

[POWER COMMANDER V]

Yamaha 1800cc SHO/HO Personal Watercraft

Installation Instructions



PARTS LIST

- 1 Power Commander Module
- 1 PCV Wiring Harness
- 1 USB Cable
- 1 Installation Guide
- 2 Power Commander Decals
- 2 Dynojet Decals
- 2 Dual Lock strips
- 1 Alcohol swab
- 1 Posi-tap
- 1 Bypass Plug
- 1 CAN Termination Plug

**THE IGNITION MUST BE TURNED
OFF BEFORE INSTALLATION!**

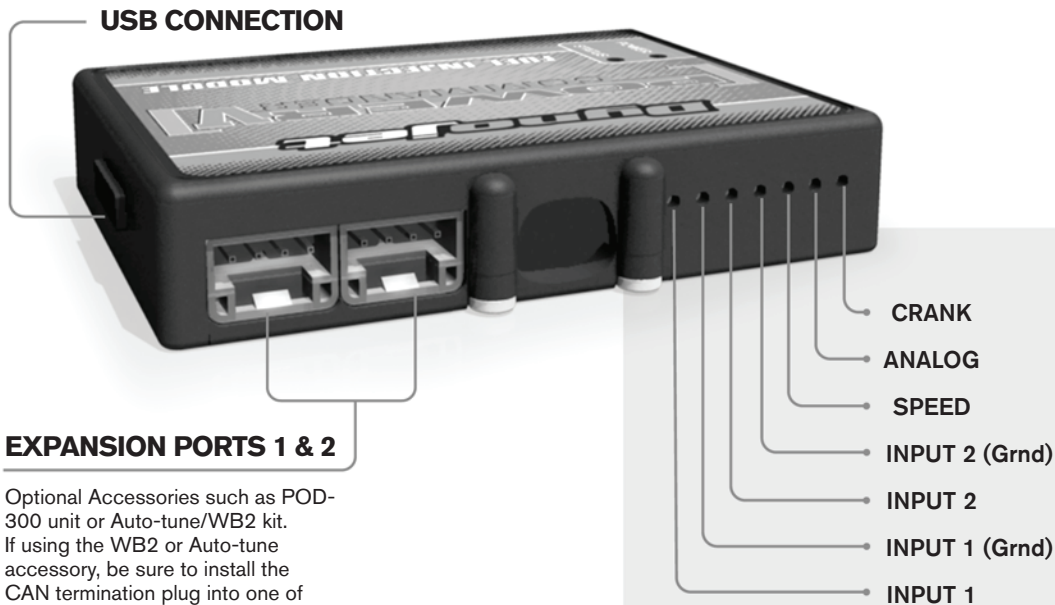
THE LATEST POWER COMMANDER
SOFTWARE AND MAP FILES CAN BE
DOWNLOADED FROM OUR WEB SITE AT:
www.powercommander.com

PLEASE READ ALL DIRECTIONS BEFORE STARTING INSTALLATION

Dynojet

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POWER COMMANDER V INPUT ACCESSORY GUIDE

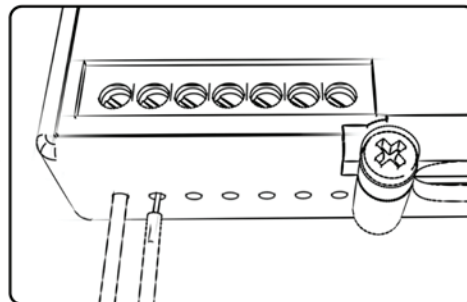


Optional Accessories such as POD-300 unit or Auto-tune/WB2 kit. If using the WB2 or Auto-tune accessory, be sure to install the CAN termination plug into one of the unused expansion ports. This is a hard plastic plug supplied with the PCV.

Wire connections:

To input wires into the PCV first remove the rubber plug on the backside of the unit and loosen the screw for the corresponding input. Using a 22-24 gauge wire strip about 10mm from its end. Push the wire into the hole of the PCV until it stops and then tighten the screw. Make sure to reinstall the rubber plug.

NOTE: If you tin the wires with solder it will make inserting them easier.



ACCESSORY INPUTS

Map -

(Input 1 or 2) The PCV has the ability to hold 2 different base maps. You can switch on the fly between these two base maps when you hook up a switch to the MAP inputs. You can use any open/close type switch. The polarity of the wires is not important. When using the Autotune kit one position will hold a base map and the other position will let you activate the learning mode. When the switch is "CLOSED" Autotune will be activated. (Set to Switch Input #1 by default.)

Shifter-

(Input 1 or 2) These inputs are for use with the Dynojet quickshifter. Insert the wires from the Dynojet quickshifter into the SHIFTER inputs. The polarity of the wires is not important. (Set to Switch Input #2 by default.)

Speed-

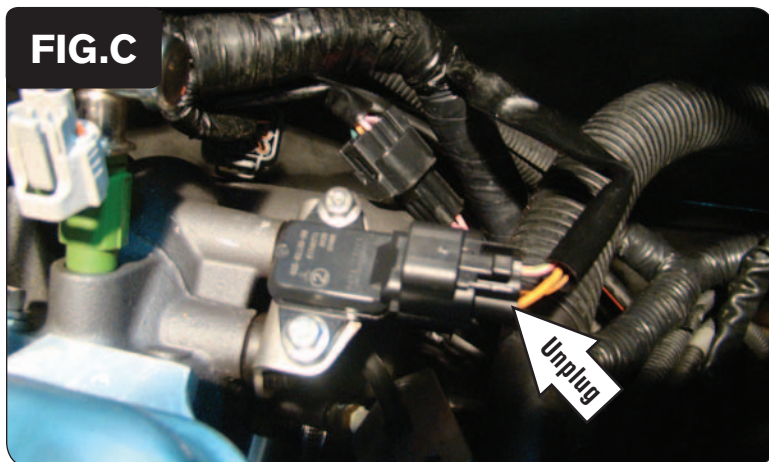
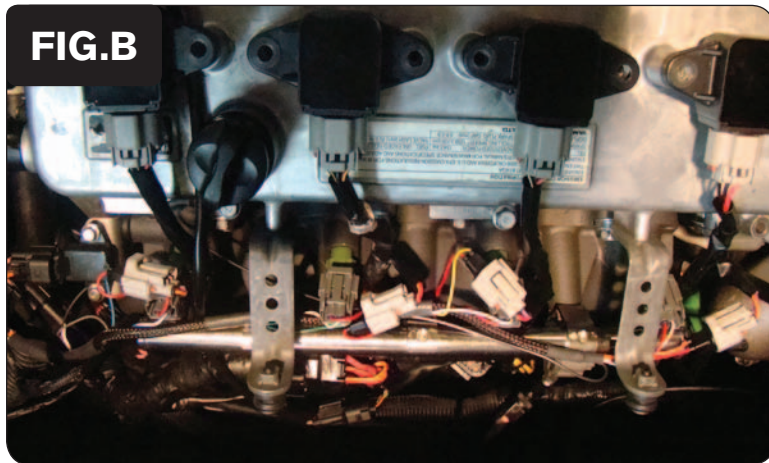
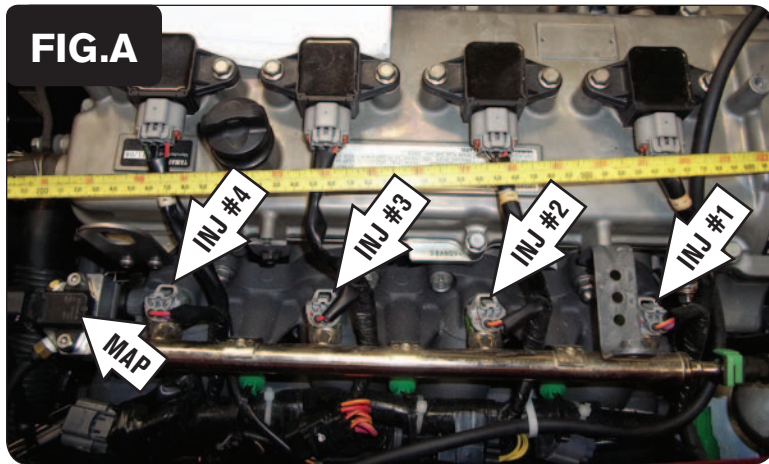
If your application has a speed sensor then you can tap into the signal side of the sensor and run a wire into this input. This will allow you to calculate gear position in the Control Center Software. Once gear position is setup you can alter your map based on gear position and setup gear dependent kill times when using a quickshifter.

Analog-

This input is for a 0-5v signal such as engine temp, boost, etc. Once this input is established you can alter your fuel curve based on this input in the control center software.

Crank-

Do **NOT** connect anything to this port unless instructed to do so by Dynojet. It is used to transfer crank trigger data from one module to another.



- 1 Remove the seat to access the watercraft's engine compartment; and remove the cover from the top of the engine.
- 2 Locate and unplug the stock wiring harness from the engine's fuel injectors (Fig. A).

The injectors are numbered from front to rear.

- 3 Plug the PCV wiring harness in-line of the fuel injectors and the stock wiring harness (Fig. B).

The PCV connectors with ORANGE colored wires should go to injector #1.

The PCV connectors with YELLOW colored wires should go to injector #2.

The PCV connectors with GREEN colored wires should go to injector #3.

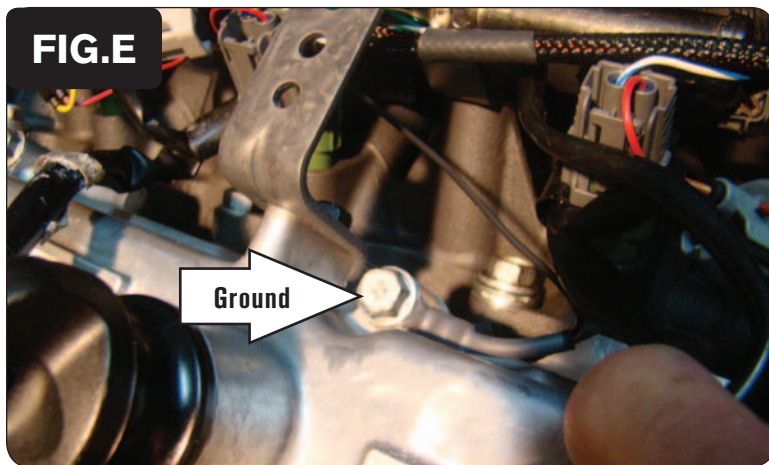
The PCV connectors with BLUE colored wires should go to injector #4.

- 4 Locate and unplug the stock wiring harness from the MAP sensor (Fig. C).



- 5 Plug the PCV wiring harness in-line of the MAP sensor and the stock wiring harness (Fig. D).

The PCV MAP sensor connectors have solid BROWN wires going to them.



- 6 Secure the ground wire of the PCV wiring harness with the 6mm ring lug to an unpainted engine case bolt or a sufficient ground source (Fig. E).

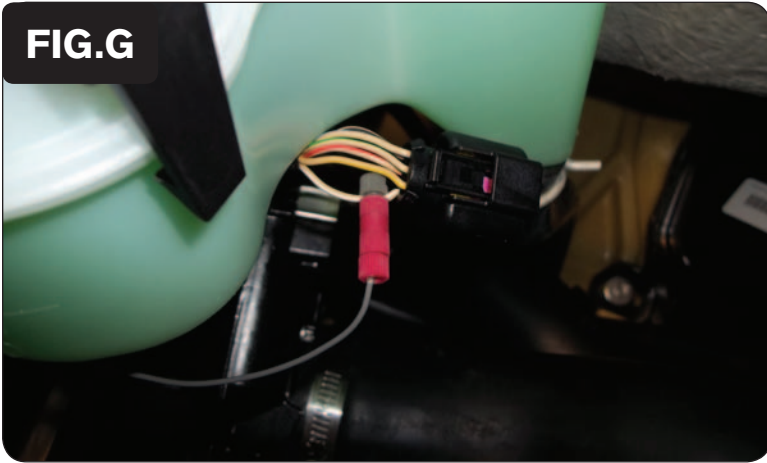


- 7 Locate and unplug the stock wiring harness from the watercraft's throttle body servo (Fig. F).

The throttle body servo is located on the throttle body over the pivot point of the throttle blade.

The throttle body is located beneath the intake almost to the bottom of the hull under the region highlighted in Figure F. It can be difficult to access.

FIG.G



- 8 Use the supplied Posi-tap to tap the GREY wire of the PCV wiring harness to the stock PINK wire of the watercraft's throttle body servo (Fig. G).
- 9 Plug the stock electrical connector back onto the throttle body servo.

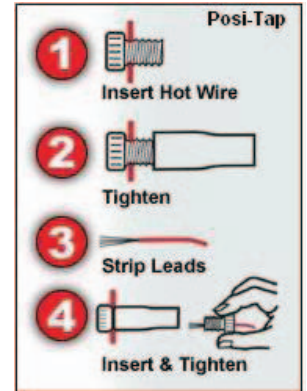
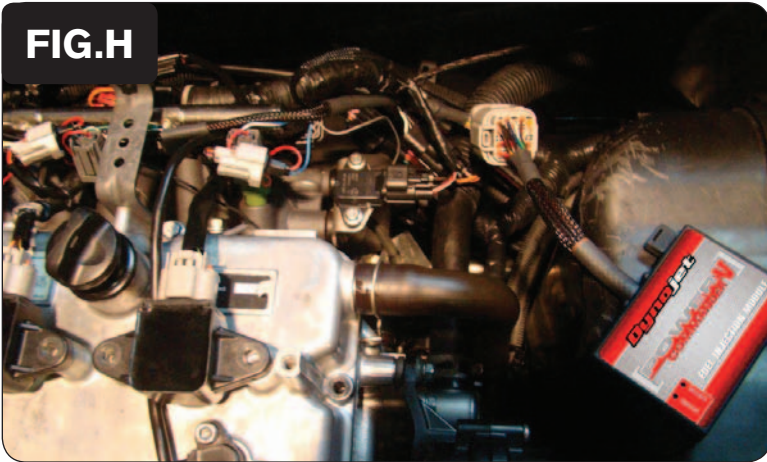


FIG.H

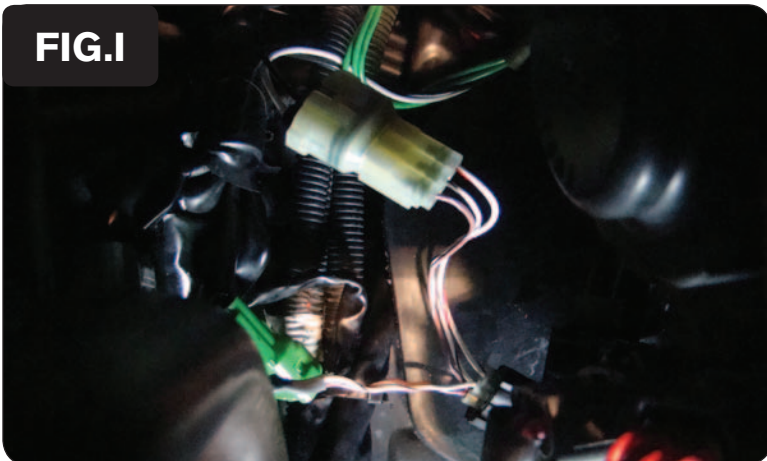


- 10 Using the supplied 3M Dual Lock fastening strips, secure the PCV module to a suitable mounting location. We recommend and use the location shown in Fig. H, but your location may vary depending on watercraft model and other considerations.

Keep the module as clear as possible from any splashing water at the bottom of the bilge. Use the supplied alcohol swab to clean the surface area prior to applying the 3M Dual Lock strips.

- 11 Plug the PCV module to the PCV wiring harness and plug the supplied CAN termination plug into one of the expansion ports on the PCV module.

FIG.I



- 12 Plug the CLEAR 3-pin connectors of the PCV wiring harness in-line of the stock Crank Position Sensor connectors.

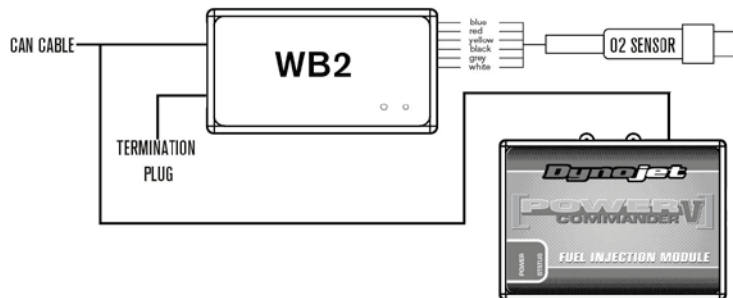
The stock CPS connectors (pictured) can be found towards the rear of the engine

FIG.J**Bypass Plug**

Bypassing the PCV

In the event you need to run the engine without the PCV module, the supplied bypass plug will return the engine control and tune back to stock. Refer to Fig. J.

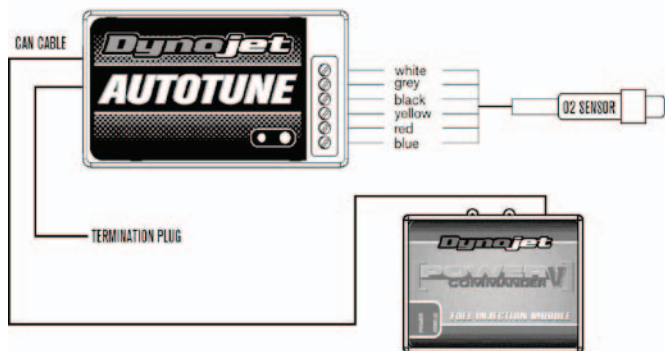
- 1 Unplug the wiring harness from the PCV Module.
- 2 Plug the bypass plug into the PCV wiring harness in place of the module.

FIG.K

Using Auto-tune with PCV

To take advantage of Dynojet's AutoTune feature with the PCV, you need to install a Wideband device on your vessel. With the PCV, this could be one of the following:

- Wideband 2—single channel Auto-tune module with gauge output
- AT-200—single channel AutoTune only module (shown in Figure M)

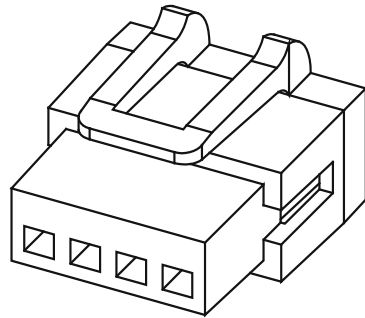
FIG.L

The PCV Control Center software allows you to enable and configure Auto-tuning when it sees one of these devices connected.

Refer to the appropriate Wideband device installation guide for more information on installation.

Refer to the PCV Control Center Help for more information on enabling and configuring Auto-tune.

FIG.M



CAN termination plug

Connecting the PCV to the Wideband

- 1 Verify the Wideband device is installed correctly. Refer to the appropriate Wideband device installation guide.
- 2 Connect the PCV to the Wideband device using the CAN to CAN cable. Refer to Figure K or L.
The CAN to CAN cable is provided with the Wideband device.
- 3 In one of the open CAN ports on either AutoTune module, attach the provided CAN termination plug. Refer to Figures K, L, and M.

EFI Tuning with PCV

The PCV makes fueling changes based off of the values in the map stored in the PCV.

The PCV is shipped with a Zero Map. A Zero Map means that all the values are 0, which will yield no changes and the watercraft will run exactly the same as if the unit were not installed.

When a map is loaded into the PCV, the engine fueling will be adjusted according to the values in the map.

The PCV does not make changes to the ECU programming. The numbers in the PCV map add or subtract a percentage of the fuel the ECU is supplying for a particular load condition. For example, if the PCV map shows a 10 in a given cell, the PCV increases the amount of fuel the ECU is supplying by 10%. If the PCV map shows a -10 in a given cell, the PCV reduces the amount of fuel the ECU is supplying by 10%.

When tuning, always start with a setting where the motor runs rich. Slowly trim fuel out to find the desired exhaust gas temperature (EGT) or air-to-fuel ratio (A/F).

The PCV gives you the freedom to subtract up to 99% and add up to 250% of the fuel the ECU is supplying for a particular condition.

When adding fuel with the PCV, the injector duty cycle may reach 100% (always open) before the PCV fuel change value reaches 100%. For example, if the ECU is running the injectors at 67% duty cycle (injectors open 67% of the time) then adding 50% fuel with the PCV will max out the injectors. In this case, the amount of fuel that can be added will be limited by the injectors.

Primarily, tuners will choose to map the fueling based off of a throttle position versus RPM fuel table; however, the device has the capability to map fueling based off of intake manifold air pressure versus RPM as well.