

## **Behind Seat Dual Battery Mounting Instructions Ranger/BT-50**

**While all care has been taken to prepare these instructions any damage done to your car is YOUR responsibility and Accelerate Auto Electrics can not be held liable. If you are unsure about ANYTHING feel free to call us on 07 5479 6652 and we will be happy to answer any questions.**

### **Anderson Plugs-**

All the Anderson Connections have been supplied with the terminals crimped on but the plugs are not clipped in, this is to allow you to pass all the wires easily through the grommets etc.

When fitting the plugs you will notice that the 'Top' of the plug has the Anderson branding on it and a + and - markings.

The Terminals have an A stamped on them, this A goes to the top as well.

To fit the plug put the red wire in the round + hole and push it in until it clicks. If you look in the front of the plug you will see the terminal is all the way to the front and is retained at the bottom by the metal spring plate. Put the black wire in the - hole and push it in until it clicks. If you look in the front of the plug you will see the terminal is all the way to the front and is retained at the bottom by the metal spring plate.

### **Nutserts and installation-**

You will notice we have set up the tool ready for the first installation.

To use the tool, place the nutsert in your hole, place a 13mm spanner on the nut. With that hand hold the spanner and the metal tool in one place

With your other hand place a 10mm spanner on the bolt and turn clockwise until the Nutsert squashes up and is retained.

DO NOT overtighten, when you fit the brackets etc you can use that opportunity to really crush up the nutsert, go easy on them when installing so you don't damage them. We have given a few extras in case you need to remove any and start again. Feel free to practice with one on a spare bit of steel.

**Before starting this job disconnect the battery from the negative side and insulate so it does not fall back onto the neg terminal.**

## **Installation Instructions:**

**Please read these fully and ensure you understand all steps before starting!**

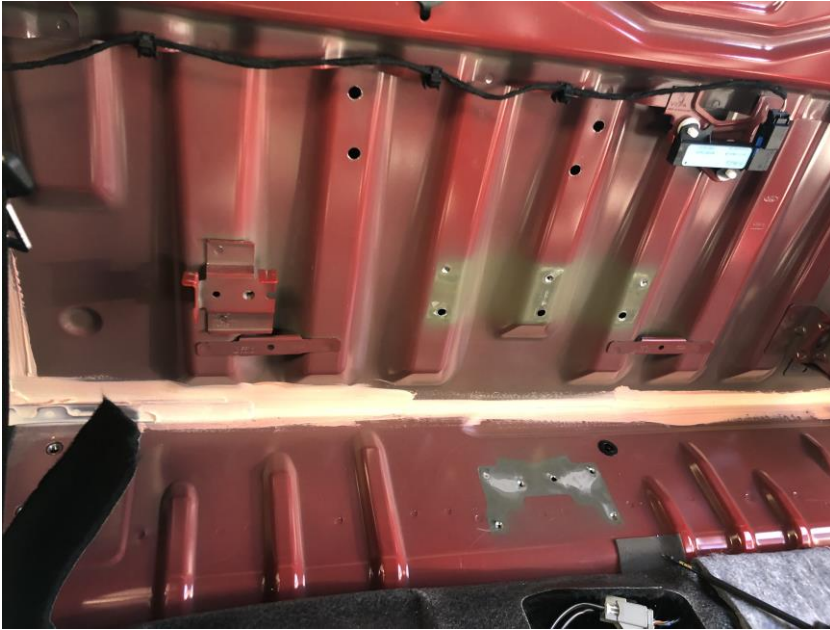
- 1.** Fold up the back seat and remove T45 torx bolt holding the middle seat belt and stalk in place. Unplug the wiring that goes to the seat belt stalk.  
Fold down the back of the rear seat and pull up the carpet on each side to reveal the 4x T45 Torx head bolts holding seat in position. Once unbolted Remove rear seat to give ample work space. You will need 2 people to lift it out through the car.



- 2.** Remove plastic shroud off the back wall covering the centre seat belt. Unbolt seat belt retractor T45 Torx. Remove Tyre removal tools and Vehicle jack from mount, Remove plastic shroud off back wall above the rear carpet/insulation (hint-pull at the top to release retaining clips). Remove rear wall insulation. Then fold back the carpet so bare metal is showing on the floor.



**3.** With a pilot drill bit drill out the centre of all the spot welds on the Tool Mount, Jack Mount brackets and on new rangers remove the small bracket to the left of the others (if the small bracket is not there please ignore). Once pilot holes are drilled use a M8.5 drill bit to drill out the rest of the spot welds. After the brackets are removed, clean up all rough edges and keep brackets for re fitment.



**4.** Position Dual battery tray into vehicle on the Drivers side. Line the edge of the mounting tab up with the seat mount ridge (hint- important step,see pic) and pushed as far back as possible against the rear wall. Once it's in the shown position mark the holes with the tray sitting on the centre of the ridges in the rear of the vehicle. You will require space up the other end of the tray as no ridge to suit. (Washers supplied)

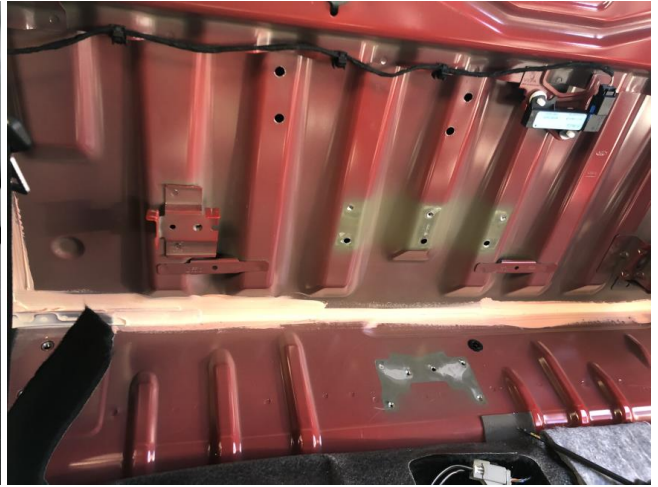




**4b.** Mark holes for Tyre tool bracket by positioning bracket directly above original holes but hard up against top ridge on back wall. Mark only 4 holes.

Position jack mount on the passenger side rear wall, it does have to sit on an angle keeping in mind plastic trims over seat belt mount. Mark holes where suited for jack mount.

Please have a play with the Jack mount as to find the best position.



Once jack is fitted and the job is done it should look like this.





**5.** Once all holes are marked and confirmed (test fit seat to confirm) pilot drill all marked holes and drill out with a 10mm drill bit (to suit mounting of M6 nutserts) Clean off all rough edges of holes drilled. Nutsert all mounting holes drilled with M6 nutserts. (do not nutsert factory Jack mount and tyre tool mount holes, these will be filled)



**6.** Vacuum out all metal shavings and prep factory jack mount/tyre tool mount holes for filling. Using a quality body filler (preferably fibreglass based) fill holes excessively. Once the body filler has set sand flat and clean up all excess filler up. Once filled and cleaned, prep back section for paint. Wipe down all surfaces being painted and mask off all seat belts/window. Once ready for paint, prime surfaces and paint to suit vehicle colour if you wish.



**7.** Once the paint has dried fit Jack mount and Tyre tool mount on rear wall,





**8.** Step 8 has 2 options, either choose 8a or 8b. For PX1's we usually use option 'A' because the factory insulation is quite flat. On Px2 & Px3 we usually use option 'B' as the insulation on the later ones has lots of contours and does not sit as well behind everything.

**8a.** Refit rear wall insulation cutting holes where needed to suit new mounting locations. Then you will need to cut the insulation as shown in the photo to allow for the battery and the tools. This option is not as attractive but perfectly functional and means you don't need to obtain carpet.



This is a Px3 with the carpet cut out, on a PX1 you can just cut slots for the tool and jack mounts.

**8b.** Use the current rear wall insulation as a template and cut out a separate piece of carpet. This option looks a lot better as it will sit flat against the wall and there is no need to cut sections out for the tools and the jack. You can get the carpet from any hardware or marine store. Just cut slots in the carpet for the mounting tabs to poke through for the Jack and Tool mounts.

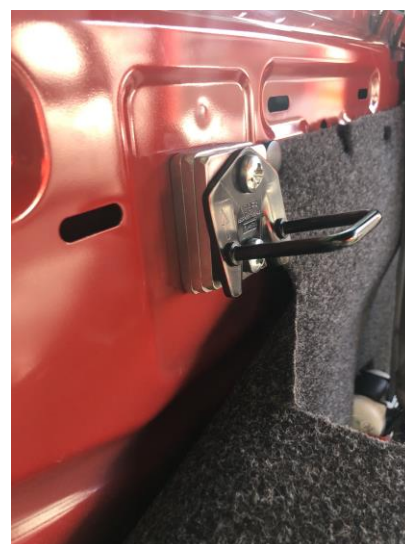




**9.** Fold carpet back over onto the floor and mark and cut squares for access to nutserts for the battery tray. Once this is done bolt in the battery tray remembering to fit the battery tie down straps under the tray before tightening.

**10.** Remove Back seat latch and Space out with supplied spacers, re fitting with longer hex M8 bolts. Fit all 3 in the beginning then at the end of the job you can remove as many as possible. The number of spacers needed will vary on the placement of the battery tray/ battery option taken/ if you have seat covers etc. The goal will be to use none of the spacers at all if possible.

[`Note- each state has different rules regarding modifications to seat mounting points. Its your responsibility to check local laws and ensure you comply!](#)



**11.** Run the 6mm twin from the Auxiliary fuse box across the rear wall of the car on the floor and exit the cab through the grommet on the rear wall on the passenger side. Cut the little knob off on the gromet and run the wire through that. **THE EYELET END OF THIS HARNESS IS TO BE CONNECTED TO THE 6 WAY FUSE BOX ON INDIVIDUAL FUSED CIRCUITS.**

Run the wire straight down to meet up with the factory loom running along the chassis rail. Follow the factory loom to passenger tail light. Be careful not to stray from the factory loom as this can be a rub through hazard. It

may be easier to continue running the wire if you remove the rear passenger wheel arch plastic. If you remove the clips that should be enough to bend it out of the way without removing the plastic pop rivets. Leave the wheel arch out for the next step.



**12.** Remove the passenger side tail light with a T30 torx bit. The tail light will pull straight back once the 2 screws are removed. It is clipped in (hint- pull straight back NOT to the side as you will scratch the car). Drill out the drain hole to a 14mm size hole and run the cable straight up through the hole. Then drill a 14mm hole straight through to the tub. The height of this hole will determine where the cig socket sits inside the tub or where the wires come through for the accessory box. Fit the Anderson plug to the wiring behind the tail light and connect either option in the taillight space and run wires to tub.



**13.** Plug in and mount the cig socket with the screws provided, it can point up or down depending on your preference. If your vehicle does not have a canopy we recommend you face it down to reduce water ingress. If you have chosen the Accessory box option then mount it on the side wall in the recess, it should fit nicely. Run wires into tail light area and connect anderson plug, Then use the supplied nut to bolt the earth ring terminal to the stud behind the lower of the taillight. Plug it in and refit taillight.

**PLEASE NOTE FOR SOCKET BOX OPTIONS. GREY ANDERSON PLUG ARE BOTH POSITIVE FEEDS.** It is a Red & Black Twin core but both cables are used as **POSITIVE FEEDS**, Connected on the 6 WAY Fuse box behind the seat via the pre-terminated eyelets fitted. Fused 30 amp EACH.

IF you have opted for **Socket Box 5** you will require to run another loom (supplied) from RED anderson plug fitted on tray to Red anderson on socket Box.

**14.** In this step we will be removing the passenger side interior panels and the glovebox in preparation of running our input 8 B&S twin cable. Remove the sill panel on the passenger side front footstep, you will then be able to remove passenger side front kick panel. Remove rear side step sill panel. Once front and rear footsteps are removed pull forward the centre pillar cover that sits in front of the passenger front seatbelt retractor to allow your wiring to run the length of the cab.

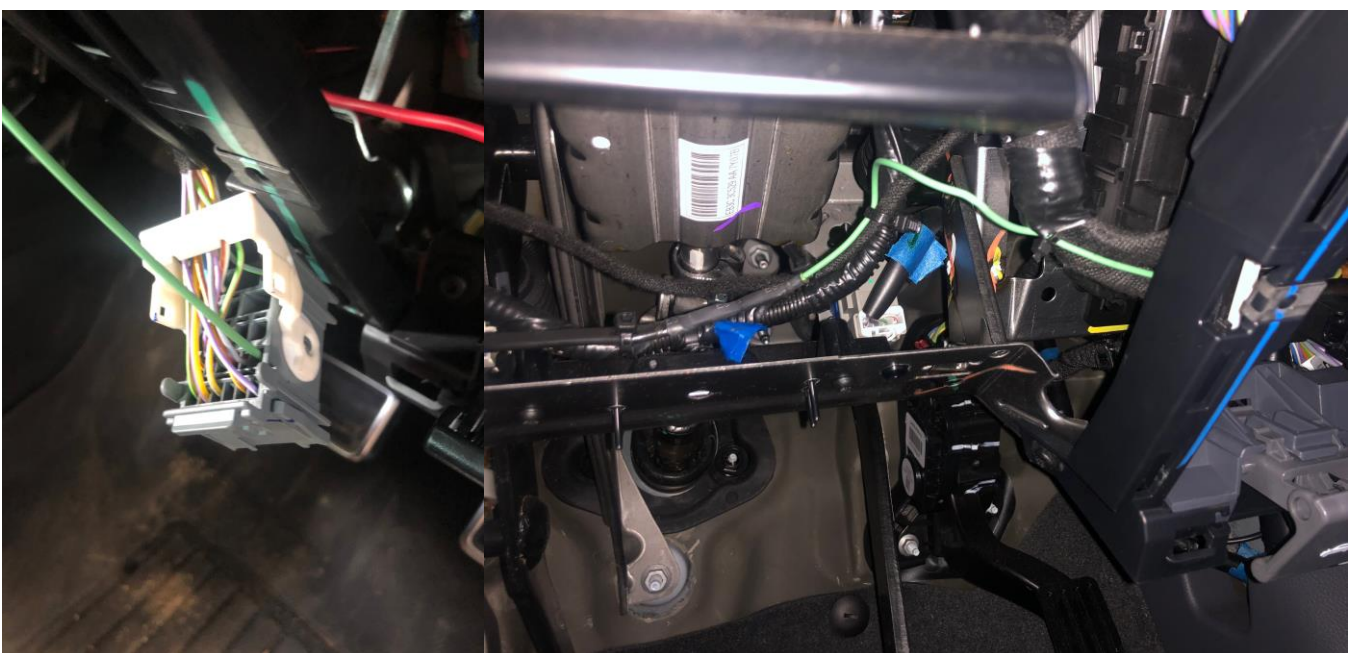


**15.** Run the 8 B&S twin from under bonnet into cab VIA the firewall grommet on the passenger side. You will need to make a small cut in the grommet and feed the wire through, it may help to tape wires to some electrical yellow tongue, mig wire or something similar. Be mindful to steer away from the main wiring loom so not to damage it. (hint- Be very careful here, take you time and don't damage any other wires. It is major surgery to fix factory wires if your not careful here). Just leave the cable of the passenger front floor at the moment, don't run it down the vehicle till after the next step.



**16.** PLEASE SEE FACTORY FORD MANUAL ATTACHED AT BACK OF INSTRUCTIONS.

Depending on the series of your vehicle follow the steps to insert the green wire into the plug on the BCM (Px2/3) or join to the existing wire (Px1). If inserting the pin please note the orientation of the other pins and insert the new one the same as the factory ones. Run it across to behind the glove box. The blue wire is then run with the 8 B&S for step 17. Note this output is ONLY for the BCDC input, if you wish to run anything else off this feed you will need a relay.





**17.** Follow the factory loom down the passenger side kick panel with your 8 B&S and your blue BCM input wire 'if used'. Keep following the factory wiring loom to the rear of the vehicle. When the loom has reached the back wall follow that across to the drivers side in preparation to plug into auxiliary battery. Wire up Anderson plug. Connect the blue wire if used into the plug. Do not plug into auxiliary battery at this stage. Secure wire through vehicle with the cable ties working front the rear to front.



**18.** Run earth lead to 13mm bolt that holds ABS Module bracket. \*note ABS plug should be unplugged, that will give you enough room to get your socket onto the bolt for the earth. Run fuse lead to battery, Cable tie Midi Fuse to Factory Power Loom and wire up. Check the Ford Bulletin attached for connection point.. Don't forget to plug ABS back in after earth is fitted. Secure wires with cable ties.

**19.** Fit the auxiliary battery to tray and strap down tight. Wire up red wire to "+" symbol on battery and wire up black wire to "-" symbol on battery. Plug Anderson plug from front into bottom Anderson plug of auxiliary battery.



20. Start up vehicle and ensure everything is working correctly by checking lights on the DCDC charger. Check auxiliary sockets in rear with test light or multimeter.
21. Put panels back in reverse of taking them out. Put car seat back in. Put seat belts back in correct spots and ensure all bolts are tight.
22. Plug in fridge and enjoy your cold beer.

## **Kit inclusions**

- 1 x Front Battery harness with Midi Fuse
- 1 x Battery Bracket with selected charger, fuse box, red Anderson, grey Anderson, and rear harness prefitted
- BCM wiring insert harness with Factory Ford pin
- 1 x Accessory Box
- 3 x Anderson Plugs
- 4 x Medium M6 bolts for tray
- 8 x Short M6 bolts for Tool bracket and Jack Mount
- 2 x Long M6 bolts for Jack Mount that is on the ridges
- 3 x Seat Spacers
- 2 x Bolts for Seat Spacer
- 1 x Nutsert tool
- 17 x Nutserts
- 6 x screws for Accessory Box (2 are spares)
- 1 x M6 Nyloc nut for earth behind tail light
- 1 x M8 Nut
- Cable ties x 100
- 1 x Thunder Fridge Straps
- 6 x Washers

## **Tools and consumables needed**

- Drill
- Drill bits
- Trim removal tools
- Torx bits
- Basic hand tools
- Fiberglass based body filler

- Sandpaper, something like 120 grit
- Carpet for rear wall (optional)

**Auxiliary Battery fitted to vehicles with a Battery Monitor System (BMS)**

**NOTE:** The addition of an auxiliary battery in a vehicle with BMS would cause both batteries to not reach a state of full charge. The system will only allow charging of the batteries during deceleration. Refer to Dual Batteries with Battery Monitor System (BMS) in this section.

**NOTE:** Disabling the BMS will negate the fuel economy benefit provided by the BMS.

**NOTE:** Auxiliary loads must always be connected to the vehicle ground and not to the battery negative terminal.

**NOTE:** Ensure the auxiliary battery connection is safely secured using suitable fixtures to reduce vibration damage or contact with surrounding components.

For vehicles equipped with BMS, an additional battery can be connected using one of the following methods:

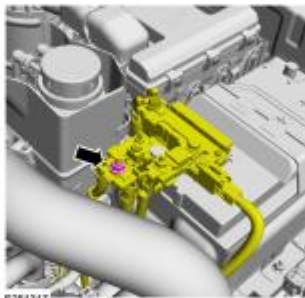
1. Use an in-vehicle battery charger (DC/DC converter) such as BCDC1220 model from Redarc ([www.redarc.com.au](http://www.redarc.com.au)) (or similar), connected via an additional terminal to the starter post terminal on the B+ using a 30A fused connection and grounded to the vehicle body, in the shown locations.

**NOTE:** The additional terminal must be installed on top of the starter post terminal using the existing nut.

**NOTE:** The maximum thickness of the additional terminal being installed on top of the starter post terminal must be no more than 2.0 mm.

**NOTE:** Ensure the existing nut is reused.

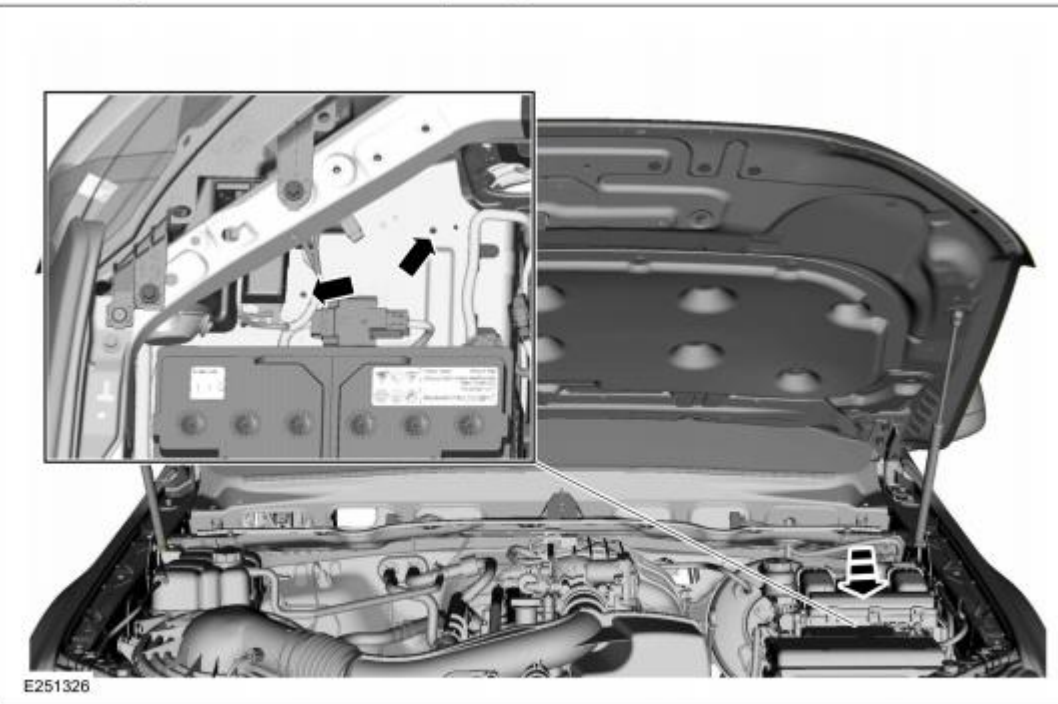
**B+ Connection for Auxiliary Battery Charging**



The B+ connection should be fixed to the terminal posts using the existing nut with a torque of 13.5 Nm +/- 2.1 Nm.

**NOTE:** Ensure the fused connection is secured using suitable fixtures to reduce vibration damage or contact with surrounding components.

**Grounding points for in-vehicle battery charger**



Item	Description
1	Possible ground connection points using W705661-S901.



The ground point connection should be tightened to torque of 12 Nm +/- 1.8 Nm.

2. Request a Ford dealer to disable the BMS. Disabling the BMS enables voltage sensitive relay based dual battery systems to work.

### Auxiliary Battery fitted to vehicles without a Battery Monitor System (BMS)

**NOTE:** Auxiliary loads must always be connected to the vehicle ground and not to the battery negative terminal.

**NOTE:** Make sure the fused connection is safely secured using suitable fixtures to reduce vibration damage or contact with surrounding components.

An auxiliary battery charging system can be connected using one of the following methods:

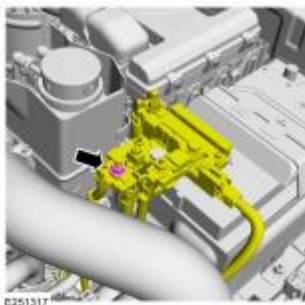
1. Use an in-vehicle battery charger (DC/DC converter) such as BCDC1220 model from Redarc ([www.redarc.com.au](http://www.redarc.com.au)) (or similar), connected via an additional terminal to the starter post terminal on the B+ using a 30A fused connection and grounded to the vehicle body, in the shown locations.

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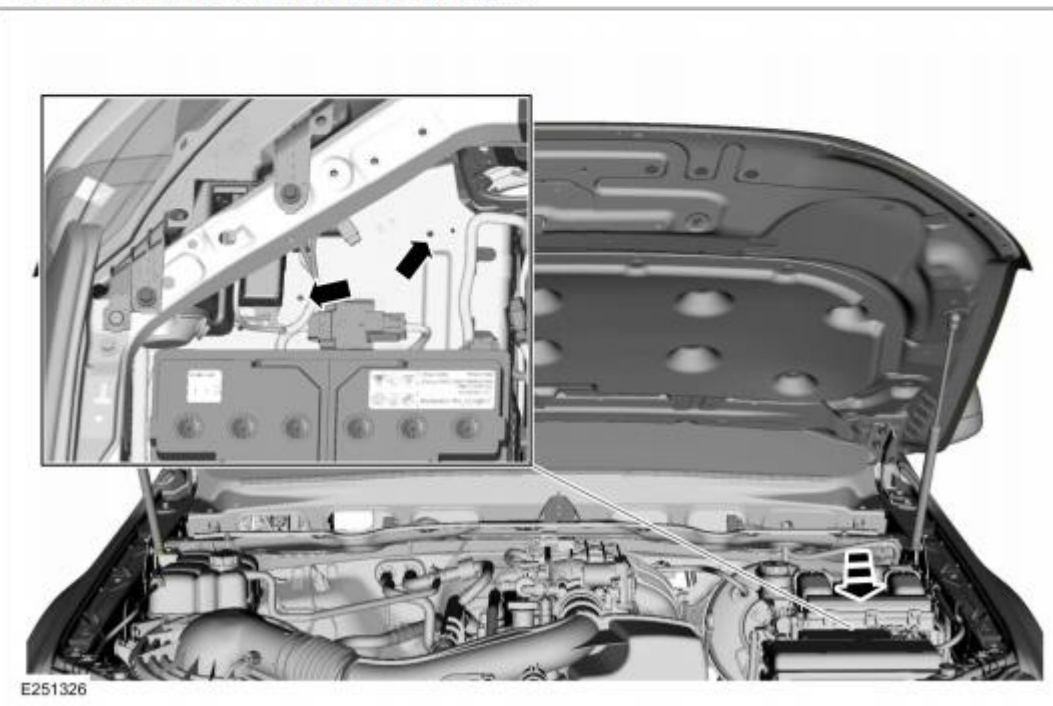
### B+ Connection for Auxiliary Battery Charging



The B+ connection should be fixed to the terminal posts using the existing nut with a torque of 13.5 Nm +/- 2.1 Nm.

**NOTE:** Make sure the fused connection is secured using suitable fixtures to reduce vibration damage or contact with surrounding components.

### Grounding points for in-vehicle battery charger



E251326

Item	Description
1	Possible ground connection points using W705661-S901.



The grounding point connection should be tightened to torque of 12 Nm +/- 1.8 Nm.

### Connection of Auxiliary Loads - Low Level Vehicles

#### WARNINGS:

**⚠ Make sure all electrical connections and wiring comply with regulations stated in ADR 42/04 Clause 9.**

**⚠ Under no circumstances should any unfused connections be made directly to any of the vehicle's battery terminals.**

**⚠ An increase in battery drain due to an auxiliary load will void the battery warranty.**

**NOTE:** Auxiliary loads must always be connected to the vehicle ground and not to the battery negative terminal.

- For auxiliary customer electrical loads, a suitable fused connection must be used.
- If multiple auxiliary loads are required, it is recommended that an auxiliary fuse box is fitted to the vehicle.
- For the connection of auxiliary exterior lighting, refer to the guidelines given in the exterior lighting section.

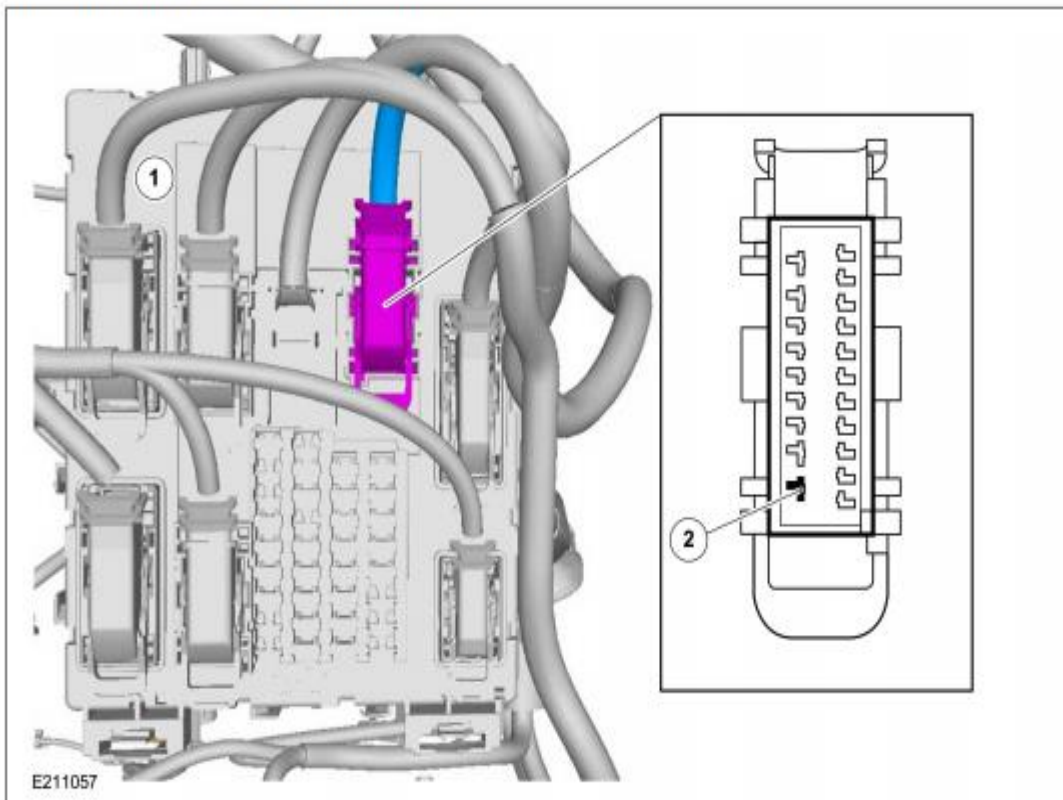
Refer to: 4.3 Exterior Lighting (page 66).

Auxiliary loads for external devices which require an ignition feed (such as UHF/CB radios) may be connected via a relay energised by the IG+ feed to the Body Control Module.

**⚠ WARNING: Under no circumstances should the IG+ feed be used to drive auxiliary loads directly. A suitable relay must be used.**

The Body Control Module is positioned on the driver's side of the vehicle underneath the dash panel.

### IG+ Connection at Body Control Module



E211057

Item	Description
1	Body Control Module
2	IG+ Feed

## Connection of Auxiliary Loads - High Level Vehicles

### WARNINGS:

**⚠** Make sure all electrical connections and wiring comply with regulations stated in ADR 42/04 Clause 9.

**⚠** Under no circumstances should any unfused connections be made directly to any of the vehicle's battery terminals.

**NOTE:** Auxiliary loads must always be connected to the vehicle ground and not to the battery negative terminal.

- For auxiliary customer electrical loads, a suitable fused connection must be used.
- If multiple auxiliary loads are required, it is recommended that an auxiliary fuse box is fitted to the vehicle.
- For the connection of auxiliary exterior lighting, refer to the guidelines given in the exterior lighting section.

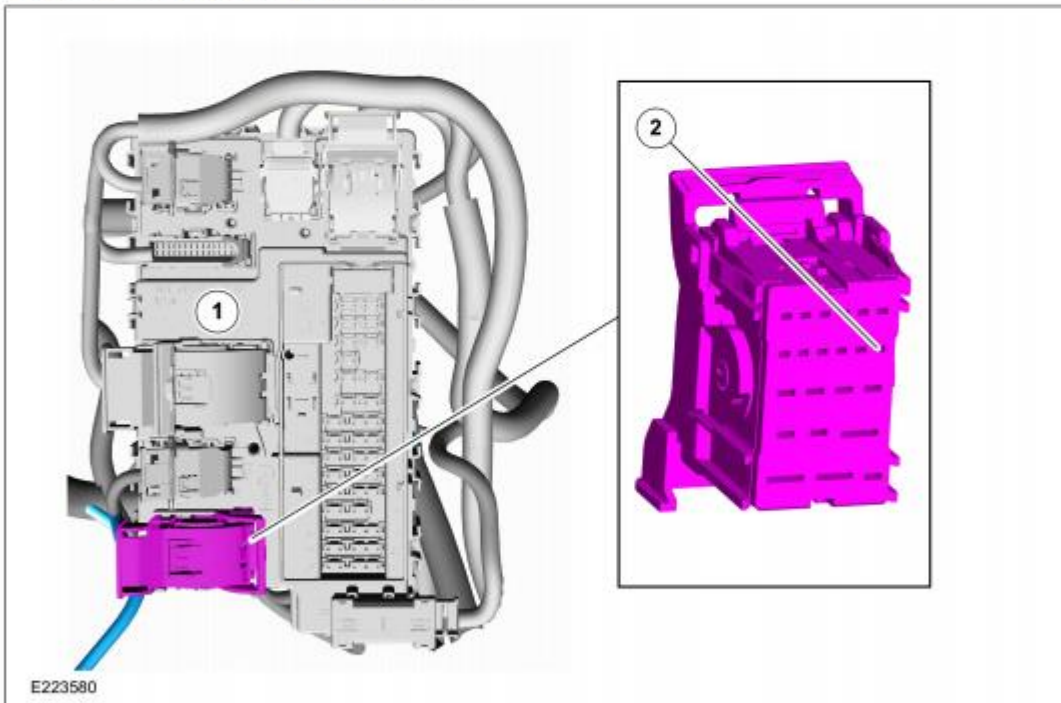
Refer to: 4.3 Exterior Lighting (page 66).

Auxiliary loads for external devices which require an ignition feed (such as UHF/CB radios) may be connected via a relay energised by a IG+ feed to the Body Control Module.

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The Body Control Module is positioned on the driver's side of the vehicle underneath the dash panel.

### IG+ Connection at Body Control Module



Item	Description
1	Body Control Module
2	IG+ Feed