SpeedTech Lights®

Lighting The Way®

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STL Raptor® Series Interior LED Visor Light Bar

Operation Manual and Instructions

Congratulations, you are the owner of a STL Raptor® Series Interior LED Visor Light Bar! Your bar is equipped with the latest technology and features at the best value found industry wide, GUARANTEED. In addition to that, your purchase comes with the STL 5 Year Warranty against any manufacturer defects that may occur with your bar. So please read this document carefully and call Customer Service at 800-757-2581 Monday - Friday 8:30 AM - 4:30 PM central time if you need assistance. We are available and happy to help!

Warnings and Notices for Users and Installers

This document must be delivered to and read by the end user and installer as it serves to provide you with the required information for proper and safe use of your STL product. Before operating this or any STL products the user and installer must read this manual all the way through. You will find important information in this manual that could prevent property damage and/or serious injury to the user and installer.

STL products are intended to alert pedestrians and other operators of the presence of personnel, the operation of emergency vehicles, an emergency site, and any warning needs. This does not ensure that pedestrians or drivers will react, heed, or observe emergency warning signals. Nor does the use of emergency signals grant or ensure you the right of way. It is your responsibility to make sure you can proceed safely before driving against traffic, entering an intersection, responding at a high rate of speed, or walking on or around traffic lanes.

Your STL emergency vehicle devices should be tested daily to ensure the device and all its functions are operating correctly. If you experience a malfunction contact STL's Customer Service immediately for troubleshooting options, or a warranty or service claim. You must ensure sure that the projection of the visual and audible signal is not blocked by vehicle components (i.e.: open trunks, visors, compartment doors), vehicles, other obstructions, or people.

This is professional grade equipment and is intended for strict use by authorized personnel only. It is the user's responsibility to understand and obey all laws regarding emergency warning devices. You must know and be familiar with all applicable city, state, and federal laws and regulations prior to the use of emergency vehicle warning devices.

SpeedTech Lights, Inc. assumes no liability for any loss resulting from the use of this warning device. Proper installation is vital to the performance of the warning devices and safe operation of the emergency vehicle. Since the operator is under stressful environments the equipment must be properly wired and mounted to ensure effectiveness and safety. Therefore controllers must be properly installed and placed within convenient reach of the operator so eye contact with the roadway is never lost.

The effectiveness of your STL equipment is highly dependent upon correct mounting and wiring. Improper wiring and mounting of the warning device will reduce the output and performance of the equipment. Emergency warning devices frequently 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 severe personal injury and/or serious vehicle damage, including fire.

Electromagnetic interference can be caused by many electronic devices used in emergency vehicles. To ensure that this doesn't happen to you, lightbars should be mounted a minimum of 12" - 34" from the radio antenna and do not power your equipment from the same circuit or share the same grounding circuit with radio communication equipment. After installation, test all the vehicle's equipment together to ensure everything operates free of interference.

Driver and/or passenger airbags bags (SRS) will impact the way you mount your equipment. Any equipment installed in the deployment area of the airbags will damage or dislodge the airbags and sensors. This will also reduce the effectiveness of the airbags to protect the passengers and therefore these areas must be avoided. Installers must make sure that this equipment along with any parts, hardware, wiring, power supplies, and switch boxes do not interfere with the airbags, SRS wiring, or sensors.

All STL equipment needs to be mounted and installed according to the vehicle manufacturer's instructions and securely attached to a part of the vehicle of sufficient strength to withstand the forces applied by the equipment. This device should be permanently mounted within the zones specified by the vehicle manufacturer. This especially applies to equipment mounted on the exterior of the vehicle to avoid dislodging. Mounting units on the interior of the vehicle by a method other than permanent mount is discouraged as it may become detached under aggressive driving conditions such as sudden braking, collision, or swerving.

PROPER INSTALLATION COMBINED WITH OPERATOR TRAINING IN THE PROPER USE OF EMERGENCY WARNING DEVICES IS ESSENTIAL TO ENSURE THE SAFETY OF EMERGENCY PERSONNEL AND THE PUBLIC.

Important Points for Your Safety and Longevity of Your Light Bar

- Installers are required to have a good understanding of automotive electronic systems and procedures for proper installation.
- Never stare directly into the LEDs as momentary blindness and/or eye damage may occur.
- Never take any lights through a car wash. Use only water to clean the outer body/lens of your equipment.
- Never use a pressure washer to clean any STL products. Inspect and test your product daily to ensure it operates properly and is mounted correctly.
- Never cut wires or work on a unit while the unit is still connected to a power source.
- Never install this product or route any wires through or in the deployment area of the airbag. Doing so may cause serious personal injury as it will damage or reduce the effectiveness of the airbag by causing the unit to become a projectile. Reference the owner's manual for your vehicle to find the airbag deployment area. The User/Installer assumes all responsibility to determine proper mounting location, based on providing ultimate safety to all passengers in the vehicle.
- If the product requires you to drill holes, the installer must ensure that the drilling process does not damage any vehicle components or other vital parts. Check all sides of the mounting surface before beginning to drill. Make sure to deburr all drilled holes and remove any metal remnants or shards to avoid injury and wires from becoming spliced. Grommets are to be installed in all wire passage holes.
- In order for STL products to operate at optimum efficiency, a secure and good electrical connection to the battery's Ground Post must be made. The recommended procedure requires the unit's ground wire be connected directly to the NEGATIVE (-) battery post.
- Instruction manuals should be stored in a safe place for reference if you need to reinstall the unit or perform maintenance. They can also be found at the main site under the product listing at www.SpeedTechLights.com. If your product is no longer available on the website contact STL's Customer Service at 800-757-2581 for assistance.
- If your product requires the use of a control box or remote device to turn on and control your equipment make sure it is installed in a location that allows both the user and the vehicle to operate safely in any driving condition.
- Never activate or control your equipment in hazardous driving conditions.
- FAILURE TO FOLLOW THESE SAFETY PRECAUTIONS, WARNINGS, NOTICES, AND INSTRUCTIONS COULD RESULT IN DAMAGE TO THE PRODUCT OR VEHICLE THAT WILL VOID YOUR WARRANTY AND/OR CAUSE SERIOUS INJURY TO YOU AND YOUR PASSENGER.

Unpacking Your STL Product

- Unpack your unit to identify all parts including but not limited to: Light Bar, switch box, brackets, screws, bolts, wiring harness, fuses, etc.
- Some parts may be in small bags.
- Some products may be packaged inside boxes of other products.
- Some parts such as Gutter Brackets, may be in the foam protection. Double check that no parts are left within the foam protection or left in the box.

Pre-Installation and Testing

BENCH TEST all units prior to installation by connecting the Positive Cable (Red) and Negative Cable (Black) to a power source to ensure all the features and parts of the Light Bar are functional.

Test Check List:

- All LEDs and LED Modules fully functional
- Flash patterns
- Non-volatile memory
- No physical damage

If you have trouble call Customer Service at 800-757-2581 before proceeding.

RAPTOR:

Wire Color	Function	Wire Color	Function
*Red	Positive	*Black	Negative
Yellow	Flash Pattern	White	Positive (When bypassing Grand Control™ Box)
Blue	Take Down Steady	Green	Take Down Flashing
* Indicates a main power cable		**NOTE: All cables (except Negative) contact +VDC**	

RAPTOR SUPER TAKE DOWN:

Wire Color	Function	Wire Color	Function
*Red	Positive	*Black	Negative
Yellow	Flash Pattern	White	Positive (When bypassing Grand Control™ Box)
Blue	Super Take Down	Green	Take Down
* Indicates a main power cable		**NOTE: All cables (except Negative) contact +VDC**	

Instructions for Mounting, Wiring and Programming

IMPORTANT! To ensure proper installation installers are required to have a good understanding of automotive electronic, systems and procedures for proper installation. When you are drilling into the vehicle's surfaces, ensure that the area is free of any electrical wires, vehicle upholstery, fuel lines, etc. that could be damaged. All wiring passing through drilled holes should use grommets and silicone sealant to prevent wire or moisture damage when passing through compartment walls. WARNING! Larger wires and secure or tight connections will ensure longer service life for your product. It is highly recommended that soldered connections have heat shrink used to protect the connection. Special attention should be given to the location and method of splicing wiresto make electrical connections to protect these splices from lost power or connection and corrosion. Insulation displacement connectors are not to be used. To reduce voltage drop, minimize the number of splices in the wires. The current carrying capacity of wires and fuses will be significantly reduced under high ambient temperature (e.g. under the hood). Use SXL type wire in the engine compartment where higher heat resistance is required according to SAE J-1128. All wires should be in accordance with the minimum wire size and other recommendations made by the manufacturer and be protected from hot surfaces and moving parts. Grommets, cable ties, looms, and other installation hardware should be used to anchor and protect all wiring. Fuses should be properly sized and located as close to the power take off points as possible to protect the wiring and device. To protect against short circuits, a fuse is included by STL for all products. Do NOT use a fuse with a higher amp rating than the initial fuse included. Do NOT use Circuit Breaks with STL Products. Ground terminations should only be made directly to the battery.

Mounting Visor Brackets:

Q-300: Chevy Tahoe 2015+

Driver Side  Passenger Side  Center 

Q-301: Chevy Tahoe 2007-2014

Driver Side  Passenger Side  Center 

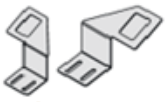
Q-302: Dodge Charger 2011+

Driver Side  Passenger Side  Center 

Q-303: Dodge Ram 2015+

Driver Side  Passenger Side  Center 

Q-304: Ford Explorer 2011+

Driver Side  Passenger Side  Center 

Q-305: Ford F-150 2015 +

Driver Side  Passenger Side  Center 

Q-306: Ford Taurus 2011+

Driver Side  Passenger Side  Center 

Q-307: Universal Bracket

Driver Side  Passenger Side  Center 

Mounting Headliner Bracket:

- There will be four (4) pieces per side. Two (2) forked pieces and two (2) rectangular pieces.
- Mount the forked pieces to the back of the bar with the forked pieces pointed away from the LEDs.
- Mount the rectangular piece to the back of the bar lining it up with one of the two mounting locations that will provide the best fit.

How the STL Grand Control® Box Operates Your Raptor® Series

Power:
- Press to power on flashing mode
- Press again to shut off flashing mode

Flash Pattern:
- Cycles to the next flash pattern with each press. Non-Volatile memory recalls the last flash pattern selected.
- Hold flash pattern button down for 3 seconds to toggle Steady Burn mode.
- Hold flash pattern button down for 5 seconds to toggle Random pattern mode.

RAPTOR SPECIFIC CONTROLS

***TD:**
- 1st Press: Steady Burn
- 2nd Press: Pulsing Flash
- 3rd Press: Flash in the same sequence/flash pattern as the light bar when the warning lights are activated

***Aux (Red ((+) Positive) and Blue ((-) Negative) wires):**
- Rated for 10 AMPs
- 1st press: Power ON unit attached to aux cables
- 2nd press: Power OFF unit attached to aux cables

RAPTOR SUPER TAKE DOWN SPECIFIC CONTROLS

***TD:**
- 1st Press: Steady Burn
- 2nd Press: Pulsing Flash
- 3rd Press: Flash in the same sequence/flash pattern as the light bar when the warning lights are activated

***Super TD:**
- 1st press: Entire unit Steady Burn
- 2nd press: Entire unit Pulsing Flash
- 3rd press: Super TD off.

*These functions can be operated independently of the light bar's warning lights being activated

Wiring: Connecting Wires to the Battery

WARNING! If you are supplying your own wiring that connects to the positive or negative terminal of the battery, fuse sizes must be sized according to STL's provided fuse to be considered fused properly to the battery in order to carry the load.
- Route the power cables by opening the wiring shield and running the cables through it towards your vehicle's firewall.
- Follow the factory wiring harness through the firewall.
- If it is necessary to drill a hole in the firewall for the power cables, be sure no components will be damaged from drilling. As with all holes that are drilled, file the edges down smooth and insert a grommet to protect the cables.
- Route the cable along the factory wiring harness towards the battery.
- Wire your power cables (Red with In Line Fuse (STL Supplied) and Black cable) to your battery to power up your Light Bar.
- You will want to ensure your grounding cable is taken directly to the negative terminal of your battery to avoid any electrical feedback which may disrupt your Light Bar system.
- DO NOT allow the positive (Red wire) and negative (Black wire) to touch one another. This may cause injury to you and damage your equipment by causing a short in the unit that is not covered under the STL warranty.

Wiring: Connecting Wires to Control Box

- This unit will feature a power harness with eight (8) colored leads with a connector that plugs into the Grand Control™ Box. When not utilizing the Grand Control™ Box reference the Wiring Diagram above.
- Now that you have pulled the cable into the vehicle attach the connector back to your Light Bar's wire harness in the CORRECT positions using a pin pusher and plug it into your Cigarette Lighter Plug. If you do not know the correct position of each wire in the connector call customer service at 800-757-2581 before proceeding.
- If you did not purchase the Grand Control™ Box and are using your own switch box , wire the cables accordingly into your control panel by referencing the wiring diagram and instruction manual of your control panel.

Wiring: Connecting Extension Cables

- This unit will feature a power harness with eight (8) colored leads with a connector that plugs into the Grand Control™ Box.
- If you have an extension cable with connectors, connect the corresponding ends to one another. Use the connector at the end of the cable to plug into your control box.
- If you have an extension cable with one connector, you will need to cut the connector off of the main cable harness coming out of the Light Bar. Save it as a spare part. You will solder, and heat shrink each wire within the cable harness to each wire in the extension cable harness. DO NOT cross connect wires. Use the connector at the end of the extension cable to plug into your control box.
- If you have an extension cable with no connectors, you will need to cut in the middle of the main cable harness coming out of the Light Bar. You will solder, and heat shrink each wire within the cable harness to each wire in the extension cable harness. DO NOT cross connect wires. Use the connector at the end of the main cable harness to plug into your control box. DO NOT leave connectors, cables, solder points exposed to heat or moisture or debris.

Programming Flash Patterns

- All STL LED products are equipped with a non-volatile memory which will recall the last flash pattern when the Light Bar is turned on.
- Set your flash pattern by pushing the Flash Pattern button on your Grand Control™ Box to cycle through the various patterns until you find the appropriate pattern.
- If you are not using the Grand Control™ Box you will follow the wiring diagram to identify the Flash Pattern wire to manually run through and select the desired flash pattern.

Take Downs

- The Raptor series will feature two (2) Take Downs in 3 Watt LEDs which have three functions: steady burn, pulsing flash, or flashing in sequence with the Light Bar's warning pattern when warning mode is activated.
- Both Take Down lights will come on simultaneously.
- This unit also may include the Super TD feature. This will function similarly as standard take down functionality except it will operate the entire unit rather than just the take down position LEDs only.
- If you are not using the STL Grand Control you will follow the wiring diagram to identify the Take Down wires to manually program. When not using the Grand Control™ Box, toggling +12VDC to the Take Down cable will cycle through the Take Down flashing sequence.

Maintenance

While STL's Light Bars are very durable, there are some things you need to keep in mind and practice to preserve the longevity and function of your bar.

- Never take any STL Light Bars through a car wash, such as a pressure washer, automatic car wash, brushes that will scratch your equipment or similar car washes or equipment where chemicals, high pressure water, and materials may scratch or damage your equipment.
- Use Water (H2O) with a soft cloth to clean your Light Bar and lenses.
- Yellowing of clear lenses may occur overtime. Lenses can be purchased by calling STL Customer Service at 800-757-2581.

Installing Raptor Brackets

1. Inspect contents of package, included in each kit should be a bag of hardware, rubber protective strips, spacers and brackets.
• Hardware contents (Q-307 -Universal brackets only)
Qty. 20 – Philips pan head screws
Qty. 30 – Flat washers
Qty. 20 – Split Lock washers
Qty. 12 – Hex nuts
Qty. 2 – Rubber protective strips
Qty. 1 – Bag of spacers (5.14MM) (For spacer installation go to Spacer Installation)
Qty. 1 – Bag of spacers (10MM) (For spacer installation go to Spacer Installation)

• Brackets
Qty. 4 – Base bracket
Qty. 4 – Forked visor bracket (Will not use if vehicle specific brackets are purchased

• If vehicle specific brackets are ordered the hardware contents will include. For installation of vehicle specific brackets go to Vehicle Specific Bracket Installation

Qty. 8 – Allan screws (Black)
Qty. 8 – Hex Lock nuts

Bracket Assembly

2. After inspecting content of package, start by assembling the "Base bracket" and "Forked visor bracket" together.

• Take attach the "Base bracket" and "Forked visor bracket" you will need the following:
Qty. 2 – Phillips pan head screws
Qty. 4 – Flat washers
Qty. 2 – Split Lock washers
Qty. 2 – Hex nuts

• Take the both brackets and place them against each other, ensuring that the fork bracket is pointing up

- Next take Qty. 1 - Phillips pan head screws and Qty. 1 - Flat washers, placing the washer on the screw and inserting through the opening

- On the other end insert Qty. 1 – Flat washer followed by Qty. 1 – Split Lock washer and finally placing Qty. 1 – Hex nut to secure.

NOTE: Do not tighten at this point as adjusting will need to be done.

- • Repeat the same steps 3 more times for each assembly, should come out to a total of 4 assemblies all together. Each assembly should look like this:

Attaching Assembly to base

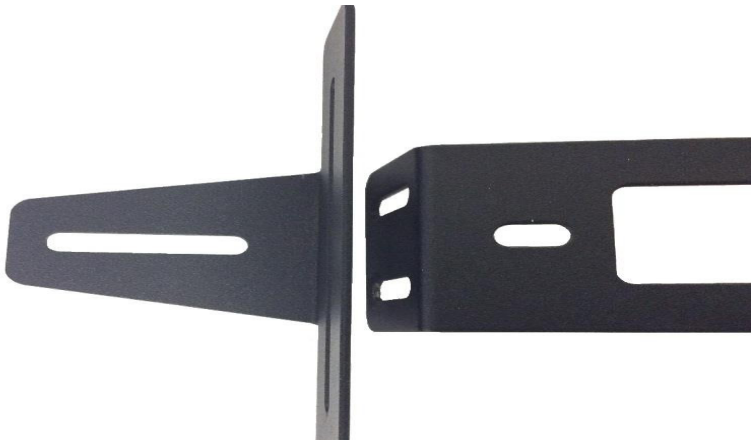
1. Notice there are four holes on the bottom of the Raptor, this is where the “Base bracket” will attach.

• Attach the assembly using the “Base bracket” and Qty. 1 – Phillips pan head screw

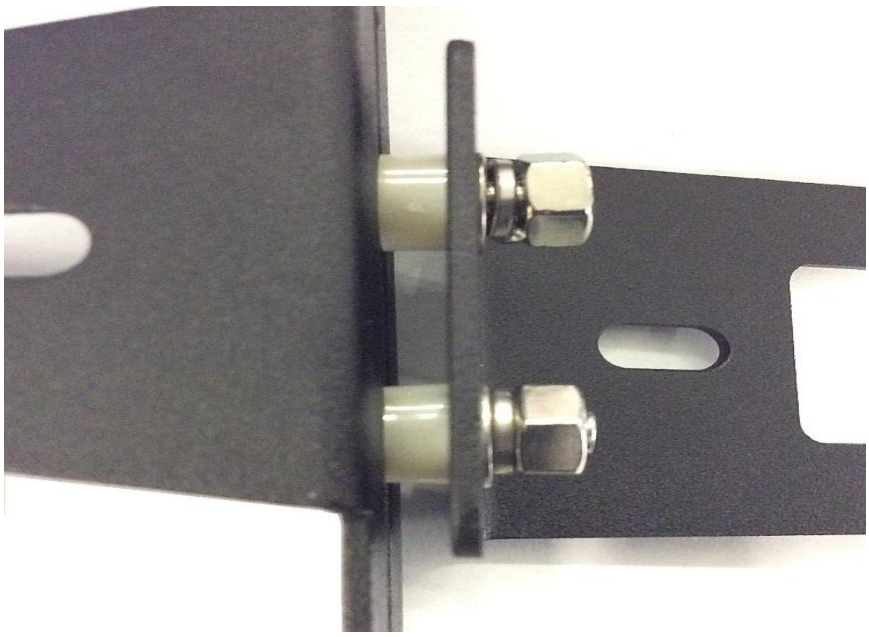
• Hand tighten only at this point, with all the assemblies now all in place, adjust both brackets as need be. Once the exact position for brackets has been determined, remove the “Base bracket” to tighten the “Fork bracket” and reinstall the “Base bracket” onto the Raptor body

Spacer Installation

1. To install spacers (If needed), start by assembling the "Base" bracket with the "Forked" bracket
• Take the both brackets and place them against each other, ensuring that the fork bracket is pointing up



• Next take Qty. 1 - Phillips pan head screws, Qty. 1 - Flat washers and run it through the "Base" bracket, followed by the spacer. Then attach the "Forked" bracket and hand tighten with Qty. 1 – Flat washer, Qty. 1 – Split Lock washer and Qty. 1 – Hex nut. Repeat steps for the second screw, the finished assembly should look like this:



Vehicle Specific Bracket Installation

1. To install the vehicle specific brackets the "Base" bracket will need to be attached to the bracket from the vehicle specific bracket
• In this example we will be using the Q-307 2015+ Dodge Ram vehicle specific brackets. Take a "Base" bracket form the universal bracket hardware kit and the "Driver" bracket from the vehicle specific bracket kit. The "Center" brackets will be used on the inner portion of the raptor but will be the same set up.

• To create the assembly, take the "Driver" bracket and overlap it to the "Base" bracket

• Next take Qty. 1 – Allan screw (black), Qty. 1 – Flat washer (from universal hardware kit) and Qty. 1 – Hex lock nut. Place the Allen screw through opening followed by the flat washer and the hex lock nut

- The completed assembly should look like the illustration below, repeat these steps for the passenger side