
SUZUKI
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SUZUKI RM125T

This motocrosser has a problem, like all previous RM125s had trouble. It was born high on a totem pole, with the competition's fires blazing angrily beneath. Don't worry; the RM125T isn't likely to get burned.

PHOTOGRAPHY: DAVE HAWKINS, ROBIN RIGGS

● HORSEPOWER IS A RELATIVELY MINOR factor in open-class motocross, because all of the big two-stroke engines can easily be made to deliver more of it than most riders can use. The same may not be said of the 125 cubic centimeter class, in which every throttle opens wide at the first twitch of the starting gate and none closes longer than a wink until somebody waves the checkered flag. Rider ability counts for something in 125cc motocross, but the class's small engines don't overload the tire/ground connection and that means the racing odds heavily favor those persons who have a horsepower edge to aid them on the stretches between berms.

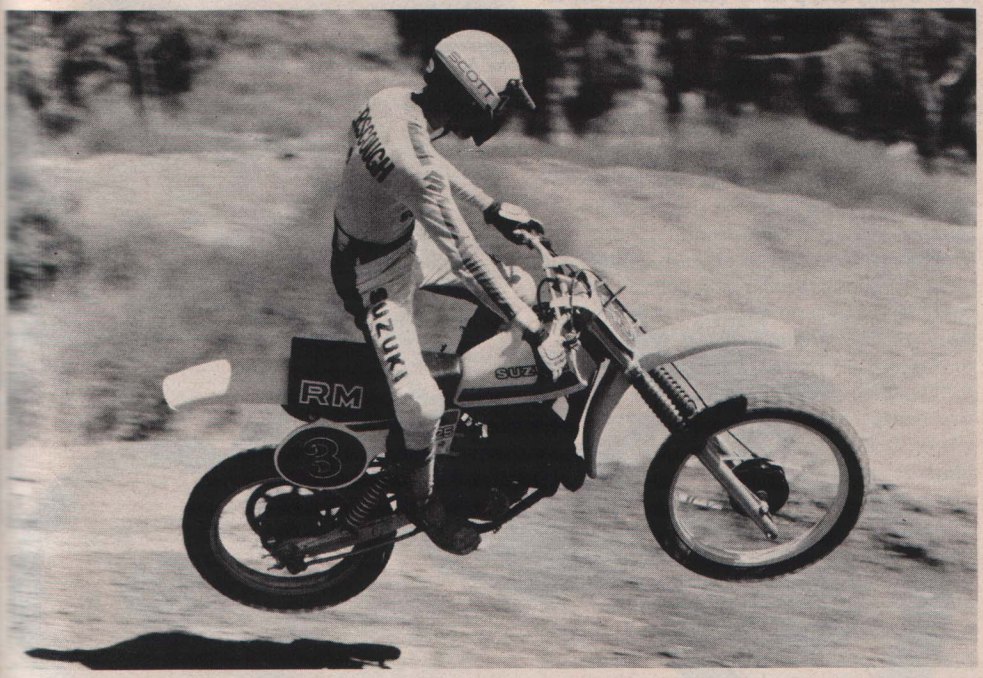
Suzuki's RM125C gave its riders a solid horsepower edge in 1978. The example we tested had an engine that pumped out 22.08 bhp at 10,000 rpm, with 12.24 pounds-feet of torque at 9000 rpm, and that's the most power we've ever seen strained from a one-eighth-liter motocrosser. And therein lies a mystery, for we now have a new Suzuki RM125T, and it would seem to be just a nudge weaker than the old RM125C despite having been improved.

Most of the engine changes in the 1980 RM125T were intended to broaden its useful power range. Last year's RM125N, like the earlier C-model, pulled strongly from about 7500 rpm and ran out of breath at 10,500 rpm. Suzuki gave the T a new expansion-chamber exhaust system, which is more like the C's than the 1979 pipe, to stretch the powerband past 10,500 rpm. The new pipe tucks in a little more closely than last year's, too, though you can still scorch your leg trying to use a lot of body English. Along with the new pipe, the RM125T got new ignition timing: 16 degrees before top center at 10,000 rpm, which is four degrees more advanced than the N's timing. This change, too, is aimed at extending the power range.

The RM125 has the same cast-aluminum, iron-sleeved cylinder as before, with the same porting and the same crankcases. But the crankshaft flywheels now have a 93.8 millimeter diameter, 2.8mm larger than in the past, and the close-fitting crankcase has been opened a corresponding amount to accommodate this change. Presumably these heavier flywheels were introduced to make the engine pull better at the lower end of its powerband. It may get a little low-end help from the slightly higher compression ratio (8.1:1 instead of the previous 8.0:1), which was obtained by fitting a thinner copper head gasket.

Whatever Suzuki's intentions may have been, the new RM125T we were loaned for testing was only different from the C-model; it wasn't better. In fact, the engine that came with the bike was distinctly limp—due to a problem discovered after an initial series of dynamometer readings were taken. The little reed-valver gave us 19.30 bhp at 10,000 rpm, 10.7 lb-ft of torque at 8500, and those figures were so low that we knew something had to be wrong. Something was: the engine's head gasket was leaking.

With the head gasket leak corrected, our



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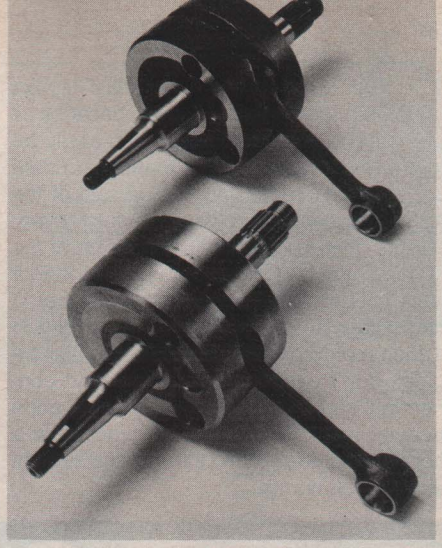
T-model made even less power, and that disappointing result was traced to a stuck piston ring. An engine with a one-ring piston wouldn't have run at all; the Suzuki's second ring allowed it to start and run, but the seal wasn't good enough to let it make full power. A Suzuki representative had another stock RM-T engine ready, and it was installed in our test machine's chassis so that the dyno work could continue. Alas, though this second engine was better than the first, it wasn't quite as strong as the C-model engine we ran on the Webco dyno back in 1978. The replacement made 21.69 bhp at 11,000 rpm and 10.43 lb-ft of torque at 10,000 rpm. These represent deficiencies of 1.8 and 14.8 per cent compared with the old RM125C's power and torque, and a power range that was higher but no broader. The RM-C produced useful power from 8500 rpm to 10,500 rpm, a 2000-rpm spread; the T-model has the same spread, shifted 500 rpm higher on the engine speed scale.

Do the horsepower data presented here mean that Suzuki's RM125T is a dud? Not necessarily. The numbers may well reflect nothing more significant than the luck of the draw. It is, after all, inevitable that some performance differences between seemingly identical engines will exist, and those differences will be most striking in engines with high specific power outputs. And Suzuki's 125cc motocross engine definitely is a high output unit, with specific power that surely would exceed 180 bhp / liter if an adjustment for transmission losses were made. None of the unsupercharged engines used in Formula One automobile racing equals the RM125's per-centimeter output, and there are power variations between even precision-built devices like the four-cam, 32-valve Cosworth V-8. Suzuki's 125cc motocross engine is mass-produced; it would be reasonable to expect that some examples will have more or less power than the average.

Most power variations between RM125 engines probably result from small differences in cylinders. Suzuki favors composite cylinder construction in which ports, finning and flanges are cast in aluminum around an iron sleeve. The loose core pieces used to form the port passages can be misaligned slightly, which means that composite cylinders seldom are as precisely ported as their all-aluminum counterparts. But the composite cylinder's iron bore is vastly superior to chromium-plated aluminum in terms of ring sealing and resistance to damage, and it can be reconditioned and fitted with an oversize piston. Individuals who are campaigning RM125s and have to pay their own parts bills should be pleased with Suzuki's choice of cylinder construction . . . especially as a slightly weak RM125 is still stronger than anything else in the class.

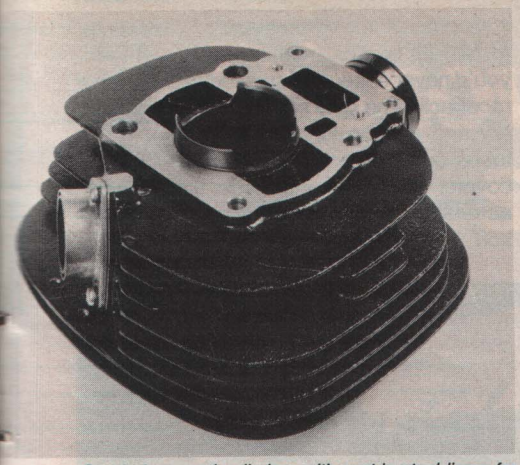
The RM125T's internal-rotor capacitor discharge ignition unit is timed at the factory, but the spark advance can be altered by anyone with a phillips screwdriver. This can be a good feature or a bad one, depending on who's doing the altering. We have noted that many of the Japanese-made high-performance two-stroke engines actually deliver better power with their spark timings retarded a little from the recommended settings. How much? Usually three or four degrees, but this varies and unless you happen to be a fairly sharp tuner (and know how to interpret what spark plugs say about spark advance) you should stick with the as-delivered timing.

"Primary" kickstarting has long been an essential feature in 125cc motocross machines, as they are more easily stalled than their 250cc or open-class brothers. Like its competition, the Suzuki can be kick started with its clutch disengaged; you don't have to find neutral. Unlike some others, the RM125's starter gearing will let you spin the engine fast enough to really make air move through its carburetor and sparks fly across its plug gap. For cold starts there's a mixture enriching "choke" lever on the left side of the 32mm Mikuni carburetor. Hot or cold, the engine starts easily.

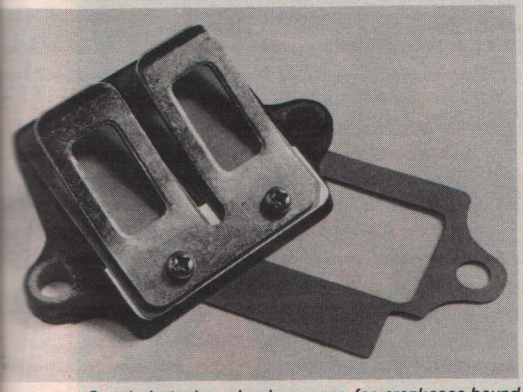


Increased crankshaft inertia is provided by larger-diameter flywheels. Small crank belongs to the RM125N.

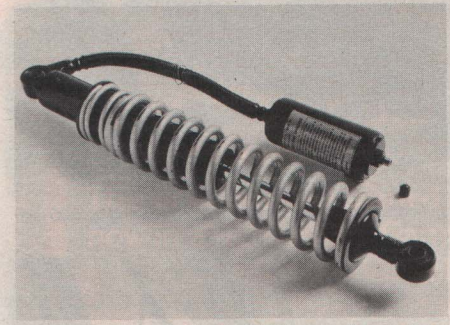
Rectangular-section rings limit blow-by, while piston skirt holes allow oil up to the bridge on the exhaust port.



Suzuki has used cylinders with cast-in steel liners for years; these liners are cost-effective and can be bored.



Coupled steel reed valves open for crankcase-bound fuel mix and close to keep the mix out of the intake port.



While appearing similar to 1979's two damping-rate shocks, the '80s have four rates and nitrogen caps.

The T-model's clutch gives fairly predictable engagement. It isn't as smooth and certain as European motocross bikes' clutches traditionally have been, but it is entirely acceptable. Of course, for fast shifting the clutch engagement characteristics are of no consequence: you hold the throttle wide open, put pressure on the gear-change pedal and spank the clutch lever. The bike's shift mechanism is good enough to flick the transmission from one ratio to the next the instant clutch disengagement takes the drive load off of the gears.

A change in the RM125's final drive places a somewhat greater load on the T's clutch and makes the new model feel a bit sluggish as compared with the C and N models. Instead of the #428 chain that is standard on some other 125cc motocrossers and was fitted on earlier RM125s, the T has a hefty #520 chain . . . and a new set of sprockets. Before, the RM125 had 13- and 59-tooth transmission and rear wheel sprockets, for a ratio of 4.54:1; now it has a 12/51 sprocket combination, a 4.25:1 ratio. This change results in taller overall gearing, and makes the use of first gear mandatory on the starting line unless traction is very poor or the starting stretch is downhill.

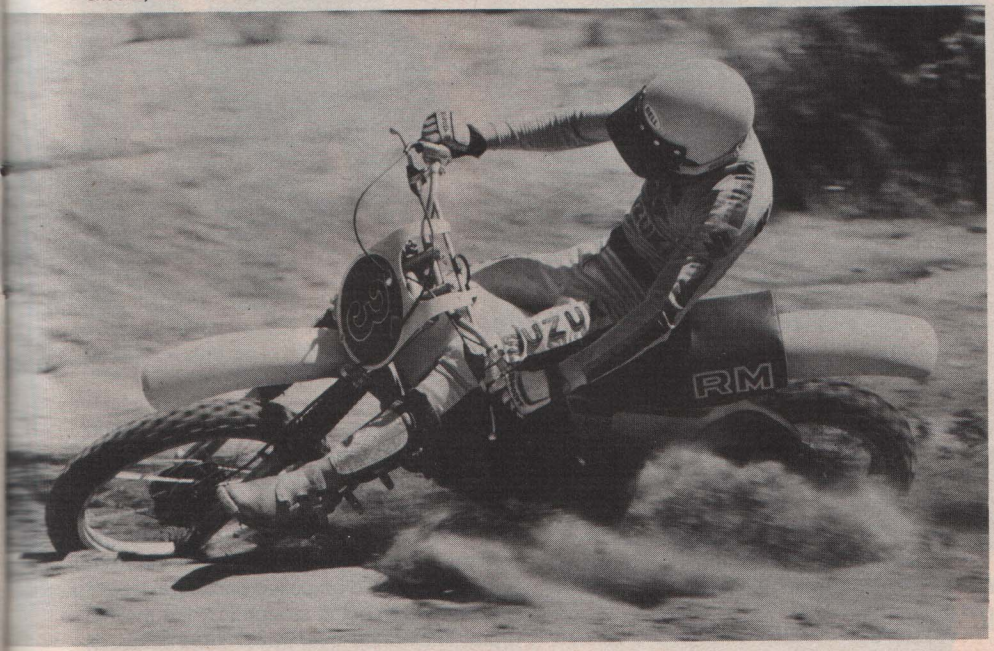
The RM125T's aluminum swing arm pivots at a point only 68mm (2.7 in.) from the transmission sprocket's centerline. With this close-coupled arrangement there is only a smallish change in chain tension as the rear suspension moves through its travel and nothing elaborate in the way of a chain tensioner is needed. A couple of skateboard-wheel rollers keep the 5/8-inch pitch chain from drooping too much when the shocks are fully extended or compressed. This scheme looks too simple to be effective, but it works. We heard a lot of rattling; we didn't lose the chain.

Apart from cosmetics, few changes have been made in the RM125's chassis. The fork's lower triple clamp has been strengthened by making it 10mm deeper, which gives it a better grip on the 38mm fork tubes and minimizes front-end twisting. The fork's measured travel is identical to last year's at 10.2 inches. Adjusting the fork's air pressure still involves two operations, as each leg is a separate unit, but if a seal leaks you'll still have pressure in one leg. Suzuki recommends any fork air pressure up to 28 pounds per square inch. *Cycle*'s test riders liked a 13 psi pressure best, but this is something that varies with individual riders and tracks.

There has been no change in the RM125's brakes (which have backing plates made of magnesium, like the clutch and magneto covers), but the rear brake has a different torque stay and actuating link. Last year's N-model had its torque rod attached at the frame with a spherical "heim" joint and at the brake backing plate with a rubber-bushed clevis; the T-model has non-elastic spherical joints at both ends of its torque stay. Instead of a steel actuating rod, 1980's RM125 has a non-sheathed, braided-steel cable that's supposedly stronger.

The biggest chassis improvement is the introduction, with the T-model, of nitrogen-charged, rebuildable KYB rear shocks with four-way-adjustable damping. The adjustment is in the shocks' rebound damping, and it isn't easy to make. You have to take the springs off the shocks, which will then let you turn the rod in the cylinder, making the adjustment. Dogs on the shock piston and at the top of its cylinder engage when the piston is extended, and twisting the rod cranks different settings into the rebound valving. The actual linear rear-wheel movement available is 10.6 inches, counting compression of the shocks' rubber bottoming doughnuts.

Previous RM125s' shocks were sealed units. Now you can change the shock oil by carefully bleeding off the pressurized nitrogen, and then disassembling the hoses and



First and foremost, 125 motocross demands a commitment: don't back off. The RM likes this promise fine—and delivers substantial power from 9000 to 11,000 rpm.

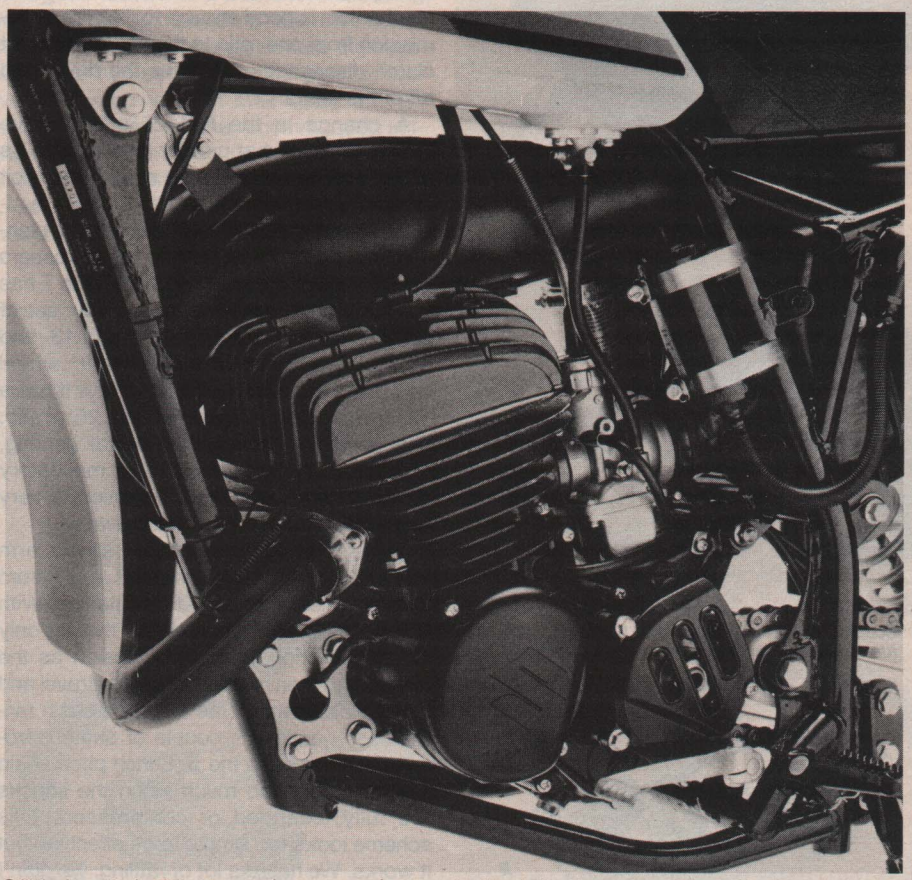
shock bodies. It's a nice feature, with one catch: you'll need a nitrogen tank, and a regulator and gauge to handle the 228 psi pressure recommended for charging the shocks.

Suzuki's RM125s don't win every 125cc motocross race, but they always seem to be well represented among the first ten finishers and their success is not based on horsepower alone; they've also had good handling, and that hasn't changed. Our T-model handled best with its IRC tires inflated to 10 psi, the fork at 13 psi and the rear shocks pressurized to 230 psi (Suzuki says the minimum shock pressure should be 142 psi and the maximum 284 psi). With these suspension pressures and the rear shock springs' perches at middle preload, the RM125T's fork and shocks would just lightly bottom for the worst jolts our test track provided. These settings, and rear shock damping at its third-stiffest adjustment, gave us handling so fine that small changes in tire pressure could be used to tune it even finer.

The Suzuki's most admirable and useful handling trait is that it steers quickly without oversteering. It can be slammed into turning almost instantly, and will come back upright and running straight just as quickly. Some quick-steering motocrossers are inclined to like turning so well that they try to keep doing it even when their riders would have it otherwise; the RM125T simply does what it is asked to do. The bike handles S-turns and berm-shots best if you slide your weight forward, sitting on the tank, but it will handle them even if you sit there like a lump. The only thing you have to be careful about is a hard-packed, slippery turn taken under power: the Suzuki's steep, explosive power curve can take over, spin the rear wheel, and put you sideways.

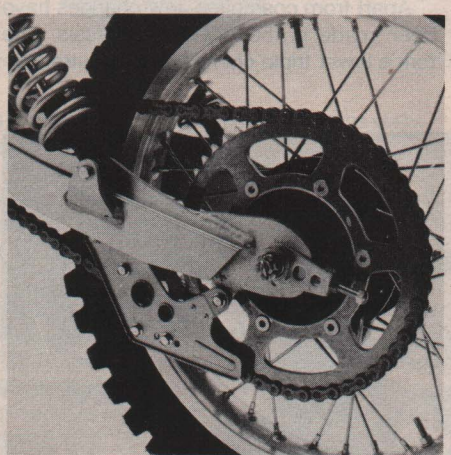
You'll have to work to keep the RM125T's engine within its powerband. The bike's six transmission ratios are well spaced, but it is pulling tall gearing and the engine is peaky. Don't try to over-rev the engine a little to save shifting on 20-foot straights. Something—either the pipe or an automatic retard built into the ignition—works like a rev-limiter, and there's no power at all much past the power peak. Also, as is normal when riding a one-two-five, you'll have to slip the clutch if you want to leave slow corners in a hurry. And there will be more clutch slipping required on courses that feature mud or deep sand. You won't have to worry about the engine wheezing and hesitating if you do happen to get caught with your revs down. The Suzuki's carburetion is very clean, and its CDI magneto fires a spark that won't be quenched by any normal fouling deposits on its plug.

We ran the RM125T through a small river to test its brakes' resistance to wet-fade; you'd never encounter such deep water on a racetrack. The bike's front brake is slow to dry and resume functioning; its rear brake loses some effectiveness but quickly recovers. This, along with the dry braking characteristics, suggest that the T-model has soft, high-friction linings on its front brake shoes and harder linings at the rear. When dry, the front brake is remarkably powerful (just short of being grabby, in fact), while the rear has to be applied hard to make it lock. The combination works exceedingly well on the track. We do wish that the front brake lever could be pulled back against the grip instead of being stopped by the throttle drum. The added lever travel could be useful

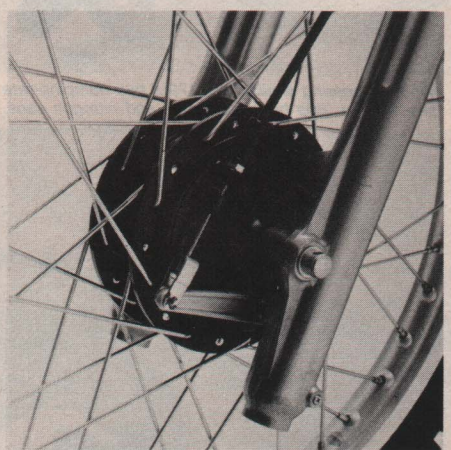


Still the box-stock 125 motocross horsepower champ: an ignition timing change moves the powerband up 500 rpm.

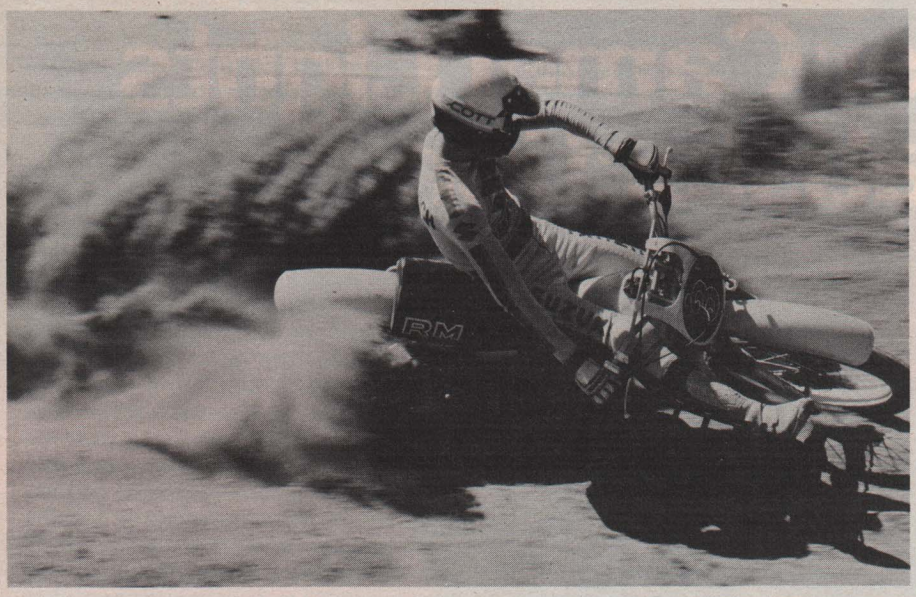
A naked brake-actuating cable replaces last year's rod, though the cable transmits less braking information.



Aside from its noisy arguments with the #520 drive chain, the RM's steel and plastic guide works very well.



The RM's 185mm diameter front hub does wonders for spoke life and houses a one-finger-operation brake.



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on a track where conditions are conducive to brake-fade.

Suzuki's RM125T basically is a refinement of earlier models, and that's all it needs to be. Last year's N-model was a state-of-the-art machine, and the T-model is an N with better suspension, slightly altered styling, and a relocated powerband. We can't know whether the horsepower figures obtained in our testing are representative of all T-model engines; if they are, then the RM125T owner will have to hope that the bike's improved suspension will offset the slight power deficit it suffers in comparison with the earlier RM125s. Maybe it will; maybe not. Either way, the T-model still has a horsepower edge on everything else in its class. That edge, and the RM125T's handling and reliability, can make you a winner . . . if you ride like one. ◉

Make and model ..... Suzuki RM125T
Price, suggested retail (as of 10/25/79) $1329

ENGINE
Type ..... Two-stroke single, air-cooled with case-reed valves and six transfer ports
Bore and stroke ..... 54.0 x 54.0mm (2.13 x 2.13 in.)
Piston displacement ..... 124cc (7.6 cu. in.)
Compression ratio ..... 8.1:1 (corrected)
Carburetion ..... (1) 32mm slide-throttle Mikuni
Exhaust system ..... Upswept with auxiliary silencer
Ignition ..... Magnetically triggered capacitor discharge
Air filtration ..... Oiled foam
Oil capacity ..... 0.8 liters (0.9 qts.)
Bhp @ rpm ..... 21.69 @ 11,000
Torque @ rpm ..... 10.43 @ 10,000

TRANSMISSION
Type ..... Six-speed, constant-mesh, wet-plate clutch
Primary drive ..... Straight-cut gear, 19/60, 3.16:1
Final drive ..... 3/8 x 5/8 in. chain, 12/51 sprockets, 4.25:1
Gear ratios (at transmission) ..... (1) 7.37, (2) 5.53, (3) 4.46, (4) 3.76, (5) 3.30, (6) 3.02

CHASSIS
Type ..... Single front downtube, partial cradle, chrome-molybdenum steel
Suspension, front ..... Leading-axle air/spring fork
rear ..... Aluminum swing arm with (2) nitrogen-charged remote-reservoir shocks
Wheelbase ..... 1440mm (56.7 in.)
Rake/trail ..... 30°/133mm (5.2 in.)
Brake, front ... Cable-actuated, 130 x 28mm (5.12 x 1.10 in.) drum, single-leading-shoe
rear .... Cable-actuated, 120 x 28mm (4.72 x 1.10 in.) drum, single-leading-shoe
Wheel, front ..... Wire, 36-spoke, Takasago aluminum alloy, 1.60 x 21 in., one rim lock
rear ..... Wire, 36-spoke, Takasago aluminum alloy, 1.85 x 18 in., two rim locks
Tire, front ..... 3.00 x 21 IRC Motocross GS-45Z2
rear ..... 4.10 x 18 IRC Motocross GS-45Z1
Seat height ..... 922mm (36.3 in.)

Ground clearance ..... 340mm (13.4 in.)
Fuel capacity ..... 6.5 liters (1.8 gal.), no reserve
Curb weight, full tank ..... 94.3 kg (208 lbs.)
Test weight ..... 166.9 kg (368 lbs.)

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