

Original Dave F mod instructions:

### Dave's Instructions

When I first started out trying to get more power out of my stock RD I relied on the experience I had with my first RD-350, a '73 #101439. That bike ended up with Bassani chambers, a swiss-cheesed airbox and slightly re-jetted carbs: mains up to 160. Thats it. I rode it that way for a year and a half, then traded it in on a new Kawasaki H1. At that time I didn't know a damn thing about tuning an 2-stroke engine. I bought my current RD in July, '79 and have had it off and on ever since. It had 101 miles on it when I got it (yep! In '79!) and has almost 13,000 on it now. My daughter had it for several years, storing it out in the Pacific Northwest weather, on the side-stand against a fence. Not good. I got it back in 09/94 and have been fixing it up ever since, money being the limiting factor. When I started doing the Dale A. carb mods back in '96, I searched all over for those fabled 5J9 needles to fit his specifications. However, the pair I finally did locate came with a caution that they probably would be too rich in the mid-range. How True! The bike was almost un-ride able in the mid-range. All the fiddling with jetting combinations that I could try or were recommended did not work. Phone calls to Dale just got a scratch on his head and a sympathetic, "You'll get it right, it worked on mine..." Later discussions focused on application and it was concluded that the 5J9 needle was just too rich in the mid-range for a stock-ported engine. So now what? As far as I was concerned I was stuck in la-la land without a needle...so time to hit the books. I finally discovered that the Dale A. carb mod re-jet was simply a retrofit to parts from the '72 R5C 350, but it used 5DP7 needles. I bought a pair and the equation was finally (almost) solved. In the last four years I have learned how make my stock '75 RD-350 perform much better without having to disassemble the engine. In this article I will give a little background on my bike, why and how I did the modifications I will describe, and their results. These modifications work for both the air-cooled RD-350 and the RD-400. I bought my RD-350 in 1979 with 101 miles on the odometer. I gave it away in '76 and bought it back for \$350 in '94; it was in bad shape. I fixed it up the best I could, got it running and found out about the 2-Stroke list. There I met Dale Alexander. Dale is what properly is properly termed, a "Guru" for the RD. Because of articles he had written about getting more performance from these machines, I decided to try some of them out. At this point I should say that I had already made a few modifications for more power. I had drilled the air-box full of holes for more flow, and installed a set of DG expansion chambers. With these changes I had to re-jet the carburetors, changing the main jets from size 105 to size 160. This alone will make an RD much quicker and faster. I wanted more, my appetite whetted by Dale's articles. The updated pieces can be found at Mike Hammer's web site, or at Doug Johnson's, [www.motocarerra.com](http://www.motocarerra.com) or on this site in the Tech Tips section. I decided to modify my carburetors per Dale's specifications and change to a single tall air filter mounted directly onto the stock intake runner, removing the air-box in the process. This proved to be a much bigger task than I ever imagined. More than a few times I had the urge to push the damn thing over the cliff at the end of my street, trying in vain to get the jetting right...but that's another story. This article assumes you already have expansion chambers. It doesn't really matter what brand. The modifications can be done on a bike with stock pipes, and it works very well. The later

mods helped me get rid of the characteristic rich spot in the power band, induced by out-of-phase positive and negative pressure waves reflecting back and forth through the engine by the expansion chambers. Lets list what parts are necessary to convert your RD carbs to get smoother, more responsive power. They are:

- RD-350: 2 169-P0 or -P2 needle jets
- 2 5DP7 needles
- Several pairs of main jets, ranging from 180-220
- 2 2mm air jets 1 K&N air filter, part #RD-0710

RD-400 Same as above, except the air filter and necessary intake runner can be bought as a kit from ProFlo, MotoCarerra, SpecII and a few others. The carb parts can be purchased from the same places or direct from Sudco-Mikuni. All these suppliers have websites (see the Services section on this site).

You'll also need a drill motor, a #30 drill bit and a 4mm tap if you want adjustable air jets. If you just want to go with the 2mm, a 5/64th drill bit will do the job. Completely disassemble one carb. Drill out the old air jet. Its located in the carb passage at 6 o'clock on the upstream side of the carb. A sharp #30 drill bit will bite and spin the jet, then it will come right out. On the 400, the brass dome covering the passage needs removal before you can get the old air jet out. I use a sharp punch to dimple the dome. This might push the dome further into the passage, but the sucker is coming out anyway. Drill a small hole in the dome, then insert a screw. Use a pair of pliers and pry out the dome. Then drill out the air jet. On the 350 it'll spin out with the bit. On the 400 it'll usually fall right out after being spun a few times. Stop here.

If you want adjustable air jets, drill out the rest of the passage with the #30 drill bit. Then tap the hole with the 4mm tap, Be careful; when the tap starts to get tight, run it back out and blow out the chips. You don't want to break off a tap! When you can just see the tip of the tap coming out the hole into the needle jet passage, stop. This provides a positive stop for the new 2mm air jet, which you now install in the drilled and tapped passage. Reassemble the carb with the new needle jet, needle and start with the 220 main jet. Do the same thing to the other carb. If you just want the 2mm passage (the above procedure can be done at another time), just finish drilling out the passage with the 5/64th drill and reassemble the carb as above. Then do the same thing to the other carb. If you are still using them, ditch the old air box and air filter. Otherwise, install the carbs, intake Y and new air filter. Set the air screws at 1 turn out. Start it up and ride it. If it wants to buck and hesitate on deceleration, turn the air screws in 1/8th at a time until its smooth. If this doesn't work, install the next size up pilot jet, a #27.5, or even a #30, then readjust the air screws at 1-1/2 turns out and fine tune from there. The main jets at 220 will be rich, but not too much. I'm currently running #200 mains. These mods will give more power, a smoother power band and spreads out the big hit at 6K on a stock-carbureted RD. You also get a tiny rich spot if you are running expansion chambers. I got rid of that.

## RECENT ADDITIONS

Recently I added a few more bolt-on performance improvements, which incidentally removed the rich spot I had a 5.5K. Those parts were: RZ intake manifolds modified to fit

ported RD reed cages A homemade balance tube for the manifolds (the RZ tube will work) TDR single-petal fiberglass reeds These improvements banished the characteristic mid-range richness caused by expansion chambers, and also an added increase in power. To my surprise, no jetting changes were required. Finally, I have changed the balance tube for a White Bros. Boost bottle (meant for a Banshee) and Hinson 3/8" reed spacers (also for the Banshee). The boost bottle adds midrange power and smooths out the power even more than before. The spacers move the cages back, unshrouding the boost port and adding some crankcase volume. More lowend torque as a result. The latest addition is a pair of gorgeous DG gold-anodized heads, which closed up the squish clearance and raised compression.