

PowerTRONIC Installation Manual

Royal Enfield Thunderbird 500 EFI [Twin spark]

Document Version	1	Release Date	14 May 2019
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Application information	Vehicle Specific
Vehicle	Royal Enfield
Model	Thunderbird 500 EFI [Twin spark]
Year of manufacture	2009 -2017
PowerTRONIC application	All PowerTRONIC ECUs, from firmware version F.3.x onwards

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 may cause burns/cuts. Proceed with extreme caution or wait until the bike has cooled down. Always wear safety gloves.
- When the installation is complete, make sure to secure the wiring loom away from the movable parts or components which tends to heat up during the normal operation of the vehicle at any chance.
- PowerTRONIC is intended for motorsport use on a closed course, please check with your local laws before using this product. Race Dynamics / PowerTRONIC is not liable for consequences arising out of using the product.

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1. Parts list

1	PowerTRONIC	Piggyback ECU
2	Stock Coupler	Stand by unit <ul style="list-style-type: none"> Can be connected in place of the PowerTRONIC to run the bike in stock mode if need be. Used for the verification of the connections.
3	Harness	Bike specific harness contains the following connectors <ul style="list-style-type: none"> Fuel injector connector Spark/Ignition coil connector Throttle position sensor connector (TPS) Map selection connector Ground terminal
4	USB cable	Can be used to connect the PowerTRONIC to a laptop for throttle calibration or changing maps
5	Nylon Tags	To secure wiring harness
6	User guide and Warranty card	Instructions

2. Tools required

Serial No	Main tools	Optional tools
1	M10 Hexagonal socket	Spinner handle
2	M10 bar Hexagonal Socket wrench	Ratchet handle
3	Wire cutter	M4 hex bit

3. Installation procedure

3.1 Removing panels, fairing

Begin at the right side of the bike.

Park the bike using the centre stand on a level surface (Or a paddock stand). Refer **Image 1**



Image 1

Note the position of the Connectors/Wires/hoses

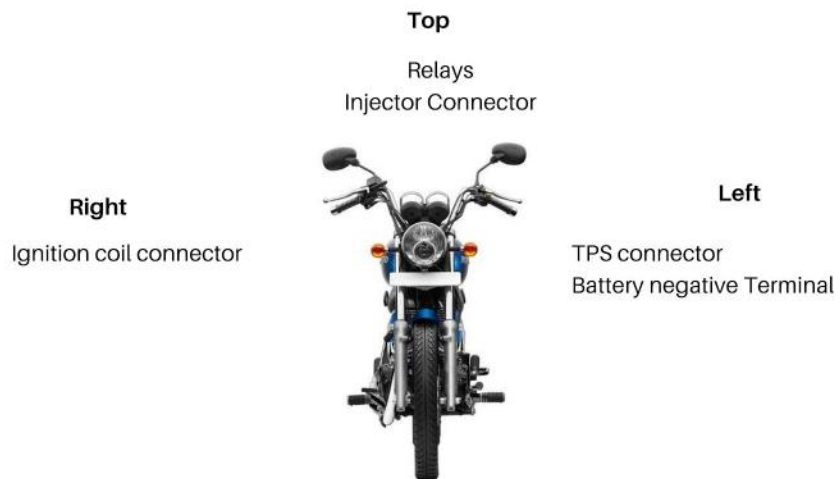


Image 2

3.1.1 Locate and unlock the battery box cover on the left side of the bike. Refer **Image 3**.



Image 3

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



Image 4

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

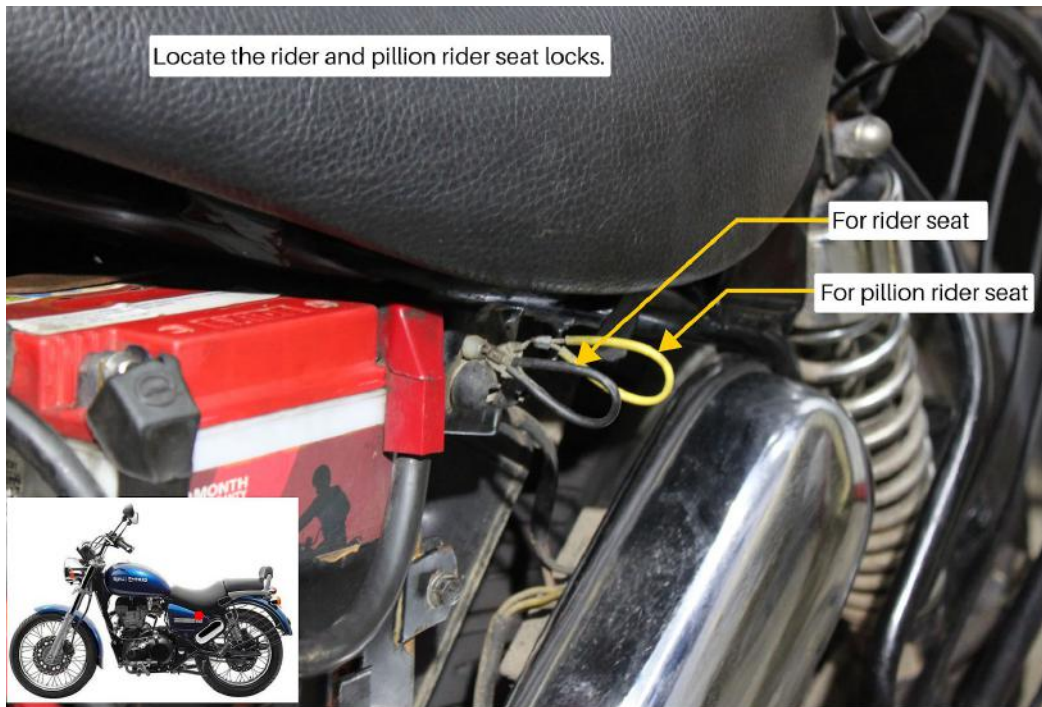


Image 5

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



Image 6

3.1.5 Detach the seat carefully. Refer [Image 7](#).



Image 7

3.1.6 Locate and remove the battery lock bolt-1 using M10 hexagonal T socket. Refer [Image 8](#) and [Image 9](#)

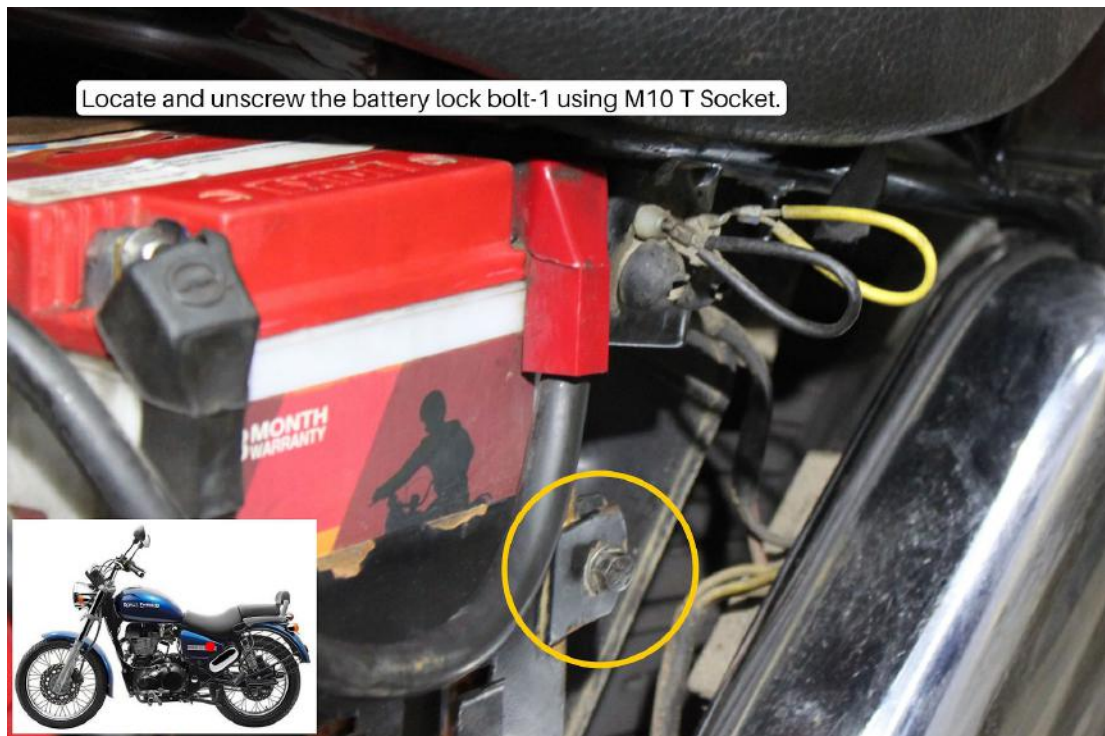


Image 8



Image 9

3.1.7 Locate and remove the battery lock bolt-2 using M10 hexagonal T socket. Refer **Image 10** and **Image 11**



Image 10



Image 11

3.1.8 Unscrew the battery terminals bolts using a Phillips-head screwdriver and detach the connectors. Carefully remove the nuts and keep them safe. Refer **Image 12**

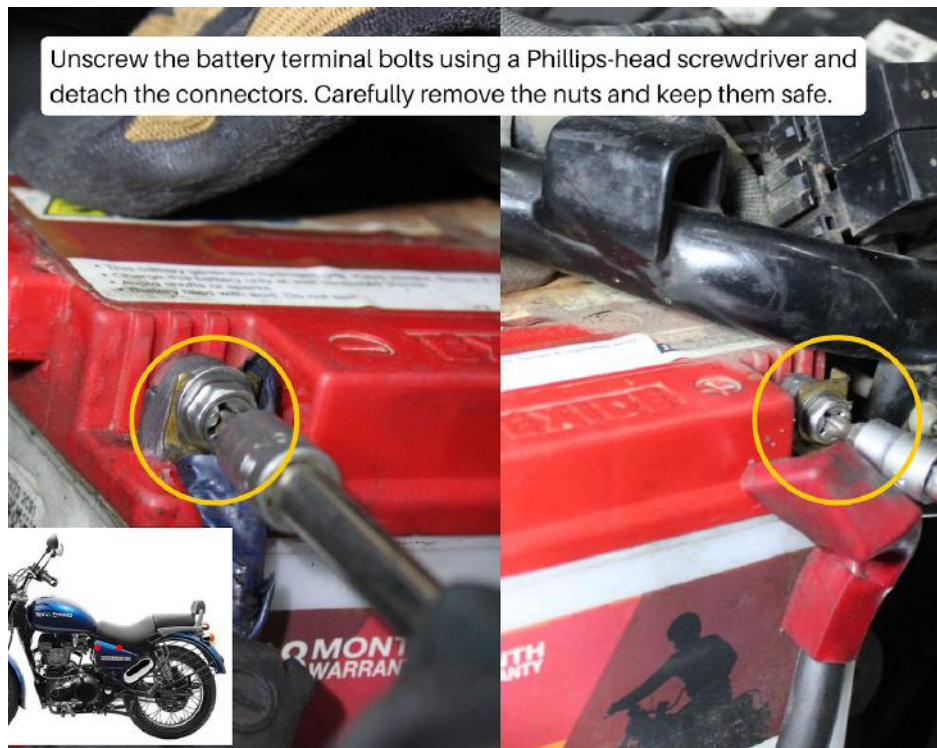


Image 12

3.1.9 Detach the battery vent tube carefully. Refer **Image 13**



Image 13

3.1.10 Remove the battery carefully. Refer **Image 14**.

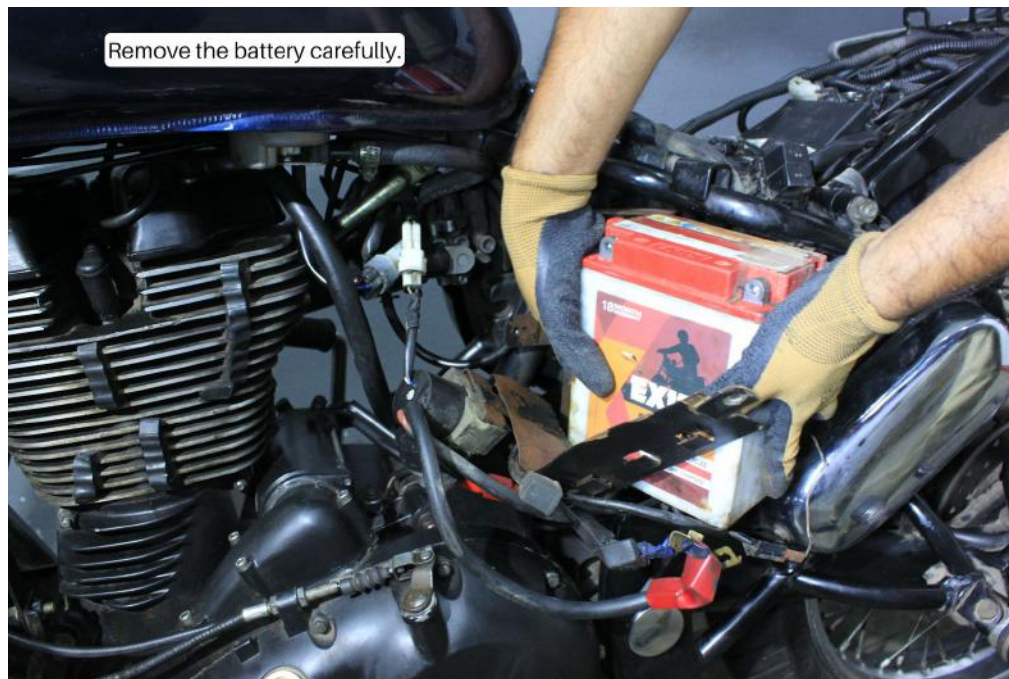


Image 14

3.1.11 Unscrew the side panel using M10 Hexagonal Socket. Refer **Image 15**



Image 15

3.1.12 Gently detach the side panel. Refer **Image 16**



Image 16

3.1.13 Gently detach the electrical part to access the bolts to remove the metal plate. Refer [Image 17](#).



Image 17

3.1.14 Unscrew the bolts using M10 Hexagonal socket. Refer [Image 18](#).



Image 18

3.2 Routing the harness

3.2.1 Start from the tool compartment. Remove the tool box and place the main connector in it. Refer **Image 19**.



Image 19

3.2.2 Make sure the map switch connector is also in the tool box. Refer **Image 20**.



Image 20

3.2.3 Route each connector terminals from in between the frame and the side panel. Refer **Images 21**.



Image 21

3.3 Fuel Injector Connector (Left side of the bike)

3.3.1 Locate the stock injector connector of your bike. Refer [Image 22](#).

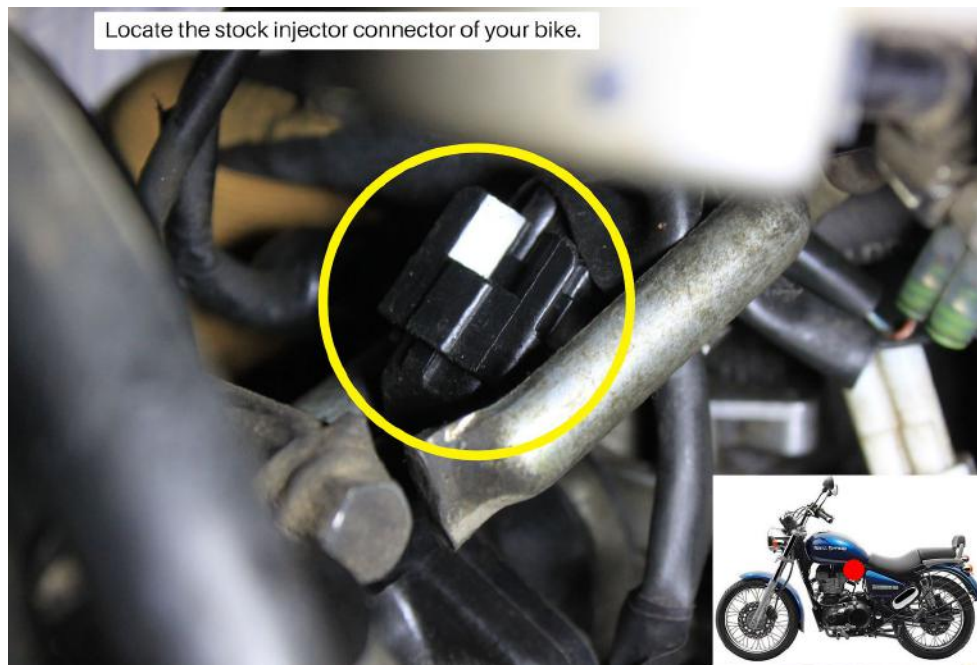


Image 22

3.3.2 Identify the fuel injector connector in the PowerTRONIC wiring harness. The connectors are labeled 'INJ'.

3.3.3 Disconnect the injector connector on your bike. Refer the zoomed view ([Image 23](#)).



Image 23

3.3.4 Connect the female PowerTRONIC injector connector to the stock male injector connector. Refer **Image 24**.

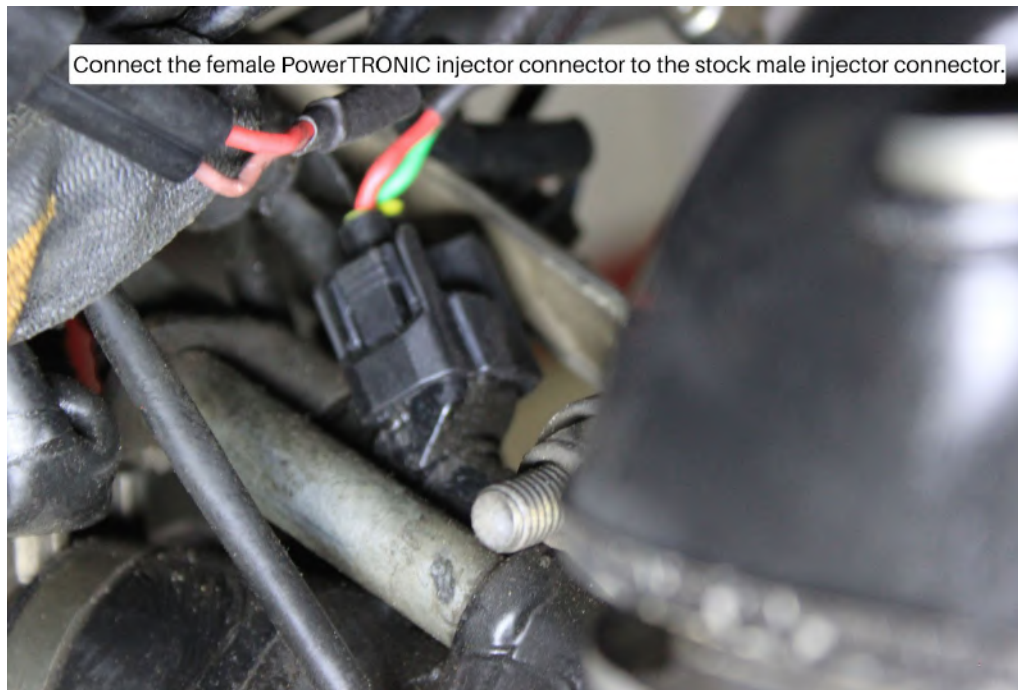


Image 24

3.3.5 Connect the stock female injector connector to the PowerTRONIC male injector connector. Refer **Image 25**.

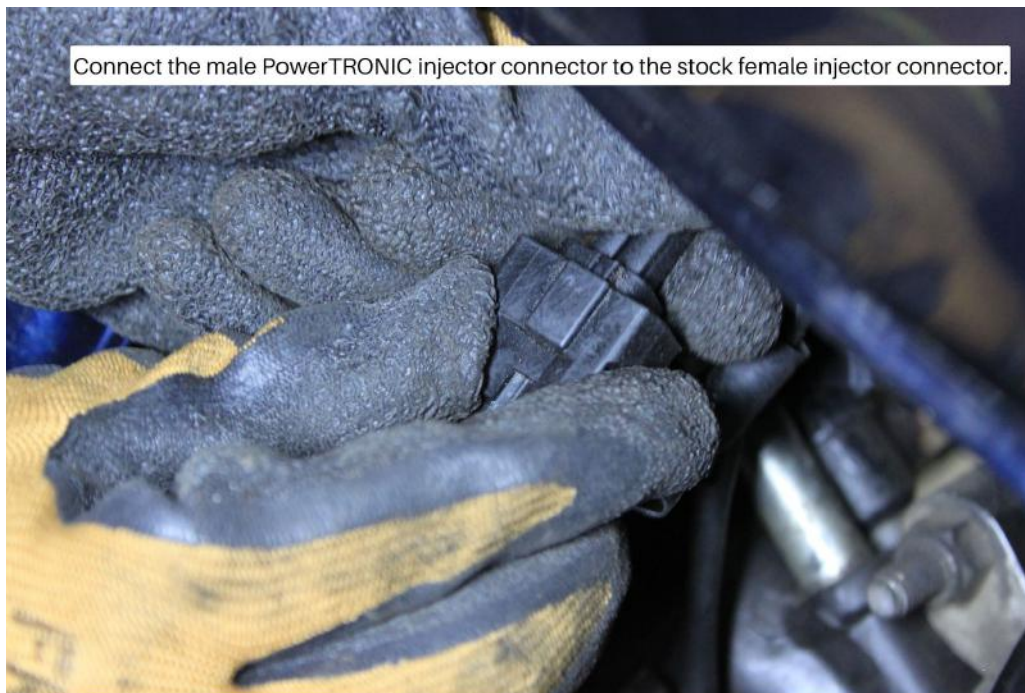


Image 25

3.4 Ignition Coil Tapping (Left side of the bike)

3.4.1 Locate the stock Spark/Ignition coil connector on the ignition coil, located right above the engine. Refer **Image 26**.



Image 26

3.4.2 Identify the Spark/Ignition coil connector in the PowerTRONIC wiring harness. The connectors are labelled 'SPK'.

3.4.3 Detach the stock ignition coil connectors. Refer **Image 27**.



Image 27

3.4.4 Remove the coating/covering of the wires for a length of 2-3 cm. Refer **Image 28**.

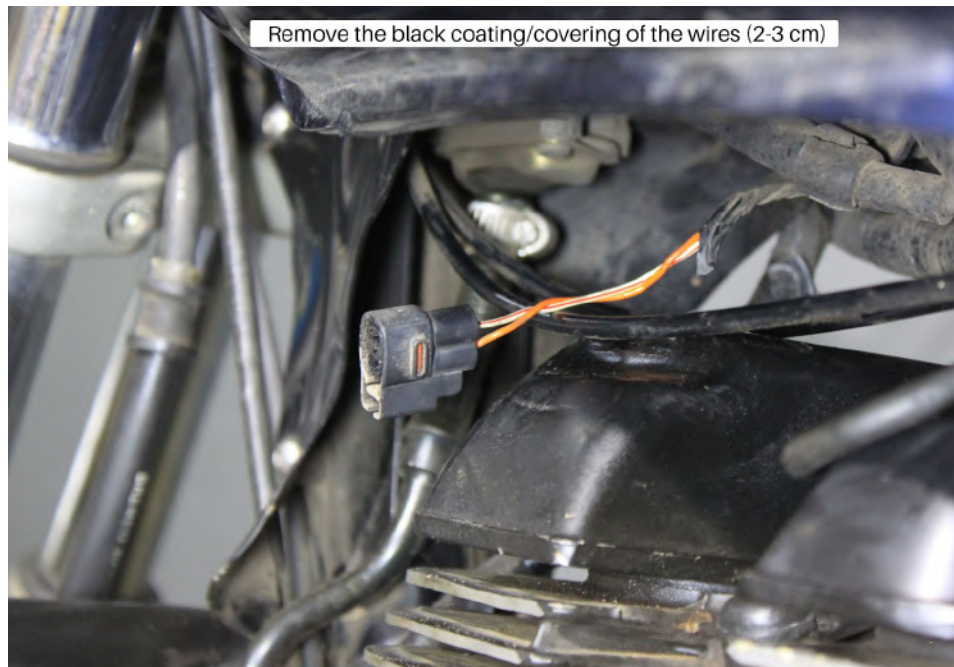


Image 28

3.4.5 Tap the Red wire from PowerTRONIC harness and Orange wire of the Bike's connector. Refer **Image 29**.

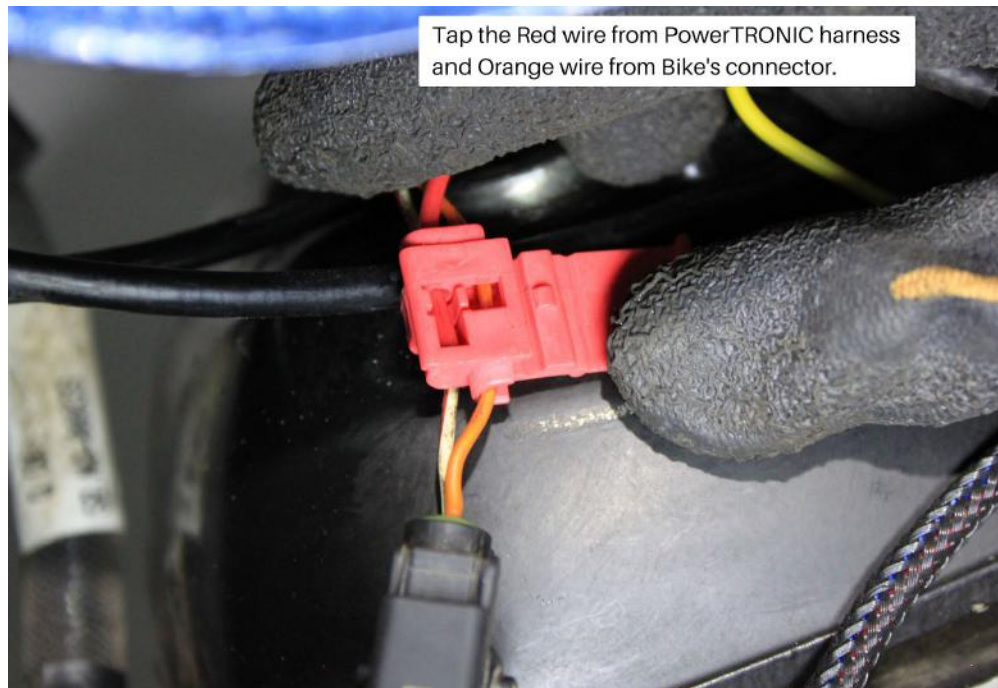


Image 29

3.4.6 Press the metallic pin inside the tap and close the tap. Refer **Image 30**



Image 30

3.4.7 Repeat the process for Yellow wire and Red-white stripe wire also. Refer **Image 31**

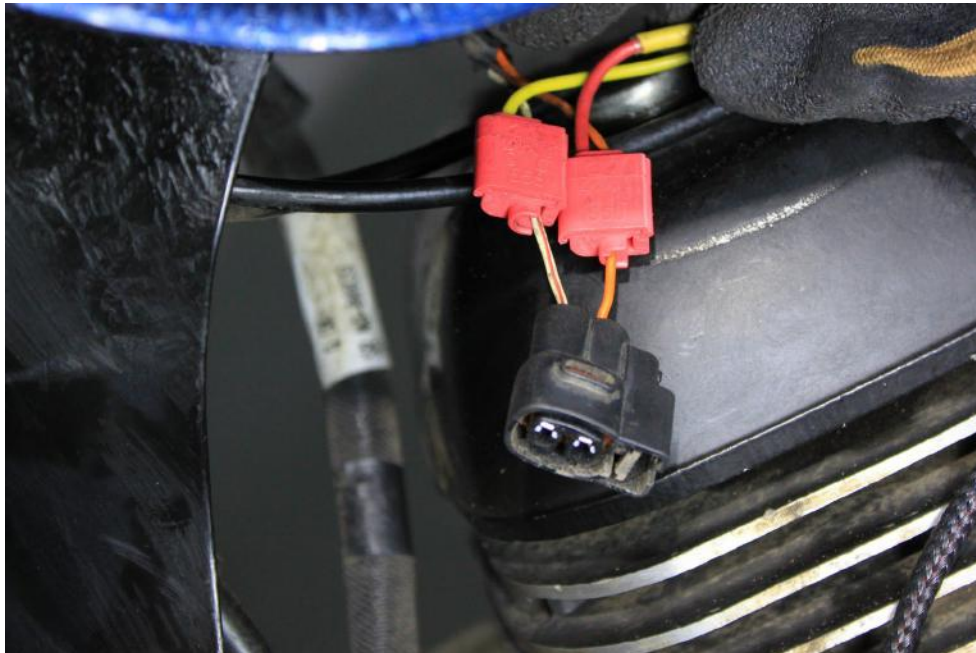


Image 31

Note: Cover the taps using an insulation tapes and secure it.

3.4.8 Repeat the process for Yellow wire and Red-white stripe wire also. Refer **Image 32**



Image 32

3.5 Throttle position sensor connector (Left side of the bike)

3.5.1 Locate the TPS connector of your bike. It is generally located on the throttle body, parallel to the throttle cable return springs. Refer [Image 33](#).

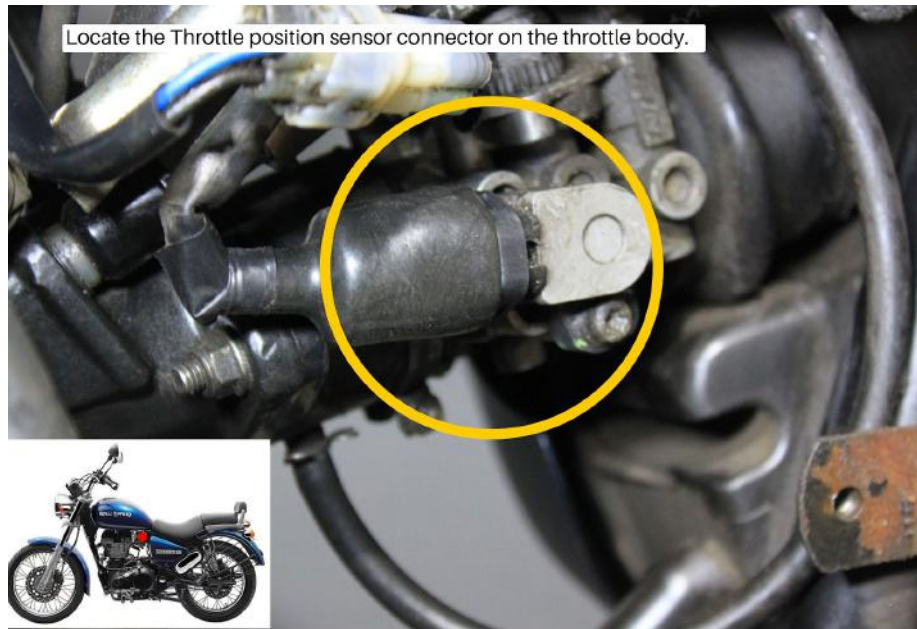


Image 33

3.5.2 Identify the Throttle Position sensor connector in the PowerTRONIC wiring harness, labeled as 'TPS'.

3.5.3 Disconnect the stock TPS connector. Refer [Image 34](#)

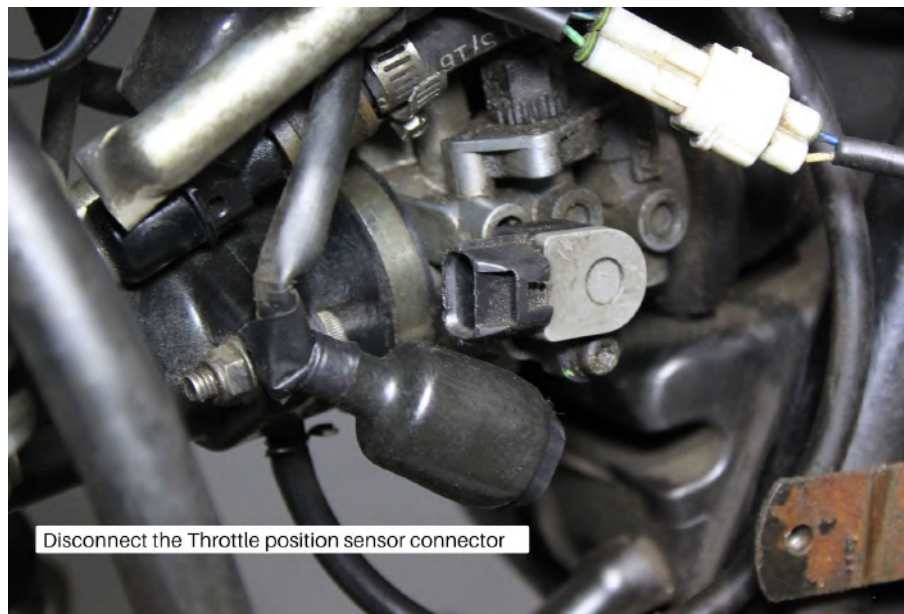


Image 34

3.5.4 Connect the PowerTRONIC male TPS connector to stock female connector. Refer [Image 35](#).

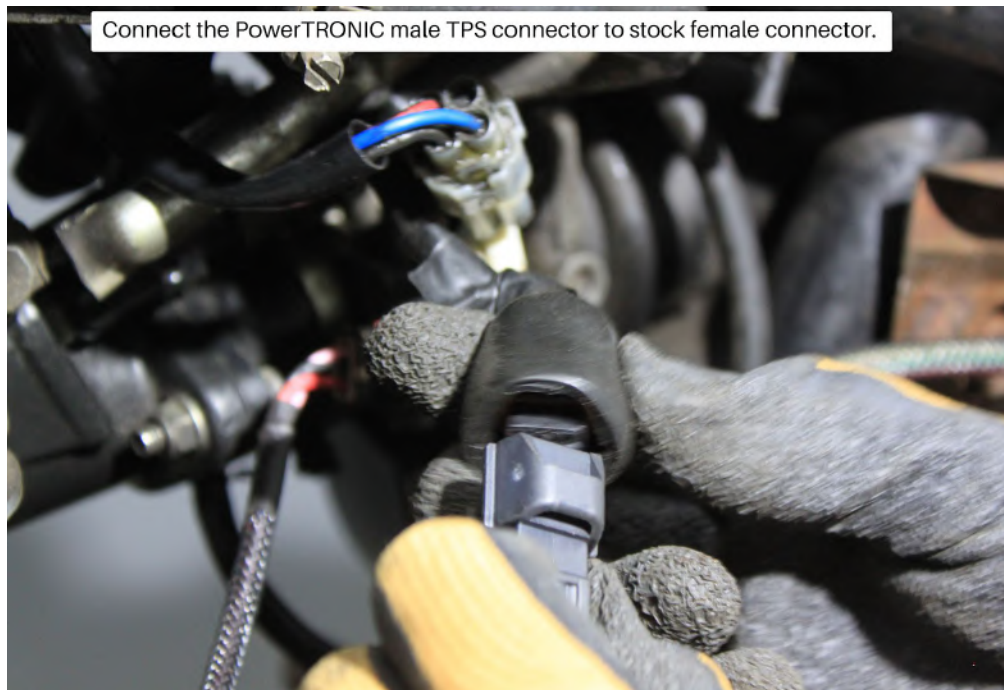


Image 35

3.5.5 Connect the PowerTRONIC female TPS connector to stock male connector. Refer [Image 36](#).

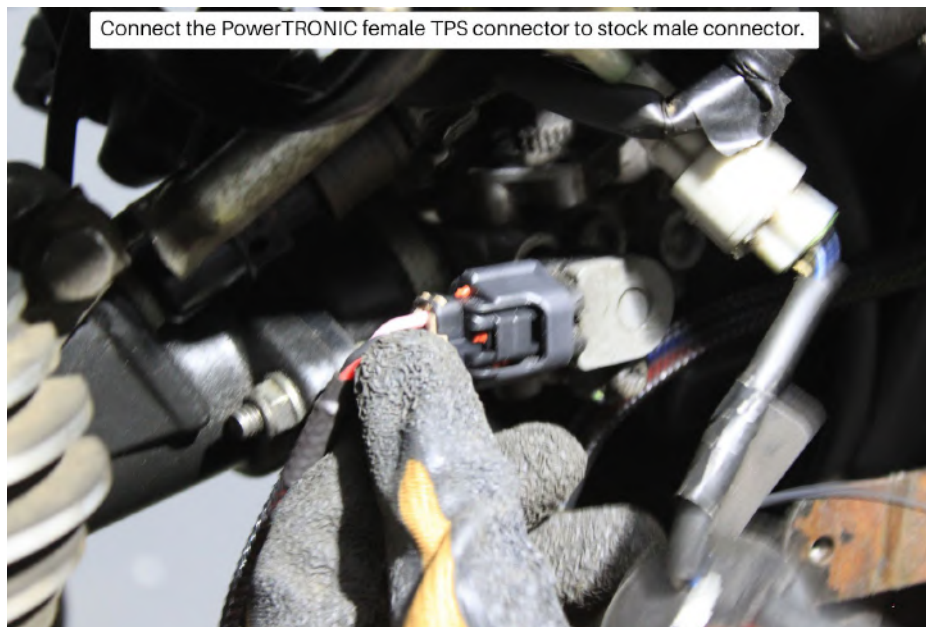


Image 36

3.5.6 We advise you to perform a TPS calibration after the installation of PowerTRONIC ECU.

3.6 Ground Terminal Connector (Left side of the bike)

3.6.1 Connect the PowerTRONIC ground terminal connector to battery negative. Refer **Image 37**



Image 37

3.7 Changing Relays

3.7.1 Locate the stock relays. Refer [Image 38](#).

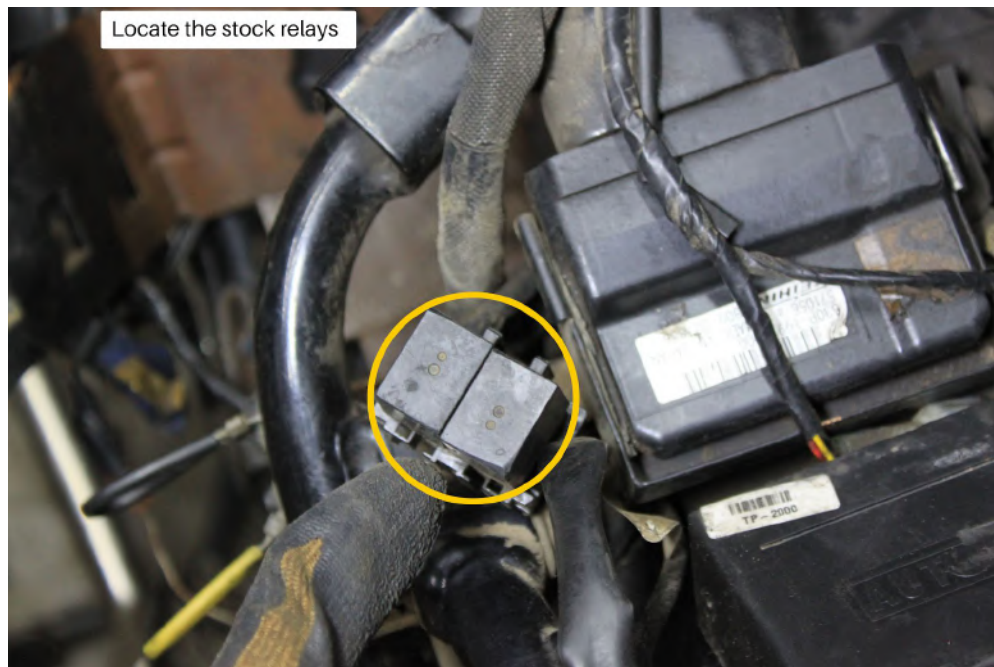


Image 38

3.7.2 Remove the stock relays from the relay kit. Refer [Image 39](#).

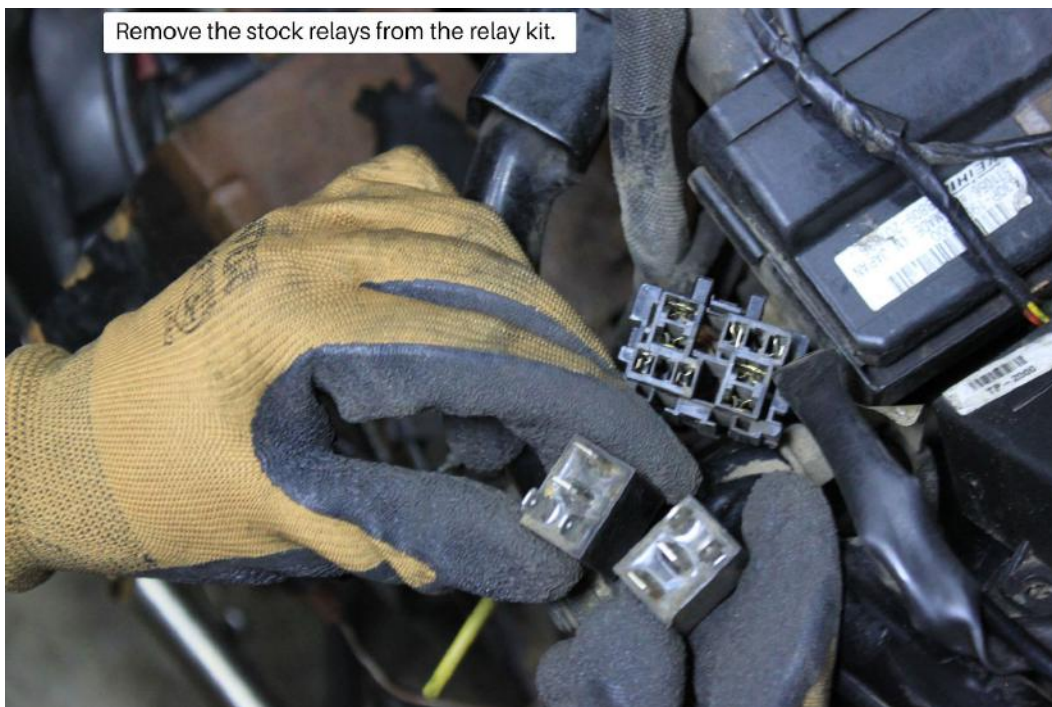


Image 39

3.7.3 Replace the stock relays with the provided relays within the PowerTRONIC kit. Refer **Image 40.**

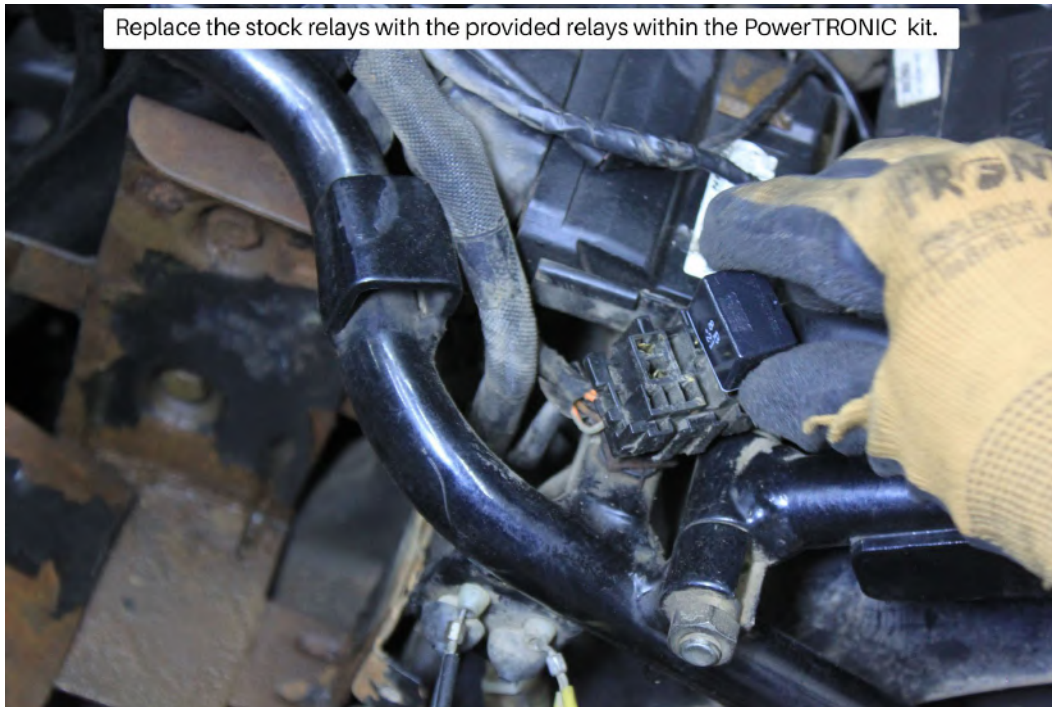


Image 40

3.8 Securing the harness using ties

3.8.1 Secure the harness away from hot moving/parts by attaching it to the chassis/frame using the zip ties provided wherever necessary. Refer the **Image 41**.



Image 41

Important note: The PowerTRONIC harness contains a Quick shifter connector. If you have bought the Quickshifter, please attach the connector to it. [Please refer Quick shifter installation manual]

If you have not bought the Quickshifter, you can leave it disconnected but make sure the harness is secured using zip ties provided.

3.9 Testing with the stock coupler

3.9.1 Attach the fuel tank.

3.9.2 You can verify the connections by attaching the stock coupler. Refer detailed Stock coupler test document. Refer **Image 42**



Image 42

DO NOT proceed with the PowerTRONIC ECU without first verifying the connections with stock coupler.

3.10 Plugging in the PowerTRONIC

Remove the key from the ignition, unplug the stock coupler and connect the PowerTRONIC to the harness by connecting it to the 24 pin connector. Secure it in the glove box. Refer [Image 43](#).



Image 43

3.11 Attaching the panels, fairing etc

Attach the panels, fairing as removed from the bike.