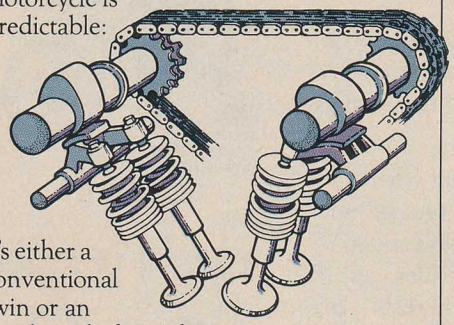
The 1977
A study in design. An

The 1977 Yamaha XS 500 is unlike other twin cylinder 500cc street motorcycles. From the compact engine to the precisely-engineered frame, it is a completely different all-around street machine.

Maximum power, minimum displacement.

The layout of a typical 500cc street motorcycle is predictable:



it's either a conventional twin or an overly-wide four. The Yamaha XS 500, however, is neither. Instead, it is a sophisticated Double Overhead Camshaft eight-valve twin. And that's a feature normally reserved for Grand Prix Formula 1 racecars.

Eight valves. Four per cylinder. Driven by two cams, each cylinder has two valves for air/fuel intake and two for exhaust. More valve area means improved high-rpm breathing capability. And more efficiency for the displacement. With this free-breathing capability, and a 9000 rpm redline, it is important to have strong, lightweight valves.

Each of the valves is coupled with two valve springs of different rates to resist "float" during high-speed performance. And Yamaha valves are specially-treated with Stellite to allow the use of low-lead or unleaded gasoline.

The frame design explained.

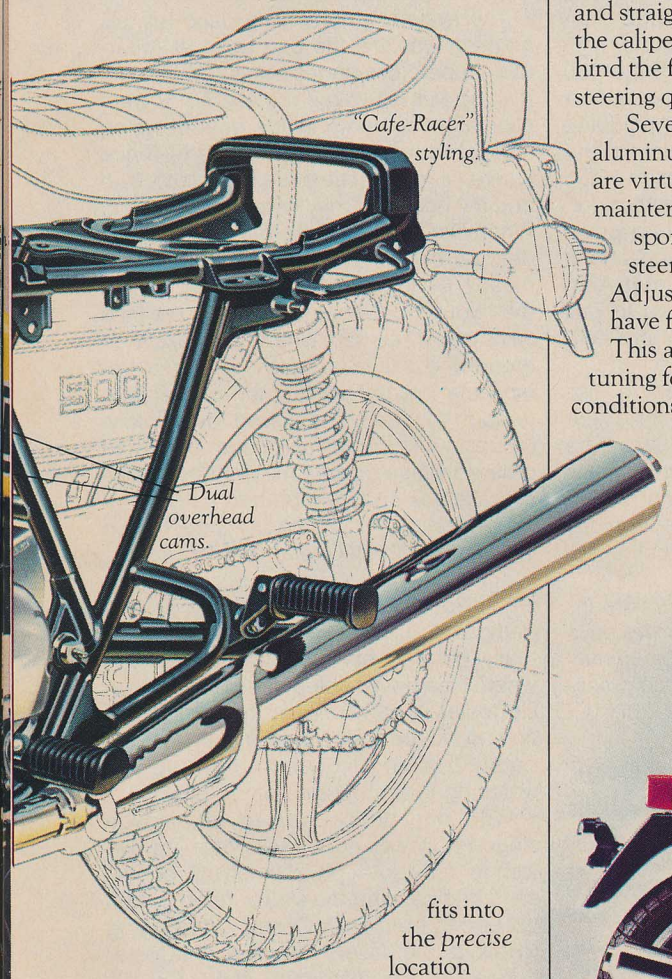
The XS 500's frame is as unique as its engine. (See illustration.) Rigidity is its most important aspect. It is a full double loop tube, with a third tube connecting the steering head to the rear cradle. Gussets reinforce the deep welds; the swingarm is further gussetted. These interconnecting triangular shapes mean strength and rigidity.

Yamaha XS 500. education in engineering.

Rigidity means virtually flex-free handling; excessive flex (as shown in the illustration to the right) means instability and vibration.

The perfect fit.

The extraordinarily narrow, compact XS 500 engine fits perfectly into its frame to form a more perfect union. The engine



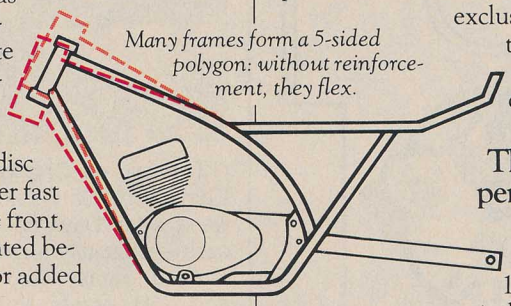
fits into the *precise* location necessary for a low center of gravity, as well as for the proper front and rear distribution of weight.

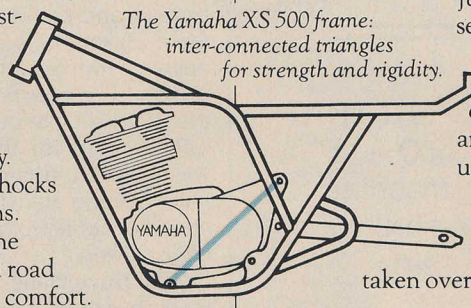
This union of frame and engine makes the XS 500 a versatile performer, suitable for back roads or freeways. A motorcycle with the correct balance and stability for cornering precision and steering agility.

The standard extras.

The XS 500 has other standard features to substantiate its education in engineering excellence. Fade-resistant front and rear disc brakes stop the rider fast and straight. In the front, the caliper is mounted behind the fork leg for added steering quickness.

Seven-spoke cast-aluminum wheels are virtually maintenance-free, sporty, and aid steering stability. Adjustable rear shocks have five positions. This allows for fine tuning for load and road conditions, and rider comfort.


Many frames form a 5-sided polygon: without reinforcement, they flex.



The Yamaha XS 500 frame: inter-connected triangles for strength and rigidity.

And, conveniences include a push-button electric starter, Yamaha's exclusive self-cancelling turn signals, and an external cam chain adjuster.

The overall performance.

Perhaps the overall performance of the 1977 XS 500 is best judged by the rider himself. Because, for all of the improvements and amenities of the engine, the frame design and the features, the ultimate test is a ride. Once experienced, you'll instinctively know what has taken over 500 words to explain.

When you know how they're built, you'll buy a Yamaha.