

WORLD'S FASTEST DR350s!

*2 ways to find ISDE
gold on a 4-stroke*

ISDE world trophy team members National Enduro Champ Randy Hawkins and Team Suzuki's Charles Halcomb are extremely talented riders who couldn't ride the same section of woods in the same way if they had to. That doesn't bother them in the least or hurt the U.S. team's chances in Sweden a bit because both their methods work incredibly well. Hawkins is a heart-and-soul enduroist with a gift for finessing his way through the difficult and unknown at speeds normal riders use only on open straights. On the other hand, the part of Halcomb's brain that controls what he does on a dirt bike has somehow frozen in the exact state it was when he was a National-level Pro supercross and motocross racer. For him, the earth is a large, poorly groomed track that must be ridden at nothing less than attack pace. Few people are as well equipped to carry the American flag into the coming ISDE. Building 350cc four-strokes that are equally as ready took some serious work and creative engineering. The level of competition in the 350 four-stroke class calls for a much higher level of performance than a stock Suzuki DR350 could offer. Hawkins and Halcomb, again unable to do the same thing the same way, decided on different routes to the ultimate DR350. Here's how they did it.



DRILLING FOR GOLD

Rob Muzzy is well known for his work with road racing four-strokes, where his machines are all but unbeatable. Currently, Kawasaki's factory superbike road racing effort has contracted for Muzzy to do the engines. Muzzy has also built some of the strongest and longest-running four-stroke dirt bikes, like Bruce Ogilvie's '88 Barstow-to-Vegas-winning HRC/Muzzy XR600 or any of a number of top-finishing Baja 500 and 1000 Hondas. His mods to the DR350 engine include head porting, additional cylinder finning, a complete exhaust system with a larger-than-stock headpipe and a Muzzy muffler (a low-noise, low-restriction unit which works well for the ISDE 94dB sound limit), and a cam that gives strong top-end power with an extremely high rpm ceiling without upsetting the stock DR's meaty, easy-to-control low-to-mid power delivery. Stiffer valve springs with titanium keepers keep the valve train reliable despite the extra revs. Halcomb found that the second oversize piston from Suzuki's GSX-R1100 road racer/street bike fit the stock bore perfectly and was lighter than the stock DR piston. A bit of machining was required to enlarge the valve pockets in the piston dome for the DR, but other than that, it was a perfect fit.

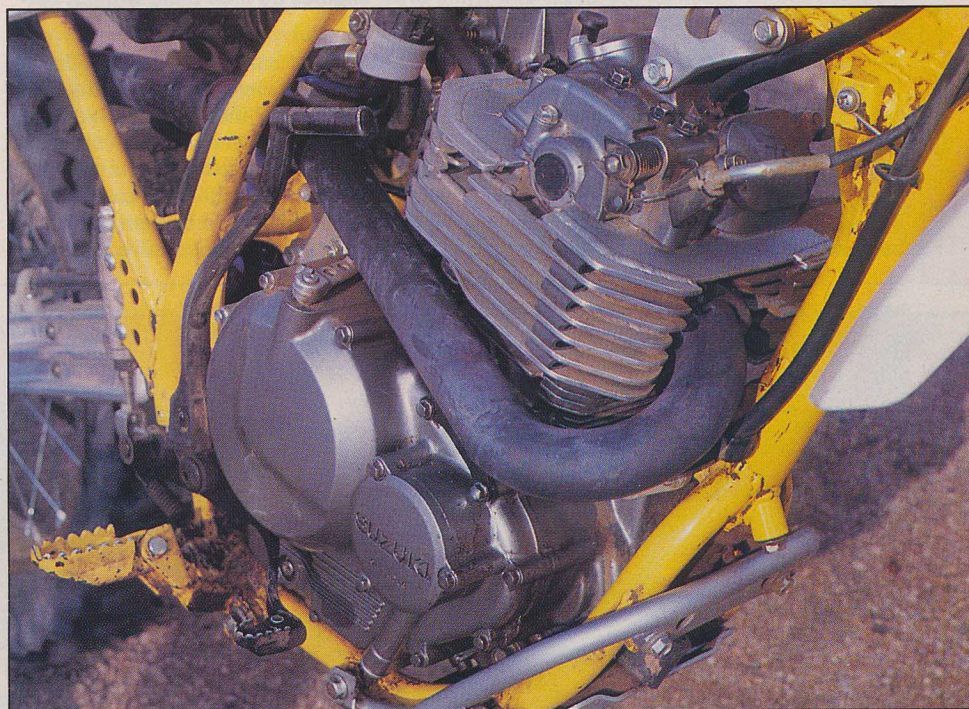
White Bros. supplied a 36mm taper-bored Mikuni carb to replace the stock 33mm Mikuni. A 1990 Honda CR250 airbox cradled in a custom-made aluminum subframe complete the intake. The airbox conversion was done to prevent filter clogging problems that could cost precious time during ISDE competition, not because the DR airbox doesn't work. A stock DR airbox and filter flow more than enough air for the stock machine, provided the filter is properly serviced. The thin plastic CR airbox provides a much larger filter and is a full pound lighter than the thick plastic DR part. The subframe provided the necessary CR to DR mounting points and cut an additional pound of unwanted flab from the DR. By coincidence, the intake boot from Suzuki's DR350S fit the 36mm Mikuni and the CR airbox inlet perfectly. These guys aren't just smart, they're lucky!

Pro Circuit devised the suspension package for both Halcomb's and Hawkins' DRs. The DRs' conventional damper rod forks were replaced with Suzuki KYB RMX inverted cartridge forks. Pro Circuit and Halcomb found that .390 kg springs and 14 clicks out on the compression adjusters worked best with these forks. Pro Circuit RMX triple clamps were used with the DR steering stem. Some serious re-engineering was involved in boring the RMX clamps to fit the DR stem and in shortening the RMX's fork travel by 15mm to keep the DR's front ride height balanced with the rear. Custom-fitting forks to the DR is not one of Pro Circuit's regular services, but if you have to have a bike just like those of Charles and Randy they'll work with you.

Getting the rear suspension to work as



Defending National enduro champ Randy Hawkins and Charles Halcomb have the hottest DR350s in the world. It's a good thing they're on our side!



Rob Muzzy's trademark extended fins and a larger-than-stock headpipe are one of the few clues to the complete transformation within the DR350 engine.

well as the front was less problematic. Pro Circuit found they could coax pro-level performance from the stock shock by extending its length and careful revalving. Even the stock spring was used. Shock length was extended 2mm by shaving a 4mm-thick top-out spacer to 2mm. The longer shock gave the rear suspension an additional half-inch of travel. Valving changes gave the shock stiffer high-speed compression damping and more rebound damping than the stock shock. "There's more potential for performance in an RM shock or with several aftermarket shocks, but we're really happy with the performance we're getting from the DR shock. Factory teams have to work within a bud-

get, too, so it was a plus not to have to buy a different shock. The forks would be expensive for an average guy, but we've got easier access to parts like that than most," Halcomb explained.

BLASTING FOR GOLD

Randy Hawkins has been developing his DR350 with help from White Bros. since late May, and he was so hooked on the engine he wanted to take it to Sweden no matter what the other half of Team Suzuki's four-stroke effort was doing. "Charles' bike is real good, but I'm getting some strong power out of my bike off the bottom and in the mid-range, and they tell me they can find even more top-end than it's got now, so I'm stick-



Both ISDE DRs share full-race Pro Circuit suspension. Suzuki RMX forks and a heavily modified DR350 shock let the Muzzy and White Bros. engines do their thing without getting the riders in trouble.

in' with it," Hawkins said. The parts list for the ISDE version of Hawkins' White Bros. engine is like a condensed version of the "expensive pages" in the White Bros. catalog, which contains a huge selection of performance parts at various levels of racing severity and expense. Full race parts were chosen because of Randy's ability and the fact that

the DR's displacement was held to 350cc because of the class he is racing. (White Bros. can turn a DR350 into a ground-gobbling 441 that can eat either of these 350s alive, but that's a different story, one we ran in our June '90 issue.) A White Bros. cam, a set of 5.5mm-stem valves (5mm-stem valves are stock), a titanium keeper valve spring kit

with special valve guides, a 36mm carb kit, a large-diameter header, a Muzzy Muffler and head porting make up the White Bros. ISDE 350 engine.

Hawkins is as pleased with the suspension as Halcomb. "Our bikes are ready as far as the important part, the engine and suspension, goes. We're just working on cutting a little more weight. We've got a few more things going on the bikes like the airbox, Renthal bars, Takasago Excel rims and works hubs. My only worry is automobile accidents. Seems like every time I get in a car with Charles I get out with big blue marks on my chest from the seat belt," Hawkins said, touching off another exchange between himself and Halcomb "We get where we're going, though, don't we, Randy?"

"About 50 percent of the time. It depends usually on whether the tow truck driver will take us."

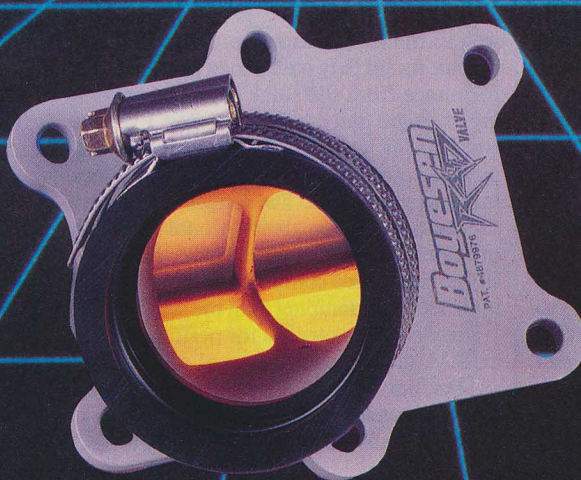
"You've got some mouth for a guy who's built like a fan belt."

THE FUN PART

While Halcomb and Hawkins continued their discussion on driving safety, we went riding. First to hit the trail loop was Halcomb's Muzzy DR. At first we thought Charles had erred in his choice of spring rates because the ride was so soft and supple in the first part of the travel. Both ends could drink up impacts with small rocks as well as the stock DR, but there was plenty of firmer travel left. The ISDE DR350 never sank into its suspension the way the stock bike can when ridden fast. The valving kept

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ISDE DR

the bike feeling tall and level, ready to absorb the worst G-outs or gully slams the trail could offer.

We needed a few trail miles to get used to the Muzzy engine. It felt reasonably strong off the bottom and through the midrange but it shines where the stocker signs off. Once the engine is past the half-throttle mark, the power just builds and builds and builds. No real enduro can test the flow of juice on this thing. You might be thinking a high-revving engine wouldn't make sense on the trail but, if you ride one, you'd love it. By extending the rev range, Muzzy has created a fabulously wide powerband. The stock engine offers usable power from about 4500 to 8500 rpm, where the Muzzy engine goes an additional 1500 rpm. You can leave it in a low gear and scream your way to the top of a sandy hill or buzz through the woods in the meat of the power with plenty of reserve left to pass or clear big obstacles.

Except for the suspension, which was identical on Halcomb's and Hawkins' machines, Hawkins' White Bros. DR350 was a different animal entirely. There was serious thrust available off the bottom and through the midrange, the type that makes low-speed obstacle-clearing wheelies possible. The engine could build revs at a rate that made the stocker feel like the exhaust pipe was pinched shut. Top-end power was far stronger than the stock 350 and continued further into the higher revs.

After riding both bikes, we were stunned at how enjoyable two very different full-race



A handmade aluminum subframe, cradling a Honda CR250 airbox, will be fitted to both ISDE DRs. Hours of measuring and fabrication result in lighter weight and longer filter service intervals, vital for continuous ISDE riding.

engines could be. For most riders, we'd think the White Bros. bike would have an advantage in tight, muddy eastern conditions. The Muzzy machine would be hard to beat in the West's open terrain. Both would take some more time for a less-than-world-class rider to get used to, and there would be some learning involved in riding either one to its potential, but both these bikes could bury

the stock DR and they started just as easily and carbureted perfectly. Hopefully, Suzuki will pump some ISDE blood into future DR models. □

THE EXPENSIVE PART

• Building the world's fastest version of any bike tends to be a costly proposition, but the result is always exciting. Here's what it'll cost to make your DR run with Hawkins' and Halcomb's.

WHITE BROS. ISDE DR350

Head porting	\$200.00
.390 lift cam	82.00 (with exch.)
5.5mm-stem valves	144.98
Titanium keeper valve spring kit w/special valve guides	201.00
Wiseco piston kit	83.29
36mm carb kit	230.80
Large-diameter header	29.95

MUZZY ISDE DR350

Head porting	\$350.00
Enduro cam	115.00 (with exch.)
Extended cooling fins	100.00
Titanium keeper valve spring kit	97.00
Piston kit	105.00
Exhaust system	249.00
PRO CIRCUIT ISDE DR350 SUSPENSION	
Shock mod and revalve	\$130.00 plus parts
Fork mod and revalve	80.00 plus parts
Fork springs	60.00

ISDE DR350 FINISHING TOUCHES

1990 Honda CR250 airbox	\$66.48
Carburetor/airbox adaptor plates	N/A
DR350/CR250 aluminum subframe	N/A
DR350S airboot	31.00
Rental handlebars	62.95 •

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