

*Installation manual power upgrade kit*

# *Yamaha Sidewinder / Arctic Cat ZR 9000*

*Stage 3*

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# Sidewinder AC 9000 stage 3 upgrade kit



*Supreme of the extreme !*

# *Sidewinder / AC ZR 9000*

## *power upgrade kits*

Thank you for choosing the MC Xpress power upgrade kit to your Yamaha Sidewinder / Arctic Cat ZR 9000 snowmobile.

The upgrade kits are designed for racing use only.

The upgrade kits are designed to give you the best performance possible together with reliability.

During the development work we have tried to keep the snowmobile as stock as possible to make the installation easy and to keep the sled as untouched as possible.

Read this manual before you start with the installation.

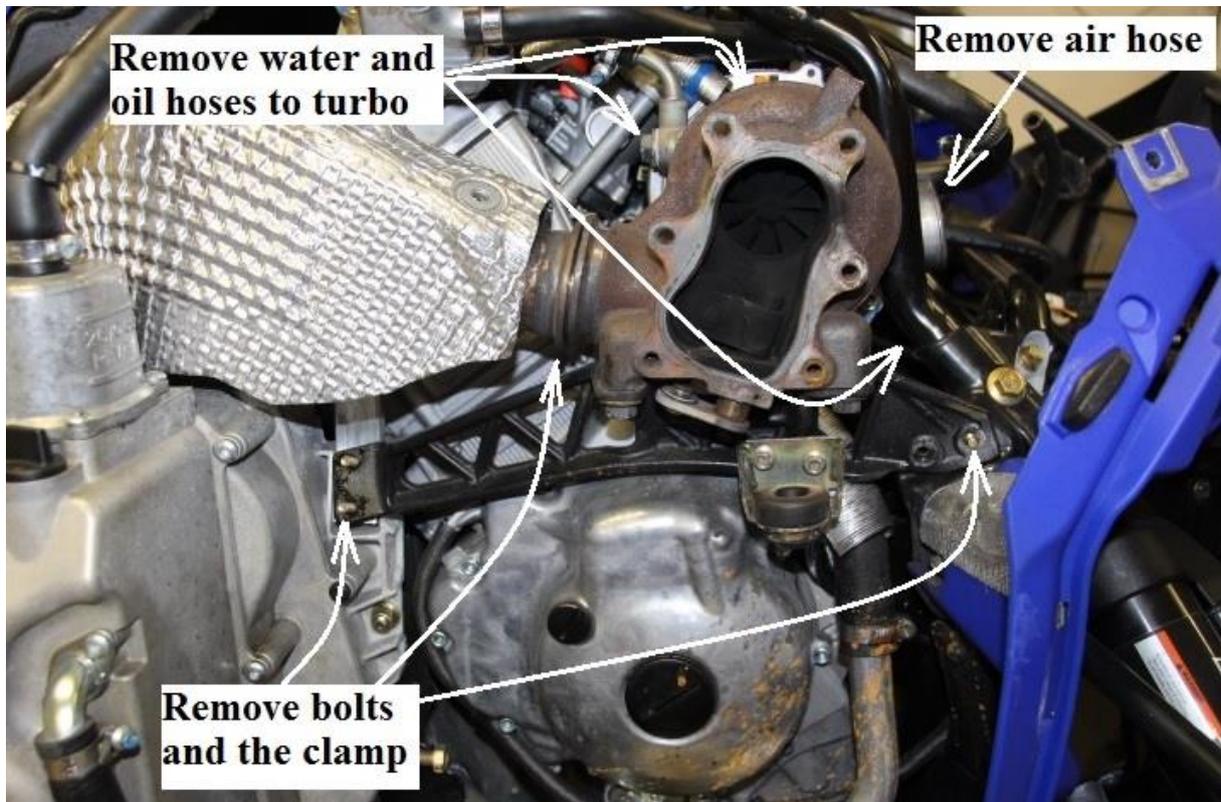
We hope you will get much joy with your new investment.

The turbo snowmobile is only recommended to be used by experienced riders and for racing use only.

- This upgrade kit greatly enhances the performance of the vehicle it is installed upon!
- Professional training should be received by anyone that operates this modified vehicle.
- Installation of this upgrade kit may void any warranty that is provided by the vehicle manufacturer.
- A one (1) year warranty is provided on the parts only. This warranty does not cover any other parts even if the damage is caused by the installation of the upgrade kit.
- MCXpress AB, its distributors, dealers, nor installers will not be held liable for any personal or physical damaged obtained in association with the installation or use of this product.

By installation or purchase of this product, the end user and or installer agree that the end user has been informed of this information.

Begin the installation by removing the plastic side fairings and the hood.  
Remove the heat shield above the turbo and stock muffler from the turbo.

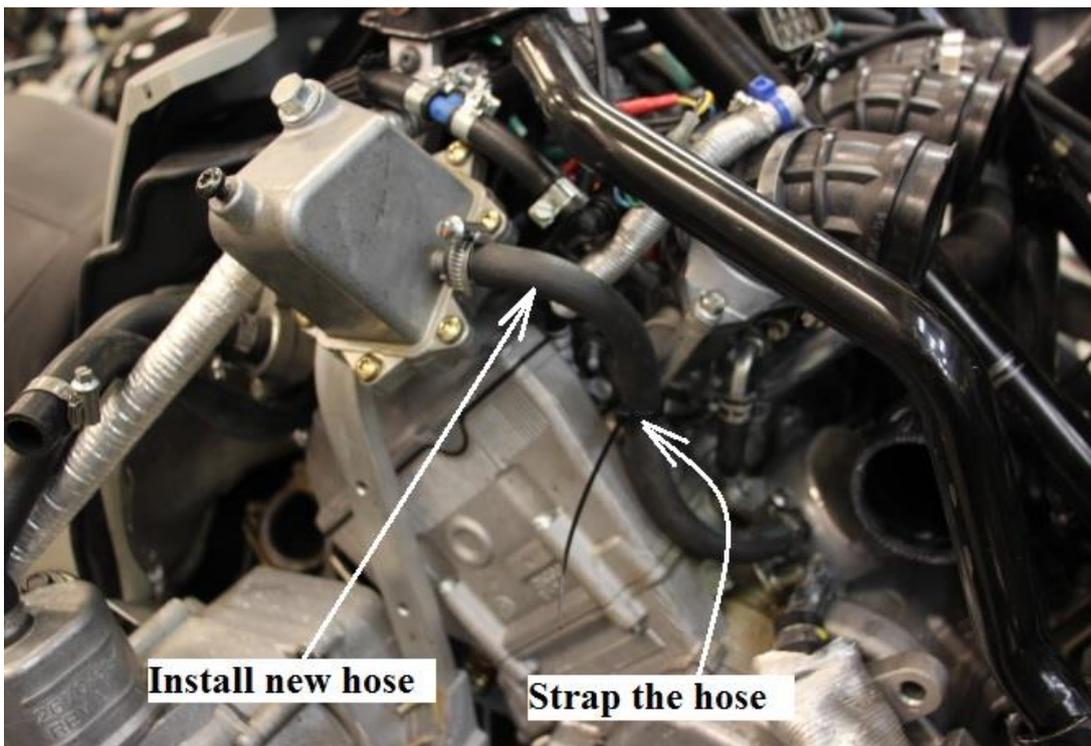


Remove the complete turbo including the bracket under the turbo.  
Remove the stock turbo from the bracket.  
Remove the front / upper muffler stay (see picture below)



Remove the front / upper muffler stay from the bracket.

Install the new turbo to the turbo bracket.

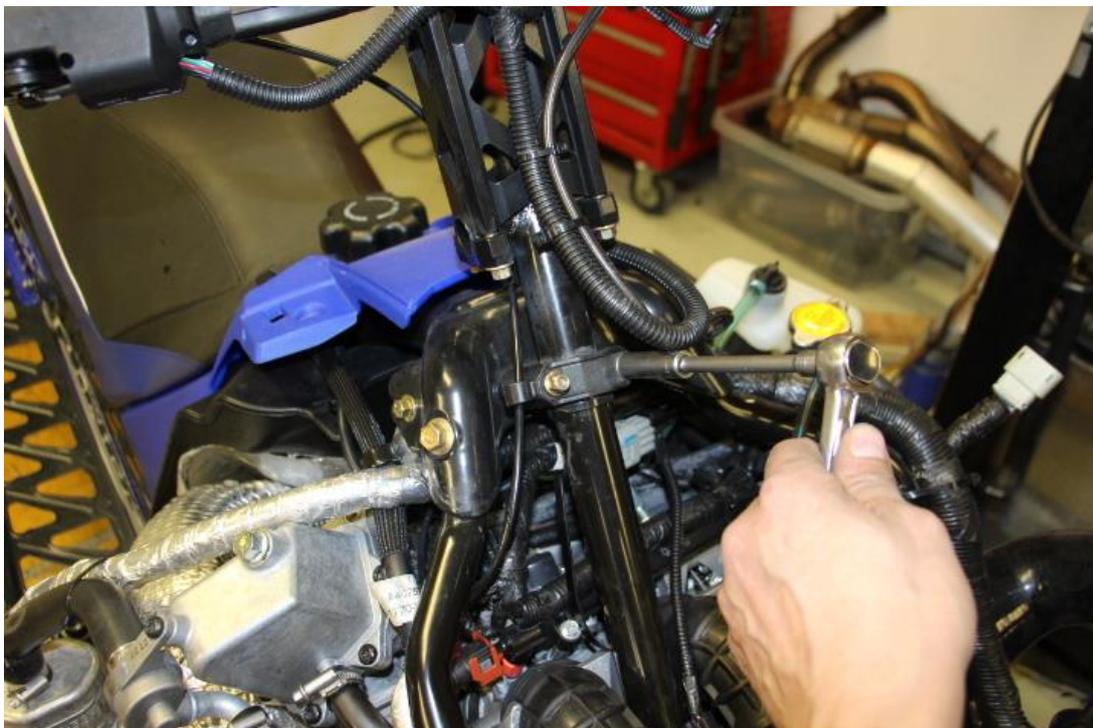


The now turbo does not need any water cooling.  
Install the hose supplied with the kit like the picture.  
Use the stock hose clamps.  
Fill up the water cooling system with anti freeze.

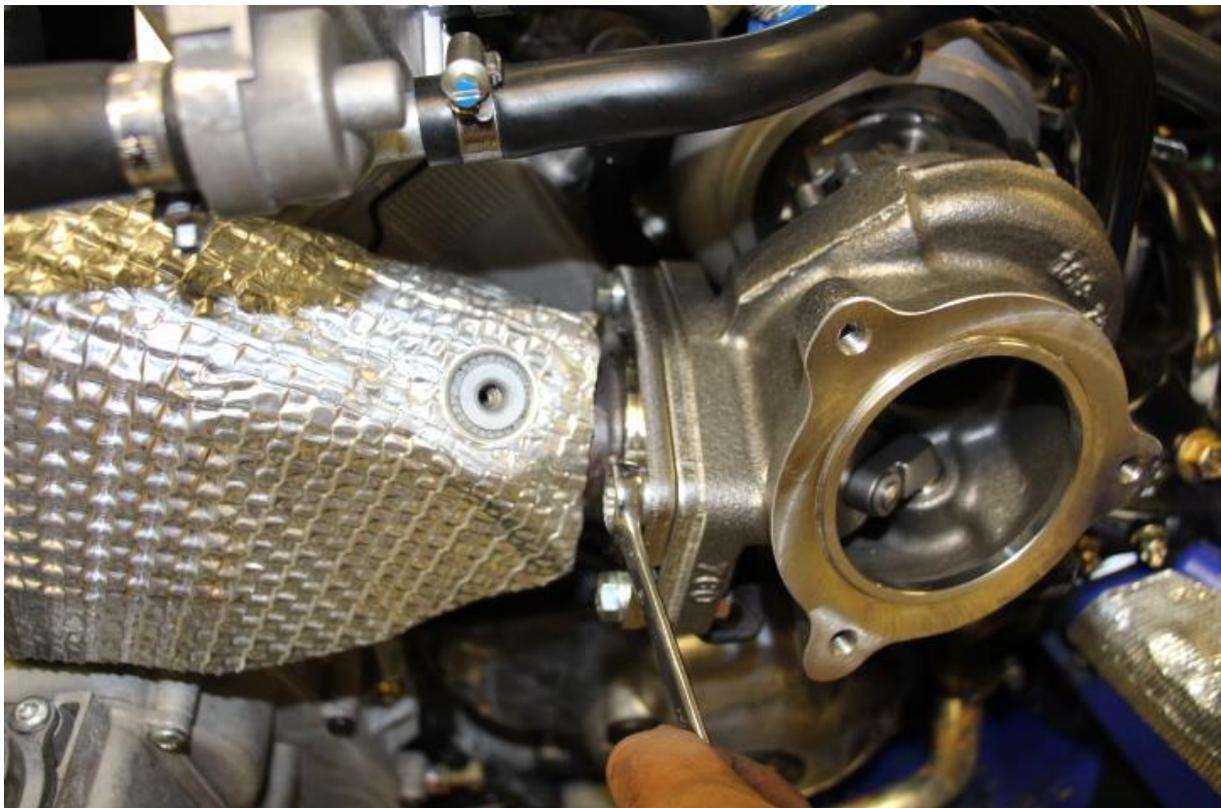
Install the new turbo to the turbo bracket.



Put the turbo in place into the sled.  
Do not hard tighten the M10 bolt that keeps the turbo yet.



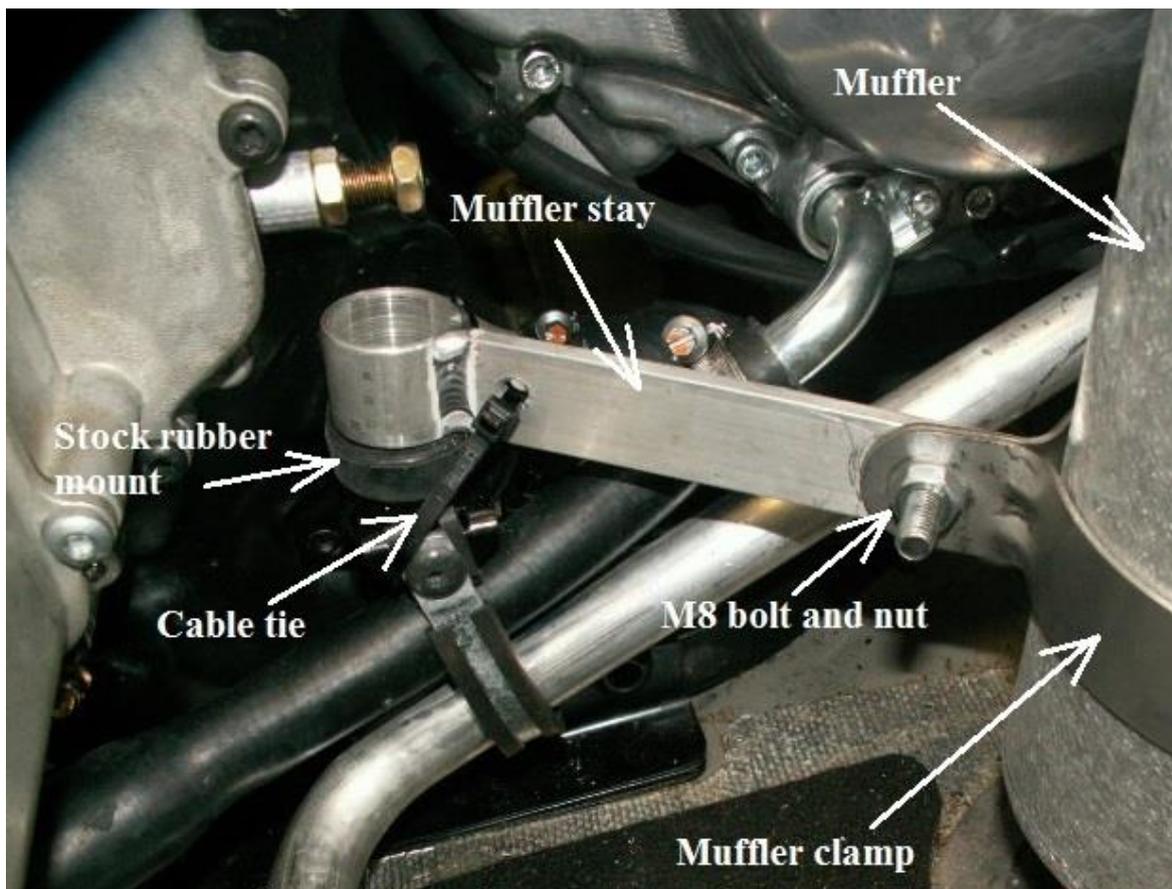
Put the new snorkel air intake hose in place, but to make it easier, remove the upper steering steam clamp and move the steering forward to get more space for the hose during the installation.



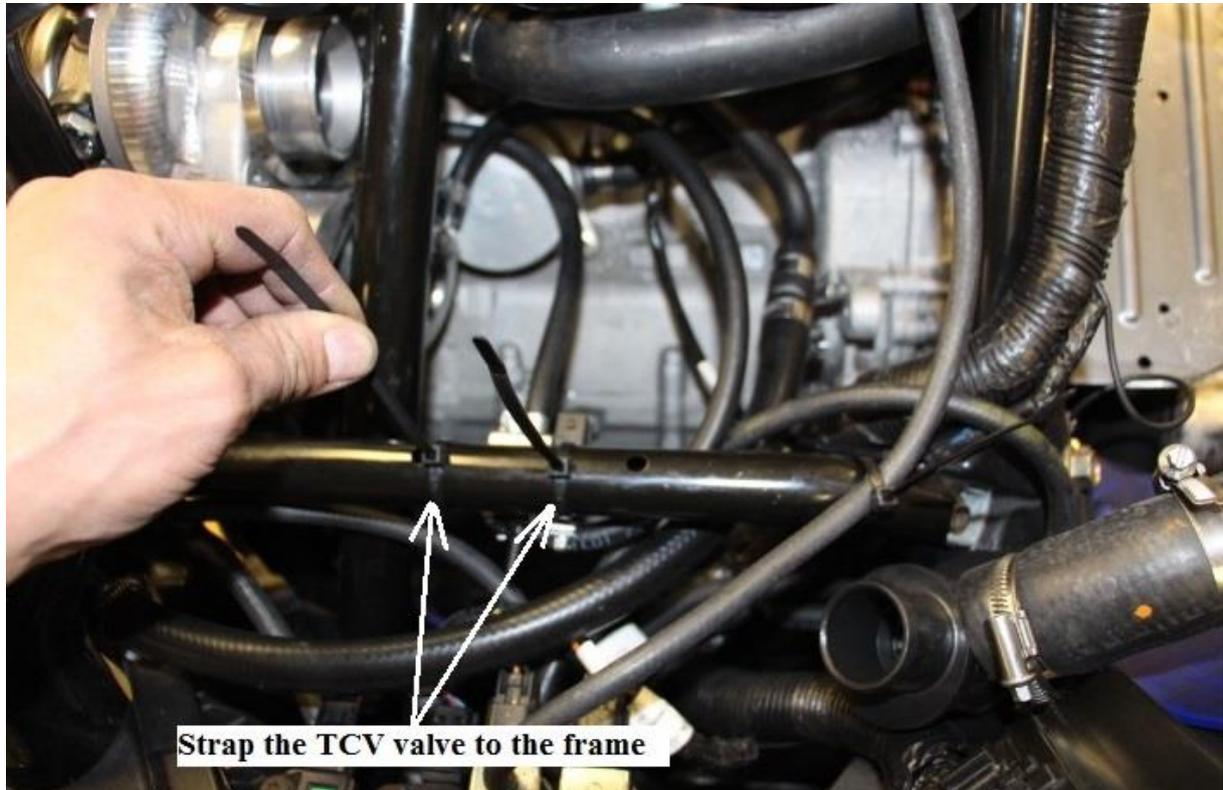
Tighten the stock exhaust pipe against the turbo.  
Tighten the M12 bolts and the M10 bolt on the turbo stay now



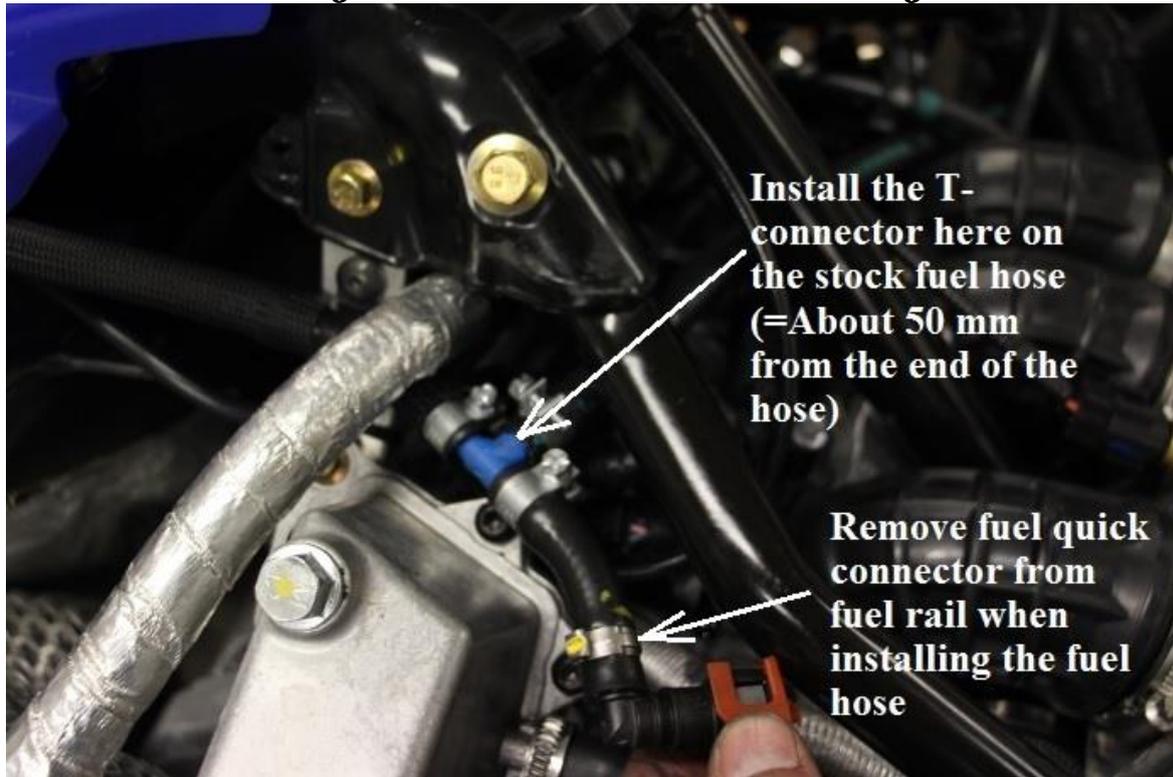
Install the oil hose to the turbo.  
Install the oil return hose. Use a hose clamp supplied with the kit.



Install the aluminum muffler and exhaust pipe to the turbo.  
Install the muffer stay between the chassis and the muffler like the picture below.  
Use the stock rubber mount.  
Strap down the muffer stay with a cable tie to keep it in place.  
Install the stock heat shield above the turbo, but first cut the corner so it fits the new turbo.  
(see next picture)



## *Install new fuel hose to extra injectors*

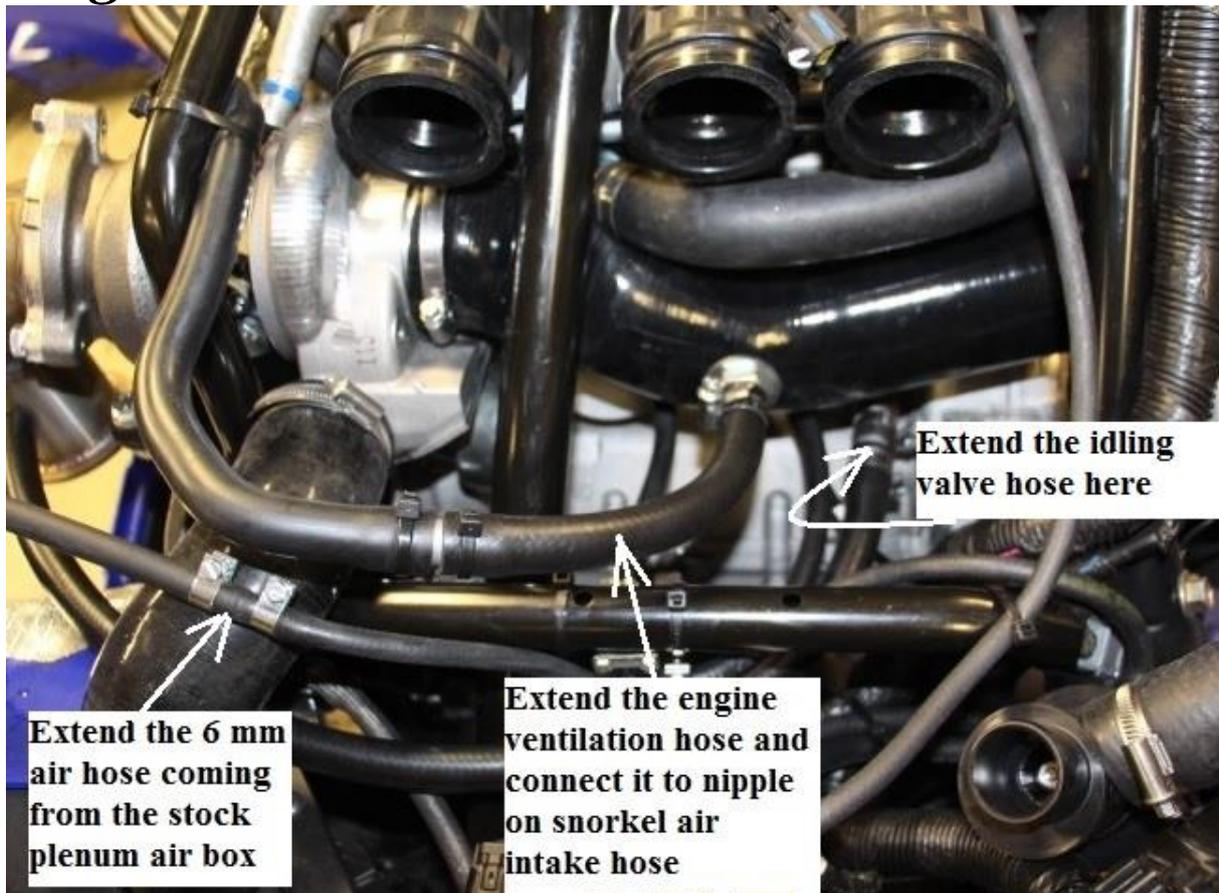


Cut the stock fuel hose like the picture.

Disconnect the stock fuel quick connector from the fuel rail.

The plastic fuel rail is fragile and can easily break when installing the new hose with the blue plastic T otherwise.

## *Engine ventilation hose*

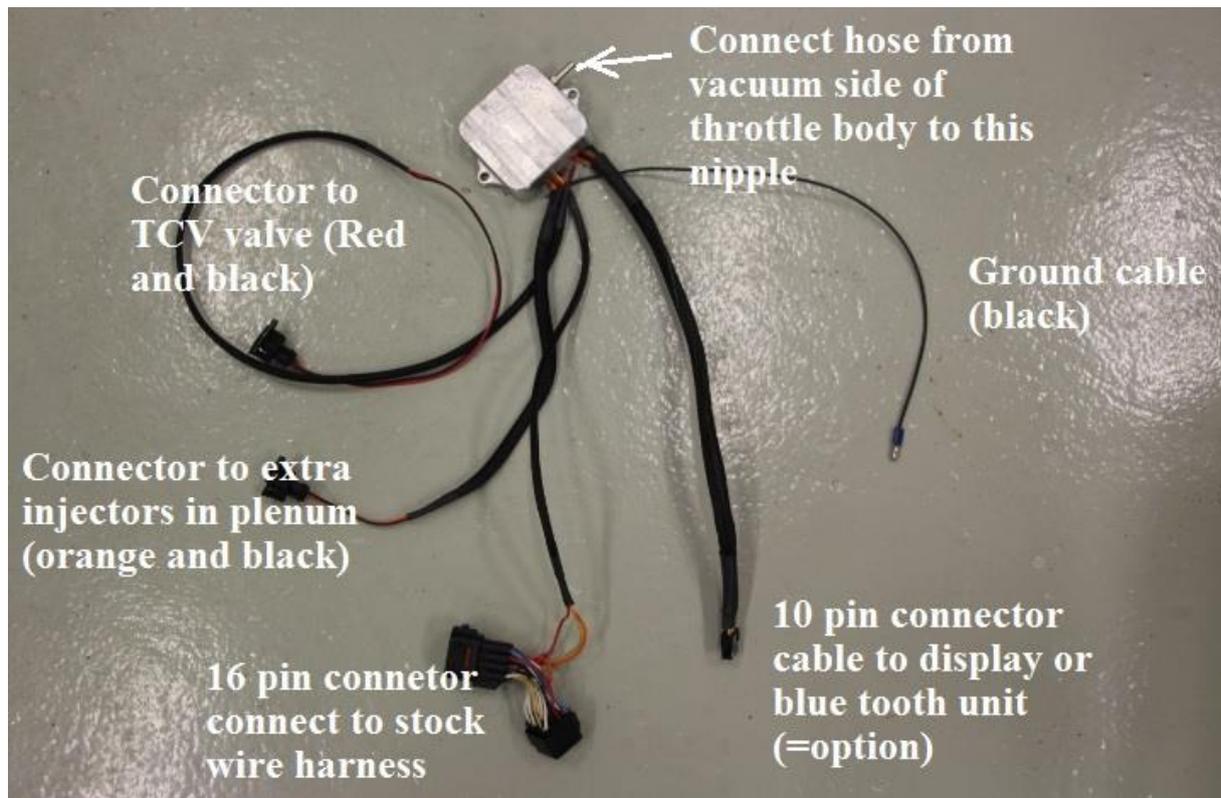


Extend the engine ventilation hose, the air hose from the stock plenum with the hoses and the hose coming from the idling motor under the throttle body with the hoses supplied with the kit.

Remove the stock blow off valve.

The small hose going to the blow off valve is supposed to be connected to the new blow off valve located on the new intercooler plenum.

## *Installation of MCX EFI-box*



The stock ECU is left untouched.

The opening time of the extra injectors inside the plenum and the TCV (=Turbo Control Valve) are controlled by the MCX EFI-box.

The 16 pin connector shall be connected to the stock wire harness.

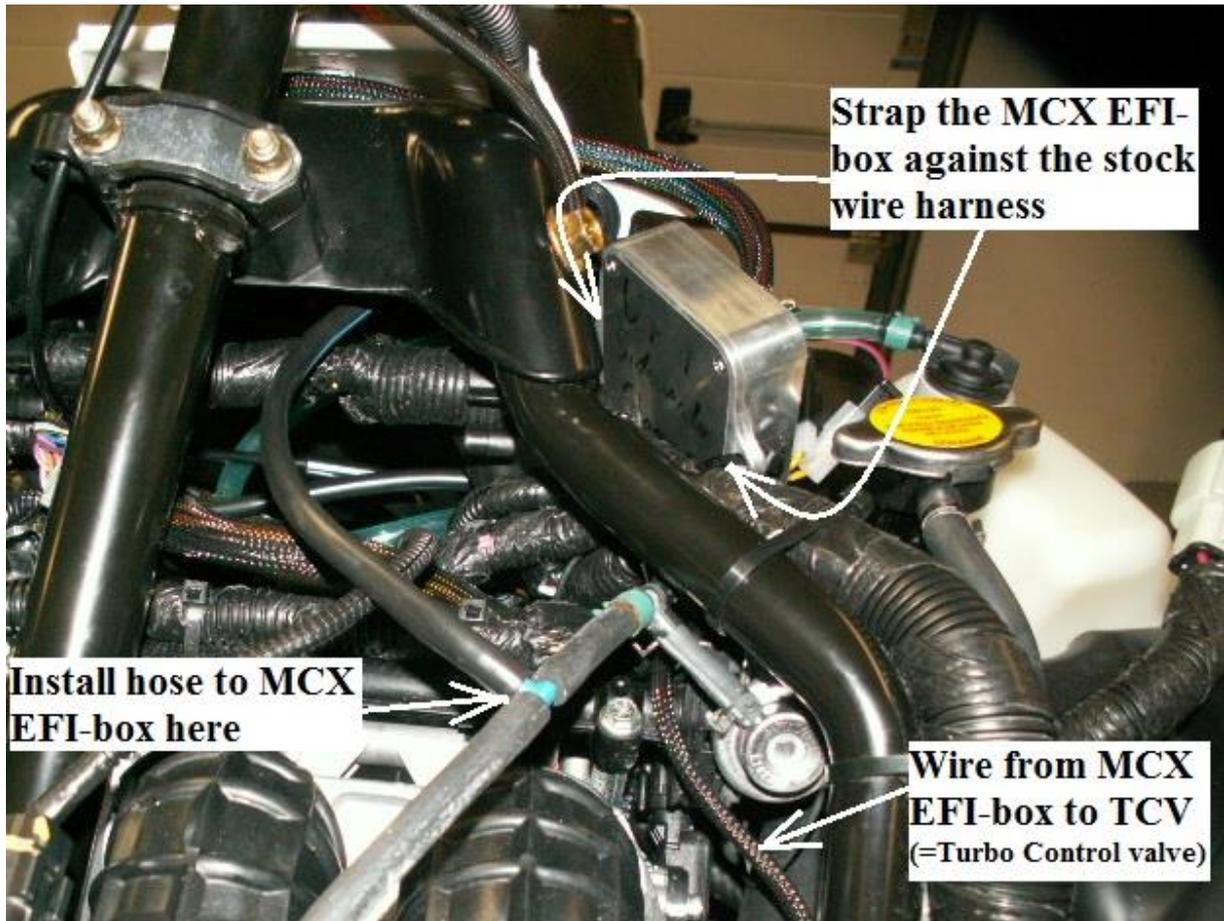
The air nipple on the MCX EFI-box shall be connected to a hose leading pressure from the stock air intake manifold.

The two pin connector with red and black wire shall be connected to the TCV valve on wastegate hose.

The two pin connector with orange and black wire shall be connected to the extra injectors inside the plenum.

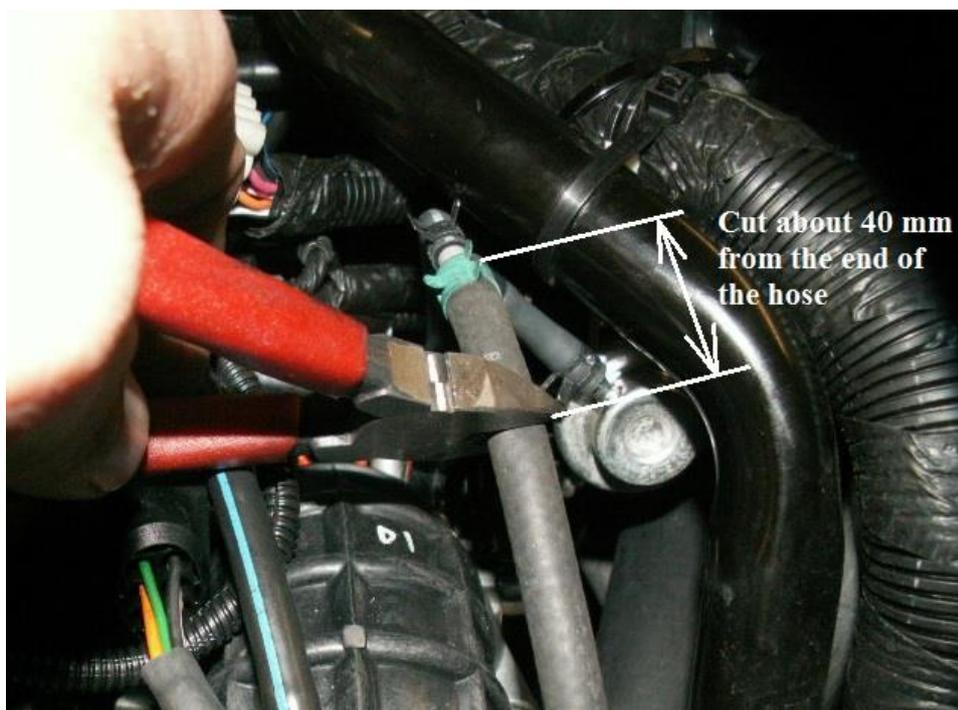
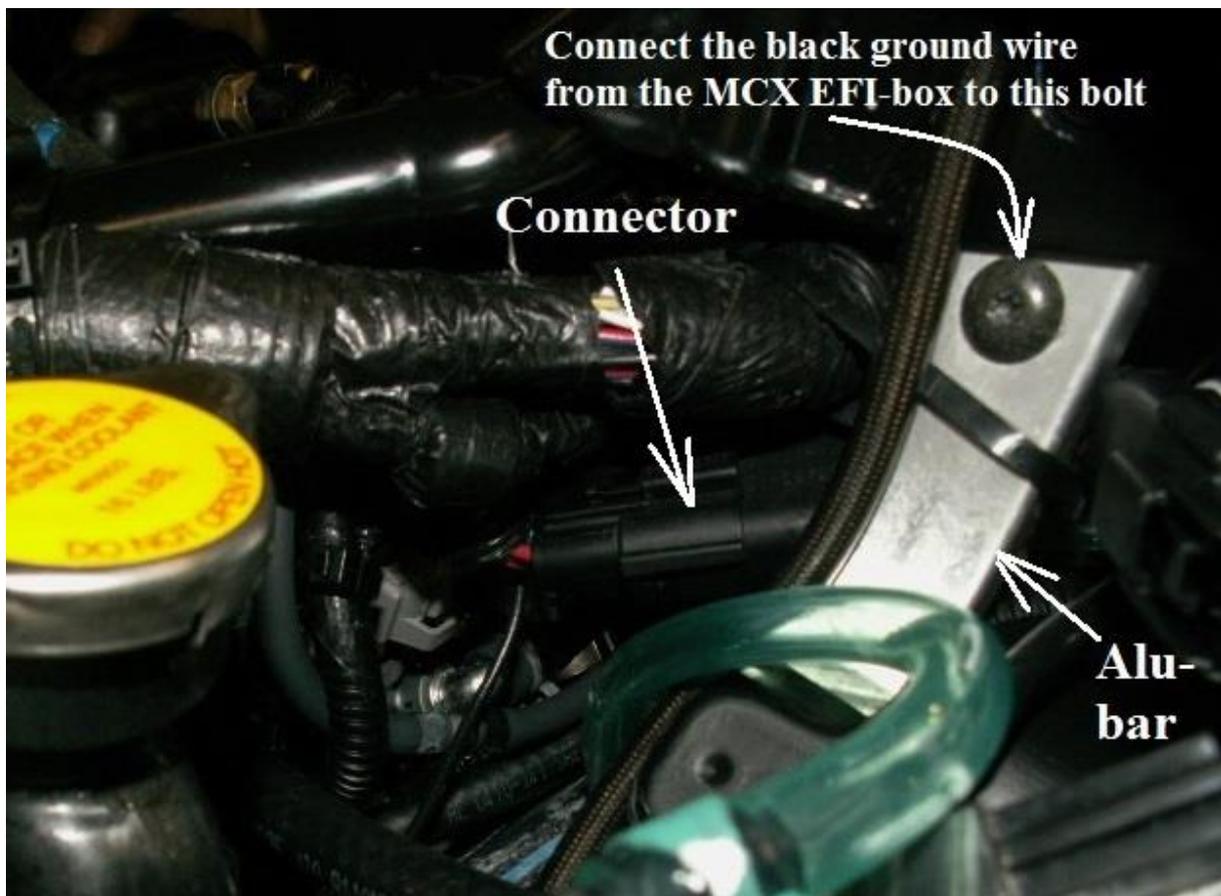
The small 10 pin connector shall not be connected to the stock wire harness.

It is made for options like the blue tooth unit or the MCX display and log unit.

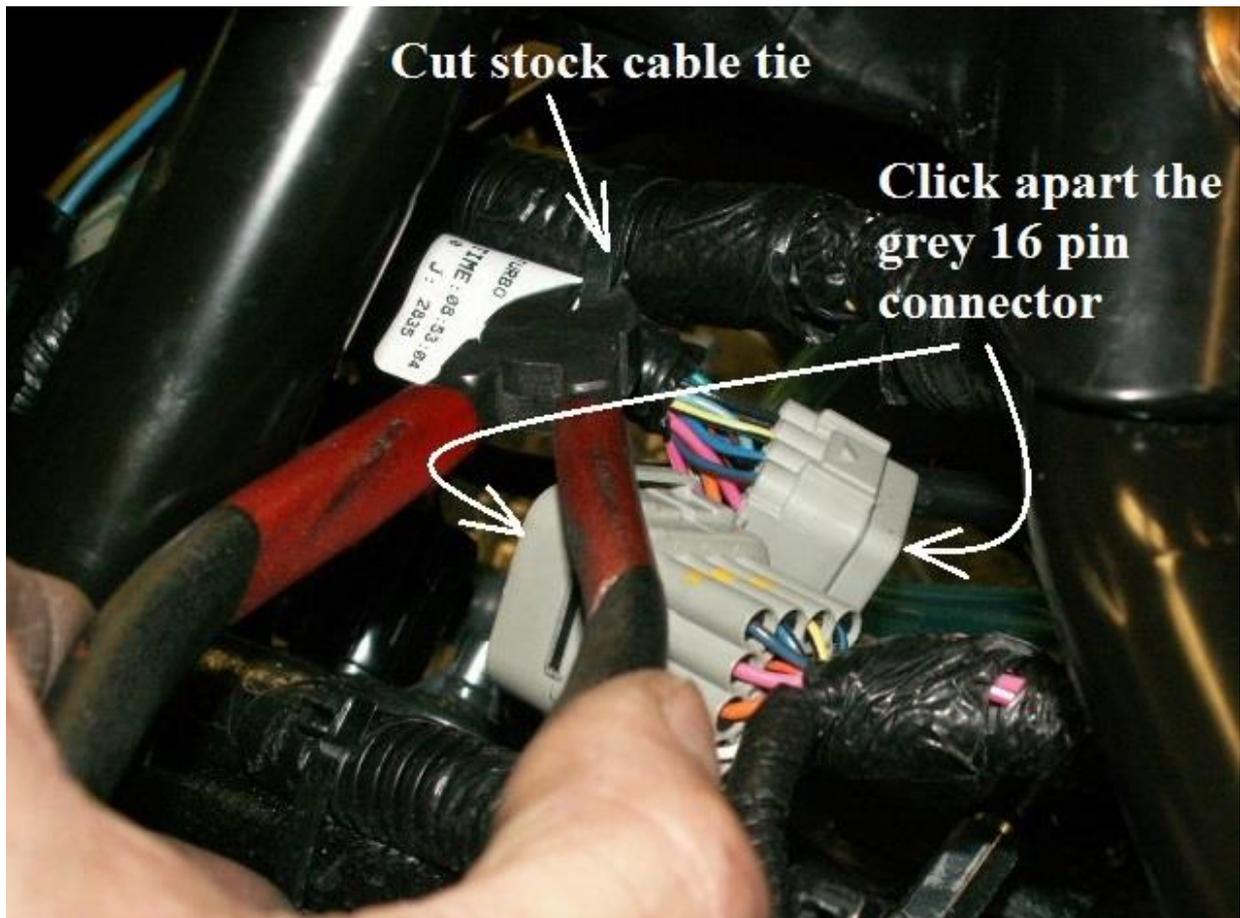


We recommend to place the MCX EFI-box like the picture above.  
(More details will follow on the next pages)

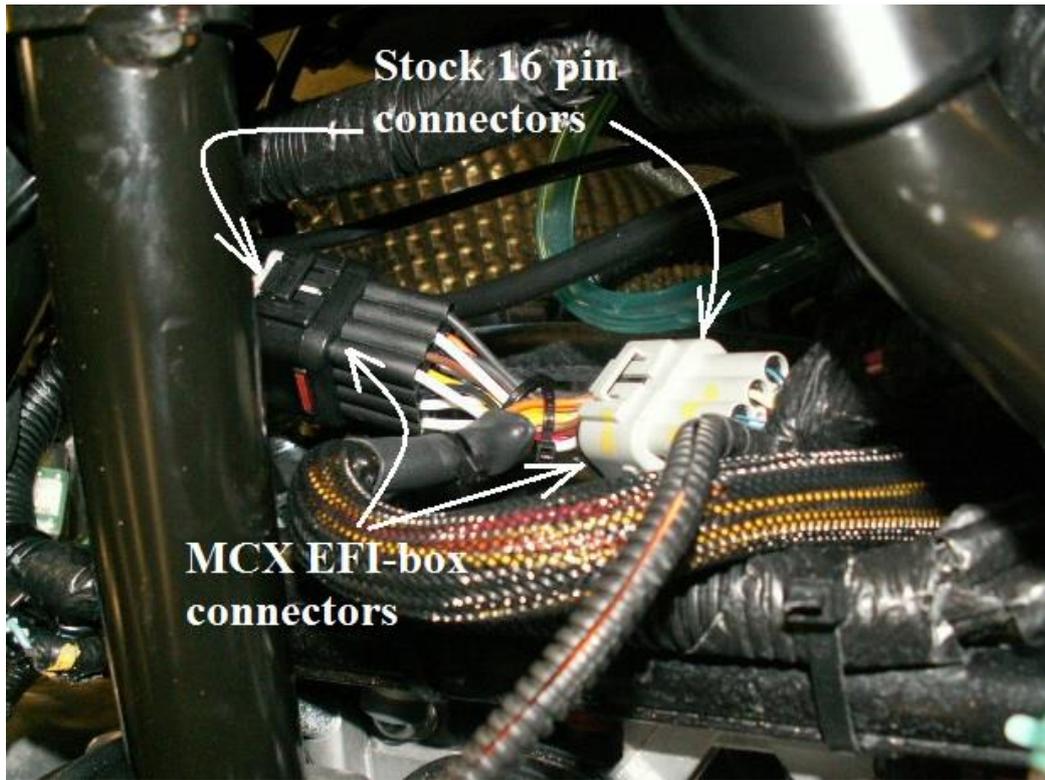
To make more space for the EFI-box, we recommend to move the connector behind the aluminum bar as we have done on the picture below. (This connector is usually in front of the alu-bar)



The MCX EFI-box shall be pressurized. Cut the small air hose like the picture. The T fitting on the Hose to the MCX EFI-box is supposed to be installed here.



Plug in the MCX EFI-box into the grey 16 pin connectors on top of the throttle body.  
Avoid bending the connectors on the MCX EFI-box.  
We suggest to place them like the picture below.



Install the black ground cable form the MCX EFI-box to ground of the chassis.  
(Connect to bolt on alu bar see picture 2 pages ago)

Connect the cable TCV cable to the TCV valve.

## *Pressure sensor voltage converters.*

Two pressure- sensor voltage converters must be installed to the snowmobile.

One is located in the front, close to the TCV valve.

Just remove the stock connector from the sensor, and plug in the voltage converter between the stock connector and the sensor.



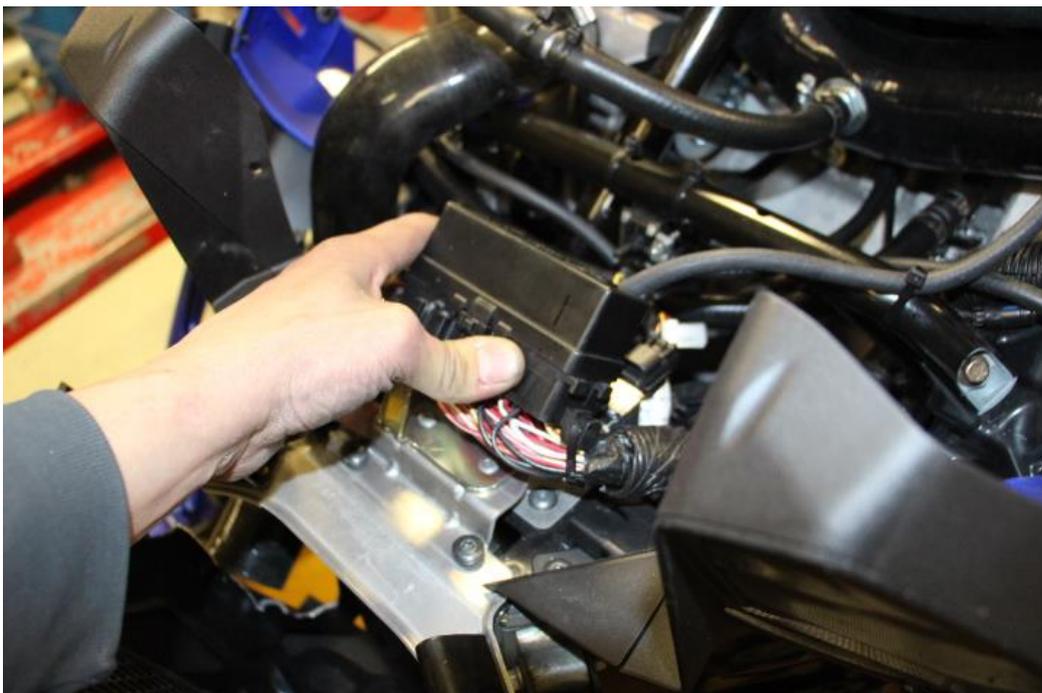
The other voltage converter shall be installed to the pressure sensor on top/ the right side of the throttle body (seen from the drivers view)



## *Installing new intercooler:*

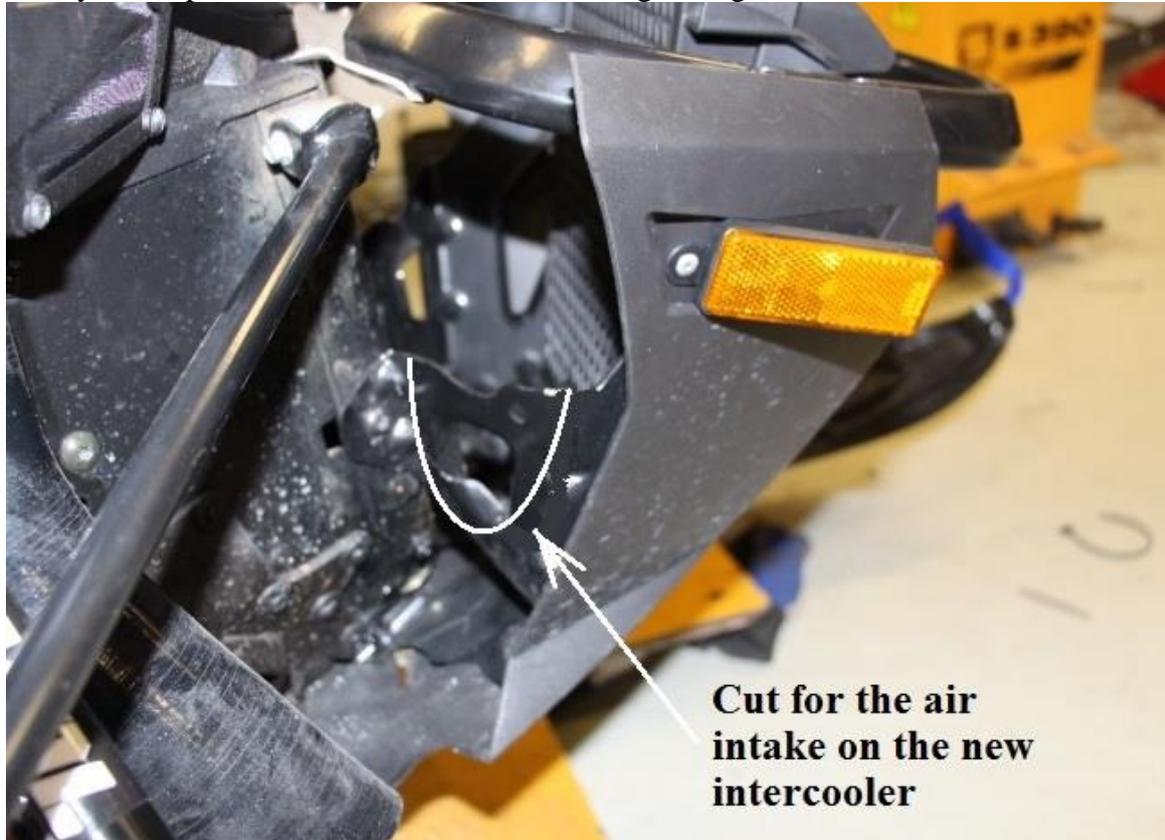
Remove the plastic behind the stock intercooler.

Remove the stock intercooler. The front bumper must first be removed.



The fuse box must be tilted backwards to fit under the new intercooler.  
Remove the plastic fuse box from the steel stay, and install it again, but just on the rear side of the stay.

Now you can press it backwards to about a 45 degree angle.



To make the new intercooler to fit, the chassis must be modified a little. Cut like the picture.  
Install the front bumper again.

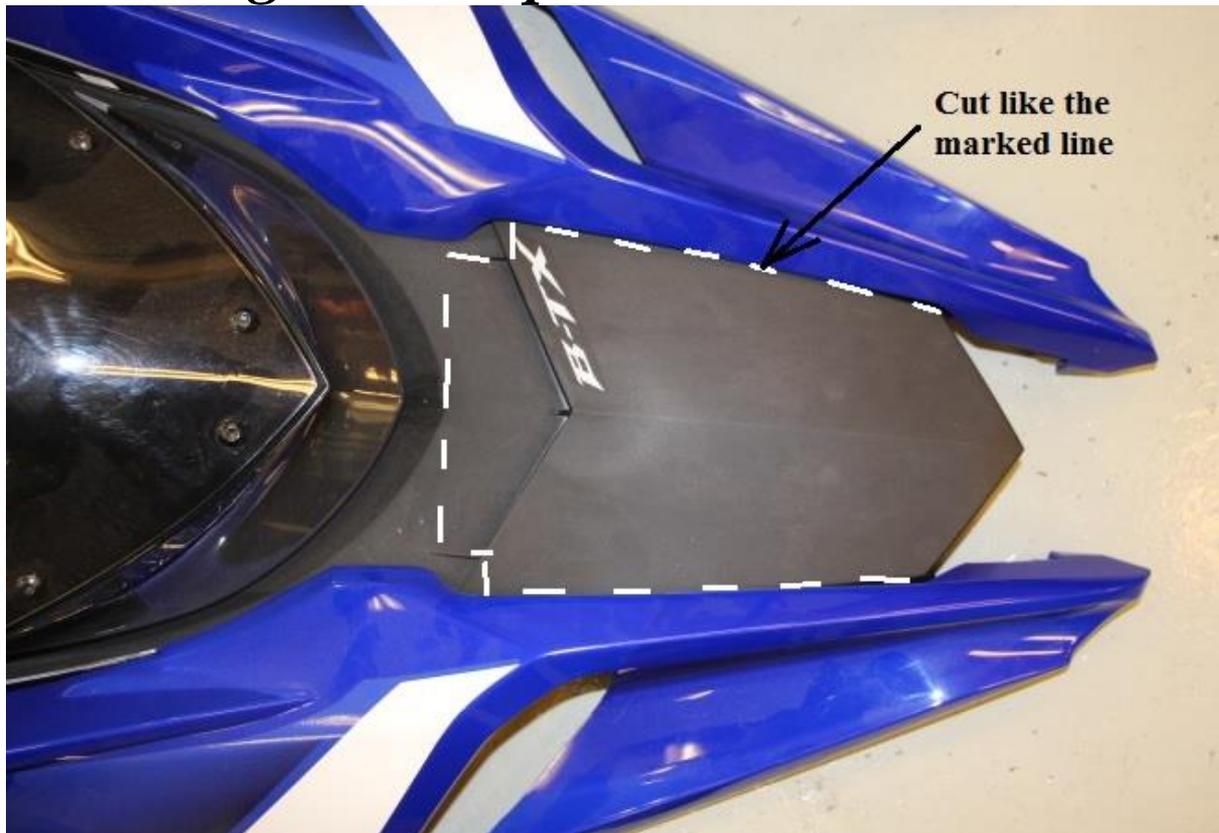
Put the new intercooler in place.



Use the stock hose clamps.  
Connect the 14 mm idling valve hose, the 6 mm hose and the hose to the blow off valve.  
Install the air hose between the turbo and the intercooler



## *Installing air scoop on hood*



Drill 4 small holes like the picture, and fasten the scoop with the 4 small screws supplied with the kit.



# *Air intake / snorkel kit*

Remove the stock air filter



Drill a hole in the hood like the picture, diameter about 70 mm



Start up the snowmobile.  
Check for leaks.  
Check the water coolant level and oil level.

## *Check the turbo pressure*

This turbo kit is designed for racing use only.

During the first test after installation of the stage 3 kit, you can disconnect the wire connector to the TCV valve. Now you get the lowest turbo pressure possible. (You can adjust the turbo pressure by adjusting the pre-load of the waste gate actuator) This pressure used to be about 80 kPa turbo pressure.

If everything seems fine, you can connect the TCV valve again.

Now the boost map inside the MCX EFI-box will raise the pressure.

You can choose your own turbo pressure.

This can be done by changing the MAP settings inside the MCX EFI-box.

When we deliver the kit, it is normally set to about 220 kPa absolute pressure.

(=about 120 kPa turbo pressure at sea level)

The maximum turbo pressure you can run is depending on the fuel quality and octane rating.

The stock fuel pump is big enough for about 270 kPa absolute pressure.

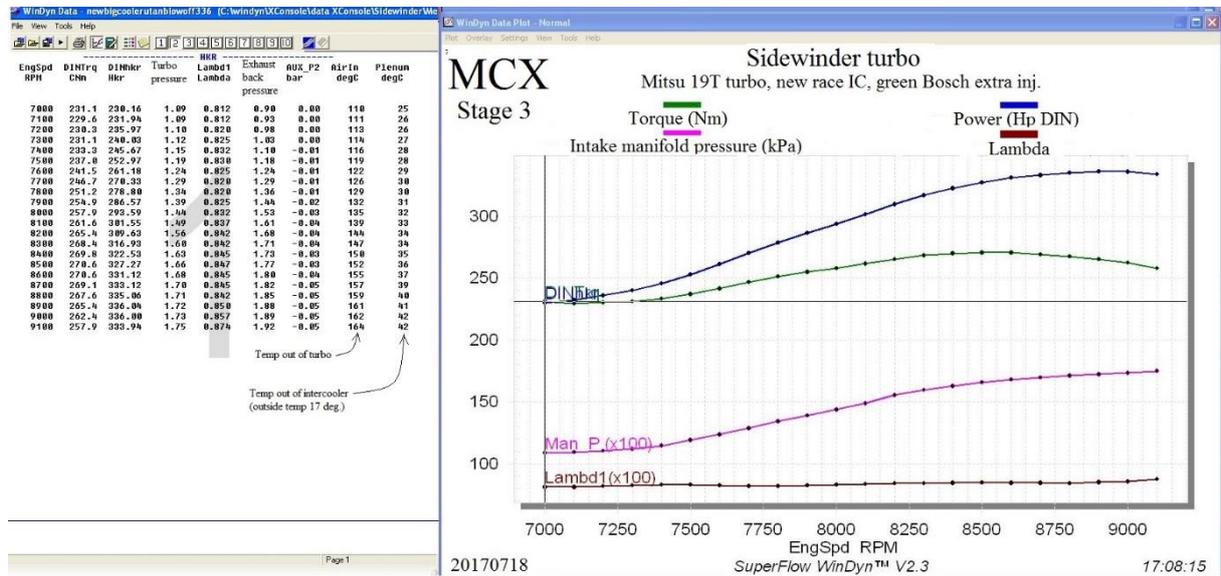
Contact us for different pressure / power maps.

You will have to buy a license for the Tuner Studio software program.

# Clutch modification:

The clutch must be re-calibrated.

The proper gearing rpm at full throttle is about 8800 to 9000 rpm.



Dyno printout with stage 3 turbo kit. 109 octane race fuel has been used at this turbo pressure

# ***Options:***

## ***Display and log unit.***

This display can show pressure, lambda or air fuel ratio, rpm, baro pressure, etc.

It can also sample data 10 times each second.

This info, you can be downloaded via the USB cable to your PC.

The MCX EFI-box is prepared with a connector, so it is just “plug and play”

A Bosch wide range oxygen sensor is included.





Blue tooth unit.

With the blue tooth unit installed on your sled, you can wireless adjust the settings in the MCX EFI-box.

It is possible to you an android phone and use it as a display and make data logging on the phone etc.