OPERATION WR

Turning the moose loose

By the DIRT BIKE staff

We can explain the Yamaha WR series—we've got it all figured out. Somewhere at Yamaha there's a broken fax machine. Back when Yamaha decided to make a 250 enduro bike, the original message to the factory must have read something like this:

"Dear Factory,

In order to build enduro bike, start with 250 motocrosser, smooth out power delivery, make suspension more compliant, add flywheel, lighting coils, wide-ratio gearbox, lights, EPA-legal muffler with spark arrester and change color."

Unfortunately, the fax machine left out words. What the factory received was:

"In order to build enduro bike, start with 250 motocrosser . . . change color."

What came out was the WR250, a blue-and-white motocrosser. The wide-ratio gearbox and lighting coil found their way onto the bike, but little else of the lost recipe. The next fax must have read:

"Dear Factory,

WR 250 is very fast but radical. Next enduro bike should be as potent but have the dual goals of being more manageable for enduro purposes and yet not too sedate, otherwise the bike would be boring."

The fax machine was really breaking up by now. What the factory received was:

"WR 250 is very . . . radical. Next enduro bike should be . . . dual . . . purpose . . . and . . . boring."

The guys at the factory just shrugged and built the WR200.

SEARCHING FOR MIDDLE GROUND

So Yamaha's two enduro bikes have two very different problems. The 250 is too radical—a motocrosser in bad need of an attitude adjustment. The 200 is too tame—a dual-purpose bike that isn't legal on the street. Moose Racing in Denver was put on the case.

Getting the 250 right was easy. The first step was to increase flywheel inertia. Even though the WR does have more flywheel than the YZ250, it still isn't enough to smooth out the engine's brutal transition from "off the pipe" to "on the pipe." Moose added eight ounces of metal to the ignition rotor. On top of that, steel clutch plates replaced the aluminum ones. This has several different effects. First, it adds still more flywheel inertia. In this case, the added inertia affects the engine only when the clutch is engaged, so if the revs are low, fanning the clutch still is an effective means of bringing the bike on the powerband. When weight is added to the crank or ignition rotor, it always slows down the engine's revability, whether the clutch is in or out. Also, the steel plates result in less oil contamination, and expand less when overheated.

Moose also offers power valve springs, which alter how quickly (not when) the power valve opens. The WR's cylinder was ported and the head was milled 0.015". Again, the goal was smoother power, not necessari-

The Moose is loose: Steve Hatch airs out the Moosed WR200. High altitudes make Colorado a big-bike haven, but the Moose WR200 will hold its own on the trail.


YAMAHA
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ly more peak output.

In the suspension department, Moose had to revalve both ends. Stock YZ suspension, which is what the WR has, is made for sharp MX whoops and landing from two-story drops. Very few enduros have two-story drops. The low-speed compression was softened at both ends so the bike could deal better with rocks, stumps and roots—things more likely to be found in an off-road race.

Finally, Moose went bolt-on crazy. That WR lighting coil doesn't do much good if it doesn't have something to light. With a little work, the WR200 headlight and front fender fell into place, followed by Enduro Engineering handguards, a Banzai Bros. pipe guard, a Graydon skid plate, an FMF pipe and an ICO odometer.

REVENGE OF THE TIDDLER

Making a fast bike tame is considerably easier than making a tame bike fast. The WR200 has two major problems: It's slow and it's soft. Most of the slow part can be traced to the double-wall pipe and the EPA silencer. Both were taken off and fed to the dumpster. You need to understand that, even with an FMF pipe and an Answer SA Pro silencer, you could still ride the 200 through a library without bothering anyone. It's no longer EPA-legal, but so far we haven't ridden a bike that makes the 82-decibel limit and still is ridable. Maybe, if the manufacturers keep on working on the sound problem, we'll get it licked, but right now good quiet-bike technology doesn't exist.

Next, Moose sent its metal termites into the cylinder to move the holes around. The cylinder was ported and the head was milled. With the engine able to exhale much better, a larger carb was required. The stocker was bored 2mm and the airbox was modified so that air wouldn't get lost, make some wrong turns and wind up in East St. Louis on the way to the filter.

The engine already had a whole bunch of flywheel inertia, but the Moose team added six ounces anyway. The stock flywheel seemed like a lot when the engine was making the same amount of horsepower as a weed whacker, but as engine oomph increases, so does the need for rotational mass. The package was finished off with a Honda XR taillight replacing the massive dual-purpose-like stocker, and Enduro Engineering handguards.

WAS IT WORTH IT?

Riding the Moose bikes is a relief. In the case of the 250, the stocker requires so much concentration and commitment that you can be mentally exhausted before breaking a sweat. Put the stocker on a tight trail and you feel like you must go fast or suffer the consequences. With the Moose bike, you can dial the bike to the right speed easily. The engine is much more controllable. Let's say you're approaching an uphill rock pile with trees spaced 30 inches apart. The proper method on the stocker would be to drop the clutch, launch off the first rock and see how much of the pile you can clear. Of course, you might hit a tree or two on the way up, and you might bury yourself under the rocks so far that they'll have to use ultrasound to find you, but if everything goes right, you'll get to the top really fast.

The Moose method is to pick a medium throttle setting and let the bike do most of the work. The machine seems to know where to look for traction. You get to the top just as fast but with a lot less mental strain. What is really nice is that peak power doesn't seem to suffer on the modified bike. Even at ex-

Moose's WR200 snaked through Colorado's deep creeks and tight trees with no problems, but rocks later wasted the WR's Achilles' heel—the chainguide.

If Damon Bradshaw rode enduros, he would want a stock WR250. For the rest of us, the Moose Racing modifications go a long way towards making the machine more manageable.

With a little work, the WR200 headlight and front fender will go onto the 250, giving it a very different overall personality.

The FMF pipe and Answer silencer provided a lot of the horsepower gain for the 200. The rest was through hard work and grinding.

MOOSE RACING WR200 & 250 MODIFICATIONS

Revalve fork	$ 88.00
Revalve shock	128.00
Porting (WR200 only)	200.00
Porting (WR250 only)	225.00
Head work	20.00
Flywheel mod	89.95
Bore carb to 32mm (WR200 only)	100.00
FMF pipe	159.95
Answer SA Pro silencer	99.95
Power valve kit (WR250 only)	29.95
Steel clutch plates	44.95
Enduro Engineering Brush Guards w/deflectors	64.90
ICO odometer (WR250 only)	219.95
Graydon Proline skid plate (WR250 only)	59.95
Banzai Bros. pipe guard	39.95

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tremely high altitude, where a stocker falls on its face, the Moose bike pulls strongly.

Where the suspension is concerned, we feel that Moose went a little too far. The fork is as compliant as anything we've ridden at slow speed, but seems a little soft in certain circumstances. At higher speeds, or with good riders doing really stupid things, the fork hits bottom with a big clunk. Moose makes its suspension mods to suit specific rider weights and riding styles, so getting the fork dialed is simply a matter of telling the company what you want.

In the rear, the modified suspension is hard to fault. It works at low speed and at high speed. Again, the smooth action of the suspension at less-than-stellar speed takes a lot of pressure off the rider. You don't have to hit everything wide-open to make it work. The WR suddenly is willing to go at any speed and with any intensity you choose.

THE HARD PART

Making the 200 into a serious enduro bike is a challenge, but Moose's engine and suspension mods go as far as possible towards accomplishing the task. The modified engine is a delight. It has all of the strong points of the stocker with none of the weak points. First of all, it's still the smoothest motor on earth. The power rolls on gently with no surges and hits. It simply goes forward when you want it to and doesn't when you don't. Of course, in the case of the stocker, we wondered if the reason for that smoothness might be that the bike had no power to *be* "unsmooth."

We now know that smooth doesn't have to mean slow. The ported 200 still has an electric-motor-like smoothness, *and* it makes respectable power. It isn't going to keep up with the 250 in an outright drag, but it now goes fast enough to get the job done. It will climb anything you're likely to run across in an enduro, and easily keep up with other machines, even in a fast, western-style race.

Possibly the biggest improvement on the 200 is the rear suspension. The stocker was just weird. It would soak up little rocks and roots just fine, but the back would jump around and do unpredictable things at speed. Now it works well at any speed. You can ride as hard as the 200 will carry you without overriding the suspension. Likewise, the fork is greatly improved. Yamaha went through the trouble of bolting on an upside-down fork more to justify an excessive retail price than for any performance benefit. We were suspicious that the 200 was an inexpensive copy of a YZ fork rather than the real thing. Moose has proven that the 200 fork can work as well as the upside-down unit on the 250, though it's just a matter of proper valving.

However, the 200 has certain problems that limit its potential, problems that the best porting and suspension valving in the world won't really help. It's still too tall for a 200, too heavy for a 200 and still has strange steering geometry. The front end deflects all over the trail. At first we had a tendency to blame this on the fork, but then we realized that the front end wanders whether or not it is hitting bumps. We can only shrug and speculate that it's the fault of one of those incomprehensible numbers that affect steering.

In the final analysis, the Moose WR200 is a great bike—for a WR200. There still are built-in limitations that prevent the machine from being a great enduro bike, period. The 250, on the other hand, *is* great. Both facts lead us to believe one thing for certain: If you plan on riding enduros on a WR and, more importantly, if you plan on doing well in enduros, these modifications aren't optional—they're necessary. □