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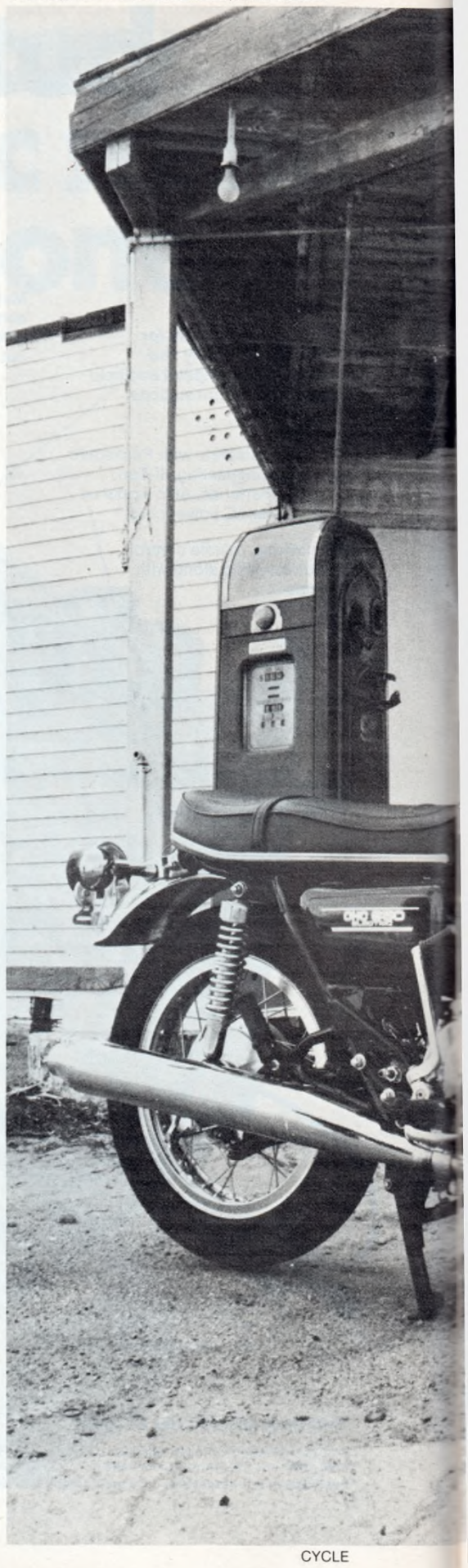


Cycle Test

YAMAHA TX650A

Different versions of Yamaha's 650 have come and gone. Here's the latest—and best.

● You've heard it all before. The British vertical twin is alive and well—and being manufactured in Japan. It's a better product for the change in climate too, because the new location allows a traditional concept to be recast by (modern) Japanese technology. Take the 650 Yamaha. Oriental wizardry preserves vertical-twin virtues—power, agility and compactness—and washes out the stains—oil leaks, thrashing mechanical noises, Weird-Joseph electrics, numbing vibrations. And the Japanese include all the civilities of present-day motoring: idiot lights that wink and electric starters that end kicking. You've heard it all before.

That kind of critique would cause any self-respecting Anglophile to pop out his neck muscles and lead with his chin. *He'd* heard it all before, and it was rubbish.

A British bike man would tell you all right. He'd tell you that a bit of oil never hurt any concrete floor. Nice engine that Yamaha 650, what with its overhead camshaft and all, *but* the thing shook like the very clappers of 'ell, and the bike was not a proper, line-holding steerer. Of what benefit was an electric starter after the machine had served its owner a fence-post brunch shortly before tea?

You've heard it all before. But where was the truth? *That* kept changing because Yamaha kept rearranging their 650 just as BSA-Triumph soldiered on to Armageddon at Meridan. While Yamaha's 650 quick-changed from the XS1 (1970) to the XS1B (1971) to the XS2 (1972) to the TX650 (1973) to the TX650A (1974), back in England the BSA twins marched to the wall and thence to extinction, and Triumph pumped their 650s into 750s in the damp shadow of that wall. The misery had not all piled up in England. Yamaha engineered a thoroughly modern 750 vertical twin which owed nothing to England; but on the road, Yamaha's newcomer never equalled its impressive engineering credentials. The TX750 disappeared from Yamaha's 1974 press-release kit. Line leadership on the street reverted to Yamaha's 650 vertical twin.

The TX650A is quite simply a different motorcycle from the XS-series Yamahas, or the TX650. Of course the engine remains fundamentally the same, but Yamaha, like so many other manufacturers, relentlessly modify a machine until a gradual metamorphic change occurs: it's the same, but it's different and new. The cylinderhead, crankshaft, and crankcases in the TX-series differ a bit from earlier models. The TX650A frame is new. It's a heavier, more rigid structure with beefed-up gusseting at the swingarm pivot and the steering head. The wall thicknesses of frame members have been increased. Furthermore, the swingarm is slightly longer (as well as considerably stronger), thus stretching out the wheelbase to 57.5 inches. The frame geometry has stayed the same; the TX650A rake and trail dimensions are identical to the XS-series motorcycles, even though the front fork and disc brake assemblies depart from the TX's forerunners. This recitation covers the major changes in the understructure of the big Yamaha twin. Even a quick recap illustrates the dangers inherent in talking about "the Yamaha 650." Given the pace of Japanese modification, the first question must necessarily be: "Which 650 Yamaha?"

Yamaha made purposeful changes to the 650. Traditionally, these efforts have centered in two areas, 1) to make the motorcycle handle better, and 2) to control the vibration which reaches the rider. The TX650A handles well, and at a price. The suspension system works between levels of "firm" and "harsh." The front suspension fits the firm-sporting category; the rear units are unpleasantly harsh—too stiff in order to be a good match for the front-fork action.

On smooth asphalt the motorcycle maintains its composure on corners, and presents no real ground clearance problems. True, the sidestand will touch down on the left-handers if you get going quickly, though no impediments exist on righthanders. The new headers and mufflers are in and up and out of the way.

Going right, the rider must determine how much faith he places in the tires, and proceed accordingly. The Yokohama tires work well on the TX650 as OEM items. Certainly they are a vast leap forward from the old made-in-Japan K-70 Dunlops which the XS1 used, much to the detriment of its handling. So much for smooth roadways.

When our test bike got rolling quickly on rough surfaced corners, the rear suspension proved too stiff, thus leaving the back end hopping and jumping its way toward the outside. If anything, all of this may heighten respect for the Yokohama rear tire while encouraging a search for some good accessory shocks. One other kind of roughery bothers the TX650A; freeway rain grooves cause the bike to hunt and wander on its wheels. A scarey experience it's not, though it will click your alertness full-on the first couple times you encounter that concrete rippling.

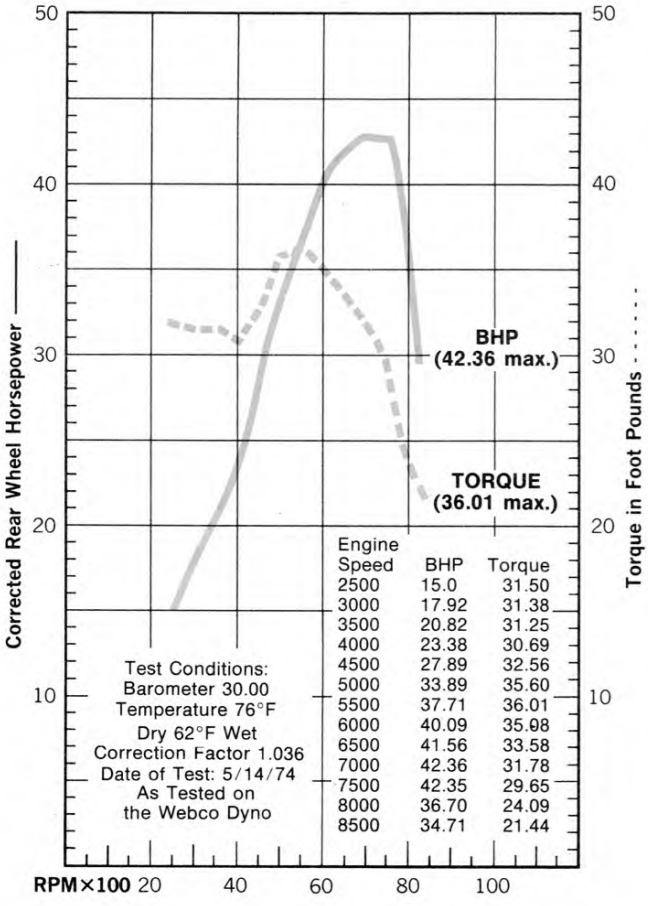
Yamaha could not deal with the 650's vibration with an elaborate engineering cure inside the engine cases, such as a system of contra-rotating weights and bobs and balancers. A drastic solution would dictate an entirely new engine, so Yamaha has tried to squelch as much of the twin's vibration as possible with remedial measures. The XS1B was an archtypical shaker, and the XS2 shook only with slightly less enthusiasm. Late series XS1Bs had their compression ratios dropped from 8.7:1 down to 8.1:1. And Yamaha stayed with the lower compression ratio through the XS2 model under the general theory that less cylinder pressure translates into milder shaking from the engine. The 650A underwent further piston modifications: Yamaha nudged the compression back up to 8.4:1 and lightened the pistons 20 percent in order to reduce the reciprocating mass inside the engine. These TX650A pistons ride on lighter connecting rods too. Efforts to get a smoother running engine extended back into the carburetion system, where detailed changes in the circuitry and metering may have eased roughness caused by uneven transitions in carburetion.

Yamaha's diligence has been rewarded. The TX650A easily is the smoothest 650 Yamaha *Cycle* has tested. Anglophiles will point out that the Yamaha remedial system is neither as imaginative nor effective as the Norton Isolastic design, and that's true. Nevertheless the Yamaha 650 vibrates far less than a 650 or 750 Triumph. The Yamaha is unquestionably smoother than Benelli's 650 vertical twin.

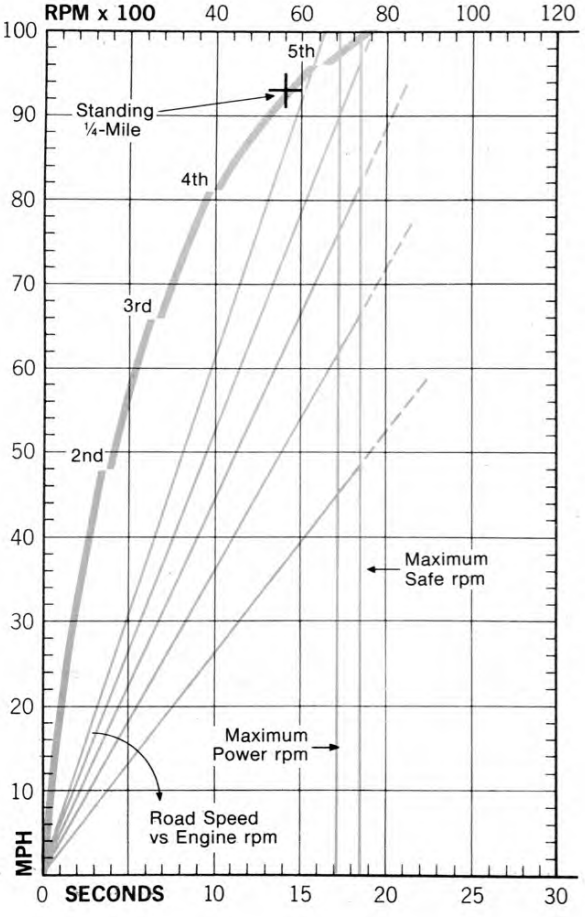
The Yamaha does not present the rider with intolerable, or even unpleasant, vibration. The machine buzzes and vibrates above 5000 rpm. At present cruising speeds in fifth gear, the rider will feel vibration through the pegs (especially the left one) if he checks for it with the balls of his feet. With feet resting on the pegs at the arches, no real complaint can be lodged. The rubber-mounted handlebars

YAMAHA TX650A

Price, suggested retail	$1804 POE West Coast; $1818 POE East Coast
Tire, front	3.50 x 19 Yokohama Y-982
rear	4.00 x 18 Yokohama Y-985
Brake, front	11.75 in. x 1.9 in. x 2 (298.5mm x 48.3mm x 2)
rear	7.1 in. x 1.18 in. (180mm x 30mm)
Brake swept area	139.5 sq. in. (899.78 sq. cm)
Specific brake loading	4.76 lbs/sq.in.
Engine type	Four-stroke SOHC vertical twin
Bore and stroke	2.953 in. x 2.913 in. 75mm x 74mm
Piston displacement	39.85 cu.in., 653cc
Compression ratio	8.4:1
Carburetion	2, 30.6mm Mikuni CV
Air filtration	Dry Paper Element
Ignition	Battery & Coil
Bhp @ rpm (actual)	42.36 @ 7000 rpm
Torque @ rpm (actual)	36.01 @ 5500 rpm
Rake/Trail	27°/3.9 in. (101mm)
Mph/1000 rpm, top gear	15.0 mph
Fuel capacity	3.7 gal. (14 l)
Oil capacity	2.6 qt. (2500cc)
Electrical power	180 watts @ 2500 rpm
Battery	12v, 12ah
Gear ratios, overall	11.81, 8.47, 6.932, 5.84, 5.1
Primary transmission	Spur gears, 2.667
Secondary transmission	⅜ x ⅝, 2.0
Wheelbase	57.5 (146 cm)
Seat height	30.5 in. (77.5cm)
Ground clearance	4.75 in. (12.0cm)
Curb weight	495 lbs. (22.5kg.)
Test weight	665 lbs. (302.3kg.)
Instruments	tachometer, speedometer, odometer, tripmeter
Sound level (California Standard)	83.2 db(A)
Standing start ¼-mile	14.08 seconds @ 93.07 mph
Average fuel consumption	51.1 mpg
Speedometer error	30 mph, actual 26.20 60 mph, actual 54.77
Braking force (actual)	.853G



Engine Speed	BHP	Torque
2500	15.0	31.50
3000	17.92	31.38
3500	20.82	31.25
4000	23.38	30.69
4500	27.89	32.56
5000	33.89	35.60
5500	37.71	36.01
6000	40.09	35.08
6500	41.56	33.58
7000	42.36	31.78
7500	42.35	29.65
8000	36.70	24.09
8500	34.71	21.44



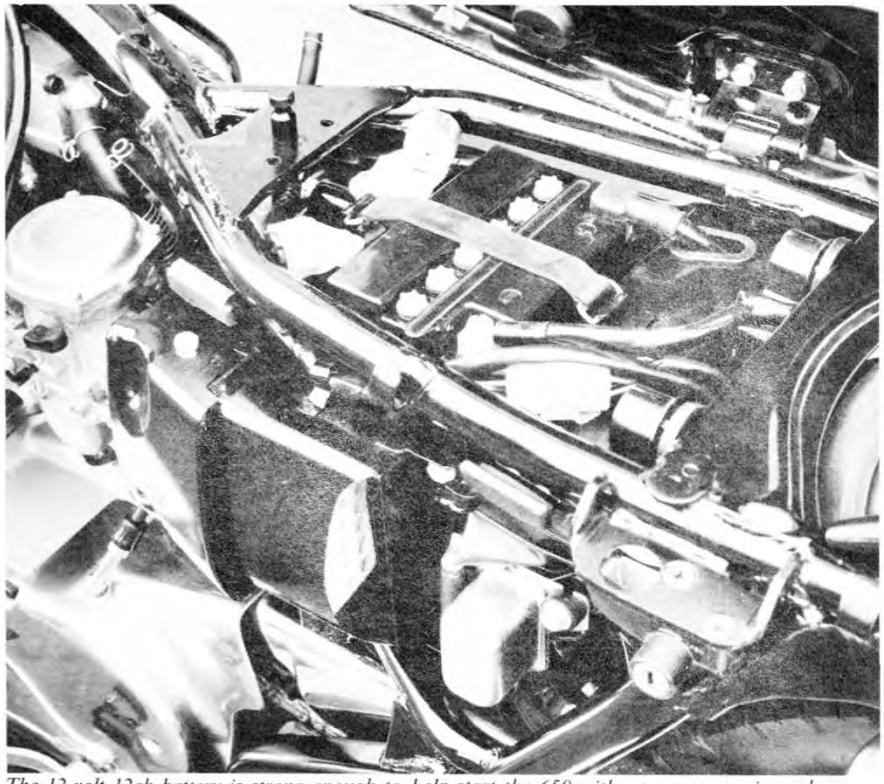
likewise stay calm enough for comfort. The saddle transmits a few tremors which only become noticeable after 150 miles on the seat. The saddle is stylish, but lacks sufficient padding for a good long roll in one sitting. Indeed, the saddle stiffness would more likely encourage parking the TX650 sooner than engine vibration.

That throaty full-power roar which strong forty-inchers have always produced still comes out the TX650's mufflers. The machine barks less in 1974 than ever before [83.2 db (A)]; nevertheless, the motorcycle seems loud when compared to present-day Japanese 500 and 750 four strokes. Nowhere has a balance pipe been incorporated into the exhaust system, so that the sound energy generated in one cylinder might be dissipated in part through a balance pipe and second muffler. The new-style mufflers seemed to choke down the 650, but the quarter-mile performance has improved despite all the engine and muffler updating. When *Cycle* tested the XS2 in September 1972, it snorted through the traps in 14.23 seconds at 93.26. The TX650A returned figures of 14.08 and 93.07 mph. Though the performance hasn't faded, the rider still collects on a smoother, quieter running motorcycle; that will strike most riders as a good bargain indeed.

The improvement in quarter-mile performance can't be traced to keeping the motorcycle very trim. The years have added weight to Yamaha's forty-incher. The 1972 XS2 still weighed under 450 pounds wet. However, the TX650A almost crashed through the 500-pound barrier on *Cycle's* certified scales. Fully laden with fuel and oil, the machine rang up 495 pounds. The big number astonished staff members, even those who had ridden the machine, for the vertical-twin's road manners never betrayed its weight. The TX650 just doesn't feel like a quarter-ton of machinery.

Those who really fancy a quick TX650 could utilize pieces from the AMA racing kit to increase the displacement to 750cc and squeeze perhaps another eight streetable horsepower out of the TX650. The kit establishes the foundation (in the engine department) for Yamaha's 750 dirt-track racers. With serious application, one could make a streetable 650-cum-750, but the thrust of such an effort would run counter to the heavily refined and tempered machine Yamaha has been trying to create with the TX650.

Though busy refining, Yamaha has left some snags in their 650. Perhaps there's less wind-up and lash than before between the end of the crankshaft and the rear wheel, but a generous bit still remains. At its worst, it's as if the gears were cut in hard rubber and the chain links cast in silicone seal. The power-transmission system lacks deft precision, although the 650's drive-line sloppiness was thankfully less than the TX500 which *Cycle* tested in August 1973.

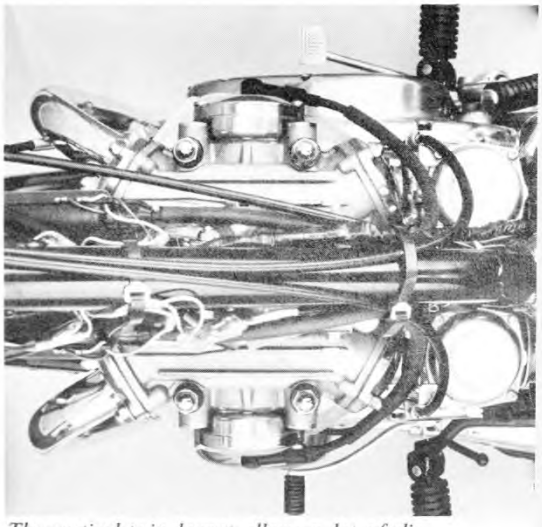


The 12-volt 12ah battery is strong enough to help start the 650 without a compression release.

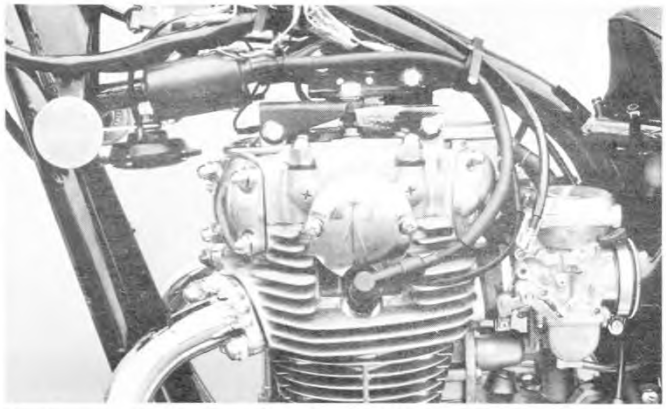
Nor did the transmission shift crisply. As the odometer stacked up miles, the shifting improved, but not to the point of never-fail easy *snicking*. Neutral at times proved elusive; to catch neutral while rolling to a stop was a better plot than fishing between first and second at the stoplight. Sometimes the engine can be inadvertantly stalled in the process. Resort to the starter button quickly revived the engine to a rumbling idle.

The electric starter does its job in 1974 without the benefit of the compression release which lifted the left cylinder's exhaust valve on the XS2. All the compression release paraphernalia is absent on the TX650A as Yamaha discovered that the electric starter would function without relieving pressure in one cylinder despite the 8.4:1 compression ratio.

Apparently Yamaha does not want anyone to forget that the motorcycle can



The vertical-twin layout allows a lot of displacement in a compact package.



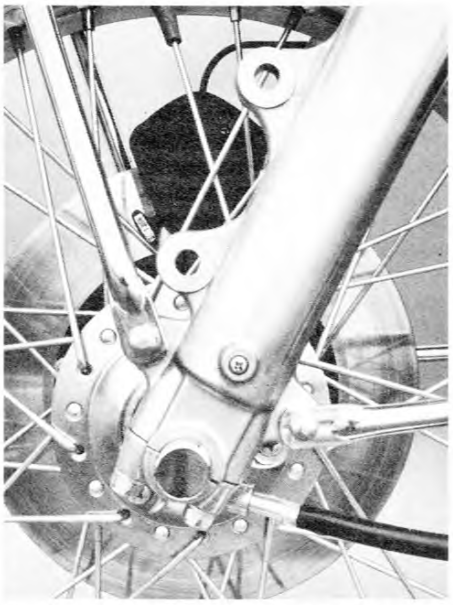
New frame has heavier gusseting, stronger tube-members than forerunners.

be kick-started if necessary. Cast into the outer engine case, under the lever, is the word "kickstarter." What a marvelous curiosity—and insult to anyone who has just paid $1800-plus for a big 650cc motorcycle. Did someone fear that an owner would think the lever might be a hydraulic jack for the centerstand? Such attention to irrelevant detail makes some people wonder if the Japanese think motorcyclists are feeble-minded idiots, and novices at that. Admittedly, these days automobile drivers are harrassed by buzzers, interlocks, and fasten-seatbelt signs. Motorcycle enthusiasts deserve better.

Interestingly, Yamaha has neglected to note which positions correspond to *off* and *on* with the carburetor choke lever. That would be a very useful piece of information, which is made more important by the engine's cold-blooded nature. The 650 always requires an extra-rich mixture to start easily and run until warmed up.

Yamaha indulges in its fair share of idiot-light-overkill on the instrument nacelle: the stoplight brake monitor-eye is still in the line-up. The turn signals have individual arrows on the panel for right and left turns—just in case you've forgotten which direction you're turning. Those riders who feel belittled by all this needn't be so abused on bright, sunny days; at those times you can't distinguish the flashing lights.

The TX650 abounds with thought-out features. The gas tap levers swing in 180-degree arcs. *On* is at 6 o'clock, *reserve* at 12 o'clock, and *off* in between. There's no confusion whether the nose or the arm of the lever indicates the position because only the arm can. Equally clever, but less endearing, is the sidestand. The arc, angle and length of the sidestand strut require the rider to tip the machine to the right, lower the stand, and then lean the bike to the left, resting it on the sidestand. The sheer weight of the TX650A makes the right-side tilt an awkward move; if the rider misjudges or loses his balance, the 495-pound machine can flop down on its right side. Some staff members preferred Yamaha's lean-strut to spring-loaded stands which snap-retract the instant the weight of the machine is taken off the centerstand.



Braking action of the Yamaha is superb; hard tire rubber limited stopping force to .85G.

There can be no equivocation on the front brake. It's tremendous. The brake is strong, progressive and predictable. Yamaha's hydraulic system contains not a nitsworth of vagueness. The lever action never varies; the same hand-lever travel results in the same pad-grip on the disc time after time. Braking pressure gradually increases toward the end of the hand lever's travel; no one needs a Charles Atlas hand-squeeze at the very end of the lever-travel to produce a tire-moaning halt. There was only one minor bother: the pads squeaked.

The 650 Yamaha used to be a gaudy dresser. The old XS-series motorcycles had all the restraint, poise and character of a purple-and-pink neon sign. Happily, the TX650 has abandoned the 5000-volt approach; Yamaha now appears to be moving their forty-incher toward contemporary/classic form. A 650 vertical-twin classic from Japan? You've heard it all before. But the TX650A says that Yamaha is really serious. ◉

Quieter mufflers and diminished vibration serve to keep the rider in the saddle for much longer periods than was possible with earlier 650 Yamahas.