



Cycle World Enduro Test

SUZUKI PE250

Pure enduro? Call it true enduro. Our 'round-the-clock, wide-open, 1004-mile test proved Suzuki's PE250 is stronger than dirt.



Photography: Brian Blades, Win Muldrow, Joe Parkhurst

RIGHT OFF THE TOP, without bothering to build suspense or indulge in drama, come the pertinent facts:

Suzuki has a new enduro model, the PE250. We submitted the PE250 to a test that would have broken an anvil.

We rode the bike in relays, across the desert and over the mountains for 1000 miles at racing speeds.

At the finish, the riders, the chase bikes and the sweep truck were exhausted.

The PE250 was intact and running strong.

The Suzuki PE250 is the best mass-produced enduro bike ever built.

Strong words, eh? We have the facts and the experience to back them up.

But first, in order to properly describe the Suzuki PE250 and why it's as good as all that, we must establish a point in time.

When off-road riding began to attract large numbers of enthusiasts, the machines they used divided into two distinct styles. One we'll call street/enduro, meaning a mass-produced bike with mild engine, full street equipment, and suspension and geometry heavily biased in favor of highway operation at the hands of riders of no great experience.

The other type was the enduro/enduro, produced in small numbers by specialist firms; these sported powerful engines, sophisticated suspension, hell-for-stout components and just enough in the way of lights and silencers to barely meet the letter, if not the spirit, of the rules.

Different machines for different people. The street/enduro bike was and is a perfectly acceptable bike for some purposes. It fills the need of the man who wants to ride from his garage to the nearest fire road or national forest and spend the day riding trails. If the owner wants a spot of competition, he can spend a few hours tightening and waterproofing, haul the bike to the course and ride the beginner's loop. He will enjoy himself. The machine will get him through. The only thing he won't be able to do with a street/enduro bike is win enduros.

Top enduro riders, the ones who take enduros seriously and compete in national events and ISDT qualifiers and the like, use enduro/enduro bikes. Genuine enduro models need not waste effort on obtaining street licenses, so they can be hardcore machines for serious competitors and serious playbike riders.

There are a lot of hardcore riders. The big factories know this. They know that mass production can offer equal qualities for less money. There may also be some pride involved, as people who are proud of their work surely must flinch when the press says things like what's just been said here, that to win an enduro worthy of the name, you gotta have a specialist, low-volume, high-dollar machine.

Add all this up and we see the emergence of a new type of motorcycle: the true enduro bike made by a large company, selling for less money than we used to spend for a trophy-winning mount. We have the Honda MR250, the Yamaha IT400D.

Now we have the Suzuki PE250.

The PE stands for Pure Enduro. A quick glance at the pictures and the specs tells you the PE250 is based on the RM-250; that is, the new enduro bike is a motocross racer with some changes.

Those changes have been made in the correct direction. The PE250 has been in the planning and development stages for a couple of years. Enduro competitors all across the U.S. have, in fact, seen the PE250 prototypes undergoing development. They didn't know that. What they saw were Suzukis wearing RM250 labels, lights, larger tanks and such, ridden by men who didn't talk much except to say they felt like running their motocross machines in enduros, just to see what would happen.

What actually happened was, Suzuki's development men began with mildly modified RM250s and made changes where needed. They reported back and Suzuki designed the new bike on the basis of conditions, that is, on what it took to build a competitive mount for U.S. enduros. Not just the western desert stuff, by the way, but Great Plains and wooded eastern country as well.

Begin with frame and geometry. The PE frame is chrome-moly, similar to the RM frame except for a swinging arm with a lower shock mounting position and an extended rear hoop. The two models also use Maico-style, nearly-flat triple clamps and offset front axles.

The differences are more important. A motocross racer's main concern is getting across the rough stuff fast as possible. An enduro bike needs less speed and must be steered and controlled with

SUZUKI PE250



The second team, setting out on one of the early night laps. The chase rider's knapsack contains emergency parts, flashlights, headlight bulbs and such, none of which were used.



A nice controlled slide on one of the better stretches of road from the paved highway to Mike's Sky Ranch.



greater precision in a wider range of conditions.

The PE250 is designed for handling. The shocks, gas/oil Kayabas, are one inch shorter than RM shocks and mount closer to the swinging arm pivot, so the PE is closer to the ground. Rear suspension and front forks provide one inch less wheel travel for the PE than for the RM, and the spring rates are lower at both ends. Steering angle for the PE is about half a degree steeper than for the RM, to quicken steering response at the expense (theoretical, as it turned out) of stability.

At first glance, the changes run counter to fashion; that is, less wheel travel at a time when all the factories are touting more wheel travel.

In fact, wheel travel isn't always a good thing. The more travel, the higher the static height and riding position, and the more variation in chain tension and steering angle. In motocross the designer begins with maximum travel and alters

The incoming rider has reported severe vibration and the crew is checking all exposed nuts and bolts. (Turned out the problem was mostly poor quality gasoline).

everything to fit that. For the Suzuki PE250, the designers began with good handling and worked from there, keeping the rider low enough to reach the ground when required, the center of gravity low as possible, and spring rates soft enough to handle enduro speeds with comfort. They wanted a bike that would slide and steer and change directions instantly. They got it.

(For another side comment, Suzuki was still working on the final details when we picked up the test bike. The actual production fork springs and rear shocks arrived via air mail while the PE250 was being prepared for the test).

The PE rear brake is identical to the RM brake, except that, because on-the-trail adjustments are possible during enduros, the PE brake can be adjusted via

a wing nut on the cable, a useful feature the RM lacks.

The PE front brake and hub are new and nearly twice the size of the RM units, the better to survive hours of use, water crossings and the like. Of course, the PE has a drive for odometer and speedometer.

The PE250 engine is not a modified RM250 engine. More like a completely new engine in the old cases.

The PE has a smaller bore and longer stroke, for more torque and lower rpm. Compression ratio has been reduced in the interest of longevity, and while the enduro and motocross engines both have case-reed induction and four transfer ports, the PE's port positions, which determine timing, have been modified in the interest of a broader, if lower, powerband. The flywheel is heavier. The factory claims 36 bhp for the RM250. It makes no claims for the PE250; the engineers say they've taken a bit off the top and packed a lot into the middle of the curve . . . and so it proved to be. The PE uses the 36mm Mikuni that also comes on the RM. The PE, as will be shown shortly, is no slug.

The transmission naturally has five speeds, with widely-spaced ratios to allow the bike to slog through mud and whiz down fire roads and pavement.

The list of careful changes and new features, large and small, goes on and on. The high exhaust pipe is tucked carefully out of harm's way and wears an efficient silencer. The enduro/enduro headlight is adequate for most conditions and is attached so as to allow a numberplate above it. The tiny tail/stop light has a rubber back that slides onto a metal blade, isolating it from vibration. The handlebars are narrow, for the woods, and moderately high, so the rider has leverage for lofting the front wheel and for control when standing. The seat is relatively low and wide for a lower center of rider gravity with some degree of comfort.

The fuel tank is aluminum, narrow and high. The filler opening is wide

SPECIFICATIONS

List price	\$1450
Suspension, front	telescopic fork
Suspension, rear	swinging arm
Tire, front	3.00-21
Tire, rear	4.50-18
Engine, type	two-stroke, case-reed-valve Single
Bore x stroke, in., mm	2.64x2.76; 67.0x70.0
Piston displacement, cu. in., cc	15.1; 247
Compression ratio	7.0:1
Claimed bhp @ rpm	N.A.
Claimed torque @ rpm lb.-ft.	N.A.
Piston speed @ rpm ft./min.	3680 @ 8000
Carburetion	VM36SS Mikuni
Ignition	capacity discharge
Oil system	oil in fuel
Oil capacity, pt.	1.85
Fuel capacity, U.S. gal.	3.2
Recommended fuel	premium
Starting system	primary kick
Air filtration	oil-wetted foam

POWER TRANSMISSION

Clutch	wet multi-disc
Primary drive	straight-cut gear
Final drive	single-row chain
Gear ratios, overall:1	
5th	7.548
4th	9.959
3rd	13.635
2nd	19.089
1st	29.080

DIMENSIONS

Wheelbase, in.	56.7
Seat height, in.	34.5
Seat width, in.	9.0
Handlebar width, in.	33.7
Footpeg height, in.	12.5
Ground clearance, in.	10.2
Front fork rake angle, degrees	29.7
Trail, in.	4.96
Curb weight (w/half-tank fuel), lb.	242
Weight bias, front/rear, percent	45/55

(shouts of "pay attention, Honda!") and the cap is complete with a retaining strap so it doesn't fall into the dirt during refueling. The lightened front sprocket cover has a guide to divert a broken chain from the engine's vital parts.

In sum, judged by specifications and initial impressions, a well-planned and executed pure enduro motorcycle.

Such a machine, a new bike with lots of promise, deserves a test worthy of the name. It deserves a test designed to reveal every strength and weakness, a test, in other words, designed to pinpoint any weak links... and to break them.

PREPARATION

The PE250 got such a test. We decided to take it deep into the mountains running down the spine of Baja California. Because the PE250 is an enduro bike designed to compete in the big leagues, we'd arrange a solo enduro, tough as a Six-Day Qualifier and long as the Baja 1000. We'd run the PE250 non-stop for 1000 miles, hard as we could go, day and night. We'd use sand washes deep enough to swallow a cow, narrow trails where the Baja race people provide constant winch service because most four-wheeled vehicles can't get through unaided. We'd have nasty rocks and

ledges, roaming livestock, clutching branches.

We came up with a 60-mile loop, with elevation changes from 4000 to 2000 feet above sea level. The loop contained sections of the Baja 500 course, stretches of dirt trail punctuated by sand washes, one horrendous 10-mile descent into a canyon and a couple miles blasting across the raw desert where the trails were too easy. The link between desert and canyon was a three-mile blast down the pavement, flat out.

Flat out? Yes. The original intent was a long enduro, run at normal enduro speeds. The actual test was more like a race.

For that, we introduce the personnel. No one rider could do 1000 non-stop miles, so we decided on relays; one loop on, two loops off. For safety and efficiency, the PE would have another bike and rider along, all the time, in case something broke or somebody crashed.

Six riders, then, and they'd better be good. Our choices: CYCLE WORLD's own Bob Atkinson and D. Randy Riggs, both experienced desert and enduro competitors; Ron Griewe and Jim Ericson, members of the Desert Zebras, expert-ranked desert racers and Baja veterans; and Jerry and Steve Platt, father and son, survivor of the Desert Sled Era and expert motocrosser, respectively. Collectively, the riders have something more than a century's experience in Baja. Their own motorcycles range from a KTM GP250 to a P-11 Norton.

The entire expedition spent a day marking the loop. They are, as we say in Mexico, *loco*. Their idea of a day in the country is to rip through the rocks and across the sand at the fastest humanly possible speed, plus about five percent. Their engines don't have throttles. They have on and off switches. For a cow-trailer to be passed by a racer on an RM370 is normal. For a cow-trailer on his knobby-tired, suspension-kitted 250, being passed by a stock street/enduro 250 on trials tires and carrying a racer and his lady (waving and smiling as they zoom by), is a revelation.

It's also confirmation that desert racers are *loco*. *Muy loco*.

Further, because the PE250 was to be ridden hard, the chase bikes were picked with an eye to doing more than keeping up. We had a Suzuki RM370, a Husqvarna 400 engine in a C&J frame, a TT500 Yamaha and a KTM GP250. For night loops there was a Powroll Honda in a C&J frame, a modified Honda XL350, two XL250s and a Champion-framed 440cc Honda cannon with a quartz-halogen headlight capable of melting cactus at 100 yards. Heavy metal, in other words.

The test PE250 was brand-new, with six miles on the odometer. It was stripped and carefully inspected, then reassem-

bled according to factory specifications, with all nuts and bolts receiving red Loc-Tite. The men doing the work have experience with racing Suzukis, so the spokes and rear sprocket were carefully tightened and fastened before the wheels hit the dirt.

There was some concern expressed during the preparation. In general, we weren't sure what would break, so we asked for at least one spare everything. In particular, the chain tensioner looked fragile, the sidestand spring was below its bracket, making it fair game for rocks, and the dinky tail/stop light looked good for maybe 10 miles. But this was a test of a stock bike, so the only changes were handlebar grips, an AC fuel filter and jets to compensate for running hard at 4000 feet.

Motorcycles, fuel, oil, parts and personnel filled CYCLE WORLD's wide van, three normal vans and a 4WD pickup truck borrowed from our companion publication *PV4*. (They won't do that again, but we'll get to that). The truck was also there as a sweep vehicle, in case of serious trouble.

Headquarters for the test was Mike's Sky Ranch. For the record, and in appreciation, we couldn't have done this test without Mike's, which must be the world's only resort hotel willing to let motorcycle racers spend a day and night roaring across the campground and through the parking lot, not to mention wandering around the kitchen in search of food and hot coffee.

Photo sessions and the course-marking loop provided some break-in miles for the PE and some riding impressions from the non-staff riders.

If this were a normal test, we'd spend a lot of time discussing the handling and power and such. We needn't, as the test provides evidence better than words.

But, for the record, the first reactions were of astonishment. The racers made remarks about baby motors, then fired up and learned the PE was quick. The PE weighs 20 pounds more than an RM-370, but because of the low riding height and responsive steering, guesses as to the weight averaged 30 less than an RM370.

And oh, the steering! Truth to tell, the normal motocross machine doesn't go around every type of corner well, so when the other big factories made enduro bikes from motocross bits, they came up with bikes that are not as versatile on the trail as the PE.

The PE turns. Very well. At least as well as the average specialist competitive enduro models from the small outfits. The PE250 front wheel bites and the back slides on request. At the same time the suspension is soft enough and long enough to sail over the bad parts and the added power in the middle of the rev range lofts the front wheel on demand.

Finally, the actual 1000 mile run.

SUZUKI PE250



Before the test was one lap old, the carefully-paced enduro had become an all-out race, as illustrated here.



The easy water crossing at the campground below Mike's Sky Ranch.

THE TEST

Six a.m. Sunday. Griewe and Ericson, the Zebras, are first team off. The team managers, wretched staff members dragooned for this assignment because they aren't good enough to ride the event, fuss over the piles of parts and fuel. Stiff upper lips in hand, they cheer as the Zebras rocket up the hill.

Silence. Minutes pass. Down the hill comes the chase bike. Seems a sharp rock has pinched and ruined the PE's front tire. Down the hill comes the PE, slowly. Hell of a way to begin a 1000-mile run.

Perhaps, says one manager, we will be able to get all the trouble out of the way early on.

A spare wheel and tire are installed and away the Zebras go. The optimist will be correct. The first time a repair was needed will prove to be the last time.

Lap One: No incidents at all. PE running well, and the lap time of 1 hour, 37 minutes is astonishingly close to the Zebras' predicted lap time of 1:38. Obviously, they are consistent and disciplined riders.

Lap Two: The second team comes in on schedule, 1:41, the added time being the result of the chase rider having gotten lost on his pre-run and thus not knowing the complete course.



After 18 hours at speed, the riders are getting tired. The just-in rider, left, is telling the outgoing man that the vibration varies with throttle opening.



Brisk fuel stops were the rule. The incoming man is climbing off while the pit crew records mileage and gets ready to refuel.

Lap Three: The chase rider is aboard his own brand-new 250 racer and the PE rider reckons his skill can make the PE a match for the thoroughbred. Perhaps it can. The daredevils return in 1:31.

Lap Four: The Zebras again, eyes all a gleam. They return in 1:42. Seemed the prediction regarding the kickstand was accurate. A rock broke the spring, the stand fell down and was lashed to the swinging arm. While the repair was being made, the PE fouled its plug. It was replaced with the spare carried in a holder clamped to the bars.

Lap Five: No incidents, except that the second team has learned the course and cuts its time to 1:35.

Lap Six: The boy racers have switched; the purebred racer owner is on the PE, the second man has switched from PE to his own TT500 Yamaha. He has top end and torque; the PE has agility and the ability to turn. Another 1:31 and one of the pair remarks to the timekeeper that if it comes to tied scores, remember, he crossed the finish line at least 50 feet in the lead. Wonder how one says *very muy loco* in Spanish.

More important, the PE rider says the rear shocks feel as if they are fading. Or

is it that he tends to go straighter than the others, over the rocks instead of around them?

Lap Seven: Another 1:31, by a different team. The rear shocks can't be too bad.

Systematic note: The pit stops are done racing style. The rider slides to a stop and jumps off. The crew records time and mileage as shown on both the normal and trip odometers. One sign of the enthusiasm of all concerned is that the riders who in theory are off resting, are in fact waiting at the pits, ready to pour in fuel, lube the chain and inspect the wheels, brakes, etc., in case they see something the rider hasn't noticed.

Lap Eight: True test mileage of 415.4 and the chain is becoming a bit loose. It's tightened. The PE rider on this trip, a rational sort of racer, says the rear shocks are getting tired. The lap finished at 7:37 p.m. Darkness fell while the team was out on the course, and the time, 1:39, reflects this. Riding at dusk may be more difficult than riding at night.

Lap Nine: The first complete night lap and the fast team comes in at 2 hours, 15 minutes. This is fine with all concerned. They report the PE's little headlight is adequate, just barely, provided the rider already knows where he's going.

There may be a problem. The PE rider says the engine has developed a vibration. The crew checks all the engine mount bolts, removes the flywheel cover to check that nut, in fact goes all over the machine checking everything within reach. Nothing is loose. We adjust the front brake and send the next team off into the dark.

Lap Ten: The Zebras arrive after midnight, with a consistent time of 2:12.

They confirm the vibration and the engine; suspension and such are checked and tightened again. As another form of insurance, the transmission is drained and refilled. Note: Too bad Suzuki doesn't provide some way to check transmission lube level.

A less vital problem is that the trip odometer seems to be acting up. It shows a mileage of 34.7 for the lap, against the previously determined 59.3 and against a 59-mile reading on the main odometer. Could the reset button have been jostled during the previous stop?

Lap Eleven: Panic has been replaced with concern. Rider says there is a vibration, but it comes at low rpm when the throttle is opened. Not a good thing, but the onset of the problem may have come with the change in riding style for the night work. The riders are going slower, so they don't wind the engine as tight. Nothing to do but press on.

Lap Twelve: The sky is beginning to lighten, the odometer is working normally again and the time is a reliable 2:15. The chase bike this trip is the 440 Honda/Champion with the giant headlight. It's borrowed from Bill Isherwood, an endurance racer visiting the ranch. The contrast in lights as the team leaves the pits makes all watching wonder how they can get one of those lights for their machines.

Livestock. The chase rider had a terrible scare. Looming up at one point was an apparition, a perfect image of what a ghost would look like if one believed in ghosts, which this man very nearly did for a second. It was a gray horse.

This is open range. We've been looking out for cows, horses and large animals. Missed them all. Sad to say, we didn't miss a few lizards, birds, squirrels and at least one rabbit. The lights and the speeds and maybe the slow reaction time of a startled rabbit make it impossible to miss them all.

Lap Thirteen: The rear shocks are hot and they are tired. This is proof of suspension excellence in one way, for as the rear wheel begins to hop and fight, the PE becomes less stable at speed and the front end loses its precision. The designers have done a fine job making both ends work well together. The sun has come up during this lap and the time, an even 2 hours, reflects the improved vision.

Another note here: We've been swapping shifts around in an attempt to give the riders maximum rest. They refuse to take advantage of it. Steve Platt rode the twelfth lap then sat in his enduro suit and helmet through the thirteenth, so he could ride again on the fourteenth, letting the scheduled rider sleep. As it happens the scheduled rider shows up anyway. Couldn't relax, he says, wanted to see how the PE was holding up. Fine. Go get some breakfast and I take back

all I said about *loco*. Enthusiastic is the word I was after.

Lap Fourteen: An anxious moment or two. The team is gone longer than expected. Turns out, during an earlier loop, about the time the shocks began to fade, the PE rider washed out in a turn. Must have banged the shift lever when he went over.

On this lap the lever fell off the arm. Odd. The pinch bolt was still in place. Apparently the bolt isn't quite large enough to engage the groove in the shaft. If the lever isn't pinched, therefore, it can slide off the arm. The two riders searched until they found the lever, popped it back on and secured it with a bit of safety wire.

End of laps. At this point it was 9 a.m. and the PE250 had done 833 miles. Total elapsed time, including fuel stops

and service and inspection and looking for lost shift levers, etc., was less than 27 hours. The PE averaged better than 31 mph, pretty good enduro time.

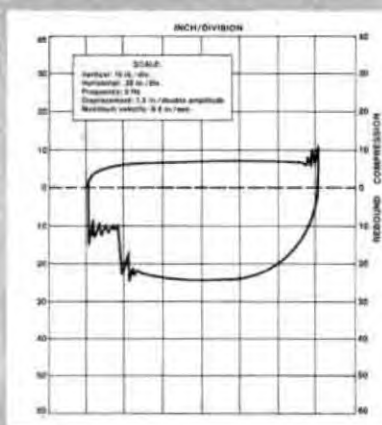
The PE250 is a cross-country bike. Next stage was to run it fast as possible cross country, using the Baja 500 race course and logging roads.

The riders got breakfast and the crews loaded up the supplies, all those unused spare parts, various chase bikes and people. The vans took to the pavement and the PE, the RM370 and the truck ran backwards half a loop and onto the old race course. Finally, they headed back to the border, wide open.

Repeat that. Wide open. The PE rider and the RM370 rider are fast and they are in fact racing each other because that's why they ride.

The course is slippery and rocky,

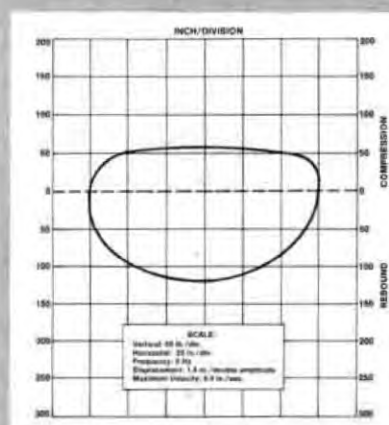
FRONT FORKS



Description: Kayaba fork, leading axle, HD-315 oil
Fork travel, in.: 7.25
Engagement, in.: 6.25
Spring rate, lb./in.: 23/35 progressive
Compression damping force, lb.: 7
Rebound damping force, lb.: 24
Static seal friction, lb.: 8.5

Remarks: What we have here is a set of RM motocross forks with minor improvements and/or modifications. The fork sliders are identical externally, but just under the fork seal PE sliders have a Teflon-impregnated bearing that eliminates any chance of the slider and stanchion tube binding. Stanchion tubes are identical to those on the RM, but damper rods are different. The PE units have less compression damping and are 1 in. shorter. This is why PE forks have 1 in. less travel and 1 in. more engagement. Spring rate is ideal, as are the damping rates. The forks pump up with air, however, especially on fast trails with washboard surfaces. We duplicated the condition on the dyno and found that the unwanted air pressure increased effective compression damping to 15 lb. Result was a harsh ride in fast sections. The cure is a set of vented fork caps, available from Webco or most local dealers. To make the forks perfect, we would also install Yamaha Teflon fork seals.

REAR SHOCKS



Description: Gas/oil Kayaba shock, non-rebuildable.
Shock travel, in.: 4.0
Wheel travel, in.: 6.5
Spring rate, lb./in.: 83/252 progressive
Compression damping force, lb.: 55
Rebound damping force, lb.: 120

Remarks: The Kayabas fitted to the PE are 1 in. shorter and have .6 in. less travel than those used on the larger RM motocrossers. Because the PE shocks have less travel, and because the PE swinging arm is not as radical as the RM component, rear wheel travel is only 6.5 in. This is not nearly as impressive as 8, but for the PE's intended purpose, it is sufficient. Damping rates are what we've come to expect from Kayaba and are well-suited to the PE's weight and speed potential. We have heard of premature shaft wear on Kayaba shocks, but did not experience it during our 1000-mile test. We did, however, have trouble with the shock springs. The softer of the two springs sacked out about half way through the test, resulting in a harsher ride and some loss of stability. The stiff springs did not deteriorate. The soft springs, then, will need replacement every 500 to 1000 miles, especially if you ride hard.



sometimes tight and sometimes straight, second gear to flat out, 70-75 mph in top.

In normal test terms, we'd say something about the PE's shocks being exhausted, the springs beginning to sack, the forks losing their progression. Then would come the comment that despite the handicaps imposed by the first portion of the test, the PE250 was still reasonably stable, still turned extremely well. The forks were pumping up with air and the shocks bottomed, the rear tire was half worn, which made it past its usefulness as a competition tire. The wear and the geometry made the PE a bit of a handful in the soft ground. But it was still quick.

In this case, we have a better measurement than words. The PE250 and RM-370 ran within sight of each other mile after mile, 10 to 75 mph. Sure, the RM had more speed, and sure, when the big motor's rear tire had grip, it shot away from the smaller PE.

Nonetheless, in elapsed time the more powerful, pure racing RM370 could not shake the PE250, until coming out of a fast turn the larger bike's slower steering did it in. The RM370 went down and both men spent some time getting the brake lever back into working shape.

That's the last time the RM370 rider makes remarks about baby motors. In any case, along about 2 p.m. the PE250 had worn tires, sacked springs, tired shocks and a severe vibration under load. It was still competitive, still running strong when the testers ran out of trail just south of the U.S. border and east of Tecate.

Test mileage, 1004.

Meanwhile, back down the trail, the sweep truck couldn't go nearly as fast on this route as the bikes. The driver was, in fact, crawling along at 10 mph or so when he went over a rise and the truck fell into a hole. The Husky strapped in the bed broke loose and did an unoccupied endo, onto the cab and through the rear window. (Perhaps you're wondering why we've taken you to lunch in this fine restaurant, we told *PV4's* editor.)



The PE250 motor is best described as a new engine, with different bore, stroke, displacement and timing, inside RM250 cases.

RM250 TO PE250: MORE THAN MODIFICATION

Suzuki's PE250 is an excellent enduro mount, just as the RM250 is an excellent motocrosser. Making the same basic components do two different jobs with equal success is more than a matter of adding lights and a big fuel tank.

For a look at what such a conversion requires, here are some comparative specifications and measurements:

PE250 RM250

Engine

Bore, mm	67	70
Stroke, mm	70	64
Displacement,		
cc	247	246
Compression		
ratio	7.0:1	7.8:1

Gear ratios, overall

5th	7.548	9.57
4th	9.859	11.58
3rd	13.635	14.17
2nd	19.089	18.35
1st	29.08	21.77

Dimensions

Wheelbase, in.	56.7	56.7
Front fork		
rake, deg.	29.7	30.0
Seat height, in.	34.5	35.5
Footpeg		
height, in.	12.5	13.5
Curb weight,		
lb.	242	224
Weight bias,		
F/R	45/55	44/56
Wheel travel,		
F/R	7.5/6.5	8.5/8.3
Steering angle,		
deg.	50	45

Miscellaneous

The PE250 has an additional connecting pipe added to the frame downtube and brackets for the spark arrestor, brake lighting switch and CDI unit.

The PE250 has a larger fuel tank and skidplate. The outside dimensions of the exhaust pipe are unchanged but the inside of the PE250 exhaust contains a muffling plate and a modified cone.

The two models share the same basic carburetor but, of course, they are fitted with different needles and an idle stop screw has been added to the PE version.



PE250 swinging arm is curved at shock-mounting point. PE shock is shorter and slightly closer to the pivot point than is the RM250 shock. Efficient silencer brings noise down to the level of a four-stroke 250.



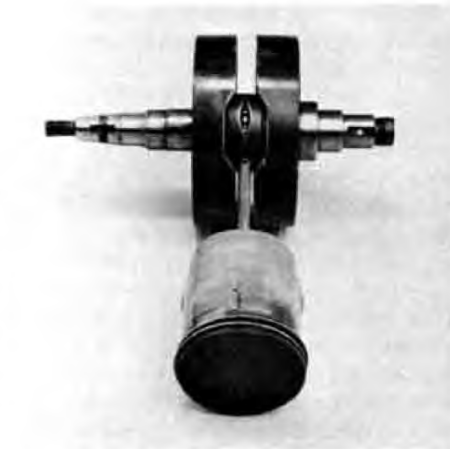
PE250 barrel has case-reed induction and four transfer ports, similar to the induction systems used on Suzuki's motocross engines, although the port locations, and thus the timing, are arranged to produce a broader powerband and less peak power.



Shafts in the transmission ride in roller bearings. The shift drum and linkage mount below the gears and shafts; the system is compact and efficient.



Retention holes on the shifting drum are camfered, the better to guide shift detents into position. The smaller location hole is for neutral.



Slotted connecting rods allow extra oil to reach the bearings at high rpm, a common racing feature but rare for production engines. Piston uses two rings.



PE flywheel is slightly heavier than the RM unit for smooth power delivery at low speed. Alternator has an extra element to accommodate the PE's head and tail/stop lights.



This section of the loop was used for the most recent Baja 500 race and was packed with sand washes, whoop-de-dooos and such.

The chase bikes had troubles of their own, with weeping forks, missing lights, lost axle nuts and clattering valves. Mind, no one chase bike did one third the distance the PE covered. And the six riders were at least as tired as the PE.

Now, the post mortem. We had determined to run the PE until it broke. We ran out of proper location and human endurance and support vehicles before that happened.

We were mighty curious. When we were back at the shop, the PE250 was stripped. The frame was intact: no breaks, no cracks. All vital nuts and bolts were tight. The rims were out of round.

Engine condition was better than we could have predicted. Suzuki calls for a new-engine ring gap of 0.0079 to 0.0157 in. Before the engine was run, ring gap was 0.014, on the high side of normal tolerance.

Ring gap at post-test teardown was 0.016-in., virtually good as new.

Because the vibration was still a mystery, we split the cases. The crankshaft had 0.0010 in. of play, and the factory doesn't call for rebuild until the play is three times that. The clutch plates were so good we could have sold them as new.

There were metal particles in the transmission but all teeth looked fine. One shifter fork was slightly bent, presumably when the PE was dropped. Shifting was still so good at the finish that a bent fork was a complete surprise.

While we were in the engine, we took some notes. The PE250 engine uses what the racing guys call a slotted rod: reliefs cut in the sides of the big end for better oil flow at high rpm. And the shifter drum, forks and linkage are nicely located in the bottom of the transmission case. No Mickey Mouse linkage, and if something should break, which happens, the broken pieces will already be at the bottom of the case. They wouldn't have to fall there through the gears. Good thinking, again.

Still have that mysterious vibration. Damned frustrating to open up an engine and find nothing amiss when you



Once more into the dark. PE light was adequate for night racing only when speed was reduced.



Yes, it was a tough test; witness the worn-away letters, the missing sidestand and the safety wire looped around the gear lever just in case it worked loose again. The engine was still running strong at the finish and the post-test teardown showed minimum wear.

know there is something happening that shouldn't.

All we have are two theories:

Competition Suzuki engines are known to be prone to detonation when hot. During most of the test, the PE was using Pemex gas. Pemex is the Mexican government's brand, they have no competition and we all know what happens to quality when the customer must buy whatever the monopoly wishes to sell. Could have been low grade fuel and nothing else.

Or it might have been Suzuki's black box. The PE uses CD ignition and the advance curve is altered electronically. Racing RMs have suffered from advance curves that go wacky under heat. The only cure is a new black box and we didn't have one along.

Mark vibration as something to watch for, then.

The suspension dynamometer tests were as impressive as surprising. Recall, during the actual running the riders reported fading shocks and pumping forks, and on the final few hundred miles the PE reacted more quickly and with less stability than it did at the start.

Number One's suspension tests were conducted *after* the test. Hard though we found this to believe, the instruments reported no loss of damping, no leaks, no worn shafts or seals. The PE components were tested to higher-than-normal temperatures and loads, mostly because the graphs didn't show what the riders believed they were feeling.

There were some problems. The front forks were pumping, but instead of fluid, they were pumping air.

The PE has higher initial drag than we expected, the result of tight seals. On the dyno, the forks showed a resistance of 8.5 psi. After a few minutes of being cycled at high speeds, the resistance increased to 15 or 20 psi. The forks were pulling air past the seals on rebound, more air than they would push out on compression. The PE had air forks, the wrong way.

The rear shocks/springs are actually two springs per shock, one soft, one stiff. The soft springs sacked; that is, they lost their resilience early on. The back of the bike sagged, causing the rear shocks to bottom. As a multiplier of these handicaps, the rear tire was worn, or more accurately, the knobs on the rear tire had lost half their height. The tire had less grip.

All this adds up to a loss of control and stability.


End of post mortem.

Suggestions: Suzuki has done a fine job producing a true enduro bike for most conditions. Because terrain varies widely in the U.S., the PE250 will need some minor adaptation for competition.

In the West, or anywhere the ground is loose and sandy, we'd fit a 3.50 front tire and wider and/or taller handlebars. And because some western enduros are run at night, we'd fit a street/enduro headlight. Or better.

In the East or the woods, the stock 3.00 tire is the best choice. The PE probably could use narrower bars for tight sections.

Any serious competitor can expect to run the engine for at least 1000 miles before overhaul. Just about the only immediate change we'd make to a PE250 is an easy one; vented fork caps, as offered by Webco and others, would solve the fork pumping before it happens. The shocks showed such durability on our test that we'd be content with inspection for many months. Instead of replacing the shocks, we'd keep a close eye on the PE's ride height, so that when and if the soft springs lost strength, they could be replaced. Whether the replacements should be factory or aftermarket depends on owner preference.

And now, let's hear it for Suzuki's PE-250! Take all the superlatives ever used to describe an enduro motorcycle, apply them to the PE250, and you can say you're quoting us. 

**PREVIEW '77: SUZUKI GS750,
KAWASAKI KZ650, H-D XLCR1000**

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1CD/08250

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The tough-as-nails Suzuki PE250 was photographed by Win Muldrow, the beautiful BMW R100RS by Volker Rauch.



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