

Rhino Supercharger TSB-503 (Technical Service Bulletin)

1. Persistent overheating

Applies to: 660 Rhino

Symptoms – Motor overheats even with an oversized radiator.

Cause – AIR IN THE COOLANT SYSTEM. If the coolant system is overheated (even just once) it will overflow into the overflow bottle when the unit is shut-off. As the unit cools down it will create a vacuum, sucking from the overflow bottle into the coolant system. The problem is that the unit sucks air along with coolant. Once there is any amount of air in the system, the stock water pump will cavitate. The pump will not be able to pump coolant through the system causing the engine to overheat.

Solution – Bleed out the coolant system per Yamaha service manual.

Install a 22-24 psi radiator cap. Available from Stant Racing (and Mountain Performance or you dealer)

Bleed out the coolant system per Yamaha service manual. Add inline water pump kit p/n hsw-0045. The water pump kit will allow the water to still flow through the engine even if the stock pump cavitates a little.

2. Engine overheats and detonates when electronic accessories and or stereo are installed:

Applies to: 660 Rhino

Symptoms – Engine will overheat or detonate when accessory electronics are turned on.

Cause – Larger than OEM Battery and /or electrical accessories.

The electronic ignition system is designed to run on 13.8v, which is the output of the OEM stator. If you add electrical accessories or a large battery to the stock system it will draw more power than the charging system is capable of producing. This will result in the ignition system operating at less than 13.8 volts, **which will cause detonation** due to a weak spark. Detonation will result in poor performance and permanent damage to the motor.

Solution – Use only the OEM battery (or a 925 odyssey as the largest).

All electrical accessories must be installed on their own power source. We recommend a second battery. The accessories and the second battery **must be 100% isolated from the OEM system**. This means that the auxiliary battery and accessories will not be charged from the vehicle. You must charge the auxiliary battery after each use. If the battery is connected to the stock charging system, the charging system will try and keep up with the extra (or over sized) battery and cause the same voltage drop we are trying to prevent.

3. Poor bottom end acceleration and no power on top end power.

Applies to: 660 Rhino

Symptoms – The machine has poor acceleration when starting out. Has less power on the top end. Verify you RPM as you accelerate. At peak speed the unit's rpm should be just over 8000. 9000 is too much.

Cause – The most common cause for this is the installation of bigger/heavier tires. There is no clutching in the world that will make up for oversized tires. To increase tire size without sacrificing performance, you must change the axle ratio. At this time we know of no alternate ratios for the rhino. Advertised clutching mods have not been shown to be durable at this time.

Solution –The supercharger works best with OEM clutching. Do NOT change the primary wet springs or weights. Do not change the secondary in any way (including springs, etc). An acceptable mod is an over/under drive primary clutch sheave. This is available from MPI or your dealer. FYI, smaller than stock tires perform better than stock. We run 23" tires on many of the shop Rhinos. It may not look quite as cool but everyone looking is looking from behind.

If you feel you must run large tires, you may have to increase the secondary spring preload by adding a shim (do not change the spring). The shim should be 0.125" to 0.250", start with a 1/8" shim first.

4. Some aftermarket CDIs cause detonation .

Applies to: 660 Rhino

Symptoms – Most symptoms occur after the damage has occurred.

Cause –It is difficult to say exactly which CDIs cause detonation due to too much timing or a poor rev limit control. CDIs produced by Dynatek have adequate rev limiters. Some other brands (including most variations on the Pro Com) have faulty rev limiters which will allow the unit to rev past the CDIs set rev limit point but cause a faulty spark. POOR IGNITION is a number one contributor to detonation. Also too much top end timing will cause detonation.

Many CDIs will work great on a stock unit, but with the added power of the supercharger, the unit will rev much higher than a stock. This is where the detonation is most likely to occur.

Solution – Run an CDI with a known timing curve and a known rev limit set point (or no rev limiter). If you use a CDI with a low rev limit (below 9000 rpm), verify the rev limiter works by testing with a tach and the transmission in low range.

Run a CDI with a published timing curve and compare it to the one published on the MPI web site for our specially programmed Dynatek. People advertised curves are not always accurate, so make sure you trust the manufacturer.

MPI's CDI has been developed, tested and proven on the supercharger Rhino, the safest solution is to run our box. Available from Mountain Performance, Inc or your dealer.

5. Over-boost

Applies to: 660 Rhino – (usually ones without a boost gauge or tach)

Symptoms – Unit produces too much boost. Do not exceed 10 psi or 6 psi when the water temp is over 180 deg.

Cause – Often the unit will have larger than stock tires. Most over boosting units also have non OEM weights, springs, etc in the clutch. See section above on oversized tires. Verify RPM and Boost with reliable gauges.

Solution – The best solution is to correct the cause (tires, clutching, etc.). If that is not feasible, an MPI overdrive clutch will reduce RPM on the top end. You can contact MPI for alternate sprocket drive ratios. This is an excellent way to increase the durability of your unit as well. Your unit ships with 36/26 (36 tooth drive and 26 tooth driven). 34 and 32 tooth drive sprockets are available. Contact Mountain Performance or your dealer.