

MOTOR CYCLE MECHANICS

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Z-1000
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MIDDLE CLASS VALUES
Which is the best 400?





MIDDLE CLASS VALUES

Which is the best 400?

There are many reasons why bikes in the 400cc class are popular — and why they could become even more attractive in the future. Even now there's plenty of choice, as these six bikes clearly showed — and we restricted this test to the mainstream Japanese models, all costing close to £1000.

From Honda there is the CB400N. They also build a lazy rider's version with automatic transmission although that isn't included here. Kawasaki provided two totally different models, the three-cylinder two-stroke KH400 and the KZ400G four-stroke twin. This is a snazzier, custom version of the 400B — identical mechanically but slightly more expensive. Suzuki recently found some bigger pistons for their 400 and made it a 425 — the GS425EN to give it its full title. Continuing their famous two-stroke line, Yamaha have the RD400F, the latest, electronic ignition version of their lively twin and the more domestic XS400, four-stroke.

XS400, four-stroke.



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To most of us there is a clearly drawn line between big bikes and little bikes. Little bikes go up to 250 cc or so, come in odd sizes to fit into various taxation and insurance classes and are tinged with the learner limit. Big bikes start at 500 cc — even in olden days they were referred to as “seniors” — and get bigger.

In between there is a hazy twilight zone but it has never caused any problems for those who like their motorcycling orderly and well-defined. If you squint your eyes sufficiently, it disappears altogether.

But in other places there are financial and legal tricks that make engines of 350 to 400 cc well worth considering. The first bikes of this ilk which appeared in the UK (Honda's 450, Bridgestone's 350, Suzuki's 380) were said to be fliers. The people who bought them may or may not have remembered British 350s, which, with a couple of exceptions, were underguttered 500s. But the point is that the new bikes with funny-sized engines didn't have to go very fast. They weren't 500s, so therefore they were practically lightweight. And compared to lightweight, they went very well indeed.

Then there was Honda's 400 four which, in an age of bad-handling heavies, wrapped European lightness and suspension around the bland, urbane efficiency of a Japanese multi. Perhaps it wasn't deliberate, but the 400F seemed to encourage people to think 400 — in the same way that the apparition of the ZX seems to be encouraging people to buy CB900s.

However, there were still cries of woe and gnashing of teeth when Honda turned their four into a twin. (Ironically, a twin that has, to the collective editorial mind, already become a classic.) But the very thought of a twin brought back the mundane — and other people were doing it, too. Yamaha, Suzuki and Kawasaki all had virtually identical bikes. Even Kawasaki's triple looked detuned and dejected when compared to its fire-breathing ancestors.

They certainly weren't big bikes and learners couldn't ride them, so what were they? It was universally agreed that they must belong to that strange race called “commuters”. Thus, neatly pigeon-holed they could, thankfully, be forgotten. And forgotten was probably the best place for some of them. Honda's long-running 360 must have been one of the worst bikes they ever built. Its claimed successes in the US probably says more about Americans than it does about Honda.

The cleansing of exhaust smoke brought about gas flow changes which did nothing to enhance performance in general. But the 400s were persevered with; appearing with balancer shafts they grew six-speed gearboxes and trick exhausts and suddenly, they were giving quite respectable performance. The French even started racing them, although we're not sure whether that proves anything in particular.

That brings us to the latest generation of 400s — machines which have proved to have



The Honda Super Dream and an amazing 113mph top speed

enough performance and rideability to be considered a serious class in their own right. There's also an abundance of them. We tested six of the major contenders, and designed the test to push them to their extremes. One reason is that this was the only way we could see any real differences.

If you want one purely for the act of commuting, then, with the exception of the two-strokes, the choice may as well be a personal one rather than one based on the design features of the bikes. Individual preferences in styling, riding position and your relationship with local dealers will be of more significance. You'd be better off basing your choice on these considerations instead of small differences in speed, handling or power.

But if you enjoy riding the bike as well as using it for transport, the 400s have enough variety to suit most tastes. The six bikes were used for commuting, for long road

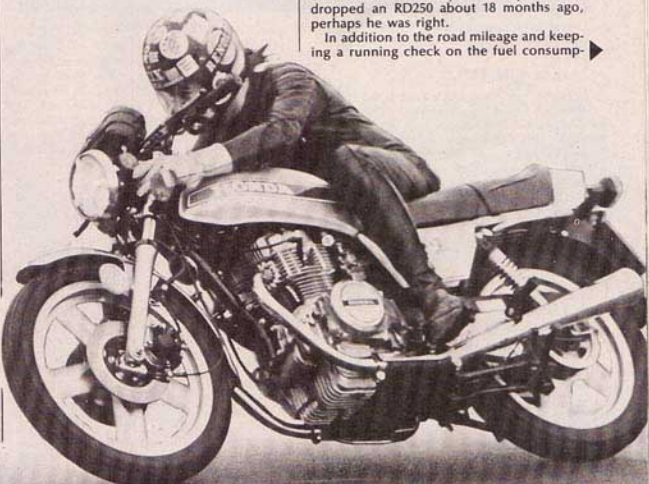
runs and for general belts around the countryside. They were run in a group and individually. They were tested flat out and ridden gently to get maximum economy.

There was no clear victor, not in a general, overall sense. The Honda was the best handling and got it all together in the best way, but it was let down by the lack of comfort and range. The Suzuki and XS Yamaha gave the best economy but couldn't match the power of the RD. The KZ400 made a very good bike for all-round, everyday work but didn't do so well in any of the tests. The ageing triple emerged as a clear loser.

Afterwards, when the riders were asked which bike they liked best, the question was invariably countered with “Do you mean if I had to buy one?” or “Well, if it was for touring...”

One rider insisted, repeatedly, “I kept on thinking they were 250s...” and as he fell off the RD400 in exactly the same place as he dropped an RD250 about 18 months ago, perhaps he was right.

In addition to the road mileage and keeping a running check on the fuel consump-



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tion, we took specific performance measurements to see how the bikes fared against one another. They were all run on the dynamometer and checked for top speed and for acceleration over the standing quarter-mile. In an attempt to get a straight comparison of the way the bikes handled and generally got it all together, we put them through two track tests. Each bike was ridden by six riders on the club circuits at Cadwell Park and Snetterton. The riders' comments and their lap times on the two very different circuits told a lot about the behaviour of the bikes ranging from how stable and safe they were when ridden hard to how well the brakes and suspension



Kawasaki's triple felt slow — but it's cheap and different



coped and how well the machines were geared for best performance.

Honda CB400N

Attractive styling and a superb riding position set this bike off immediately; it feels good to ride and everything, including the rider, clicks neatly into place. Initially, the engine seems very mild; it will pull down to low rpm and gradually builds its power up over a very wide rev range. Consequently the rate at which power increases is not great and gives the impression that not much is happening. This led one of the riders to describe it as "the dark horse" of the bunch; partly because the motor gives considerably more power than all the others except the RD Yamaha. The other part of the reason is that its handling, braking and suspension blend perfectly with the performance — again, it's not until you've got used to the bike and had the chance to use it really hard that this becomes apparent.

Despite the good riding position, there was one recurring criticism of the Honda — its hard seat! Covering 1800 miles during the test, mainly in the hands of four of our riders, all (plus one passenger) complained bitterly of aches, pains and cramp attributed

directly to the seat. It seemed like any journey over 50 miles required a rest break.

The only other point which attracted any criticism was the limited range given by the tank — often not much more than 100 miles. The Honda actually has the same tank size as most of the other machines but its fuel consumption was usually heavier than the other four-strokes and it appeared to have a larger reserve tank — cutting down the effective range on main tank.

With a slim riding position and a footrest to handlebar relationship which gives a fair amount of forward lean, the CB was good for main road cruising and even riding into a strong headwind didn't become too much of a strain. It was also a good riding position for carrying a passenger and our pillion rider also appreciated the slight bump at the back of the seat which gave reassuring support. It wouldn't have been a surprise to find the Honda was heavier to steer around slow traffic or that it put more strain on the wrists when it was moving slowly, but it was as light to handle at low speeds as any of the other, more upright, bikes.

The suspension prompted one rider to liken it to "an iron hand in a velvet glove" — soft over slight irregularities, the suspen-



sion felt under complete control from the damping." It was probably this ability to take big bumps and little bumps through the full range from low to high speed which made the Honda such an easy and forgiving bike to handle. The frame, again combined with the riding position, gives a taut feel, rapid steering response and the suspension keeps the wheels on the ground without moving the bike around. As far as the rider is concerned, the result is a very steady, stable ride with plenty of informative (rather than frightening) feedback.

During the track tests it was obvious that the Honda was one of the quickest bikes, yet it could be braked later than the others and its handling allowed it to go through the turns that much faster. The brakes didn't have the instant bite of, say, as the RD Yamaha but the power was there, all the same. It made the CB a very forgiving bike which could be pushed harder and harder and still wouldn't fight back.

Translated into road use, it would give the rider that much more time to avoid a sudden hazard and would be better-behaved over surface changes.

It is just a bit more expensive than the others and we're inclined to think that it's worth it.



The Z400 Custom was a good all-rounder, with style



Kawasaki KZ400G

The four-stroke twin's biggest problem was that it wasn't outstanding at any of the measurable parts of the test. This was aggravated by some minor engine fault on the particular bike involved. It was probably piston or ring damage and we first noticed it when the bike seemed a bit flat at the top end and needed more throttle than we expected to hold 70 mph cruising. The dyno test showed it to be some 5 bhp down on the 400B which we tested a year ago. A further check suggested that one cylinder was losing compression and so the bike

wasn't put through the rest of the performance tests — the figures in the tables apply to the results we got on the 400B.

This engine is identical to the 400G and has been around long enough to prove its worth — as far as we know the bike has a good name for reliability and we believe that this was just an unfortunate, one-off problem.

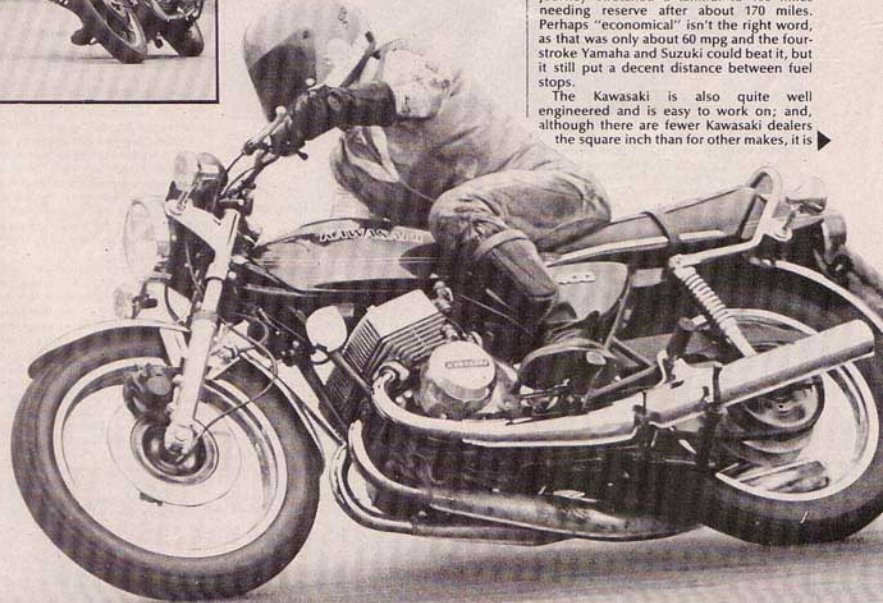
The G-model is a custom version of the 400B and all the changes are visible on the outside, such as the wheels and the paint job. It is beaten by one or more of the other 400s in any given aspect, such as fuel consumption. But it does combine all of these aspects to make a very pleasant bike to ride. When asked to choose the best bike of the bunch, most of our riders dithered over the RD Yamaha or the Honda, but two or three then reflected on what they'd look for in an everyday bike and then decided that the Kawasaki would be well worth considering.

The handling was good; the brakes powerful — and with more feel than most of the others — the suspension gave a good ride which didn't break into weaves when the bike was ridden fast or taken through bumpy curves, and, just as important, the KZ was comfortable for a day-long ride.

With slick and light controls the Kawasaki was effortless in town traffic as well as comfortable at high, open-road speeds. Of all the bikes it was possibly the least tiring to ride — and that is worth a lot to anyone intending to do a fair number of long journeys.

It could also be economical — our first journey stretched a tankful to 190 miles needing reserve after about 170 miles. Perhaps "economical" isn't the right word, as that was only about 60 mpg and the four-stroke Yamaha and Suzuki could beat it, but it still put a decent distance between fuel stops.

The Kawasaki is also quite well engineered and is easy to work on; and, although there are fewer Kawasaki dealers the square inch than for other makes, it is



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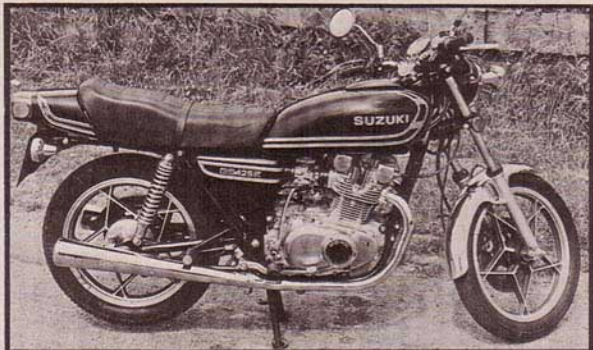
usually easier to get hold of Kawasaki parts. The Z400 is not outstanding and not exciting. It is probably best summed up as a very practical machine.

Kawasaki KH400

The three cylinder two-stroke has passed its prime — far from the racer-like potential suggested by the engine layout it was consistently among the slowest of the bikes. It also accumulated the least road mileage of any of the bikes.

Most of the enthusiasm was killed by the fuel range — about 70 miles on the average tankful with another 15 or 20 in reserve.

The engine itself was quite flexible and nothing like the "demon power plant"



Suzuki's GS425E felt like a much bigger bike



expected by one of our riders. It was smooth enough until it got to high revs but bad vibration set in above 6000 — a problem that goes right back to the first of the H1 models.

The steering was heavy-ish, disguised slightly by the fairly wide but low bars and the handling, in general, had a reassuringly firm feel. In fast bends though, there was a trace of weaving — presumably a family heirloom which has faded with the taming of the triple but hasn't vanished altogether.

One rider compared it directly with the RD — as the only other two-stroke and also because he rode one immediately after the other. The KH felt much slower both in speed and in steering and he found he was having to set the bike up for corners much earlier than he did on the RD. Grounding the exhausts on the right side caused one or two problems — it happened suddenly and tended to lift the back wheel; a couple of riders reported slides because of this.

The brakes were poor. The front disc needed very high lever pressure before it would work and the hard, almost solid, feel gave no feedback.

Its five-speed gearbox didn't seem to be a set-back — in fact it made the bike easier to

ride and the good mid-range torque of the motor let it power away from low speeds quite happily.

The only good things we could find to say about the triple are that it is considerably cheaper than all the others and that, despite its age, it is still "different".

Suzuki GS425EN

First impressions on this twin were certainly misleading. Most of our riders didn't like it, mainly, it seemed, because of the bike's layout. The riding position, in particular the handlebars, felt "strange". The seat and the suspension, and the steering for that matter, seemed spongy and sluggish. But as the test wore on, everyone agreed that the bike got better and better. It also proved to have a surprising turn of speed; at the Cadwell circuit where flexibility and rider confidence probably count for more than anything else, the Suzuki did surprisingly well. Taking its average performance for all the riders, it proved better than the Honda. Once we had got used to the riding position, it turned out to have a good compromise between low-speed control and high-speed cruising.

The engine suffered vibration, despite the

balancer weights (or, one rider maintains, because of them) although this smoothed out at higher revs.

One of the Suzuki's best attributes was its fuel consumption; the only other bike to get near it was the XS Yamaha and that lost out in practice because it had a smaller tank size.

Both of its Japanese Dunlop tyres showed quite a lot of wear, in the centres and the edges of the tread; some of the other machines were also making a bit of a mess of their tyres and this led us to wonder if the S-rated covers (105 mph) were up to the job. The speed rating is sufficient but we felt that larger section tyres might make an improvement in power transmission, handling and wear.

Overall, the Suzuki makes a pleasant bike; there's nothing outstanding about it but at the same time it has very few faults.

Yamaha RD 400E

One of the favourites with some of the riders but less popular with others, the two-stroke's biggest attraction is its power. It's got more mid-range torque and good horsepower at the top end, combining to give impressive acceleration and speeds. To offset this, its fuel consumption was invariably worse than the four-strokes. It certainly stood out as the non-conformist, the rebel of the group and it's likely that this is part of its attraction.

One good refinement, which the RD shares with the XS, is the self-cancelling indicators — otherwise the trimmings on the kick-start machine are sparse.

The RD came in for some criticism from all the riders, mainly because of its very upright riding position which seems to contradict its sporty image. Riding into a headwind along a motorway, one rider found that 60 mph was as fast as he wanted to go in comfort, although the bike was willing to hold a higher speed. The raised bars also balked fast cornering because of the bolt-upright riding position.

In town there was no problem and the Yamaha was surprisingly tractable, dawdling around quite happily at low revs. To get what our rider called "spirited acceleration" it was necessary to go down a couple of gears and he added that the gearshift could



The RD400 is a born rebel — but exciting to ride



be harsh. What seemed, at first, to be a comfortable seat, was not so good after 50 miles, possibly because the riding position puts so much weight straight through the rider's backside.

Braking was one point where our riders disagreed. The RD has an extremely powerful front brake — no argument there — but it is very light and some of the riders thought it lacked feel. Combined with that, they reckoned there was a bad balance between front and rear brakes, and that it

was too easy to lock up the rear wheel. At the other extreme, one rider said that the RD's brakes were the best of the lot.

Several slides were reported during the handling tests and seemed to highlight the inadequacy of the skinny tyres. The uneven, scalloped wear marks extended over the edge of the tread pattern, showing where the rear tyre had been fighting for grip — and not always successfully.

One rider also commented that the rear suspension seemed to deteriorate towards the end of the test, causing a noticeable difference in the bike's handling.

With more torque than any of the other bikes and equal tops with the Honda on horsepower, the RD still manages to feel like a very quick 250. The specification shows it to be a bored and stroked version of the RD 250 — even the carb sizes are the same. This seemed to cause most of the Yamaha's problems; it really needs tyres and suspension tailored to the more powerful engine. One source of irritation on earlier models — the critical ignition timing and associated piston failures — should have been cured by the electronic ignition.

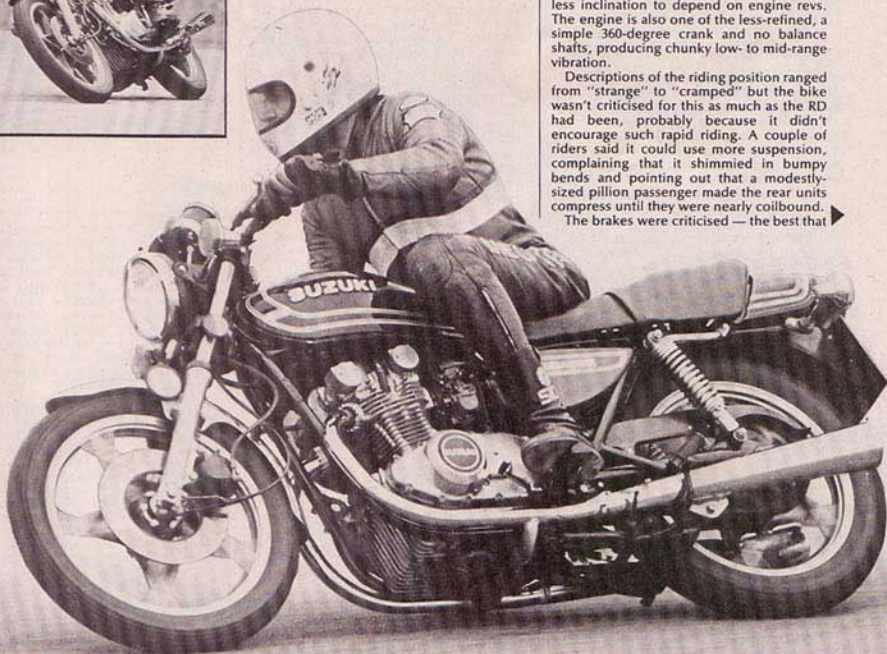
As it stands the 400E is a good bike to ride — with some attention to the chassis and riding position it could be extremely good.

Yamaha XS400

A little mundane compared to the RD, the four-stroke Yamaha felt the smallest of all the 400s. It shows a traditional sort of approach with good, low-speed torque and less inclination to depend on engine revs. The engine is also one of the less-refined, a simple 360-degree crank and no balance shafts, producing chunky low- to mid-range vibration.

Descriptions of the riding position ranged from "strange" to "cramped" but the bike wasn't criticised for this as much as the RD had been, probably because it didn't encourage such rapid riding. A couple of riders said it could use more suspension, complaining that it shimmied in bumpy bends and pointing out that a modestly-sized pillion passenger made the rear units compress until they were nearly coilbound.

The brakes were criticised — the best that



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could be said for them was that they needed a lot of lever pressure to provide moderate performance.

Hard riding was also restricted by the exhaust grounding and this had caused a couple of minor slides. All the bikes grounded, some more easily than others, but in most cases it was a folding footrest or something which touched down gently enough to give plenty of warning before it dug in.

These points — with the exception of the brakes — didn't seem so important on the Yamaha because, of all the bikes, it had the least sporty pretensions and came over as a steady, ride-to-work mount. In this context, its best point was even more important and that was fuel consumption. The XS usually came out on top in this category — in fact the Suzuki was the only bike which gave it any competition. It didn't even realise the full benefits of this, though, as its 2.4 gallon tank restricted its useful range and some of the other machines would often go further on a tankful.

Performance tests

1.917-mi Snetterton circuit

best lap speeds (mph)	lap speeds (mph)
	average of all riders
CB 76.3	CB 71.5
RD 74.7	RD 70.5
GS 74.6	GS 69.9
XH 74.2	XS 69.0
KH 72.9	KH 68.6
KZ 72.0	KZ 68.0

The longer straights and simpler corners at this circuit allowed the more powerful machines to show up. It's interesting that the individual speeds put the bikes in the same order as when the speeds were averaged out over all six riders, suggesting that machine performance was having a greater effect than rider ability.

The Honda enjoyed a double benefit here, its powerful engine giving it an advantage on the straights, while its faultless braking and handling made it that much easier in the corners. Both Yamahas suffered from awkward riding positions rather than poor handling. The good all-round abilities of the Suzuki let it keep right up with the more powerful RD Yamaha. Kawasaki's handling couldn't make up for the lack of engine power and the poor front brake on the KH caused it a few problems.

1.3-mi Cadwell Park circuit

best lap speeds (mph)	lap speeds (mph)
	average of all riders
CB 61.3	RD 56.5
RD 60.7	GS 56.3
GS 60.5	CB 55.8
XS 58.7	XS 55.3
KH 58.3	KH 54.3
KZ 58.0	KZ 53.4

The tight, club circuit with its narrow track, twisting turns, hills and blind bends demands a lot more from bikes. They not only need good handling and braking but they have to be forgiving and respond well



Inseparable twins? Yamaha XS leads Kawasaki Z.

enough to give the rider confidence in them.

Taken as a group, the riders found that the RD's light and very powerful front brake gave it an edge, along with the two-stroke's strong pulling power. Having slowed after making a mistake or choosing the wrong gear had less effect than on the other bikes because the RD would pull away as happily as ever. The same flexibility of the GS Suzuki made it an equally easy bike to ride.

The Honda was able to put in the best times but not all of the riders were aware of its very forgiving nature; three of them were able to go better on it than they had on the Yamaha, giving it the individual best performance. The remainder were happier to use the Yamaha's power in preference to the Honda's handling.

Sudden grounding, causing the odd slides, made people a bit wary of the XS Yamaha and its brakes left a lot to be desired. The KH Kawasaki suffered the same problems, its front brake lacking power and feel. The four-stroke Kawasaki was down on power, struggling on the hills and only making up ground where its good handling could be used.

Top speed and acceleration	
max speed (mph)	standing start 1/4-mile et (sec) terminal (mph)
CB 114	RD 13.7 95
RD & GS 108	CB 13.7 94
—	XS 14.2 91
XS 107	GS 14.5 90
KH 102	KH 14.5 89
KZ 101*	KZ n/a

These straight-line performance figures were taken at MIRA, with the benefit of a medium-sized tail wind. Running into the wind made all the bikes lose some 10mph. The Honda put in a surprising performance — which wasn't just a fluke reading as it went through the trap three times, all above 112mph. Its power curve shows why it is easy to get top speed and why it can take advantage of favourable conditions — the horse-power makes a flat peak which doesn't tail off even when the motor runs into the red. The RD Yamaha, although giving the same power, drops off fairly abruptly once it has peaked.

One surprise was that the XS Yamaha was



never far behind — suggested that its engine is delivering the goods but that the bike was hampered by braking, handling and its riding position in the other tests.

The acceleration times were all fairly close, the figures quoted being the best times and speeds which the bikes reached out of half a dozen attempts. These results reflect exactly the readings we got on the dynamometer, even to the RD's torque advantage over the Honda and the XS Yamaha's single horsepower more than the GS Suzuki.

*We made the top speed runs after we had discovered that the KZ400 was some 5 bhp down on the last model we tested and that it appeared to have lost some compression on its left cylinder. Consequently there was no point in including it in this test. The top speed quoted is from our test of the Z400B but as the 400G is geared to pull 103 mph at its rev limit and as all the other bikes were reaching the red-line in top gear, one could assume that the KZ, in good condition, would have pulled 103 or a shade more.

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