FuelX Autotune- Royal Enfield Super Meteor 650

Document Version	3	**Release Date**	14 July 2023

Application information	**FuelX**
Vehicle	**Royal Enfield**
Model	**Super Meteor 650**
Year of manufacture	**2023 +**

Note:

- Read through all instructions before installation and use.
- Ensure that the bike is switched off and the key is out of the ignition before proceeding with the installation.
- Some parts of the bikes might be hot/sharp and cause burns/cuts. Proceed with extreme caution or wait until the bike has cooled down. Always wear safety gloves.
- When the installation is complete, ensure to secure the wiring loom away from the movable parts or components that tend to heat up during the normal operation of the vehicle at any chance.
- FuelX is intended for motorsport use on a closed course, please check with your local laws before using this product. Race Dynamics is not liable for consequences arising out of using the product.
- The steps demonstrated in the manual are for one cylinder. For multi-cylinder vehicles, the steps have to be replicated for the other cylinders. **Customers can choose Lambda 1 or Lambda 2 connectors for any cylinder unless the connectors are different for different cylinders.** (for certain vehicles)

Support:

North & South America : +1 267 214 9292 (Call) +91 9606 044 178 (WhatsApp)

India, Bangladesh, Bhutan, Srilanka & Nepal : +91 9916 229 292 (Call & WhatsApp)

Rest of the world : +91 9606 044 177 (Call & WhatsApp)

Email : support@powertronicecu.com

Website : www.powertronicECU.com

for Indian specification vehicles, the FuelX module will have a sticker indicating it.

The warranty/support will not be provided for international users with Indian specification FuelX purchased from unauthorized re-sellers.

1. FuelX

FuelX is an electronic, plug-in, fuel-injection optimizer for modern engines. It either enriches or decreases the AFR in all operating regions according to the rider requirement. It autotunes the engine to the best operational parameters, constantly monitoring, learning, and adapting to the engine condition, wear and tear, riding style, add-ons (such as air filter and/or exhaust), etc as well as the environmental conditions such as temperature, humidity, altitude, etc. always ensuring the engine performs in the safest and most optimal zones.

FuelX kit contains the following items

- FuelX Module
- Wiring Harness
- Handlebar map switch (Pro version only)
- Zip ties
- Decals
- Quick start guide and Warranty card

Image 1.1

2. FuelX Variants:

FuelX Pro

The FuelX Pro variant has 10 maps that can be changed depending on the preference of the rider. For the Pro version, the Fuelx contains an additional connector (Refer to Image 2.3) for the Handlebar Map switch (Refer to Image 2.2)

Image 2.1

Image 2.2

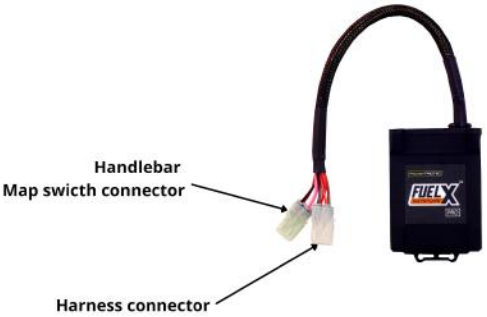


Image 2.3

FuelX Lite

The FuelX Lite variant has a single autotune map and only one connector for the harness.

Image 2.4

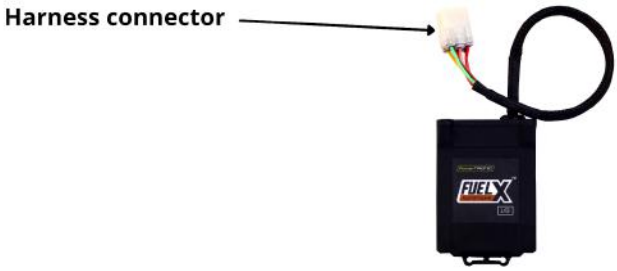


Image 2.5

3. FuelX Harness Connectors

The harness contains

- The Lambda connector (O_2)
- FuelX connector (8 Pin)
- Ground/battery negative connector.

Image 3.1

The type and number of connectors may vary depending on the vehicle, year of manufacture, and the number of cylinders. Examples of different types of Lambda sensor connectors are shown below.

Image 3.2

The FuelX is connected between the Lambda sensor connector and the ECU. The male connector of FuelX is connected to the female of the Lambda sensor and vice versa.

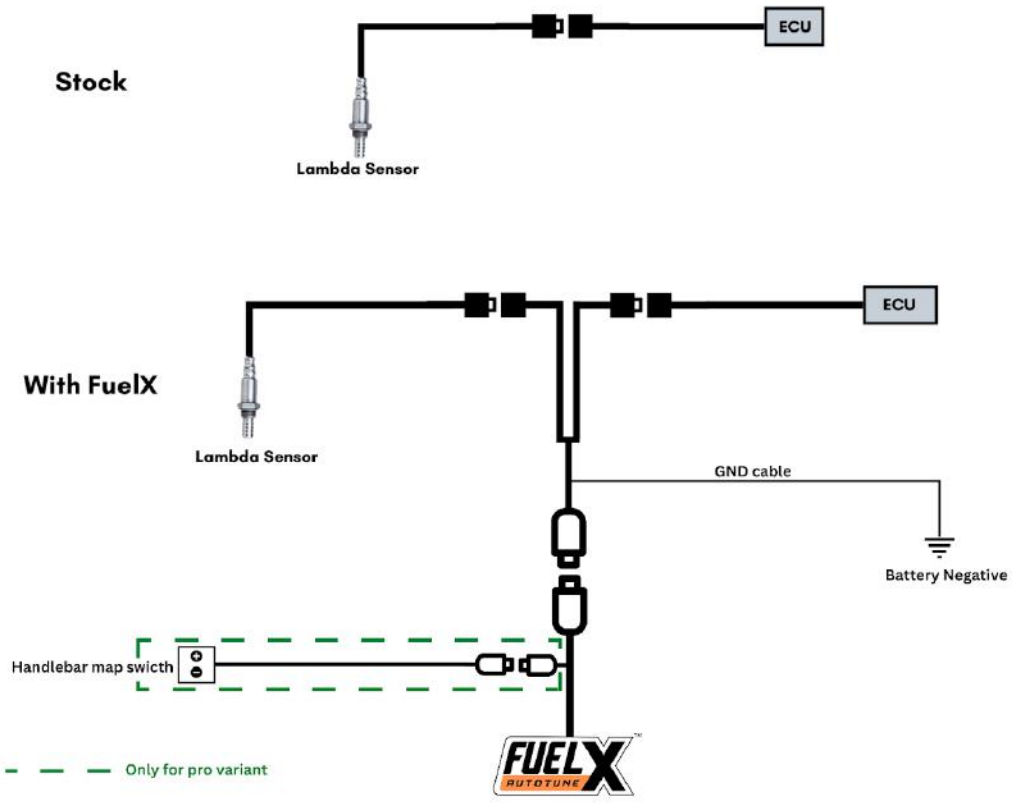


Image 3.3

Sensor configuration for Euro4 and Euro5 models.

There is a sensor configuration connector provided with the module. The customer has to choose the sensor configuration, based on the variant of the vehicle. Refer to Table 3.1 and the instructions below.

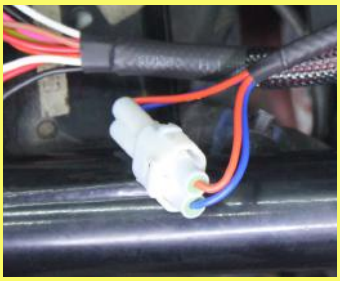
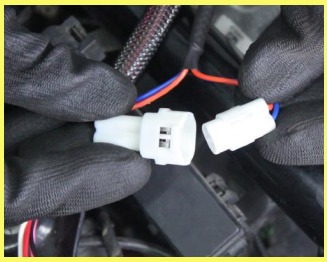
	Euro4 Models	Euro5 Models
Year of manufacture	**Generally, 2017-mid 2021**	**Generally, mid 2021+ (refer below steps to confirm)**
OEM ECU type		
Lambda Sensor connector type	**Flat type** 	**Square type** 
FuelX sensor configuration should be	**Closed/Connected** 	**Open/Disconnected** 

Table 3.1

1) One of the easy methods to identify whether the vehicle is a Euro 4 or a Euro 5, is to observe the Stock/OEM ECU serial number.

2) If the Serial number denotes that the vehicle is a **Euro 4 variant, then the sensor configuration connector should be in a closed/connected position. Generally, Euro 4 variants have flat-type lambda Sensor connectors. (refer to the image below).**

Type 1
Flat-type Lambda sensor connectors (Male and Female)

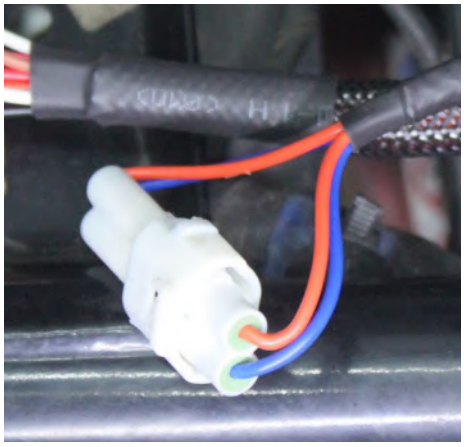


Image 3.4

3) If the serial number denotes that the vehicle is a Euro 5 variant, then the sensor configuration connector should be in an open/disconnected position. (refer to the image below). **Some of the models may not denote it is a Euro 5 model. In such cases, observe the Lambda sensor connector. Generally, Euro 5 variants have square-type lambda Sensor connectors.**

Type 2
Square-type Lambda sensor connectors (Male and female)

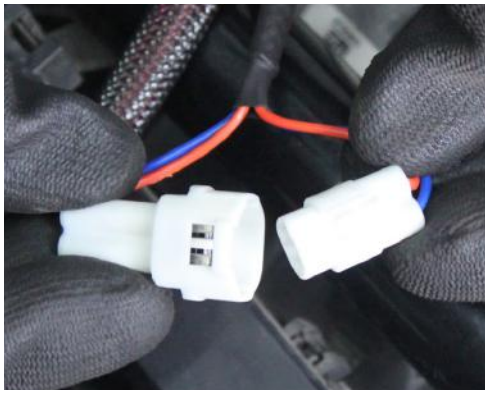


Image 3.5

4) In case a check light appears on the console, observe if the configuration is correct. If not, correct it as mentioned.

5) If the check light appears with the correct configuration, please contact technical support.

4.1 Removing panels, and fairing

Park the bike using the center stand on a level surface (Or a paddock stand).

Image 1

Locate the position of the Lambda sensor connectors.

Image 2

4.1.1 Locate the Right side panel bolt. Refer to **Image 3.**

Image 3

4.1.2 Unlock the right-side panel bolt using a 4 mm Allen Key. Refer to **Image 4.**

Image 4

4.1.3 Gently detach the panel after unlocking it. Refer to **Image 5**.

Image 5

4.1.4 Locate the key slot and unlock the right side panel using the key. Refer to **Image 6**.

Image 6

4.1.5 Locate the pillion seat bolts. **Image 7** shows their position.

Image 7

4.1.6 Using the 5 mm Allen unscrew the bolts. Refer to **Image 8**.

Image 8

4.1.7 Gently detach the pillion seat. Refer to **Image 9**

Image 9

4.1.8 Locate and unbolt the rider seat bolts using M10 hexagonal T socket. Refer to **Image 10**

Image 10

4.1.9 After removing the bolts, gently remove the bracket. Refer to **Image 11**

Image 11

4.1.10 After removing the bracket, gently lift the seat. Refer to **Image 12**.

Image 12

4.1.11 Using the 10 mm Hex socket and T handle unscrew the Tank bolts. Refer to **Image 13**.

Image 13

4.1.12 Using 4 mm hex bit, unscrew the left side TPS metal cover. Refer to **Image 14**

Image 14

4.1.13 Gently remove the panel. Refer to **Image 15.**

Image 15

4.1.14 Disconnect the fuel pump connector carefully. Refer to **Image 16**.

Image 16

4.1.15 Gently lift the rear end of the tank and disconnect the vacuum hoses from the tank. Refer to **Image 17**

Image 17

4.1.16 Locate and carefully disconnect the fuel pump connector. Refer to **Image 18.**

Image 18

4.1.17 Gently lift the tank from the tank seating after disconnecting the connections. Place it securely Refer to **Image 19**

Image 19

4.1.18 Route the FuelX harness. Refer to **Image 20**.

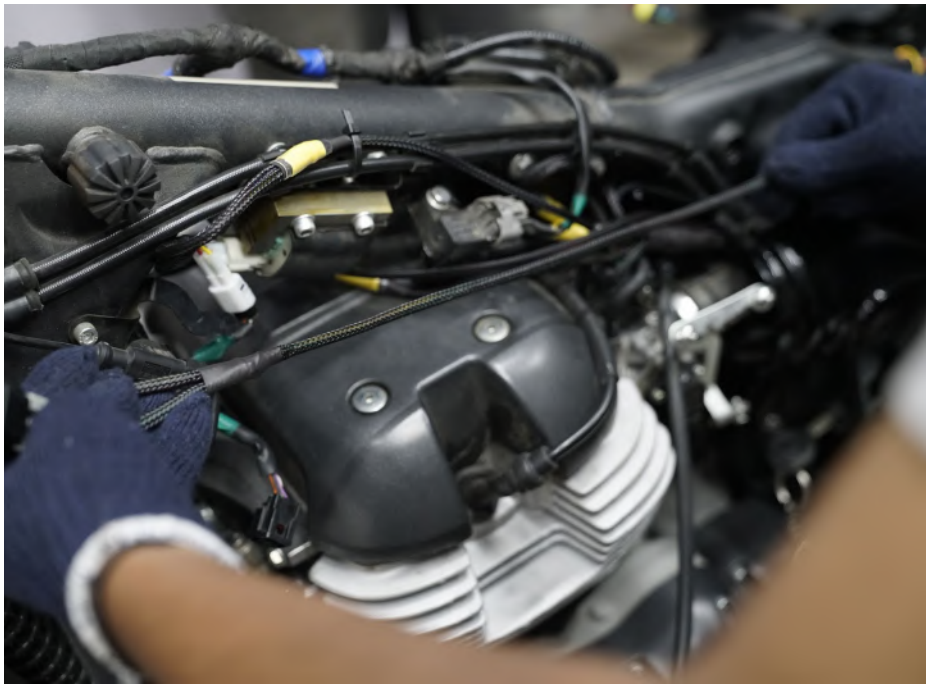


Image 20

4.1.19 Route the FuelX male and female connectors as shown in the image. Refer to **Image 21**

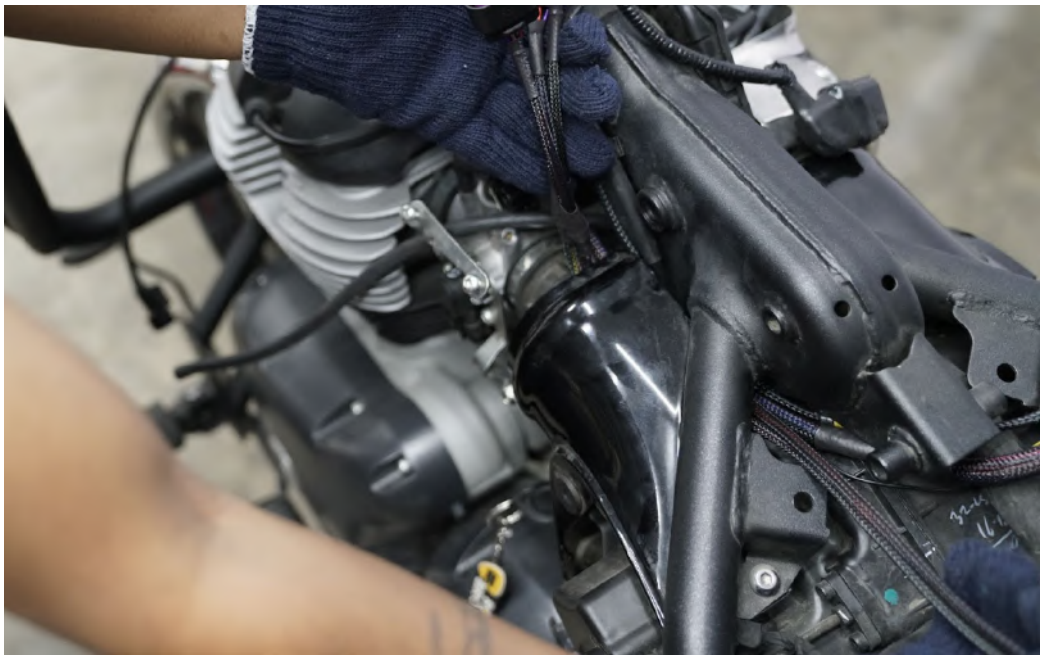


Image 21

4.1.20 Refer to **Image 22** to locate the Lambda sensor and Lambda Sensor Connector on the left side.

Image 22

4.1.21 Slide the connector back from the lock. Refer to **Image 23.**

Image 23

4.1.22 Disconnect the male and female connectors. Refer to **Image 24**.

Image 24

4.1.23 Connect the FuelX male connector to the Stock female Lambda connector. Refer to **Image 25**

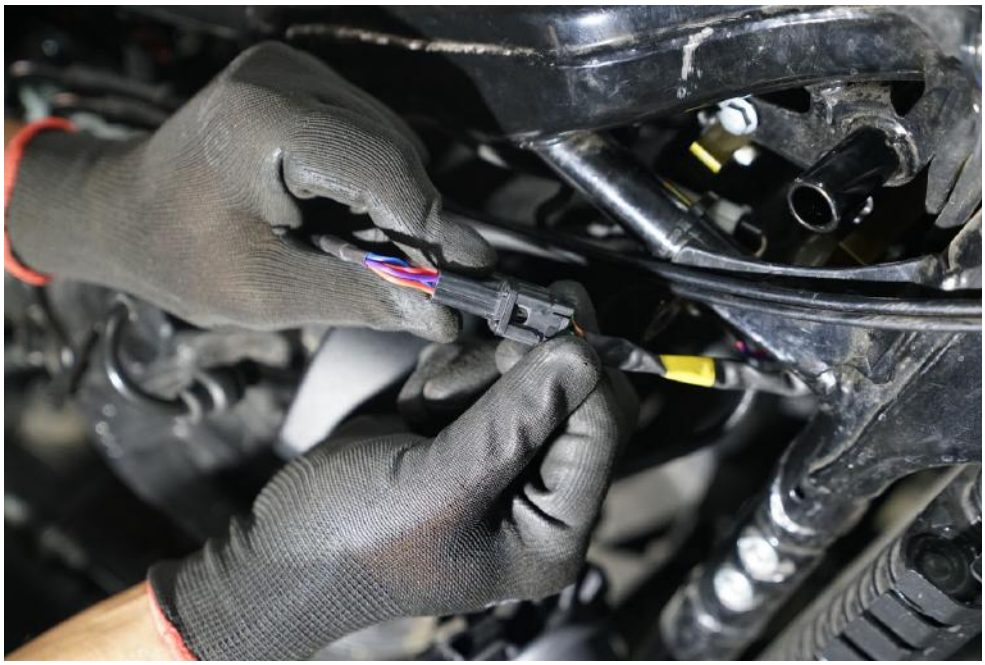


Image 25

4.1.24 Connect the FuelX female connector to the Stock male Lambda connector. Refer to **Image 26**

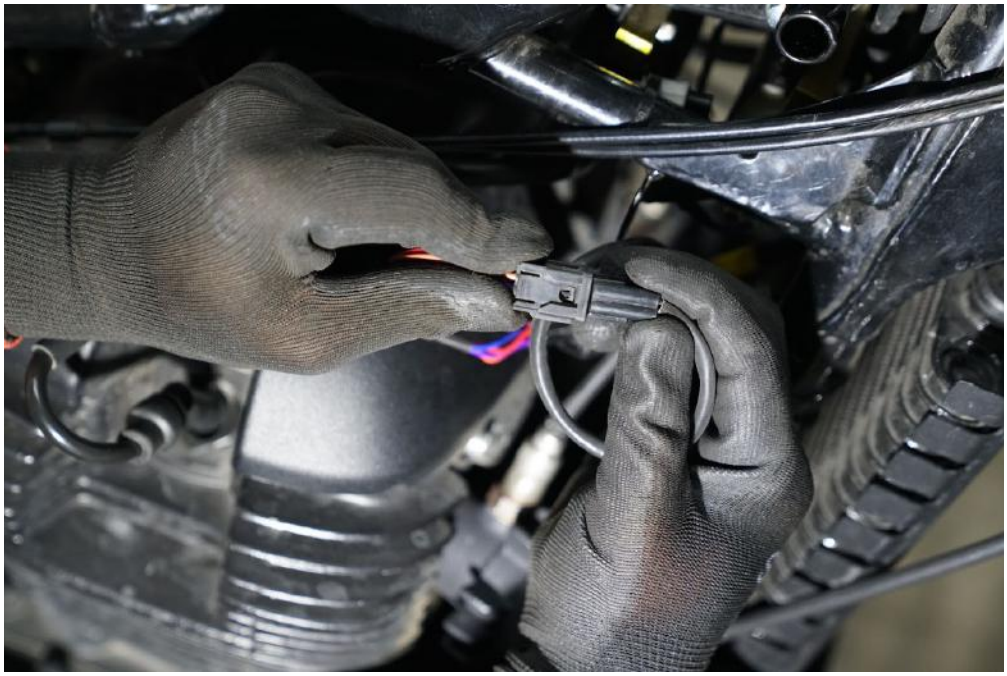


Image26

4.1.25 Slide the connector back to the lock. Refer to **Image 27**. Repeat the processes on the other side also.

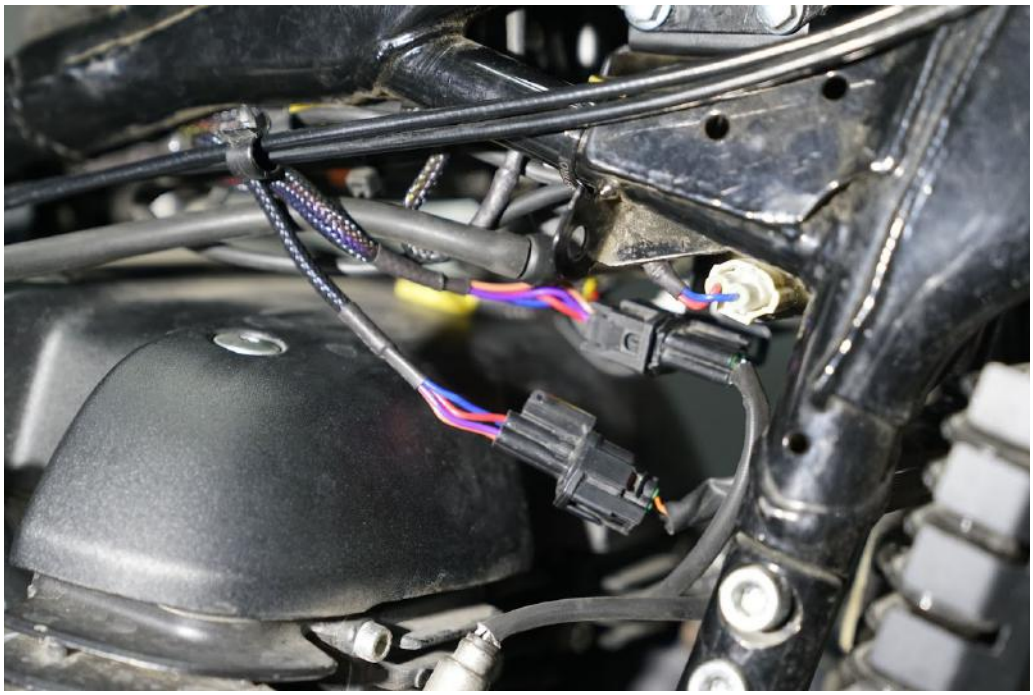


Image 27

4.1.26 Using the zip ties provided within the kit, tie the Lambda/ O2 Adapter cable to the frame. Rfere **image 28**

Image 28

4.1.27 Locate battery negative terminal. Refer to **Image 29**.

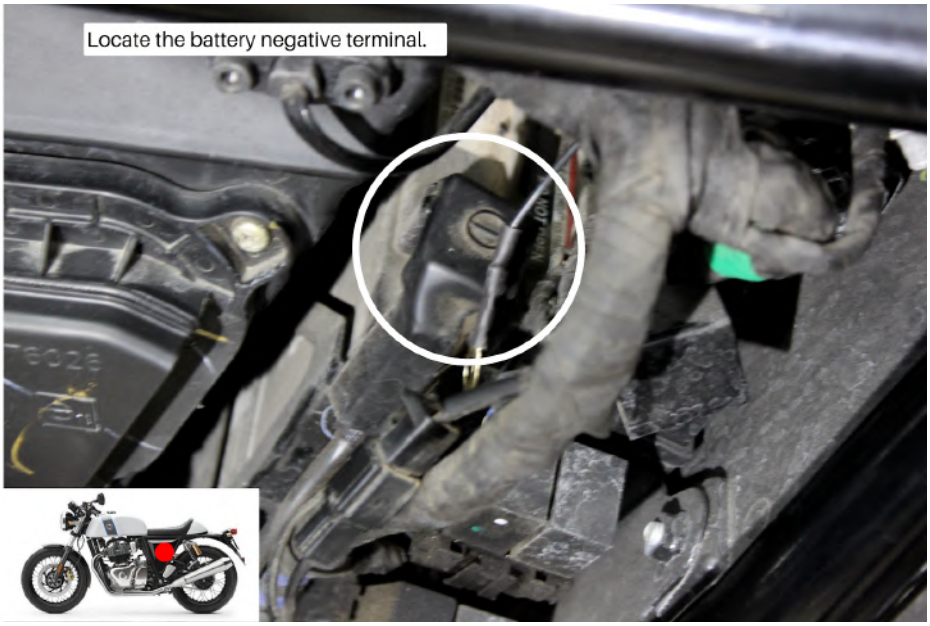


Image 29

4.1.28 Unscrew the battery negative terminal using a Phillips head screwdriver. Refer to **Image 30**

Image 30

4.1.29 Connect the FuelX ground terminal connector to the battery negative terminal. Refer **to Image 31**

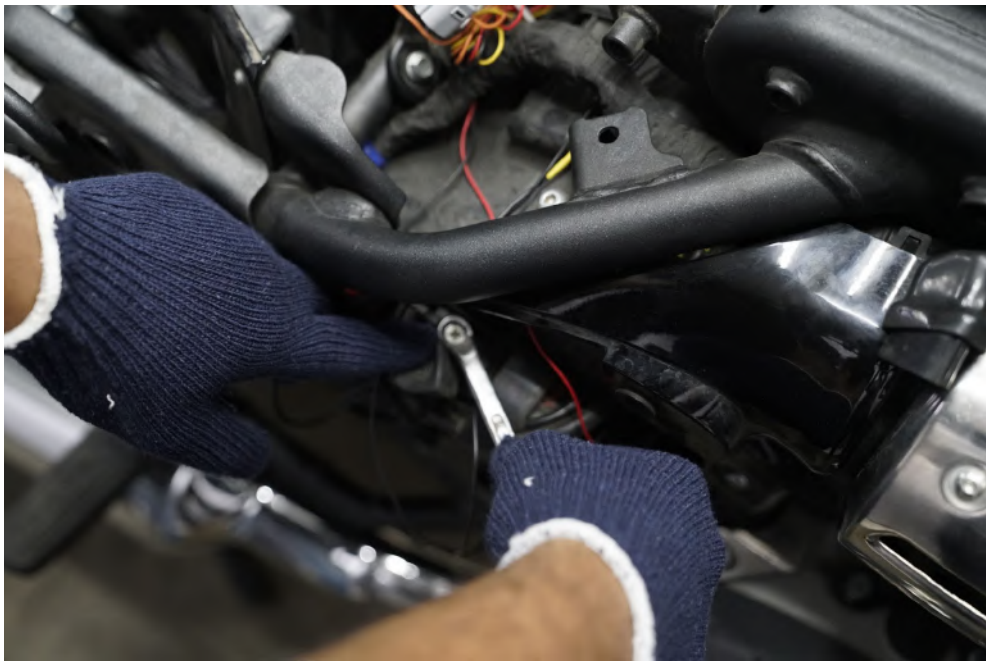


Image 31

4.1.30 For the Handlebar map switch installation in variants, start from the front end. Refer to **Image 32**

Image 32

4.1.31 Route the connector end of the handlebar map switch as shown in the image. Refer to **Image 33**

Image 33

4.1.32 Route the handlebar map switch cable to the rear end of the vehicle. Refer to **Image 34**

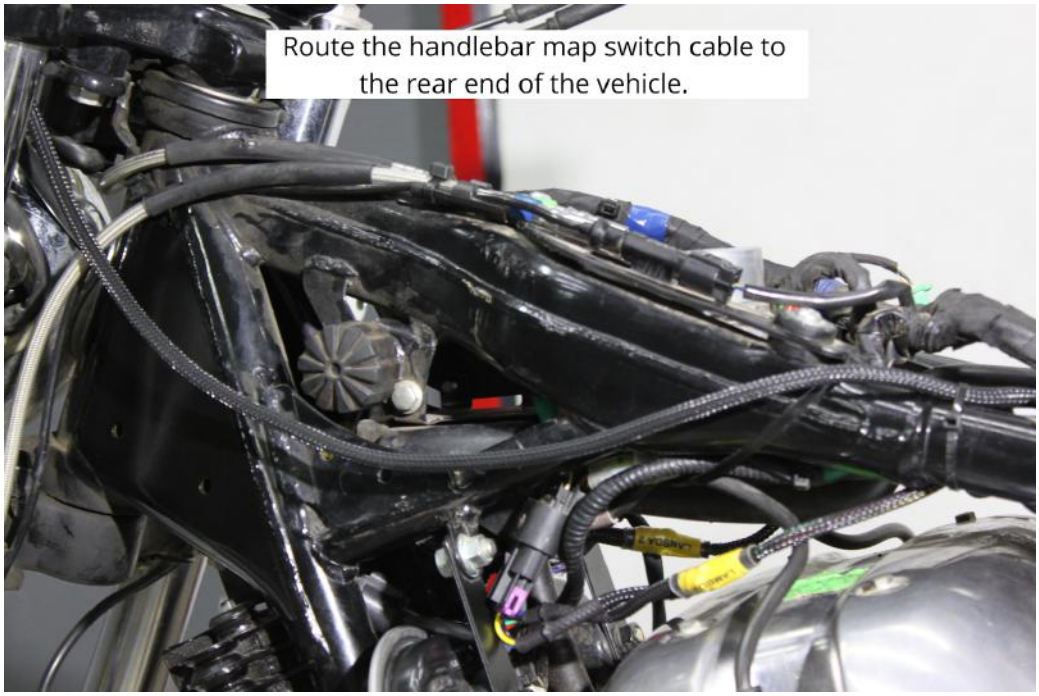


Image 34

4.1.33 Attach the handlebar switch to a suitable position. Refer to **Image 35**

Image 35

4.1.34 Using a 2.5 mm Allen key, tighten the bolts. Refer to **Image 36**

Image 36

4.1.35 Place the FuelX securely under the seat. Refer to **Image 37.**

Image 37

4.1.36 Connect the FuelX to the harness. Refer to **Image 38**

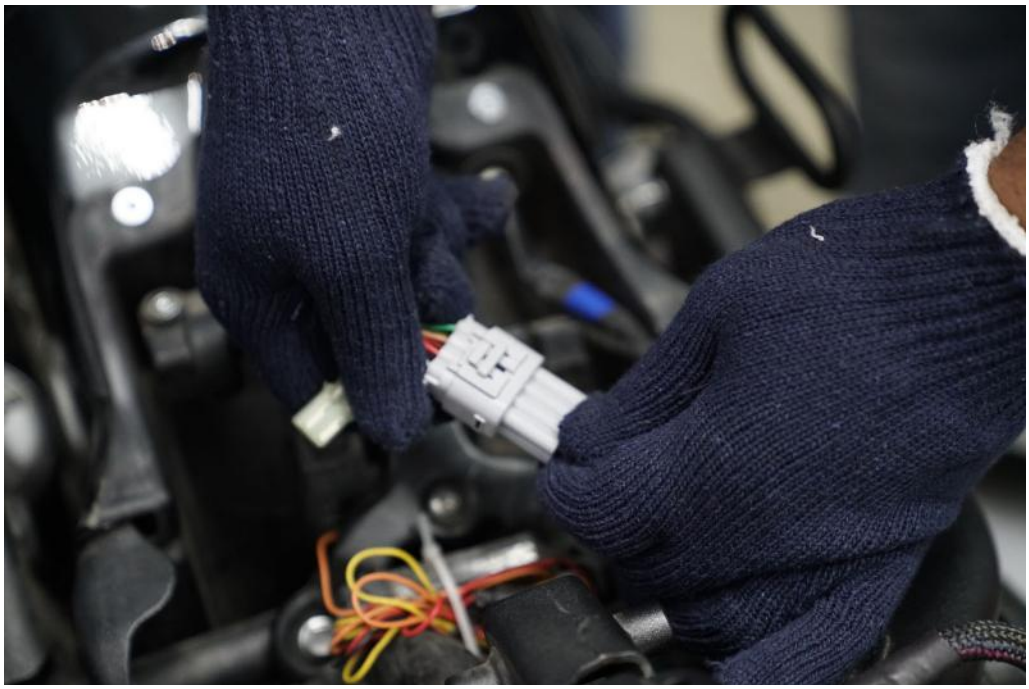


Image 38

4.1.37 Connect the handlebar map switch connector to the FuelX connector. Refer to **Image 39**

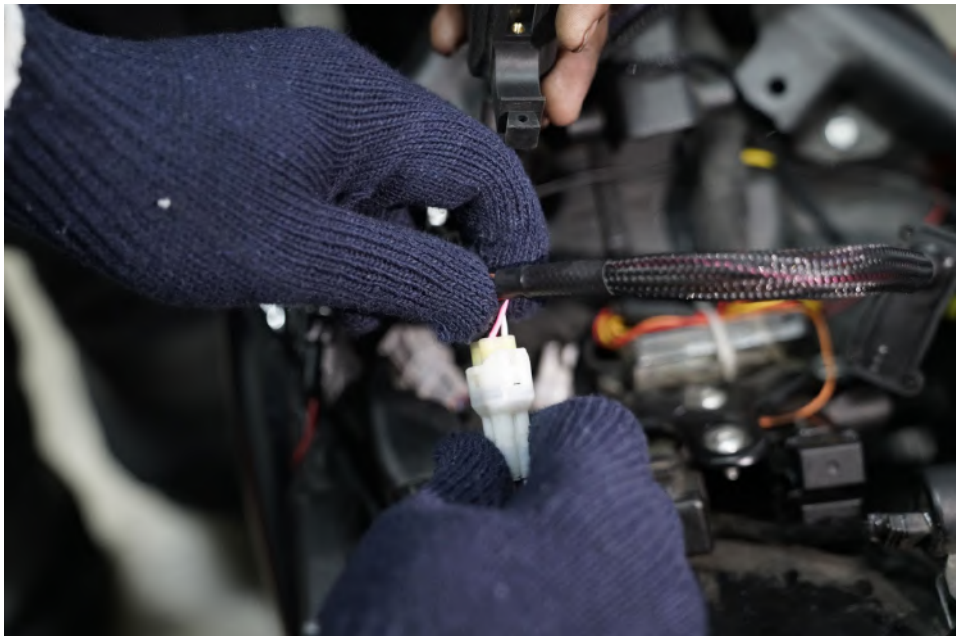


Image39

4.1.38 Using the provided nylon tags, secure the FuelX and the harness by attaching them to the frame. Refer to **Image 40**

Image 40

4.1.39 Repeat the Lambda sensor connector on the other side as well.

4.1.40 Attach the panels and the tank back.

5. FuelX Configurations and Settings

For Pro versions, maps on the FuelX can be changed according to the preference of the customer. By just pressing the +/- button on the Handlebar map switch. The **Green LED** on the FuelX Handlebar map switch will help the customer know which map is active. Ie the number of blinks on the handlebar switch indicates the number of maps.

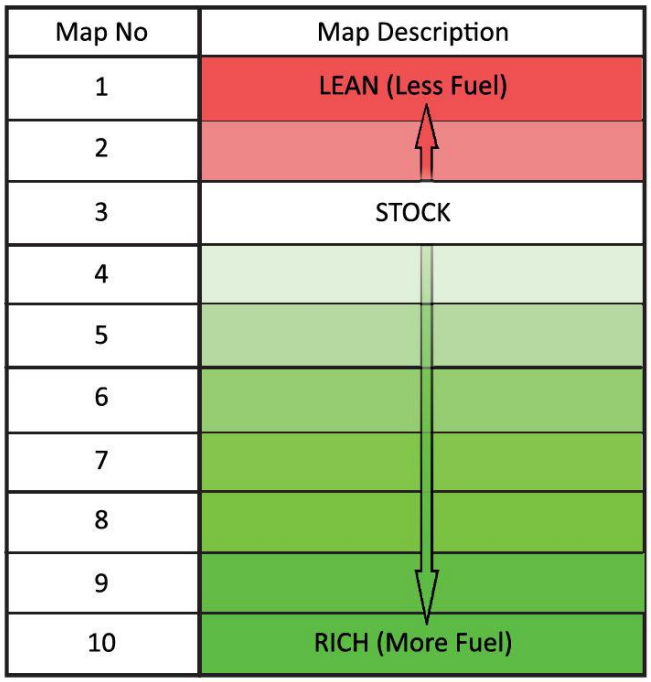


Image 5.1

The rider can choose the map according to the fuel enrichment he wants.

The first two maps are lean maps.

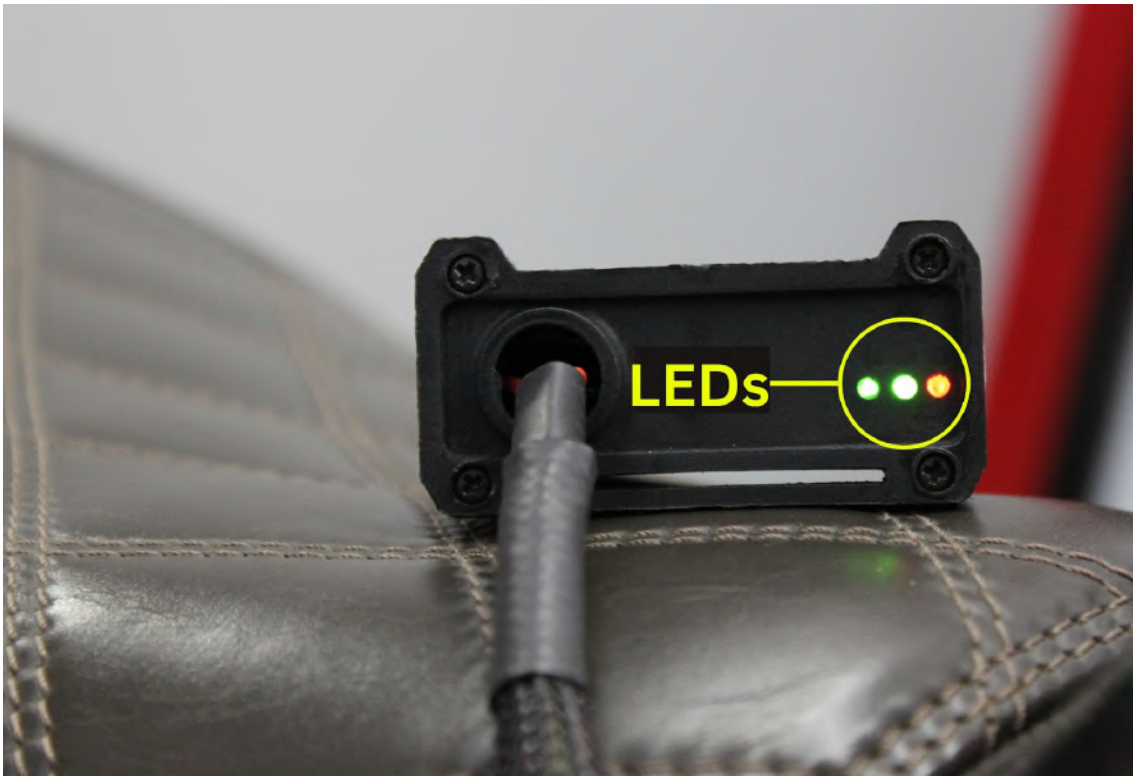
Map 3 runs with stock AFR set by the OEM manufacturer.

Maps 4 from 10 make the AFR richer as the numbers go higher.

For Lite versions, a single autotune map is provided for adjusting the AFR for the best operational parameters.

6. FuelX LEDs

FuelX has LEDs on the module to indicate the operation.



The blinking of the Red LED indicates that the Map on the FuelX is being activated. The Red LED starts blinking after the key and the kill switch are on.

The blinking of the Green LEDs during the idling of the engine indicates that the FuelX is working in sync with the OEM ECU.

The working of both Green and Red LEDs indicates the FuelX Functioning as intended.