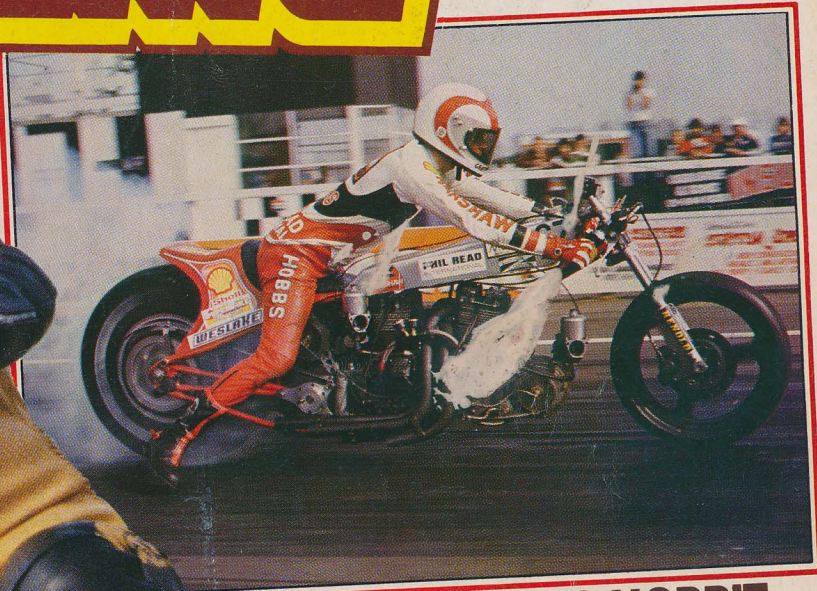


MOTOR CYCLING

MARCH 1980 60p

SPECIAL FEATURE
Pass your riding test first time



HOBBS ON HIS HOBBIT
Colour Poster and interview



ROAD & TRAIL
Kawasaki Z500 Marathon
Suzuki TS100 Trail Bike

WORKSHOP
Honda Trail Bikes Superserviced
Decoking a stroker by stages

MOTOR CYCLING

March 1980 No.53

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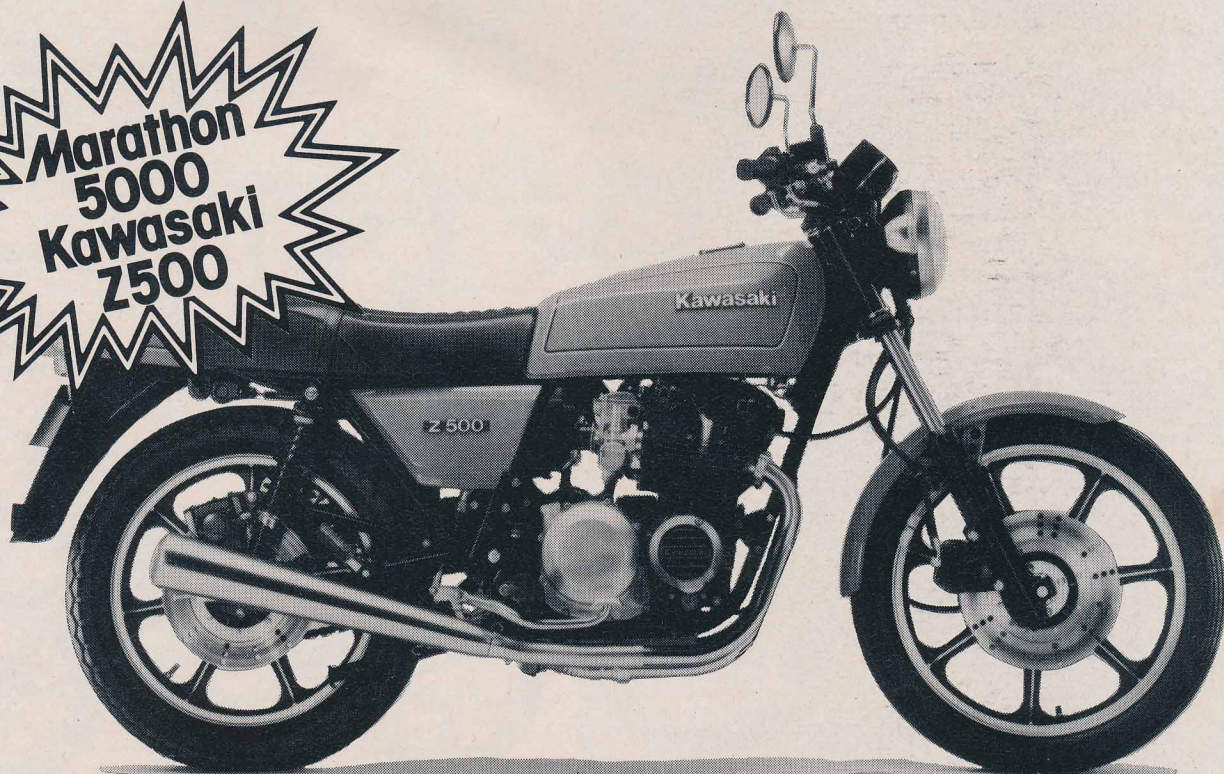
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**Marathon
5000
Kawasaki
Z500**



Low-slung fun

Suzuki's smallest trailster, the TS100ERN, heads for the road ...



ALTHOUGH several mopeds are dressed up as trail bikes and riding the dirt is nearly always more fun than being overtaken by a bus, proper bikes start at around 100cc. There's a lot to be said for decilitre dirtsters. They are big enough to commute at around 50mph, but small and light enough to throw into the back of a Cortina estate and head for the hills. They sell for around £500 and sneak into the cheapest insurance bracket, barring step-thru mopeds.

After buying a Yamaha DT100 for our *Marathon* test fleet, we found out that there aren't many places 100cc can't go. To find out how Suzuki's on/off-road 100 compares, we commuted on it, performance tested it, took it to Sammy Miller for his expert analysis, then entered it in a Thruxton MCC trailbike scramble alongside our DT100.



Little smoothie

When Suzuki updated the TS100C to the TS100ERN tested here, they left the engine alone, but gave it an all-new frame. The 100 now has the same moto-cross styling as the rest of the TS range. It has been given super-soft, long-travel suspension and a sophisticated equipment spec to produce a smooth-riding little roadburner.

Since we did our testing, the TS100ERN has been replaced with the TS100ERT for 1980. The only differences are lower handlebars, new control levers and different stripes.

By definition, any trail bike is a compromise. To give the precise steering control necessary at low speeds on rough ground, they all get a bit unstable towards their top speeds. The TS100ERN seems to have a greater-than-normal off-road bias in its steering-head angle. Although this makes it fluttery at the front when ridden flat out, it was not problem around the 45mph tarmac cruising speed. Manoeuvrability in slow-moving traffic was, of course, excellent.

Since much of the bike's life is likely to be spent in traffic, having two mirrors is soon appreciated. Nobody needs a rev counter on a trail bike. Instead, the dummy right-hand instrument block on the Suzuki contains turn indicator, neutral and main beam warning lights. The left-hand block houses an accurate speedo that is clear to read, day or night. It's a shame that there's no tripmeter.

Manhandling the bike into and out of a corner of the garage, not to mention dragging it out of streams and mudholes, was made easier by the grab handle on the left at the rear. One of the details that didn't work so well was the screw-on plastic fuel-tank cap. This was fiddly and annoying.

With plenty of moto-cross influence in the style, the little Suzuki doesn't lack looks. Super-short front mudguard makes a mess of the engine but the exhaust pipe isn't as vulnerable as it appears. Low seat height is a big attraction.

Trail Impressions



Kawasaki lag behind with their KE100 despite a higher claimed power output, although it's unlikely that you could detect the difference in use.

The most remarkable thing about the Suzuki is its ability to haul extra weight. There is only 0.2mph difference between the solo and pillion top speeds and even the standing quarter only takes 0.9 seconds longer two up.

The TS100ERN is the lightest bike in its



The pull-out choke knob on the carb was easy to find and operate and starting rarely took more than three kicks on the coldest mornings. The high-revving two-stroke single was buzzy, but there were no particular vibration problems. Two-up trips were limited by the swing-arm-mounted pillion footrests, not by vibration.

Gear selection was good with or without the clutch. Neutral was easy to find even when the engine and clutch were hot. First gear wasn't too low to be useless on the road and fifth (top) kept a cruising engine in the power band, thus avoiding lots of downchanges for headwinds or gradients.

The TS100ERN is a good road bike in its class. For me it is also unique, because it is the first trail bike I've ever managed to scrape on the ground while cornering. Unfortunately, this isn't due to anything special between the rims and the road; the 100 is the only bike in the TSER range not fitted with Suzuki's new more-on-than-off-road tyre. The problem is a lack of ground clearance which soon has the footrests touching down. An alien feeling on a trail bike.

The breather tube inevitably got twisted while screwing on the cap so it didn't breath.

Although not much worse than other 100cc trail bikes, the Suzuki's headlamp was shamefully inadequate. Only a very brave idiot would ride this bike on unlit roads at normal road speeds. It is also unlikely that there's much safety to be gained from showing a light this size in daytime traffic.

Class average

In the harsh conditions of MIRA track testing, there's not much to choose between the 100cc trail bikes. Yamaha's DT100 managed to out-rev the others, giving slightly higher solo and prone top speeds. This is remarkable when you realize that the Yamaha has much lower gearing than the Suzuki (5.6mph per 1000rpm in top gear compared with 7.4 for the TS100ERN).

Suzuki claim to develop their 0.5 extra bhp another 500rpm up the rev range, but the two engines have very similar characteristics. The Suzi was only a fraction of a second behind the Yam's standing quarter-mile time.

class, which probably explains why it stops in the shortest distance. Again, it only takes a few extra feet to stop the extra weight of a pillion.

Minimum speeds are important if you don't want tricky bits of trail rushing towards you. The Suzuki came out equal best with the Yamaha in this category, although transmission snatch spoilt the ultimate degree of control. No chain tensioner is fitted. We lubricated the chain generously and it only needed adjusting once.

Despite its lower gearing, the DT100 stays top of the 100cc fuel consumption chart with a miserly 90mpg overall figure. The TS100ERN ranks equal with the KE100 at 73mpg. This gives the Suzuki a range of about 100 miles on a tankful, with another 20 miles on reserve.

Although both the Yam and the Suzi have reed-valve induction, the DT has a higher compression ratio and the engine is slightly undersquare (the TS is exactly square). These things must make the Yam more efficient and it also has a smaller carburettor.

All the bikes in this two-stroke class have

Low-slung fun

oil-injection lubrication. The Suzuki didn't use enough oil over the test period for us to give an accurate consumption figure.

Getting down

For its first off-road trip, the TS100ERN went to the expert, Sammy Miller. One quick lap around his playground later, Sammy's first comment picked out the bike's worst feature: "It's all a bit low for serious trail riding."

After just looking around the Suzuki, Sammy had predicted that we were going to find everything rather vulnerable. The footrests and controls are so low, he soon found that getting through any narrow space resulted in the bike being knocked out of gear, assuming that it didn't dig in and come to a complete halt.

It was after the bike had wedged itself into a gap in a muddy bank that it suffered its only breakage. Sammy was legging like mad at the back while trying to lift the footrests clear with the handlebars. The left-hand rear winker brushed against his leg and broke off. The winkers look rubber-mounted, but it is brittle plastic.

Later, while riding diagonally down a steep slope to a stream, Sammy found it hard to stop the gearlever being knocked into second or third gear. This meant that the bike couldn't make it up the bank on the other side unless he managed a couple of quick downchanges in mid-stream.

The whole chassis is too low. It starts off 1½ inches lower than the DT100 and the soft suspension sinks a couple of inches as soon as a rider mounts the bike. As if the cradle itself isn't low enough, the rider's footrest bar has been tacked on underneath to take away another inch. This bar took some cruel blows when Sammy rode over his pile of concrete blocks.

The bottom loop of the exhaust pipe looks like it's sticking its jaw out and asking for trouble. But most bumps clobbered the engine cradle before they got that high.

Sammy also pointed out a few of the bike's less serious shortcomings. Like its distant relative, the four-stroke SP370, the TSERN's

front mudguard is more of a style than a design. The section forward of the forks is good, but the tail is cut off so short that it is hopeless. Mud flies straight on to the engine. I noticed that the old mudguard lugs were still cast into the fork sliders, so maybe a serious off-road rider could fit a different mudguard.

Another casualty in the mud was the rear tyre. To be fair, any trail tyre of this section (3.00) would get clogged with mud. Sammy thought the bike needed at least a 3.25 tyre on the back. None of the 100s have security bolts, but they don't have enough power to cause trouble either. We let the tyres down to 15psi front, 12psi rear, without problems.

Things weren't all bad. Sammy was full of praise for the brakes, confirming what we had already found on the track. He was especially impressed with the rear unit which, he said, wouldn't have been out of place on a 250cc machine.

Sammy thought the power output was good for a 100cc engine and added that it was well-silenced, very important for trail riding. Accepting that all two-strokes have to be buzzed to keep them in the power band, he found the TS100ERN to be flexible for its size, on a par with the DT100 in its ability to pick up revs quickly from almost any engine speed.

Although the Suzuki's gearing is slightly higher than the Yamaha's and Sammy often complains that first gear isn't low enough on trail bikes, he thought the ratios well chosen. He also agreed that the clutch was light and the gearchange quality good. If stalled, the engine can be restarted in any gear, with the clutch pulled in.

As we had expected from its behaviour on the road, the TS100ERN's steering was good on the rough, despite an almost total lack of damping. Landing after a wheelie, the forks rebound viciously.

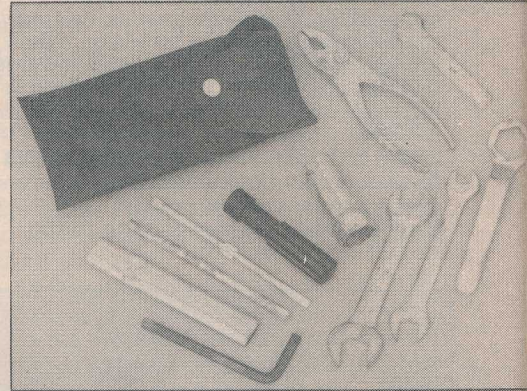
The rear suspension bottomed easily on its third setting, but was okay on its fifth (hardest) notch. Adjustment is by any suitable tommy bar, there's one in the toolkit, but the units can't be turned on to their fifth setting with a bar, because the pillion footrests get in the way. Luckily it was possible to turn the units by hand.

After one final moan, the side-stand location pin was digging a hole in his left boot, Sammy conceded that the bike was well-balanced. He thought the relationship

between the handlebars, tank and seat position was good, and the side panels made a nice shape to grip with your legs. But, oh . . . those low footrests!

Stripped for action

After watching Sammy Miller break off a winker without really trying, we decided to strip every breakable, non-essential part from the bike before the Thruxton scramble. Art man and moto-cross star Steve found the whole job possible using the 11-piece toolkit stored under the seat.



Stripping off the lights wasn't too bad compared with the DT100 or XL100S. Two large block connectors and a couple of snap connectors under the fuel tank disconnect all the forward electrics.

One annoyance is that the handlebar clamps have to be undone to remove the plastic panel that covers the ignition switch. The handlebar clamp Allen screws should

SUZUKI TS100 E

BRAKES(both)

mph	solo		pillion	
	ft	m	ft	m
30	36	11.0	42	12.8
40	69	21.0	74	22.4
50	104	31.7	120	36.4
60	153	46.6	—	—
70	—	—	—	—

OIL CONSUMPTION

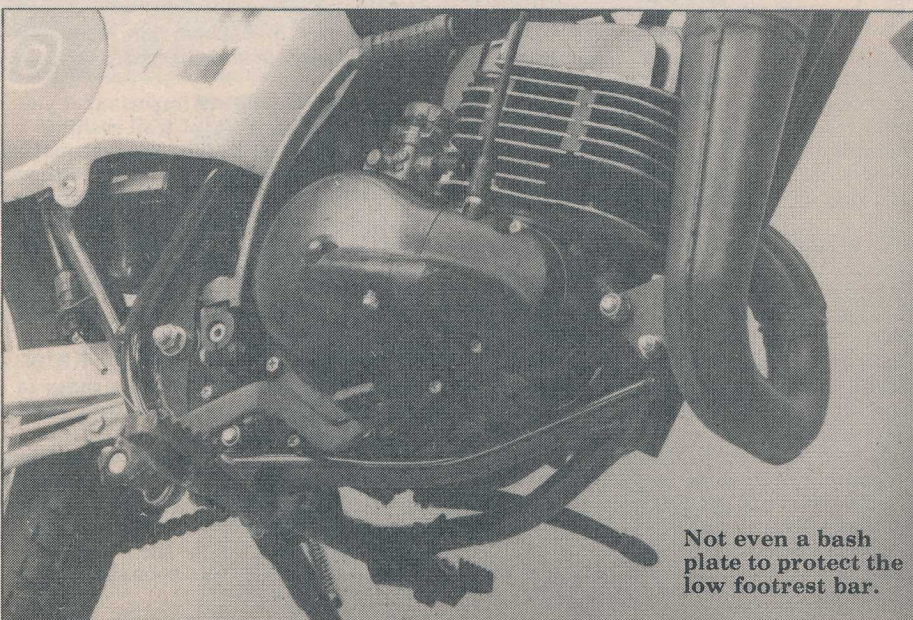
Not measured

MPG

mph	solo	pillion
30	118	103
40	118	95
50	70	—
60	—	—
70	—	—
overall	73	—

MPH per 1000 rpm

gear	mph
1	2.08
2	3.16
3	4.70
4	5.88
5	7.44
6	—



Not even a bash plate to protect the low footrest bar.

have been hidden by rubber stoppers, but these were missing on the test bike.

Like all these small trail bikes, the magneto ignition works direct once the ignition switch has been removed. The only problem with the Suzuki was that, since no kill switch is fitted, the engine had to be stopped by stalling or by closing the choke.

The number plates styled into the side panels proved useful. Unfortunately, Steve

wasn't entered as number 100, so we had to cover the panels with Fablon. Removing the Fablon afterwards also removed the '100' transfers. Oops.

Back to back

Scrambling at Thruxton was an ideal way of comparing the TS100ERN with the other two bikes we had previously raced there —



No problems when taking off — but keep your toes out of the way when landing.

the Yamaha DT100 and Honda XL100S. At the time of the race, the DT100 was still on our *Marathon* test fleet, so I entered it for a second back-to-back bashing.

The performance of the two bikes was virtually identical. Although the Suzuki needed slightly higher revs before it began to bite, it came out of most bends just as quickly.

Like the XL100S, the TS100ERN's suspension gave a softer ride than the DT100. But the front forks were too soft. They easily bottomed going fast over hillocks and bumps. This made the steering feel skewy, although it didn't actually veer off line. On its hardest setting, the rear suspension only bottomed after The Big Jump.

Generally, the bike was very light to handle and throw round corners. Letting the back slide was easy to hold as long as the engine was revved near maximum to keep the power coming.

The lack of ground clearance proved to be a major drawback. The engine cradle hit the ground often on the bumpy surface. Mud was lodged around the crankcase drain plug. In the TSERN range, only the 185 and 250 have sump guards.

ERN

SPEEDO

ind	true
20	20
30	31
40	39
50	50
60	—
70	—
80	—
90	—

Milometer

Accurate

MAXIMUM SPEEDS and SPEED RANGES

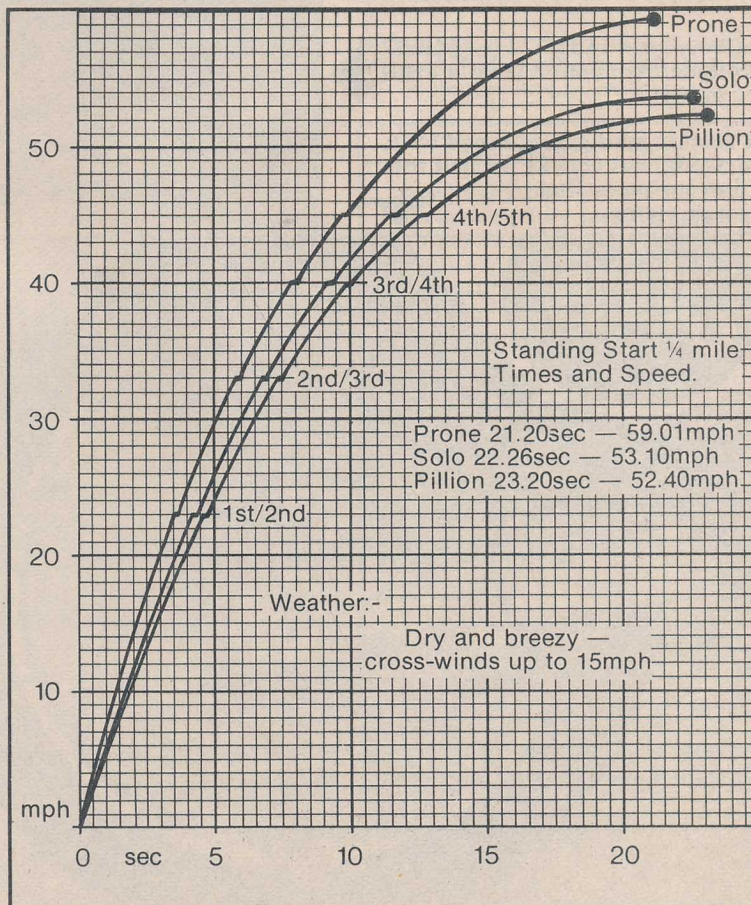
gear		mph max	mph min
1	solo	23.13	3.56
2	solo	33.79	6.06
3	solo	45.30	6.22
	solo	49.70	7.15
4	pillion	49.18	„
	prone	52.60	„
5	solo	53.25	10.80
	pillion	53.05	„
	prone	59.92	„

FLEXIBILITY IN TOP GEAR(sec)

mph	30-50	40-60	50-70	60-80	70-90	80-100
solo			Unattainable — see text			

Performance figures obtained at:-
Motor Industry Research Association Test Track
Nr. Atherstone, Works.

Test Riders: Neil Millen; Merril Boulton.



Low-slung fun

But the biggest problem was definitely the footrests. The rider often feels the footrest bar hitting the ground. Even without jumps, riding quickly over uneven ground is disconcerting. The footrests are constantly taking the tops off little mounds, which left me with the feeling that my feet were going to get caught and twisted at any moment.

Still in the running

For a supposedly dual-purpose bike, the

Suzuki's lack of ground clearance was bad. But it all depends on what you want. Even Sammy Miller described it as "One of the better bikes in its class".

If you want the bike for commuting you won't care about ground clearance. Suzuki claim that the TS100ERN's low seat height has made it a big hit with female riders, and I can't say that I like standing on my toes at traffic lights either. But do I want a trail bike that looks more like a low-rider when the springs sag under my weight?

Even if you would like to wander up the occasional green lane, you should hesitate before crossing the Suzuki off your list. On reasonably even ground, taken at modest speeds, there's just about enough clearance.

The 100cc category is one of the most competitive. There is only £75 separating

the cheapest from the most expensive bike in this class, so price probably won't affect your choice.

The DT is slightly faster than the TS and it uses less fuel. Honda's 100 is so far unknown because we haven't performance tested it. It is the heaviest in the groups, with the lowest claimed power output, although that didn't seem to hold it back when we raced one at Thruxton some time ago.

The Suzuki's suspension ranks about equal with the Honda for road comfort, but the Honda doesn't have the Suzuki's off-road limitations. The Suzuki and the Yamaha head the group for off-road steering and throttle response. The Kawasaki isn't so far behind at anything, but it doesn't excel at anything either.

Neil Millen

Technical specification

Engine

Type: Two-stroke, air cooled single. Piston and reed valve induction

Bore x stroke: 50.0 x 50.0mm (1.97 x 1.97in.)

Displacement: 98cc (6.0cu in.)

Compression ratio: 6.41:1

Claimed max power: 10.5bhp @ 8000rpm

Carburettor: Mikuni VM24SH

Lubrication: Autolube

Starting: Kick only

Transmission

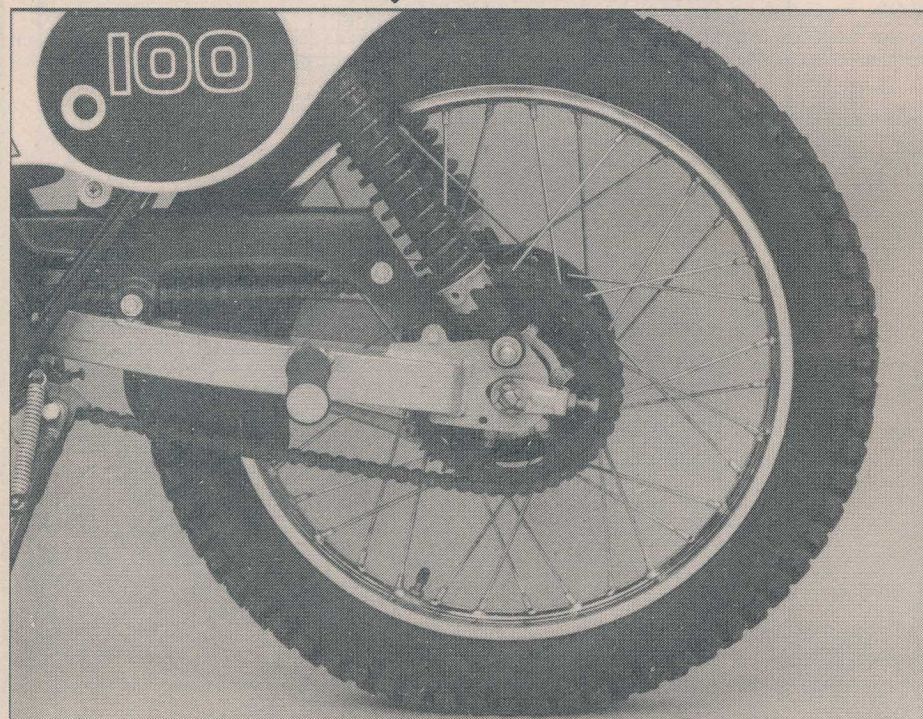
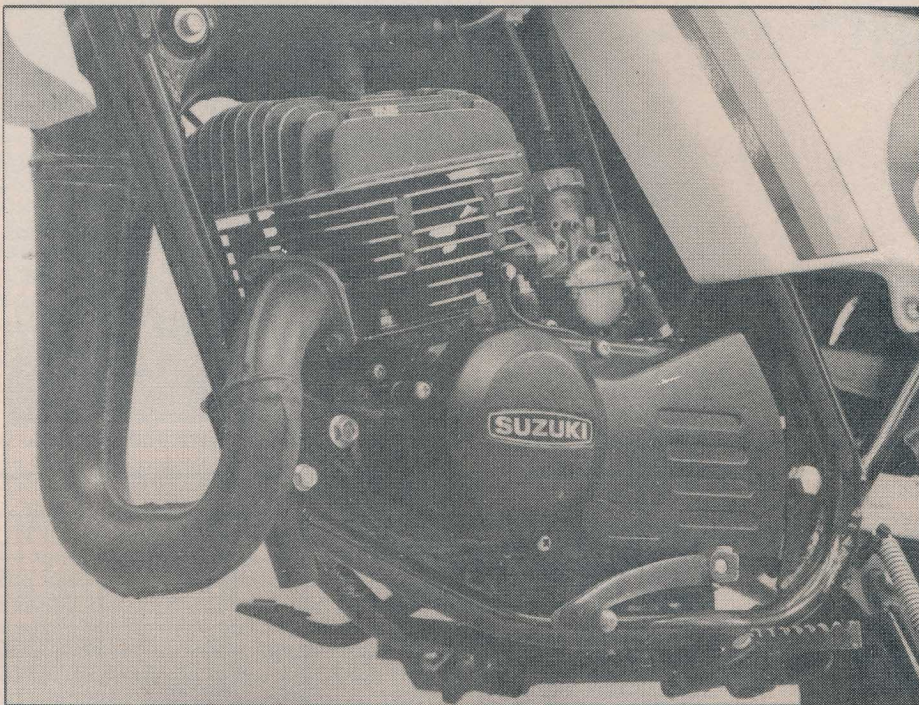
Clutch: Wet, multi-plate

Transmission: Five-speed, constant mesh

Overall ratios: 1st 34.58, 2nd 22.38, 3rd 15.31, 4th 12.25, 5th (top) 9.79:1

Good response and plenty of poke — no complaints about Suzuki's well-tried motor. ▶

Box section swing-arm coped with everything, but shocks needed their hardest spring setting for rough riding. ▼



Electrics

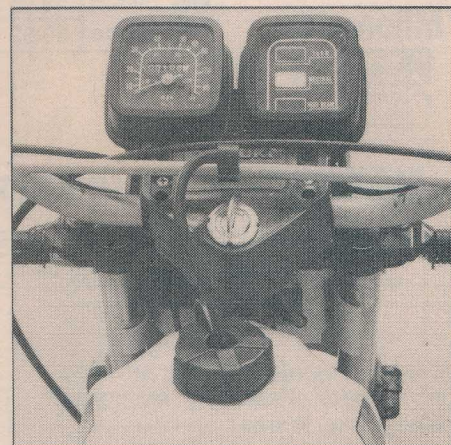
Ignition type: Flywheel magneto

Spark plug: NGK B8ES or Nippon Denso W24ES

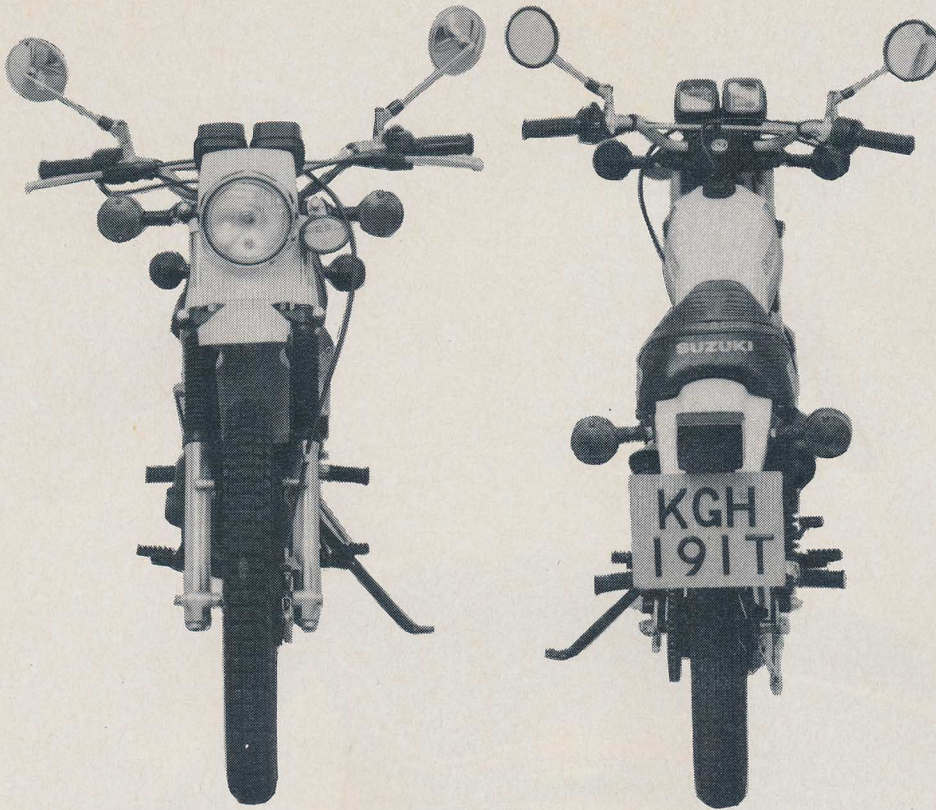
Battery: 6V, 4Ah

Fuse: 10A

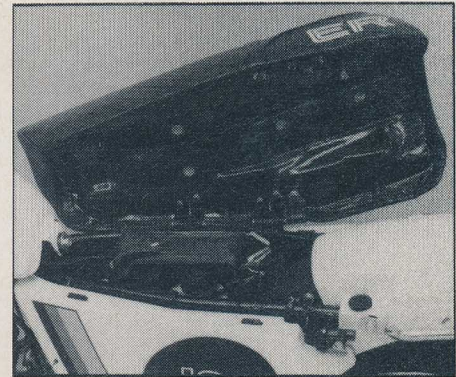
Headlight: 25/25W



Easy-to-read instruments but no trip meter. Screw-on fuel cap was a nuisance.



Trail Impressions

Locking seat protects tools in sensible tray and easy-to-fill oil tank.

Frame and Forks

Frame: Single downtube tubular cradle.
Front forks: Telescopic oil-damped
Rear suspension: Swinging arm controlled by hydraulically-damped springs with five adjustable pre-load settings

Wheels and Brakes

Wheels: Wire-spoked with steel rims
Front brake: Cable operated SLS drum
Rear brake: Rod operated SLS drum
Tyre sizes: Front 1.75 x 19in, rear 3.00 x 18in.

Dimensions

Length: 2060mm (81.1in)
Width: 800mm (31.5in)
Height: 1075mm (42.0in)
Seat height: 762mm (30.0in)
Wheelbase: 1325mm (52.2in)
Ground clearance: 206mm (8.1in)
Dry weight: 89kg (196lb)

Equipment

Side stand, steering and seat locks, two mirrors, indicators, toolkit, handbook, speedometer and mileometer.



Long-travel, leading-axle forks spoilt by a lack of damping. Braking is one of the bike's best features, with lots of feel at the front and a fully-floating rear unit.

STAR RATING

Our Star system gives a quick reference to the standard reached in both performance and engineering. The standard is:-
 * = Poor; ** = Below average; *** = Average; **** = Above average; ***** = Outstanding.

Performance	*****
Handling and Ride	*****
Servicing	****
Engine	****
Transmission	****
Frame and Forks	***
Wheels and Brakes	*****
Electrics	***
Dimensions	**
Equipment and Finish	****
OVERALL RATING	*****

COMPARISONS

	Speed prone	SS ¼ mile (prone)	Dry weight	Claimed bhp	mpg	Price inc.VAT
Suzuki TS100ERN	60mph	21.20sec/59mph	196lb	10.5 @ 8000	73	£527
Yamaha DT100	62mph	20.35sec/61mph	206lb	10.00 @ 7500	90	£540
Kawasaki KE100	60mph	21.56sec/54mph	201lb	11.0 @ 7500	75	£499
Honda XL100S	not tested	not tested	209lb	9.5 @ 9500	—	£574