INSTALLATION

This procedure details installation of this Kit into a Toyota GR Yaris 2020.

Kit Components

1. M142 ECU MARINE
2. M142 TOYOTA YARIS GR 2020 ADAPTOR BOX
3. M1 ADAPTOR 250MM 26W KEY 1 STUB LOOM
4. M1 ADAPTOR 250MM 26W KEY 3 STUB LOOM
5. M1 ADAPTOR 250MM 34W KEY 1 STUB LOOM
6. M1 ADAPTOR 250MM 34W KEY 2 STUB LOOM
7. BOSCH LSU 4.9 WIDEBAND LAMBDA SENSOR
8. M1 ADAPTOR LTC LOOM
9. LTC - LSU LAMBDA TO CAN
10. TOYOTA YARIS GR 2020 GATEWAY LOOM
11. 2 PIN DTM CONNECTOR KIT MALE
12. 2 PIN DTM CONNECTOR KIT FEMALE
13. M5 fasteners x 3 (included with Adaptor Box)
14. M5 flat washer (not shown, included with Adaptor Box)

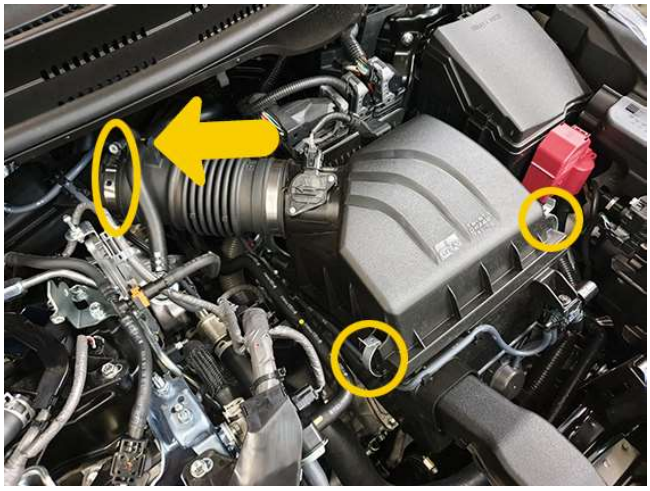
Tools Required

- Small flat blade screwdriver
- Side cutters
- 8 mm socket
- 10 mm socket
- 12 inch 3/8 socket extension
- Socket for Lambda sensor
- 3/8 universal joint
- 3/8 ratchet
- Needle nose pliers

Step 1: Remove Peripherals

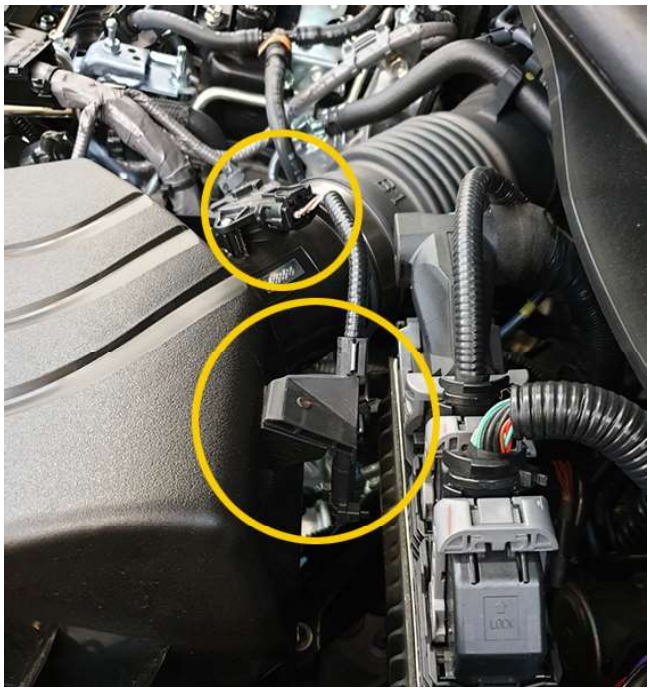
- With the key off and the vehicle parked in a suitable location in which to work, pop the bonnet and remove the engine cover.

- Unlatch airbox clips, and loosen circled hose clamp.
- Unclip the rubber hose that passes over the rubber intake tube.

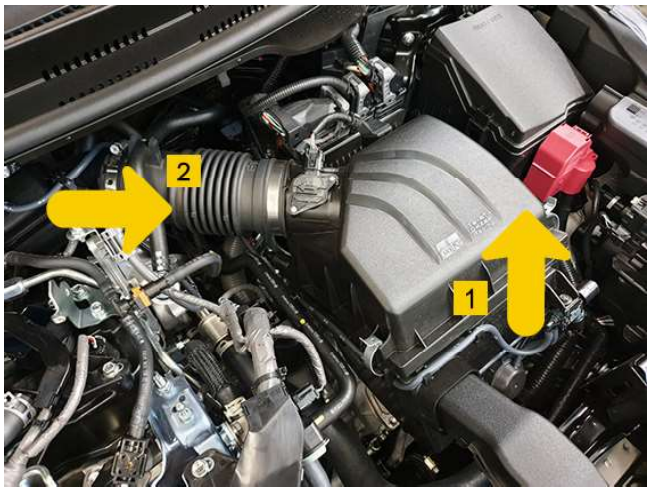


- Unplug mass airflow sensor

- Unclip the wiring support bracket from the airbox lid



- With the mass airflow meter tucked out of the way, remove the airbox lid and rubber intake tube as a single assembly:
  - (1) First raise the front edge of the box up, and pull the airbox lid forward slightly to unlatch it.
  - (2) Wiggle the rubber intake pipe off the plastic inlet assembly.
  - Remove the assembly from the engine bay, and put it off to the side.
  - It is recommended to remove the air filter from the lower airbox portion to prevent damage while changing the ECUs over.

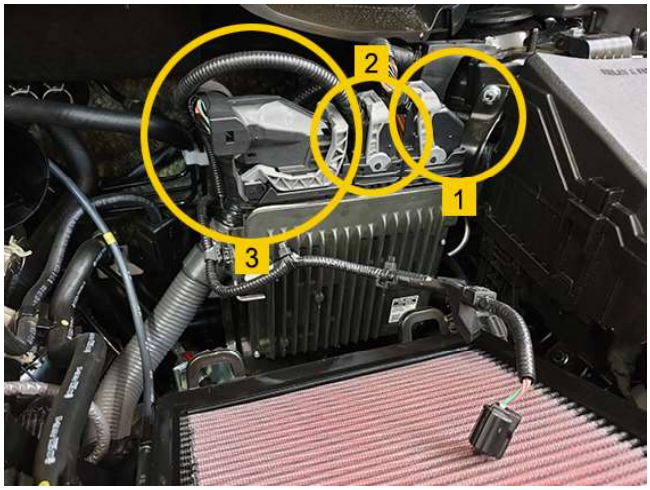


Step 2: Remove the Yaris ECU

- Using the small flat blade screwdriver or a pair of pliers, unclip the mass airflow wiring from the silver bracket.

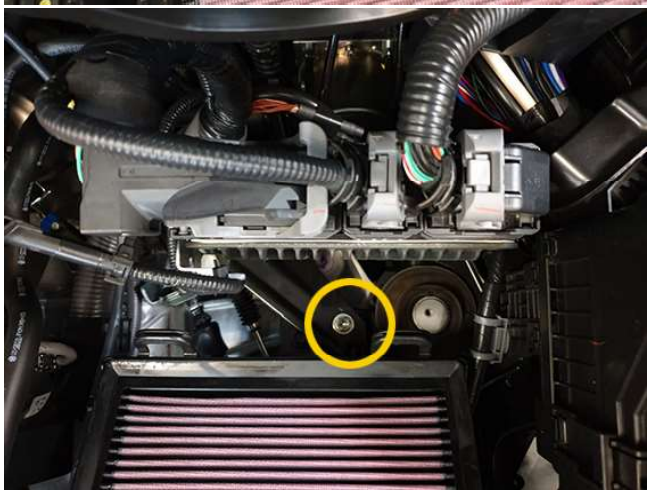
- Unplug the ECU connectors in the order as numbered.

  They are removed by pressing down the locking tab, and then moving the light grey levers.



- Remove the highlighted nuts and bolts using the 10 mm socket, extension and ratchet.

  Put them aside as they will be reused.

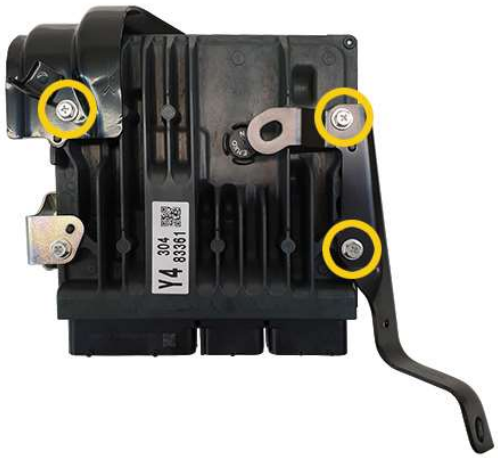


- Gently pull the ECU forward and towards the centre of the car to get the ECU bracket off the mounting stud on the strut tower.

- Remove the ECU wiring:
  - When the ECU is off the mounting stud, pull the top of the ECU forward to allow access to the wiring clips on the backside of the ECU.
  - Unclip the main loom branch. This allows tilting the ECU further forward.
  - Unclip the smaller wiring branch with pliers or a small flat blade screw driver.

- With the wiring removed, the ECU can carefully be removed from the engine bay.
- Put it in a work space. Remove the two black mounting brackets from the OE ECU by undoing the highlighted bolts.

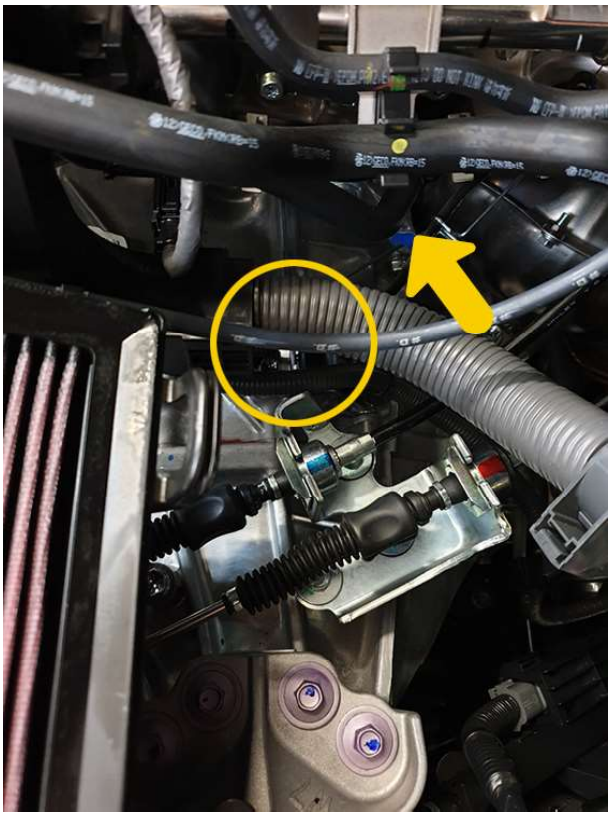
  Put them aside as they will be reused.



Step 3: Lambda sensor

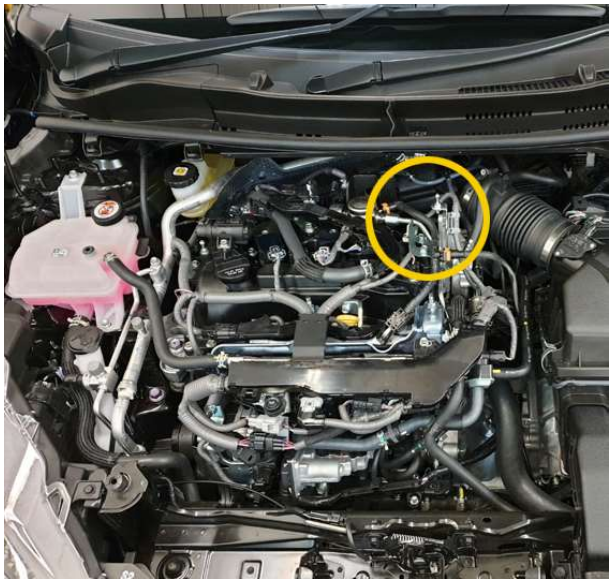
- To remove the OE wideband Lambda sensor:
  - Fist unplug it. The connector is under the main loom (circled).

    To locate the connector look for the black sleeved wire with a tape on it. It can be identified as it is secured in a wire frame.



  - With the sensor wiring unhooked, fit a Lambda sensor socket onto the sensor, as well as a universal joint.

  - Feed the 12 inch extension through the circled area. There is a small space between the head and plastic intake pipe to feed the extension through.



  - Attach the extension to the universal joint.
  - Loosen and remove the OE wideband Lambda sensor.
- Install and torque the supplied Bosch LSU 4.9 wideband sensor in the exhaust pipe where the OE sensor was fitted.
- Secure the wiring to the wire frame.

Step 4: Install MoTeC Kit

- Attach the MoTeC ECU to the Yaris GR adapter box with the three supplied M5 fasteners.

- Fit the supplied stub looms between the MoTeC ECU and the Yaris GR adapter box.
  - Start with the centre two, before fitting the outer two.

  - When fitting the stub loom with the Ethernet communications cable, plug the end with the Ethernet cable into the MoTeC ECU (not the adapter box) This will provide communication with the ECU when installed.

- Drill out the hole (as marked) on the OE ECU bracket to 5 mm.

- Fit the reserved OE ECU brackets (see step 2) to the adapter assembly using the screws that were removed in step 2.

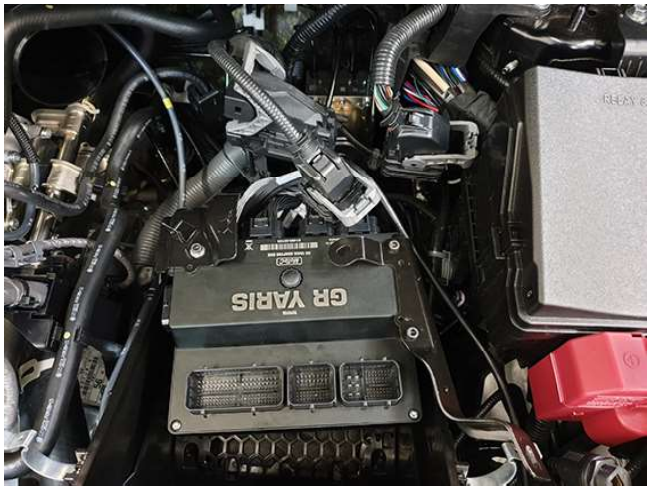
  Fit the M5 washer in between the adaptor and the lower bracket (RH mounting hole in the following image). This is to ensure the mounting bracket clears the Breakout connector.

  When fitting the bracket to the two holes pictured on the left, ensure the bracket has maximum clearance from the OE ECU header, as there is minimal clearance when plugging the adapter into the OE loom.

  The adapter box does not have locating dowels. The lower bracket, held with the single screw can be adjusting after initial installation to align the assembly correctly.

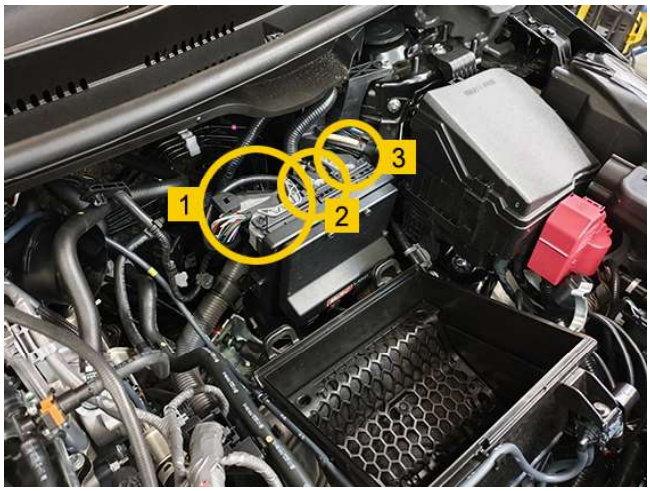
- The assembly is now complete.

- Feed the assembly roughly into place.



- Plug the OE connectors into the adapter box in the reverse procedure to their removal from the OE ECU (see step 2).

  There will be insufficient space to do this once the ECU is bolted in place.

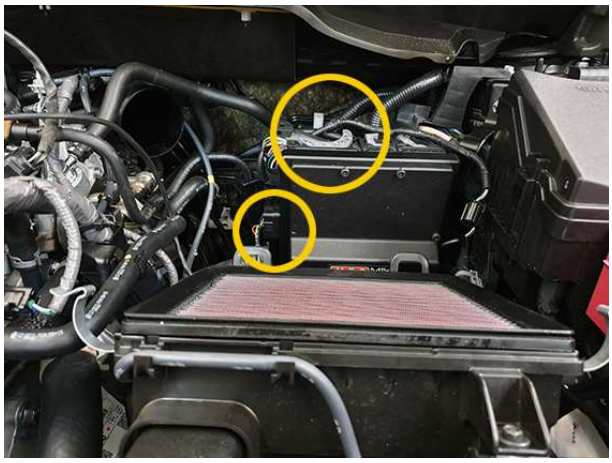


- Locate the brackets to bolt the unit in place.

Step 5: Finalise Installation

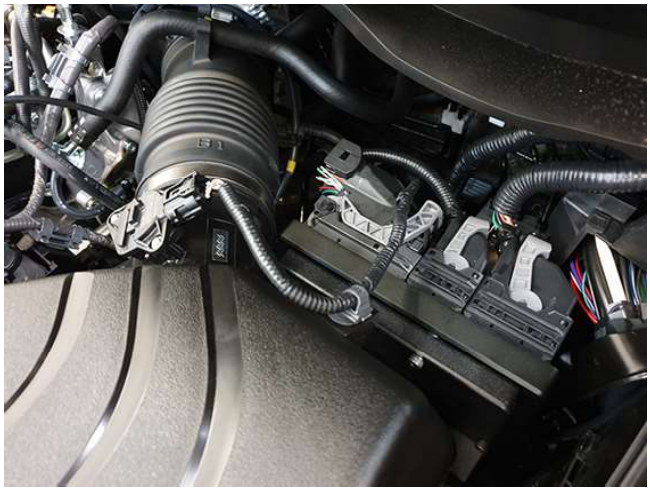
- Reroute the wiring for the mass airflow meter:
  - Remove the three plastic clips (third clip not shown in picture).

  - Try to loosen or remove the third (unpictured) grey clip by lifting the zip tie locking tab and loosening. The wiring clip can be retained for securing the mass airflow wiring to the airbox.
  - Feed the mass airflow wiring up behind the adapter box, passing it over the wiring connectors as pictured. Plug in the auxiliary adapter harness, then refit the air filter into the lower airbox.



- Refit the upper airbox in the reverse method to the removal procedure.

- If the grey mass air flow wiring clip was successfully retained, fit it as shown to allow strain relief for the mass airflow wiring. Otherwise secure with a zip tie and the white mass airflow wiring clip.



- Route the communications cable away from heat sources while remaining accessible.
- Connect the LTC to the LSU 4.9 sensor and 4 pin DTM on the auxiliary harness and secure the LTC.

- Replace the engine cover to complete the installation.

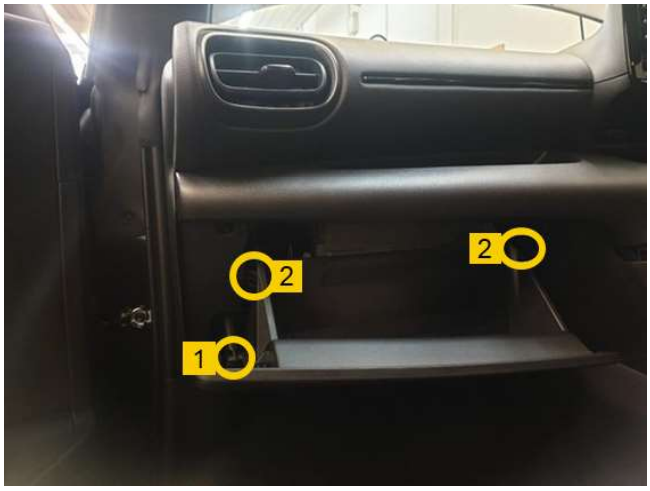
Dash Override Installation

Drivers should be aware that specifically the following standard features do not work utilising this M1 Package: Active Cruise Control, Dynamic Stability Control, Low Speed Pre-Collision System and Lane Trace Assist.

This Kit includes parts to install the optional Dash Override feature. This feature prevents alarms associated with these systems showing up on the dash,

Step 1: Remove Glovebox

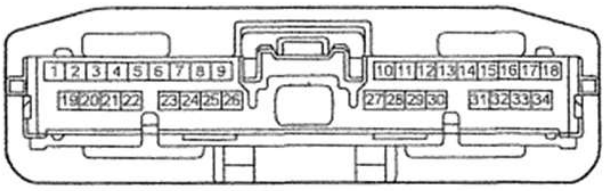
- Open the glovebox, and remove any items from it.
- Next unclip the opening dampener (1) and remove the glovebox by pulling the glovebox up to unlatch the hinge, and then remove, moving each stopper (2) past the dashboard frame.



Step 2: CAN Wiring Modification

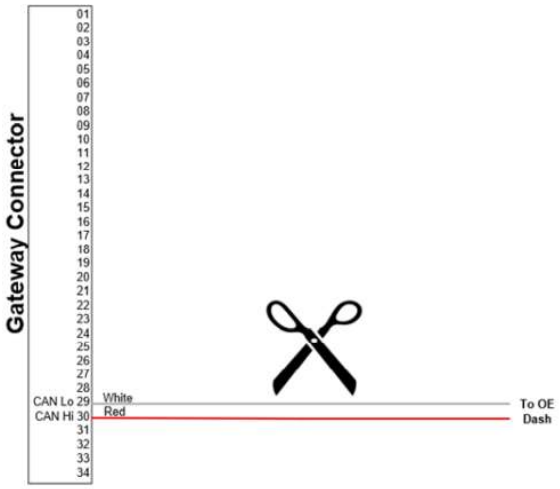
- The CAN gateway (circled) is located next to the HVAC unit. This is where the wiring modification is required. Ensure the car is powered off, and unplug this white connector.

- The CAN bus that needs to be intercepted is on pins 30 (red wire CAN HI) and 29 (white wire CAN LO).



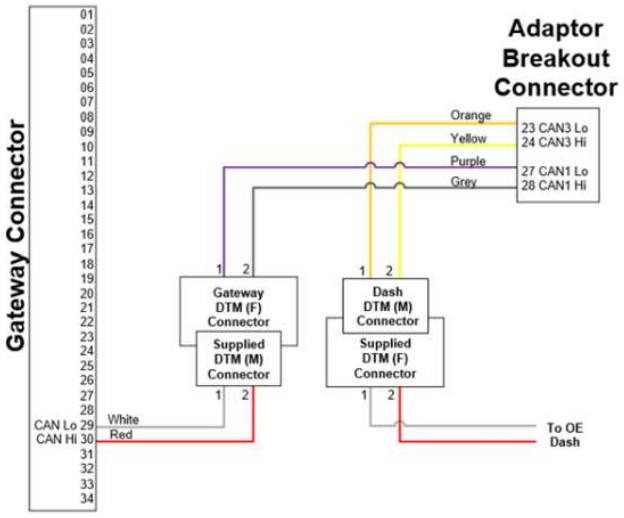
Pin numbering is from the viewpoint of the pin side of the connector.

- Cut the CAN Hi (red) and CAN Lo (White) wires approx 100 mm from the gateway connector.



- Using the supplied DTM connectors, crimp and connect the wires as shown to the gateway loom.

  The Adaptor Breakout Connector will be connected in step 4.



- Once this is joined, feed the wiring to the drivers side of the cabin, as the recommended grommet to pass the wiring through is above the steering column.

Step 3: Remove Wiper Components

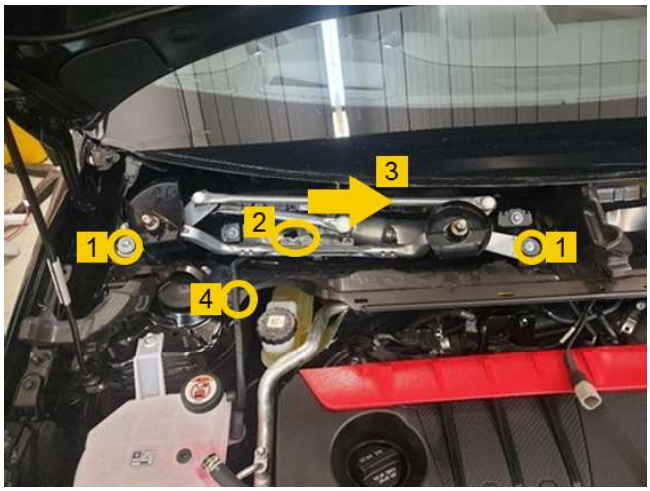
- Now moving to the outside of the vehicle, the wiper cowl and plenum need to be removed. Start off by removing the two wiper arm bolt covers to expose the M10 nuts. Using a 14 mm socket and ratchet, remove the wiper arm, retaining the bolts.

- Once the wiper bolt is removed, remove the wiper arm by applying and releasing pressure with your palm in the area indicated by the arrow to disengage the taper fit. Use your other hand to support the wiper arm to prevent damaging any plastic trims when the wiper arm is disengaged.

- Remove the corner capping pieces from the wiper tray cover. This is done by prying up from the front corner with a plastic trim removal tool. Avoid using excessive force, as the trims are hooked under the front guards.

- The wiper tray cover can now be removed. The front edge clips into the sheetmetal lower cover with a series of clips. Unclip the front edge, then lift up and pull forward to remove the tray cover.

- Next the wiper motor assembly needs to be removed.
  - First undo the 2 x M6 bolts.
  - Then unclip the wiring harness from the motor (Item 2).
  - To remove the assembly, slide towards the centre of the vehicle approximately 30 mm and remove (Item 3).
  - Finally unclip the harness from the lower wiper cowl (Item 4)

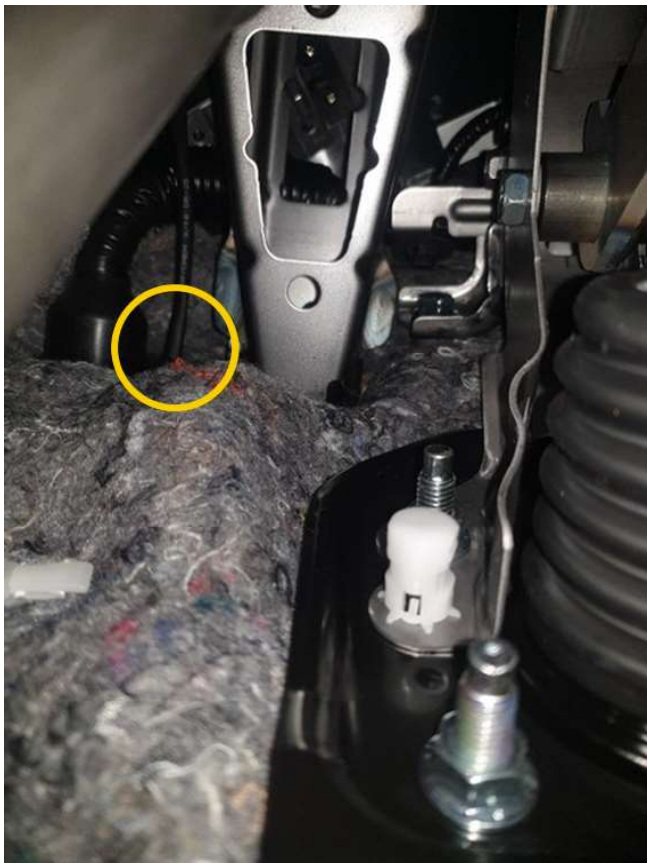


- Unbolt the lower wiper cowl by removing the 12 x M6 bolts. To do this, unclip the foam insert (indicated by the arrow). Once all the bolts are removed and the cowl is loose, lift slighty, and rotate the front edge towards the bonnet while pulling the cowl towards you to remove. Take care as some of the brackets on the firewall edge are quite flimsy and can potentially damage the front edge of the windscreen.

Step 4: Feed Loom Through Grommet

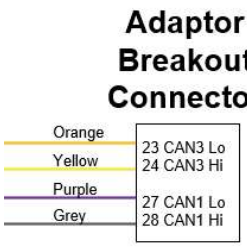
- Locate the driverside firewall grommet. There is a black nipple on the side nearest the brake booster (circled). The tip of this nipple needs to be cut off, using the casting line as a guide. The dash loom will pass through this. To aid in getting the wiring through this hole, feed a pull aid through from the engine bay side (a piece of welding filler rod, or a piece of wire are easiest).

- From inside the driver's footwell area, secure your gateway loom to your pull aid. The CAN wires need to be secured to the pull aid, and then pull the wiring through the firewall grommet carefully, ensuring the loom does not get caught on anything or wrapped around any pedals. This is easiest with one person guiding the loom, whilst another person pulls it through. (note in the image, the gateway loom has already been pulled through)

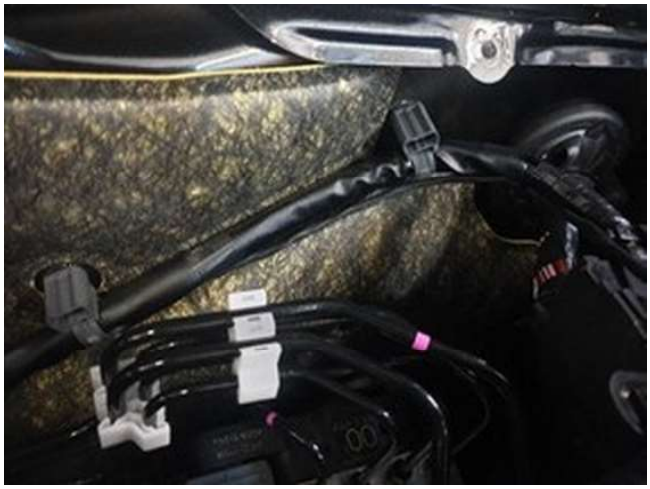


- We recommend using a few layers of glue lined heat shrink to build up a thick section that seals in this grommet nipple.
- Put a zip tie around the grommet to secure it.

- Connect the 4 terminated breakout loom wires to the Adaptor Breakout Connector as shown. See also loom schematic



- Secure the gateway loom along the factory harness and connect the breakout connector to the adaptor box.



Step 5: Setup

- Power on the vehicle
- Open M1 Tune and connect to the ECU
  - Set CAN Bus 1, 2 and 3 Mode to 500 kbps
  - Set Exhaust Lambda Bank 1 Collector CAN Bus to CAN Bus 2
  - Set Toyota Yaris CAN Bus to CAN Bus 2
  - Set Toyota Yaris Dash Warning Override Dash CAN Bus to CAN Bus 3
  - Set Toyota Yaris Dash Warning Override Gateway CAN Bus to CAN Bus 1