YAMAHA XJ650R SECA

One of Motorcycling's Great Engines Now Has a Chassis to Match

If you were nominating candidates for The Best Engine in Motorcycling, Yamaha's twin-cam XJ650 four would have to be among them. Just being a 650 gives it certain advantages. An average 650 engine is powerful enough to perform any task required of it with something left in reserve, and as a class, 650cc motorcycles are small and light enough for novices, roomy enough for comfortable two-up riding, and relatively inexpensive to buy, insure, and operate when compared to the larger bikes that can perform the same tasks.

Of course, Yamaha's 653cc four isn't an average 650. It makes more maximum power and offers a wider range of usable power than any machine in the under-750cc class except Suzuki's 673cc four, which has a slight edge in the mid-range. The XJ650 is the narrowest, most compact (and possibly the lightest) 650-class power plant available, thanks largely to the designers who placed its alternator behind the cylinders instead of on one end of the crankshaft. It is one of the most vibration-free in-line fours on the road, and features like maintenance-free transistorized ignition, simple two-valve combustion chambers, and shaft final drive make it easy to keep the XJ650 running smoothly.

The first motorcycle using this great engine was introduced two years ago and received an indifferent reception here at *Motorcyclist*. Last year it finished sixth (out of nine) in our middleweight (500 to 650cc) touring comparison. That motorcycle was the XJ650 Maxim, dandified with standard American chopper garb. The Maxim's styling involved the usual compromises to range, handling, seat comfort, and riding position, so even though we loved the engine, we weren't impressed by the motorcycle as a whole.

It was frustrating, and made more so by occasional glimpses of the European XJ650, which seemed to complete the promise of the engine. Last year, the European-styled XJ550 Seca, which uses a smaller chain-drive version of the same basic engine design, won our touring comparison, and we opined that if the European XJ650 had been included, Yamaha might have captured the top two spots. Our editorial voice wasn't the only enthusiast publication heard in the call to import the 650 Maxim's European sibling, and plenty of consumers also told Yamaha they were ready to buy such a machine. Yamaha listened and produced the XJ650R Seca for their 1982 U.S. lineup.

Americanizing the XJ650R was mostly a matter of making it meet EPA emissions standards. It has the same carburetion as the 1982 Maxim, but lacks that bike's YICS induction, its automatic cam-chain tensioner, and its electronic tachometer. The Seca also wasn't fitted with the European version's oil cooler.

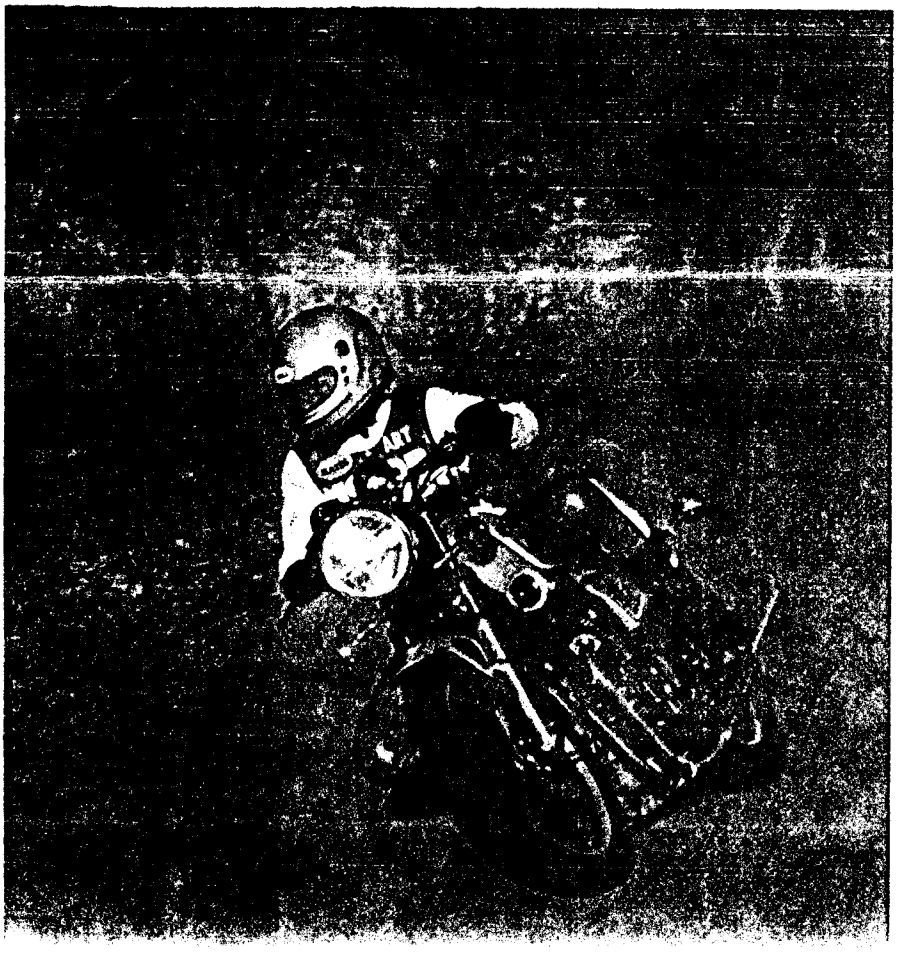
However, the 650 Seca does have most of the Continental version's appointments. Besides the items which are largely styling considerations—pipes, fenders, colors, etc.—there's a 5.2-gallon fuel tank, oversized headlight, rearset footpegs, low handlebar, and a wide, flat seat. The seat probably constitutes the single best change from the Maxim. Instead of the limited padding, confined movement, and somewhat awkward position afforded by the stylishly stepped Maxim saddle, the Seca's seat offers ample padding, room to stretch and fidget, and a riding position that stays comfortable for long periods of time. The low bars and rearset footpegs dictate a leaned-forward crouch, the preferred posture of European riders. Americans who like higher bars will find that the Seca's seat and footpegs readily accommodate such changes.

We'd be reluctant to change the handlebar, however. The standard riding position offered comfort and control not only when we were flinging the bike down the kind of twisty road conjured up by discussions of low bars and rearset pegs, but also in hours of cruising on interstate highways. Those 5.2 gallons of fuel permit you to cruise over 200 miles before switching to reserve, and on several occasions we did just that—nonstop—without tying knots in our back muscles or creating flat spots on our backsides. That leaned-forward riding position works perfectly when you are pushing through the air at 60 mph; wind pressure against your chest takes the weight off your arms, but you don't have to pull yourself forward, either.

The smoothness of the buzz-free engine and easy-riding suspension also coddles the tourer. Despite its sporting look, the XJ650R's suspension is lightly sprung and stiction-free, so it soaks up routine bumps such as seams, patches, and expansion joints. Large bumps and dips are a different matter. The suspension at both ends bottomed occasionally during solo riding, and the rear bottomed fairly frequently with a passenger. Preload collars on the rear dampers are the only suspension adjustments in sight. Air caps would be welcomed up front, and air-pressure or damping adjustments (or both) would help a lot with heavier loads. Of course, all these things are available from accessory firms, and aftermarket air caps are an inexpensive route to fork adjustability, but adjustable shocks will cost over $100. Most riders will probably find the stock shocks more than adequate until they begin to wear out.

The soft suspension performs fairly well during fast cornering too. It does permit the bike to settle in and use up some of its generous cornering clearance and it bottoms on big bumps, but in those all-too-common corners with choppy pavement at their apexes, the soft suspension does a better job of keeping the tires on the pavement than a stiffer or less responsive suspension. Even with the added unsprung weight of the shaft-drive mechanism, the wheels stayed properly planted in bumpy bends.

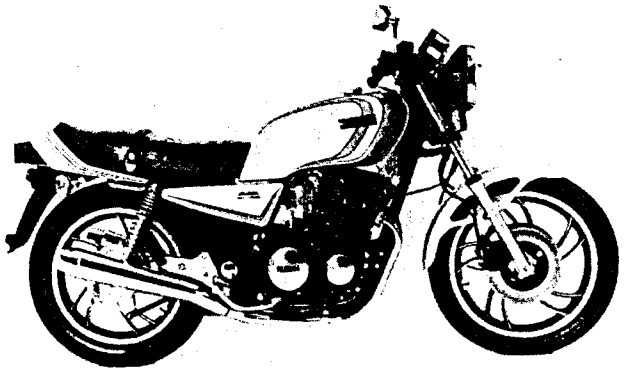
PHOTOS BILL JENKINS



Although they are fairly narrow in comparison to many similar bikes' tires, the 650R's Bridgestones stick to the road like a squashed cat and allow the rider to make the most of the bike's cornering clearance. When you finally do drag something, it's usually a folding footpeg which warns you that you're running out of room.

Partially because of the narrow tires, the 650 Seca handles quite nimbly at all speeds. It has none of the low-speed awkwardness of some flat-barred machines, and it flicks from side to side quickly and predictably in tight S-bends. Even when you're braking hard into a downhill hairpin, the steering feels light. The agility is not accompanied by instability or lack of precision at high speeds, either. The Seca doesn't wobble or wallow during WFO cornering, and it's easy to make the machine go exactly where you want it to.

Dual disc front brakes used to be a sure way to get road testers to rave about stopping power, but that was before Honda came along with their twin-piston calipers, which created a new standard for disc brakes. After riding the Honda 650 Nighthawk for last month's road test, the 650 Seca's dual disc front brake seems just OK by comparison. That's partially because it developed a



YAMAHA XJ650R SECA

PRICE (2200 2400 2600 2800 3000)	
1982 Yamaha XJ650 Seca	$3099
1982 Honda CB650SC	$2748
1982 Suzuki GS650E	$2599

WET WEIGHT (460 470 480 490 500)	
1982 Yamaha XJ650 Seca	504 lb
1982 Honda CB650SC	491 lb
1981 Suzuki GS650E	479 lb

QUARTER-MILE TIME (11.5 12.0 12.5 13.0 13.5)	
1982 Yamaha XJ650 Seca	12.92 sec., 98.0 mph
1982 Honda CB650SC	13.29 sec., 98.0 mph
1981 Suzuki GS650E	12.70 sec., 104.2 mph

HIGH-SPEED PASS, TERMINAL SPEED (71 72 73 74 75)	
1982 Yamaha XJ650 Seca	72.8 mph
1982 Honda CB650SC	70.5 mph
1981 Suzuki GS650E	75.4 mph

AVERAGE FUEL CONSUMPTION (30 35 40 45 50)	
1982 Yamaha XJ650 Seca	46.8 mpg
1982 Honda CB650SC	50.4 mpg
1981 Suzuki GS650E	52.0 mpg

AVERAGE TOURING RANGE (125 150 175 200 225)	
1982 Yamaha XJ650 Seca	239 miles
1982 Honda CB650SC	181 miles
1981 Suzuki GS650E	218 miles

Suggested retail price $3099
Warranty ..... 6 months, unlimited miles
Number of U.S. dealers ..... Approx. 1800
Recommended maintenance intervals ..... 5000 miles

ENGINE

Type ..... Air-cooled transverse in-line 4-stroke four
Valve arrangement ..... DOHC, 2 valves, adjusting shims on top of buckets
Displacement 653cc
Bore x stroke ..... 63.0 x 52.4mm
Compression ratio 9.2:1
Carburetion ..... 4, 32mm Hitachi constant-velocity
Ignition ..... Battery-powered, transistorized
Lubrication ..... Wet sump, 3.7 qt
Battery 12V, 14AH

DRIVE TRAIN

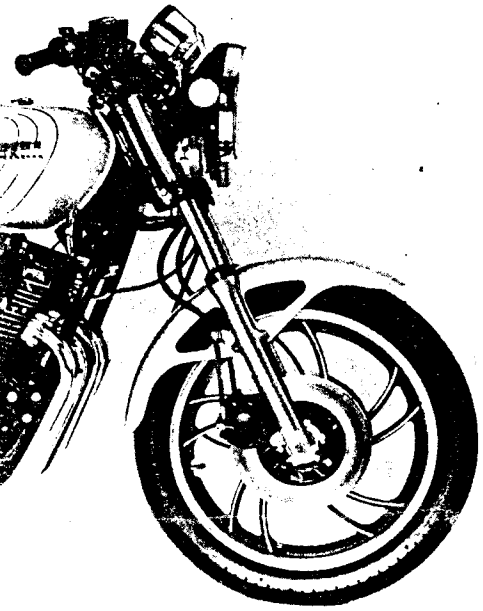
Primary transmission ..... Straight-cut gears, 1.672:1
Clutch ..... 15 plates, wet
Final drive ..... Shaft, 4.1795:1

CHASSIS

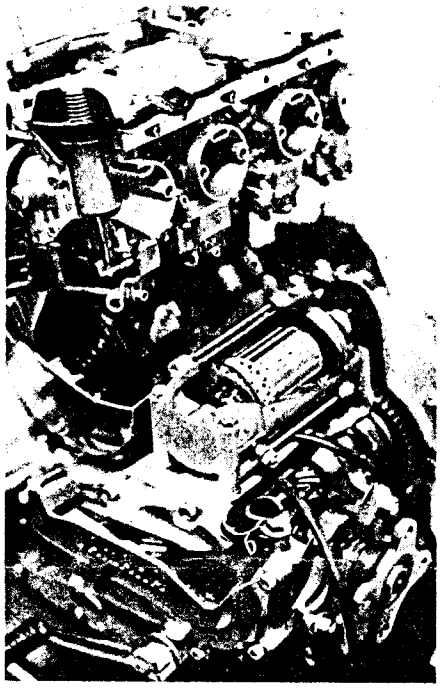
Front suspension ..... 36mm Kayaba, 5.6 in. travel
Rear suspension ..... Dual Kayaba dampers, 3.65 in. wheel travel, adjustments for spring preload
Front brake ..... 2, single-action calipers, 268mm discs
Rear brake ..... Single-leading-shoe drum, rod-operated
Front tire ..... 3.25H19 Bridgestone Mag. Mopus L-303
Rear tire ..... 120/90H18 Bridgestone Mag. Mopus S-716
Rake/trail ..... 27.75°/4.53 in.
Wheelbase ..... 56.5 in. (1435mm)
Seat height, unladen ..... 30.9 in. (785mm)
Fuel capacity ..... 5.1 gal (19L)
Wet weight ..... 504 lb (229kg)
Colors ..... Silver
Instruments ..... Speedometer, tachometer, odometer, tripmeter (resettable to zero); lights for left turn signal, right turn signal, oil level, high beam, neutral

PERFORMANCE

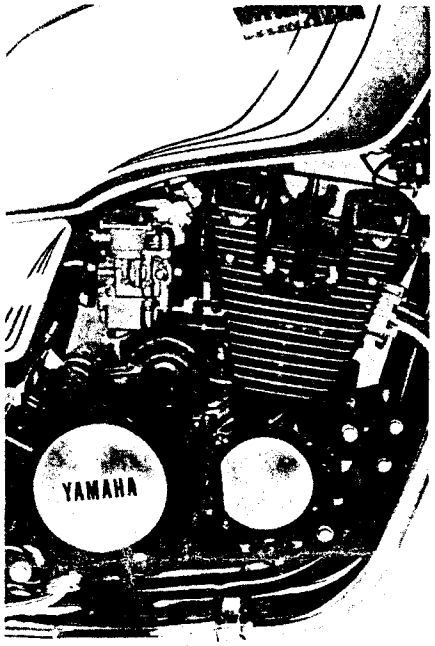
Fuel consumption ..... 35 to 56 mpg, 46.8 mpg avg.
Average touring range 239
Best ¼-mile acceleration ..... 12.916 sec., 102.50 mph
200-yd. top-gear acceleration from 50 mph ..... 72.8 mph terminal speed
RPM at 60 mph, top gear 4527
Calculated speed in gears at (redline) ..... (9500) 1st 47 mph; 2nd 68 mph; 3rd 89 mph; 4th 110 mph; 5th 126 mph
Speedometer error ..... 30 mph, actual 29.8; 60 mph, actual 60.1



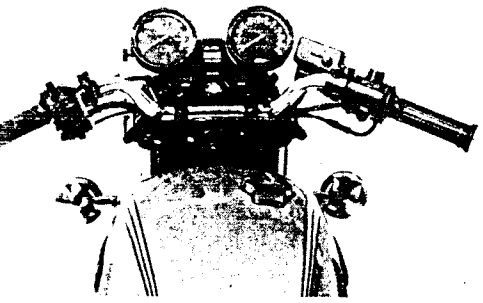
Soft front suspension allows a lot of nose-dive during braking. Fortunately, air caps for the fork are cheap. The steering-head bearings loosened up quickly.



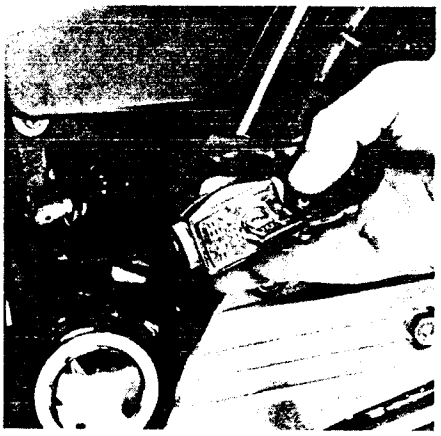
The 653cc engine is essentially identical to 1981 and earlier Maxim power plants. Putting the starter *and* alternator behind cylinders narrows the engine.



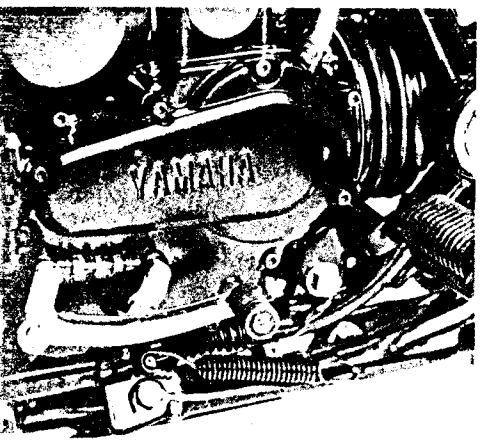
The narrow, powerful engine is ideal for a sporting bike, where the increased banking angle and the speed can be most fully utilized and appreciated.



The low, narrow handlebar creates a perfect high-speed riding position, even on long rides. An oil *level* light is the only unique feature of instrumentation.



Like the 650 Maxim, the Seca has a built-in security chain in its own compartment on the left side of the bike. The chain's lock operates with the ignition key.



With the rearset pegs, it was necessary to make the shift lever pivot forward; this may account in part for the less positive feel. Lever is easily adjusted.

PHOTOS: PAT BROLLIER

slightly spongy feel during a long, fast, downhill charge on a steep, twisty, slick, little road in Northern California and never returned to its original feel. The predictable, powerful drum rear brake was unaffected.

The slight change in brake feel was about as minor as the 650's other problems. When we first received the bike, power below 4000 rpm seemed to be slightly less than what we recalled from our experiences with 650 Maxims. We returned the 650 Seca to Yamaha for a tune-up, and thereafter it ran as we expected—very well—for the rest of our 2200-mile test. The only maintenance in that time was the addition of a quart of oil and one clutch adjustment.

When it was running properly, the 650 Seca pulled well from about 2700 rpm and was particularly strong near the 9500-rpm redline. At the dragstrip, it posted the same terminal speed as the 750 Seca run that day: 102.5 mph. Of course, at 12.92 seconds, it also took about half a second longer than the 750 to charge through the quarter-mile from a standing start, and the top-gear 200-yard roll-on acceleration test from 50 mph found the 650 going 1.6 mph slower than its bigger stablemate; that's a not-inconsiderable difference. Nonetheless, its 72.8-mph terminal speed is extremely respectable by 650cc standards and, when combined with the under-13-second quarter-mile time, emphasizes the potency of the XJ engine.

Aside from a smooth-working clutch (which, in combination with the riding position, made the Seca easy to launch at the dragstrip), the XJ650's drive train was unremarkable. The five-speed gearbox shifted predictably but not particularly smoothly; we missed an occasional rushed shift. There was a bit of lash, but not enough that you had to allow for it when cornering. Throttle response was slightly abrupt too. The engine was mechanically noisier than average but not annoyingly so. When the engine was cold, the handlebar-actuated choke was needed for only a half-mile or less. We averaged about 52 mpg while cruising on the highway and got about 46 mpg in the city, although mileage dropped as low as 35 mpg during very hard twisty-road riding.

The 650 Seca's list of features is devoid of flash and gimmickry. Like the bike itself, the extras are straightforward and designed for practicality and convenience. For example, take the big, bright, eight-inch quartz-halogen head-

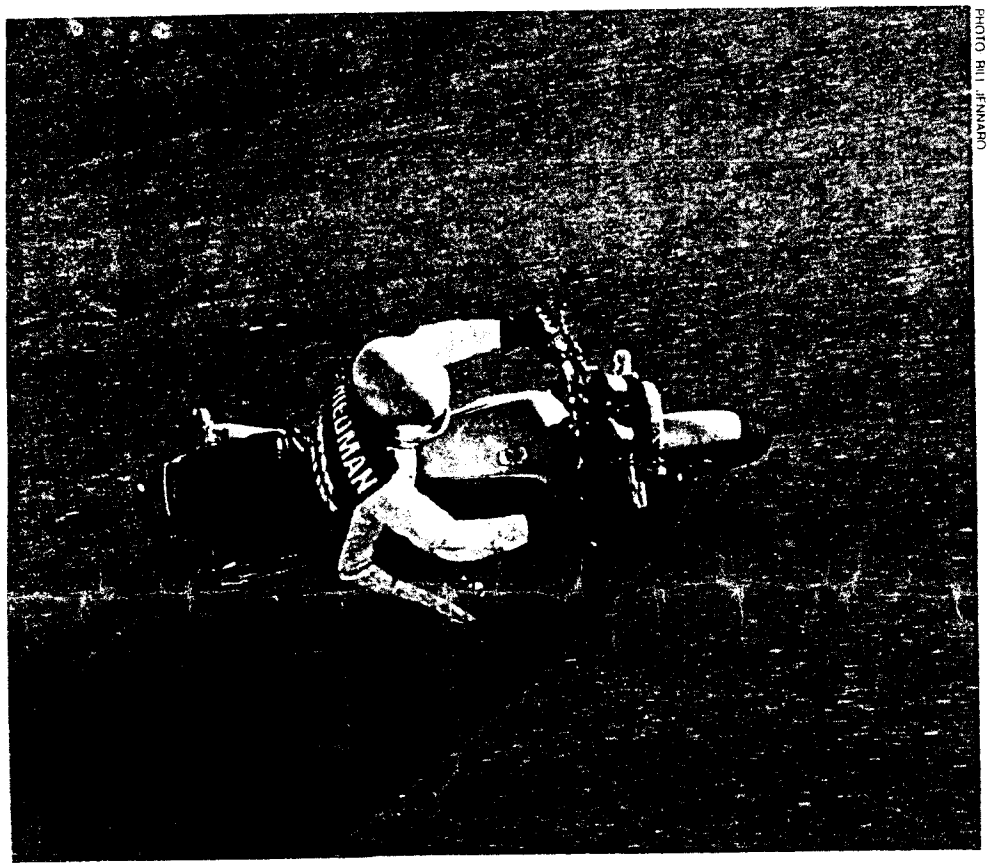
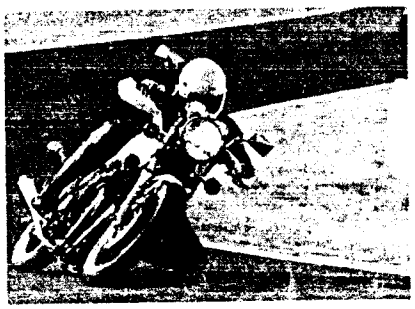


PHOTO: BILL FANARO

light which fills the road ahead with more light than most riders are used to. It may not have the sales appeal of an L.E.D. readout that tells you the temperature and pressure of your shock absorbers, but you'll appreciate it much more when you're riding at night. The same sort of practical thinking provided louder-than-average dual horns, self-cancelling turn signals, an offset gas cap to allow topping-off on the sidestand, an easily deployed centerstand, a longer-than-usual rear fender, tubeless tires, and a dash light that warns you when your oil *level* is getting low—before you lose oil pressure and damage your engine. Despite its no-frills approach, the 650 Seca, at $3099, sells for $100 more than its flashier brother, the XJ650 Maxim. This makes sense when you realize that the Maxim is the American standard model and the Seca is the exotic sporting variation imported in smaller quantities.

No, the XJ650R Seca won't hook buyers drawn to gadgets or glitter. But its simple styling and direct approach will provide discerning riders with exceptional performance, comfort, operating economy, and handling. It finally gives enthusiasts an opportunity to put one of motorcycling's great engines through its paces in a chassis to match. *M*

OFF THE RECORD



On the racetrack in Japan, Vreeke found the Seca genuinely fun to ride.

While in Japan testing the Turbo 650 and water-cooled Vision V-twin, I had the opportunity to take a few laps around Yamaha's test course on the sporty 650 Seca. It was, indeed, an opportunity.

Until then, I could only imagine the potential of the aggressive Maxim engine wrapped in a European chassis. These thoughts were, of course, nurtured by the ravings of the European press over just such a machine. After a few laps around the course, I was pleased to discover the Seca came close to my expectations; it was fast, nimble, and had plenty of brake power, responsive suspension, and ample ground clearance, so long as I didn't get too crazy. The rearset seating position was as close to perfect as it could be without sacrificing comfort.

The Seca was exceedingly stable through the top-gear, wide-open sweepers and steered quickly enough through the tight esses to keep me from working too hard. But the suspension was too soft to handle the deep mid-turn dips and bumps. Both ends would bottom or often sink enough to allow the undercarriage to drag. Though the overall ride is supple and ground clearance ample for all but the most obsessed riders, the Seca would benefit greatly from adjustable suspension.

Air caps and an adjustment that provides for more rebound damping in the rear would enable the Seca to cover a wider range of riding chores, including two-up and heavily laden touring, for which the Seca is otherwise so comfortably suited. But fitting caps and accessory shocks is a relatively minor expense considering what you'll end up with: a rock-steady chassis, a rocket of an engine, a shaft that doesn't interfere with either one, and a machine that is genuinely fun to ride.

I am glad Yamaha decided to bring the 650 Seca to our shores. I think there are those out there who will really appreciate it; those who put performance above all, but get depressed every time they glance at their checkbooks.

—Ken Vreeke

It's easy to like a bike because it does one important thing well. I can develop a lot of affection for a bike that's exceptionally comfortable, get excited when a bike shows some real fancy footwork on a swoopy road, or feel quite content on a bike that's unusually predictable and thrifty in traffic. Since the 650 Seca performs well in all those ways, you can be sure I like it a bunch. I put over 800 relaxed miles on it cruising the interstates, and my most memorable twisty-road ride in months happened aboard the 650 Seca on Page Mill Road above Palo Alto, California.

The Seca's style also appeals to me. It's sporting, comfortable and purposeful without gadgetry, mechanical complexity, or cosmetic embellishments like a fairing. In short, this XJ650 is straightforward, and it performs. I recommend it without reservation.

—Art Friedman

Thanks, Europe. Thanks, Yamaha.

The marketing departments of the Japanese companies still seem to think of American riders as frustrated chopper pilots, and much though I hate to admit it, they've been selling a lot of motorcycles based on that assumption.

If it hadn't been for the legions of frustrated Kenny Roberts fans in Europe, the 650 Seca, the Honda 900F, and the Suzuki Katana might not exist at all. It's bad enough when the Europeans get flashy sport bikes that we can only salivate over; imagine how bleak things would look if these machines didn't exist at all.

Maybe the public outcry that brought the Seca 650 to America has convinced some of the Japanese decision-makers to give us more of the trick stuff right off the starting gate. I hope Yamaha sells enough Secas this year to drive the message home.

The 650 needs adjustable suspension badly; that's my only major criticism. With adjustable fork damping, adjustable shocks, and a set of air caps, I'm sure I could find a place for it in my garage.

—Dexter Ford