ARB FITTING INSTRUCTIONS

Part Number:	**4214080 – DUAL BATTERY TRAY ONLY**
	4314200 – DUAL BATTERY KIT *
Product Description:	**AUX BATTERY TRAY TO SUIT CENTURY N70ZZL (OR EQUIVALENT) BATTERY. BATTERY WEIGHT NOT TO EXCEED 30KG, NOT SUITABLE FOR RH CONFIGURATION (N70ZZ) BATTERIES**
	PLACEMENT REARWARD OF EXISTING BATTERY
Suited to vehicle/s:	**TOYOTA HILUX 2015 ON (DIESEL MODELS)**
	TOYOTA FORTUNER 2015 ON (DIESEL MODELS)

WARNING

NOTE:

- This product must be installed exactly as per these instructions using only the hardware supplied.
- Do not use this product for any vehicle make or model, other than those specified by ARB.
- The installation of this product may require the use of specialized tools and/or techniques
- It is recommended that this product is only installed by trained personnel
- These instructions are correct as at the publication date. ARB Corporation Ltd. cannot be held responsible for the impact of any changes subsequently made by the vehicle manufacturer
- During installation, it is the duty of the installer to check correct operation/clearances of all components
- Work safely at all times
- Unless otherwise instructed, tighten fasteners to specified torque

*Kit 4314200 has been provided with a REDARC BCDC1225D charger and ARB wiring kit (4300020). If the tray has been purchased individually (4214080), the ARB Wiring kit (4300020), and bracket to suit REDARC BCDC charger (4214090) can be purchased from ARB.

ARB 4x4 ACCESSORIES

Corporate Head Office

42-44 Garden St
Kilsyth, Victoria
AUSTRALIA 3137

Tel: +61 (3) 9761 6622
Fax: +61 (3) 9761 6807

Australian enquiries sales@arb.com.au
North & South American enquiries sales@arbusa.com
Other international enquiries exports@arb.com.au

www.arb.com.au

FITTING REQUIREMENTS

REQUIRED TOOLS FOR FITMENT OF PRODUCT:

BASIC METRIC SPANNER SET	**BASIC METRIC SOCKET SET (WITH EXTENSION)**
SIDE CUTTERS	**4mm ALLEN KEY**
CLIP REMOVAL TOOL	**PHILIPS HEAD SCREWDRIVER**
TORQUE WRENCH 1 - 25 Nm	**SOLDERING IRON & SOLDER**

HAVE AVAILABLE THESE SAFETY ITEMS WHEN FITTING PRODUCT:

Protective eyewear 	**Hearing protection** 

NOTE: 'WARNING' notes in the fitting procedure relate to OHS situations, where to avoid a potentially hazardous situation it is suggested that protective safety gear be worn or a safe work procedure be employed. If these notes and warnings are not heeded, injury may result.

IMPORTANT:

- Ensure all electrical connections are correct and tight and that both main and auxiliary batteries have a good earth connection to engine or chassis. Failure to do this can result in damage to the main wiring loom or vehicle.
- Make sure all wires are securely fastened away from any hot, sharp or moving surfaces. Do not fasten any wires to the brake or fuel lines.
- Good condition of the charging system and primary battery is important for the correct operation of this system. Any accessories connected to the battery must use the appropriate wiring and fuses.
- As the BCDC Charger priority charges the primary battery, it is desirable to wire additional driving lights to the primary battery. Other accessories such as a refrigerator should be wired to the auxiliary battery.
- CAUTION Additional driving lights can rapidly drain the primary battery.

INFORMATION ON THE BCDC Charger:

- DUAL BATTERY CHARGING. The BCDC Charger features technology designed to charge your batteries to 100%, regardless of their type or size. By providing a unique charging profile to each specific battery type, the BCDC charger can achieve and maintain an optimal charge in your auxiliary battery, at all times.
- EFFICIENT CHARGING. The BCDC Charger is designed to boost the low voltage present at the end of a long cable run to a level suitable to charge your auxiliary battery to 100%. The BCDC charger has a built-in battery isolator which protects your vehicle's start battery from going flat.
- WORKS WITH ALL ALTERNATORS. The BCDC Charger is designed to work with newer variable voltage alternators where the vehicle battery may not reach optimum voltage for a typical isolator to open. They are designed to boost the voltage to optimum levels, regardless of what input voltage they are getting from the primary battery.

PARTS LISTING – 4214080 AUX B.TRAY			
APPLICATION.	**PART NO.**	**QTY**	**DESCRIPTION**
UPPER LAMINATION PLATE	3750261	1	Bracket Assy Side Panel Upper
	6151180	2	Bolt M6 x 1.0 x 20
	4584369	2	Washer M6 x 16 x 1.2 HV300
LOWER LAMINATION PLATE	3750259	1	Bracket Assy Side Panel Lower
	6151180	3	Bolt M6 x 1.0 x 20
	4584369	3	Washer M6 x 16 x 1.2 HV300
TRAY TO BODY BRACKET	3750263	1	Bracket U Apron to Tray
	6151180	2	Bolt M6 x 1.0 x 20
	4584369	4	Washer M6 x 16 x 1.2 HV300
	6151162	2	Nut Nyloc M6 x 1.0
BATTERY TRAY TO BODY	6542164	1	Battery Tray Assy
	6151180	4	Bolt M6 x 1.0 x 20
	6151162	2	Nut Nyloc M6 x 1.0
	4581084	6	Washer Flat M6 x 25 x 3
	6151022	1	Bolt M8 x 1.25 x 25
	6151032	1	Nut Nyloc M8 x 1.25
	4584311	1	Washer Flat M8 x 18
	4581063	1	Washer Flat M8 x 25 x 3
	180302	5	Cable Tie - 200mm
BATTERY CLAMP	6582481	1	Bracket Battery Clamp
	6151114	1	Bolt L M8 x 190mm
	6151117	1	Bolt L M8 x 145mm
	6151032	2	Nut M8 x 1.25 Nyloc
	4584311	2	Washer Flat M8 x 18 x 2
	6151022	1	Bolt M8 x 1.25 x 25
	4581063	1	Washer Flat M8 x 25 x 3

ADDITIONAL PARTS LISTING – 4314200 AUX BAT KIT			
BCDC TO BCDC BRACKET	**3750265** **6151256** **6151128** **6151046**	**1** **4** **4** **4**	**Bracket BCDC** **Screw Btn Hd M6 x 1.0 x 16** **Nut Flange M6** **Washer Flat M6**
BCDC BRACKET TO BODY	**6151022** **4584311** **6151180** **4584369**	**1** **1** **1** **1**	**Bolt M8 x 1.25 x 25** **Washer Flat M8 x 18 x 2 HT** **Bolt M6 x 1.0 x 20** **Washer M6 x 16 x 1.2 HV300**
FUSE BLOCK TO BATTERY TRAY	**6151281** **6151354** **4584338**	**2** **2** **2**	**Screw Button Head M5 x 12** **Nut Hex M5 x 0.8 Nylock** **Washer Flat M5**
CHARGER & WIRING	**4300020** **BCDC1225D**	**1** **1**	**ARB Wiring Kit** **REDARC Battery Charger**

NOTE: This product is designed to fit on the LHS of the engine bay, towards the rear between the vehicle fuse box and the firewall.

FASTENER TORQUE SETTINGS:

SIZE	Torque Nm	Torque lb/ft
M6	9Nm	7lbft
M8	22Nm	16lbft

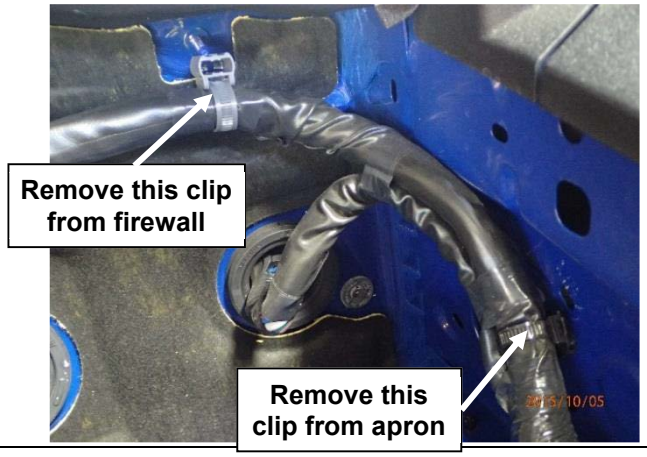
NOTE:

- ARB recommends installing a REDARC BCDC as part of this fitment. Refer to ARB/REDARC to determine the appropriate BCDC unit for your application.
- For details about the REDARC BCDC charger, refer to the manual provided with the unit.
- If using an alternative charging system and/or wiring, refer to the guidelines provided with those units.

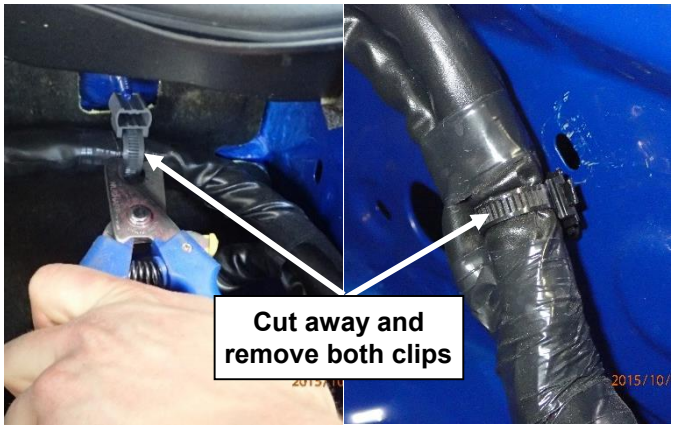
THIS BATTERY TRAY IS COMPATIBLE WITH THE FOLLOWING ACCESSORIES:

ACCESSORY	BATTERY CHARGER	MIDI FUSE HOLDER	FUSE BOX
BRAND	REDARC	MTA OR ZEEMAN	NARVA
MODEL	BCDC 1220, 1225, 1225D, 1240, 1240D	MIDIVAL, ANG-H2	54420, 54422, 54424
SPEC	20A, 25A OR 40A	1 WAY, 2 WAY	4, 6, 8 WAY

INSTALLATION PROCEDURE



1. Locate vacant area on LHS of engine bay between vehicle fuse box and firewall
2. Locate 2 X harnesses that run along the LHS apron, with one going into the vehicle and the other running along the firewall
3. Unclip this harness from two locations as shown
    a. Clip from apron
    b. Clip on metal stud from firewall

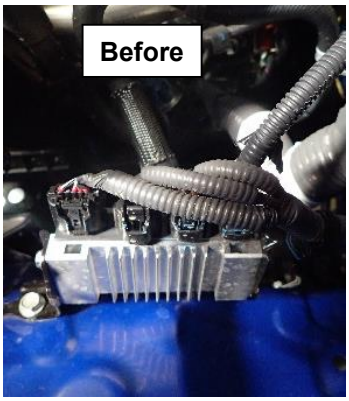


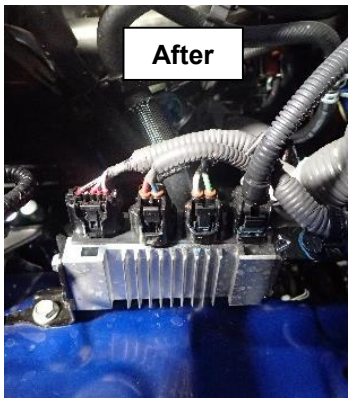
4. Cut away and remove previously removed clips from Step 3

5. Remove tape joining both harnesses as shown

6. Remove tape that loops around sedimenter harness.
7. Remove harness from the metal bracket by removing plastic clip from metal bracket.

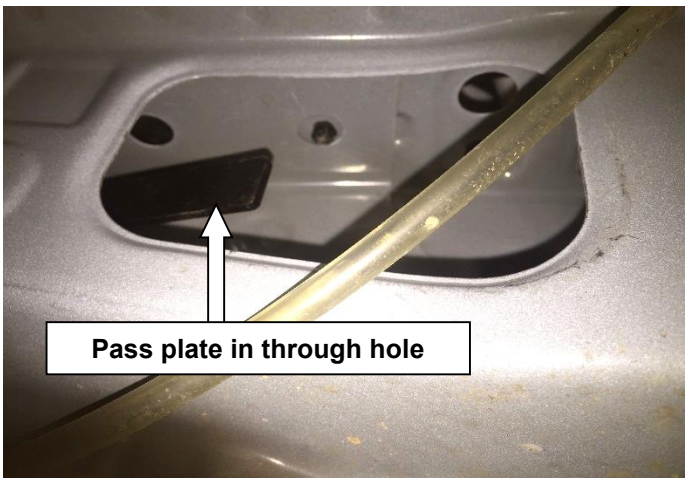
INSTALLATION PROCEDURE

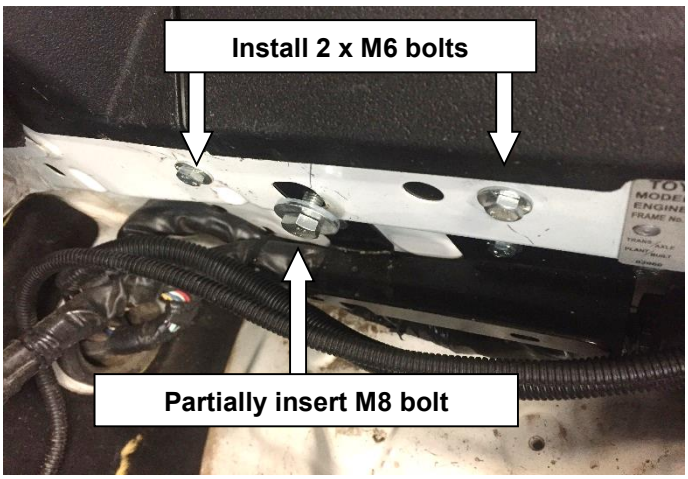




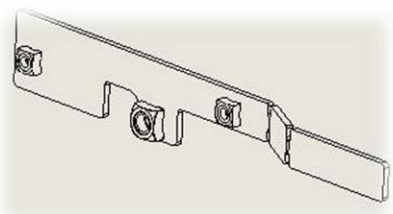
8. Re-route (disconnect and reconnect) 3X vehicle harness branches towards inboard side as shown in the ‘after’ picture

9. Remove the plastic wheel arch cover by removing the 8 plastic clips and 2 M6 bolts. To release the clips prise the centre out part way and then pull the outer edge of the clip.

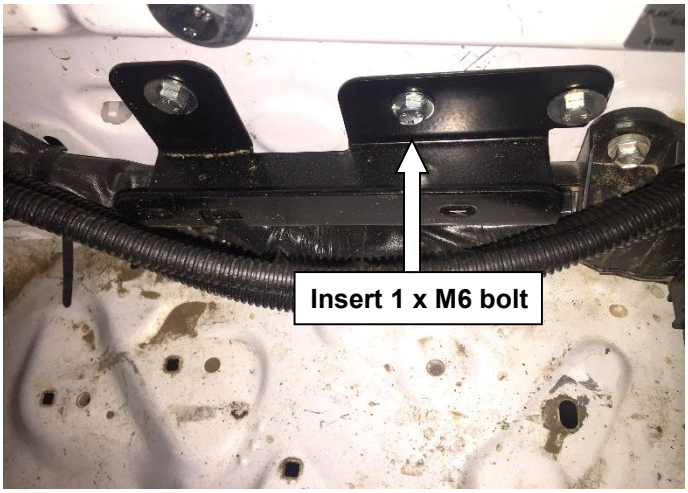




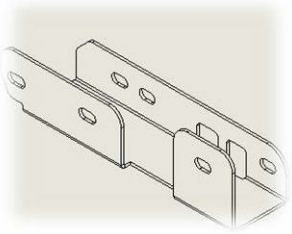
10. Bend the plate as shown, using cut outs to identify bend positions.
11. Pass the plate through the hole in the in the channel section of the inner guard from inside the wheel arch. Install the upper lamination plate behind the inner panel with the flat face of the plate positioned against the vehicle. Screw a M8 Bolt with M8 x 25 flat washer into the weld nut in the centre of the plate, going in just 3 – 4 turns and leave remaining thread exposed.
12. Screw 2 x M6 bolts with M6 x 16 flat washers into weld nuts on bracket through vehicle panel as shown. Screw the M6 bolts in all the way by hand but do not tighten.

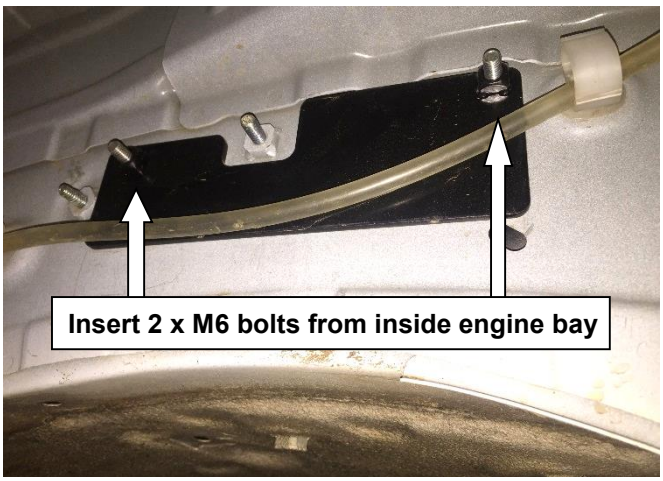


INSTALLATION PROCEDURE

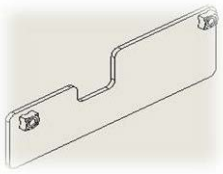


13. Place U shaped bracket against inner guard of vehicle, directly below the 3 bolts installed in previous step. Secure in place using 1 x M6 Bolt and M6 x 16 flat washer in middle slot of bracket to captive nut in inner panel.





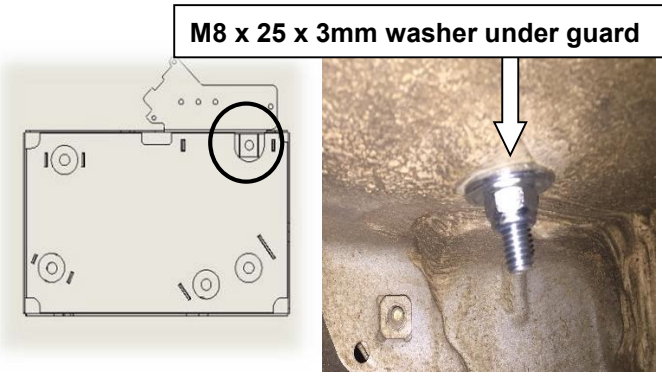
14. Install lower laminating plate behind the inner panel and align with U shaped bracket as shown. Screw 2 x M6 bolts with M6 x 16 flat washers into weld nuts on bracket through the 2 remaining holes in the U shaped bracket installed in the previous step. Screw the bolts in all the way by hand but do not tighten.



15. Place Battery Tray into vehicle,

HINT: Insert tray at an angle (downward towards firewall) for ease of fitment

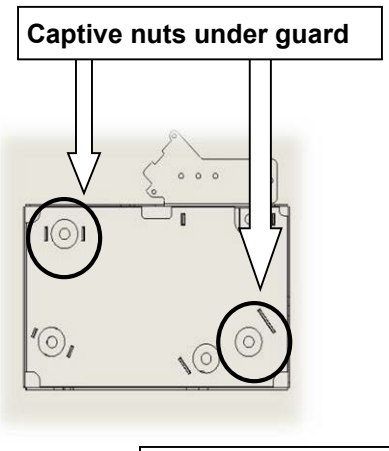
CAUTION: Make sure that all wires are securely fastened away from any sharp edges.



16. Align holes in battery tray base with holes in inner guard. Install 1 M8 x 20 bolt with M8 x 18 flat washer under the head into the hole in the RHR corner of the tray.

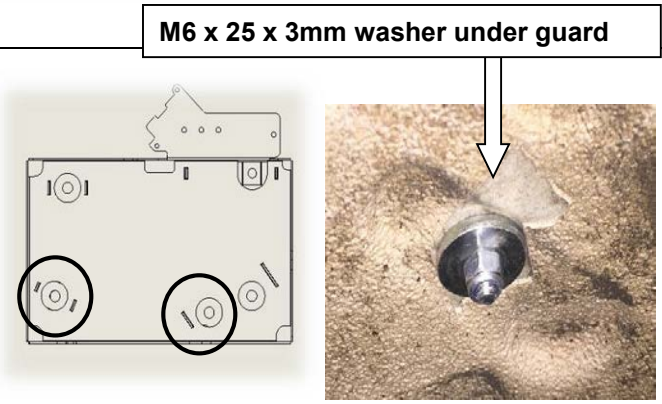
    On the underside of the panel attach a M8 nylock nut with a M8 x 25 flat washer

INSTALLATION PROCEDURE

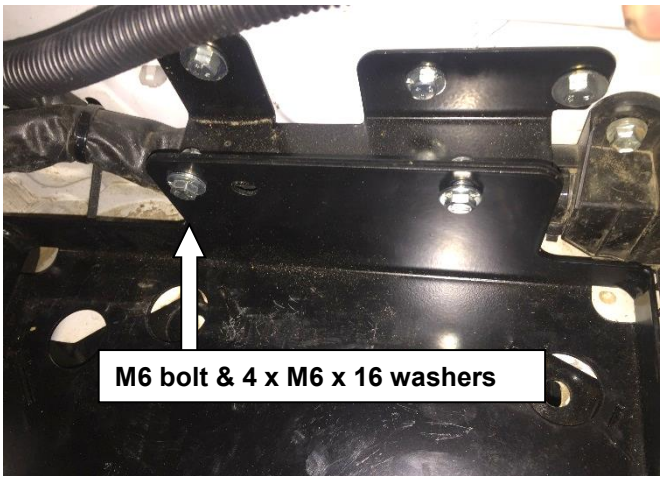


17. Install 2 M6 x 20 bolts with M6 x 25 flat washers under the head of each bolt to the RHF and LHR holes as shown opposite.

    These bolts are threaded into captive nuts under the guard.

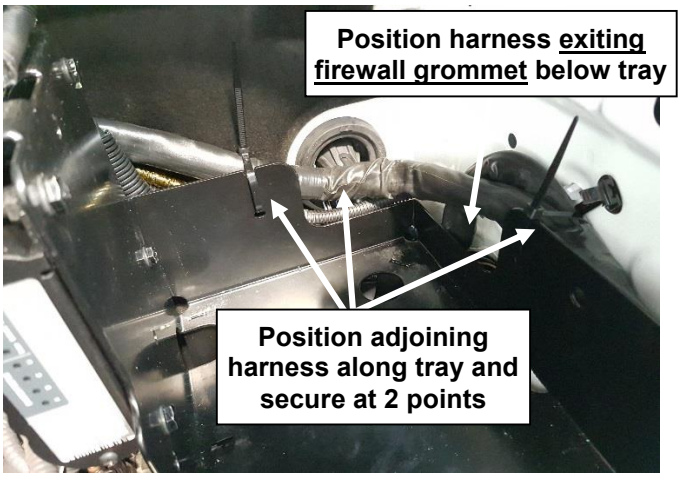


18. Install 2 x M6 x 20 bolts with M6 x 25 flat washers and nyloc nuts to the 2 remaining mounting holes.
19. Place 1 x washer between the head of each bolt and the battery tray.
20. Place 1 x washer under the guard between the guard and each nyloc nut.



21. Install 2 x M6 x 20 bolts, 2 x M6 nuts with M6 x 16 flat washers both sides to the 2 holes that join the tray to the support bracket mounted to the vehicles body.

22. When all bolts are started, tighten all bolts in the tray base and side support bracket.

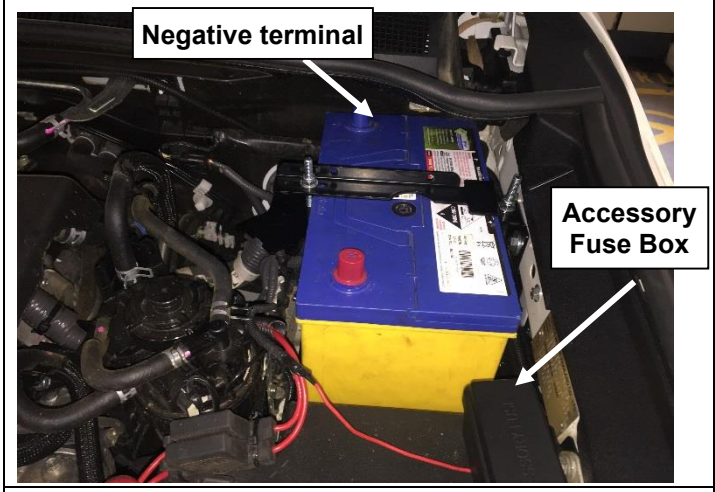


23. Position harness (exiting from firewall grommet) below tray as shown.

    Position adjoining harness along the battery tray and secure on tray using 2X cable ties as shown.

    CAUTION: Make sure that all wires are securely fastened away from any sharp edges.

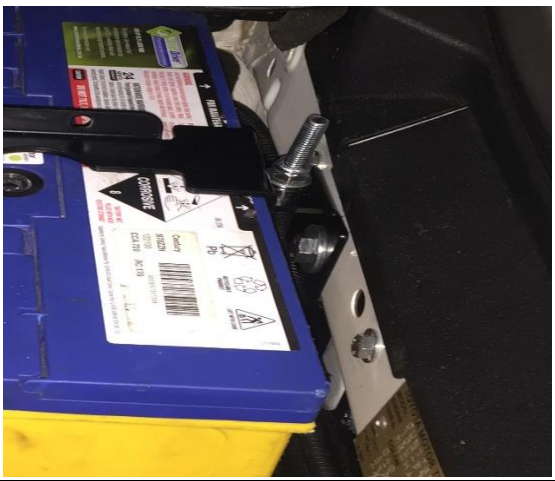
INSTALLATION PROCEDURE



24. Insert **N70ZZL** (or equivalent) battery into Battery Tray in orientation as shown

NOTE: Ensure battery terminals are on inboard side of vehicle as shown. Negative terminal must be positioned closest to firewall.

25. Install battery hold down clamp over battery. Position the slot on the outer edge of the clamp under the M8 bolt and 25mm flat washer that was loosely installed early in the procedure.
26. Secure battery hold down clamp over battery by using 2 X J bolts, 2 x M8 x 1.25 Nyloc nuts and 2 X M8 x 18 flat washers.

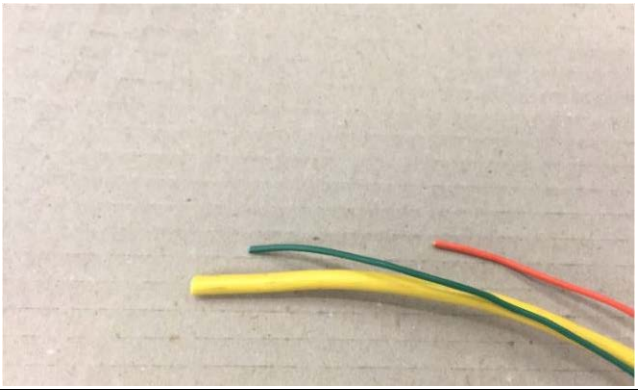


27. Tighten the battery clamp over the battery before tightening the M8 bolt securing the clamp to the side.
28. **Note, torque battery hold down bolts to <u>8Nm only.</u>**
29. Tighten the 2 remaining M6 bolts securing the top laminating bracket to the body.

30. Working with Item 1 from the ARB Wiring kit cut the BCDC input wire to a length of 850mm. Measure from the centre of ring terminal and retain end with ring terminal
31. Strip back 100mm of black tubing.
32. Strip back 15mm of red wire for soldering

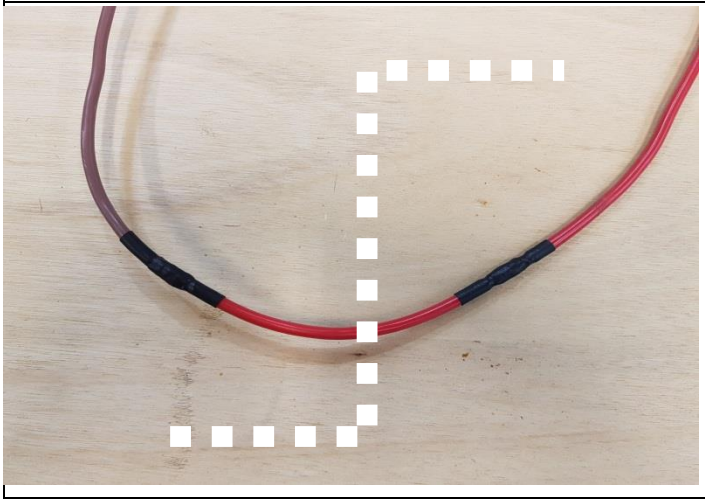
INSTALLATION PROCEDURE

33. Working with BCDC cut a length of black tubing from unused BCDC input wire and fit over red wire on BCDC unit leaving approximately 50mm of the red wire exposed.
34. Strip back red wire 15mm on BCDC unit for soldering.
35. Place a 50mm length of heat shrink tubing (Item 13) over wire and slide away from joint area. Solder 850mm long BCDC input wire and red wire on BCDC unit together and insulate using heatshrink.
36. Slide black tubing down wire and connect to tubing of input wire with insulation tape.



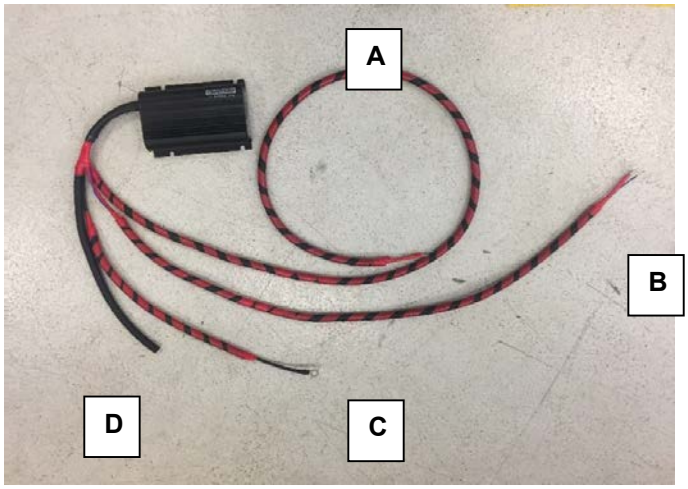
37. The Orange, Green and Yellow wires are not required for this application.
38. Cut wires so they are staggered as shown
39. Cut a 300mm piece of tubing from the unused section.
40. Slide the Orange, Green and Yellow wires inside tubing and retain with insulation tape.

41. Locate BCDC output wire (item6) from ARB wiring kit and remove tubing as shown and disregard tubing
42. Strip wire back 15 mm from blank end for soldering.
43. Cut a 1150mm length of wire from unused BCDC input wire, strip back both ends 15mm for soldering.



44. Cut 2 lengths of heatshrink 50mm long and place over brown wire of BCDC
45. Solder together brown wire from BCDC and wire prepared in step 41.
46. Solder together wire prepared in step 40 and wire prepared in step 41.
47. Place heatshrink over both soldered joints and secure
48. Measure and cut a length of black tubing from unused BCDC input wire and fit over previously soldered wire leave approx 50mm free at ring terminal end.

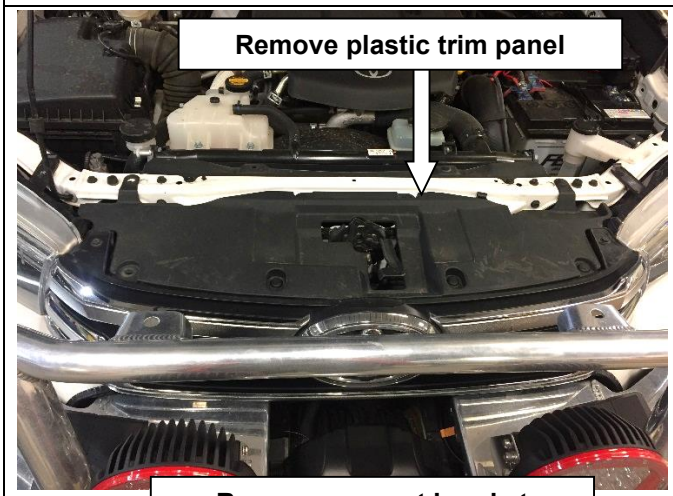
INSTALLATION PROCEDURE



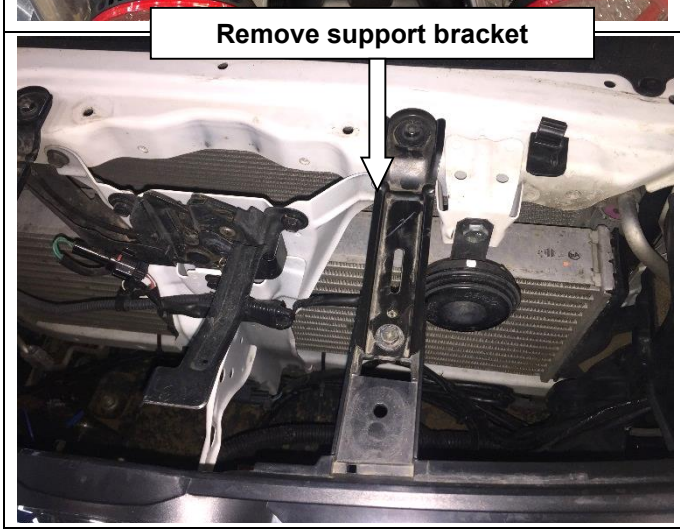
49. BCDC prepared and ready for installation.

    A, BCDC output wire
    B, BCDC input wire
    C, BCDC earth wire
    D, unused Orange, Green and Yellow wires

50. Install the BCDC onto the BCDC bracket as shown using 4 x M6 x 16 capscrews, M6 x 12 washers and flange nuts.



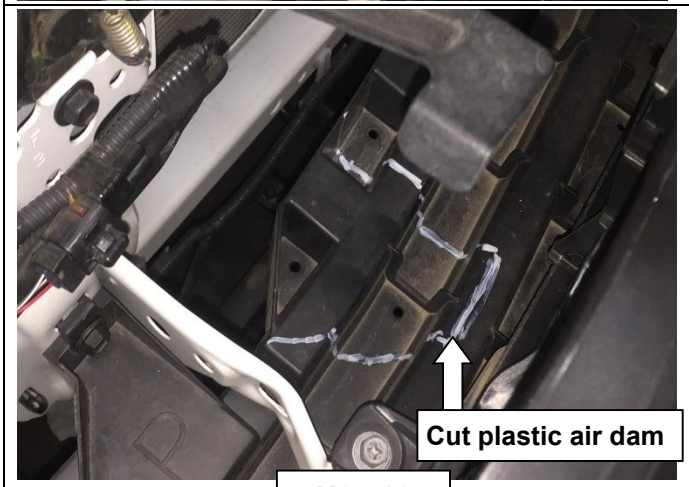
51. Remove the plastic trim from top of grille to radiator support panel.



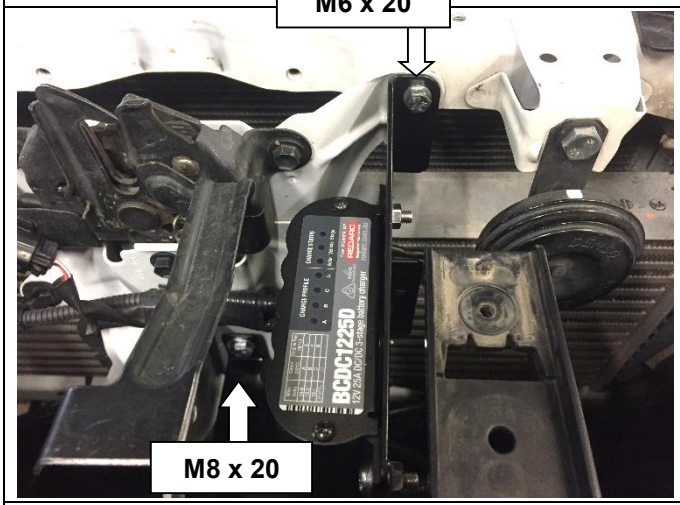
52. Temporarily remove grill support bracket from radiator support panel.

INSTALLATION PROCEDURE

53. When installing the BCDC bracket into a vehicle without a bullbar installed, place the BCDC bracket into the desired location and trace around the base of the bracket.



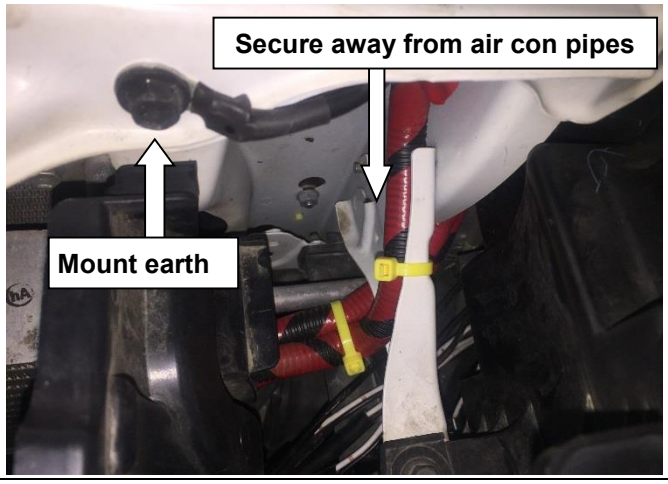
54. Cut the plastic air dam to allow for clearance around the BCDC bracket.



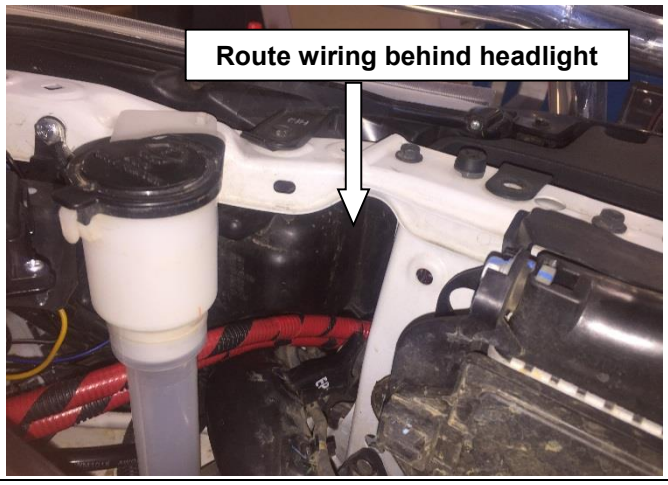
55. Install BCDC bracket to radiator support panel on the LH side of the bonnet catch.
56. Secure using 1 x M6 x 20 bolt and M6 flat washer and 1 x m8 bolt and M8 flat washer.
57. Re-install grille support bracket.

58. Route BCDC wiring through plastic trim near LH side of intercooler where the air conditioning pipes are routed.
59. Using a cable tie provided in the kit, secure the horn wiring to the 2 holes in the BCDC bracket.

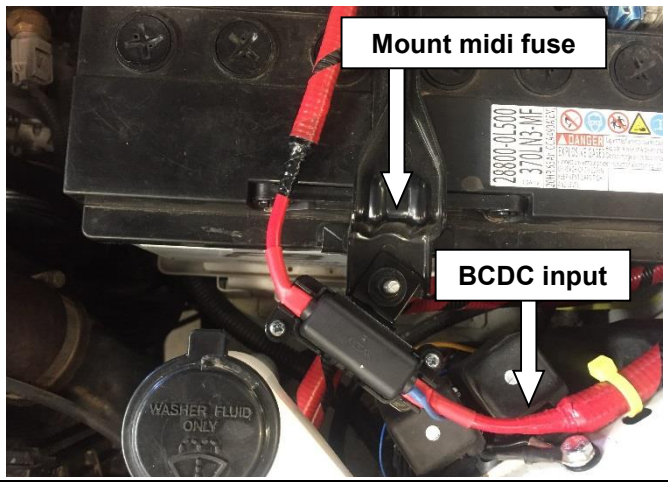
INSTALLATION PROCEDURE



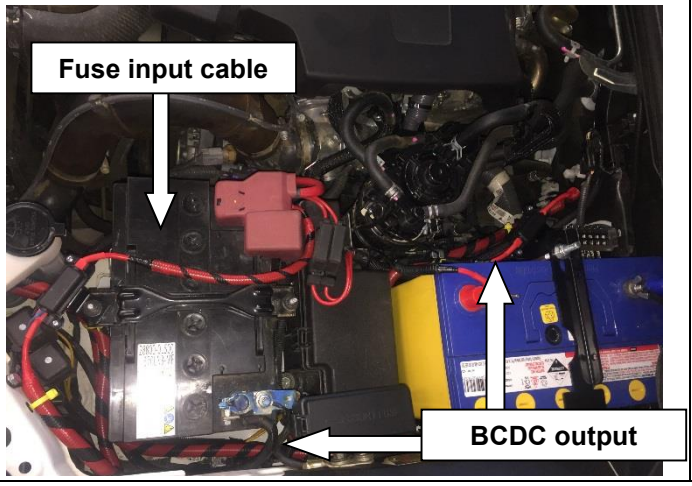
60. Secure wiring to body of vehicle. Ensure that the wiring does not rub against air conditioning pipes.
61. Mount BCDC earth cable under M6 bolt in radiator support panel.



62. Route the BCDC wiring behind headlight and towards the LH side of the engine bay.

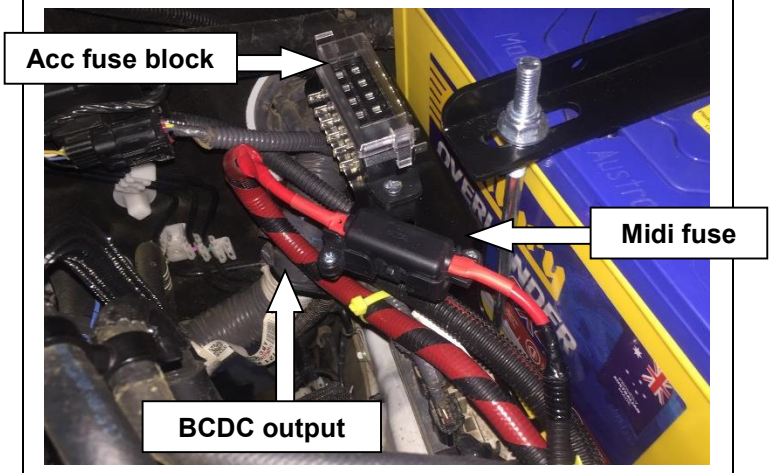


63. Secure midi fuse to front nut securing the cranking battery.
64. Connect the BCDC input wire to this midi fuse.

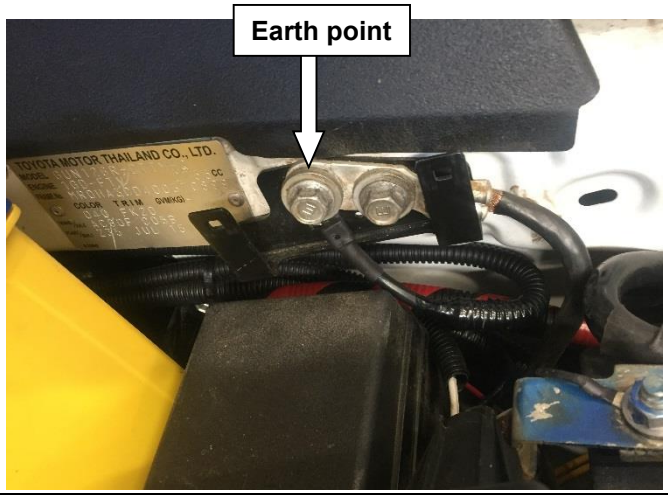


65. Connect fuse input cable (item 3) from other side of fuse to vehicle cranking battery.
66. Continue to route BCDC output cable along LH side of engine bay, pass between the fuse box and the front of the auxiliary battery towards the inboard side of the auxiliary battery.

INSTALLATION PROCEDURE



67. Mount second midi fuse and accessory fuse block to auxiliary battery bracket next to inner battery securing “L” bolt.
68. Connect the BCDC output cable to the midi fuse.
69. Connect the second fuse input cable (item 3) from other side of fuse to vehicle auxiliary battery.



70. Locate the battery earth cable (item 4), connect this cable to the negative terminal on the auxiliary battery. Route the cable between the battery and the LH side of the vehicle.
71. Connect the other end of the earth cable to the factory earth point next to the vehicle fuse box.

72. Place plastic trim over top of BCDC, identify and mark the area above the BCDC as shown by the shaded area opposite.

73. Cut the plastic trim panel to expose the BCDC LED display.
74. Refer instructions in the following section for installation of the BCDC charging system with an alternative wiring harness.

1 CONNECTING THE CHARGING CIRCUIT

ARB recommends fitting a Redarc BCDC charger to achieve optimum performance from the auxiliary battery.

To achieve safe and reliable operation of the BCDC charger, follow the steps below.

Even though the BCDC used will depend on the application, the following guidelines still apply.

Do not fasten any wires to brake or fuel lines.

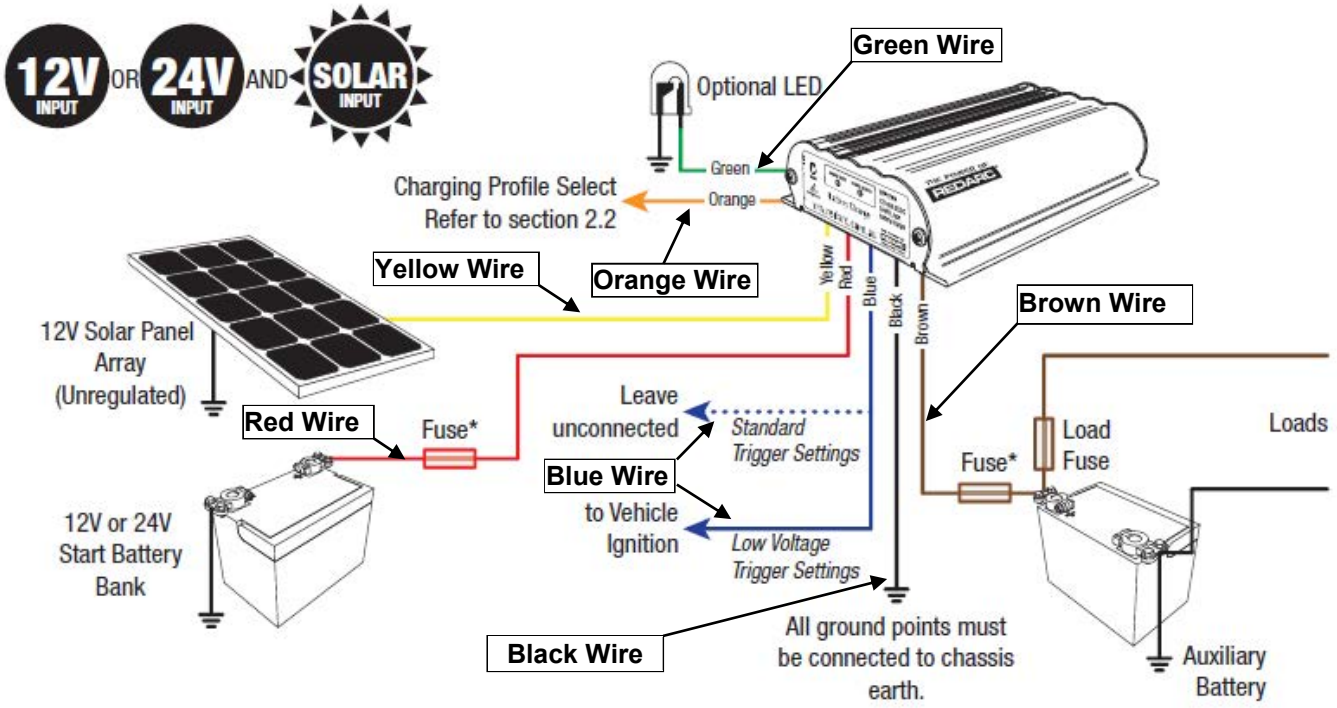
If the charging circuit is not working after correct installation, please consult a qualified Automotive electrician for assistance.

CAUTION: *Make sure all wires are securely fastened away from any hot, sharp or moving surfaces.*

Refer to diagram below for a typical setup of a 12V Battery connected with a BCDC Charger.

For detailed steps on how to wire the BCDC charging circuit, go to page 9.

Installation Setup diagram courtesy of REDARC Electronics.



WIRING – AUX BATTERY CHARGING SYSTEM

***NOTE:* IF INSTALLING 4300020 ARB AUX BATTERY WIRING KIT, THEN FOLLOW INSTRUCTIONS SUPPLIED WITH KIT**

FOLLOW INSTRUCTIONS BELOW IF INSTALLING OWN WIRING.

1. Disconnect main battery terminals, negative terminal first.
2. **RED WIRE**

   Connect BCDC Red Wire to Positive Terminal on Vehicle Main Battery. This wire must have a fuse as close as possible to the positive terminal of Main Battery. Use the fuse listed below for the BCDC being installed.

Fuse Guide	
Type of BCDC	**Fuse Size (A)**
BCDC 1220	30*
BCDC 1225/1225D	40*
BCDC 1240/1240D	50

** If using the ARB wiring kit (4300020), use the 50A MIDI fuses supplied with this kit as the wire is the correct size for these fuses.*

When lengthening the wire, use the wire size listed below for the BCDC being installed.

Input Battery Positive – Wire Size Guide		
Type of BCDC	**Length (m)**	**Recommended Wire Size (mm^2)**
BCDC 1220	1-3	3.5 mm^2 OR 6mm auto
	3-5	5.7 mm^2 OR AWG 8
BCDC 1225/1225D	1-5	7.71 mm^2 OR AWG 8
BCDC 1240/1240D	1-5	13.56 mm^2 OR AWG 6

3. **BLUE WIRE**

   Connect BCDC Blue Wire to Positive Terminal of Vehicle Start Battery (12V Positive Supply).

   For BCDC 1225D/1240D

   Leave Blue Wire disconnected for *standard trigger settings Refer to Redarc manual for directions on when this wire should be connected.*

4. **ORANGE WIRE**

   For Lead-Acid Batteries: Connect orange wire to Chassis Ground/Earth

   For Gel or AGM Batteries: Leave orange wire disconnected

   For Calcium Batteries: Connect orange wire to +12V Positive Supply

5. **GREEN WIRE**

   For BCDC 1225/1240/1225D/1240D

   If customer requires a visual indicator to show when the BCDC is charging the aux battery, connect green wire to positive terminal of a LED. Connect LED negative terminal to ground. The LED can be placed inside the vehicle on the dash.

   NOTE: This wire can be left disconnected if visual indicator is not required.

6. **BLACK WIRE**

   Connect BCDC Black Wire to Chassis Ground/Earth.

7. **BROWN WIRE**

Connect BCDC Brown Wire to Positive Terminal on Auxiliary Battery. This wire must have a fuse as close as possible to the positive terminal of Aux battery. Use the fuse listed below for the BCDC being installed.

Fuse Guide	
Type of BCDC	**Fuse Size (A)**
BCDC 1220	30*
BCDC 1225/1225D	40*
BCDC 1240/1240D	50

** If using the ARB wiring kit (4300020), use the 50A MIDI fuses supplied with this kit as the wire is the correct size for these fuses.*

When lengthening the wire, use the wire size listed below for the BCDC being installed.

NOTE: The BCDC brown wire may be connected directly to the aux battery positive terminal without any extra wire length added on to it.

Output Battery Positive – Wire Size Guide	
Type of BCDC	**Recommended Wire Size (mm^2)**
BCDC 1220	3 mm^2 OR 5mm auto
BCDC 1225/1225D	7.71 mm^2 OR AWG 8
BCDC 1240/1240D	7.71 mm^2 OR AWG 8

8. **YELLOW WIRE**

Connect Yellow Wire to Solar Panel input if option is available.

NOTE: This wire can be left disconnected if Solar Panel is not required.

9. Connect Negative Terminal of Auxiliary Battery to Chassis Ground/Earth.
10. Reconnect Vehicle Main Battery Terminals.

TESTING

Start the engine.

Observe the LEDs on the BCDC Charger.

Normal Operation:

BCDC 1220, 1225, 1240

Under battery type, the one of the three LEDS (Standard, AGM/Gel or Calcium) must be blinking.

Under charge status, one of the three LEDS (boost, absorption or float) must be blinking.

BCDC 1225D, 1240D

Under Charge Profile, the one of the three LEDS (A, B, C or Li) must be blinking.

Under Charge Status, "Stage" must be on or blinking.

Faulty Operation:

If all the LEDs on the BCDC are blinking at the same time, consult the Redarc BCDC user manual or a qualified auto electrician to diagnose the issue.