

Part Number: PT413-42191 (Black, Aluminized)
PT413-42190 (Fully Aluminized)

Kit Contents

Item #	Quantity Req'd.	Description
1	1	RH LED Fog Light
2	1	LH LED Fog Light
3		

Vehicle Service Parts (may be required for reassembly)

Item #	Quantity Req'd.	Description
1		
2		
3		

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

None

Recommended Tools

Personal & Vehicle Protection	Notes
Blankets	
Special Tools	Notes
Installation Tools	Notes
Screwdriver	#2 Phillips
Ratchet	
Socket Extension	
Socket	10mm
Small Nylon Removal Tool	i.e. Panel Pry Tool #1 Toyota SST#00002-06001-01
Torque Wrench	5.4 N-m (48 in-lbs)
Special Chemicals	Notes


General Applicability


MY18 and newer Highlander, Highlander HV models


Recommended Sequence of Application


Item #	Accessory
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.

 **REGULATORY MARK:** This mark indicates the component is related to regulatory compliance

*Mandatory

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.

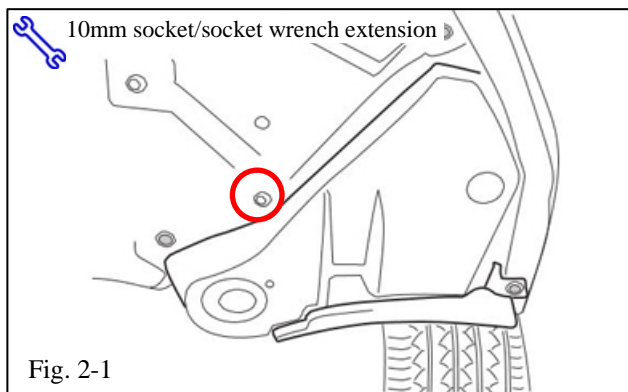
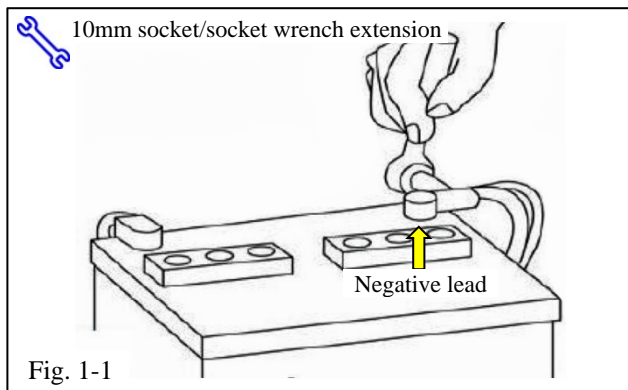
1. Prepare the vehicle.

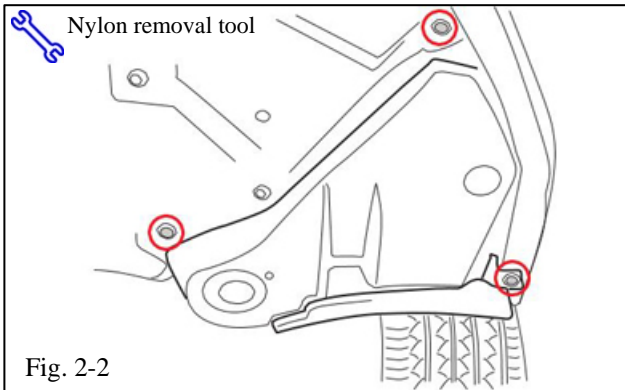
-  (a) Protect the fender before starting.
-  (b) The engine components and coolant may be hot.
- (c) Check the kit for contents and any damage.
- (d) Remove the battery cable from the negative terminal (Fig. 1-1)

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

2. Remove the Body Panel.

- (a) Raise the vehicle on a lift.
- (b) Remove the indicated bolt (Fig. 2-1).



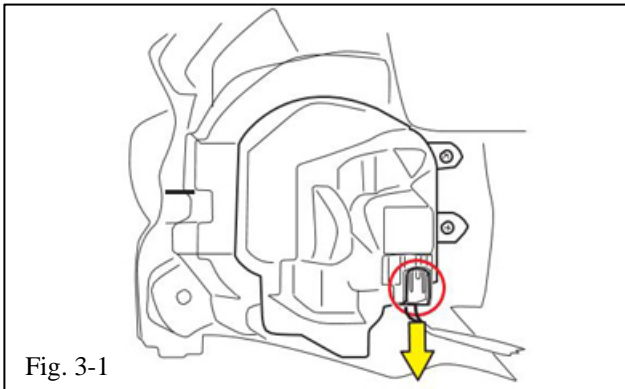


(c) Remove the fasteners (Fig. 2-2).

NOTE: Fasteners will be reused.

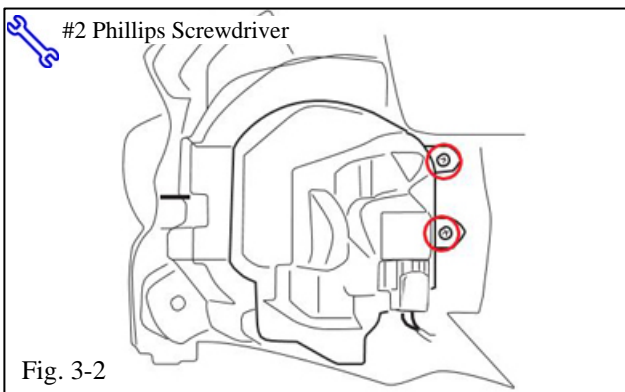
(d) Remove the panel and place it in a safe location.

3. Remove the Fog Light.



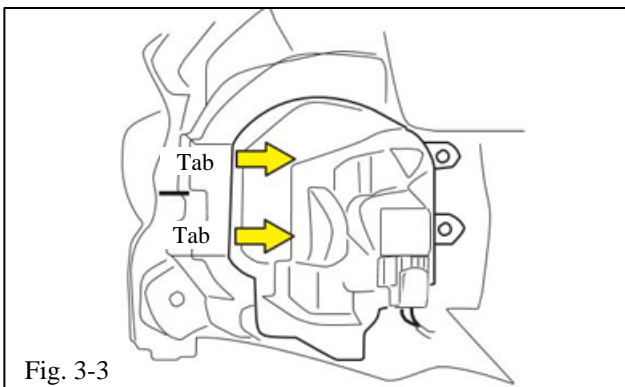
(a) Disconnect fog light harness indicated by the circle (Fig. 3-1).

(1) Press the tab and pull the connector in the direction indicated by the arrow.



(b) Remove the Phillips screws indicated by the circles (Fig. 3-2).

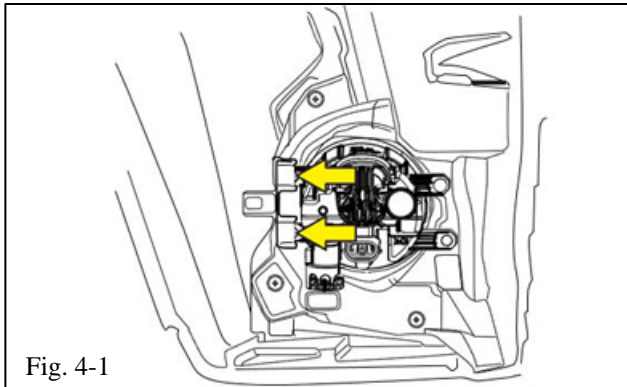
NOTE: The screws will be reused to install the LED fog light.



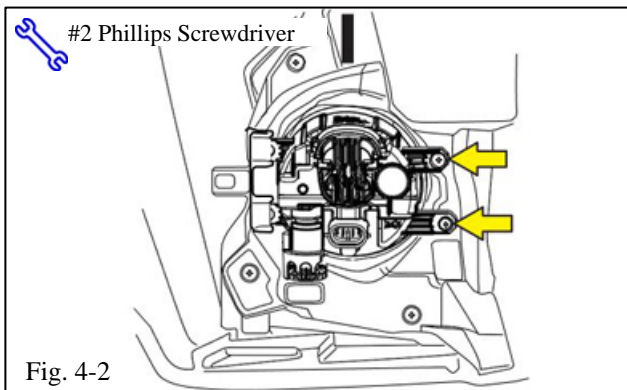
(c) Slide original equipment fog light off of the guides in the direction indicated (Fig 3-3).

4. Install the LED Fog Lights.

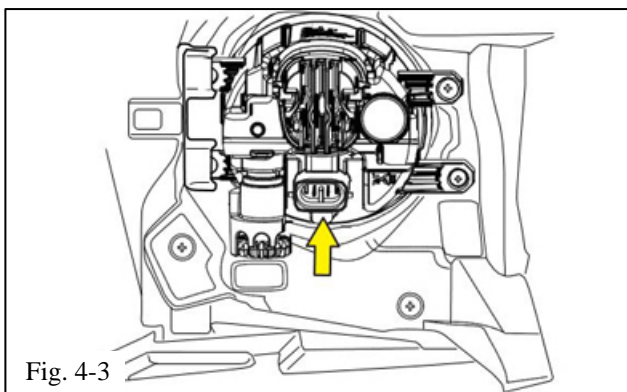
- (a) Insert the LED fog light in to the guides (Fig. 4-1).



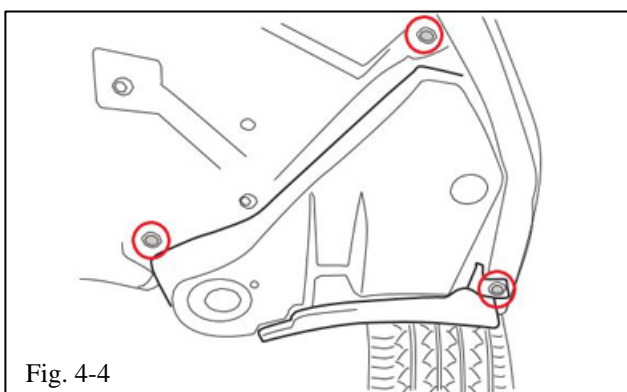
- (b) Secure with screws removed and saved from Step 3b (Fig 4-2).

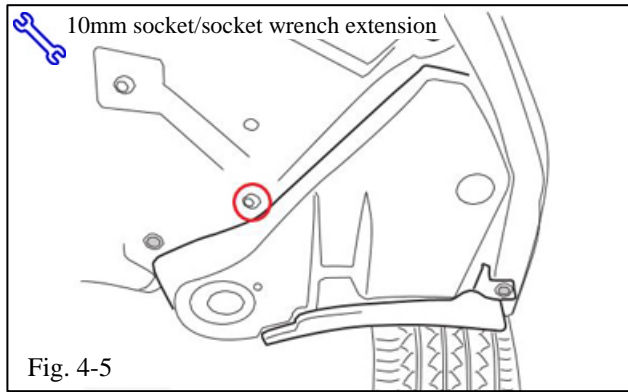


- (c) Reconnect the harness disconnected in Step 3a (Fig. 4-3).



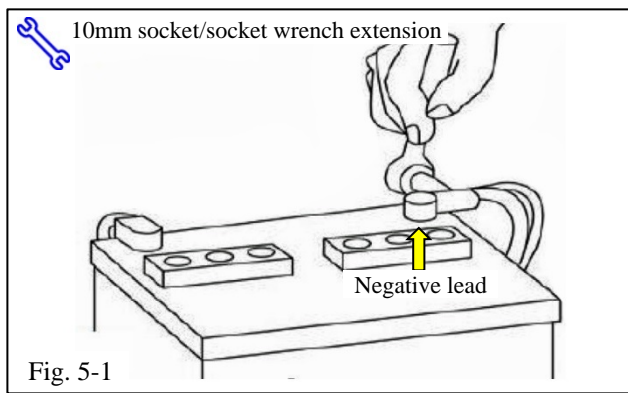
- (d) Reinstall the body panel removed in step 2 by reinstalling the fasteners in the locations indicated (Fig. 4-4).





- (e) Reinstall the bolt in the location indicated (Fig. 4-5).
- (f) Repeat the procedure on the opposite side.

5. Reconnect the Battery.

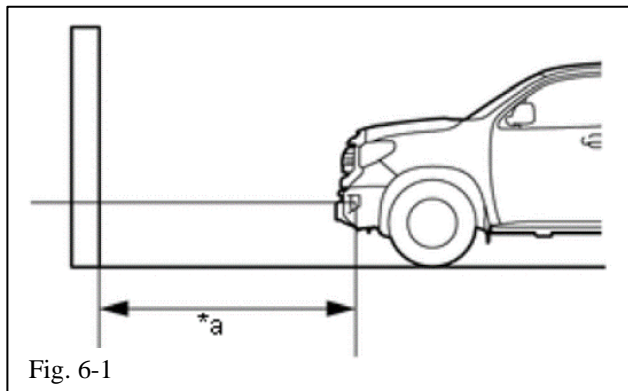


- (a) Reconnect the negative (-) battery cable (Fig. 5-1).

S Torque: 5.4 N•m (48 in•lbs)

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

6. Adjust the LED Fog Light.



- (a) Prepare the vehicle for fog light aiming adjustment (Fig. 6-1).

! NOTE: *a: Distance of 7.62 m (25.0 ft.) between the vehicle (fog light bulb center) and wall. If unavailable, secure exactly 3m (9.84 ft.) for the adjustment (the target zone will change with the distance, so follow the instructions in the illustration (Fig. 6-2)).

- (1) Make sure that there is no damage to or deformation of the body around the fog lights.
- (2) Fill the fuel tank.
- (3) Make sure that the oil is filled to the specified level.

- (4) Make sure that the coolant is filled to the specified level.
 - (5) Inflate the tires to the appropriate pressures.
 - (6) Unload the vehicle, ensuring that the spare tire, tools and jack are in their original positions.
 - (7) Have a person of average weight (68 kg, 150 lb) sit in the driver seat.
- (b) Prepare for fog light aiming.
- (1) Place the vehicle in a location that is dark enough to clearly observe the cutoff line. The cutoff line; below which light from the fog lights can be observed and above which it cannot.

- (2) Place the vehicle at a 90° angle to the wall.

- (3) Create a 7.62 m (25.0 ft.) distance between the vehicle (fog light bulb center) and the wall (Fig. 6.2).

- (4) Make sure that the vehicle is on a level surface.

- (5) Bounce the vehicle up and down to settle the suspension.

- (c) Prepare a piece of thick white paper approximately 2.0 m (6.56 ft.) (height) x 4.0 m (13.1 ft.) (width) screen.

- (d) Draw a vertical line down the center of the screen (V line).

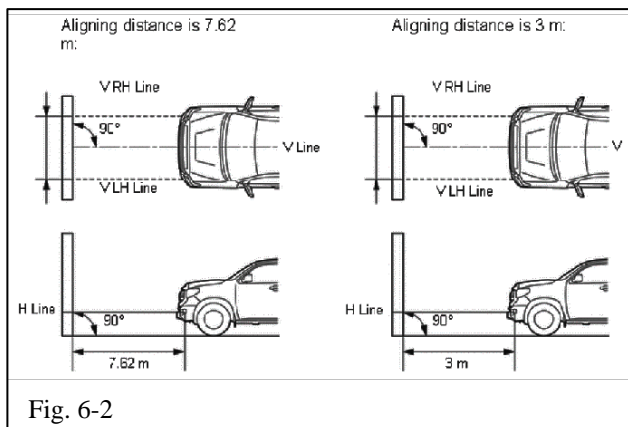
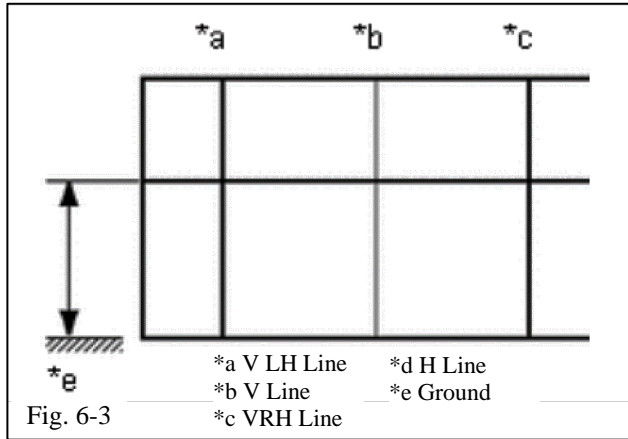


Fig. 6-2

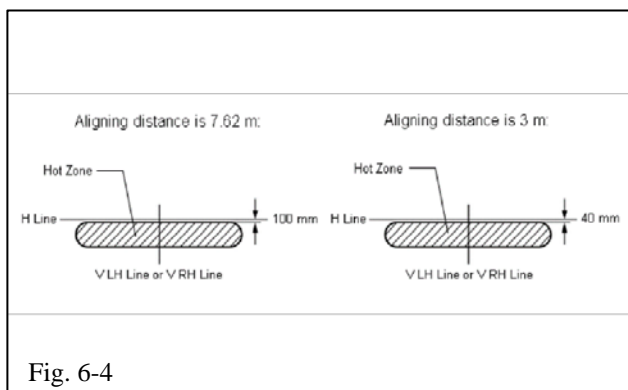


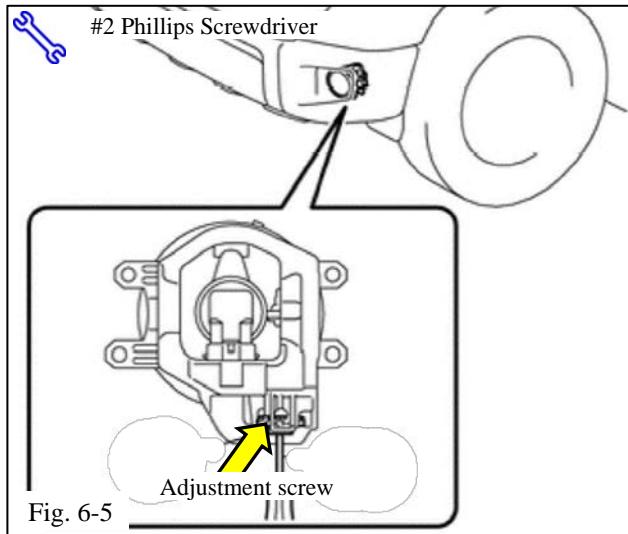
- (e) Set the screen as shown (Fig. 6-2).
- (f) Draw base lines (H line, V LH, V RH lines on the screen as shown (Fig. 6-3).
 - (1) H Line (Fog light height): Draw a horizontal line across the screen so that it passes through the center marks. The H line should be at the same height as the fog light bulb center marks of the fog lights.
 - (2) V LH Line, V RH Line (Center mark position of left-hand (LH) and right-hand (RH) fog lights): Draw two vertical lines so that they intersect the H line at each center mark.

- (g) Inspect fog light aiming.
 - (1) Cover the fog light or disconnect the connector of the fog light on the opposite side to prevent light from light that is not being inspected from affecting the fog light aiming inspection.

⚠ NOTE: Do not keep the fog light covered for more than 3 minutes. The fog light lens is made of synthetic resin may melt or be damaged due to excessive heat.

- (2) Start the engine.
- (3) Turn on the fog light and check if the cutoff line falls within the specified area (Fig. 6-4).






(h) Adjust fog light aiming.

- (1) Adjust the aim vertically (6-5).
- (2) Adjust the aim of each fog light to the specified range by turning the aiming screw with a screwdriver.

⚠ NOTE: final turn of the aiming screw should be made in the clockwise direction. If the screw is tightened tight, loosen it and then retighten it so that the final turn of the screw is in the clockwise direction.

- (3) If it is not possible to correctly adjust fog light aim, check the bulb, fog light unit and fog light unit reflector installation.

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 	<p><u>Look For:</u></p> <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><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.</p> <p>(For PPO installations, refer to TMS Accessory Quality Shipping Standard.)</p>