INSTALLATION INSTRUCTIONS

2010-2024 TOYOTA 4RUNNER E-POWER BOARD STEPS
PART # TR-4600

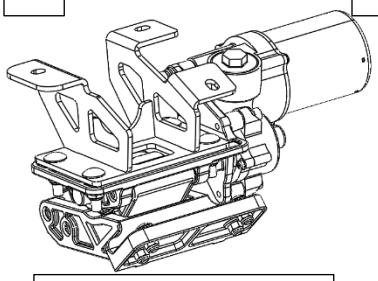
Mechanical PARTS LIST:

Qty	Item Description	Qty	Item Description
2	Running boards (63in)	8	8-1.25x30mm Hex Bolts
1	Driver/Left Front Motor Linkage Assembly	4	8mm Hex Nuts
1	Passenger/Right Front Motor Linkage Assembly	4	8-1.25x40mm Bolt Plates
2	Rear Linkage Assemblies	12	8x24x2mm Large Flat Washers
1	Driver Front Steel Mounting Bracket	12	8mm Lock Washers
1	Passenger Front Steel Mounting Bracket	16	6-1.00mm x 20mm Carriage Bolts
2	Rear Steel Mounting Brackets	16	6x16x1.6mm Flat Washers
16	8-1.25x30mm Carriage Bolts	16	6mm Nylon Lock Nuts
16	8mm Flange Nylon Lock Nuts	4	Plastic Retainers

Electronic Materials Package PARTS LIST:

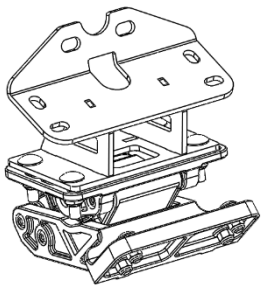
Qty	Item Description	Qty	Item Description
1	Main Harness	1	ECU (2.0)
5	Double Sided Adhesive Tapes	4	LED lights
2	Wire Taps	15	Zip Ties
1	LED Y-Harness (280mm)	1	LED Y-Harness (1200mm)

A



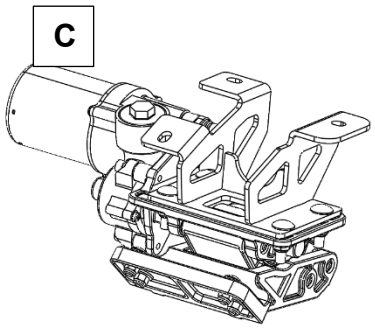
Driver Front Bracket Assembly

B



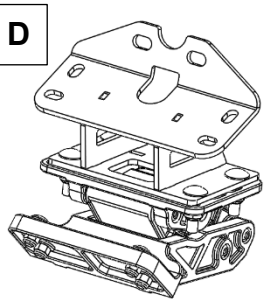
Driver Rear Bracket Assembly

C



Passenger Front Bracket Assembly

D

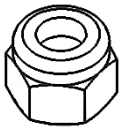


Passenger Rear Bracket Assembly

E

M6 Carriage Bolt

F



M6 Nylon Lock Nut

G

Flat Washer

H

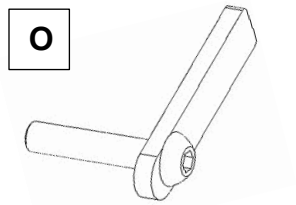
M8 Hex Bolt

I

Lock Washer

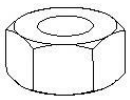
INSTALLATION INSTRUCTIONS

O



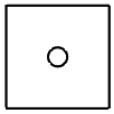
M8 Bolt Plate

P



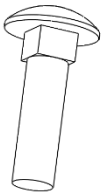
M8 Hex Nut

Q



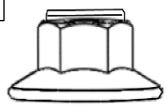
Plastic Insulator

R



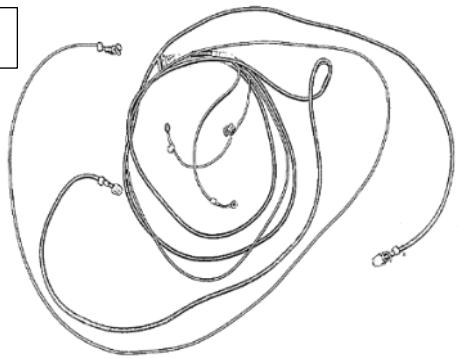
M8 Carriage Bolt

S



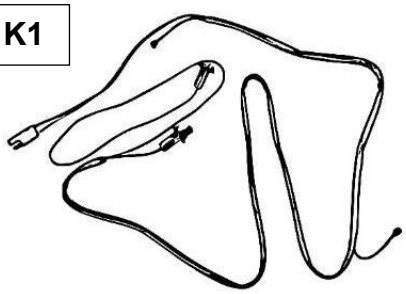
M8 Flanged Nylon Lock Nut

J



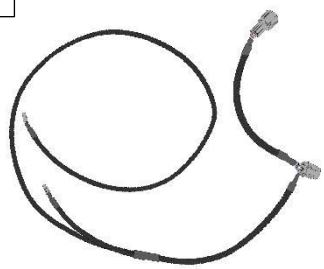
Main Harness

K1



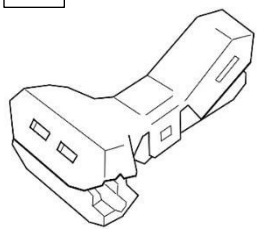
LED Y-Harness (1200mm)

K2



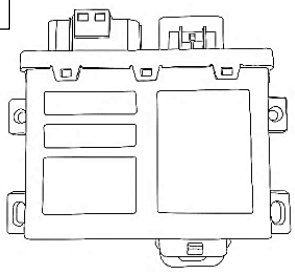
LED Y-Harness (280mm)

L



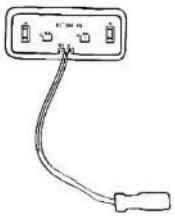
Wire Taps

M



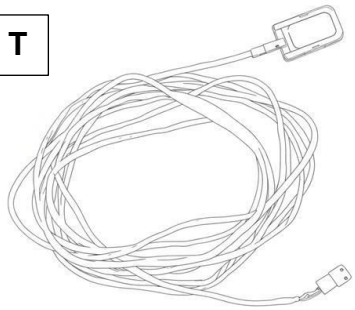
ECU

N



LED Lights

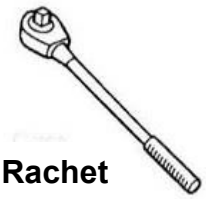
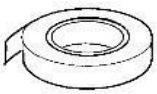
T



Toggle Switch

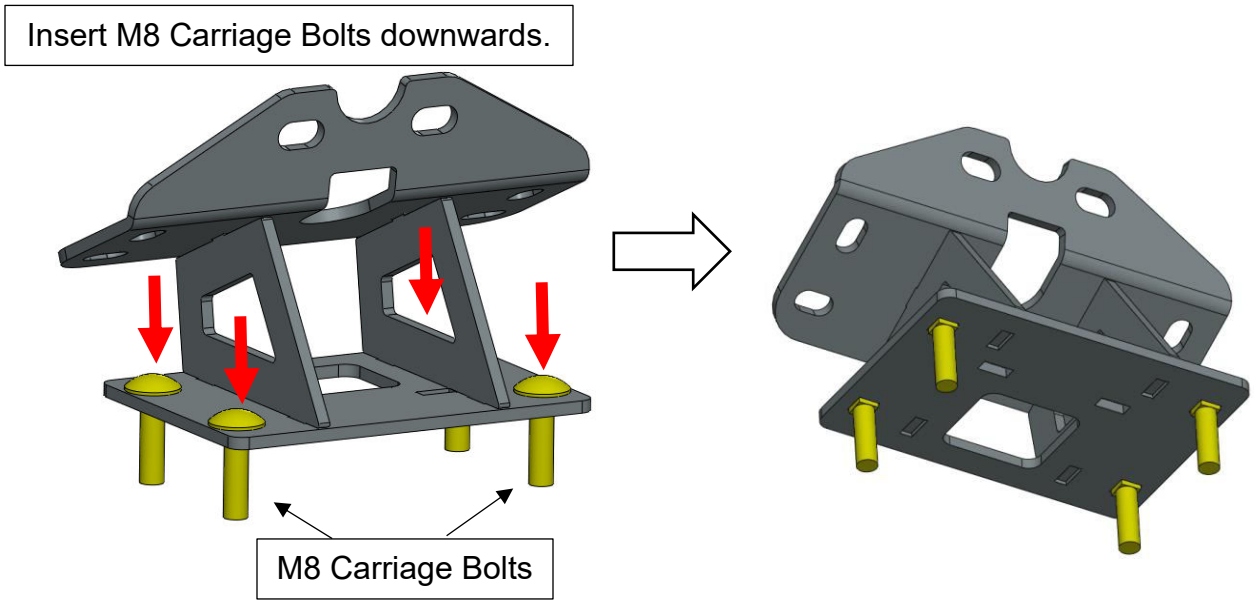
This is an optional accessory, not included in standard kit.

TOOLS REQUIRED

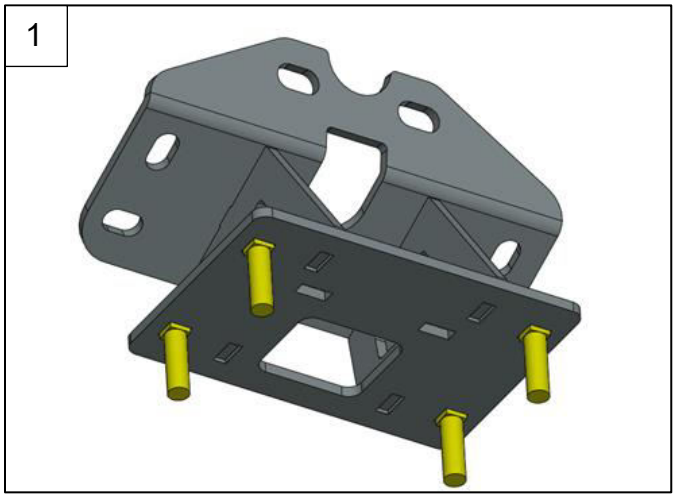
 Rachet	 8mm 10mm 13mm Socket	 Extensions	 Wrench	 Electrical Tape

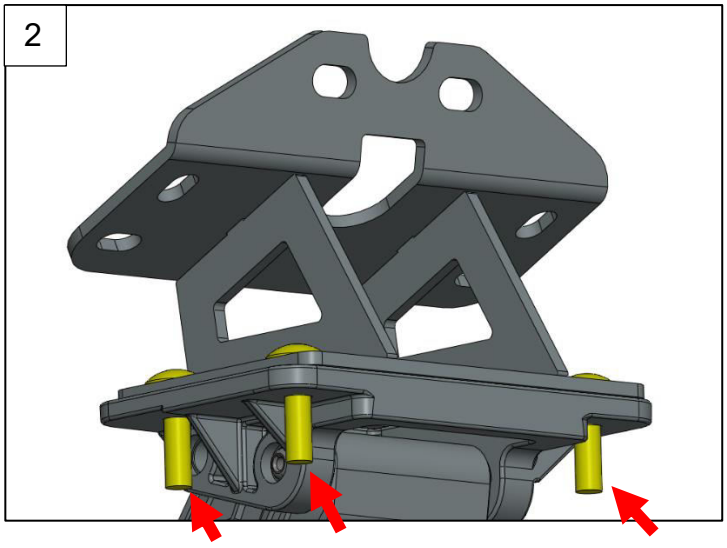
1

Take the mounting brackets and attach them to the linkage arms. First, insert the M8 Carriage Bolts into the square slots on the brackets so that the threads are pointing downwards.

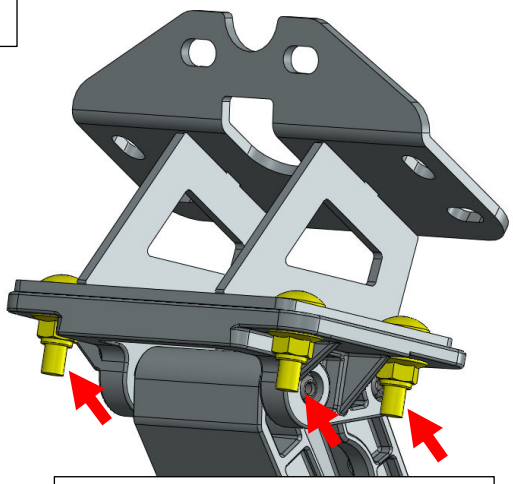


Next, use the M8 Flanged Nylon Lock Nuts to fasten the aluminum linkage arms to the brackets. There are 4 fastening points on each bracket.



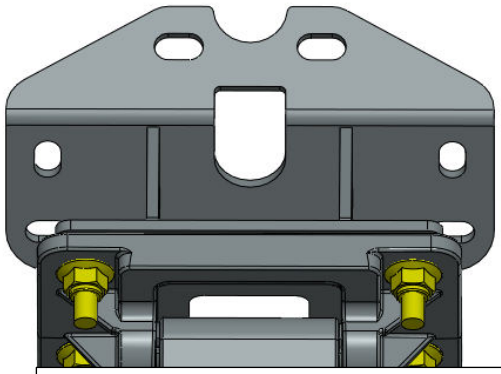


3



M8 Flanged Nylon Lock Nut

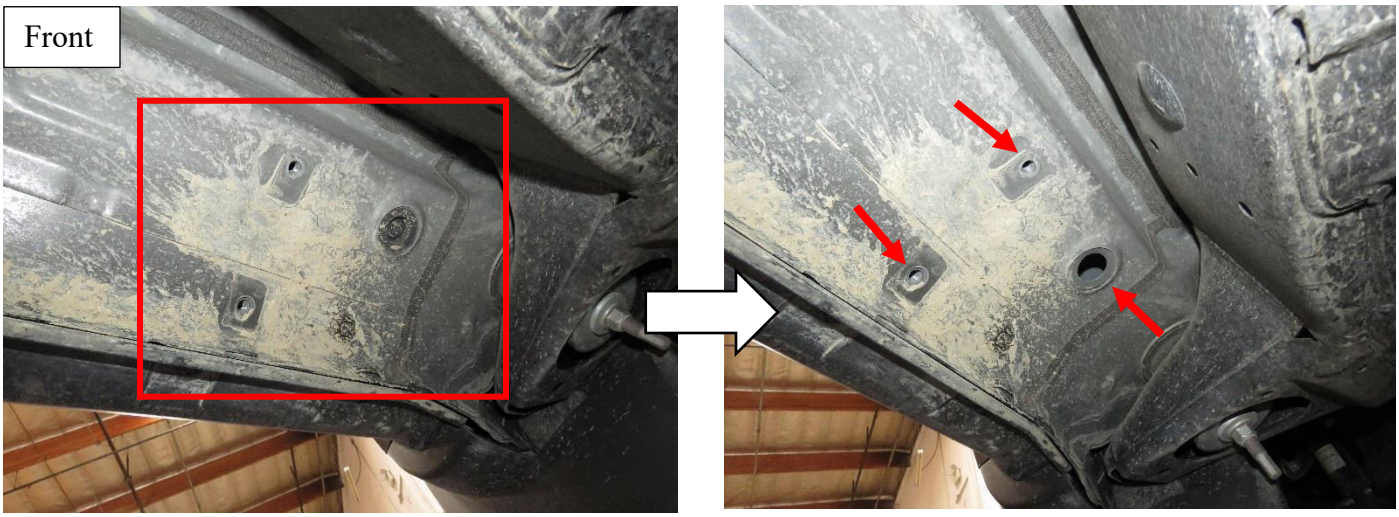
4



Tighten the M8 Flanged Nylon Lock Nuts all the way until tight.

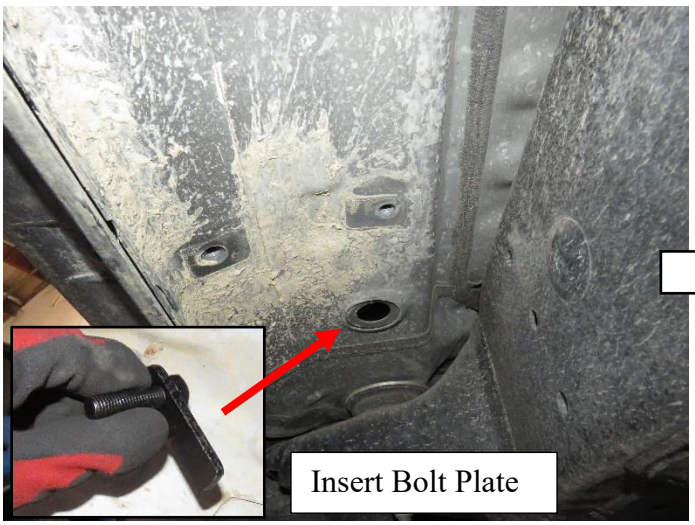
2

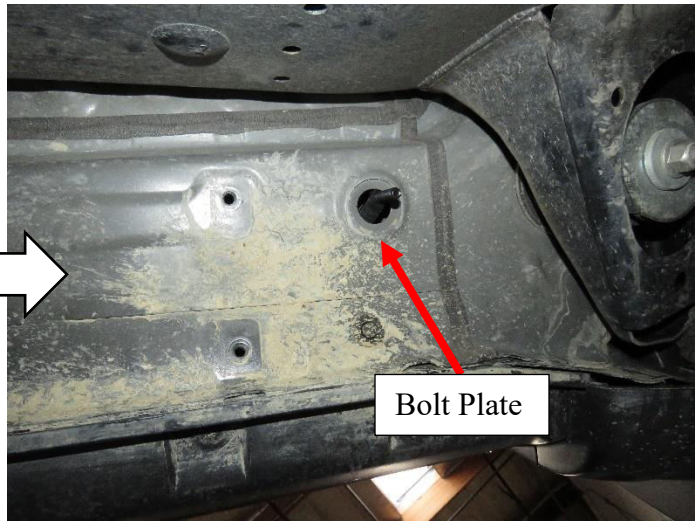
Locate Driver Side front mounting points on the rocker panel under the front door. Remove the OE bolts and appropriate rubber plugs before mounting the front bracket.



3

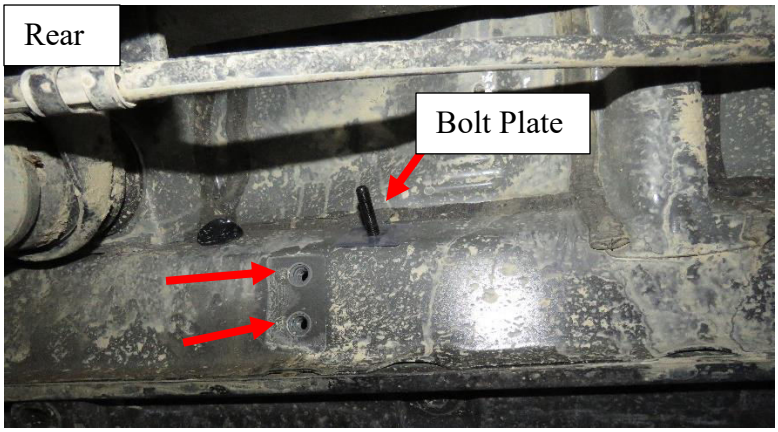
Next, take a Bolt Plate (O) and insert it into the large hole where the rubber plug was. Once the bolt plate sits in the hole with the threaded end stick out, use a Plastic Retainer (Q) to help the Bolt Plate (O) stay in place.

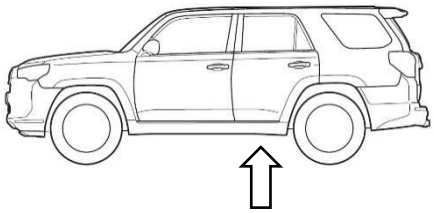




4

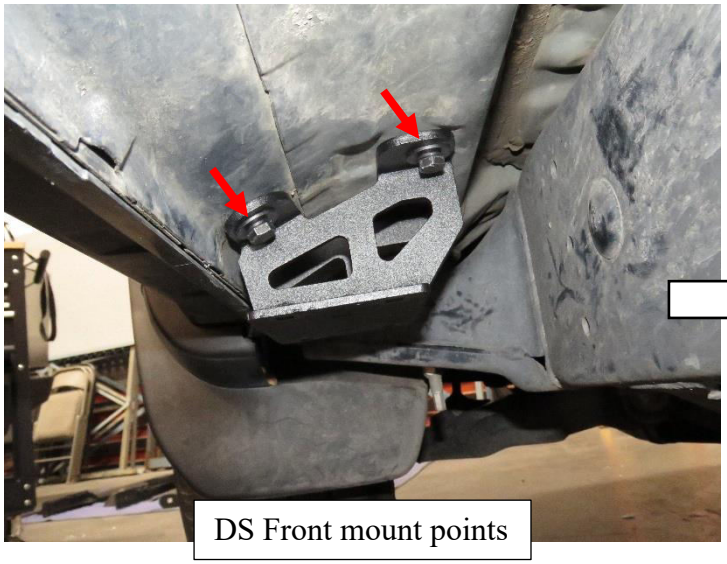
Locate Driver Side rear mounting points on the rocker panel. Remove the OE bolts and appropriate black sticker before inserting the bolt plate (O).



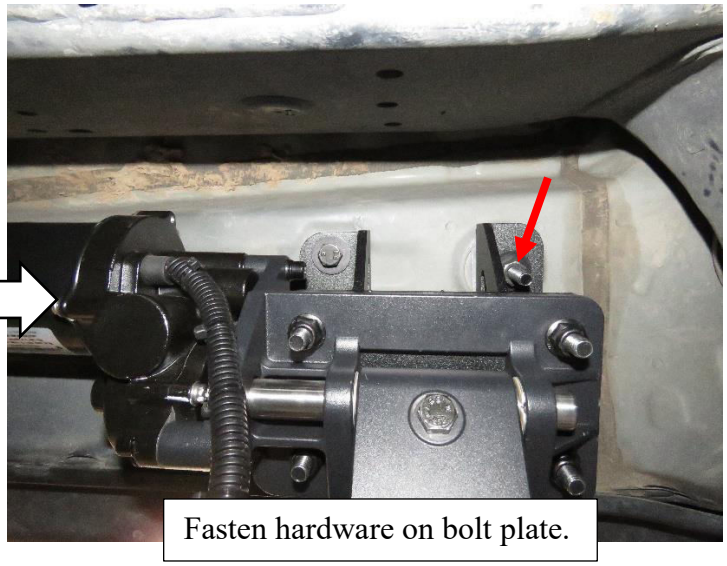


5

Next, line up front mounting bracket slots to the threaded inserts and place Driver Side/Left Front Bracket Assembly (A) onto rocker panel. Then fasten Hex Bolts (H), Lock Washers (I), Hex Nut (P), and Flat washers (G). Do not tighten all the way yet. Use the smaller Flat Washers only as indicated below.



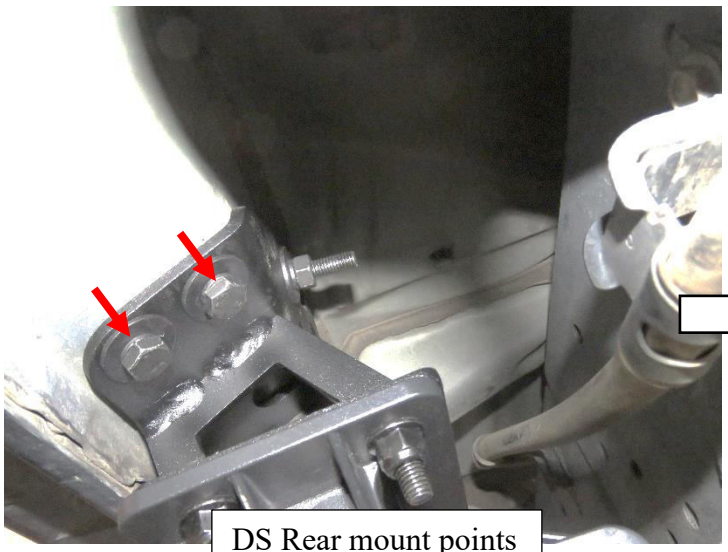
DS Front mount points



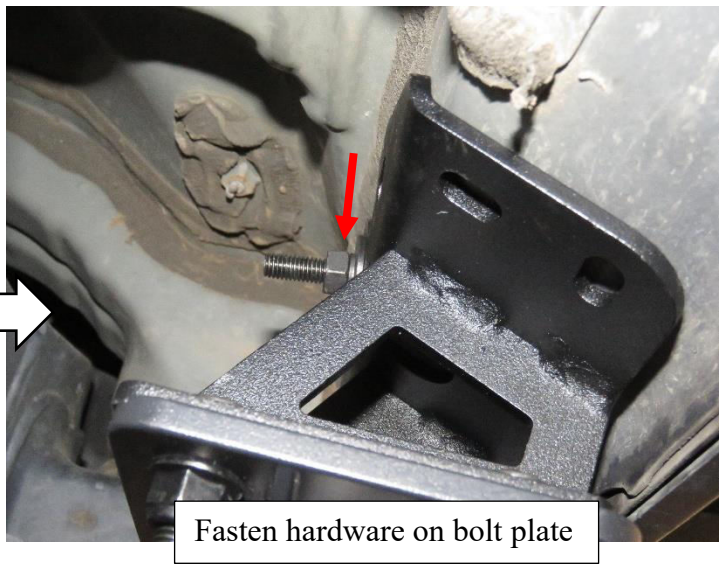
Fasten hardware on bolt plate.

6

Locate rear mounting points. Next, line up rear mounting bracket slots to the threaded inserts and place Driver Side/Left Rear Bracket Assembly (B) onto rocker panel. Then fasten Hex Bolts (H), Lock Washers (I), Hex Nut (P), and Flat washers (G). Do not tighten all the way yet. Use a foam strip and adhere it to the brake hose to protect it against long-term rubbing.



DS Rear mount points



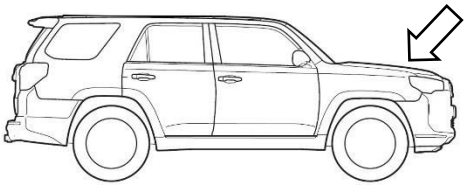
Fasten hardware on bolt plate

7

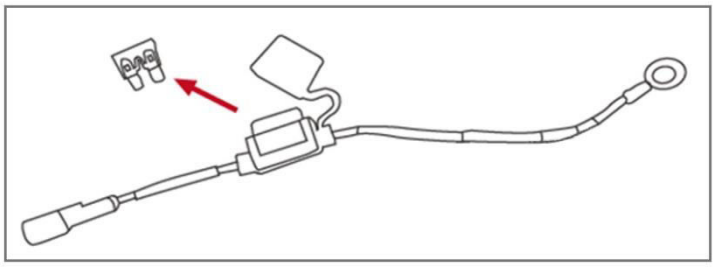
Repeat steps 2 – 6 for the Passenger Side.

8

Start from the engine compartment by opening the front hood of the vehicle. Locate the Battery and its terminals (positive/negative). Remove the 25A fuse from the fuse box that comes with the main harness (J).



*WARNING: Keeping the fuse connected to the fuse box may result in electrical sparks and risk of shorting when working with the battery.



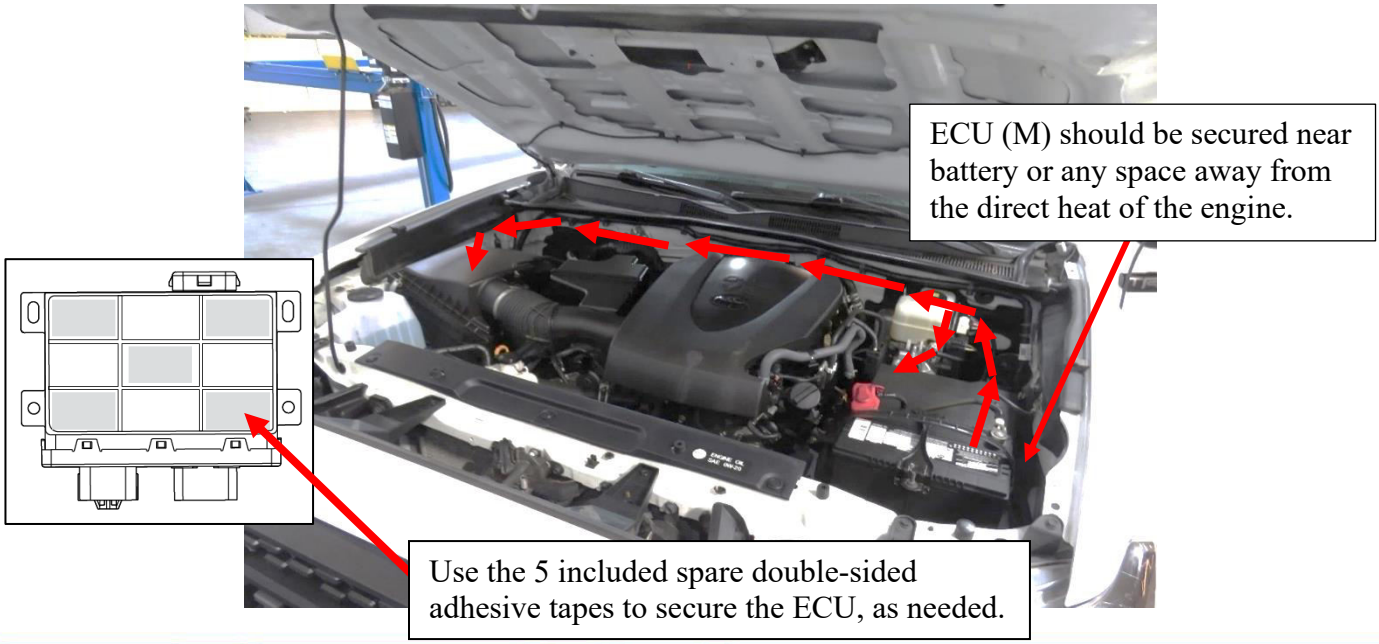
Open fuse holder cap and remove fuse

9

Connect the positive power lead on the main harness (J) to the positive battery terminal. Connect the negative lead to the negative battery terminal. Make sure both power leads are fully secured. Connect the ECU (M) to the main harness. Connect the Long LED Y-Harness (K1) to the Driver-side branch of the main harness. Connect the Short LED Y-Harness (K2) to the Passenger-side branch of the main harness.

10

Route the main harness (J) around the battery, up along the rear of the engine compartment. The longer Driver-side branch of the main harness must route down the backside, against the fire wall, and down past the steering column towards the vehicle frame. **Be sure to avoid contact with the steering column.**



ECU (M) should be secured near battery or any space away from the direct heat of the engine.

Use the 5 included spare double-sided adhesive tapes to secure the ECU, as needed.

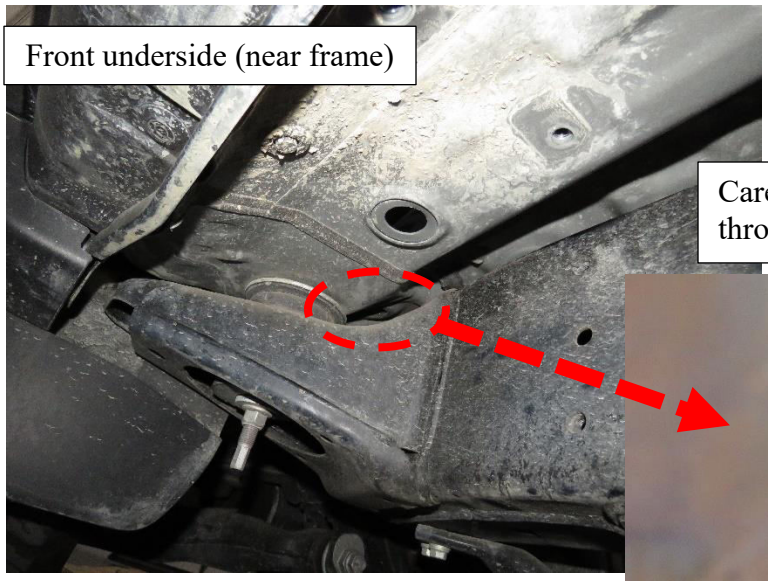
Route the shorter (marked “Passenger-side”) leg of the harness down the Passenger-side wheel well. **Be sure to avoid contact with any moving or hot engine components.** Attach and secure the main harness (J) with supplied cable ties.

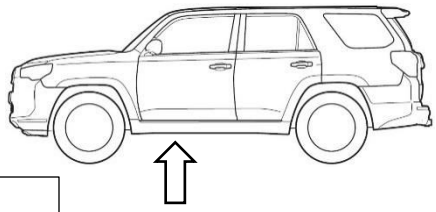
11

Be sure the harness avoids contact with the suspension and steering column. Inside the vehicle cabin, remove the bottom door sill panel and then the driver-side front kick panel. Peel back the carpet to access the hole with a removeable grommet. This is the hole where the signal wires from the Main Harness (J) will need to feed through.

12

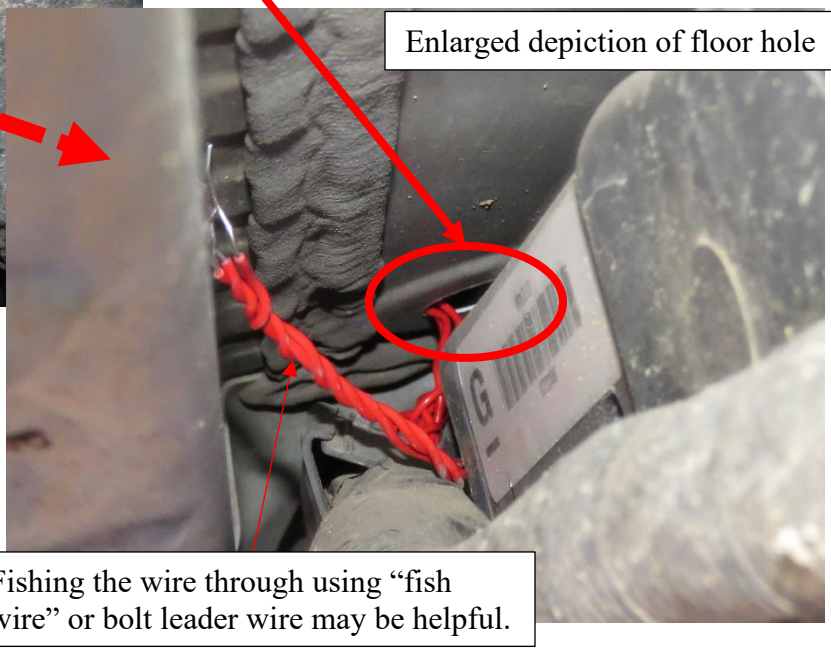
On the underside of the driver side, locate and remove the floor grommet in the floor panel above the frame. The grommet will be in a tight space above the frame and OE conduit. Poke a hole through the grommet and thread the two signal wires through and up into the vehicle cabin.





Carefully put wiring through rubber floor plug

Enlarged depiction of floor hole

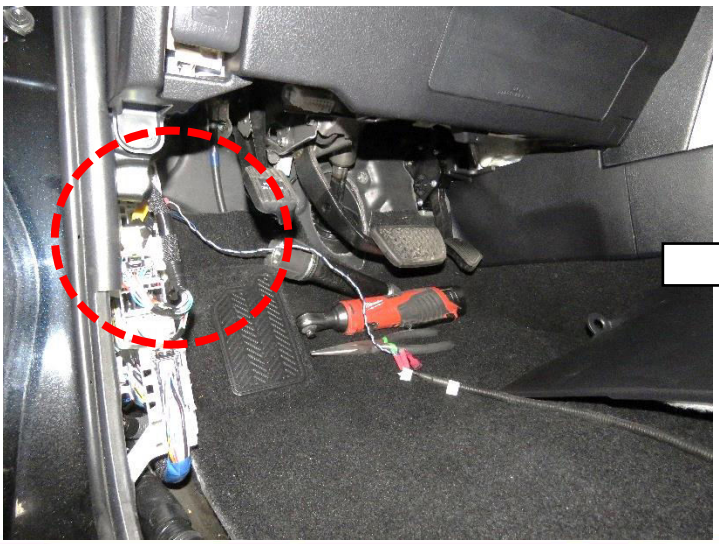


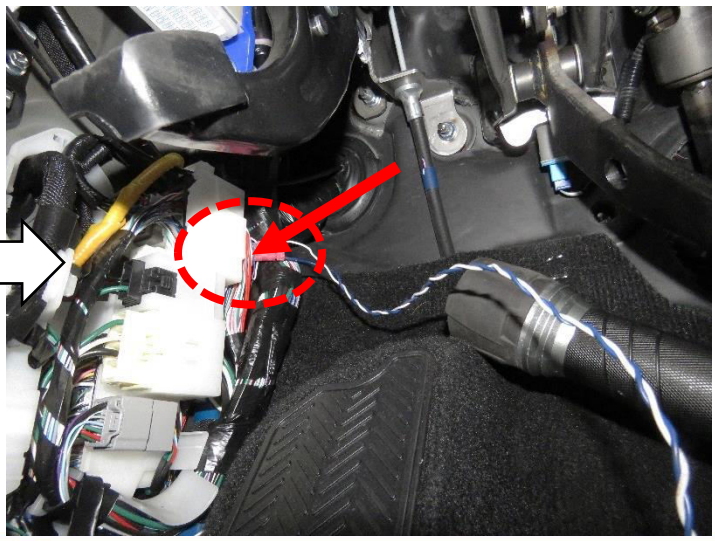
*NOTE: There are two holes the wiring harness must pass through, 1 inside cabin and 1 on underside belly. Each has a rubber grommet (total 2 grommets). The 2 holes are not always aligned; thus, some finesse and fishing may be needed.

Fishing the wire through using “fish wire” or bolt leader wire may be helpful.

13

Locate the white OEM CAN Junction connector under the steering wheel, behind the kick panel. Be sure vehicle is not powered on. Locate the large bundled harness of wires on the backside of the junction (top of the stack of connectors). There should be several pairs of twisted colored wires in the wire harness bundle.





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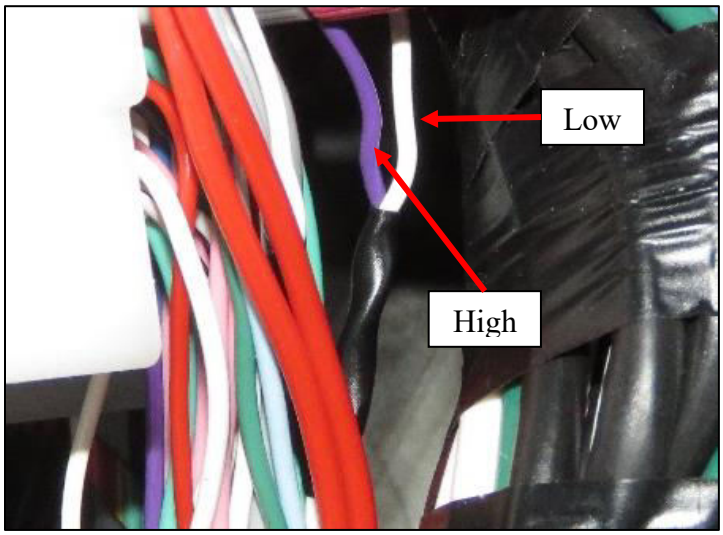
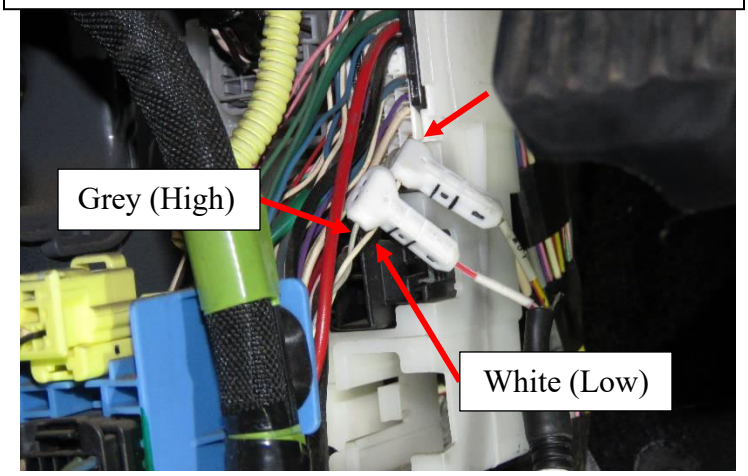
ORDERS@BODYARMOR4X4.COM

On the white connector, identify the **twisted** pair of Purple and White wires. Connect the High and Low wires from the main harness (J) using the supplied wire taps (L). After successfully connecting the wires, check that it is secure and hidden away.



Example of twisted pair being on the front of the connector hub instead of the rear. Location depends on model year.



Factory CAN Wire/ Data Line	Power Step Main Harness Wire Color
Purple (High)	White (CAN-H)
White (Low)	Yellow (CAN-L)

*NOTE: Depending on the year of make, the colors of the wires may be different. In these cases, the white wire of the twisted pair is always "CAN Low".

If possible, avoid tapping the RED wires.

Wire taps supplied with kit.
Please see next page for guide.

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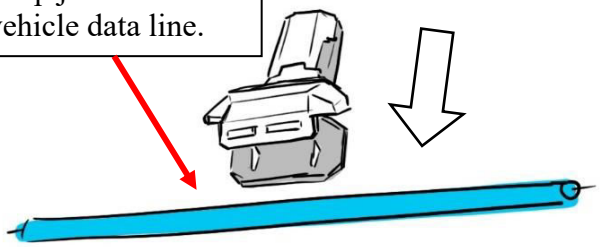
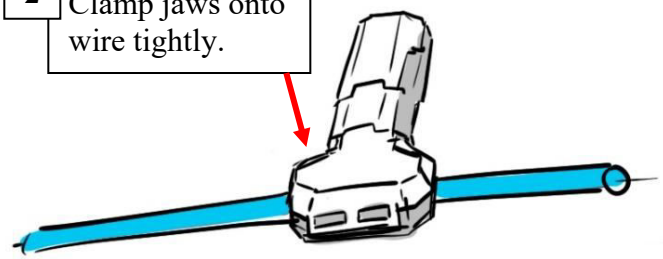
INSTALLATION INSTRUCTIONS

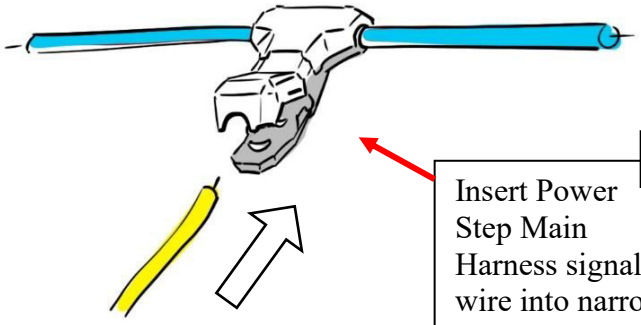
The kit comes supplied with wire taps called “shark taps”. Follow the guide below to tap the wire using the “shark tap”:

1 Take wider end and wrap jaws onto vehicle data line.

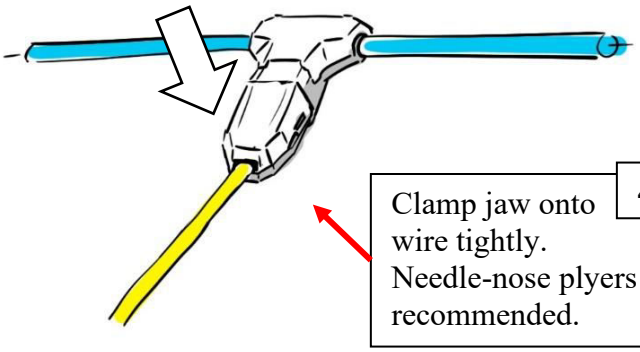


2 Clamp jaws onto wire tightly.





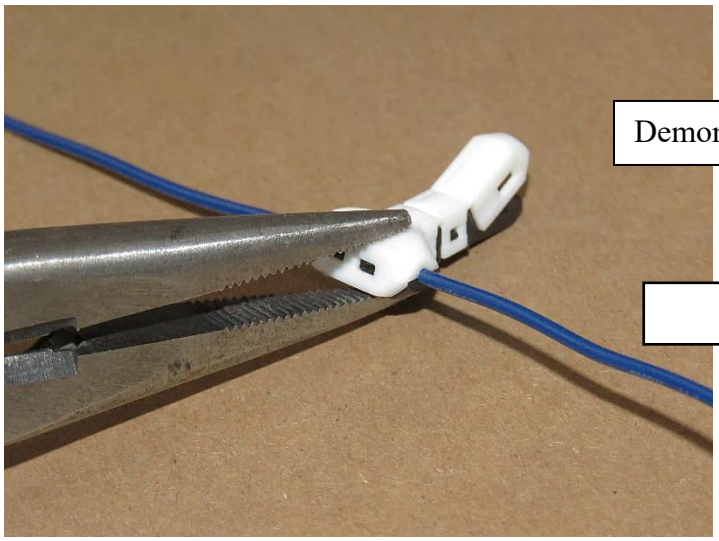
3 Insert Power Step Main Harness signal wire into narrow jaw.

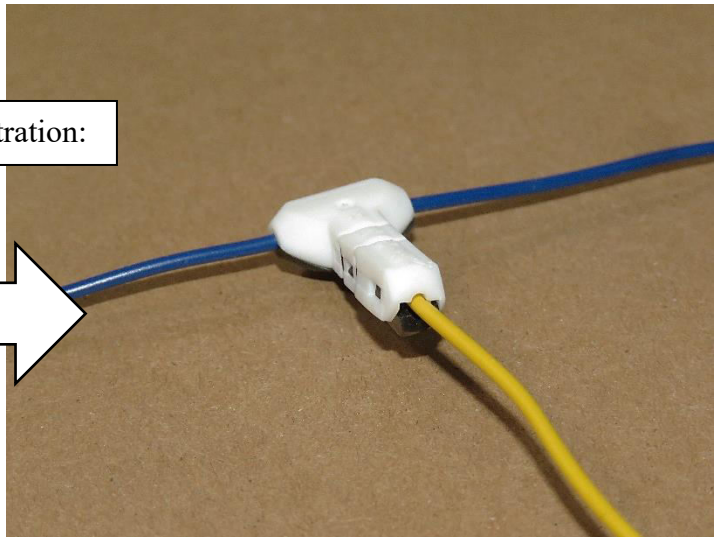


4 Clamp jaw onto wire tightly. Needle-nose plyers recommended.

NOTE: Make sure wire is seated properly in the jaws before clamping. The wire being tapped must be centered on the “teeth” to make a proper tap.

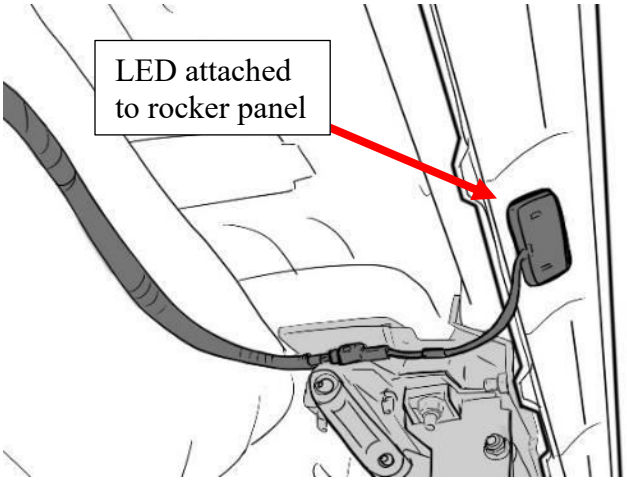
Demonstration:

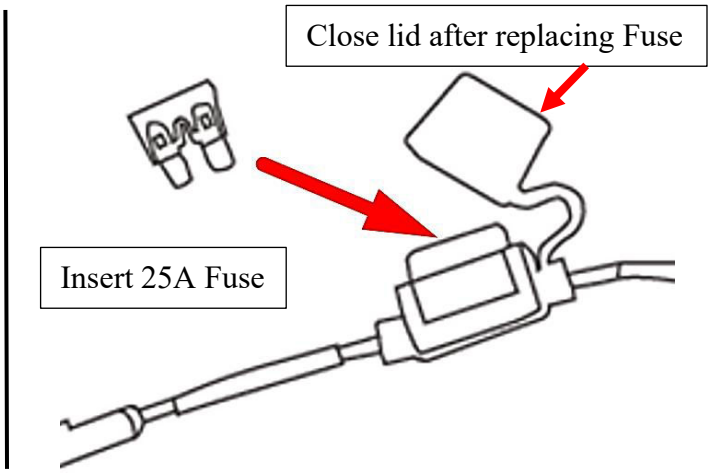




14 Attach the main harness (J) to the LED Y-Harness (K). Then attach the LED Y-Harness (K) to the motor on the Driver Side. Repeat for Passenger Side. The shorter LED Y-Harness should connect to the motor that is on the same side as the ECU.

15 Plug in LED lights (N) into LED Y-Harness (K) and attach them to the bottom of the rocker panel. Use provided 3M double sided adhesive tape on back of LED light (N). Replace Fuse into Fuse Box.

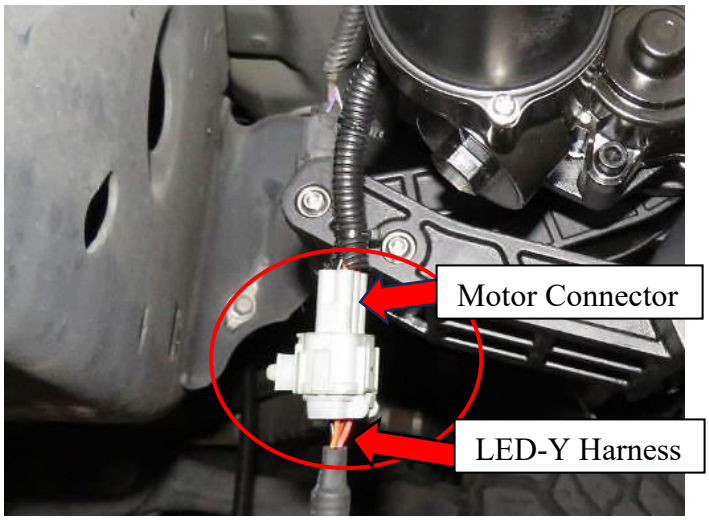




16

Check to make sure the harnesses on the Driver Side/Left Front Bracket Assembly (A) and Passenger Side Front Bracket Assembly (C) are connected to the main harness (J) via the LED-Y harnesses (K).

*NOTE: The linkage arms on the front bracket assemblies will not move unless both motors are connected.

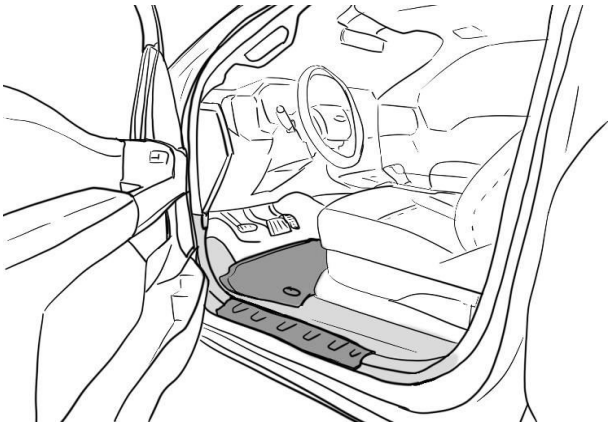


17

Seal the rubber boot with RTV Silicone Sealant if needed.

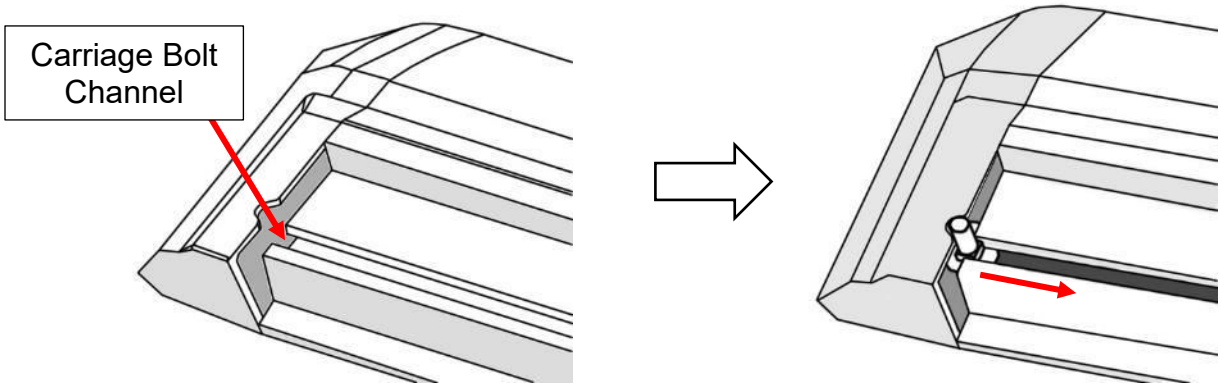
Hide wires and reattach the kick panel with the carpet fully unfurled in its original position. Reattach the door sill panels and check to make sure there are no obstructions or potential snag points around the brake pedal area.

Be sure to reattach plastic kick panel nut.

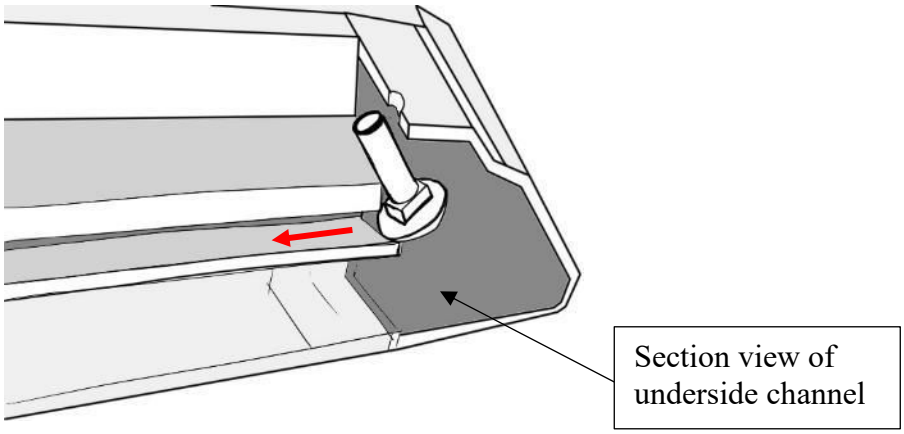


18

Prepare the power step boards. Locate the end of the boards and slide the M6 Carriage Bolts (E) into the channel on the underside of the board. Insert a total of 8 carriage bolts (E) for each board.



Use the notch in the board's end caps to feed the bolts into the channel.

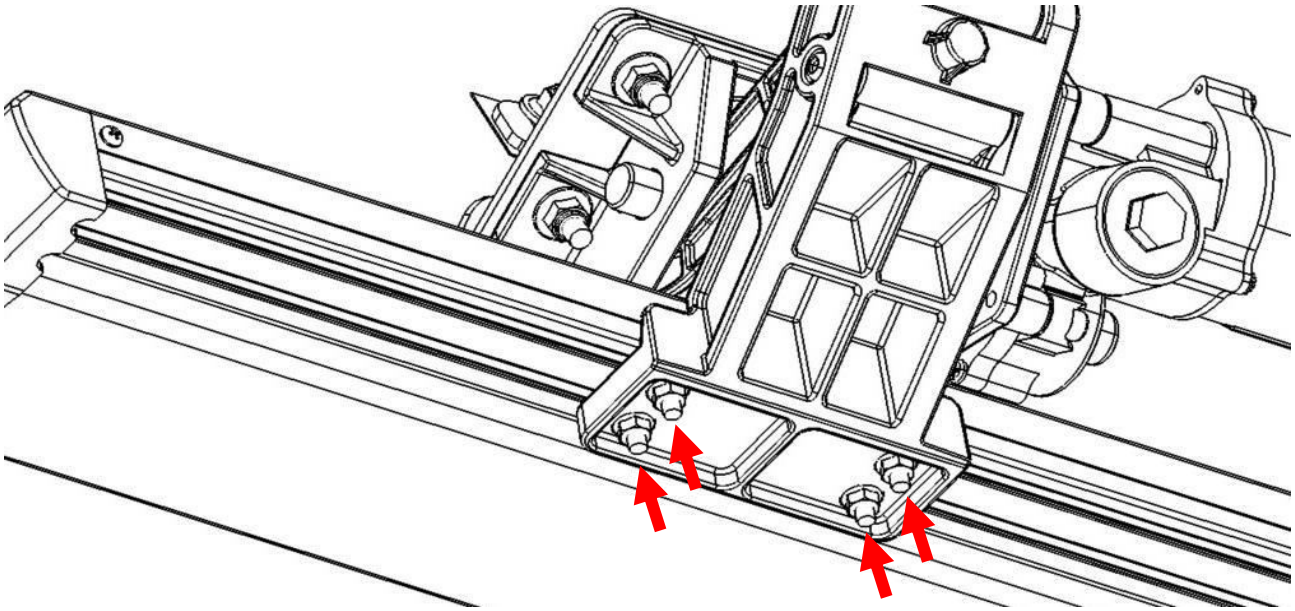


19

Perform a function check by closing the driver side front door and opening it again. The front bracket assembly (A) motor should activate the linkage arm and move it into the down or "deployed" position.

After deploying linkage arms, unplug the motor connector from the LED-Y harness (to cut power to the linkage arms), while front door is open, to hold the board in the deployed position for running board installation.

Line up the carriage bolts (E), under the power step boards, with the slots on the linkage arms (A & B). Insert the 8 carriage bolts (E) into the slots on front and rear linkage arms. Adjust board to desired position. Moderately hand tighten the 6mm Flat Washers + 6mm Nylon Lock Nuts (G) onto the carriage bolts.



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Once the board is adjusted, plug in the motor connector to the LED-Y harness (to return power to the linkage arms), making sure that the door remains open. Proceed to open and close doors several times to deploy and retract the steps to settle them into their natural alignment. After cycling the step, tighten all hardware on the board and brackets.

Some further adjustment may be required for desired step position. Repeat for passenger side.

20

Perform system check and troubleshooting. If board is making irregular movements or noise, readjust the boards as follows:

a) With board deployed loosen 6mm nuts under board.

b) Leave the nuts slightly less than snug.

c) Open and close door several times for board to settle into position.

d) With the step in the deployed position, gradually tighten nuts while alternating between each. Do not over tighten.

If board is making abnormal noise or the motion is binding, repeat steps “a” through “d”.

Note: If the above method does not resolve the issue, the brackets mounting to the vehicle may not be aligned properly with the vehicle. In this case, remove the board and realign brackets before attempting steps “a” to “d” once again.

21 Reinstall any remaining trim panels if necessary. Check and make sure all hardware is fully tightened. Perform a final system check. Finish.

*NOTE: If board does not move during troubleshooting, check the tapped CAN Signal High and Low wires.

Toggle Switch Optional Accessory

If you purchased the toggle switch accessory, please refer to the detailed instruction sheet included with the toggle switch kit.

FINAL REMARKS

- Ensure there are no debris or obstacles preventing the power steps from operating.
- Open and close each door on both sides to ensure that power steps are operating correctly.
- Check and ensure that all electrical connections are stable and secure.
- Check and ensure that the fuse is placed into the main harness.
- Check and ensure that the CAN tap connections are fully engaged and are seated completely.
- Recheck that all mounting hardware is tight.
- Adjust mounting brackets or running board to enable smooth operation even after having stepped on the deployed boards.

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MAINTENANCE AND CARE

- Periodically clean the linkage arms and motor of any dirt or debris that may accumulate.
- Avoid spraying the motors directly with high pressure liquids.
- Avoid damaging the power steps.
- Ensure power step ECU is not exposed directly to water to prevent degradation.
- Ensure wiring is properly tucked away and concealed from mechanically moving parts and exposure to high heat or very low temperature conditions.
- Periodically recheck that all mounting hardware is tight
- Do not overload the running board.
- Readjust running board if necessary.

WARNING AND SAFETY

- Do not use boards as a rock slider or as skid protection.
- Do not use solvents, chemicals, oils, or corrosive liquids on power steps. If the power steps encounter these substances, clean the power steps as soon as possible. Mild detergent and water is recommended.
- Do not obstruct the power steps in any way during operations of deployment and retraction.
- Do not rely in any way on the components of this product to keep occupants within the vehicle or to protect against injury or death in the event of an accident.
- Do not sit/stand on the running board for long periods of time.
- Do not jump on power step board or rest heavy objects on boards or subject power steps to excessive force.
- Do not step on plastic end caps of the boards. Failure to do so may result in injury.
- Do not place bodily appendages between running board and the vehicle body. Please mind the gap between the vehicle and the board.
- Do not allow children to use power steps without adult supervision and proper operation. This is not a toy. Improper use may result in injury.
- Remove the fuse on the power lead on the main harness before doing electrical troubleshooting to avoid risk of shock or injury. Make sure the motors do not have power before working on mechanical adjustments to avoid injury.

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