

TOYOTA

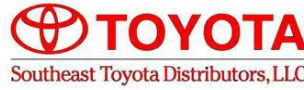
RAV4

2012 -

FOG LIGHT

Part Number: 00016-12013

Accessory Code: LF10



Conflicts

-

Kit Contents

Item #	Quantity Req'd.	Description
1	2	Fog Lamps
2	2	Fog Lamp's bezels
3	1	Switch Assembly
4	1	Fog light operation guide

Hardware Bag Contents

Item #	Quantity Req'd.	Description
1	1	Wire harness
2	1	Switch harness
3	2	SPST Relays
4	15	Wire ties
5	2	Phillip head screws
6	2	3M T-Taps

Additional Items Required For Installation

Item #	Quantity Req'd.	Description

Recommended Tools

Safety Tools	
Safety Glasses	
Electrical Tape	
Installation Tools	
10mm Wrench	
Phillips Screw Driver	
Pliers	
Side Cutters	
Special Chemicals	
3M Silicon Sealant	

Color Applicability/Trim Level

Service Part Part Number	Fog Light Housing LH	Fog Light Housing RH	Switch	Wire Harness	Relay	Bezel LH	Bezel RH
00016-32105-02	X						
00016-32105-01		X					
00016-32230-02			X				
00016-32230-01				X			
00016-32105-04					X		
00016-12013-02						X	
00016-12013-01							X

General Applicability

Models:

Recommended Sequence of Application

Item #	Accessory
1	
2	
3	

Mandatory

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

CRITICAL PROCESS: Proceed with caution to ensure a quality installation. These points will be audited on a completed vehicle installation

TOOLS & EQUIPMENT: This calls out the specific tools and equipment required for this process

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

SPECIAL NOTE:
 After TMS and Safety mandated preparatory steps have been taken, the installation sequence is the suggested method for completing the accessory installation. In some instances the suggested sequence is written for one associate to install and in others the sequence is given as part of a team accessory installation. Unless otherwise stated in the document, the associates may perform the installation steps in any order to make the installation as efficient as possible while maintaining consistent quality. Also some items listed to be removed may not need to be removed if caution is taken to not damage vehicle.

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 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)
- Vehicle Disassembly / Reassembly (panel removal, part storage, etc)

Preparation



Remove battery from vehicle

Installation

1. Secure the relay and fuse to the negative battery harness next to the battery. Secure top and bottom with wire ties (picture 1).



Picture 1

2. Attach the ring terminal with 2 black wires to the 10mm bolt at factory ground next to battery (picture 2)



Picture 2

3. Connect the ring terminal from the relay (12v red wire) routing it through positive red terminal cover (picture 3)



Picture 3

4. Locate the rubber grommet that seals the heater hoses on the firewall. Cut ¼" slit in outer edge of the grommet. Secure excess

wires with wire ties to fuse block wire harness. Push the red and gray/white wires through firewall. Note: Extra caution should be taken not to damage the bullet connectors. Seal with 3M Silicone sealant (picture 4)



Picture 4

5. Route wire to the left side of the vehicle and secure with wire ties (pictures 5A, 5B and 5C)



Picture 5A



Picture 5B



Picture 5C

Vehicle Disassembly

6. Remove the driver's side lower dash panel: remove two lower screws (picture 6)



Picture 6

7. From underneath the left panel, push out the switch knockout. Mount switch into switch knockout on left side of dash (see picture 7 and 7A)



Picture 7



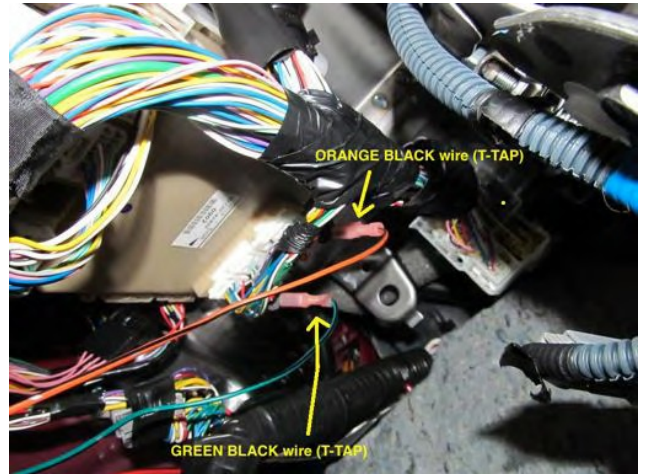
Picture 7A

- 8. From inside the cabin, locate the wires that were pushed through in step 4 (picture 8)

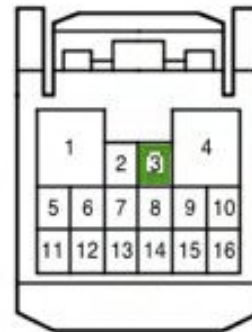


Picture 8

- 9. T-tap green/black wire from fog light harness to connector E16 pin 3, light green. Connector E16 is located behind the ECU, left to the steering wheel (pictures 9 & 10)



Picture 9

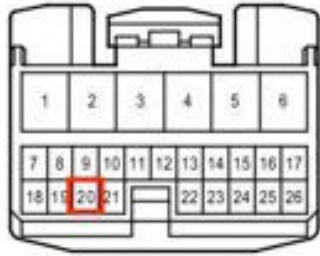


Picture 10

- 10. T-tap orange/black wire from fog light harness to connector E15 pin 20, brown wire (pictures 11 and 12). Connector E15 is located behind the vehicle ECU, left to the steering wheel (pictures 9, 11 and 12)



Picture 11



Picture 12

- 11. Secure fog light relay and excess wires to OE harness (see picture 13)

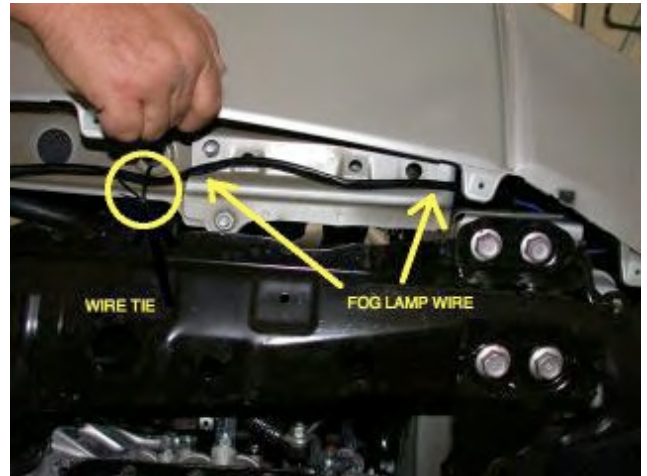


Picture 13.

- 12. Connect switch harness to switch
- 13. Reinstall dash panels and connectors

ENGINE COMPARTMENT

- 14. Remove lower splash panels
- 15. On the left side of the vehicle, drop wire harness to reach out the left fog lamp compartment. Route fog lamp wire under the car to the right side of the vehicle (picture 14 and 15)



Picture 14



Picture 15

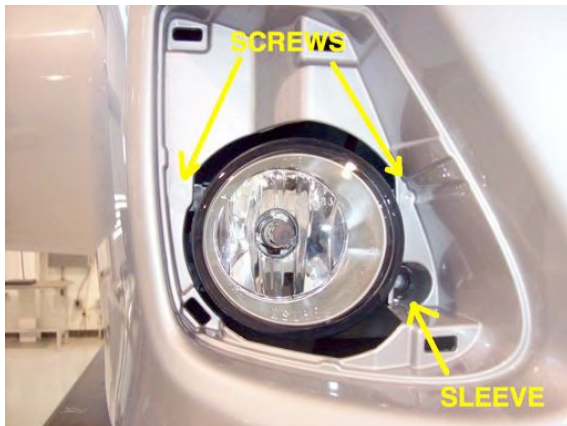
- 16. Remove fog light cover plates on both sides of vehicle (picture 16)



Picture 16

- 17. Insert one side of the fog light into the plastic sleeve and secure with 2 supplied

Phillip screws (picture 17). Repeat this step for other side of vehicle.



Picture 17



NOTE: Use only hand tools to adjust the fog light aiming screw. DO NOT use automatic tools, as they will damage the fog light

18. Plug in left side fog light into harness plug and secure with wire tie to factory harness
19. Plug in right fog light into harness plug and secure with wire tie to factory harness
20. Snap on both fog light bezels (picture 18)
21. Reinstall splash panels



Picture 18

22. Reinstall and reconnect battery. Torque terminals to 36 in-lbs.

Checklist – these points MUST be checked to ensure quality installation**Check System for Operation**

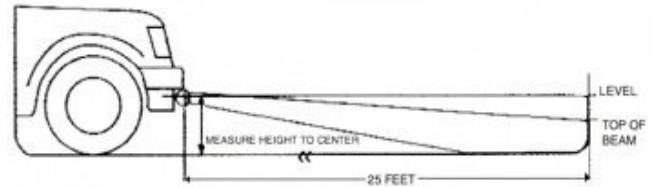
1. Turn on headlamp low beams, then press fog light switch to “ON” position. Fog lights should be working. Fog lights will only work when the low beam headlamps are “ON”. Fog lights will NOT work when the high beam headlamps are “ON”

Fog Light Aiming

Traditional fog lights are usually mounted in the front bumper about 10-24 inches from the ground. There are two important issues to address when installing fog lights: the first is to minimize the amount of return glare into the drivers eyes, and the other is to minimize the glare into oncoming eyes. Both of these issues must be accomplished while putting as much light as possible on the road.

These fog weather light aiming instructions are suggestions taken from common practice and the S.A.E. standard J583. Some modifications to these instructions may be necessary to minimize glare.

Visual aim is made with the top of the beam 4 inches below the lamp center at 25 feet with the lamp facing straight forward (see picture 19)



Picture 19

Check

Accessory Functions Checks

- Fog Lights function.....

- All Panels snapped into place.....
- Fog Lights.....
- Battery Terminal.....

Vehicle Function checks

- Check functions all switch functions

Look For:

Confirm fog lights turn off if headlights are turned off with remote or 30 seconds delay with headlight switch left in "ON" position.

Loose panels and switches

Visually confirm lights are straight forward

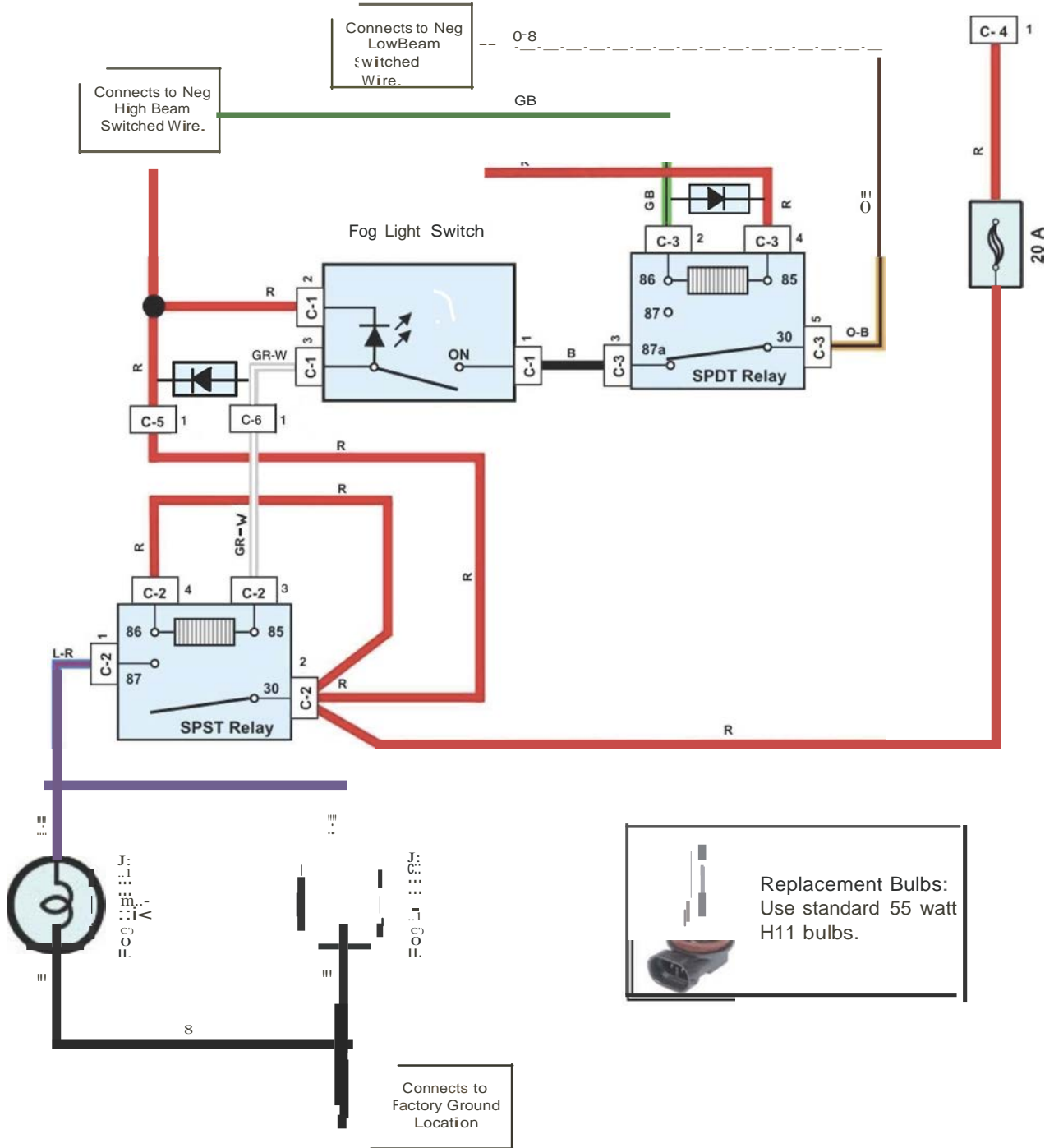
Re-torque battery terminals to 36 in-lb

Place fog light operation guide inside glove box.

VEHICLE FUNCTION CHECK

AFTER ALL PANELS, COVERS AND COMPONENTS THAT WERE REMOVED HAVE BEEN REINSTALLED, TEST THOROUGHLY ALL MECHANICAL AND ELECTRICAL COMPONENTS DISCONNECTED AND/OR REMOVED FROM THE VEHICLE DURING THE INSTALLATION OF THIS ACCESSORY

Block Diagram Fog Lights RAV4 2010 00016-12013



Checking the Harness Pinouts:

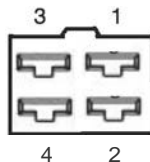
Connector C-1 -



**Unplug connector from switch prior to testing pin outs.

Pin	Wire Color	Test Reference	Proper Operation
1	Black	Pin 1 to Ground	Approximately 0 VDC Headlights OFF or HIGH Position. Approximately +11 VDC Headlights ON LOW Position.
2	Red	Pin 2 to Ground	Always +12 VDC
3	Gray /White	Pin 3 to Ground	Always +12 VDC

Connector C-2 -



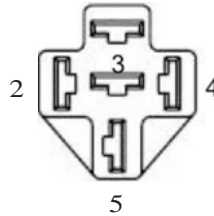
FEMALE TERMINALS
TERMINAL VIEW

**Leave Relay connected while testing pin outs.

Pin	Wire Color	Test Reference	Proper Operation
1	Blue / Red	Pin 1 to Ground	0 VDC when Fog Light switch is OFF. 0 VDC when Fog Light switch is ON AND high beam headlights are On. + 12 VDC when Fog Light switch is ON AND low beam headlights are On.
2	Red	Pin 2 to Ground	Always +12 VDC
3	Gray /White	Pin 3 to Ground	Approximately 0 VDC with Fog Light Switch ON and Low Beam Headlights ON. +12 VDC All Other Times.
4	Red	Pin to Ground	Always+ 12 VDC.

Checking the Harness Pinouts:

Connector C-3:



FEMALE TERMINALS
TERMINAL VIEW

** Leave Relay connected while testing pin outs.

Pin	Wire Color	Test Reference	Proper Operation
2	Green / Black	Pin 2 to Ground	Approximately 0 VDC with High Beams ON. Approximately 11 VDC all other times.
3	Black	Pin 3 to Ground	Approximately 11 VDC with low beam headlight switch off. 12 VDC with high beam headlight switch on. Approximately 0 VDC with low beam headlight switch on.
4	Red	Pin 4 to Ground	Always +12 VDC.
5	Orange / Black	Pin 5 to Ground	Approximately 11 VDC with headlights switch off. Approximately 0 VDC with low beam headlight switch on.

Connector C-4:



Pin	Wire Color	Test Reference	Proper Operation
1	Red	Pin 1 to Ground	Always+ 12 VDC.

Checking the Harness Pinouts:

Connector C-5:

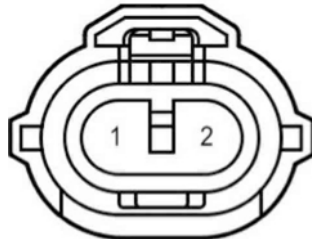


**Leave connectors connected while testing pin outs.

Pin	Wire Color	Test Reference	Proper Operation
1	Red	Pin 1 to Ground	Always+ 12 VDC.
2	Gray /White	Pin 2 to Ground	Approximately 0 VDC with Fog Light Switch ON and Low Beam Headlights ON. +12 VDC All Other Times.

Connectors A-1, A-2:

Fog Lamp Connectors at Bulb



FEMALE TERMINALS
TERMINAL VIEW
HARNES SIDE

Pin	Wire Color	Test Reference	Proper Operation
1	Blue / Red	Pin 1 to Ground	12 VDC while low beam headlights are on <i>AND</i> the Fog Light switch is ON. 0 VDC while high beam headlights are on <i>AND</i> the Fog Light switch is ON. 0 VDC while headlights are off <i>AND</i> the Fog Light switch is ON. 0 VDC while Fog Light switch is OFF.
2	Black	Pin 2 to Ground	Always Continuity