Zodiac® Top Fuel Injection Controller Instructions



Thank you for choosing the Zodiac Top Fuel Injection (Tfi) Controller. The Zodiac Tfi Controller is only usable for the following Harley-Davidson models:

- **2016 HD SOFTAIL – All Models**

This product is a great fit for stock bikes with exhaust and intake mods.

This is an Electronic Jet Kit. Like jet kits in the past, the more you modify, the more responsibility you take in getting your fuel curve right. Going to www.zodiac.nl will help you obtain better high horsepower tuning.

INSTALLATION PREP

- Install Time: 60 minutes
- Required Tools for: Disconnecting the negative terminal of the battery
  Removing your seat
  Loosening and propping up the fuel tank

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INSTALLATION INSTRUCTIONS – Please consult your owner's manual for help with removing parts

1. Make sure your vehicle is cold before starting the installation.
2. First gain access and disconnect the negative lead from the battery.
3. Loosen and lift up the fuel tank (be sure to disconnect the fuel line at the fuel tank using the quick disconnect feature on the tank fitting, DO NOT UNSCREW THE FITTING) then loosen the front tank mounting bolts and remove the rear tank-mounting bolt. Tilt the fuel tank upward from the rear and you will need something to hold the fuel tank up (block of wood or a towel) from the frame to gain access to the injectors.
4. Determine a location for the Zodiac Tfi unit. Suggested locations are under the seat or on top of battery.
5. Route the injector harness along the left side of the frame backbone to the injectors.
   IMPORTANT: Make sure all connections are firmly secure and allow a little slack at the connections to prevent engine vibration from damaging/breaking a wire on the harness.
6. Underneath the fuel tank you will locate the fuel injectors (figure 2). Disconnect the factory fuel injector connector from the fuel injector. Connect the Zodiac Tfi fuel injector harness inline with the factory fuel injector connector and the factory fuel injector. Reference Figures 3,4,5. IMPORTANT: The Zodiac Tfi injector harness with the white/yellow wires must go to the front cylinder. The Zodiac Tfi injector harness with the green/gray wires must go to the rear cylinder.
7. Locate the front factory O2 harness for your model. Connect the supplied O2 harness with corresponding connectors inline with the factory O2 connector.
   IMPORTANT: Make sure connection is firmly secure and allow a little slack at the connection to prevent engine vibration from damaging/breaking a wire on the harness.
8. Locate the rear factory O2 harness for your model. Connect the supplied O2 harness with corresponding connectors inline with the factory O2 connector.
   IMPORTANT: Make sure connection is firmly secure and allow a little slack at the connection to prevent engine vibration from damaging/breaking a wire on the harness.
9. Connect the Zodiac Tfi BLACK ground lead to the negative terminal of the battery along with the factory ground lead.
10. After connecting the box make sure to check all wire connections to ensure proper connection. Do this by pulling on the connection to make sure the connectors are *properly locked in*.
11. Be sure to check the wire harnesses are not in direct contact with any sharp edges, exhaust and/or other objects, which could result in long term wear and/or damage.
12. Make sure you can view your controller and **START** the bike up. Do not simply turn the key on. In approximately five seconds, the lights inside the Zodiac Tfi will energize and become visible. With a proper installation, the Zodiac Tfi will have a continuous lighting sequence where green lights come on from left to right and then back again. It will then stop scrolling the lights and go to a few steady green lights to the far left. With an improper installation the light display will consist of a flashing green and a flashing red light. This occurs when the Zodiac Tfi is not receiving a proper injector signal. Recheck the wire connections for any defects. ***(NOTE: The flashing green and flashing red lights is common for a proper installation during deceleration because the stock fuel map shuts off the fuel injectors during this process.)***
13. Reassemble all removed parts to complete the installation.

To program the Zodiac Tfi, the bike must be running in order to supply power to the box. If at anytime you stay in an adjusting mode for longer than 4 seconds without pressing any buttons, the Zodiac Tfi will exit adjusting mode and will return to the ready state. To save settings at a particular mode press the MODE button which goes to the next adjustable mode or wait for the Zodiac Tfi to exit back to the ready state. The settings are adjusted by pressing the plus and minus buttons located on the right and left side respectively of the mode button. When entering each mode for the first time, remember a light is flashing on the left side, which signifies a value of 0 for that particular mode if the unit isn't preset from the factory. To start adjusting press the plus button once and notice that the light which was flashing is now flashing at a faster rate. This signifies an increase of 0.5 for the mode value. Press the plus button again and the light to the right of the last flashing light will now begin flashing. This represents a value of 1 for the mode. Now if you press the plus button again you will notice the next light to the right begins flashing. You should now have two flashing lights and the current value is 1.5 for the mode. This process continues for all the lights across the light display until you reach the right most light. When the value is 7.5 you will have the second from the right light flashing in the color of the mode and the right most light will be flashing blue. Pressing the plus button will make the value 8 which is the max value and the right most light will flash a combination of the two colors. The range of values for each mode is 0 to 8. To see a visual display of adjusting values go online to www.zodiac.nl

1. **At this point you are ready to adjust the Zodiac Tfi to the base settings supplied with the unit. The first thing to do is ensure that the proper code was supplied by checking that the six programmable features are available. To begin this process press the MODE button and to enter each successive mode, just press the MODE button again. The unit comes pre programmed to the settings listed on a following page.**
    a. **The first mode represents an additional amount of fuel added during light load steady throttle cruise. A flashing green LED should appear somewhere on the display.**
    b. **The second mode represents an additional amount of fuel added during acceleration. A flashing yellow LED should appear somewhere on the display.**
    c. **The third mode represents an additional amount of fuel added during full throttle conditions. A flashing red LED should appear somewhere on the display.**
    d. **The fourth mode represents an adjustment for richening the de-acceleration fuel mixture. A flashing green LED should appear somewhere on the display along with a flashing blue LED on the very right side.**
    e. **The fifth mode represents an adjustment for when the yellow fuel comes in. A flashing yellow LED should appear somewhere on the display along with a solid blue LED on the right.**
    f. **The sixth mode represents an adjustment for when the red fuel comes in. A flashing red LED should appear somewhere on the display along with a solid blue LED on the right.**

2. **If each mode is present then the proper code exists and you are ready for making manual adjustments. If you failed to enter a mode, try going through the sequence again and be sure to only press the MODE button once quickly in between each step.**

3. **You are now ready to manually program each mode. Consult the base settings supplied with the unit or you can look up the most up-to-date settings by going to our website www.zodiac.nl**

4. **Your Zodiac Tfi should now be properly programmed and you are now ready to tune your bike.**

Always make sure your bike is at normal operating temperature when making tuning adjustments.

Tuning for mode 1 – Fuel addition during steady throttle cruise/idle.

This adjustment deals with adding fuel during all steady throttle/idle conditions. The lowest light setting (0) represents the factory fuel addition level and the highest light setting (8) represents the maximum amount of Zodiac Tfi fuel added to the factory level.

Tuning for mode 2 – Fuel addition during acceleration

Tuning for this mode depends greatly upon your individual bike and can vary widely from the base setting. After market high flow exhaust systems and high flow air filters "MAY" cause you to tune differently from the base settings. This combination could have a setting difference as great as three yellow lights. Note that this adjustment is only for hard acceleration. The lowest light setting (0) represents the factory fuel addition level and the highest light setting (8) represents the maximum amount of Zodiac Tfi fuel added to the factory level.

Tuning for mode 3 – Fuel addition during full throttle

This adjustment deals with adding fuel for primarily 4000 RPM and up to red line. For example, running to red line in 1st, shifting, running to red line in 2nd, shifting, and continuing this all the way through the gear range, you would have been engaging the red light all the time. Again this mode could vary widely from the base settings depending on the set up of your bike and could have a difference as great as three red lights or more. The lowest light setting (0) represents the factory fuel addition level and the highest light setting (8) represents the maximum amount of Zodiac Tfi fuel added to the factory level.

Tuning for mode 4 – Represents an adjustment for richening the de-acceleration mixture

This adjustment deals with enrichening the de-acceleration fuel. The lowest light setting (0) represents the factory fuel addition level and the highest light setting (8) represents the maximum amount of Zodiac Tfi fuel added to the factory level.

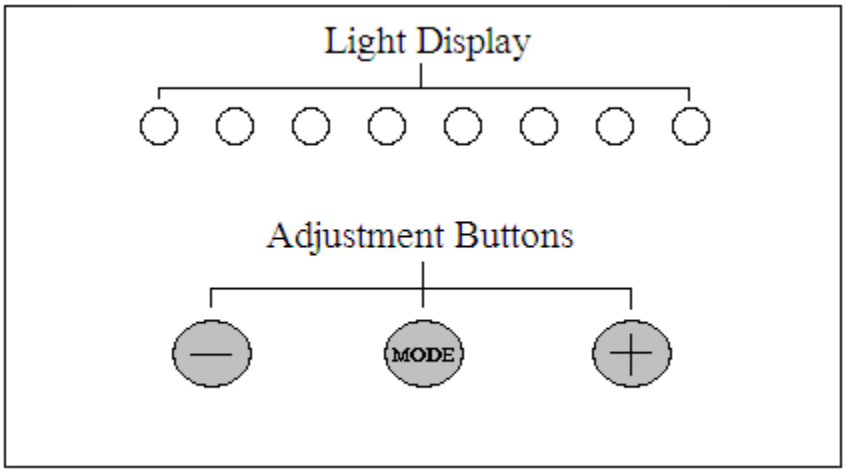
Tuning for mode 5 – Represents an adjustment for when the yellow fuel engages

This mode "MAY" vary from the base settings depending on the set up of your bike. The lowest light setting (0) represents the lightest load to switch on the yellow fuel and the highest light setting (8) represents the heaviest load to switch on the yellow fuel.

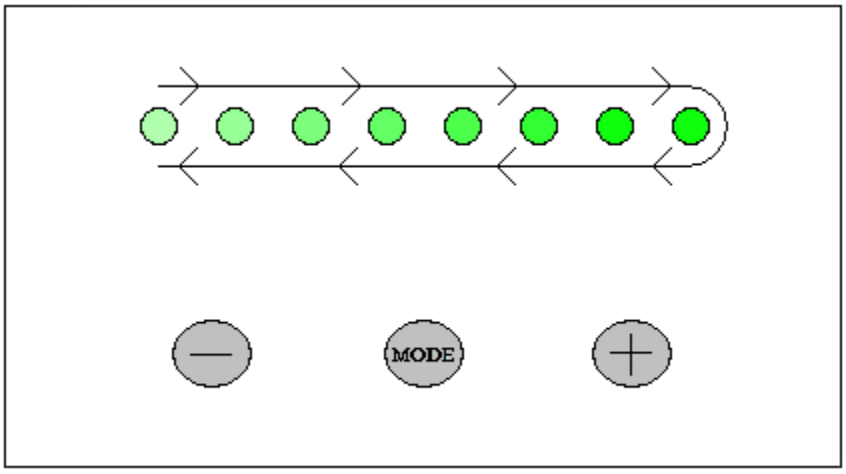
Tuning for mode 6 – Represents an adjustment for when the red fuel engages

The base setting for this mode will rarely have to be changed. The red light should be engaged during the full throttle period. For example, running to red line in 1st, shifting, running to red line in 2nd, shifting, and continuing this all the way through the gear range, the red light should be engaged the whole time. If you do not see the red light the whole time then you need to lower this setting to make the red light turn on sooner.

General Layout

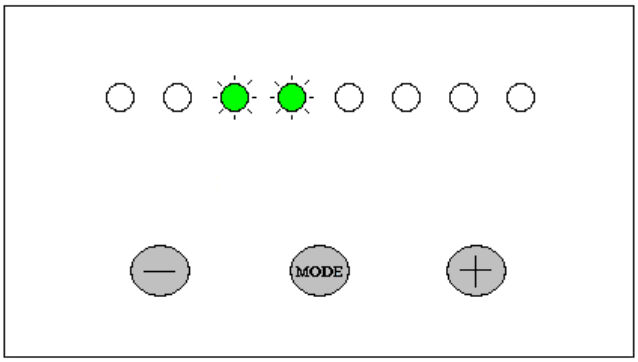


Start-Up Light Sequence

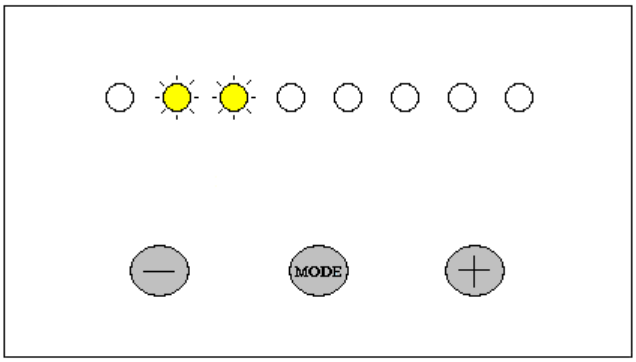


Base Settings

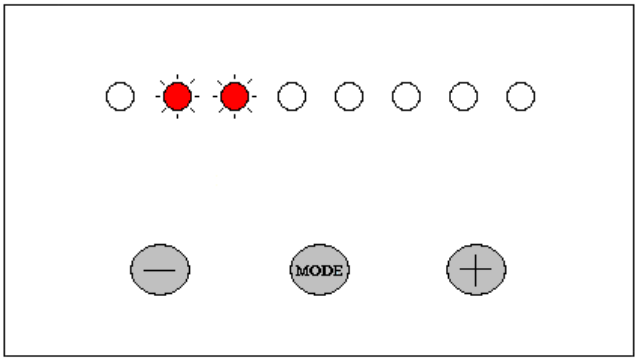
Mode 1 – Green - 3.5



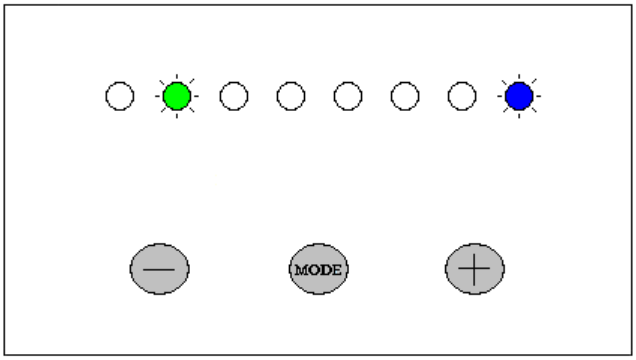
Mode 2 – Yellow - 2.5



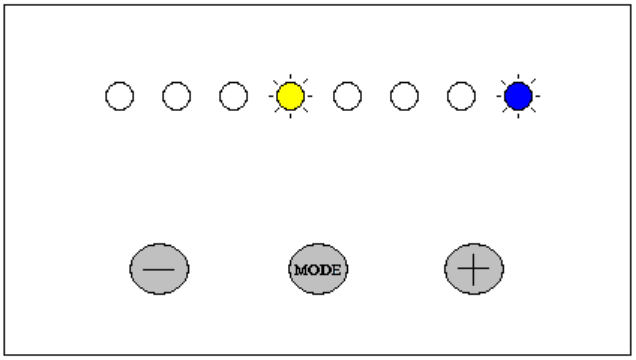
Mode 3 – Red - 2.5



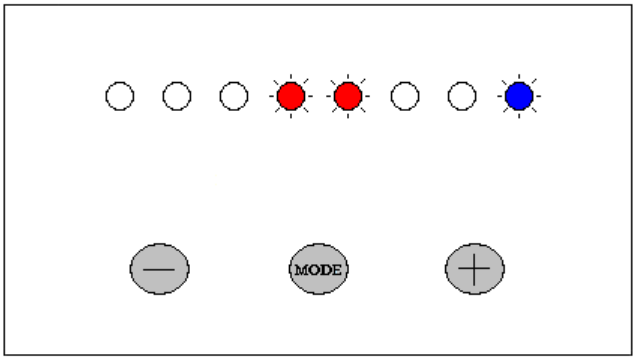
Mode 4 – Green/Blue - 2

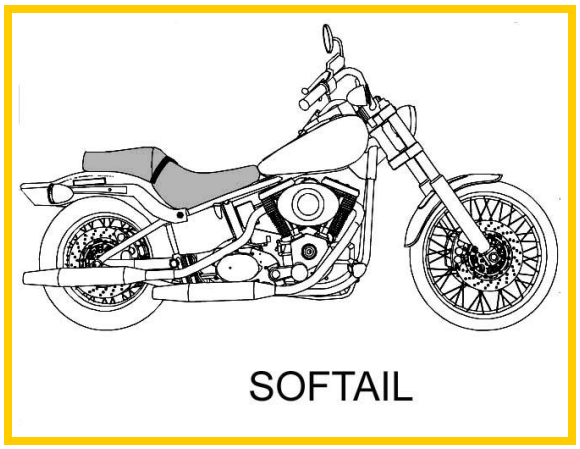


Mode 5 – Yellow/Blue - 4



Mode 6 – Red/Blue - 4.5





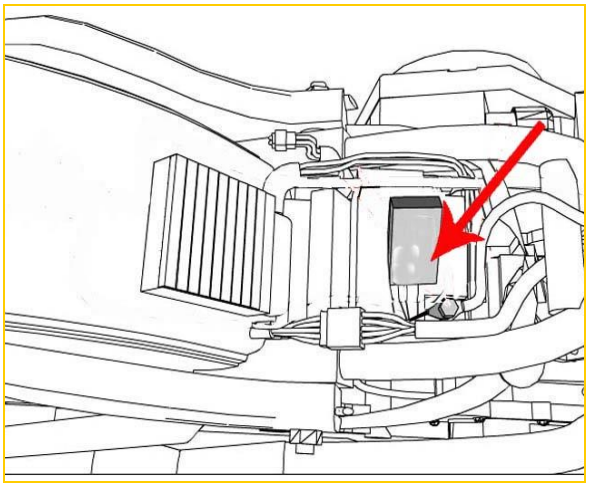


Figure 1

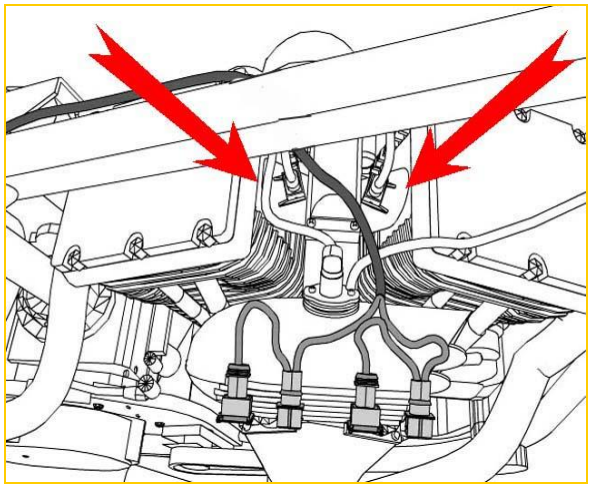


Figure 2

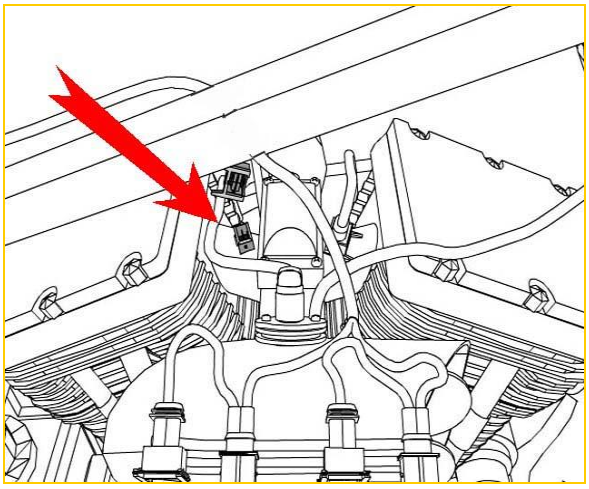


Figure 3

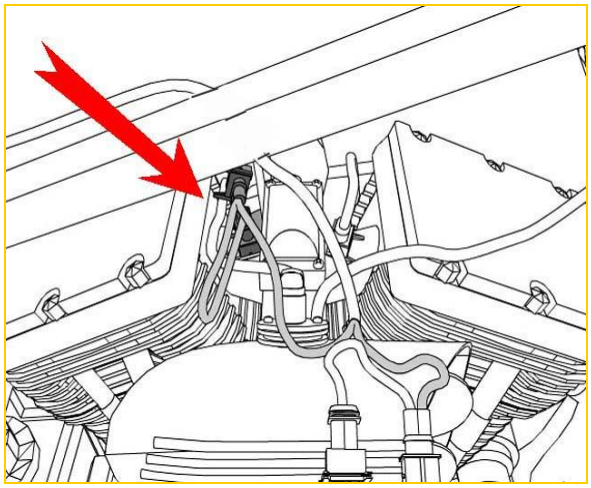


Figure 4

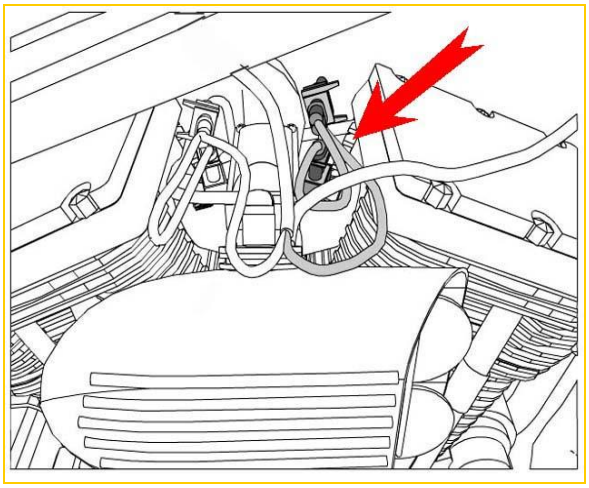


Figure 5

E-mail: sales@zodiac.nl Internet: www.zodiac.nl

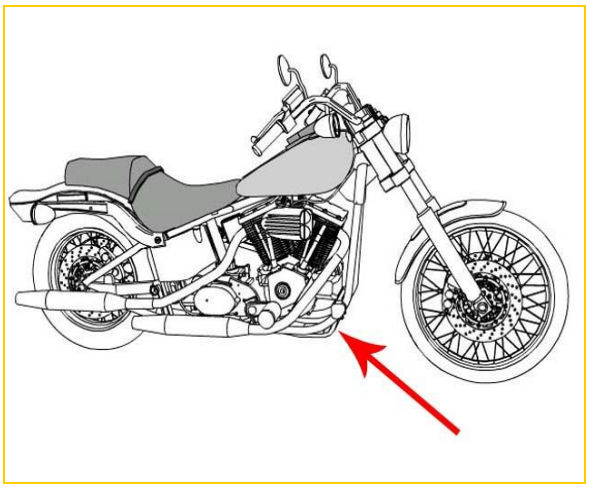


Figure 6

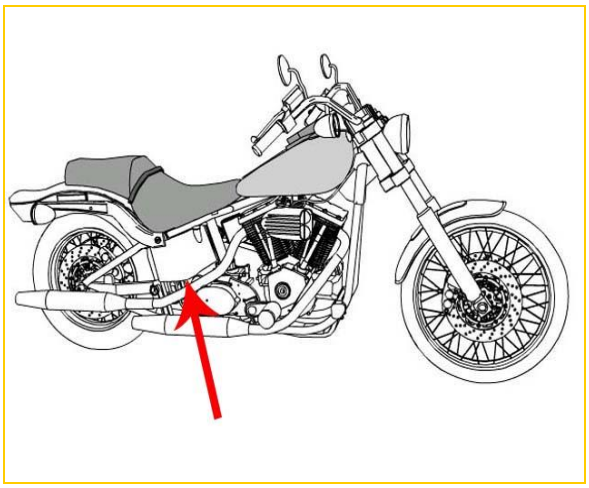


Figure 7

1 – Year Unlimited Mileage Warranty

Zodiac warrants that this product carries a warranty for 1 year from date of purchase against original defects in materials and workmanship. Should this product fail to perform for either of the above reasons, Zodiac will repair or replace it with an equivalent product at no charge, except for postage, to the original retail purchaser.

*** * Important * * Important * ***

To obtain the benefits of this warranty, the retail purchaser must send the product with proof of purchase and postage prepaid to:

Zodiac International B.V.
Industrieweg 44,
3641 RM Mijdrecht,
The Netherlands