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Safety First: This document provides all the necessary information to allow your Whelen product to be properly and safely installed. Before beginning the installation and/or operation of your new product, the installation technician and operator must read this manual completely. Important information is contained herein that could prevent serious injury or damage.

- Proper installation of this product requires the installer to have a good understanding of automotive electronics, systems and procedures.
- Whelen Engineering requires the use of waterproof butt splices and/or connectors if that connector could be exposed to moisture.
- Any holes, either created or utilized by this product, should be made both air- and watertight using a sealant recommended by your vehicle manufacturer.
- Failure to use specified installation parts and/or hardware will void the product warranty!
- If mounting this product requires drilling holes, the installer MUST be sure that no vehicle components or other vital parts could be damaged by the drilling process. Check both sides of the mounting surface before drilling begins. Also de-burr any holes and remove any metal shards or remnants. Install grommets into all wire passage holes.
- Do not install this product or route any wires in the deployment area of your air bag. Equipment mounted or located in the air bag deployment area will damage or reduce the effectiveness of the air bag, or become a projectile that could cause serious personal injury or death. Refer to your vehicle owner's manual for the air bag deployment area. The User/Installer assumes full responsibility to determine proper mounting location, based on providing ultimate safety to all passengers inside the vehicle.
- For this product to operate at optimum efficiency, a good electrical connection to chassis ground must be made. The recommended procedure requires the product ground wire to be connected directly to the NEGATIVE (-) battery post.
- If this product uses a remote device to activate or control this product, make sure that this control is located in an area that allows both the vehicle and the control to be operated safely in any driving condition.
- Do not attempt to activate or control this device in a hazardous driving situation.
- This product contains either strobe light(s), halogen light(s), high-intensity LEDs or a combination of these lights. Do not stare directly into these lights. Momentary blindness and/or eye damage could result.
- Use only soap and water to clean the outer lens. Use of other chemicals could result in premature lens cracking (crazing) and discoloration. Lenses in this condition have significantly reduced effectiveness and should be replaced immediately. Inspect and operate this product regularly to confirm its proper operation and mounting condition. Do not use a pressure washer to clean this product.
- **WARNING!** All customer supplied wires that connect to the positive (+) terminal of the battery must be sized to supply at least 125% of the maximum operating current and FUSED "at the battery" to carry that load. **DO NOT USE CIRCUIT BREAKERS WITH THIS PRODUCT!**
- **FAILURE TO FOLLOW THESE PRECAUTIONS AND INSTRUCTIONS COULD RESULT IN DAMAGE TO THE PRODUCT OR VEHICLE AND/OR SERIOUS INJURY TO YOU AND YOUR PASSENGERS!**

Mounting: Trim Ring (optional)

CAUTION! Permanent mounting of this product will require drilling. Make sure no other vehicle components could be damaged by this process. Check both sides of the mounting surface before starting. If damage is possible, select a different mounting location.

1. Position the flange onto the proposed mounting location. Using a scribe or similar tool, mark off the 3 mounting holes. Also mark the area in the center where the 1 inch wire passage hole will be drilled.

IMPORTANT: Be sure to check all measurements before drilling.

2. Using a drill bit sized for a #8 sheet metal screw and the thickness of the mounting surface, drill the 3 mounting holes. Drill a 1" dia. wire passage hole in the area marked. Be sure to deburr and install a grommet (customer supplied) into this hole.
3. Using appropriately sized wires (18 AWG min.), extend the lighthead wires to their designations. Fuse the +12VDC connections at 3 amps and test for proper operation. Secure the lighthead to the vehicle using the supplied mounting hardware.

Mounting: Grommet (optional)

IMPORTANT! Make sure the lighthead will not interfere with existing equipment and be aware of any items on the opposite side of the mounting surface.

1. Mark the center of the mounting location onto the mounting surface. Scribe a circle onto the mounting surface using this point as the center. Refer to the mounting hole chart for the proper diameter. Cut and deburr the grommet hole.
2. Using appropriately sized wires (18 AWG min.), extend the lighthead wires to their designations. Fuse the +12VDC connections at 3 amps and test for proper operation.
3. Insert the lighthead into the grommet then secure it to the vehicle by snapping the grommet into the mounting hole.

Operation - This lighthead features Scan-Lock™ selectable flash patterns and SYNC capabilities.

Scan-Lock™ - To cycle forward through patterns, with the lighthead switched on, apply +12VDC to the WHT/IO wire for less than 1 second and release. To cycle backward through patterns, apply +12VDC to the WHT/IO wire for more than 1 second. When the desired pattern is displayed, allow it to run for more than 5 seconds. The lighthead will now display this pattern when active. To reset to the factory default pattern, turn off power and apply +12VDC to the WHT/IO wire while turning power back on.

SYNC lightheads have a special set of flash patterns, with each pattern available in two modes; Phase 1 and Phase 2. All lightheads configured to display the Phase 1 mode of a given pattern will flash simultaneously. Any lightheads configured to display the Phase 2 mode of a pattern, will alternate with any Phase 1 lightheads with the same pattern.

Sync - To sync two lightheads, configure both lightheads to display the same Phase 1 pattern. With the power off, connect the GREY wires from each lighthead together. When the lightheads are activated, their patterns will be synchronized. To configure the two lightheads to alternate their patterns, set the pattern of either lighthead to the Phase 2 mode of the current pattern.

To understand how to use the SYNC feature with more than 2 lightheads, the principals will be applied to a sample system consisting of 4 lightheads. 2 are mounted on the rear, driver side of the vehicle and 2 mounted on the rear, passenger side of the vehicle.

With all the wiring complete, turn on the 4 lightheads. As shipped from the factory, all the lightheads will simultaneously display the same pattern (SignalAlert™ 75 Phase 1).

To configure, for example, the passenger side lightheads to alternate with the driver side lightheads, change the flash patterns for either the passenger or driver side lightheads to Phase 2 mode of the same pattern.

Available 4-wire Flash Patterns / * = California Title XIII compliant

SYNC Flash Patterns: SignalAlert™ 75 Phase 1 > SignalAlert 75 Phase 2 > CometFlash® 75 Phase 1 > CometFlash 75 Phase 2 > DoubleFlash 75 Phase 1 > DoubleFlash 75 Phase 2 > SingleFlash 75 Phase 1 > SingleFlash 75 Phase 2* > ComAlert™ 75 Phase 1 > ComAlert 75 Phase 2 > LongBurst™ 75 Phase 1 > LongBurst 75 Phase 2 > PingPong™ 75 Phase 1 > PingPong 75 Phase 2 >

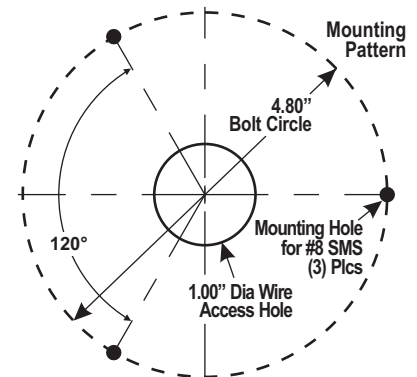
Regular Flash Patterns: SingleFlash 60* > SingleFlash 90* > SingleFlash 120* > SingleFlash 300 > DoubleFlash 150 > ComAlert™ 150 > ActionFlash™ 1 > ActionFlash 2 > ModuFlash™ > ActionScan™ > Steady

Grommet Mounting Hole Table

Surface Thickness	Hole Diameter
.0625" or 1/16"	4.47"
.125" or 1/8"	4.50"
.1875" or 3/16"	4.50"
.25" or 1/4"	4.53"
.375" or 3/8"	4.56"

Wiring

Color	Function	Connect to:
LED Color	Power	Switched +12VDC
Black	Ground	Chassis Ground
Grey	Sync	See text
White/Violet	Scan-Lock™	See text



Warnings to Installers

Whelen's emergency vehicle warning devices must be properly mounted and wired in order to be effective and safe. Read and follow all of Whelen's written instructions when installing or using this device. Emergency vehicles are often operated under high speed stressful conditions which must be accounted for when installing all emergency warning devices. Controls should be placed within convenient reach of the operator so that he can operate the system without taking his eyes off the roadway. Emergency warning devices can require high electrical voltages and/or currents. Properly protect and use caution around live electrical connections. Grounding or shorting of electrical connections can cause high current arcing, which can cause personal injury and/or vehicle damage, including fire. Many electronic devices used in emergency vehicles can create or be affected by electromagnetic interference. Therefore, after installation of any electronic device it is necessary to test all electronic equipment simultaneously to insure that they operate free of interference from other components within the vehicle. Never power emergency warning equipment from the same circuit or share the same grounding circuit with radio communication equipment. All devices should be mounted in accordance with the manufacturer's instructions and securely fastened to vehicle elements of sufficient strength to withstand the forces applied to the device. Driver and/or passenger air bags (SRS) will affect the way equipment should be mounted. This device should be mounted by permanent installation and within the zones specified by the vehicle manufacturer, if any. Any device mounted in the deployment area of an air bag will damage or reduce the effectiveness of the air bag and may damage or dislodge the device. Installer must be sure that this device, its mounting hardware and electrical supply wiring does not interfere with the air bag or the SRS wiring or sensors. Mounting the unit inside the vehicle by a method other than permanent installation is not recommended as unit may become dislodged during swerving; sudden braking or collision. Failure to follow instructions can result in personal injury. Whelen assumes no liability for any loss resulting from the use of this warning device. **PROPER INSTALLATION COMBINED WITH OPERATOR TRAINING IN THE PROPER USE OF EMERGENCY WARNING DEVICES IS ESSENTIAL TO INSURE THE SAFETY OF EMERGENCY PERSONNEL AND THE PUBLIC.**

Warnings to Users

Whelen's emergency vehicle warning devices are intended to alert other operators and pedestrians to the presence and operation of emergency vehicles and personnel. However, the use of this or any other Whelen emergency warning device does not guarantee that you will have the right-of-way or that other drivers and pedestrians will properly heed an emergency warning signal. Never assume you have the right-of-way. It is your responsibility to proceed safely before entering an intersection, driving against traffic, responding at a high rate of speed, or walking on or around traffic lanes. Emergency vehicle warning devices should be tested on a daily basis to ensure that they operate properly. When in actual use, the operator must ensure that both visual and audible warnings are not blocked by vehicle components (i.e.: open trunks or compartment doors), people, vehicles, or other obstructions. It is the user's responsibility to understand and obey all laws regarding emergency warning devices. The user should be familiar with all applicable laws and regulations prior to the use of any emergency vehicle warning device. Whelen's audible warning devices are designed to project sound in a forward direction away from the vehicle occupants. However, because sustained periodic exposure to loud sounds can cause hearing loss, all audible warning devices should be installed and operated in accordance with the standards established by the National Fire Protection Association.