

MOTOR CYCLING

YAMAHA
3 Bike Test Special

JULY 1980 60p

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Fairing Guide

Yamaha's Tasty Trio

A long trip, a rough trip and an ego trip on three new models

No holds barred supersports machines and California styled custom roadsters figure strongly in Yamaha's 1980 range.

The first of a new breed of Yamaha super-sportsters are the exciting liquid cooled RD250 and RD350 and the XJ650. Sadly these quickies arrived late in the UK and so missed this feature, but the full road and track tests will appear in the future.

Five new custom versions, represented here by the XS250SE, follow the success of Yamaha's 650 Special launched last year.

An all-new XT250 four stroke trail bike reinforces Yamaha's trail range and the new XS850 continues their line of comfortable long distance touring machines. Our three-bike test special gives a cross section view of the latest developments with full performance analysis.

XS850

BIG, black and beautiful. These are the results of taking a market leader and revamping it to keep it in the foreground of today's needs. The very popular and successful Yamaha XS750 has been around for about three years, so I suppose some changes were inevitable. Fortunately the changes are beneficial, and turn the XS850 into one of the best long distance touring motorcycles I have ever ridden.

When I first saw the 850 standing in a corner of Yamaha's workshops I was totally impressed. It looked big and comfortable. It had no frills, and was therefore practical, and it *was* beautiful.

I helped Neil load two other bikes onto the trailer in Yamaha's yard, and couldn't help feeling sorry for him. Three hours in a Ford Escort is bad enough, but with a trailer as well, and no radio... My journey was to be less than two hours to MIRA.

It started with a moment of disbelief at the nearby petrol station. I took out a five pound note and placed the pump nozzle in the filler hole. I pulled the trigger and waited. I was distracted for a moment as Neil trundled past, and turned to see £5.50 register and disappear in favour of a higher figure. Oh well, I had my cheque book, so I carried on. Past £6, past £6.50, and then click — finally at £6.80 and 5.11 gallons. The girl in the kiosk looked on in amazement, and a motorist stood telling me how the moped he had at home only took point six of a gallon. I payed up and set off.

Motorway cruising is not my idea of riding



a motorcycle, but it is the fastest way from A to B, and showed that the 850 was totally stable. At speeds in excess of 70mph, and sometimes 100mph, the bike felt as steady as the Rock of Gibraltar, even with the blustery crosswinds.

Later, on single-carriageway, the run was made more exacting, and much more fun, by a dice with a quick Honda 750. He only managed to stay with me because he could catch up on the straights and in the small villages dotted along the route. Through the bends he had no chance. I was delighted to find the XS850 had the handling qualities of bikes in the Suzuki GS1000 class. Providing the power was kept on through the turns I was able to flick the bike with ease, and change line almost at will. Something I don't remember being able to do on the old 750. Only on very tight bends did the 850 tend to widen its exit line. If for any reason the throttle was closed whilst in a bend the torque reaction of the shaft took over, and made the bike weave and wobble. It sometimes became disconcerting, but never dangerous or uncontrollable.

The riding position is of the touring style, and is ideal for continuous riding at 70-80mph, but quite painful on the arms and back at higher speeds. The handlebars seemed to be a little wider than on the 750 and this added to rider comfort, as well as making the bike a little easier to handle in traffic.

That first ride, from Chessington to a hotel near MIRA, was only about 120 miles, and has to be classed as nothing for the 850. In order to test the theory that a long journey would leave me feeling fresh, I left MIRA with a full tank, 5.3 gallons, and did the 167 mile trip non-stop. In fact it was such a good ride that I only had to put my foot on the ground once. The journey was easy with no hint of discomfort from the well padded seat. The XS finally went onto reserve with 186

XS850



XS250



XT250



Yamaha
16 page Special



COMPARISONS

	Speed prone	SS ¼ mile (prone)	Dry weight	Claimed bhp	mpg	Price inc. VAT
Yamaha XS850	117mph	13.48sec/98.48mph	520lb.	79 @ 8500	39	£1825
Suzuki GS850G	121mph	12.84sec/103mph	558lb.	77 @ 8500	42	£1795
Suzuki GS750	122mph	12.65sec/101mph	492lb.	68 @ 8500	48	£1699
Yamaha XS750	120mph	13.56sec/98mph	538lb.	64 @ 7500	43	£1790
Moto Guzzi 850T3	114mph	13.95sec/94mph	452lb.	69 @ 7000	50	£2199
BMW R80/7	107mph	13.73sec/97mph	430lb.	55 @ 7000	55	£2349

miles on the clock, a range in keeping with its long-legged image.

The XS850 boasts fifteen more brake horsepower than its predecessor. The bores are increased from 68mm to 71.5mm, leaving the stroke the same. There is a new cylinder head and new pistons and rings. The Mikuni carbs have given way to 34mm Hitachi units and the compression ratio goes up from 8.5 to 9.2:1. Along with the horsepower maximum torque is up by about 5ft lbs.

With the XS850 (826cc) punching out a claimed 79bhp at 8500rpm it is on a par with the only other Japanese 850 shaft, the Suzuki GS, which claims 77bhp. The only other 850 shaft driven bike, the Moto Guzzi T3, is way down on power at only 69bhp, but then it scores on better fuel consumption.

On the open road the extra power of the 850 is hardly noticed at high speeds, in fact it could be a 750 with a big tank. Low down power is a different story. The engine is so much more flexible some gear changes become obsolete. The power comes in from just above tickover, and just keeps coming. It is accompanied by a low rumbling noise from the three-into-two exhaust system, and that makes it sound even more powerful.

Improved flexibility

Comparing the figures we obtained at MIRA for the 850 with those of the 750 we tested back in August 1977 there is very little difference. The top speeds are almost the same, as are the standing start acceleration runs. But take a look at the flexibility figures. The new 823cc version knocks the bottom out of the old times. In top gear, with the rider sitting upright, it accelerates from 80-100mph 7 seconds quicker. Even the 30-50mph run was nearly one second less. That low down punch really pays off.

The extra 79cc have not been too kind to the fuel consumption figures however, hence the need for that bigger tank. Individual steady speed figures return higher miles per gallon, but the overall figure, which includes the very poor 28mpg achieved at MIRA, has dropped from 43 to only 39mpg. The Suzuki GS850 we tested managed 42mpg. It must be said though that the XS850 was used very hard during its test period. A long distance touring rider should expect to see somewhere in the region of 50mpg overall with careful use of his right hand, and may manage a massive 250 miles to a tankful. There are two fuel taps by the way, to drain the petrol from both sides of the tank wells.

Unfortunately the supposedly beefed-up clutch wasn't up to the power and the abuse we gave it. It started slipping after a few standing start acceleration runs and had to be left for quite a while to cool down. A quick adjustment was made before the journey home, and providing I didn't snap the throttle open the slipping was not noticeable. With such a smooth gearbox it

was possible to save the clutch for stopping, starting and changing down from second to first. All other changes were made clutchless.

The gear ratios have been chosen to give very high interim speeds; 62 in first, 89 in second, 107 in third, and 117 (the maximum) in fourth. All of which aid the flexibility of the motorcycle, and tend to make top gear an overdrive.

The gear ratios also proved to be very forgiving whenever the wrong one was selected. The power helped as well, managing to pull the bike in any gear from just over tickover. All the minimum non-snatch speeds recorded on our test sheet were obtained at 1200rpm, with tickover set at 1100rpm. It was only necessary to take up the free play in the throttle cable to keep the big bike moving.

Overall, the transmission proved to be very quiet and efficient, the primary transmission shock absorber having been altered to allow better transfer of power to the rear wheel. The shaft drive itself was very quiet, without even a hint of the whine that is usually associated with shafties. The gear changes were a little clunky between first and second, and selecting first from neutral when cold, but all the other changes were as smooth as the best chain driven bike.

The usual quirk of a shaft, to raise the bike slightly on initial take off, remains with the 850. If the clutch was let out whilst both my feet were flat on the ground (I could just manage to do that, being over 5ft. 10in.) the take up lifted me to tip toes before the motorcycle started to move forwards. The shape of the new seat helps slightly, by lowering the seat height by two tenths of an inch at the rider's end. Smaller riders will have difficulty reaching the ground, and will have to resort to hanging one cheek over the side of the saddle.

Ideal tourer

The new seat, complete with grabrail, kept pillion passengers as fresh as the rider on a long run. We never had one complaint from any passenger carried, whether large or small. The footrests were ideally placed to avoid any cramp or discomfort, just the way it should be on a long distance tourer.

The bike's good handling characteristics, referred to earlier, owe a lot to the new front forks. Teamed up with the now proven double-loop cradle frame are air-assisted adjustable front forks, and the easy to adjust 5-position rear shock absorbers of the type fitted to the big XS1100. Although air-assisted, the new front forks have retained the special Teflon bushes which allow them to react instantly to road irregularities. We'll have to take their word for that one, because whilst handling was good, there was no way I could tell that they were reacting any quicker or slower to bumps and undulations.

The rear shock absorbers were set to their second softest setting, which I found to be ideal, and only needed raising one notch when a pillion passenger was carried. The ride was soft and comfortable without reaching the point of becoming wallowy. Bumps were easily soaked up, and only the deepest pot holes gave any jolts to the rider.

Backing up the handling qualities of this super shaft are a pair of Bridgestone tyres that seemed equally at home in wet or dry weather. The profile of the tyres did tend to have them following white lines and ridges, mostly in the wet, but whilst noticeable it was never disconcerting.

I can't think of one time that the rear end of the XS850 stepped out on a dry road. It stayed on line perfectly, even when the centre stand or one of my boots was dragging along the road surface. In the wet I was always aware of the point at which the rear tyre would decide to slide, and therefore able to keep on the right side of it. No need to have 'V' rated tyres. With the bike only capable of 117mph Yamaha have settled for 'H' rating.

The main disappointment of the 850 was

Yamaha XS850

BRAKES(both)

mph	solo		pillion	
	ft	m	ft	m
30	38	11.5	52	15.9
40	67	20.4	79	24.0
50	96	29.2	112	34.2
60	154	47.1	163	49.6
70	213	64.9	216	66.0

OIL CONSUMPTION

negligible

MPG

mph	solo	pillion
30	74	69
40	69	67
50	65	64
60	56	52
70	42	40
overall	39	

MPH per 1000 rpm

gear	mph
1	6
2	9
3	11
4	13
5	14
6	—



the braking. No matter how hard we tried we couldn't get it to pull up any quicker than the very poor distances listed in the performance chart. The Suzuki GS850, which is 38lbs. heavier, managed to stop quite a lot quicker than the Yamaha, and with bikes like the GS1000 stopping in incredibly short distances like 136 feet from 70mph, the 213 feet solo figure for the XS can only be described as bad.

An interesting point is that as the speed increases the difference in solo and pillion figures decreases, probably due to the fact the extra weight is holding the back end down on the road surface. When stopping solo I noticed that the back end was hopping around like a rabbit on heat, and whenever the rear wheel was locked the skid mark took the form of a dotted line. With the rear being very easy to lock up a lot of care had to be taken not to use too much pressure on the foot pedal. After all, a sliding tyre does not offer any braking ability.

The front brake needed a lot of lever pressure to have the front wheel screaming on the tarmac, and was very easy to control to the point of holding the wheel just before it started to lock.

Straight line stability was never impaired by this episode from Watership Down. The bike maintained a perfectly straight course, right up to the point of putting a foot down.

On the open road the overall braking performance seems to be the same as any other big bike, but then it doesn't take long for a rider to assess the capabilities and adjust his riding style to suit. The triple disc arrangement showed little sign of any delay in the wet, and even more care was required to avoid locking the rear wheel and inducing a slide.

SPEEDO

ind	true
20	19
30	29
40	38
50	47
60	58
70	66
80	75
90	86

Milometer

+0.5%

MAXIMUM SPEEDS and SPEED RANGES

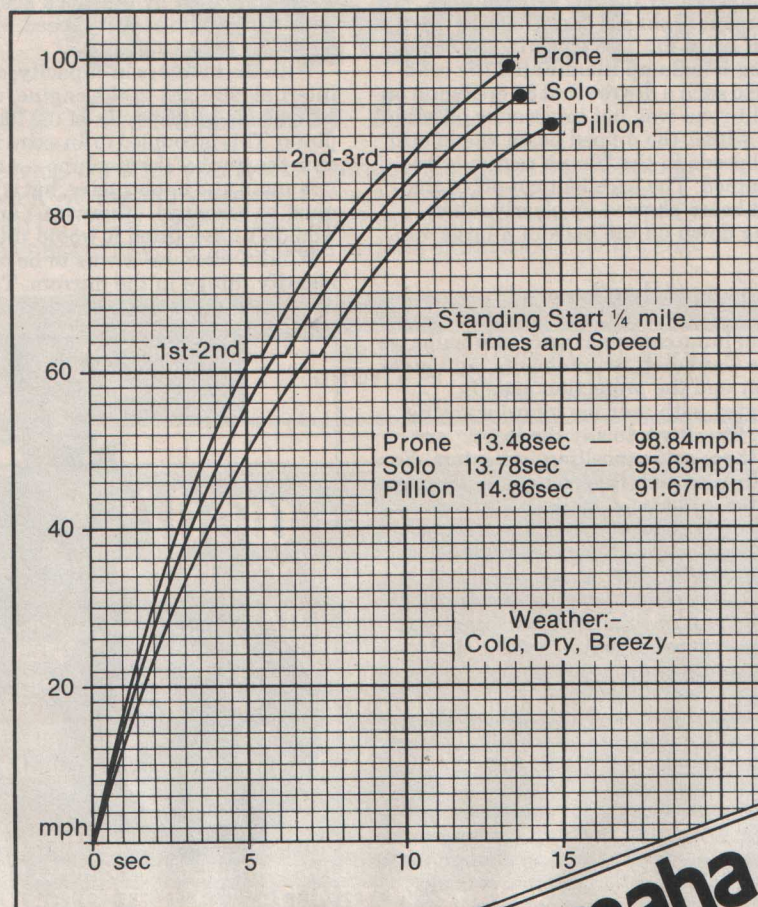
gear		mph max	mph min
1	solo	62.61	7.33
2	solo	89.79	9.81
3	solo	107.65	11.94
4	solo	108.79	14.76
	pillion prone	117.31	"
	solo	105.73	"
5	solo	104.57	16.49
	pillion prone	114.85	"
	solo	100.54	"

FLEXIBILITY IN TOP GEAR(sec)

mph	30-50	40-60	50-70	60-80	70-90	80-100
solo	5.69	5.87	6.31	7.77	9.55	11.52

Performance figures obtained at:-
Motor Industry Research Association Test Track
Nr. Atherstone, Warks.

Test Rider: Geoff Carless,
weight 13 stone.



TECHNICAL SPECIFICATION

Engine

Type: Air-cooled, DOHC, three cylinder, four-stroke.
Bore x Stroke: 71.5 x 68.6mm.
Displacement: 826cc.
Compression ratio: 9.2:1.
Carburettors: Three Hitachi HSC 34mm.
Max. horsepower: 79bhp @ 8500rpm.
Max torque: 51ft. lbs. @ 7500rpm.
Lubrication system: Mechanical pump, wet sump, with 3.7 litre (6.5 pints) capacity.

Transmission

Type: Five speed constant mesh.
Final drive: Shaft.
Clutch: Wet, multi-plate.

Wheels and Brakes

Front tyre size: 3.25H 19-4PR.
Rear tyre size: 4.00H 18-4PR.
Front brake: Twin hydraulically operated discs.
Rear brake: Single hydraulically operated disc.

Frame and Forks

Type: Welded tubular steel double cradle.
Front forks: Air assisted, adjustable, oil damped telescopic.
Rear suspension: Swinging arm with 5-position adjustable shock absorbers.

Electrics

Ignition: Electronic. **Battery:** 12V 14Ah.
Headlight: 60/55W Halogen.
Rear light: 2 x 5/21W.
Indicators: 21W.
Warning lights: Turn, headlamp main beam, oil pressure, neutral.

Dimensions

Overall length: 2155mm (84.4in.).
Overall width: 675mm (26.6in.).
Overall height: 1120mm (44.1in.).
Seat height: 815mm (32.1in.).
Wheelbase: 1465mm (56.7in.).
Ground clearance: 130mm (5.1in.).
Dry weight: 236kg (520lbs.).
Fuel tank: 24 litres (5.3 gals.).

from road undulations and not the very smooth triple cylinder engine. Usually a machine has a vibration period where the mirrors become nothing more than decorative ornaments, but not so the XS850.

Summary

Right, so what do you get for laying out £1825? A long legged, long distance tourer with a potential for covering in excess of 200 miles on a tankful.

With all the high powered sports machinery about it is comforting to see a motorcycle developed with bags of bottom end, low-down torquey guts.

Its only major failing is in the braking department, but providing the bike is only to be used as a tourer, or similar, and not production raced or dragged at Santa Pod meetings, then the rider will soon learn to cope with this inadequacy.

It is about the same price as a Suzuki GS850, its nearest equivalent, has the same performance and similar dimensions, but it is better, if only for its lighter weight and better handling.

Value for money I think Yamaha are on a winner. It is without doubt better than its smaller predecessor, but not without fault.

Geoff Carless

Continued on page 52

Confirming the Japanese belief that their electrics are the best, Yamaha have done away with a kickstart on the 850, and justifiably so. The starter never failed to send the triple into its burbling dawn chorus at the first touch of the electric starter button. A night of heavy frost, about the only one this April, couldn't halt the bikes enthusiasm to get up in the morning. The 14Ah battery supplied more than enough power to spin the heavy motor, and was kept fully charged by the AC generator.

Riding at night did slow the bike down a bit, but not a lot. The powerful 60/55W halogen headlamp illuminated the road ahead to such a degree that 80 or 90mph on an unlit road was not impossible on main beam, whilst the dipped beam would still allow speeds in the 70mph region to be maintained. The excellent cut-off of the dipped beam showed up clearly when bearing down on the back of a large van.

Self cancelling?

The rear lamp contains two 5/21W bulbs, as per the Canadian requirements, and gives the rear end the protection usually associated with rear fog guard warning lamps. Excellent, to say the least.

Oh, these self cancelling indicators. You either love 'em or hate 'em. Personally I hate them. Several times, whilst watching very heavy traffic on motorways, I was conscious of the lamps cancelling, and I had to turn them on again. Only under certain circumstances did they stay on for just the right amount of time. In town situations they sometimes stayed on too long, and were still flashing whilst passing a second junction. It could lead to a misunderstanding and even an accident. It would be nice to see an alternative system, as on the Kawasaki Z1R, so that the rider can decide just what he wants.

Whilst on the electrical side of things, it was nice to see that the horn is now a dual unit, and punches more than enough noise to be heard in most situations. It could almost be mistaken for a car hooter, and wasn't very far off the decibel limit achieved

by air operated systems. The button was ideally located on the handlebar cluster, as were all the other switches. Their control was faultless, even when wearing heavy gloves shrouded by nylon overmitts.

After my many outbursts asking for more accurate instrumentation it was a pleasure to see the XS850 fitted with a speedometer that wasn't all that far out. Even at 100mph, not shown on our test sheet, it was only 4mph out, reading 96mph. Sticking to the speed indicated by the clock keeps you within the 4mph at every speed, although at 30 it was only 1mph out.

With the increase in capacity, and the few internal changes to the engine, comes an increase in oil capacity of 0.2 litres (0.35 pints). This is coupled to an extra item bolted onto the front of the machine — an oil cooler. It is small and unobtrusive, but is there, and must be essential, otherwise Yamaha wouldn't have fitted it would they?

What a pleasure it was to be able to identify things in the mirrors. The only noticeable vibration seemed to originate

STAR RATINGS

Our Star system gives a quick reference to the standard reached in performance and engineering. The standard is:-

* = Poor; ** = Below average;
 *** = Average; **** = Above average;
 ***** = Outstanding.

Performance	***
Handling and Ride	*****
Servicing	***
Engine	*****
Transmission	*****
Frame and Forks	*****
Wheels and Brakes	**
Electrics	*****
Dimensions	*****
Equipment and Finish	***
OVERALL RATING	*****



With its shaft drive and plenty of low-down power the XS850 is an ideal touring machine

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