

Part Number: PT413-42150**Kit Contents**

Item #	Quantity Req'd.	Description
1	5	7" Wire Tie
2	4	#10-16 Cross Pan-Washer Head Screws
3	1	Switch
4	1	Relay
5	1	LH Fog Light Bracket
6	1	RH Fog Light Bracket
7	1	Switch Wire Harness
8	1	LH Fog Light
9	1	RH Fog Light
10	3	Scotchlok™
11	2	Foam Pad

Hardware Bag Contents

Item #	Quantity Req'd.	Description
1		
2		
3		

Additional Items Required For Installation

Item #	Quantity Req'd.	Description
1		
2		
3		

Conflicts

Factory fog lights (standard on XLE & Limited models)

General Applicability

LE Grade RAV4

Recommended Sequence of Application

Item #	Accessory
1	
2	
3	

*Mandatory

Recommended Tools

Personal & Vehicle Protection	Notes
Blankets	
Special Tools	Notes
Panel Removal Tool	
Hella Photometric Beam Setter (or equivalent)	DIO Only
Installation Tools	Notes
Ratchet	
Socket	10 mm
Socket Extension	
Diagonal Cutters	
Pliers	
Screwdriver	#2 Phillips
Screwdriver	Small Flat-Blade
Special Chemicals	Notes
None	

Vehicle Service Parts (may be required for reassembly)

Item #	Quantity Req'd.	Description
1		
2		
3		

Legend

STOP: Damage to the vehicle may occur. Do not proceed until process has been complied with.



OPERATOR SAFETY: Use caution to avoid risk of injury.



CAUTION: A process that must be carefully observed in order to reduce the risk of damage to the accessory/vehicle and to ensure a quality installation.



TOOLS & EQUIPMENT: Used in Figures calls out the specific tools and equipment recommended for this process.



REVISION MARK: This mark highlights a change in installation with respect to previous issue.



SAFETY TORQUE: This mark indicates that torque is related to safety.

Care must be taken when installing this accessory to ensure damage does not occur to the vehicle. The installation of this accessory should follow approved guidelines to ensure a quality installation.

These guidelines can be found in the "Accessory Installation Practices" document.

This document covers such items as:-

- Vehicle Protection (use of covers and blankets, cleaning chemicals, etc.).
- Safety (eye protection, rechecking torque procedure, etc.).
- Vehicle Disassembly/Reassembly (panel removal, part storage, etc.).
- Electrical Component Disassembly/Reassembly (battery disconnection, connector removal, etc.).

Please see your Toyota dealer for a copy of this document.

1. Prepare for Installation.

+ (a) The engine components and coolant may be hot, use caution.

STOP (b) Check the kit for contents and any damage.

(c) Protect the fender before starting.

! (d) Remove the battery cable from the negative terminal (Fig. 1-1).

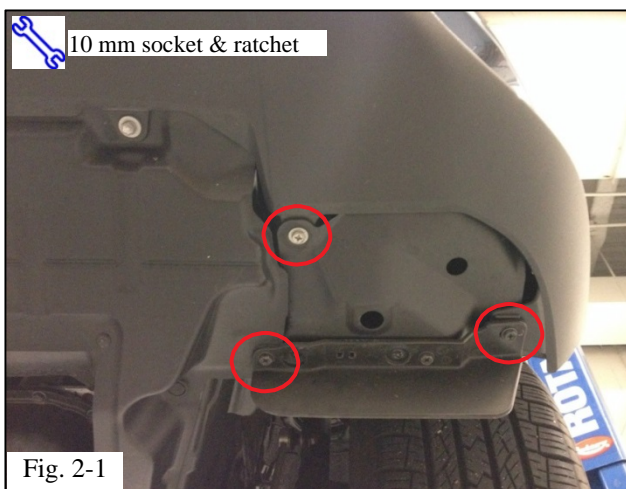
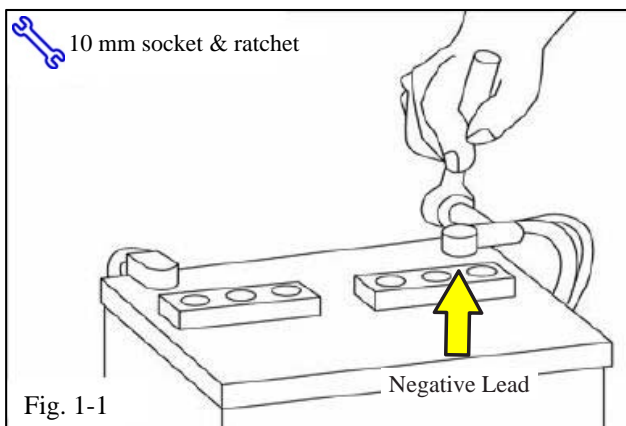
+ **CAUTION:** Do not touch the positive terminal with any tool.

2. Detach the Under Side Fender Liner.

(a) Raise the vehicle.

(b) Remove the three (3) fasteners indicated by the circles (Fig. 2-1).

NOTE: Driver's side shown.





(c) Remove the fastener indicated by the circle (Fig. 2-2).

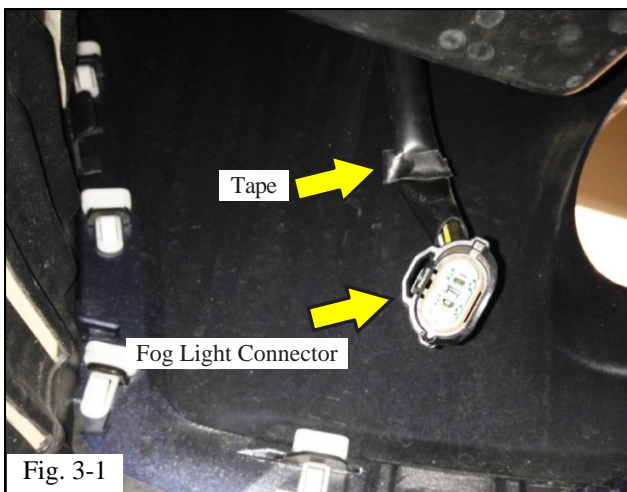
NOTE: Driver's side shown.

(d) Repeat Steps 2(b) and 2(c) for the other side of the vehicle.

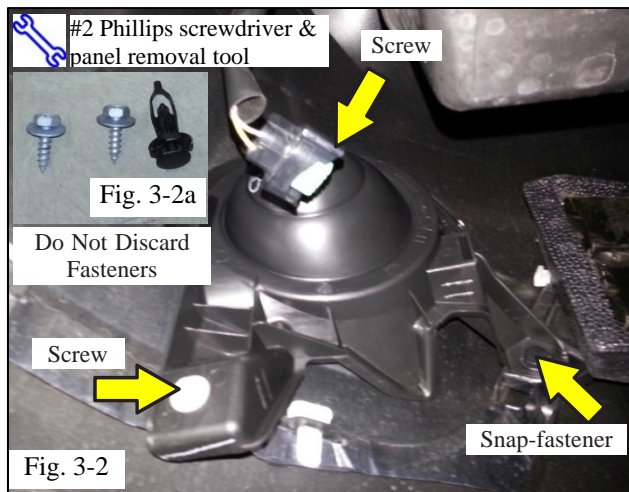
(e) Save all eight (8) fasteners for reassembly.

3. Remove the Fill Panels.

(a) Locate the fog light connectors (both sides).



(b) Remove the tape to release the fog light harness connectors (Fig. 3-1).



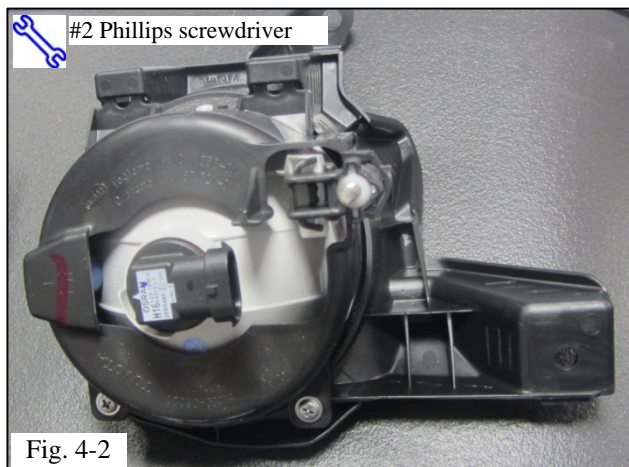
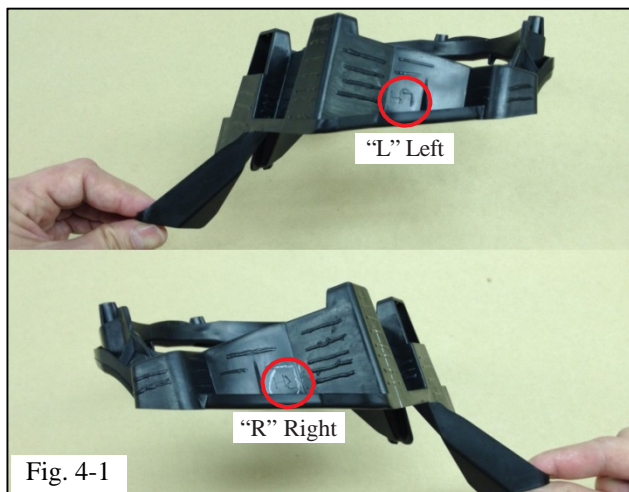
- (c) Reach behind the underside/fender liner to access the fill panels (Fig. 3-2).
- (d) Remove the panels by removing the two (2) screws and one (1) snap-fastener (Fig. 3-2).
- (e) Save the two (2) screws and one (1) snap-fastener removed from each side (Fig. 3-2a).

NOTE: Driver's side shown.

4. Install the Fog Lights.

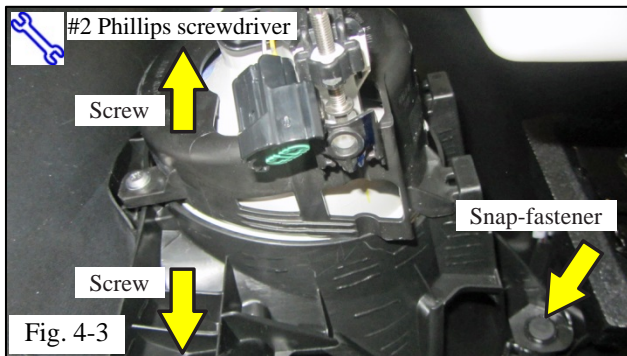
- (a) Locate left and right fog light brackets.
 - (1) Verify the correct bracket for each side.
 - (2) Look for the "L" or "R" symbol indicated by circles (Fig. 4-1).

CAUTION: The brackets are marked RIGHT and LEFT and will not fit if reversed.



- (b) Install the fog lights into the respective (left or right) brackets (Fig. 4-2).
 - (1) Insert the two inboard tabs into the bracket.
 - (2) Fasten the other two tabs on the outboard side with two (2) supplied self-tapping screws.

CAUTION: The fog lights are marked RIGHT and LEFT and will not fit if reversed.



- (c) Use the two (2) screws and one snap-fastener removed in Step 3(d) to install the fog light & bracket assembly in the left side and right side (Fig. 4-3).

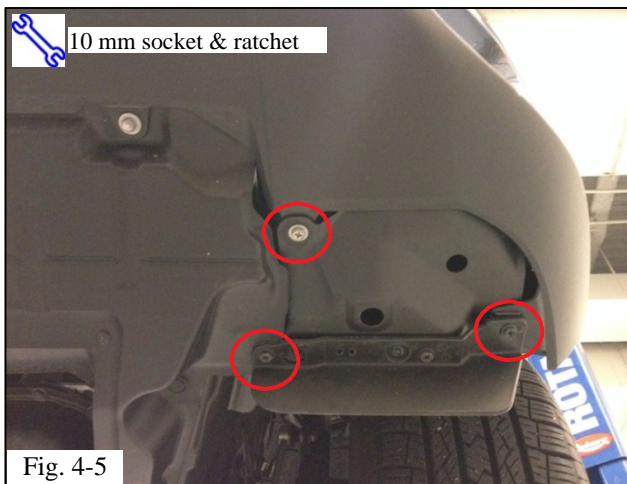
NOTE: Driver's side shown

- (d) Plug the factory harness into the fog lights.

CAUTION: Make sure the connector snaps in securely.

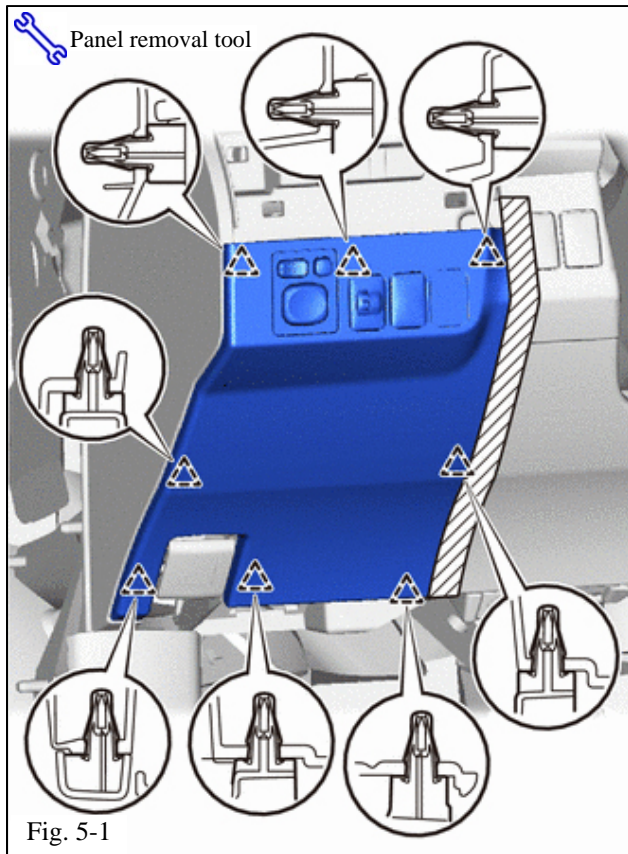
- (e) Reassemble underside/fender liner with the four (4) fasteners removed in Step 2(b) and 2(c) (Fig. 4-4 & Fig. 4-5).

- (f) Lower the vehicle.

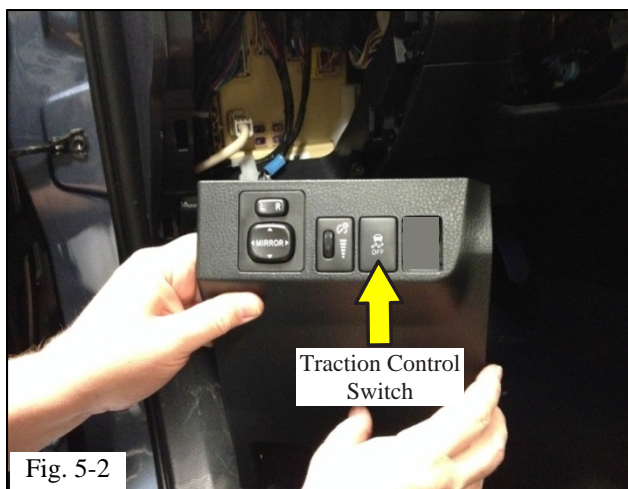


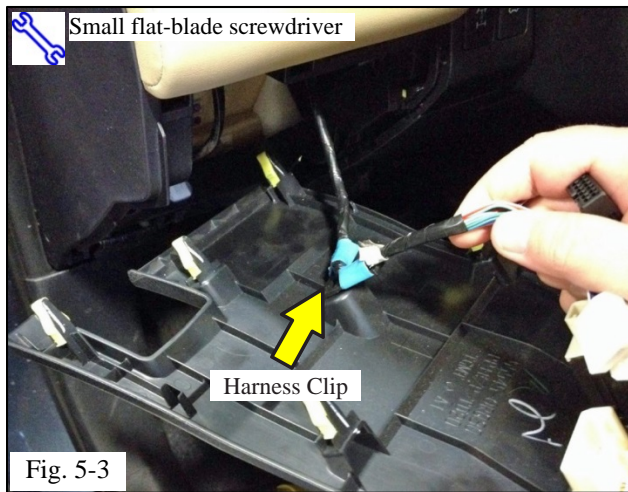
5. Install the Switch.

- (a) Start at the bottom and pull up to remove the left side lower panel (Fig. 5-1).



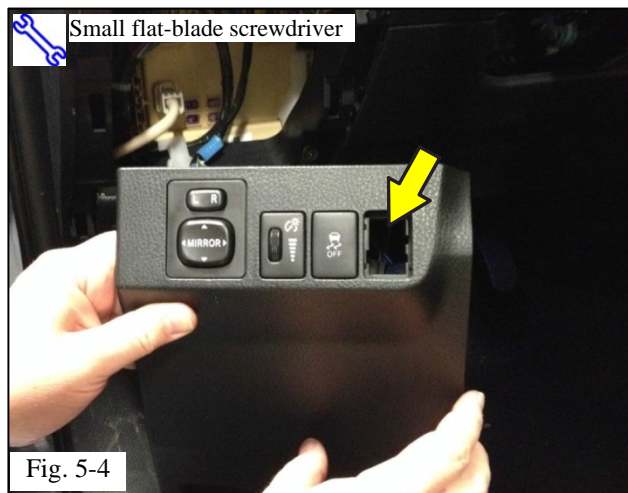
- (b) Disconnect all of the connectors and take note of the traction control switch connector (Fig. 5-2).





(c) Detach the harness clip and remove the panel from the vehicle (Fig. 5-3).

CAUTION: Take care to prevent damage to the panel.



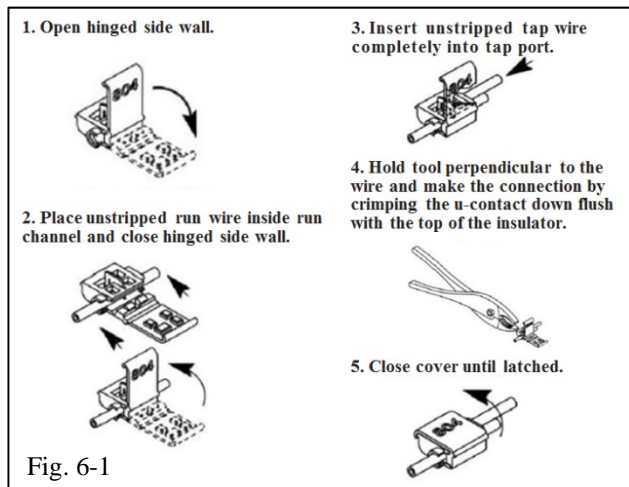
(d) Remove knock out from the switch panel (arrow, Fig. 5-4).



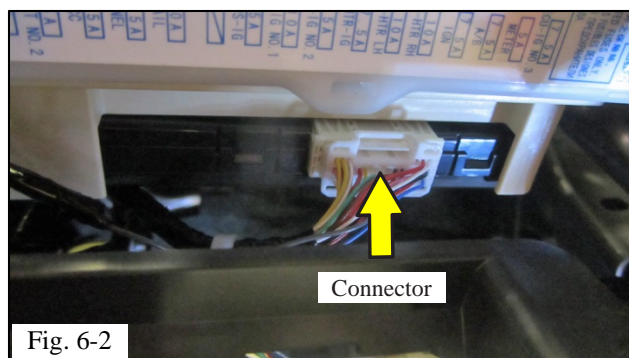
(e) Install the fog light switch into the switch panel (Fig. 5-5).

NOTE: Make sure that the graphic is in the indicated orientation (Fig. 5-5).

6. Make the Electrical Connections.



- (a) Review the tutorial on the correct use of Scotchlok™ connectors (Fig. 6-1).

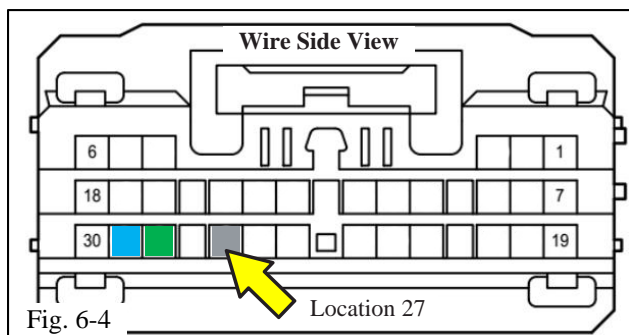


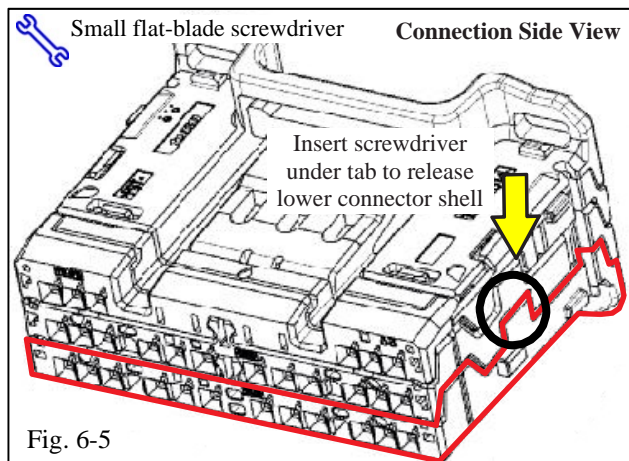
- (b) Remove the connector from the bottom of the body ECU located behind and under the dashboard junction box (Fig. 6-2).

NOTE: Fig. 6-2 is looking up from the floor and the connector is directly above the OBD port.



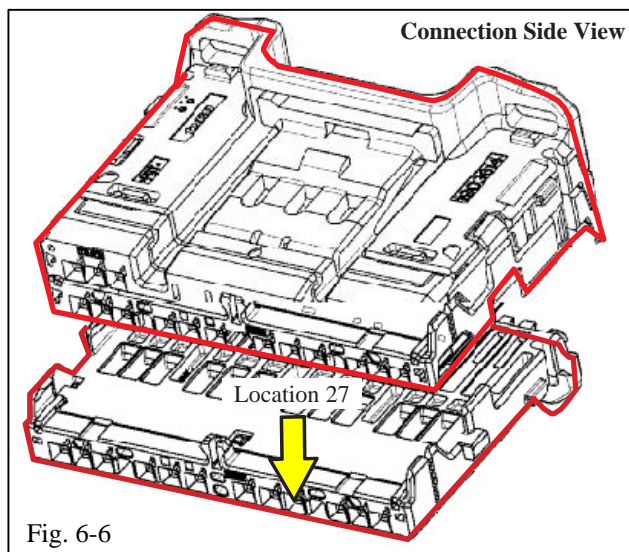
- (c) The grey lead on the switch harness (Fig. 6-3) will be inserted into position 27 in the vehicle BODY ECU harness (FOGLIGHT ON) (Fig. 6-4).





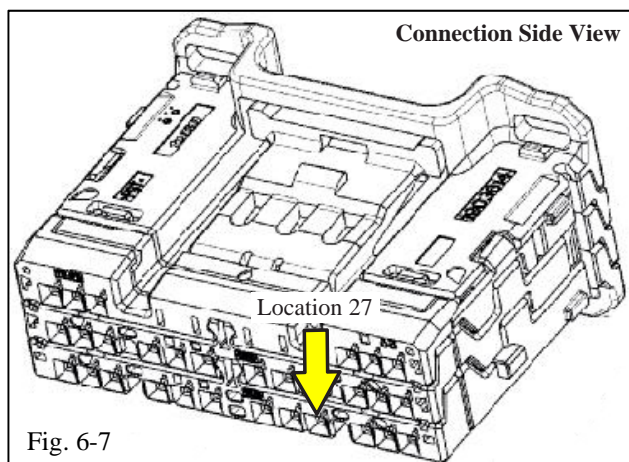
- (d) Use a small flat-blade screwdriver to gently pry open the connector indicated by the arrow (Fig. 6-5).

CAUTION: Take care to avoid damage to the connector.

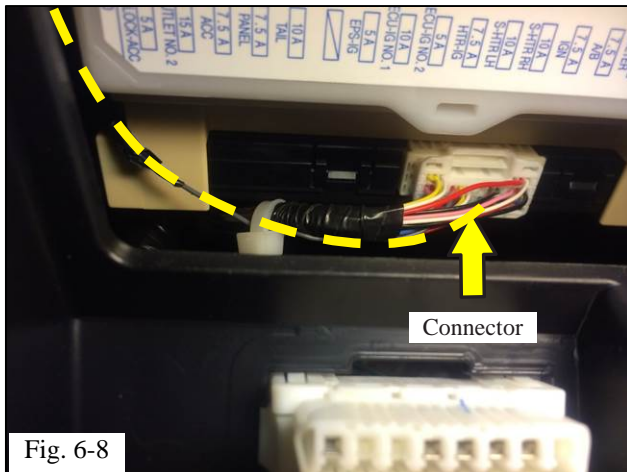


- (e) Once the connector shell has been separated, insert the terminal of the grey wire into location 27 (Fig. 6-6).

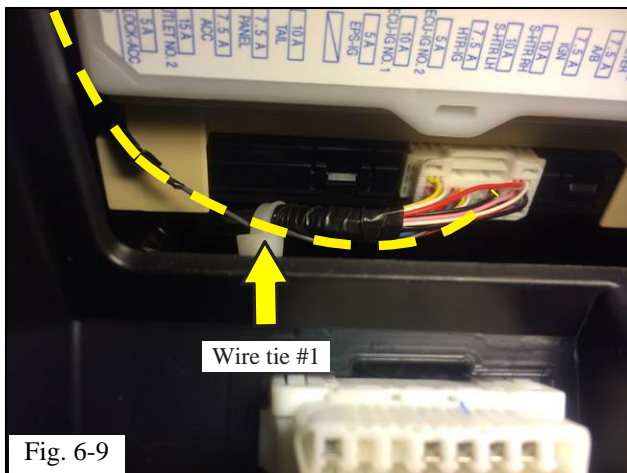
- (f) Verify the grey lead is correctly seated.



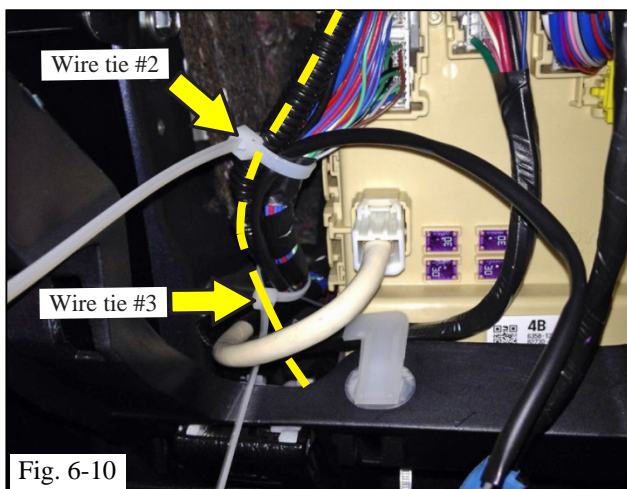
- (g) Snap the lower connector shell onto the connector (Fig. 6-7).



(h) Reconnect the connector (Fig. 6-8).

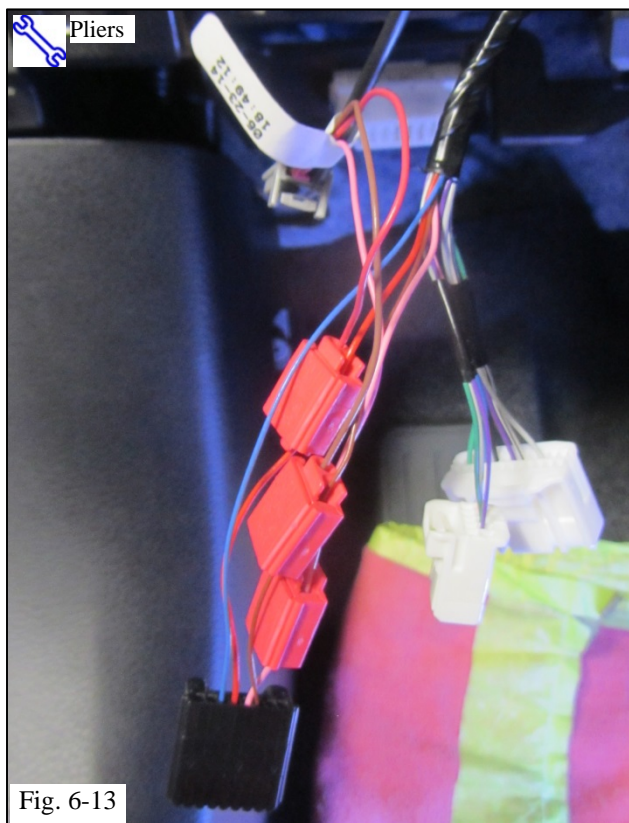
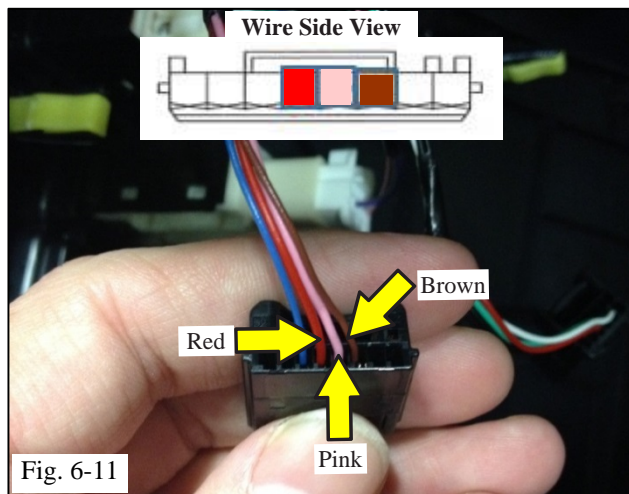


(i) Secure the fog light harness with one (1) wire tie (Fig. 6-9). Trim the excess wire tie.

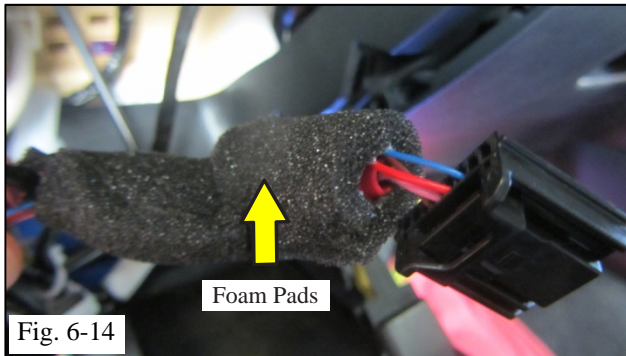


(j) Route the harness up on the left side of the junction block. Secure it with two (2) wire ties (Fig. 6-10). Trim the excess wire tie.

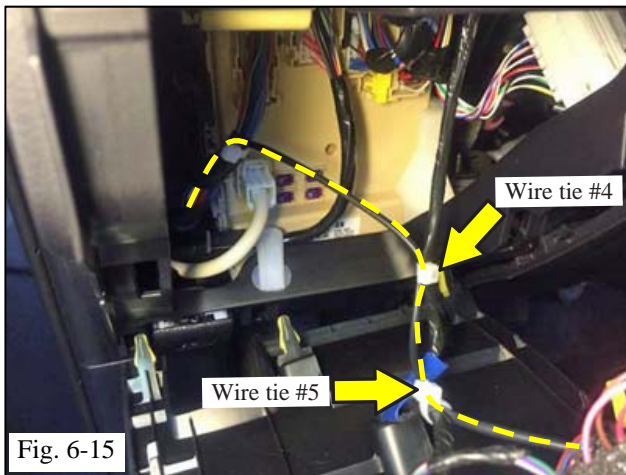
⚠ CAUTION: Make sure to leave enough slack in the wire so it does not rub up against the corner of the junction box.



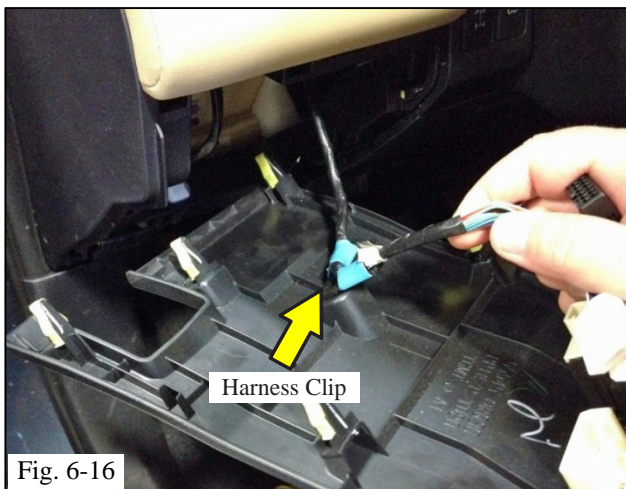
- (k) Locate the black traction control connector disconnected during Step 5(b) (Fig. 6-11).
- (l) Locate the PINK lead in the traction control harness (ILL -) (Fig. 6-11).
- (m) Locate the RED lead in the traction control harness (ILL+) (Fig. 6-11).
- (n) Locate the BROWN lead in the traction control harness (GND) (Fig. 6-11).
- (o) Remove/cut the black electrical tape as necessary to allow room to apply the Scotchloks in the following steps.
- (p) Use a Scotchlok to connect the PINK lead of the fog light switch connector to the PINK lead of the traction control harness (Fig. 6-12 & Fig. 6-13).
- (q) Use a Scotchlok to connect the RED lead of the fog light switch connector to the RED lead of the traction control harness (Fig. 6-12 & Fig. 6-13).
- (r) Use a Scotchlok to connect the BROWN lead of the fog light switch connector to the BROWN lead of the traction control harness (Fig. 6-12 & Fig. 6-13).



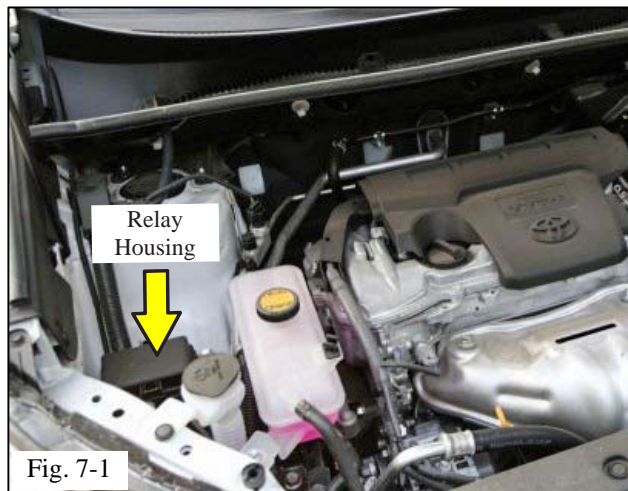
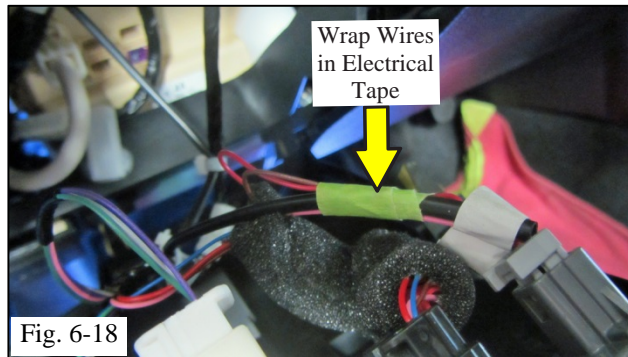
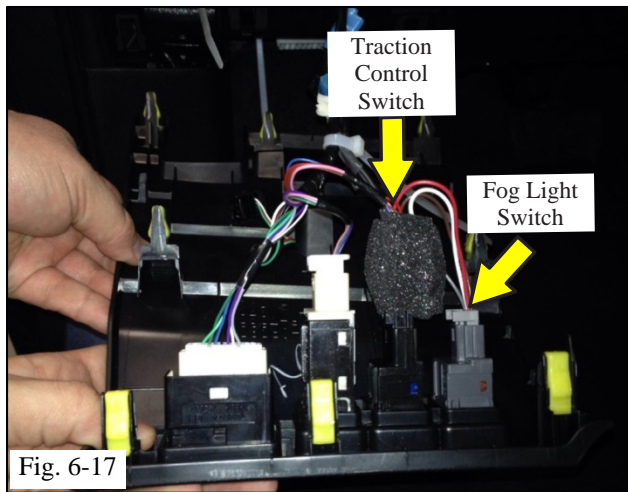
- (s) Wrap the Scotchloks with two (2) foam pads (Fig. 6-14).



- (t) Route harness as shown and align the connectors before secure the harness with two (2) wire ties (Fig. 6-15). Trim the excess wire tie.



- (u) Reconnect the harness clip disconnected in Step 5(c) (Fig. 6-16).

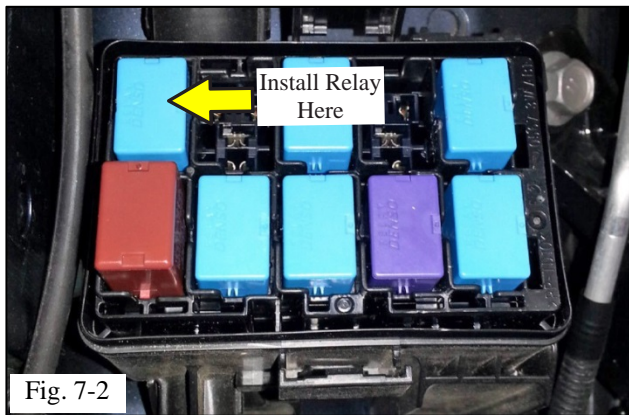


- (v) Reconnect the traction control switch. (Fig. 6-17).
- (w) Connect the fog light switch connector to the fog light switch (Fig. 6-17).
- (x) Reconnect the rest of the connectors (Fig. 6-17).

- (y) Wrap the fog light wires in electrical tape to avoid pinching them when replacing the panel (green tape used for clarity, Fig. 6-18).
- (z) Reattach the panel.

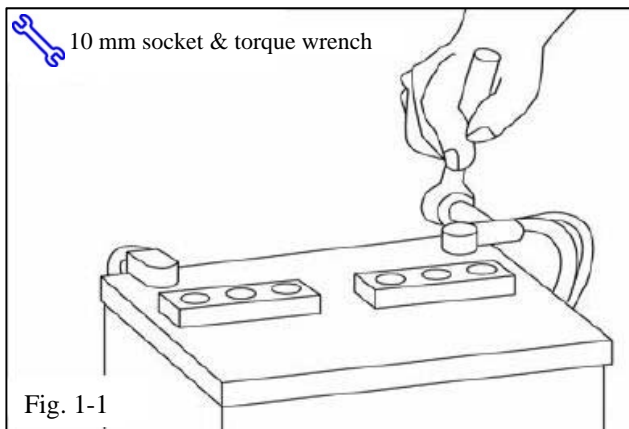
7. Install the Relay and Reconnect the Battery.

- (a) Locate the relay housing on the passenger side of the engine bay (Fig. 7-1).
- (b) Remove the relay housing cover.



(c) Install the supplied relay in location indicated by the arrow (Fig. 7-2).

(d) Replace the relay housing cover.



(e) Reconnect the battery negative cable (Fig. 7-3).



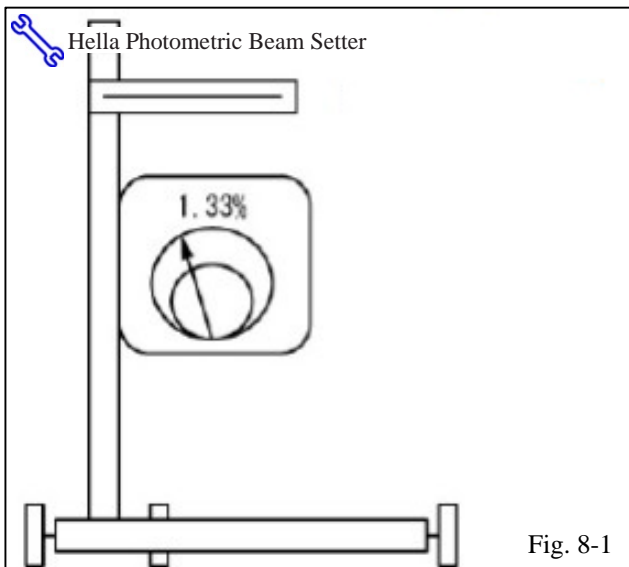
Torque: 5.4 N·m (48 in·lbs)



CAUTION: Do not touch the positive terminal with any tool.

8. Aim the Fog Lights (DIO ONLY).

(a) If available, use a Hella Photometric Beam Setter (or equivalent) to align the fog light beam (Fig. 8-1).



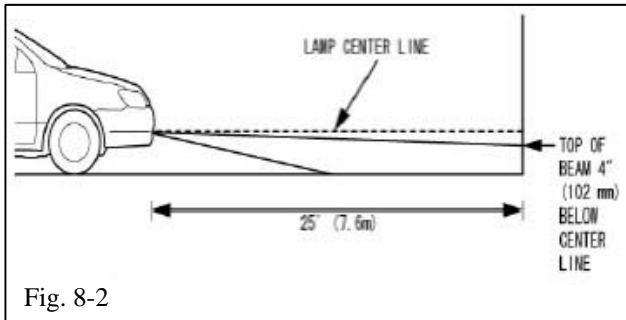


Fig. 8-2

(b) Alternate aiming method: Use a wall to aim the lights.

(1) Position the vehicle on a flat surface at a distance of 25 feet (7.6m) from the fog light to a wall (Fig. 8-2).

(2) Measure the distance from the center of the lamp to the ground and mark off the same height on the wall. This is the fog light centerline (Fig. 8-2).

(3) Turn the fog lights on and adjust them so that the top of the beam (high intensity portion) falls 4 inches (102 mm) below the mark on the wall (the fog light centerline) (Fig. 8-2).

(c) Use a Phillips screwdriver to turn the adjustment screw on the fog lights.

Checklist - these points **MUST** be checked to ensure a quality installation.

Check:	Look For:
<p><u>Accessory Function Checks</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> Install a short pin (if necessary) <input type="checkbox"/> Turn the headlights on <input type="checkbox"/> Check the fog light switch illumination <input type="checkbox"/> Turn the fog lights on <input type="checkbox"/> Switch the high beams on <input type="checkbox"/> Turn the headlights off <input type="checkbox"/> Check the fog light switch orientation 	<p>Headlights function as normal</p> <p>Switch lights up</p> <p>Fog lights turn on</p> <p>High beams on/Fog lights off</p> <p>Headlights and fog lights turn off</p> <p>The lamp symbol faces left</p>
<p><u>Vehicle Function Checks</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> Taillights/brake lights/turn signals <input type="checkbox"/> Reverse lights & emergency flashers <input type="checkbox"/> Mirror & dimmer controls <input type="checkbox"/> Traction control <input type="checkbox"/> Negative battery cable torque 	<p>All function properly</p> <p>Function properly</p> <p>Function properly</p> <p>Functions properly</p> <p>5.4 N·m (48 in·lbs)</p>
<p><u>Vehicle Appearance Check</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> After accessory installation and removal of protective cover(s), perform a visual inspection. 	<p>Ensure no damage (including scuffs and scratches) was caused during the installation process. (For PPO installations, refer to TMS Accessory Quality Shipping Standard.)</p>