

# WHELEN<sup>®</sup>

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## Installation Guide: Liberty™ II Mini-Lightbar

### 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 they can operate the system without taking their 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.

### 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.**
- **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 the holes and remove any metal shards or remnants. Install grommets into all wire passage holes.**
- **If this manual states that this product may be mounted with suction cups, magnets, tape or Velcro®, clean the mounting surface with a 50/50 mix of isopropyl alcohol and water and dry thoroughly.**
- **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 (this does not include products that use cigar power cords).**
- **If this product uses a remote device for activation or control, make sure that this device is located in an area that allows both the vehicle and the device 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.**
- **It is recommended that these instructions be stored in a safe place and referred to when performing maintenance and/or reinstallation of this product.**
- **FAILURE TO FOLLOW THESE SAFETY PRECAUTIONS AND INSTRUCTIONS COULD RESULT IN DAMAGE TO THE PRODUCT OR VEHICLE AND/OR SERIOUS INJURY TO YOU AND YOUR PASSENGERS!**

**IMPORTANT!** The lightbar must be a minimum of 16" from any radio antennas.

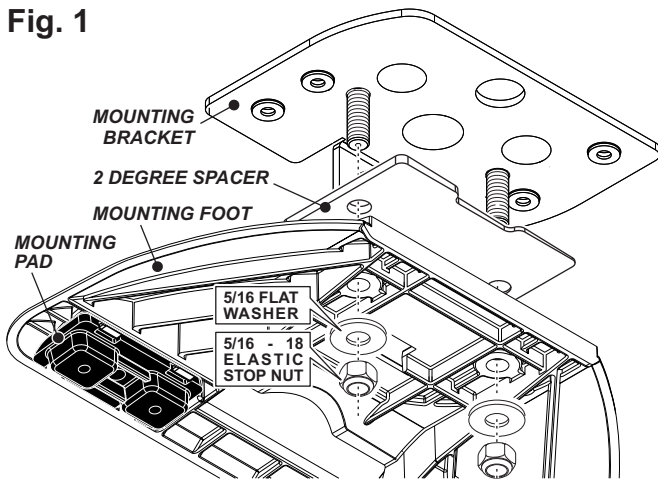
**NOTE:** There may be a roof support member that spans the distance between the driver's and passengers side. **DO NOT DRILL THROUGH THIS MEMBER!** Adjust the location until the holes can be drilled without contacting this support member.

**Caution:** Permanent mounting of this product will require drilling. It is absolutely necessary to make sure that no other vehicle components could be damaged by this process. Check both sides of the mounting surface before starting. If damage is likely, select a different mounting location.

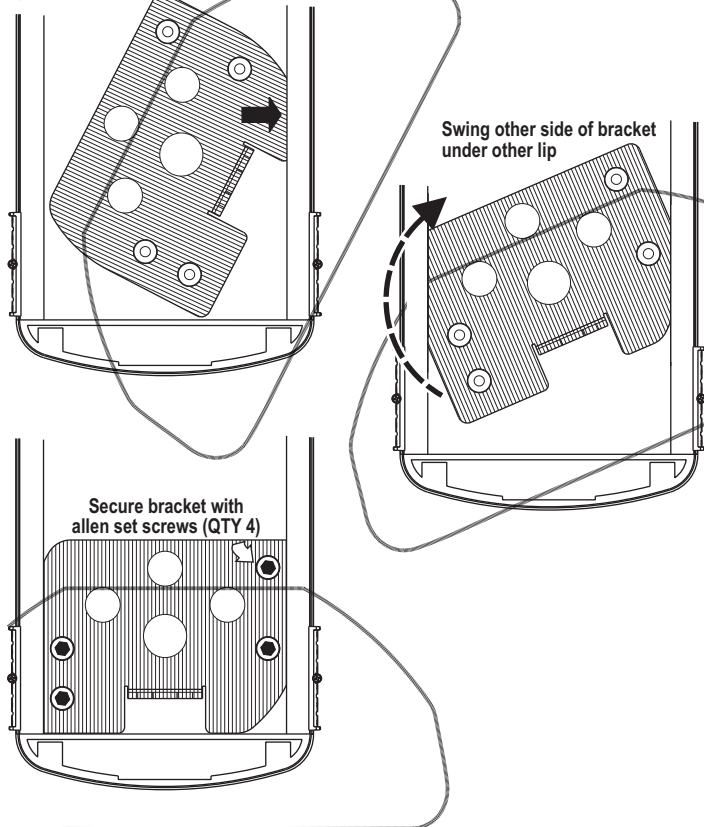
**Permanent Mounting:**

1. Install the mounting bracket to the mounting foot using the supplied 5/16 FLAT WASHERS and 5/16 - 18 ELASTIC STOP NUTS (Fig. 1). Do NOT install the optional spacers yet.
2. Place the bracket into the track on the bottom of the extruded base of the lightbar and twist it into position (Fig. 2).

**Fig. 1**

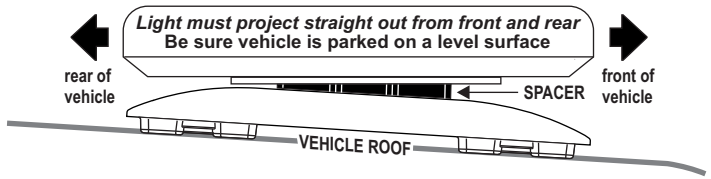


Insert round side of bracket under lip in extrusion

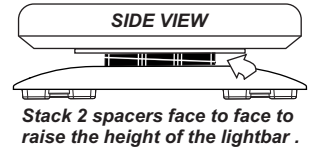


**Fig. 2**

3. Slide the bracket to the outer end of the base extrusion and secure the bracket to the extrusion using the four 1/4 - 20 X 1/2 ALLEN SET SCREWS (Fig. 2). Repeat steps 1 - 3 for other side of lightbar.
4. **Installing Spacers:** Spacers are used as required to adjust the lightbars clearance from the vehicle roof. Spacers are also used to make the lightbar level with the road so that the light does not project up or down when viewed from the front or rear of the vehicle. Each spacer creates a 2° incline.



**Lightbar angle:** Place the lightbar onto the vehicle roof in its exact mounting location and use a level to check the angle of the lightbar. If (because of the curvature of the vehicle roof) the front and rear lights project up or down, you will need to install one of the supplied spacers. Note the angle of the tilt to determine where to place the spacer.

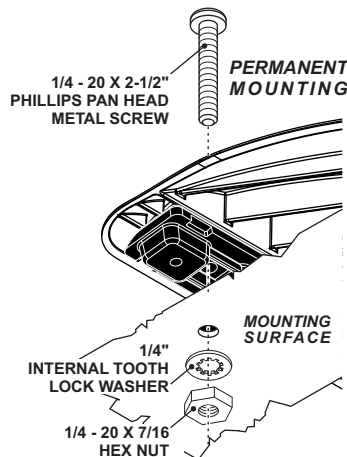
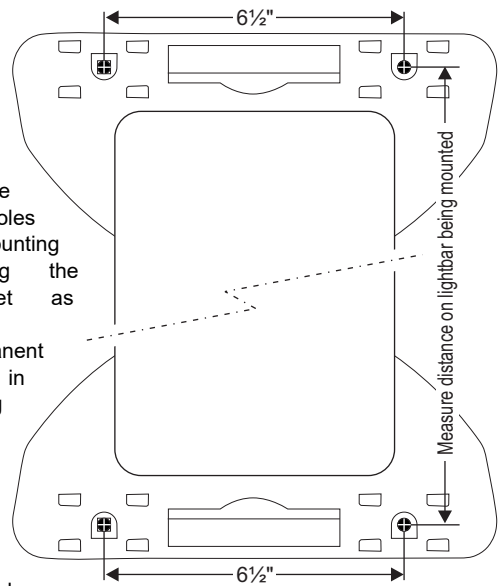


**Installation:** Remove the mounting feet (not the bracket) and install the spacer (maximum 1 per side) then reinstall the feet.

**Distance from roof:** The lightbar must be no closer than 1/2 inch (at the closest point) from the vehicle roof. **Installation:** Remove the mounting feet (not the bracket), install the spacers as shown (maximum 2 per side) and reinstall feet.

5. Position the lightbar onto the vehicle in its exact mounting location and mark the location of the mounting holes onto the mounting surface using the mounting feet as templates.

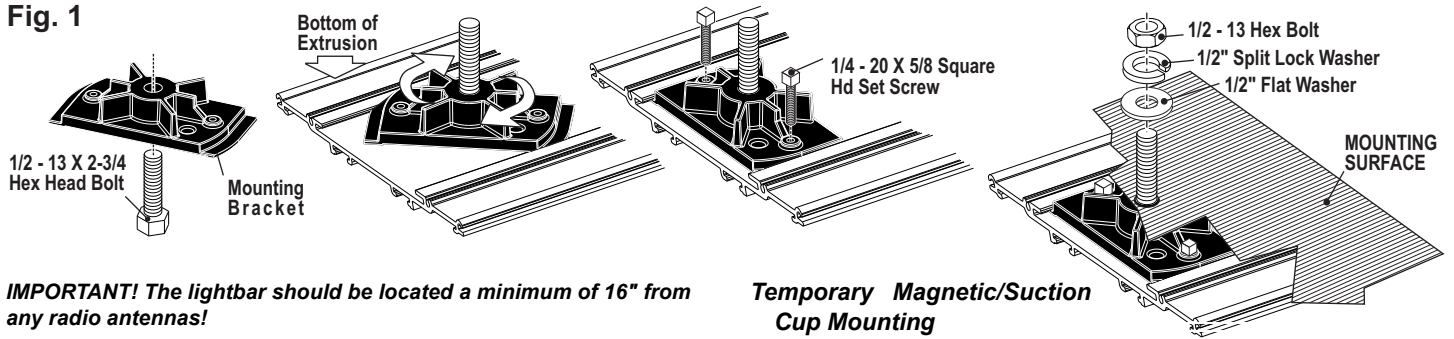
If the permanent mounting holes in the mounting feet are difficult to access, you can use the measurements shown here to mark off and



drill the mounting holes. You will also need to measure the distance between the mounting feet for your application since lightbar width will depend on the lightbar you are mounting.

6. Remove the lightbar and drill the 4 mounting holes.
7. Install the lightbar using the supplied 1/4 - 20 Phillips Pan Head Metal Screw, 1/4" Internal Tooth Lock Washer and 1/4 - 20 X 7/16 Hex Nut.

**Fig. 1**



**IMPORTANT! The lightbar should be located a minimum of 16" from any radio antennas!**

**Slide Bolt Mounting:**

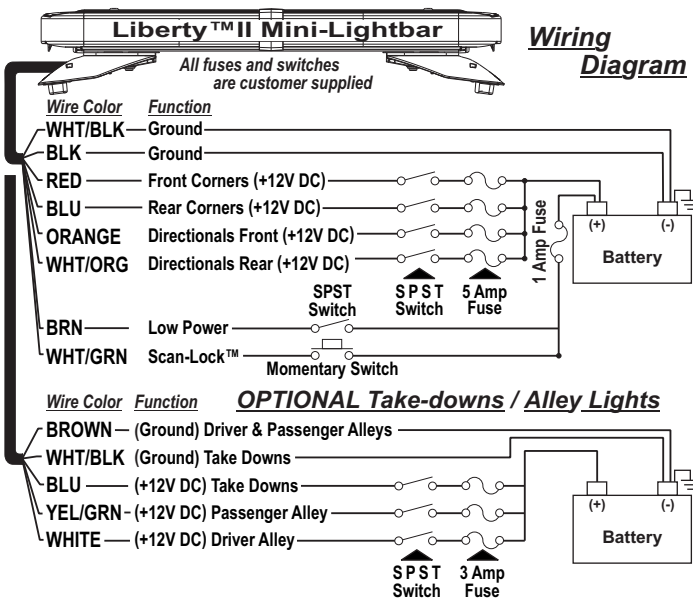
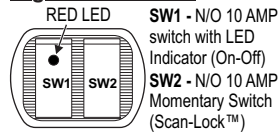
1. Insert the two supplied 1/2 - 13 X 2-3/4 HEX HD BOLTS into the slide bolt brackets and twist the brackets into the bottom of the lightbar extrusion (Fig. 1).
2. With the slide bolt brackets in their mounting position, secure them to the lightbar with the supplied set screws.
3. Position the lightbar onto the vehicle and mark the location of the two mounting bolts off onto the mounting surface.
4. Remove the lightbar and drill the two mounting holes you marked off using a 1/2" drill bit.
5. Secure lightbar to mounting surface with the supplied mounting hardware and extend the wires to your switch panel Refer to the wiring diagram and the instructions included with your switches for wiring.

**Wiring and Operation:**

Extend the control cable to your switch panel and make connections. The control cable connects to your control head or switch box and is fused there. Applying +12VDC to a control wire will activate its function. BLACK and WHT/BLK are ground wires. (Optional Alley/Take-down cable also shown).

**Cigar Plug:** In models that feature a cigar plug, you can control Scan-Lock pattern selection and Power with the 2 switches located on the top of the plug.

**Cigar Cord Switch**



**RED / Front Corners:**

Apply +12VDC to the RED wire to activate the *Front Corners* lights.

**BLUE / Rear Corners:**

Apply +12VDC to the BLUE wire to activate the *Rear Corners* lights.

**ORANGE / Front Directionals:**

Apply +12VDC to ORG wire to activate the Front Directional lights.

**WHT/ORG / Rear Directionals:**

Apply +12VDC to WHT/ORG wire to activate the Rear Directional lights.

**Temporary Magnetic/Suction Cup Mounting**

The magnetic/suction cup should be mounted on a flat part of the roof.

**Magnetic/suction:** Thoroughly clean the proposed mounting surface prior to mounting. Wipe the suction cup clean, place the beacon onto its mounting surface and apply gentle pressure to ensure a good seal has been achieved.

**WARNING! The use of any magnetically mounted warning device on the outside of a vehicle in motion is not recommended and is the sole risk and responsibility of the user.**

**IMPORTANT! It is the responsibility of the installation technician to make sure that the installation and operation of this product will not interfere with or compromise the operation or efficiency of any vehicle equipment! Before returning the vehicle to active service, visually confirm the proper operation of this product, as well as all vehicle components/equipment.**

**BROWN / Low Power:**

The switch type used depends on how you wish *Low Power* to function:

**Latching Mode:** Apply +12 VDC to the BROWN wire for less than 1 sec. to "latch" the lightbar into *Low Power*. The unit must be turned off and then back on to restore normal operation. (Momentary Switch)

**Level Mode:** Apply +12 VDC to the BROWN wire for over 1 sec. to hold the lightbar in *Low Power* until voltage is removed. (Toggle Switch)

**WHITE-GREEN / Scan-Lock™:**

The WHT/GRN wire is for Scan-lock pattern selection. On cigar plug models use the switch on top of the cigar plug instead of the WHT/GRN wire. You must activate the function to select a pattern for it:

**TO CYCLE THROUGH ALL PATTERNS:**

To cycle forward apply +12 VDC to the WHT/GRN wire for less than 1 second and release.

To cycle backward apply +12 VDC to the WHT/GRN wire for more than 1 second and release.

**TO SET A PATTERN AS DEFAULT:**

When the pattern is displayed, allow it to run for more than 5 seconds. The lighthead will now display this pattern when activated.

**TO RESET TO THE FACTORY DEFAULT PATTERN:**

With power off, apply +12 VDC to WHT/GRN wire while turning power on.

**Use a normally open momentary switch for Scan-Lock operation**

<b>FLASH PATTERNS:</b>	23. LongBurst™ L/R ASYNC	46. SingleFlash 120 ALT/SIM
1. SignalAlert™ L/R SYNC	24. LongBurst™ SIM	47. SingleFlash 120 STDY LEFT
2. SignalAlert™ L/R ASYNC	25. LongBurst™ ALT/SIM	48. SingleFlash 120 STDY RT
3. SignalAlert™ IN/OUT	26. SingleFlash 60 L/R SYNC	49. SingleFlash 120 STDY BOTH
4. SignalAlert™ SIM	27. SingleFlash 60 L/R ASYNC	50. SingleFlash 240 L/R SYNC
5. SignalAlert™ ALT/SIM	28. SingleFlash 60 IN/OUT	51. SingleFlash 240 L/R ASYNC
6. CometFlash® L/R SYNC	29. SingleFlash 60 SIM	52. SingleFlash 240 IN/OUT
7. CometFlash® L/R ASYNC	30. SingleFlash 60 ALT/SIM	53. SingleFlash 240 SIM
8. CometFlash® IN/OUT	31. SingleFlash 60 STDY LEFT	54. SingleFlash 240 ALT/SIM
9. CometFlash® SIM	32. SingleFlash 60 STDY RT	55. ActionFlash™ L/R SYNC
10. CometFlash® ALT/SIM	33. SingleFlash 60 STDY BOTH	56. ActionFlash™ L/R ASYNC
11. DoubleFlash 75 L/R SYNC	34. SingleFlash 90 L/R SYNC	57. ActionFlash™ IN/OUT
12. DoubleFlash 75 L/R ASYNC	35. SingleFlash 90 L/R ASYNC	58. ActionFlash™ SIM
13. DoubleFlash 75 IN/OUT	36. SingleFlash 90 IN/OUT	59. PingPong™ L/R SYNC
14. DoubleFlash 75 SIM	37. SingleFlash 90 SIM	60. PingPong™ L/R ASYNC
15. DoubleFlash 75 ALT/SIM	38. SingleFlash 90 ALT/SIM	61. PingPong™ IN/OUT
16. SingleFlash 75 L/R SYNC	39. SingleFlash 90 STDY LEFT	62. PingPong™ SIM
17. SingleFlash 75 L/R ASYNC	40. SingleFlash 90 STDY RT	63. ModuFlash™ L/R SYNC
18. SingleFlash 75 IN / OUT	41. SingleFlash 90 STDY BOTH	64. ModuFlash™ L/R ASYNC
19. SingleFlash 75 SIM	42. SingleFlash 120 L/R SYNC	65. ModuFlash™ IN/OUT
20. SingleFlash 75 ALT/SIM	43. SingleFlash 120 L/R ASYNC	66. ModuFlash™ SIM
21. LongBurst™ L/R SYNC	44. SingleFlash 120 IN/OUT	67. ActionScan™
22. LongBurst™ L/R ASYNC	45. SingleFlash 120 SIM	

**L/R SYNC** = LEFT / RIGHT SYNCHRONOUS

**L/R ASYNC** = LEFT / RIGHT ASYNCHRONOUS

**SIM** = SIMULTANEOUS

**IN/OUT** = IN / OUT

**STDY LEFT** = STEADY LEFT

**STDY RT** = STEADY RIGHT

**STDY BOTH** = STEADY BOTH

**ALT/SIM** = ALTERNATING SIMULTANEOUS

QTY	QTY	ITEM	PART NUMBER	DESCRIPTION
*	*		01-0687777-__	LIBERTY II MINI LIGHTBAR, PERM MT
*	*		01-0687777-__	LIBERTY II MINI LIGHTBAR, MAGNETIC MOUNT
*	*		01-0687777-__	LIBERTY II MINI LIGHTBAR, VACUUM MOUNT
1	1	1	11-366F309-0-15	BASE, EXTRUDED MACHINED 15.72" LEGACY MINI
1	1	1	21-11245004-1	GROMMET, SPECIAL TO BE MOLDED 1.362"
1	1	1	14-104219-100	SCREW, 10-24 X 5/8 PPHMS SS
2	2	4	07-26E120-000	BRACKET, BULKHEAD LENS MOUNT LIBERTY II
1	1	1	07-26D865-000	BRACKET, I/O ANCHOR LEGACY LIGHTBAR
-	-	1	02-016H001-00	I/O BOARD MINI SOLO ENHANCED
-	-	1	46-0743403-00	CABLE 9IC 18 GA TPR 20' SL-156 SOCKTS 1 END
1	1	8	02-0243700-03	ASSY, CIGAR CORD WITH 8 POS SL-156
-	-	1	26-0115037-06	CABLE CLAMP, 3/8"D, 1/2"W, 203' MTG HOLE, BLACK
1	1	10	26-0115037-04	NUT, 10-24 CAD PLATED WH/CR STEEL ZINC PLATED
1	1	11	13-104111-0-63	TY WRAP, 6" BLACK
1	1	12	26-0215001-06	HOUSING, PLUG 8 POS 18 AWG SL-156 W/ LOCKING RAMP
-	-	1	39-1M17672-08	HOUSING, PLUG 8 POS 18 AWG SL-156 W/ LOCKING RAMP
2	2	14	07-247187-000	BRACKET, END CLAMP NO ALLEY LIBERTY II
10	10	15	14-062216-0-81	SCREW, 6-32 X 1/2 PPHMS SEMS W/IT LOCK WASHR 410 SS
-	-	16	01-0247193-30	SUB ASSY, 3LED TIR ALLEY LIGHT LIBERTY II
A/R	A/R	17	01-026F608-0	ASSY, CORNER L-FRONT/R-REAR SINGLE ROW LIBERTY II
A/R	A/R	18	01-026F609-0	ASSY, CORNER L-REAR/FRONT SINGLE ROW LIBERTY II
4	4	19	07-226275-000	BRACKET, CORNER CLAMP LIBERTY II
A/R	A/R	20	68-396F577-0	LENS, CORNER FILTER NON OPTIC LIBERTY II
4	4	21	07-247153-000	BRACKET, HALF FILLER LIBERTY II
A/R	A/R	22	01-0247106-0	SUB ASSY, SHORT DIRECTIONAL LIBERTY II SINGLE COLOR
A/R	A/R	23	68-3947100-0	LENS, HALF FILTER NON OPTIC REFLECTOR LIBERTY II
-	-	24	01-0247225-30	SUB ASSY, 3LED HALF TAKE-DOWN LIBERTY II
-	-	25	07-223841-000	SUB ASSY, HALF TIR TAKE-DOWN LIBERTY II
2	2	26	46-0787707-00	BRACKET, FILLER LEGACY LT/BAR
1	1	27	46-0787707-01	ASSY, HARNESS, J6 MINI LEGACY
1	1	28	46-0787707-01	ASSY, HARNESS, J6 MINI LEGACY
1	1	29	46-0787707-02	ASSY, HARNESS, J2 MINI LEGACY
1	1	30	46-0787707-03	ASSY, HARNESS, J5 MINI LEGACY
-	-	31	39-0402023-04	HOUSING, 2 POS SOCKET COMM MATE-N-LOK
-	-	32	39-0403023-04	HOUSING, 3 POS SOCKET COMM MATE-N-LOK
-	-	33	46-0787732-01	ASSY, LEGACY MINI ALLEY HARNESS
-	-	34	46-0787732-00	ASSY, LEGACY MINI TAKE-DOWN HARNESS
4	4	35	07-26F382-000	BRACKET, SNAP-IN/LT MODULE MT
A/R	A/R	36	26-0215001-03	TY WRAP, 3" BLACK
2	2	37	02-036E7742-__	SUB ASSY, CUT DOME, MINI LIBERTY II
2	2	38	38-046E119-00	SEAL, LENS DIVIDER LIBERTY II
1	1	39	38-046E118-00	DIVIDER, LENS LIBERTY II
4	4	40	14-104286-16J	SCREW, 10-24 X 1/2 SET ALLEN SKT HD CUP PT STEEL BK W/PTCH
1	1	41	66-0917786-00	WIPE, STENCIL ALCOHOL REFILL, CE#440-594
4	4	44	15-105C736-148	SCREW, 10 X 7/8 T-25 TORX TRUSS HD PLAST/LOC SS NYEAL
-	-	2	02-0387331-00	SUB ASSY, LOW PROFILE MTG FOOT
-	-	46	02-036A935-00	SUB ASSY, MAGNET MOUNT JUSTICE MINI
2	2	47	14-130436-120	SCREW, 1/4-20 X 3/4" HEX HD MS SS
2	2	48	16-1302820-06	WASHER, FLAT 1/4" 7/8 OD SS 1764 ID .056-.070" THK
2	2	49	08-1583927-05	SUCTION CLIP, MAGNET MOUNT
4	4	50	14-130526-08M	SCREW, 1/4-20 X 1/2 SET ALLEN SKT HD CUP PT STEEL BK W/PTCH
2	2	51	07-764726-023	PLATE, ADAPTER MAG/SUCTION CLIP MINI LIGHTBAR
-	-	52	02-038132309S	MOUNTING BRACKET TOMMANS EDGE
1	1	53	10-0322935-00	LABEL, "FRONT" LIGHTBAR ASSYS
1	1	54	10-0523912-00	LABEL, "PIN/IN" LIBERTY II (not shown)
1	1	55	10-0523922-00	LABEL, SERIAL NUMBER LIBERTY II SERIES
-	-	A/R	46-0742938-07	ASSY, CABLE 9IC 18 GA TPR 20' MINI SKT ONE END
4	4	4	68-3947100-31	LENS, HALF FILTER METALIZED LIBERTY II
1	1	-	02-016H001-01	I/O BOARD MINI SOLO ENHANCED 12V CIGAR PLUG

