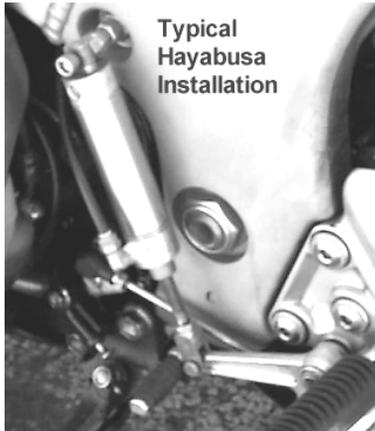


**MPS Sport Bike Electric Air Shifter Installation Instructions**

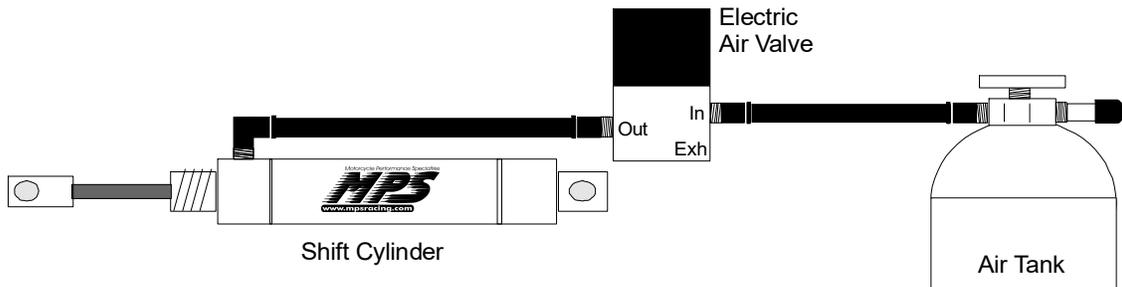
The first thing to do is remove the seat, fuel tank, and possibly the front fairing if equipped. You will need plenty of room to work.



**Mount the Shift Cylinder** – There are so many ways to mount an air shift cylinder we cannot cover them all. Basically, you want the cylinder mounted so it will pivot freely at the pivot mount without binding. The shift cylinder clevis should be connected to the shifter itself or a bracket attached to the shifter with the provided pin. The clevis should pivot freely at the shift lever. At rest the shift cylinder should be extended to ½ of its total travel. This allows the shift lever to travel both up and down. The shift cylinder should be as close to 90 degrees with the shift lever as possible. The shift cylinder clevis should be attached 2 to 3 inches from the pivot point of the shift lever. Make sure the shift cylinder is in the same vertical plane as the shift lever. The photo should give you a pretty good idea of how things need to be. Remember nothing should

bind and the shifter should go through its normal travel just like without the shift cylinder connected. There are some model specific bracket kits available. Check out our web site for available models.

**Mount Air Bottle, Electronic Kill & Electric Air Valve** – Every brand and model bike are different, so you will need to fabricate your own bottle mounting. Make sure they are fastened securely. The Electronic Engine Kill & Electric Air Valve can be mounted anywhere using zip ties, double sided tape, or Velcro strips. Generally, the best spot for both components is in the tail section. We offer a remote air gauge mount kit to mount the gauge away from the tank if desired.



**Plumbing** – Cut one end of the provided ¼" O.D. poly line square with a razor blade. Push the line as far into the fitting as it will go. Pull out to lock the line in place. To remove the line from the fitting, push down on the retaining ring on the fitting and the line. While holding down the retaining ring pull the line out of the fitting. The first line is the supply line and has pressure equal to that of the air tank at all times. It runs from the air tank outlet to the "in" port of the electric air valve. The "exhaust" port on the electric air valve must remain free. The second line is the work line and only has pressure during the shift when the air valve is open. It runs from the electric air valve "out" port to the shift cylinder. To determine which air cylinder port to use shift the non-running bike from 1<sup>st</sup> to 2<sup>nd</sup> gear noting which direction the shift cylinder moved. If it pulled, put the fitting in the port nearest the cylinder clevis. If it pushed, put the fitting in the port closest to the pivot mount. Make sure nothing is in the port that is not used. It must remain free and unobstructed. Careful to route the air lines away from high temperatures. Avoid sharp bends to prevent kinks and pinches in the air lines.

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The new generation MPS Air Shifter Electronic Engine Kills have several new features.

- 1) The kill time can be adjusted from 10ms to 100ms in 10ms increments.
- 2) Direct Air Valve activation – air valve plugs directly into the kill box
- 3) Fixed 25ms delay from air valve activation to kill activation.
- 4) Dedicated Kill Ground direct to the cylinder head.
- 5) Isolated power circuit.
- 6) Small Size 4.0" x 2.8" x 1.2"

**Three Conductor Connector (Red 12V + - Black Ground – Blue Activation)** – The red (power) wire is connected to an ignition switched 12-volt power source. Do not attach direct to battery! The black (ground) wire is connected directly to the battery negative post. The blue wire is the activation lead. When a ground is applied to this wire from the shift button (horn switch) the unit kills the motor for the specified time period and activates the air valve after a 25 ms delay. The horn circuit test and wiring diagrams below show you how to wire it.

**Two Conductor Connector Electric Air Valve (2 Green Leads)** – The two green wires labeled Green Air Valve + and Green Air Valve - plug directly into the two black wires on the Electric Air Valve. Polarity does not matter so these wires are interchangeable.

**Six Conductor Connector (4 Brown Coil Leads)** – These 4 brown wires are spliced into the 4 coil negative leads. Each coil will have 2 wires attached for a total of 8 wires. There will be 4 that are the same color (positive side) and 4 will have individual colors (negative side). The brown wires will splice into the individually colored (negative) wires. Scotchlok and male spade connectors are provided to make this connection. However, we recommend soldering these connections whenever possible.

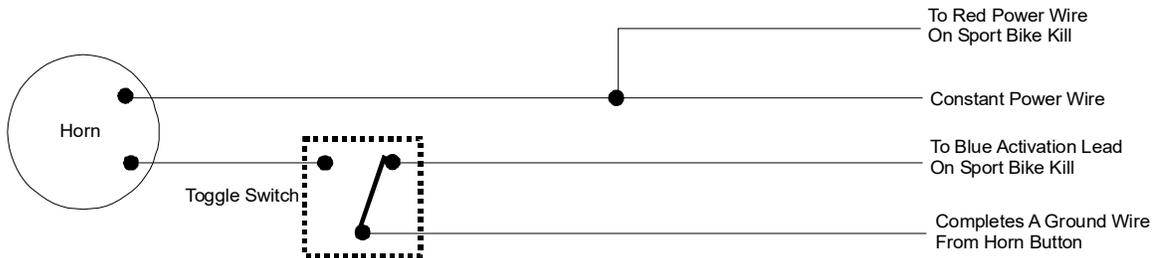
On a two-coil system you will use only two of the brown wires. Race bikes with Dyna Pro 4000 Ignitions will use one brown wire connected to the orange kill wire. MSD Ignitions with a brown kill wire will use one brown lead connected to it.

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**Single Black Head Ground** – This lead must be connected directly to the cylinder head. Late model sport bikes a good spot is a thermostat housing bolt. GS & KZ's a good spot is the cam chain tensioner bolt. Unit will not function without this lead attached to the cylinder head.

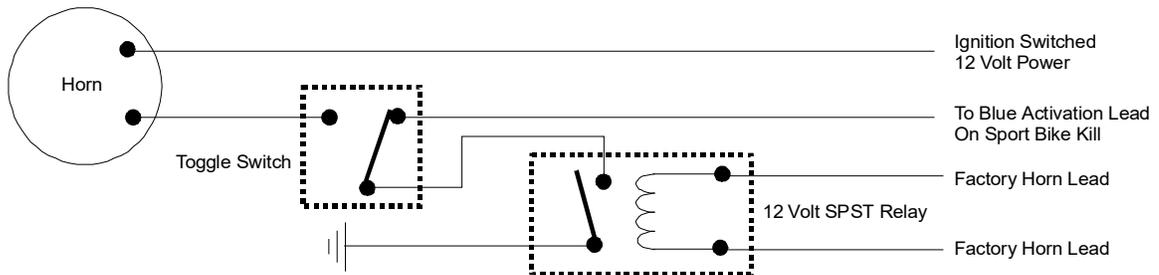
**Horn Test** - Unplug both your horn leads from the horn(s). Turn the key on. Using a test light, check each horn wire for power. If one of the wires has continuous power the horn button circuit completes a ground circuit to operate. This is the typical Kawasaki and Suzuki horn system. A wiring diagram showing how to wire a switch to select the shifter or the horn appears below.

If no wires have continuous power, check them each with the horn button depressed. One of the two should have power with the horn button depressed. This system completes a power



circuit to operate. This is the typical Honda and Yamaha horn system. This system requires a SPST relay to be added to the system. A wiring diagram showing how to wire a switch to select the shifter or the horn appears below.

If you would like to skip all the horn/relay stuff, we have a Switch Swapper P/N 1-0317 to eliminate all the work of wiring the relays. It works with either system and is a snap to wire.





**Setting Kill Time** – Kill time is the amount of time the engine stays dead between gears during a shift. Generally, the shorter the kill time the quicker the shift. The proper kill time will vary from bike to bike. It's generally better to start with too much kill time and work your way quicker. We set them at 60ms of kill time. Remove the 4 screws on the side that hold the top on the box. Use a razor blade and carefully pry the lid up. The Kill Time is adjusted via a series of 4 dip switches inside the box. Each switch adds a set amount of kill time. The #1 switch adds 40ms of kill time. The #2 switch adds 30ms of kill time. The #3 switch adds 20ms of kill time. The #4 switch adds 10ms of kill time. The switches are cumulative and add the corresponding kill times in the down (on) position.

**Testing the System** – With no air in the system start the bike. Bring the rpm up to around 3000 rpm and push the shift button. You should hear a slight hesitation in the engine each time you depress the shift button. If you don't hear a hesitation and the horn sounds the arm switch is in the horn position. If you just hear no hesitation the brown wires are probably not hooked up correctly. Once you establish that you have an engine kill when pushing the shift button remove the clevis pin from the shift cylinder and extend the shaft to the end of its travel. Air up the shifter to 120 psi. We also have onboard compressor kits (P/N 1-0894) available to conveniently fill the air tank on the fly or high-pressure CO2 systems that can shift hundreds of times without refilling. With the engine off and the key on push the shift button. The shift cylinder shaft should snap into position. With these preliminary tests done you can put the bike back together and go for a ride! Shift it at lower rpms first to make sure it is in fact operating properly.

If you have any more questions, we have a Frequently Asked Questions page at our web site as well as the telephone tech support. Thank you for your purchase of this MPS product. All products sold by MPS are for use at closed course competition events and not for use on public streets or highways.

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