

HUSQVARNA 400 ENDURO AND 430 AUTOMATIC

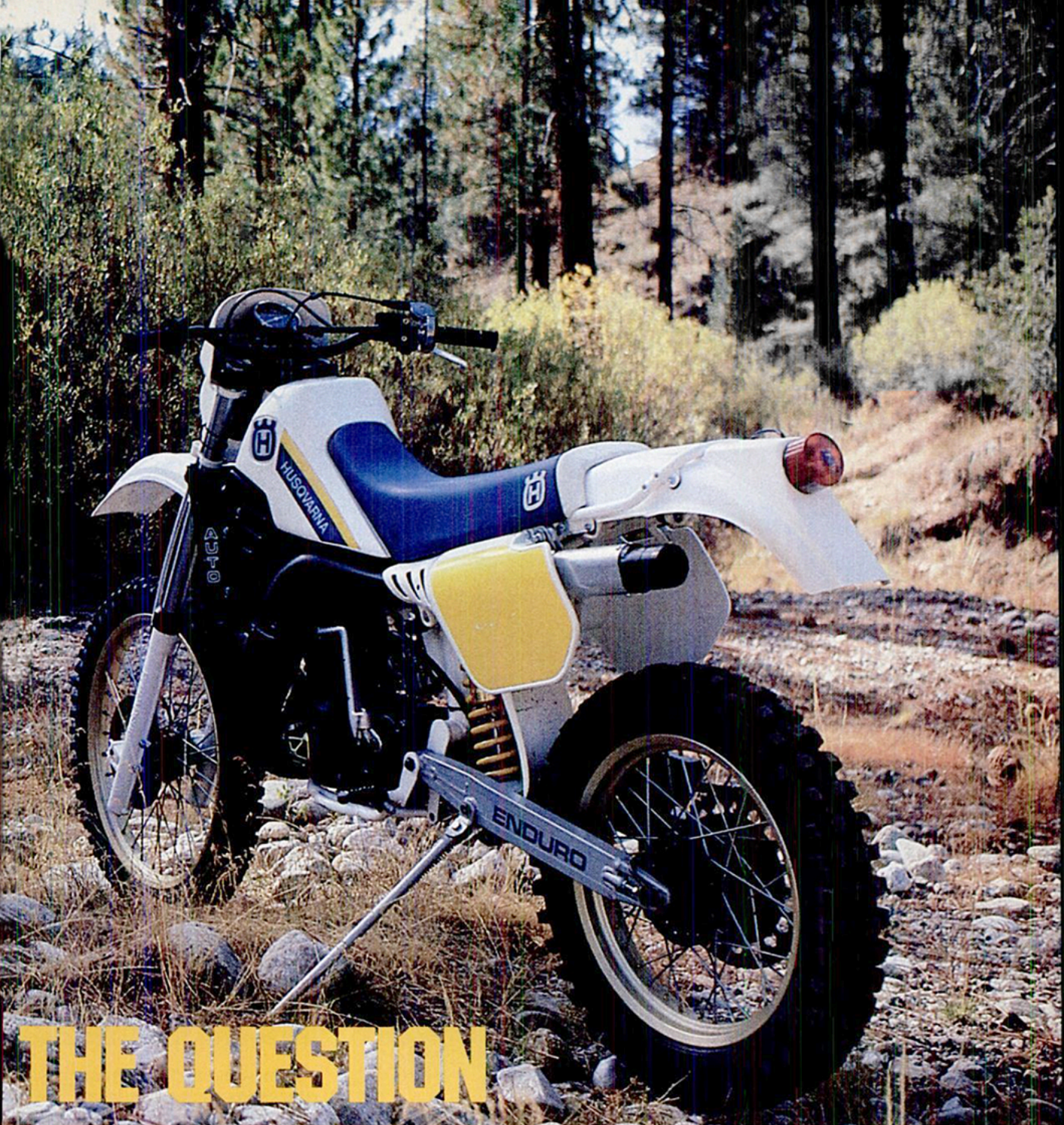


TO SHIFT OR NOT TO SHIFT; TH

Husqvarna takes pride in its racing heritage; that much is obvious from the record book. With 16 U.S. national enduro championships, a long string of Baja 1000 wins and decades of success in the International Six Days Enduro, Husky has a corporate trophy case that is one of the fullest in the business. Husqvarna takes off-road racing and riding *so* seriously, in fact, that it builds eight bikes for the Open class alone: three four-strokes, a motocrosser, two

cross-country racers, and a pair of two-strokes made just for enduros.

Those last two, the 400 Enduro and the 430 Automatic, clearly mark the depth of Husky's commitment to off-road performance. Both bikes have the same mission—to win Open-class enduros—but each approaches that goal in a different way. As the two tests that follow demonstrate, these two enduro machines are almost identical in many ways, yet still manage to be entirely different in many others.



THE QUESTION

400 ENDURO

HOW DO YOU IMPROVE THE world's best enduro machine? That was the dilemma faced by Husqvarna for 1986. Because when the 400WRX was introduced mid-year in 1985, it was instantly proclaimed by everyone who rode it as a near-perfect enduro machine. Its six-speed, 400cc engine had already proven to be an ideal powerplant for all-around off-road use; and when mated to a long-travel, single-shock chassis, it made for an enduro bike

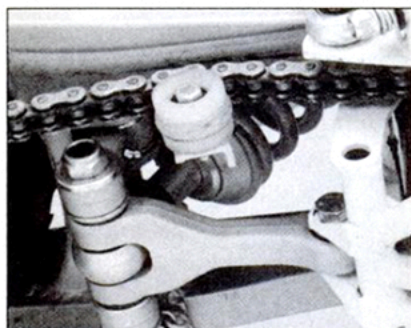
that was virtually untouchable.

There was, however, one problem with the 400WRX: It was in very short supply. The bike had been built in limited numbers because the company wasn't completely sure it would sell. The few that were available disappeared from the showrooms so quickly that large numbers of prospective buyers were left in the cold. And when 1986 rolled around, Husqvarna made a shocking announcement: The 400WRX was being *dropped* from the lineup, and a new model, the 400 Enduro you see here, would take its place.

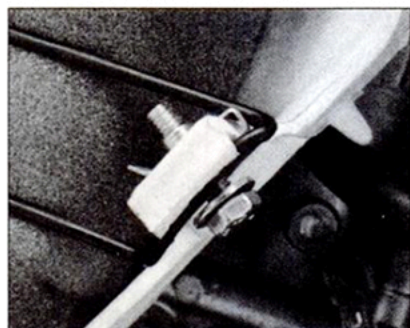
Well, if you're one of those who wanted to buy a 400WRX but couldn't, not to worry; the 400 Enduro actually *is* a 400WRX, but one that's been improved, mostly by the elimination of most of the nagging little problems that plagued last year's bike. The list of improvements includes several reasonably large changes for a small company like Husqvarna, such as a redesigned exhaust system that has a better mounts and gives the liquid-cooled two-stroke engine improved performance, a revised Ohlins damper in the single-shock rear suspension, a



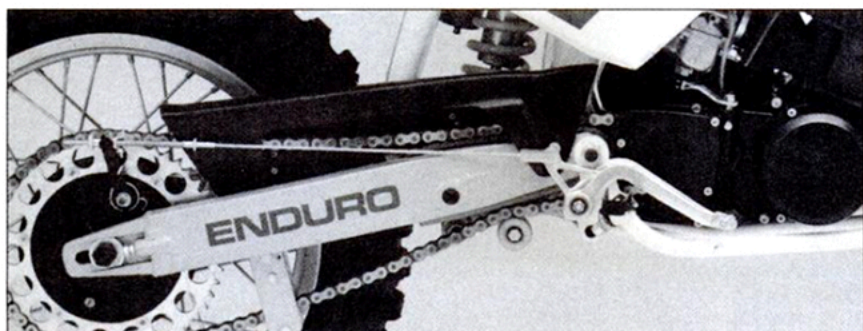
PHOTO BY DE



The 400 Enduro now has grease fittings that make shock-linkage maintenance a snap.



Two 6mm bolts now secure the air-cleaner cover. One of those bolts threads into the air-filter bail to eliminate the possibility of the bail unhooking on the trail.



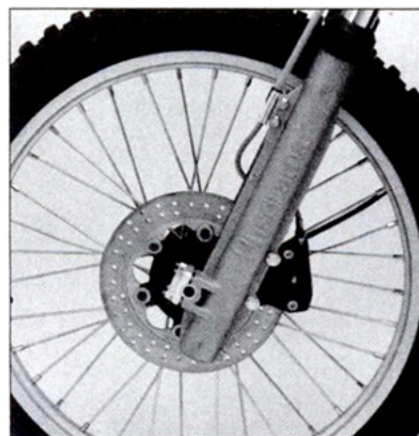
stronger aluminum swingarm, increased spring rates at both wheels, new front-fork internals and a refined front disc brake.

There also are numerous smaller refinements, the most significant of which are: the inclusion of grease fittings on the rear suspension's linkage arms; a rear-brake backing plate that fits in the hub more closely and plugs directly into the swingarm (which makes for more waterproof brakes and quicker rear-wheel removal); new, sawtooth-type footpegs (replac-

ing the often-slippery stamped-metal pegs traditionally used on Huskys) with stronger return springs; a sturdier kickstand mount; and improvements to the shift lever, the kickstart lever and the plastic airbox cover.

All of these changes have made the world's best enduro bike even better, but it's still not quite perfect. The new front fork, for example, performs superbly under most conditions, but is a bit short of rebound damping and has no external damping adjusters (although we were pleased with the

Unpainted magnesium fork sliders boast a single oil seal (rather than Husky's traditional two), new bushings and an aluminum damper rod. Front-brake action is improved due to better machining of the caliper mounts.



New welding and heat-treating processes on the aluminum swingarm allegedly make the arm stronger despite it having one less crossbrace.

stock compression damping). Riding across small bumps at medium to fast speeds causes the front wheel to move up and down in a blur while giving the rider a slight feeling of insecurity.

We cured the problem by welding shut the small rebound-damping hole at the very top of each fork's aluminum damper rod, and refilling each leg with 14 ounces of 15-weight fork oil. That turned a fair fork into an excellent one that is perfect for anything from slow-speed enduro riding



BY RON GRIEWE

to high-speed desert use. The modified fork absorbs all bumps smoothly and efficiently, yet seldom bottoms.

Dialing-in the rear suspension was much easier. After setting the spring preload to provide four inches of rear-end sack, we merely turned the compression- and rebound-damping knobs a couple of clicks one way or the other, depending upon rider preference. The rear wheel then followed the bumps well and made for a smooth and controlled ride, and our testers only occasionally used the full 1.3 inches of travel. With both ends set up this way, the 400 Enduro's suspension would not only out-perform the 400WRX's, but most other off-road suspensions as well.

So, too, is the 400's handling top-flight. The bike is both stable at speed and agile when the going gets tight. The steering is quick enough to deal with trails that snake around closely spaced trees or through rockpiles, yet is never twitchy when blasting along a desert sandwash in the higher gears. And due to the firmer suspension, the 400 Enduro can slide fireroad turns more controllably and nimbly than the 400WRX.

On top of that, improvements in the engine allow the 400 Enduro to outmotor the WRX—and perhaps any other enduro bike, for that matter. The new exhaust system's headpipe is tucked up higher for added ground clearance, and its mid-section is less obtrusive to the rider's legs. But best of all, a slight tuning change has broadened the engine's already-wonderful powerband; there are more revs available at the top, and the power is stronger at low engine speeds.

What results is the closest thing to a perfect enduro engine we've ever sampled. It will lug down to ridiculously low rpm like a trials motor, yet come on at higher revs not unlike a motocross engine. And no matter where you are in between, there is always a healthy supply of strong, usable, tractable power on tap. A 14-tooth countershaft sprocket is standard, which should prove perfect for all but the tightest of woods riding. Low gear allows a crawling pace, 6th gear is good for 90 mph.

Thanks to more-accurately machined caliper-mounts on the front-fork slider, the 400 Enduro has a first-class front brake to go with its world-class engine. The disc setup is borrowed from last year's MX and Cross Country models, but it works better than ever because the caliper now aligns properly with the disc. A light, two-finger pull on the adjustable Magura hand lever stops the 400 from high speeds, yet the brake isn't grabby at slower trail paces. And because the disc hardly notices when it's wet, you don't lose the brake after deep water-crossings.

Two fingers are all that's needed to work the clutch, too, thanks to a longer clutch-activating arm; the clutch plates will get hot and drag, however, if subjected to much abuse. We eliminated the problem by installing the bronze clutch discs from a late-model Husky four-stroke. Makes you wonder why the factory didn't do likewise. We also question Husqvarna's decision to use a Motoplant ignition on the 400 Enduro rather than the 400WRX's SEM ignition. The Motoplant has no noticeable effect on engine performance, although it is

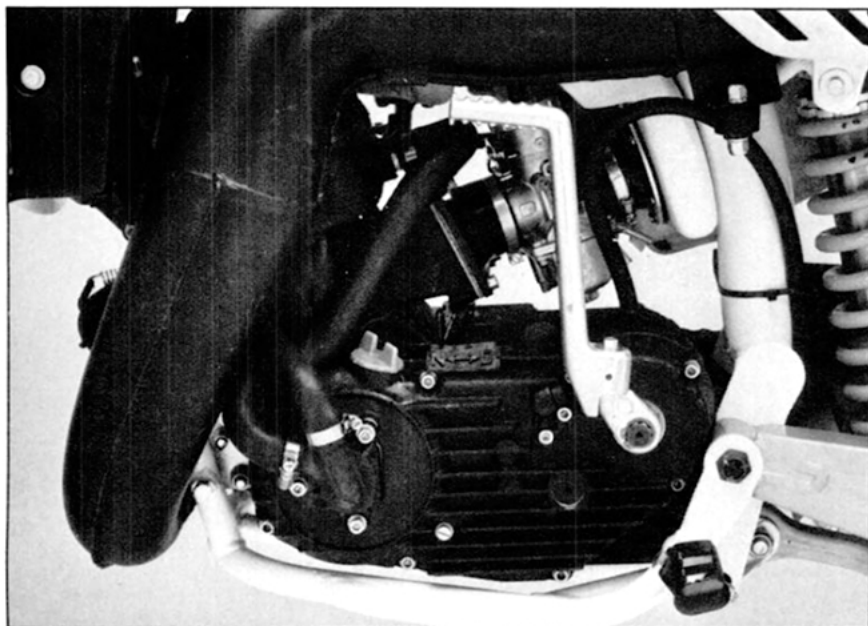
claimed to be more reliable, but there is a difference in lighting capability. The SEM had 140 watts of power, while the Motoplant can only muster 35 watts. As a result, the 60-watt halogen headlight only emits a dim, yellow glow.

Despite those and a few other niggling complaints, though, everyone who rode the 400 Enduro fell hopelessly in love with it—including a few riders who generally dislike Huskys. The 400 is not only an excellent enduro and desert racer, it's a great bike for anyone who simply likes to trail ride. The wide powerband, six-speed transmission, good suspension, large fuel tank and easy-working controls make the 400 a truly versatile off-road motorcycle. After 600 miles of thrashing through the woods and the desert, our test 400 Enduro is still running strong and hasn't given us any problems. Which means that next year, Husky is going to have an even tougher act to follow.

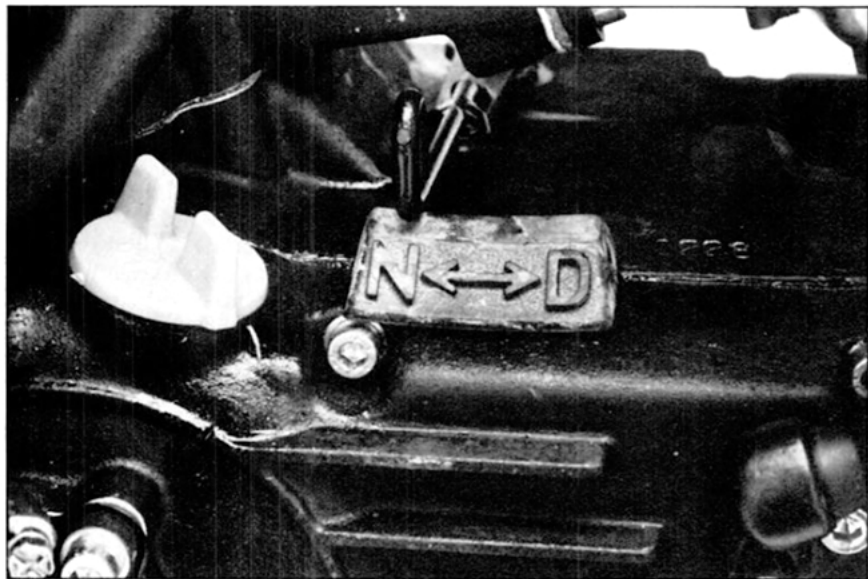
AUTOMATIC 430

DEPENDING UPON WHO YOU TALK to, Husky's Automatic is either the absolute best enduro bike on Earth, or the absolute worst. Some people will even tell you it's both.

On one hand, the Auto has been the most successful bike on the enduro circuit, with Terry Cunningham using one to win three national titles. On the other hand, since their inception in the late Seventies, Autos have suffered more than their share of problems with their three-speed automatic transmissions. Husqvarna has stuck with the concept, though,



Liquid-cooled 430 engine features a stronger three-speed automatic transmission. The transmission can be quickly changed or inspected by removing a plate on the other side of the engine.



A rather crude wire lever atop the crankcases selects Drive or Neutral on the Automatic.

steadily modifying and improving it through the years. Finally, with the 1986 430 Automatic, the company believes it has the problems licked.

Husky has tried its automatic transmission in conjunction with a variety of engine sizes from 250 through 500. This latest version uses a new, 430cc engine that features narrower cases, and stronger transmission clutches and springs. Fundamentally, the chassis is the same basic single-shock arrangement used on the 400 enduro.

A detailed explanation of precisely how the Auto's gearbox works would require more space than available here. But essentially, the gearbox

comprises three separate flyweight-type centrifugal clutches not unlike those in a moped. One of these clutches, called the first-gear clutch, is on the end of the crankshaft, while the other two are housed within a common hub inside the usual gearbox cavity. At idle, the engine rpm is too slow to allow any of the clutches to engage; but as the engine is revved, the flyweights in the crank-mounted clutch move outward and engage, driving the bike forward in first gear. And as the rear-wheel speed increases, the other two flyweight clutches engage in order—first the second-gear clutch, then, when the bike reaches sufficient speed, the one

controlling third gear.

The beauty of this arrangement that, because the crank-mount clutch is sensitive to engine speed and the other two clutches are sensitive to rear-wheel speed, the gearbox always knows which gear it's supposed to be in—which is more than you can say for a lot of riders. Still, riding an Auto for the first time requires a bit of adjustment. To begin with, the engine can be a bear to start. The kick lever is placed high on the left side of the engine, and it doesn't engage until it's halfway through a stroke. Then, besides requiring a lot of oomph, the lever only moves a few inches before it bottoms on the foot peg. And once running, the Auto sounds as if it's destroying itself, for the transmission makes incredibly clanging noises; but Husqvarna claims that's the way they're supposed to sound.

It's also normal for a first-time Auto rider to extend his left fingers in search of a clutch lever and fish for shift lever with his left foot; but neither of those controls exists. Getting the Auto "in gear" requires only using your hand to move a crude-looking wire lever on top of the crankcases from "N" to "D." That results in a loud crunch, another normal sound on an Auto.

Opening the throttle then gets the bike moving; and shifts through the gears, both up and down, are very gradual. The three transmission ratios are widely spaced, but the torquey engine and the slight bit of built-in clutch slippage effectively bridge the gaps. Slowing for a corner brings out another of the Auto's differences: There's no engine braking. The bike just freewheels when the throttle is closed—meaning that you must rely on the brakes exclusively to slow or stop.

After a day or so of riding the Auto most riders start getting used to the bike's peculiarities, and riding it becomes a more enjoyable experience. And after a little *more* time in the saddle, it becomes obvious why Autos win so many enduros. The bike makes almost everything you do with the throttle open an easier task, simply because the engine can't ever fall off the powerband. Plus, the 430 is deceptively fast. It doesn't waste much power through rear-wheel spin, but instead just hooks up. Drag races against the 400 Enduro proved the Automatic just as fast up to 60 mph before the six-speed 400 started pulling away.

But a simple drag race doesn't tell the whole story. The Auto literally

GENERAL	400 ENDURO	430 AUTOMATIC
List price	\$3295	\$3355
Importer	Husqvarna Motor Co., Inc. 4925 Mercury St. San Diego, CA 92111	Husqvarna Motor Co., Inc. 4925 Mercury St. San Diego, CA 92111
Customer service phone	(619) 565-1414	(619) 565-1414
Warranty	30 days	30 days
DRIVETRAIN		
Engine	two-stroke Single	two-stroke Single
Bore x stroke	82.5 x 74.0mm	86.0 x 74.0mm
Displacement	396cc	430cc
Compression ratio	12.1:1	12.6:1
Carburetion	38mm Mikuni	38mm Mikuni
Air filter	oiled foam	oiled foam
Lubrication	premix	premix
Gear ratios, overall:1		
6th	5.9:1	
5th	7.0:1	
4th	8.3:1	
3rd	10.9:1	7.0:1
2nd	14.5:1	9.3:1
1st	20.9:1	13.1:1
Measured top speed		
CHASSIS		
Weight:		
Tank empty	237 lb.	243 lb.
Tank full	256 lb.	262 lb.
Weight distribution, front/rear:		
Tank empty	47.7/52.3	48.6/51.4
Tank full	48.0/52.0	48.9/51.1
Fuel capacity	3.2 gal.	3.2 gal.
Wheelbase	59.5 in.	59.5 in.
Rake/trail	27°/4.7 in.	27°/4.7 in.
Handlebar width	31.0 in.	31.0 in.
Seat height (unladen)	37.7 in.	37.5 in.
Footpeg height	17.6 in.	17.2 in.
Footpeg to seat top	20.4 in.	20.4 in.
Swingarm length	22.5 in.	22.5 in.
Ground clearance	13.9 in.	13.7 in.
SUSPENSION/TIRES/BRAKES		
Front suspension:		
Manufacturer	Husqvarna	Husqvarna
Tube diameter	40mm	40mm
Wheel travel	11.3 in.	10.7 in.
Adjustments	air	air
Rear suspension:		
Manufacturer	Ohlins	Ohlins
Type	single shock	single shock
Wheel travel	12.9 in.	12.4 in.
Adjustments	compression and rebound damping, spring preload	compression and rebound damping, spring preload
Tires:		
Front	90/90-21 Metzeler MXR	3.00-21 Metzeler MX
Rear	4.50-18 Metzeler Multi-Cross	4.50-18 Metzeler Multi-Cross
Brakes:		
Front	9.1 in. disc	9.1 in. disc
Rear	6.3 in. drum	6.3 in. drum

duro, which, in theory, makes for a lower seat. But the softer suspension is the real reason why the Auto sits much lower. It's also why most whoops and other trail obstacles are passed over so smoothly by the Automatic, even though the suspension is a bit *too* soft for negotiating rough terrain at a competitively fast pace.

Nothing is perfect, however, and the 430 Auto does have its share of faults. When subjected to prolonged low speeds, or to bottlenecks of the type so common in enduros, the engine quickly overheats. The coolant starts boiling and quickly fills the plastic catch bottle mounted under the gas tank. The bottle only holds about half the volume of the radiator, so anything that boils out after that goes onto the ground. Our test bike overflowed its catch bottle three times during our test period—once in an enduro, twice on trail rides. And all three times, the ambient temperature was below 60 degrees.

Apparently, the problem stems from the automatic transmission, which, due to the fact that its very design relies on the friction caused by its multiple clutches, runs much hotter than a standard gearbox. The transmission is subject to so much heat that Husqvarna recommends an oil change after every ride. And the first-gear clutch apparently has to deal with much continual abuse, because the one in our bike self-destructed on the eighth day of riding.

All of this leaves us with mixed emotions about the 430 Auto. With a pricetag of \$3355, it is Husqvarna's most expensive model, yet it doesn't have all of the latest refinements found on the other '86 Husky two-strokes. It is, in effect, last year's chassis, meaning that it lacks, among other things, the strengthened aluminum swingarm, the redesigned front fork, the grippier footpegs and the shock-linkage grease fittings found on the new 400 Enduro. But despite all this, and an overheating problem, as well, the Auto came to be loved by all of us for the way it could blitz through the woods and along the trails faster than anything we had ever ridden on two wheels.

For anyone trying to win enduros on this bike, however, riding is only half the battle. The other half is *finishing*—and that just might be the hardest part for the Auto. Because despite what Husqvarna might think, there still are a few bugs in this concept. And until they're all gone, the 430 Automatic will continue to be both the best and the worst enduro bike on earth. ☐

leaps out of the turns on a twisty trail once the operator learns the correct riding procedure. You go deep into the turn, leave the throttle partially on, use a lot of rear brake, pivot, then release the brake. Leaving the throttle on "preloads" the transmission so that the bike will explode out of the turn once the rear brake is released.

Once its rider gets this procedure perfected, the Auto is capable of getting through tight woods quicker

than any standard-shift motorcycle. The Auto also has an advantage when the trail gets muddy or rocky, or both, and when climbing steep, gnarly hills. The rear wheel gets amazing traction and the rider has two fewer things to do—clutching and shifting.

Contributing to the ease of riding are the Auto's relatively soft suspension and lowish seat. The bike has slightly less travel than the 400 en-