

800 Pro-RMK/Assault

Turbo System Installation Manual

INTRODUCTION

Congratulations on your purchase of the Aerocharger Turbo system for the Polaris Pro-RMK or Assault snowmobile. You are now the owner of the most responsive, reliable and technologically advanced turbocharger in the world. With your new intercooled turbocharger and fuel system installed, you will experience substantial performance gains on pump gas or race gas. Not only will you get amazing performance, but our unique system which combines VATN technology (Variable Area Turbine Nozzle) and our near-frictionless, non-flooded ceramic ball bearing design, will provide you with our famous zero turbo-lag.

This system is made and assembled by Aerocharger LLC.

We manufacture turbo systems with a passion.

The installation of this system consists of two major components:

1. Installation of the turbo system
2. Installation the electronic fuel control system

Note: Before getting started, refer to your Packing List and identify all the components of your turbo kit. This will also aid in the installation process.

WARNING!

Installation of the Turbo system is not for the mechanically challenged! If you are uncomfortable with anything about performing any of the tasks outlined in this manual, please refer to trained professionals at your local performance shop. If you are performing the installation of this system, it is suggested that you read this ENTIRE manual prior to proceeding with the installation. It is also suggested that you review each section as you progress to ensure everything is installed correctly.

WARNING!

This system is designed for use on a STOCK Pro-RMK and Assault sleds only!

WARNING:

If your snowmobile has been modified, consult Aerocharger (913.541.0200) before proceeding. This turbo system is intended for use on a **STOCK**, well-maintained snowmobile with a strong running, well-maintained engine. Installation of this system on brand-new snowmobiles, with very few miles/hours, is **NOT** recommended. New engines require specific break-in procedures that do not include adding forced induction! If your snowmobile is brand new, consult your local dealership and owner's manual to determine proper break-in procedures **BEFORE** continuing with this installation. Failure to do so may result in significant internal engine damage. **AEROCHARGER WILL NOT BE HELD RESPONSIBLE FOR DAMAGE TO VEHICLES POWERTRAIN.** Aerocharger is not responsible for ECU tuning/programming on snowmobiles that were not stock before the installation of this turbo kit.

WARNING:

For best performance and reliability always use 91+ octane premium fuels and listen for signs of detonation. **IF DETONATION SHOULD OCCUR OR IF YOU ARE UNSURE IF YOU ARE HEARING DETONATION, DECREASE THROTTLE APPLICATION IMMEDIATELY** and consult Aerocharger staff (913.541.0200). Detonation should NOT be an issue with this system provided it is correctly installed, though OEM factory shipped engine and parts inconsistencies are possible on any new vehicle.

Note:

Aerocharger holds no responsibility for any powertrain damage that results from misuse of this turbo system!

Note:

Read and understand ALL safety and technical precautions in this manual before proceeding. Failure to comply with the instructions in this manual could result in personal injury, property damage, voiding of your warranty, and/or inconsistent/poor performance from the turbo-charger system. Contact Aerocharger for any questions or concerns.

Do **NOT** let any debris (hard or soft) enter the existing air intake or exhaust ports during installation of this turbo system.

Do **NOT** use any silicone sealants under any circumstances. Doing so can result in F.O.D. (Foreign Object Damage) to the turbo. This will void your warranty.

CONTENTS

Introduction	2
Tools needed	5
Unplug Leads and Remove Hood.....	6
Remove Head Lights	7
Remove Factory Airbox	8
Remove Factory Muffler	12
Install Airbox.....	12
Install New Fuel Lines	16
Install Muffler	19
Clearance the Hood for the Intercooler.....	22
Intercooler Installation	24
Gauge Pod and Gauge Installation.....	26
Aerocommander Installation	27
Connecting the Air Fuel Ratio Gauge	29
Connecting the Air Lines	31
Connect Electrical Leads to Hood and Reinstall the Hood.....	32
Clutching	34

TOOLS NEEDED

1. Metric Wrench and Socket Set (7mm to 17mm)
2. 7/16" wrench
3. 1/2" wrench
4. 3/16" Allen wrench
5. T27 Torx bit
6. T35 Torx bit
7. T40 Torx Bit
8. Razor blade
9. Small Flat Head Screwdriver
10. Spring pulling tool
11. Fuel line quick disconnect tool
12. Red Loctite
13. Electric Drill
14. Tapping tool or 1/4" socket to hold tap

UNPLUG LEADS AND REMOVE HOOD

1. Remove the side panels



2. Remove the plastic rivet from each side of the hood.



3. Remove the T-40 Torx screws holding the hood.



4. Disconnect the electrical connector underneath the hood.



REMOVE HEAD LIGHTS

1. Remove the windscreen by removing the six plastic rivets.



2. Remove the headlights by removing the five T-27 Torx screws holding it to the hood.



3. Disconnect the wiring harness from the headlights and set aside for reinstallation.

REMOVE FACTORY AIRBOX

1. Remove the oil tank.

a. Remove the four 10mm nuts holding the clutch guard/oil tank in place.



b. Disconnect all of the electrical connections from the ECU and oiling system.



c. Lift up the plate holding the oil tank and tilt it towards you; then disconnect the oil line.



2. Using a 9/16" socket, remove the secondary clutch after expanding the sheaves.



3. Using a 10mm socket wrench, remove the barometric pressure and temperature sensor located on the intake tube. Zip tie the sensor out of the way. The top section of the Airbox ducting can be discarded.



4. Unclip the four retaining clips and remove the top half of the Airbox.



5. Using a long straight slot screwdriver, loosen the hose clamps retaining the Airbox to the throttle bodies.



- Using a 10mm socket, remove the hose clamp that retains the coolant hose to the Airbox on the magneto side.



- Remove the remaining section of the factory Airbox.

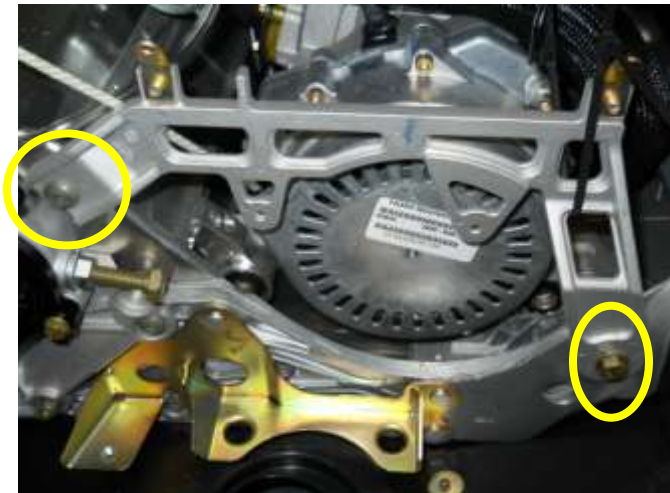


REMOVE FACTORY MUFFLER

1. Using a spring tool, remove the springs holding the muffler in place.



2. Pull the muffler out and then remove the muffler brace using a 13mm socket and a T-40 Torx.



INSTALL AIRBOX

1. Remove the throttle bodies from the reed cage boots by loosening the hose clamps and pulling them out.
2. Place a cover over the boots to keep out foreign debris.

3. Use the provided drill bit and tap to drill and tap the manifold. Be sure the hole is located behind the throttle plates. You **cannot** use the cast hole on the throttle bodies.



4. Then screw in the provided hose barb using red Loctite.



5. Make sure to clean out all of the aluminum from inside the throttle body.
6. Remove the cover from the reed cage boots and reinstall the throttle bodies.

- Using the same drill bit used to drill the throttle body, drill out the rivet holding the coolant tank in its factory location.



- Press the new Airbox onto the throttle bodies; make sure the coolant tank is behind the Airbox when you press it on. This will take significant force and is normally easiest if the bottom is started first then the top is pushed on while holding the bottom in place. You can also heat the o-rings with a heat gun to soften them. Just be sure not to melt the o-rings.



9. Remove the bolt from the outside of the reed boots on both the PTO and MAG cylinders.



10. Install the conical washer, with the round flat side closest to the bolt head onto the supplied bolts.



11. Install the airbox onto the throttle bodies then insert the bolts into the tabs. Place a conical washer on the airbox tab, with round side facing the tab. Then tighten the supplied lock nuts.



INSTALL NEW FUEL LINES

1. Use a fuel line quick-disconnect tool to disconnect the stock fuel line from the gas tank.



2. Connect the threaded fitting to the fuel rail and the other short leg to the stock fuel line that was removed from the tank.



3. Connect the long leg of the fuel line to the fuel tank where the stock line was connected.



INSTALL THE ROPE RELOCATION KIT

1. Remove the front brake caliper bolt with a 15mm Wrench.



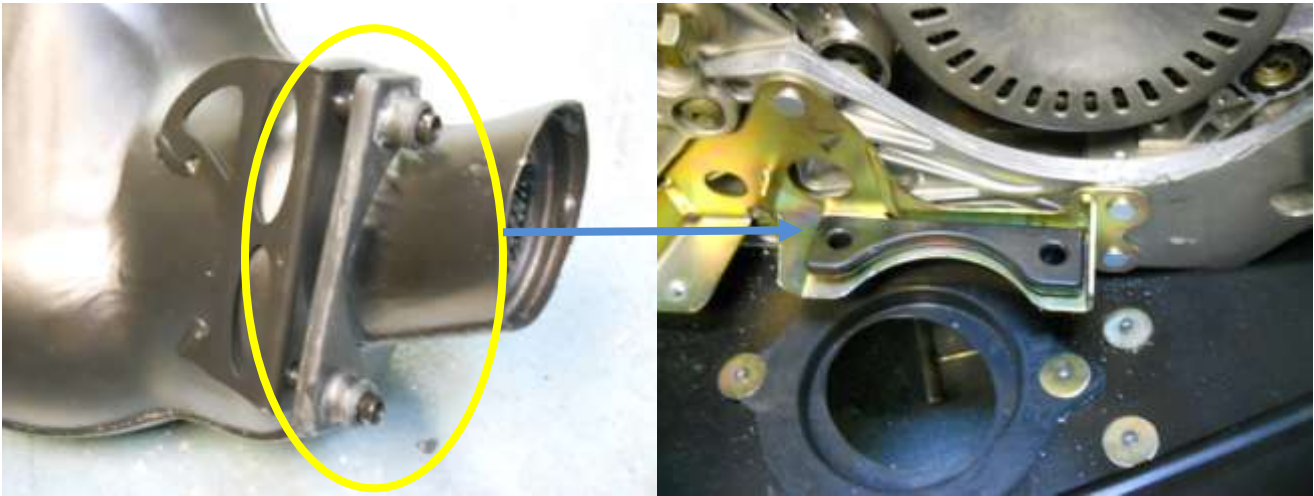
2. Install the rope relocation bracket using the longer bolt included with the kit. Tighten the bolt with a 17mm wrench and use red Loctite.



3. Thread the rope onto the bracket.

INSTALL MUFFLER

1. Place the stock rubber bushing in the stock location on the snowmobile.



2. Assemble the Aerocharger muffler assembly.
 - a. Place the exhaust wrap on the inside of the heat shield as shown.



- b. Install the heat shield onto the Aerocharger.



- c. Using the provided M8 bolts and lock washers, install the Aerocharger onto the muffler; do not completely tighten the bolts, as you will need to be able to rotate the muffler for proper installation.



3. Drop the Aerocharger muffler assembly into position. Tighten the four M8 bolts once aligned.



Seat the turbine inlet on the stock pipe using the stock donut gasket; then pull 2 springs on each side.

Using a 15mm wrench, tighten the two nuts at the base of the muffler to the threaded stud and to the bolt that drop into the stock mounting location.

4. Fill the Aerocharger with the two bottles of oil provided in the kit. When reinstalling the fill plug, use red Loctite and torque to 35 in-lbs.

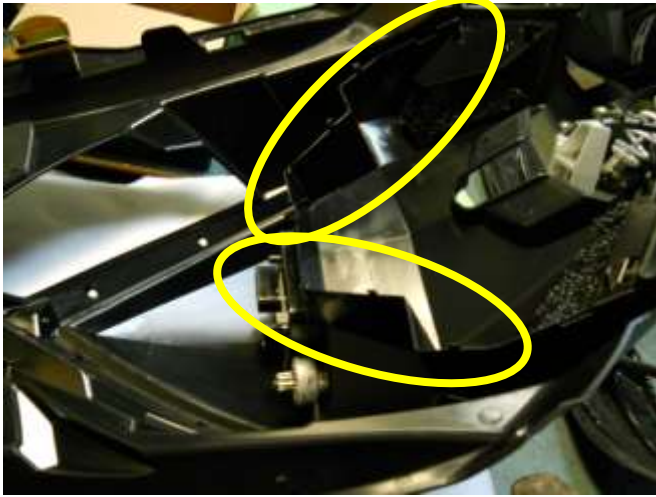


CLEARANCE THE HOOD FOR THE INTERCOOLER

1. Remove the air plenum attached to the hood by pushing in the black plastic tabs that hold it in place.



2. Tape the template onto the plastic to show where to cut away for clearance.



3. Use a razor blade or tin snips to cut away the plastic shown in the template.



INTERCOOLER INSTALLATION

For alternate intercooler options see page 35.

1. Use a 13mm socket to remove the frame bolts closest to the handlebars.



2. Place the intercooler on top of the chassis members and thread in the new bolts to replace the bolts you just removed to loosely hold the intercooler in place. Use the rubber washers included with the kit between the intercooler and the chassis.



3. Connect the silicone charge tubes from the turbo and the Airbox to the Intercooler, but do not tighten.



4. Tighten the top bolts on the intercooler with a 13mm wrench.



5. Adjust the silicone, if necessary, and then tighten the hose clamps on the charge tubes using a 7mm socket.

GAUGE POD AND GAUGE INSTALLATION

1. Remove the handlebars using a 10mm wrench and 5mm hex wrench.



2. Insert the gauge pod adapter under the handlebars and use the stock bolts to sandwich it between the handlebars and the steering column.



3. Bolt the preassembled gauge pod to the gauge pod adapter using the provided hardware: 5mm hex wrench and 13mm wrench.



AEROCOMMANDER INSTALLATION

1. Make sure the ethanol fuel plug is installed on your sled. This is the plug that tells the ECU that you are using ethanol fuel and will help maintain the proper air fuel ratio.
2. Disconnect the six-pin fuel injector connector located just above the throttle bodies.



3. Plug in the leads from the 6 pin connectors from the Aerocommander between the two factory connectors.



4. Connect the ground lead to the chassis ground located on the frame just in front of the oil tank.



5. Zip Tie the solenoid to the chassis under the intercooler and connect the Aerocommander harness to the solenoid.



Zip Tie the solenoid to the circled chassis member.

6. Using a wire splice, tap the red wire with a white tracer on the DC PWR harness. This is located above the clutch near the front cross member. You are going to attach both of the red wires from the Aero-Commander as well as the red wire from the AFR wiring harness that is mentioned in the next step.



CONNECTING THE AIR FUEL RATIO GAUGE

1. Using the same spliced wire, attach the red lead from the AFR wiring harness to the red wire on the DC PWR plug.



2. Attach the black wire to a chassis ground.

3. Attach the connector on the sensor to the sensor harness.



4. Attach the sensor harness to the gauge.



CONNECTING THE AIR LINES

1. Connect the line labeled boost gauge on the turbo to the boost gauge.



2. Connect the hose from the blow off valve to the nipple previously installed into the throttle body.



3. Connect the line on the solenoid labeled to manifold to the T-barbed fitting on the blow off valve line.



4. Connect the line labeled Aerocommander from the solenoid to the Aerocommander.

CONNECT ELECTRICAL LEADS TO HOOD AND REINSTALL THE HOOD

1. Replace the oil tank, and reconnect all of the wires you disconnected
2. Make sure the oil line is also reconnected.
3. Replace the secondary clutch.
4. Reconnect the wiring harness that you removed from the headlights back to the chassis harness.



5. Reconnect the other end of the harness to the gauge cluster and the ignition switch.



6. Place the hood back in place, making sure the gauge wiring cluster is run behind the intercooler so that it will not disrupt the airflow over the intercooler.



7. Reinstall the two T-40 screws to hold the hood in place.



8. Reinstall the two plastic rivets.



9. Reinstall the side panels.



CLUTCHING

The clutching of the snowmobile will depend upon elevation, boost pressure, rider weight and riding style. We can give you suggestions of clutching to run but it will not be perfect for every rider. You may need to make changes to get the optimal performance out of your Aerocharger turbo system.

FUEL

As stated earlier we recommend at least 91 octane non-ethanol fuel. This fuel is good up to 5psi above 6000 ft. Above 5 psi, we strongly recommend mixing race gas to allow for safe boosting of your engine. At 7 psi we recommend a 50/50 mix of 91 and 110 octane fuel; this roughly comes out to 100 octane.

NON INTERCOOLED INSTALLATION

The Non-intercooled installation of the system is very similar to the intercooled version. Some of the instructions can be disregarded for the Non-intercooled installation, notably:

- Clearancing under the hood
- Bolting the intercooler on
- Any reference to charge tubes
- The headlights can also remain in their stock location

Follow these additional instructions for the non-intercooled installation.

1. Relocate the steering linkage connected to the handle bars to the top of the arm to clearance the charge tube.



2. The charge tube connects from the turbo to the air box with the blow off valve closest to the air box. It gets routed under the steering linkage.



3. Connect the blow off valve line the same way you would as described in the intercooled installation.

AIR TO WATER INTERCOOLER INSTALLATION

The air/water intercooler is built into the air box. It takes the place of the air box used on the intercooled and non-intercooled versions of the system. However, it mounts to the throttle bodies in the same way.

1. Relocate the steering linkage connected to the handle bars to the top of the arm to clearance the charge tube.



2. Slide the intercooler/air box in from the CVT side of the sled.
3. Install the air box using the same instructions for the intercooled system.
4. Install the charge tube as shown.



Polaris Pro-RMK/ Assault Turbo System

By Aerocharger, LLC

913.541.0200

www.Aerocharger.com