

Part Number: PT413-42163

Kit Contents

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

Hardware Bag Contents

Item #	Quantity Req.	Description
1		
2		
3		

Additional Items Required For Installation

Item #	Quantity Req.	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, Deep
Socket Extension	8"
Diagonal Cutters	
Pliers	
Screwdriver	#2 Phillips
Screwdriver	Small Flat-Blade
Wrench	10mm
Special Chemicals	Notes
None	


Vehicle Service Parts (may be required for reassembly)


Item #	Quantity Req.	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.

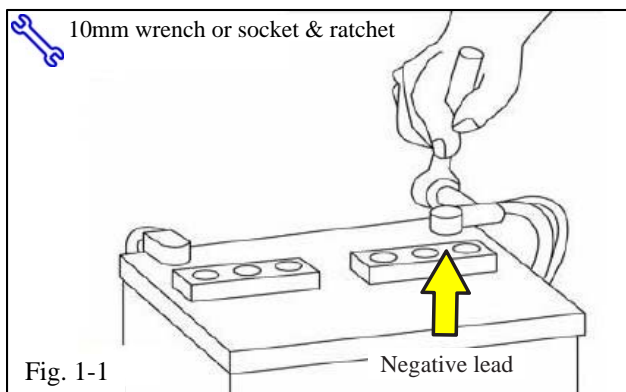
Care must be taken when installing this accessory to ensure damage does not occur to the vehicle. The installation of this accessory should follow approved guidelines to ensure a quality installation.

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 the 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.

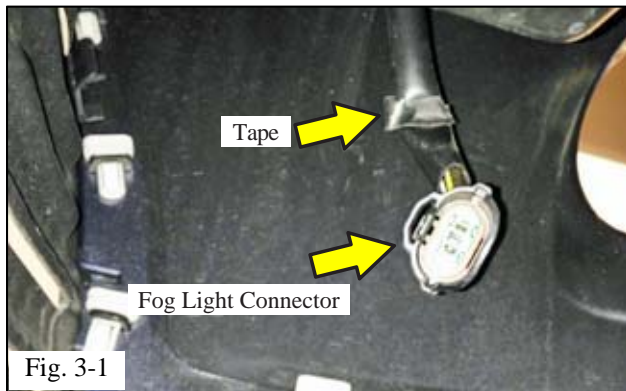
(d) Repeat Steps 2(b) and 2(c) for the other side of the vehicle.

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

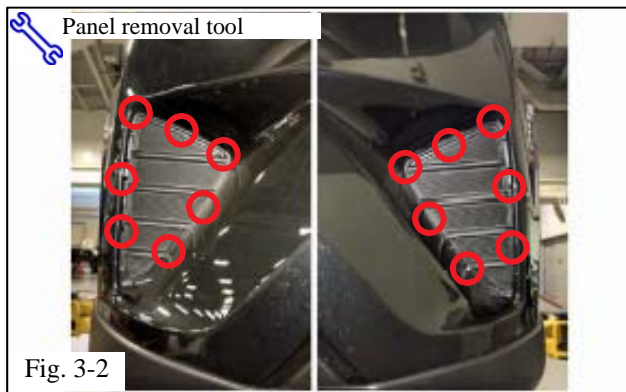
3. Remove the Fill Panels.

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

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



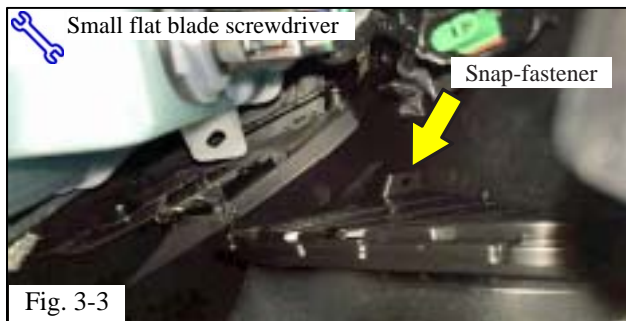
(c) Reach behind the underside/fender liner to access the fill panels (Fig. 3-2).



(d) Remove the snap-fastener (Fig. 3-3).

(e) Press the insert inwards (Fig. 3-2).

(f) Use a panel removal tool to reach inside to push open the tabs on the bumper as needed (Fig. 3-2).



(g) Remove the connector (LH side only).



(h) Remove the fastener indicated (Fig. 3-4, LH side only).

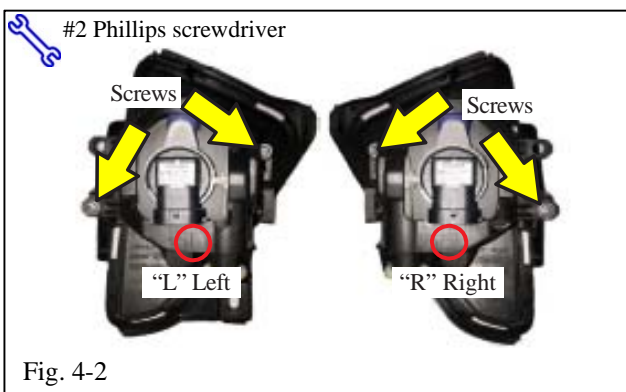
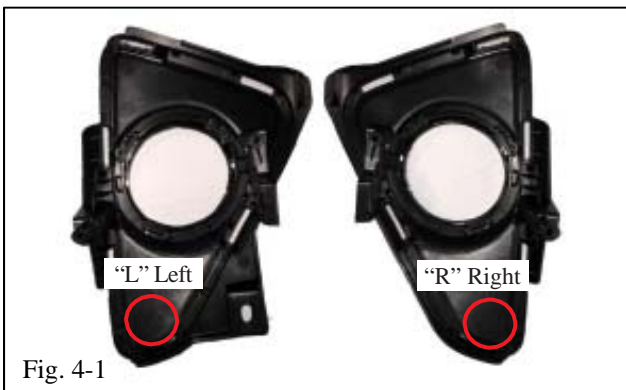
4. Install the Fog Lights.

(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 the 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 inboard tab into the bracket.

(2) Fasten the two other tabs with two (2) supplied self-tapping screws.

(3) Install the assemblies to the vehicle.

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

(4) Ensure all of the guides are fastened into the bumper with an audible snap noise.



(c) Insert the snap-fastener removed in Step 3(d) through the top hole in the cover. Install the fog light & bracket assembly in the left side and right side (Fig. 4-3).

NOTE: Passenger side shown.

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

CAUTION: Make sure the connector snaps in securely.



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

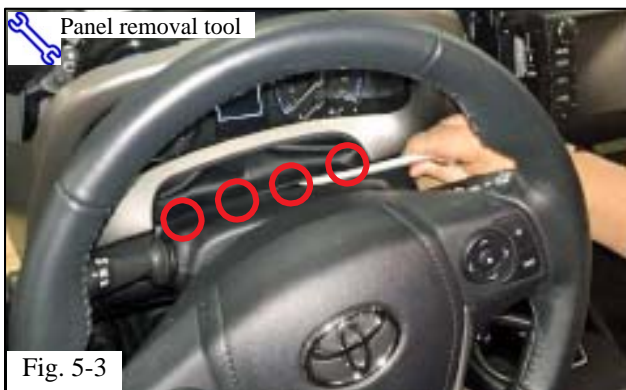
(f) Lower the vehicle.



5. Remove the Trim and Instrument Cluster.

⚠ The following steps are for FWD vehicles only. Skip to Step 5(i) for AWD vehicles.

- (a) Remove the upper trim panel (Fig. 5-1).
 - (1) Apply tape to the panel below the edge of the upper trim panel (inset, Fig. 5-1).
 - (2) Use a nylon panel removal tool to disengage the clip at the right end of the upper trim (inset, Fig. 5-1).
 - (3) Carefully pull the trim away from the instrument panel to disengage the remainder of the clips.
- (b) Remove the left air vent (Fig. 5-2).
 - (1) Place protective tape to the right side of the dashboard by the air vent in the areas indicated by arrows to protect the surfaces.
 - (2) Use a nylon panel removal tool to loosen the left air vent.
 - (3) Carefully pull the vent outward to disengage the yellow clips (inset, Fig. 5-2).
- (c) Disengage the upper steering wheel cover (Fig. 5-3).
 - (1) Adjust the steering wheel down and rearward as far as possible.
 - (2) Disengage the steering wheel clips indicated by circles.





(d) Lift the steering wheel cover (Fig. 5-4).



(e) Remove the instrument cluster bezel (Fig. 5-5).

- (1) Apply protective tape to the top portion of the steering wheel cover.
- (2) Disengage the bezel clips indicated by circles and remove the bezel.



(f) Remove the instrument cluster (Fig. 5-6).

- (1) Use a Phillip's screwdriver to remove the two (2) screws indicated by arrows.
- (2) Pull the instrument cluster partially outward to disengage the two (2) clips indicated by circles.
- (3) Disconnect the connectors and remove the instrument cluster (inset, Fig. 5-6).



(g) Locate the differential lock switch connector indicated by the arrow. Un-tape the connector from the harness behind the instrument panel (Fig. 5-7).



(h) Route the connector down through the opening in the instrument panel brace towards the connector block located below instrument panel (Fig. 5-8).

⚠ NOTE: Position the OE corrugated tubing as shown to protect the wire.

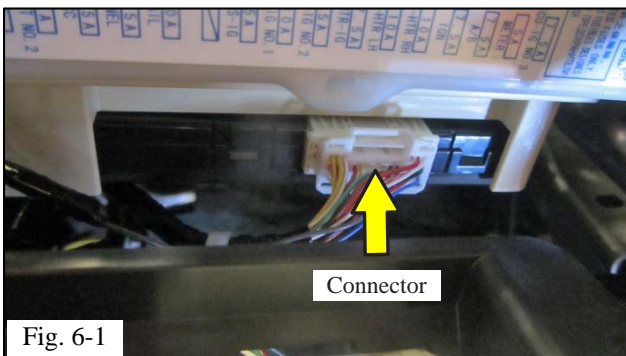


(i) Start at the bottom and pull up to remove the left side lower trim panel (Fig. 5-9).



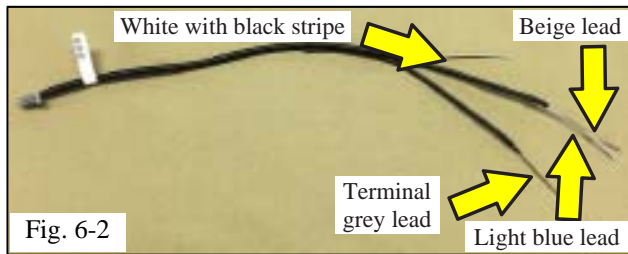
⚠ (j) AWD Only: Locate the differential lock connector behind the switch and unplug it (Fig. 5-10).

6. Place the Fog Light On Lead.

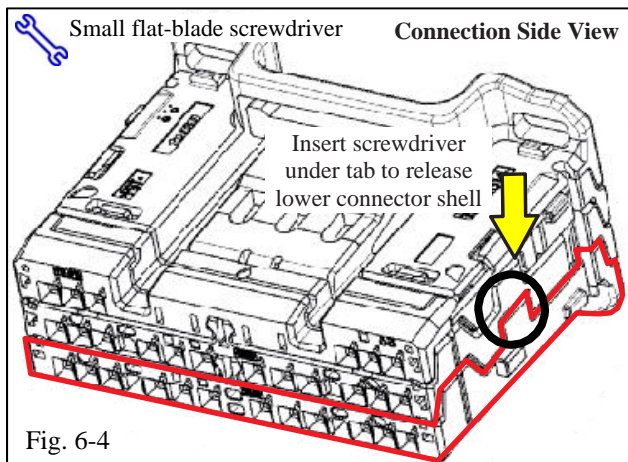
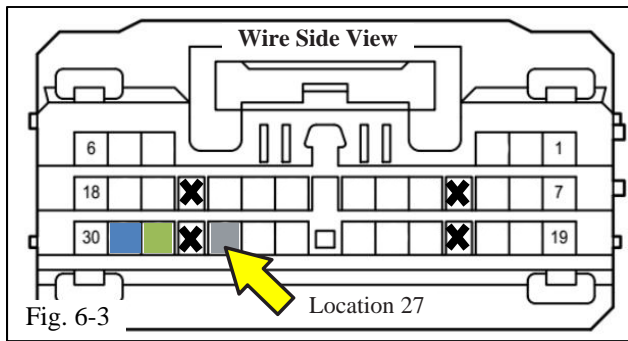


(a) Remove the connector from the bottom of the body ECU located behind and under the dashboard junction box (Fig. 6-1).

⚠ NOTE: Fig. 6-1 is looking up from the floor and the connector is directly above the OBD port.

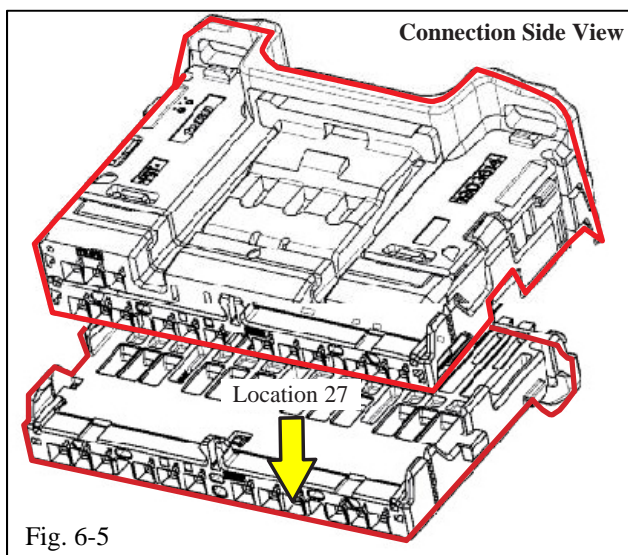


(b) The grey lead on the switch harness (Fig. 6-2) will be inserted into position 27 in the vehicle BODY ECU harness (FOG LIGHT ON) (Fig. 6-3).



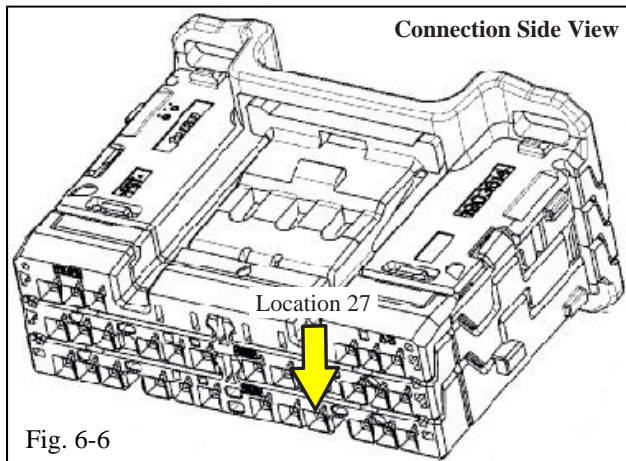
(c) Use a small flat-blade screwdriver to gently pry open the connector indicated by the arrow (Fig. 6-4).

CAUTION: Take care to avoid damage to the connector.

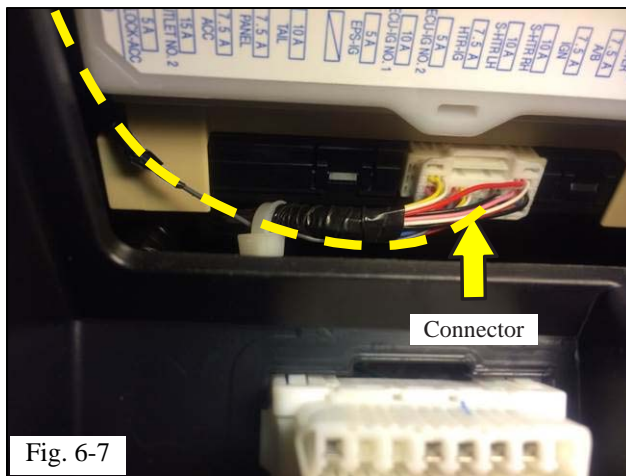


(d) Once the connector shell has been separated, insert the terminal of the grey wire into location 27 (Fig. 6-5).

(e) Verify the grey lead is correctly seated.

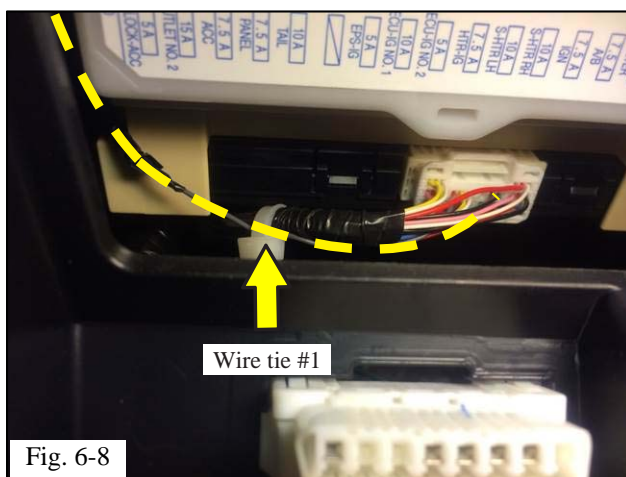


(f) Snap the lower connector shell onto the connector (Fig. 6-6).

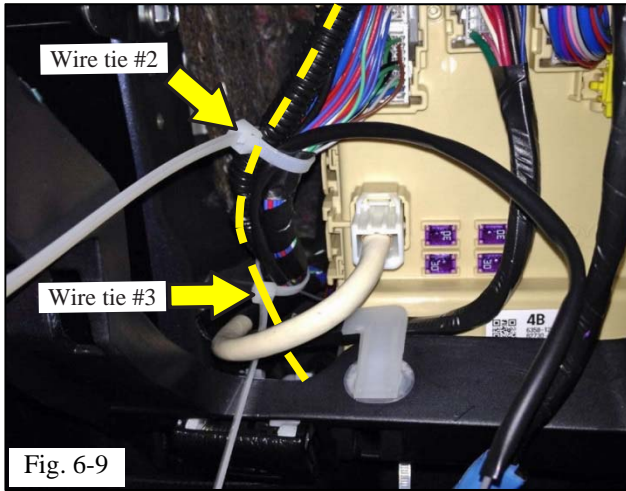


(g) Reconnect the connector (Fig. 6-7).

⚠ CAUTION: Be sure **NOT** to route the wire in front of the fuse box cover.



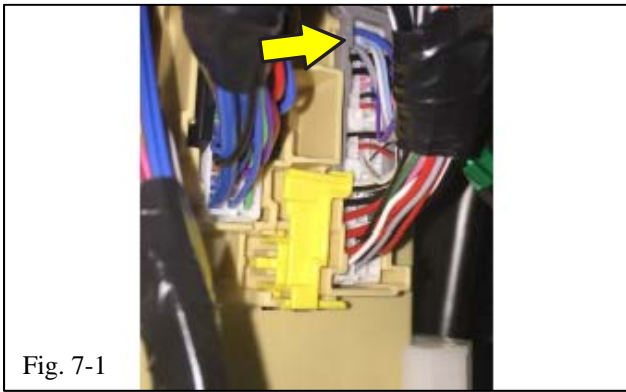
(h) Secure the fog light harness with one (1) wire tie (Fig. 6-8). Trim the excess wire tie.



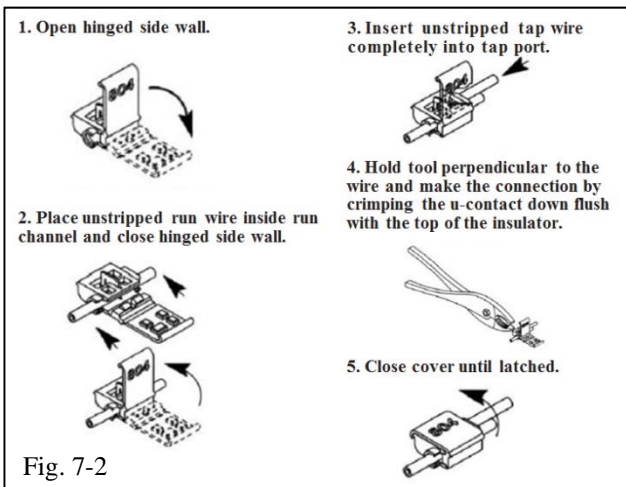
- (i) Route the harness up on the left side of the junction block. Secure it with two (2) wire ties (Fig. 6-9). Trim the excess wire tie.

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

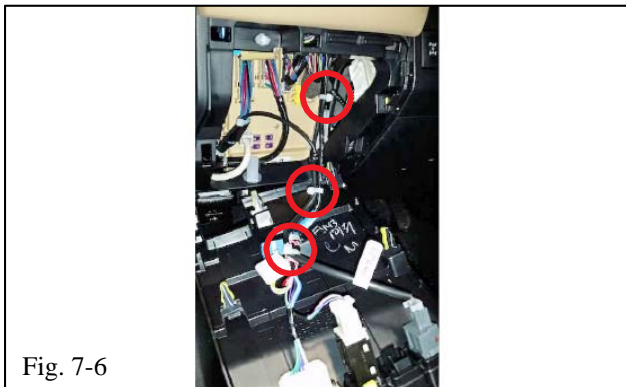
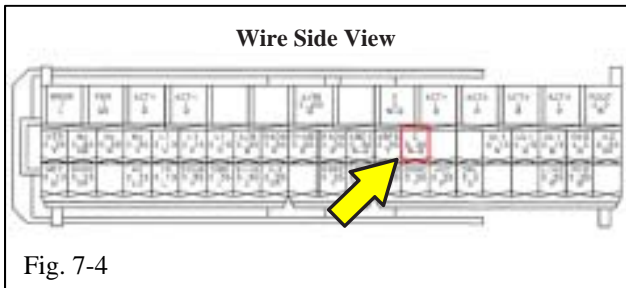
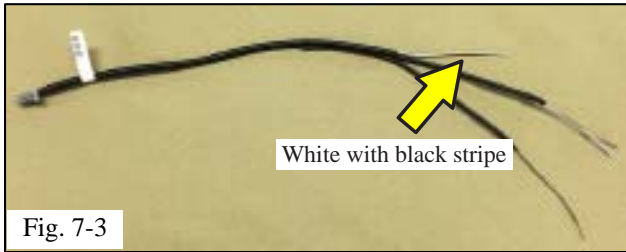
7. Connect the Ground Lead.



- (a) Unlock the gray connector lock by pulling outward (Fig. 7-1). Unplug the connector.



- (b) Review the tutorial on the correct use of Scotchlok™ connectors (Fig. 7-2).



(c) Locate the WHITE WITH BLACK STRIPE wire on the fog light switch connector (Fig. 7-3).

(d) Locate the WHITE WITH BLACK STRIPE wire in the vehicle connector (Fig. 7-4).

CAUTION: Verify the correct wire is used; other white and black wires are for airbag operation only.

(e) Remove/peel the black electrical tape as necessary to allow room to apply the Scotchlok™ in the following steps.

(f) Use a Scotchlok™ to connect the WHITE WITH BLACK STRIPE lead of the fog light switch connector to the WHITE WITH BLACK STRIPE lead of the upper ECU harness (Fig. 7-5).

CAUTION: Be sure to properly identify the white with black stripe wires.

(g) Wrap the Scotchlok™ with one (1) foam pad.

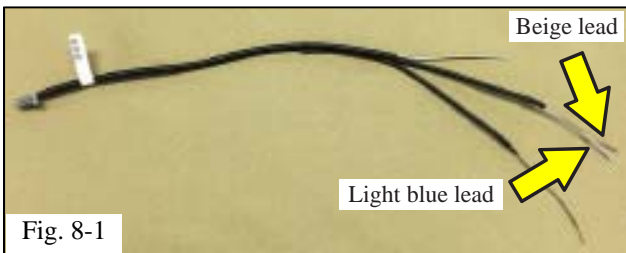
(h) Route the harness as shown (Fig. 7-6).

(1) Secure the harness with three (3) wire ties.

(2) Trim the excess wire tie.



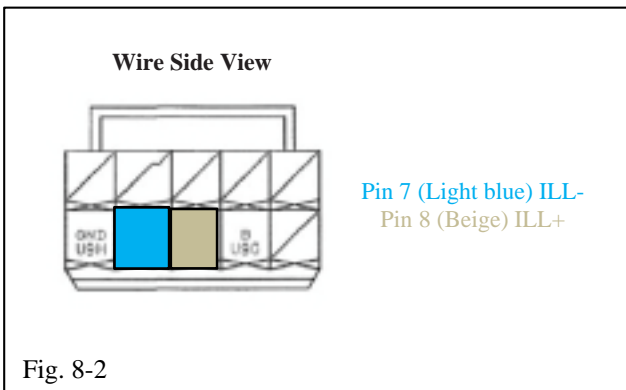
- (i) Add a foam pad (Fig. 7-7).
- (j) Reconnect the connector and close the grey lock (Fig. 7-7).



8. Connect the Illumination Lead.

- (a) Locate the LIGHT BLUE lead in the fog light switch harness (ILL -) (Fig. 8-1).
- (b) Locate the BEIGE lead in the fog light switch harness (ILL+) (Fig. 8-1).
- (c) Remove/peel the black electrical tape on the differential lock switch connector (Step 5(g) or 5(j)) as necessary to allow room to apply the Scotchloks™ in the following steps.

⚠ NOTE: Be sure to replace the tape after installing the Scotchloks™.



- (d) Use a Scotchlok™ to connect the LIGHT BLUE lead of the fog light switch harness to the LIGHT BLUE lead of the differential lock harness (Fig. 8-2 & Fig. 8-3).
- (e) Use a Scotchlok™ to connect the BEIGE lead of the fog light switch connector to the BEIGE lead of the differential lock harness (Fig. 8-2 & Fig. 8-3).

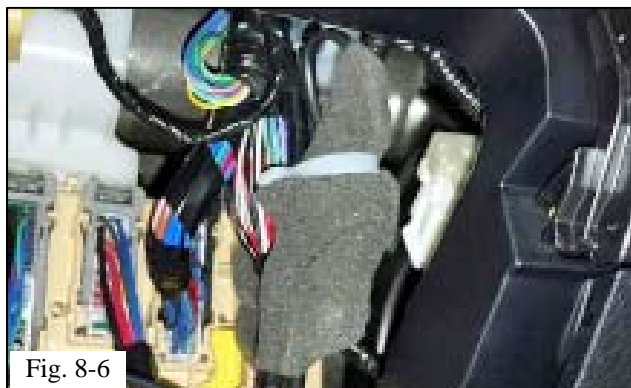




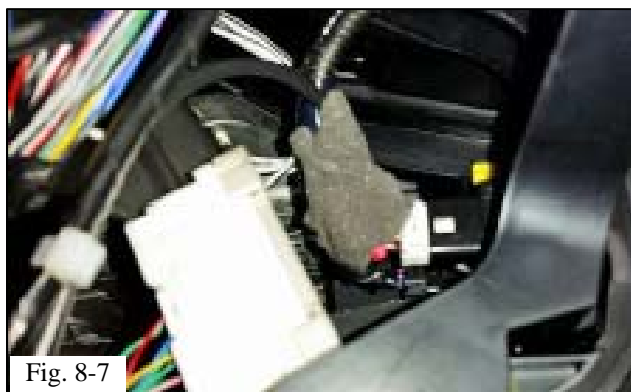
- (f) Wrap the connection with one (1) foam pad (Fig. 8-4).



- (g) **FWD Only:** Use one (1) wire tie to secure the differential lock switch connector to the OE harness (Fig. 8-5). Trim the excess wire tie.



- (h) **FWD Only:** Wrap the unused differential lock switch connector with one (1) foam pad (Fig. 8-6).



- (i) **AWD Only:** Reconnect the differential lock switch disconnected in Step 5(j) (Fig. 8-7).

⚠ NOTE: The wire tie around the foam pads is not used if the connector is plugged into the differential lock switch. The wire tie is used on FWD vehicles only.

9. Install the Fog Light Switch.

- (a) Remove the blank from the switch panel (Fig. 9-1).

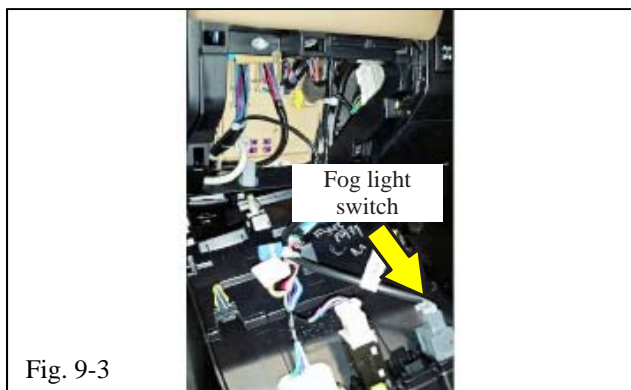


- (b) Install the fog light switch in the inboard knockout (Fig. 9-2).



⚠ NOTE: Make sure that the graphic is in the indicated orientation.

- (c) Connect the fog light switch connector to the fog light switch (Fig. 9-3).
- (d) Reconnect the rest of the connectors (Fig. 9-3).
- (e) Reattach the panel and all of the components.



10. Install the Relay and Reconnect the Battery.

(a) Locate the relay housing on the passenger side of the engine bay (Fig. 10-1).

(b) Remove the relay housing cover.

(c) Install the supplied relay in the location indicated by the arrow (Fig. 10-2).

(d) Replace the relay housing cover.

(e) Reconnect the battery negative cable (Fig. 10-3).

S Torque: 5.4 N·m (48 in·lbs)

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

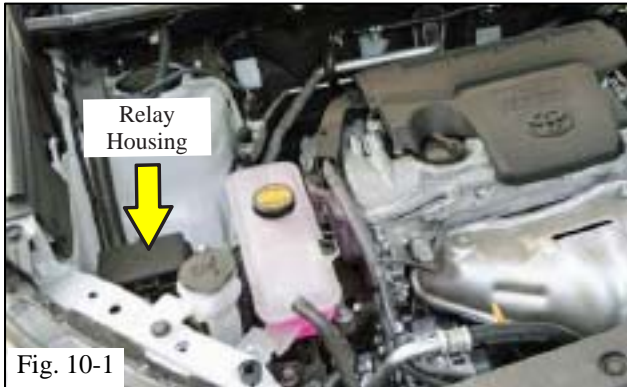


Fig. 10-1

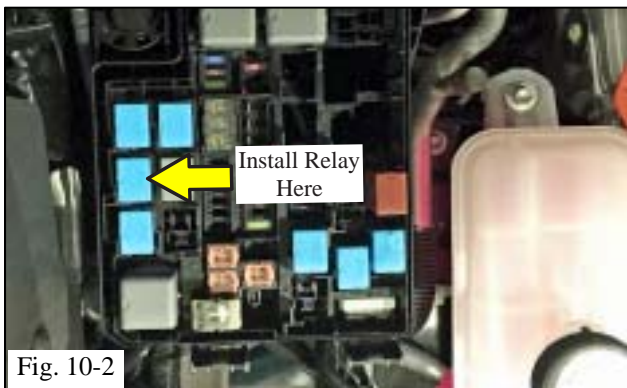


Fig. 10-2

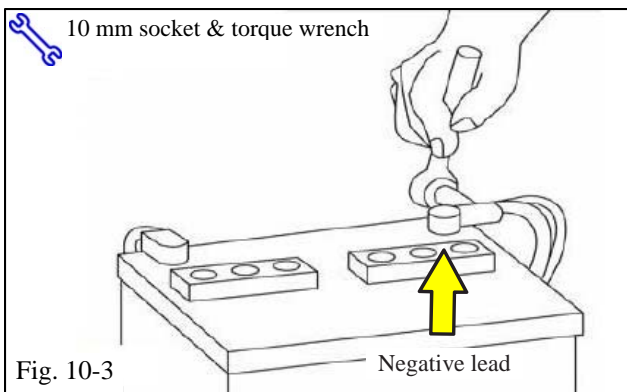
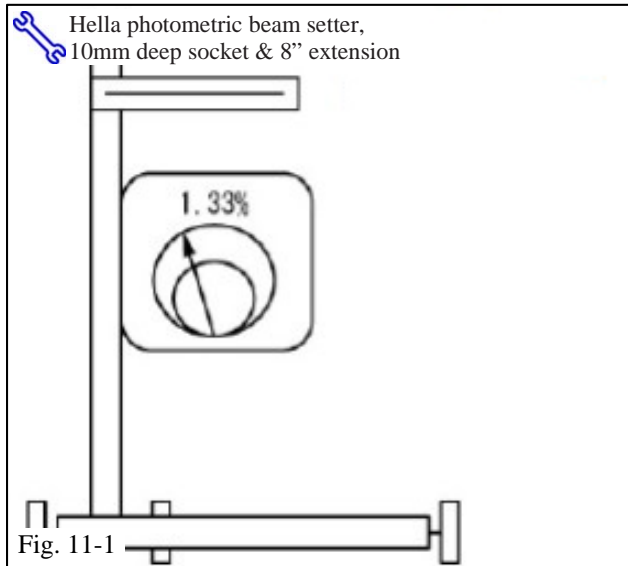


Fig. 10-3

11. Aim the Fog Lights (DIO ONLY).

(a) If available, use a Hella Photometric Beam Setter (or equivalent) to align the fog light beam (Fig. 11-1).



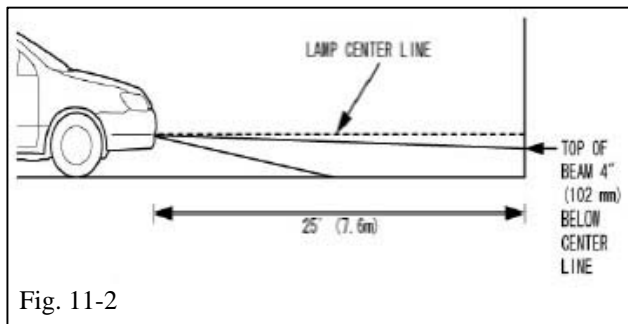
(b) Alternate aiming method: Use a wall to aim the lights.

(1) Position the vehicle on a flat surface at a distance of 25 feet (7.6m) from the fog light to a wall (Fig. 11-2).

(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. 11-2).

(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. 11-2).

(c) Use a 10mm deep socket and 8" extension to turn the adjustment screw on the fog lights.



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

<u>Check:</u>	<u>Look For:</u>
<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 	<ul style="list-style-type: none"> Headlights function as normal Switch lights up Fog lights turn on High beams on/Fog lights off Headlights and fog lights turn off The lamp symbol faces left
<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"/> Differential lock switch (if equipped) <input type="checkbox"/> Negative battery cable torque 	<ul style="list-style-type: none"> All function properly Function properly Function properly Functions properly Functions properly 5.4 N·m (48 in·lbs)
<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>