POLARIS XP 900/1000 ENGINE PERFORMANCE TIPS

SPECIAL NOTE: DRI does not recommend working on the engine of your Polaris XP 900/1000 without the assistance of the Genuine OEM Polaris Service Manual.

TOP END ASSEMBLY
It is MANDATORY that the cylinder head and cam tower bolts are torqued properly.
Consult the OEM Yamaha Service Manual for specific instruction and torque settings. Head bolts must be tourqued exactly as per specified in OEM service manual.

NOTE: Check Valve settings after head is torqued. Cylinder Head can and will distorts after it is torqued onto the cylinder/cases. Valve lash MUST BE CHECKED and adjusted as necessary prior to final installation off the camshafts. This applies to ALL heads stock or modified.

CAM TIMING
Start with Piston at TDC, Refer to OEM Service Manual for specific details. Cam timing must be set correctly or serious damage will occur.

CAM CHAIN TENSIONER: The OEM cam chain tensioner on most RZR XP 900/1000 models is hydraulically design. On initial startup when oil pressure is low, tension on the cam chain is decreased allowing the possibility that the cam chain can jump a tooth on the cam sprockets.
There a number of aftermarket companies that offer manual adjusting, modified OEM tensioners. This upgrade should be strongly considered.

CAM HOLDER OIL MOD: DR recommends performing a small modification to the front cam holder to improve oil flow to the camshafts.
*See DR TECH POLARIS XP 900/1000 CAM HOLDER OIL MODIFICATION

PISTON RINGS: Piston ring installation is a very delicate procedure and should be performed by a trained professional. All rings **MUST** have gap checked.
*DRI recommends consulting DR TECH 4-STROKE PISTON RING ASSEMBLY TIPS install sheet before attempting to install your rings.

VALVE SETTINGS: Valves clearances should be checked initially (after rebuild) 10-20 hours for after initial set-up and every 20 hours after that. Consult your camshaft specification card for correct clearances. Stock clearances no longer apply after camshaft has been upgraded to a DRI camshaft.
DRI CAM SETTINGS (**Clearances must be set and checked with engine cold**)

BREAK-IN: Any time you are installing new pistons-Read and follow instructions for DRI TECH Sheet UTV 4-STROKE BREAK-IN.
*NOTE: Engine will run better after it has 3-5 hours on it. See DRI website www.duncanracing.com for more details

AIR INTAKE: Though enhanced air intakes systems improve performance. The PRIMARY FUNCTION of the air intact system must be proper air filtration. The leading cause of engine damage to RZR engines is caused from dirt, sand and other foreign debris passing through the air filter system. If an aftermarket air filter system is installed- Maximum Filtrations needs to be priority 1.

EXHAUST: For maximum performance use Fat Boy 4 Complete Stainless Exhaust System. When a quieter exhaust is required use a Fat Boy 4 HQ. Turndown and or spark arrester are optional

OIL: Maxima SXS Premium 4 Engine Oil 10W40
*Consult OEM Polaris Service Manual for oil capacity specifications. Every Model varies slightly. RZR's run minimal oil capacity for the size of engine. OIL LEVEL MUST CHECKED BEFORE EACH USE. One the leading causes of RZR engine damage is caused by the running engine low on oil.

OIL BREATHER: pay close attention all breather hose stay attached to motor and do not get clogged.

OIL PRESSURE: It is necessary to verify that the engine is receiving oil to the top end. Upon on start up loosen and remove if necessary the 6mm bolt oil pressure check bolt located on the RH front side of head. (Consult OEM service manual for additional information). The oil pressure should be 1.4psi.

OIL CAPACITY: RZR engines will benefit greatly from increased engine oil capacity and enhanced oil cooling. This can be accomplished by installing an aftermarket oil cooler system. These systems are usually plumbed through the oil filter fitting. Adding 1-2 liters in oil capacity and dropping the oil temperature 10-20 degrees is definitely worth the effort.

CARBURETION: This machine is NOT carbureted. This machine is equipped with fuel injection. Read EFI information regarding tuning/adjusting air fuel mixture

AIR FUEL RATIO/IGNITION: Stock ECU should be replaced with Vortex X10 ECU (where available- currently 2011-14 RZR 900 XP Only). The Vortex ECU is preprogrammed with new fuel and ignition maps to work with modified engines.
NOTE: The ECU (Engine Control Unit) controls all fuel (jetting equivalent in carbureted engine) and all spark (CDI equivalent on carbureted engines)

ELECTRONIC FUEL INJECTION: To adjust the air fuel mixture on this machine (which is required with ALL performance engine modifications) a VORTEX X10 ECU- 2011-14 RZR XP 900 all other models a AFR+ by Dobeck is recommended

VORTEX ECU: Pre Programmed with 10 Performance Fuel & Ignition maps developed on the Dyno & Track - all the work is done for you! · Instant Plug in Performance (replaces standard ECU with no mods to wiring required) · Additional 3 fuel trim switches to adjust fuel mapping by +12.5% to minus 10% in Lo , Mid and Hi throttle opening· Adjustments made using a screwdriver and switches provide visual feedback as to changes made· Rubber Mounting Boot + Brackets supplied (where required) · V-Boost - Programmable Voltage Boost Circuit for maximizing Spark Energy across the entire rev range· Higher Rev Limit (where required) · Robust design -fully waterproof - o-ring sealed switches

· Diagnostic Flash codes - tests for sensor faults and flashes codes to FI light
· Re Programmable (Software and Interface hardware not Included)

EFI TROUBLE SHOOTING: Both the stock OEM ECU and the VORTEX X10 ECU have a flash code system that works with the OEM dash lights. It is essential to keep the original Yamaha dash in tack and in good working condition.
For information on trouble shooting dash codes consult OEM Polaris Service Manual or Vortex X10 ECU instructions.

FUEL: If Pump Fuel is used. Use highest octane available. 91 Octane and higher.
For performance engines or maximum reliability the following race fuels are recommended;
VP Racing Fuel type C-12 (www.vpracingfeuls.com). Motor Octane 108
Or
Sonoco Race Fuel type 110 "The Standard" (www.racegas.com) 105 motor 0ctane

TOP END SERVICE
For maximum performance and reliability, top end should be serviced at least every with in Polaris OEM Service manual guidelines.
A top end service includes checking valves, valve sealing, piston clearance, piston pin, cam chain and tensioner, upper and lower rod bearings, etc.
Piston clearance should be kept between .0015" -.0025" not recommended to exceed .004"
Ring end gap should be kept .015" - .020" not to exceed .020"
Consult DRI or a qualified technician for additional assistance.

GASKETS: It is recommended to use OEM Polaris Genuine gaskets on all engine rebuilds. Only exception is when installing big bore pistons.

CRANKSHAFT: The OEM YFZ R crankshaft is a strong component. But it is necessary to keep track of the hours put on the crankshaft. In most recreational applications crankshaft replacement should occur prior to 100 hours. For racing applications that number can be greatly accelerated.

GEARING: RZR's are belt driven. There is no drive chain or sprockets to adjust.

CLUTCH: Clutch and belt function is as important to overall performance as engine modifications. If additional performance is desired- Do not overlook the clutch.
Call DR Tech department with any questions regarding clutch performance or upgrades.

HOUR METER: Most RZR's have hour meter incorporated in the speedo/gauge. It is recommended to keep track via the hour meter, all engine service, oil checks, valve service etc.