Congratulations on your purchase of a JRPW Racing engine. Your engine has been machined, assembled, and tested using state of the art equipment and techniques. Hours and hours of development and testing are behind every engine we build. JRPW is very proud to be on the cutting edge of the engine and karting industry, and our commitment to you, our customer, is to continue to do our part to insure our customers are the leaders of the pack.

Unpacking your engine, you will notice a few things. All engines shipped from JRPW are shipped without any fluids. The engine will be marked as well, this is just a quick reminder to add oil. Each engine will also have a sheet detailing the engine specifics. This sheet should provide answers to the most common questions, and I will be happy to further assist if needed. Enclosed you will also find a detailed invoice, and all the replaced parts.

Your engine is completely broken in and is ready to race, just add oil and fuel.

General Engine Notes

Upon completion of the first track session, it is advised to change the oil right away. Changing at this time does an excellent job of flushing all the contaminants from break-in. After this, the regular change schedule should be followed.

During the year, obviously the temperature changes, and with this brings a change in the air density. Slight changes are usually not a cause for alarm, however if a major temperature change has occurred since dyno tuning, a jet change may be needed to maintain peak power. Give JRPW a call, and we will be happy to help. While speaking of jet, the mixture screw is set at two full rounds from bottom. (flathead carb) It is recommended this not be changed. Do not change this to alter head temp. The addition or removing of tape is a much better way to get the desired result, and will not affect the fuel mixture. Your engine was tuned at this setting, and changing will affect performance. Animal carbs have a tuned setting as well, and contact us before any adjustments are made.

As stated above, taping the flywheel screen is the best means of raising the engine temp, and on some engines, especially the restricted engines, it is necessary to completely cover the screen. Extremely hot days may require removal of some tape. Remember as well, a tight kart tends to raise the temp, as a free kart lowers it.

The RPM stated on your spec sheet is the optimal operating range of your engine as determined by dyno testing, however, it may be necessary to exceed or reduce this under some circumstances. Just as the handling affects the temp, it also affects the rpm. I cannot tell you how many times I have witnessed a kart handle terrible, and upon returning to the pits, the first thing done is to check the tach and change the gear. My point is, keep an open mind when changing gears, because when the kart is handling poorly or glued to the track, the gear is the last adjustment you should be making. The rpms will increase as the kart handling improves. For reference, a tooth on the rear sprocket is worth approximately 100 to 150 rpms.

Engine care and maintenance

Your engine is a vital part of your racing program and needs to be treated very carefully to keep it at its peak. Proper care and maintenance can also save you a lot of money when rebuild time comes around. I cannot tell you how many engines have come into my shop that were very poorly maintained, and every one of these required more parts and services than if the engine was properly cared for.

First, let's start with the air filter. It is imperative that every week your filter is cleaned and properly oiled. Cleaning the filter requires little more than a bit of heavy duty degreaser, and warm water. Completely saturate the filter with the cleaner, and with the warm water, wash the filter out from the inside. Then, repeat as needed, thoroughly rinse the filter, and allow to air dry. Never use compressed air to dry the filter, as it can tear the fabric inside the filter, allowing dirt to enter the engine. When dry, spray the filter with fabric filter oil, completely covering the filter in a good even coat. Wiping away the excess, the filter is ready to install. Having an extra filter to replace during the event is also a good idea. You can pre-oil the filter and store in a ziplock bag. This saves a step at the track.

Engine oil. This is the blood of your engine. I personally recommend changing the oil about every 20 laps. I start the day with fresh oil, change after practice, run my heat race, change again, then run the main event. This can be adjusted a bit for days with multiple classes, but the point is, keep your oil changed. There are several reasons why we change oil so often. The single biggest reason is because our engines do not have a filtration system. Keeping the crankcase flushed regularly is our only means of keeping out the contaminants. Another reason is to keep the volume at the needed level. Some engines will burn a little bit of oil, and some will push oil into the catch tank, and constant changing insures us we have enough oil to prevent damage. It is a good idea to drain your oil when it is warm. This helps make sure all the settled particles and contaminants are flushed from the system. Make sure you use a good quality oil. JRPW recommends Cool Power Extreme, Cool Power green medium or Thor light. There are also other quality oils, however, there are also some to stay away from. Automotive oil should never be used, as these oils are not compatible with alcohol fuels and usually cannot withstand our operating temperatures. Mixing oils can also create problems, as well as the use of additives. Contact JRPW before experimenting with oil.

Bolts, bolts, bolts. These engines have alot of vibration. Briggs did not provide use with a balanced rotating assembly, so sometimes, bolts do tend to loosen. Couple this with the surface at some tracks, and well, you get the point. Every week, I recommend going over your engine bolts and just making sure everything is nice and tight. The main bolts to watch is the tank and carburetor bolts, and a regular check at the track is a good idea as well. Keeping check on all your fasteners on the kart is part of a good maintenance program. Head bolts should only be tightened with a torque wrench, I use a setting of 140 in-lbs. Sidecover bolts are torqued at 110 in-lbs. Keep in mind, tight is tight enough, more than that can cause damage or break parts.

Washing the engine. There are several areas that need to be addressed before washing the engine. Make sure the breather tube is taped off, tape off the carburetor, (G-Man makes a handy cap for this) tape off the exhaust, and make sure the spark plug is tight. It is also a good idea to tape off the vent on the gas cap, just make sure as soon as you are done, remove this piece of tape. Spray the engine down with a mild degreaser, and rinse away. Be careful with some chemicals, as they are very tough on paint, and may dull or even remove paint from the painted covers. Be sure to rinse behind the flywheel, as this is a common spot for dirt to accumulate, and this can also put the flywheel even further from balance. Once satisfied with the cleaning, it is a very good idea to start the engine and let the heat evaporate any moisture and dry the engine. Once the engine is nice and warm, I also recommend changing the oil. This is another way of making sure any moisture or water is eliminated, and decreases the possibility of rust.

Carburetor maintenance for the Animal. Alcohol is a very corrosive fuel, and when it dries, it tends to form a chalky residue. This is why fuel should never be allowed to remain in your carb. JRPW recommends removing the two screws that attach the float bowl, and draining the fuel. Then, after removing the fuel inlet hose at the pump, with low pressure compressed

air, gently force all the remaining fuel out of the lines and the carb. From the bottom, blow everything completely dry. Be careful not to move the pin holding the float assembly and needle. Blow all through the inside of the carb as well, making sure there is not any fuel left anywhere. Then, after blowing the bowl dry, reposition the o-ring on the bowl, and reassemble. On occasion, wash everything with carb cleaner to make sure it is good and clean. Remove the slide from the top of the carburetor, and lubricate it with WD-40 or similar lubricant. The slide gets dry from the alcohol, and tends to try and stick in the bore. It is important that you flush your carb as soon as you can after use, problems can start after only a few days, and in most cases, leaving fuel in the carb for extended periods of time, results in having to replace the carb. JRPW will be happy to further explain these steps, and demonstrate as well.

Fuel system. It is highly recommended that you filter your fuel each time you add to your tank. Carburetors have small holes and passages that are easily blocked and this can cause a lot of headaches on race day. It is also a very good idea to completely drain your tank regularly to make sure it stays clean. Fuel containers and pump arounds can contain small particles that, like stated above, can cause a lot of unnecessary problems. You can use a paint strainer, or a coffee filter placed inside a funnel. Both are very inexpensive and can help prevent a lost day at the track.

Spark plugs. Some racers never look at their spark plug until there is a problem. JRPW recommends changing the spark plug every couple races. This helps lessen the potential for problems. With most plugs selling for just a couple dollars, this is a small price to pay for peace of mind. Check the plug gap with a feeler gauge, (.025) and index properly when installing. Mark the opening of the electrode with a marker on the ceramic, then tighten the plug and use index washers to change the position if needed. I prefer the opening to point at the exhaust valve. Based on my testing, position really doesn't seem to matter as long as it clears the intake valve. After changing the plug, always start the engine for a second to verify the plug is good. Sometimes, a brand new plug comes from the factory defective and will not fire.

Diaphragms. On a flathead carburetor, the diaphragm gasket should be changed every two or three race weekends. The alcohol dries it out and the pump doesn't function as it should, usually resulting in an engine that will not start. Be careful when removing the cover plate, as a couple parts are behind the gasket. The proper order is to install the spring into the carb first, place the cup onto the spring, the diaphragm gasket, then the cover plate. Tighten each screw evenly, and the job is complete.

Every week, it is a very good idea to lubricate the cylinder prior to starting the engine. Remove the spark plug, and with a spray lubricant, wet the cylinder down. This insures the cylinder isn't dry at startup.