
# SUZUKI RM-125

Cycle Test

● When the RM-125 sells like wildfire and wins races all over America, Suzuki will shake its corporate head and wonder why they didn't do it sooner. They've had the technology to build a killer motocrosser for five years, ever since Joel Robert first won them a World Championship in 1970. Yet Suzuki has never, until now, made an effort to apply their Grand Prix technology to production machines. Their TM-125 was only competitive for a year. The TM-250 Champion has been a neat playbike, and never a motocrosser, for four years. The TM-400 Cyclone, long known for its brutal power and uncontrollable chassis, made you feel like wrestling alligators for relaxation. Consequently Suzuki's reputation among the motocross set was that of a company which played on the names of Joel Robert and Roger DeCoster to sell production bikes which didn't share so much as a sump plug with the real racers.

All along everyone wished Suzuki would get really serious, because some of their production efforts, like the TM-125, were awful nice. Imagine what they could do with an order from management to inject Suzuki's full-house technology into production machines.

Finally, about a year ago, a management change in Japan resulted in decisions which brought us the RM-125. This bike, so we are told, is only the beginning of a new thrust by Suzuki to get serious with all their motocrossers. We expect to see an RM-250 and an RM-400, hopefully with enduro counterparts. If they are as good as the RM-125, Suzuki will become a powerful force on local tracks—fulfilling potential that it has had for years.

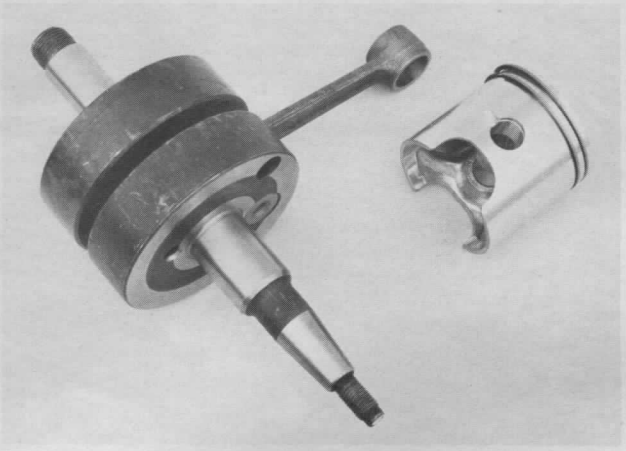
Right now the RM-125 is wheel-to-wheel with the Yamaha YZ-125 monoshocker as the best buy in small class racing. The Honda Elsinore has equal power but cannot match the RM's sophisticated suspension. Kawasaki's KX-125 has neither the horsepower nor suspension performance of the Suzuki. Same with Suzuki's own TM-125. Some of the European bikes may have certain advantages, but they are all unmentionably expensive. An RM-125 lists for $945, but can be had for less—$775 in Los Angeles. Yet it doesn't give up performance anywhere near the way its $200–$600 price spread with the Europeans might suggest.

The RM's advantage lies in the fact that it was conceived recently enough to include all the latest motocross technical evolvements in its original design. This means that its long-travel rear shocks have a long-travel front fork to match, and that engine position and frame geometry reflect all those considerations attendant

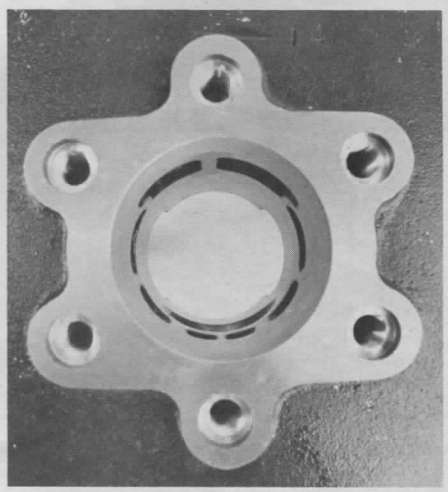
PHOTOGRAPHY: DALE BOLLER

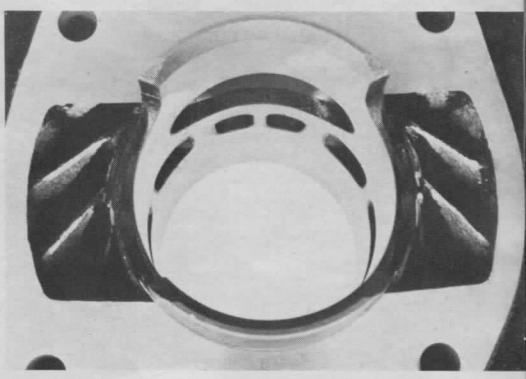
*Suzuki's factory hop-up kit is available from dealers for $195. Everything bolts on with existing fasteners. Bottom end torque is less, midrange power is very slightly more and top end power increases close to 10 percent—about 2 hp. That amount adds up to $100 per horsepower.*


# Five years of GP technology finally reaches production



*Giant full-circle flywheels are press fit onto unusually hefty mainshafts. A piston with two keystone rings free-floats on the rod.*





*Double bridges in the transfers (above) result in three separate tunnels—one for each port. The two back ports above the intake are new on the RM. The alloy cylinder has a shrunk-in cast-iron liner.*

to the suspension's greater travel. Older bikes have usually been updated by the add-on method—which often results in only partial success. For instance, if a manufacturer attempts to keep pace in the suspension revolution by merely moving the shocks forward on an existing model, suddenly the old forks aren't adequate, steering characteristics change, and the chain will likely scrape the frame somewhere. The latest motocross design concepts and their execution on the RM-125 don't suffer from intervening years. It's all fresh, it all harmonizes and it all works really well.

*Cycle's* test bike was delivered brand new with a quart of Castrol R strapped to the seat. Though castor-bean oil lubricates with wonderful effectiveness, its varnish content actually bonds to metal in time. Thorough cleaning with the engine completely disassembled (a job usually beyond the average motocrosser) becomes a twice-yearly task. Suzuki probably wanted *Cycle* to use bean oil because they knew we'd begin flogging the RM-125 after little or no break-in. Which is exactly what happened. Yet not one problem occurred in running 10 gallons of gas through the Suzuki. Several RMs racing out of a local dealership near the *Cycle* shop have operated trouble-free with either Bardahl VBA or petroleum-based Torco in their gasoline, so Castrol R doesn't seem to be imperative.

The first surprise comes right after you climb aboard. All long-travel motocrossers are built high to accommodate suspension movement, and the RM is taller than most 750 street bikes. Seat height on two standard-suspension 125s, the Honda Elsinore and KX Kawasaki, measures 31 and 29 inches respectively. Seat height on the RM is 35 inches and the feeling from up there is precarious to say the least. When you tilt the bike from side to side, it feels top-heavy because the engine is so high. Ground clearance must be more than full suspension travel—which is 7 inches—so up goes the engine and up goes the center of gravity. Elsinore and KX ground clearances are 6½ and 5½ inches respectively. The RM soars 9½ inches above ground and feels heavier because of it. Yet at 199 pounds wet, it only weighs 5 pounds more than its toughest competition.

None of the different feelings you get when sitting on a Suzuki in the local dealership prove to be annoyances on the track. Seat height diminishes as rider weight preloads the suspension and dents the seat an inch or two. The sensation of top-heaviness gives way to nimble, but not quick, handling. The RM doesn't get bounced around by terrain as much as some 125s. In fact it has a meatier feel more like a 250 than a wispy 125.

Going fast brings out the efficiency of long-travel suspension. A casual pace overplays the severity of a given bump with a feeling similar to undamped standard suspension. The bike pitches and yaws and doesn't steer properly. Hit the same terrain at speed and your hands and

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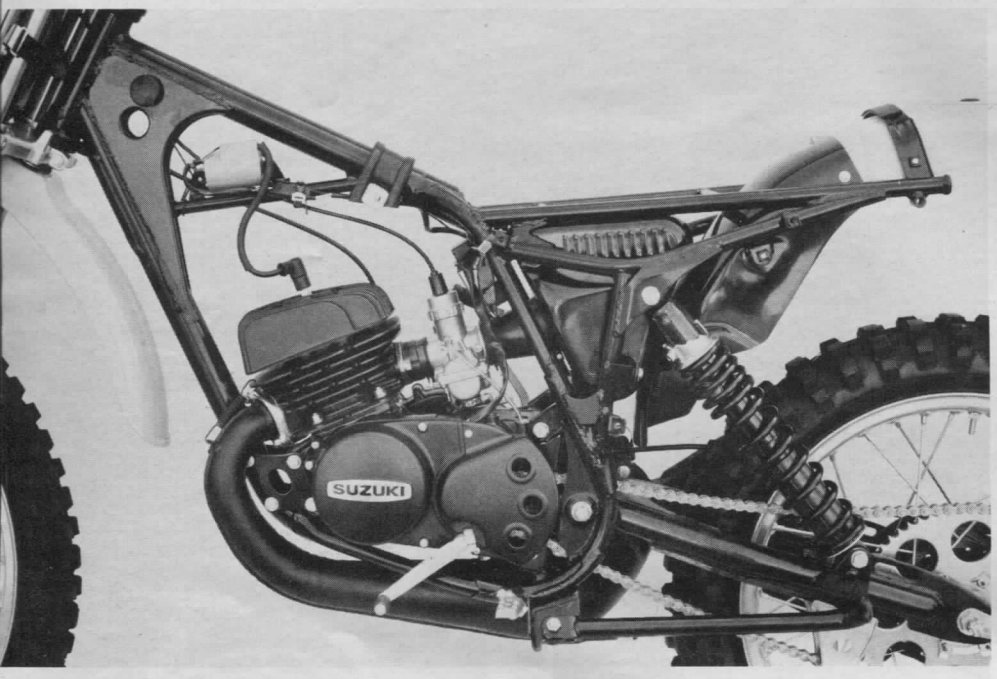
feet get thudded sharply while the bike continues in a straight line. A quick jolt is all there is to it. Long-travel suspension will increase your speed on rough straightaways more than anywhere else. It will take the sting out of jump landings and help traction in loamy soil.

On the RM-125, long travel seemed to make hard braking a little less predictable because of considerably more front-end plunge. In turns braking became noticeably more skittery. It also made slides harder to initiate and harder to sustain with precision. The trickier slides, and slightly less accurate steering compared to a TM-125, for instance, is probably due to greater variations of rake and trail as the suspension moves. Since lap times improve by as much as 10 percent almost immediately, the advantages of long-travel would seem to outweigh the peculiarities it initiates in other areas. In time a rider will adapt his style accordingly and then the old bikes will feel "different." In the end, long-travel means more control over bumps—which means more speed. That's why it's there.

Both fork and shock design are all new. Up front the RM forks have 7½ inches of travel, a full inch more than the TM, in addition to 85cc more oil capacity for greater resistance to damping fade in long motos. Larger diameter stanchions contain two-rate springs and different valving, which make RM fork more sensitive sooner than TM fork. A new forged-aluminum triple-clamp features huge stanchion pinch bolts (a stronger set-up than two small ones) and offset handlebar mounts so the fork can be raised or lowered to alter steering characteristics. There's plenty of access for easy fork spring switches and oil changing. The recommended lubricant is 210cc of 10W-30 or ATF. Tough plastic covers protect the sliders from flying rocks.

In back, Kayaba gas/oil shocks with 4½ inches of travel are cantilevered 6 inches in front of the rear axle, which results in 7¾ inches of wheel travel. Gas/oil shocks have one major advantage—they contain no air. Thus air cannot mix with the oil (aeration), which results in a less viscous mixture and therefore steadily weaker damping. Secondly, as heat builds, vis-

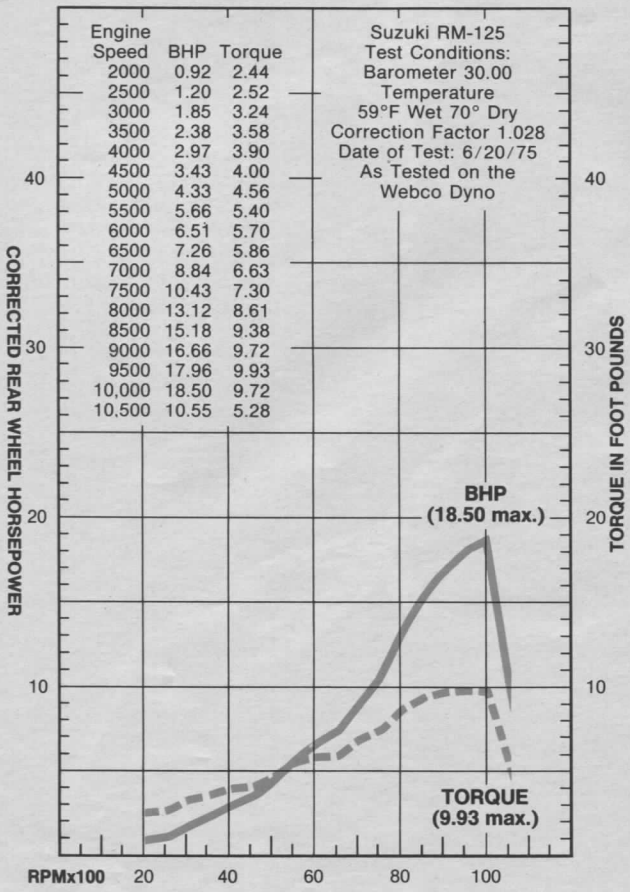
*(Specifications page 70; test continued on page 73)*

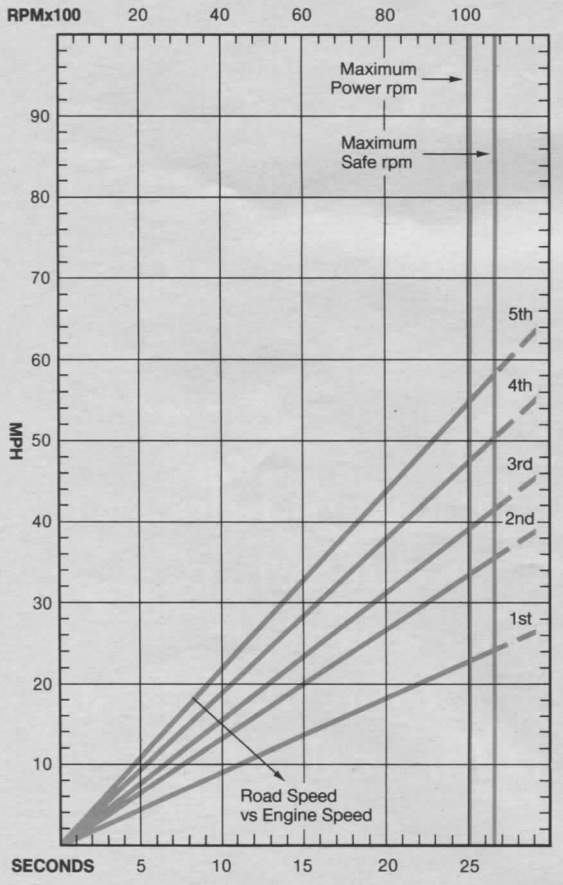



*Forward mount shocks (above) result in 7.80 inches of rear wheel travel. Shocks are mounted upside down (left) so only the weight of the piston and damper rod is unsprung. Nitrogen is used inside gas/oil shocks instead of air because air corrodes.*



*Long travel shocks may be seen at work in these two photos. Note distance between wheel and fender at full extension (left) and full compression (right).*





**SUZUKI RM125**

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| Price, suggested retail | $945 |
| Tire, front | 3.00 x 21 Bridgestone Motocross |
| rear | 3.50 x 18 Bridgestone Motocross |
| Brake, front | 5.12 x 1.06 in. (130 x 27mm) |
| rear | 4.33 x 1.06 in. (110 x 27mm) |
| Brake swept area | 31.52 sq. in. (203 sq. cm) |
| Specific brake loading | 11.39 lbs./sq. in. at test weight |
| Engine type | Two-stroke piston-port single |
| Bore and stroke | 56 x 50mm |
| Piston displacement | 123cc |
| Compression ratio | 7.4:1 |
| Carburetion | 1; 28mm; Mikuni |
| Air filtration | Oiled polyurethane foam |
| Ignition | Pointless electronic |
| Bhp @ rpm | 18.50 @ 10,000; actual |
| Torque @ rpm | 9.93 @ 9500; actual |
| Rake/Trail | 29°/4.84 in. (123mm) |
| Mph/1000 rpm, top gear | 5.42 mph |
| Fuel capacity | 1.4 gal. (5.3 liters) |
| Oil capacity | Premix 20:1 |
| Primary ratio | Spur gear 3.39:1 |
| Gear ratios, overall | (1) 31.14 (2) 22.64 (3) 18.16 (4) 15.18 (5) 13.27 |
| Wheelbase | 54¾ in. (139 cm) |
| Seat height | 34 in. (86 cm) |
| Ground clearance | 8¼ in. (21 cm) |
| Curb weight | 199 lbs. (90 kg) |
| Test weight | 359 lbs (163 kg) |

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cosity decreases independently of further aeration, compounding the damping loss.

The Kayaba shock is a single tube with pressurized nitrogen gas (210 lbs./sq. in.) at one end, separated from several ounces of oil at the other end by a free-floating seal. As the piston and damper rod ascends into the oil-end of the tube on compression, the nitrogen gas compresses in an amount equivalent to the volume being displaced by the piston and damper rod. In a standard shock this volume is displaced by oil leaving the tube through a foot valve and flowing into an outer chamber full of air—with which it all-to-readily mixes. In gas/oil shocks the piston and damper rod operate in pure oil—no aeration. They also stay cooler because the oil-filled tube is exposed directly to outside air instead of being insulated by the standard shock's outer chamber. Furthermore, gas pressure pushes the oil against the shock body constantly for faster heat dissipation. Suspension on our test bike could have been labeled almost faultless if the front fork springs hadn't sacked slightly after about three tanks of gas. Combined with a generally looser action in front, the weakened springs made the rear end seem too stiff and thus slightly mismatched with the fork. But the only effect was more frequent bottoming of the fork than Suzuki would want.

Other elements of the chassis are first-rate. Malleable levers, unbreakable plastic fenders and a tough seat covering should keep crash expenses low—unless it's a lulu. Good Bridgestone tires, though not as sticky as Dunlop Seniors, work best with 12 pounds in front and 10 in back. Bead stoppers secure the knobbies to Akront mudless rims. Our spokes loosened twice before bedding-in permanently, and our brakes performed superbly from the outset.

In stock form our test bike registered 18.50 horsepower at 10,000 revs on the Webco dyno. Suzuki claims in excess of 19 hp, and indeed Webco had run another stock RM which squeezed out 19.59 hp at 10,000 rpm. In engines as highly tuned as 125 motocrossers it's likely that output will vary 5–6 percent (one horsepower) depending on how coincidence matches parts at the factory. A full-minus cylinder mated to a full-minus head could spread the squish band enough for a 1-hp difference in itself.

Suzuki claims the factory did extensive testing with a six-speed gearbox in Japan and found no improvement in lap times. The company maintains that midrange torque is sufficient to retain the TM's five-speed gearbox, but *Cycle* disagrees. To a newer or heavier rider, it's fairly apparent in the field that the engine never cracked the 10-foot-pound torque level on the dyno, for it quite easily falls off the pipe. So it is with all 125s, but some less than others. Yamaha's YZ has over 10 foot-pounds of torque for 1000 revs and well over 9 for 1500 more—plus a six-speed tranny—which is why it outguns an RM. Any experienced rider weighing 160 pounds or less will have no complaints about pulling power or gear ratios, but since six speeds won't hinder the expert and can only help the learner, we expect the RM to be so equipped in 1976.

It's clear that Suzuki is aiming the RM at several different levels of riders, because for ultra-serious racers, they already offer an extensive hop-up kit which boosts peak power about 10 percent (to 21.14 hp, as dyno-tested by Webco). A kitted RM is about as powerful as a 125 ever gets without being an interminable struggle to ride, and on the verge of exploding at all times. Marty Smith won the National 125 Championship last year on a 21-horsepower Elsinore.

The RM engine is a vastly modified TM-125. Basic TM cases have a wider cylinder stud pattern and different transfer channels because of larger ports. A stronger crankpin and connecting rod ride in big-end rollers 1mm longer than before. Since there is no oil injection on the RM, the right-side main bearing spins in transmission oil and the left one in 20:1 premix. Both mains are single-row ball bearings. A spur-gear primary drives a tough 11-plate wet clutch held by seven springs. A wide friction point combats

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After the middle of the race, Sassaman opened a 50-yard lead on Scott, who was that far ahead of Beauchamp and Lawwill. The best racing developed between Roberts, Williams, Gillespie, Romero, Skip Aksland and Aldana, all of whom were locked together in a freight train of ever-changing position.

Sassaman let the world know who the hell he is by going on his way to win easily. Scott roared on to second, just ahead of Beauchamp. Lawwill's engine stumbled to one cylinder on the last lap because of a broken valve guide and he was lucky to cross the line before Roberts. The middle-of-the-pack dog fight had lost some of its intensity at the finish and Gillespie, Romero, Williams, Aksland, and Keener filled out the top ten.

For Greg Sassaman and Harley Davidson, San Jose was a joyous portent of good things to come. Throughout his Junior year, Sassaman had stayed close to home in the Southeast to race in the unpublicized shadow of the more widely travelled Jay Springsteen. It was a good coming-out. Now it was clear that O'Brien's judgement was accurate in placing Sassaman on the full factory team ahead of other rookies and established veterans. He was chosen largely because of his road racing ability. O'Brien figured that the kid would catch on to win his share of dirt races, but in private sessions and during local road races, Sassaman has demonstrated an ability that O'Brien rates close to that of the late Cal Rayborn. If that's the way O'Brien figured his abilities and he can pull off a Mile race like San Jose, we *really* want to see him do a road race.

Sassaman is soft-spoken, strong and wiry, and barely 20 years old. He is shy and unaccustomed to public notice. At the trophy presentation, with a Camel girl supporting each elbow, Greg inspected his boot toes a lot and said aw-gosh and gee-whiz in the most genuine manner since George Roeder. "Yep, Poppa raised 'em pretty good," O'Brien said of Greg's up-bringing by Grover Sassaman. O'Brien knew Grover from his own racing days in Florida, when Sassaman was the H-D dealer in Lakeland and O'Brien was the shop foreman for Puckett H-D in Orlando.

O'Brien was feeling okay. Yamaha riders had won the last seven Nationals in a row. There are only two more points-heavy road races this year, at Laguna Seca and Ontario, that Yamaha is almost sure to win. But the Kawasaki and Suzuki teams could seriously dilute Yamaha's strength in these races, and Scott will finally have a decent ride on the new H-D 500cc two stroke twin (Sassaman will debut at Laguna on Rayborn's old four-stroke). And there were 12 big-bike dirt Nationals after San Jose. The points tally after the race closed Scott to 116 points behind Roberts.

The resurgence of H-D's prowess at San Jose sparked new life into the Camel Pro Series. Roberts squeezed every point possible from San Jose and you can bank on the fact that he will do the same at every other event as well. ◉

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wheelies on full-throttle starts. Three shift forks controlled by a rotary drum shifter execute positive gear changes with or without the clutch. One small chain guide near the countershaft sprocket and another in the usual place ahead of the rear wheel sprocket both have adjustable rubber wheels to help control the extra slack necessary with long-travel shocks.

Suzuki really got tricky with the cylinder. Besides incorporating two extra transfers for a total of six, they contoured them differently on each side. The left side has a wide, curving tunnel which exits at nearly right angles to the cylinder. The right transfers are more vertical and skinnier and aim directly toward the head where the charge they carry can scavenge burned gases from around the pocket where the spark plug resides. A flat-topped piston with two keystone rings controls the single inlet port and bridged exhaust. Despite the fact that the cylinder resembles a chunk of alloy swiss, the porting arrangement is basic in concept and operation. Combined with PEI electronic ignition and clean Mikuni carburetion, good breathing adds up to easy starts and sputter-free top-end revving. We never even fouled a spark plug.

One-two-five motocross machines are fiercely competitive technically. All the good ones produce 18–20 horsepower, weigh under 200 pounds and handle extremely well. Consequently any single clear-cut advantage one machine has over the others will make a tremendous difference on the track. The RM-125 clearly has superior suspension. Combined with a competitive motor (simply add the kit parts) it would become an instant winner. It's good looking, available and fun. The price is fair and square. If you need further justification, there's always the clincher: it will make you go faster. ◉