- ❖ Your hearing and the hearing of others in or close to your emergency vehicle could be damaged by loud sounds. This can occur from short exposures to moderately loud sounds. For hearing conservation guidance, refer to Federal, State or local recommendations. OSHA Standard 1910.95 offers guidance on "Permissible Noise Exposure".
- ❖ All effective sirens and horns produce loud sounds, which may, in certain situations, cause permanent hearing loss. You should minimize your exposure times and wear suitable hearing protection.

Sound Limitations

- ❖ Maximum sound output will be severely reduced if any objects are in front of the speaker. If your installation has obstructions in front of the speaker, drive even more cautiously. Frequently inspect the speaker to ensure that it is clear of any obstruction, such as mud or snow, which will reduce maximum sound output.

Signaling Limitations

- ❖ Be aware that the use of your visual and audible signaling devices does not give you the right to force your way through traffic. Your emergency lights, siren and actions are REQUESTING the right-of-way.

- ❖ Although your warning system is operating properly, it may not alert everyone. People may not hear, see or heed your warning signal. You must recognize this fact and continue driving cautiously.
- ❖ Situations may occur which obstruct your warning signal when natural or man-made objects are between your vehicle and others, such as when you raise your hood or trunk lid. If these situations occur, be especially careful.
- ❖ The control head's LED display simulates the light pattern(s) being executed by the warning systems. The display is intended ONLY as a guide and NOT as an indication of proper warning system. Before using the warning system, its operation should be observed from outside the vehicle.

Driving Limitations

- ❖ At the start of your shift, you should ensure that the warning system is securely attached to the vehicle and operating properly.
- ❖ If the unique combination of emergency vehicle equipment installed in your vehicle has resulted in the light/siren controls being installed in a position that does not allow you to operate them by touch only, OPERATE CONTROLS ONLY WHILE YOUR VEHICLE IS STOPPED.
- ❖ If driving conditions require your full attention, you should avoid operating the light/siren controls while the vehicle is in motion.

Continuing Education

- ❖ File these instructions in a safe place and refer to them periodically. Give a copy of these instructions to new recruits and trainees.

Failure to follow these safety precautions may result in property damage, serious injury, or death to you, to passengers or to others.

3. A relay is used in all models to transfer horn ring circuitry (Relay #K2 at top left of top circuit board). Remove cabinet cover and verify contact integrity.

SECTION VI

SERVICE AND MAINTENANCE

ADJUSTMENTS & TROUBLE-SHOOTING

Page

ADJUSTING P.A. VOLUME

MICROPHONE P.A.

The Volume Control switch is pre-adjusted for a noise-canceling microphone. Other types may "squeal". Adjust internal volume control (behind hole in front faceplate) with 1/8" blade screwdriver. *CAUTION: Excessive inward force will damage the control.*

1. Sit inside car: Set VOLUME on Hi. If using radio microphone for p.a., press MIC setting of P.A. switch. Make test count while slowly rotating control counter-clockwise until squeal stops.
2. Repeat test using microphone outside of car with Volume Control in M D setting.

OUTSIDE RADIO P.A.

The Touchmaster is pre-adjusted for an input level of 1 Vac. Higher-than-average settings of the radio's Volume Control will cause higher-than-average amplification outside. Adjust radio input level control (hole, rear right side of cabinet) with 1/8" blade screwdriver. Rotate counter-clockwise to reduce level.

NO SIREN SOUNDS

If SIREN KILL feature has been connected, shift car out of Park or Neutral before testing.

1. Check siren speaker or its wiring for a short circuit.
2. Repairing the short-circuit will automatically restore siren operation. No damage to electronic components can result from speaker or speaker wiring problems.
3. Remove speaker wires. Turn siren on and listen for faint siren sound from Touchmaster cabinet. If sound can be heard, speaker or speaker wiring is "open" (not connected).

NO HORN RING SIREN CONTROL

1. (-) or (+) polarity may be connected to the RNG terminal. Compensation is automatic.
2. Verify that cut ends of horn ring wire have been correctly connected to HRN (HORN) and RNG (HORN RING) terminals. Reversed connections may result in a malfunction.

NO MICROPHONE P.A.

1. Plug a known good microphone fully into the microphone jack in the front faceplate.
2. If using an LM Radio Microphone Adapter, verify that correct model has been installed for radio being used. If model is correct, interchange adapter with another known to be operational.
3. If above procedures are followed without results, audio input or drive circuitry is defective.

WARNING LIGHT SWITCHING

1. Control terminals: emit +12V. Use test light or voltmeter to check voltage at related terminals. Connect one probe to ground.
2. If no voltage is present at tested terminals, warning light control circuit is defective.

ACCESSORY SWITCHING

1. The release switch can be activated when ignition is on.

ASSISTANCE

Technical help is available by phone 7:00 AM to 3:30 PM Pacific Standard Time, Monday through Friday, except holidays.

(800) 854-3375 is toll free within the United States and Canada. Phone (714) 871-3336 from other areas.

If it is necessary to return a unit, please observe this procedure:

- a) Call for RMA number.
- b) Pack to prevent damage in transit.
- c) Include brief description of problem and RMA No.
- d) Include name and phone number of a person who can be contacted in the event the bench test