

# Street Test

Say something exotic.  
"Yamaha XS500D."  
Right on!

Ignoring cost and class, trend and time, few motorcycles have approached, and fewer yet paralleled, this tiger in respect to sophistication with its dual-cam, four-valve head with central spark plug. After paying respects to NSU's locomotion-drive cam, Ducati's desmo and Honda's torsion bar DOHC, worshipers of the exotic find themselves right back in Hamamatsu City nodding in agreement. Whether or not you need it is something else, something we're going to get into. But the fact remains, Yamaha's XS500D (D for '77) is the juiciest technical feast of all.

While the 500 four-stroke twin class has been a perennial displacement standard, only five marques remain in the hunt, counting Honda, Laverda, Ducati and the 600 BMW. But with BMW now right at three grand, Laverda maintaining a low profile in the States, Honda deglamorizing their twin by replacing torsion bars with coiled valve springs, and the new Ducati still locked in its native Italy, Yamaha continues to bear down with trick chassis hardware and futuristic styling, putting evermore heat on their contemporaries.

Their '77 version of the XS500 sports standard mag wheels, juice discs front and rear, and squared-off black glass frock. Unashamedly intent on domination, Yamaha seals the package with a rock-bottom sticker price of \$1550. Without even throwing a leg over it, Yamaha's l-o-o-king g-o-o-d. But let's test it anyway.

What is it? Play roadster? Glorified commuter? Weekend warrior? Or a real fairing and bedroll tripper? Falling into our clutches with a mere 82 miles registered, Yamaha's fanciest twin was first relegated to commuter work until it had logged 500 miles, during which time we began to wonder if the thing hadn't been born in Scotland rather than Japan; fuel figures were looking like 60 miles per gallon! Could it be true? Sure, we were cooling it, but not that cool. Get ready to chalk up one for touring; with this kind of mileage and the Yummy's four-gallon tank, we could be looking at a 240-mile range—outstanding.

#### THEN AND NOW

The last occasion Motorcyclist had

to go a few rounds with Yamaha's XS500 twin was in 1975, then heading into its third year of production. Highlights of the test included admiration of its aggressiveness and performance, but we didn't exactly fall in love. Mileage ranged from 40 mpg commuting to mid-40s on tour. Pronounced driveline snatch was reported at that time and it was more expensive than the Honda CB500 (November 1975 Motorcyclist).

Well, Yamaha baby, you've come a long, long way. You've been burning the midnight oil and reading a lot of magazines, and it shows. After our 500-mile pampering, the 1977 version of the XS500 was given its first taste of the whip, a 100-mile mountain and desert exercise embracing 35 miles flat-out over our 5000-foot hill followed by 65 miles steady 55 mph highway running, with a fuel stop immediately ensuing the hillbilly berzerko and another after the legal limit cruise on level freeway. Over the hill, with throttle cable stretched to the near breaking point, the XS turned in a most creditable 39.24 miles per gal-

## The Many Faces Of YAMAHA'S XS500 TWIN

60 MPG, 90-MPH QUARTER,  
100-MPH TOP END...AND EVERY  
GOODIE KNOWN TO MAN



lon corrected, representing close to the minimum a rider would likely encounter on tour, unless he were riding double or working in such a devilish environment as Death Valley's Wildrose Canyon. Now this fuel mileage is virtually identical to what the older 1975 model had achieved just loafing around town. And out on the highway the '77 model now got an outstanding 59.7 mpg corrected, almost 12 mpg better than the 75's performance (that mileage, incidentally, was *not* corrected for tripmeter error). That's a 25 percent improvement! What th' hay was going on here? How'd they do it?

Well, in 1976 Yamaha switched from 32mm Keihin SU-type carbs to Mikunis of the same bore and type, but with rubber diaphragms and leaner jets. They credit the vastly improved economy to the leaner jets and minor head contour work. But more important is the fact that with the Mikunis came a much smoother engine; any hint of that typical Japanese driveline snatch reported in our previous test is now gone! The '77 XS500D has been civilized without losing performance. If anything, it's stronger than before, and so much more enjoyable to ride, quieter to boot. This is one of the most dramatic updates we've seen on a given model in years. Tripmeter error, by the way, is 5 percent, making the Ya-

maha counter 95 percent accurate, and this discrepancy has already been figured in the above fuel mileage listings, so they are accurate. You'll show slightly more optimistic consumption unless you also use this factor.

#### GITTIN' IT ON

Up on the mountain the Yammy straps it on hard, moving fluidly through the esses without a sign of wanting to lay down or stay down. The chassis is completely neutral in any attitude, unresisting and immediately responsive to slight or even major changes in bank due to tightening radius or unsuspected obstacle. It can be whipped around with the ease of a lightweight, some of its nimbleness undoubtedly due to the fine Bridgestone tires that have a very soft (gummy) Shore hardness of 58 front and 54 rear. You'll eat 'em up in the woods. Didn't come close to getting into the hardware.

We had rear suspension set midway in its five-way adjustment and, with a 185-pounder aboard, the experience was soul-satisfying and devoid of quivers. No wobbles, weaves or oscillations due to speed or road irregularities; it's a straight-arrow chassis with a suspension system that doesn't chip your teeth. Enough of this poppycock about a motorcycle having to ride like a dump truck to be fast and safe. Yamaha, and a

few others, prove it. Fork travel is right at 5 inches, with 3 inches of axle travel out back. That's reportedly .8 and .2-inch respectively more than the '75 models had. Both ends absorb impact with a relatively soft and progressive cushion that reflects a pretty decent blend of spring rate and damping for a production job.

Although we finally saw 103 on the speedometer on a downhill run, we'd concede an honest century mark. Redline begins at 9000 and runs through 12; perhaps as she limbers up, the little dude might live up to its factory-given top end of 110 mph. Or maybe it's just because there's no CHP in Japan. But does it really matter, with fuel prices now almost on a par with vintage wine and radar traps behind every tree? More practically speaking, the XS500 will cruise comfortably at any touring speed you can afford to run, without hint of heat or going off song. For with this engine's exotic cranium, we're not about to stress it with extended high revs. It's got so much technical overkill upstairs that it can laugh at those three-digit numbers. Cruising speeds of 55, 60, 65, 70, 75, 80 and 100 mph registered corresponding engine revs of 4400, 4700, 5200, 5500, 6000, 6300 and 8000. Our initial outing had gone exceptionally well, giving us good vibes about gymnastics yet to come that would include: an all-day tour, a day at the drags and, finally, an afternoon tied to the dynamometer rack. In all we would put nearly 2500 miles on the twin before reluctantly turning it back in to Yamaha International. Meanwhile, let's look at the chassis, special features and engine makeup.

#### CHASSIS

Basically unchanged since its 1973 introduction, the race-bred all-tube frame is full double-loop front to back, with a heavily gusseted third top tube member tying the fork head into the wasp-waisted horizontal tank



## YAMAHA XS500

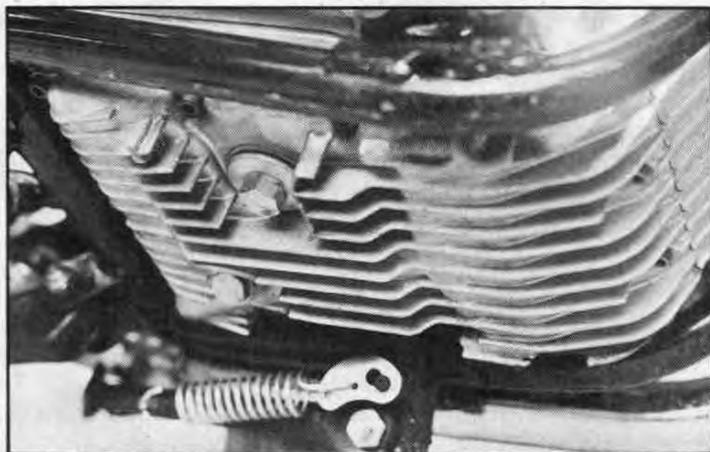
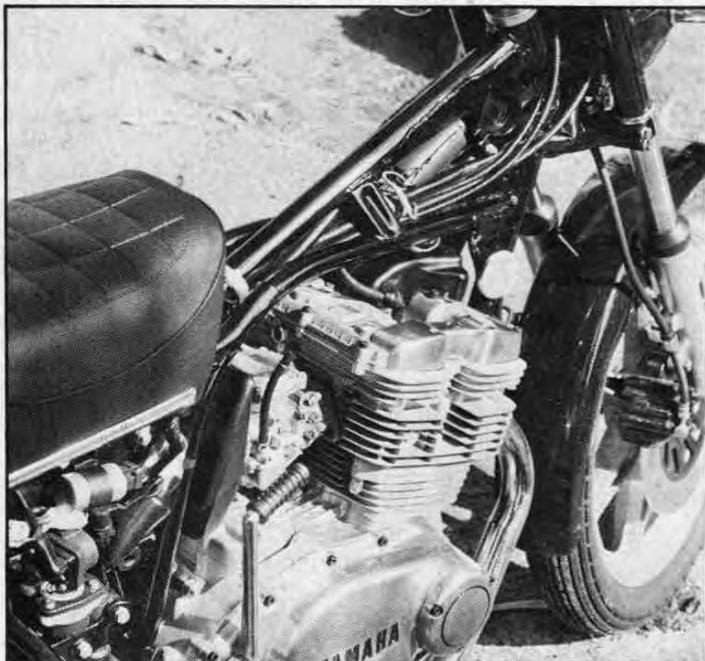
conventional full rocker arm setup and the direct cam-valve contact system such as Kawasaki uses on their Z. The main advantage here, of course, is that valve lash is easily adjusted through conventional adjuster screws incorporated in these cam followers, individually for each valve. It's an exceptionally simple and effective design that the old Indian twins used between cam and valve in their flatheads. What else is new?

Why four valves per cylinder? We might say that four valves per cylinder provide more area than two, with a bonus in reduced valve weight and

also less spring pressure on the cam. Prove it to yourself; draw two circles on paper, then in one draw four circles as large as possible, and in the other draw two circles as large as possible. The total area of the four circles in the one will exceed the total area of the two circles in the other. Yes, the lighter weight of each small valve permits higher rpm without valve float than would be possible with a comparable single large intake and exhaust valve. Righteous, indeed, but we suspect that such lofty thoughts might not have constituted the whole, if even the strongest, motivation behind Yamaha's exoticism. Think about it; the way

they've rigged it, the engine will stop breathing long before the valves tangle, giving the deaf, dumb and blind ample time to back out of it before it destructs. Even more realistically, with federal engine decibel ratings as critical as they are now—some can't pass proposed sound tests on mechanical noise alone, even when motored over without firing, by a remote power source—the smaller components and lighter spring pressure of the XS500's top end won't hammer nearly as hard as a big two-valve head. So less racket. Either way, you win.

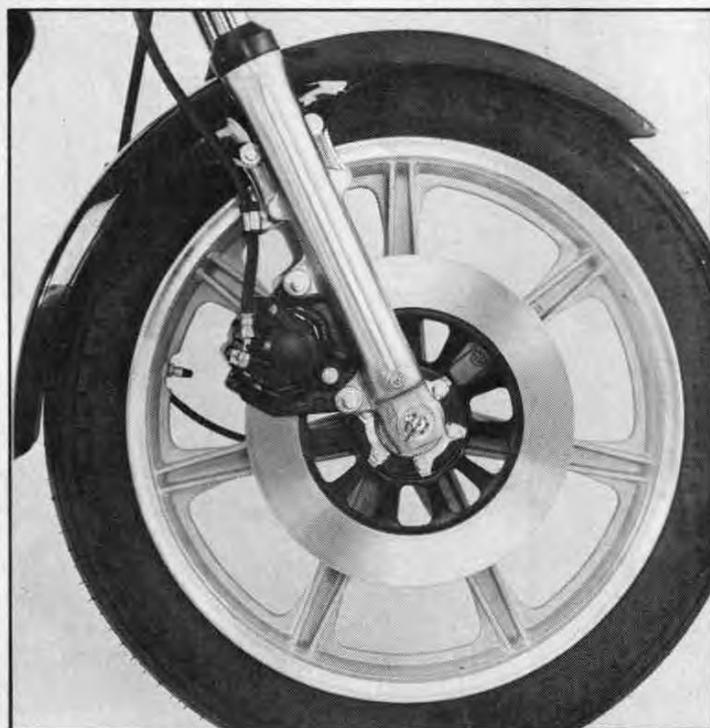
Why is the '77 model so noticeably improved over the '75 we tested pre-



*LEFT: Rugged all-tube frame is flex-free. Unit head and rocker box, new for 1977, precludes warpage and oil leaks... and removal of cylinder head with engine in frame. Although suspension was subjected to abnormal cruelties of rare off-road sortie, and the fork springs went away, the stock alloy wheels withstood pounding. ABOVE: Ribbed crankcase removes with engine in frame.*



*Overly raked mufflers will probably be lowered in 1978 to ease saddlebag fitting. Mileage at steady 70 mph is 43-50 mpg, per wind and grade, onto Reserve at 173 mi.*



*Plastic fenders would shrug off a fall or a bump easily, are inexpensive and reduce unsprung weight. Need mud flap. 466-pounds is heavy for 500 twin, but handles light.*

viously? We mentioned the carburetors that brought smoother running and eliminated driveline snatch, and the leaner jetting that introduced remarkable economy. Head configuration and porting were also slightly modified, and although valve timing duration remains the same at 284° for both intake and exhaust, overlap between exhaust and intake has been increased from 71° to 75. And the '77 version has 10 percent more flywheel weight that, in conjunction with the new Mikuni carbs, is a definite factor in the elimination of driveline lurch when the throttle is quickly rolled on or off. Remembering that the earlier engine was a powerful sprinter even then, these few modifications become quite meaningful in the seat of the pants as well as on paper. And the engine and drivetrain are dead-consistent, there being only a quarter of a mile per hour and seven-tenths of a second between our highest and lowest quarter-mile runs; the best performance of 90.09 mph and 14.31 seconds falling in the same run. The Webco dyno figure of almost 39 hp from a 30 cubic inch engine (at the gearbox countershaft) is impressive for a street/touring machine. Zero to 60 mph time is 6.2.

Of constant-mesh type, the five-speed gearbox is all ball and roller bearing construction, cam and fork operated. Lever action is short, crisp and precise, making for quick, sure, silent changes. Even during the most tedious and prolonged stop and go traffic work, neutral selection was always clean and positive, without a hitch. High marks here.

The oiling system consists of double trochoid pumps, with pressure to crankshaft mains, rod bearings and valve gear, and gravity fallout to the self-levelling chambers of clutch and gearbox. Level check is made through a common opening with an included dipstick, with filler neck nearby. A disposable filter is backed up by bypass and relief valves that automatically ensure lubrication in case of stoppage.

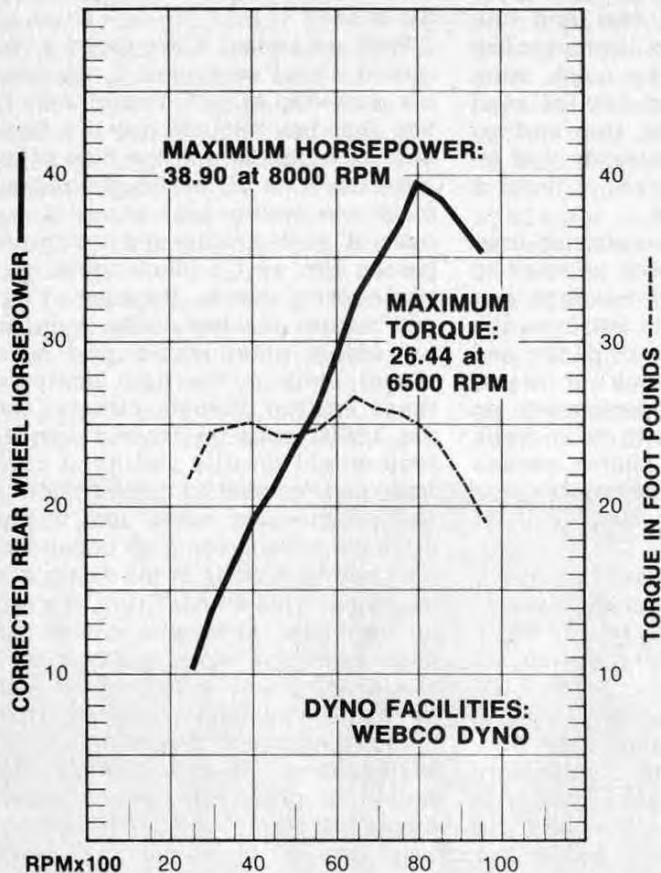
Electrics are by Hitachi, with AC generator, rectifier and resin-sealed pointless regulator. It's Hitachi again on the ignition coils and 12-volt, 14 ampere hour battery, with NGK 14mm plugs. Headlight illumination is good, up to touring standards. Definitely superior are the dual taillight bulbs that provided safety backup in case one bulb fails. This and the self-cancelling turn signals are

uniquely Yamaha features that all manufacturers would do well to copy. **SO WHAT?**

Well, we cooled it, we raced it, we dyno'd it and we toured it. We tried our damndest to pick it apart, only to find that the XS500D has the fleetness of a gazelle and the hide of an armadillo. One of the finest handling machines we've ever slung a leg over, it splits traffic and mountain passes with all the intuitiveness of a heat-seeking missile. Because of this and superb braking ability, it is an extremely pleasurable and safe mount, and in the final analysis, these are the ultimate criteria. But the XS500 goes far beyond with its featherlight throttle and hand controls, undetectable oil consumption in the first thousand miles, zerk fittings on brake pedal pivot, both brake callipers and both ends of the swing arm bearings. Cleanliness? Hey, it's got its own little genie who comes out each night and wipes it off, or so it would seem—not a hint of oil mist *anywhere* on engine or chassis. Multi smoothness, record economy, long touring range, 90-mile quarter, cafe handling, posh ride, sharp looks, mags, full discs... for under sixteen bills? Beat it. **M**



**THE TOUR**—350 miles in a day, 50 of them off-road over rugged 7000-foot Piute Mountain section of the classic Greenhorn National Enduro, where the XS500 proved almost as good a fire-roader as touring roadster by holding official enduro speed average fitted with a \$38 Bates windshield. Back on the deserted highway below, 105 mph and 8400 rpm proved higher than previous top-end without shield. Handling at this speed with Bates sail: impeccable! Bike and shield rate top marks. How many genuine street roadsters could safely handle both on- and off-road with such assurance? The XS500 is bigger than all outdoors—a fire-roadin' fool. If it were a sack of doughnuts, and you opened it up when you got home, there'd be 13; it's a baker's dozen if there ever was one. Add versatility to its virtues. **M**



### TEST BIKE: YAMAHA XS500

Price, sugg. retail ..... \$1550

#### ENGINE

Type ..... DOHC 8-valve vertical twin  
 Bore/stroke ..... 73 x 59.6mm (2.874 x 2.346 in.)  
 Piston displacement ..... 498cc (30.39 cu. in.)  
 Compression ratio ..... 8.5:1  
 Carburetion ..... (2) Mikuni BS 38 (38mm bore, 32mm venturi)

BHP @ rpm ..... 38.90 @ 8000

Torque @ rpm ..... 26.44 @ 6500

Air filtration ..... Dry foam

Ignition ..... Battery and coil

Lubrication ..... Wet sump; dual trochoid pumps

Electrical power ..... 12-V alternator

Battery ..... 12-V, 14 ah

#### DRIVETRAIN

Primary transmission ..... Spur gear (3.038)

Clutch ..... Multi-plate, wet

Secondary transmission ..... # 530 chain (2.625)

Gear ratios, overall ..... (1) 18.60 (2) 12.36 (3) 9.51

(4) 7.69 (5) 6.43

#### CHASSIS & SUSPENSION

Suspension, front ..... Telescopic, 5-in. travel

Suspension, rear ..... Swing arm, 3-in. travel

Tire, front ..... Bridgestone 3.25H 19

Tire, rear ..... Bridgestone 4.00H 18

Brake, front ..... 11.73x1.45 in.x2(298x36.9mm x2)

Brake, rear ..... 10.51x1.45 in.x2 (267x36.9mm x2)

Brake swept area ..... 185 in./sq.

Rake/trail ..... 27.5°/4.6 in. (117mm)

Wheelbase ..... 56.4 in. (143.3 cm)

Seat height ..... 32.8 in. (83.3 cm)

Handlebar width ..... 29.2 in. (74.2 cm)

Ground clearance ..... 6.5 in. (16.5 cm)

Instruments ..... 140 mph speedometer, reset odometer:

12,000 rpm tachometer: oil press,

neutral, turn signal lights.

Stands ..... Side and center

Tire retention device(s) ..... Serrated rim edges

#### WEIGHTS & CAPACITIES

Fuel capacity ..... 4.0 gal. (15 liters)

Oil capacity ..... 3.2 qts. (3.0 liters)

Weight, wet, unladen ..... 466 lbs. (211.37 kg)

#### PERFORMANCE

Standing start quarter-mile ..... 14.31 sec./90 mph

Average fuel consumption ..... 59.7 @ steady 55 mph

#### PRICE

YAMAHA XS500D	\$1550
HONDA CB500T	\$1545
HONDA CB550F	\$1820

1400 1500 1600 1700 1800

#### HORSE-POWER

YAMAHA XS500D	38.9
HONDA CB500T	33.9
HONDA CB550F	38.4

20 25 30 35 40

#### QUARTER-MILE

YAMAHA XS500D	14.3 at 90mph
HONDA CB500T	14.8 at 86mph
HONDA CB550F	14.1 at 91mph

5 10 15 20 25

#### WEIGHT

YAMAHA XS500D	466lbs
HONDA CB500T	459lbs
HONDA CB550F	462lbs

300 350 400 450 500