



## Universal Ignition Quick Shifter

### 4-112 Technical Manual



### **SAFETY**

When installing this product it is advisable to position the motorcycle so it cannot cause injury or damage by falling over/rolling forwards or backwards, the use of a rear stand is recommended and if necessary chock the wheels.

Ensure that the ignition is switched off at all times unless instructed otherwise within this manual. When removing or adding electrical cables to the vehicle battery or wiring harness always remove the negative cable/terminal before the positive cable/terminal. Replace the negative cable/terminal last to avoid shorting the electrical system.

### **GOOD INSTALLATION PRACTICE**

**TAKE YOUR TIME!** When mounting the DJ-QS control unit ensure that the unit is protected from excessive vibration and the environmental elements where possible and that it is securely mounted. When using adhesive pads ensure that the mounting surfaces are grease/dust free by wiping thoroughly with an alcohol based fluid.

When routing electrical cables ensure the cables cannot become trapped or pinched which could result in malfunction and secure with cable ties where necessary. If you are unable to utilise the plug & play connectors then for a really professional installation solder all wire connections where applicable. Remember to place heat shrink sleeves over the wires before making the wire connections.

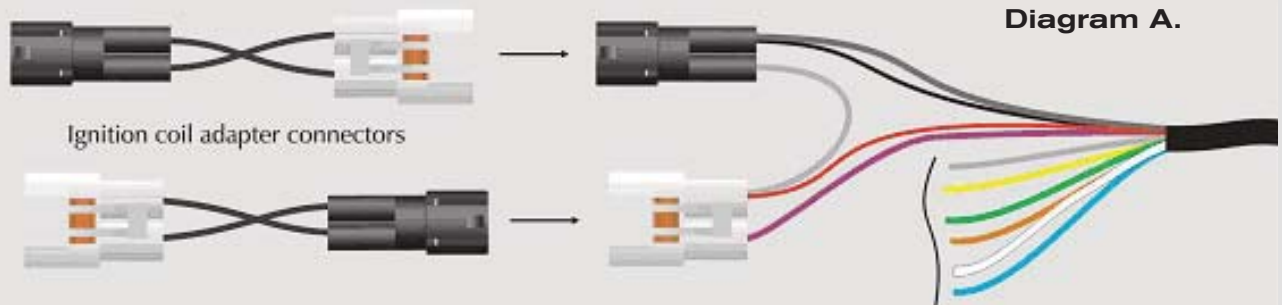
If you encounter difficulties with this installation please do not struggle, call your vendor/supplier for professional assistance.

### **INSTALLING THE DJ-QS QUICKSHIFTER CONTROL UNIT**

**ATTENTION!** The DJ-QS Quickshifter control unit must be positioned where they do not exceed an operating temperature of +130° F and should be installed where it is protected from vibration and the environmental elements.

## IMPORTANT DJ-QS CONTROL UNIT PRE-PROGRAM CHECKS

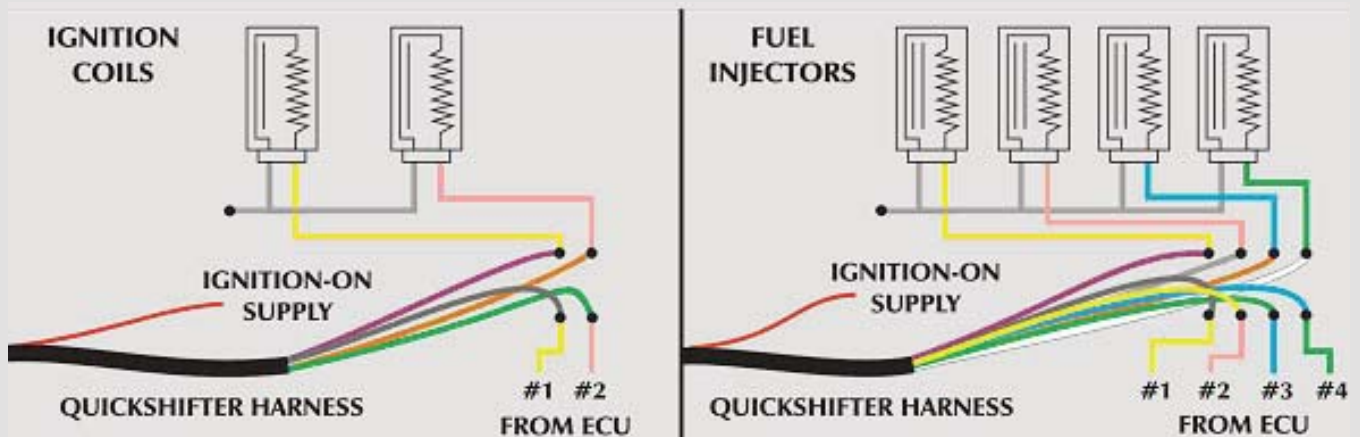
**ATTENTION!** If your motorcycle has stick ignition coils then these ignition coils will be either Denso or Mitsubishi type. These ignition coils may require you to fit the ignition coil adapter connectors into the connectors as illustrated below if the DJ-QS quickshifter control unit does not power-up, this is due to the ignition coils being available in differing formats. Failure to fit these adapters may result in a possible engine misfire and no Intellishift™ quickshifter functionality. See *diagram A*.



- A Route the harness through the motorcycle/vehicle so the 4 white and 4 black connectors end up in close proximity to the ignition coils. One at a time unplug the original connector on each ignition coil and connect one male and female quickshifter harness connector to the ignition coil and its original connector. You will need to do this on each of the ignition coils.

**Note:** If your vehicle/motorcycle has a twin ignition coil system without suitable connectors or you wish to connect to the fuel injectors remove/cut the connectors from the end of the quickshifter harness and interrupt/connect directly to the signal side of each ignition coil/fuel injector as illustrated shown below. You will need to connect the thin red wire to a suitable ignition-on supply. See *diagram B*.

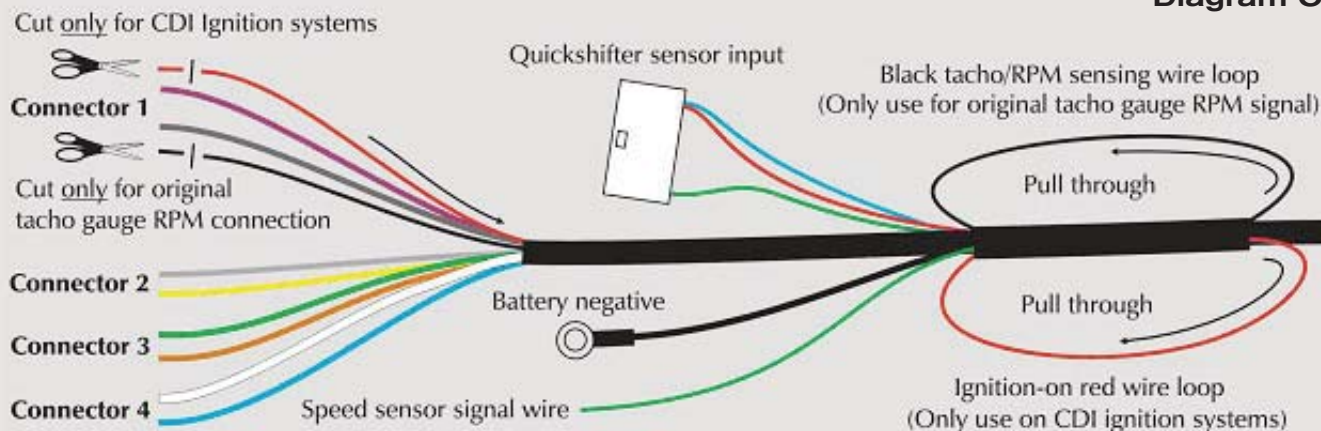
**Diagram B.**



**ATTENTION!** If your motorcycle has a CDI ignition system then you must cut the thin red wire close to the ignition coil connector 1 at the end of the quickshifter harness and then pull the switched +12 volt red wire back through the quickshifter harness via the red wire loop and then connect directly to a switched +12 volt supply. Failure to do this may result in an engine misfire on Connector 1. See *diagram C*.

**Note:** The thin black auxiliary tach/RPM sensing wire may need to be connected to the motorcycles original tach signal wire to facilitate Intellishift™ quickshifting if your application does not have a suitable CDI ignition coil signal. See *diagram C*.

**Diagram C.**



- B Place the black ring terminal on the negative side of the battery only.
- C Connect the green speed sensor wire to the bikes original speed signal wire. Usually the bike has a 3 wire speed sensor, one wire ground, one wire +5-12v and the other is the speed signal that goes to the bikes original gauges.
- D Switch on the ignition and start the engine, check that the DJ-QS control unit powers up by checking the Blue power LED is illuminated, the Orange Intellishift LED may be illuminated too at this pre-program stage. If the unit powers up then switch off the ignition/engine. See *diagram 1*.

**Note1:** (If the control unit does not power-up and the Blue power LED does not illuminate then check to see if the ignition coil adapter connectors are required or if your ignition system is a CDI ignition type. If you have a CDI ignition system then you should cut the thin red ignition-on wire at the ignition coil connector and pull this wire back through the loom where it loops out of the loom half way down, it might be tough to pull through but it will go, connect this wire to a +12volt ignition-on source, rear brake light switch supply or headlight supply or direct ignition switch supply. See *diagram A*.

- E Get to the Dyno, or use a rear stand very carefully, switch on the ignition and start the engine, select 2nd gear, let the clutch out and check that the Yellow Gear/Speed signal LED flashes when the back wheel is turning and that the Red Interrupt duration/RPM signal LED flashes in unison with the engine when it is running, this is to check the Control unit is seeing the correct signals to facilitate full Intellishift™ functionality, now switch off the ignition/engine again, if the DJ-QS control unit is detecting these signals then proceed to **GENERAL PROGRAMMING** on page 4. See *diagram 2*.

**Diagram 1.**



**Diagram 2.**



**Note2:** (If the Red interrupt duration/RPM signal LED does not flash in unison with the engine then the engine does not have a suitable RPM signal, you must now cut the thin black tacho signal sensing wire at the ignition coil connector and pull this wire back through the loom where it loops out of the loom, it might be tough to pull through but it will go, now connect it to the bikes original tacho signal wire. This wire normally runs directly from the bikes ECU to the back of the gauges.

If you have had to carry out either of the 2 above notes then re-start the engine to check you have made the correct connections and that the DJ-QS is seeing the correct speed signal and RPM signal and that it is operating as described, if this is the case proceed with the following programming stages.

**ATTENTION!** If the Red interrupt duration/RPM signal LED still does not flash in unison with the engine then Intellishift™ quickshifting is not available. Please see **BASIC QUICKSHIFTING WITHOUT INTELLISHIFT™** on page 6. where you will find instructions on how to select the basic default setting.

## GENERAL PROGRAMMING

1a Press and hold the program button, switch on ignition and start engine, now release the program button, the blue Power LED should be on and the orange Intellishift LED should start to flash in unison with the engine, the Gear/Speed signal and Interrupt duration/RPM signal LEDs should be off at this point. See *diagram 3*.

### Setting the Intellishift™

1b Now raise the engine RPMs to half the RPM range of the engine, hold RPMs steady at this point and then press the program button once momentarily to set the Intellishift quickshifter parameters, let the RPMs fall back to idle speed, then press and hold the program button for approximately 4 seconds until you see the yellow gear/speed signal LED illuminate solid, then release the button, this yellow gear/speed signal LED will illuminate for about 4 seconds then it will go out and flash back on once at a time to indicate that 1st gear needs to be programmed, this yellow gear/speed signal LED will continue to flash on once until you have programmed 1st gear. See *diagram 4*.

**Note:** If you do not wish to program the gears into the DJ-QS control unit this Quickshifter system will function very well running purely on Intellishift™ without the need for the gear programming, if this is the case then simply switch off the ignition/engine at this point as no further programming is required.

If you do wish to take advantage of the full capabilities of this advanced Quickshifter system with the reducing interrupt times through the gears then do not switch off the ignition/engine and continue onto the next stage of programming, section 2.

Diagram 3.



Diagram 4.



- 2 Select first gear, let the clutch out, raise the engine RPMs to approximately 1/2 of the RPM range and hold steady at this RPM, then press the program button once momentarily to program 1st gear, now the yellow gear/speed signal LED should flash twice to indicate that 2nd gear needs to be programmed, select second gear, raise engine RPMs to approximately 1/2 of the RPM range again and hold steady at this RPM, then press the program button once momentarily to program 2nd gear and so on until you have programmed the gearbox's top gear, usually sixth, when you have programmed sixth gear you will notice that the Yellow gear/speed signal LED will illuminate solid, now press and hold the program button for 4 seconds or so to authenticate these settings, the red interrupt duration/RPM signal LED will now illuminate for approximately 4 seconds then will go off.
- 3 Now switch off the ignition/engine to authenticate the programming settings.

## TECHNICAL INFORMATION

We would suggest that at this point no more programming is required. We have entered reducing interrupt times for each gear, listed below are the base settings. The settings may seem shorter than normal interrupt times experienced with other types of Quickshifter systems, however Intellishift™ allows shorter interrupt times on some cylinders in some gears which results in faster smoother shifts.

### **Default factory interrupt settings:**

**1st gear - 60ms 2nd gear - 53ms 3rd gear - 53ms 4th gear - 48ms 5th gear - 48ms 6th gear - 48ms**

These figures are only the 'front end', 'the info you can see', there are literally hundreds of different interrupt times selected for different engine RPMs in different gears for different cylinders, that's the Intellishift™ part. This is a good starting point and gives great "out-of-the-box" feel. These interrupt times can however be reduced by following the next fine tuning procedure.

## FINE TUNING

**Scenario:-** You want to reduce the interrupt setting in 1st gear from the factory default setting.

- 1a Re-enter the programming routine by pressing and holding the program button, switch on the ignition/engine, now release the program button, the Blue Power LED should be on and the Orange Intellishift LED should be flashing. See diagram 5.
- 1b To skip the Intellishift programming section and move to the next section press and hold the program button for approximately 3 seconds until you see the Yellow gear/speed signal LED illuminate, then release the button. See diagram 6.
- 1c To skip the gear programming section and move onto the interrupt duration section press and hold the program button again for approximately 3 seconds until you see the yellow gear/speed signal LED flash on once to indicate first gear interrupt duration is to be adjusted, you will also see the Red interrupt duration/RPM signal LED come on for approximately 3 seconds and then it will go off to confirm you have entered the interrupt time adjustment section.

**Note1:** When the duration/RPM signal LED is off in this interrupt duration section this indicates the default interrupt duration is selected as illustrated in the *Default factory interrupt settings* on page 5. and that no interrupt duration reduction has been carried out from the default setting.

**Diagram 5.**



**Diagram 6.**



**Note2:** You will see that the Yellow LED flashes on once to indicate 1st gear interrupt setting is to be adjusted. When you press the program button once momentarily you will see the Red interrupt duration/RPM signal LED flash on once, this indicates a 2ms decrease in interrupt duration in first gear, if you press the program button again once momentarily you will see the red interrupt duration/RPM signal LED flash twice to indicate a 4ms decrease in duration and so on until you see a maximum of 5 red LED flashes to indicate a total 10ms decrease in duration in 1st gear, one more press of the program button will cycle you through to the default setting again with the Red LED going back off. See diagram 7.

When you have programmed in your desired interrupt duration setting in 1st gear you can now either switch off the ignition/engine or press and hold the program button for approximately 3 seconds so the Yellow gear/speed signal LED flashes twice to indicate you have entered 2nd gear interrupt duration setting.

If you wanted to skip 2nd gear and move to 3rd gear press and hold the button without releasing for approximately 3 seconds to reach 3rd gear settings and so on, you can now reduce the interrupt duration in 3rd gear as described above. When you have finished your interrupt duration settings you can off the ignition/engine to save and authenticate your adjustments.

### **Additional notes**

If the ignition/engine is switched off at any point by accident during the set-up procedure the control unit will remember what has been set or been altered during that particular set-up procedure.

In normal run mode the Power LED should be illuminated Blue, the Yellow Gear/Speed signal LED and Red Interrupt duration/RPM signal LED should flash in unison with their respective signals. The Orange Intellishift LED will only be illuminated if it has been set and will illuminate at or above the half engine RPM point.

**Diagram 7.**



### **BASIC QUICKSHIFTING WITHOUT INTELLISHIFT™**

There maybe in some cases with older motorcycle models or unsuitable models the inability to run in either Intellishift™ mode and that the basic default setting may have to be initialised. This basic default setting will give a 'smooth-ish' & 'quite fast' quickshift function still superior to other Quickshift systems. The interrupt will occur at all engine RPMs regardless of engine performance.

- 1 To select the basic default setting press and hold the oval programming button, switch on the ignition only, do not start the engine, now release the programming button, the Blue power LED should be illuminated, now momentarily press the program button once to select the default setting, the Orange Intellishift™ LED should now illuminate solid. Now switch off the ignition to save this default setting. See diagram 8.

**Note:** When the engine is running the Blue power LED and the Orange Intellishift LED will be permanently illuminated. No other LED indicators will be illuminated when running in default mode.

**Diagram 8.**

