



Corporate Office: PerTronix Inc. 440 E. Arrow Highway, San Dimas, California 91773 \* Phone 909.599.5955 \* FAX 909.599.6424 \* [www.patriotpipes.com](http://www.patriotpipes.com)

## ***Motorcycle Fuel Injection Controller Installation Instructions***

**Part # M151900R  
Fits: Harley Davidson ©  
2002-07 V Rod**

**WARNING:**

*Not legal for street use except for racing vehicles which may not be operated on a highway.  
Not Legal for Sale or Use in California on Emissions controlled Vehicles.*

*California CARB Legal version also available, contact your dealer or go to [www.patriotpipes.com](http://www.patriotpipes.com)*

*Your New Patriot Top Fueler utilizes State of the Art Load Based Technology to provide accurate Fuel/Air mixtures. It is not difficult to install or program but can be intimidating to new users. Take your time and follow the instructions. If you are uncomfortable with the tuning we suggest taking your motorcycle to a Professional Mechanic.*

*The Top Fueler is designed to be used with Patriot's Defender exhaust but will work equally well with other brands and will support most engine modifications you may make in the future.*

*Please read and understand these instructions completely prior to attempting installation. Check the parts list and tools required to be sure all you have all the necessary items.*

## **INSTALLATION**

1. Be sure your Harley Davidson is cold before starting installation.
2. If you are not familiar with the basic mechanical workings of your motorcycle we suggest you consult a factory shop manual.
3. Remove the Allen screws on the front frame covers between the steering neck and the air box cover. Remove both covers.
4. Remove the Maxi Fuse from the right side.
5. Open the seat and remove the Air Box Cover by turning the quick release fastener ¼ turn and lifting the air box cover away from the bike.
6. Remove the horn from the left side of the bike.
7. Locate the Intake Air Temperature Sensor from the front of the air box lid (some years have the AIT located on the engine; if yours is that way disregard this step). See Photo 1
8. Using a flat blade screwdriver, release the 8 clips that retain the lid to the air box. See Photo 1.
9. Remove the plastic nut in the center of the air box lid and remove the cover and the filter element. See Photo 2.
10. Loosen and remove the air box to rear cylinder crankcase breather hose at the head cover. Remove breather hose inside air box. See photo 3
11. Slide the O-Rings upward on the intake velocity stacks to reveal the stack mounting screws. Remove the 6 screws and the velocity stacks. See photo 3
12. Remove the air box from the bike, separating the front cylinder breather hose as you remove it.

13. Locate the fuel injectors located between the cylinders below the throttle body. Disconnect the factory harness from each injector, starting with the rear. See Photo 4
14. Lay the Top Fueler on top of the battery from the left side. Route the wiring for the injectors along the inside of the frame rail and mirror it to the stock injector harness.
15. Connect the Top Fueler connectors to the original Harley connectors paying close attention to the color coding. **NOTE: The Top Fueler harness with the White/Yellow wires goes to the front cylinder and the harness with the Green/Gray wires goes to the rear cylinder.** Connect the Top Fueler connectors to the fuel injectors, again paying close attention to the color codes.
16. Pull any slack in the harness back up towards the Top Fueler at the battery and then Zip Tie the Top Fueler harness to the original wiring harness.
17. Connect the Top Fueler black ground wire to the battery ground cable at the front cylinder head.
18. Reinstall the Horn.
19. Reinstall the air box, breather hoses, velocity stacks, O Rings, air filter and Air filter lid in the opposite manner that you removed them. Reconnect the AIT sensor to the air box cover.
20. Secure the Top Fueler to the battery using the double sided Velcro supplied.
21. Reinstall the Maxi Fuse and both front frame covers. Reinstall the Air box cover.

Top Fueler's come pre programmed with a base setting for a stock engine with a High Flow Air Cleaner and the Patriot Defender Exhaust.

If this is the way your bike is set up you can Skip the Tuning section and go directly to "Starting the Engine". You can also use the Tuning section to verify that your Top Fueler has the appropriate base map programmed.

If you have other modifications, proceed to "Tuning your Top Fueler"

## TUNING YOUR TOP FUELER

### Understanding the tuning modes

The Top Fueler displays LED lights to tell you how each mode is set. As you scroll through the different modes the lights will change colors. The LED's will appear in different positions from left to right indicating the amount of fuel that is being added for that particular mode. Far left is leanest (least amount of fuel) far right is richest (most amount of fuel added). To check or change modes, you simply press the mode button. The Top Fueler will then display the current setting. To change that setting use the + and – buttons to increase or decrease the setting. When you are satisfied with the setting push the mode button again and it will move to the next mode. If you do not make any changes, after 5 seconds the Top Fueler will exit the adjusting mode and will return to the ready to ride state. You can start over or readjust at any time.

Mode 1 – Idle and Steady Throttle Cruising. This adjustment deals with idle condition and steady state cruising. Standard setting will be Green LED's 3 and 4 (from left) flashing.

Mode 2 – Acceleration. This setting is strictly for HARD acceleration, such as wide open throttle accelerating. Standard setting is Yellow LED 3

Mode 3 – Full Throttle. This setting is the adjustment for full throttle from approximately 4000 rpm to red line. Standard setting is Red LED 3.

Mode 4 – Deceleration. This adjustment adds fuel under deceleration. With higher flow pipes and air cleaners, the bike may pop or back fire under deceleration. Standard setting is Green LED 2 and Blue LED 8.

Mode 5 – Acceleration Load. This adjustment determines the transition from cruise to acceleration from light load to heaviest load to switch to acceleration mode. This will tune out an acceleration stumble or lazy feeling acceleration. Standard setting is Yellow LED 4 and Blue LED 8

Mode 6 – Full Throttle Load. It is rare you will change this setting. The red light should be on any time you are wide open above 4000 rpm. If for some reason it is not you would then adjust this mode. Standard setting is Red LED 4 and 5, Blue LED 8

Ideally adjustments should be made on a Dyno with an exhaust sniffer reading the actual air/fuel mixtures under the various loads. As long as your bike is relatively stock (Hi Flow air filter, performance exhaust) the base settings will be very close. If you feel your bike is overly rich or lean, you can try different settings and then ride to see the difference. If your bike is more heavily modified (big bore, cams, head work, etc) then you can call or email us for new base settings to program, again without the use of a dyno.

## STARTING THE ENGINE

Start the bike. In approximately 5 seconds the LED lights on the Top Fueler will energize and become visible. If the connections were properly made, the Top Fueler LED's will flash in a sequence of green from left to right and back. This will repeat until the bike is warmed up. After it is warmed up the LED's will stop scrolling and you should see a Green LED towards the left and possibly a flashing Blue LED on the far right. If there is a faulty connection you will see a flashing Green and Red LED, recheck all connections until the red LED goes out.

## PARTS LIST

Top Fueler Fuel injection controller  
Double Sided hook & loop tape  
Zip Ties

## LIMITED TWO YEAR WARRANTY

All Patriot Top Fueler's are guaranteed, to the original purchaser, to be free of defects in materials and workmanship for two years. If your Top Fueler should fail, your bike will continue to run with all original Harley-Davidson fuel settings return to original. This feature allows you to continue to ride your bike, although will a decrease in power in possibly hotter running. We don't recommend riding a bike with aftermarket engine or exhaust modifications without a fully functioning Top Fueler for any longer than absolutely necessary to prevent possible engine damage. This warranty covers the replacement or repair of the product only and does not cover the cost of removal and installation. Should a part become defective it should be returned to the original selling retailer and must be accompanied with the sales receipt. If there is no retailer in your area, call the factory for a return authorization and return your part prepaid to the factory for inspection. Patriot reserves the right to replace or repair the alleged defective part at our discretion and return the part freight collect.

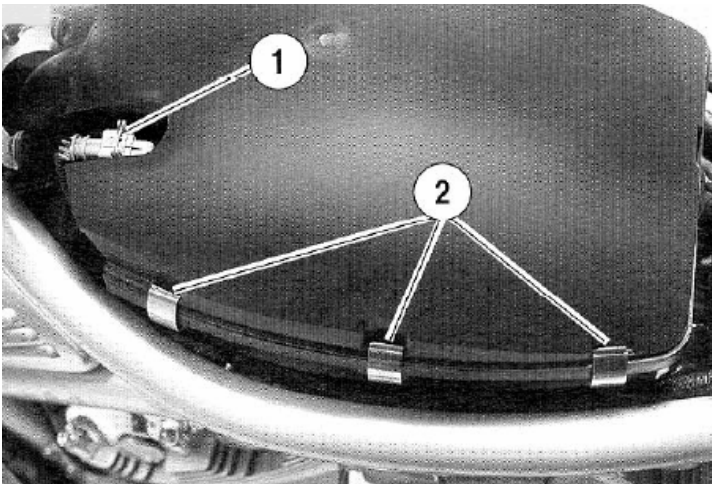


Photo 1 (#1 is IAT Sensor, #2 is retaining clips)



Photo 2; Air Cleaner plastic nut

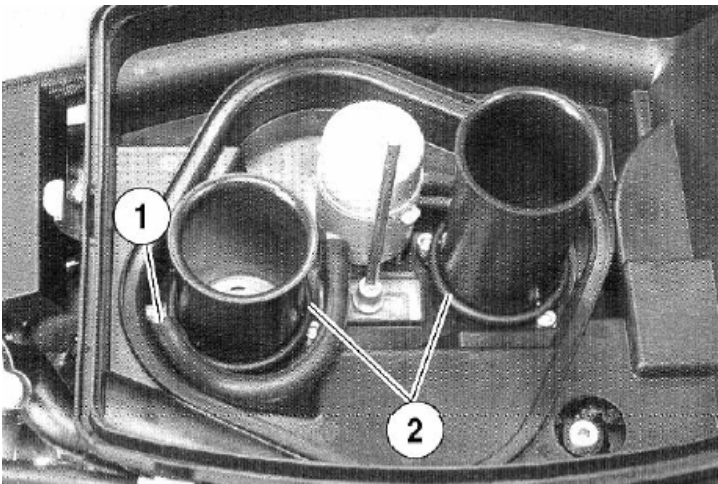


Photo 3 (#1 is breather hose, #2 is O Rings on Velocity Stacks)

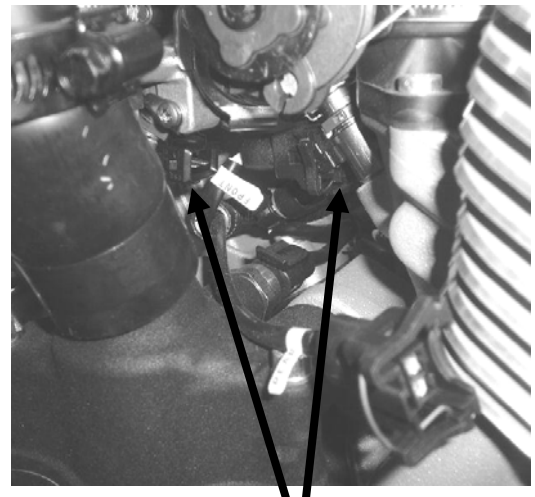


Photo 4: Fuel injector location as seen from right side