
PE250
SUZUKI

SUZUKI PE250

Since its introduction in 1976, the Suzuki PE250 has been blessed with many detail changes and some minor suspension updates. But major—and much-needed—functional refinements haven't been made. All fun the PE is; Pure Enduro it isn't.

● WHEN SUZUKI INTRODUCED THE PE250 IN 1977, serious enduro riders understood one thing about the bike: despite its "Pure Enduro" designation, the factory intended the 250 to be a congenial trail bike—first and foremost. But people quickly found out that it was suitable for Novice to Amateur enduro riders. The PE offered soft suspension for a comfortable ride at low speeds and a mild powerband that gave non-threatening throttle response. Two years ago the Suzuki settled in its niche beside other family-enduro bikes such as the Honda MR250 and Hodaka 250. But enduro riders with real intentions of winning continued to turn to Bultaco, Can-Am, Hercules, Husqvarna, Maico, Ossa and Penton or KTM.

SUZUKI PE250 TEST

Few people in the Suzuki organization kidded themselves about the 250's potential as an A-rider's machine. Still, there were many key company people who had wanted to see a more competition-oriented 250. In late 1977 and '78, the voices for a competition-sharp machine were heeded. The result of their effort was an expert-level performer—the PE175.

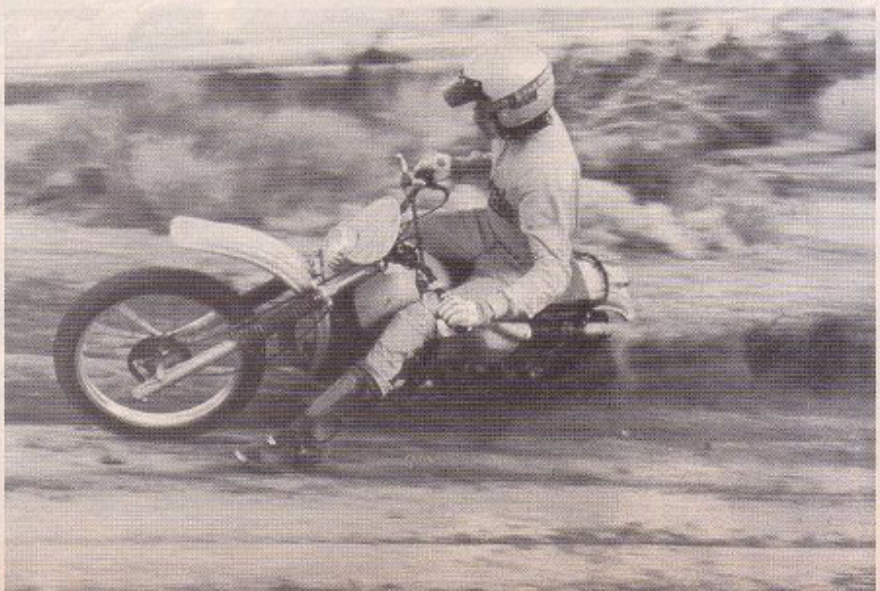
Since Suzuki concentrated its effort on the smaller PE, no time was left to refine the 250. So for 1979 the original PE is just about where it was two years ago; it's changed a little, but not much. Unfortunately (for those who compete on PEs) Can-Am, Husqvarna and KTM have all improved recently and have widened the gap between their level of performance and the PE's. Yamaha too has kept working with their IT250, which has been sufficiently refined to rank with the best in its class. The Suzuki is still an excellent playbike, but compared to its state-of-the-art rivals, the PE needs more compliant suspension and more horsepower.

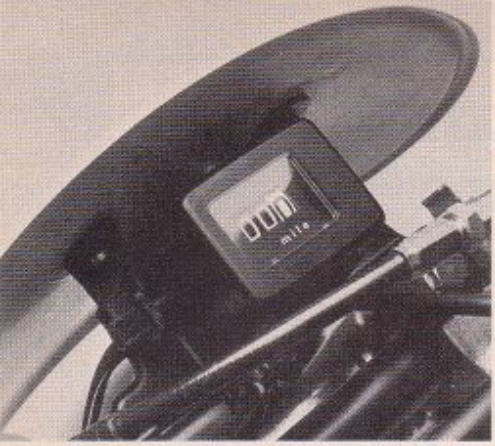
Most of the PE250's major components are the same as those used in the original 250, and many of those parts were modifications from the RM-B. Suzuki chose to base the enduro bike on the motocrosser because the RM-B engine would adapt easily to enduro work. Suzuki changed the '77 motocrosser's powerplant significantly from the RM-A's. The A-bike had a 70 x 64mm engine that produced peak torque at 7500 rpm. The long-stroke 67mm x 70mm RM-B peaked 500 rpm lower with 2.5 pounds/feet more torque.

In theory a long-stroke engine produces more mid-range power for a couple of reasons. Long-stroke cylinders simply have more cylinder-wall area available for port space. Taller ports, or ones more nearly square, as a rule scavenge better. Better scavenging is the key to mid-range power in a two-stroke. Next, a smaller-diameter piston with less crown area is exposed to less combustion chamber heat. A cooler piston crown does not heat the charge trapped in the crankcase as much; a cooler, denser charge means more air/fuel mixture reaches the combustion chamber, resulting in more power at all engine speeds.

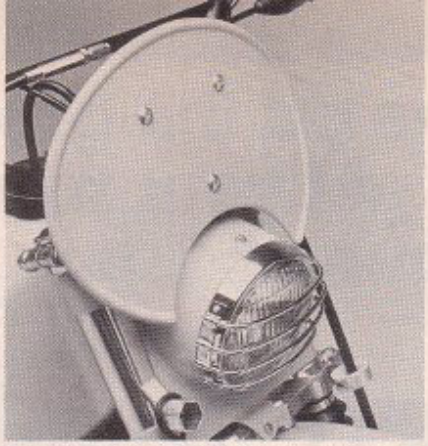
Because a torquey engine was necessary, the first PE enduro bike used the second-generation RM's cylinder, but the PE setup had smaller ports all around and

"With the increased rake and wheelbase, the PE's characteristically slow and easy handling has been enhanced. When you ride the 250 you immediately notice that it's long and stable."





Speedometer/odometer found on original PE has been replaced by easily read, compact odometer.



Guard protects headlight. Combination tool includes 13/16-inch plug wrench, 12 and 24mm box sections.

Air cleaner breathes through vented top cover, is waterproof—and mildly difficult to remove and service.

SUZUKI PE250 TEST

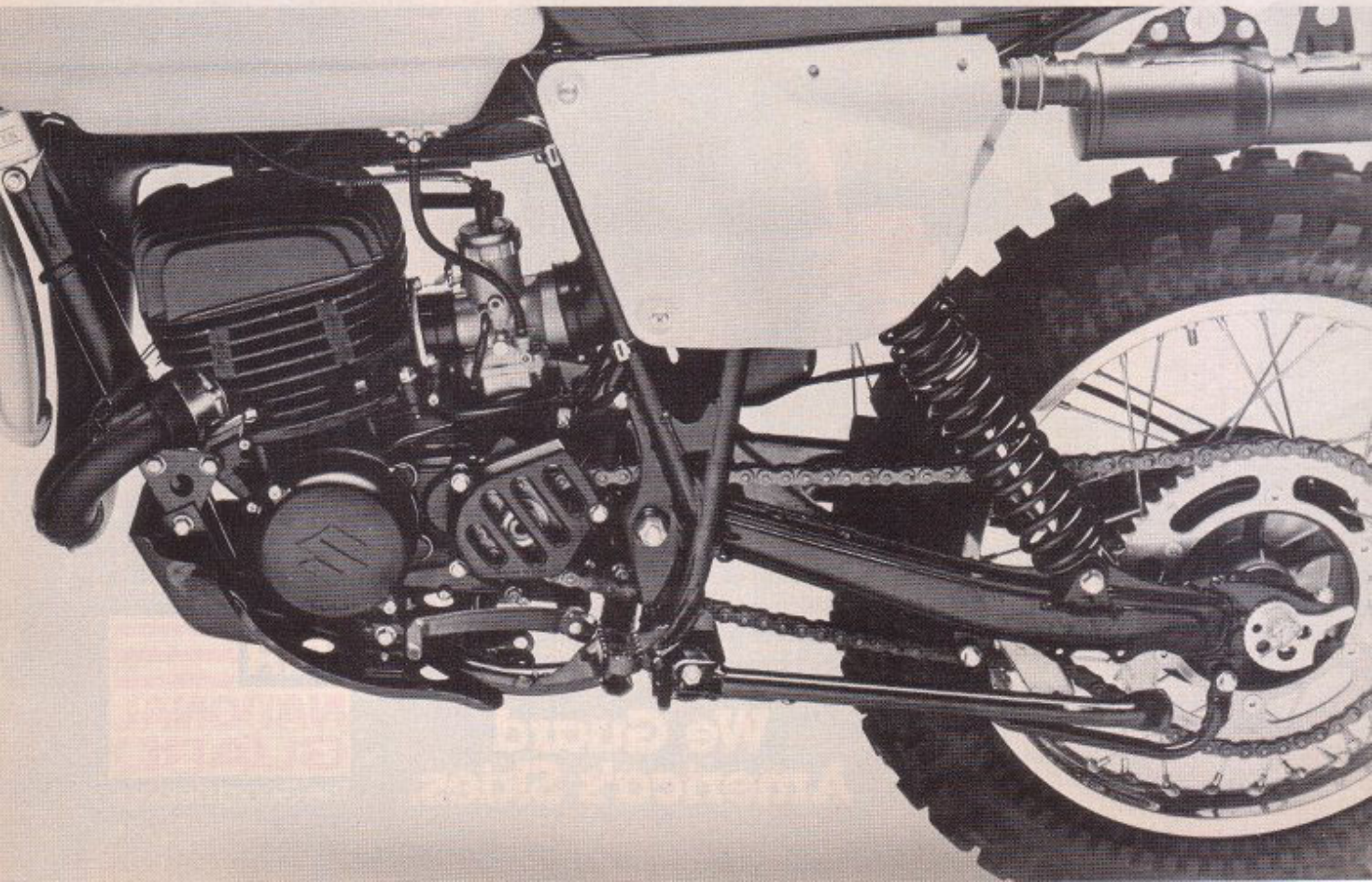
shorter intake- and exhaust-port timing. Both the PE-C and this year's PE-N still use the '77 250's cylinder layout.

The PE's cylinder is one of the reasons we say the bike is *basically* well designed. There is a lot of available port area, but Suzuki chose to use small ports to keep the powerband sane. In fact, the beefy magneto flywheel and heavily muffled exhaust probably would have kept the PE tame enough for most people. In any case, the 250 cylinder is just a few millimeters away from producing some very serious horsepower.

Other engine parts were taken directly from the RM, including the clutch, straight-cut primary gears and engine cases. Naturally, a close-ratio six-speed motocross transmission wouldn't do; the PE had to have a wide-ratio gearbox to allow easy high-speed cross-country riding. Several engine parts had to be modified to make the PE suitable for woods work. Though the PE-B/RM-B crankshaft flywheels were identical, the left shank of the PE shaft was changed to accept an external-rotor magneto flywheel. This change served two purposes. It provided more flywheel effect to let the engine gain and lose revs more slowly, and the heavier outside flywheel provided the charging coils necessary to power the lights.

Both the induction and exhaust systems on the original PE were virtually identical to the RM's. Suzuki's standard case-reed/piston-port induction design routes the air/gas mixture through both the piston ports and the reed valves. The metal, two-petal reed assembly controls most of the induction flow in low-rpm use, even though some mixture is still entering through the piston-controlled ports. Since the Suzuki uses reeds primarily for low-rpm crankcase charging, the reeds are manufactured to be more sensitive than otherwise to pressure changes in the crankcase. During high-rpm use, greater negative crankcase pressure draws more gas/air mixture through the piston ports, which work very well for high-speed use. This system has worked well in every PE250 model year, and the new PE-N employs this time-tested induction.

Since the PE needed a very quiet exhaust system, the RM's pipe had some internal baffles added. The PE muffling system as applied to the A-bike has been updated only in minor ways since 1977.



Surprisingly, the PE's designers made no changes to the RM frame when they chose to use it for the enduro bike. They shortened the RM's suspension about an inch at each end and softened it up considerably. For finishing touches, detail parts were changed to make the PE cross-country ready. A large 3.2-gallon gas tank was fitted; a skid plate, larger seat and speedometer were bolted on.

Suzuki took the path many manufacturers have followed: slightly modify a motocrosser's engine and suspension, and then add the "enduro" accessories. Only a few years ago that was an accepted formula; generally, that approach created a more than acceptable enduro mount provided the basic motocross bike was decent. The RM250 was an expert-level competition machine, but *Cycle* termed the original PE "an exceptionally appealing enduro/playbike."

Suzuki had just barely miscalculated the formula, by rounding the RM's powerband off as well as broadening it for the PE. Suzuki also softened the RM's suspension to the point where it couldn't handle even relatively high speeds. Nevertheless, the basics were there, and the PE could be easily modified to be competitive, and Team Suzuki riders demonstrated that fact in 1978. Still, the speed tricks did not, and have not, trickled down to the production line models. In 1978 Suzuki made two functional changes in the PE250: a front conical brake hub and an additional inch of suspension travel front and rear.

For 1979 a few more minor alterations have been made to keep the PE somewhat competitive. A lower combustion chamber ceiling has raised the compression ratio from 7.0:1 to 7.2:1. This modification, combined with some changes in the air intake tract that produce better breathing, results in a slight elevation of the entire power curve.

Chassis improvements are likewise minor. The head angle has been increased one-half degree, to 30 degrees. This frame-geometry change produces a 15mm-longer wheelbase and four millimeters more trail. Longer fork sliders, similar to the RM's, have been added, and they extend 4.5 inches below the front axle. The PE also employs a new system to secure the rear brake backing plate. On previous models the torque arm attached to the front of the swing arm. This year, to avoid the possibility of a rock damaging the arm, a backing plate "stay" (similar to a block wedge) fits directly to the needle-bearing-mounted swing arm—leaving the PE without a floating rear brake.

Detail improvements include the addition of a quick-change rear wheel. To remove the rear axle with the new system, loosen the axle nut, remove the two bolts behind the axle, take off the brake cable nut, and slip off the chain. The wheel can then be slipped out. Snail-cam adjusters for quick chain maintenance complete the rear wheel modifications.

With the increased rake and wheelbase, the PE's characteristically slow and easy handling has been enhanced. When you ride the 250 you immediately notice that it's long, stable and—with a 35-inch seat height—not too high. On fire roads and in rough cross-country terrain these characteristics are appreciated. But when you get up into the hills on some tight trails, the bike's 57-inch wheelbase becomes a handicap because the PE tends to resist quick turns. Switchbacks require the rider to muscle the bike; one technique that works well is to oversteer the front intentionally and take advantage of some front-wheel washout.

A head angle one degree steeper or a

(Continued on page 230)

Make and Model	Suzuki PE250N
Price, suggested retail	$1699
ENGINE	
Type	Two-stroke; case-reed valve/piston-port induction; single-cylinder
Bore and stroke	67.0 x 70.0mm
Piston displacement	246cc (15.0 cu. in.)
Compression ratio	7.2:1 (trapped)
Carburetion	(1) 36mm Mikuni
Exhaust system	Upswept expansion chamber with silencer and USFS-approved spark arrestor
Ignition	Capacitor-discharge; external rotor magneto
Air filtration	Oiled, washable foam
Oil capacity	900cc
TRANSMISSION	
Type	Five-speed with wet, aluminum- and steel-plate clutch
Primary drive	Straight-cut gears; 60/22; 2.727
Final drive	DID 520 chain; 52/13 sprockets; 4.0:1
Gear ratios (at transmission)	(1) 2.666;32/12 (2) 1.750; 28/16 (3) 1.200; 24/20 (4) 0.913; 21/23 (5) 0.692; 18/26
CHASSIS	
Type	Single-downtube, full-cradle steel frame; tubular swing arm
Suspension, front	Oil-damped, steel-spring fork with forward-mounted axle and 231mm (9.1 in.) of travel
rear	Gas-filled, three-way adjustable pre-load KYB shocks
Wheelbase	1455mm (57.3 in.)
Rake/trail	30 degrees/130 mm (5.12 in.)
Brake, front	Conical hub with 150mm (5.91 in.) shoes
rear	Standard hub with 150mm (5.91 in.) shoes
Wheel, front	Takasago 1.60 x 21 rim with one rim lock
rear	Takasago 2.15 x 18 rim with two rim locks
Tire, front	3.00 x 21 IRC Volcanduro VE-1
rear	4.50 x 18 IRC Volcanduro VE-1
Seat height	891mm (35.1 in.)
Ground clearance	267mm (10.5 in.)
Fuel capacity	12 liters (3.2 gallons)
Curb weight, full tank	121 kg (266 lbs.)
Test weight	197 kg (436 lbs.)

CUSTOMER SERVICE CONTACT
Customer Relations Department
U.S. Suzuki Motor Corp.
13767 Freeway Drive
Sante Fe Springs, CA 90670
(213) 921-4461

SUZUKI PE250N ... *Continued from page 137*

wheelbase an inch or two shorter would go a long way to give the PE some additional agility. The present dimensions of the PE250 would make an understandable trade-off if the Suzuki were a superb high-speed, rough-terrain handler. But it's not. Its suspension prevents the rider from blitzing cross country. On paper the 9.1-inch travel fork appears to be capable of tackling the logs and rocks that any enduro rider will confront. Many enduro bikes have more than nine inches of travel, but just an average amount of front wheel movement isn't the PE's problem. It doesn't put its 9.1 inches to good use. The fork's spring rates and damping action are not capable of dealing with the PE's weight (266 pounds).

Frankly, this is curious because the PE175 uses the identical fork, and the small bike's performance is very good. Both have 25.6-inch dual-rate springs. The first winding accounts for 4.92 inches of travel, and its spring rate is 31.1 pounds/inch. The second winding accounts for 4.13 inches and has a spring rate of 44.8 pounds/inch. Each fork leg contains 274cc of oil and comes stock with 5W/20 fork oil. The 175's fork differs only in that it comes stock with 10W oil. Compare the 250's figures to the 1978 Yamaha IT250's. It had 23.8-inch dual-rate springs with 18.27 pounds/inch and 24.75 pounds/inch rates, significantly lighter than the Suzuki's. However, the IT fork does not feel as soft as the PE's.

Part of the PE250's suspension problem is weight: it's 28 pounds heavier than the PE175. Also, 5W/20 oil is a bit light, though damping is smooth and progressive at moderate speeds. Confounding the fork's action is the shocks—they're sprung correctly for faster, rougher riding, and they're pretty good. They don't fade and rarely bottom; at low speeds they're a bit stiff but still comfortable. In combination with the fork, though, they make the PE dive over whoops.

In one set of particular circumstances the Suzuki's suspension combination produces odd results. Over a rolling trail—which would be similar to a series of jumps on a motocross course—the fork bottoms at the base of little hills (15 to 30 feet from top to bottom with about a 10-foot vertical drop). By itself this is no problem; it's typical of all but the very best long-travel forks. The Suzuki, however, does something else. Just as it bottoms the front end deflects, aiming the rider off the trail. It isn't fork-tube flex alone which is the culprit, though the bike's behavior suggests some minor flexing of the 36mm tubes is occurring. Rather, the entire front end seems to twist—handlebar, fork, wheel and all. Our riders had not experienced such a severe deflection-phenomenon before; without a great deal of time to isolate all possible variables and control them, we're not prepared to speculate on the causes. To reiterate, this behavior only occurs as the fork bottoms at the base of a V, just as the bike must begin immediately to climb the next roller. This situation places enormous stress on the suspension and frame, and the PE deflects only in these rollers, not when bottoming on flat ground.

Aside from this annoyance the PE handles slowly and predictably. Slides are controllable, and wheelies to clear obstacles are easy in first and second gears. Both brakes provide powerful and progressive stopping. The front unit especially never locks the wheel; the cable-actuated rear brake chatters only slightly while slowing the bike down hills or over stutter bumps. Both tires are IRC Volcanduros, and they provide very good traction especially over soft ground.

Though the new PE has a little more horsepower at every point than its predecessors, the feel of the powerband has not changed. Throttle response is exceptionally clean and very gradual; there are no surprises lurking in the PE's powerplant, thanks to the heavy crank and magneto flywheels. This power delivery makes the PE docile enough for beginning riders who still want an engine which produces a fair amount of peak power.

First, second and third gears are all closely spaced, and these gears allow the rider to tackle any terrain at speeds up to 40 mph. Fourth and fifth gears are overdrives (0.913 and 0.692), and there's a noticeable drop in the power when the rider shifts into the high gears. Top gear won't pull the bike in deep sand, or up much of a grade, or much below 50 mph. That doesn't really matter because fourth, with a top speed of over 60 mph, will handle these situations.

Gear engagement is always precise, though there's a fairly long lever throw. Shifts without the clutch are no problem if the rider backs off the throttle almost completely; full-throttle shifts are fast and precise provided the clutch is used. Even under abuse there's no clutch fade. The 10-plate assembly (five drive, five driven plates) reflects some thorough development work. The innermost plate is steel, rather than aluminum, because aluminum plates need pressure on both sides or their shape deforms.

Overall, the PE is basically sound. Its roots are in a winning motocrosser. In designing the original PE and refining subsequent versions, Suzuki engineers have steered down the middle of the technological road. They've made the PE docile enough to attract that largest segment of the market, the Play Riders. In the process they've left competition riders hanging. Team Suzuki riders know the PE 250 needs better suspension and more horsepower. They also know those ingredients are hidden not very deep within the PE. For 1979, though, the PE250 retains its place as an excellent novice-level enduro bike, a sturdy playbike, and lunch-meat for KTMs, Huskies and ITs. ●

CYCLE