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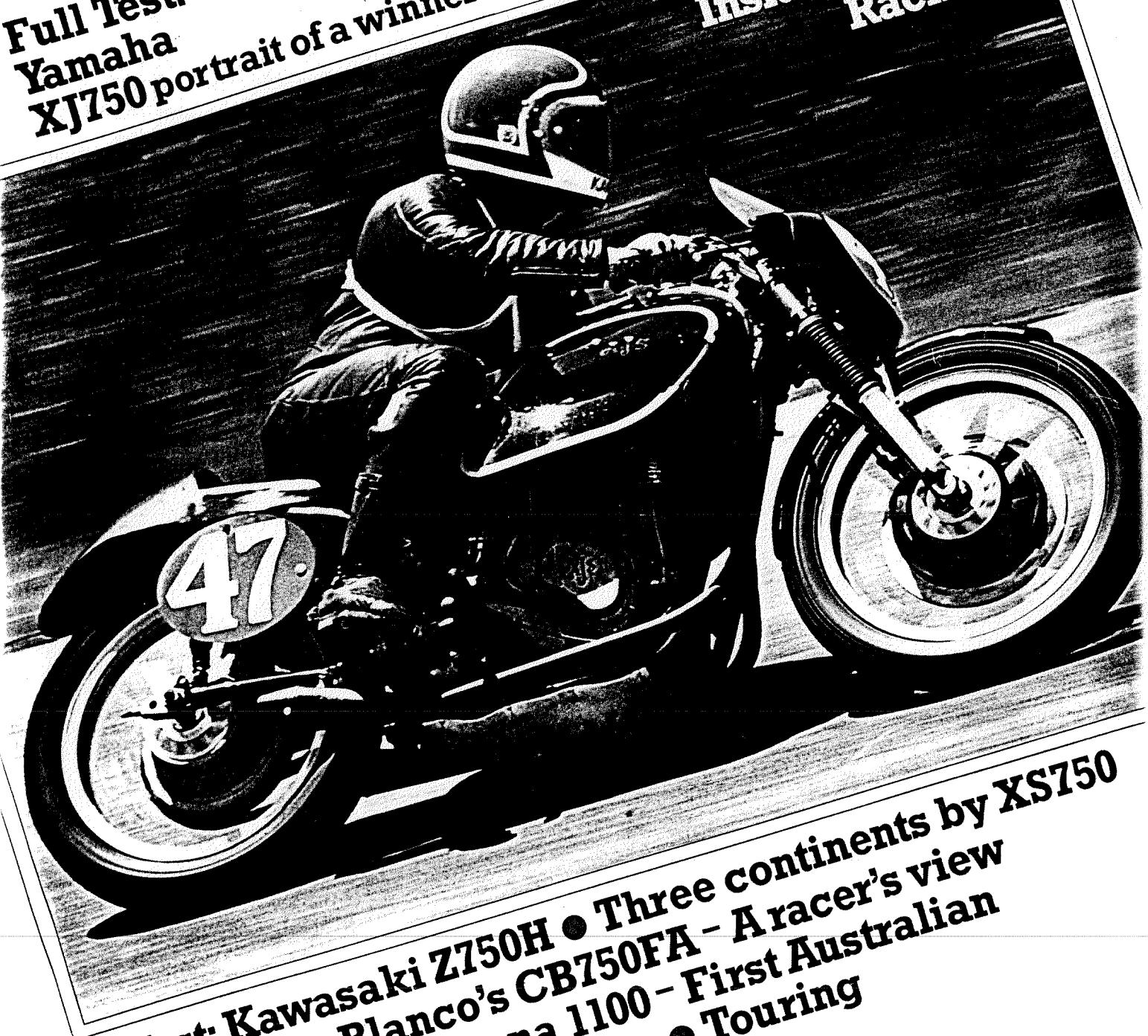
OCTOBER, 1981

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TWOWHEELS

Full Test:
Yamaha
XJ750 portrait of a winner

Inside Classic
Racing



Test: Kawasaki Z750H • Three continents by XS750
Alan Blanco's CB750FA - A racer's view
Suzuki Katana 1100 - First Australian
impressions • Touring
for beginners

Yamaha XJ750RH

The Techno-bike surfaces



Yamaha has often demonstrated a willingness to partake of the odd stab in the dark (in terms of design and styling of course, no unsavoury pun intended) and in doing so has tailored some of the road machines to suit small but deserving market sectors. Pleasantly enough, these market sectors have often turned out to be larger than expected. The SR250 special is an appropriate illustration. Its popularity has demonstrated that quite a few Australians do like small bore choppers with Japanese tank badges. Some other recent additions to the Yamaha fleet serve to amplify this conclusion. Many people now have special places in their garages for big in-line V-twins that aren't stamped "made in USA" or "Italy".

While the company with the tuning fork logo may show a tendency to be more daring than most, in the case of the 750 it was more a matter of necessity than choice. Kawasaki, Honda and Suzuki had established a niche for their very capable 750s, so to chop in another contender of similar ilk probably would have been enough to banish the new pretender into obscurity — unless it proved to be remarkably superior in many respects. Yamaha must have realised the folly of bringing out an ordinary 750, so they've hit us with something quite different. Not just a bigger XJ650, but a new machine with some innovative features which could be showing us motorcycling in the 80s. There is a possibility Yamaha may be using the XJ750 as a testbed to gauge market acceptance of its new gadgetry. If this is the case we think they've picked a commendable vehicle for that exercise.

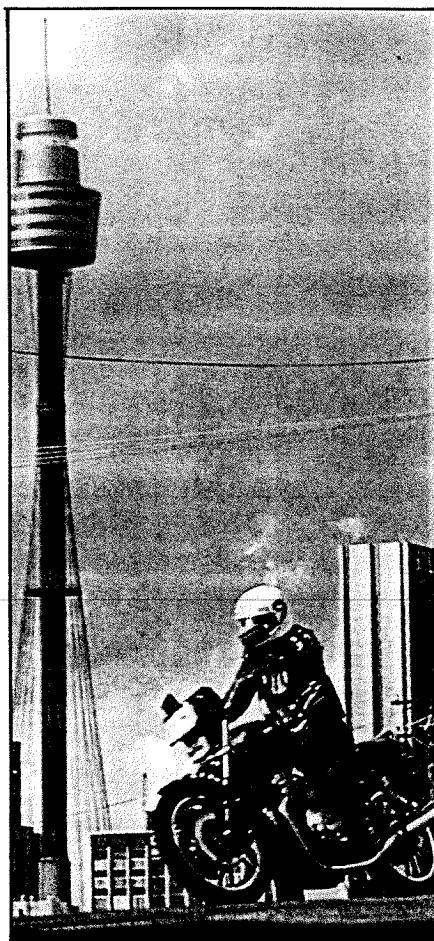
The bike

You will remember your first encounter with an XJ750. Whether your heart missed a beat or your stomach suddenly reminded you of a hard night with vast excesses of brain corroding liquid refreshments, the reaction was sure to be a pretty strong one either way. You appreciated the styling a lot or disliked it intensely. Whatever happened, one conclusion is inescapable. The XJ is one eyecatching motorcycle, without the brashness of a Katana. We found our initial less-than-favourable impression mellowed with time, and we developed a fondness for the neatly scalloped tank, the wrap around taillight and the smooth lines of the bike. It is pretty and finish is superb.

One blot on the styling copybook remained — the handlebars. The rubber mounted fully enclosed item looked odd, and produced an unusual riding position. Footpegs are set low and rearwards a-la-sportster but the rider finds the upper half of the body has to adopt a contrary upright posture. A few

testers also complained of wrist ache after long trips, due to an excessive inward twist on the handlebars. Ah well, it's not a major expense to replace the offending devices if they don't suit. The XJs we did see with flatter bars fitted looked like more purposeful sportsters — and that's what they're all about.

For flat-out blasting stints the Yamaha's pluses far outweigh the minuses — very pleasant in windies territory. On the positive side the dry weight of 218 kg lies well under midway between the nimble Kawasaki Z750L (212 kg) and the heaviest of the four cylinder 750s, the Suzuki GSX750 (236 kg) — in spite of the XJ's shaftdrive penalty. In addition the motor is narrowest of them all, due to the alternator being positioned behind the cylinders rather than on the end of the crank-shaft, and is very responsive, flexible and to all intents and purposes just as powerful. On the negative side there is a slight lack of cornering clearance and a few minor handling quirks (see handling section). As a tourer there is more to criticise. Rear shocks don't soak up road irregularities very well (the XJ is worse than the Z in this regard) and high speed, long distance riding tends to be tiresome due to excess wind buffeting incurred through the upright riding stance.



So why all the fuss over Yamaha's new 750? The features which set the XJ apart from the crowd come in three forms: the computerised instrument console, antidiive forks, and Yamaha's induction control system (YICS). Ideally, all these additions to a road machine should be of unquestionable worth, but as it turned out the YICS impressed, the antidiive forks didn't and the computerised monitor system (CMS) was the subject of some debate. (For detailed descriptions of the YICS, antidiive and CMS see the article following this one.)

We couldn't decide whether the CMS was gimmicky for its own sake, or useful gimmickry. For safety reasons alone it's certainly handy to know whether the sidestand has been left down, or brake fluid is low, or the tail or brake light have ceased to function. Warnings for low oil level and insufficient battery electrolyte are also worthwhile. When taken to extreme, however, this type of system could encourage overdependence on warning displays to the detriment of the quick and infallible visual check. Still, the flashing lights and LCD displays certainly impress party guests.

Whatever your opinion, if you're still motorcycling in the late eighties then chances are the bike you're sitting on (or maybe in) will sport one of them flashy gadgets.

The computerised monitor system did have one annoying feature — the low fuel level warning. As the last of the four dots on the LCD display disappeared (usually quite a few km before reserve) the fuel LCD would come on together with the flashing warning light. Pushing the warning control button twice would extinguish the distracting warning light.

The trouble arose during stop start round town riding. When fuel sloshed forward under braking, the sensor would detect the presence of fuel and the LCD would go off. On acceleration, the petrol level at the sensor would drop and the fuel LCD would go on again, together with the flashing warning light. So again it would be necessary to press the warning light control button and so on and so on ... until after a few kilometres of flashing and prodding it was impossible to continue without filling up. The XJ just didn't politely suggest some fuel would be in order, it absolutely insisted! At least only the stoutest among us would ever run out of fuel on an XJ750.

Engine

Undoubtedly the XJ has the neatest, most compact motor in the 750 class. Apart from the addition of YICS, it's basically a bored and stroked 650 mill. Bore has been increased by 2 mm to 65 mm and stroke has been pushed up 4

mm to 56.4 mm, so essentially the new motor retains the oversquare configuration that has become very fashionable these days. Plain, slipper-type main and big end bearings are used, while the camshaft is driven by an automatically tensioned roller chain. The two valves per cylinder have inverted bucket cam followers and shim adjustments. Wet sump lubrication by trochoid pump with an oil cooler ensures the motor gets enough oil at not too high a temperature. Fuel is metered by a bank of 32 mm constant vacuum Hitachis while spark is controlled by a maintenance free transistorised control unit.

We didn't obtain the 10 percent improvement in fuel economy that Yamaha suggests the YICS will give, but we did find the XJ750 to be more of a miser than the 650. On highway cruises (around 120 km/h) the bike returned 20.1 km/l (57.2 mpg) while round town work consumed 15.9 km/l (45.2 mpg). These figures give the XJ a slight edge over the Honda CB750FA and the Suzuki GSX750E but the Kawasaki Z750 still wins out in the economy stakes.

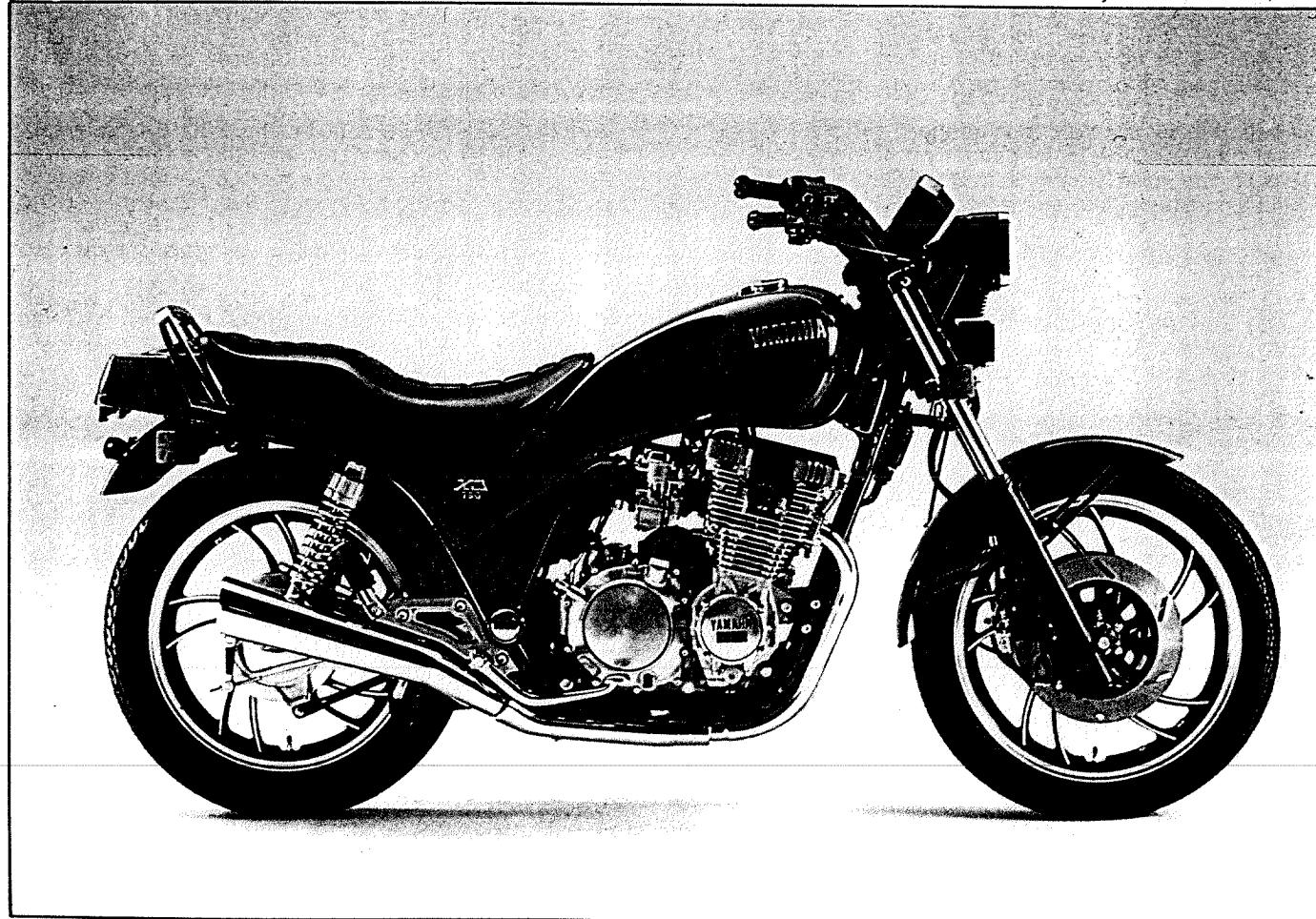
Undeniably YICS does improve throttle response, but in this case it may be slight overkill — the throttle was very sensitive particularly at midrange revs.



Riding over very rough surfaces in top gear at about 4000 rpm would cause bothersome surging unless extreme care was taken to keep carb butterfly position constant. This problem also surfaced elsewhere. While pushing the Yamaha hard around tight windies one had to be careful not to apply too much throttle too quickly, otherwise the XJ would tend to wander off the chosen line. It's not all bad news though. Once we adjusted to this sensitivity, it became more of an asset than a liability. Another major contribution to this behaviour comes from the XJ's massive engine braking — easily the best of the Japanese four! We wonder whether this is a YICS by-product.

Hot or cold starting was completely hassle-free — it fired up first time every time. From cold some (handlebar mounted) choke was required but warm up was rapid. After start up and after the computer goes through its paces to check all systems are go you immediately recognise some similarities between the XJ650 and the 750. The motor emits that same high pitched whine, and the exhaust note is similar but a little louder. Engage first gear, and move off and you'll notice the difference, much more punch at low revs and a little more grunt up high.

It is a remarkably smooth motor, too.



There's a small band of vibration at about 5000 rpm (right in the middle of the legal cruising speed range) but above and below that the XJ is smooth. At sub-4500 rpm engine speed the motor is ultrasmooth — again the best of the four.

Performance, strip and dyno

If we had believed the publicity which heralded the release of the XJ750, we might have expected this new model would totally embarrass the other 750 fours in terms of sheer get-up-and-go. We would have been disappointed. Not that the XJ is severely lacking in street performance — it isn't. The Yamaha will keep up with the best of them. However, the more clinical procedures at the strip and the dynamometer illustrated that the Yamaha is microscopically short on rear wheel power and a trifle slower over the 400 metres.

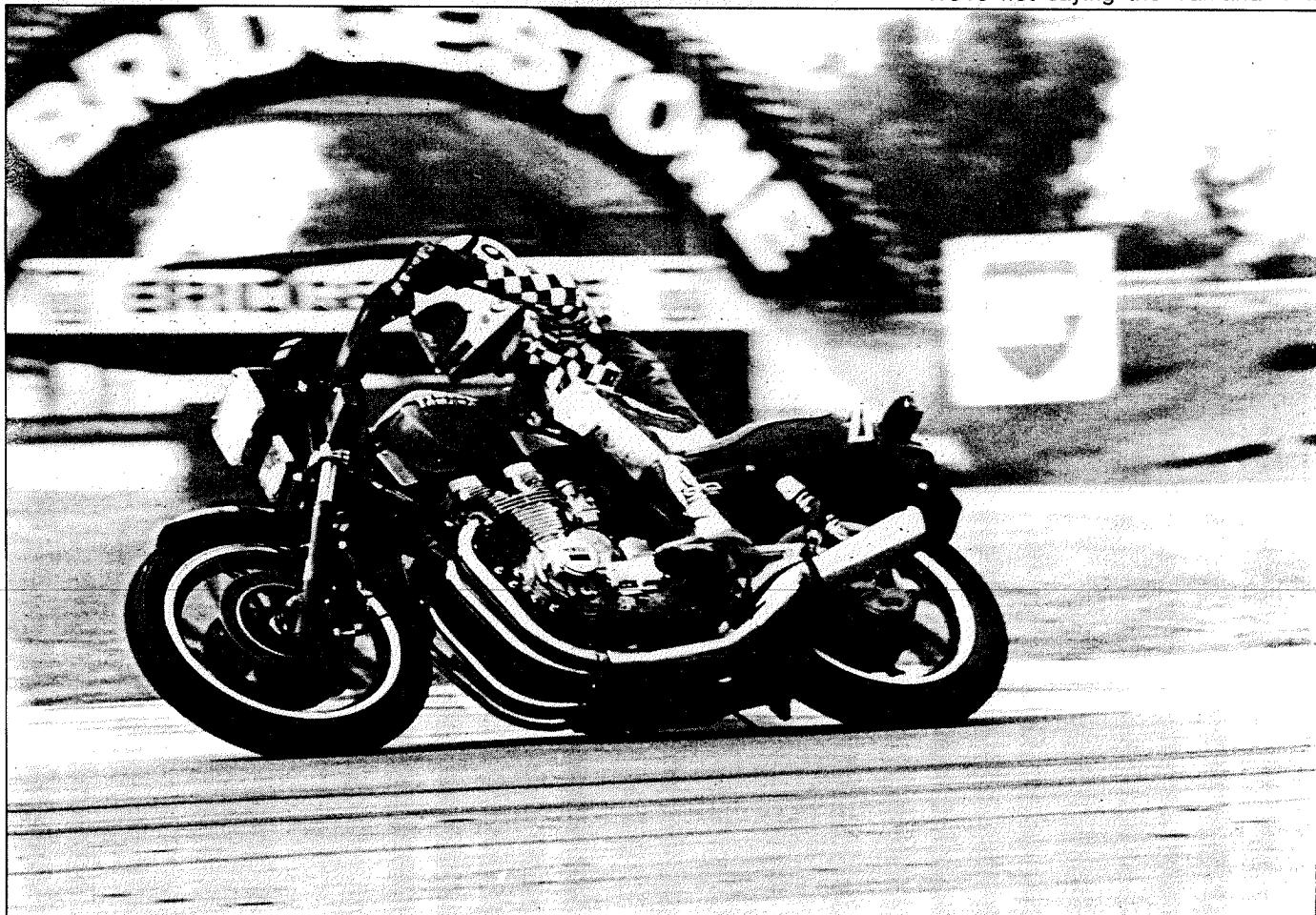
Our dyno session produced power and torque curves of very similar shape to the XJ650's, but there were some very significant differences. Peak rear wheel horsepower is up from 38.1 kW at 9500 rpm (for the 650) to 41.5 kW at 9000 rpm. More importantly, power and torque output have been increased right through the rev range. The low and midrange have been beefed up the most. At 4000 rpm there's about a 15



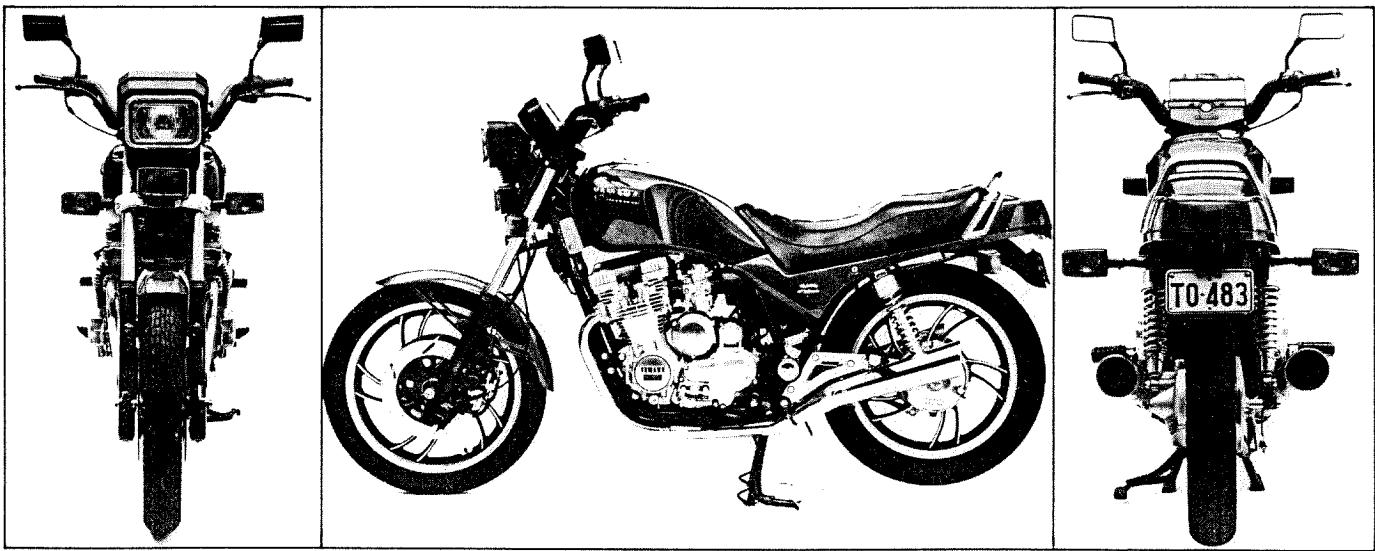
percent increase in power and torque as against a nine percent improvement in maximum output. On the street the presence of more low and midrange power is quite obvious, and enjoyable. The XJ is much like Kawasaki's Z750, very nimble around suburbia and there's no real need for constant gear changing to gain tractability through the traffic.

Our day at the strip was a little disappointing, though. No matter how hard we tried, we couldn't push the Yamaha over the standing start 400 metres any quicker than 12.65 secs at a terminal speed of 170 km/h. The Pirelli-equipped XJ650 ran a 12.7 sec 400 metres but crossed the line at a slightly lower terminal speed (168 km/h). The Z, CB and GSX all did better. They passed through the quarter in 12.4, 12.5 and 12.6 secs respectively. The major blame for the XJ750's poor showing can be thrown at the narrow rear tyre. With a narrow, not so adhesive standard tyre it wasn't surprising we had so much trouble getting off the line quickly. The wheel spun too easily (first was fairly low) and time was lost. With a wider and stickier rear tyre we would expect a 12.5 sec standing start 400 metre time to be well within the capabilities of this machine.

We're not saying the Yamaha is a



YAMAHA XJ750RH



ENGINE

Air-cooled, transverse, double overhead camshaft, four cylinder four-stroke. Chain driven cams, two valves per cylinder, plain bearing cam-shaft. Wet sump lubrication with oil cooler. Alternator mounted behind cylinder block on jackshaft driven by silent chain.

| | |
|--------------------------------|---|
| Maximum rear wheel power | 41.5 kW at 9000 rpm |
| Maximum torque | 45.5 Nm at 8500 rpm |
| Bore x stroke..... | 65.0 x 56.4 mm |
| Displacement..... | 748 cm ³ |
| Compression ratio | 9.2:1 |
| Maximum engine speed..... | 9500 rpm |
| Carburetion..... | 4 x 32 mm constant vacuum Hitachis |
| Air filtration | Pleated paper element |
| Starter system..... | Electric only |
| Ignition | Transistorised battery/coil with electronic advance |

TRANSMISSION

Gear primary drive to wet, multiplate clutch. Five speed, constant mesh gearbox with one down, four up pattern. Final drive by enclosed shaft in left hand swingarm strut.

| | |
|----------------------------|---------|
| Ratios (overall:1) | |
| First | 15.29 |
| Second..... | 10.48 |
| Third..... | 8.065 |
| Fourth..... | 6.52 |
| Fifth | 5.68 |
| Primary reduction: | 1.672:1 |
| Secondary reduction: | 1.361:1 |
| Final reduction: | 3.071:1 |

FRAME AND BRAKES

Double cradle frame with tapered roller steering head bearings and needle roller swingarm bearings. Leading axle, air assisted, oil damped coil spring forks and coil spring rear units with five spring preload positions and four rebound damping settings. Hydraulic slotted twin disc front brake and rod-operated single leading shoe drum rear brake.

| | |
|-------------------------------|---------------------------------|
| Front suspension travel | 125 mm |
| Rear suspension travel | 60 mm |
| Fork rake..... | 28 degrees |
| Fork trail..... | 114 mm |
| Front brake diameter | 280 mm |
| Rear brake diameter | 210 mm |
| Front tyre | Bridgestone Mag Mopus 3.25H19 |
| Rear tyre | Bridgestone Mag Mopus 120/90 18 |

DIMENSIONS

| | |
|-----------------|--------|
| Dry weight..... | 218 kg |
|-----------------|--------|

| | |
|-----------------------------------|-------------|
| Seat height | 750 mm |
| Wheelbase | 1445 mm |
| Ground clearance..... | 135 mm |
| Fuel capacity (inc reserve) | 19.0 litres |
| Fuel reserve | 4.1 litres |
| Engine oil capacity | 3.5 litres |

CALCULATED DATA

| | |
|---|----------------|
| Weight to power ratio (90 kg load)..... | 7.42 kg/kW |
| Specific power output..... | 55.48 kW/litre |
| Mean piston speed at redline revs | 17.9 m/second |

PERFORMANCE

Acceleration

| | |
|----------------------------------|------------------------|
| Standing 400 m..... | 12.65 secs at 170 km/h |
| Average of last three runs | 12.7 secs |
| Zero to 100 km/h..... | 4.7 secs |
| Maximum speed..... | 198 km/h |

Braking

| | |
|----------------------------------|-------------|
| From 100 km/h to zero..... | 35.6 metres |
| Average of last three stops..... | 35.8 metres |
| From 60 km/h to zero..... | 12.5 metres |
| Average of last three stops..... | 12.6 metres |

Fuel consumption

| | |
|----------------------|----------------------|
| Touring..... | 20.1 km/l (57.2 mpg) |
| City | 15.9 km/l (45.2 mpg) |
| Hard riding | 14.2 km/l (40.4 mpg) |
| Average on test..... | 16.5 km/l (46.9 mpg) |

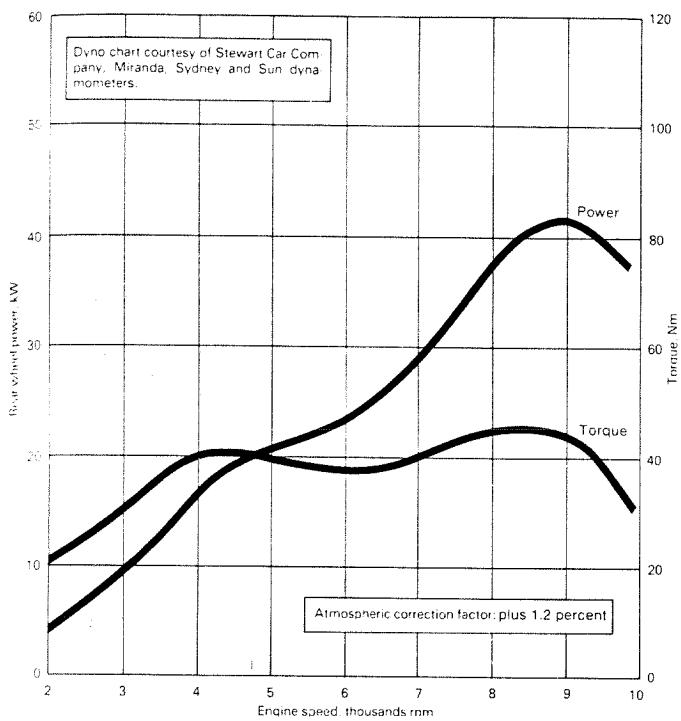
TEST MACHINE

| | |
|--------------------|-------------------------------------|
| Manufacturer | Yamaha Motor Co, Iwata, Japan |
| Test machine | McCulloch of Aust, Seven Hills, NSW |
| Price | \$3199 |

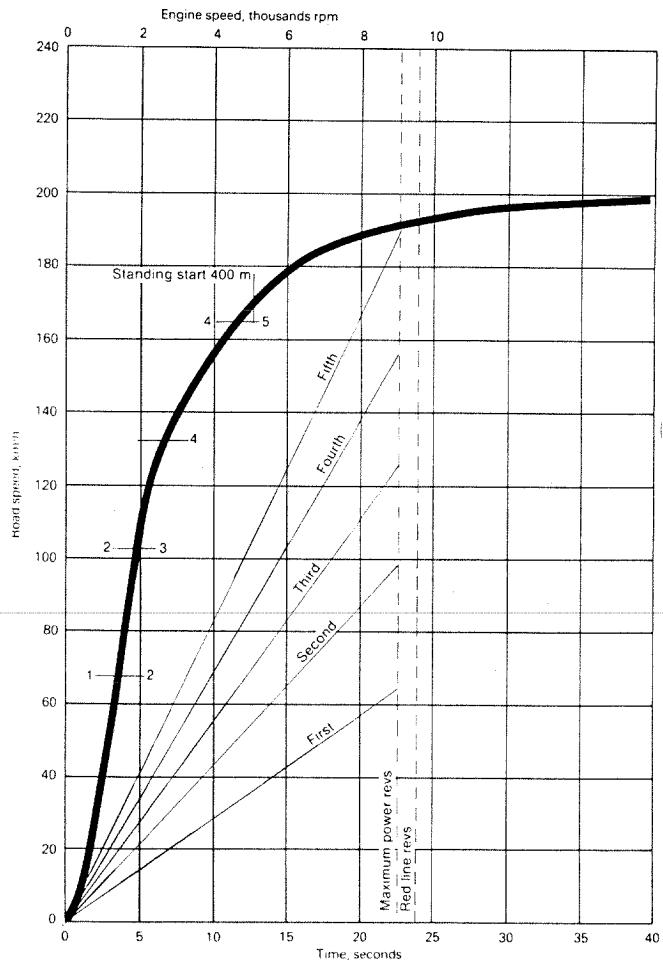
Best points: A responsive, flexible and reasonably powerful motor with excellent engine braking gives the bike a nimble feel. The light weight and low seat make the XJ extremely easy to throw about. High speed behaviour is commendable as is braking stability. A top quality finish, eye-catching styling, loud horn and powerful headlight complement an already impressive motorcycle. Fog light is a welcome addition.

Worst points: Compared to the other 750 fours the motor is shorter on midrange and top end power. Excellent handling is marred by a lack of cornering clearance. Handlebars promote an unusual riding position, interfere with manoeuvring and interrupt pleasing lines of the bike. Front brakes are spongy and low on feel. Pillion and rider don't enjoy a comfortable ride.

CHASSIS DYNAMOMETER



ACCELERATION



SUMMARY

RATINGS

ENGINE

- Responsiveness
- Smoothness
- Bottom end power
- Mid range power
- Top end power
- Fuel economy
- Starting
- Ease of maintenance
- Quietness
- Engine braking

| Poor | Below Average | Average | Above Average | Outstanding |
|------|---------------|---------|---------------|-------------|
|------|---------------|---------|---------------|-------------|

TRANSMISSION

- Clutch operation
- Gearbox operation
- Ratio suitability
- Drivetrain freeplay

HANDLING

- Steering
- Cornering clearance
- Ability to forgive rider error
- High speed cornering
- Medium speed cornering
- Bumpy bends
- Tossing side to side
- Changing line in corners
- Braking in corners
- Manoeuvring
- Top speed stability

SUSPENSION

- Front
- Rear
- Front/rear match

BRAKES

- Resistance to fading
- Stopping power
- Braking stability
- Feel at controls

CONTROLS

- Location of major controls
- Switches
- Instruments

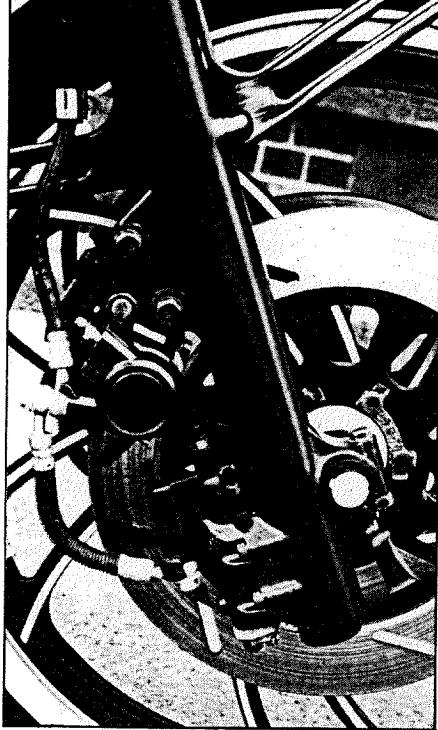
TWO-UP SUITABILITY

- Passenger comfort
- Stability with pillion
- Cornering clearance two-up

GENERAL

- Quality of finish
- Engine appearance
- Overall styling
- Seat comfort
- Riding position
- Touring range
- Headlight
- Stands
- Other lights
- Rearview mirrors
- Horn
- Toolkit

VALUE FOR MONEY

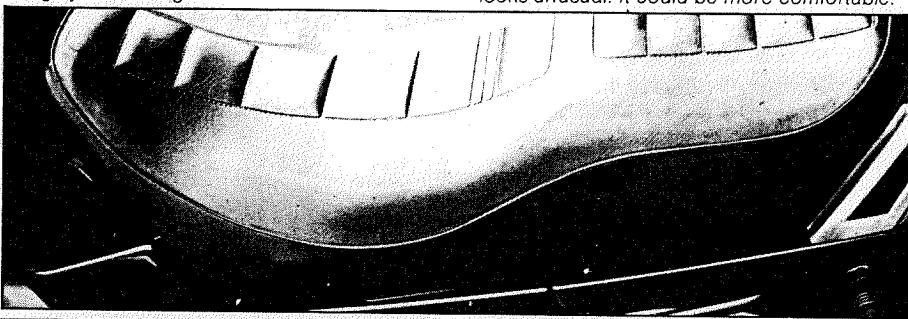


The anti-dive mechanism on the XJ's forks is a Yamaha first — we'll be seeing a lot more bikes with this or similar gadgets on them.

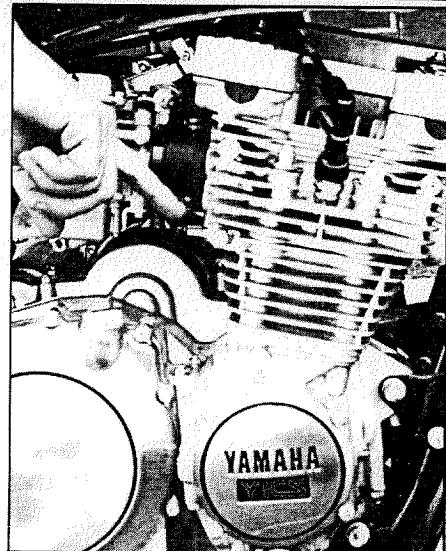
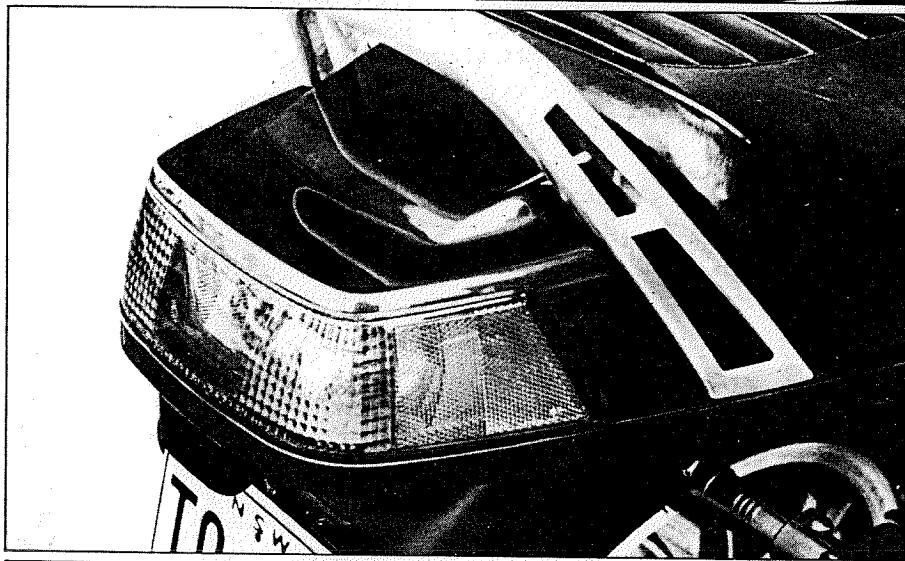


The flight deck of the techno-bike. Layout is actually very good, although that warning light is highly distracting.

In keeping with the rest of the bike, the seat looks unusual. It could be more comfortable.

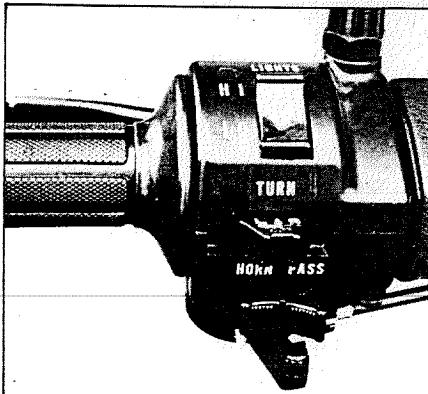


Tail treatment is pretty wild — it may not be to your taste, but it's better than on the XV1000.

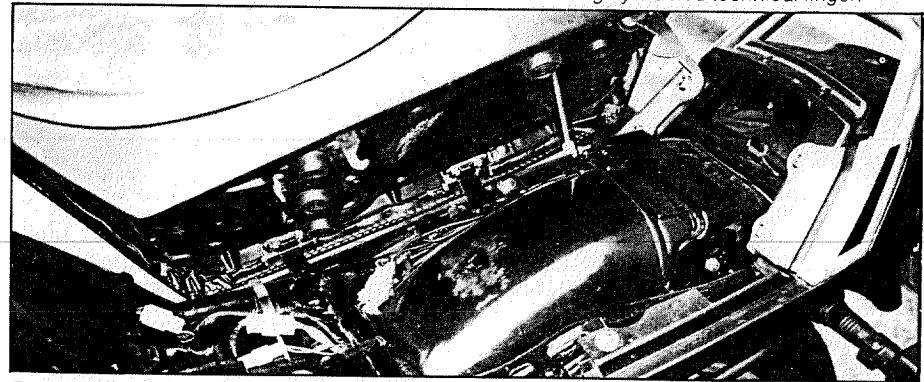


Tail treatment is pretty wild — it may not be to your taste, but it's better than on the XV1000.

That's the YICS right there, says tester Bourne's highly-trained technical finger.



You'd better have a pretty trick thumb to work all the controls on the left switch cluster.



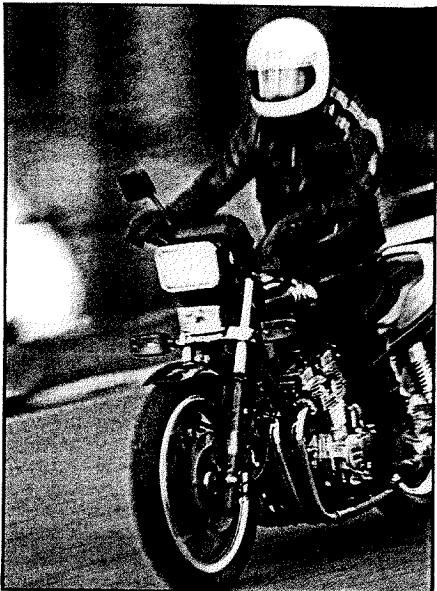
Fuse box location is convenient, and the XJ features the usual cubbyhole in the tailpiece.

sluggish performer. It excels in low rpm power, gives away a little top end to the four-valvers but essentially the bike is a hard charger with enough performance to satisfy even the most dedicated speed freak. On the highway there's heaps of 100 km/h plus top gear passing power as well as appreciable zip out of low and medium speed corners. In essence an exhilarating sportster, it's a bit of a shame the XJ has so much to live up to.

Handling

The XJ650 received the BOTY award in 1980 for a number of reasons. Prolific among these was the bike's nimble and sure-footed handling, and thankfully little has changed. Yamaha has retained the same basic frame-suspension package with the 750 but has fine tuned it a little. The new XJ has the same welded, tubular steel, double downtube cradle frame with tapered roller steering head bearings and needle rollers in the swing arm. Rake has been increased 0.25 degrees and trail reduced by 1 mm.

The new leading axle front forks now have air caps, lighter springs and a brake-actuated antidive mechanism. A range of air pressures can be used which allow a rider to choose a soft plush ride for sedate touring or a taut



but compliant feel for hard and fast riding — or anything in between. Unfortunately a balance tube is not fitted, but valves are readily accessible so adjustment is not a time consuming process. On occasions the forks on the test bike did lose some air pressure but we hope that isn't typical of the breed.

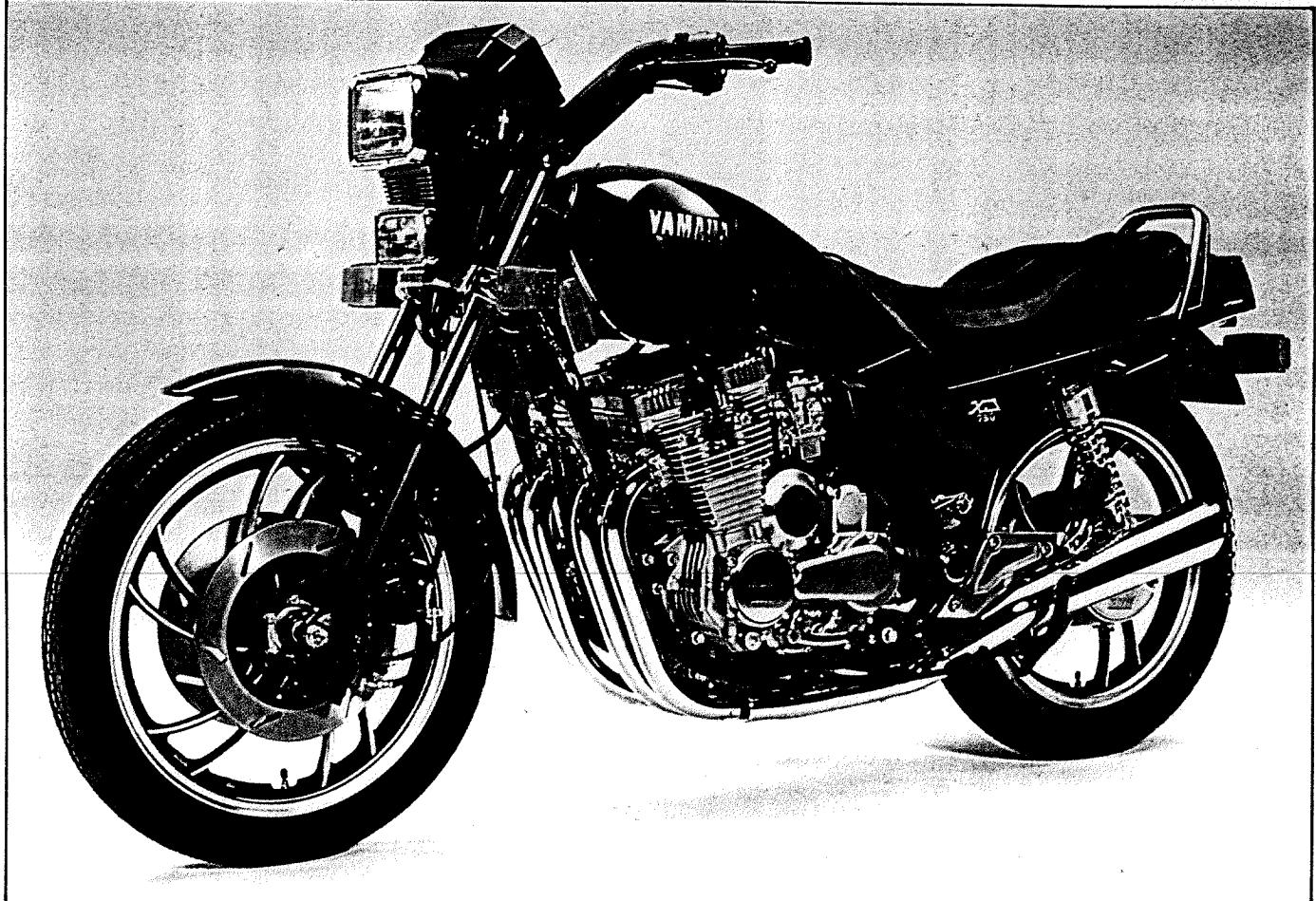
Yamaha is first in producing a road going motorcycle with an antidive front

end. In theory the system is meant to reduce dive under heavy braking by using brake fluid pressure to close off a valve in one of the damping oilways in the front forks. In practice an XJ pilot is not likely to notice any great reduction in fork compression even with the antidive adjusted to maximum. We did notice a perceptible reduction in the rate of compression towards the end of fork travel while braking hard on the entry to corners and over corrugated surfaces. In these situations the antidive is a definite aid to stability.

Rear suspension didn't rate highly. On the softest settings ride quality was good but the shocks bottomed out too readily, while firmer settings produced a very hard ride — there was no magic medium. Handling didn't suffer much but our posteriors certainly did.

Giving the XJ the lowest seat in its class must have given the designers a few headaches. Setting the footpegs high would have produced a cramped riding posture but sitting pegs low reduces cornering clearance. Yamaha sensibly chose to sacrifice a few millimetres of clearance for a better riding position and while the bike does have the least clearance in its class, this is not alarming. The foldup footpegs serve as good barometers of lean angle

Continued on p. 77



Continued from page 41

and they scrape before any immovable underpinnings do.

Steering was precise and responsive but a little heavier than the XJ650. The bike did show some self-steering characteristics at low speed, but this was probably aggravated by the long bars. No complaints once the throttle was at liberal openings though, the XJ steered beautifully at high speed.

Basically we could say the 650's handling traits are reproduced by bigger brother. It's a sure footed back roads blaster that behaves extremely well over lumpy bends, tolerates line changes midcorner, is forgiving and very stable at speed.

Transmission

Gear primary drive transmits the engine's power through a wet multiplate clutch to the five speed constant mesh gearbox. Internal ratios and primary and secondary reduction ratios are identical to those in the 650 and the overall result is the same. Gear ratios suit the bike to a tee.

The XJ is the only four cylinder 750 with shaft drive — and it's a good solid unit. The shaft isn't completely unobtrusive; quite often the rider is reminded of its presence by slight up and down lurching when the throttle is suddenly opened or closed while traversing the twisties. Transmission freewheel is excessive; the 750 drivetrain just isn't as smooth as the 650 item.

No problem with the gearbox though, rapid swapping could be accomplished without fuss. Gate is narrow and shift-

ing precise. Essentially, gearbox operation is well suited to the XJ's sporting tasks.

Clutch was a trifle heavy but take up zone was sufficiently wide and action progressive and controllable. Lever shape contributed to ease of control and Yamaha has thoughtfully used a lever freeplay adjustment screw which can be easily operated on the move.

Braking

The XJ runs twin slotted discs up front and a single leading shoe drum at the rear. Front brake is powerful enough, the stopping distances of 35.6 metres from 100 km/h and 12.5 metres from 60 km/h are about average for the class. The only complaints about the front stoppers were lack of feel and a spongy action. The master cylinder resides on the steering stem directly behind the foglight and is connected by cable to the brake lever. This is the most likely cause of the spongy feel. Rider braking feedback suffers a little through the antidiive effect. The rear brake was quite powerful, reasonably progressive but locked up a little too easily. Both front and rear stoppers were essentially fade free.

General

The XJ's finish is excellent. Yamaha has obviously paid great attention to detailing with this model. There are some very neat touches. A security chain is supplied with the bike and although it won't stop the determined thief, it may deter the casual joyrider.

Another thoughtful addition is the fog light. It doesn't merely fill in the space under the headlight, it works well.

Headlight is excellent too. The square quartz halogen unit has a sharp cut off and a good wide spread. Unfortunately the self cancelling indicators aren't up to this high standard. They're quite dull and collect moisture with consummate ease.

Switches are large and positive in operation, but the left hand cluster is cramped with choke, horn-pass, and indicator switches. Smooth operation was sometimes difficult with gloved hands. The semicircular speedo and electronic tachometer were a little small for rapid and accurate assessment of speed or revs. Speedo gave true readings up to 60 km/h but gradually became more optimistic. Idiot lights are reduced to a minimum thanks to the computerised monitor system but they're large and sited in a sensible position — at the top of the instrument console. Mirrors are small but almost fuss-free and the horn is pleasantly loud.

The hinged seat is well shaped but is too firm. Couple this with an uncompromising rear suspension and an odd riding position and you'll find the XJ isn't comfortable over long distances. The touring range of 360 km (taking it easy) makes sure there'll be sufficient body refreshment stops.

Low maintenance is a forte of the XJ750. No chain or points to adjust, and most serviceable components are readily accessible. It's not all good news though. Front master cylinder top-ups will be fiddly and rear suspension preload adjustments have to be made with the bike on the centrestand (otherwise the mufflers won't permit rotation of the adjusting wrench).

We've already moaned about the handlebars but there's more to come. The ease of manoeuvrability offered by light weight and low seat is lost due to the wide bars. Getting in and out of tight spots is more difficult than it should be. The plastic shrouds also act as effective water traps.

Conclusion

If you like the styling and appreciate good performance and handling, then the XJ may be your kind of motorcycle. The bank manager may bark at the extra expense but the bike has a few novel features. In terms of road performance the Yamaha will keep up with the rest of them and requires less effort to throw around than the Suzuki or the Honda — and it is competitive on the racetrack. It's the dearest of the four cylinder 750s by about \$200 and may not be the best. These days however, even being second or third means "very very good".

— D.B.

