

July 1984

\$2.25\* NZ \$2.95\*

# TwoWheels

Arai

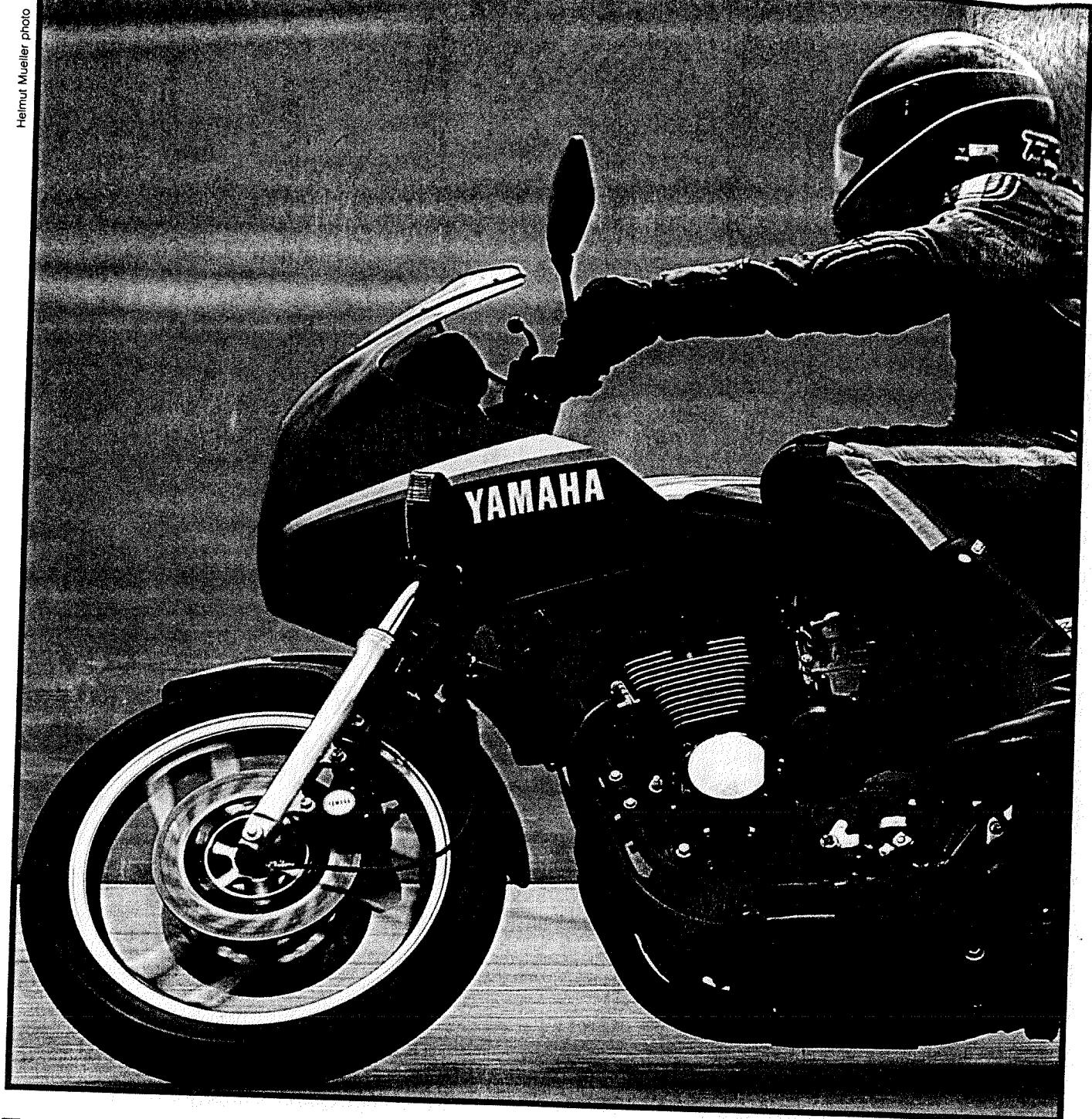
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*Full Tests!*

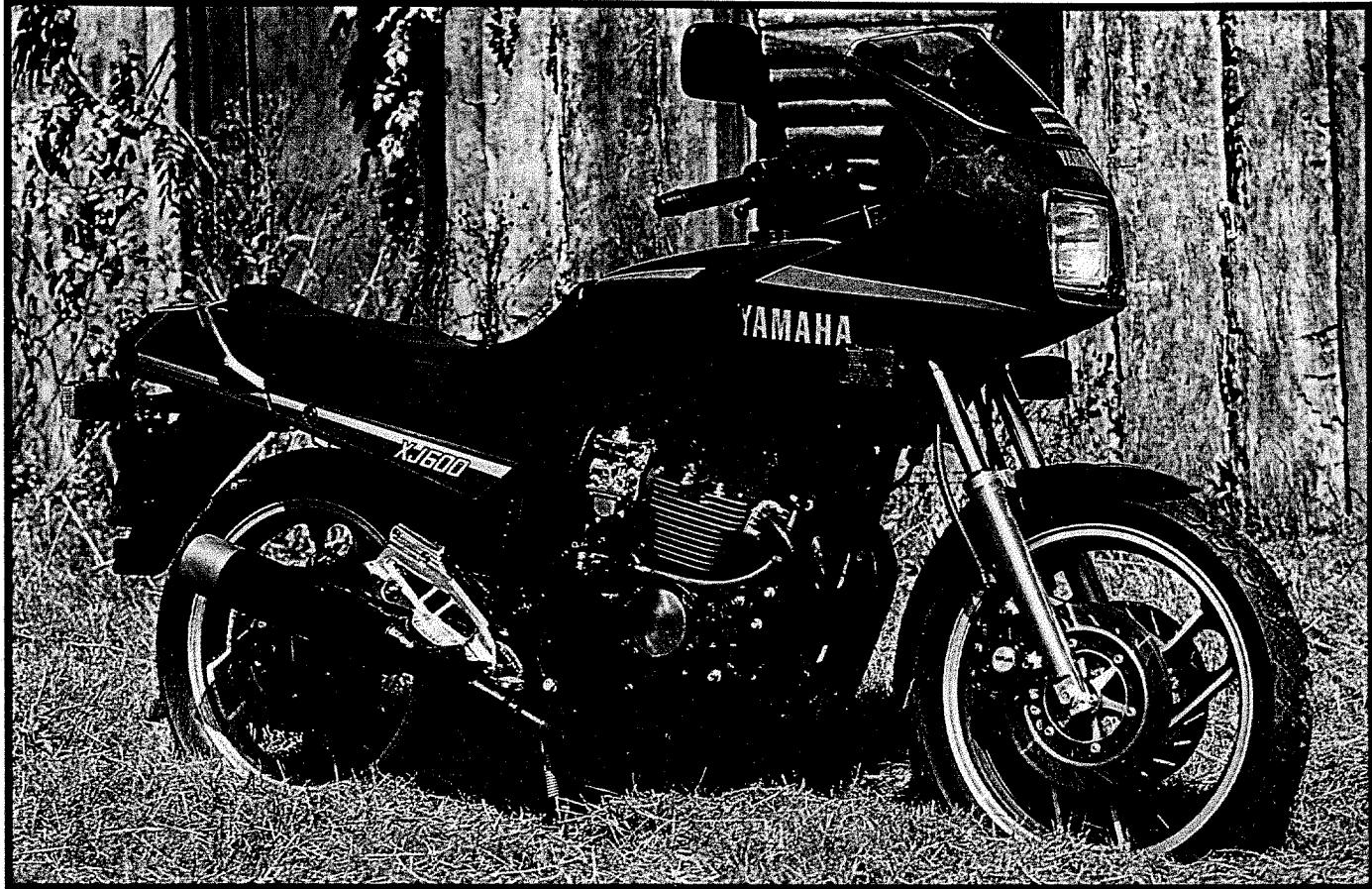
**Yamaha FJ1100  
Kawasaki KLR600  
Yamaha XJ600  
Hailwood Replica**

**INJURY INSURANCE:  
Giant Survey**



# LITTLE BIKE, BIG GO

Yamaha's XJ600 is, on the surface, not much more than an upsize of the previous XJ550. But in reality the newcomer is unchallenged boss of the 600 cm<sup>3</sup> bracket, and a worry to many 750s.



**V**AMAHA'S recent model war with Honda saw both companies suffer loss of profits through increased R&D development costs and mammoth stockpiles of unsold bikes. This led to Yamaha announcing a policy of "Evolution, not Revolution" in subsequent model development.

The XJ600RL is an expression of this philosophy. A series of changes to what is basically a three-year-old model — the XJ550 — have resulted in a bike ready to take on the best its class can offer in 1984, while keeping even 750s very much on their toes.

The XJ550 proved more than a match for the other up to 600 cm<sup>3</sup> bikes available when it was released. Since these were more like underbored 750s than separately developed motorcycles they carried a high weight penalty for their power output, giving the quick and nimble Yamaha a marked advantage.

The supremacy enjoyed by the 550 was, however, short-lived, with Kawasaki's GPz550, Honda's CBX550 and later Suzuki's GSX550ESD offering progressive increases in performance over the 528 cm<sup>3</sup> XJ.

Now Yamaha has once again turned the tables on the competition. The XJ600 offers a performance/handling combination as impressive in its class as the RZ series machines in the smaller-capacity roadster brackets.

The 600 shares many of the RZ-range charms with its nimble handling, good balance and excellent power to weight ratio creating a bike with a sporting bias similar to the Yamaha 'strokers.'

Although the 600's design aims are the same as those employed to the 550 in 1981, it is a much changed and updated machine. Changes are numerous, with chassis, suspension and the powerplant receiving their fair amount of attention to retain an overall balance as good as its predecessor.

The motor carries the same basic specifications as the other XJ series units and as such is reasonably compact and simple. It is an across the frame four-cylinder layout with dual overhead camshafts operating eight valves via a shim and bucket arrangement. The one-piece crankshaft uses plain slipper-type main and big-end bearings.

While the four-year-old design of the basic motor includes no particular high-tech highlights, the development work carried out in the transition from the 550 to 600 has given the powerplant a new lease of life not possible from simply a reboore.

#### Muscle to spare!

Yamaha now claims a massive (for a 600) 54 kW at 10,000 rpm compared with 41 kW at 9500 rpm for the 550 — a 32 percent increase in power for a 13

percent capacity lift. Against the current competition the 600's power is just as impressive, heading the GSX550 by some 7.4 kW and the GPz550 by 4.5 kW.

Although it could be expected midrange would suffer in this peak power hike the XJ's power delivery on the road is exceptionally capable for a 600 four and displays little of the "dead" midrange feel of the other 550s, or even big brother XJ750.

Changes to the motor from the 528 cm<sup>3</sup> version are numerous, simple and effective. The most significant of these is the extra 70 cm<sup>3</sup> swept volume, the result of a 1.5 mm increase in bore and a 3.9 mm jump in stroke. This gives the cylinders slightly less oversquare dimensions of 58.5 mm x 55.7 mm.

An extensive redesign of the cylinder head — including larger valves and ports — has made the most of the extra capacity. Feeding the 600 is a bank of 32 mm CV Mikuni carburetors — replacing the 28 mm units on the 550 — while high lift cams aid the extra gas flow potential.

On the exit side exhaust header diameter is increased and the four-into-two exhaust system has been redesigned. The new arrangement is basically two sets of two-into-ones linked by two balance pipes — one just aft of the headers and the other just forward of the mufflers. The system appears simple and



light, and has a good note to it.

Other changes are limited to a compression increase (from 9.5:1 to 10:1) and a lift in redline from 10,000 rpm to 10,500 rpm. With the increased stroke, this gives the piston a high mean speed of 19.5 m/sec, although a claimed reduction in piston and conrod weight should negate the extra loads on the crank as well as increasing the engine's responsiveness.

On that point, Yamaha has removed the YICS system which has appeared on every other XJ. While the system has been claimed to increase the throttle responsiveness the 600 could never be said to be lacking in that area and the only change noticeable was rather disappointing fuel consumption when compared with the relatively frugal YICS-equipped bikes.

#### Performance — at a price

The best we could obtain was 22.7 km/l compared with 24 km/l for the XJ750

under similar conditions and 25.6 km/l for the 550. More spirited riding saw the consumption increase to 15.2 km/l while the urban cycle rarely saw more than 17 km/l achieved. Although not as impressive as the 550 Yamaha, the figures are significantly better than the GSX550 and only marginally worse than the GPz550.

The motor's changes, combined with its inherent strengths, result in a bike that gives very little away in performance to some 750s and blitzes anything below that limit with its smooth, strong power delivery.

With 42.5 kW available at the rear wheel and a dry weight of only 188 kg the 600 is lightning fast. On test the bike fairly flew through the standing 400 m, clocking 12.4 seconds at a terminal speed of 174 km/h. That's 0.2 secs ahead of the GSX550ESD and a full 0.8 secs and 18 km/h quicker than the XJ550.

Against the sporting 750s, with which it deserves comparison, the bike is by no means disgraced, falling only 0.4 secs

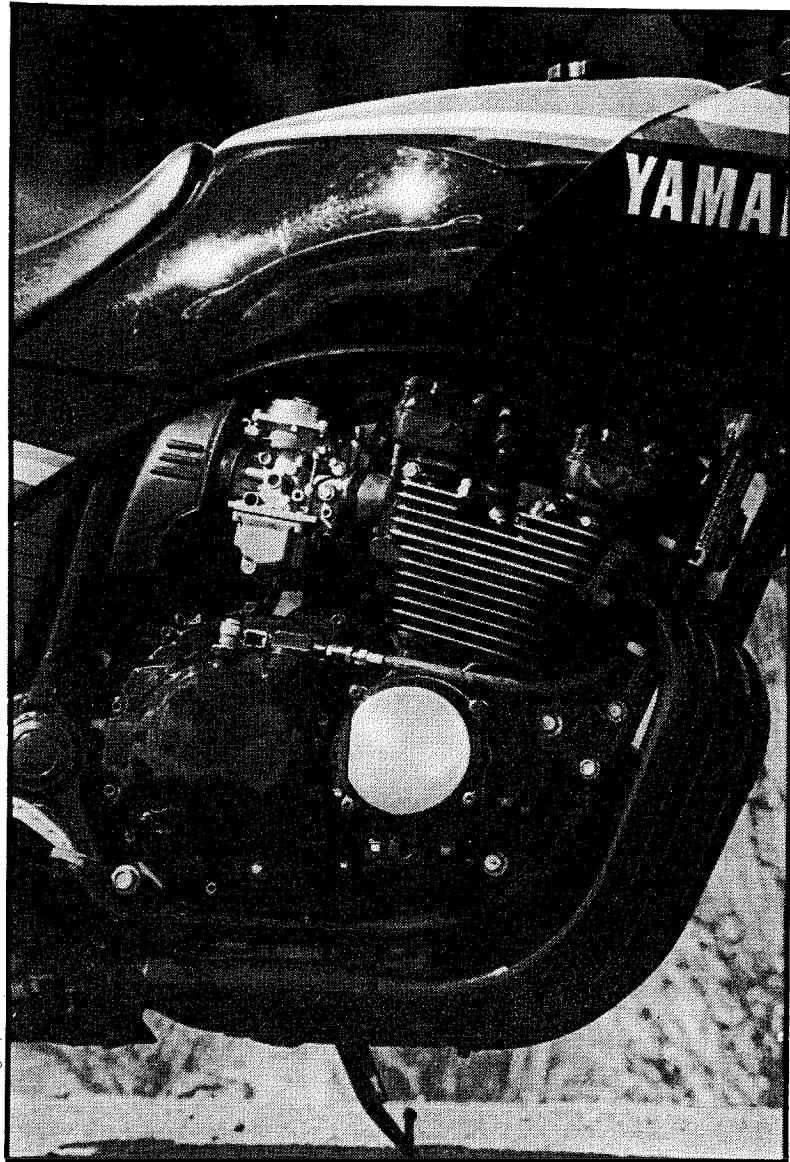
behind Honda's VF750 and CBX750 fours, currently the quickest pair in that class.

While starting technique — which calls for a fine balance between mono-wheeling and excess wheelspin — is more critical with the 600 than the heavier 750s, the performance is there and the results are just as impressive.

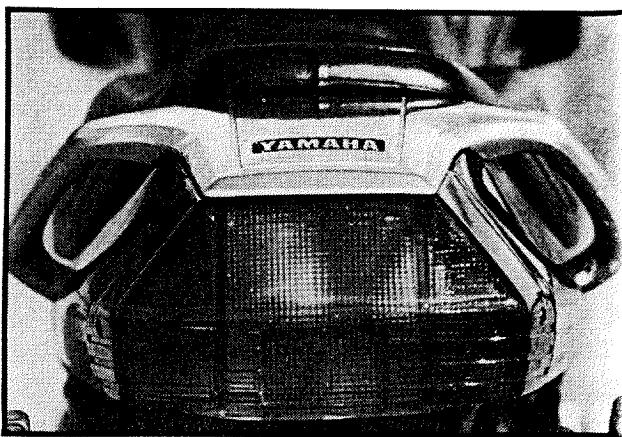
Not content merely with top-end performance, the 600 powerplant also displays plenty of merit in the midrange. Over 80 percent of the maximum torque of 43 Nm at 8500 rpm is available between 5000 rpm and the redline. This translates to a first for an up-to-600 cm<sup>3</sup> four-cylinder bike: a sportster with midrange go.

While there isn't much excitement below 4000 rpm the XJ pulls cleanly from only 60 km/h (3000 rpm) in top. This alleviates the need for constant gear changing around town and the chore of holding the bike in a lower gear in traffic to ensure you've got the go to get out of trouble.

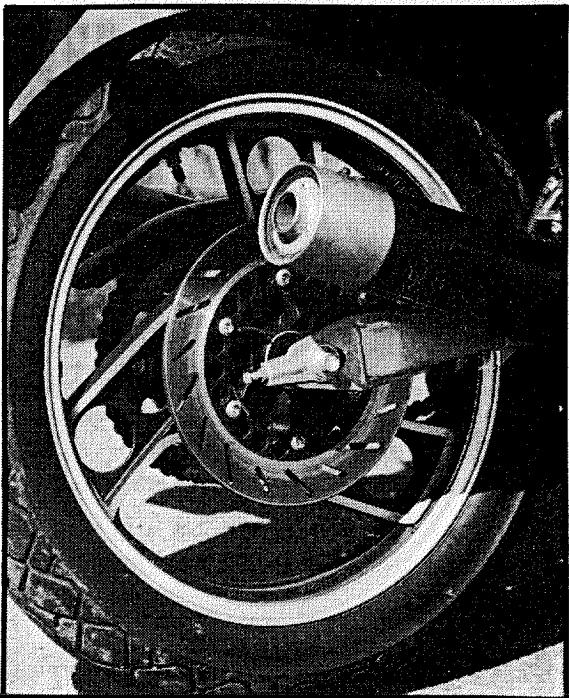
John Knight photo



John Knight photo



John Knight photo



## The good made better

When we tested the XJ550 in 1982 we considered the handling one of the best aspects of an excellent package. In 1984 the 600 carries on and improves upon the 550's credentials as one of the sweetest-handling bikes on the road.

Changes in the suspension from the 550 are concentrated mainly in the rear end, with Yamaha's rising rate monocross system employed instead of the twin shock set-up of the earlier model.

At the front a pair of telescopic forks are tied together by a new 18-inch wheel (replacing the 550's 19-inch unit) and an alloy fork brace. Despite the absence of air preload or antivede the forks cope well with the demands of our roads, aided by dual-rate springs which give compliance for small bumps yet resist bottoming over larger ones.

Suspension travel has increased by a useful 20 mm at both ends, to 150 mm at the front and 100 mm at the rear.

On the road, the suspension units tie the whole package together exceptionally well to produce a steering/handling combination that excels on everything from high speed sweepers to broken surfaces and hairpins.

With a dry weight of only 188 kg, tossing the 600 through corners or traffic is a delight which few bikes can emulate. Add to this a level of steering precision and feel that laughs at most of the 16-inchers and you have a bike with the ability to leave all but the best 750 aces floundering when the corners close in. And the tighter the corners, the more the XJ shines.

The 600 retains the six-speed close-ratio gearbox of the 550. The only concession to the new model's extra power has been to drop a tooth from the rear sprocket, changing the final drive ratio from 2.813 to 2.750:1.

Apart from this, the 550's internals and primary ratio are retained. This gives the bike a slightly undergeared feeling and

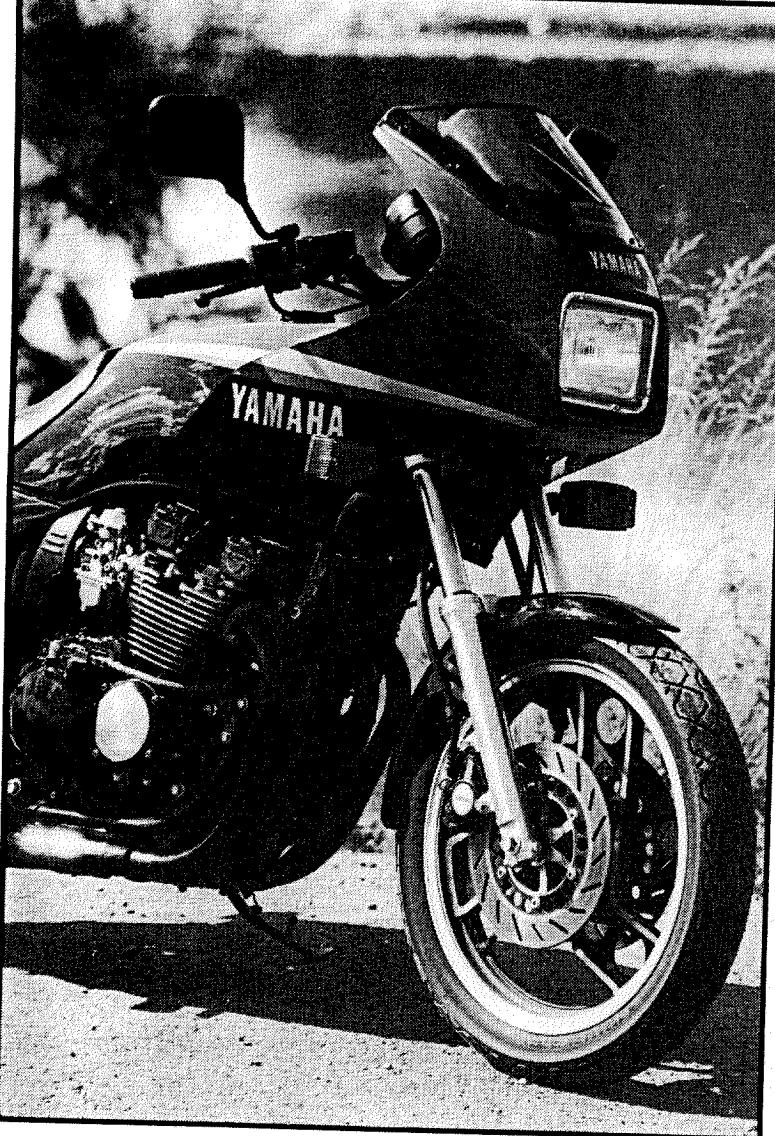
results in a ratio spread which is a mixture of good and mediocre.

## A busy left foot

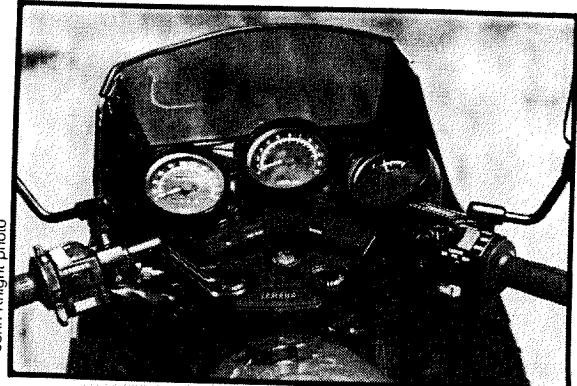
In high-rev race type situations the spread is excellent, ensuring that the motor is kept on the boil no matter what the situation. Under more sedate touring conditions the ratios are too closely spaced, and two, sometimes three, downchanges can be required if optimum acceleration for overtaking is needed.

Apart from this we found one other bitch to make regarding the gearbox. The shift action, like the ratios, is more suited to high engine speeds where smooth, fast cog-swapping is achieved with little clutch or pedal effort. Around town, where short-shifting is the norm, the gearchange becomes less precise and takes on a notchy, vague feel. This frequently saw two stabs required to make the first to second change and occasionally threw in

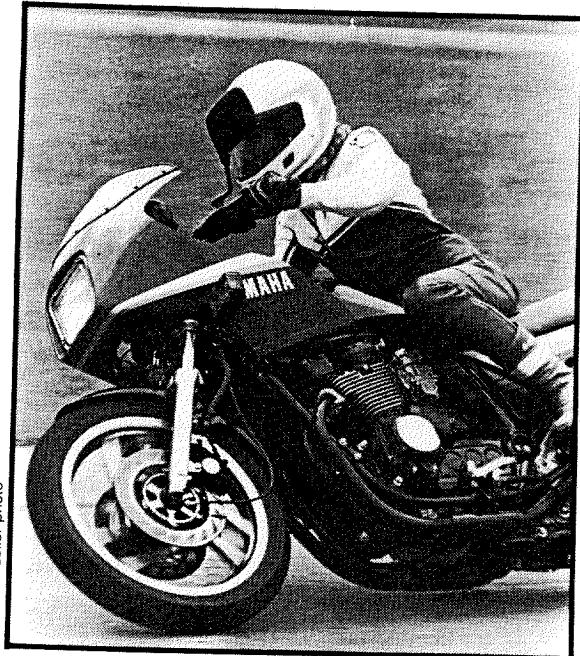
*Continued on page 88  
Specifications overleaf*



John Knight photo



*The XJ feels larger than most middleweights when riding, although it is certainly a nimble handler. Instruments would benefit from the addition of the 900's digital clock.*



Hemut Mueller photo

*Continued from page 85*

a false neutral between fifth and sixth.

The brakes on the early XJs were considered good in their day, although the system lacks both power and feel compared with the better 1984 stopper.

The braking of the 600, in contrast, is up with the best. This isn't surprising since the system is the same as that used on the RZ series, a triple disc arrangement with semi-metallic pads actuated by twin piston calipers. The discs themselves are slotted to aid heat dissipation and improve wet weather performance.

While stopping distances are fractionally up on the lighter RZs, the feel at the lever and pedal is improved, allowing the rider to dial in commendably high levels of retardation without locking up the wheels.

Stability of the bike under brakes is generally good and although the front end compliance allows a fair amount of dive, this is nowhere near as severe as the XJ750 we tested recently.

Resistance to fade is not as high as the ventilated discs of the bigger XJs but the lower weight of the 600 ensures the demands placed on the brakes are not as high under the same conditions — hence fade is only encountered after repeated high-speed stops.

#### Nice where it counts

In the areas of finish, styling and rider comfort there is little about the XJ which will disappoint. The striking red and black paintwork and frame-mounted fairing leaves no doubt as to the bike's sporting pretensions.

The fairing follows the 750/900 styling and as such is both neat and functional while well integrated with the rest of the bike's styling. Switchgear and instruments are also strictly family stuff with the only omissions on the smaller model being the digital clock and multi-adjustable alloy bars of the 900.

The XJ600's bars are two-piece items which are — like much of the bike's

ancillaries — finished in matt black.

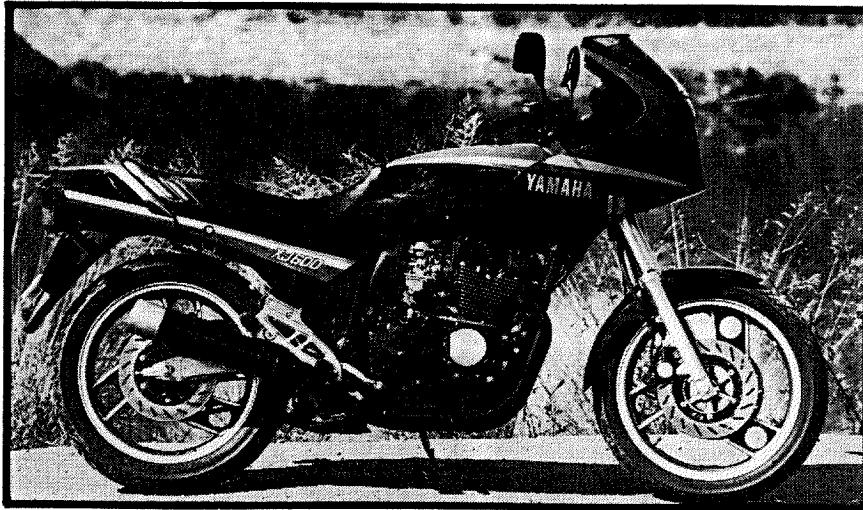
The seat will prove comfortable over reasonable distances although long stints in the saddle will require a stop or two to allow the rider's bum to recover. This is particularly noticeable two-up when the rear suspension loses some of its compliance and transmits a fair amount of road shock to the passenger's body.

Lighting is up to the high standard we've come to expect from Yamaha. A rectangular 60/55W QH headlight mounted in the fairing takes care of forward vision, while the twin-bulb tail light is also well up to scratch.

Compared against the other middleweights there is little that the Yamaha XJ600 doesn't excel at; in addition, prospective 750 buyers may find a ride on the 600 saving them several hundred dollars and giving them a mount that meets all their requirements for a sportster.

Either way, the XJ600RL is a bargain that deserves to succeed.

—S.M.



# YAMAHA XJ600R

## ENGINE

Air-cooled transverse four-cylinder four-stroke. Chain driven double overhead camshafts, two valves per cylinder. One-piece crankshaft, plain main and big-end bearings. Wet sump lubrication, oil cooler.  
Claimed maximum power ..... 53.0 kW at 10,000 rpm  
Claimed maximum torque ..... 52.0 Nm at 9000 rpm  
Bore x stroke ..... 58.5 x 55.7 mm  
Displacement ..... 598 cm<sup>3</sup>  
Compression ratio ..... 10.0:1  
Maximum engine speed ..... 10,000 rpm  
Carburation ..... 4 x 32 mm Mikuni CV  
Air filter ..... Pleated paper  
Starter system ..... Electric only  
Ignition ..... Magnetically-triggered battery/coil

## TRANSMISSION

Gear primary drive through wet, multiplate clutch and six-speed, constant-mesh gearbox. Left foot shift, one-down, five-up pattern. Final drive by O-ring roller chain.

Ratios (overall: 1)  
(km/h per 1000 rpm in brackets)  
First ..... 18.28 (6.6)  
Second ..... 13.03 (9.3)  
Third ..... 10.34 (11.7)  
Fourth ..... 8.29 (14.6)  
Fifth ..... 6.93 (17.4)  
Sixth ..... 6.02 (20.0)  
Primary reduction ..... 2.432:1 (90/37)  
Secondary reduction ..... 2.750:1 (44/16)

## FRAME AND BRAKES

Welded tubular steel double cradle frame. Telescopic forks with dual-rate springs. Rectangular section swinging arm. Monocross rising rate rear suspension system, single gas/oil unit. Twin disc front brakes, single disc rear. Twin piston fixed hydraulic calipers.

Front suspension travel ..... 150 mm  
Rear suspension travel ..... 100 mm  
Fork rake ..... 26 degrees  
Fork trail ..... 106 mm  
Front brake diameter ..... 270 mm  
Rear brake diameter ..... 270 mm  
Front tyre ..... 90/90 H18 Yokohama  
Rear tyre ..... 110/90 H18 Yokohama

## DIMENSIONS

Dry weight	188 kg
Seat height	790 mm
Wheelbase	1430 mm
Ground clearance	160 mm
Fuel capacity (incl. reserve)	19 litres
Fuel reserve	2.5 litres
Engine oil capacity	3 litres.

## CALCULATED DATA

Weight to power ratio (90 kg load)	6.54 kg/kW
Specific power output	71.1 kW/litre
Mean piston speed at redline revs	19.5 m/sec

## PERFORMANCE

### Acceleration

Standing 400 m	12.4 secs at 174 km/h
Zero to 100 km/h	4.7 secs

Maximum speed ..... 201 km/h

### Braking

From 100 km/h to zero	34.5 metres
From 60 km/h to zero	12.0 metres

### Fuel consumption

Touring	19.4 km/litre
City	17.1 km/litre
Hard riding	15.0 km/litre
Average on test	17.4 km/litre

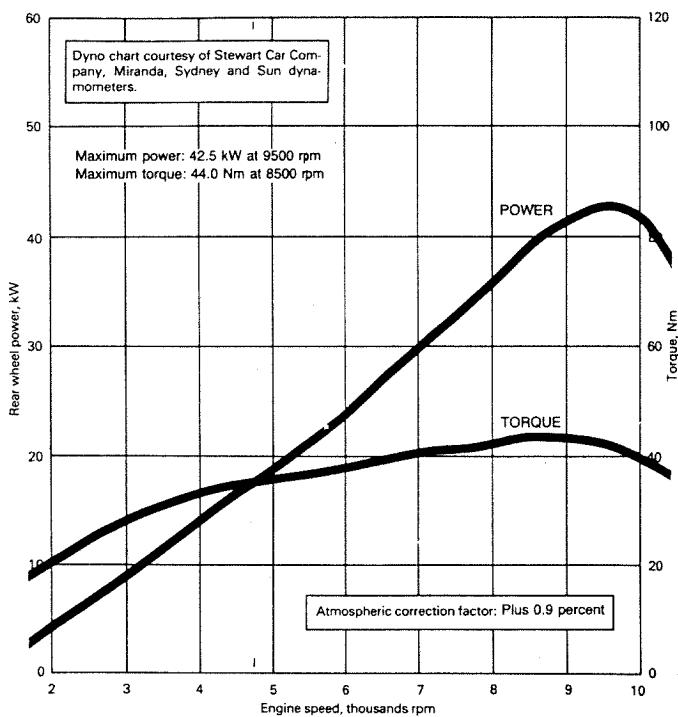
## TEST MACHINE

Manufacturer ..... Yamaha Motor Company, Iwata, Japan  
Test machine ..... Yamaha Motor Australia, Silverwater, NSW  
Price ..... \$3599

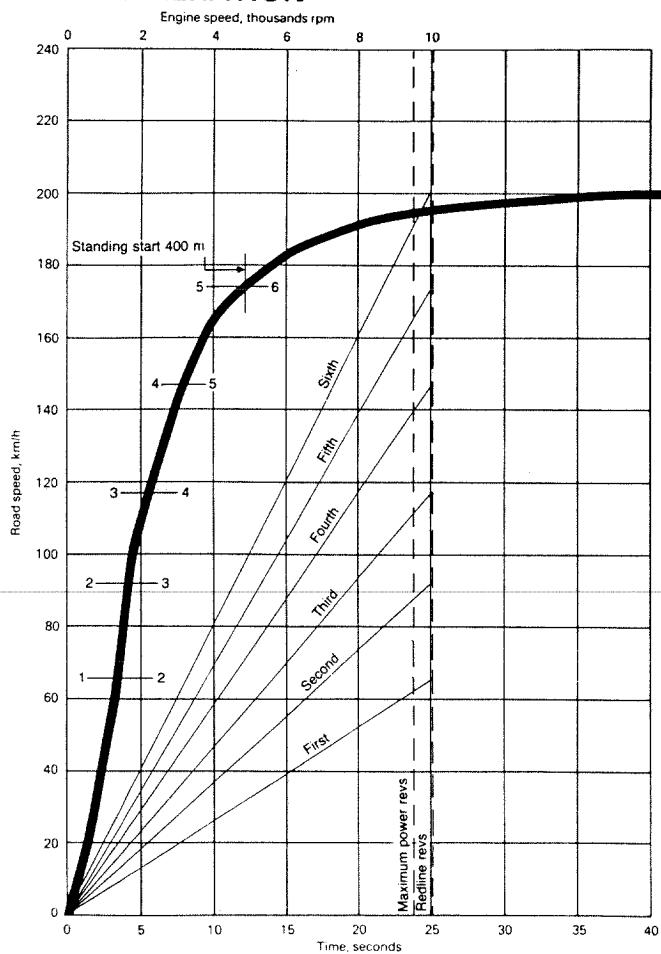
**Best points:** Smooth, powerful motor has both good midrange and excellent top-end performance. Bike is one of the best-balanced packages on the road. Steering is precise, suspension well-matched. Brakes are powerful and stable. Overall finish and styling match bike's sporting flavour.

**Worst points:** Gearbox action is a little vague and ratios are too close. Horn is weak, mirrors poorly designed. Long-range comfort is not good, while pillion footpegs are too far forward. Fuel consumption a trifle disappointing.

## CHASSIS DYNAMOMETER



## ACCELERATION



## SUMMARY

### RATINGS

#### ENGINE

	Poor	Below Average	Average	Above Average	Outstanding
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- Responsiveness
- Smoothness
- Bottom end power
- Mid range power
- Top end power
- Fuel economy
- Starting
- Ease of maintenance
- Quietness
- Engine braking

#### TRANSMISSION

Clutch operation	●
Gearbox operation	●
Ratio suitability	●
Drivetrain freepay	●

#### 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	●
Other lights	●
Stands	●
Rearview mirrors	●
Horn	●
Toolkit	●

#### VALUE FOR MONEY