

[POWER COMMANDER V]

2009-2010 Arctic Cat M8, M1000,
F8, and F1000 Snowmobiles

Installation Instructions



PARTS LIST

quantity	description
1	power commander
1	USB A to mini B cable
1	cd-rom
1	installation guide
2	power commander decals
2	dynojet decals
2	velcro strip
1	alcohol swab

**The ignition MUST be turned
OFF before installation!**

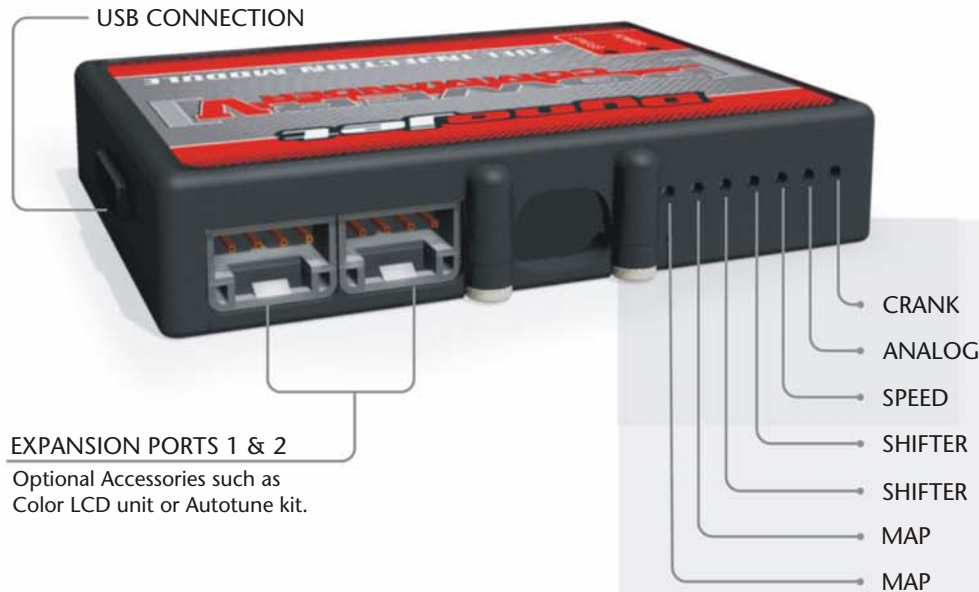
DOWNLOAD THE POWER COMMANDER SOFTWARE
AND LATEST MAPS FROM OUR WEBSITE:
WWW.POWERCOMMANDER.COM

PLEASE READ ALL DIRECTIONS BEFORE STARTING INSTALLATION

Dynojet

2191 Mendenhall Drive • North Las Vegas, NV 89081 • (800) 992-4993 • www.powercommander.com

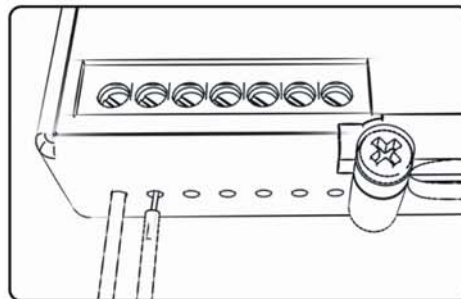
POWER COMMANDER V INPUT ACCESSORY GUIDE



PCV Wire Connections

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

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



ACCESSORY INPUTS

- Map -** The PCV has the ability to hold two 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.
- Shifter -** Not used for snowmobiles.
- Speed -** If your application has a speed sensor, 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.
Note: Harley Davidson models have this feature enabled internally—do **NOT** use this input for HD models.
- 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.

WARNING

The ignition must be turned OFF before installation.

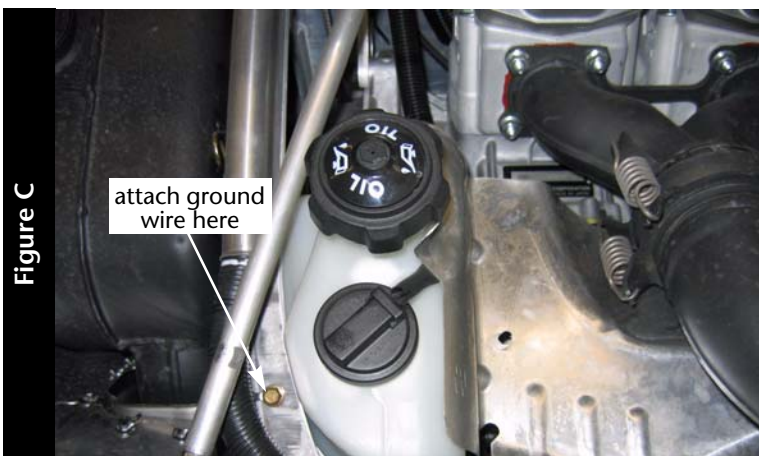
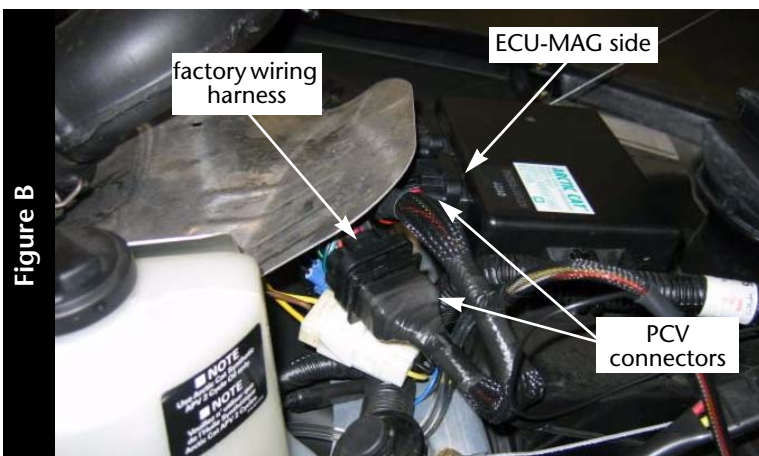
- 1 Locate the engine control unit (ECU) under the hood.
On the F-series snowmobiles, the ECU is located beneath the headlight above the engine. It may be necessary to remove the body panels to access the ECU.

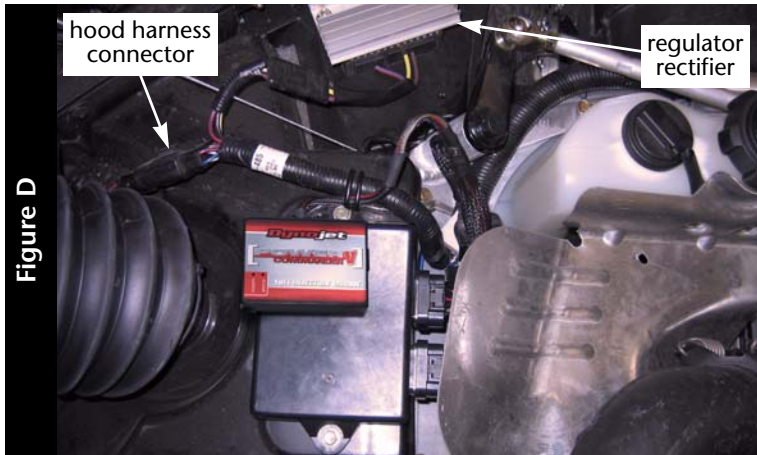
- 2 Unplug the ECU connector on the MAG side as shown in Figure B.
- 3 Attach the Power Commander V (PCV) connectors to the ECU and the factory wiring harness.

- 4 Attach the ground wire ring lug to the frame bolt located next to the oil reservoir as shown in Figure C.

On the F-series snowmobiles, locate a frame bolt near the ECU. Attach the ground wire ring lug to the frame bolt located near the ECU.

Note: Remove paint as necessary to provide a good connection.





- 5 Clean the top of the ECU and the back of the PCV using the supplied alcohol swab and attach the supplied velcro.
- 6 Attach the PCV to the ECU.
- 7 Replace any removed panels.
- 8 Insert the cd provided into your computer's cd-rom drive.
- 9 Follow the on-screen instructions to install the PCV software.
Visit www.powercommander.com to download software tutorials.

OPTIONAL CONNECTIONS

TEMPERATURE INPUT

- 1 Using a t-tap or posi-tap, secure a 22-24 gauge wire to pin 21 on the PCV ECU connector. The pin numbers are located on the back side of the ECU connector.
- 2 Connect this wire to the Analog input on the Power Commander V. Refer to page 2.

12 V SOURCE FOR OPTIONAL WIDEBAND 2/AUTOTUNE KIT

Locate the regulator rectifier as shown in Figure D. The red/blue wire can be used as a 12 V source. Use a t-tap or posi-tap when connecting to this wire.

SPEED INPUT

- 1 Locate the main hood harness connector near the hood hinges.
- 2 Using a t-tap or posi-tap, secure a 22-24 gauge wire to the white/orange wire. The white/orange wire is located on pin 3 of the hood harness connector.
- 3 Connect this wire to the Speed input on the Power Commander V. Refer to page 2.

EFI TUNING WITH PCV

The Power Commander makes fueling changes off of the numbers in the map stored in the Power Commander. The snowmobile Power Commanders are shipped with a Zero Map. With a Zero Map, the snowmobile will run the stock fueling programmed in the ECU. When a map is loaded into the Power Commander, the snowmobile will be fueled according to the numbers in the map. The Power Commander does not make changes to the ECU programming.

The numbers in the Power Commander map add or subtract a percentage of the fuel the ECU is supplying for a particular load condition. For example, if the Power Commander map shows a 10 in a given cell, the Power Commander increases the amount of fuel the ECU is supplying by 10%. If the Power Commander map shows a -10 in a given cell, the Power Commander 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 100% and add up to 250% of the fuel the ECU is supplying for a particular condition. When adding fuel with the Power Commander, the injector duty cycle may reach 100% (always open) before the Power Commander value reaches 250%. 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 Power Commander will max out the injectors. In this case, the amount of fuel that can be added will be limited by the injectors.

FUEL SUBTRACTION

The PCV gives you the ability to trim fuel out of the map to correct rich conditions.



Engine failure can result from running the engine in a lean state.

Two-stroke tuning should only be done by qualified individuals. If you are not familiar with two-stroke tuning concepts, seek the help of an experienced tuning professional.

ADVANCED MAPS

When the fuel map is advanced the PCV creates an individual table for each injector.

- Cylinder 1 table—PTO injector
- Cylinder 2 table—Mag. injector

Advanced maps can be used to increase the precision of fueling changes, but you may find a single map will be less complicated and sufficient for most engine modifications.



ADDITIONAL FEATURES AND ACCESSORIES FOR THE POWER COMMANDER V

The PCV can be combined with the Dynojet Autotune kit (P/N AT-200) allowing you to tune as you ride. The Autotune feature uses a target AFR table where the user specifies a target AFR based on TP and RPM. After enabling Autotune, the user rides as normal and the PCV calculates a trim table as you ride. Once the system has calculated a trim table for the specified conditions, the user can accept the trims as a base map and turn the Autotune feature off.

Autotune is a very powerful feature allowing the user to build custom maps for any modifications made to the sled, including big bore kits, aftermarket pipes, and intakes. The Autotune kit may also be used to smooth out a stock sleds fuel map eliminating midrange flat spots and improving throttle response.

Figure F



If you are looking for a display for your setup we have the answer. Dynojet's LCD-200 is a color touch screen display capable of displaying all PC data and AFR if you are using the Wideband 2. The LCD-200 is capable of logging data including TP, RPM, Injector duty cycle, fuel change, AFR, and two analog signals input into the PCV.

The LCD-200 uses a standard SD card (1GB or smaller) to store data. The data logged on the LCD-200 can be played back in the field or downloaded to your computer and viewed in Excel.