

# **MSD** **IGNITION** **INSTALLATION INSTRUCTIONS**

## **MSD FI Enhancer for 2002-2005 Harley-Davidson® Twin Cam Touring Models PN 4177**

### **Parts Included:**

1 - MSD FI Enhancer  
1 - Wire Tap  
1 - Wire Ties

1 - Velcro®  
1 - Alcohol Swab

**WARNING:** During installation, disconnect the battery cables. When disconnecting, always remove the Negative cable first and install it last.

### **OPERATION**

The MSD FI Enhancer is preprogrammed with four base fuel curves. The curves are selected using the switch labeled BASE. These curves adjust fuel delivery based on throttle position and rpm, providing the right amount of fuel under all conditions. The four fuel curves correspond to varying levels of performance modifications. These levels of modification are broken down into the following groups:

**Curve 1** - Stock or base modifications. This includes slip on exhausts, intakes, air boxes, and air filters.

**Curve 2** - Bolt on modifications such as a full exhaust system.

**Curve 3** - Engine modifications, including cams, big bore kits, etc.

**Curve 4** - The fourth curve has all of the fuel adjustment values zeroed out. This curve is selected by moving the rotary switch to any position other than Base 1, Base 2 or Base 3. This curve is useful for those wanting to just modify the fuel delivery with the potentiometer adjustment, without having any other adjustments.

In addition to the four curves, there are three potentiometers that allow you to fine tune the curve you select. These potentiometers allow you to adjust the fuel curve from +20% to -20% in three different rpm ranges. The rpm ranges are:

**Low** - Idle - 2,000 rpm

**Mid** - 2,000 - 4,000 rpm

**High** - 4,000 - 6,000 rpm

To add fuel, turn the potentiometer clockwise. To subtract fuel, turn the potentiometer counterclockwise. With the potentiometer pointed straight up at the thick indicator mark (towards the MSD logo), that is 0% adjustment. Fully CCW is -20%, and fully CW is +20%. Adjusting the potentiometer between these points will result in adding or subtracting an amount of fuel proportional to how far the knob was moved from zero.

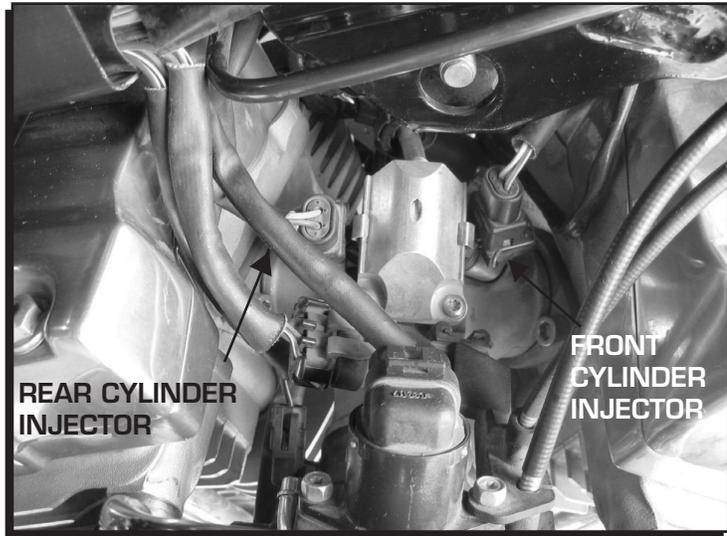
### **LED**

The FI Enhancer has an LED that will illuminate when there is power to the unit.

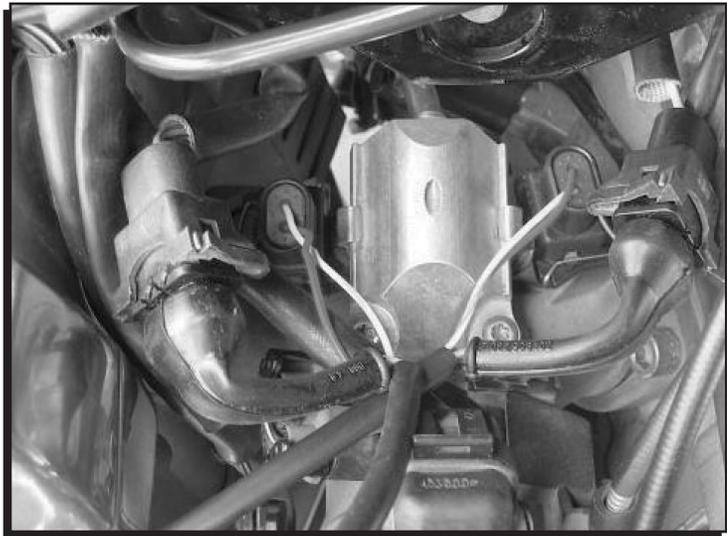
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## **INSTALLATION**

1. Remove the seat. Remove or raise the fuel tank. The tank needs to be raised enough to give access to the fuel injectors and TPS wires (Figure 1).
2. Disconnect the front injector. On the FI Enhancer, there are two pairs of injector connectors. Plug the pair with the orange wires into the front cylinder injector harness and front cylinder injector. Repeat this using the other connector pair and the rear cylinder injector (Figure 2).
3. Locate the TPS connector behind the throttle body (Figure 3).



**Figure 1 Injector Location.**



**Figure 2 Injector Connections.**



**Figure 3 Throttle Position Sensor.**

4. Disconnect the connector from the TPS. Crimp the wire tap onto the wire that is Gray with a Violet stripe. This wire should be in position "C" on the connector. Plug the Gray wire from the FI Enhancer into the wire tap (Figure 4).



**Figure 4 TPS Connection.**

5. Run the wiring harness for the FI Enhancer from the engine to the seat. Make sure that it will not get damaged when you reinstall the tank. Use one of the wire ties to tie the wires to the frame, away from the cylinder head (Figure 5).



**Figure 5 Secure the Harness.**

6. Place the FI Enhancer where you plan on mounting it permanently. In most cases, this will be next to the ECU, on the right hand side of the bike. Connect the ground lug (Black wire) to a grounding point on the bike. Use the Velcro tape to mount the FI Enhancer in position. Use alcohol swab to clean mounting surface prior to attaching Velcro (Figure 6).

7. Reinstall fuel tank and seat.



**Figure 6 Mounting the Enhancer.**



# INSTALLATION INSTRUCTIONS

## **CALIBRATION**

To select the right curve, start by making sure that all three of the rpm pots are set to zero adjustment. Then select the base curve which corresponds to your bike's level of modification. This should make the bike run better through all rpm.

Once you have selected the correct curve, then you can fine tune any problems with the map by using the potentiometers. With the arrows on the pot straight up and down, the pots are at 0% adjustment. To add more fuel, turn the pots clockwise. To subtract fuel, turn the pots counterclockwise. **Do not attempt to adjust while riding!**

## **TROUBLESHOOTING**

If the STATUS LED does not come on when the ignition is switched On, there is no power to the FI Enhancer. Make sure that you have the ground connected properly either directly to the battery ground, or to a lug on the frame that is grounded.

If the LED comes on, but does not run on one or both cylinders, double check all connections at the injector, making sure the connectors are seated properly.

### **Service**

In case of malfunction, this component will be replaced free of charge according to the terms of the warranty. When returning components for warranty, Proof of Purchase must be supplied for warranty verification. After the warranty period has expired, replacement service is charged based on a minimum and maximum charge.

**All returns must have a Return Material Authorization (RMA) number** issued to them before being returned. To obtain an RMA number please contact MSD Customer Service at (888) 258-3835 or fax a request to (915) 858-3496. Send the unit prepaid with proof of purchase to the attention of: **MSD Powersports, Customer Service - RMA #, 12120 Esther Lama, Dock 5, El Paso, Texas 79936.**

When returning the unit, leave all wires at the length in which you have them installed. Be sure to include a detailed account of any problems experienced, and what components and accessories are installed on the vehicle.

A replacement unit will be returned as soon as possible after receipt, COD/Cashiers Check for any charges. For more information, call the MSD Powersports Customer Service Line **(888) 258-3835**. MSD Powersports technicians are available from 8:00 a.m. to 5:00 p.m. Monday - Friday (Mountain Time).

### **Limited Warranty**

MSD Powersports warrants this product to be free from defects in material and workmanship under its intended normal use\* and if properly installed, for a period of one year from the date of original purchase. If found to be defective as mentioned above, it will be repaired or replaced at the option of MSD Powersports. Any item that is covered under this warranty will be returned free of charge through standard shipping methods. If faster service is required the customer has the option of paying for this service.

This shall constitute the sole remedy of the purchaser and the sole liability of MSD Powersports. To the extent permitted by law, the foregoing is exclusive and in lieu of all other warranties or representations whether expressed or implied, including any implied warranty of merchantability or fitness. In no event shall MSD Powersports or its suppliers be liable for special or consequential damages.

\*Intended normal use means that this item is being used as was originally intended and for the original application as sold by MSD Powersports. Any modifications to this item or if it is used on an application other than what MSD Powersports markets the product, the warranty will be void. It is the sole responsibility of the customer to determine that this item will work for the application they are intending. MSD Powersports will accept no liability for custom applications.