

SUPERCHARGER TSB-504

(Technical Service Bulletin)

This Supersedes TSB-501

1. Sprocket taper locks loosening. – **SEE TSB-502**

Applies to: All Models

2. Water in Supercharger Oil Tank.

Applies to: All Models - especially Nytros with holes cut in the front.

Symptoms – Blower oil is milky white. The supercharger oil temperature gauge will not increase as you ride the sled. The oil reservoir may expel milky white oil out of the vent hose.

Cause – Water has gotten into the oil tank. In some extreme cases the water may freeze at the bottom of the tank preventing and oil flow (flow of the water contaminated oil is better than no oil). Snow and water build up in the nose of the sled present when the snowmobile is shut off and the oil tank is allowed to cool. As the oil tank cools, a vacuum is created in the tank and air (or water) is sucked into the tank through the vent line; simple physics. If the oil tank vent tube is in the snow/ice/water as the oil cools, the vacuum will suck up water. No oil circulation or water-contaminated oil will cause irreparable damage to the supercharger. The damage to the unit is unmistakable and NOT covered under your warranty.

Corrective action – Reroute (lengthen is necessary, but no more than 18” total length) the blower oil breather line over the ECU and down the backside of the frame. Try and keep the line low so that the oil will not leak out in case of a snowmobile rollover.

If you have ingested water into the oil, contact MPI. You will purchase a new filter, a bypass fitting, clamps and a double quantity of oil. You will remove oil filter and drain all oil possible from the lines and the tank (by removing the bottom tank hose). Flush the tank with brake cleaner until all the white oil is removed. Disconnect the top tank line as well. TEMPORALLY insert the filter bypass fitting, reconnect the bottom line to the tank and fill the tank with new ROTREX oil. Start the snowmobile and let it idle. All the oil should be caught in a drain pan. DO NOT RUN THE SLED WITHOUT OIL IN THE TANK. WATCH THE TANK LEVEL. Once clear blue (uncontaminated) oil is pumping out of the return line, install your new filter & reconnect all line as described in the kit instructions. Continue to monitor your oil level and oil color during future rides.

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3. Rough idle\ dies when letting off throttle\ hard starting.

Applies to: All Models especially Nytro except Phazer

Symptoms – Sled will idle rough and\or stall intermittently on deceleration, hard to start.

Cause – The TORS (Throttle Over-Ride System) may be activating. This can appear as code 84 on the OEM dash. The throttle blades not closing fast enough cause this. This is common on all boosted sleds.

An improper Altitude Compensation setting in your GEMS control module can also cause these symptoms.

Corrective action – MPI is currently investigating the problem. We are searching for an electronic measure to correct this issue. A stronger throttle return springs will help the issue. MPI DOES NOT recommend this because of safety concerns, but it is possible to verify that the TORS is causing the problem by TEMPORALLY bypassing the system. Again, MPI states that there is a potential for bodily harm to damage to the snowmobile and recommends against this.

To test the TORS: unplug the single wire with a black connector and the single wire with a white connector. Connect the black plug to the white plug located under the rubber cover at the end of the grey convoluted handle bar wiring looms. The black to white connection should be made with the wires coming from the main wiring harness, not the wires from the handle bars.

The proper way to set Altitude Compensation on your GEMS Controller – **NYTRO ONLY**:

Programming LEDs: LED 2 on equals setting 2, LED 2& 3 on equals setting 2.5, LED 3 on equals setting 3, and so on (LED 1 fast blink equals 0.5 and slow blink equals setting 1). The center button is the MODE button. There are 6 user adjustable modes. Pushing the Mode button will advance you through the modes:

- a. **Mode 1: Green** – Idle / Cruise Mixture Level
- b. **Mode 2: Yellow** – Needle Enrichment
- c. **Mode 3: Red** – Main Jet
- d. **Mode 4: Green/Blue** – Boost Fuel adder.
- e. **Mode 5: Yellow/Blue** – Accelerator Pump.
- f. **Mode 6: Red/Blue** – Altitude compensation.

With the sled idling (must be at or near operating temperature; not on cold start warm-up) and at the Altitude you intend to ride at: Turn MODE 6 (Blue-Red) down ½ a point at a time (1 push of the button) until the sled begins to idle rough. Now increase the setting by 1 whole number (2 pushes of the + button). The lights MUST return to a solid (not flashing state) while the sled is still running or your new setting will not be saved in memory.

4. Sled stumbles or dies at mid throttle position changes.

Applies to: 2008-2010 Nytro

Symptoms – Sled stumbles or dies as the throttle position is increased from a mid-throttle position to a slightly higher position (but not all the way to full throttle) -OR- The throttle position is quickly decreased from a full or nearly full throttle position to a mid throttle position.

Cause – GEMS Module programming bug. The sled has a very slight window where this happens and was missed during development and testing. The transition point to Red Mode from Green or Yellow modes is too aggressive and the sled will temporally flood.

Cure – A correct program is under development. A software reprogram will be required and your controller must be sent to MPI or taken to one of our Master Dealers. A new program has not been released at the time of the TSB publication. Please attempt to slightly alter your throttle habits to “drive around” this bug temporarily.

5. High Wide Band O2 Readings at full throttle

Applies to: All Models, especially Nytro

Symptoms – Snowmobile’s Wide Band O2 gauge reads lean at wide-open throttle, BUT DOES NOT ACT LEAN OR POP.

Cause – The snowmobile may very well be on the Rev limiter. When the snowmobile over revs, the ignition signal purposely does not fire on every cycle (it may cut 1 out of 5 pulses or 1 out of 2 pulses depending on the severity of the over-rev). This is known as “soft rev control”. When this happens unburned fuel is sent through the motor and your Wide Band Gauge will interpret unburned fuel as lean. The wide band measures the amount of external O2 that must be introduced to react with the unburned HC and CO. In a NORMAL lean condition there is no excess O2, therefore external O2 must be introduced to react with the residual HC and CO, but in a REV LIMIT condition, no fire took place so there is no reaction between the O2 and the HC/CO in the pipe and the sensor assumes you are lean since it has to add heated O2 to the exhaust to get a stoichiometric reading.

Also, when the ignition is cutting pulses the tach will not read accurately, since it counts ignition pulses. At MPI we often test with a crank trigger tach. It is amazing how slow to react the OEM TACH IS, however, this is done to make it easier for you to read. The crank trigger tach can be set to read instantly without delay and also is immune to rev control. We have seen these extraneous Wide band & Factory tach readings often.

Cure – Test the sled where you KNOW THE TRACK IS **NOT** SPINNING (this literally eliminates most road like conditions). Add extra weight to your clutch or install a softer spring until your snowmobile is running WELL BELOW the Soft Rev Limit of 8900 RPM (Hard Rev Limit is well above 9000 rpm, FYI). We recommend testing for a False Wide Band Lean Condition around 8000 RPM.

Providing we are correct and you are hitting the Rev Limiter, clutch your snowmobile correctly.

6. Lean at full throttle and GEMS module is not able to add more fuel.

Applies to: All Models, especially Nytro

Symptoms – Sled runs lean at wide open throttle. Cannot add any more fuel with GEMS module.

Cause – Refer and test the above issue regarding a false Wide Band reading caused by over rev. Assuming that the snowmobile is truly lean, you have over run the supply capability of the OEM fuel system.

Cure – Contact MPI or your dealer to purchase a fuel system upgrade. Depending on your altitude and boost requirements the proper upgrade will be recommended. Alternately, you can lower the boost level.

Upgrade 1 includes the addition of a fuel rail bypassing rising rate regulator and return system in conjunction with an OEM pump replacement. Do not attempt to add a piggyback (or second pump) as your sled will not have enough power to drive both pumps and can cause poor spark and detonation (catastrophic piston failure).

Upgrade 2 Includes Upgrade 1 plus modified OEM injectors. Please simply replacing your OEM injectors with larger ones will result in poor idle and bottom-end drivability issues.

Note on Upgrade Pricing:

- Stage 1 sleds operated above 3000 feet and run at the advertised 10 psi do not typically require any of these upgrades.
- Stage 2 sleds operated above 8000 feet and run at the advertised 14 psi do not typically require any of these upgrades.

The upgrade kits are being supplied at a near cost of manufacturing price. Not everyone needs these upgrades and therefore are not included in the base kit. We feel, and hope you feel as well, that MPI kits are of the highest quality and clearly are not the highest price source of boost on the market. If we were to add the upgrades to all kits, it would mean that some people would be purchasing parts they didn't need. Thank you for your understanding.