



4X4 ENGINEERING

SMIVDJ70

**TOYOTA LANDCRUISER 70 SERIES 1VD-FTV 2012 – 2016
(EURO 4) ALL MODELS**

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	333-283-000	WIRING LOOM AM2P	1
3	370-283-150	WIRING LOOM AM2P IN CAR	1
4	000-716-200	MOUNT-DTM	1
5	000-082-000	SWITCH-5 POSITION-ECU	1
6	000-088-100	EGT THERMOCOUPLE ASSY	1
7	333-289-000	MOUNTING BRACKET A	1
8	333-289-100	MOUNTING BRACKET B	1
9	333-289-200	MOUNTING BRACKET C	1
10	333-289-300	MOUNTING BRACKET D	1
11	333-289-400	MOUNTING BRACKET E	1
12	333-289-700	MOUNTING BRACKET F	1
13	333-189-800	MOUNTING BRACKET G	1
14	333-189-500	SPACER BRAKE PIPE	1
15	333-189-600	SPACER POWER STEERING	1
16	000-001-500	BOLT-M6X12MM-SEMS-SS	3
17	000-001-600	BOLT-M6X15MM-SEMS-SS	4
18	000-003-400	BOLT-M6X20MM-SEMS-SS	4
19	000-1013-400	BOLT-M8X25MM-SEMS-SS	2
20	000-987-290	CABLE TIE	30
21	000-987-100	CABLE TIE	2
22	000-717-500	BRIDGE OUT CONNECTOR-AM2P	1

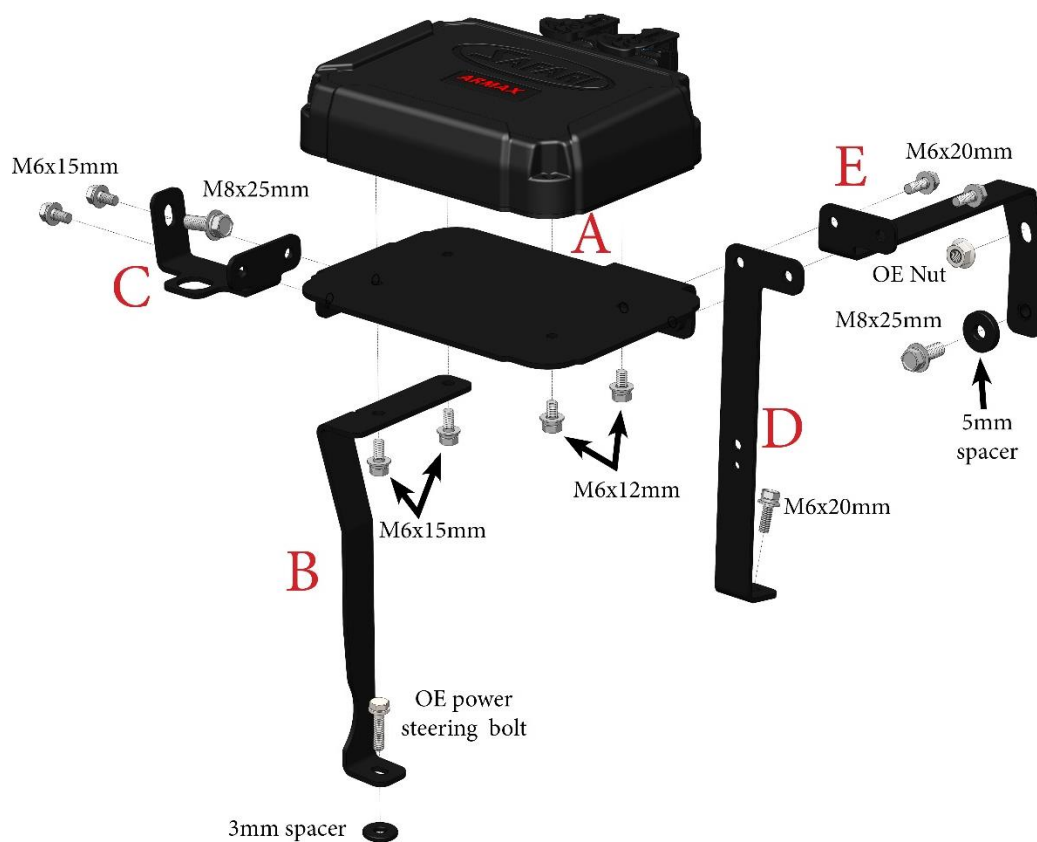
Pre installation checklist:

- Check engine oil level
- Check fuel filter condition
- Check air filter condition
- Check for pre existing fault codes
- Check injector compensation values are within manufacturers specification.
- Check vehicle doesn't blow excessive smoke
- Check for other performance devices/controllers

Any faults must be rectified prior to the installation of the ARMAX ECU. Contact Safari 4x4 engineering for further information.

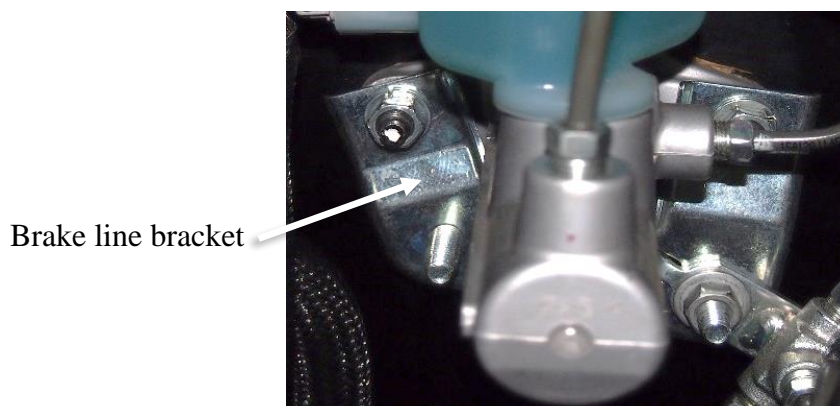
1

Mounting Bracket Diagram 1



2

Remove master cylinder brake line bracket and discard. Retain the 2 nuts that secure the master cylinder.

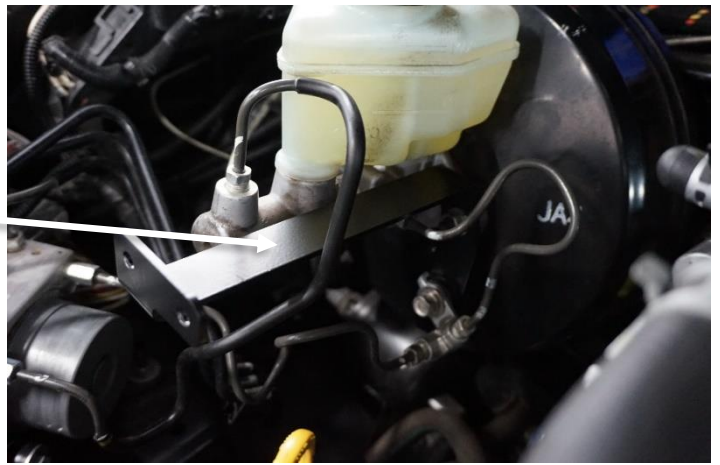


3

Install mounting bracket E as shown to the master cylinder and secure using the 2 retained nuts.

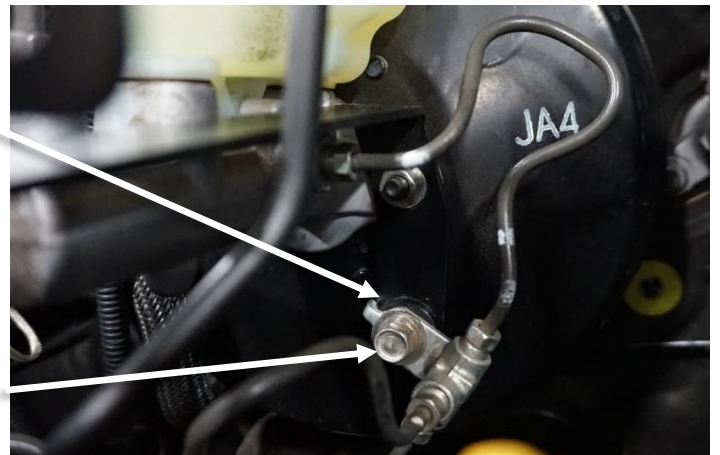
Install the 5mm spacer between brake line bracket and mounting bracket E. Secure using an M8x25mm bolt.

Mounting bracket E



5mm Spacer

M8x25mm Bolt



4

Locate the bolt hole in the inner guard next to the ABS unit.

Install mounting bracket D using a M6x20mm bolt but do not fully tighten.

Inner guard bolt hole



Mounting bracket D

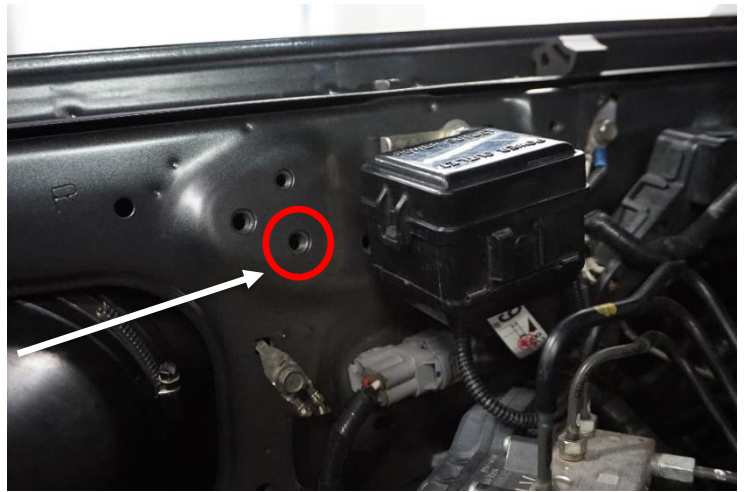
M6x20mm Bolt



Install mounting bracket C to the inner guard next to the power outlet box.

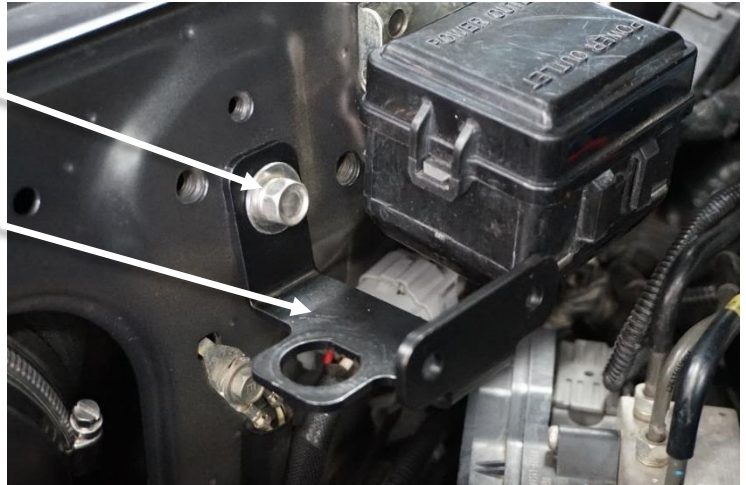
Secure using a M8x25mm bolt but do not fully tighten.

Inner guard
mount position



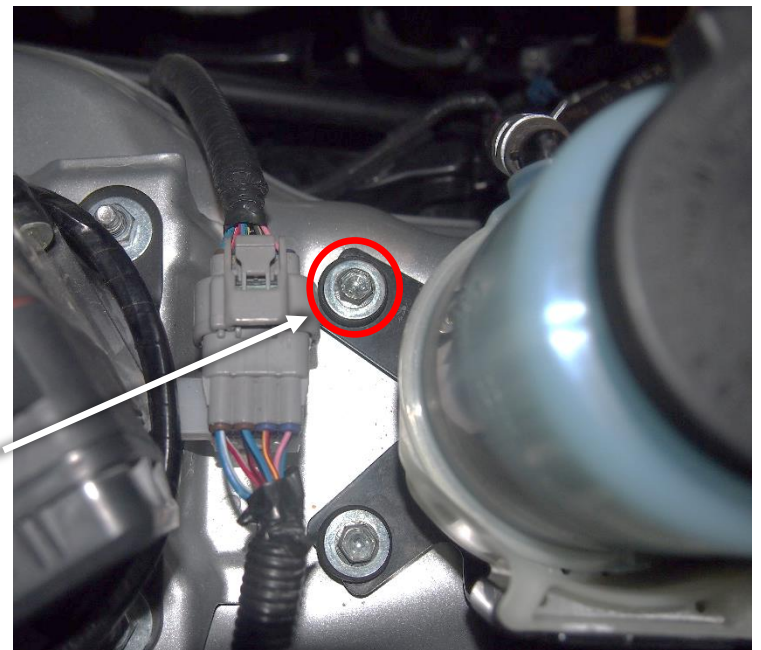
M8x25mm
Bolt

Mounting bracket
C



Remove OE bolt
from power
steering bracket.

Remove



Install mounting bracket B using the 3mm spacer below the bracket.

Use OE bolt to secure bracket, do not fully tighten.

Note: If vehicle has an ARB air compressor fitted do not use 3mm spacer provided.

3mm Spacer



Mounting bracket B

OE Bolt

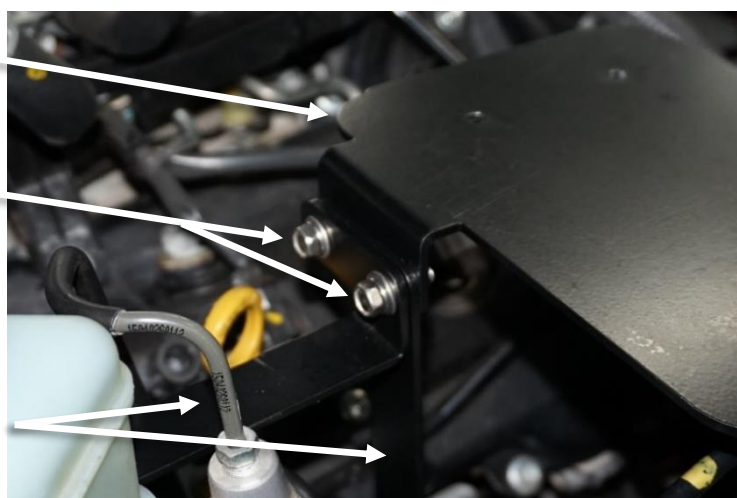


Install the ECU base plate (mounting bracket A). Secure to mounting bracket E and D using 2x M6x20mm bolts and to mounting bracket C using 2x M6x15mm bolts.

Mounting bracket A

M6x20mm Bolts

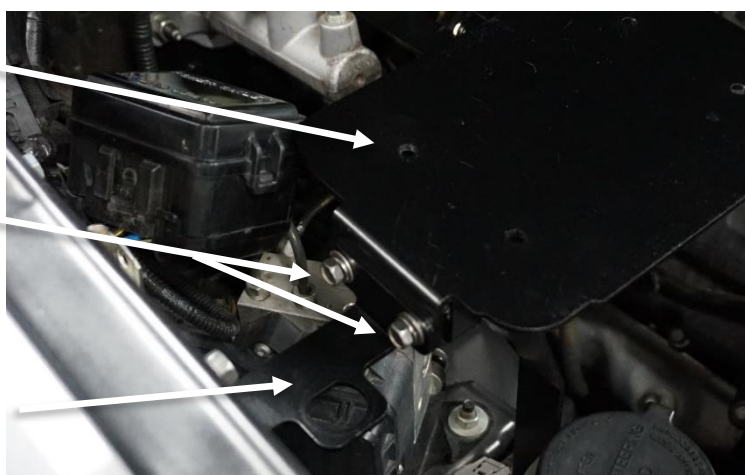
Mounting brackets E and D



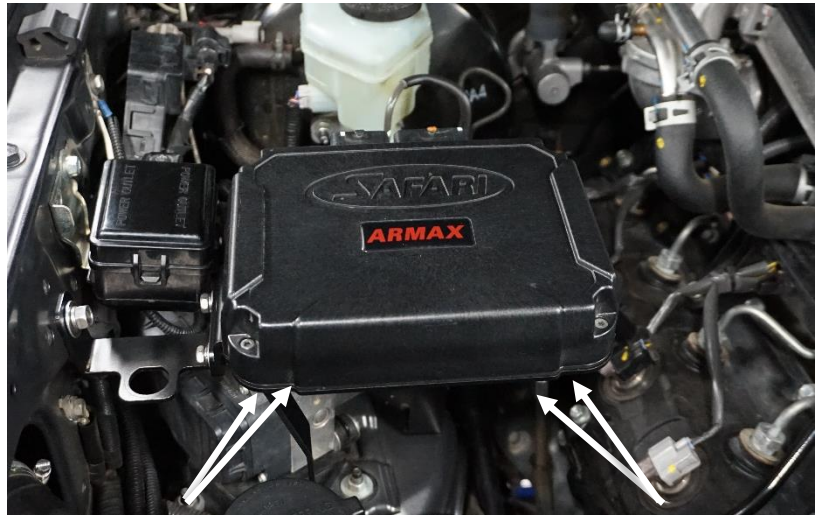
Mounting bracket A

M6x15mm Bolts

Mounting bracket C



Install the ECU to the base plate (mounting bracket A). Secure using 2 x M6 x12mm and 2 x M6x15mm for the 2 bolts that go through mounting bracket B and into the base.



M6x15mm
Bolts

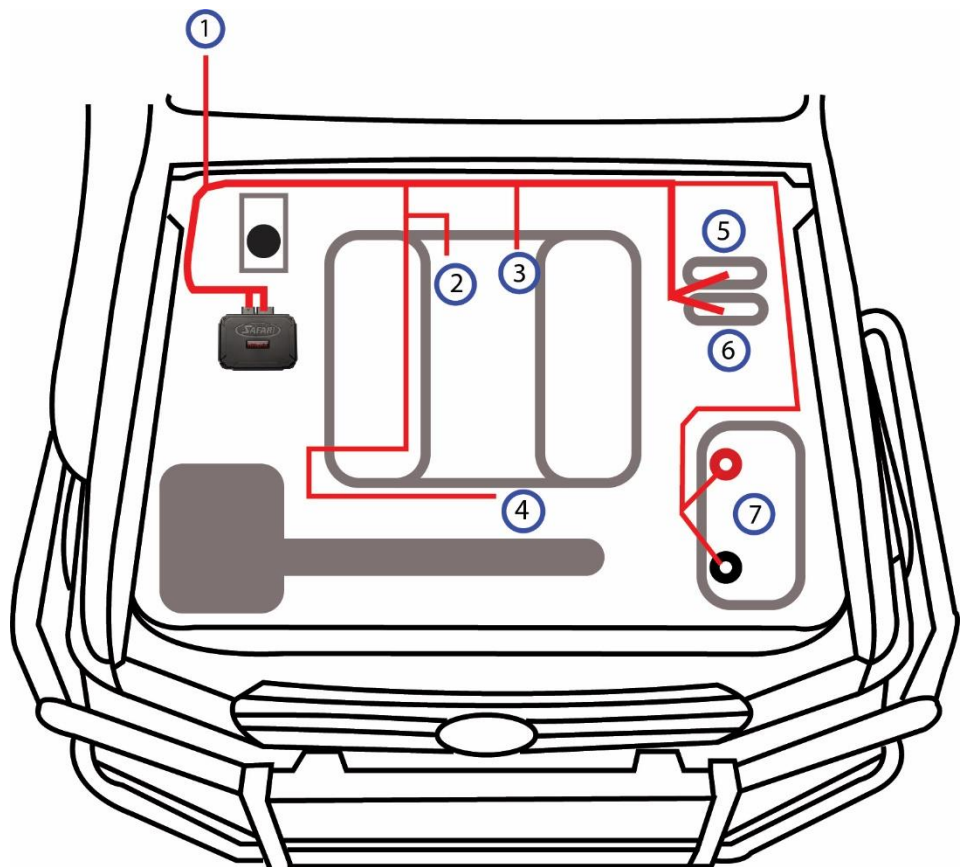
M6x12mm
Bolts

**Final tighten
all mounting
bracket bolts**

Diagram 2

Red: ARMAX wiring harness

1. In Car Loom
2. Fuel Pressure Sensor
3. MAP Sensor
4. Crank Angle Sensor
5. EDU 1
6. EDU 2
7. Main Vehicle Battery



12 Locate the rubber grommet on the firewall located next to the brake master cylinder as shown.

Locate the branch labelled **IN CAR LOOM** on the main Armax wiring harness.

Pierce a hole in the rubber grommet.

Feed the **IN CAR LOOM** through the grommet on the firewall and pull through approximately 150mm into the driver's side foot well.

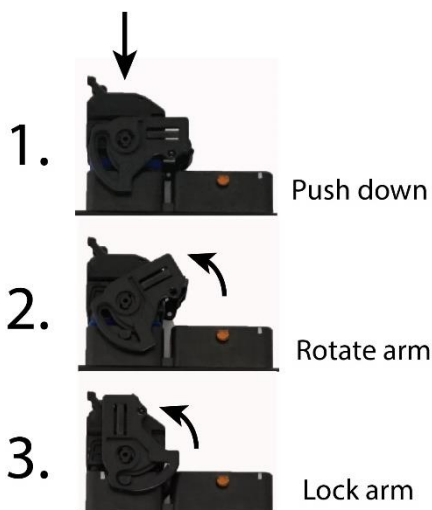
Rubber grommet



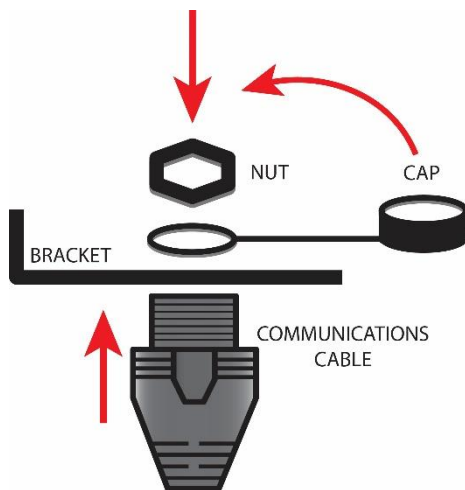
13

Connect the ARMAX loom to the ECU.

Connect the smaller 32 pin plug as shown. Then connect the larger 48 pin plug in the same manner.



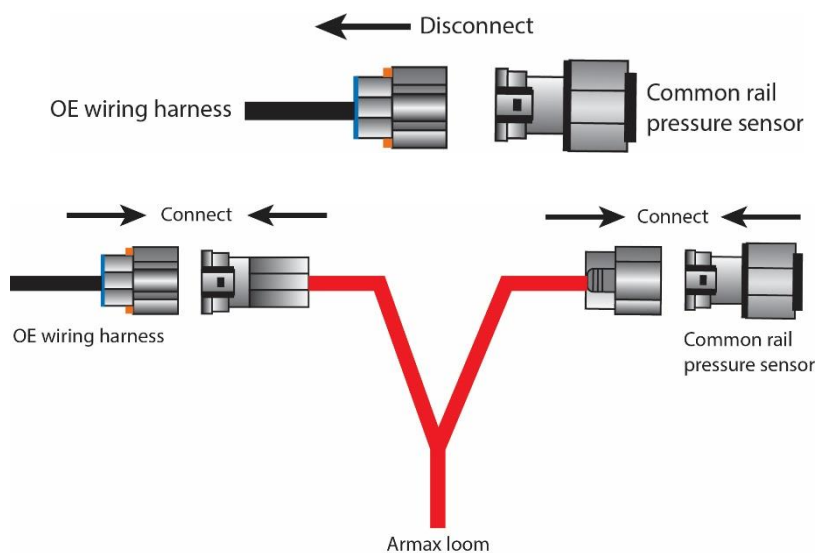
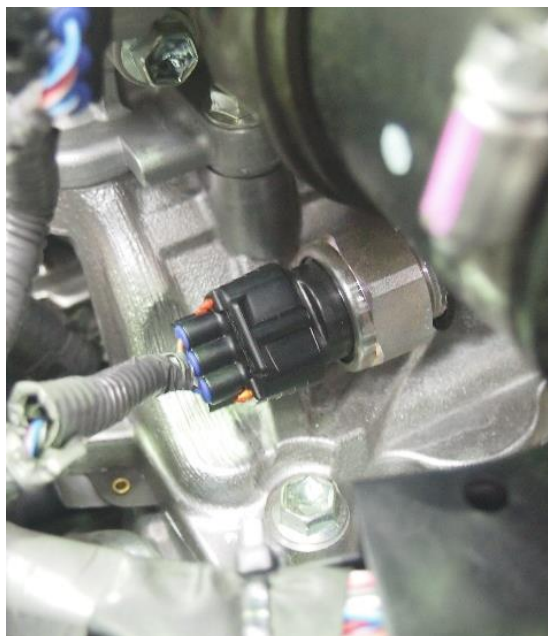
Connect the communications cable to mounting bracket C



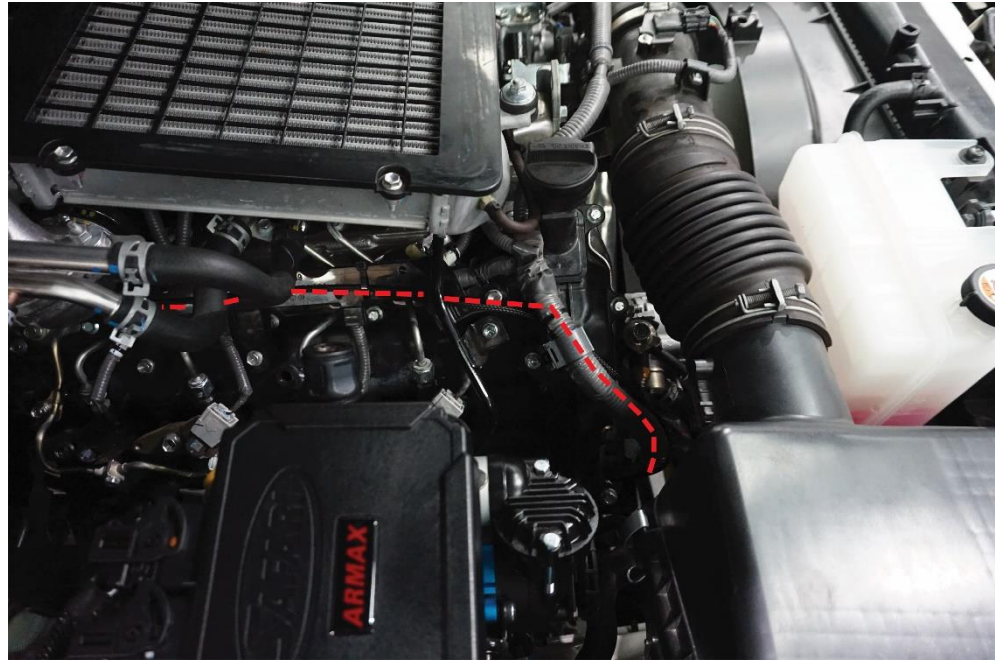
Run loom along firewall. Refer to Diagram 2 on page 7.

Connect the ARMAX loom to the RH fuel pressure sensor on the RH fuel rail.

The fuel pressure sensor is located at the RH side rear of the engine beneath the intercooler.



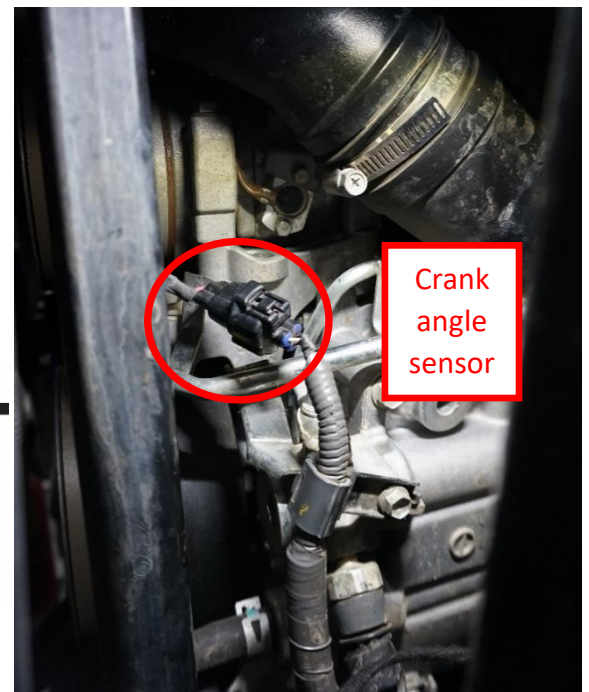
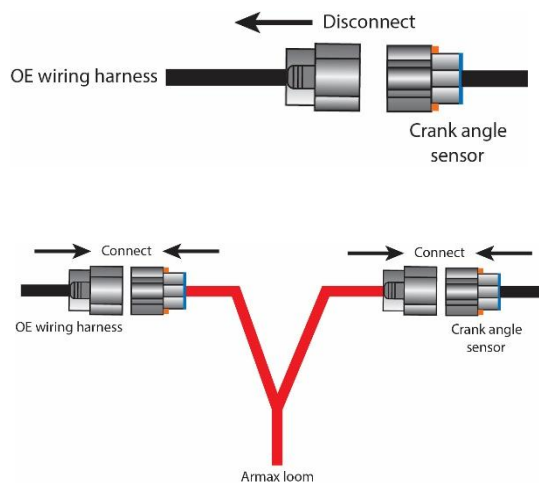
- 17 Route the crank angle sensor wire along the top of the rocker cover following the injector loom (as shown by red dotted line). Continue along the loom that runs down towards the back of the alternator at the bottom of the engine.



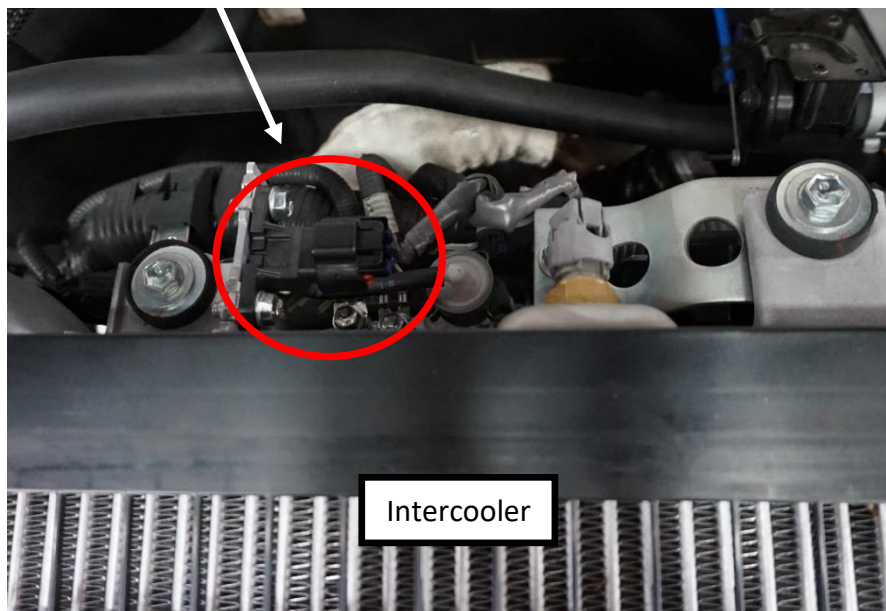
- 18 Connect the ARMAX loom to the crank angle sensor connector.

The crank angle sensor connector is located beneath the air conditioning compressor.

Secure crank angle sensor wire to OE loom with supplied cable ties.

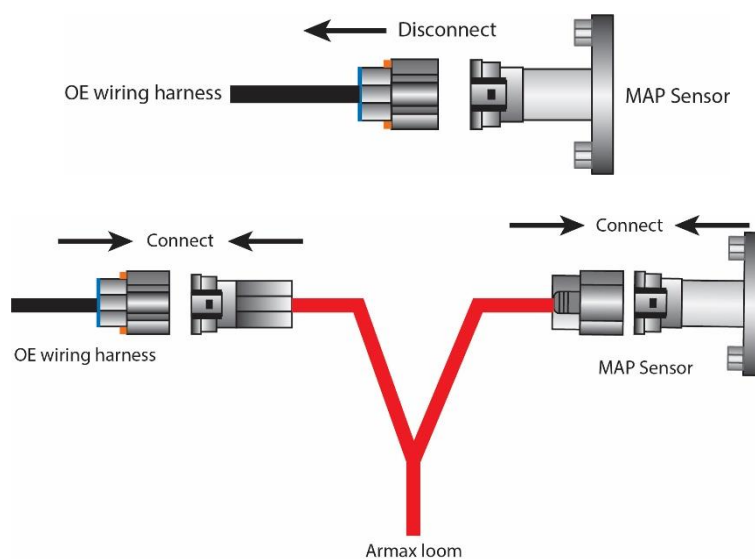


MAP sensor



Connect the ARMAX loom to the MAP sensor.

The MAP sensor is located at the back of the intercooler



Run loom along the firewall, then run the EDU branch down towards the front of the vehicle alongside the LH cylinder head. Run the EDU loom along the factory loom to the EDU's. (Refer to Diagram 2 on page 7)

Connect the ARMAX loom to EDU's

EDU 2 is on the bottom and EDU 1 is on the top. The OE loom has white tape marking EDU 1.

The ARMAX loom connects to the grey 8 pin plug on each EDU indicated in the photo.

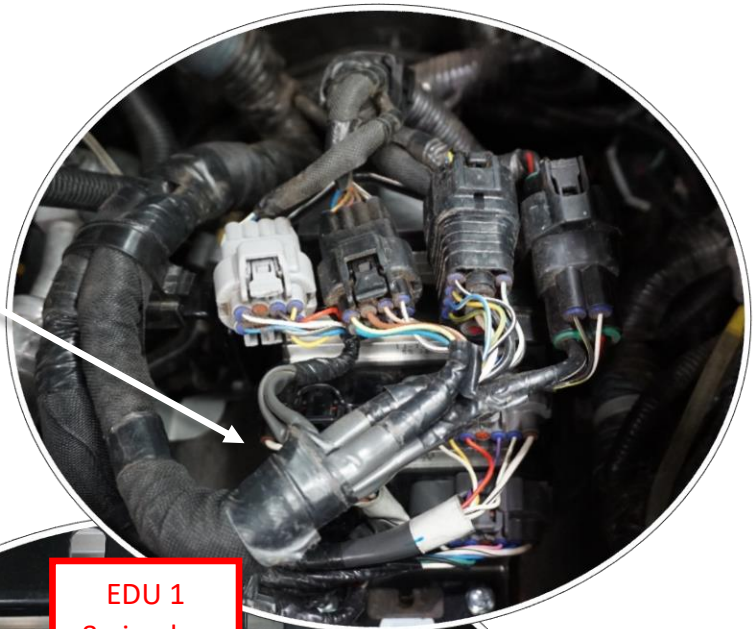
NOTE: EDU location may vary with the fitment of aftermarket accessories such as a dual battery kit. If you are unsure about identifying them correctly please contact Safari 4x4 for further information



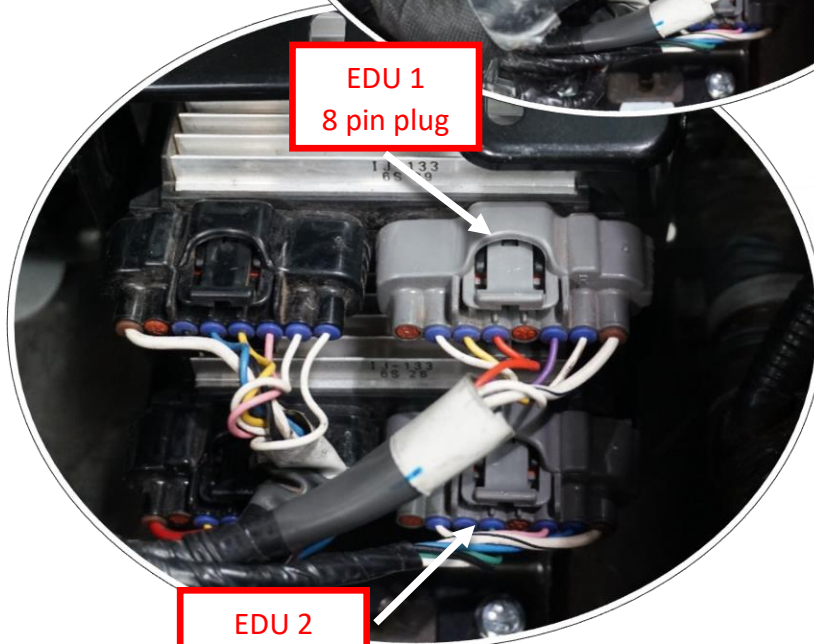
WARNING!

DO NOT CROSS EDU CONNECTORS AS THIS MAY CAUSE ENGINE DAMAGE. PLEASE REFER TO THE PHOTOS AND DIAGRAMS BELOW TO IDENTIFY THE EDU'S. PLEASE CONTACT SAFARI 4X4 FOR FURTHER INFORMATION.

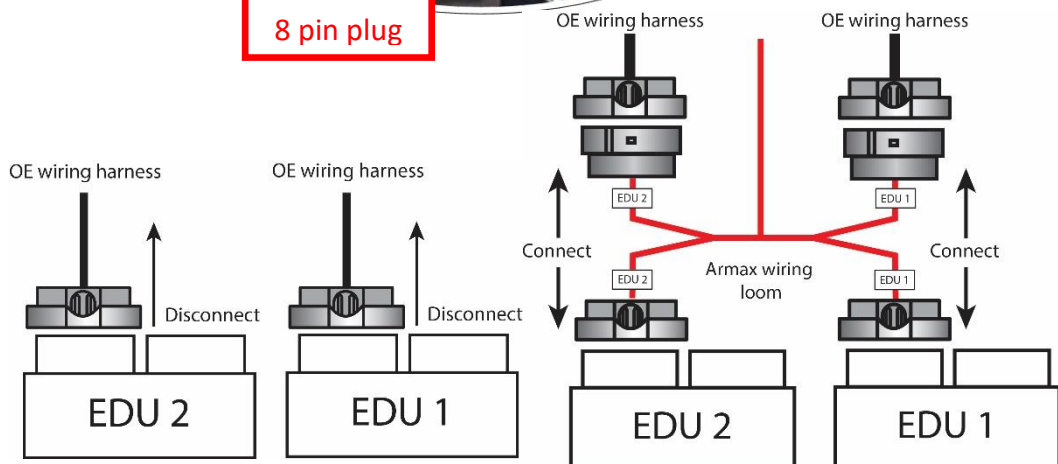
EDU location



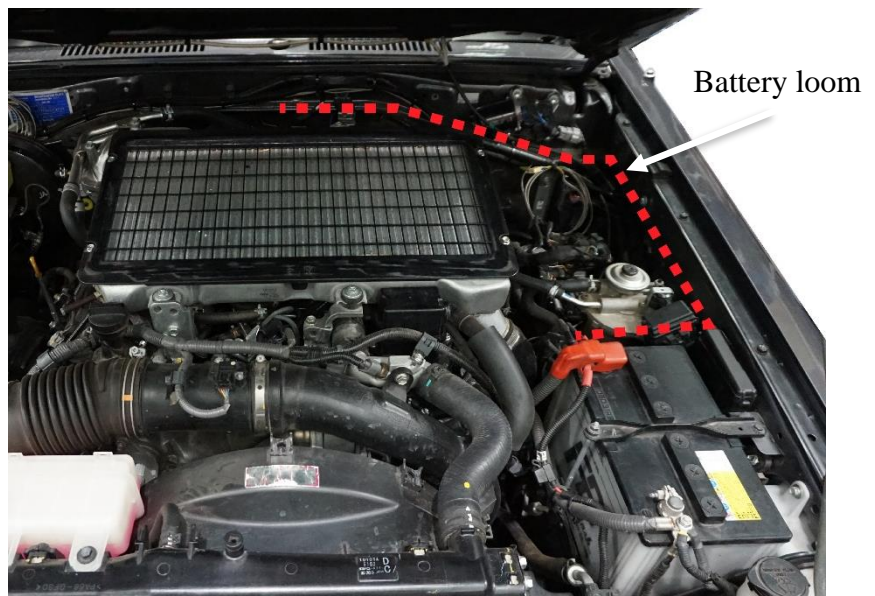
EDU 1
8 pin plug



EDU 2
8 pin plug



Route the Battery branch of the ARMAX loom along the firewall and inner guard to the main vehicle battery (see photo).



Connect the battery branch of the ARMAX loom to the positive and negative terminals of the main vehicle battery.



Install the EGT thermocouple into the clamp assembly.

Using a ruler measure the distance between the top of the EGT thermocouple and the clamp.

Set the distance according to diameter of the engine pipe at the back of the turbo (see diagram 2).

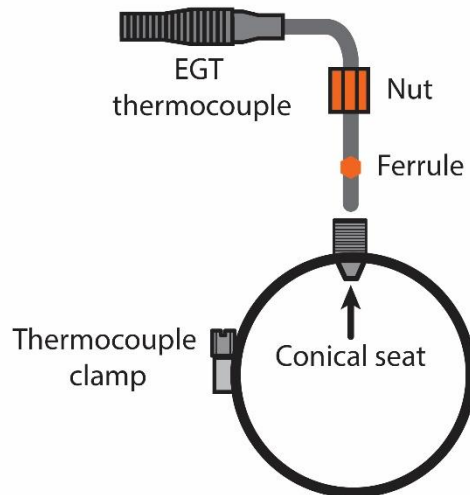
Once in position tighten the nut onto the clamp. When the nut is fully tightened the ferrule will lock the thermocouple into position.

Remove the thermocouple from the clamp

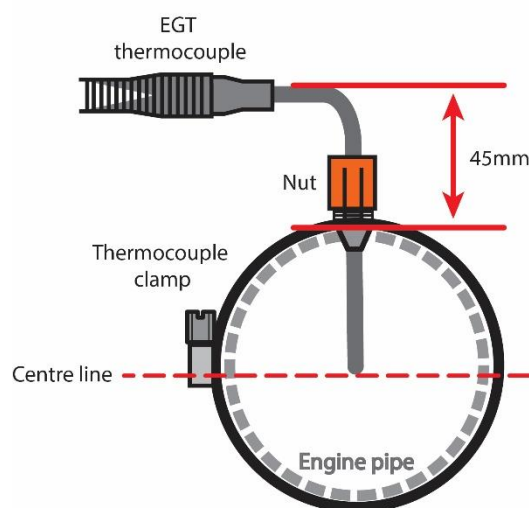
IMPORTANT

NOTE: The EGT depth is critical to the performance of the ECU. Ensure the depth is set correctly.

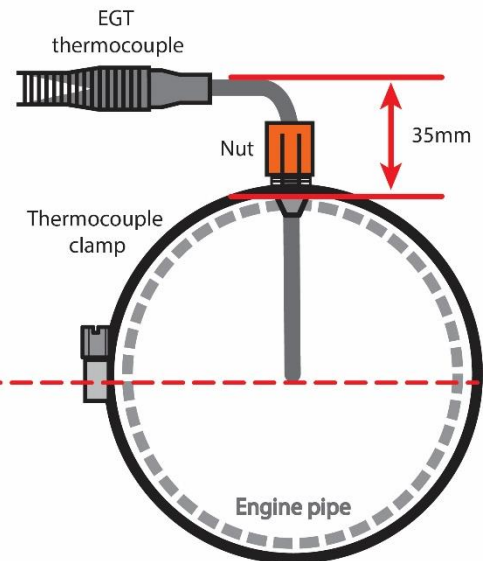
EGT thermocouple and clamp assembly



Standard engine pipe



3 inch engine pipe



Remove rear section of inner guard liner from LHF wheel arch.

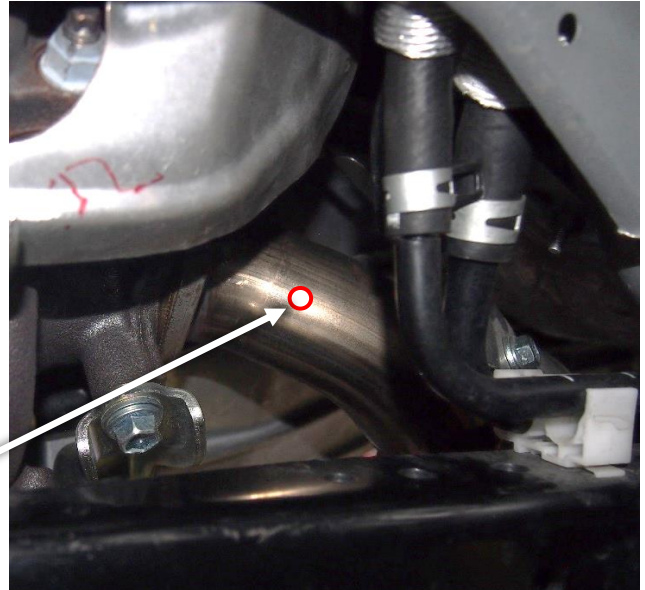
Remove



Mark location on LH engine pipe to be drilled for EGT thermocouple.

Centre punch and drill a 7mm hole where marked in LH engine pipe.

Mark

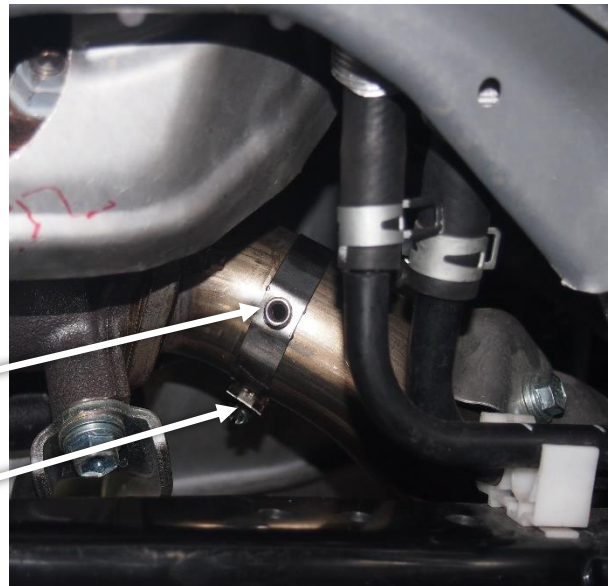


Install thermocouple clamp to engine pipe and tighten. Ensure the conical seat is aligned with 7mm hole

Cut off excess band from thermocouple clamp once tight. Fold over cut section of clamp to avoid sharp edge.

Thermocouple clamp

Cut

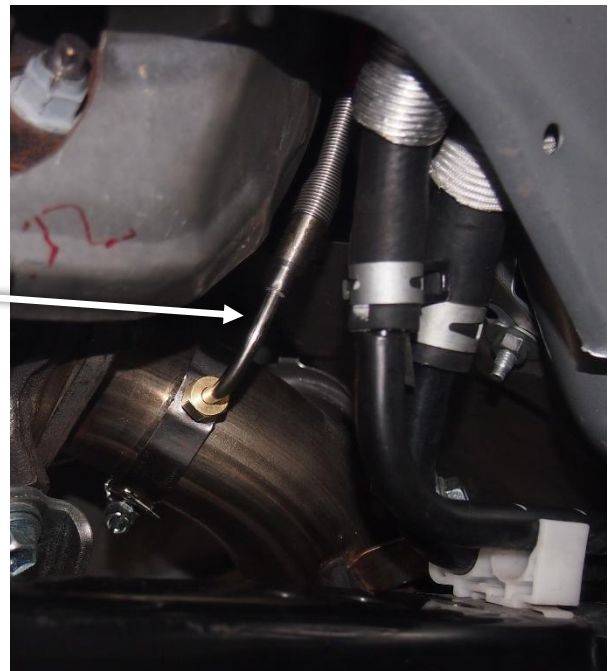


26

Install the EGT thermocouple into the clamp noting the orientation shown and tighten.

Reinstall inner guard cover.

EGT Thermocouple



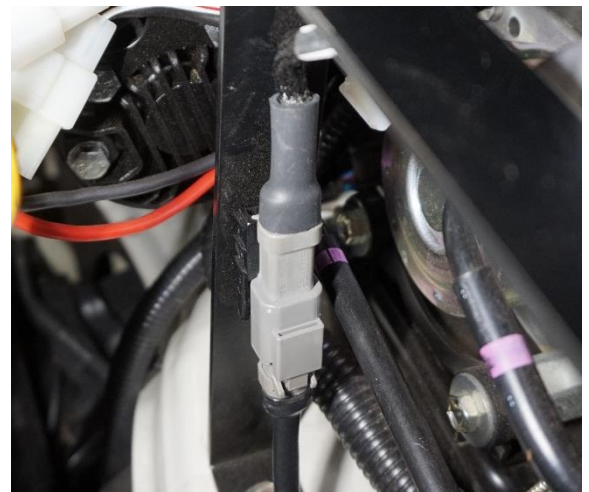
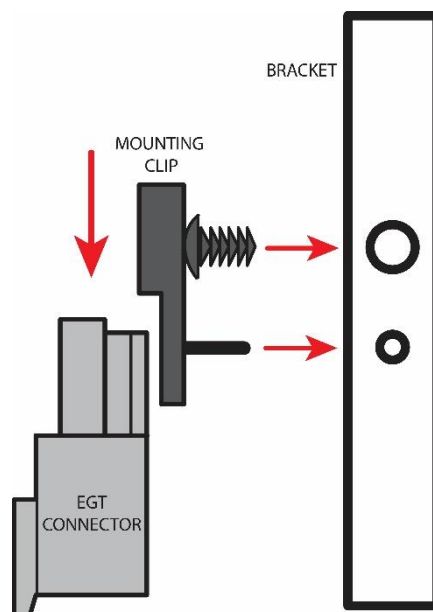
27

Route EGT wire along the firewall alongside the Armax loom.

28

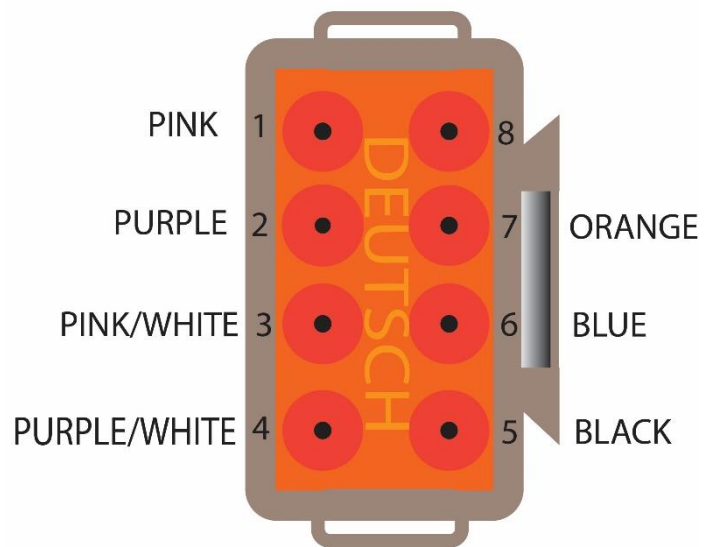
Mount EGT connector to mounting bracket D.

Connect EGT wire to the ARMAX loom



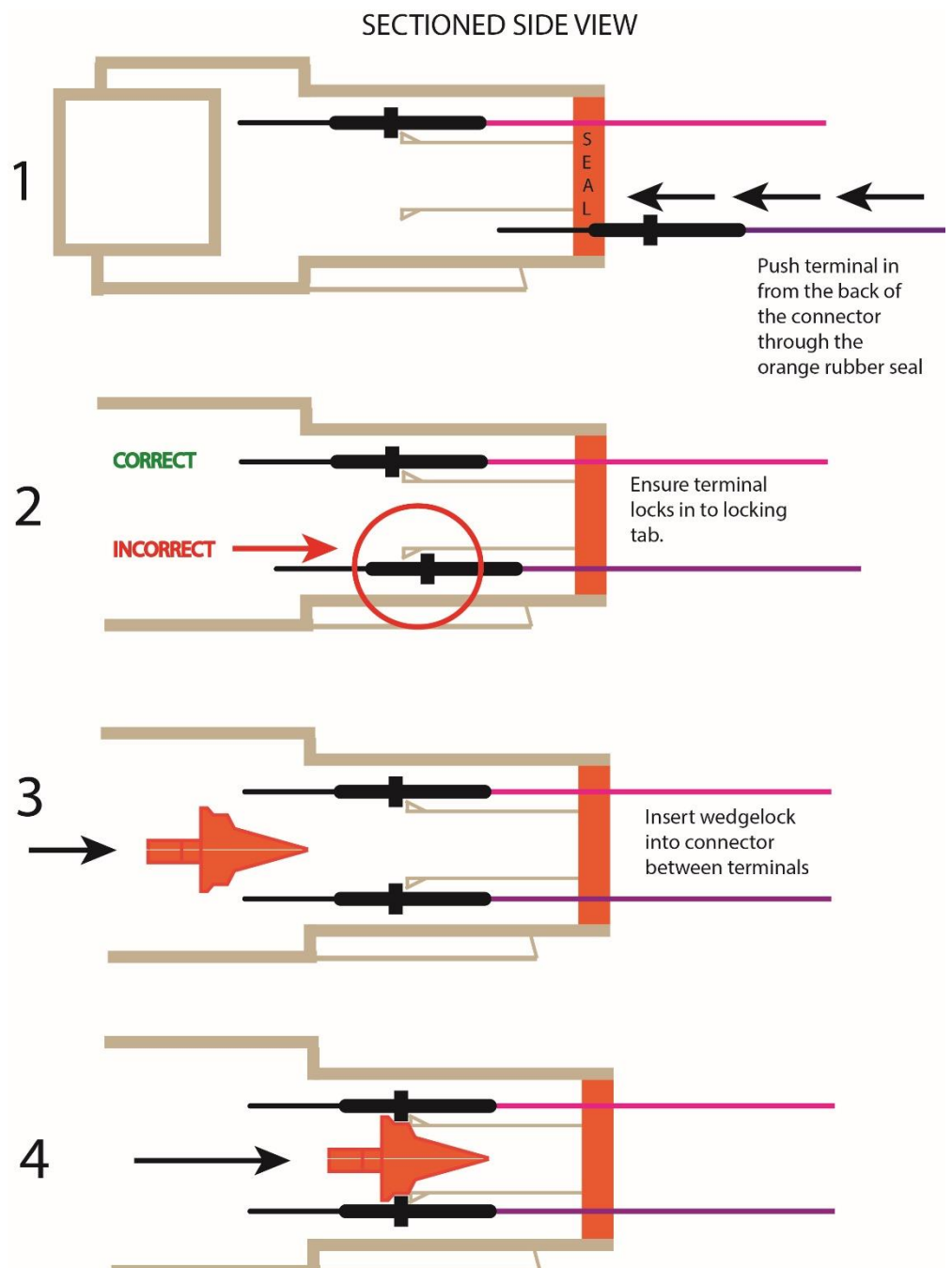
29

Use supplied cable ties to secure the ARMAX loom and the EGT wire to the firewall.



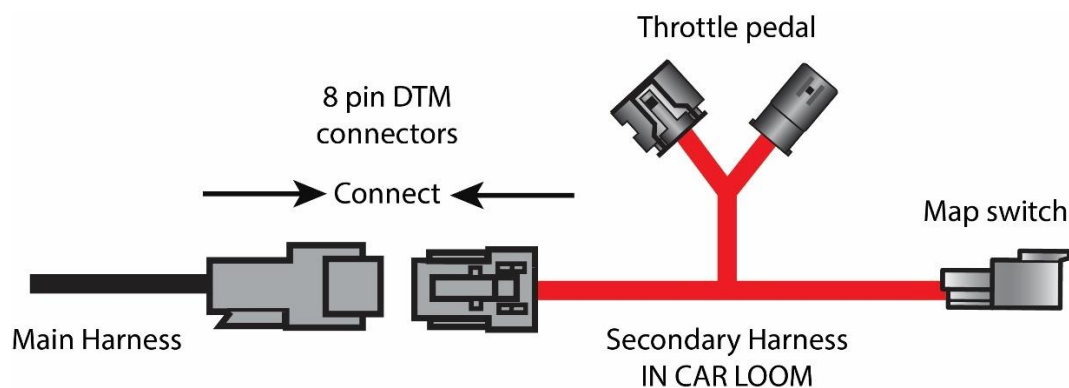
Locate the main harness in the driver's side footwell labelled IN CAR LOOM.

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

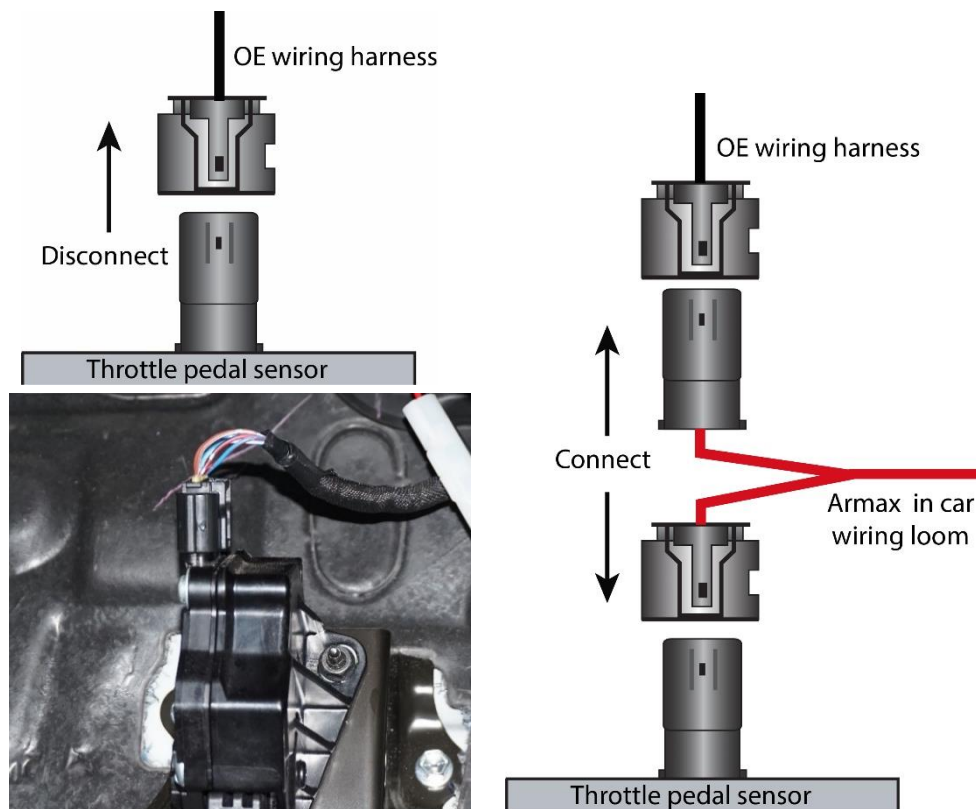


31 Connect the IN CAR LOOM (secondary harness) to the DTM connector on the main harness.

Check that the wire colours all correspond with each other.

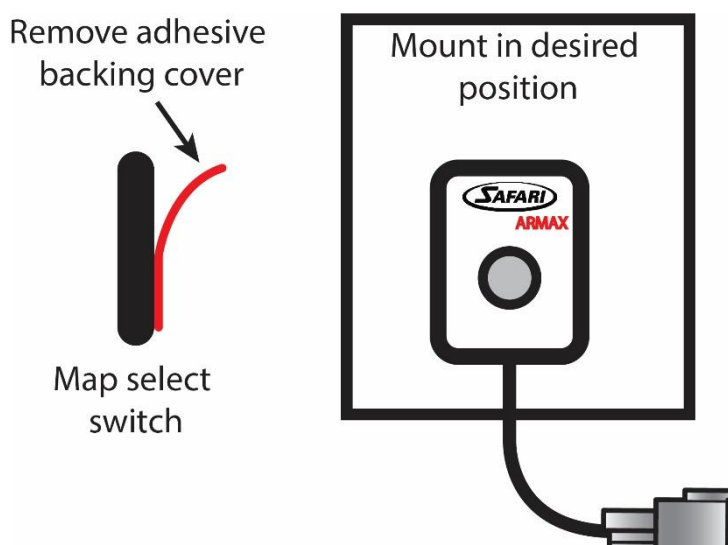


32 Connect the IN CAR LOOM to the throttle pedal connector.



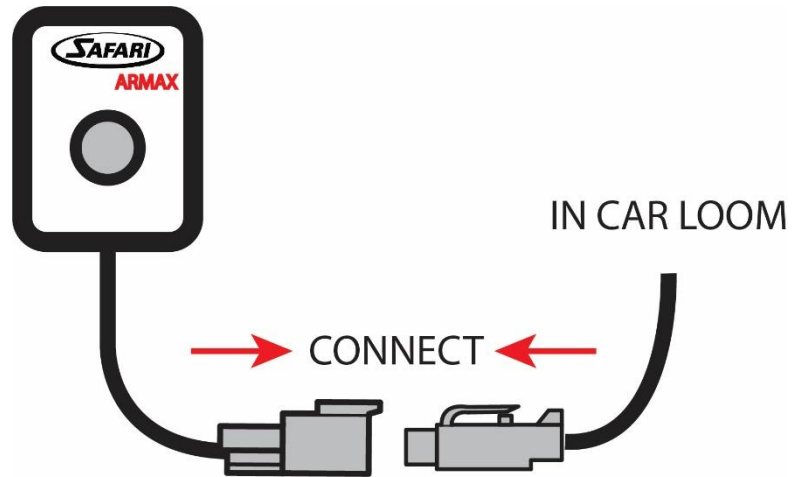
33 Remove the adhesive backing cover from the map select switch and mount in a position that the driver is comfortable with.

Ensure that it is on a flat clean surface to allow for maximum adhesion.



- 34 Connect switch to the IN CAR LOOM.

Neatly cable tie the IN CAR LOOM and any excess wire from the switch neatly in driver side foot well ensuring that it will not interfere with the driver's feet.



35 Final fitment checklist:

- Check all ECU mounting hardware is tight.
- Check the loom is secure and not in contact with the engine or exhaust.
- Check all connections are correct.
- Check EGT is connected and the thermocouple probe depth is correct.
- Check the Armax ECU diagnostics.
- **Place the user manual and bridge out connector in the glove box of the vehicle.**

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.