

# PowerTRONIC Installation Manual- KTM Duke 790 (2018-2019)

Document Version	1	Release Date	04 Feb 2020
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Application information	Vehicle Specific
Vehicle	<b>KTM</b>
Model	<b>Duke 790</b>
Year of manufacture	<b>2018-2019</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.
- **WARNING:** Before clicking Burn after tuning or the TPS Calibration, disconnect the USB from laptop, then turn off bike, after 20 seconds connect the USB, then Click on Send and then Burn.

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## **Warning:**

Some of the KTM 790s have a different original ECU and wiring configuration, hence, it is recommended that the following precautions are adhered to for these specific bikes, failure to do so may result in the fuse breaking connectivity on the vehicle, which would need to be replaced to start the vehicle.

**Problem:** On certain models of the KTM 790s, when the laptop is connected to the device, and if the vehicle ignition key goes from on to off position, the vehicle fuse blows

## **Workaround:**

- 1. Turn the ignition key on and/or start the vehicle.**
- 2. Connect the PowerTRONIC ECU to the laptop via the USB cable provided.**
- 3. Tune the bike as required, and save the map on the laptop. (DO NOT Burn the map to PowerTRONIC ECU).**
- 4. Disconnect R-Tune software and unplug the USB cable from the PowerTRONIC ECU.**
- 5. Turn the ignition key off and remove the key.**
- 6. Wait 20s.**
- 7. Plug back the USB cable to PowerTRONIC ECU, Connect it to the R-Tune software, Send the stored map, and click Burn.**
- 8. Unplug USB cable from laptop and PowerTRONIC ECU.**

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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 connector</li> <li>• Spark connector</li> <li>• Throttle position sensor tapping wire (TPS)</li> <li>• Crankshaft position sensor connector (CKP)</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	M12, M10, M8 Hexagonal socket
2	Phillips-Head screwdriver
3	M12 T bar Hexagonal Socket wrench
4	M5, M4 Hex bit
5	Nose plier, Wire stripper

### 3. Installation procedure

#### 3.1 Removing panels, fairing

Begin at the left side of the bike.

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



Image 1

**3.1.1** Locate and unlock the pillion rider seat lock. Refer **Image 2**.



Image 2

**3.1.2** Carefully detach the rider and pillion rider seats. Refer **Image 3**.



Image 3

**3.1.3** Take off left side panels. Refer **Image 4**



Image 4

**3.1.3** Take off the right side panel. Refer **Image 5**

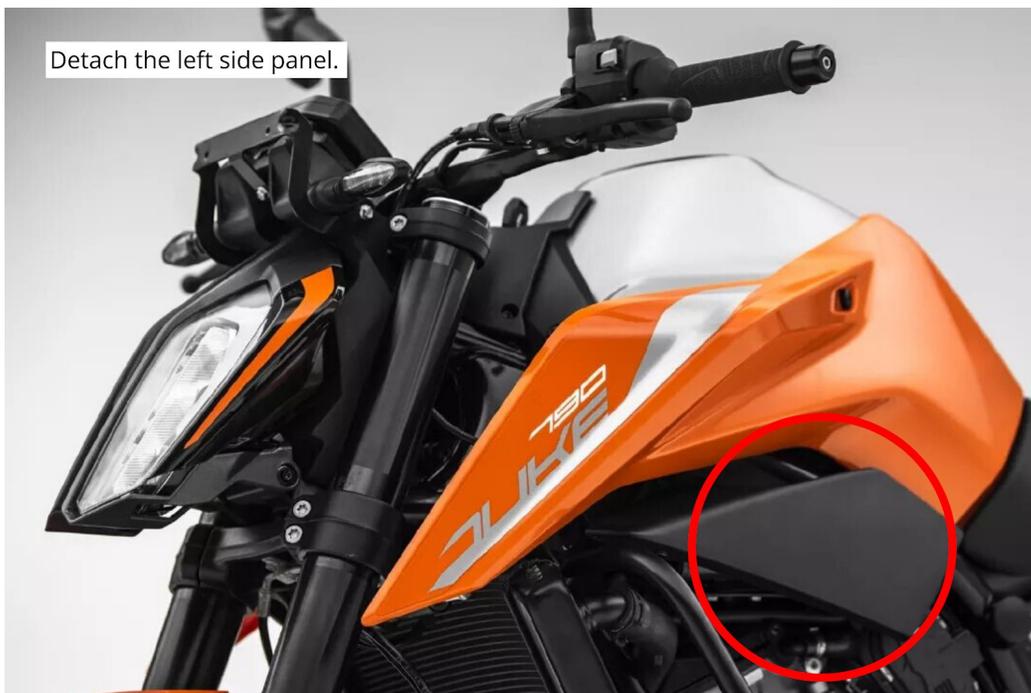


Image 5

### 3.2 Routing the harness.

#### 3.2.1 Take off the right side panel. Refer **Image 6**

Route the harness properly and route the each PowerTRONIC connectors to respective stock connectors.



Image 6

**Important Note:** There are 2 fuel injector connectors and ignition coil connectors.

Fuel injectors are labelled as INJ1 and INJ2 and Ignition coil connectors are labelled as SPK1 and SPK2.

Before proceeding with the installation, understand the order and then do the installation in the same order for fuel injector and ignition coil connectors in the same cylinder. I.e INJ1 & SPK1 goes to cylinder 1 and INJ2 & SPK2 goes to cylinder 2.

### 3.3 Fuel injector connections.

**3.3.1** Identify the fuel injector connector in the PowerTRONIC wiring harness. The connectors are labelled 'INJ'.

**3.3.2** Unplug the stock fuel injector connectors.

**3.3.3** Connect the PowerTRONIC female INJ connector to stock fuel injector male connectors. Refer to **Image 7** and **Image 8**.

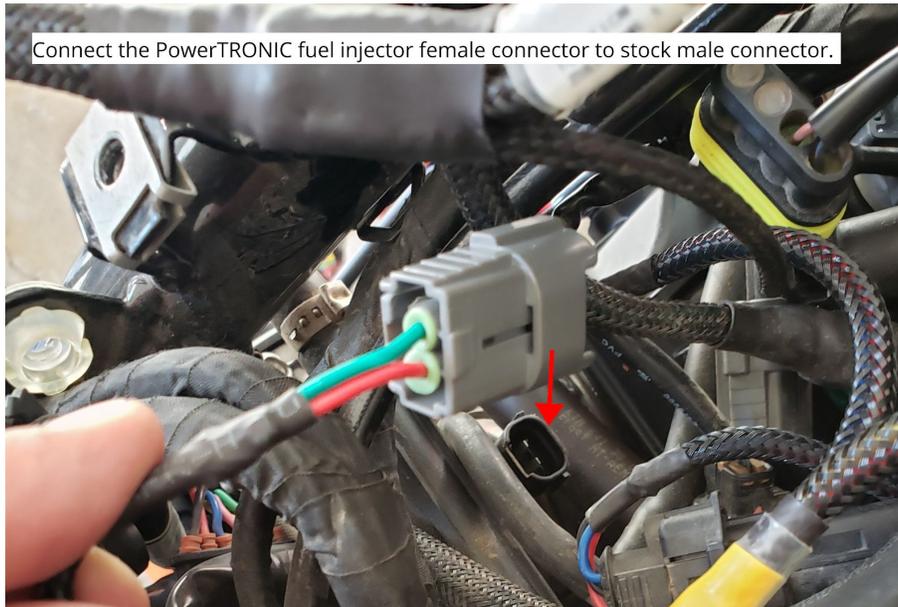


Image 7

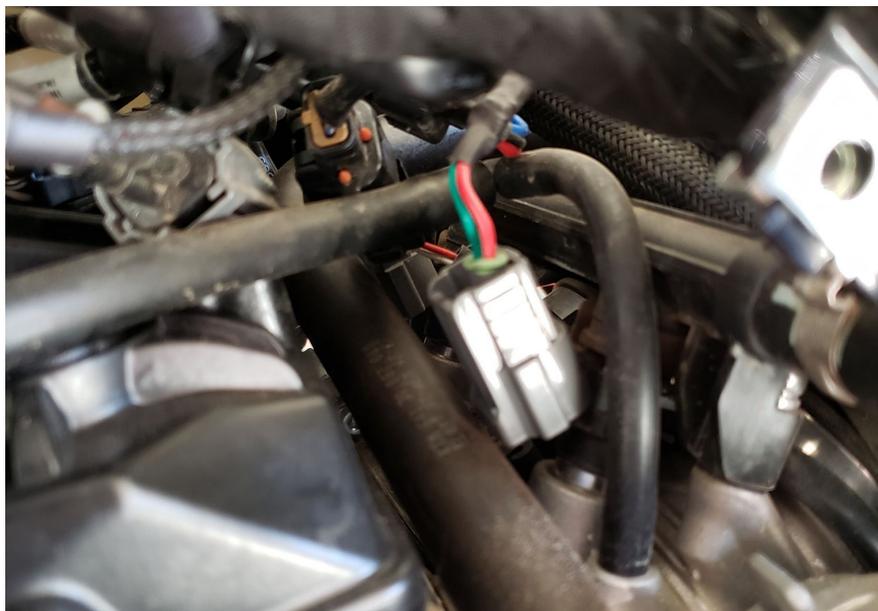


Image 8

**3.3.4** Connect the PowerTRONIC male INJ connector to the stock fuel injector female connector. Refer **Image 9**.

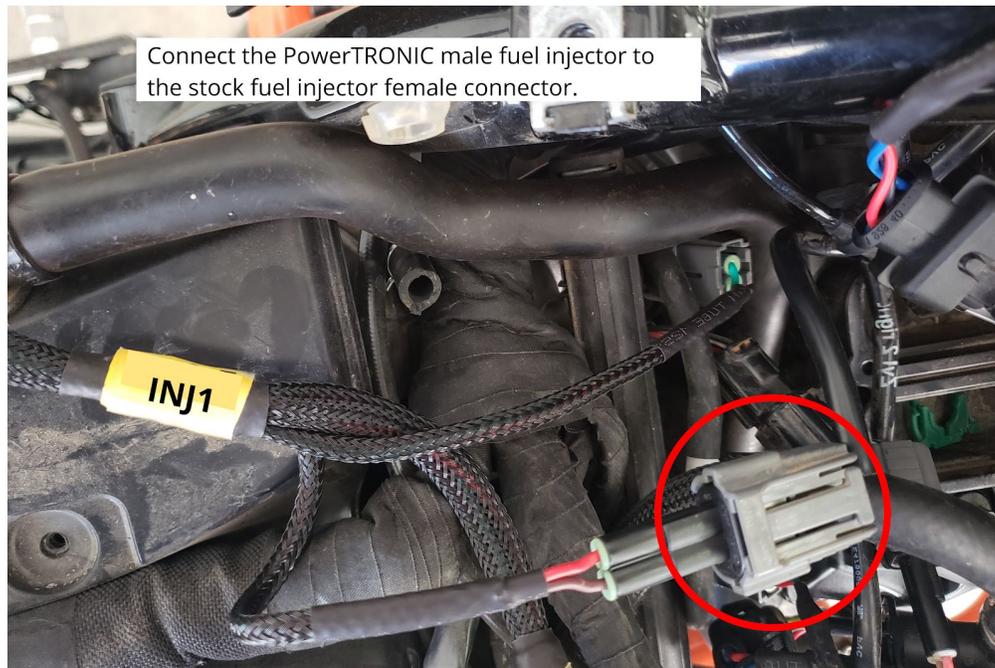


Image 9

**3.3.5** Connect the PowerTRONIC female INJ connector to stock fuel injector male connectors. Refer **Image 10**.

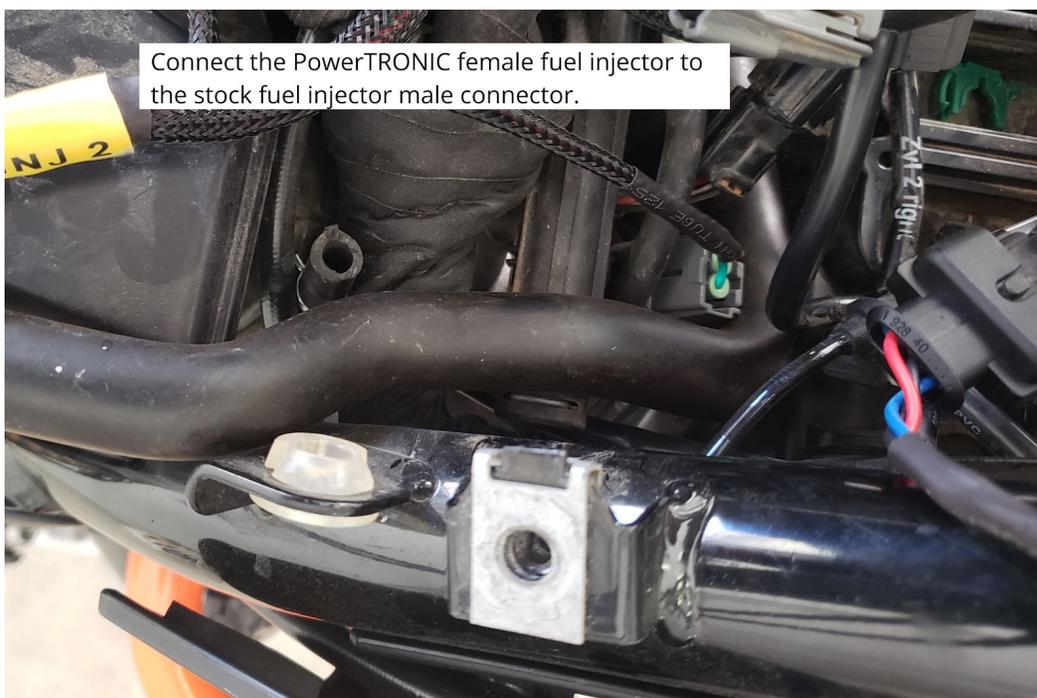


Image 10

3.3.6 Repeat the process for the right side fuel injector connector also. Refer [Image 11](#)



Image 11

### 3.4 Ignition coil connectors.

3.4.1 Locate the left side ignition coil.

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

3.4.3 Unplug the stock ignition coil connectors. Refer [Image 12](#)



Image 12

3.4.4 Connect the PowerTRONIC female SPK connector to stock left ignition coil male connector. Refer to [Image 13](#) and [Image 14](#).

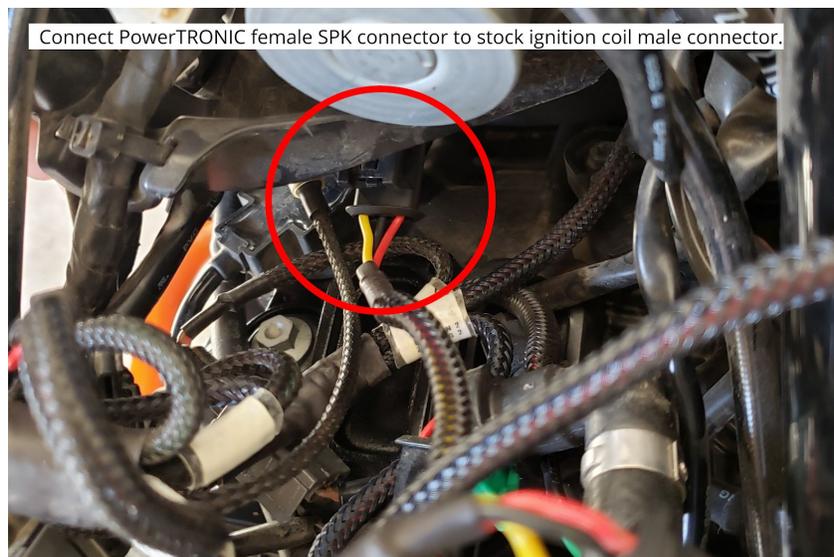


Image 13



Image 14

**3.4.5** Connect the PowerTRONIC female SPK connector to stock left ignition coil male connector. Refer **Image 15**.



Image 15

3.4.6 Repeat the process for the right side coil also. Refer the Image 16.



Image 16

### 3.5 Throttle position sensor connectors.

**3.5.1** Locate the Throttle position sensor connector of your bike and disconnect the stock TPS Connectors.

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

**3.5.3** Connect the PowerTRONIC male TPS connector to stock female connector. Refer **Image 17**.

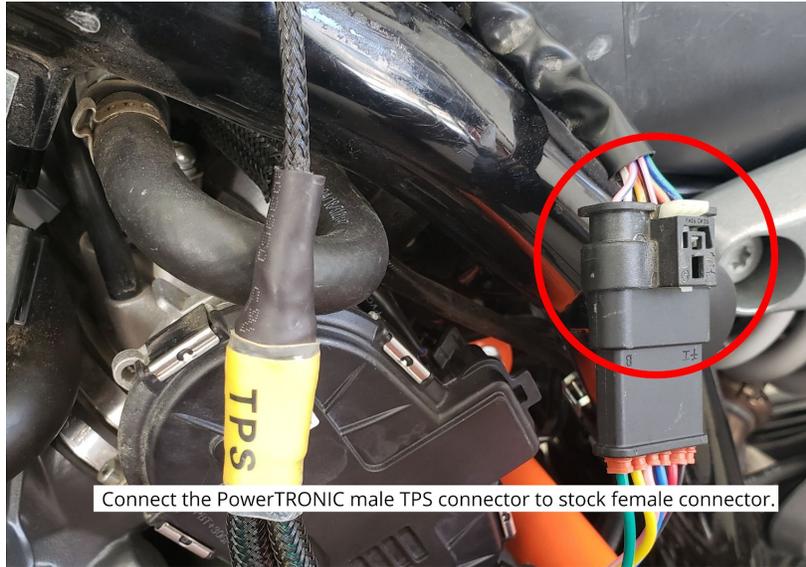


Image 17

**3.5.4** Disconnect the stock TPS Connectors. Connect the PowerTRONIC male TPS connector to stock female connector. Refer **Image 18**

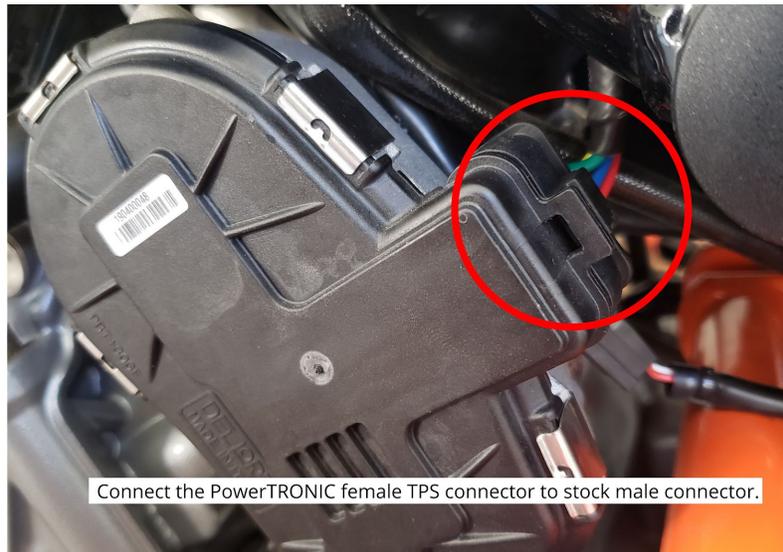


Image 18

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

### 3.6 Crank Position sensor Connector

3.6.1 Locate the stock CKP connectors. Refer the **Image 19**



Image 19

3.6.2 Identify the Crank position sensor connector in the PowerTRONIC wiring harness, labeled as 'CKP'

3.6.3 Disconnect the stock CKP connectors.

3.6.4 Connect Stock male CKP a connector and PowerTRONIC female CKP connector and connect Stock female CKP connector and PowerTRONIC male CKP connector. Refer **Image 20**.

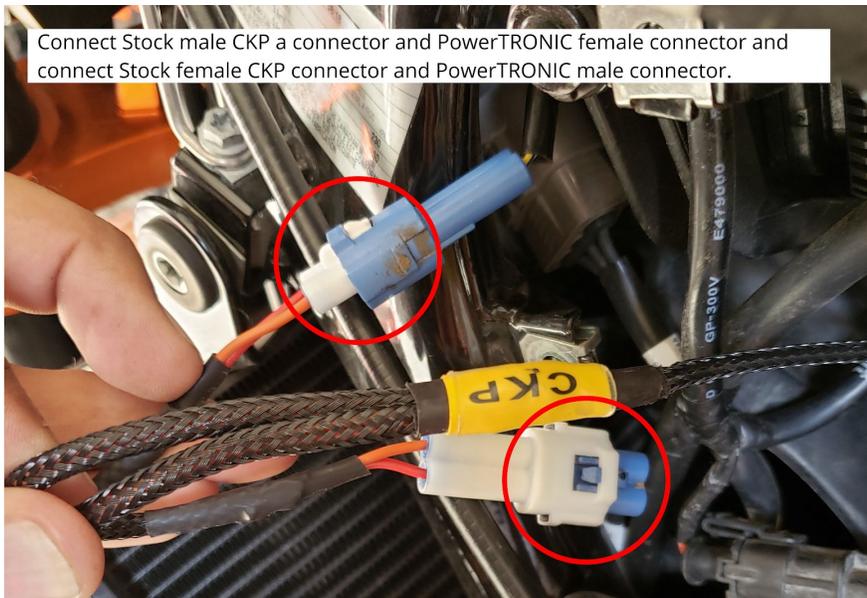


Image 20

### 3.7 Ground Terminal Connector

3.7.1 Identify the Ground terminal connector labelled as GND and connect it to the negative terminal of the battery.  
Refer [Image 21](#)



Image 21

### 3.8 Securing the harness using ties

**3.8.1** 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 22](#)



Image 22

**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. Refer [Image 23](#)



Image 23

### 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 to the detailed Stock coupler test document. Refer **Image 24**



Image 24

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

### 3.10 Plugging in the PowerTRONIC

Connect the PowerTRONIC to the harness by connecting the 24 pin connector. Secure it in the glove box. Refer [Image 25](#)



Image 25

### 3.11 Attaching the panels fairing etc

Attach the panels, fairing as removed from the bike.