



# 1979 – 1981 Datsun 280ZX

## Advanced Sequential LED Tail Lights

### Installation

#### CONFIGURATION:

The LED panels must be correctly identified and configured for the panels to operate properly.

- Backup LED Panel:
  1. The backup LED panel can be identified by having both White LEDs (LEDs are visibly White with Yellow lens) and Yellow LEDs (LEDs are visibly Black with a Clear domed lens).
  2. This panel requires the harness with 1156 bulb base and **Blue** wire plugged into one of the receptacle connectors on the backside of the LED panel.
  3. An Interconnect harness, with Black, Pink, Green and White wires attached, needs to be plugged into the remaining receptacle connector on the backside of the LED panel.
- Turn Signal LED Panel:
  1. The Turn Signal LED panel can be identified by having only Yellow LEDs (LEDs are visibly Black with a Clear domed lens).
  2. This panel requires the harness with 1156 bulb base and **Green** wire plugged into one of the receptacle connectors on the backside of the LED panel.
  3. An Interconnect harness, with Black, Pink, Green and White wires attached, needs to be plugged into the remaining receptacle connector on the backside of the LED panel.
- Brake and Running Light LED Panel:
  1. The Brake and Running Light LED panel can be identified by having only Red LEDs (LEDs are visibly Black with a Clear domed lens).
  2. This panel requires the harness with 1157 bulb base and **Yellow** and Tan wires plugged into the receptacle connector on the backside of the LED panel.

#### ORIENTATION:

The LED panels must be installed in the correct location and orientation for the panels to operate properly. Proper identification and mounting orientation is essential for the lights to function as intended.

- Each LED panels has one or more receptacle connectors on the backside of the LED panel. These connectors are justified to one of the long panel edges. All of the panels on one side of the vehicle will have these connectors justified to either the top or bottom of the lighting cell cavity in the back housing as follows:

- a) **The Right side of the vehicle will have all the connectors towards the top of the lighting cells.**
- b) **The Left side of the vehicle will have all the connectors towards the bottom of the lighting cells.**

#### INSTALLATION:

Each of the LED panels will have 3D printed brackets to install into the tail light housing to mount the panels. Correctly locate and identify each of these brackets and install them BEFORE mounting the LED panels.

- The reverse and turn signal brackets should slot into the lighting cavity of the tail light housing and fixed on with the correct cap on the backside of the housing. Run the wires for the LED panels through the backside and plug them into the panels.
  - These panels should have a 3-pin JST connector that needs to be connected to each other.
- The brake and running light LED panel will require removal of the OEM socket attachment to install the new 3D printed one. Attach the mounting bracket and wire up the LED panel.

**It is highly recommended that the sequential programming/selection is done at this point, before fixing the LED panels to their brackets.**



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### INSTALLATION GUIDE:

Begin installation by removing the tail light from the vehicle and the removing lens and the light bulbs.





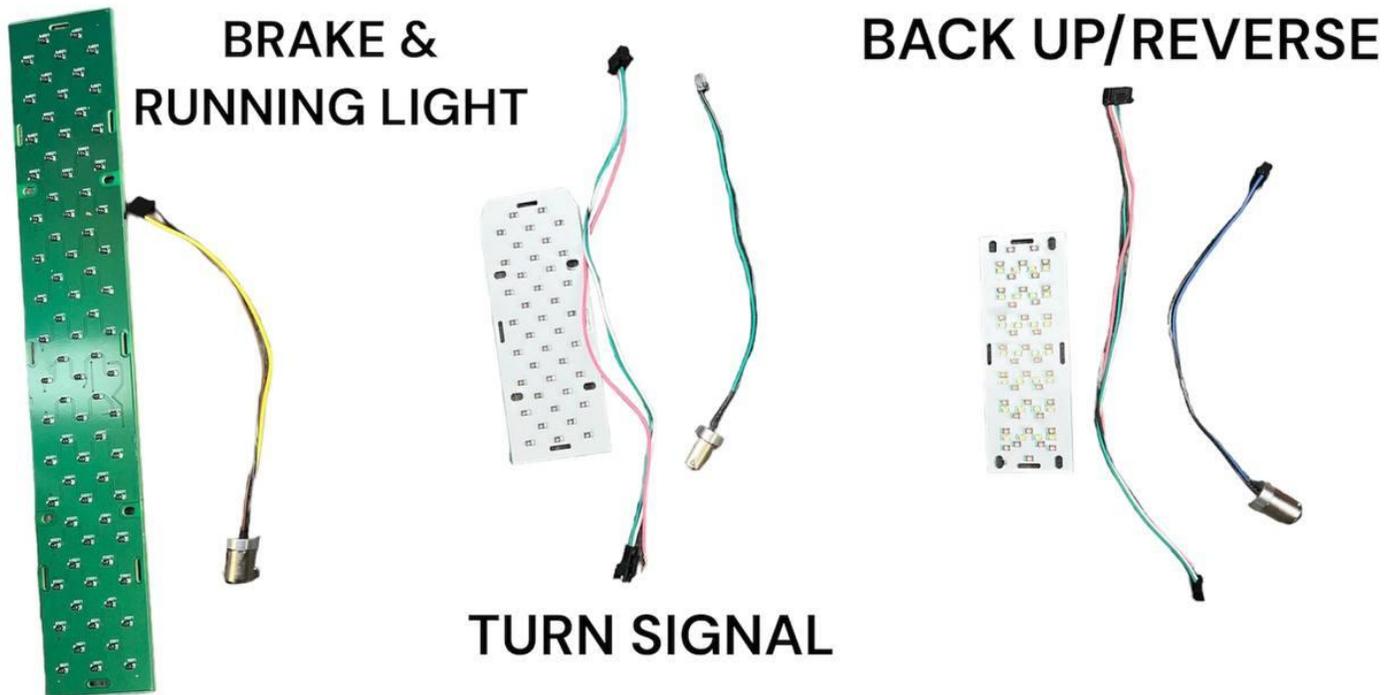
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Locate and identify the new LED panels that will be going into the tail light housing.

Ensure that the wiring harness with the 1156 bulb base go with the corresponding LED panel

- Turn Signal LED Panel will be paired with the 1156 bulb base wiring harness with **green** and black wires.
- Back up/Reverse LED Panel will be paired with the 1156 bulb base wiring harness with **blue** and black wires.





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## Installing the Brake and Running Light

Remove the OEM socket holder from the tail light and replace with the included 3D printed ones.



Reinstall the OEM screws to attach this piece to the tail light housing.



Attach the bracket to the base using the included M3x8 screws.

The backside of the bracket will have 'LH' or 'RH' labeled that corresponds with the left side or right side tail light housing. Ensure that the correct bracket is used.



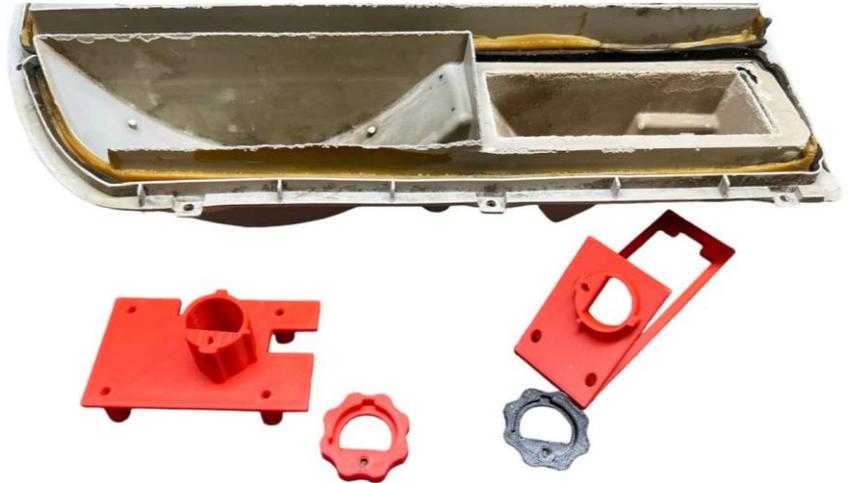


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### Installing the Turn Signal and Backup/Reverse Light

The turn signal and back up/reverse mounting hardware both utilize an end cap to fasten the bracket on the backside.



Place the brackets in the corresponding light cell in the orientation shown. They should fit in very snug.

The backside of the bracket will have 'LH' or 'RH' labeled that corresponds with the left side or right side tail light housing. Ensure that the correct bracket is used.



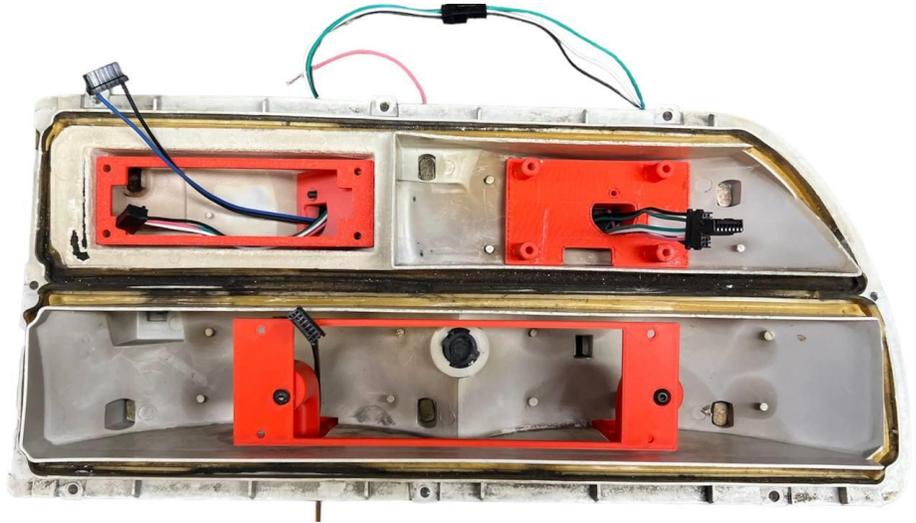
Attach the end caps on the backside of the housing and securely fasten with the included M3x8 screws.





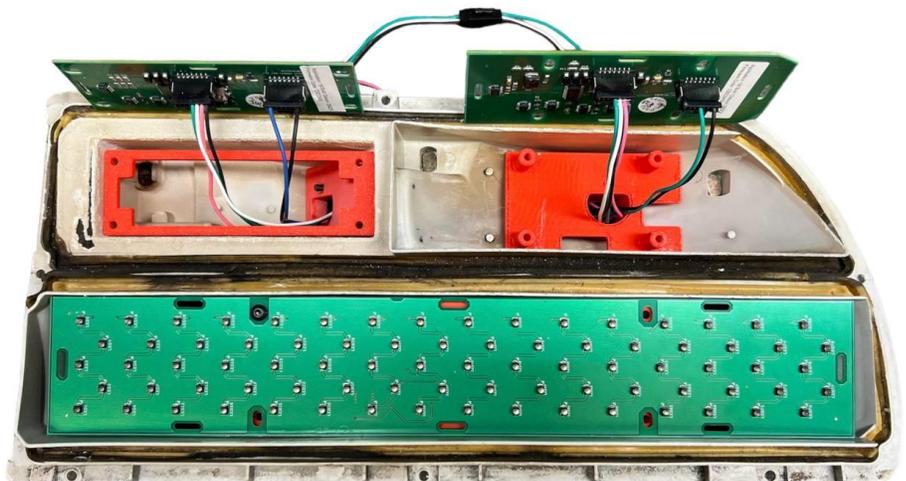
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The corresponding wires for each panel can now be run through the hole on the back side of the housing.



Plug in the wires into the boards. For the reverse and turn signal boards, the plugs can be inserted into either slot on the board.

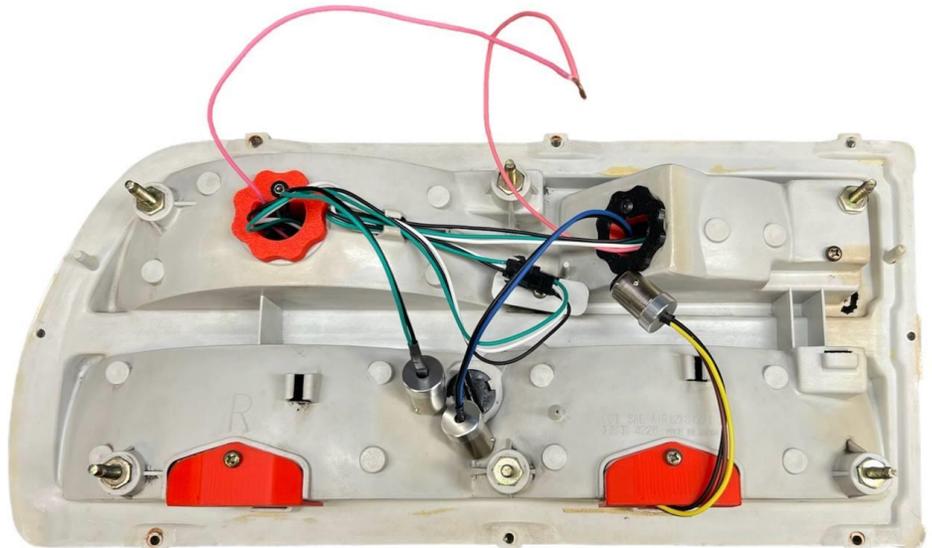
The brake and running light board can be plugged in and fastened down. This board does not have a sequential function, so it does not need to be programmed.





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On the backside of the housing, the 3-pin JST connectors from the reverse panel and turn signal panel need to be connected.



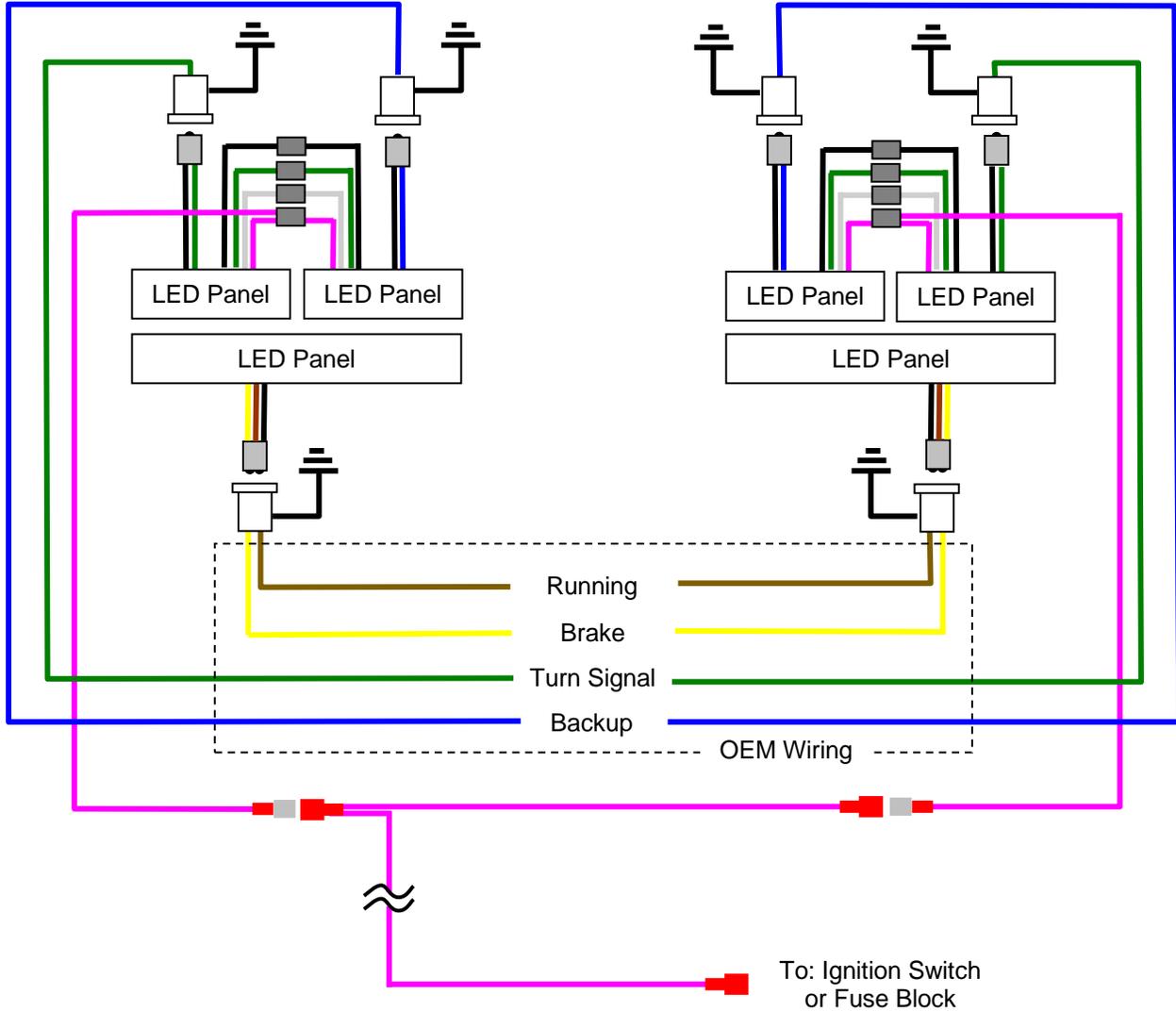
At this time, the board can be placed back into the vehicle to program or connect to a separate power source to program before placing it back into the vehicle. Proceed to [Sequential Lighting Operation](#): on page 9.

Once programming is complete, the reverse and turn signal boards can be fastened down and lens can be reinstalled.



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## Wiring Diagram:





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### **Sequential Lighting Operation:**

The pink wire from each LED panel must be connected to ignition power in order for sequential patterns to be activated. If the pink wire is not connected, the taillight panels will flash with the non-sequential taillight / brake light signal.

The LED panels can be programmed to flash a variety of sequential patterns. To change the programmed flash sequence a few things are needed to be done.

- 1- The ignition must be on and the turn signal or flasher signal must be activated in order for the tail lights to display the current sequence pattern.
- 2- Short pressing the button on the back of the LED panel will change the sequence pattern. The sequence pattern number will then flash a number of times that corresponding to the sequence pattern number.
  - a. Example: The panel will flash once for sequence number one. The panel will flash 5 times for sequence number five.
- 3- After cycling through the sequences, once the button is pressed after the last sequence number, the panel will return to the first sequence.
  - a. Alternatively, to go back to the first sequence, pressing the button for more than 1 second will return to the panel to sequence number one.
  - b. Pressing the button multiple times successively, the panel will step up in sequence numbers as many times as the button is pressed. The panel will then flash the corresponding sequence number. This sequence flash count will occur twice.
  - c. Refer to Page 10 for a list of the sequence numbers and a description of their pattern.
- 4- Once a pattern is selected it will be stored in the memory of the panel until another pattern is selected regardless if the ignition is on or off.

\*If there is not a fused 10 amp circuit to use, any other circuit can be used if an inline 5 or 10 amp fuse is installed at the connection with the pink wire.

If you have any question, concerns or comments please visit the Dapper Lighting website at [www.DapperLighting.com](http://www.DapperLighting.com) for more information.

Otherwise, you can always give us a call at (833) DAPPER – 1 (833) 327 – 7371 or send an email to [support@dapperlighting.com](mailto:support@dapperlighting.com).



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### Sequential Pattern Chart:

**Application:** 1979 – 81 280ZX

**Firmware Code:** 23022410

Sequence #	Pattern Description
1	Standard flash with relay, all panels flash simultaneously
2	Sequential light up taillight housing Inboard to Out
3	Sequential light up taillight housing Inboard to Out then back
4	Sequential light up taillight housing Inboard to Out then turns off Inboard to Outboard
5	Panels flash sequentially, Inboard to Out
6	Panels flash sequentially, Inboard to Out then back
7	Sequential light up tail housing Center to Out
8	Sequential light up tail housing Center to Out and back
9	Sequential light up tail housing Center to Out then turns off center of panel outward
10	Sequential light up within panels, Center of panels outward, all panels flash simultaneously
11	Sequential light up within panels, Center of panels outward then back, all panels flash simultaneously
12	Demonstration Mode – Flashes sequence numbers 2 through 11 cyclically, flashes each sequence 6 times before stepping to the next sequence



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### TROUBLESHOOTING GUIDE

#### How the tail lights are supposed to work:

With the running/driving lights ON, there should be +12.4 volts or more on the tan wire going to the LED panels on both sides of the vehicle.

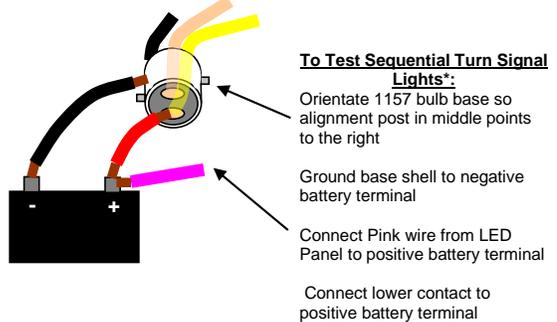
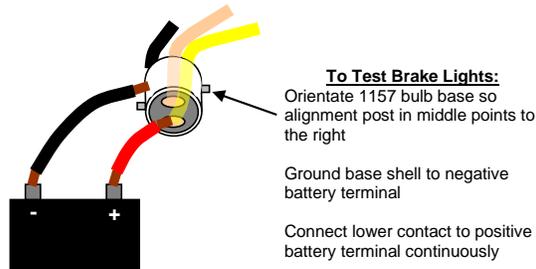
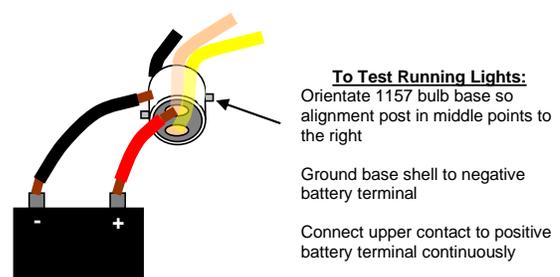
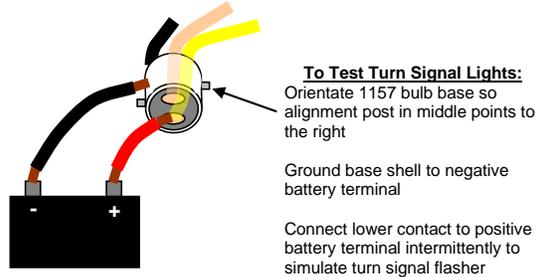
With the ignition ON and the turn signal activated, running/driving lights OFF and brake NOT applied, there should be pulsing +12.4 volts or more on the yellow wire going to the LED panel on the vehicle side receiving the turn signal. Also, there should be constant 0 volts on all yellow wire on the vehicle side that is NOT receiving the turn signal.

When the Brake is applied, running/driving lights OFF and turn signals not activated, there should be constant +12.4 volts or more on the yellow wires going to the LED panels on both sides of the vehicle.

If these voltages are not achieved, then the vehicle's wiring should be inspected and corrected to provide the expected voltage signals.

#### How to bench test the tail lights:

The LED panels can be bench tested with a 12 volt battery that is fully charged (reading 12.6 volts) or near fully charged (reading above 12.4 volts). Red LED bench testing is performed on the 1157 bulb base (with 3 wires; yellow, tan & black) wired to the LED panels. To bench test the panels, use a length of test wire and simply connect the bulb base (silver metal casing) to the negative post on a 12 volt battery. Then use another length of test wire to connect the battery's positive post to one of the solder bump pads on the end of the bulb base. Just follow the diagrams below to perform specific tests on the LED panels.





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### Running/driving lights are dim:

The most common problem with the running lights being dim is insufficient voltage across the tan wire and black wire connections on the LED panels. The voltage drop across these connection points must be 12.4 volts or higher to achieve full brightness of the LED panels while in running light mode. If the voltage across these points is lower than 12.4, then illumination brightness will diminish proportionally and will not illuminate below 11 volts.

The first step should be to test the voltage at the battery. The voltage on the battery posts should be above 12.4 volts. If not, then charge or replace the battery so it maintains a voltage above 12.4 volts.

If voltage measured between the tan wire and black wire connections on the LED panels is below 12.4 volts with proper battery voltage, then running light circuitry and grounding circuitry must be inspected and repaired to provide the required voltage to the LED panels.

### Turn signals do not flash when the turn signal is activated:

For most cars, the ignition must be ON to test the turn signal functions. Make sure the ignition is ON and the flasher module is receiving +12 volts to the +12 volt terminal.

For the LED panels to flash a turn signal pattern, the yellow wire going to the LED panels must receive a pulsating + 12 volt signal, relative to chassis ground. When changing from incandescent bulbs to LED lighting, most vehicles will require changing to a 'Low Current Flasher Module'. The problem with the original OEM type flasher module is the LED panels draw such low current that the OEM flasher sees LED lights as a burned out light bulb and typically do not flash. Changing to a 'Low Current Flasher Module' will remedy this situation.

If a 'Low Current Flasher Module' is already installed, the next step to diagnosing the problem is to test the output of the turn signal flasher. If the turn signal flasher is not producing pulsating + 12 volts on the 'Load' terminal (flasher not activating) when the turn signal is activated, then the flasher module will need to be replaced. If the flasher's 'Load' terminal is producing pulsating +12 volt signal, then the vehicle's wiring must be corrected to permit this pulsating voltage reaching the taillight sockets.

### When the turn signal for one side is activated, the opposite side flashes (dimly) as well:

If you are seeing both sides of your car flashing when only one side is supposed to be flashing, then there is crosstalk occurring between your left and right turn signal circuits.

If you are running incandescent light bulbs in the front turn signal housings, then remove the bulbs from both sides and retest the rear turn signals. If the problem goes away with removing the front bulbs then you have a grounding problem in your front turn signal housings. Correct grounding connections so you are able to test the resistance between the front bulb socket body (ground) and the negative post on the battery is less than 1 ohm.

### The tail lights do not light up all (i.e. no running/driving lights, brake lights, turn signals):

If the tail lights are not lighting up at all (i.e. with running lights, brake or turn signal), then the most likely reason is they are not receiving a ground connection. Keep in mind that the bulb sockets that the bulb bases plug into must be in contact with the metal back housing to achieve a ground connection. For many classic cars, the taillight housing is metal and the bulb sockets have metal clips/tangs that use the metal housing for making the ground connection. Thus, the bulb socket clip/tang must be making good connection to the housing and the housing must have good metal-to-metal contact with the chassis to establish a good ground connection.

The next likely source of this problem is a connection issue with the bulb base. Please take a piece of Scotch-Brite pad, fine sand paper or steel wool and clean off the solder bumps on the 1157 bulb bases wired to the LED assembly. When you make the connection, use a volt meter or Digital Multi Meter to check and make sure you are getting +12 volt (relative to chassis ground) signals to the Yellow wire solder junction from the 1157 bulb base on LED assembly. If you are not getting +12 volt signals (pulsing +12 volts if the turn signal is ON, steady +12 volts if the brake is applied) to the Yellow wire solder junction, then you must determine where the circuit is disconnected.



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The same test can be performed for the Running/Driving Lights. For this function, the Tan wire solder junction from the 1157 bulb base on LED assembly should be getting +12 volt (relative to chassis ground) signal when the light switch is pulled out to power up the Running/Driving Lights.

Another possible cause for the panels not to light up at all is the solder bumps on the end of the 1157/1156 bulb bases and/or the spring loaded pads and grounding surround within the bulb sockets are contaminated. This can be corrected by using a Scotch Bright pad and buff these metal surfaces so they are clean and void of any tarnish or corrosion.

#### **Brake lights (LED panels) stay on all the time with no turn signal activated or brake pedal being pressed:**

Using a volt meter or Digital Multi Meter, check the voltage on the Yellow wire going to the LED panels when the turn signal is not being activated and the brake pedal is not being pressed. If there is any voltage higher than 0.5 volts, then you must troubleshoot the reason for voltage leaking onto this circuit. Normally, this circuit should be near or at 0 volts.

NOTE: If the vehicle has an aftermarket cruise control system or alarm system installed, check the wiring of the system to see if has a connection to the brake/brake switch circuit. In most cases, they do and the installation instructions for the system should provide alternative wiring for installation into a vehicle that has LED lighting. The installation of the aftermarket system must be made compatible with LED lighting in order for the LED panels to illuminate when properly signaled to do so.

#### **The tail lights come on sporadically without the turn signal being activated or brake pedal being pressed:**

Our LED light kits are designed to work with the single brake/turn signal wire as the input for differentiating between brake and turn signal function. Referring to the wiring diagram in the installation instructions, the Yellow wire connecting between the 1157 bulb base and the circuit board carries this signal. The way the LED panel distinguishes between a turn signal and a brake signal is by monitoring the voltage on this Yellow wire input. 0 volts is recognized as the Low State and any voltage above ~1 volt is considered a High State. With no brake or turn signal activated, the voltage on this Yellow wire should be at 0 volts (Low State). If the panel sees the voltage transition to a High State voltage on this input, it starts the sequential pattern. If the voltage remains constant (i.e. stays in the High State), the panel will stay fully lit, illuminating the brake condition. If the voltage on the Yellow wire pulses between Low State and High State, then the panel will continue activating the sequential pattern, thus illuminating the turn signal condition. Both conditions are cancelled when the voltage on the Yellow wire drops to 0 volts (Low State) and remains so for over a ½ second.

If your installation is not able to achieve a turn signal condition, then the Yellow wire is not receiving a pulsed signal between. In other words, the panel is not seeing pulsed transitions between Low State and High State. Because your panel is staying in the brake condition, then this Yellow wire is seeing a High State voltage constantly. You will need to troubleshoot the wiring of the vehicle to determine the reason the signal being supplied to the Yellow wire is not pulsing between 0 volts and high state voltage when the turn signal is activated in the vehicle.

#### **The tail lights do not flash sequentially correctly:**

For LED kits that have more than one LED circuit board per side, all circuit board panels within the assembly must be set to the same program number for the assembly to function properly. Pressing the programming button for more than 1 second will reset panels to Sequence #1. From there, you can step the sequence number by pressing the programming button. Be sure to observe each panel to ensure all panels are flashing the same sequence number.

The Pink wire from each LED Taillight Panel must be connected to ignition power in order for sequential patterns to be activated. If the Pink wire is not connected, the taillight panels will flash with the non-sequential taillight / brake light signal.

If the tail lights work in every respect other than the sequential patterns, then you have likely lost power to the Pink wire going to the LED panels. Check your wiring and any fuses on the circuit supplying +12 volts to the Pink wire.

#### **The tail lights have been programmed to the same sequential pattern but they flash out of sync:**

For LED kits that have more than one LED circuit board per side, after pressing the programming buttons and the panels have ceased flashing the sequence number, the turn signal must be turned off and then reactivated to have all the panels starting the



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sequence pattern at the same time. In some cases, power must be removed from the Pink wire (turning ignition Off) in order to get the panels re-initialized and working together.

#### **When the running lights are turned On, the tail lights are flashing randomly:**

The most likely reason for this type of behavior is one or more of the 1157 bulbs / bulb bases inserted into the 1157 bulb sockets are mis-inserted and causing the running light circuit and turn signal circuit to be shorted together. This mis-insertion can be on any of the front or rear turn signal sockets. Remove and inspect the bulb sockets for damage, improperly aligned contacts inside the sockets as well as inspecting the keying prongs on the bulb bases.

#### **The tail lights on either or both sides flash erratically when a turn signal is activated:**

This condition can occur when the 1157 bulb base is inserted incorrectly in the taillight bulb socket. The problem lies in the bulb base contacts are shorting the running light terminal and the brake/turn signal terminal together. Inspect the bulb base locating pins and the socket terminals for damage. Also check that the terminal plate holding the terminals in proper orientation is not damaged or mis-located. Correct any problems that are detected.

**Note:** This LED taillight kit requires the installation of a low current turn signal flasher (not included). If you don't already have one, they can be purchased locally at any good auto parts store. Example: NAPA part stores sell them under Part Number EL12L1.