

## PowerTRONIC Installation Manual- Kawasaki Ninja 650 R/ER-6F (2012-2018)

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Application information	Vehicle Specific
Vehicle	<b>Kawasaki</b>
Model	<b>Ninja 650R/ER-6F</b>
Year of manufacture	<b>2012-2018</b>
PowerTRONIC application	All PowerTRONIC ECUs, from firmware version F.3.x onward

**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"><li>• Can be connected in place of the PowerTRONIC to run the bike in stock mode if need be.</li><li>• Used for the verification of the connectors involved.</li></ul>
3	Harness	Bike specific harness contains the following connectors <ul style="list-style-type: none"><li>• Fuel injector connectors</li><li>• Ignition coil connectors</li><li>• Throttle position sensor connector (TPS)</li><li>• Crank position (CKP) sensor connector tapping wire</li><li>• Map selection connector</li><li>• Quick shifter connector</li><li>• Ground terminal</li></ul>
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	Item with description
1	M3, M5 Hexagonal bit
2	M10 Hexagonal socket
2	Phillips-Head screwdriver
3	Wire cutter

### 3. Installation procedure

#### 3.1 Removing panels, fairing

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

Begin at the left side of the bike.



Image 1

#### Locate the Connections/wires/hoses



Image 2

3.1.1 Locate the pillion rider seat lock shown in **Image 3** and unlock the pillion rider seat as shown in **Image 4**.



Image 3



Image 4



3.1.2 Detach the pillion rider seat. Gently detach the rider seat also. Refer [Image 5](#) and [Image 6](#)



Image 5



Image 6

**3.1.3** Locate the tank front cover bolt and unscrew it with M5 Hex bit. Refer the **Image 7**



Image 7

**3.1.4** Refer **Image 8** for Unscrewing the bolt, repeat the process on the other side as well.



Image 8



**3.1.5** Unpin the tank front cover from the slot and gently detach it from the hook-and-loop fastener. Refer **Image 9**.



Image 9

**3.1.6** Locate and unscrew the tank mounting bolts at the front end using M10 Hexagonal socket. Refer **Image 10**



Image 10

**3.1.7** Locate and detach the pins (1 and 2) on the front panel. Refer [Image 11](#)

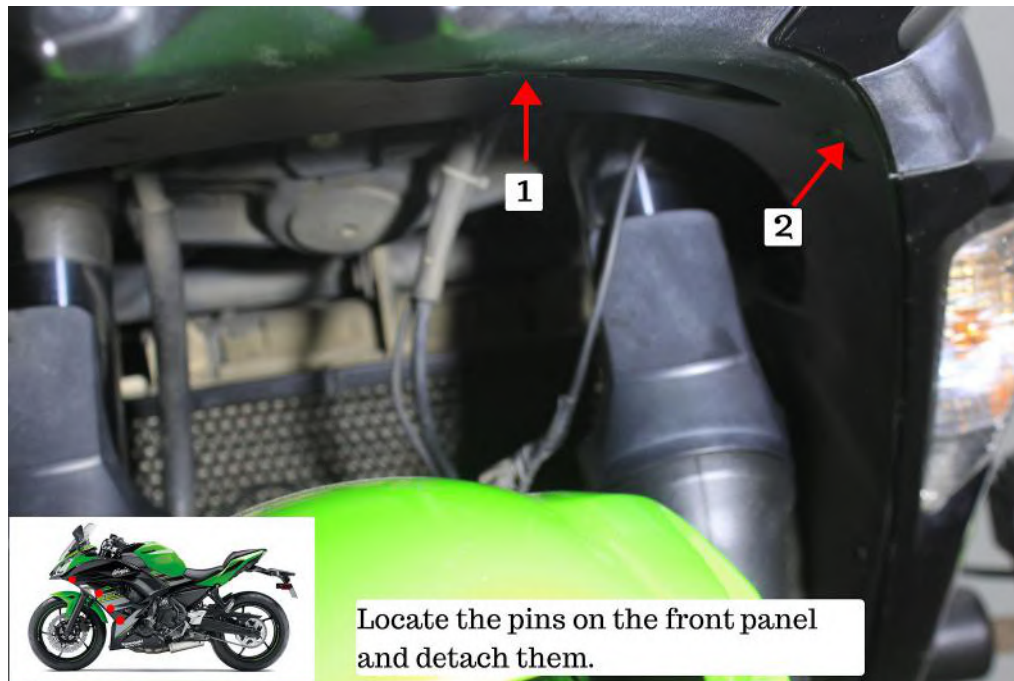


Image 11

**3.1.8** Locate and detach the pins (3 and 4) on the front panel. Refer [Image 12](#)

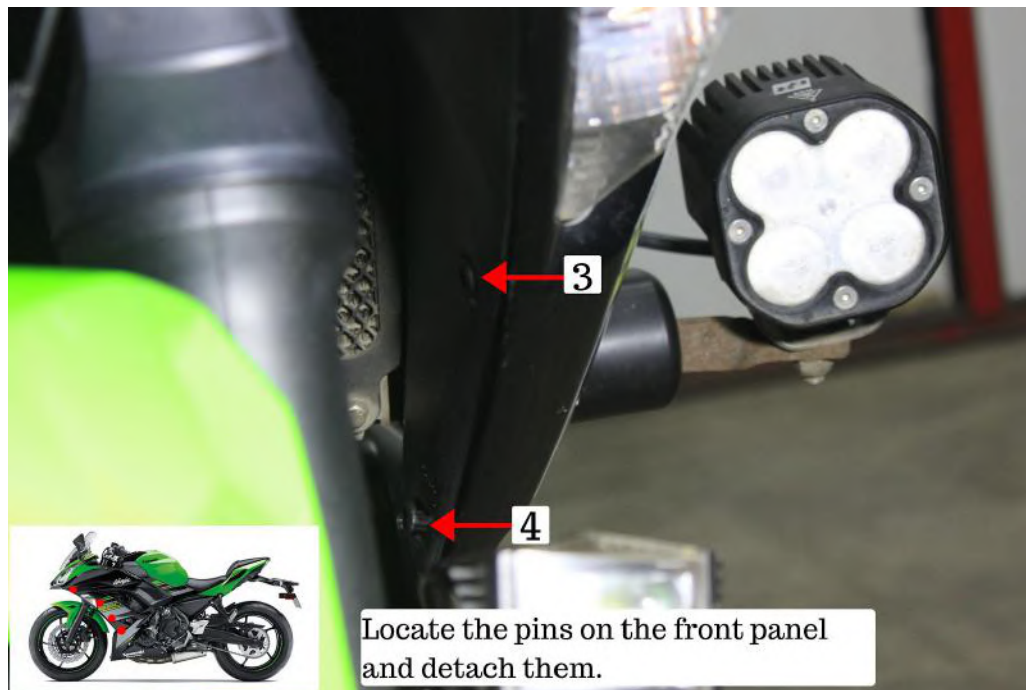


Image 12



**3.1.8** Detach the side panel carefully. Refer **Image 13**



Image 13

**3.1.8** Unscrew the side panel bolts. Refer **Image 14**



Image 14

**3.1.8** Unscrew the panel bolt under engine using M4 Allen T handle. Refer **Image 15**



Image 15

**3.1.8** Carefully detach the side indicators connections on the side panel. Refer **Image 16**

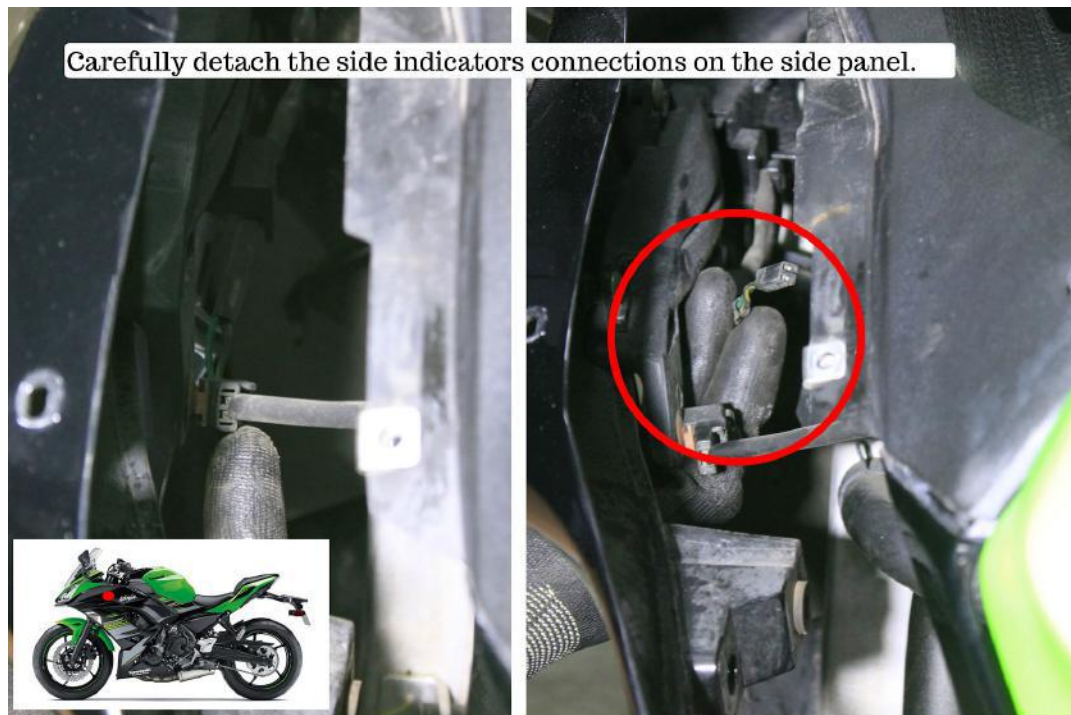


Image 16



**3.1.8** Carefully detach the side panel. Repeat the process on the other side also. Refer **Image 17**

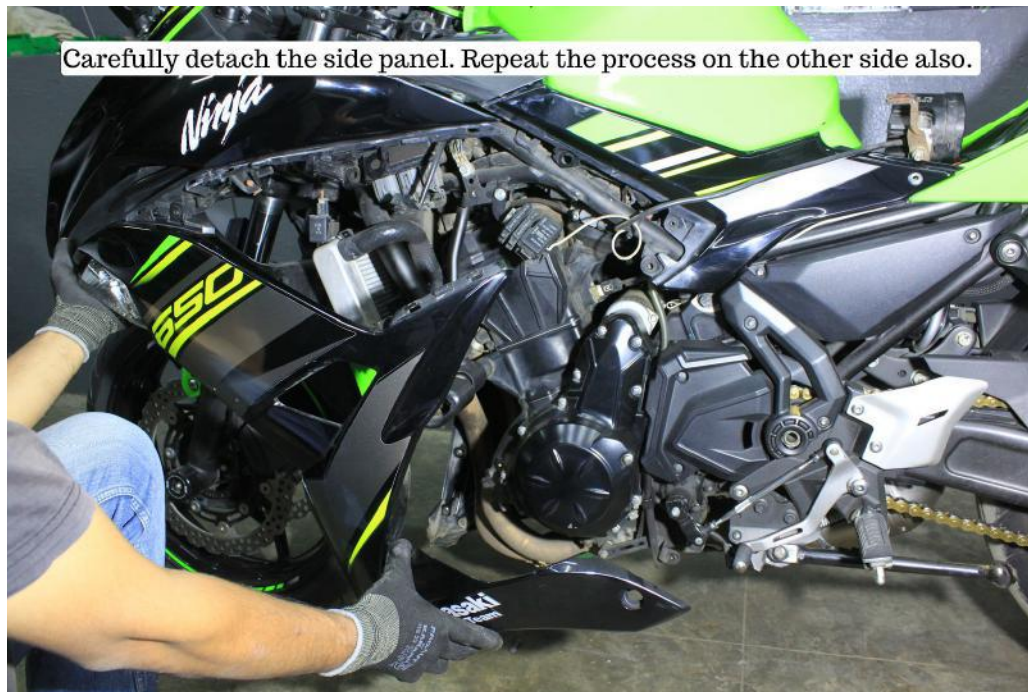


Image 17

**3.1.8** Unscrew the side panel bolt using M4 Allen T handle. Refer **Image 18**



Image 18



**3.1.8** Unscrew the tank front bolts using M5 Allen T handle. Refer [Image 19](#)



Image 19

**3.1.8** Locate the bolts that fix the metal part using M5 Allen T handle. Refer [Image 20](#)



Image 20

**3.1.8** Carefully detach the metal part. Refer [Image 21](#)

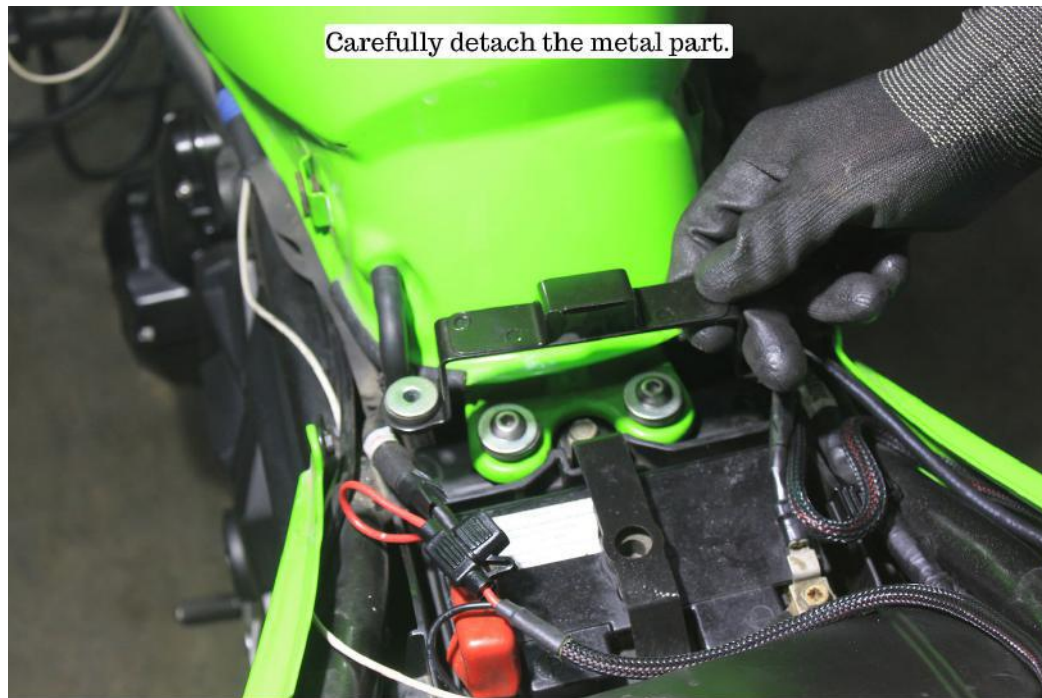


Image 21

**3.1.8** Unscrew the tank rear bolts using M5 Allen T handle. Refer [Image 22](#)



Image 22



**3.1.8** Carefully disconnect the vacuum hose on the tank. Refer [Image 23](#)



Image 23

**3.1.8** Gently lift the front end of the tank. Refer [Image 24](#)

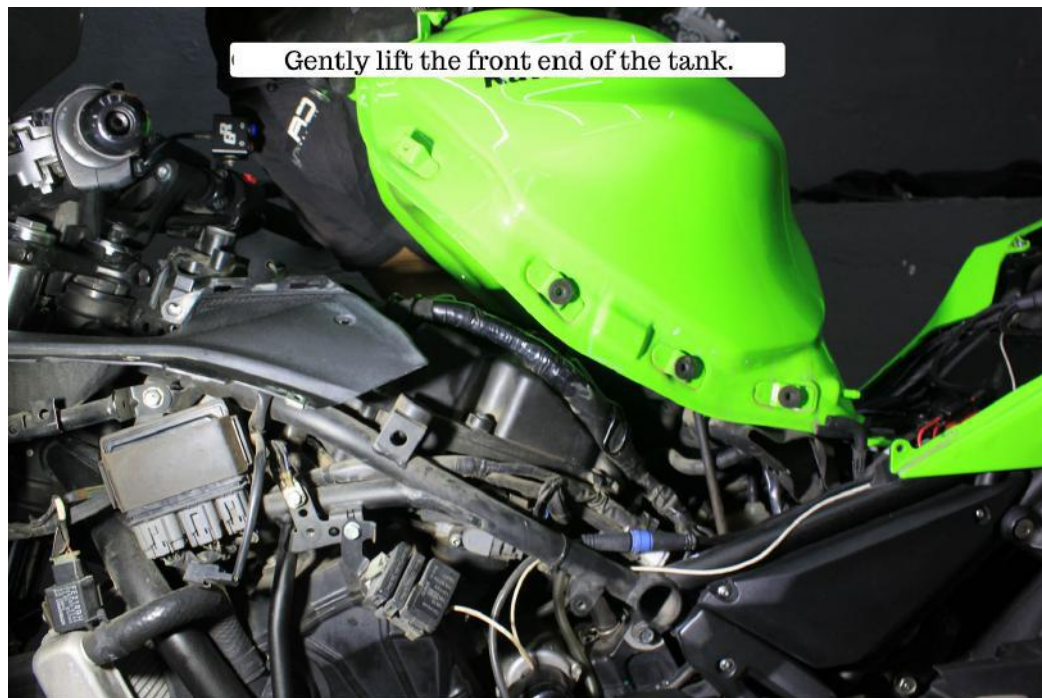


Image 24



**3.1.8** Gently disconnect the vacuum hose inside the tank. Refer [Image 25](#)

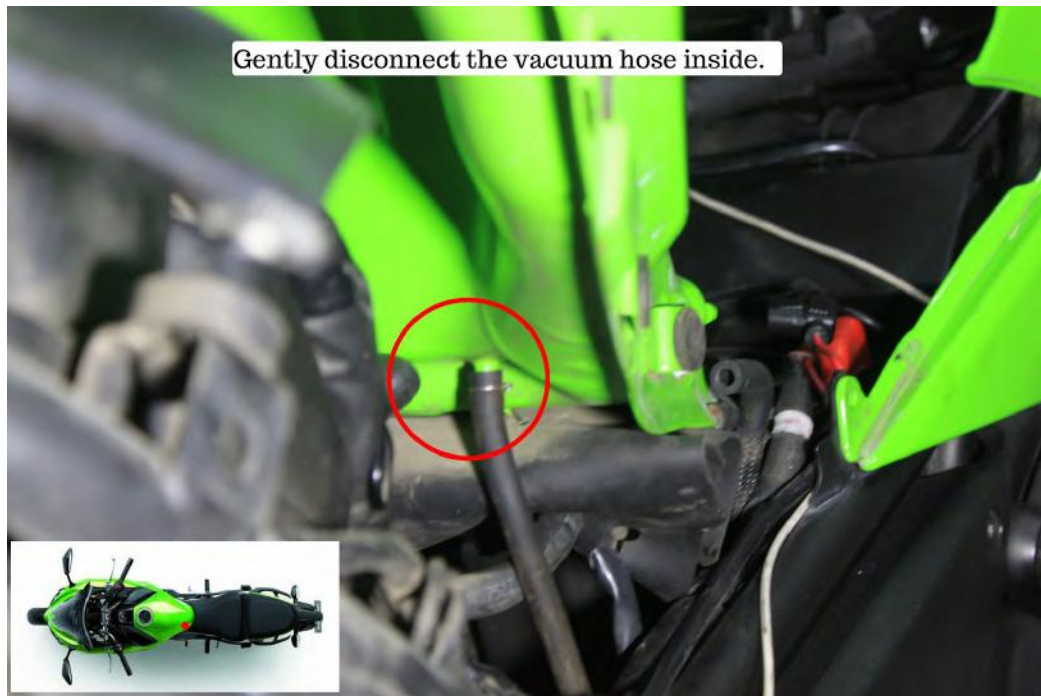


Image 25

**3.1.9** Gently lift the rear end of fuel tank. Disconnect the fuel line by gently pulling the red lock pin. Refer [Image 26](#)

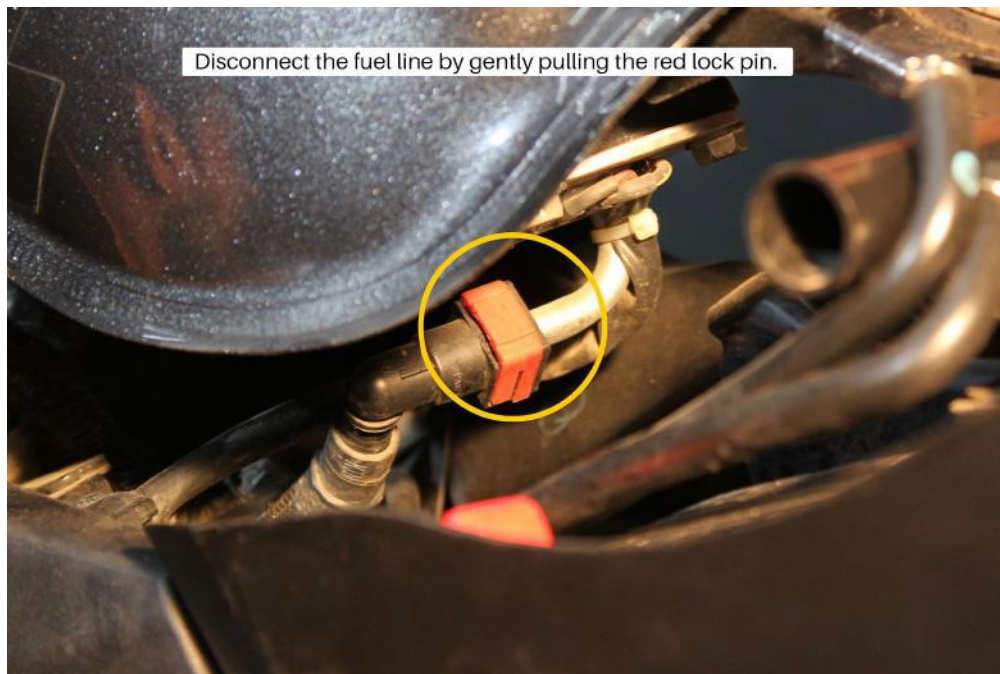


Image 26

**3.1.10** Unscrew the left side panel bolts. Refer **Image 27-A**



Image 27-A

**3.1.10** Detach the fuel pump connector. Refer **Image 27-B**



Image 27-B



**3.1.11** Unscrew the ECU harness lock screw using M8 Hex socket. Refer **Image 28**



Image 28

**3.1.12** Disconnect the air box connector from the top side. Refer **Image 29**

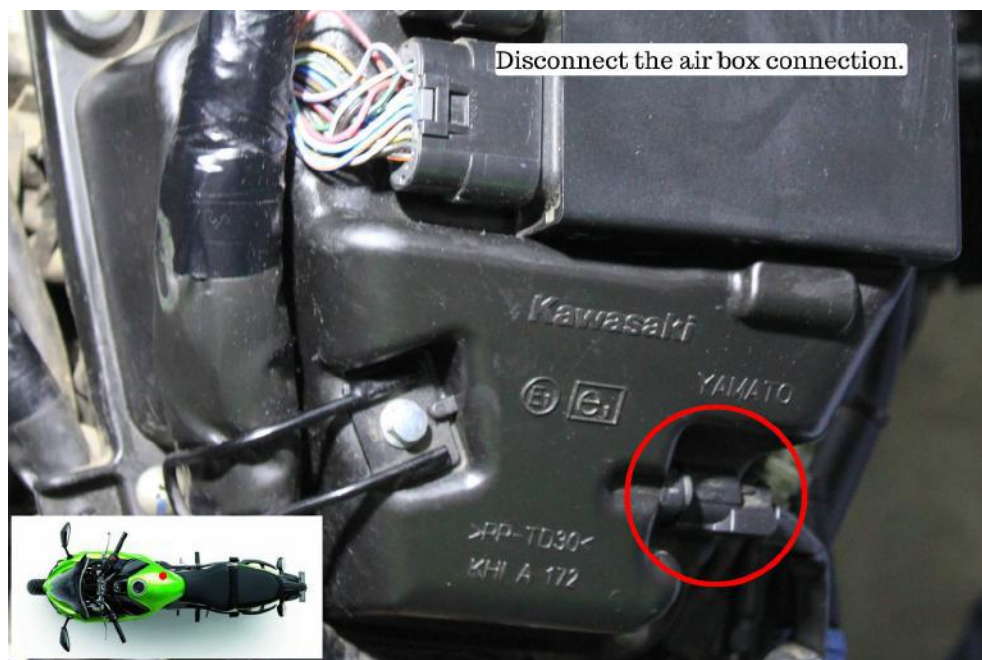


Image 29



**3.1.13** Locate and unscrew all the screws of air box using a Phillips head screwdriver. Refer [Image 19](#)

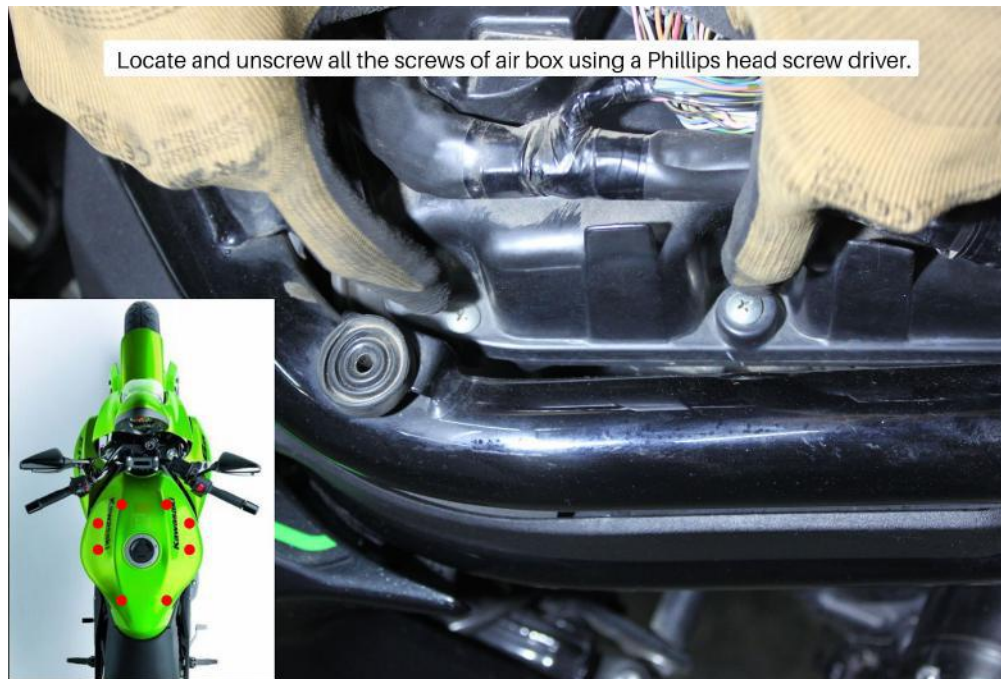


Image 30

**3.1.14** Slide the wire to the left carefully. Gently detach the air box top part. Refer [Image 31](#)

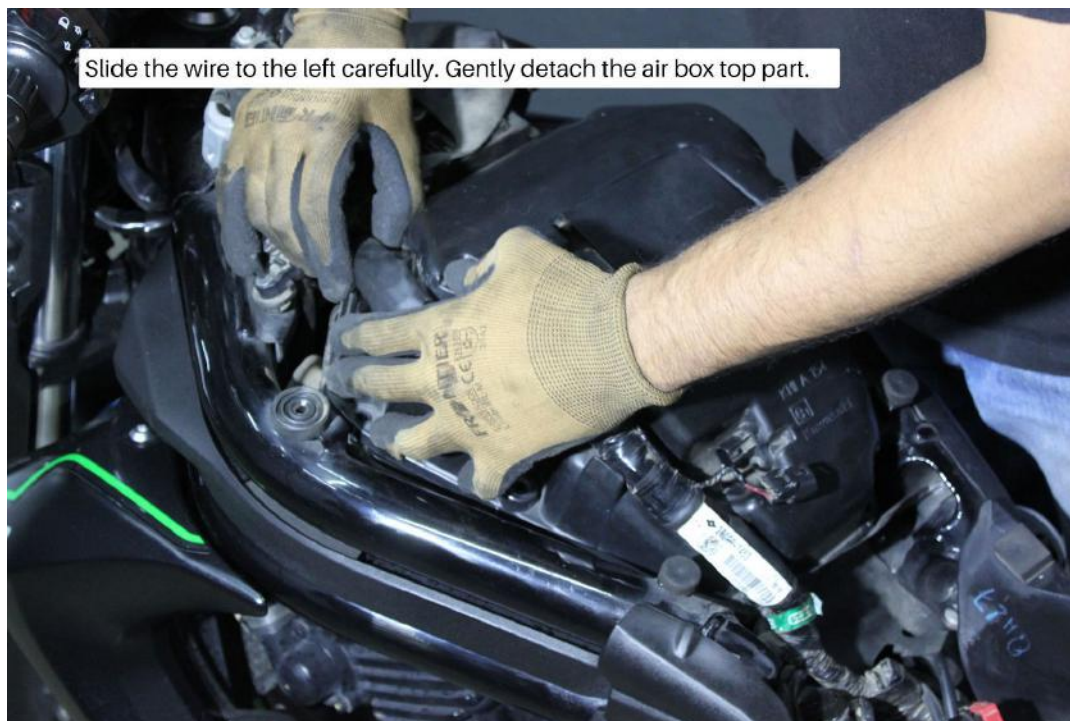


Image 31

**3.1.19** Disconnect the hoses at the rear side of the air filter box. Refer **Image 32**

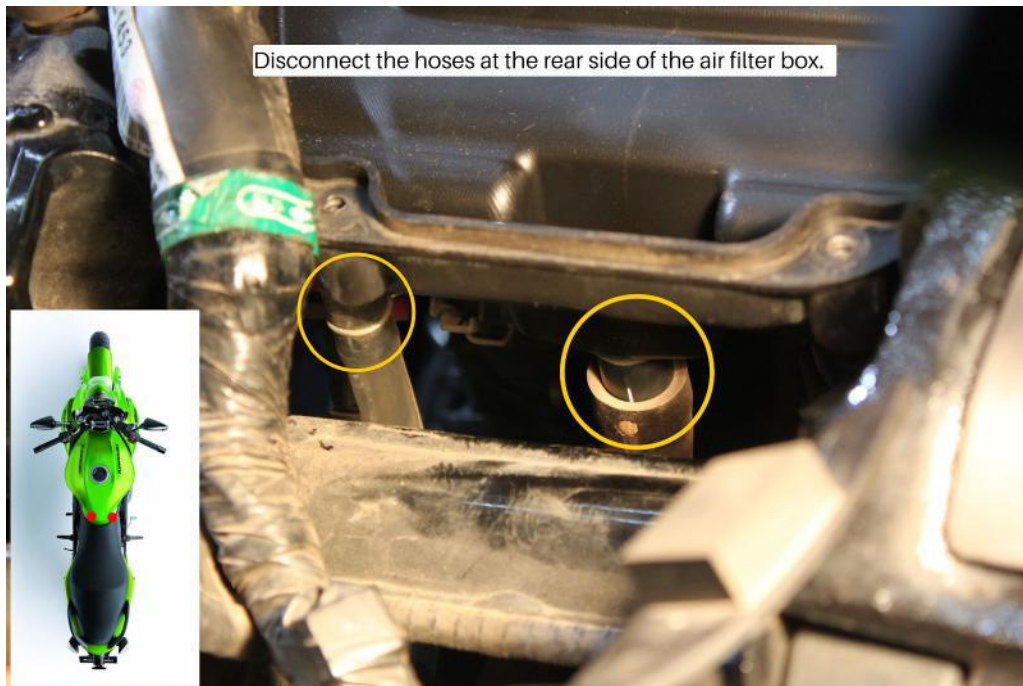


Image 32

**3.1.19** Disconnect the hose from the air filter box at the left side of the bike. Refer **Image 33**



Image 33



**3.1.19** Gently detach the air filter box from the slots. Refer **Image 34**



Image 34

**3.1.19** Refer the detached view before routing. Refer **Image 36**

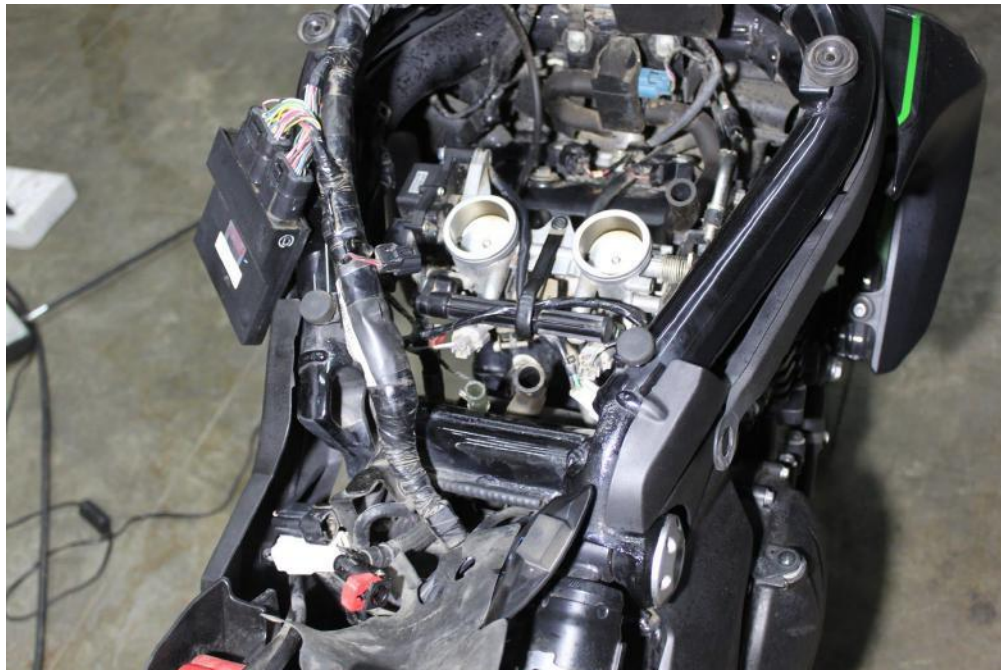


Image 36



## 3.2 Routing the harness

**3.2.1** Starting from the glove compartment, route each connector terminal between the welded plate and the mud guard. Refer [Image 37](#).

Route the harness as follows

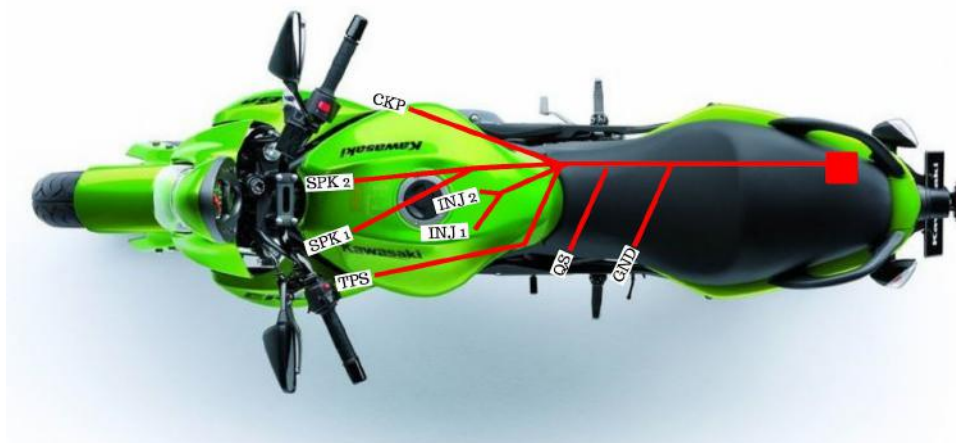


Image 37

**3.2.2** Start from the glove compartment, route each connector terminal between the mudguard and seat centre panel. Refer [Image 38](#) and [Image 39](#).



Image 38

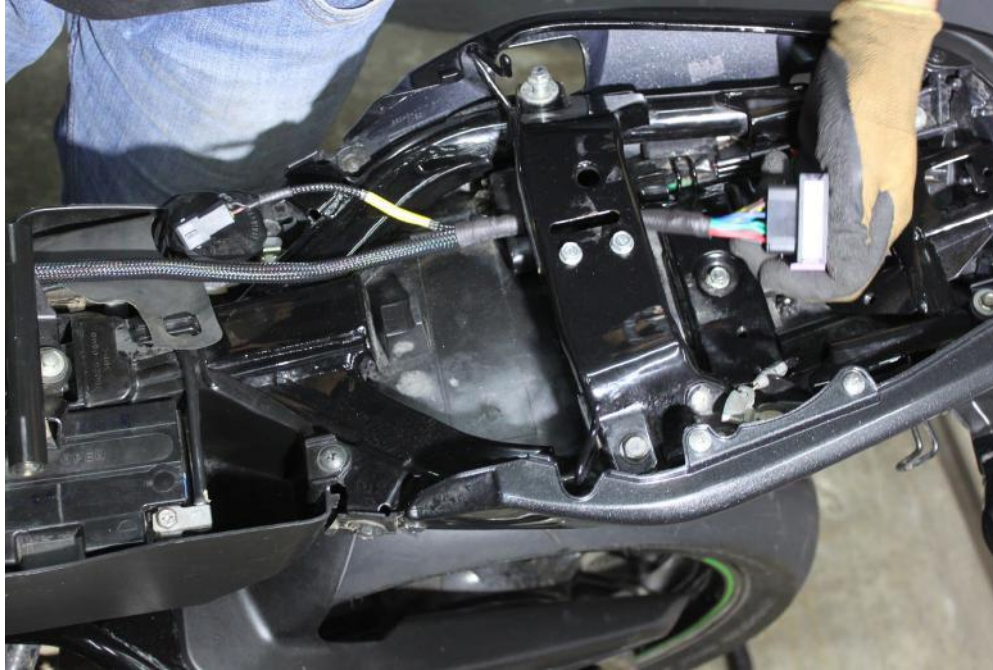


Image 39

**3.2.3** Route each connector through the panel carefully and route the entire harness. Refer [Image 40](#) and [Image 41](#).



Image 40





Image 41

**3.2.4** Route the harness around the battery casing. Refer [Image 42](#)

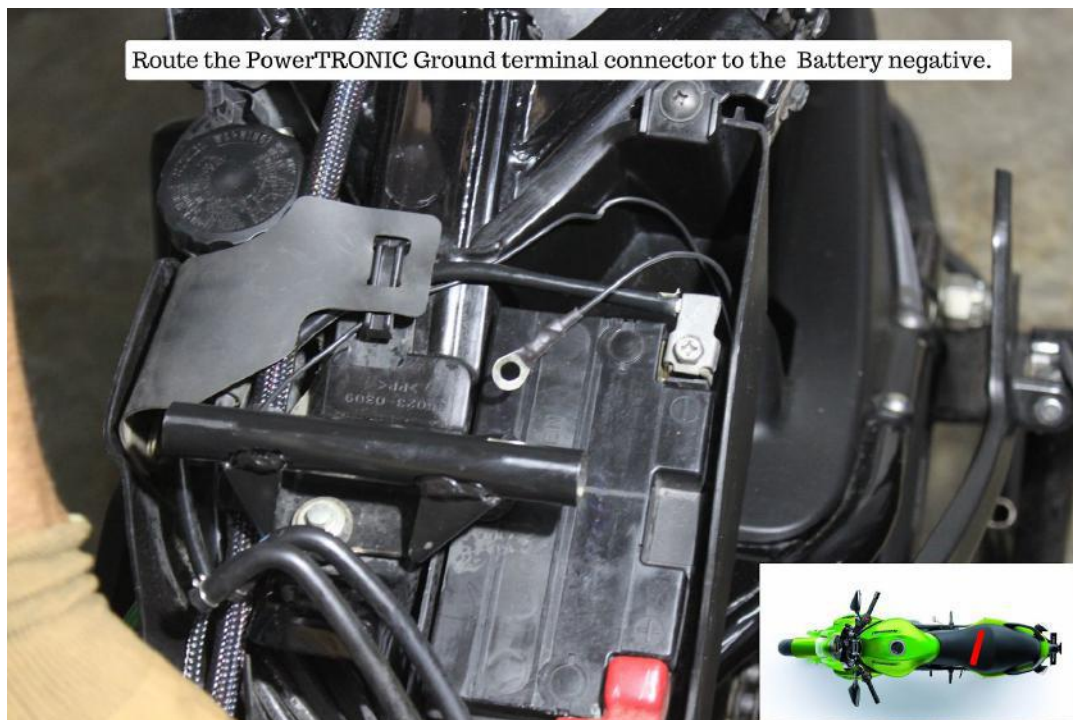


Image 42

3.2.5 Route ignition coil connectors under the throttle cable. Refer **Image 43**

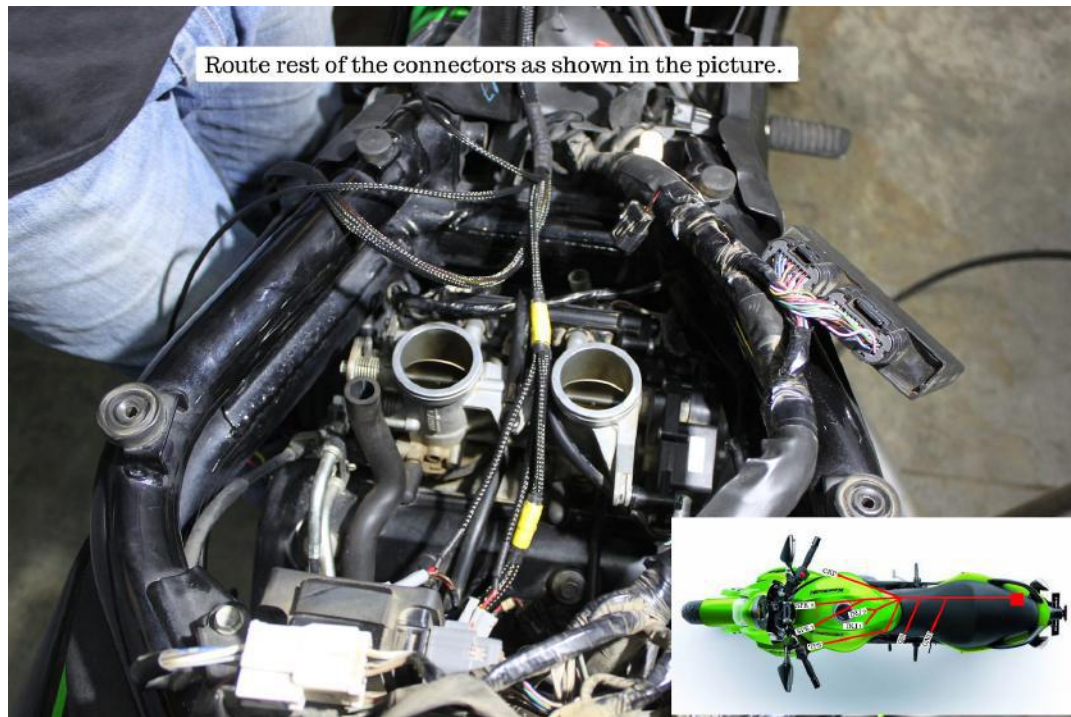


Image 44



### 3.3 Fuel Injector Connector

**3.3.1** Locate the stock injector connector of your bike. Refer [Images 45](#).

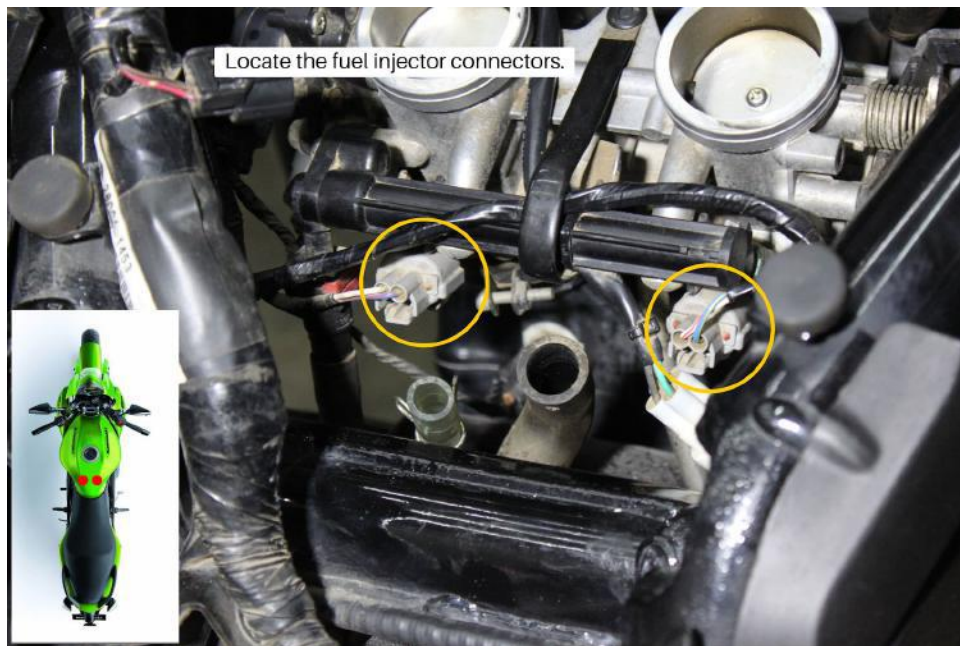


Image 45

**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 46](#))

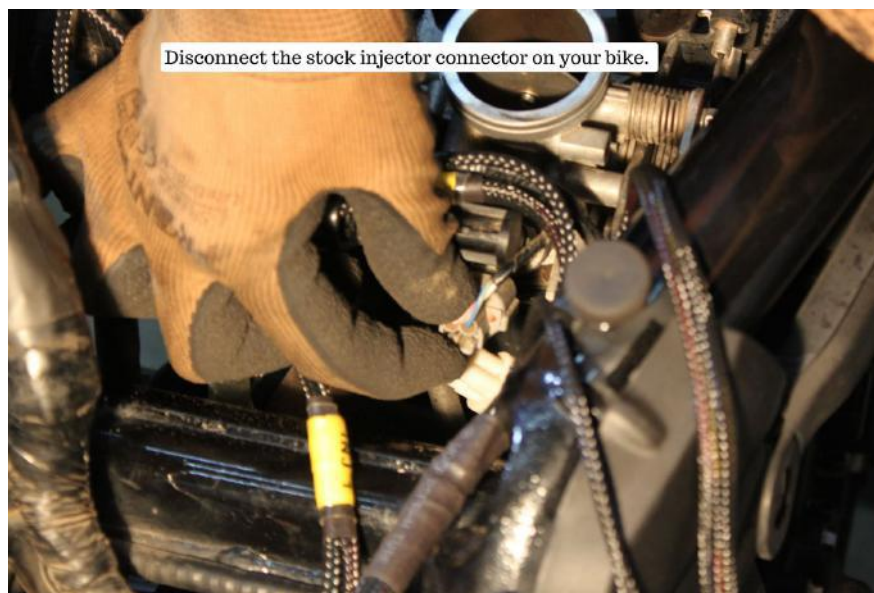


Image 46

**3.3.4** Connect the PowerTRONIC female injector connector harness to the stock male injector connector. Refer **Image 47**

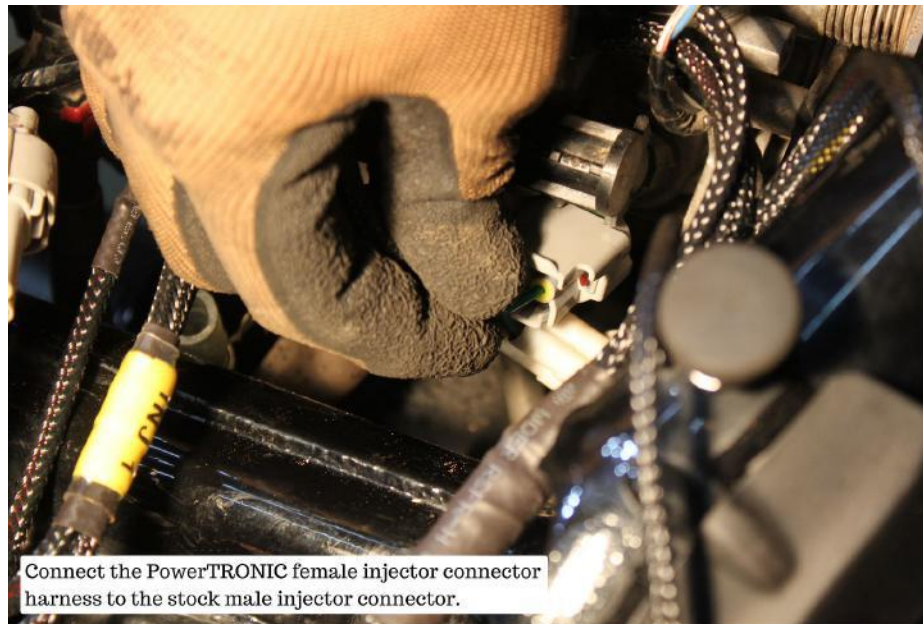


Image 47

**3.3.5** Connect the PowerTRONIC male injector connector to the stock female injector connector. Refer **Image 48**



Image 48



### 3.4 Ignition Coil Connector

**3.4.1** Locate the stock Ignition coil connectors. Refer [Images 49](#)

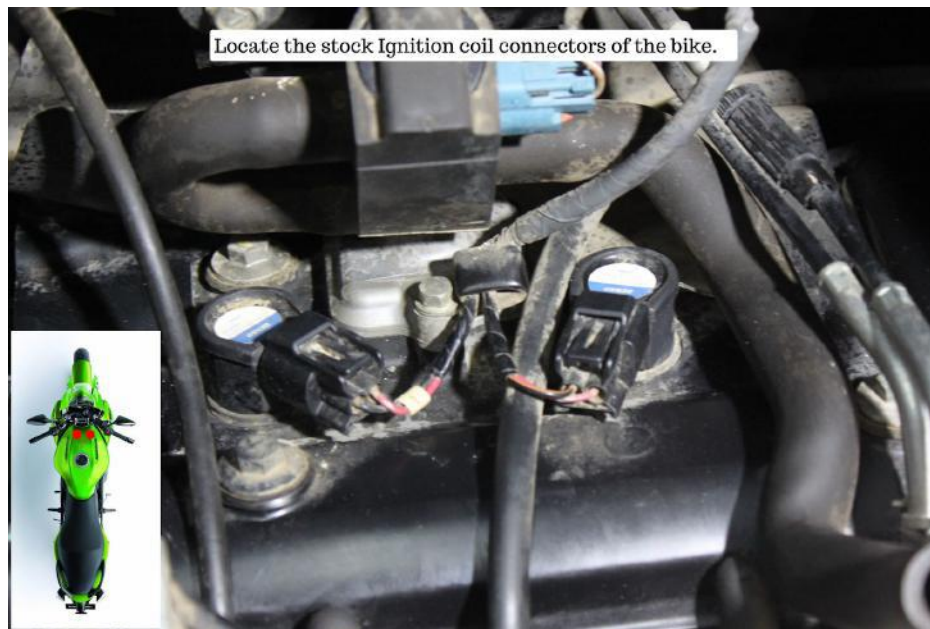


Image 49

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

**3.4.3** Disconnect the stock ignition coil connectors. Refer [Image 50](#)



Image 50

**3.4.4** Connect the PowerTRONIC Ignition coil female connector to the stock ignition coil male connector. Refer [Image 51](#).



Image 51

**3.4.5** Connect the PowerTRONIC Ignition coil male connector to the stock ignition coil female connector. Refer [Image 52](#).

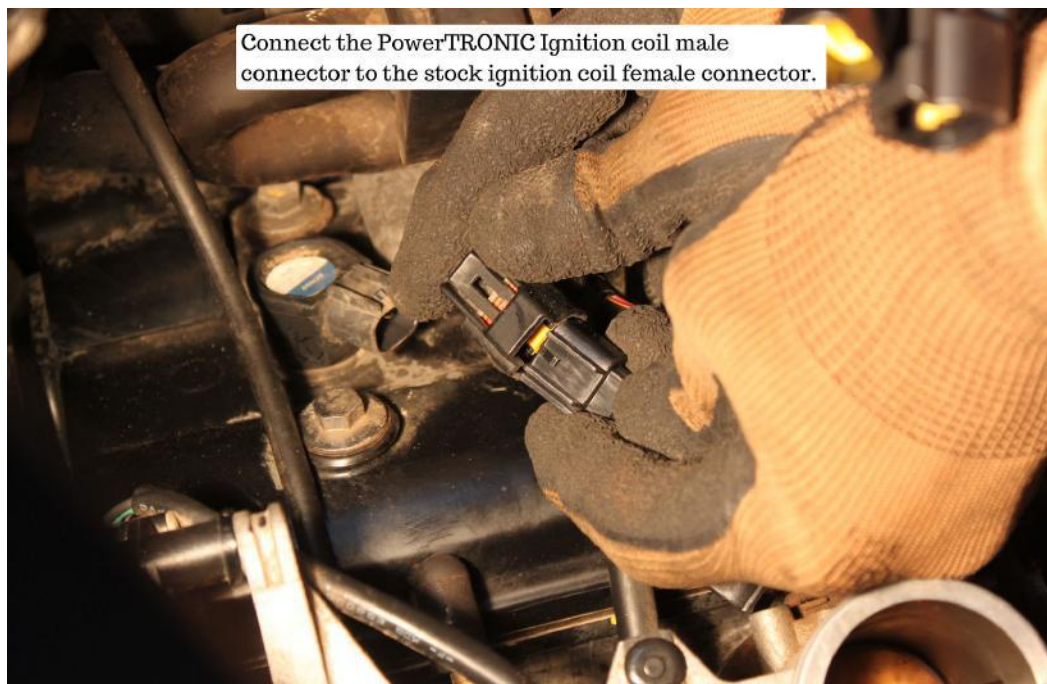


Image 52



**3.4.6** Repeat the above steps for the other 3 ignition coils. Refer [Image 53](#) for completed view.

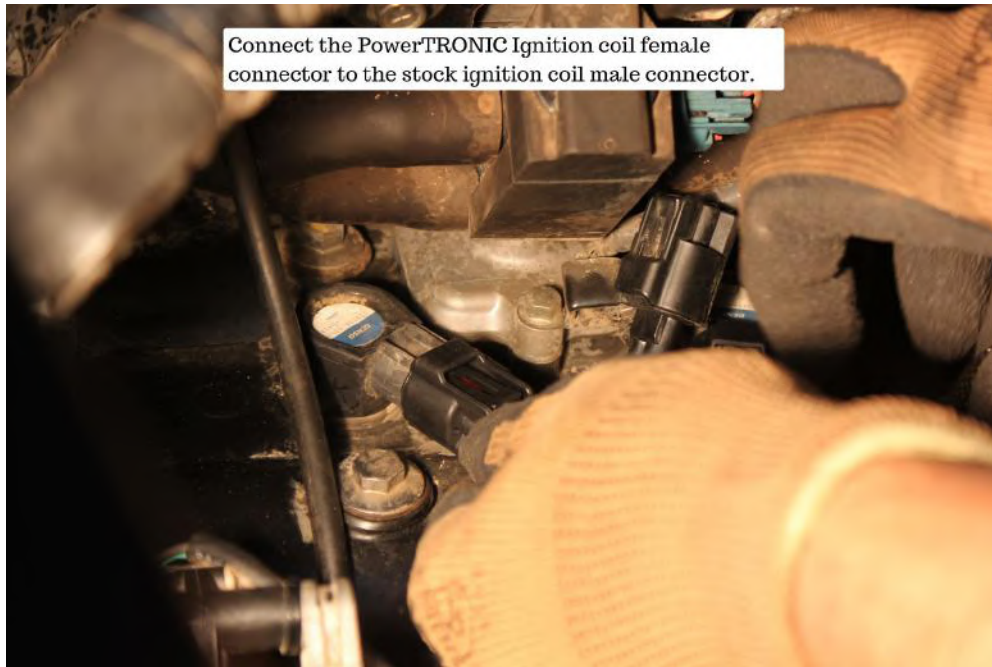


Image 53

### 3.5 Throttle position sensor connector

**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 54](#)



Image 54

**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 55](#)



Image 55



**3.5.4** Connect the PowerTRONIC female TPS connector to the stock TPS male connector. Refer [Image 56](#)



Image 56

**3.5.5** Connect the PowerTRONIC male TPS connector to the stock TPS female connector. Refer [Image 57](#).



Image 57

**3.5.6** We advise you to perform a TPS calibration after the installation of PowerTronic ECU.  
Refer the detailed TPS calibration document.

### 3.6 Crank Position Sensor Tapping

**3.6.1** Unscrew the right side panel bolt with M5 Hex bit to access the CKP sensor connector. Refer [Image 58](#)

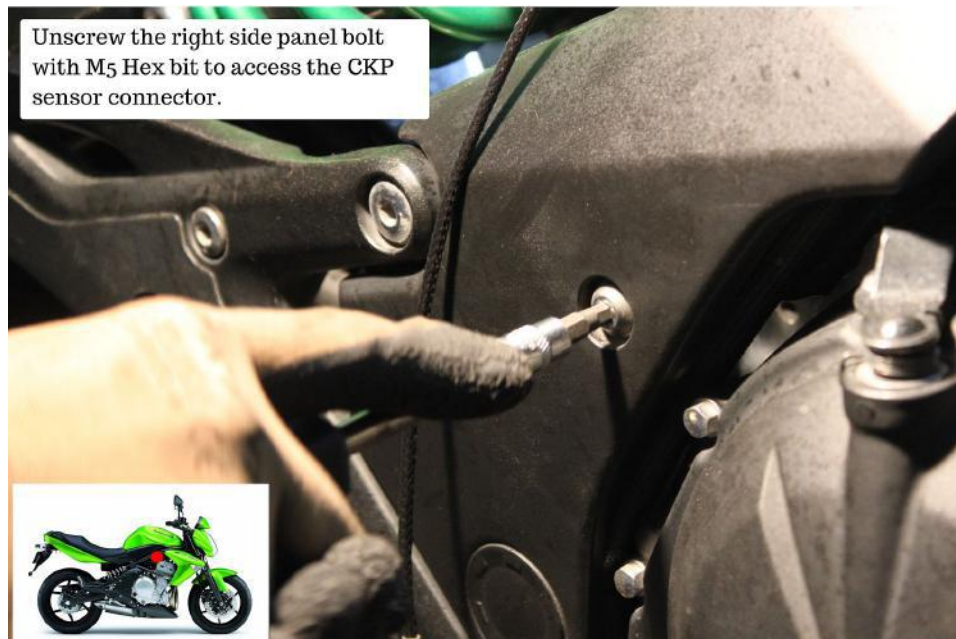


Image 58

**3.6.2** Remove the panel and locate the CKP sensor connector. Refer [Image 59](#) and [Image 60](#).



Image 59



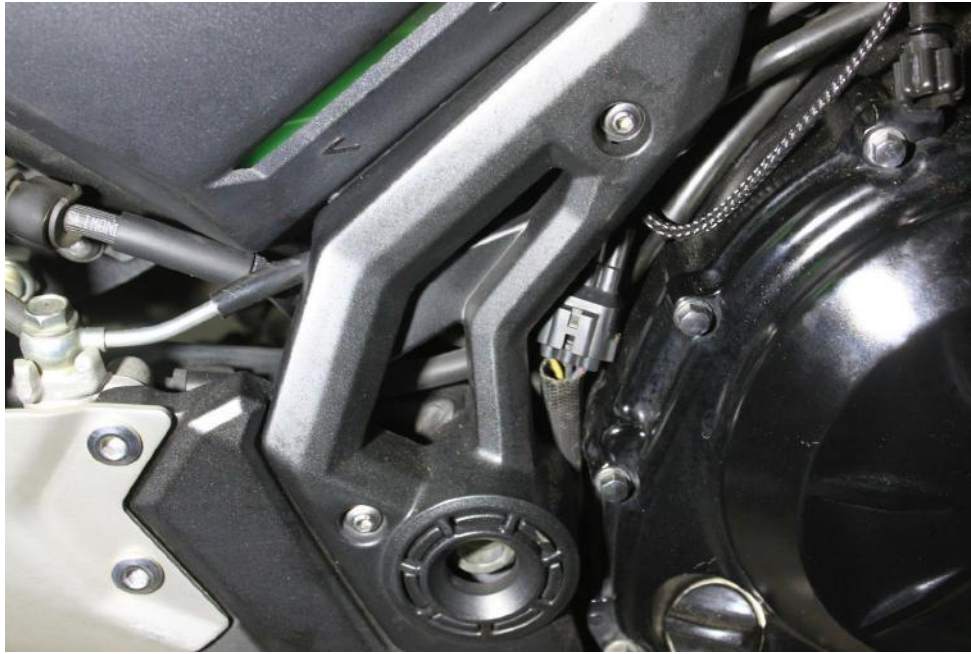


Image 60

**3.5.2** Identify the Crank Position sensor connector in the PowerTRONIC wiring harness, labeled as CKP

**3.5.3** Disconnect the stock CKP connector. Refer **Image 61**

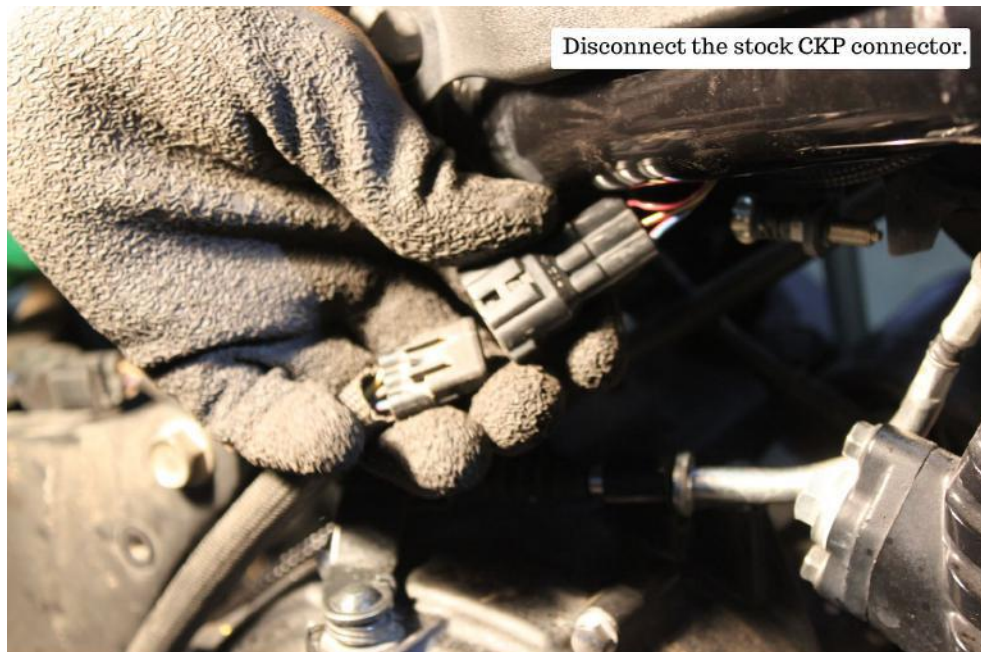


Image 61

**3.5.4** Tap the CKP connector of the bike with the CKP wire (Red and Black) of the PowerTRONIC using the tapping clip provided in the kit. Refer **Image 62**.

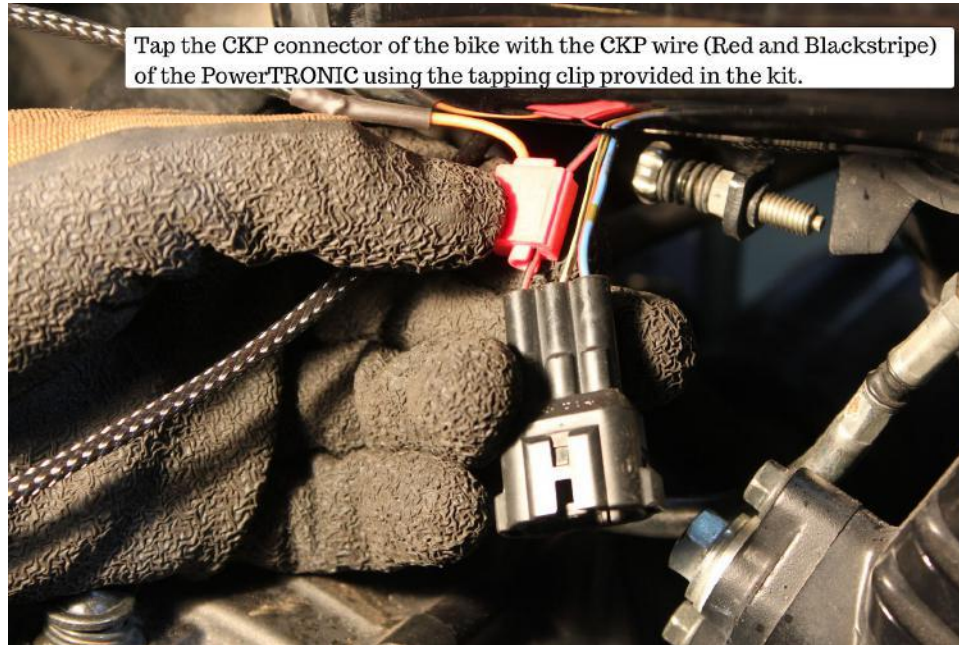


Image 62



### 3.6 Ground Terminal Connector

**3.6.1** Unscrew the battery negative terminal and Identify the Ground terminal connector labelled as GND and connect it to the negative terminal of the battery. Refer **Image 63**



Image 63

**3.6.2** Refer the completed view. Refer **Image 64**



Image 64

### 3.7 Securing the harness using ties

**3.7.1** Secure the harness away from general heating areas by attaching it to the chassis or frame using the zip ties provided wherever necessary. Refer **Image 65**

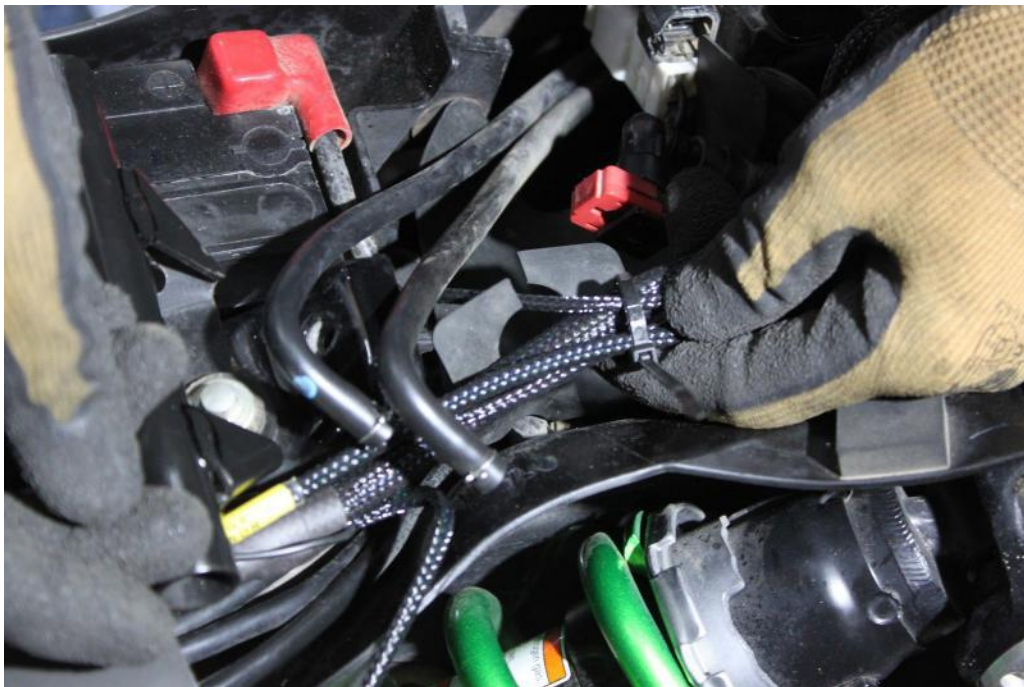


Image 65

**Important note:** The PowerTRONIC harness contains 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.



### 3.8 Testing with the stock coupler

**3.8.1** Attach the fuel tank.

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

**3.8.3** ***DO NOT proceed with PowerTRONIC ECU without verifying the connections with stock coupler.*** Refer **Image 66**



Image 66

### 3.9 Plugging in the PowerTRONIC

Connect the PowerTRONIC to the harness by connecting the 24 pin connector. Secure it in the glove box. Refer [Image 67](#)



Image 67

### 3.10 Attaching the panels fairing etc

Attach the panels, fairing as removed from the bike.