

Zodiac® Top Fuel Injection Controller Instructions



Thank you for choosing the Zodiac Top Fuel Injection Controller. The Zodiac "Tfi" Controller is usable only for the following fuel injected Harley-Davidson's

➤ **2008 V-Rod 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

1. Remove the tank shell, left and right front frame covers and the horn assembly.
2. Locate and disconnect the IAT sensor. (Fig. 1)
3. Use a screwdriver to disengage the 8 clips retaining the airbox lid. The front clip is not visible and must be reached from the left side. (Fig 2)
4. Remove the plastic nut, air filter cover and filter. (Fig 3)
5. Locate and disconnect the rear crankcase breather hose inside air box and push through air box floor.
6. Slide the large O rings up the stacks to access the stack mounting screws. (The O-rings retain the screws should they become loose.) Remove the 6 screws and the velocity stacks. (Fig 4)
7. Disengage front crankcase breather hose and remove the airbox floor. There is no clamp on this hose. (Fig 5)
8. View from left, stock. (Fig 6)
9. View from right. Depress locking bails and remove injector connectors. Rear first, then front. Do not pull wires. (Fig 7,8)
10. Feed the factory injector harness out the left side. (Fig 9)
11. Route Zodiac Tfi harness between the frame and the OEM harness that goes over the battery negative. (Fig 10)
12. Continue pulling the Zodiac Tfi harness through, routing it on top of the main (plastic braid covered) harness. Route the connectors inside the frame, down through the engine V and out where the stock injector harness is. (Fig 11)
13. Connect the Zodiac Tfi harness to the stock harness. Pay attention to the color-coding. The Zodiac Tfi harness with the yellow and white leads is for the front injector. It is essential the connectors be installed properly at the front and rear injectors. (Fig 12)
14. Feed the Zodiac Tfi injector connectors under the throttle body and connect them to their respective injectors.
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.
15. The front factory O2 connector is located inside the left radiator cover. Remove the screw located on the bottom of the cover and slide the cover away from the radiator to access the O2 connector. Connect the Zodiac Tfi front O2 lead (pink/tan) in between the O2 sensor and the main harness. Tuck the connectors inside the radiator cover and reinstall the fastener.
16. The rear factory O2 connector is located at the left rear of the tank shell. With the shell removed it should be visible under the existing wiring. Route the Zodiac Tfi rear O2 harness (purple) along the left frame and connect between the O2 sensor and the main harness.
17. Cable tie the Zodiac Tfi rear O2 and Injector harness to the main wire harness on the left frame. Cable tie the front O2 harness to the frame. Keep all wiring away from the fan.
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.
18. Install the horn. (fig 13)
19. Pull any excess slack in the Zodiac Tfi harness back to the front. (fig 14)
20. Connect the Zodiac Tfi ground wire to the battery negative cable as shown (fig 15)
21. Cable tie the Zodiac Tfi harness and ground lead to the main wiring harness. Reinstall the air box floor, crankcase breathers, velocity stacks, O-rings, air filter assembly and air box lid. Make sure you reconnect the IAT sensor.
22. Mount (tuck) the Zodiac Tfi behind the Maxi-fuse located behind the louvered right hand frame cover (at the steering head)
23. After connecting the box, check all the wire connections to ensure proper connection. To do this just pull on the connections to make sure they are *properly locked in*.
24. 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 or damage.
25. Start the bike up and in approximately seven seconds the LED's inside the Zodiac Tfi will energize and be visible. With a proper installation, the Zodiac Tfi will have a continuous LED sequence where the LED's come on from left to right and then back again. Then it will stop scrolling the LED's and go to a steady or slow flashing green LED to the far left (depending on programming). With an improper installation the LED display will consist of a flashing green and a flashing red LED. This occurs when the Gen 3 is not receiving a proper injector signal. Recheck the wire connections for any defects. *(The flashing green and flashing red LED's is "common" for a proper installation during deceleration because the stock fuel map shuts off the fuel injectors "on most models" during this process.)*

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 five 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 with pre programmed settings these settings should match the recommended starting settings on pg 6.
 - 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 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 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 TFI fuel added to the factory level.

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

This adjustment deals with enriching 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 TFI fuel added to the factory level.

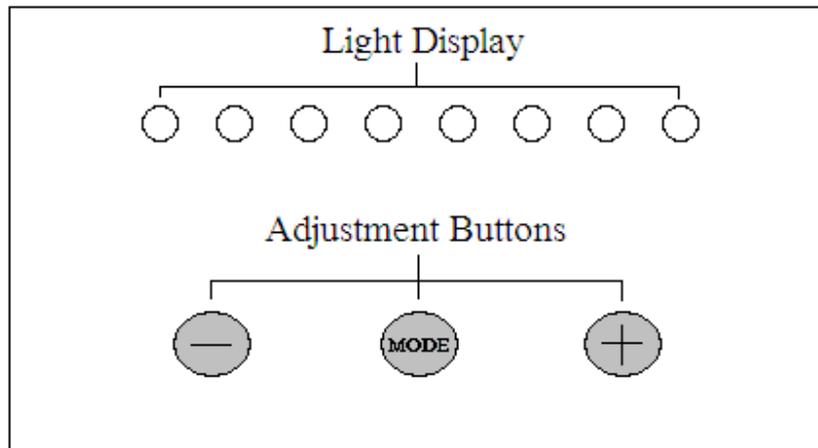
Tuning for mode 5 – Represents an adjustment for when the yellow fuel engages

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.

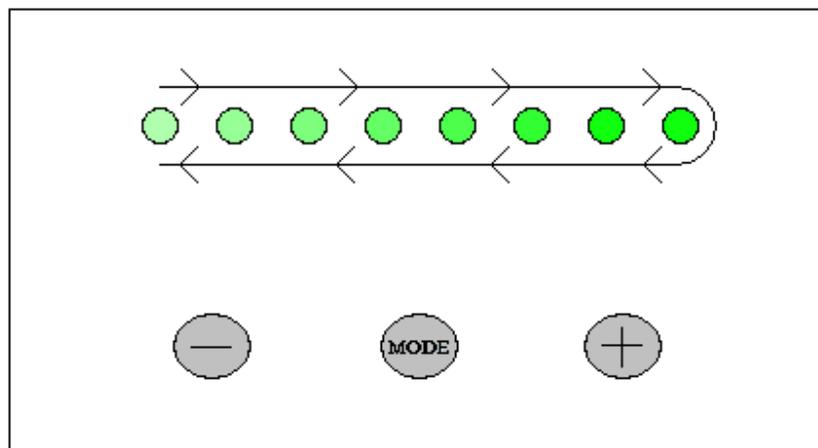
Tuning for mode 6 – Represents an adjustment for when the red fuel engages

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

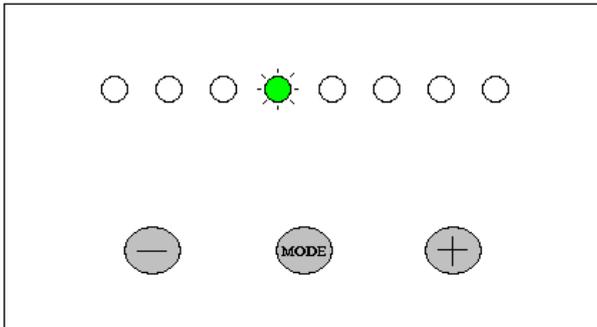


Start-Up Light Sequence

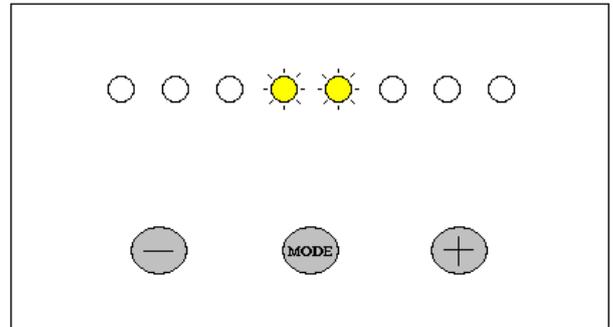


Base Settings

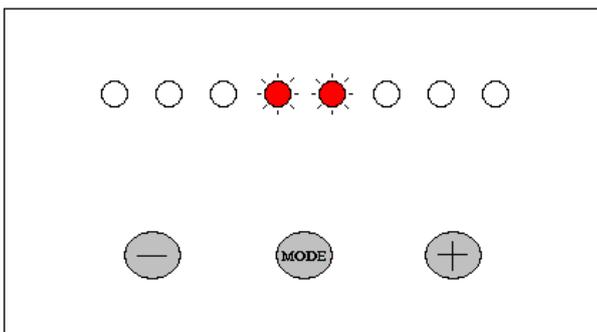
Mode 1 – Green



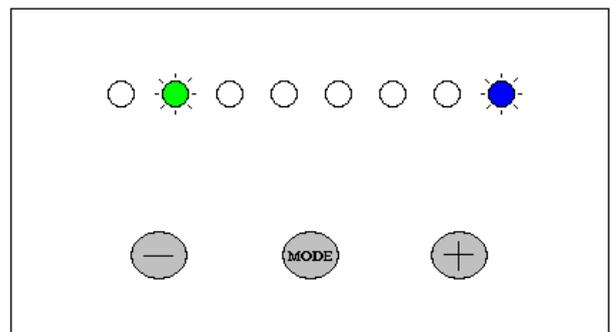
Mode 2 – Yellow



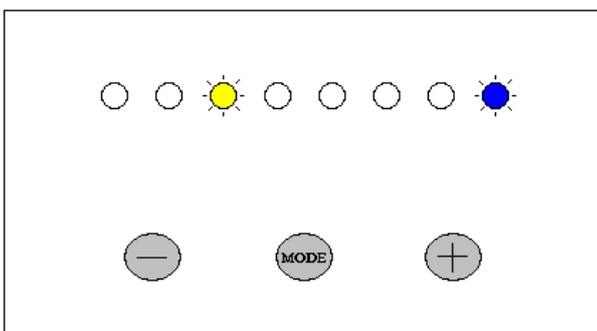
Mode 3 – Red



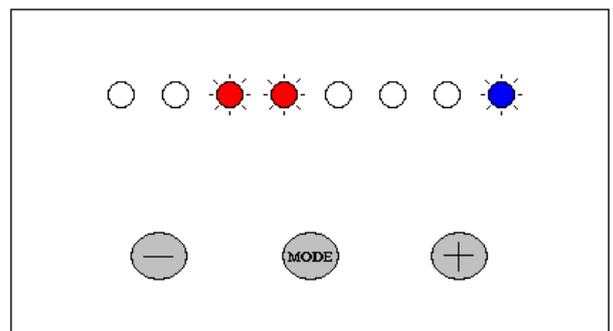
Mode 4 – Green/ Blue



Mode 5 – Yellow/Blue

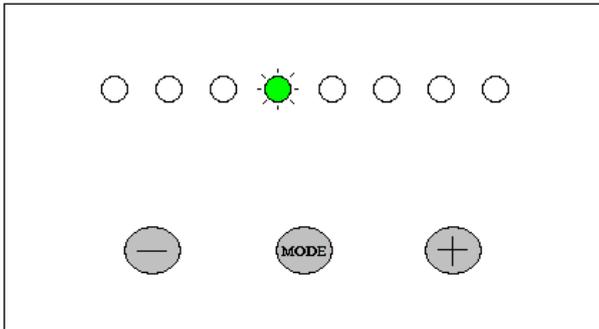


Mode 6- Red/Blue

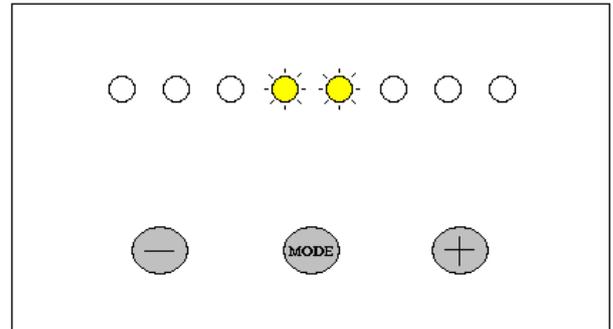


Stage 1 Settings

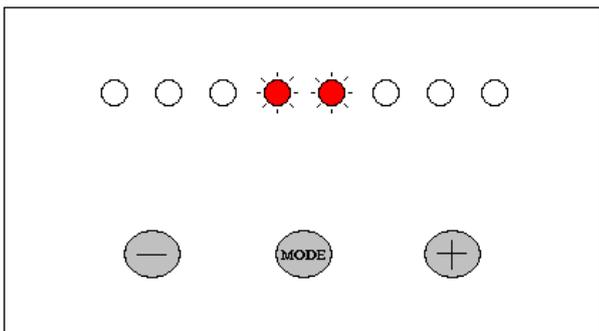
Mode 1



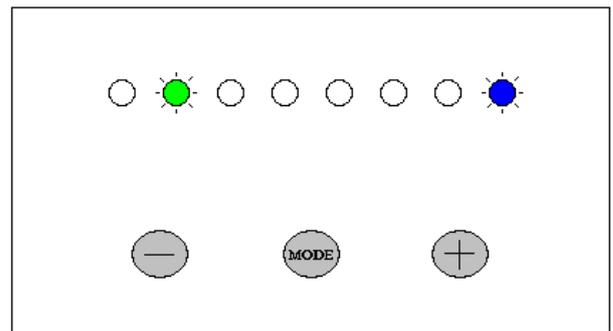
Mode 2



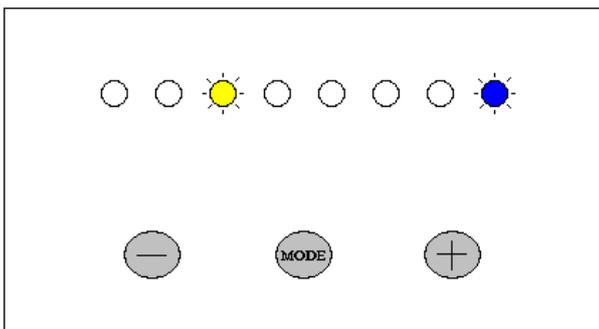
Mode 3



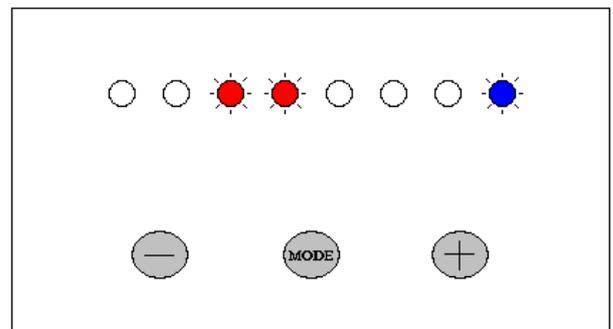
Mode 4



Mode 5



Mode 6



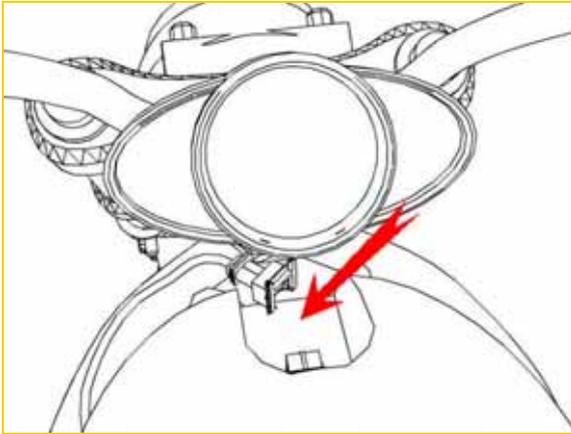


Fig 1

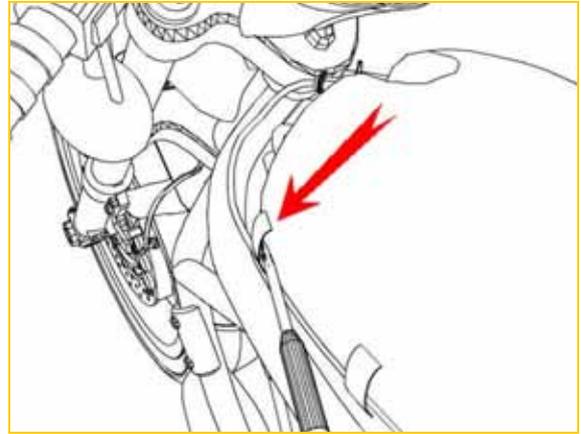


Fig 2

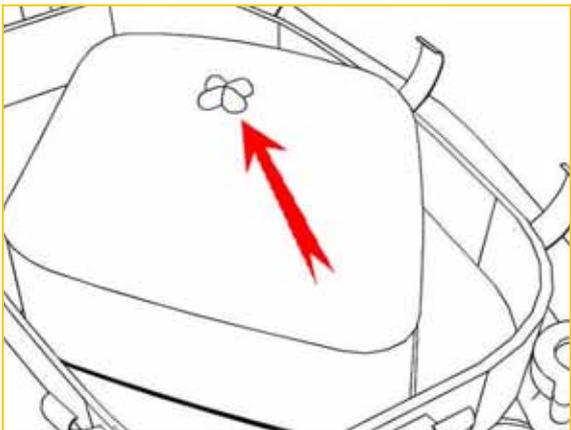


Fig 3

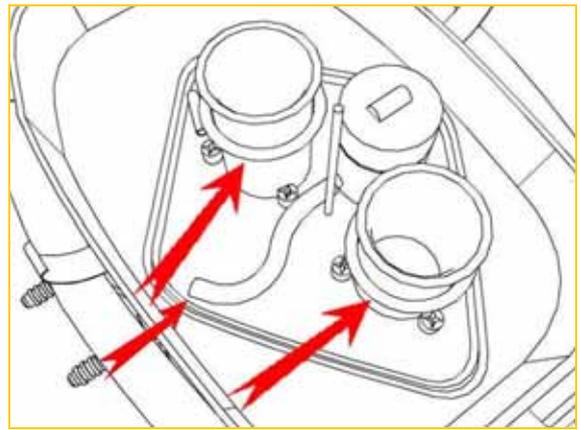


Fig 4

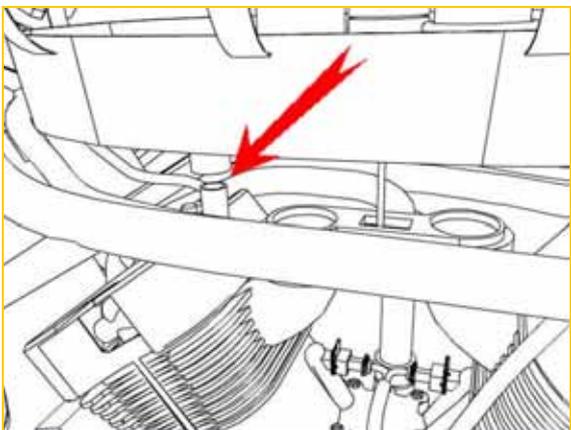


Fig 5

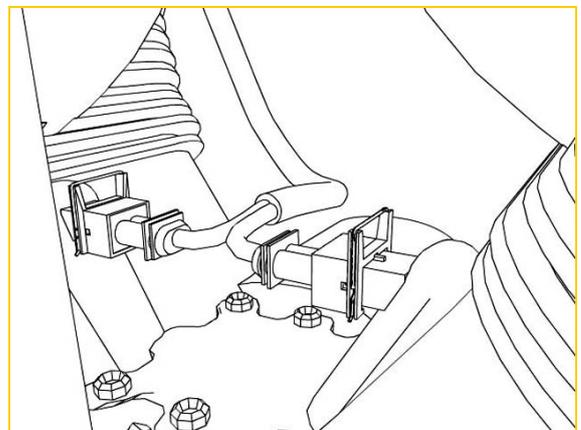


Fig 6

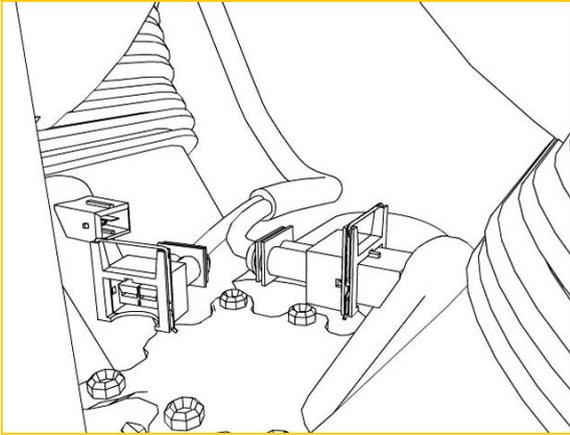


Fig 7

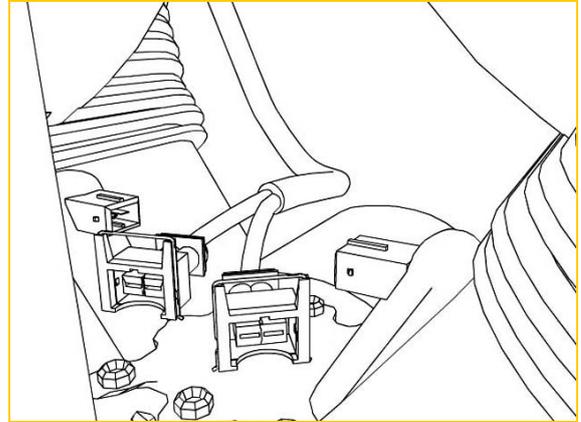


Fig 8

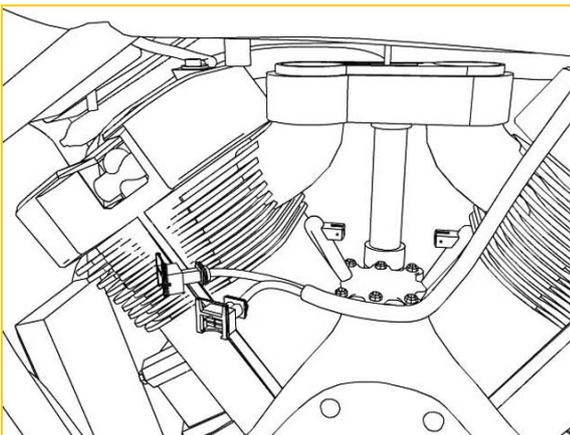


Fig 9

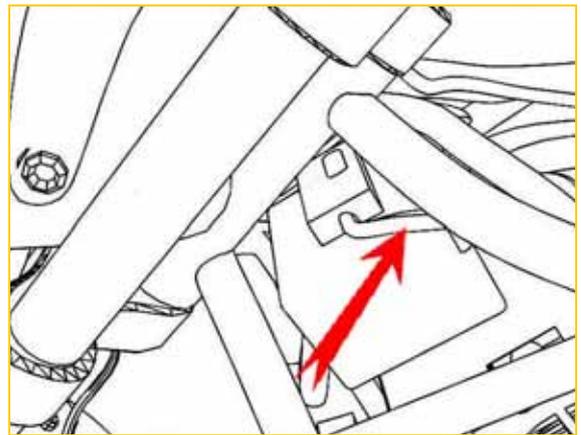


Fig 10

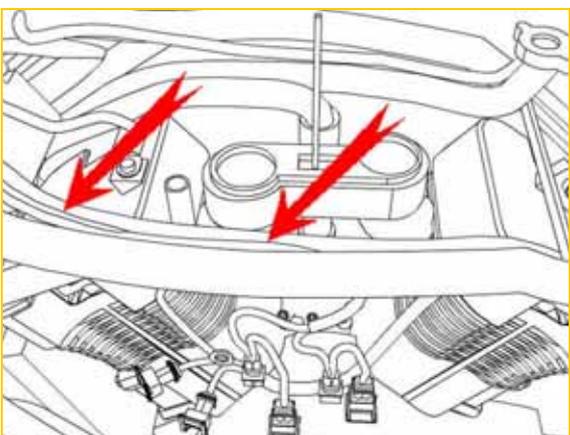


Fig 11

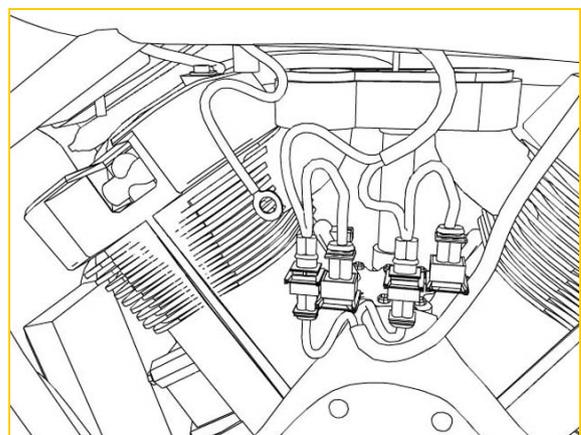


Fig 12

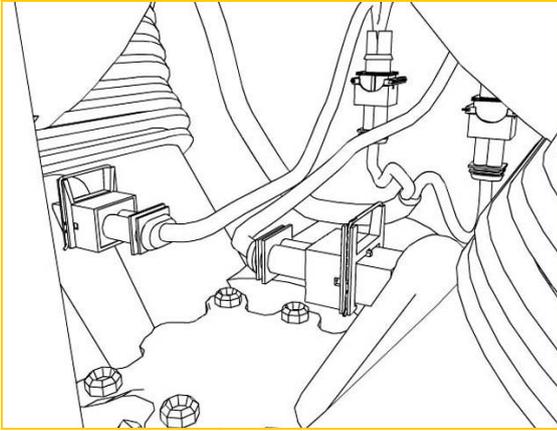


Fig 13

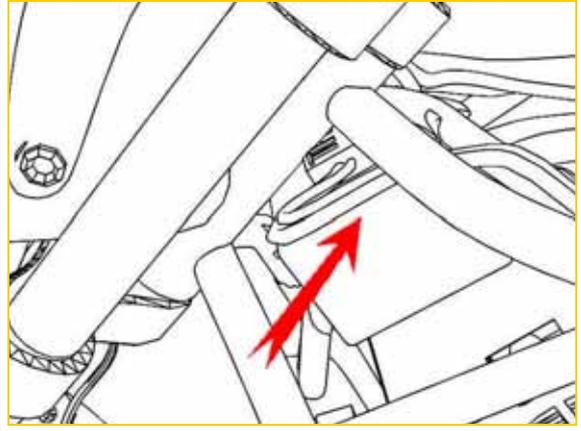


Fig 14

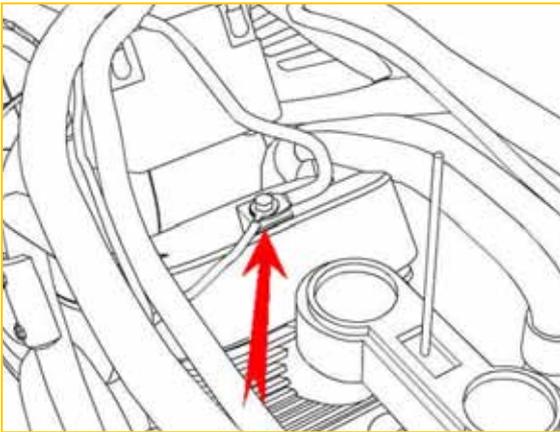


Figure 15



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