

SUZUKI SP500

A Strong New Thumper With Motocross Traits That Are More Than Tank Deep

■ Time waits for no bike. A company introduces a model that appeals to a different segment of the market or out-performs the competition and the marque gains sales. Other companies see the model selling and in response build or update an existing motorcycle to compete. Then the originators fall behind and revise. The others do likewise, with first one brand and then another having the newest in class.

In this case the class is big-bore, four-



stroke, dual-purpose and the newest of the group is Suzuki's SP500.

The class is nearly 10 years old. Honda re-invented the full-size four-stroke Single with the XL250 in 1972. Yamaha reckoned bigger to be better and came out with the XT500 in 1975. Kawasaki stuck with the original displacement in the form of the KL250 and Suzuki got into the act in 1978 with the SP (for Street Practical) and off-road only DR (for Dirt Racer) 370s.

The 370s were good machines but never quite caught on. The styling was flat track, while motocross was the coming thing, and the unusual size, perhaps supposedly

more powerful than a 250 while not as intimidating as a 500, was interpreted as the reverse: not enough grunt for the 500 fanciers, yet larger than the 250 crowd had in mind. The 370 was enlarged into the 400 and the DR was restyled, but meanwhile Honda had arrived with the second generation XL250, backed up by the XL500.

Suzuki's reply is the SP500, and the bike is more than the label and the displacement alone would indicate.

The 500 engine—shared with the DR except that the SP is tuned for road legality—is all new. Nothing is shared with the 400 or 370 four-strokes. Like Honda's 500, the SP/DR has four valves per cylinder



SP500

der worked by a single overhead camshaft, but the Suzuki difference is that the combustion chamber uses the TSCC patents, swirling the incoming charge and improving power, according to Suzuki. And the engine has balancer shafts, again like Honda's except that Suzuki uses two shafts, one in front of the crank and one behind, while Honda's rear balancer is part of a transmission shaft. The two shafts are driven by a roller chain on the crank's left side and each shaft has a counterweight rotating in opposition to the crank throw, neutralizing what would otherwise be vibration. The crank itself spins in ball bearings and primary drive is helical-cut gear. Bore and stroke are 88 x 82 mm, and displacement is 498 cc. Ignition is CD and the carburetor is a 40mm CV Mikuni. A flywheel magneto powers the ignition and the six-volt electrical system of lights, turn signals, etc.

The frame is mild steel, with single tube backbone and downtube, branching into two tubes below and behind the engine and aft of the seat to the tops of the rear shocks. All conventional, as are the non-air forks, the two shocks with spring pre-load adjustment only and the steel swing arm painted so as to give perhaps the impression of being aluminum. There's a toolbox bolted to the rear of the frame and the fenders are plastic while the tank is steel. Plastic saves weight, although the paint impregnated in the fenders didn't quite

match the paint on the tank, which looked a bit odd.

But the weight, or more accurately the lack of weight, is more important. Four-strokes weigh more than two-strokes. The more displacement the more stress on other components. Even adding suspension travel adds pounds because the bike needs longer stanchion tubes and shock shafts.

The SP500 fits right in the middle of the class. By virtue of plastic body bits, the six-volt electrics and a small horn that barely meets the demands of city traffic, the SP500 tips the scales at 318 lb. with half a tank of gas.

Honda's XL500 in the same trim weighs 304 lb. and the Yamaha XT500, last time we looked, weighed 319 lb. There's more involved here than that. Honda uses a shared balancer shaft and has an open frame with stressed engine. Yamaha has no balancers and a full cradle frame. Each carries the 15 lb. penalty of lights, muffler and battery, so the Suzuki gives the plus of the balanced engine, compared to Yamaha's 500, at no weight penalty against the Yamaha while not doing as much trimming as Honda did.

In family, the SP500 has been moved in the direction of the dirt. The SP370 was lower, with a smaller, simpler engine and a shorter, lighter frame. In test trim the SP370 weighed 287 lb. Thus, the taller longer, larger and more powerful 500 picked up 30 lb.

About those dimensions. Suzuki and

Yamaha are using nearly the same measurements. While the SP370 had a 55.7-in. wheelbase and a steering head angle of 31°, a classic case of short and far out, the SP500 has a wheelbase of 57.5 in. and a steering head angle of 29.5°. The longer the wheelbase the more stable at speed, and the steeper the steering head the quicker the turning, all other factors being equal. Yamaha's 500 has a wheelbase of 55.9 in. and a steering head angle of 29.5°. There are other factors in the equation, for example Honda's XL500 has the shortest wheelbase, 55.1 in. and the steepest rake, 28.5°, but does not have the quick steering this would suggest.

Suzuki has taken advantage of the frame change to add other improvements, as in tapered roller bearings in the steering head. New forks incorporate low-friction bushings for less stiction over small bumps and provide increased travel as well (7.7 in. vs. 6.6 in.). The new rear shocks are relocated to deliver more wheel travel (7.7 in. vs. 5.0 in.). The rear brake is activated by a straight-pull cable just like on the RM motocrossers. The tires are semi-knobbies with a pattern similar to the one pioneered by Honda with the revamped XL250S three years ago, offering better traction off-road than traditional trials universal tires. And, the rear tire is a 4.60-18 vs. the 4.00-18 found on the SP400.

The gas tank is bigger by about half a gallon, but it's still small, narrow and short, holding just 2.4 gal. Ridden at close-to-legal speeds on pavement, the SP500 will travel 115 mi. before requiring reserve, delivering almost 59 mpg. But when ridden briskly, that is, accelerated hard away from stops and cruised at a little more than 55 mph, mileage drops to about 52 mpg and the tank must be refilled every 100 mi. or so.

For serious street use, the gas tank could be larger. But that narrow tank makes it easy for the rider to slide forward when riding in the dirt, once again showing the SP500's preference.

Nobody will ever mistake a four-stroke Single for a two-stroke motocrosser, because the weight never goes away. But in spite of being, by generic type, a heavy dirt bike, the SP handles well in the dirt. The forks are compliant over small bumps yet don't bottom except on the biggest holes. Spring and damping rates are perfect for semi-casual off-road riding, and in fact the shock spring rate is far closer to being right—and better matches the forks—than the spring rate used on the dirt-only DR500. The bike doesn't bottom hard or clank when landing from jumps, but rather soaks up the impact. It is easy to control upon landing, and doesn't veer or do other nasty things.

The suspension is not, however, perfect. If speed is pushed up on rough ground, the shocks fade and the back end of the motorcycle gets busy, jumping around. Still,



steering is amazingly precise, and the bike goes where it is pointed with no head of its own.

The brakes are responsive, predictable and progressive, and the tires grip relatively-hard-pack dirt very well for being designed for dual-purpose. They work better than traditional trials tires off road.

The relationship between the bars and pegs, and the positioning of the controls all show that Suzuki knows something about building dirt machines—everything fits.

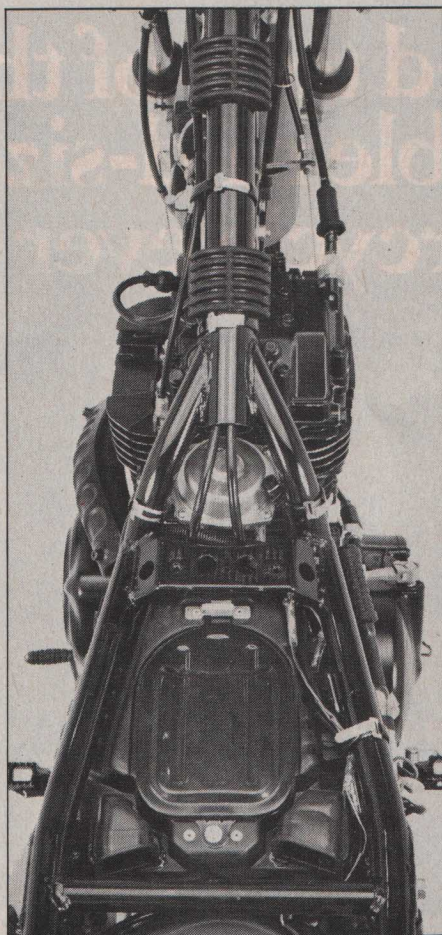
Suzuki also knows about road bikes, so the result of the SP's usefulness is as much in intent as in execution. That first SP worked best on the road, where its light weight and agility made up for the lack of suspension travel on the trail. The SP500 though, while stiff and tall, is still nimble in traffic and goes where pointed in the dirt, in contrast to the XL500, whose 23-in. front tire makes it slow and sometimes vague, and to the XT500, famous for going where it wants despite rider input. Balance is the key here. Somehow the designers took the engine, heavier and more complex than it needs to be, and put it in the right spot within the longer wheelbase, pulled the steering angle back to speed up reaction and lo, it worked so well the SP500 is the best steering dual-purpose bike of our memory.

Rationale for the complex engine appears on pavement. At the dragstrip, the Suzuki turned the quarter-mile in 14.86 sec. with a terminal speed of 85.22 mph, quicker and faster than the XL500S Honda's 15.02 sec. at 84.19 mph.

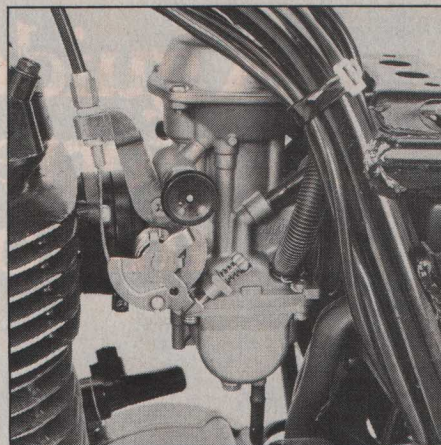
Those are not superbike times. But the SP500 is quick enough to leave traffic far behind and strong enough to cruise at maximum speed (about 85 mph sitting up, about 90 mph tucked in) for as long as the rider wishes. On the interstate at 60 mph, the SP turns about 4800 rpm with enough power on tap to pull uphill or pass trucks without hesitation or downshifts.

There is no point in the powerband where the engine comes alive and takes off. Instead, the power delivery is steady and even up to the 7500 rpm redline. The bike will chug along at low rpm, but prefers being kept above 3000 or better still, 4000 rpm. Below those engine speeds the power pulses are spaced far enough apart that power delivery is rough and unimpressive, the bike shuddering with each firing. Yes, this is a Single. Yes, big Singles have a reputation of being torquey. But in reality a multi will tolerate extremely low rpm better than a Single, and this Single is happier spinning than chugging, if one can call 4000 rpm "spinning."

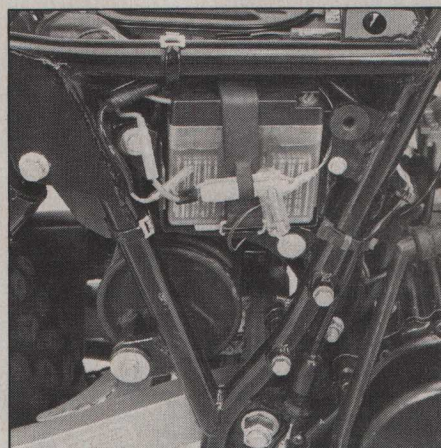
The SP is smooth for a Single, the dual counterbalancer shafts preventing excessive vibration from reaching the rider. But some shaking is noticeable, enough to fuzzle the mirror images and even to loosen the compression release handle and the side-stand bolt on our test bike. The Suzuki is smoother than the Yamaha XT500 and



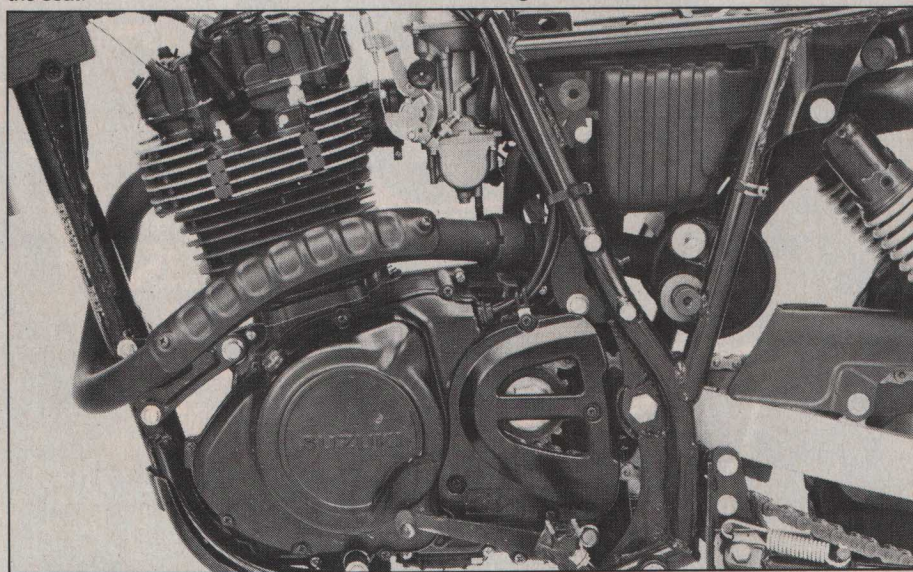
SP500 frame features a single, large backbone. Airbox intakes point rearward and are just below the seat.



40mm Mikuni CV carburetor delivers good cold-start performance, contributes to excellent mpg.



Tiny 6v battery is rated at 4ah. It powers the taillight to meet certain state vehicle codes.



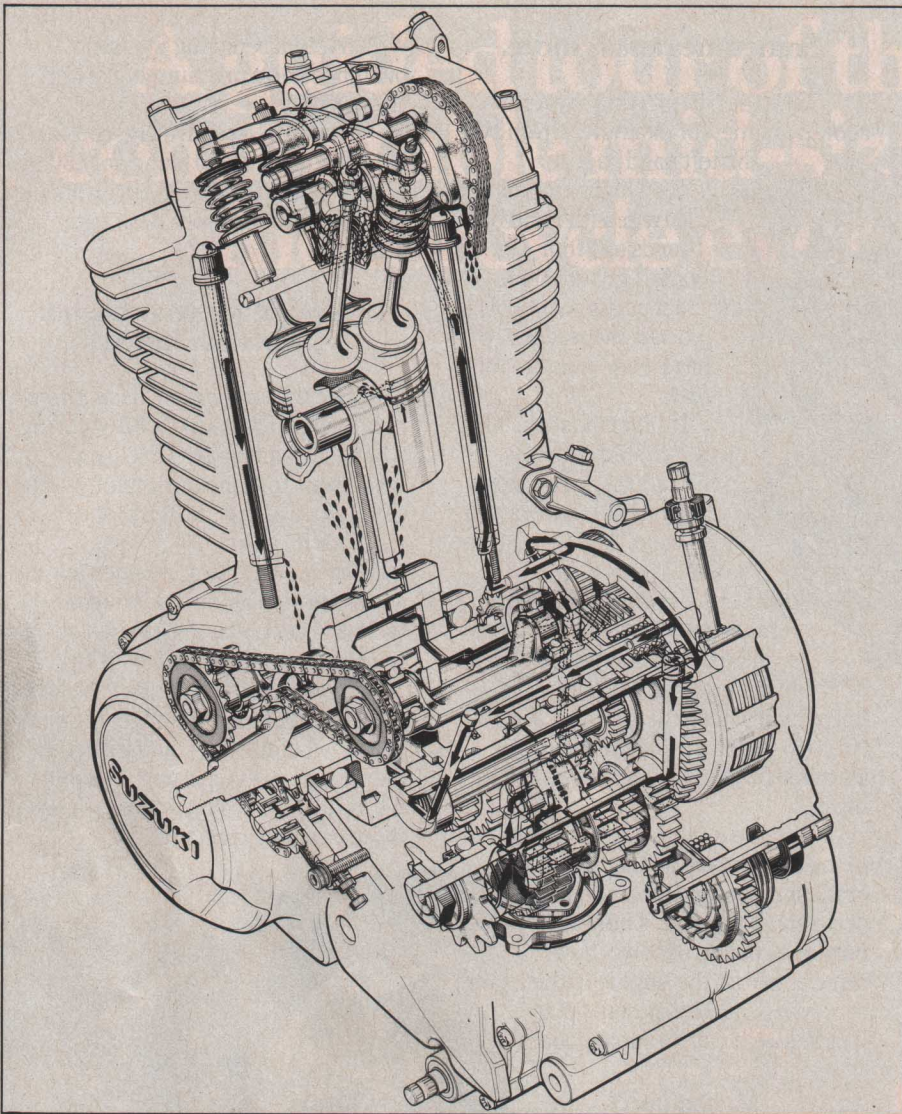
SP500 engine has TSCC head, twin balancer shafts. Countershaft cover is plastic.

SR500, which have no counterbalancers, and no rougher than the XL500. It is not as smooth as a CBX or a Four.

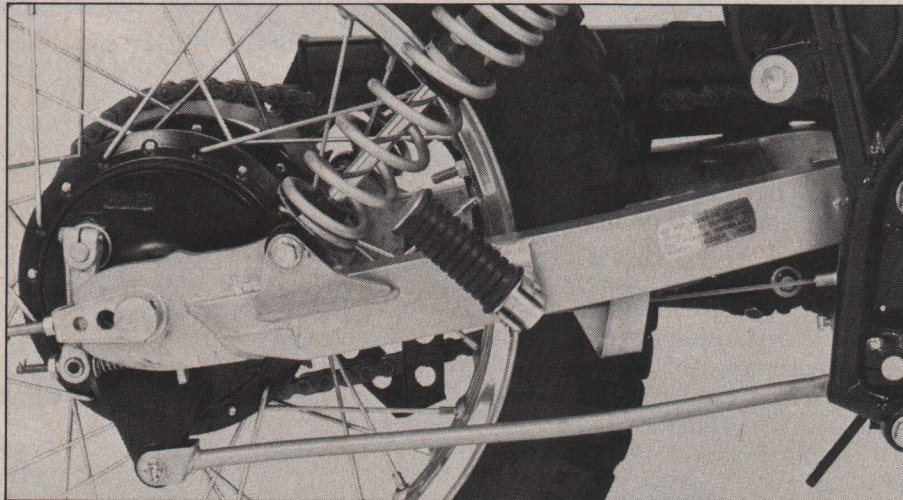
A more serious deterrent to street comfort is the SP's lack of reaction to street irregularities. Remember that suitable-for-dirt suspension? Small bumps off road are larger than small bumps on the road, and the suspension is too stiff for street riding comfort. And that nice, narrow seat

to match the slim gas tank, both allowing the dirt rider to slide forward at critical moments off road? Ride for more than 45 min. and you'll be ready to try sliding up on the tank, off the back of the seat, anywhere, because a good dirt seat is not a comfortable street seat. It is that old dual-purpose bugaboo, compromise.

The SP500 comes with a nifty starting aid. It has kick start only, of course and the >



This cutaway drawing shows oil flow in the engine as well as the location of moving parts.



Swing arm is box-section steel. Rear brake is operated by a straight-pull cable.

8.7:1 compression ratio is enough to make kicking over a 498cc Single something of a challenge. To start the SP500, the rider turns on the gas (un, yes, the petcock is manual in this day of heavier, more complex automatic petcocks) and ignition, sets the choke in one of two positions if the engine is cold, dials in a little throttle, and

pulls the compression release lever (which opens the exhaust valves). Then the rider slowly nudges the kick start lever until the compression release lever snaps back, signifying that the piston is just over TDC and the exhaust valves are closed. The rider then lets the kick start lever return, and drops his weight in a mighty kick. Fol-

lowing the routine, the SP often starts on the first kick. Disregarding the system—or trying to use the compression release the way they were used on Sixties British Singles—will leave the rider frustrated and worn out.

The SP's 318 lb. may make it a heavy dirt motorcycle, but that's outrageously light for a street machine. The bike's wide bars give the rider plenty of leverage on what isn't much weight to start with, and in response the SP changes direction quicker-than-instantly. Except for the bars, the SP is very narrow, making it easy to thread through traffic jams. The ability to fit through small spaces and to change direction at whim makes the SP ideal for splitting lanes where that's legal. For riders faced with long freeway commutes during rush hour, in fact, the SP500 has a lot to recommend it.

The limiting factors in the SP500's street performance are its tires. Maybe they stick better than traditional trails tires on hard dirt, and maybe they're supposed to stick better on pavement. But that doesn't mean that they work well on asphalt and concrete. How quickly the SP can stop—and it can't stop very quickly at all compared to even far heavier 750cc and 1000cc street machines—isn't limited by braking power, but rather tire adhesion. The rear tire locks instantly and the front makes its intentions clear long before maximum brake power is reached. They don't stick much at maximum lean angle in corners, either, and applying the power exiting a turn will start drifts at close-to-vertical lean angles.

Happily, the SP's dirt heritage comes through when the bike is crashed. Yes, we dropped it, once on a diesel oil slick so big it had cars traveling through the intersection sideways and backwards before we got the SP picked up, and again on anti-freeze tucked in a driveway bordered by parked cars. Both times the flexible turn signal stalks protected the lenses and bulb housings and the worst damage showed as minor scratches on the plastic front fender and on one rearview mirror.

The instruments are basic, being speedometer, odometer, tripmeter, tach and assorted idiot lights. The controls are straightforward and simple. But the headlight, being six-volt for previously-explained reasons, is better suited for attracting insects than for illuminating the road. Keep the speeds down or stay on well-lit highways and the SP will get you home after dark. Try to canyon-race at night and it could be trouble.

But canyon racers aren't the riders who'll appreciate the SP500. This is a dual-purpose machine with emphasis on the dirt side, meant for the off-road fan who can't afford a motorcycle for every specialty. With its easy maintenance, good steering, strong engine and bargain price of \$1899, the SP500 is the closest thing to a dirt bike you can ride on the street. ☐

SUZUKI SP500

SPECIFICATIONS

List price\$1899

Engine.....sohc Single

Bore x stroke88 x 82mm

Displacement.....498cc

Compression ratio.....8.7:1

Carburetion..... (1) 40mm
Mikuni CV

Air filter.....oiled foam

Ignition.....CDI

Claimed power.....na

Claimed torque.....na

Lubrication.....wet sump

Oil capacity.....1.7 qt.

Fuel capacity.....2.4 gal.

Starter.....primary kick

Electrical power.....magneto

Battery.....6v 4ah

Headlight......35/35w

Primary drive.....helical gear

Clutch.....multi-plate, wet

Final drive......520 chain

Gear ratios, overall: 1

5th.....6.06

4th.....7.33

3rd.....9.26

2nd.....11.92

1st.....17.72

Suspension:

Front.....telescopic fork
travel.....7.7 in.

Rear.....swing arm
travel.....7.7 in.

Tires:

Front.....3.00-21 IRC GP1

Rear.....4.60-18 IRC GP1

Brakes:

Front.....5.9-in. drum

Rear.....5.9-in. drum

Brake swept area .40.8 sq. in.

Brake loading (160-lb.
rider).....11.7 lb./sq. in.

Wheelbase.....57.5 in

Rake/Trail.....29.5° / 5.08 in.

Handlebar width......31 in.

Seat height......34 in.

Seat width......8.0 in.

Footpeg height......13 in.

Ground clearance......10.5 in.

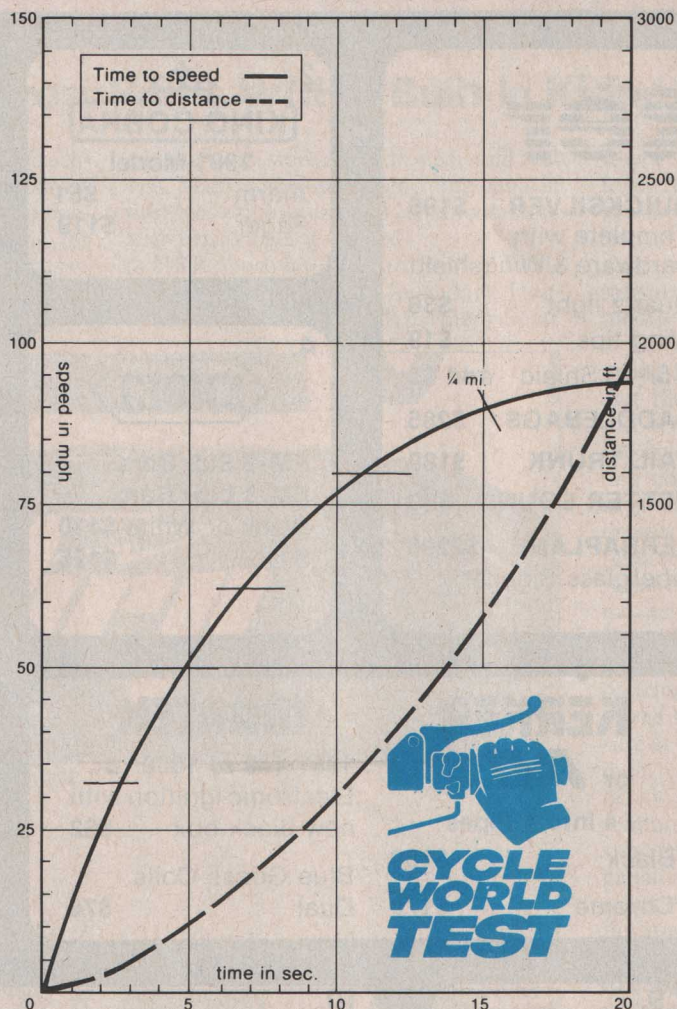
Test weight
(w/half-tank fuel) ..318 lb.

Weight bias, %
front/rear......45/55

GVWR......715 lb.

Load capacity......397 lb.

ACCELERATION



PERFORMANCE

Standing 1/4-mile.....14.86 sec.
@ 85.22 mph

Top speed in 1/2-mile...90 mph

Fuel consumption...58.9 mpg

Range (to reserve tank).....115 mi.

Acceleration:

0-30 mph.....2.2 sec.

0-40 mph.....3.3 sec.

0-50 mph.....4.7 sec.

0-60 mph.....6.6 sec.

0-70 mph.....8.9 sec.

0-80 mph.....11.5 sec.

0-90 mph.....17.1 sec.

Top gear acceleration:

40-60 mph.....6.6 sec.

60-80 mph.....10.8 sec.

Maximum speed in gears:

1st.....32 mph

2nd.....48 mph

3rd.....61 mph

4th.....78 mph

5th.....94 mph

Speedometer error:

30 mph indicated...31 mph

60 mph indicated...61 mph

Braking distance:

from 30 mph.....42 ft.

from 60 mph.....163 ft.

Engine speed
at 60 mph.....4787 rpm

