



## NEXTUP PnP CONTROLLER SUZUKI AIR SHIFTER INSTALLATION MANUAL - VER. 1.4

### CONTENTS

<u>INTRODUCTION</u>	<u>1</u>
<u>STEP-BY-STEP INSTALLATION</u>	<u>2</u>
<u>SET-UP AND TUNING</u>	<u>7</u>
<u>SUGGESTED STARTING VALUES</u>	<u>10</u>
<u>TROUBLESHOOTING</u>	<u>10</u>
<u>CONTACT INFORMATION &amp; DISCLAIMER</u>	<u>11</u>
<u>APPENDIX</u>	<u>12</u>



### INTRODUCTION

This installation manual explains how to install a *Nextup PnP Controller* onto a Suzuki brand motorcycle equipped with an air shifter using the appropriate *Nextup Wiring Harness*. 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 cannot be resolved.

The *Nextup PnP Controller* is a transmission control system for motorcycle engines. A bike equipped with a *Nextup PnP Controller* should be able to upshift by pressing the horn button at full throttle (see disclaimer). Best results are obtained when shifting in the upper RPM range.

## STEP-BY-STEP INSTALLATION

1. Prop up the gas tank.
2. Locate the fuel injectors and gear position sensor connector (see Figure 1).

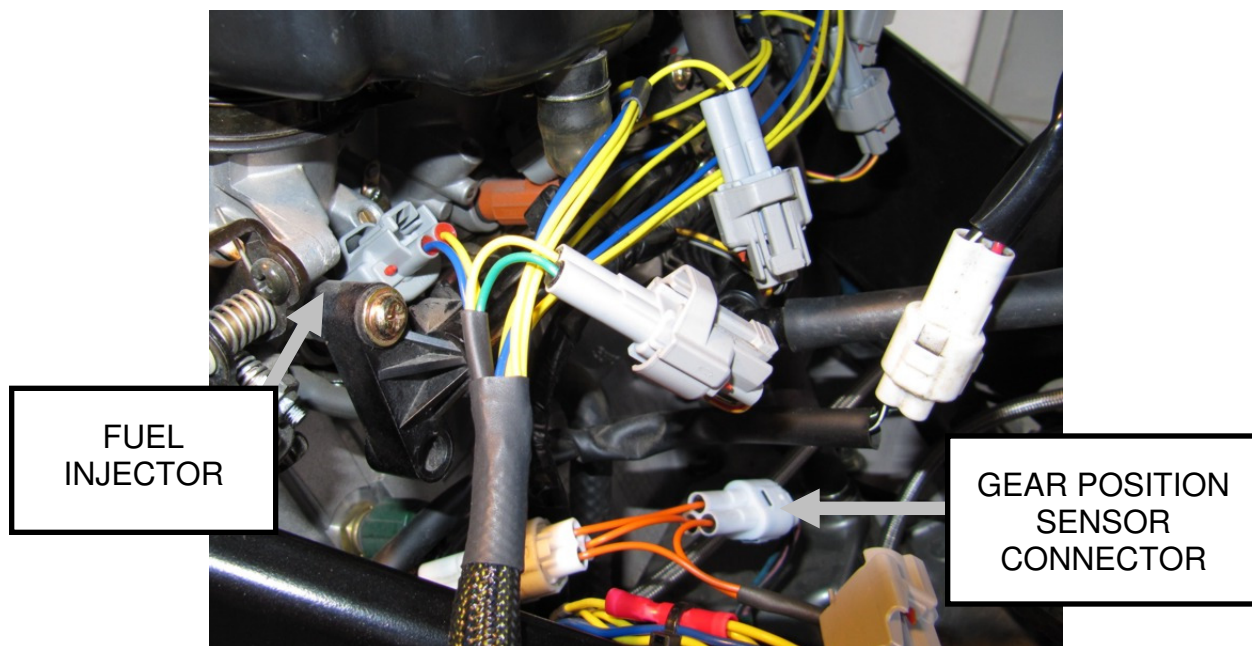


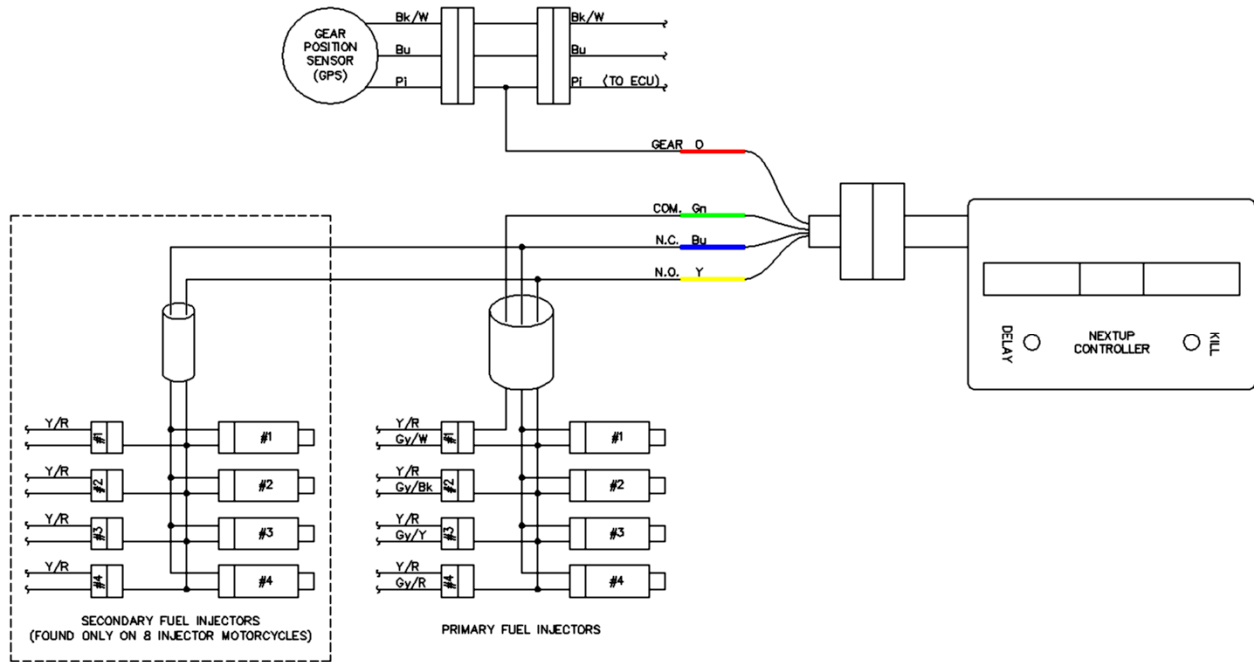
Figure 1 : Plug-n-play connections

3. Install the wiring harness by making connections as shown in Figure 2. Each fuel injector will have a male and female pair to plug into. **DO NOT** interchange fuel injectors and fuel connectors. The easiest way to avoid this is by connecting the harness to the fuel injector's **one-at-a-time**.

**Note:** When used in combination with 3<sup>rd</sup> party fuel injection boxes (eg. Power Commander), ensure that the *Nextup Wiring Harness* plugs **directly** into the motorcycle fuel injectors.

**Note:** Modifications to your gear position sensor including the TRE (Timing Retard Eliminator) may cause your gear position sensor to stop working. Wiring may need to be returned to stock for the gear position input to work.

**NEXTUP PnP CONTROLLER**  
**SUZUKI AIR SHIFTER INSTALLATION MANUAL - VER. 1.4**



**Figure 2: Fuel injector and gear position sensor connections**

**Power and Ground**

4. Connect the ring terminal on the **BLACK** ground wire to the motorcycle battery ground terminal.
  
5. Unplug the horn connector from the horn (see Figure 3).



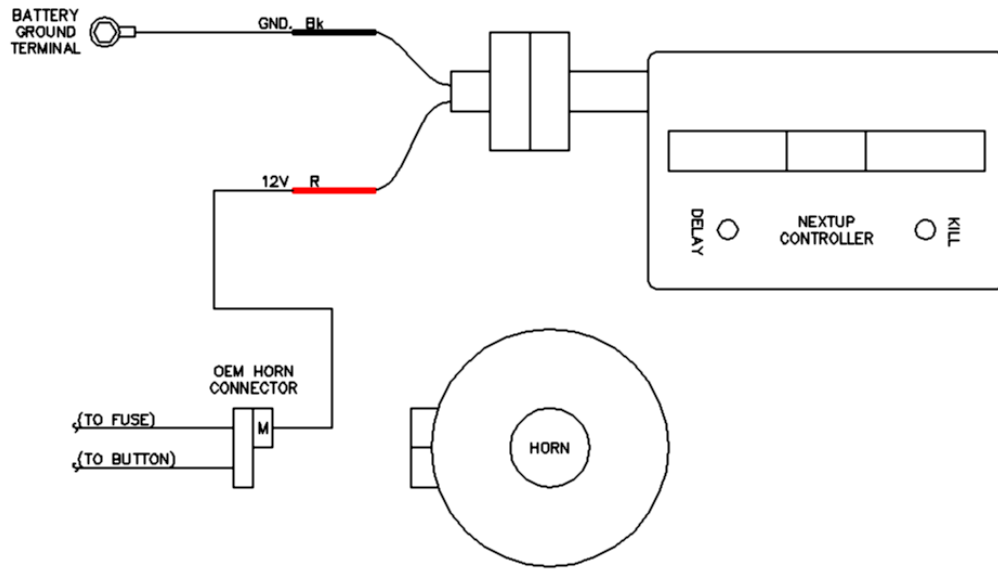
**Figure 3 : Horn Connector**

Model	Year	Wire Colour	
		12 Volt Power	Horn Button
SV650	K3-K9	<b>See Appendix</b>	
GSX-R 750	2000	Orange / Green	Black / Blue
GSX-R 600 / 750	K1-K3	Orange / Green	Black / Blue
GSX-R 600 / 750	K4-K5	Orange / Green	Black / Blue
GSX-R 600 / 750	K6-K7	Orange / Green	Black / Blue
GSX-R 600 / 750	K8-K9	Orange	Black / Blue
GSX-R 1000	K1-K2	Orange / Green	Black / Blue
GSX-R 1000	K3-K4	<b>See Appendix</b>	
GSX-R 1000	K5-K6	Orange / Green	Black / Blue
GSX-R 1000	K7-K8	Orange / Green	Black / Blue
GSX-R 1000	K9-K11	Black / Red	Black / Blue
GSX-R 1300	K1-K7	Orange	Black
GSX-R 1300	K8-K12	Orange / Black	Black

**Table 1 : Suzuki Look-up Table**

NEXTUP PnP CONTROLLER  
SUZUKI AIR SHIFTER INSTALLATION MANUAL - VER. 1.4

6. Locate your motorcycles 12V power wire colour in Table 1. Connect the spade terminal on the **RED** power wire to the 12V power wire. Use Figure 4 as a guide.



**Figure 4 : Power and ground connections**

**Note:** Suzuki made changes to the K3 / K4 GSX-R 1000 and SV650 wiring harness that will require you to cut and splice. Refer to the appendix, at the back of this manual, to make the connections.

## Button and Solenoid Valve

7. Connect the **WHITE** button wire, shipped loose in your wiring kit, to the 2-pin connector on the *Nextup Wiring Harness*.
8. Connect the spade terminal on the **WHITE** button wire to the horn button. Refer to Figures 5 and 6 as a guide.

NEXTUP PnP CONTROLLER  
SUZUKI AIR SHIFTER INSTALLATION MANUAL - VER. 1.4



Figure 5 - Horn connector with harness installed

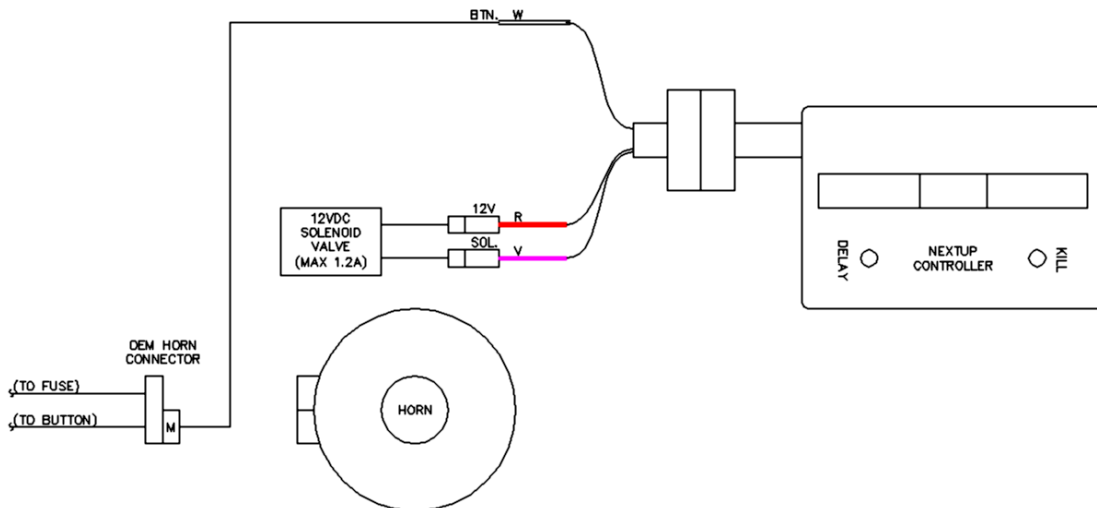


Figure 6 - Horn and solenoid valve connections

9. Crimp the bullet connectors onto the two lead wires of your solenoid air valve.

**Note:** The *Nextup PnP Controller* is designed to drive a 12V solenoid air valve up to a maximum of 1.2A current draw (14W).

**Note:** If the valve wiring does not reach the wiring harness you will need to extend these wires.

NEXTUP PnP CONTROLLER  
SUZUKI AIR SHIFTER INSTALLATION MANUAL - VER. 1.4

10. Connect the solenoid air valve to the *Nextup Wiring Harness*. Refer to Figures 6 as a guide.

**Note:** Most DC solenoid valves do not have polarity so the wires can be interchanged.

11. Thread the main connector on the *Nextup Wiring Harness* through the motorcycle chassis to the location where you would like to mount your *Nextup PnP Controller*.

**Note:** The *Nextup PnP Controller* should be located in a secure spot, preferably away from water spray or direct heat sources.

12. Securely mount your *Nextup PnP Controller* to the motorcycle chassis using tie-straps or adhesive Velcro.

13. Connect the *Nextup Wiring Harness* to the *Nextup PnP Controller*.

14. Turn the motorcycle ignition ON. Verify that both LED bar graphs are lit on the *Nextup PnP Controller*.

15. Use tie straps to bundle and tie down any loose wires.

## SETUP AND TUNING

The *Nextup PnP 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 PnP Controller* can be used to set the amount of time between when the shift is triggered and when 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 sweep the LED lights telling you that the setting has been written to memory.
2. The *Nextup PnP 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 sweep the LED lights telling you that the setting has been written to memory.

### 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 PnP Controller* **MUST** be configured to work with your motorcycles gear position sensor. Motorcycles such as **Suzuki** and **Triumph** 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 7 when configuring the *Nextup PnP Controller*. Reset your *Nextup PnP Controller* by holding both the Delay and Kill buttons until the LED bars turn OFF (takes about 5 seconds).

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

Reset the *Nextup PnP Controller* by turning the ignition switch off then on.

The *Nextup PnP Controller* is now configured.



NEXTUP PnP CONTROLLER  
SUZUKI AIR SHIFTER INSTALLATION MANUAL - VER. 1.4

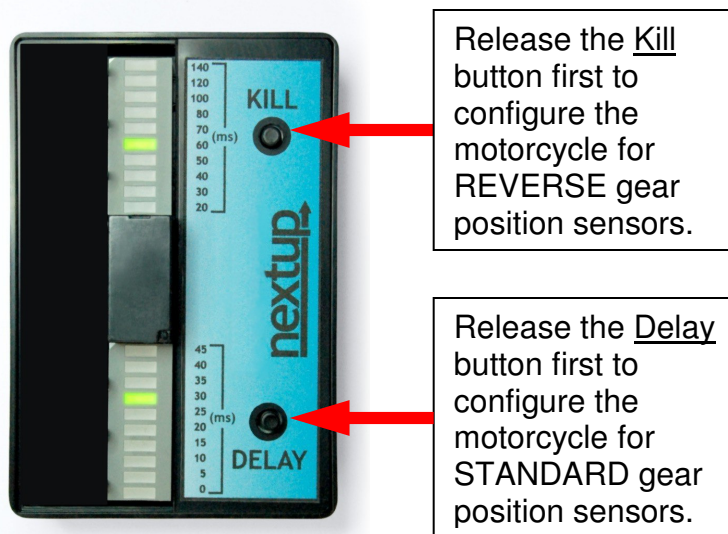


Figure 7 - Nextup PnP Controller Setup

3. Place the motorcycle into 1<sup>st</sup> gear.
4. The delay value is the amount of time between when the shift is triggered and when 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 sweep 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 sweep 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 – 80 ms	60 – 80 ms
<b>2<sup>nd</sup> Gear Kill</b>	40 – 60 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 quickshifter, 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> – Check that WHITE button wire is being pulled to ground 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 connections for looseness.</li></ul>

<b><i>Rough Engine Idle</i></b>
<ul style="list-style-type: none"><li>• <b>Fuel Injector Unplugged</b>– Check connections</li></ul>
<ul style="list-style-type: none"><li>• <b>Fuel Injectors Cross-wired</b> – Check connections</li></ul>

**Engine Power Loss at High RPM**

- **Controller mounted incorrectly** – The controller uses a relay that is shock resistant to 30 g's. If the vehicle is exhibiting intermittent power loss at high engine RPM's then high vibrations may be causing the relay contacts to open. Reposition and strap down the controller.

**CONTACT INFORMATION & DISCLAIMER**

<b>Distributor</b>	<b>Manufacturer</b>
Orient Express Racing 28 Grand Blvd., North Brentwood, NY 11717 USA  Web:           www.orientexpress.com Phone:        1.800.645.6521	Biperformance Development Corp. 160 - 12811 Clarke Place Richmond, BC V6V 2H9 Canada  Web:           www.biperformance.ca Email:         info@biperformance.ca Phone:        604.304.1181 Fax:           604.304.0526

**- DISCLAIMER -**

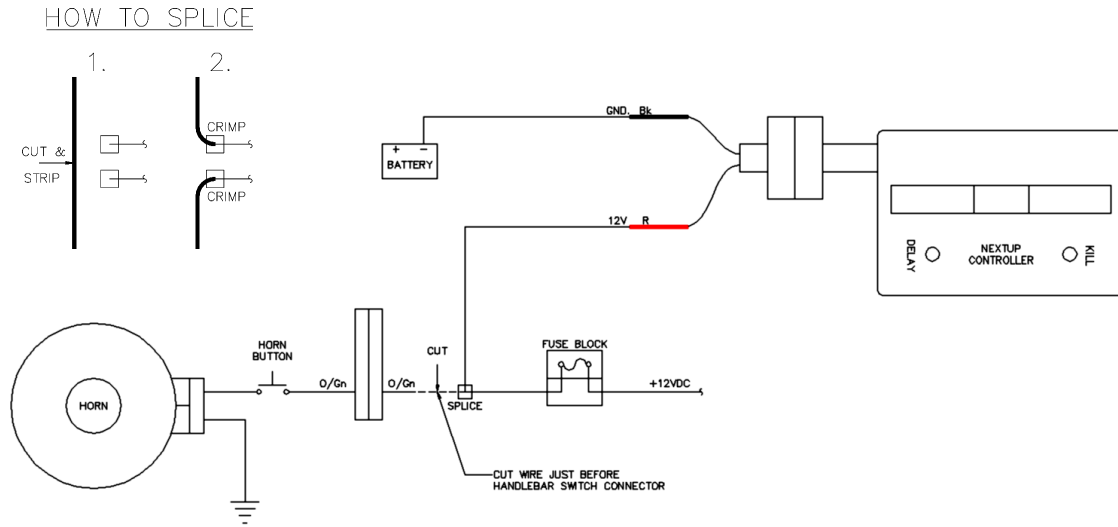
**This Product is for Off-road Use Only**

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.

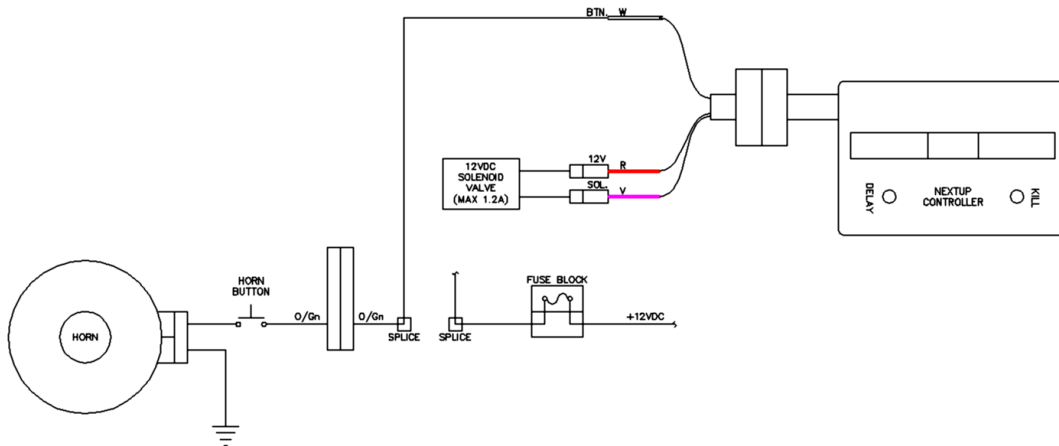
NEXTUP PnP CONTROLLER  
SUZUKI AIR SHIFTER INSTALLATION MANUAL - VER. 1.4

## APPENDIX

The stock wiring on Suzuki GSX-R 1000 K3-K4 and SV650 K3-K9's will require you to either cut and splice or install a *Type 2 Relay Kit*. Follow these directions to complete the installation without the relay kit:



**Figure A 1- Power connection for Air Shifters**



**Figure A 2 – Button connection for Air Shifters**