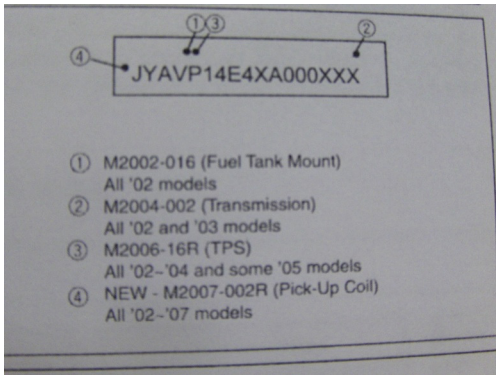
Set-Up Tips Before Performing Trouble Shooting or Repairs:

Before you perform a maintenance tune-up or a dyno-tune, and before you troubleshoot some problem with your Warrior, its important to be sure the bike is 'set-up' correctly. In fact, performing a set-up routine will often fix odd problems. A correct set-up will also make tuning more effective, and dyno-tuning more powerful. On the other hand if your bike isn't set-up correctly you have no foundation, and this will effect trouble shooting and repair results. Use this list to build a checklist.

Before you start, be sure all recalls that may apply to your model year are properly completed. The following replication of a Warrior's VIN plate shows how recall completion is supposed to be indicated by the repair station, however these marks were often omitted. If you are unsure then contact your Yamaha / Star dealer and give them the VIN from your motorcycle's neck plate or frame-stamp (written documents can be wrong).



If you are in the USA then you can call Yamaha / Star at (800) 962-7926, press "1" for Star Specialist, they are in California (pacific time).

The Set-Up Routine:

1. Be sure the air filters are clean and seated. Check for obstructions at cables, under the air filters, and inside the throttle bodies – including butterfly obstructions.

2. Be sure the engine oil is clean enough, the oil level is correct, and the filter is fresh. You should already know the special method required to check the oil level (the Warrior has a semi-dry-sump). If your motor oil turns gritty and dirty too fast, be sure the oil filter you are using has an appropriate pressure-bypass rating. The Warrior's oil circuit includes an internal bypass that bypasses the oil filter about 11.3 ~ 17.1 psi (80~120 kPa). The reason? If the filter clogs then oil can bypass, unfiltered, to avoid immediate engine failure. When you buy oil filters, either buy one without a bypass valve, or buy one with a bypass valve rated close to the same psi as the Warrior's internal bypass valve. Why? For example, if you select an oil filter with a bypass valve rated to open at ~8psi, then your oil will be unfiltered above ~8psi instead. Remember, the motorcycle's internal bypass would continue to filter the oil until sometime between 11psi and 17psi, so the lower filter bypass psi is extending the unfiltered window. Unfiltered oil turns dark and gritty too soon. These oil filter psi ratings can be found on-line. Or use the oem filter. Also, both of the oil drain plugs are 14mm x 1.5 pitch with 17mm hex head. Try to use new gaskets on the drain plugs. If your local auto parts store doesn't stock them, try www.DormanProducts.com for #65292 14mm aluminum gaskets. Copper gaskets are okay in a pinch, but avoid nylon gaskets as they require too much torque. The oil plugs are steel, while the engine is aluminum, so torque carefully and use new gaskets.

3. Be sure the spark plugs are clean and gapped. It only takes ~25 miles to foul all 4 new plugs if the injectors are pumping too much fuel. Or melt them if air:fuel is very lean. Its good practice to use new spark plug crush washers every re-install. If your local parts store doesn't stock them, get 12mm #P-678 from www.sparkplugs.com (get plenty – they are very cheap insurance against stripping your heads). Since spark plugs are seldom removed its handy to spread a dab of nickel-based anti-seize around the spark plug threads to prevent galling of the threads in the heads.

4. Be sure the spark plug wires are not shorting-out along their length, or at the boot. Look for barely-visibly black arc-marks on the wire or adjacent metal, or view the running bike in a darkened garage looking for sparks arcing. Be sure the stock coil ends are still firmly seated inside the coil, or aftermarket coil ends are fully seated.

5. Be sure the stock coil primary wires are gently pushed all the way onto the coils (front of the bike at neck, push-on connectors, two per coil, be gentle) or the aftermarket wire connection fasteners are tight and not shorting at their mounts.

6. Unclick both dry-breaks and dab a small bit of WD40 onto the visible o-rings for protection, then gently re-connect them with firm pressure until they audibly click. This will help make sure the o-ring is soft, fuel is flowing, and the tank is venting properly.

7. Check the two small vacuum hoses at the front-left frame neck under the tank, are they collapsed or damaged? Also check that the LCV is working properly, and that the vacuum hoses from the LCV to the intakes (and other vacuum hoses) are solid. If the LCV is not working, first discover if it failed in an 'open' or 'closed' condition before deciding on the best repair, and make that repair before adjusting idle speed to counteract a failed LCV because you will usually compound an unstable condition.

8. Are you running a PC3-Serial or PC3-USB? Then look at the TPS wire (right side between the jugs and behind the stock air filter). Is there a (usually red) crimp-connector on the TPS wire, and is it corroded? This corrosion can interrupt TPS signals and cause phantom troubles. Therefore, why wait. Even if its not corroded yet, you should seriously consider performing the 'PC3 Perfect Install' for better results and less long-term maintenance headache. If your PC3-USB is newer it might have the TPS plug integrated so you won't have a red crimp connector to the TPS wire to worry about, and also don't need to 'Perfect Install' so be sure first. The newer PC-V (which will indeed work perfectly on 2002-2010 warriors) is not hampered by these difficulties and requires no re-wiring to work perfectly.

9. In case it becomes handy later, its good to identify if your stock ECU has been 'bumped' by inspecting ECU wires #27 and #29. If they have been cut, an air-fuel ratio 'bump' may have been performed. If these wires are not cut, its likely the ECU remains in factory condition. Its possible to bump by manually removing the #27 - #29 wire-loop pins from the ECU, but its harder and generally unknown, so its rare.

10. After these set-up steps are completed, fully-warm the bike by riding for a few minutes. In the absence of a Power Commander you can use the motorcycle's tachometer to set the warm idle rpm. With a Power Commander installed, its better

and easier to set warm idle with a computer connected to the installed Power Commander because the idle rpm displays digitally on-screen. Either way, use the idle screw under the rider seat to adjust the warm idle to 850~950rpm. If you use a computer, try to set the warm idle so it never falls below 850rpm even if it sometimes exceeds 950rpm. Blip the throttle between every idle screw adjustment, allowing everything to free-up after moving the screw, then wait ~10 seconds for the idle to stabilize again (as much as a V-Twin will stabilize). Its helpful to know the Warrior's electrical charging system uses gear-reduction, so too low an idle will not allow the battery to fully charge, and if the ECU doesn't receive adequate power then some sensor functions may fault, creating phantom problems often resembling CPS or TPS sensor problems, or other pesky problems including battery fatigue, so the specified 850~950rpm warm idle is best.

11. After all the above steps are completed, set the Power Commander's zero% rpm (warm idle) to read 0% on your computer screen. See the on-line tutorial for this adjustment at www.powercommander.com. Read and act with care because this setting is so easy to reset most people take the wrong step and reset the 100% throttle setting (see below).

12. If you want to reset 100% throttle then see the on-line tutorial. It's usually not helpful to mess with the 100% setting because, unless the engine won't rev, it has no effect on troubleshooting or tuning at this stage.

13. However, its always good to have the Dyno-Tuner reset the actual warm-idle to 850~950rpm, and the 0% warm idle to 0%, and finally the 100% throttle to 100%, especially after everything else is finished.

These steps can identify or solve as many as 75% of problems without the need to go further. Plus it keeps your hot rod beast in top shape. When you make modifications, remember to make one at a time (when possible) so any problems that arise can be attributed to a specific change. Keep good notes including aftermarket part numbers and sources, and take digital pictures for your service manual when ever possible.

Additional Set-Up Tips Before Performing Dynotuning:

14. If your Power Commander has 'buttons' to allow air:fuel adjustments then you need to know that using these buttons does not adjust the fuel map but instead makes completely separate adjustments that are in addition to the fuel map. So its important to ask your dynotuner to zero these buttons in all rpm ranges before starting the tuning procedure. This solves troubles before they occur.

15. If you have confirmed your ECU has been bumped, there can be benefits to setting CO1 and CO2 both to zero (0) after you arrive at the dynotuner's location but before the tuning begins. In some cases this can solve troubles before they occur. Because this step can seriously effect engine performance, communicate with your dynotuner so they know to adjust idle and low-rpm air:fuel back into an acceptable range quickly to avoid very-lean or very-rich conditions effecting the motorcycle.

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