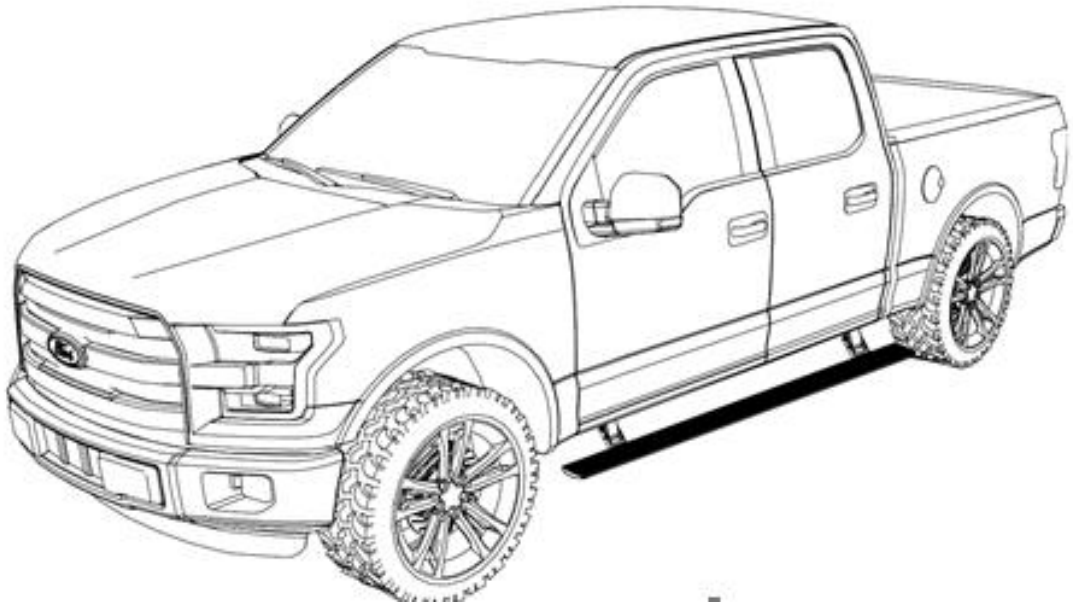
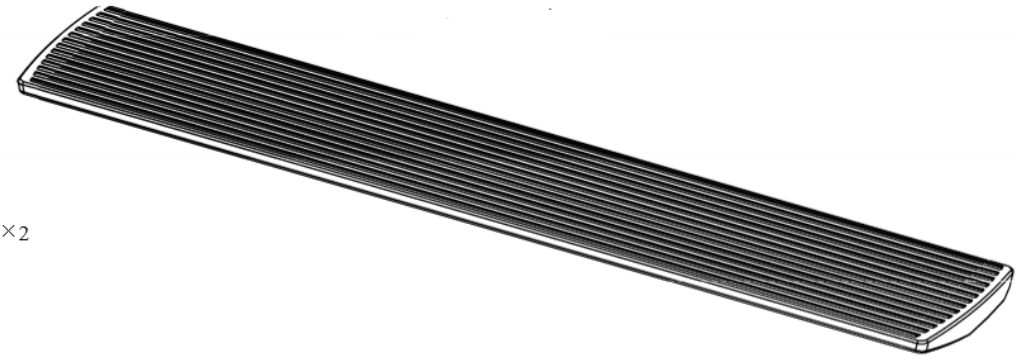
# INSTALLATION INSTRUCTIONS

## 2015-2023 FORD F-150 CREW CAB, 2017-2023 RAPTOR, 2022-2023 F-150 LIGHTNING, 2017-2023 F-250/F350 SUPERDUTY CREW CAB E-STEP
## PART #FD-4500

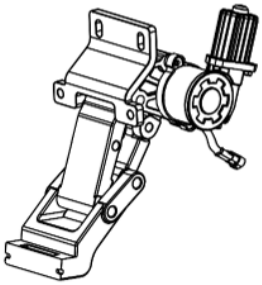
**Note-** Installation time averages 3-4 hours.

| | | | |
|---|---|---|---|
| 2 | Board Assembly | 25 | Wire Ties |
| 1 | Front Motor Linkage Right | 2 | Fuse |
| 1 | Rear Motor Linkage Right | 4 | Led Lamp |
| 1 | Rear Motor Linkage Left | 1 | Power Board Switch |
| 1 | Front Motor Linkage Left | 2 | Wire Magnetic Eq Module |
| 14 | Hexagon Nut M8 | 4 | Wire Magnetic Eq Magnet |
| 14 | Large Flat Washer M8 | 1 | Controller Assembly |
| 14 | Lock Washer M8 | 1 | Control Input Wire |
| 8 | Socket Cap Screws M6x25mm | | |

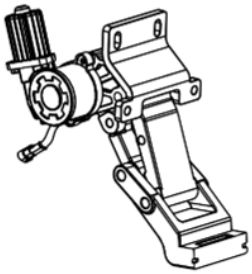




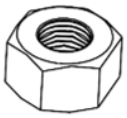
① - Board Assembly ×2



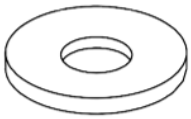
②- Front Motor Linkage Right ×1
Rear Motor Linkage Right ×1
6119100.1R



③ - Rear Motor Linkage Left ×1
Front Motor Linkage Left ×1
6119100.1L



④ - Hexagon Nut ×14
GB/T6170-2000 M8

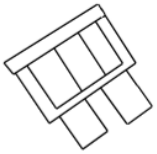


⑤ - Larger Washer Grade A ×14
GB/T96.1-2000 8

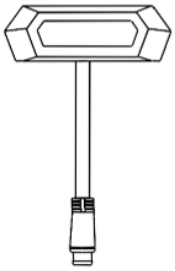
⑥ -Spring Washer ×14
GB/T93-1987 8

⑦ - Socket Cap Screw ×8
GB/T70.1-2000 M6×25

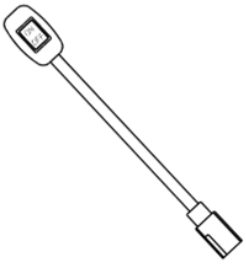
⑧ -Wire Tie ×25
GB/T22344-2008 5×300



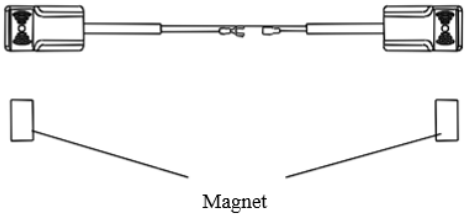
⑨ -Fuse ×2



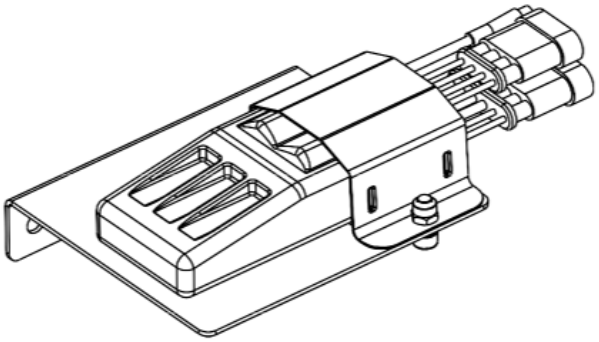
⑩ -LED Lamp ×4
6161100.4.8
(Optional)



⑪ - Power Board Switch ×1
6124151.4.9




⑫ -Wired Magnetic Induction
Module ×2
- Magnet ×4



⑬ - Controller Assembly × 1
6119100.4.4ZJ

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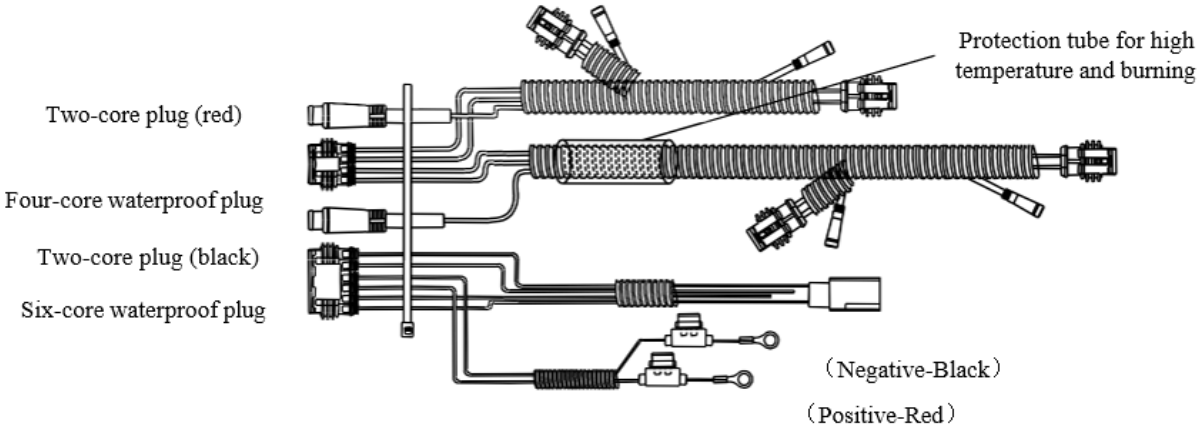



⑭ - Control Input Wire × 1　6119100.4.1

## Product Technical Specification

**Rated Voltage: 12V Specified Load: ⩽750lbs Gross Weight: 58lbs**

**Forward Extension Length: 169mm (Horizontal distance between the edge of power board and the vehicle door when the board extends)**

**Board falling dimension: 320mm.**

**(Vertical height difference between the edge of power board and the vehicle door while board extending).**

**(Both dimensions of forward and falling are theoretical, which may vary due to uncertainties such as installation errors, manufacturing errors of vehicle bottom and etc.,)**

**Notice：Impact load is not allowed.**

**WARNING-**

**Children and elderly must provide 8 inches of clearance for step to actuate. Failure to do so will result in failure or injury.**

## Mechanical Installation

### Driver Side

**Fig 1.**

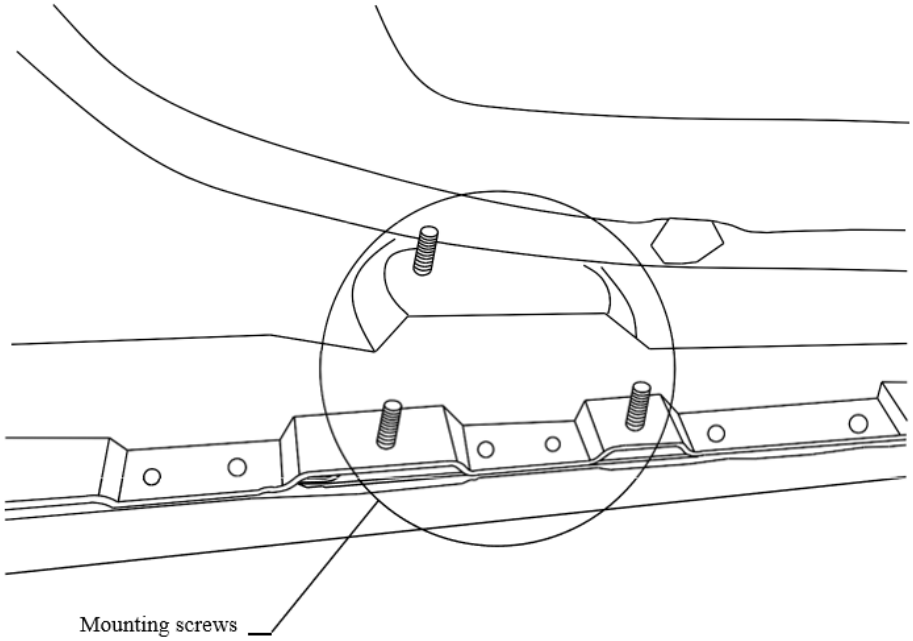



**Fig 1.** As shown in the picture: the three screws on the left rear side are installation spots. Please ensure that the screws are matched with the installation hole of motor linkage.

Screw position on the rear left side (Rear Driver side)

**Fig 2.**

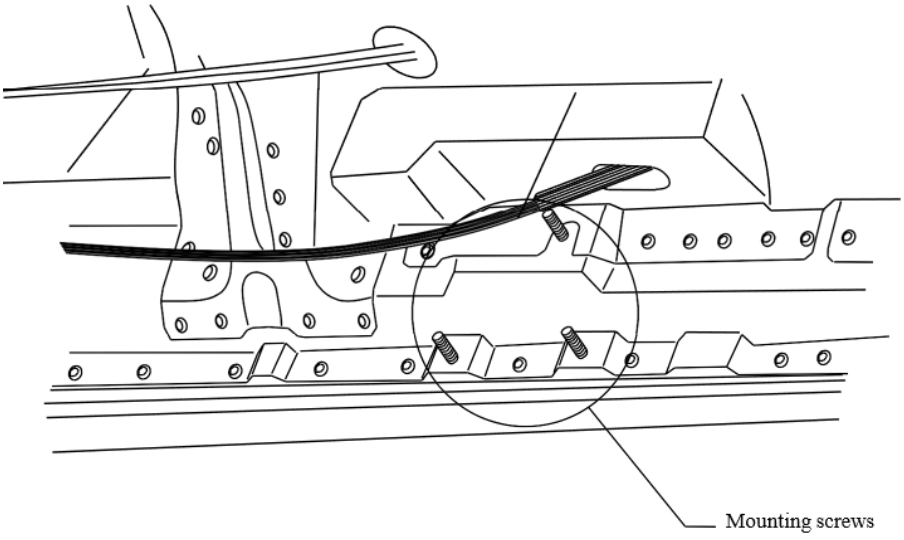
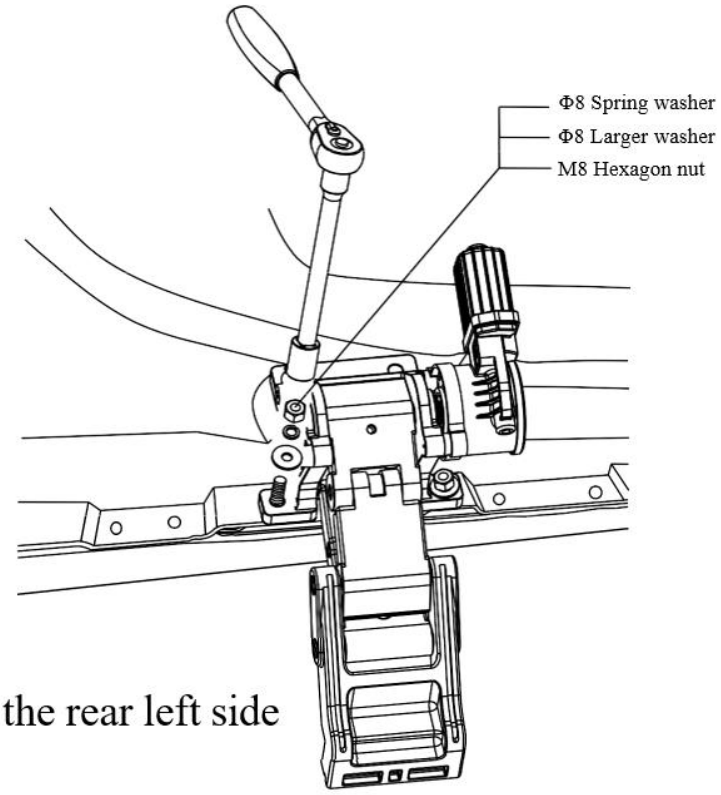



**Fig 2.** As shown in the picture: the three screws on the left front side are installation spots. Please ensure that the screws are matched with the installation hole of motor linkage.

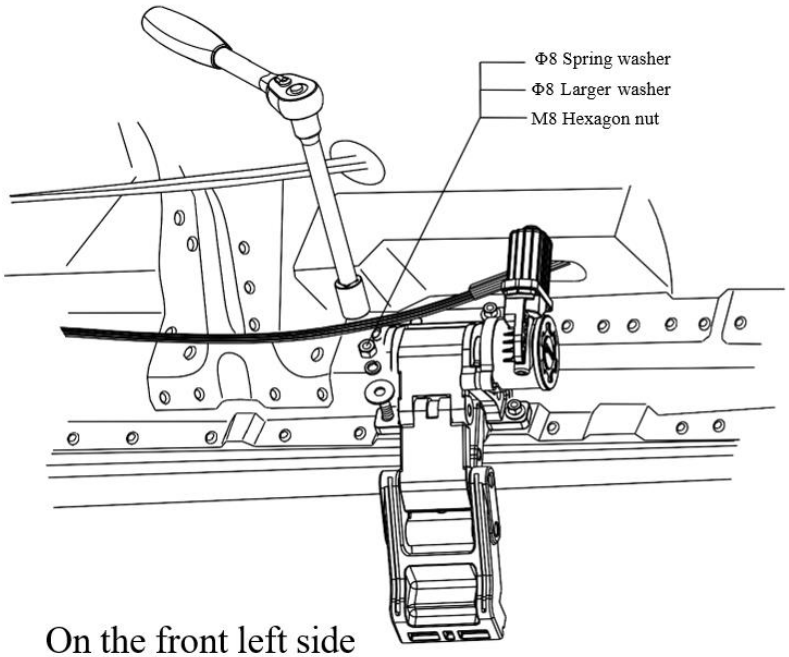
Screw position on the front left side (Front driver side)

**Passenger Side**



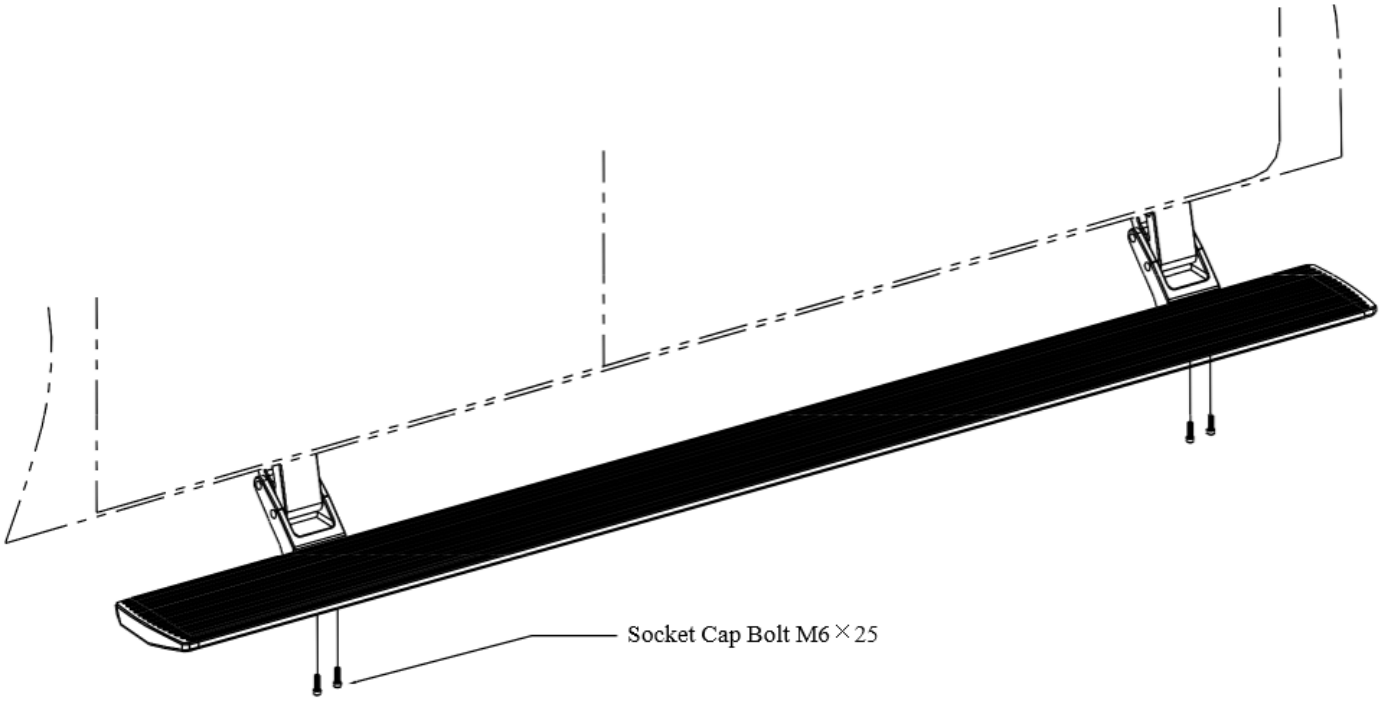

On the rear left side

Step 1: As shown in the picture, fixing the hexagon nut (with spring washer and big washer) into the corresponding screws and tighten it




On the front left side

Step 2: As shown in the picture, fixing the hexagon nut (with spring washer and larger washer) into the corresponding screws and tighten it




Step 3: Install the board using the M6 x 25 socket cap bolts.  Adjust the board at the T-nut to make the two ends of the board sit evenly on the vehicle. Once adjusted, tighten down.

Repeat this on the other side.



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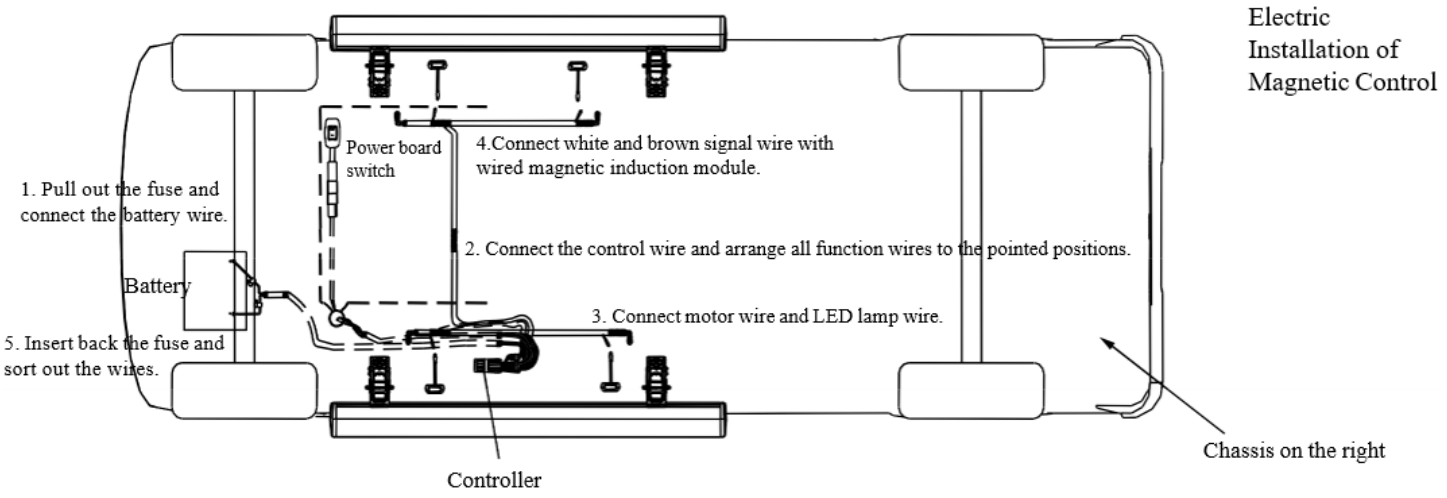
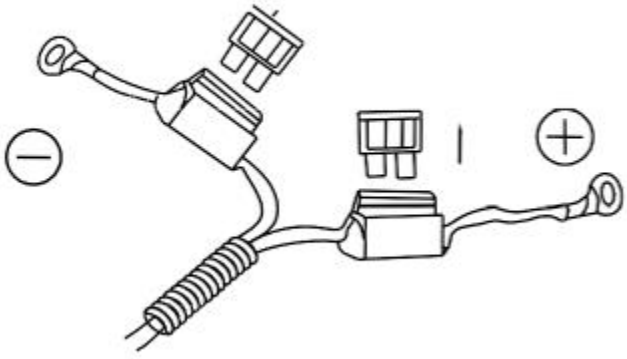


Step 1: Find out the control input wire and pull out the fuse (ensuring circuit safety during installation) and connect the positive and negative pole of wire harness to vehicle battery respectively.

**Note: Any modifications made to the harness will void warranty.**

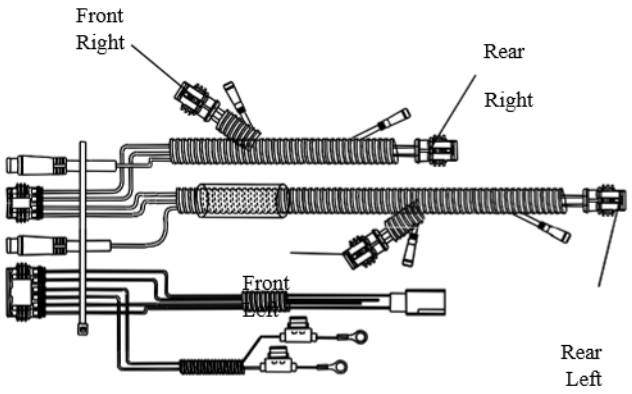
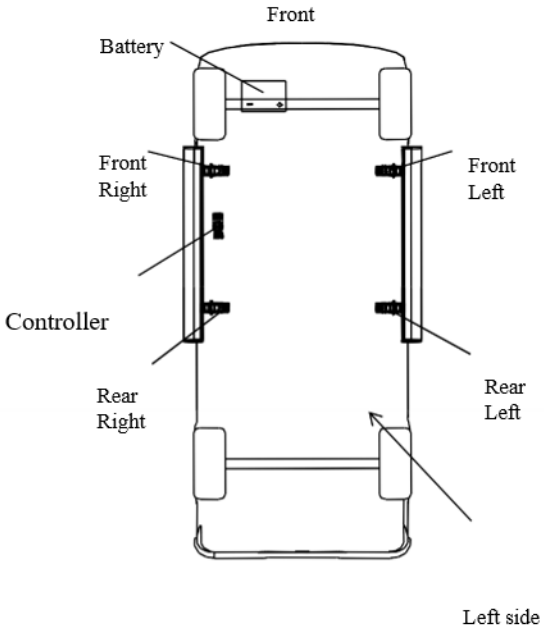


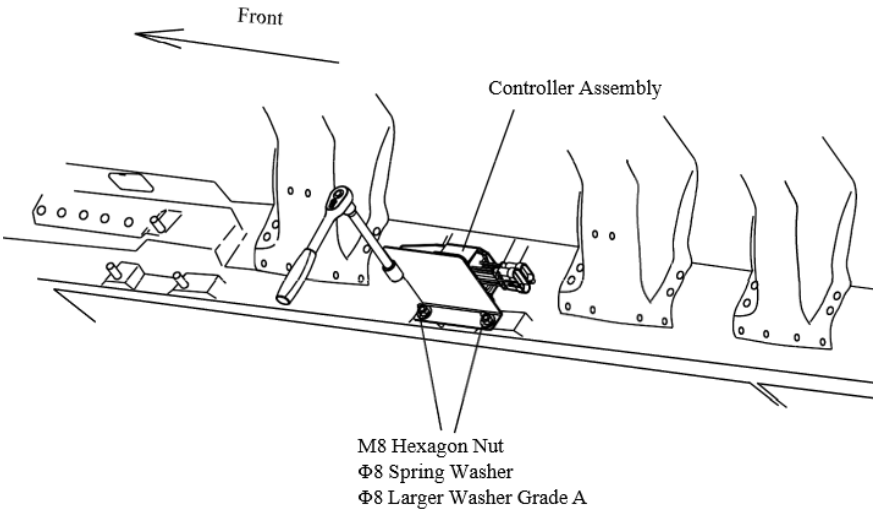

Figure 1



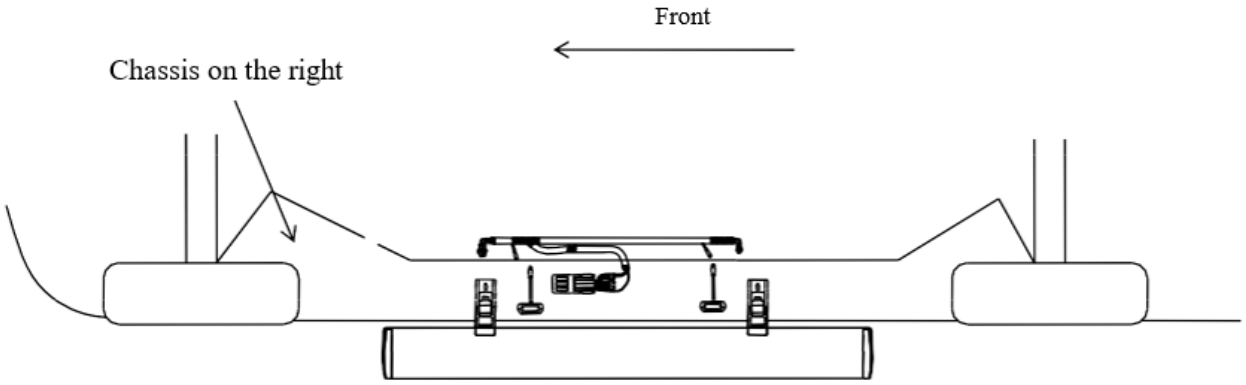

（upward view）

Figure 2

**Figure 1** is the wire harness diagram and **figure 2** is the installation diagram.
When installing the wire harness, make sure the four connectors relate to the four motor linkages by “front right, rear right, front left and rear left”.




Step 2: Put the controller assembly into the bolt and then screw the hexagon nut and tighten it.




Step 4：The arrangement of motor wire and LED lamp wire: Arrange the motor connection wire along the beam as shown in the picture, the motor wire plug extends to motors of linkage. At least, adjust the wire harness to make sure it is tidy and beautiful. The other side uses the same way for installation.

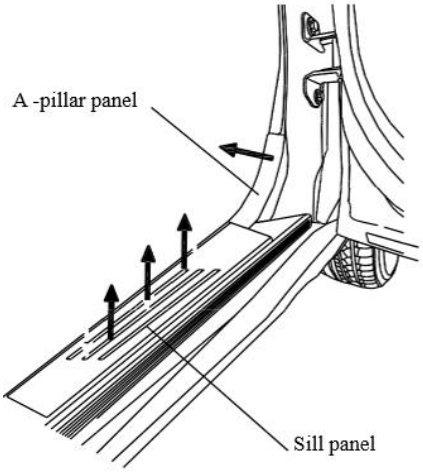



Figure 1

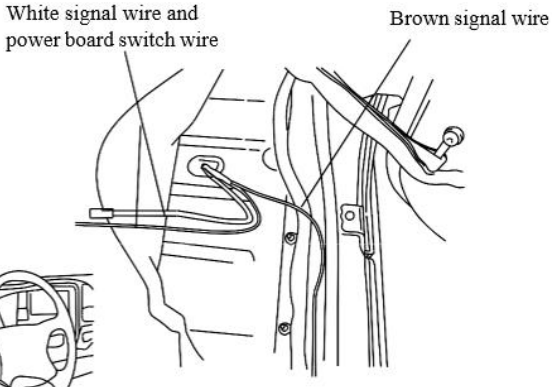



Figure 2

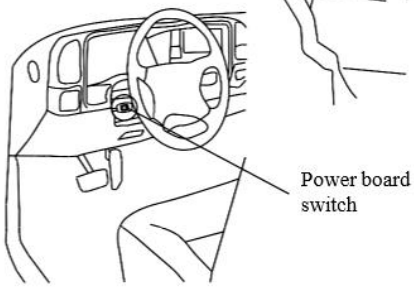
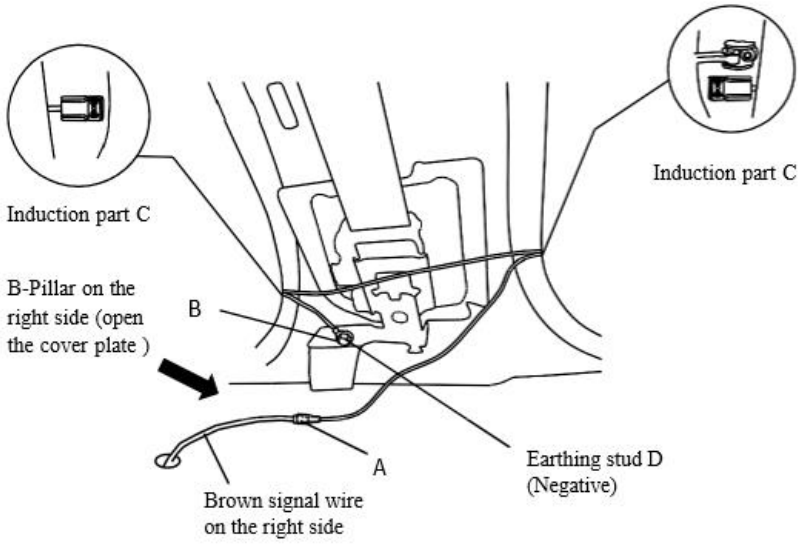
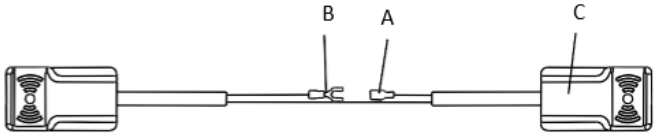



Figure 3

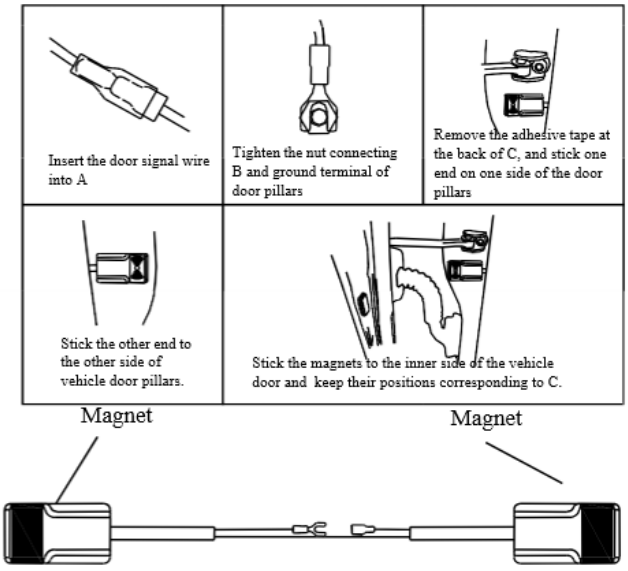
Step 4: Connection of signal wire: Pry the sill panel and A-pillar panel in **figure 1**. Pull the brown signal wire into the vehicle through the rubber grommet of chassis on the right side in **figure 2**. Then the white signal wire extends to the left side of the vehicle under the carpet and stick the power board switch to the left side under the steering wheel in **figure 3**.

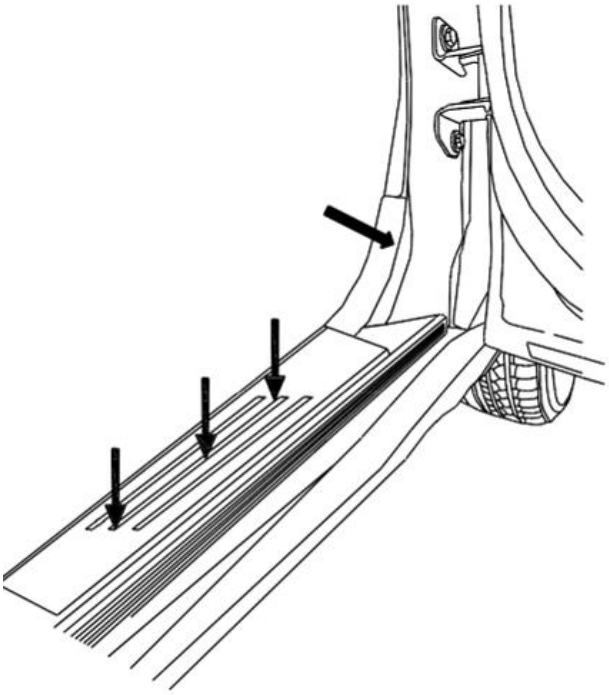



**Step 5**: Open the cover plate of B-pillar on the right side of the vehicle, expose the above part (as shown above), connect the brown signal wire to terminal A of magnetic inductor, loosen the
earthing stud D, connect fork type terminal B to the earthing stud,
and then tighten the earthing stud. Stick the induction part C to both sides of B-pillar, stick the magnet on the inside of vehicle door which is corresponding with induction part. The connection of white signal wire and wire harness induction on the left side are same as the installation of the right side.

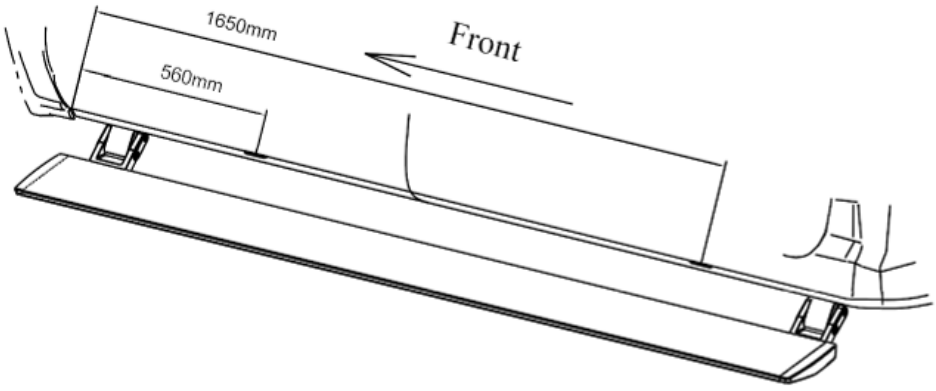



Wire Harness Magnetic Inductor

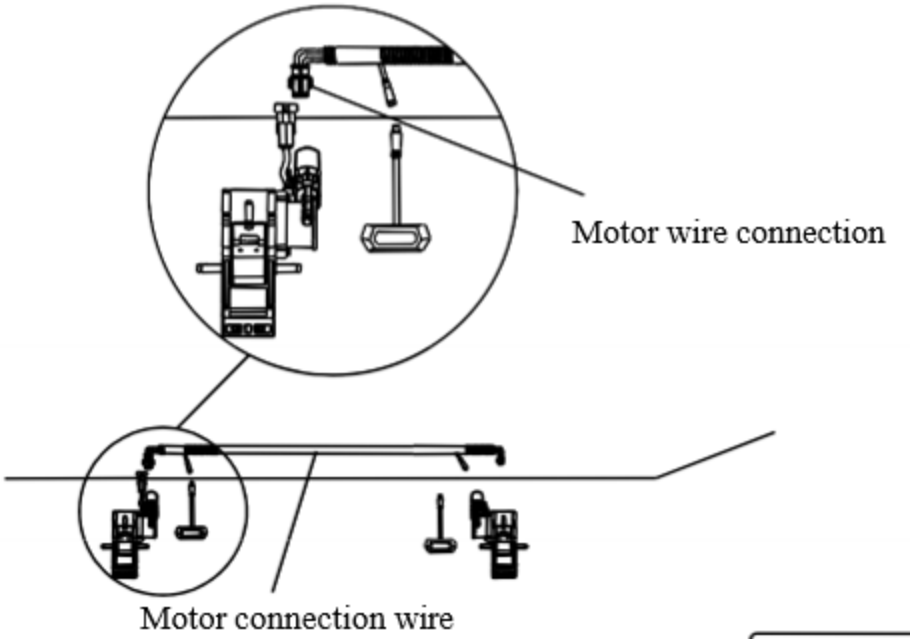




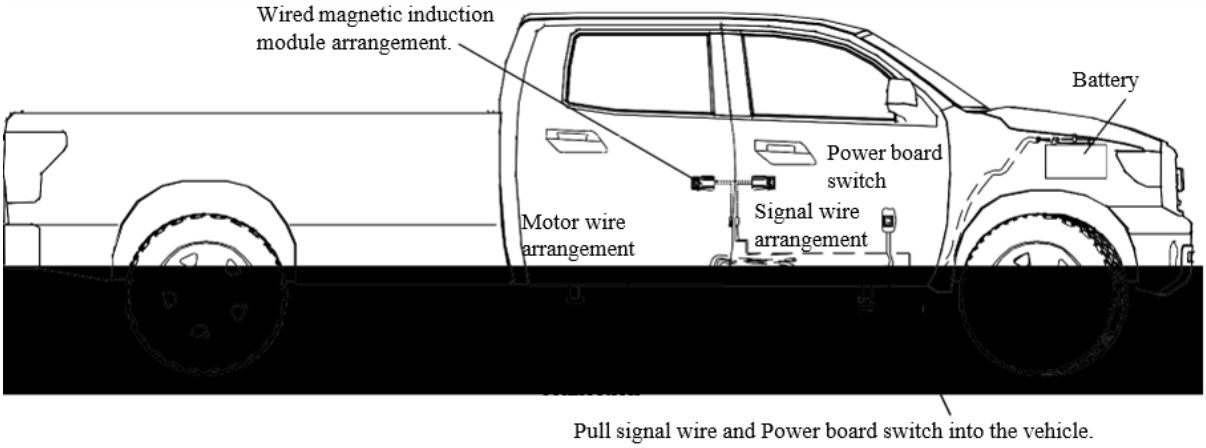
Step 6：Sort out the wire harness and close the panels. The installation of white signal wire on the left side is same with the right side.



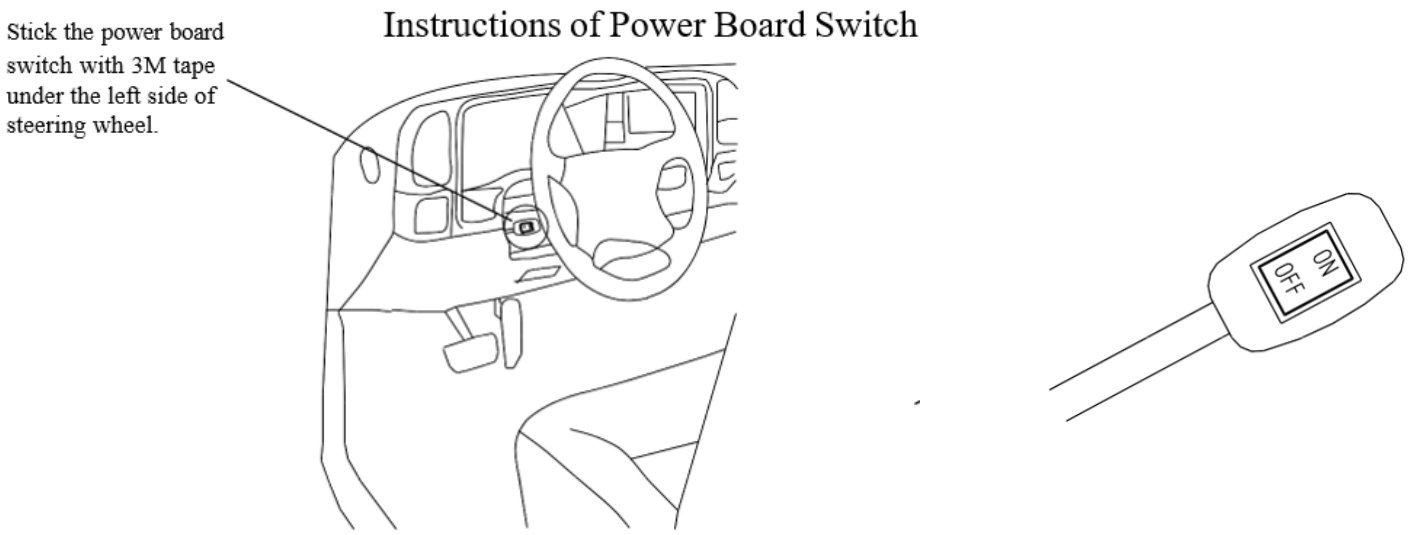

Step 7: Tear off the double-sided adhesive sticker behind the LED lamp and stick it to the side of the car skirt, The distance (the lamp of the side 560mm,the back lamp 1650mm ) of the designated pasting position of the lamp band (Wipe the paste position with a rag) and the front door seam is as shown in the figure above




Step 8: Insert back the fuse, assign the wire in order. Check if all the wires are connected well and test if the power board can work normally. If it can work normally, the board installation is completed. (If it cannot work normally, please check the installation of each part.)




Step 10: Check out the Power board switch of controller to make sure it is off. Insert back the fuse, arrange the wire harness in order. Check if all the wires are connected well and test if the power board can work normally. If it can work normally, the board installation is completed. (If it cannot work normally, please check the completeness of installation of each part.)




1. Function of power board switch

Turn off the switch when there is no need for a power board or inconvenience of power board, then the power board will automatically get back and stop working to avoid any impact when use the vehicle.

II. Power board switch using method:

1. Press the power board switch button to set “ON”. And at the same time, the steps will automatically go back and stop working.

2. Press the power board switch button to set “OFF”. And at the same time, the power board will return to its normal working status.

## Maintenance

Inspect the operation of the step, ensure it works as it's supposed to.

At every oil change interval, take the time to inspect for damage to each cable connection and the exposed components, apply dielectric grease to the electrical components and dry Teflon lubricant (PTFE LUBE) to the mechanical

Inspect hardware to be sure hardware is still tight.

Be sure the board is still stable with the motor fully actuated.

Keep the underside of boards clean and free of debris and ice if in colder weather.

## Warranty

2 Year Limited warranty on electrical and mechanical components

The following can potentially void warranty

- Failure to maintain the steps in accordance with the maintenance guidelines provided in the installation instructions
- Misuse of the steps (Using the product in any manner other than for the intended use of the product)
- Installation errors causing damage to the product
- Electrical and mechanical modifications

To file a warranty claim

• Contact an authorized BA dealer to initiate warranty process. Authorized dealers must contact BA to assist in evaluating the warranty claims. Valid warranties will have an RGA issued. Once issued the dealer will request the product be returned to BA facilities.
• Products purchased through an authorized BA dealer will be refunded and/or credited by that BA dealer.
• Warranty contact: help@bodyarmor4x4.com
• Return address: Body Armor 4x4, 1050 N. Vineyard Ave. Ontario CA, 91764

## Troubleshooting Guide

After installing the steps, when the door is opened one motor goes up while the other goes down.
**Disconnect the motors and swap connections.**

How do I extend or retract the motor linkages when I am installing these?
**Make sure your connected to the battery, connect the power to the motors and the disable switch. Then hit the disabled switch, this is a great way to control the extension or retraction of the motors.**

When I open the door, the steps do not retract and come down.
**Flip the override switch from "I" or "on" position. If the steps retract after the override switch is powered, then the steps have proper power. If the boards do not retract check the fuses.**

The steps only work on one side.
**Flip the switch on and off a few times to confirm the steps go up and down. If they don't move, check the power connectors at the front and rear motor. Then check the 6 pin and 4 pin connectors at the controller to be sure it's secure. If the steps did retract when flipping the switch a few times. Check the door magnets and sensor alignment to be sure they are in spec per the instructions. Be sure to double check the grounds on the chassis.**

My steps are operating in reverse. They go up when I open the door and drop when I close the door.
**Disconnect the harness to the motors and swap connections. Disconnect the harness to each front motor and plug it into the rear motor on the same side and vice versa.**

My steps were working fine, now they won't go up
**Check the door magnet and sensor alignment on the front and rear doors to make sure they're in spec per the instructions. Check that the ground terminal to the truck is making good contact. Check the fuses on the positive and negative power wiring harness leads.**

My LED lights aren't working.
**Check the round wiring connectors for each LED light. Make sure that the small arrows on the mating plug and connector are aligned and the connection is tight and secure. Check the two round connectors at the controller. Make sure that the small arrows on the mating plug and connector are aligned and the connection is tight and secure. Open a door on the Driver side of the truck and check to see if the LED lights are illuminated on the Passenger side. If opening a Driver side door is causing the Passenger side LED lights to come on, simply swap the two LED Power wires at the controller. These are two small round connectors.**

I open the driver side door and the passenger side LED lights turn on.
**Swap the two round connectors at the controller, making sure the small arrows on each plug are aligned and the connections are tight and secure.**

My running boards are squeaking.
**Using a water hose, spray the hinges on the front and rear motors to remove any dirt, sand, or mud. Dry with a towel and generously lubricate all**
**the hinges using a PTFE LUBE.**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