

WHELEN[®]

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Installation Guide:
Freedom[®] IV Low Current Lightbar
(Miller Industries)

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.

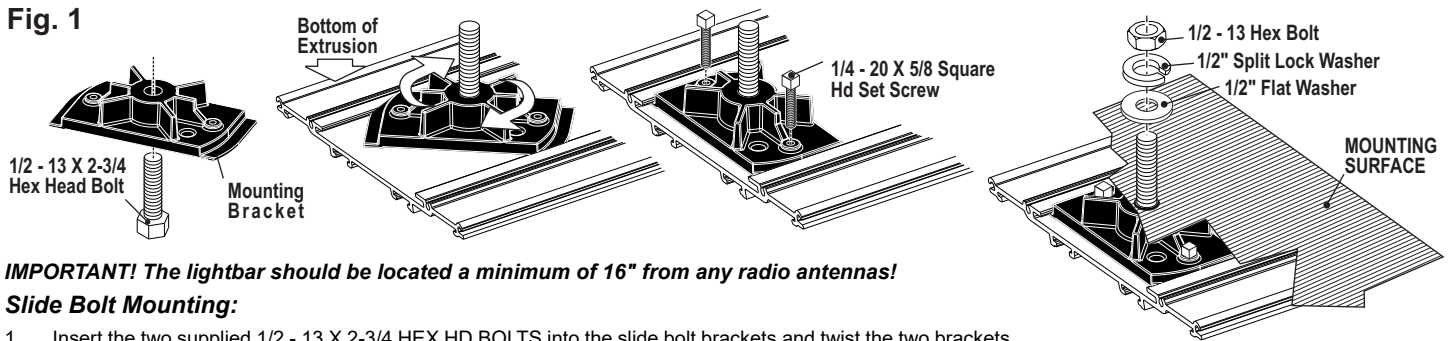
Safety First

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.

⚠ WARNING: This product can expose you to chemicals including Methylene Chloride which is known to the State of California to cause cancer, and Bisphenol A, which is known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

- **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 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!**

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 two 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 the lightbar to the mounting surface with the supplied mounting hardware.
6. Extend wires to your switch panel and refer to the wiring diagram. Refer to the instructions included with your switches for switch wiring.

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.

Routing your Lightbar Cables:

1. To protect the headliner from damage caused by drilling the cable access hole through the vehicle roof, allow a 5" to 7" distance between roof and headliner by lowering the headliner before drilling.
2. Using a 1" hole saw, drill the cable access hole (See page 1 warnings).

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

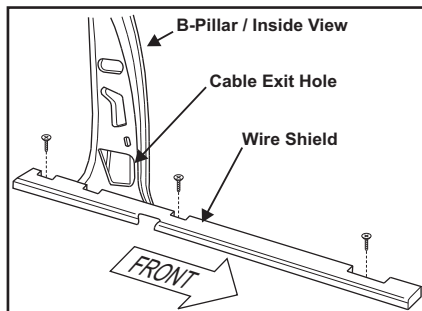
3. Use a round file to smooth and de-burr the edges of the hole.
4. Insert a 1" grommet (user supplied) into the cable access hole.
5. Insert the cables through the cable access hole into the vehicle. Use RTV silicone to weatherproof the access hole after the cables are pulled completely into the vehicle.
6. Route the cables down through the B-pillar taking a 90° turn to enter the B-pillar. Pull the full length of the cables out of the hole at the base of the B-pillar and route towards your switch panel.

Connecting the Cables:

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!

Power Cable:

1. Open the wiring shield lid and route the power cable into the wiring shield and towards the firewall.
2. Follow the factory wiring harness through the firewall. It may be necessary to drill a hole in the firewall. If so, be absolutely sure that there are no components that could be damaged by drilling. After the hole has been drilled, insert a grommet to protect the cable.
3. Route cable along the factory wiring harness towards the battery.
4. Install a customer supplied fuse block (20 amp = 12 volt system 15 Amp = 24volt system) on the end of the RED wire in the power cable. Remove the fuse from the fuse block before connecting wires to battery.
5. Connect the fuse block to the POSITIVE (+) terminal on the battery. There can not be more than two feet of wire between the fuse block and



the battery. The wire between the fuse block and the battery is "unprotected", do not allow it to come into contact with any other wires.

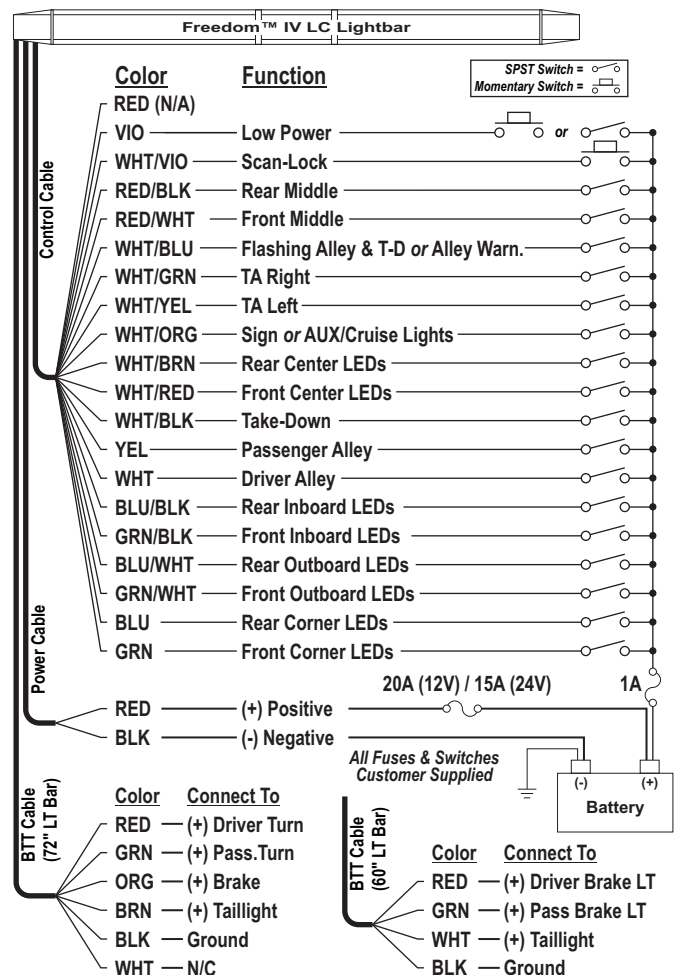
6. Connect the BLACK wire to the factory chassis ground.

BTT Cable:

Extend to Brake Lights and connect as shown in the wiring diagram.

Control Cable:

Extend the control cable to your switch panel and make connections. Connect control cable to control head or switch box and fuse there. Applying +12VDC to a control wire will activate its function.



Cruise Lights / Auxiliary / White-Orange: Low Cruise & Auxiliary (default) or High Cruise & Auxiliary or Cruise Off, Auxiliary Only (Activate WHT/ORG wire, then use Scan-Lock to select).

Low Power / Violet: The switch type used depends on how you wish Hi/Lo to function:

Latching Mode: Apply +12 VDC to the VIOLET 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 VIOLET wire for over 1 sec. to hold the lightbar in low power until voltage is removed. (Toggle Switch)

Scan-Lock™ / White-Violet: The WHT/VIO wire allows you to choose from available flash patterns. You must activate the function to select a pattern:

TO CYCLE THROUGH ALL PATTERNS:

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

To cycle backward apply +12 VDC to the WHT/VIO 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 lighthouse will now display this pattern when activated.

TO RESET TO THE FACTORY DEFAULT PATTERN:

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

Use a normally open momentary switch for Scan-Lock operation

Flash Patterns:

1. SignalAlert™ 75 Alternating (default)
2. CometFlash® 75 Alternating
3. DoubleFlash 150 Alternating
4. DoubleFlash 75 Alternating
5. SingleFlash 375 Alternating
6. SingleFlash 150 Alternating
7. SingleFlash 75 Alternating
8. ActionFlash™ 75 Alternating

9. ModuFlash™ 75 Alternating

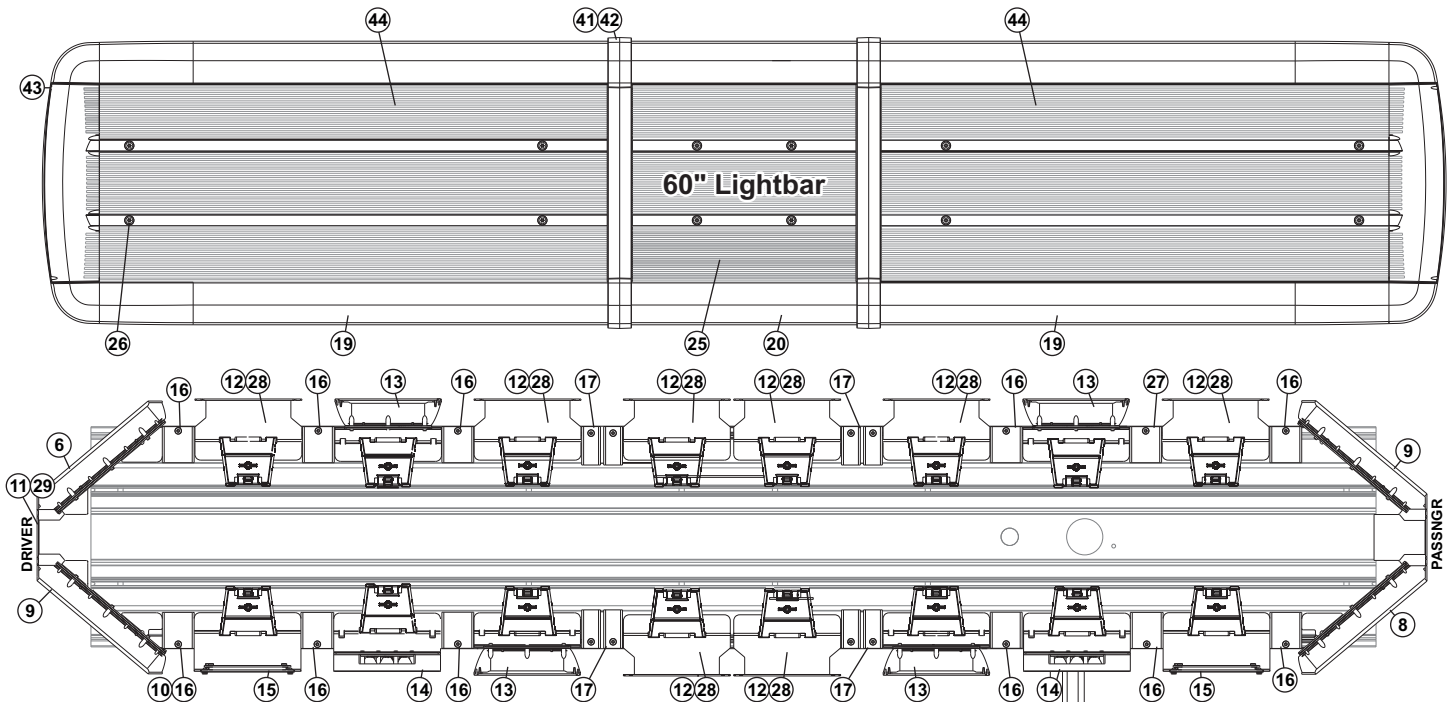
10. CalFlash™ Single 75 driver Steady
11. Steady
12. ActionScan™

Traffic Advisor Patterns:

1. Sequence to Solid (default setting)
2. Sequence On-Sequence Off
3. One Lamp: Seq. On to TripleFlash™
4. Two Lamp: Seq. On to TripleFlash™

IMPORTANT WARNING!

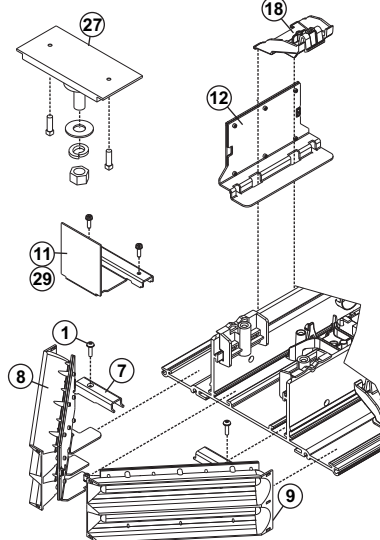
CAUTION! DO NOT LOOK DIRECTLY AT THESE LED'S WHILE THEY ARE ON. MOMENTARY BLINDNESS AND/OR EYE DAMAGE COULD RESULT!



QTY	ITEM	PART NUMBER	DESCRIPTION
*	1	01-0688200-00	60" FREEDOM IV LC, MILLER
1	1	14-0023347-01	SCREW, 10-24 X .875" TX PHD SWEDGE FORM 1/4" LEAD 5/8" THD
12	2	07-26F288-000	BRACKET, LENS MOUNT FREEDOM IV
1	3	46-0746800-17	ASSY, CABLE INPUT 2/C 8 GA 17' LEGACY LIGHTBAR
1	4	46-0743903-17	ASSY, CABLE INPUT CONTROL 17' FREEDOM/LIBERTY 2
1	5	02-0241912-01	ASSY, 4/C 16 GA 20' CABLE 61117-1 SCKTS ONE END
1	6	39-0406324-04	HOUSING, 6 POS SOCKET MOTOR MT COMM MATE-N-LOK
4	7	19-147132-000	RETAINER, CORNER LINEAR ASSY FREEDOM IV
2	8	01-026F826-11	ASSY, CORNER L-FRONT/R-REAR AA 12LED FREEDOM IV
2	9	01-026F827-11	ASSY, CORNER R-FRONT/L-REAR AA 12LED FREEDOM IV
28	10	14-062216-081	SCREW, 6-32 X 1/2 PPHMS SEMS W/IT LOCK WASHER 410 SS
2	11	07-26F833-000	BRACKET, FILLER ALLEY POSITION FREEDOM IV
8	12	07-247177-000	BRACKET, FULL FILLER FREEDOM IV
4	13	01-026G823-11	SUB ASSY, FULL DIRECT A/A 12V FREEDOM IV
2	14	01-026F778-30	SUB ASSY, 6LED TIR FULL T-D LT FREEDOM IV
2	15	01-026F962-50	SUB ASSY, STOP/TURN, TAIL 12V LC FREEDOM IV
12	16	07-226279-000	BRACKET, FILLER 1.400" FREEDOM IV
8	17	07-226352-000	BRACKET, SPACER .800" FREEDOM IV
16	18	07-26F382-000	BRACKET, SNAP-IN LT MODULE MT
2	19	02-036F779-30	SUB ASSY, LENS FULL CLEAR GREY FREEDOM IV
1	20	68-196F602-30	LENS, CLEAR OPTIC 2-LT CENTER FREEDOM IV
4	21	38-046F226-00	SEAL, LENS DIVIDER FREEDOM IV
2	22	38-046F227-00	DIVIDER, LENS CLEAR FREEDOM IV
4	23	14-104286-16J	SCREW, 10-24 X 1.25" WAX DIP SHOULDER PHTX TRI POINT SS
2	24	11-26E056-021	COVER, TOP EXTRUDED 21.665" MACHINED 17.625" HOLES LEGACY
1	25	11-26E377-009	COVER, TOP EXTRUDED CENTER LEGACY LT BAR
12	26	15-105C76-148	SCREW, 10 X 7/8 T-25 TORX TRUSS HD PLAST-LOC SS W/INSEAL
1	27	02-048132320S	OPTION, MK20S MOUNTING
8	28	68-396F391-31	LENS, METALLIZED FULL FILLER FREEDOM IV
2	29	68-3947120-31	LENS, METALLIZED HALF FILLER FREEDOM IV

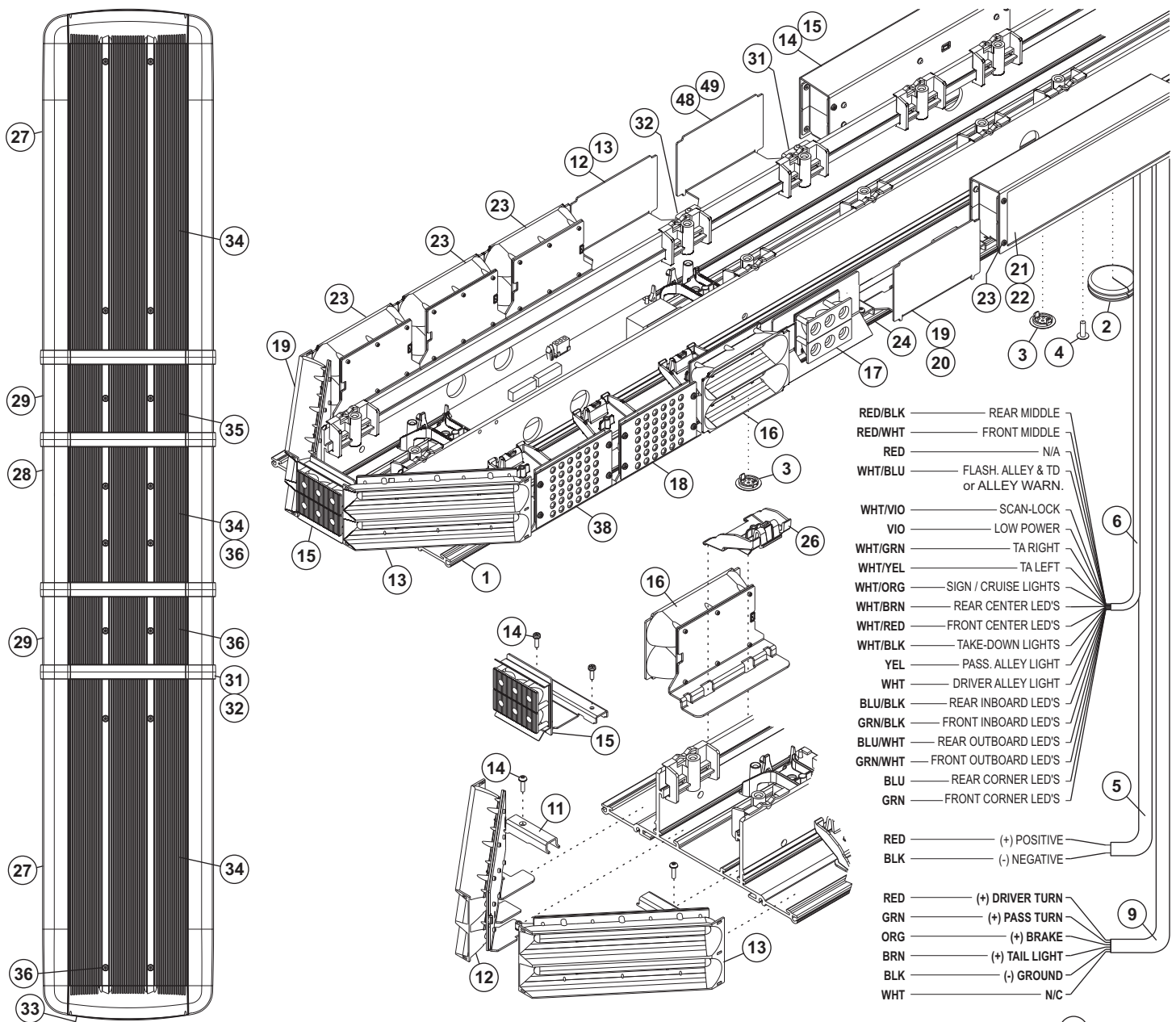


RED = (+) DRIVER BRAKE LT
GREEN = (+) PASS BRAKE LT
WHITE = (+) TAIL LTS
BLACK = (-) GROUND



RED / BLK - REAR MIDDLE
RED/WHT - FRONT MIDDLE
RED - N/A
WHITE/BLUE - FLASHING ALLEY & TD
WHITE/VIO - SCAN-LOCK
VIOLET - LOW POWER
WHITE/GRN - TA RIGHT
WHITE/YEL - TA LEFT
WHITE/ORG - AUX / CRUISE LIGHTS
WHITE/BRN - REAR CENTER LED'S
WHITE/RED - FRONT CENTER LED'S
WHITE/BLK - TAKE-DOWN LIGHTS
YELLOW - PASSENGER ALLEY LIGHT
WHITE - DRIVER ALLEY LIGHT
BLUE/BLK - REAR INBOARD LED'S
GREEN/BLK - FRONT INBOARD LED'S
BLUE/WHT - REAR OUTBOARD LED'S
GREEN/WHT - FRONT OUTBOARD LED'S
BLUE - REAR CORNER LED'S
GREEN - FRONT CORNER LED'S

RED = (+) POSITIVE
BLACK = (-) NEGATIVE



QTY	ITEM	PART NUMBER	DESCRIPTION
*		01-0688287-00	ASSY, 72" FREEDOM IV, MILLER DEPANNAGE
1	1	11-387986-066	BASE, EXTRUDED MACHINED 71.5" CTR SECTION FREEDOM IV
1	2	21-11245004-1	GROMMET, SPECIAL TO BE MOLDED 1.562"
2	3	21-7263998-00	PLUG, VENT .750 DIA HOLE LIGHTBAR
1	4	14-0023347-01	SCREW, 10-24 X .875" TX PHD 1/4" LEAD 5/8" THD
1	5	46-0746800-25	ASSY, CABLE INPUT 2/C 8 GA 25' LEGACY LIGHTBAR
1	6	46-0743903-25	ASSY, CABLE INPUT CONTROL 25' FREEDOM/LIBERTY 2
1	7	26-0115037-11	CABLE CLAMP, 11/16"D, 1/2"W .203" MTG HOLE, BLACK
1	8	13-104111-063	NUT, 10-24 CAD PLATED WHIZ OR STEEL ZINC PLATED
1	9	46-0743349-00	ASSY, CABLE 6/C 18 GA 20' 61117-1 SCKTS ONE END
2	10	26-0215001-06	TY WRAP, 6" BLACK
4	11	19-147132-000	RETAINER, CORNER LINEAR ASSY FREEDOM IV
2	12	01-026F826211	ASSY, CORNER L-FRONT/REAR AA 12LED FREEDOM IV 24V
2	13	01-026F827211	ASSY, CORNER R-FRONT/REAR AA 12LED FREEDOM IV 24V
16	14	14-062216-081	SCREW, 6-32 X 1/2 PPHMS SEMS WIT LOCK WASHER 410 SS
2	15	01-026F855-32	SUB ASSY, 24V 6TIR ALLEY LIGHT FREEDOM IV
8	16	01-026G823211	SUB ASSY, FULL LINEAR A/A 24V XQ-A FREEDOM IV
2	17	01-026F778-32	SUB ASSY, 6LED TIR FULL T-D LT 24V FREEDOM IV
2	18	01-026F962-51	SUB ASSY, STOP/TURN, TAIL 24V LC FREEDOM IV
6	19	07-247177-000	BRACKET, FULL FILLER FREEDOM IV
6	20	68-396F391-31	LENS, METALLIZED FULL FILLER FREEDOM IV
2	21	01-026G340-32	SUB ASSY, LIGHTED SIGN 24V WHT FREEDOM IV
2	22	09-1187991-02	PANEL, GRAPHIC "DEPANNAGE" BACK LIGHTED SIGN
8	23	14-040116-04V	SCREW, 4-40 X 1/4 P100FH/CSNK 410 SS VIBRA-TITE VC-3
4	24	07-223841-000	BRACKET, SPACER LEGACY LTBAR
4	25	07-226279-000	BRACKET, FILLER 1.400" FREEDOM IV
24	26	07-26F382-000	BRACKET, SNAP-IN LT MODULE MT FREEDOM REDESIGN
2	27	02-036F779-30	SUB ASSY, LENS FULL CLEAR GREY FREEDOM IV
1	28	68-196F602-30	LENS, CLEAR OPTIC 2-LT CENTER FREEDOM IV
2	29	68-196F612-30	LENS, CLEAR OPTIC 1-LT CENTER FREEDOM IV
8	30	38-046F226-00	SEAL, LENS DIVIDER FREEDOM IV
4	31	38-046F227-00	DIVIDER, LENS FREEDOM IV
4	32	14-104286-16J	SCREW, 10-24 X 1.25" WAX DIP SHOULDER PHTX TRI POINT SS
2	33	11-26E056-021	COVER, TOP EXTRUDED 21.665", 17.625" HOLES LEGACY
1	34	11-26E377-009	COVER, TOP EXTRUDED CENTER LEGACY LTBAR
2	35	11-26F554-004	COVER, TOP 4.758" SINGLE CTR FREEDOM IV
16	36	15-105C76-148	SCREW, 10 X 7/8 T-25 TORX TRUSS HD PLASTI-LOC SS WINYSEAL
1	37	02-048132320S	OPTION, MK20S MOUNTING
2	38	01-026F962-11	SUB ASSY, TURN AMBER 24V LC FREEDOM IV

