

HW Yamaha Rhino HO Stator Rectifier Instructions

Tools Needed:

10mm socket
8mm socket
10mm wrench
17mm socket
Ratchet
Philips head screw driver
Vise-Grips

1. Remove seats, engine cover and center floorboard section.
2. Removing the dump bed is optional but makes it easier.
3. Drain engine oil and engine coolant.
4. From underneath the Rhino loosen the screw shown below thru one of the holes in the skid plate. On 04-05 models the center skid plate can be removed. This screw will not come all the way out because it will hit the coolant line so leave it in but not threaded in. The one we are talking about is the bottom one in the picture. You can however remove the other one while you are there or do it from the top side. Both screws are 8mm.



5. Below is the topside view before you start.



6. Remove the black fan housing by removing the (4) 10mm bolts holding it on the engine and the (1) 10mm bolt holding it on at the output end. Below is what you see when it is removed. Once removed, remove the two 10mm bolts holding the fan on.



7. Remove the center fan hub using a 17mm socket. If you are not using an air ratchet you might have to hold onto the hub with something to keep it from turning while you loosen it. While you're at this point remove the black fan backing plate using a 10mm socket.



8. At this point you will want to disconnect the two coolant lines. Remove them by loosening the clamps and sliding the hoses off. See the following two pictures. You will need to remove the 10mm bolt holding the clamp on the water line so you can remove hose clamp. The second line needing to be disconnected is on the back side of the engine.



9. Remove the small water line from the water pump as seen below.



10. Now that everything is unattached from the stator cover, start removing the 8mm bolts that hold the cover on. Do NOT remove the water pump from the cover or the engine; it will come off with the cover.
11. Once all the bolts are out unplug the stock stator and pick up coil plug from the stock harness. Follow the wire coming from the edge of the stator cover to just inside the center floor board cover. You will have to cut a couple of wire ties to remove it.



12. Below is the cover removed from the engine with water pump still attached



13. Turn the cover over and lay on a work bench. Start by removing the three Phillips head screws holding the stator itself in. These may be difficult to remove and require a pair of vise grips to remove them. On this installation I was able to remove two of the three with an impact driver and the last one required the use of the Vise-Grips.

14. Remove the pick-up coil; it is the other part with a pair of wires on it and the metal guard also.



15. Once the stock stator is removed get the HW HO stator and reverse the installation of the stock one. It is a good idea to put some locktite on the three supplied screws that holds the stator in. Pay close attention to the orientation of the stator so that the wire clip is in the groove in the cover. Also pay attention to the routing of the all the wires so none of them get pinched as you reinstall the stator, pick-up coil and guard. See picture below.



16. Apply some silicone gasket sealer around the rubber plug on the wiring harness and push it into its' slot in the cover.



17. Remove any excess or left over gasket from the stator cover and the mating surface on the engine. If you leave any it will leak oil. Now place the supplied gasket on the engine side as seen below. No sealant is needed on the gasket.



18. Now slide the cover back on the engine paying close attention not to get any wires in between the cover and the engine. The magnets in the flywheel will pull the cover back on.
19. Now simply reverse the rest of the order as you took it apart.
20. Don't forget to tighten the screw on the bottom from underneath.
21. Once you have it all buttoned back up you will need to install the new rectifier and then plug the new stator into the new rectifier harness.
22. Remove the stock rectifier from its' location and reinstall the new one using the same screws. Unplug the stock wiring harness from the stock rectifier and either fill it with silicone or tape it up with electrical tape. After the installation of the HO stator one of the wires in the stock plug will still be hot and that is why you must fill it with silicone or tape it up. See the two pictures below



23. Route the longest part of the rectifier harness down and thru under the floor board and plug the round connector to the round connector on the new HO stator. Route the short side of the harness to the battery and connect it to the battery by connecting the black to the negative side and the red to the positive side of the battery. This leaves one plug unplugged and that is on the stator harness, it is the square plug. Plug this back into the stock harness on the stator end. This connection is for the pick-up coil. See the two pictures below. In the first picture below, this Rhino has some electrical accessories on it, so the largest wires are the rectifier wires in the photo. You will be leaving the round stock stator plug on the stock harness loose, it is no longer used.



24. Now that all the electrical connections made, the stator and rectifier installed all that is need to do is refill with oil and anti-freeze.
25. When you drain the anti-freeze an air pocket can form in the cylinder head therefore not allowing the coolant to flow through the engine, so when you top the radiator off and have it running you will need to “Burp” the system. You do this by allowing the engine to run and loosen the screw on the head pictured below to allow the air to escape. Tighten this screw back up once water flows from the screw hole. This might actually take a couple of times to get all the air out. The screw is the one to the right in the picture below.



26. Once the air is out you are finished.
27. Contact me if you have any questions on installation.
Todd at Hunterworks 1-800-626-7449

Troubleshooting

Once your installation is complete and you think it is not charging the way it is supposed to, do these things before calling.

1. **Test#1** Unplug the round plug on the HO stator and measure the AC not DC voltage on all three legs to see if they are as the following chart says. Measure the voltage in between each of the three legs. Start with the negative lead on one, wire and the positive lead on one of the other then the other. Complete circle checking all of them. The engine must be running at high idle for at least 25 seconds before testing. The voltage is lower than stock but the amperage is higher.

Stator output in ac

1000	7.6
2000	15.0
3000	22.4
4000	29.6
5000	36.9

2. **Test #2** With all the electrical accessories off, measure the voltage at the battery, at idle you should get some where between 11.8 and 12.5 anything above idle it should start to rise to nearly 15volts.

Electrical Pointers

If you still run your battery down after you installed our HO stator and you have a good many electrical accessories you might still have too many accessories for the system.

The point is:

Remember it is 500 watts, while it is more than double the stock system you still cannot run too many accessories.

The following is from one of our tech articles off our forum at www.ridesidebyside.com

Dual Batteries:

Basically this is a good idea but only if you have the HO stator/rectifier and the reason is the lack of charging capacity in the stock system. If you must have a dual battery set up make sure you use a battery isolator so the system can charge them independently. Connect all your accessories to the aux battery, that way if you run the aux battery down it does not affect your starting battery. For your aux battery, don't use a big automotive battery as it will use a large portion of the charging capacity just to charge it. I personally use yellow top optima in the small form factor. I forget the number I think it is 24. If you don't have our HO stator and you still want to install an aux battery still use the isolator but charge it at home with an external battery charger.

If you add a second battery to your vehicle and simply connect them together without an isolator then when the vehicle is not running the second battery will drain power from the starting battery because it is smaller and you won't be able to start it. Either put an isolator on there or keep a trickle charger on there when not in use.

Extra lighting:

Use HID lights not halogen or regular incandescent lights they draw too much power. On the stock system if you just add two 55 watt lights and nothing else to the electrical system, you are already going backwards on the battery. Two HID lights draw 60 watts together and put out an amount of light equal to two 100 watt lights so you would be safe with two HID lights on the stock system.

Connecting electrical accessories:

Most of the time you want to wire the accessory directly to the battery and use a relay, fuse and a switch to turn it on. Never power any accessory off any of the stock wiring it is too small and will cause you problems. The only thing I power off the stock system is the relays. What is a relay you might ask; basically it is an electrically operated switch. Say you have several high amperage lights that need a heavy wire to supply the power and the current is too much for a toggle switch and

you want them to turn off when you turn the key off. First off you have to figure which terminals on the relay do what. For more information on relays click the link below.

<http://www.bcae1.com/swrelay.htm>

1. Connect the heavy gauge wire to the battery to a terminal on the relay; connect another heavy wire from the relay to the lights. The number to which you connect these two wires depends on whether you have a four or five terminal relay. For this application I would use a four terminal and it would not matter which of the remaining terminals you use as you are simply closing the internal contacts between the two. If you use a five terminal relay for this, one of the terminals won't be used.
2. Then connect a smaller wire from a wire on the vehicle that is hot when the key is on to the toggle switch then to the relay terminal numbered 85. On a rhino most all brown wires are keyed hot.
3. Lastly connect a ground wire to the relay on terminal 86; again this is normally a smaller wire because relays only use a very small amount of current to operate.

So what you end up with is; the lights won't turn on unless the key is on. Once the key is on, turn the toggle switch on and the lights will come on, but if you forget to turn the switch off they will go off when you turn the key off because of the relay. This set up also does not put any additional loads on the stock wiring harness.

It really doesn't matter if it is lights, stereos, air compressors or whatever you will basically want to connect the accessories in the same manner. Of course a stereo and most amps have an internal relay so they have two power wires, one for the battery and one for a keyed hot wire.

On the Hunterworks Rhino we have the following accessories on there and everything runs fine. We do have our HO stator on there, yellow top optima, battery isolator and a volt gauge for each battery.

(6) HID lights
HID Headlights
On-board air compressor
Ipod connection with 50 watt amp
Sub-Woofer with 50 watt amp
3000lb Winch

If you have questions or comments contact me via e-mail
todd@hunterworks.com