

TOMAR ELECTRONICS, INC.

MODEL 930N-4805 HELIOBE (TM) Lightbar

INSTALLATION, OPERATION, AND MAINTENANCE INSTRUCTIONS

REFERENCE DRAWINGS

- 11656 - Permanent Mount 930-UNPK
- 11657 - Mounting hardware Hook Mount
- 11700 - Outline and illustrated parts list
- 11703 - 930-N12 Wiring diagram

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PRODUCT DESCRIPTION

The Tomar Electronics Inc. model 930N-4805 HELIOBE is a state-of-the-art PROGRAMMABLE NEOBE lightbar designed to provide complete emergency warning, preemption, and traffic control lighting for police and fire vehicles.

The 930N-4805 has multiple selectable flash patterns which allows the user to select from four different lighting patterns to convey different messages to other drivers. The patterns available are:

- | | |
|--------------------------------|---|
| REAR INBOARD WIG-WAG
MODE 1 | Usually done in Amber, the rear wig-wag position provides effective, long distance warning to the rear of the emergency vehicle warning on coming traffic of a vehicle stopped on the right way. |
| 360 DEGREE
MODE 2 | The 360 degree mode provides complete all around protection for the emergency vehicle. The front, rear and side lamps are turned on. The NEOBE pattern is designed so that when viewed from the front or rear of the lightbar, there is never a time period when light is not being generated greatly enhancing safety. |
| 360 PLUS
MODE 3 | The 360 PLUS mode activates all lamps as in the 360 degree mode plus the addition of the corner lamps. If using the /PRE option, the front lamps generate the preemption coded signal to provide preemption priority. |

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Also, when not operating in any of the above EMERGENCY modes the 930N-4805 can display rear facing traffic control arrows. ARROW mode is a highly effective traffic arrow displayed using NEOBE technology to more clearly indicate the intended direction of the arrow.

The traffic control modes are as follows:

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|------------------|--|
| LEFT ARROW | The left arrow mode displays a chasing NEOBE pattern across the full width of the rear of the lightbar, indicating to traffic to proceed around the stopped emergency vehicle to the left. |
| RIGHT ARROW | The right arrow mode is the reverse of the left mode. |
| CENTER-OUT ARROW | The center out arrow mode provides a chasing visual display conveying to traffic to merge around either side of the stopped emergency vehicle. |

Note: The front lamps operate in 360 degree mode 2 when any arrow mode is used.

NOTE: AT NO TIME SHOULD THE OPERATOR OF THE EMERGENCY VEHICLE ASSUME THAT THE TRAFFIC CONTROL ARROWS PROVIDE 100% PERFECT DIRECTIONAL COMMUNICATION TO ONCOMING DRIVERS. AS WITH ANY LIGHTBAR MOUNTED ARROW SYSTEM, THERE IS ALWAYS THE POSSIBILITY THAT THE ONCOMING DRIVER DOES NOT UNDERSTAND THE SIGNAL THE LIGHTBAR IS PROJECTING.

INSTALLER SAFETY MESSAGE

The safe installation of the Tomar 930 HELIOBE Light Bar is your first priority. All instructions listed here should be followed and common sense applied to each Light Bar installation to insure safety. Tomar field service should be called if you have any question.

Some important precautions and instructions:

- Installers should have a good understanding of automotive electrical and mechanical systems. The quality of the installation work should equal or surpass OEM standards.
- Protect the vehicle components when drilling into the sheet metal. Metal chips and sharp edges must not be left on the vehicle. Check to see that the drill bit will not damage surrounding components when it penetrates the sheet metal.
- Review all instruction sheets packed with other components of the 930 HELIOBE Light Bar and make sure you thoroughly understand each step of the installation before you start.
- Roof damage can occur if hook adjustment bolts are over tightened.
- File these instructions in a safe place for future reference.

Perform a final inspection of the installation to insure that the 930 HELIOBE Light Bar is operating properly. It should be securely fastened to the vehicle when pulling on the Light Bar mounting bracket. Failure to follow all safety procedures and instructions may result in serious injury, property damage or death to you or others.

I. GENERAL INFORMATION

This instruction sheet provides procedures to install the 930-UNHK Hook Mounting System to the Tomar 930 HELIOBE Light Bar and mount the assembly to the vehicle. In order to complete the installation, you must have purchased the 930 HELIOBE Light Bar, a 930-UNHK Hook Mounting Kit, and the correct Hook Bracket pair for the vehicle. Consult Tomar Sales for the correct part no. for your vehicle. You should also have a completely assembled light bar with the correct lamp configuration you have ordered. Refer to Figures 1 and 2 on this sheet.

II. UNPACKING

Check to see that all components shown in Figures 1 and 2 are included. You should also have one pair of the hook brackets to fit your vehicle. Check your packing lists carefully.

III. ASSEMBLY

- A. Turn the light bar assembly upside down while protecting the top surface from scratches.

B. Slide 2 of the carriage bolts to each end of the slot in the bottom of the light bar, approx. 8 inches from the end of the aluminum extrusion.

C. Install 2 rubber bumpers into the rectangular holes in the bottom of the molded bracket (see Figure 1). The molded rubber head on each bumper must be pulled through the hole in the bracket. Repeat for the second molded bracket.

D. Install the hook mounting bracket in the top recess of the molded bracket. Insure that the two square holes in the mounting bracket align with the circular holes in the molded bracket. Place the assembly over the two carriage bolts on the left end of the light bar and secure with a flat washer, lock washer and nut. Leave the nuts loose. Repeat with the molded bracket on the right end of the light bar.

E. Center the light bar on the vehicle roof, approximately over the driver's head. Adjust both molded bracket assemblies so that the rubber bumper pads rest near the edge of the roof or gutter where the roof is most rigid. Check to see that the light bar is still centered and the molded brackets are equally spaced on each side of the vehicle. Tighten the 3/8 hex nuts, two on each bracket.

F. Insert the separately purchased mounting hook into the opening on the left molded bracket and tighten (finger tight) with one of the 5/16 stainless adjusting bolts that best fits your installation. Repeat with the right bracket. Insure that the hooks do not interfere with the operation of the door or window glass. Also insure that the water tightness of any sealing rubber is maintained.

G. If your mounting hooks are supplied with sheet metal screws, see instructions packaged with the hooks for correct procedures.

H. Remove the light bar from the roof and lay upside down on a table. Cut three pieces of the filler extrusion and install in the carriage bolt mounting slot on the bottom of the main aluminum extrusion.
NOTE: This is very important in order to reduce the wind noise at high speeds.

J. Reposition the light bar on the roof of the vehicle and tighten each hook adjustment bolt to a maximum torque of 72 in-lb (6 ft-lb). Check to insure that the light bar does not slide front-to-back when pulling on the mounting brackets. CAUTION: Excessive tightening of the hook adjustment bolts can cause damage to the light bar, mounting system, or vehicle roof.

K. Inspect the entire assembly to insure that all fasteners and brackets are tight.

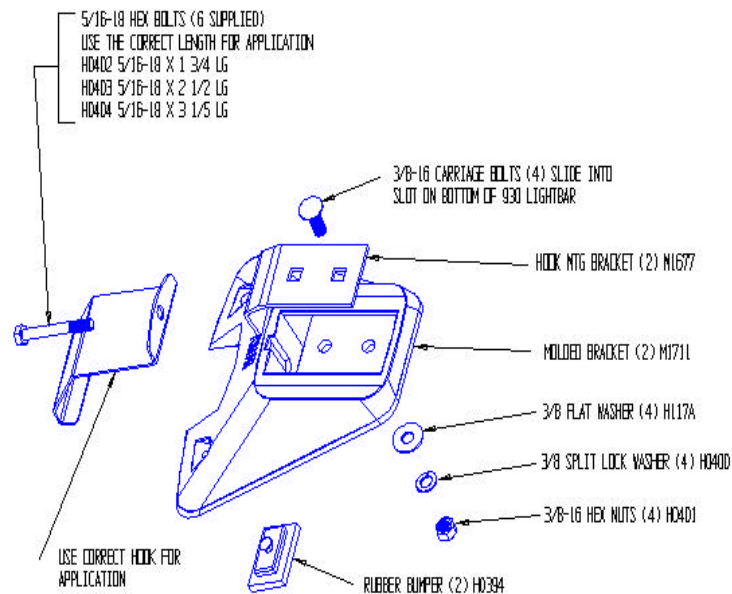


Figure 1

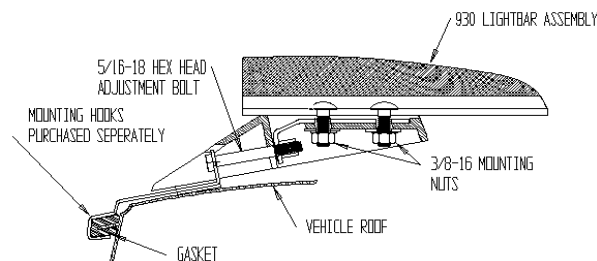


Figure 2

Additionally, the 930N-4805 HELIOBE lightbar also contains a factory programmed interface to allow control of all the warning features of the bar from the 3-level, master lever or rotary switches commonly found on today's modern sirens. When the system is installed per the wiring diagram, the 930N-4805 warning strobes will operate in the following modes:

<u>MASTER SWITCH POSITION</u>	<u>MODE</u>	<u>930N-4805 FUNCTION</u>
POSITION 0 (off)		ALL OFF
POSITION 1.....	MODE 1.....	Rear wig-wag
POSITION 2.....	MODE 2.....	360 Degree
POSITION 3.....	MODE 3.....	360 PLUS (Preemption mode is also activated if the bar is so equipped.)

Available options include alley lights, front and/or rear takedown lights, and dual priority preemption emitter.

Auxiliary SPST switches are required to operate the traffic ARROBE modes, and the alley and takedown lights and are usually part of the siren control.

INSTALLATION INSTRUCTIONS

- Step 1** If you intend to interface the 930N-4805 lightbar to a siren lever or rotary master switch, first install the siren/light controller as you would normally, per the siren manufacturers instructions. Verify normal operation of the siren controls.
- Step 2** Referring to the installation instructions provided with the lightbar mounting kit you have purchased, attach the 930N-4508 to the vehicle securely. Double check your installation to make sure the bar is firmly attached to the roof of the vehicle. Tomar Electronics Inc. is not responsible for damage or injury incurred due to improper mounting of the bar.
- Step 3** Route the 15' cable coming from the bar carefully through the vehicle to the area where you have installed the control switches (customer provided) for the bar. Make certain that the cable is routed and protected so that it cannot rub and become abraded when the vehicle is in motion.
- Step 4** Wire power and control switches for the functions you wish to use per the attached wiring diagram. Be sure to use a master 35 amp fuse or breaker located as close to the battery as possible running to it. Failure to use this breaker will increase the chances or wiring become damaged.
- Step 5** Refer to the operating instructions and switch the bar into each of its operating modes and verify proper functioning. If the bar does not operate correctly for some reason, refer to the troubleshooting section of these instructions for assistance. If the bar operates properly, the installation is complete.

OPERATING INSTRUCTIONS

REAR WIG-WAG To operate the REAR WIG-WAG ONLY feature of the 930N-4805, simply slide or rotate the siren/controller master switch to the level 1 position. The 930N-4805 will now operate in the REAR WIG-WAG mode. The REAR WIG-WAG mode is intended for use when the emergency vehicle is stopped and wishes to project only long distance hazard warning to vehicles approaching the emergency vehicle rear.

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360 DEGREE PATTERN To operate the bar in the 360 DEGREE pattern, simply slide or rotate the siren/controller master switch to the level 2 position. The 930N-4805 will switch immediately to the 360 DEGREE pattern which is usually used at night, when following another pursuit vehicle, or any other time the operator judges the white front lamps to be too bright for conditions. Amp draw is about 16 amps average in this mode (no alley or takedown lights).

360 PLUS PATTERN To operate the bar in the 360 PLUS pattern simply slide or rotate the siren/controller master switch to the level 3 position (all the way to the right for lever type switches, fully clockwise for rotary type switches). The 930N-4805 will immediately commence operating in the 360 PLUS pattern, generally used for pursuit. In this mode the bar draws approximately 16 amps average (with no takedown or alley lights on). If using the 930N-4805/PRE, the front lamps will generate their pattern at the installer selected preemption priority.

REAR LEFT ARROW To operate the REAR LEFT ARROW feature of the 930N-4805, the slide or rotary master switch must be in position 0. Activate the LEFT ARROW auxiliary switch. The 930N-4805 will now project a rearward facing LEFT ARROW pattern. The REAR LEFT ARROW mode is intended for use when the emergency vehicle is stopped and wishes to inform vehicles approaching from the rear to merge LEFT around the vehicle.

REAR RIGHT ARROW To operate the REAR RIGHT ARROW feature of the 930N-4805, the slide or rotary master switch must be in position 0. Activate the RIGHT ARROW auxiliary switch. The 930N-4805 will now project a rearward facing RIGHT ARROW pattern. The REAR RIGHT ARROW mode is intended for use when the emergency vehicle is stopped and wishes to inform vehicles approaching from the rear to merge RIGHT around the vehicle.

REAR CENTER-OUT ARROW To operate the REAR CENTER-OUT ARROW feature of the 930N-4805, the slide or rotary master switch must be in position 0. Activate both the LEFT and

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INTENSITY CONTROL If installed, to operate the bar in the high intensity mode close the intensity control switch. To operate in the low intensity mode open the switch.

NON-WARNING HALOGEN LIGHTS If you purchased and installed other non-warning, halogen lights such as alley takedown lights, to operate them simply close the switch that controls their function. To extinguish them simply open the appropriate switch.

TROUBLESHOOTING INSTRUCTIONS

WARNING! The NEOBE power supplies contained in this bar are high voltage devices and can store lethal amounts of energy. DO NOT remove or connect lamps or touch lamps while in operation. Disconnect incoming power and wait 10 minutes before removing outer lamps.

TROUBLE

THINGS TO CHECK

Nothing works

- 1) Check battery or power source and main fuse or breaker
- 2) Check lightbar ground connection for good solid connection.

Rear/Side facing lamps

- 1) Check internal in-line fuse near the passenger side power supply.
- 2) Check lighthouse wiring harness for shorts.

Front facing lamps

- 1) Check internal in-line fuse near driver side power supply.
- 2) Check lighthouse wiring harness for shorts.

Patterns do not select correctly on both front and rear lamps.

- 1) Check installation and programming of the siren/controller you are using. Make sure the siren/controller is programmed per the attached wiring diagram.
- 2) Check input wiring for opens and shorts in the orange, blue, and blk/wht wires.
- 3) Check power/control wiring harness for shorts or opens.

Patterns do not select correctly on the front lamps.

- 1) Check power/control harness for shorts or opens in the orange, blue, and purple wires leading to the drivers side power supply.

Patterns do not select correctly on the rear lamps.

- 1) Check power/control harness for shorts or opens in the orange, blue, and purple wires leading to the passenger side power supply.

Power supply in-line fuse blows.

- 1) Check for reverse polarity on input power connections.
- 2) Replace power supply with known good unit.

One lamp does not flash

- 1) Check lamp by replacing it with a known good lamp.
- 2) Check lighthouse harness wiring from power supply to the bad lamp.

Bar does not preempt in mode 3
(But front lamps flash)

- 1) Check BRN or BRN/WHT priority select lines for proper connection. See wiring diagram 11703 attached.
- 2) Check to make sure preemption RECEIVER is in proper

MAINTENANCE INSTRUCTIONS

- 1) Periodically clean the lamps using a good quality glass cleaner. DO NOT use an oil based cleaner will leave a light absorbing film and will reduce light output from the bar.
- 2) At the beginning of every shift, inspect the bar for proper operation in all modes.
- 3) Monthly, inspect the lamps and reflectors for lamp aging and reflector condition. If a lamp is more than 30% black, it should be replaced. If a reflector is cloudy or dull, the lamp should be replaced. A c