

Reading time: 10min

## Full Race Unit installation manual YZF-R1(2002-2014)

**Please read carefully before attempting any use of this product!**

To install the SP-Full Race Unit you will have to:

1. Gain access to the ignition coils (for best results refer to your motorcycle service manual). Plug in the female connectors to the ignition coils and the male connectors to the bike's harness. You must connect each male and female pair connectors to the same corresponding cylinder!

**IMPORTANT NOTE:** Make sure when plugging the connectors that you press them well enough to lock, as this will provide sealed and reliable electrical connection, vital for the function of the Full Race Unit. Find appropriate place for the Full Race Unit control box and route the cables, they are high quality, automotive class, heat resistant cables but there is some care you should take: Avoid moving parts as they might damage them, the best way is to follow other cables from the bike's harness, use the cable ties provided to fasten them. Make sure the place for the Full Race Unit control box is away from heat and it is not constantly exposed to rain and water.

**NOTE:** The Full Race Unit connects directly to the ignition coils, if you use another product(s) for altering or modifying the ignition coil signals (that needs to be connected to the ignition coils as well) you need to connect the Full Race Unit control box first in line to the ignition coils!

2. Connect the single Yellow wire with the provided quick-splice terminal to the ECU tachometer signal. **This is very important because the whole system will rely on this signal and if not provided properly it will not function at all.** Please look at the following pictures:

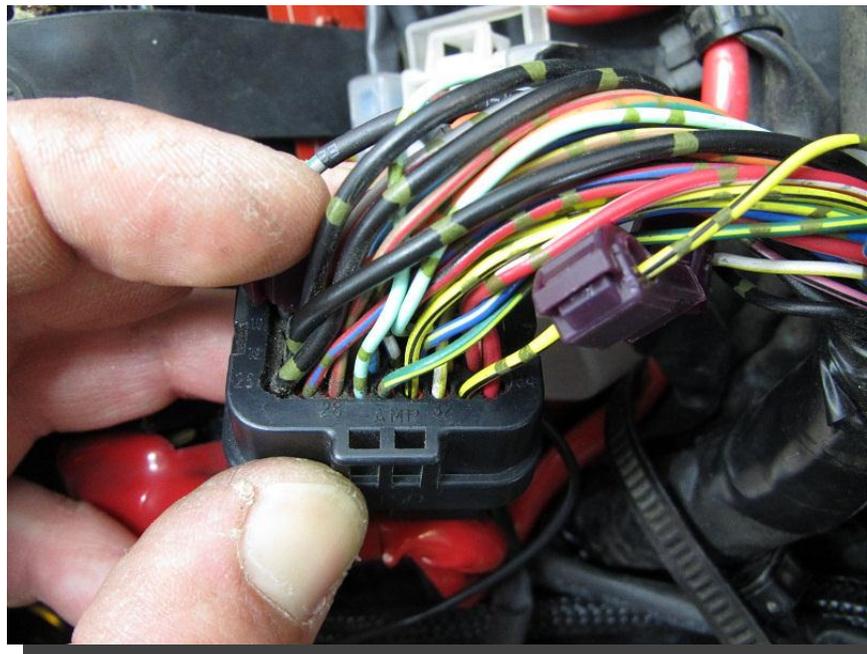
### **(Step\_ 1) Locate the correct ECU connector!**



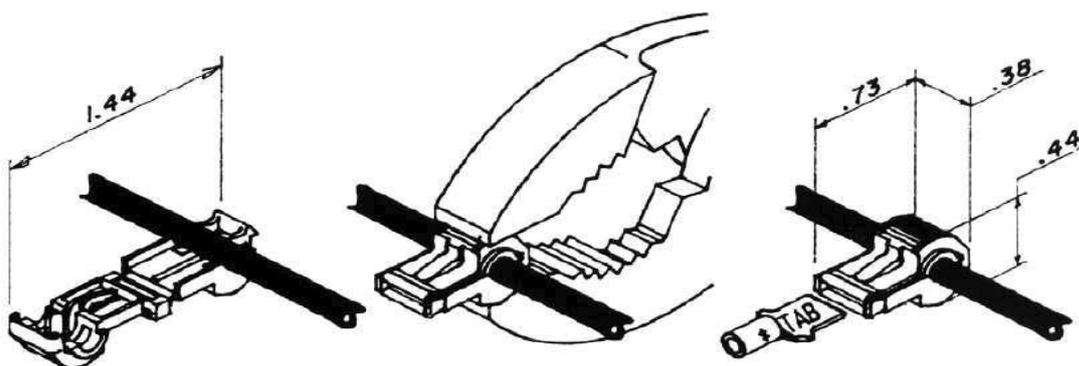
(picture is for illustrative purposes and may differ from your actual connector)

## (Step\_2) Connect the quick-splice terminal to the Yellow with Black stripe wire.

NOTE : The ECU is using two wires with same color Yellow with Black stripe. One is for the tachometer output signal the other is for the headlight relay, you must connect the quick-splice to the tachometer-output signal!



Quick-splice connector installation guide!



1. Do not strip run wire.
2. Place run wire in open channel.
3. Fold connector body until element contacts wire.
4. Crimp connector closed with pliers.
5. Slide completed T-Tap onto male tab.

**NOTE: Before disconnecting the ECU coupler make sure to disconnect the battery first!**

### Tachometer signal checking:

The Full Race Unit will flash continuously the blue "SHIFT" light every time the engine speed exceeds 3000(RPM) so you can check if the ECU tachometer output signal is provided to the Full Race Unit by revving the engine and observing the "SHIFT" light! **Make sure the shift sensor is connected to the Full Race Unit control box when checking the tachometer and speed sensor signals!**

3. Connect the male and female 3-way white connectors to the speed sensor!

### Speed sensor signal checking:

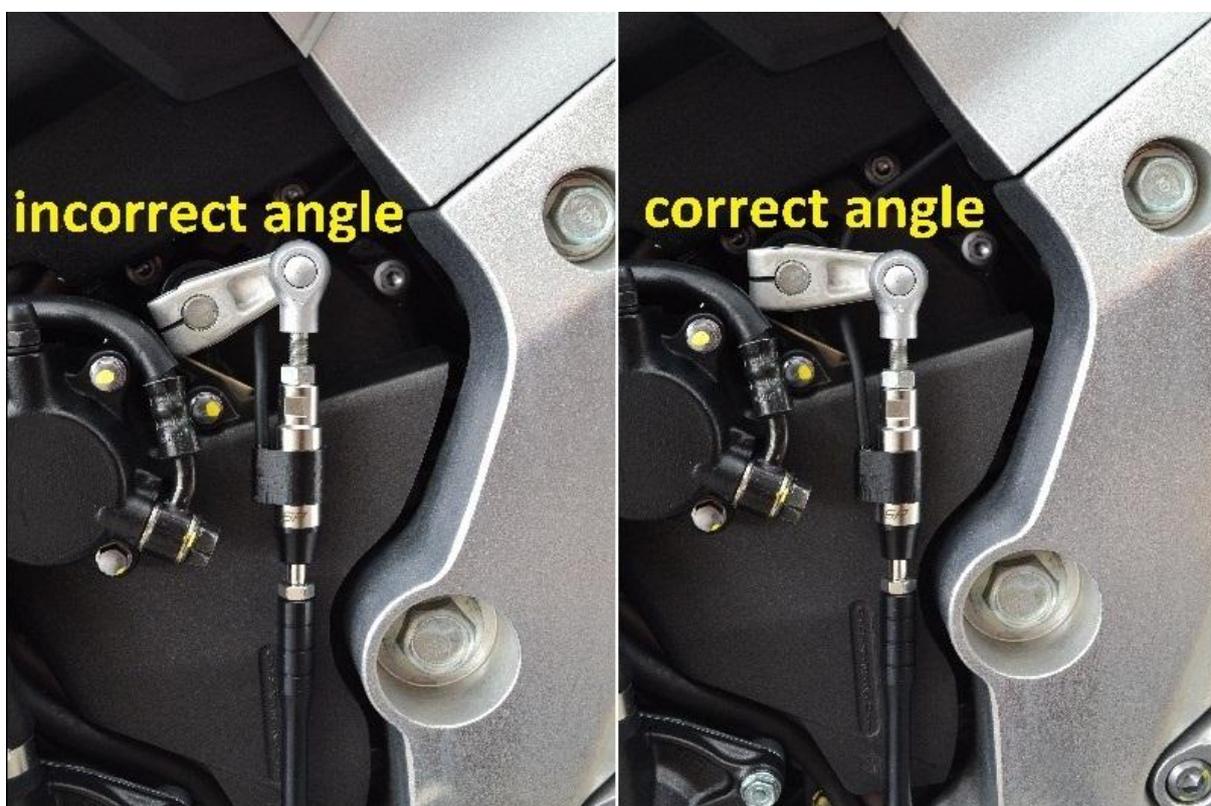
The Full Race Unit will flash the blue "SHIFT" light with every speed sensor impulse! To check if the speed sensor signal is provided to the Full Race Unit do the following: Lift the rear wheel on a paddock stand and rotate the rear wheel by hand – (the ignition switch must be ON and the engine must NOT be running)! Observe the blue "SHIFT" light must flash with every speed sensor impulse. **Make sure the shift sensor is connected to the Full Race Unit control box when checking the tachometer and speed sensor signals.**

4. The Full Race Unit will require negative (ground) connection to power up, connect the single black wire to the battery NEGATIVE (-) lead!

5. Remove your original shift rod and install SP-Shift Sensor with the fitting rod(s) provided to its place. Route the wire to the Full Race Unit control box and plug it in. When installing the sensor, make sure all counter nuts are locked and the sensor wire is not under tension when pressing the gear lever all the way up and down. Do NOT force the treads on shift sensor more than 5Nm. The rod and sensor provided are made with DUAL THREADS so fitting is universal.

**NOTE:** Never use the plastic hub on the shift sensor to hold the sensor body! Use the notches in the steel top side and a (10mm) open end wrench - spanner to hold the sensor body when tightening counter locking nuts!

**NOTE:** The gearbox pivot arm must extend to 90 degrees with the shift rod in order to receive an equal force in both directions, if not set correctly, the gearbox may not react accordingly and miss gears when using the quickshifter!



After this is done, turn the ignition key ON, make sure the engine kill switch is in RUN position and the gearbox is in neutral, at this time the red POWER light on the Full Race Unit must be ON, (if not recheck connections and particularly the single black wire for the ground connection). After the

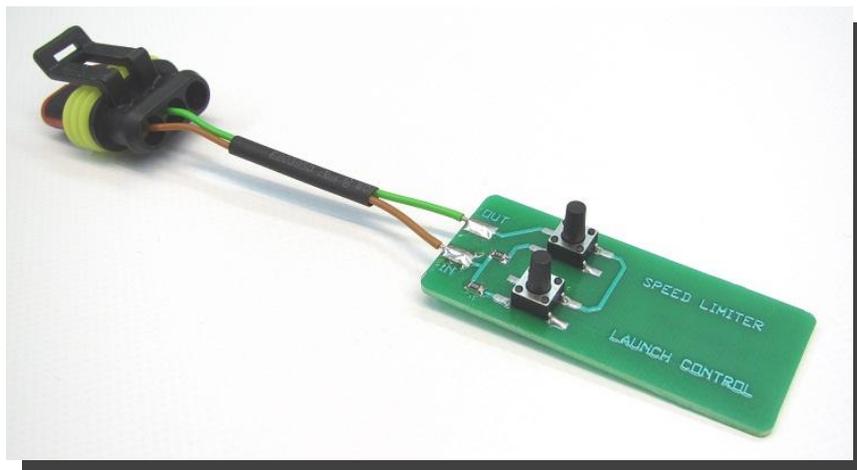
POWER light is ON, press the gear lever in the direction of UP-shifting, observe the blue SHIFT light must turn on for a short period every time you press it.

**IMPORTANT NOTE:** Do NOT check SHIFT light when the engine is running! By pressing the gear lever UP, you will engage the bike on gear and it is possible to injure yourself or someone else!

The Full Race Unit will work to the make and model of motorcycle it is intended, do not install it on another make and model of motorcycles before checking for compatibility as you might damage the ECU or the Full Race Unit permanently!

If you want to fine tune it to suit your specific riding stile and/or modified bike, use the following:

### Programming board!



#### Adjusting the Launch Control RPM limit:

- Place the bike on a rear wheel paddock stand or on a dynamometer. Disconnect the shift sensor connector from the Full Race Unit control box, the ignition key must be off!
- Connect the programming board to the Full Race Unit control box –(shift sensor connector).

Start the engine and put the bike on **1st gear**, then accelerate the engine to the desired range, hold it there and press the “Launch Control”- button. It takes less than a second and you will see the blue “SHIFT” light flashing, this means that the Full Race Unit has memorised it, release the “Launch Control” button.

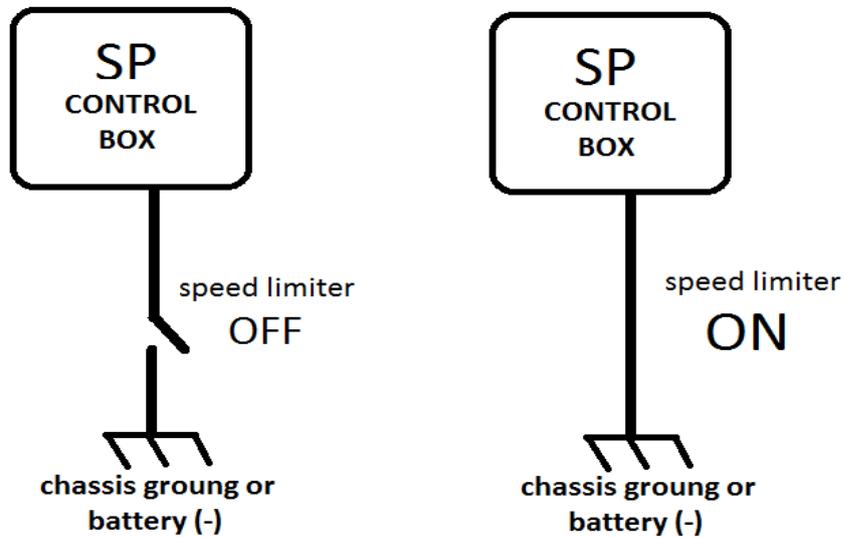
**NOTE:** The Launch Control activates when the rear wheel speed is zero and the engine speed exceeds 3000RPM.

#### Adjusting the Speed Limiter:

- Place the bike on a rear wheel paddock stand or on a dynamometer. Disconnect the shift sensor connector from the Full Race Unit control box, the ignition key must be off!
- Connect the programming board to the Full Race Unit control box –(shift sensor connector).
- Start the engine and put the bike on **1st gear**, then accelerate the engine to the desired speed, hold it there and press the “Pit Limiter” button, it takes less than a second and you will see the blue “SHIFT” light flashing, this means that the Full Race Unit has memorised it, release the “Pit Limiter”- button.

- Turn the ignition key OFF and reconnect the shift sensor to the Full Race Unit connector!

**NOTE:** The Speed Limiter activates when the Full Race Unit control box single pin connector is connected to the chassis ground or battery(-)! Use the single Blue wire with connector-(**provided**) and the external handlebar switch-(**provided**) to activate the Speed Limiter mode!



- ST(Shift Time) adjusts the engine interrupt time for which the gearbox must engage the next gear after you apply enough pressure to the gear lever:... turn it clockwise for more time or anticlockwise for less time. The adjuster starts from 50ms(milliseconds ), each setting is recognized by a light code on the blue "SHIFT" light. Light codes are implemented to ensure exact settings are selected. The following table shows the time settings with the corresponding light codes:

50ms-one short blink	"-"
55ms-two long blinks	" _ _ "
60ms-three long blinks	" _ _ _ "
62,5ms-one long blink	" _ _ "
65ms-two long blinks	" _ _ _ "
67,5ms-three long blinks	" _ _ _ _ "

70ms-one continuous blink " \_\_\_\_\_ "

75ms-one short and one continuous blinks " \_ \_\_\_\_\_ "

80ms-one continuous and one short blinks " \_\_\_\_\_ \_ "

### **Tips on adjusting your Quickshifter!**

The Full Race Unit comes with best overall setting for your motorcycle make and model but because each motorcycle sprocket ratio, chain free-play, suspension settings and riding style are different, fine tuning is often necessary for best results and seamless up-shifts. Use the following as a general guide when adjusting your Quickshifter:

If when using the Quickshifter the gearbox seems to push back the shift lever, the shift feels rough and you have experienced missed gears - this means that the gearbox needs more time to react-turn the adjuster clockwise for more time.

If when using the Quickshifter the motorcycle front dives for too long and the shift seems slow - this means that you have to lower the shift time - turn the adjuster anticlockwise for less time. Best results for most motorcycles are achieved with the following time settings - (62,5ms/65ms/67,5ms/70ms).

**NOTE:** : Before changing the factory setting make sure to remember the length of the Shift Time, so that you will be able to set it back and have a good starting point. Do not attempt to insert a larger screwdriver and never force the adjuster beyond MIN and MAX levels, the turning cycle is 270 degrees. If you want to switch OFF the Full Race Unit functions for some reason, unplug the Shift Sensor from the Full Race Unit control box.

The Quickshifter has a threshold RPM which means that the engine speed must exceed the minimum threshold in order to activate the Quickshifter function. The factory setting is over 3000RPM- (Revolutions Per Minute) and this is not adjustable.

NOTE: It is important that your motorcycle spark plugs are within the manufacturer service limit and specifications otherwise the operation of the SP Full Race Unit system will be compromised!

If for some reason you're experiencing difficulties with adjusting your Shift Power product, you think it is not functioning as expected or you would like to share your opinion please feel free to contact your dealer-he will support you with a professional help or contact us online.

**Web:** [www.ShiftPower.co.uk](http://www.ShiftPower.co.uk)    **Email:** [info@ShiftPower.co.uk](mailto:info@ShiftPower.co.uk)

This product is covered by one year warranty against malfunctions from the original date of purchase under the following conditions:

1. If any of the components are physically damaged by an external force and/or improper installation, the warranty will be voided, so please make sure it is installed by a professional as most, if not all malfunctions will result from an improper installation.
2. If any malfunction occurs, the faulty component will be exchanged with a new one if repair is not possible: the buyer must send it back to the dealer and he/she is responsible for covering all shipping costs.
3. Warranty will be given to the buyer himself/herself and it begins from the original date of the purchase.

### **Terms of use:**

- ❖ This product is intended for racing use only.
- ❖ The specifications of this product and the contents of this manual can be subject to modification without notice.
- ❖ The manufacturer and its suppliers do not assume any responsibility towards the purchaser or towards anyone else in relation to any damages, expenses, loss of profits or any other loss resulting from the use of this product.

**Thank you for using the SP-Full Race Unit!**