

Modifying the exterior lighting of the Ram truck

The Ram truck has been designed and developed using standard incandescent lights. These lights are controlled by a computerized module called the “Central Body Controller” (CBC). This module controls the left front, right front, left rear and right rear lighting independently. The CBC utilizes “smart” technology that has the ability to monitor the current (amperage) on some of the lighting outputs. These monitored outputs include the headlamps, turn lamps, stop lamps and reverse lamps. The module is able to detect both electrical short and open circuit conditions. The module has a preset allowable current (amperage) operating range for each of these outputs. If while in normal operation the current detected falls outside this preset range, then a fault is set in the module. In the case of too high of current the circuit will be shut off. This fault condition will remain true until the current level falls back into the normal range. In the case of the turn lamp circuits, if the module detects too low of current then the module will assume an open circuit condition (burned out bulb) and the blinker will flash at a double flash rate.

This detection is in place to assist the customer in determining if there is an active short in the lighting circuit or a burned out bulb (open circuit).

You can also get into these fault conditions by adding additional lamps to the circuits or by changing the lamp specifications (i.e. changing the type of lamp used). This would include, but is not limited to, the use of LED’s. By using them you run the risk of causing lighting faults or loss of lighting functionality.

The question then becomes, “can you use LED lighting on Ram trucks”? The answer is yes, but special care and procedures need to be followed to use LEDs successfully.

Use of LED lamps in conjunction with the original equipment

incandescent lamps:

If you are keeping the original incandescent lamps (or the aftermarket equivalent) and you want to add additional LED lamps for use as stop, turn, reverse or park lamp function you can do so with no additional changes to the vehicle or its electrical system.

Adding additional incandescent lamps to the original equipment

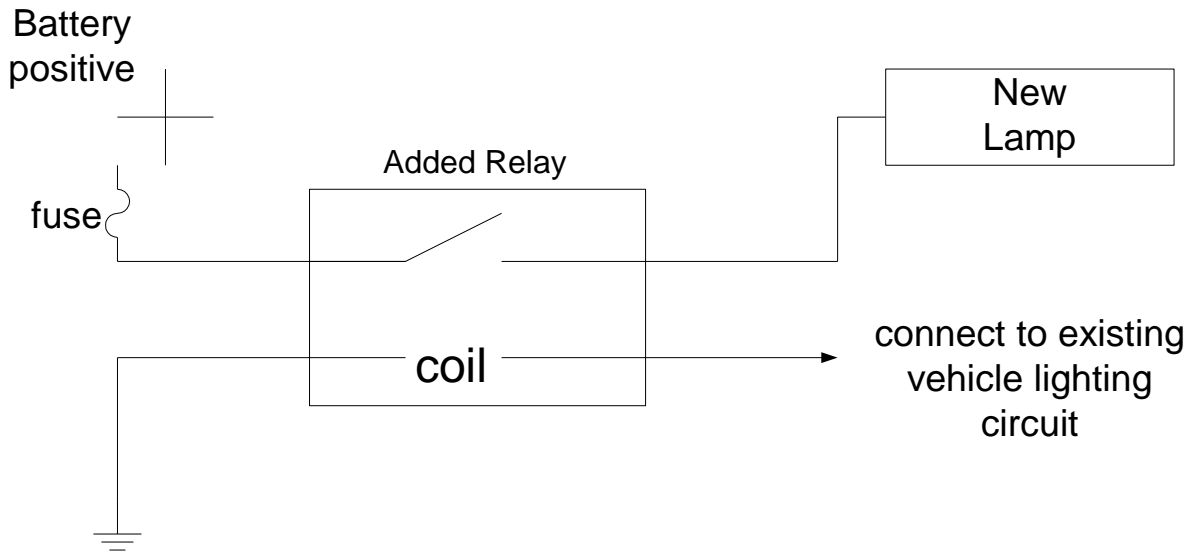
incandescent lamps:

Customers sometimes desire to add additional lamps to the exterior lighting circuits. This is possible but requires adding a relay to control the additional lamps. By correctly wiring the relay into the lighting circuit you only add the additional coil resistance of the relay. This will maintain the correct operating current (amp) range of the circuits and no faults will be set. A relay will need to be added to each side of the vehicle (left and right).

Below is a sample relay circuit which can be utilized to add additional lamps



Below is a sample relay circuit which can be utilized to add additional lamps



When this type of circuit is used please understand that there is no way for the vehicle to perform any diagnostics on the added lamps.

As a general statement the CBC does not provide a large enough current range on the head, turn, stop or reverse lamp circuits to add any additional incandescent lamp loads. It is therefore strongly recommended that the above procedures are followed for modifying the exterior lighting.

Replacing rear incandescent bulbs with LED's:

For 2013 there are three different methods to eliminate fast flash and error codes when replacing rear stop/turn incandescent bulbs with LED's –

NOTE: You must complete these modifications BEFORE the error codes are created. If you have error codes you must unground the circuit, reinstall incandescent bulbs and turn on the turn signals to eliminate the faults. Then reground the circuit.

Method (A) -

Cut the appropriate harness wire at the CBC, add wire length, add a ring terminal, and ground this circuit at an appropriate location.

Method (B) -

Add the wire/terminal kit (part number P68225777AA) provided with the vehicle.

Method (C) -

Add power resistors to the rear light circuits.

Detailed instructions for each of the three different methods are delineated below:

Method (A) – cut and adds wire to a circuit at the CBC, refer to photos below.

Method (B) – use wire/terminal kit (part number P68225777AA) provided with the vehicle, refer to photos below.

Method (C) – add power resistors to the rear light circuits. This is the same procedure that could be employed from previous model years. Wire a 9 or 10 ohm, 50 watt power resistor in parallel with each LED. The resistors must be capable of surviving exterior exposure on the vehicle with consideration for vibration and expected life cycle. As power resistors may get hot under normal operation it is suggested that they be placed in an area with adequate ventilation and heat dissipation. It is further suggested that they be located very near the LED's; this is to help with any future service related maintenance or repairs to the lighting circuits.

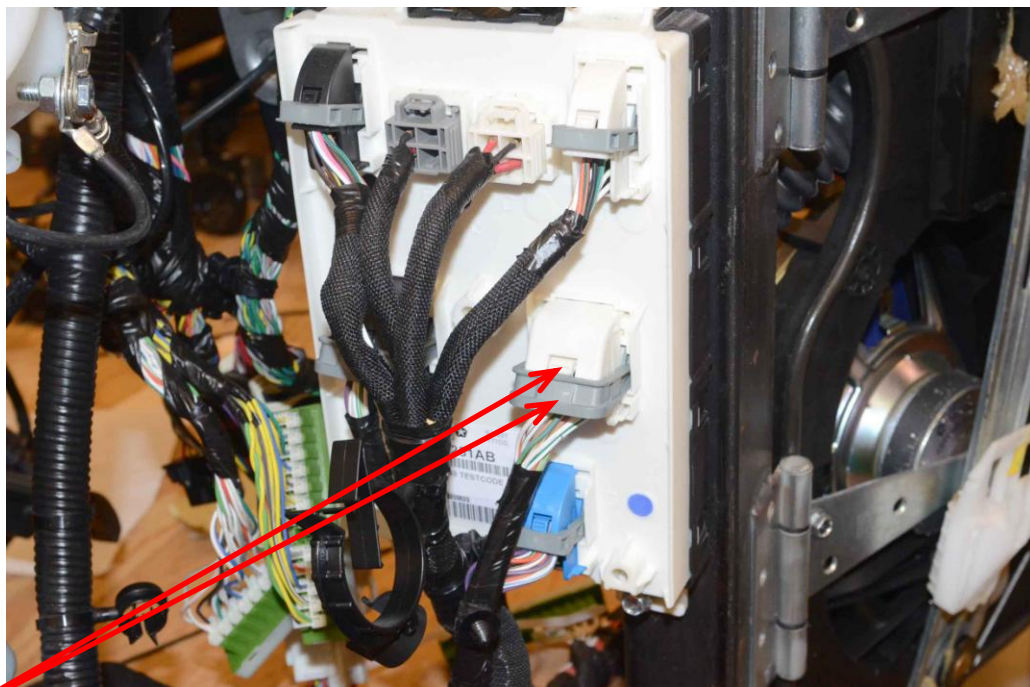
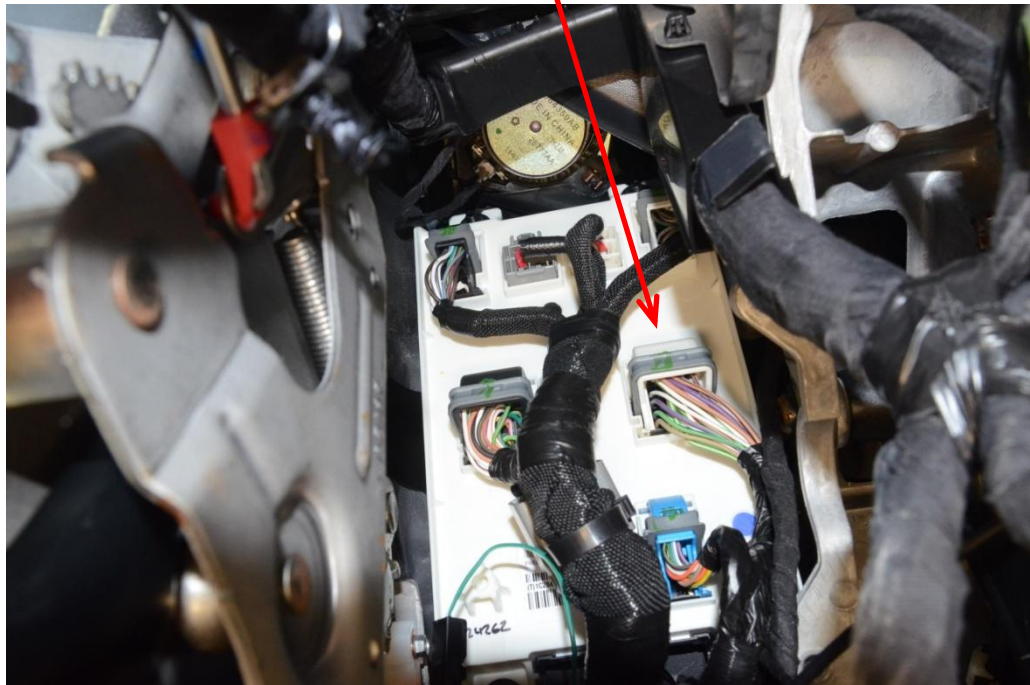
Method (A) :



CBC module location under dash

Method (A) :

Connector to be modified



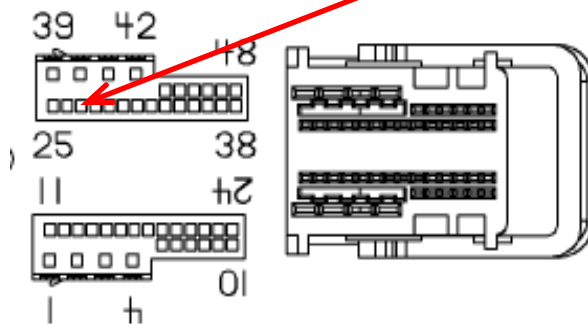
To remove connector from the CBC, push in tab while simultaneously lifting bail

Method (A) :

Connector removed from the CBC

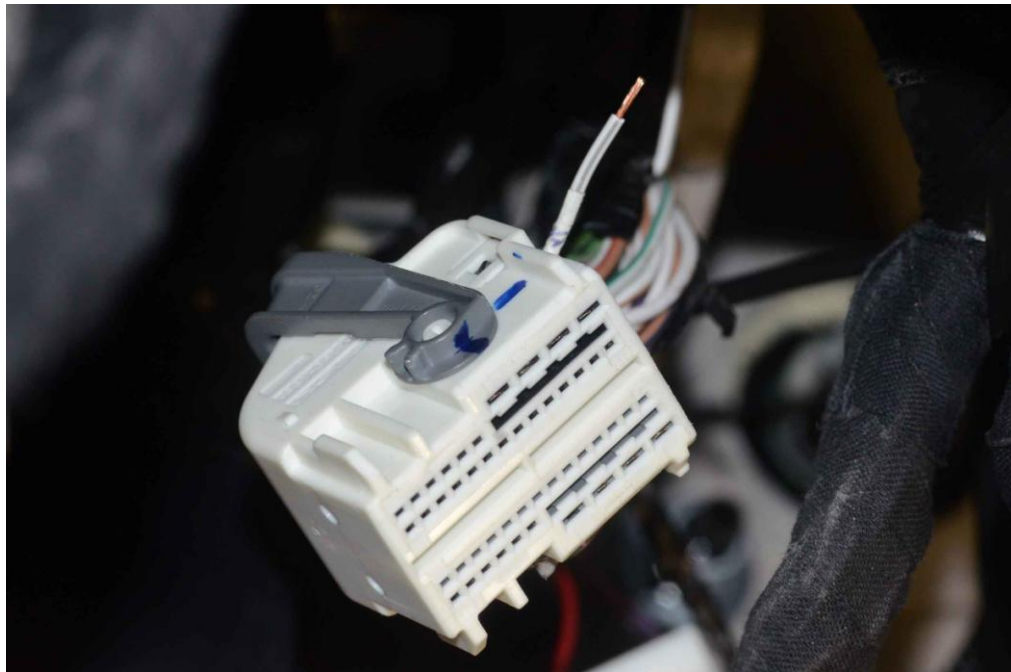


Circuit L563 cut and insulation stripped from the connector side of the cut circuit. L563 is a WT/GY wire in cavity #27.



Method (A) :

Circuit L563 cut and insulation stripped from the connector side of the cut circuit. L563 is a WT/GY wire in cavity #27.



Additional wire and a ring terminal soldered onto the connector side cut circuit, ground the ring terminal at an appropriate location

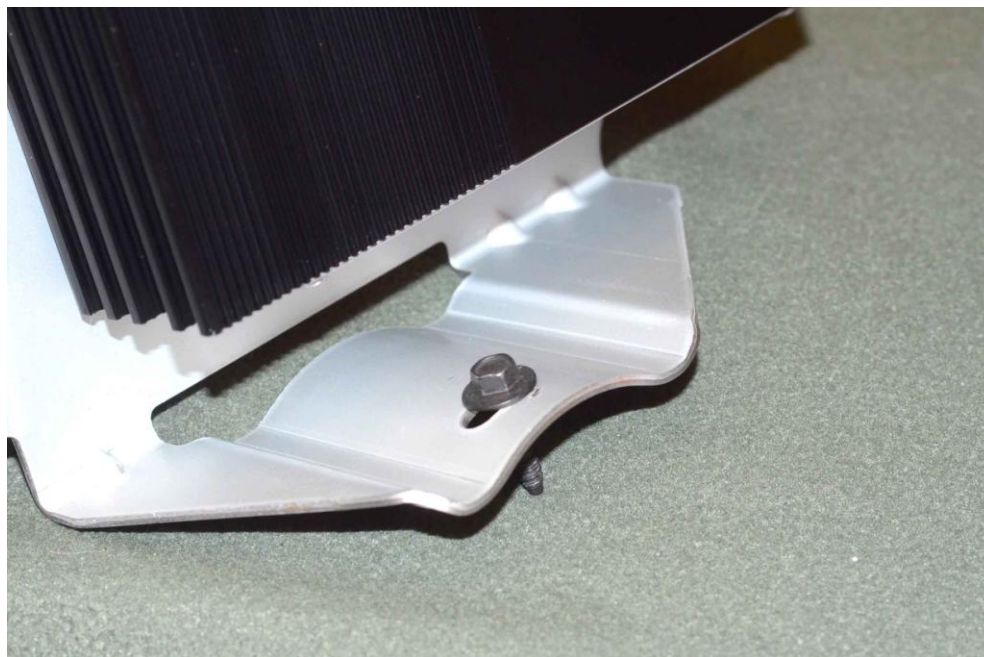


Method (A) :

If the vehicle is equipped with a premium radio and auxiliary amplifier, the amplifier will need to be temporarily removed to gain access to the CBC connector

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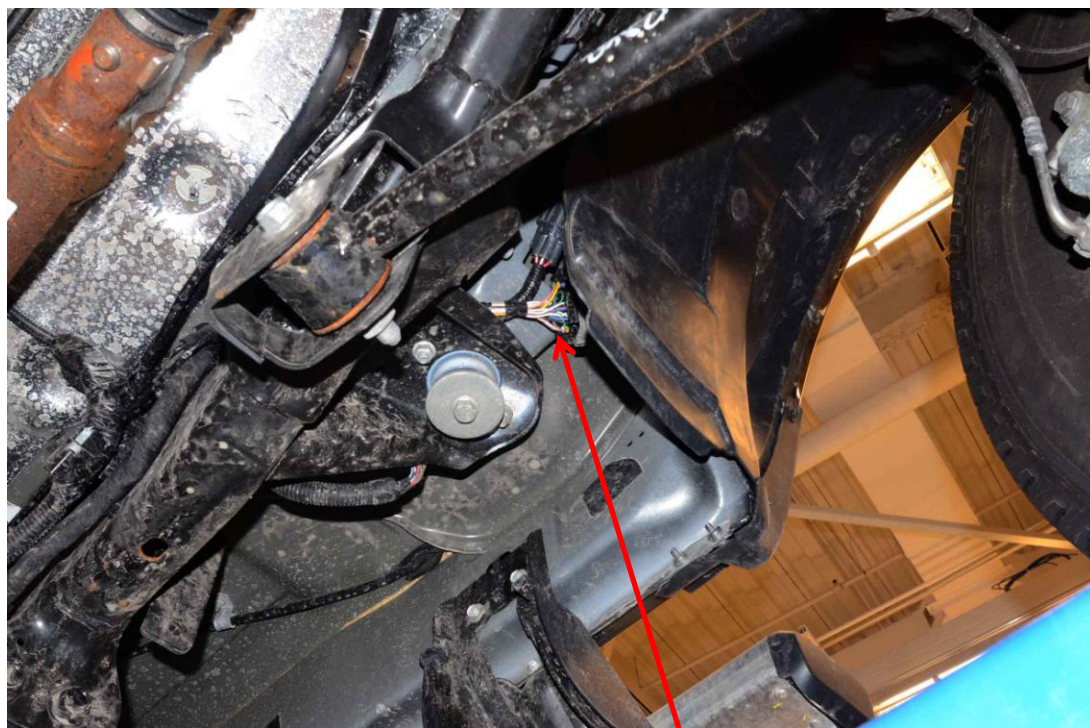
If the vehicle is equipped with a premium radio and auxiliary amplifier, the amplifier will need to be temporarily removed to gain access to the CBC connector



Method (B) :



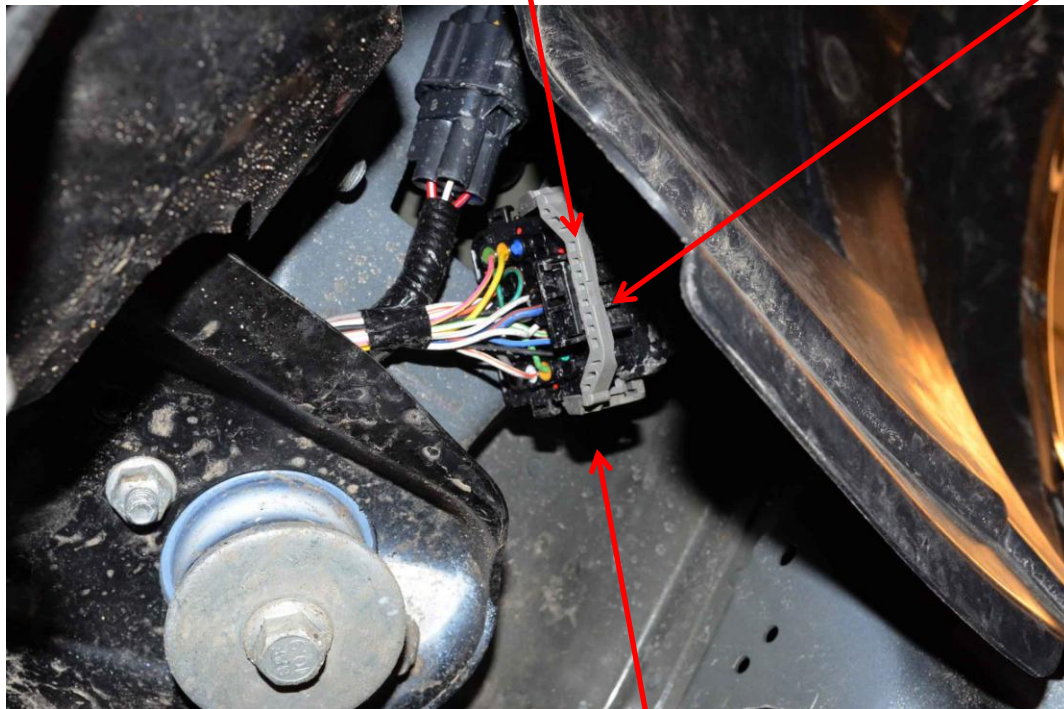
Connector located behind the left (driver's side) front wheel well liner



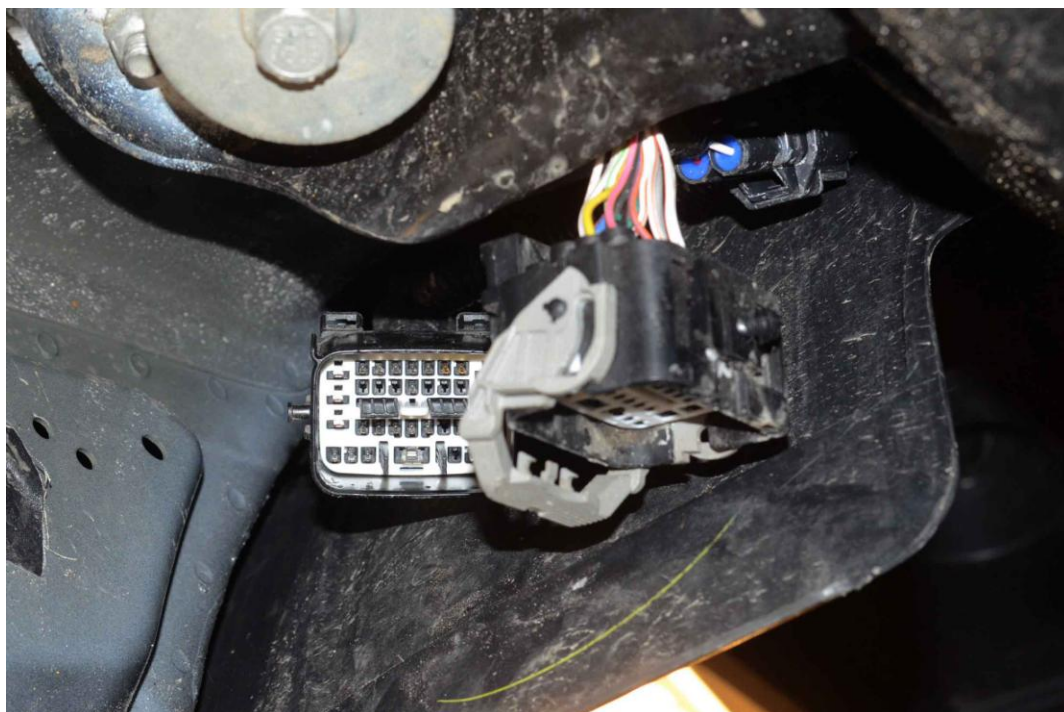
Connector from underneath

Method (B) :

Push in tab while simultaneously lifting bail to unlock the two connector halves



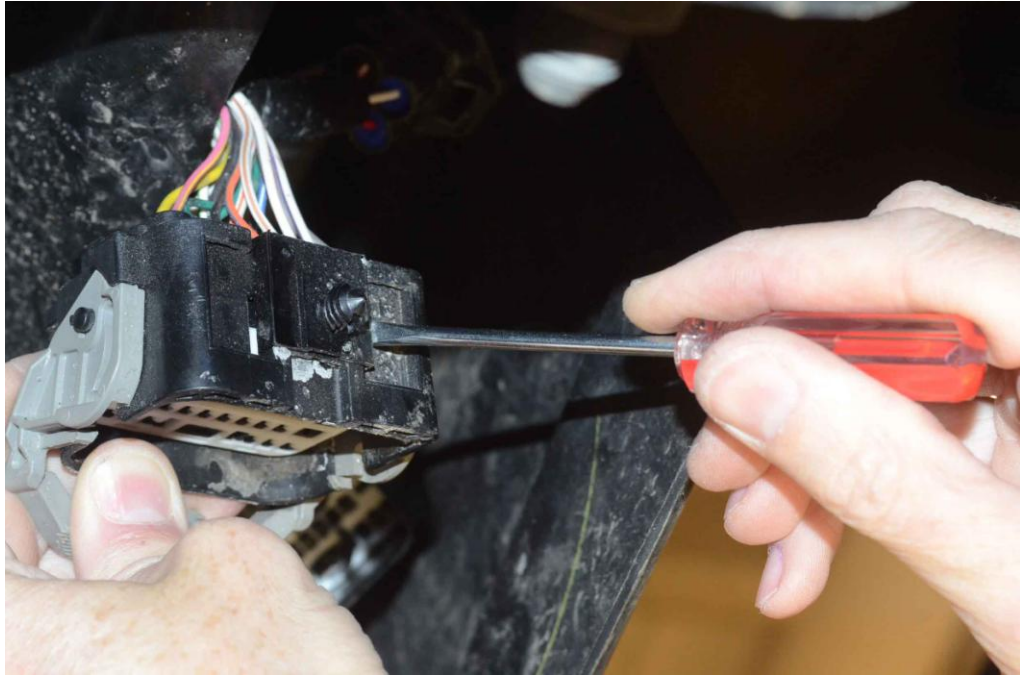
Connector from underneath



Using a prying tool pull the connectors "X-mas" tree clip out from its mounting hole and pull the two halves of the connector assembly apart

Method (B) :

Using a small flat blade screw driver carefully “work” the white plastic terminal lock partially out of its lock position



Carefully fully remove the white plastic terminal lock, note the “clocking” of the lock to aid in correct re-installation

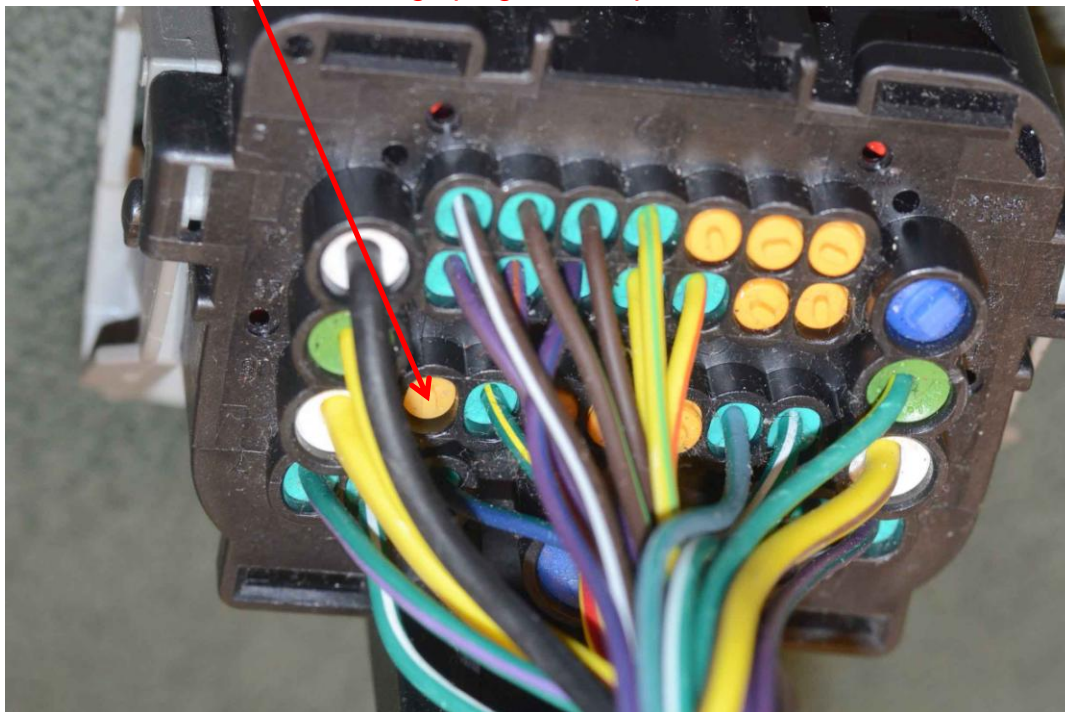


Method (B) :

Carefully fully remove the white plastic terminal lock



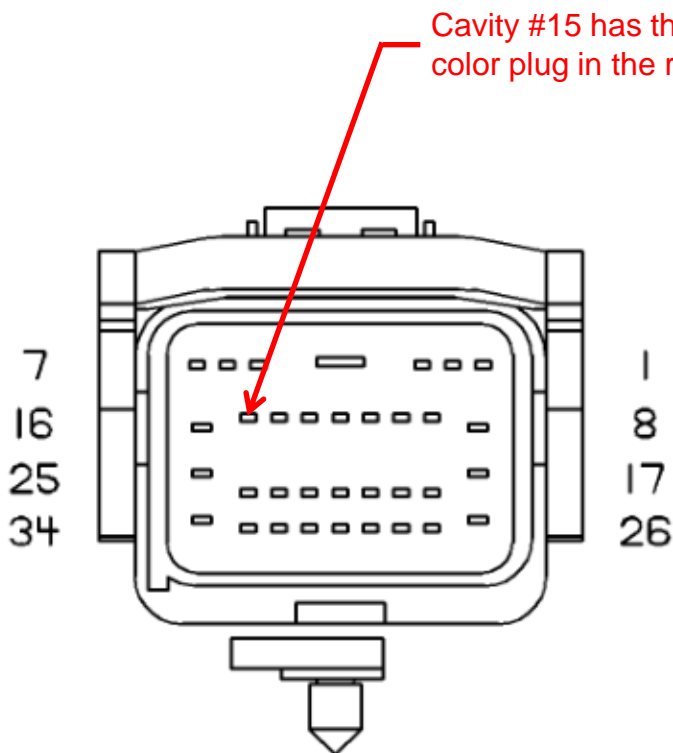
Backside of connector (difficult to see on vehicle), this orange plug is to be pushed out and discarded



Example of a thin pick tool



Cavity #15 has the orange color plug in the reverse side



Method (B) :

Using a thin pick tool, carefully push tool (painted orange in this photo for clarity purposes) into cavity #15 to push orange plug out of cavity.



Wire harness kit provided with the vehicle

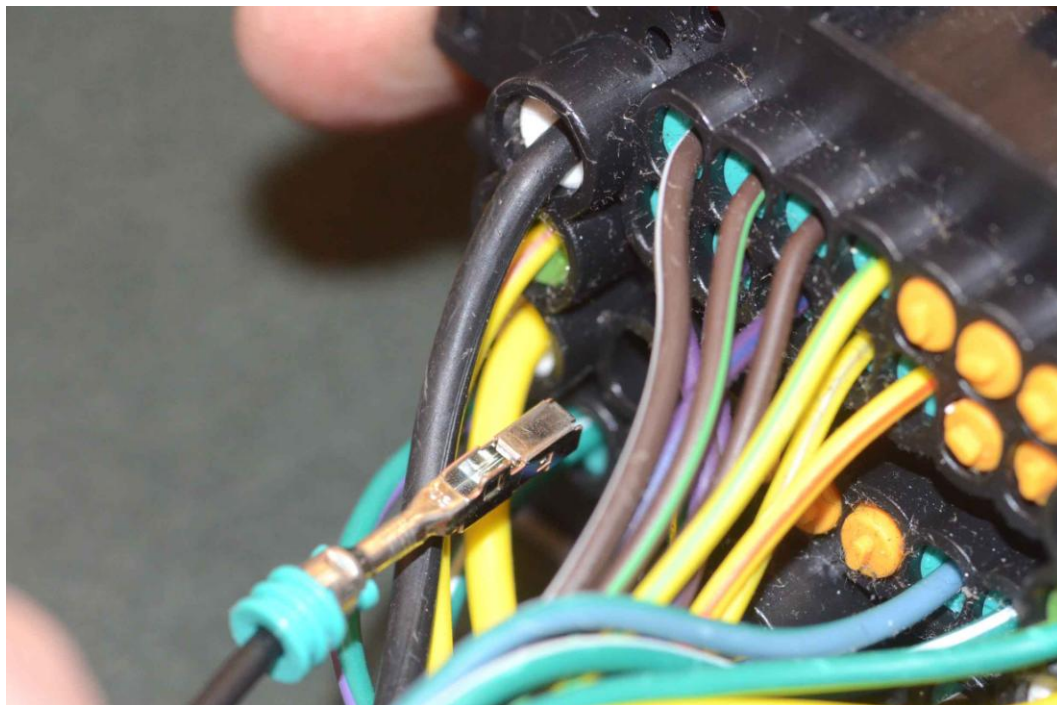


Method (B) :

Close-up of kit terminal, note direction of upstanding metal "tab" on metal terminal

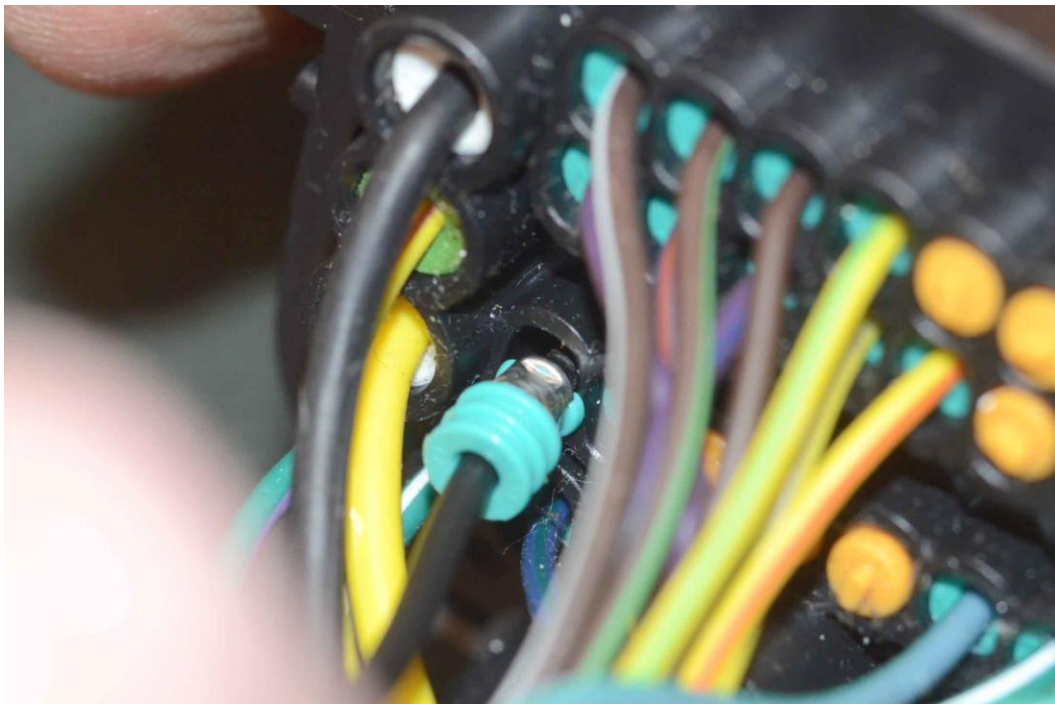


Wire harness kit ready for insertion into now empty connector cavity #15 note direction of upstanding metal "tab" on metal terminal

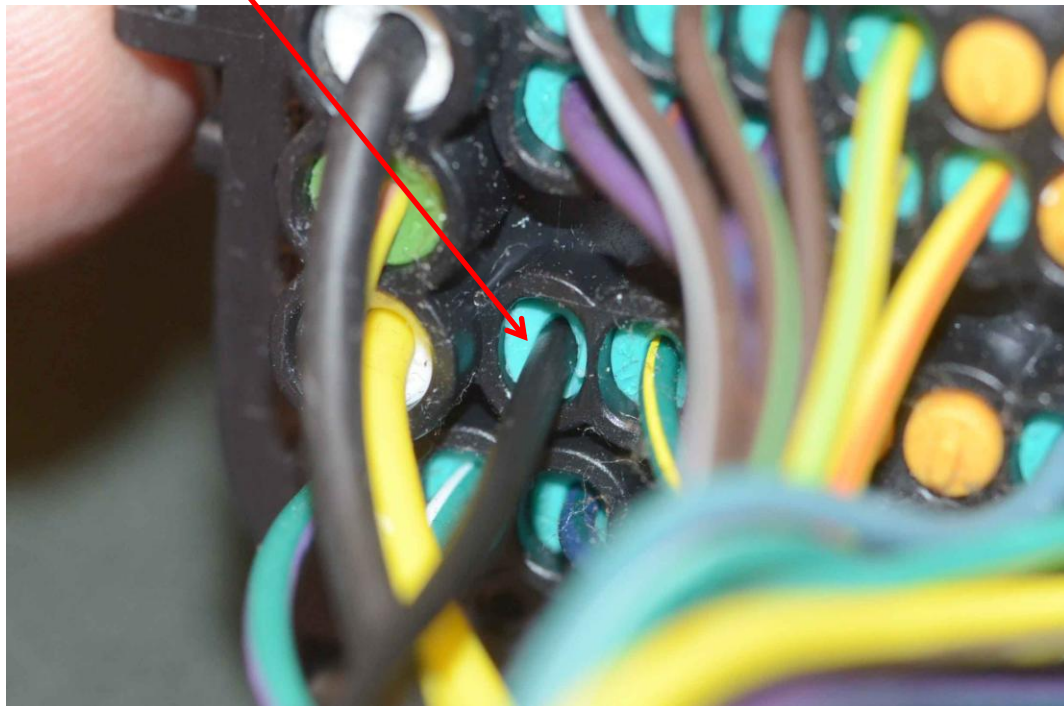


Method (B) :

Wire harness kit partially inserted into connector cavity

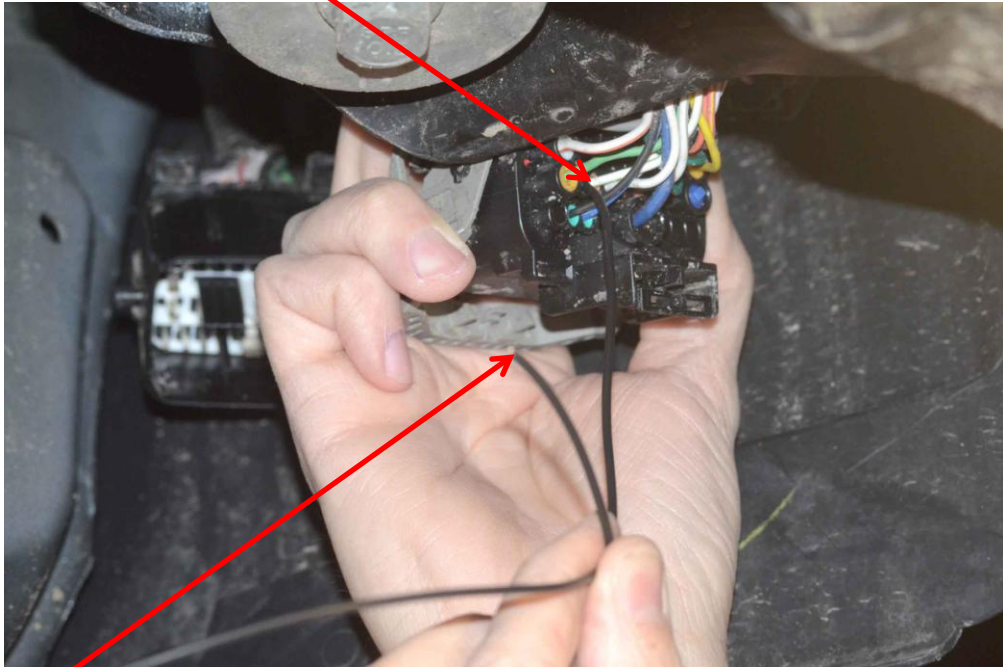


Wire harness kit fully seated into connector cavity



Method (B) :

← Wire harness kit fully seated into connector cavity



← Add additional wire as necessary to reach the grounding location of your choosing, add a ring terminal and securely fasten to ground location

Align the white plastic terminal lock noting the same “clocking” as before removal



Method (B) :

Carefully push the lock to fully seated position



Reassemble the two halves of the connector assembly, lock the bail into place, and reinsert the X-mas tree clip into its mounting hole

