

Valkyrie Carbs and Custom Fuel Solenoid Assembly Description



A positive fuel shutoff is a vital component of preventing hydrolock on a Valkyrie.

We custom build an electric solenoid fuel shutoff harness with a relay.

We are using the “safety circuit” 12V connection to trigger the relay. When the key is turned on, if the safety circuit is satisfied, 12V energizes the relay. The relay then routes power from the battery and energizes the fuel solenoid. The fuel solenoid will remain energized until any shutoff signal is received. The safety shutoff signals such as the ignition key, kill switch, bank angle sensor, kickstand sensor, deenergize the fuel solenoid and stop fuel flow.

Construction notes:

Loctite 580 thread sealant is applied to the brass fuel fitting threads before assembly. The fuel lines and stainless-steel hose clamps are installed. Heat shrink is placed on the solenoid wires for abrasion protection. Wire labels are placed on the wires, and a 2 pin Molex connector is installed on the solenoid wires.

A flyback diode is soldered in parallel with the coil of the automotive relay. There are 2 power sources for the relay circuit. One to trigger the relay, and one to supply power to the fuel solenoid through the relay. Each is fitted with an inline fuse. The bike “safety circuit” is fused at 10 Amps. We fused the connection to it at 3 Amps to trigger the relay. The circuit connected to the battery is fused at 5 Amps to power the solenoid. The solenoid draws about 1 Amp normally. Spare fuses are also provided. The fuse holders and the schematic are marked with fuse ratings.

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Connections are made from the relay to the solenoid by a Molex connector. all other connections are soldered. Wires are wire-marked for their connections. All relay connections are made with a relay connector. The flyback diode is soldered into the relay connector so if the relay ever must be changed the diode is still in place.

The relay is fitted with 3M Dual Lock mounting tape for mounting. An alcohol swab is supplied to clean the mounting location.

All connections except soldered connections are treated with Stabilant 22A contact enhancer.

Heat shrink is applied upon completion of the wiring harness.

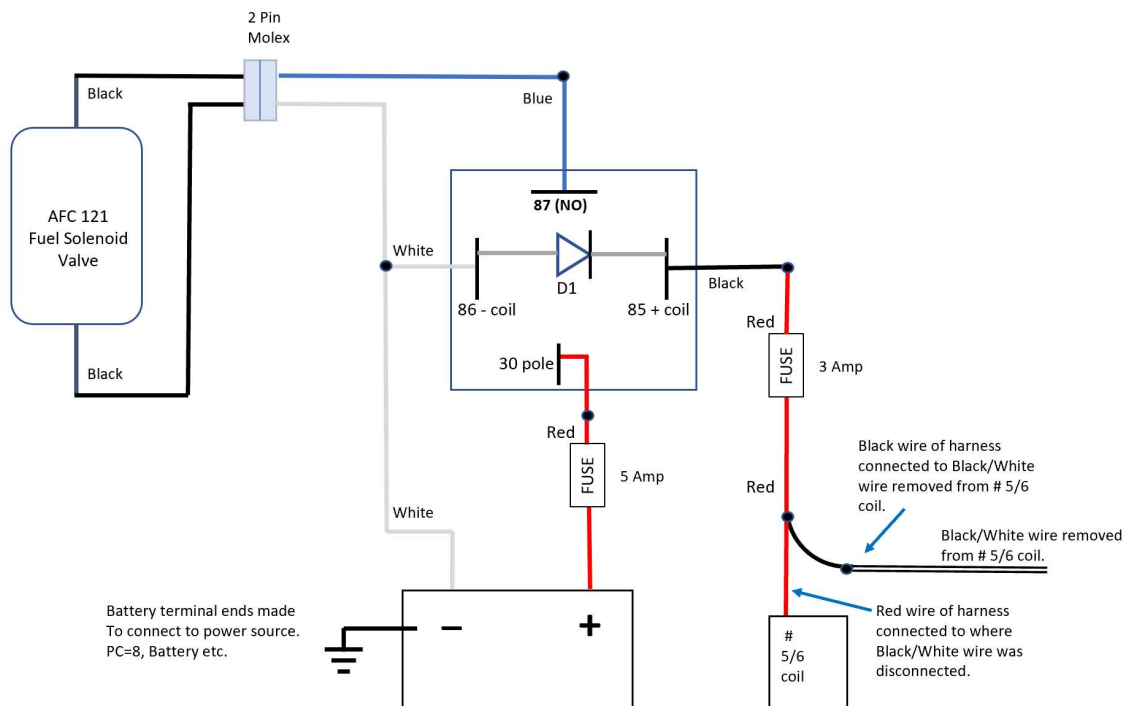
Ty Wraps are supplied for securing the solenoid and the wire harness.

Detailed installation instructions with pictures are provided.

Operational Notes:

To use the fuel shut off, simply start the bike as you usually do. The solenoid will energize when you turn on the key. It will turn off with any signal that shuts down the bike.

Functional Description of Operation:



We are using the “safety circuit” 12 V Coil Black/White wire connection to trigger the relay. When the key is turned on, if the safety circuit is satisfied, 12 V is supplied to 85 of the relay, which energizes the relay. The relay then routes power from the battery through 30, to 87 of the relay, and energizes the fuel solenoid. The fuel solenoid will remain energized until any shutoff signal is received. The safety shutoff signals such as the

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ignition key, kill switch, bank angle sensor, and kickstand sensor, deenergize the fuel solenoid and stop fuel flow.

D1 across the coil of the relay is a flyback diode. When the relay coil is deenergized, the magnetic field on the relay windings collapses and generates a high voltage kick. The diode protects the connected circuitry from the voltage spike.

Components:

AFC-121 Solenoid Fuel Shutoff valve.
Fuel Fitting Brass TEE 3/8" ID X 1/4" Male NPT to Hose Barb
Loctite 580 Thread Sealant
Hose clamps
Fuel line tubing
Heat shrink tubing
Automotive 12VDC relay
3M Dual Lock mounting for relay
Diode
Solder
Wire
Wire terminals
Wire marks
Fuses
Alcohol swab
Ty Wraps
Stabilant 22A Contact Enhancer
Molex connectors
In-line fuses

Operational Notes:

To use the fuel shut off, simply start the bike as you usually do. The solenoid will energize and open when you turn on the key. It will Deenergize and close when you turn off the key, or with any signal that shuts down the bike.

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