

Yamaha XS650

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- MANUFACTURER:** Yamaha Motor Corporation, Iwata Shizuoka, Japan
- ENGINE:** 653cc, air-cooled, SOHC twin cylinder, two valves/cylinder, ~53 HP at 7000 rpm, 15 or 12 litre fuel tank (regular gasoline), 8.9:1 compression ratio
- TRANSMISSION:** 5-speed synchromesh manual, cable-operated wet multi-plate clutch
- ELECTRICAL:** 12-volt negative ground, integral externally-excited AC alternator, Kettering breaker points ignition (1970-79) or transistorized TCI ignition (1980-84)
- STARTER:** Electric starter (post 1971) (which *often* works) and a kick starter
- CARBURETTORS:** Mikuni CVs – either BS38 (1970-79) or BS34 (1980-84)
- BRAKES:** Hydraulic front disk / rear drum (rear disk on *some* 1980-84 *Special* models)
- WEIGHT:** ~ 460 lbs (full fuel, no rider)
- TOP SPEED:** 105 MPH (also not with me on it)
- MODELS:** XS1, XS1B, XS2, TX650-A, XS650B-F Standards (1970-79), XS650S(E-K) Specials (1978-84) (Yamaha couldn't seem to make up its mind about model naming systems)
- PRODUCTION:** 1970-84 (an estimated 500,000 XS650s were built – which was a big production run for a large motorcycle built outside of India and China)

History

The Yamaha XS650 originated in Germany as the 1955 *Horex* which moved to Japan where the *Hosk* firm developed the bike as a 500cc model, which in-turn was purchased by *Showa*, who were soon acquired by the giant Yamaha Corp. The bike was intended to compete with the excellent middle-weight motorcycles from *BSA*, *Norton* and *Triumph* of Britain. It was one of the first large Asian 4-stroke motorcycles along with the even more advanced Honda *CB750 Four* which was introduced a year or so before the Yamaha.

The handling of early XS650s was a bit wobbly due to a flexible frame, but later bikes handle quite well – although they outweigh their British competitors by about 50 lbs (22 kg). The reason for the added weight is that the Yamaha has a five-speed transmission (four speeds only in the British bikes) plus, more importantly, the XS650 has an electric starter and a much larger battery. In addition, all of the engine and transmission bearings are balls and rollers on the Yamaha rather than lighter and more compact plain journal bearings used by the British, as well as BMW and Honda.

While potentially a bit noisier, the balls and rollers have the advantage of being more tolerant of poor oil condition which helps account for the amazing robustness of the Yamaha XS650 powertrain.

There were two basic XS650 models over the years: the *Standard* (1970-79) which had the classic lines of a British vertical twin and the *Special* which emerged in 1978 with “*cruiser*” styling (higher pull-back handlebars), a smaller (12 litres versus 15 litres on the *Standard*) fuel tank and a wider 16” rear wheel with a fatter profile tire. The other visible difference is that the wheels on the *Specials* were either cast alloy with a rear disk brake or 48-spoke (versus 36 spokes on the *Standards*) chrome steel with a rear drum. After 1979, only the XS650 *Special* was built. Sadly, many XS650s have been chopped and “hard-tailed” so relatively few bikes survive in original condition (this is especially true of the earlier *Standard* models).

The powertrain had only detail differences such as carburettors from year-to-year other than the electric starter which came in 1971 and electronic ignition in 1980. Engine parts are readily interchangeable throughout the model run although the 1970-73 crank and camshafts cannot be mixed with those of later production engines because the number of teeth on the timing drive sprockets was changed.

My Bikes

1976 XS650C Standard – “Lucille” (*because she is red and occasionally a bit troublesome*)

I bought a well-used 1975 XS650B in about 1978 while a student. I rode that bike all over eastern North America for several years and accumulated more than 80,000 miles with only a valve job and some minor suspension work. I traded it in on a larger 4-cylinder Suzuki GS850G and after another decade of riding, gave up the hobby for all the usual reasons. That began a 25-year absence from riding – but in 2015, the bug bit again and I bought a big Honda ST1300 sport-touring bike, which I really enjoy.

In the fall of 2015, a friend at work introduced me to the Essex-Kent chapter of the CVMG and I went out to a meeting. During the roundtable, I mentioned that I hoped to restore a vintage bike someday and that my choice would be a Yamaha XS650. One of the other members told me that he knew where there were a couple of XS650s for sale and so I made the call which we all enjoy and our spouses dread.

My first “new” XS650 is a red Standard 1976 “C” model named *Lucille* which I bought in Jan/2016 from a CVMG member who had planned to restore it but had too many other projects (*who doesn't?*). Prior to him acquiring it, the bike had spent about 20 years in a barn without any care and it did not run when I got it, but the engine turned freely, and she was complete.

So, *Lucille* came to me with rusty shocks, pitted fork tubes, dented exhaust head pipes, a tear in the seat, the brakes and clutch were seized as solid as frozen turkeys, the electrical system was a total disaster, the carbs were coated in goo and were full of a mixture of what looked like coffee grounds and yoghurt.



***Lucille* as acquired in January 2016**

On the upside, the frame, wheels and instruments were good, the mufflers (a common rusty part) were solid and the seat and fuel tank were OK, except for the damaged tank decals. Several members of the XS650.com on-line forum have donated parts to make *Lucille* look nicer. I have completely rebuilt the fuel and electrical systems and the front brake and all of the control and instrument cables have been replaced.

The sidecover decals are new and were made in Windsor to the original 1976 design and fuel tank is a loaner from a fellow CVMG member. *Lucille* has not been modified except for a modern voltage regulator/rectifier unit and a PAMCO electronic ignition system (two simple and popular upgrades), and she retains her “*patina*” of dings and dents from 40+ years of service and storage.

Since I got *Lucille* running in July 2016, I have ridden her all over SW Ontario and have put more than 16,000 km (really!!) on it with only...a few minor problems on the road. In the summer of 2018, the front timing chain guide failed (*one of the only known XS650 weaknesses – and not expensive to repair*) and while fixing that issue, it made sense to do a top-end rebuild. Due to a busy work schedule, much of the work was done by Terry Wolfe of WolfeWorx in London, ON (highly recommended for vintage bike work).

The next step is to return *Lucille* to as-new condition – but this bike will always be ridden and not hidden.

1978 XS650E Standard – “Black Betty” (*her name under her late previous owner*)

“*Black Betty*” came to me in a rather sad way. Her former owner was a close friend who had been a London CVMG Chapter member. He died suddenly in the autumn of 2018 and I bought the ‘78E from his

wife in June 2019. Even though *Betty* hadn't run in nearly a year, she started-up readily. She only required minor adjustments to the ignition points, timing chain tension and valves and now she runs quite well.

However, when *Betty* came to me, she needed a new set of tires and inner tubes, her front brake was seized, her right side muffler was badly damaged and her fuel tank leaked badly from rust holes in the underside tunnel. Repairs were attempted but the tank was too far-gone, but through the incredible generosity of two *XS650* forum members in the US, she will soon have a new right-side muffler and an original 1978 *XS650E* tank. I am re-painting her tins in the rarely seen *Emerald Green Metallic* colour. Her new tank and sidecover decals came from Diablo Cycles in London, ON.



1978 XS650E Black Betty being refurbished on my lift – Jan/2020

1981 XS650SH Special / Café – “Demi” (*'cause she is a little bigger up-top and a bit mysterious*)

After I joined the *XS650.com* on-line forum, I ran across what I felt was one of the most attractive motorcycles I had ever seen. It is a conversion of a 1979 *XS650SF Special* into a tribute to a 1960s British café racer bike that had been built by a friend in Seattle WA (see the photo at right).

I have seen and sat on this bike while on a business trip out west a couple of years ago and I resolved to built one myself.

1979 XS650SF Special-to-Café tribute bike built by a friend in Seattle WA

The tribute bike has an 18” rear wheel, an updated front disk and a bum-stop seat along with a larger 20 litre *XS750* fuel tank that more closely resembles the shape of 1960s café tanks.



My donor bike is a 1981 *XS650SH Heritage Special* (photo below) that I bought from a fellow CVMG member in the winter of 2017. She is a little rough around the edges, but is otherwise solid and runs well and I have ridden it a little although it needs new tires and some electrical work. Also, since I am swapping an 18” rim onto the 48-spoke rear hub, I have taken her off the road till the project is completed. I will also

use a 1977 *XS750* fuel tank. Other plans include a double-disk front brake and a hinged bum-stop seat to replace the lift-off king-queen that is on the bike. I will also adapt earlier model rectangular metal sidecovers in place of the plastic ones shown in the photo.

To finish her off, I have a brand new *2-into-2 MAC* exhaust system which I won in an on-line contest in 2018, all set to go.

1981 *XS650SH* Special donor bike currently being transformed into a café racer.

Demi's tins are being repainted in a low-gloss dark blue with silver trim and I have a set of beautiful cast pewter *XS650* emblems for the sidecovers. These were made by an *XS650.com* forum member who lives in Winnipeg MB.



Conclusion

The Yamaha *XS650* is widely regarded as a durable, economical, easy to fix and reliable motorcycle with very few weak points. While not particularly fast, they can definitely “*keep up with the Jones*”.

Key items to watch for are the charging system (the alternator requires brushes which must be carefully maintained), the rather complex electric starter system has one component known as the #4 starter gear “*hairclip*” which generates a terrible noise if it is failing and the front timing chain guide, which can delaminate. However, fixing these issues is simple and replacement parts are easily found at reasonable cost, plus the on-line community is great for advice and help with step-by-step instructions.

While the *XS650* isn't the ideal long-distance tourer, it truly is one of the best bikes for short trips and general booting around on a Sunday afternoon. The riding position is remarkably comfortable, the handling is safe and predictable, the brakes are adequate, the vibration is....well, its not too bad and the sound from the engine is music to the ears of any biker (at least – after the engine has been started).

On one of my first rides after I got *Lucille* running, I went out to diner in a nearby town for breakfast and an elderly lady remarked that she liked my bike because “*it doesn't look like a plastic praying mantis and it doesn't sound like a kitchen appliance*”. People regularly tell me they had one when they were young and I have had offers to buy it from passing motorists at stoplights.

I have had a lot of fun working on, and riding, my *XS650s* and have made many great new friends. *Lucille* and I have attended a number of *XS650* events and vintage Yamaha rallies in the US and she has always proved to be a safe and reliable performer on winding roads such as the Tail of the Dragon and in the Ozarks of Arkansas. She has never let me down in three years of riding and I enjoy every minute on her.

As a vintage bike to restore and enjoy, the Yamaha *XS650* is hard to beat as they were fundamentally well-designed and built from good materials in the first place and nearly all of the key replacement parts are easily found today. In addition, there is an incredibly strong, active and friendly on-line community that is knowledgeable, generous and helpful.

Some people say that at the end of time, only three things will survive:

1. *Cockroaches*
2. *Keith Richards (the Rolling Stones guitarist)*
3. *The Yamaha XS650*