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## INTRODUCTION

This installation manual explains how to install a **Nextup Controller** onto a motorcycle. The work should be performed by a trained mechanic working in a shop environment. If the installer encounters any problems along the way they should review the troubleshooting section and then contact the company for support if the problem can not be resolved.

The **Nextup Controller** is a transmission control system for motorcycle engines. A bike equipped with a **Nextup Controller** should be able to upshift using a button or quickshifter at full throttle. Best results obtained when shifting in upper RPM range.

## STEP ONE -

### Controller and Wiring

It is recommended that the Nextup Controller be installed using a Nextup wiring harness. When installing the Nextup Controller with a Nextup wiring harness use the installation manual specific to the wiring harness. Otherwise follow the general instructions below:

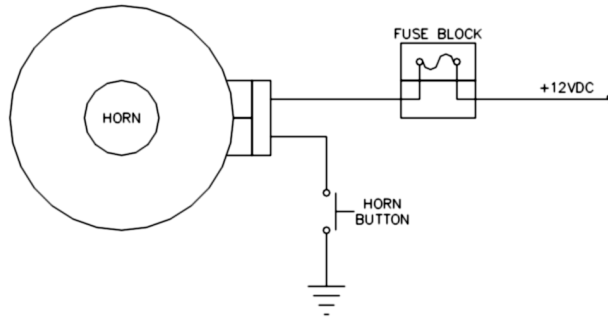
Tools and Supplies Needed for Installation Without a Wiring Harness:

- Wire cutter
- Wire stripper
- Insulated crimper
- Insulated butt splices, ¼" ring terminals, ¼" blade terminals, #4 spade connectors, and wire taps
- Multi-meter
- Wire (18 AWG minimum gauge)
- Plastic tie straps

Note: Solder joints can be used in place of butt splices and wire taps.

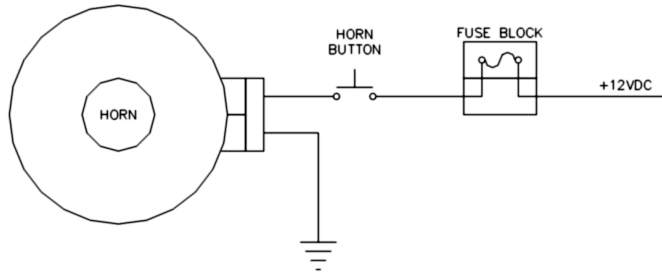
1. Securely mount the controller in a dry place away from heat sources.
2. Determine whether the motorcycle wiring is *type 1* (Figure 1-1) or *type 2* (Figure 1-2). Refer to the motorcycles wiring diagram or test the OEM horn connector with the ignition ON (Figure 1-3). *Type 1* wiring can be verified by measuring 12 volts on one of the terminals. Note the 12 volt wire colour. *Type 2* wiring can be verified by measuring 12 volts on one of the terminals only when the horn button is pressed.

TYPE 1 HORN

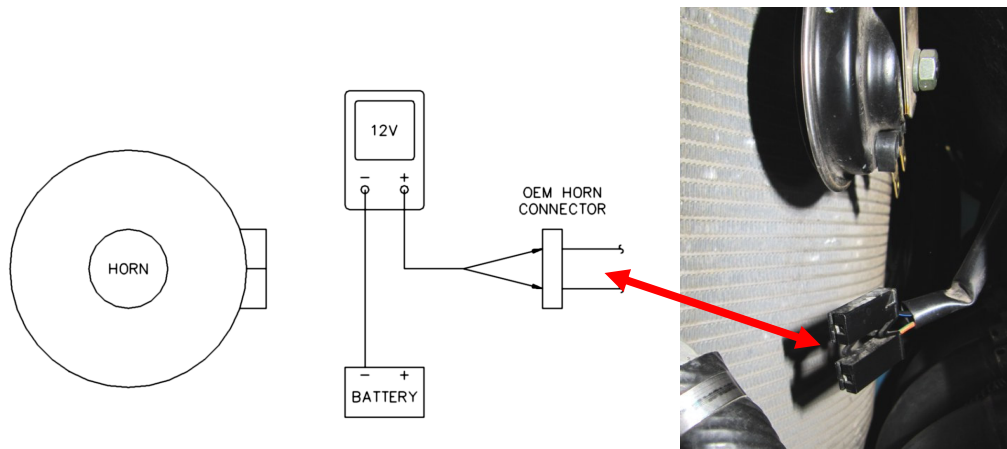


**Figure 1 - 1 : Type 1 Wiring**

TYPE 2 HORN



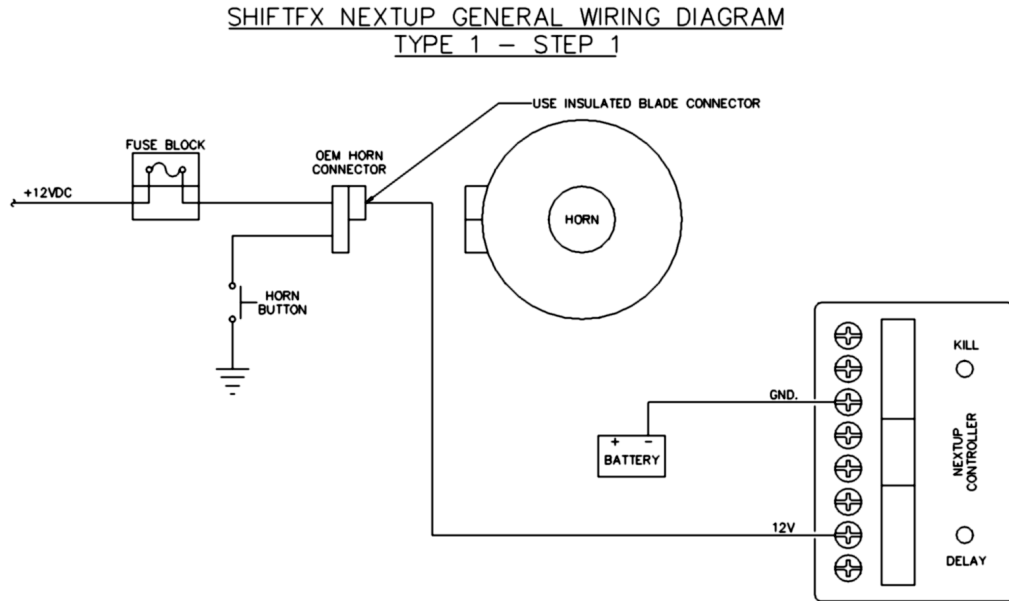
**Figure 1 - 2 : Type 2 Wiring**



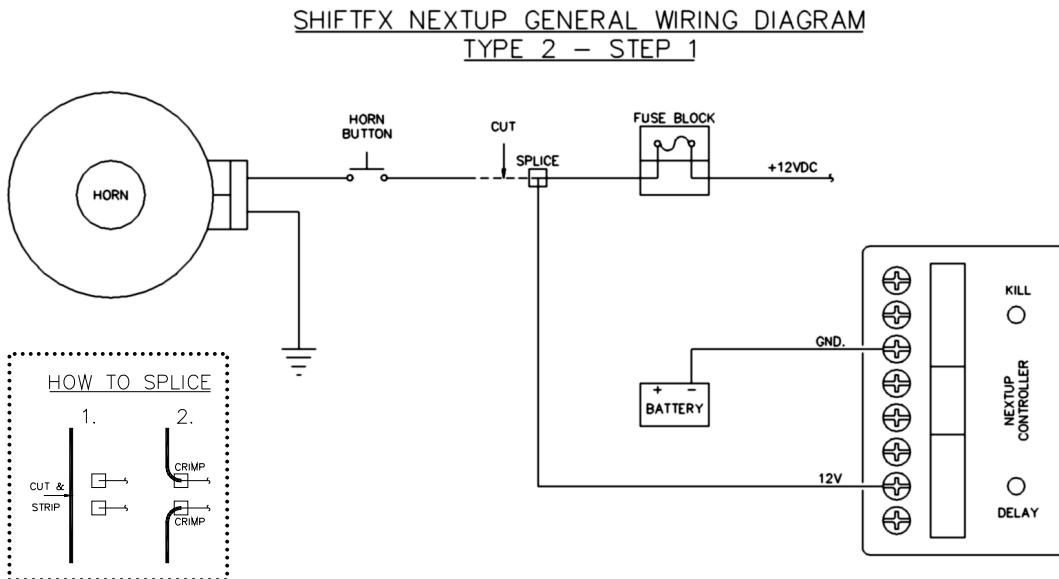
**Figure 1 - 3 : Test for Wiring Type**

3. Turn the ignition off. For *type 1* wiring, make the power and ground connections as per wiring diagram (Figure 1-4). For *type 2* wiring, make the

power and ground connections as per the wiring diagram (Figure 1-5). Pull wire to the controller, cut, strip, and crimp on the spade connectors.



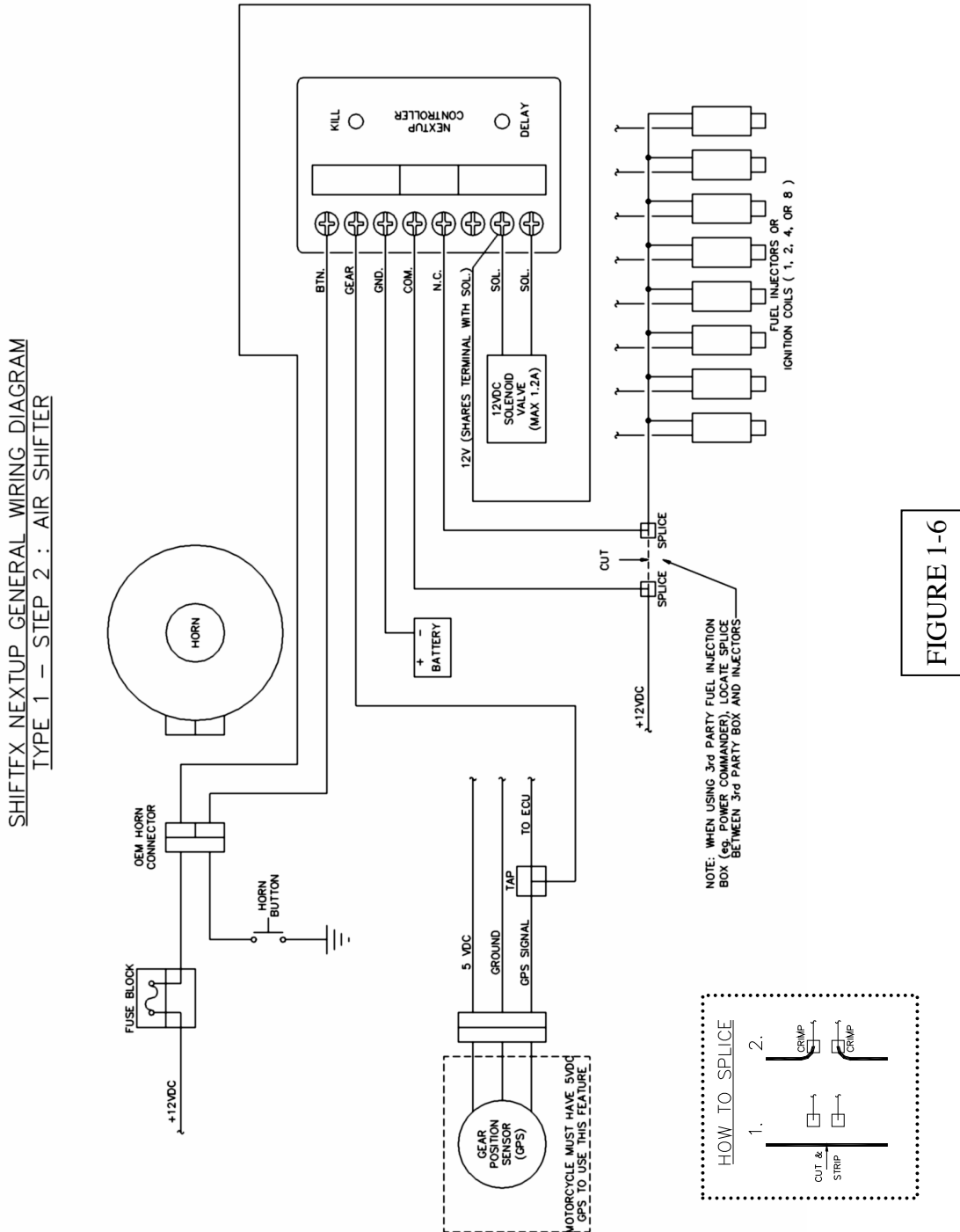
**Figure 1 - 4 : Type 1 Power and Ground Connections**



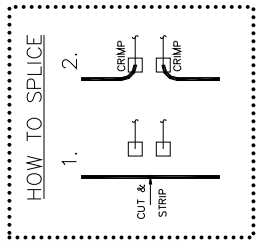
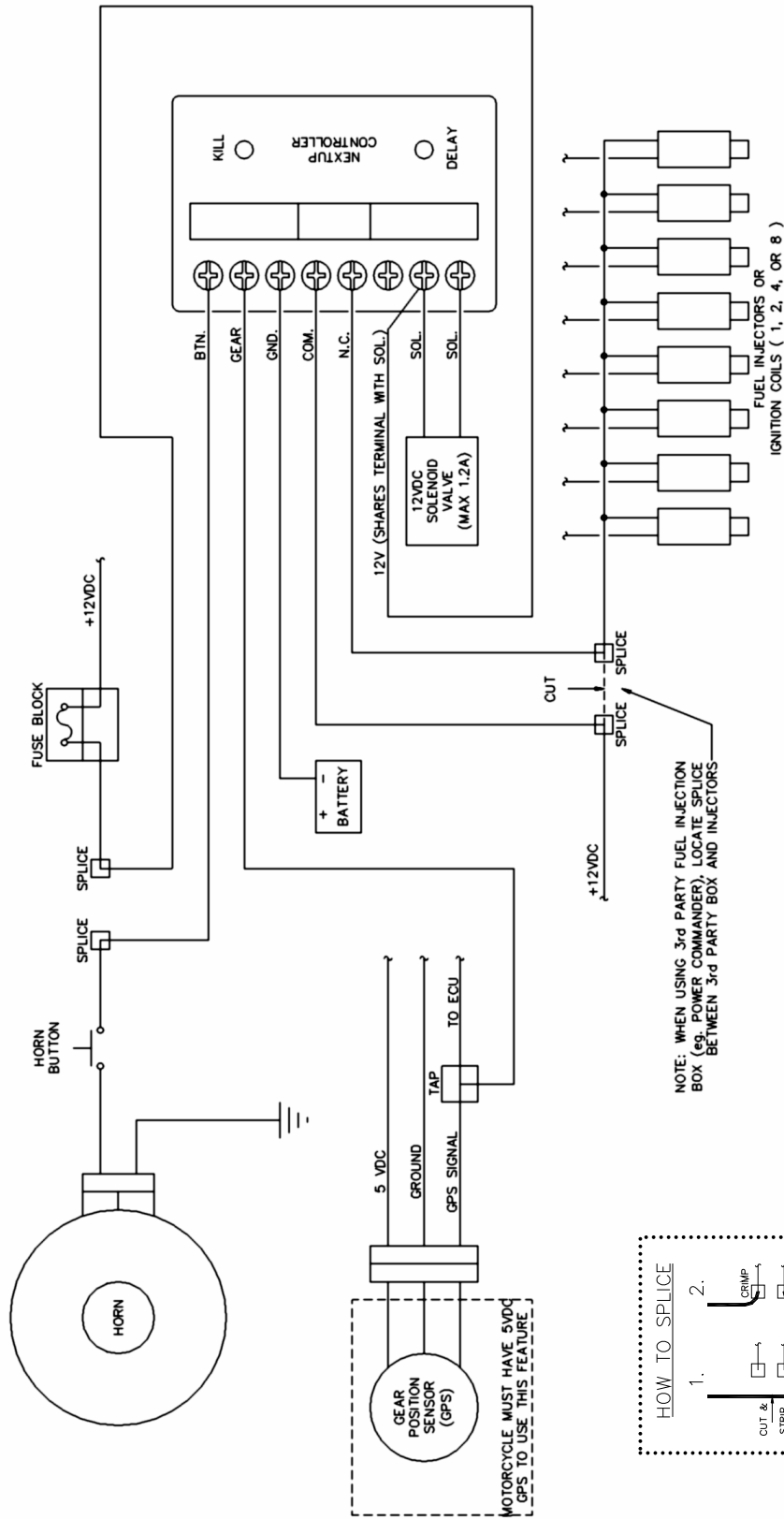
**Figure 1 - 5 : Type 2 Power and Ground Connections**

4. Turn the motor cycle ignition ON. Verify that both LED bar graphs are lit on the controller. DO NOT PROCEED TO THE NEXT STEP UNTIL POWER AND GROUND CONNECTIONS ARE VERIFIED.

- Turn the ignition off. For *type 1* wiring, finish the connections as per wiring diagram (Figure 1-6). For *type 2* wiring, finish the connections as per wiring diagram (Figure 1-7). Pull wire to the controller, cut, strip, and crimp on the spade connectors. Read notes 6, 7, and 8 for additional help.



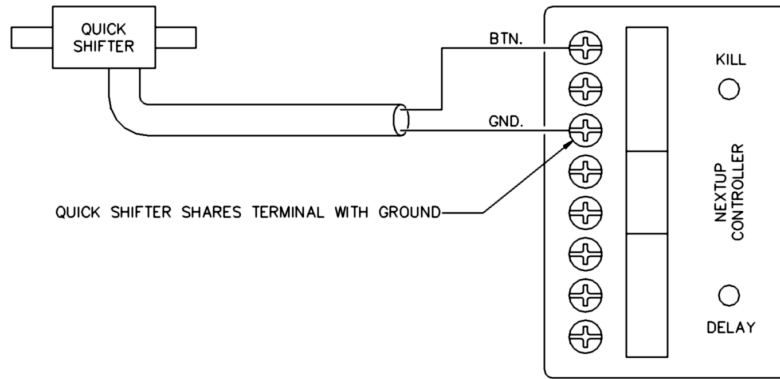
SHIFTFX NEXTUP GENERAL WIRING DIAGRAM  
TYPE 2 - STEP 2 : AIR SHIFTER



NOTE: WHEN USING 3rd PARTY FUEL INJECTION BOX (eg. POWER COMMANDER), LOCATE SPLICE BETWEEN 3rd PARTY BOX AND INJECTORS

FIGURE 1-7

- When using the Nextup Controller with a quickshifter disregard the button and solenoid valve connections shown on Figures 1-6 and 1-7 and follow Figure 1-8.



**Figure 1 - 8 : Quickshifter Connection**

- If the motorcycle has a 5 volt DC gear position sensor, tap into the gear position signal wire. Refer to the motorcycles wiring diagram to locate this wire. This wire is typically Pink on Suzuki motorcycles and Red with a Green stripe on Kawasaki motorcycles. An example of a wire tap is shown in Figure 1-9.



**Figure 1 - 9 : Gear Position Sensor wire tap on Kawasaki ZX14**

- Use tie straps to bundle and tie down the loose wires.

## STEP TWO - Setup and Tuning

The Nextup Controller should now be completely wired into the bike. Test power and ground connections by turning the ignition (key) switch to the ON position. The LED bar graph display should light up and stay lit.

### **Tuning WITHOUT a Gear Position Sensor**

1. The Nextup Controller can be used to set the amount of time between when the solenoid valve is turned on and the engine power is cut. This delay value can be set by pressing the Delay button repeatedly until the display bar shows the amount of time, in milliseconds, you want the delay to happen. Wait 2 seconds and the bar graph will flash the LED lights telling you that the setting has been written to memory.
2. The Nextup Controller can be used to setup the amount of time the engine power is cut (aka "kill time"). This kill time can be set by pressing the Kill button repeatedly until the display bar shows the amount of time, in milliseconds, you want the kill to happen. Wait 2 seconds and the bar graph will flash the LED lights telling you that the setting has been written to memory.

***Congratulations! You're Done!***



### **Tuning WITH a Gear Position Sensor**

1. Turn both the ignition (key) switch AND the engine stop switch to the ON position.
2. **IMPORTANT** – the Nextup controller **must** be configured to work with your motorcycles gear position sensor. Motorcycles such as Suzuki use a STANDARD gear position sensor that outputs lower voltage values at lower gear positions. Some motorcycles, such as Kawasaki, use a REVERSE gear position sensor that outputs higher voltage values at lower gear positions. If you do not know what type of gear position sensor you have use a multimeter connected between the Gear and Ground terminal screws and compare the voltage reading in 1<sup>st</sup> gear and 2<sup>nd</sup> gear. If the 1<sup>st</sup> gear value is lower than the 2<sup>nd</sup> gear value you have a STANDARD gear position sensor.

Refer to Figure 2-1 when configuring the Nextup controller. Reset your Nextup controller by holding both the Delay and Kill buttons until the LED bars turn OFF (takes about 5 seconds).

- a) Setup the Nextup controller for the STANDARD (Suzuki) gear position sensor by releasing the Delay button first. The Nextup controller will confirm this by flashing the Delay bar graph.
- b) Setup the Nextup controller for REVERSE (Kawasaki) gear position sensor by releasing the Kill button first. The Nextup controller will confirm this by flashing the Kill bar graph.

The Nextup controller is now configured.

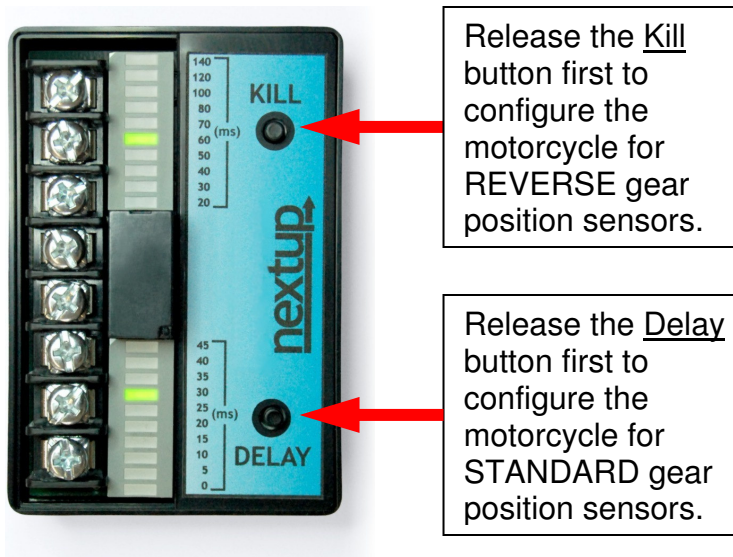


Figure 2 - 1

3. Place the motorcycle into 1<sup>st</sup> gear.
4. The delay value is the amount of time between when the solenoid valve is turned on and the engine power is cut. Set the delay value by pressing the Delay button repeatedly until the display bar shows the amount of time, in milliseconds, you want the delay to happen. Wait 2 seconds and the bar graph will flash the LED lights telling you that the setting has been written to memory.
5. The kill time is the amount of time the engine power is cut during an upshift. This kill time can be set by pressing the Kill button repeatedly until the display bar shows the amount of time, in milliseconds, you want the kill to happen. Wait 2 seconds and the bar graph will flash the LED lights telling you that the setting has been written to memory.
6. Repeat steps 4 and 5 for gear positions 2, 3, 4, and 5. It is OK to leave delay and kill times unchanged for two or more gear positions.
7. Once complete, go back through the gears and confirm the LED bar graph displays the correct timing for each gear. Make changes as needed.

***Congratulations! You're Done!***

## SUGGESTED STARTING VALUES

|  | Engine Setup        |                   |
|--|---------------------|-------------------|
|  | Naturally Aspirated | Boosted / Sprayed |
| <b>Delay</b>                                     | 10 – 20 ms          | 10 – 20 ms        |
| <b>1<sup>st</sup> Gear Kill</b>                  | 40 – 60 ms          | 60 – 80 ms        |
| <b>2<sup>nd</sup> Gear Kill</b>                  | 30 – 50 ms          | 50 – 60 ms        |
| <b>3<sup>rd</sup> – 5<sup>th</sup> Gear Kill</b> | 30 – 40 ms          | 40 – 60 ms        |

When using a quick shifter, the *Delay* value can be tuned to vary the amount of preloading done by the foot before the power cut happens. For best results set the *Delay* value between 0 – 20 ms.

## TROUBLESHOOTING

The following is a list of trouble signs and possible solutions:

| <b><i>Controller does not light up</i></b>   |
|--|
| <ul style="list-style-type: none"> <li>• <b>Blown Fuse</b> - Replace with one of the same rating.</li> </ul> |
| <ul style="list-style-type: none"> <li>• <b>Poor ground connection</b> – Check grounding circuit.</li> </ul> |
| <ul style="list-style-type: none"> <li>• <b>Ignition in OFF position</b> – Turn ignition ON.</li> </ul>      |

| <b><i>Controller unresponsive when Upshift button pressed.</i></b>  |
|---|
| <ul style="list-style-type: none"> <li>• <b>Bad button wiring</b> – Ensure the button terminal is being grounded when the Upshift button is pressed.</li> </ul> |

| <b><i>Controller clicks during Upshift but the solenoid valve does not open.</i></b>   |
|--|
| <ul style="list-style-type: none"> <li>• <b>Valve draws too much current</b> – Use valve rated at 1.2 A (14.4W) of power or less.</li> </ul> |

|  |
|--|
| <b><i>Controller bar graph display jumps to incorrect Delay and Kill values in certain gears.</i></b>  |
| <ul style="list-style-type: none"> <li>• <b>Controller incorrectly configured</b> – Repeat setup steps to reset and re-configure controller.</li> </ul>              |
| <ul style="list-style-type: none"> <li>• <b>Noisy gear position signal</b> – Check gear position signal tap and screw terminal connections for looseness.</li> </ul> |

|  |
|--|
| <b><i>Motorcycle FI light comes on after shift</i></b>   |
| <ul style="list-style-type: none"> <li>• <b>ECU is sensing power cut</b> – Model specific Nextup wiring harnesses can be used to prevent the FI light turning on.</li> </ul> |

## CONTACT INFORMATION & DISCLAIMER

| <b>Distributor</b>  | <b>Manufacturer</b>  |
|---|--|
| Orient Express Racing<br>28 Grand Blvd., North<br>Brentwood, NY<br>11717<br>USA | Biperformance Development Corp.<br>160 - 12811 Clarke Place<br>Richmond, BC<br>V6V 2H9<br>Canada   |
| Web:           www.orientexpress.com<br>Phone:        1.800.645.6521            | Web:           www.biperformance.ca<br>Email:         info@biperformance.ca<br>Phone:         604.782.2453<br>Fax:            604.304.0526 |

**- DISCLAIMER -**

**This Product is for Off-road Use Only**

The Purchaser understands and recognizes that this product is subject to many and varied conditions due to the manner in which it is to be installed and used. It is the purchaser's responsibility to determine the suitability of this product for his or her application. The Purchaser agrees to indemnify and hold Biperformance Development Corporation harmless from any loss, damage, injury, cost of repair, or consequential damages of any kind in connection with the sale or use of this product.