

THE POWER THE GLORY

Two modern vee-twins – but with engines from Yamaha and Morini that are worlds apart.

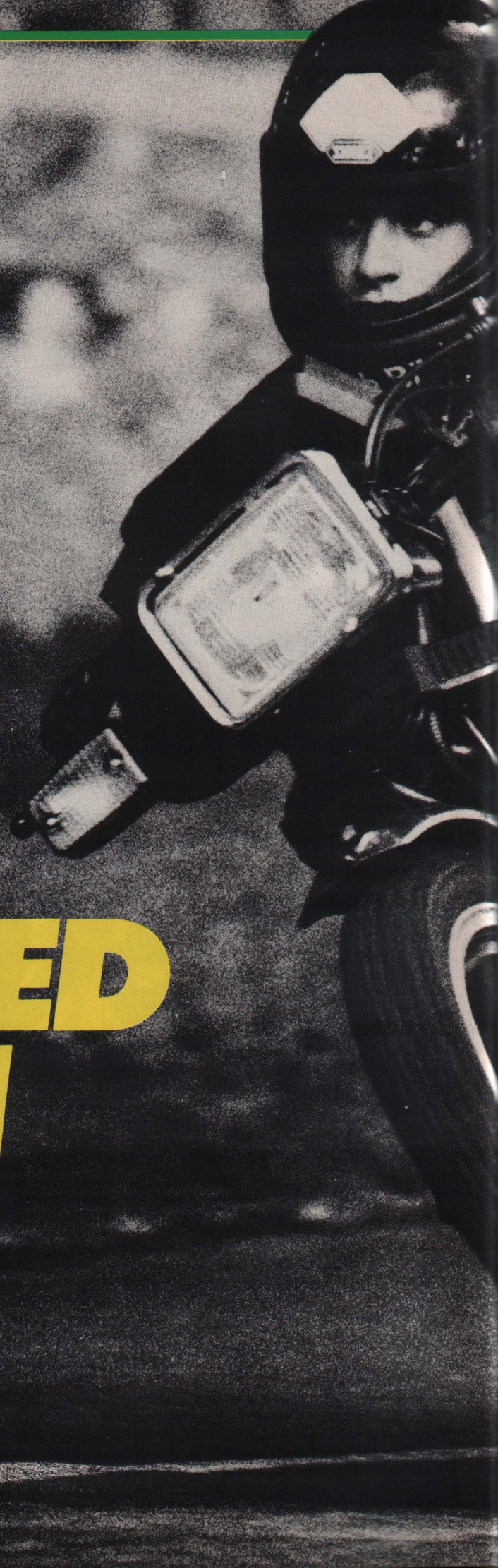


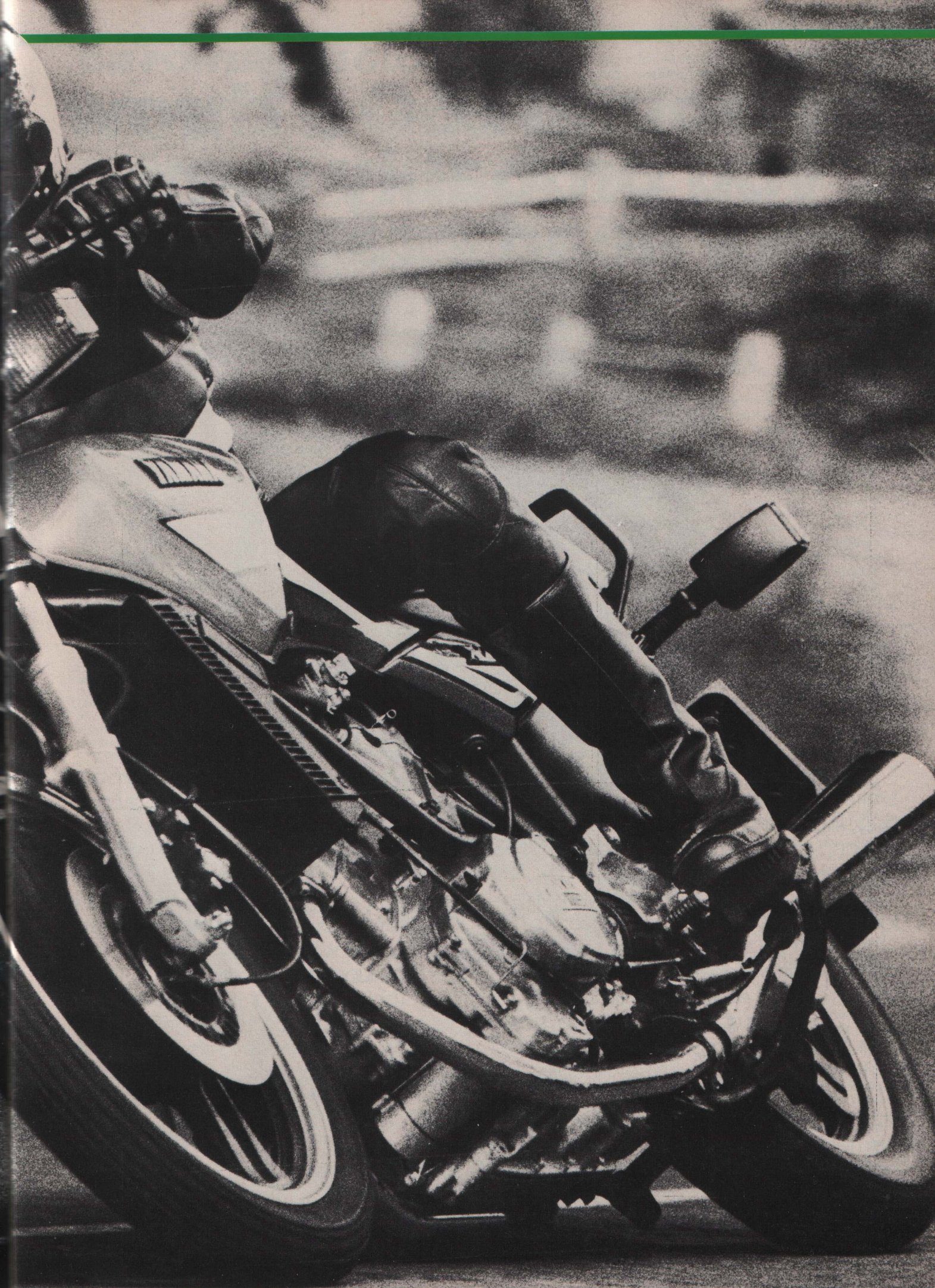
Deep down inside Yamaha's XZ550, there's a vee-twin lurking

CLOUDED VISION

Yamaha's XZ550 vee-twin is a thoroughly confusing motorcycle. A look at the specifications of the motor and the power it's claimed to develop might suggest that what we have here is a no-holds-barred sports bike capable of giving the best four-cylinder five-fifties a run for their money. After all, this 553cc twin is supposed to punch out over 64bhp, giving it one of the highest specific power outputs of any four-stroke machine – the result of using more or less a chip off a Cosworth vee-eight Formula One car racing block.

On the other hand, the XZ's looks are, to put it mildly, a break from tradition. The bulky front appearance, lack of sporting signals from the polished-alloy engine castings plus shaft final drive all indicate a machine with more substantial and lasting credentials. Vee-twins have always had a peculiar appeal to motorcyclists, their off-beat exhaust note and lazy power delivery providing a perfectly natural rhythm. They worked back at the turn of the century and the latest versions work now, offering a refreshing alternative to the plethora





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of frenetic fours that have become the basic diet of the modern rider.

Despite its broadside of technical features, the XZ550 is everything a vee-twin should be. Cut through the liquid cooling, the double-

overhead camshafts, the trick downdraft carburetors and all the trappings of a machine muscling into the eighties and you'll find that it can provide the same ol' simple pleasures. The XZ's real character is best appreciated on a long

ride, where the strength and suppleness of the engine make light of high cruising speeds and its flexibility gives deceptively brisk acceleration out of bends.

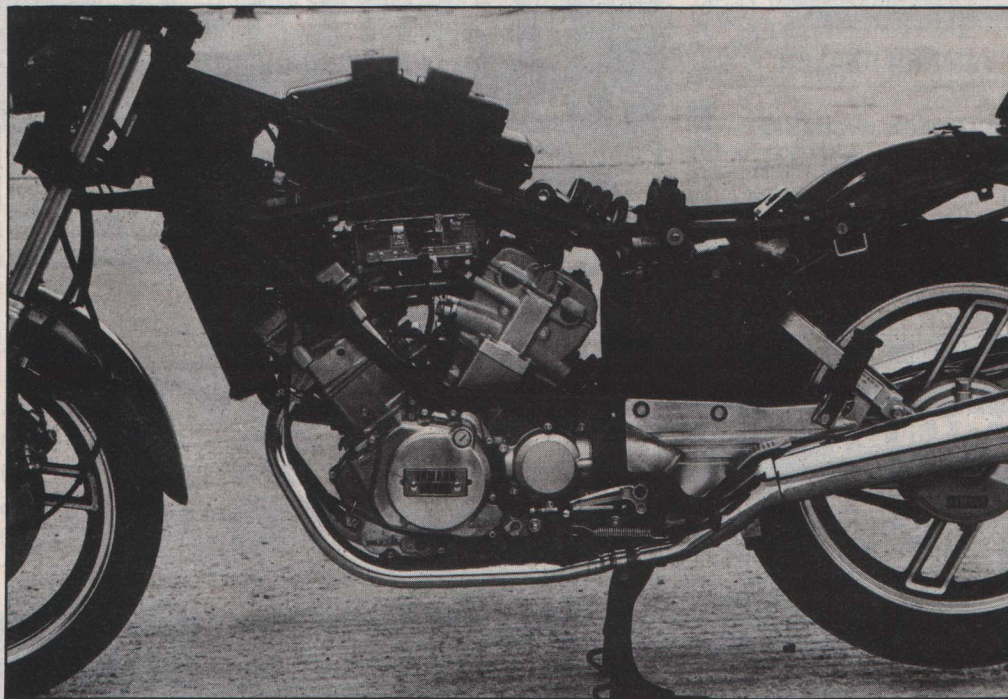
Yet it's the same features which give the XZ550 such remarkable top-end power that also boost its mid-range urge. All the qualifications

for a modern high-performance four-stroke are packed into this narrow-angle vee. To allow the use of a high 10.5:1 compression ratio while running on low octane fuels without the risk of detonation, compact combustion chambers are made possible by four symmetrically placed valves with a narrow included angle. In fact, the two twin-lobe camshafts are placed so close together at the top of each head that the head and barrel nuts have to be passed through holes in each camshaft journal.

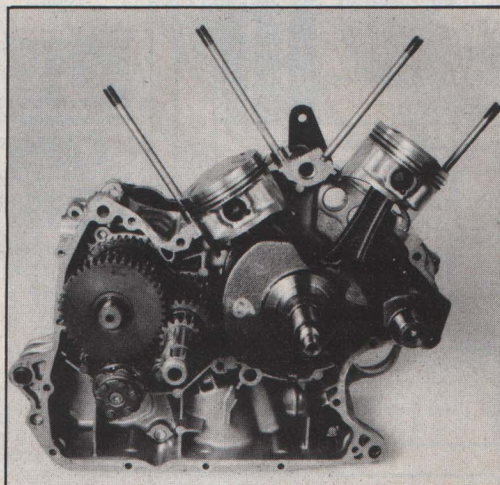
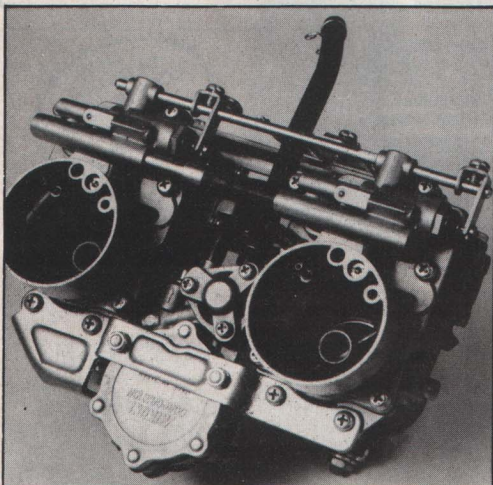
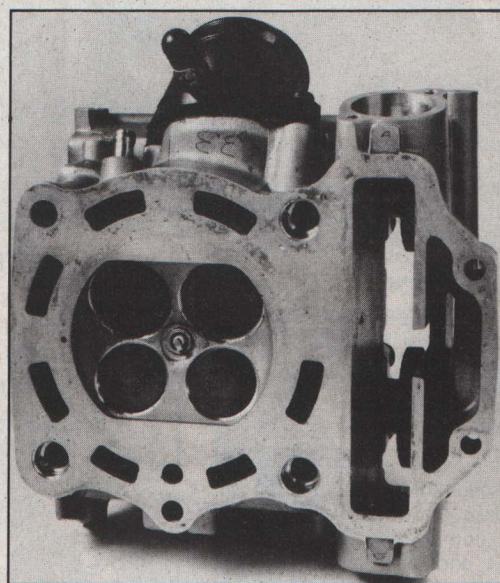
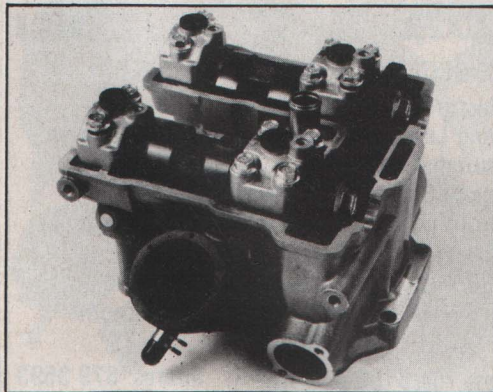
Because of the high power output, the liquid cooling used on the XZ was a necessity, as Yamaha has already experienced wide variations in head temperatures with the more modestly tuned XV750 and XV1000 vee-twins. Liquid cooling the heads and barrels ensures virtually constant temperatures throughout the motor. It also allowed Yamaha's engineers to make the motor more compact. It's already squat, thanks to the high bore-to-stroke ratio (80 x 55mm), but narrowing the vee angle to 70 degrees from the wider air-cooled models makes it more so. Trouble is that narrower angles produce more primary vibration, but this was neatly sidestepped by using a balance shaft in the front of the cases. This is driven direct by a pair of spur gears with small shock absorbers and it has three lobes: one placed centrally that minimises the primary forces and two smaller ones at either end of the shaft but 180-degrees out of phase that reduce the rocking couple that naturally arises from the offset from having two connecting rods side-by-side on the crank.

As far as the rider is concerned, there's no troublesome vibration, even at the 10,000rpm red line. But I was surprised to find that the XZ would buzz its mirrors enough to spoil the rear view at 75mph — just when you needed it most.

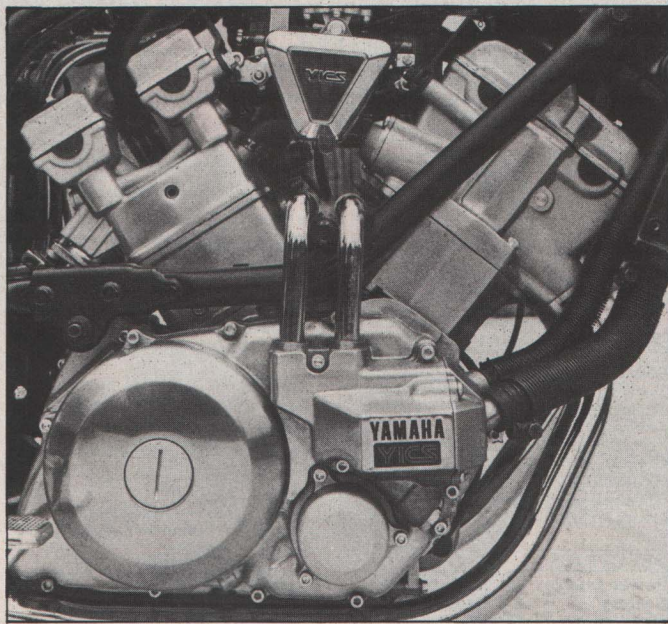
You may be amazed that the XZ550 revs to such heady heights. After all, vee-twins of any size haven't been known as revvers. This has mostly been because of the awkward, and often asymmetric, intake plumbing. On the XZ, the inlet tracts are as good as they could be, taking a straight vertical aim into the paired inlet valves with none of the curves that limit breathing at high revs. The only kink is just above



Frame of XZ550 shows similar thinking to that which spawned the Ducati Pantah's. Bottom right: 70-degree vee-twin uses plain main bearings and balance shaft. Below: Cylinder heads have really downdraft inlet tracts and identical cams. Right: Compact four-valve combustion chamber allows high 10.5:1 compression ratio. Bottom left: 36mm downdraft Mikunis use butterfly throttles and vacuum-operated fuel pump between bodies.



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Sitting in the centre of the XZ550's cylinder vee is the Induction Control System's chamber connected to the inlet tracts which is claimed to boost midrange.

the valves; while allowing for the offset of the cylinders, this imparts a degree of swirl on the tumbling mixture. This is further enhanced by Yamaha's Induction Control System where a small chamber is connected to the inlet tract just above the valve head by a small port. When the valve closes the inertia of the mixture fills the chamber which is then emptied just as the valve opens again and also swirls the mixture as it enters the cylinder. The resultant turbulence improves mixing and hence combustion.

Atop the inlet tracts are a pair of complex Mikuni downdraft carburetors. Similar to Webers, they don't use slides or needle jets; the metering being controlled by three jet systems and an acceleration pump. There's a sub-venturi within the throat of each carb to control the bulk of the fuel flow but more importantly there's a finely controlled set of bleeds

adjacent to the throttle butterfly to ensure accurate metering at part throttle, which would be virtually impossible on a slide carb with the same massive 36mm choke diameter and hence low air speeds.

That the XZ550's motor will pull cleanly from 3,500rpm all the way to the red line shows that the system works well. Yet because of the relaxed delivery of the power there's never any sense of urgency. You power through bends and reel in straights with no more sensation of speed than if you'd been winding up a giant piece of elastic. Early in the bike's life we experienced a flat spot at around 3,500rpm which was especially annoying in town. After the first service, during which the pilot mixture settings were richened slightly, this was reduced to an occasional cough at just under 3,000rpm.

Riding cross country you don't find yourself using these low revs, despite keeping the motor in a high gear most of the time. Overall gearing is short compared with the Kawasaki GPz550 and CBX550F Honda, yielding almost 109mph in top gear at the peak power revs of 9,500rpm. The gearbox is superbly slick, though, and there's no need to use the light clutch except for pulling away from a standstill. The only glitch in the transmission is that the shock absorber in the final drive shaft clonks in the lower ratios as you wind on and off the throttle.

If Yamaha's engineers had a field day in arranging the motor exactly to their tastes, then it's more than likely they ran into difficulties with the chassis and its styling. Short and squat though the engine may be, once the radiator and intake air box are added at the front and top then the whole power package becomes a formidable lump to place in a motorcycle.

This is probably mostly why a trailing axle front telescopic fork has been adopted. Placing most of the fuel tank's bulk and the radiator well forward puts a premium on clearance around the fork at full lock. The only way out, apart from using say, a leading link fork, has been to place the legs in front of the normal position of a centre-axle fork (in which the centre line of the legs passes through the wheel axle). This may fly in the face of elegant engineering practice because of its increase in the fork's steering inertia, but the alternative would have been (at



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least in the eyes of the Yamaha stylists) an unacceptably lean-looking front end.

As it is, the XZ550's wheelbase is still 57.1 inches, making it as long as the XJ650 four, which along with a fairly light dry weight of 430 pounds would suggest a slow-steering, stable machine at speed. To counteract this, the steering geometry is unorthodox with a steep 63.3 degree head angle and more than the usual amount of trail at 4.6 inches. Effect is that the machine is very responsive to the handlebar at speeds below 50mph and all those who rode it remarked at how nimble the XZ was. The light-



ness of the steering is further enhanced by the small 18-inch front wheel with a thin 90/90 tyre. The high-speed stability of the bike isn't helped, however, for although the XZ can be cranked confidently into bends without fear of grounding anything, it has to be carried out forcefully; back off on the throttle and the change in attitude of the bike provokes a weave that lighter riders will experience sometimes in a straight line.

The ride comfort provided by the monoshock rear suspension could be better, too. Personally I found the riding position awkward because of the stretch from the seat (which you tended to slide back down) to the stubby handlebars was too long for the position of the footrests. These handlebars, by the way, are mounted on cast-alloy extensions of the top yoke and can be rotated to taste on splines. The passenger room is cramped too because of the height of the footrests, though the grab handles are well styled. Shame there isn't anywhere to hook elastics under the plastic bodywork.

For a bike capable of cruising at 100mph, the brakes are more than ample. The front discs, mounted directly on the 'straight-italic' cast wheel, have immense power, perhaps more than the tyre can handle. The rear unit is a drum. It's stopping power is fine but the strength of the return spring masks its feel.

Otherwise on the XZ there's a balanced amount of modern equipment. You won't find computers or any silly warning lamps, just an engine temperature gauge. The hand controls are the usual high standard expected of Yamaha and in addition to the self-cancelling turn signals there's a headlamp flasher on the left console that's easily reached by the forefinger.

Used for a brisk run with cruising speeds around 80, the XZ returned 49mpg on three-star giving a range to reserve of 160 miles. In more taxing going the consumption dropped to 44mpg for a range of 140 miles with another 30 odd in reserve. That's not as good as some 550cc machines but Yamaha sees the XZ appealing to the more well heeled enthusiast aged 25 to 35 years.

Certainly it's no LC, although its handling has been compared to the two-stroke twins. The XZ550 is a more mature machine. The

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| MODEL: | Yamaha XZ550 |
| Price inc taxes | £1789 |
| Warranty | 12 mnths/unltd mileage |
| Importer/Manufacturer | Mitsui Machinery Sales, Oakcroft Road, Chessington, Surrey Tel: 01-397 5111 |
| ENGINE | |
| Type | Dohc liquid-cooled 70-deg vee-twin |
| Capacity | 553cc |
| Bore/stroke | 80 x 55mm |
| Comp ratio | 10.5:1 |
| Lubrication | Wet sump |
| Carburation | Dual-choke 36mm downdraft Mikuni |
| Ignition | Electronic inductive |
| Power (bhp) | 64.4 @ 9,500rpm |
| Torque (lb-ft) | 36.8 @ 8,500rpm |
| TRANSMISSION | |
| Primary drive | Spur gears |
| Clutch | Wet multiplate |
| Gearbox | Five speed |
| Final drive | Bevels and shaft |
| Overall ratios | 19.5, 13.2, 10.0, 8.05 & 6.57:1 |
| ELECTRICS | |
| Power source | alternator |
| Battery | 12V Ah |
| Headlamp | 60/55W quartz |
| CHASSIS | |
| Frame | Tubular-welded trestle type |
| Front susp | Telescopic trailing axle fork, |
| Rear susp | Triangulated swing arm, single shock with 5-pos preload adj. |
| Front brake: | Dual 10.4in (265mm) discs |
| Rear brake: | 7in (180mm) drum |
| Front tyre | Bridgestone 90/90 H18 L303 tubeless |
| Rear tyre | Bridgestone 4.25/85H18 G514 tubeless |
| CAPACITIES | |
| Fuel tank | 3.7gal (17 litre) |
| Oil | |
| DIMENSIONS | |
| Wheelbase | 57.1in (1450mm) |
| Seat height | 31.5in (800mm) |
| H'bar width | 27.5in (700mm) |
| Grnd crnce | 5.5in (140mm) |
| Rake/trail | 63.3 deg/4.6in |
| Dry weight | 416lb |
| EQUIPMENT | |
| | Elec start, mirrors, speedo, 10,000 rpm tacho, tools, trip, turn sigs |
| PERFORMANCE | |
| Top speed | 117.5mph prone (mean) |
| | 106.3mph upright |
| St ¼-mile time | 13.33 @ 98.0mph |
| Speedo | 30 (29.8)mph indicated/50 (49.9)mph (actual)/70 (69.8)mph |
| Speeds in gears | 37, 54, 71, @ max power |
| | 87, 109 mph |
| Test weight | (full tank) 469 lb |
| Rpm @ 70mph | in top 6150 |
| Fuel consump | average 46.0mpg |
| | worst 40.5mpg |
| | best 49.8mpg |
| Tank range | to reserve 150-165 miles |
| | Speed figures obtained on the MIRA timing straight and are two-way averages. |

most apt comparison is an up-market CX500 Honda. It feels lighter, is much faster, uses about the same amount of fuel but has that same muted burble. The layout of the XZ550 may be similar to Morini's, but the effect is way off on a different course.

John Nutting

SECOND OPINION

With only nine months' riding experience under my belt, there is no way I can make any smart-assed comments comparing the XZ to any other bike. But I can say that it's a very even-tempered beast. Having ridden only 125s and 250s so far I was surprised at how light the bike feels, and how comfortable it is. As far as performance goes, even a nurd like me spotted the incredibly wide power band and the fact that a shaft-drive, watercooled vee-twin is a very quiet bike. The styling of the tank might upset the purists but I like it. I still can't make my mind up about the paint job but I don't foresee too much mechanical trouble over the next year - the bike feels really well built. *Stephen England*

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0953 803397/805120

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