

## FuelX Autotune- Royal Enfield 650s

<b>Document Version</b>	2	<b>Release Date</b>	16 Sep 2022
-------------------------	---	---------------------	-------------

<b>Application information</b>	<b>FuelX</b>
Vehicle	<b>Royal Enfield</b>
Model	<b>Interceptor 650, Continental GT 650</b>
Year of manufacture	<b>2018-2022</b>

**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

<b>SL No</b>	<b>Chapter</b>	<b>Page</b>
1	About FuelX	3
2	FuelX Variants	4
4	FuelX Connectors and Sensor configuration.	5
5	FuelX Installation	10
6	FuelX Configuration	35

## 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



### 3. FuelX Harness Connectors

The harness contains

- The Lambda connector (O<sub>2</sub>)
- 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.

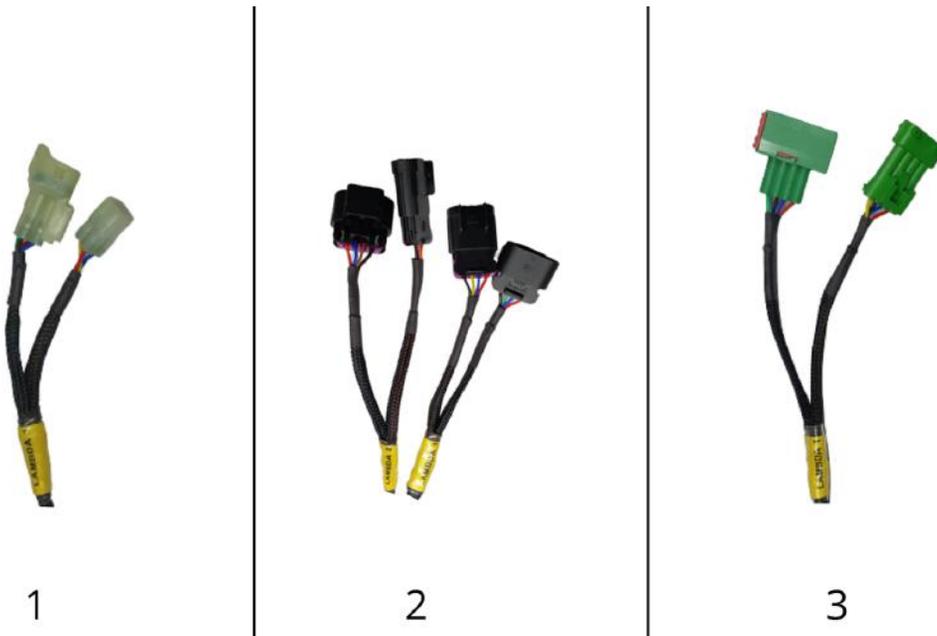


Image 3.2

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.

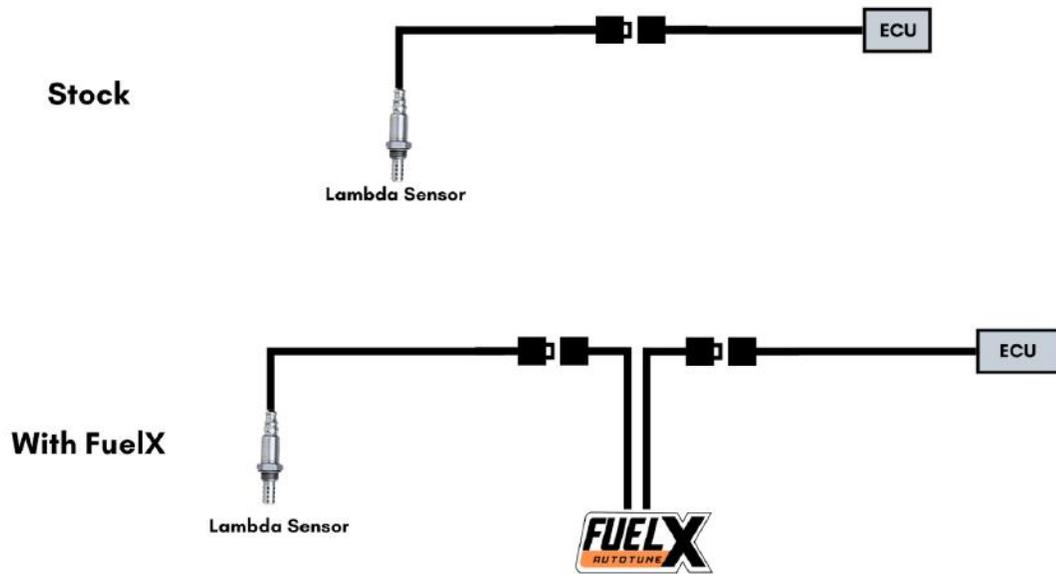


Image 3.3

**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.

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

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)

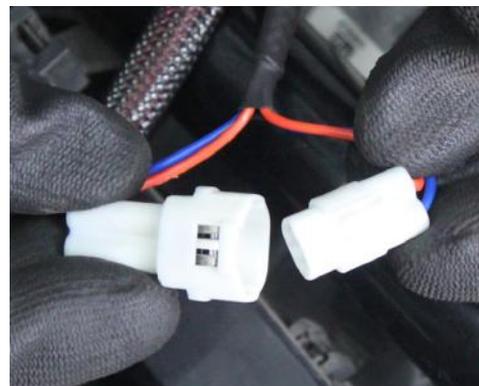


Image 3.5

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.

**Important Note:**

In some models of the Interceptor 650 (Generally, Euro 5 models), the Lambda sensor connectors are, square type instead of flat connectors.

Refer to the image below.



Image 3.6

In such cases, please use the Lambda/ O<sub>2</sub> Adapter cable (refer to the image below) provided within the kit to connect the sensor to the FuelX wiring harness.



**Lambda / O<sub>2</sub> Adapter cable**

During the installation, connect the Lambda/O<sub>2</sub> Adapter cable between the Lambda sensor connector and the FuelX harness.



Image 3.7

## 4. Installation procedure

### 4.1 Removing panels, and fairing

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



Image 1

Locate the position of the Lambda sensor connectors.



Image 2

**4.1.1** Unlock and detach the right-side panel. Refer **Image 3**.



Image 3

**4.1.2** Gently detach the panel after unlocking it. Refer **Image 4**.



Image 4

4.1.3 Locate and pull the knob to unlock the seat lock. Refer [Image 5](#).

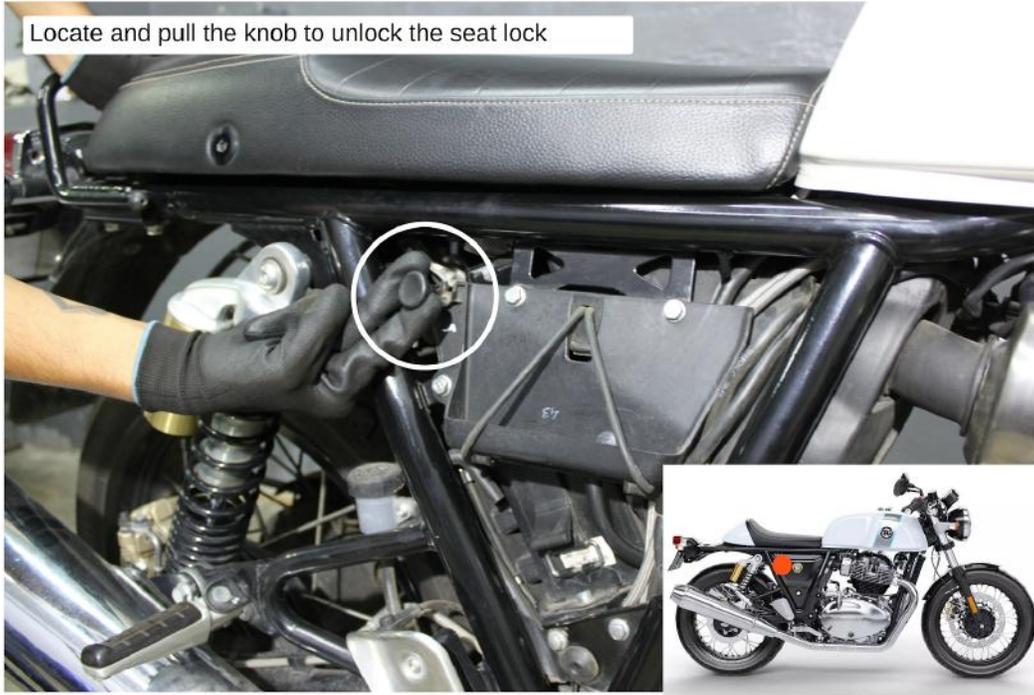


Image 5

4.1.4 [Image 6](#) shows how the seat is unlocked.



Image 6

**4.1.5** Detach the seat carefully. Refer **Image 7**.



Image 7

**4.1.6** Locate and remove the tank bolts using M10 hexagonal T socket. Refer **Image 8** and **Image 9**



Image 8



Image 9

4.1.7 After removing the bolts, gently lift the rear end of the tank a little. Refer [Image 10](#).



Image 10

**4.1.8** Disconnect the vacuum hose 1 carefully. Refer **Image 11**.

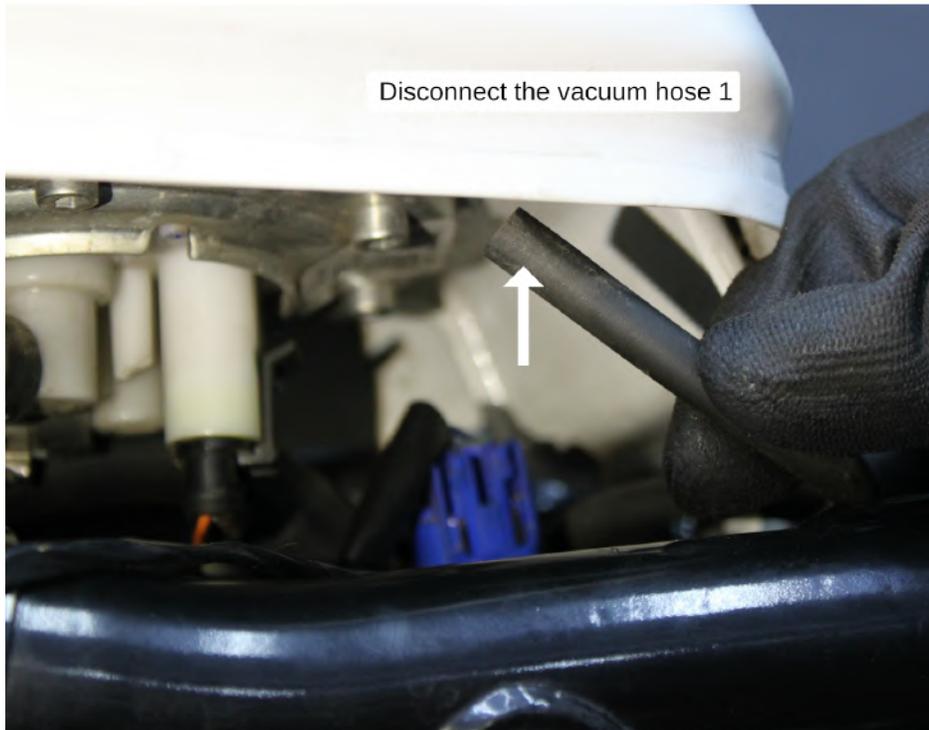


Image 11

**4.1.9** Disconnect the vacuum hose 2 carefully. Refer **Image 12**.

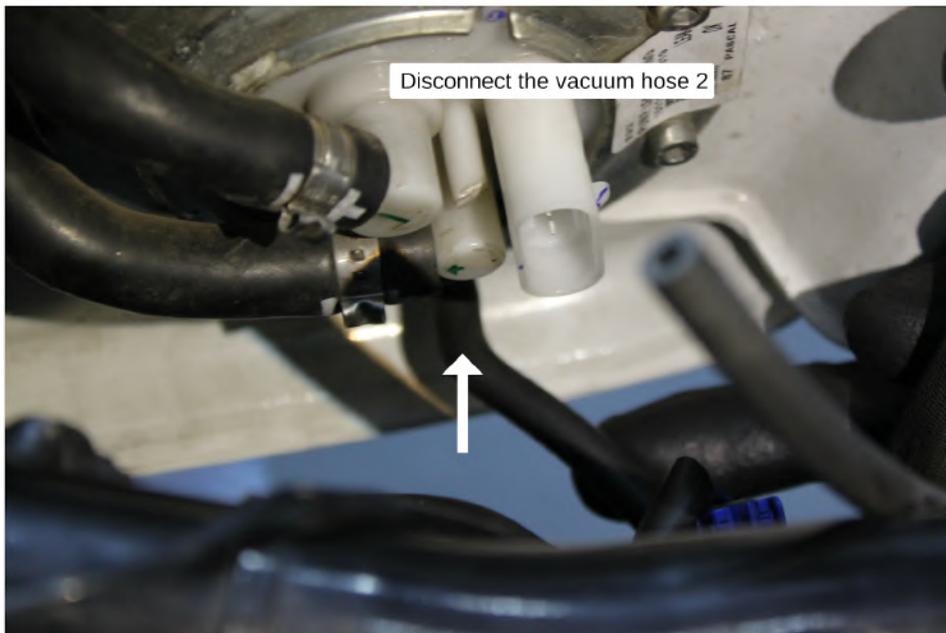


Image 12

**4.1.10** Disconnect the fuel pump connector carefully. Refer **Image 13**.

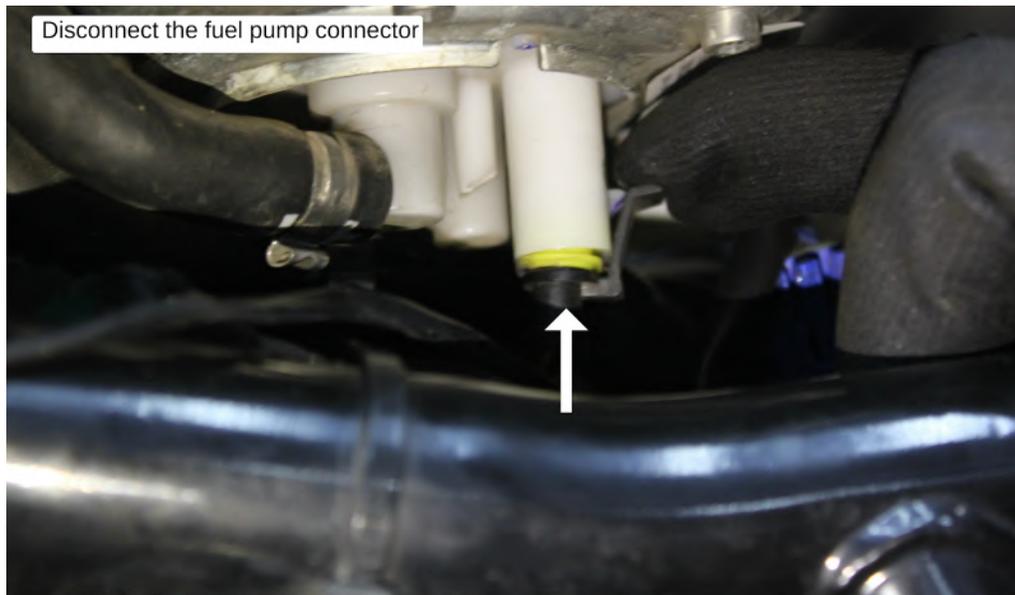


Image 13

**4.1.11** Identify and disconnect the fuel gauge connector. Refer **Image 14**

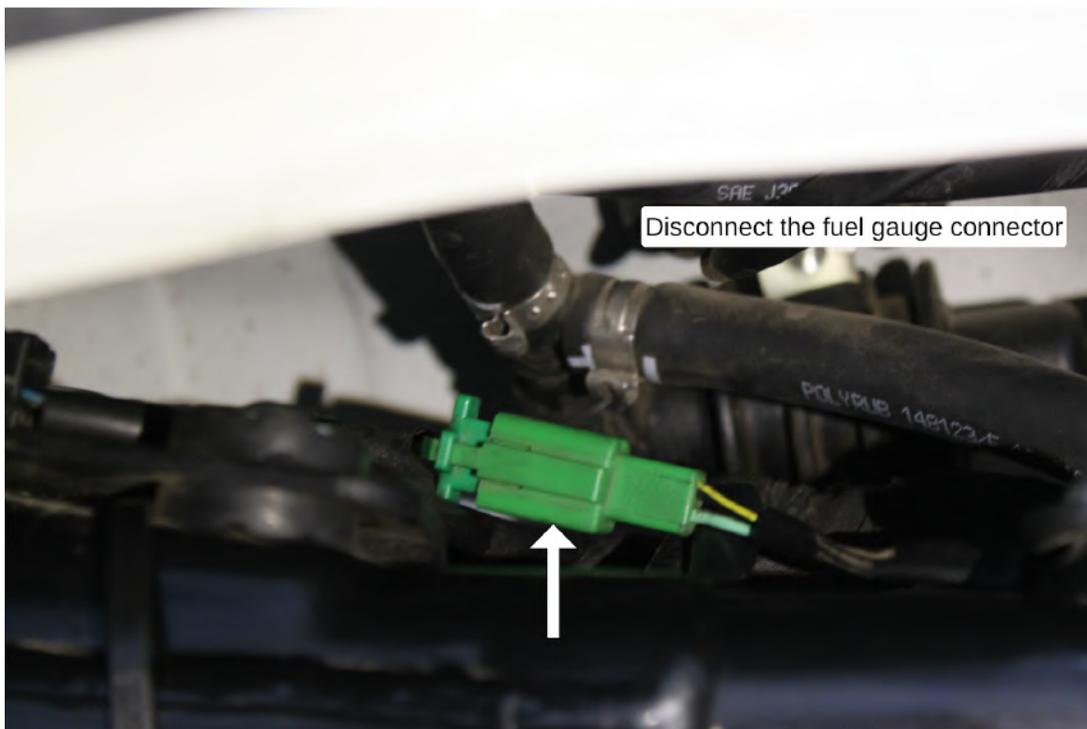


Image 14

**4.1.12** Locate and carefully disconnect the fuel line. Refer **Image 15**

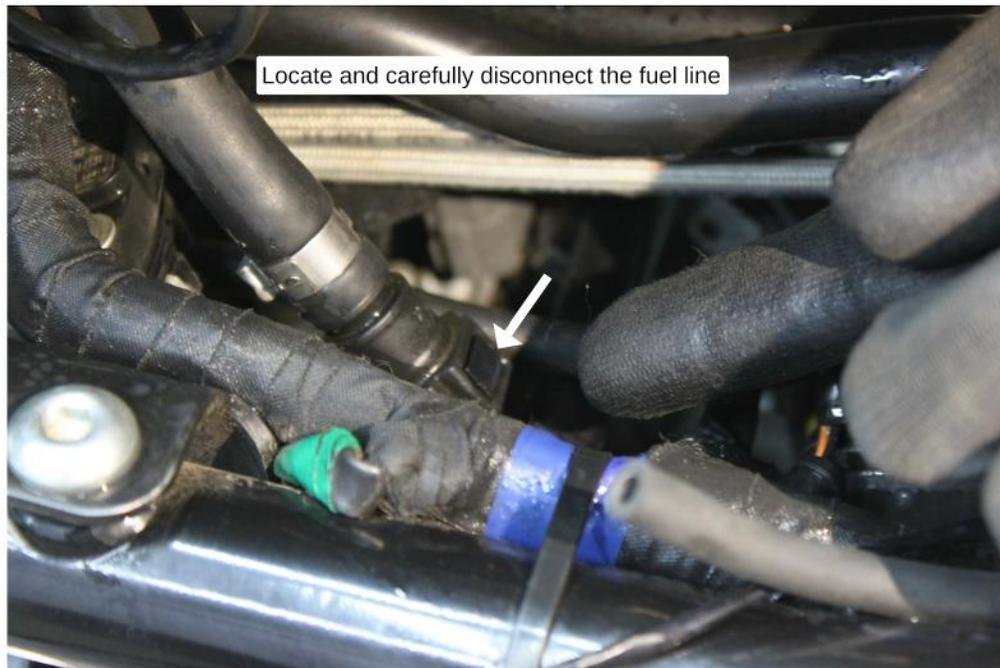


Image 15

**4.1.13** Gently lift the tank from the tank seating after disconnecting the connections. Refer **Image 16**.



Image 16

4.1.14 Refer the **Image 17** for the disconnected view of the connections.

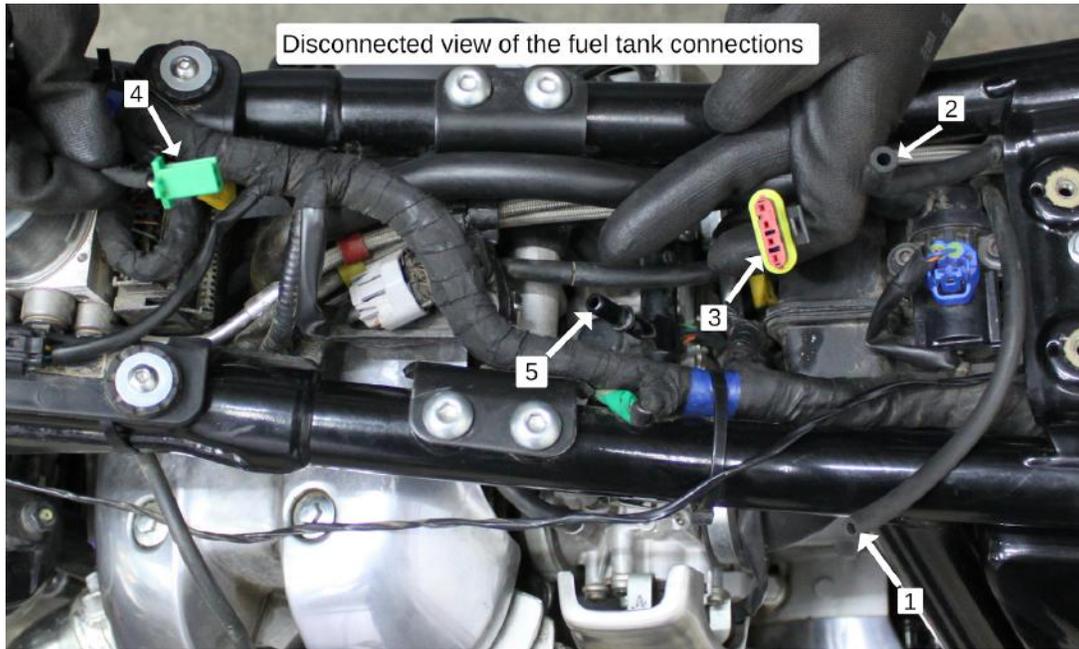


Image 17

**Note:**

For certain models, the Lambda sensor is the flat type and some other variants have square-type connectors. Refer to the image below.

FuelX harness contains Flat-type connectors. If the connector type is a Flat type, use the FuelX harness from the kit. If it is a Square-type connector, use the Lambda/ O<sub>2</sub> Adapter cable also to connect it to the Square-type connectors.



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



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



**4.1.15** Refer the **Image 18** to locate the Lambda sensor and Lambda Sensor Connector

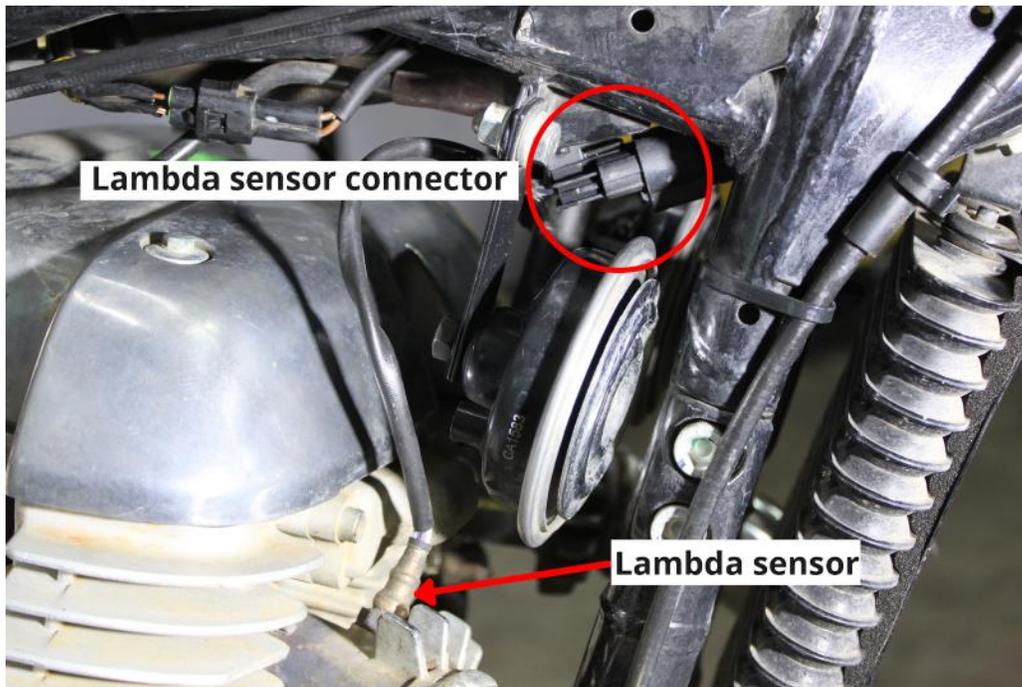


Image 18

**4.1.16** Slide the connector back from the lock. Refer the **Image 19**



Image 19

**4.1.17** Disconnect the male and female connectors. Refer the **Image 20**.



Image 20

**4.1.18** Route the FuelX harness. Refer the **Image 21**.



Image 21

**4.1.19** Route the FuelX harness under the frame. Refer the **Image 22**

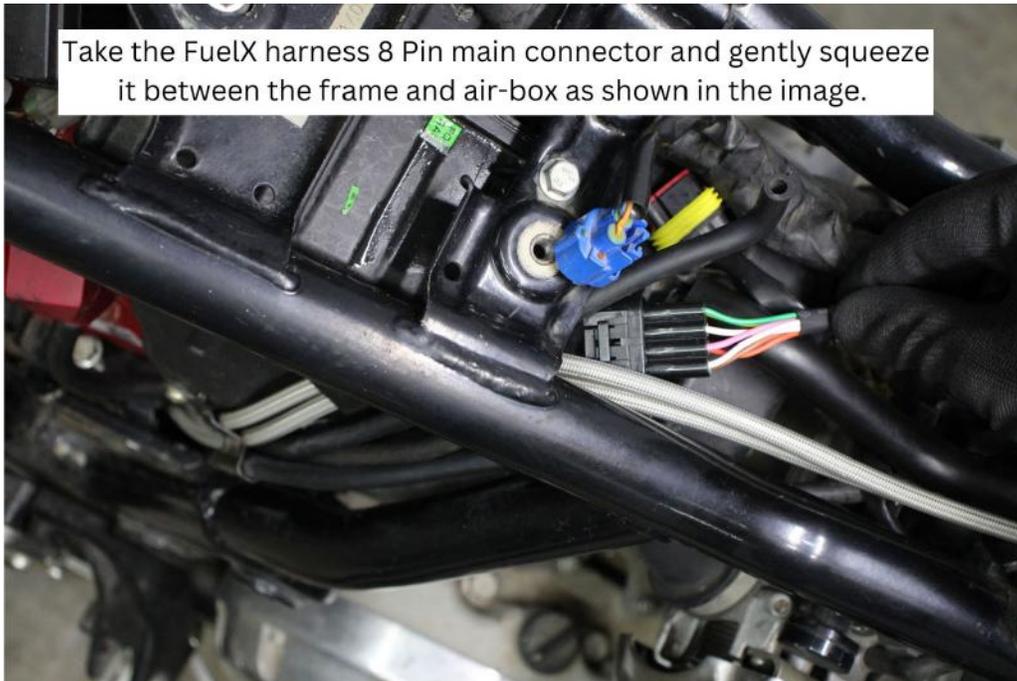


Image 22

**4.1.20** Route the FuelX harness under the frame. Refer the **Image 23**



Image 23

**4.1.21** Route the FuelX harness behind the frame. Refer the **Image 24**



Image 24

**4.1.22** Route the FuelX male and female connector as shown in the image. Refer the **Image 25**

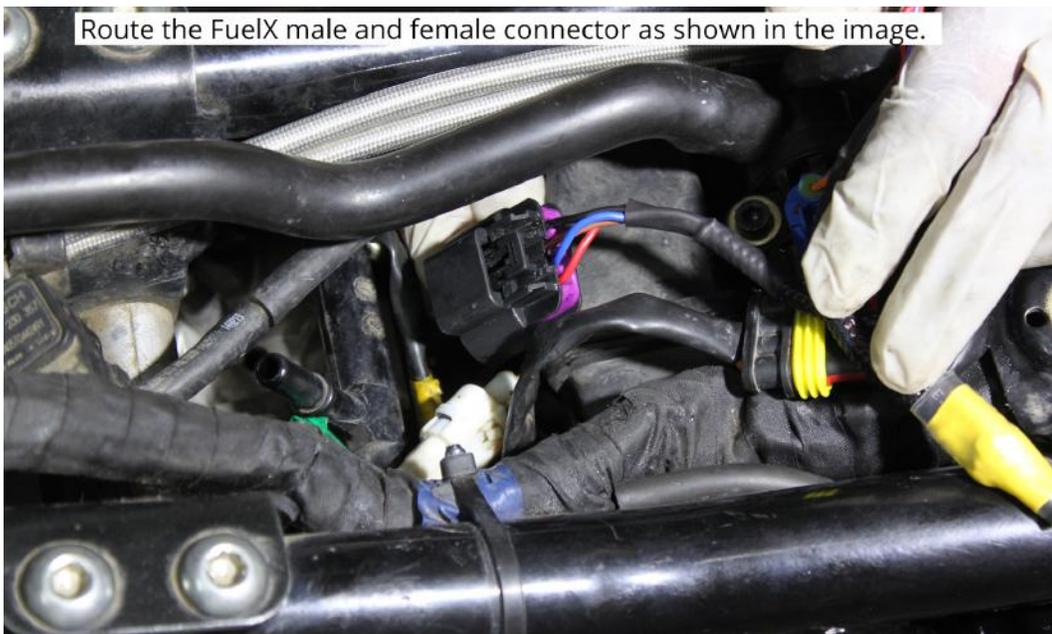


Image 25

**4.1.23** Route the FuelX male and female connector as shown in the image. Refer the **Image 26**

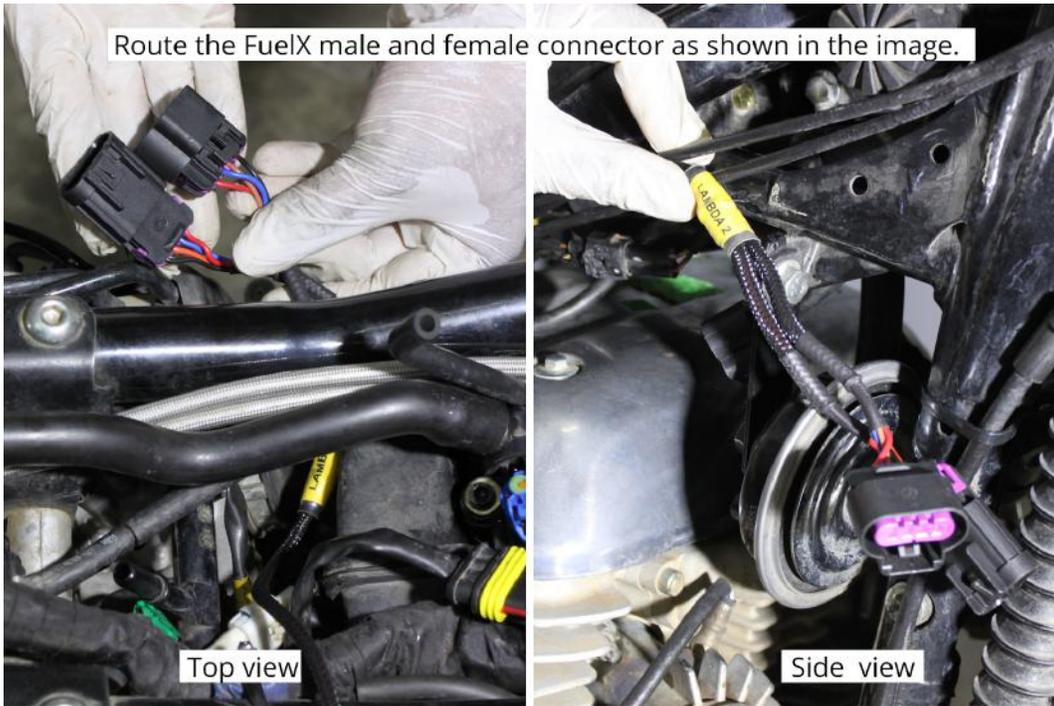


Image 26

**4.1.24** Connect the FuelX male connector to the Stock female Lambda connector. Refer the **Image 27**



Image 27

**4.1.25** Connect the FuelX female connector to the Stock male Lambda connector. Refer the **Image 28**



Image 28

**4.1.26** Slide the connector back to the lock. Refer the **Image 29**. Repeat the processes on the other side also.



Image 29

**4.1.27** For vehicles with square-type Lambda Sensor connectors use the Lambda/ O2 Adapter cable for connection. Refer the **Image 30**. Repeat the processes on the other side also.



Image 30

**4.1.28** Slide the Lambda sensor connectors from the lock and disconnect them. Refer the **Image 31**. Repeat the processes on the other side also.



Image 31

**4.1.29** Connect the male and female Lambda sensor connectors to the Lambda/ O2 Adapter cable female and male connectors. Refer the **Image 32**. Repeat the processes on the other side also.



Image 32

**4.1.30** Connect the male and female connectors of the Lambda/O2 Adapter cable to the male and female connectors of the FuelX harness. Refer the **Image 33**. Repeat the processes on the other side also.



Image 33

**4.1.31** Refer the **Image 34** for the completed view.



Image 34

**4.1.32** Using the zip ties provided within the kit, tie the Lambda/ O2 Adapter cable to the frame. Refer the **Image 35**. Repeat the processes on the other side also.

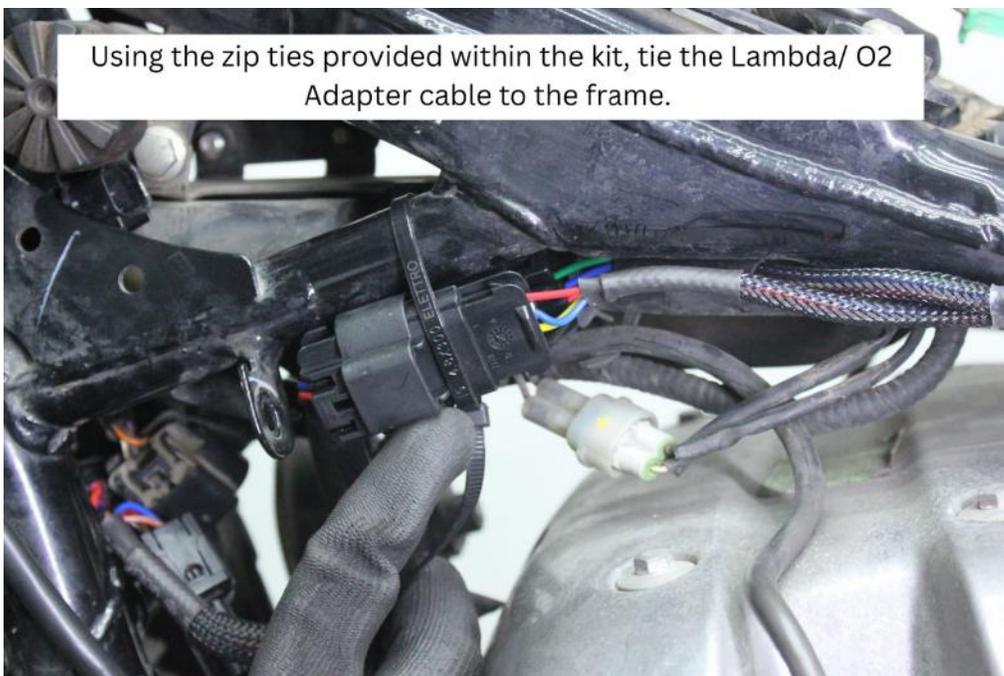


Image 35

**4.1.33** Locate battery negative terminal. Refer [Image 36](#).



Image 36

**4.1.34** Unscrew the battery negative terminal using a Phillips head screwdriver. Refer [Image 37](#)



Image 37

**4.1.35** Connect the FuelX ground terminal connector to the battery negative terminal. Refer **Image 38**

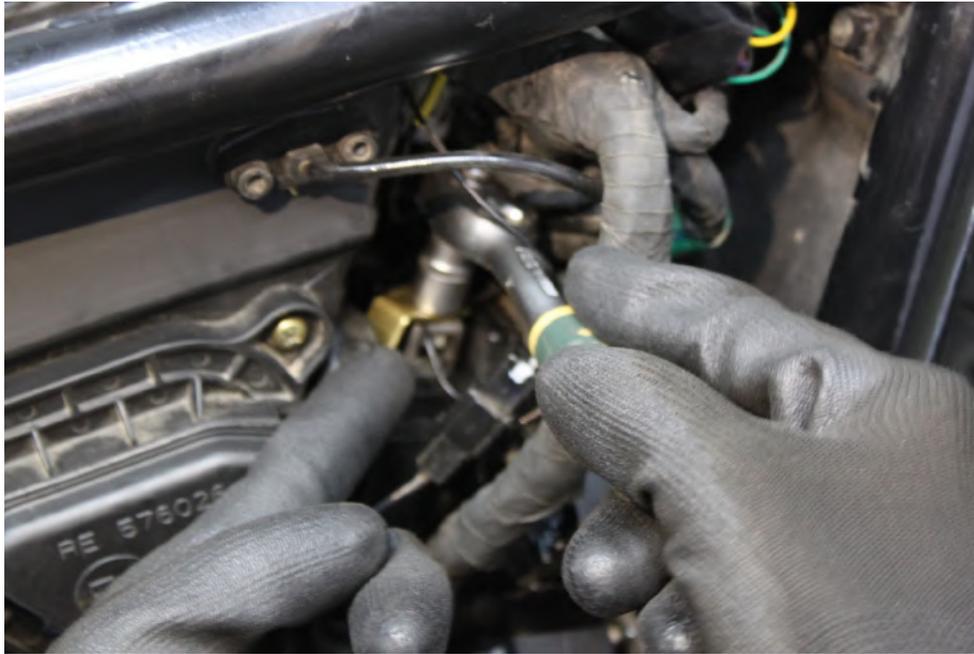


Image 38

**4.1.36** For the Handlebar map switch installation, start from the front end. Refer the **Image 39**



Image 39

**4.1.37** Route the connector end of the handlebar map switch as shown in the image. Refer the [Image 40](#)



Image 40

**4.1.38** Route the handlebar map switch cable to the rear end of the vehicle. Refer the [Image 41](#)

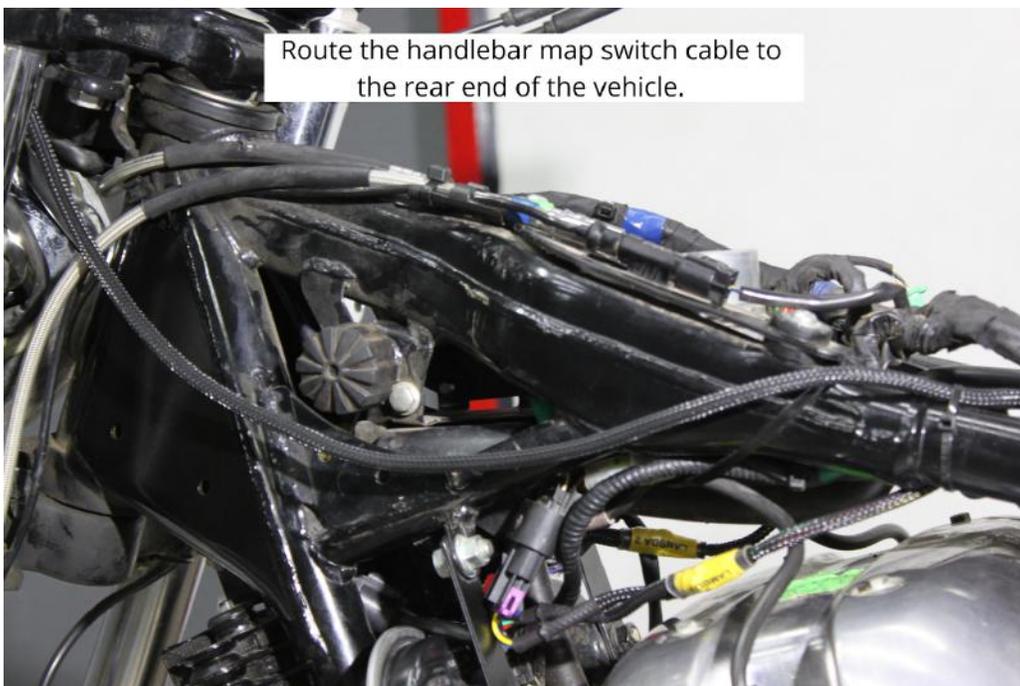


Image 41

**4.1.39** Attach the handlebar switch to a suitable position. Refer the **Image 42**



Image 42

**4.1.40** Using a 2.5 mm Allen key, tighten the bolts. Refer the **Image 43**



Image 43

**4.1.41** Place the FuelX securely under the seat. Refer the **Image 44**



Image 44

**4.1.42** Connect the FuelX to the harness. Refer the **Image 45**



Image 45

**4.1.43** Connect the handlebar map switch connector to the FuelX connector. Refer the **Image 46**

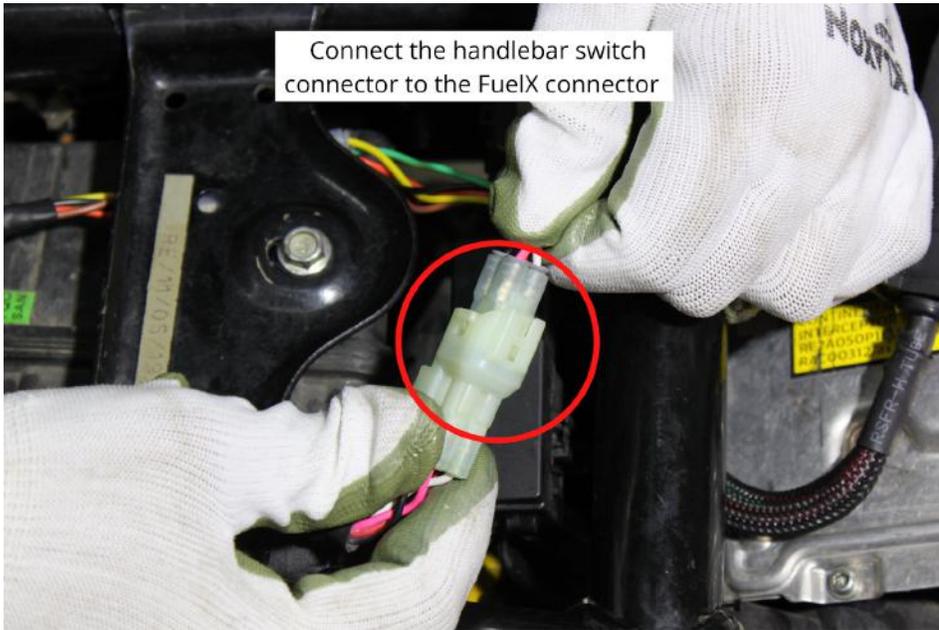


Image 46

**4.1.44** Using the provided nylon tags, secure the FuelX and the harness by attaching them to the frame. Refer the **Image 47**



Image 47

## 5. FuelX Configuration

Depends on the version, the Red/Green LED on the FuelX module blinks once the FuelX activates.

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 to know which map is currently active. Ie the number of blinks on the handlebar switch indicates the number of maps.

Map No	Map Description
1	LEAN (Less Fuel)
2	
3	STOCK
4	
5	
6	
7	
8	
9	
10	RICH (More Fuel)

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.