



## Care and Feeding of the Rotax Max FR125

The following is a list of areas that we have found that improve the performance reliability of the FR125

1. The engine package must be kept CLEAN. After a day at the track, we will use as much as ½ can of carb cleaner on the outside of the engine. This is to remove any dirt, grease, etc.

An important and often overlooked area is the gear for the starter. This area will build up grime from chain lube and can cause future problems, so this area must be kept clean. Also, check the tightness of the starter motor bolts.

Our typical cleaning ritual after a day at the track will include:

- a) Clean and inspect powervalve.
  - b) Remove and clean inside of airbox. Use foam filter cleaner on the air filter, allow to dry and re-oil with foam filter oil.
  - c) With airbox off. Clean carb intake. Pull the carb slide and clean (use carb cleaner)
  - d) Remove and inspect fuel filter. Clean and reassemble.
  - e) Wipe down exhaust with motor oil to prevent corrosion.
  - f) Inspect electrical connections. If wet conditions are expected, coat connections with WD40.
  - g) Inspect fuel tank for dirt. Check all fuel lines for kinks, wear, or holes.
2. Remove exhaust, clean both male and female portions with scotchbrite pad. You can also use carb cleaner on this area. Coat both male and female parts With high temp RLV and reassemble. We have found that after a race day, the compound in this joint will get brittle, thus power is blown out of this area. This will adversely effect operation of the powervalve. Also, while exhaust is removed, check tightness on exhaust flange bolts.
  3. Check gearbox oil (as per Rotax manual)
  4. Overflow tanks. We run overflow tanks off the radiator, the crankcase vent, and the carb. Overflow. The intent is to keep from spilling anything on the track or fellow racers, but just as important, it allows us to monitor engine function. It is critical that black lines that come off the carb are clear and allow the carb to breath. We used a “F” shaped plastic fitting (from a auto parts store)and ran it down into a single piece of fuel line and then into a overflow tank on the side pod. We noticed early in the race season that we developed a “bog” on the new engine package, when checking the overflow tank we saw it was ¾ full of fuel. Thus we inspected the floats in the carb. and found that they need adjustment. Overflow tanks are an excellent way to tell you what is going on with the engine.

5. Jetting is critical to the FR125. Most performance problems usually result from the combination of items 1 – 4 listed above and improper jetting.  
It is true that you don't want to get the motor too lean and risk sticking the piston, but if the motor is too rich, it will not perform to its ability  
We HIGHLY recommend using the MAXJET Jetting Software program.  
It is accurate and takes the guess work out of proper jetting.
6. External adjustment to carburetor.  
We have found that the idle screw doesn't do too much. (at least a high altitude tracks). But adjustment to the Fuel / Air mixture is one area to fine tune for the race. With the kart on the ground and the driver sitting in the kart with the motor running, have the driver press the throttle and see how the "pickup" is with the motor. If it seems to lag, adjust the screw  $1/8^{\text{th}}$  of a turn at a time forward or backward until you find the desired pickup performance.  
As a reference point to start from, the screw should be  $1 \frac{1}{2}$  to  $1 \frac{3}{4}$  turns out.  
Please note not to "stomp" on the throttle when doing this procedure.  
And be sure to do this on level ground.  
Finally, be kind to the clutch when making this adjustment.
7. Periodically remove clutch drum. Clean inside drum and around components of the shoes with brake cleaner. (careful not to get on any painted surface, brake cleaner will eat up paint). Clean and inspect bearing cage. Re-lube bearing cage and reassemble.
8. Powervalve – A lot of people think that when performance is off that this is the first place to start. Wrong! The fact is this is the last parameter to adjust.  
The powervalue should be adjusted after all the items listed above have been completed. The reason for this is that the powervalve will react on the setup of all these other items plus one final consideration and that is how the gearing is setup. Remember that when you move the dial on the powervalve out, you are taking tension off the spring and therefore it will engage sooner.  
Move it out, and it will engage later. The best starting point is to place it flush with the housing around it.
9. Battery – For best performance, the battery needs to have a full charge on it.  
When not in use, remove batter cover and disconnect leads. Some people have had problems with the factory charger. We have found that using a "float type" battery charger seems to work best.
10. RPM's & Gearing – Pay attention to the power curves shown in the Rotax Manual and from dyno test by MaxJet (on the MaxJet CD). drops off right at Gear to the power curve..  
Many people have gone with the theory of setting the gearing to bounce off the rev. limiter (14,000 RPM +) at the end of a straight.  
We would suggest gearing to pull out of the corners.  
If the kart is "bogging" out of the corners the first thing that everyone looks at is the jetting. If jetting is correct and the motor still bogs out of corners, the issue is most likely gearing. If jetting is correct and gearing is correct and you still have a problem with "bogging" coming out of corners, the adjust driving technique to use either or a combination of trail braking and "blipping" the throttle.

11. Filter to fuel vent – Not a good idea to leave the vent to the fuel tank open without some form of filter on it. If left open it leads to the possibility of fuel contamination and problems with the engine package. We ran fuel line up a inline filter from the fuel tank and secured it under the front fairing.

12. Hard to start motor – There are three areas to check.

Fuel – Spark - Air

First and easiest is fuel flow. When changing out jets, the float bowl becomes dry. This makes the motor hard to start. And our experience is that the choke on the Delorto carb is somewhat ineffective. Two remedy's we have found for this are: 1) Blow into the fuel tank vent tube (again assuming you have put a filter on it) this will create positive pressure in the fuel system. 2) With the kart on the ground and the driver in position, have the mechanic place his fingers over the airbox intake tubes, have the driver turn the motor over and when motor starts, remove fingers from the tubes. In effect, you are cutting off the air (choking the motor) and causing the fuel to flow.

The second area is to check the spark plug. If the motor is allowed to sit in idle too long or if you are jetted rich, the plug will have a tendency to foul.

Pull out plug and check for condition. If it is dark in color (like dark chocolate) it has been running rich and is probably fouled. Replace plug with a new plug. (Good idea to have mechanic on the grid with a plug wrench and a new plug just in case) Also make sure that the plug wire is securely attached to the plug for good electrical contact. Again, if since the Rotax uses the battery for it's spark, if the battery is not sufficiently charged, the motor will not perform as designed.

Lastly is air, mainly a good clean air filter and properly set clamps and hoses. We have seen several times where a racer made an adjustment to his engine package and failed to put the clamps back in place only to be surprised with poor performance.

Also, if the motor is hard to start another area that should be check is the slide in the carb. If the slide is not in the fully closed position, the motor will not start. You can remove the airbox and look down the carb venturi to verify that it is closing fully.

And as a reminder (as per Rotax manual) DO NOT rev the motor on the stand. This may lead to damage to the motor or shortened life of the motor.

The motor should be ran with a load on it.

In summary

The Rotax FR125 motor package is one of the most reliable and easy to work with motors as long as you understand it's operation.

If you follow the recommendations shown here, you should be able to get long life and great performance out of your motor package.