



4X4 ENGINEERING

SMPPX2P5AT

FORD RANGER PX2 2015-CURRENT 3.2L 5 CYLINDER TDCI

FORD EVEREST UA 2015-CURRENT 3.2L 5 CYLINDER TDCI

PATENT PENDING





WARNING!!

The Safari Armax Engine Control Unit (ECU) CANNOT be used in conjunction with any aftermarket electrical device, micro controller or altered/reflashed OE control unit which influences the operation of the OE control unit and/or the operation of the vehicles drivetrain, without specific written consent from Safari 4x4 Engineering Pty Ltd, failure to seek written consent will void all claims against vehicle drivetrain warranties which Safari 4x4 Engineering offer as part of this system.

PARTS LIST

ITEM	PART NO	DESCRIPTION	QTY
1	000-081-700	SAFARI ARMAX ECU	1
2	680-283-000	SAFARI ARMAX WIRING HARNESS	1
3	680-283-050	IN CAR WIRING HARNESS	1
4	000-082-000	SWITCH-5 POSITION-ECU	1
5	680-289-000	MOUNTING BRACKET A	1
6	680-289-100	MOUNTING BRACKET B	1
7	680-289-200	MOUNTING BRACKET C	1
8	680-289-400	MOUNTING BRACKET D	1
9	680-289-500	MOUNTING BRACKET E	1
10	000-001-500	BOLT-M6 X 12MM-SEMS-SS	4
11	000-001-600	BOLT-M6 X 15MM-SEMS-SS	2
12	000-003-400	BOLT-M6 X 20MM-SEMS-SS	3
13	000-204-300	NUT-M6 X 1MM-NYLOC-SS	2
14	000-301-300	WASHER-FLAT-M6	2
15	000-987-290	CABLE TIE	20
16	000-717-500	BRIDGE OUT CONNECTOR-AM2P	1

1

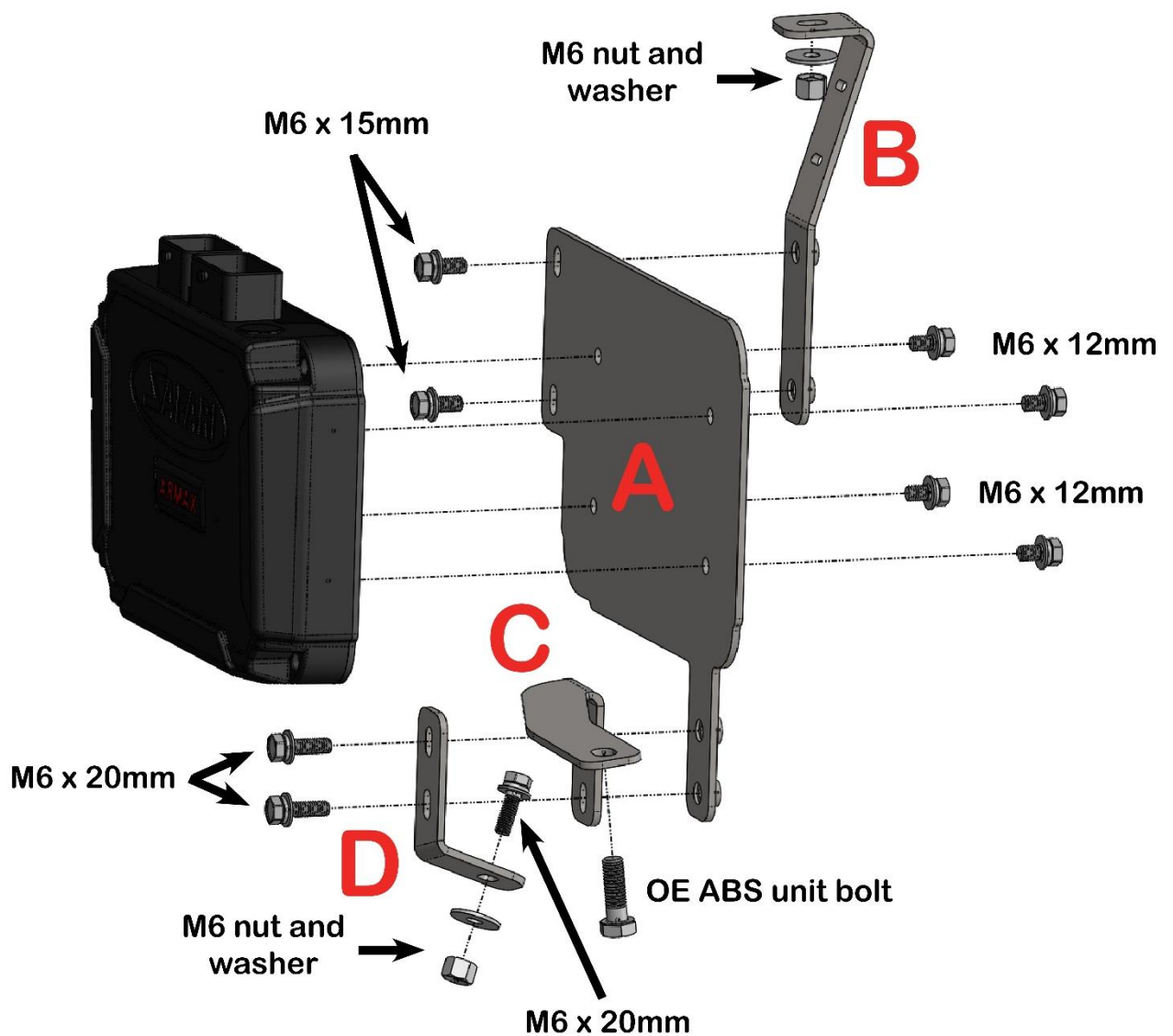
Using a diagnostic scan tool check the vehicle for pre-existing fault codes.

Check that the engine is operating correctly and not making excessive noise or blowing excessive smoke.

Any faults must be rectified prior to fitment of the Safari ARMAX ECU.

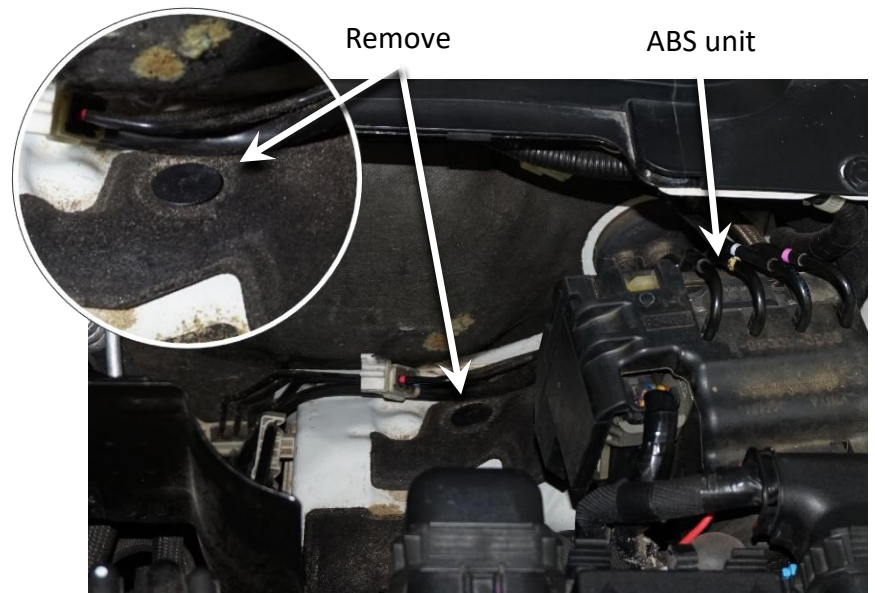
2

MOUNTING BRACKET DIAGRAM



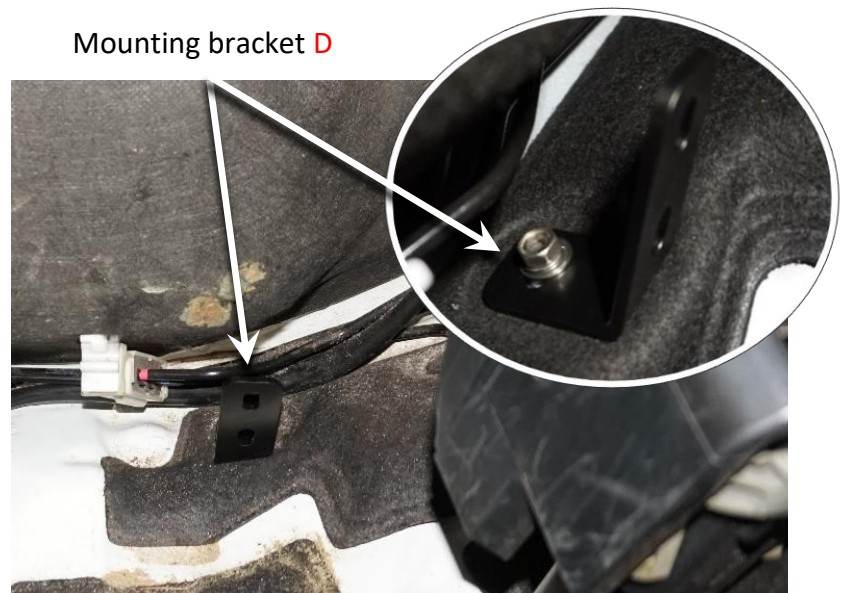
3

Remove the plastic clip from the protective liner on inner guard next to the ABS unit.



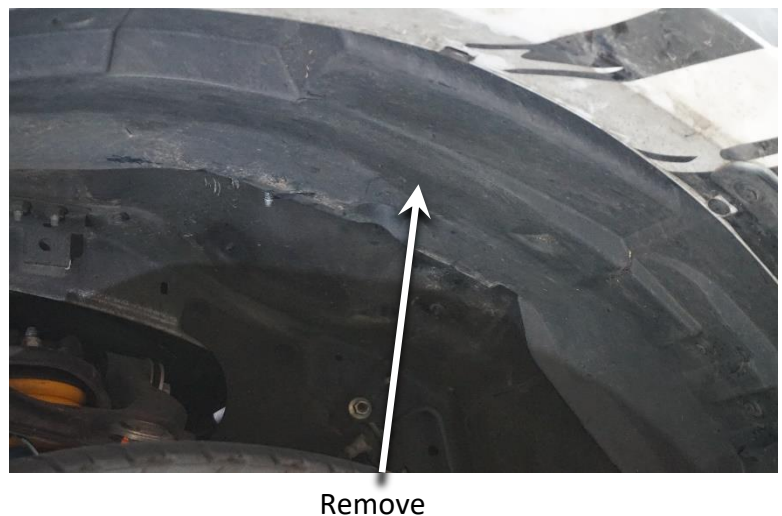
4

Install mounting bracket **D** to the inner guard where the plastic clip was removed. Use an M6 x 20mm bolt, M6 nut and washer to secure the bracket. **Do not fully tighten.**



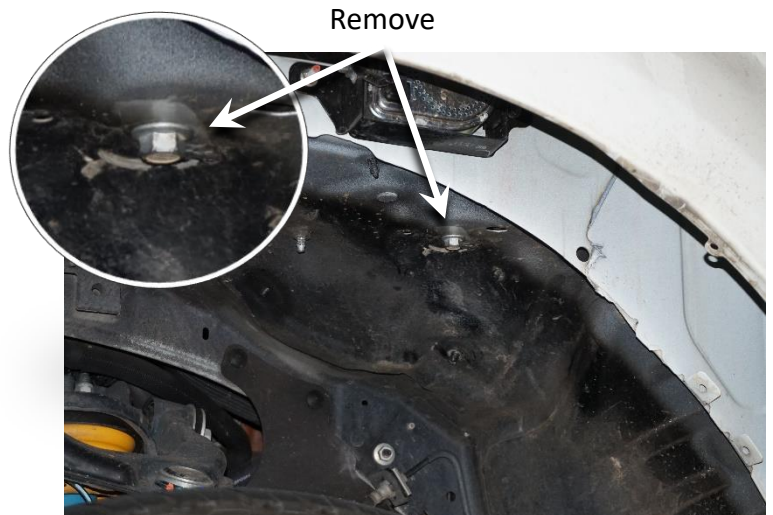
5

Remove the plastic inner guard liner from the LH front wheel arch.



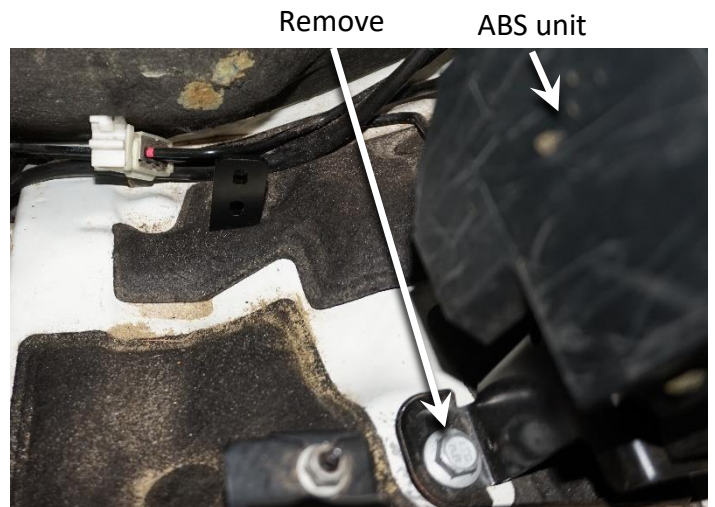
6

Locate the ABS mounting bracket bolt and remove.



7

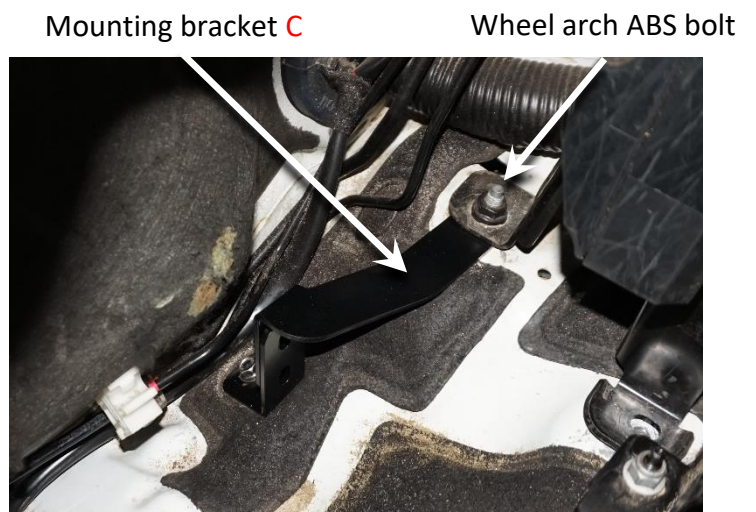
Remove the ABS mounting bracket bolt from inside the engine bay.



8

Lift the ABS unit enough to slide mounting bracket C below the ABS mounting bracket. Secure using the OE ABS bolt that was removed from the wheel arch in step 6. **Do not fully tighten.**

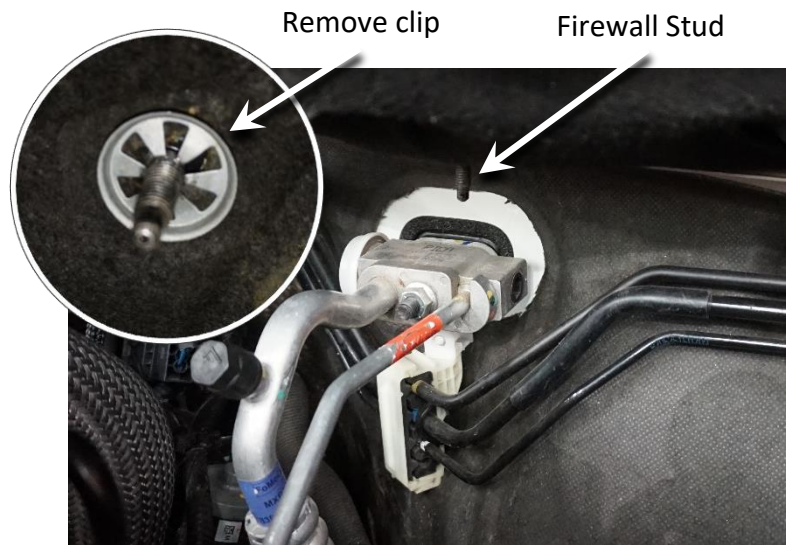
NOTE: Mounting bracket C sits behind bracket D.



9

Remove securing clip from the M6 stud on underside of the firewall.

Note: The edges of the retaining clip are sharp. Use needle nose pliers to remove.



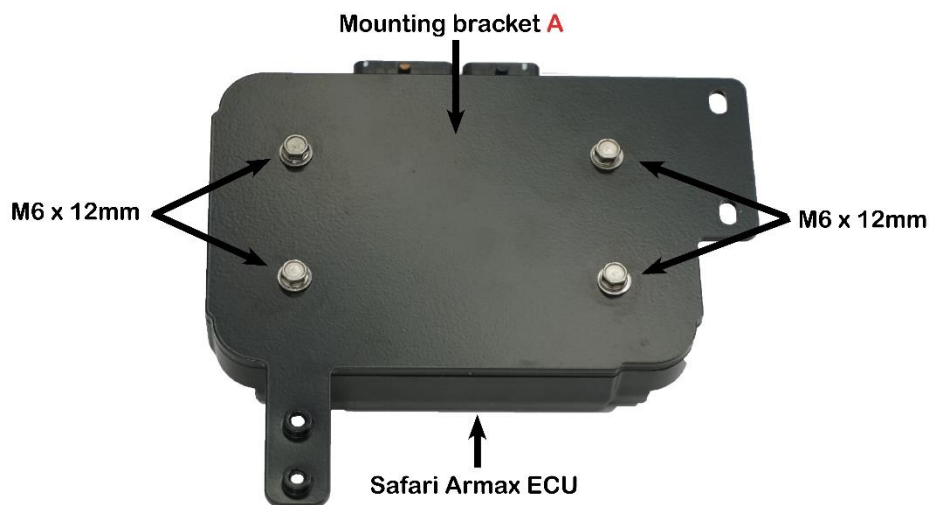
10

Install mounting bracket **B** to firewall stud using an M6 nut and washer. **Do not fully tighten.**



11

Bolt the ECU to mounting bracket **A** using M6x12mm bolts. Fully tighten bolts once installed.



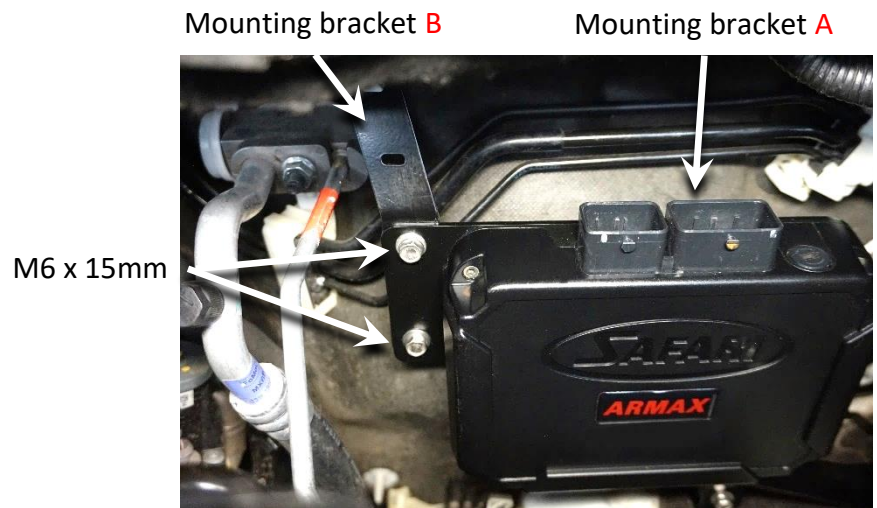
12

Install mounting bracket A (ECU bracket) to the vehicle and secure to the bottom 2 brackets using M6 x 20mm bolts. **Do not fully tighten.**



13

Secure mounting bracket A (ECU bracket) to mounting bracket B using 2x M6 x 15mm bolts. **Do not fully tighten.**



14

Ensure ECU is sitting level and then final tighten the 4 bolts securing mounting bracket A.

Final tighten the remaining mounting bracket bolts.

Tighten the ABS bracket bolt located in the inner guard.

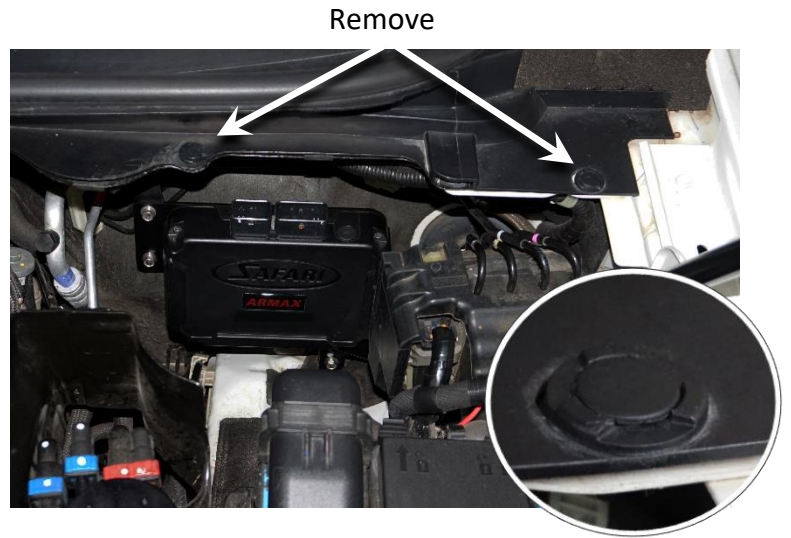


15

Re-install wheel arch inner guard liner and the ABS bolt inside engine bay.

16

Remove the two plastic clips from LH front scuttle panel.



17 Remove the OE bolt and fit the communication port bracket (mounting bracket **E**).

Refit the OE bolt through the bracket and tighten.

Refit the plastic clips to scuttle panel.



18

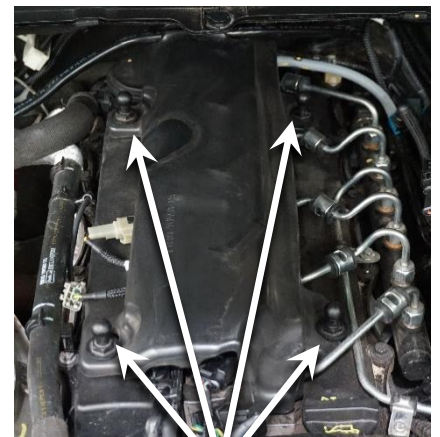
Remove engine cover and sound deadening foam from the rocker cover.

Engine cover



Lift to remove

Sound deadening foam



Remove 4 studs

19

Remove securing bolts from coolant reservoir and move aside.

Caution! Do not remove reservoir cap or hoses when the vehicle is hot.



20

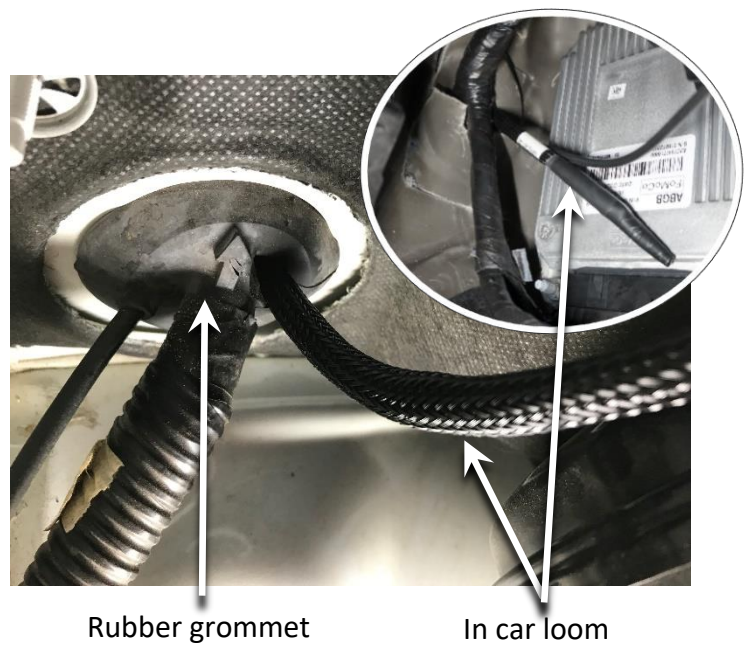
Locate the in-car loom on the main harness.

NOTE: In-car loom connector is taped onto the loom. Remove before installing.



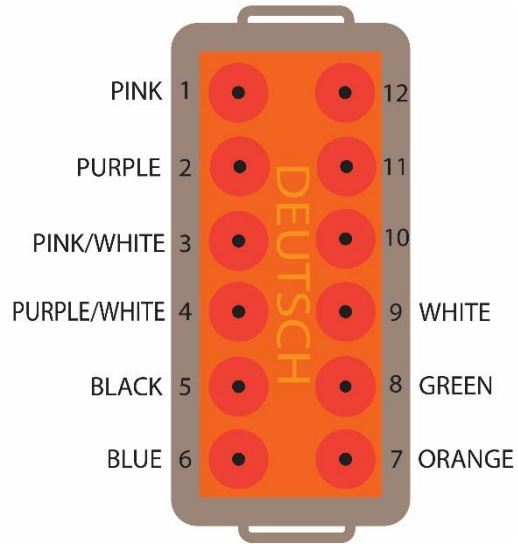
21

Being careful not to damage the factory wiring loom, pierce a hole in the rubber grommet on the firewall behind the coolant reservoir and feed the in-car loom into the driver's side footwell.



Rubber grommet

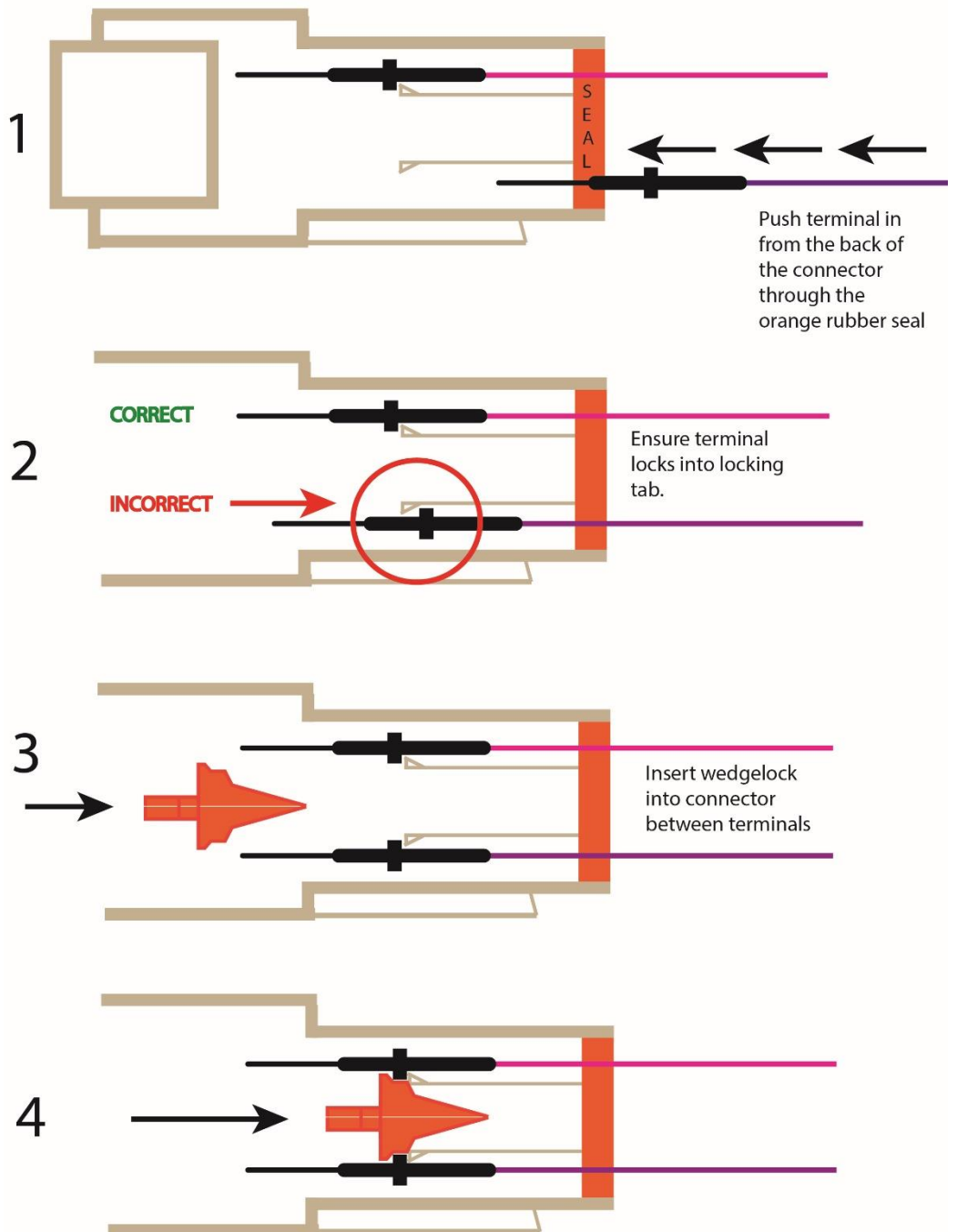
In car loom



SECTIONED SIDE VIEW

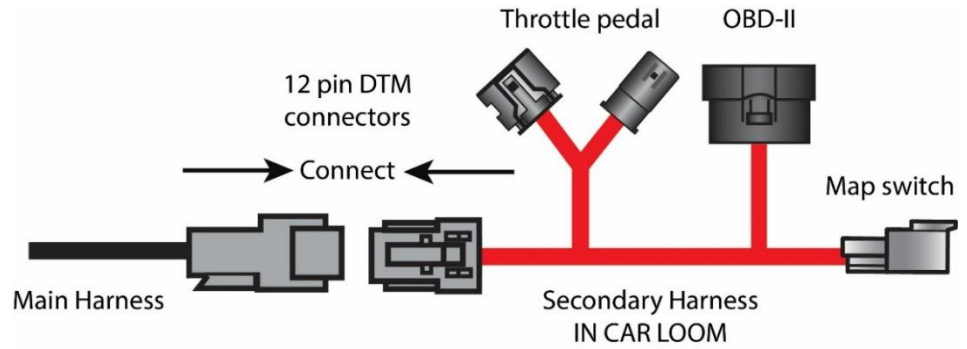
Locate the main harness in the driver's side footwell labelled IN CAR LOOM.

Use the diagrams to insert terminals on the main harness into the DTM connector.



23 Connect main harness to the in-car loom.

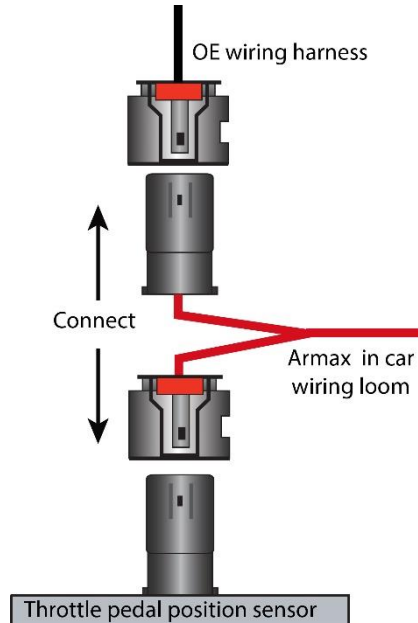
Check that the wire colours on the 12-pin DTM connector on the main harness match the wire colours on the in car loom connector.



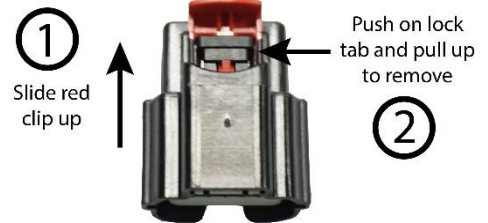
24

Connect the in-car loom to the throttle position sensor.

Slide the red lock clip up then push down on locking tab to remove.



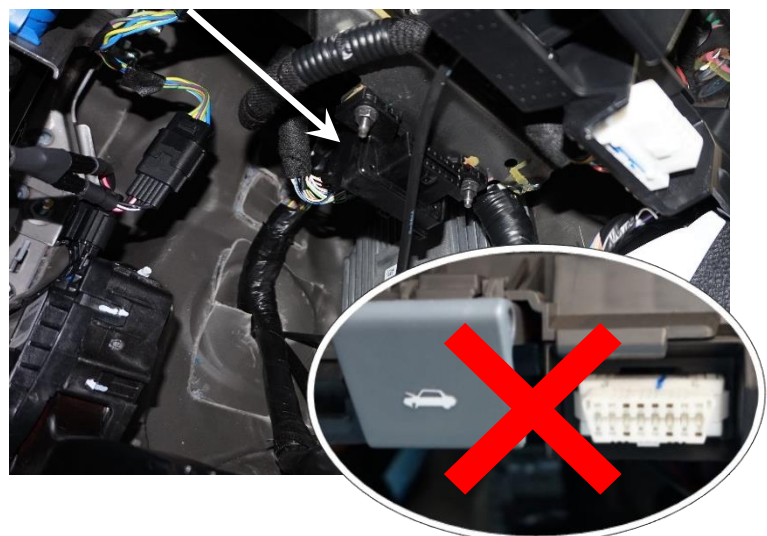
Throttle pedal position sensor



25

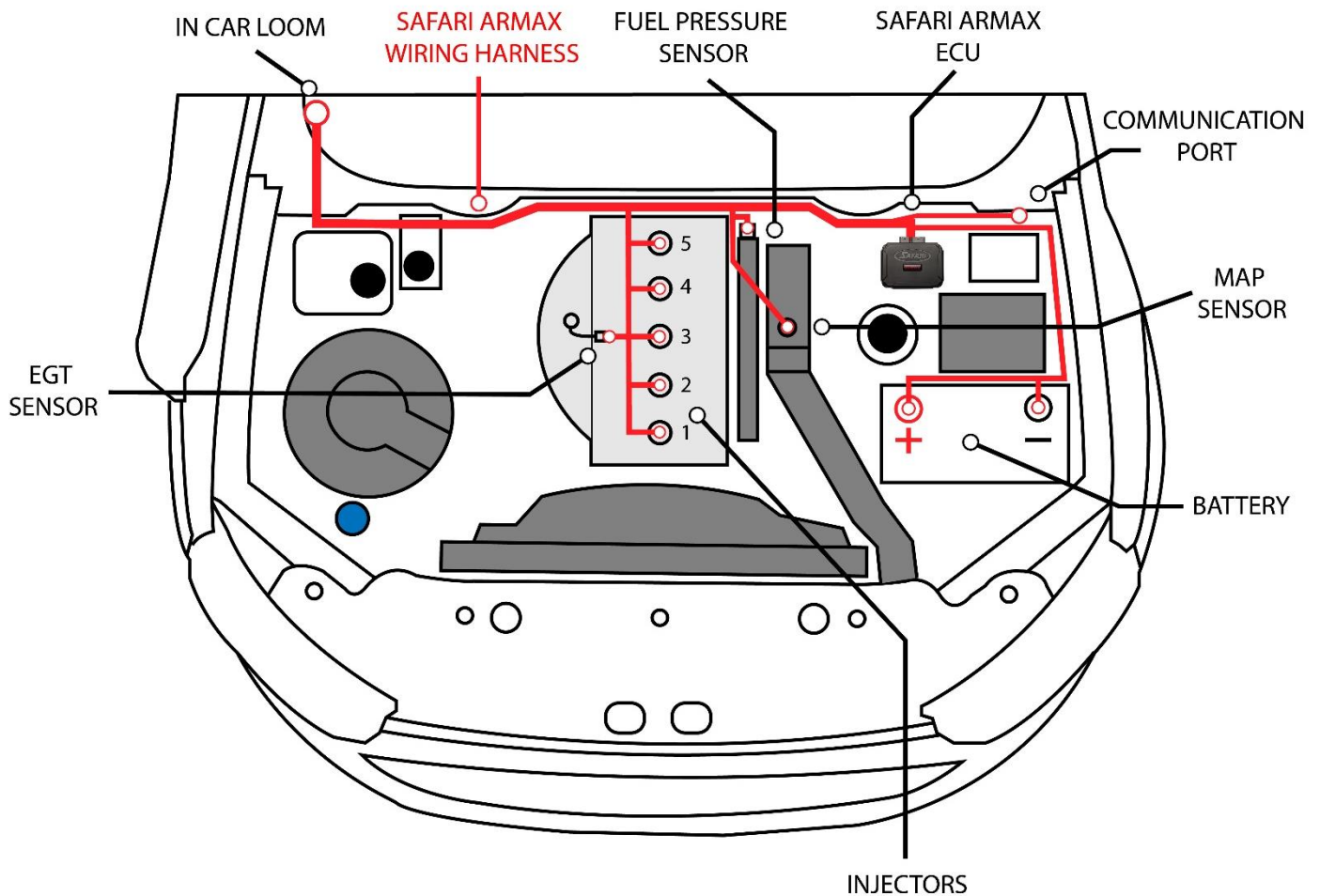
Connect the in-car loom to the black OBD port located in driver's side footwell. (not the white one behind the cover)

OBD II port

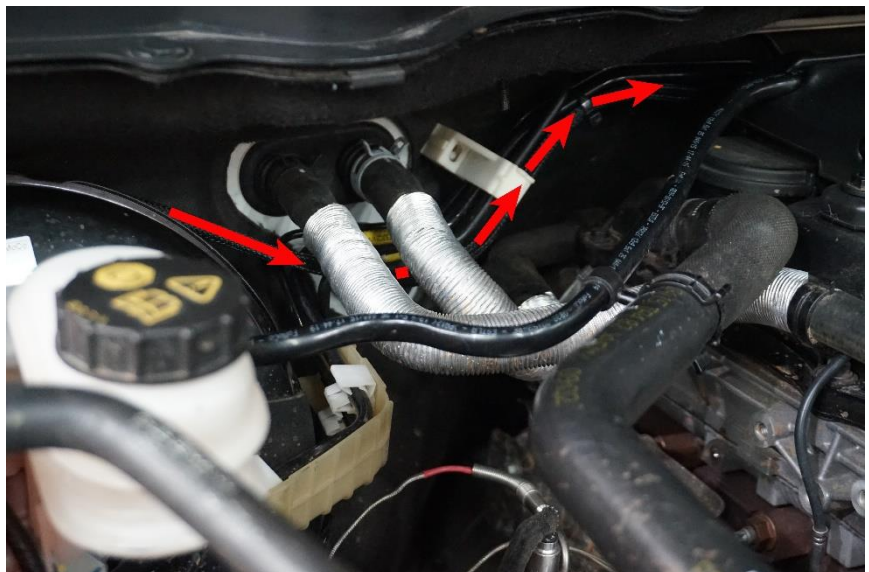


26 Pull the main harness back through into the engine bay

WIRING HARNESS ROUTING DIAGRAM

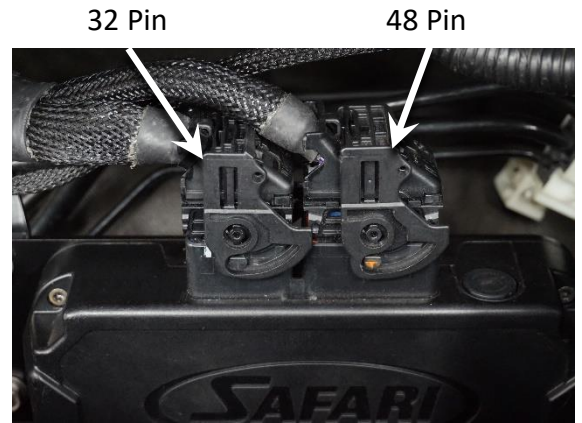
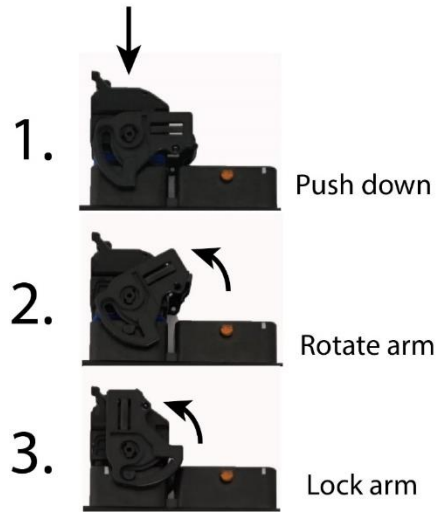


Route the Armax wiring harness below the heater hoses on the firewall and along the brake lines on the firewall to the Armax ECU.

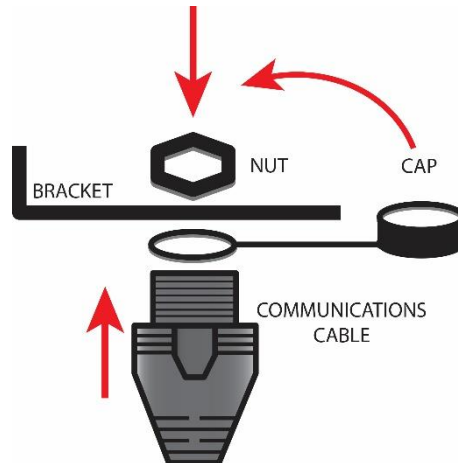


Connect the Armax wiring harness to the ECU.

Connect the smaller 32 pin connector first as shown, then repeat with the larger 48 pin connector.



Mount the communications port to the mounting bracket.



Connect battery branch of the Armax harness to the **main** vehicle battery terminals.

Remove the negative body earth lead before connecting to the positive terminal.

Battery Positive



Battery Negative

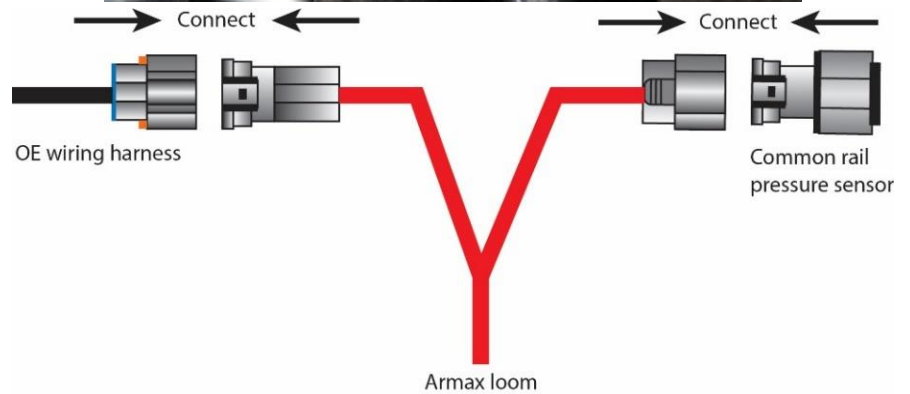


Negative body earth

Connect the fuel pressure branch of the Armax harness to the fuel pressure sensor. The fuel pressure sensor is located at the end of the fuel rail on the LH side of the rocker cover.

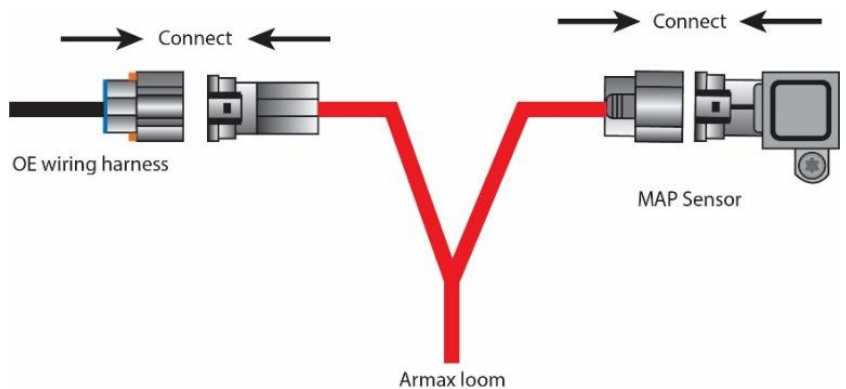
REFER TO THE WIRING HARNESS ROUTING DIAGRAM ON PAGE 12 FOR FURTHER INFORMATION.

Fuel pressure sensor



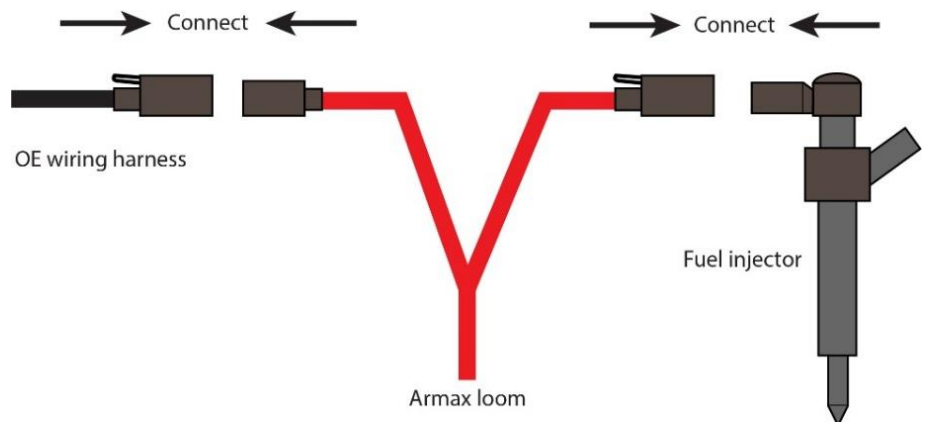
Connect the MAP sensor branch of the Armax harness to the MAP sensor. The MAP sensor is located just behind the throttle body.

Manifold absolute pressure (MAP) sensor



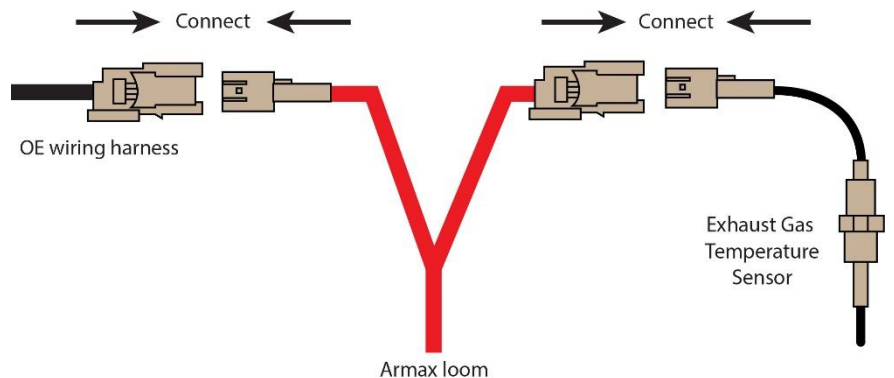
Fuel injectors

Connect the injector branch of the Armax harness to the injectors. Cylinder one is located at the front of the vehicle and cylinder five is located at the rear.



Exhaust gas temperature (EGT) sensor

Connect the EGT branch of the Armax harness to the EGT sensor. The EGT sensor connector is located on the rocker cover next to cylinder 3 injector.

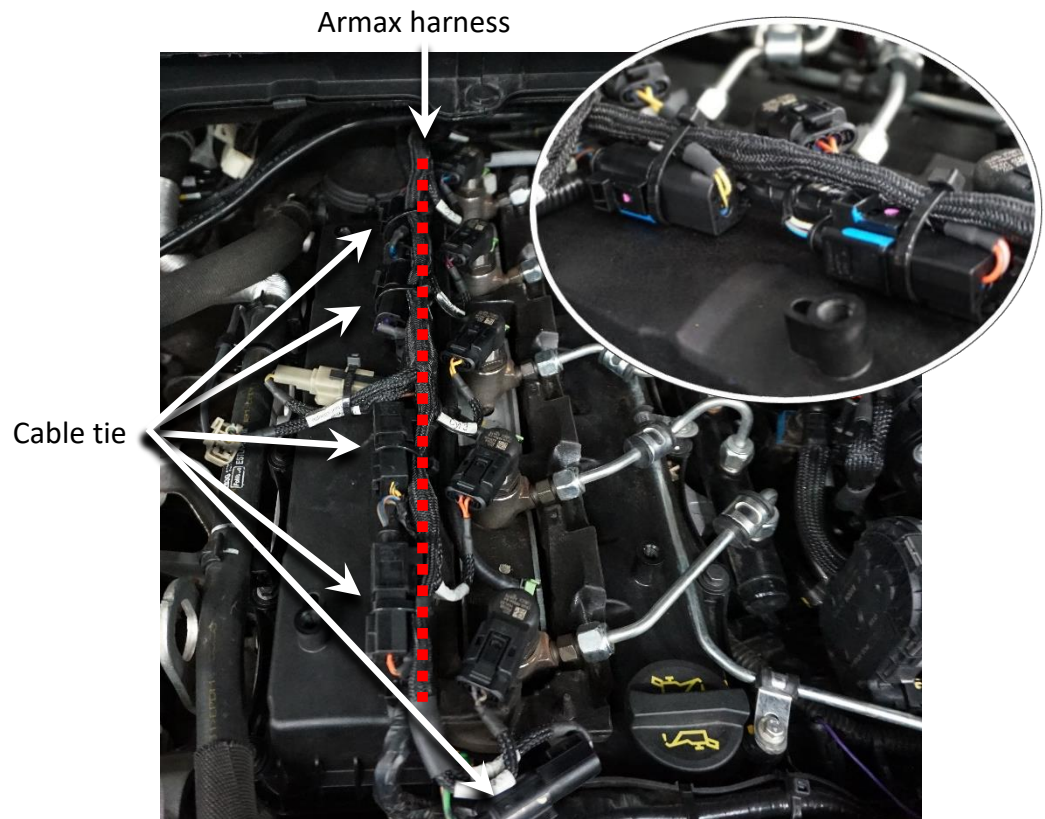


36 Neatly cable tie the Armax injector harness to the OE injector harness.

Ensure that the OE injector connectors are secured to the RH side of the OE harness as shown.

Note: If the injector harness is not secured correctly the sound deadening cover will not fit back on properly.

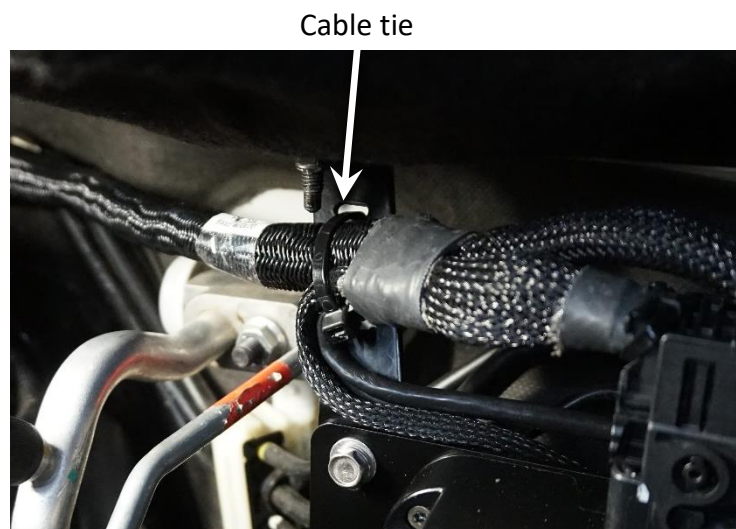
Ensure that the Armax harness is not contacting the injectors.



37 Cable tie the Armax harness through the slots on mounting bracket **B**.

Cable tie the remainder of the harness along the brake lines on the firewall.

Ensure that the Armax harness is well secured and is not rubbing or contacting any hot or sharp surfaces.

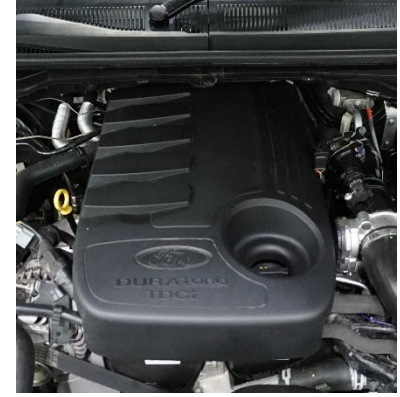


Refit the sound deadening injector cover and the engine cover.

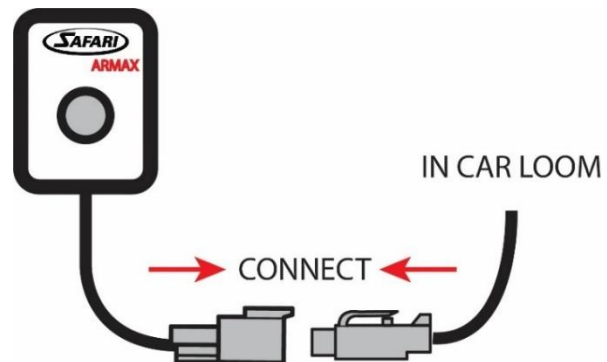
Sound deadening foam



Engine cover



Connect the map select switch to the in-car loom



Use supplied alcohol wipe to clean the surface of the customers desired switch position. Peel off adhesive backing and mount the switch. Press down firmly on the switch for 60 seconds.

Remove adhesive backing cover



Final fitment checklist:

- Check all ECU mounting hardware is tight.
- Check the wiring harness is secure and not in contact with the engine or exhaust.
- Check all connections are correct.
- Check the Armax ECU diagnostics.
- **Place the user manual and bridge out connector in the glove box of the vehicle.**
- **Place the Armax hardcase inside the vehicle for the customer.**

Test drive checklist:

- Start vehicle and ensure there are no engine/warning lights.
- Check that the engine is operating as normal (not missfiring/making unusual sounds).
- Check that the switch illuminates and cycles through the different maps.
- Drive the vehicle ensuring it reaches **full operating temperature** (the ECU will not operate at its full potential until this is reached). Drive the vehicle on different maps and check that the ECU operates correctly.