

3 Road-going Two-strokes

Yamaha built their early reputation around high-performance two-strokes and now, approaching the mid 'eighties, the company is constantly refining and improving the models as it faces a fierce challenge from both Honda, who have at last abandoned their earlier 'four-strokes only' policy, and Suzuki.

Larger Capacity Two-strokes

King of the Yamaha two-stroke range, and more powerful than any of the rival sports two-strokes built by other companies, is the new RD350LC with electrically operated power-valve system (factory designation YPVS). Introduced at the Cologne Show in 1982, with sales on the world market starting in mid-1983, this super-sports version of the already popular RD350LC is the fastest roadster 350cc machine ever offered to the public, producing around 54bhp at 9000rpm.

The engine is a simple vertical twin, the logical descendant of the engines that Yamaha started to build in the late 'fifties and which are still basically the same as the originals. Bore and stroke are 64 x 54mm (347cc) and, to help the unit keep its tune, it is water-cooled. The YPVS power-valve system, developed on the factory

racing machines, helps to improve acceleration by making the engine more tractable at lower revs. It does this by reducing the size of the exhaust port when the revs drop, opening up progressively as the engine speed rises. In effect this gives Yamaha the best of both worlds – a small bore exhaust for good low-speed performance and a larger, unobstructed port for high-speed running.

Lubrication, as with all the Yamaha roadsters, is by the Yamaha Autolube system, in which the oil is metered to the engine by a small pump from a separate oil tank. This eliminates the need to mix the oil with the petrol every time the rider has to refuel, a messy and time-consuming business if the service station does not have a mixer pump.

Gearbox is a six-speeder and starting is by a good old-fashioned kick-starter; there is no electric starter on the sports models which are in any case very easy to get going. Rising-rate Monoshock rear suspension is fitted together with race-developed, air-suspension front forks.

The standard RD350LC stays in the range, its less highly tuned engine producing 47bhp at 8500rpm to give a top speed of close to 120mph. It can be easily distinguished from the power-valve model because it has no cockpit streamlining around the headlamp and



Moto cross inspired roadster – the DT125LC with water-cooled engine.

handlebars and no mini-fairing under the radiator. Both machines weigh in at under 320lb.

Yamaha's near identical RD250LC sports twin really is the direct descendant of the YD1 of 1957. The 54bhp x 54mm (247cc), water-cooled engine develops 35bhp at 8500rpm in road-going trim which is just about double the power of its racing ancestor!

With a top speed of close to 110mph and a

weight of only 305lb, the RD250LC is the near perfect sports model. Just how good has been ably demonstrated around the world by the many Pro-Am race series that Yamaha importers organise, where selected fields of competitors are mounted on identical machines to battle out some unbelievably close races.

Originally the RD twins were air-cooled. The water-cooling was added when power went up. But one air-cooled model is retained – the RD200. A budget-priced sports model, this is powered by a 195cc twin-cylinder engine (52 x 46mm) which



A practical lightweight, the RXS100, is designed for the commuter.

revs to 8000 and produces 20bhp – enough to give a top speed of close to 90mph.

Gearbox is a five-speeder and the RD200 does have one refinement its more glamorous brothers lack: an electric starter. This model retains the older twin rear-shock suspension system.

The largest model in the two-stroke trail bike range is the DT175MX. Powered by a single-cylinder engine (66 x 50mm – 171cc) which develops 16bhp at 7000rpm, this has a six-speed gearbox and a new frame with the moto cross rear

fork with adjustable gas-oil shock absorber. To help when riding off-road, this frame gives over 10 in. of ground clearance but in case this is not enough an under-engine crankcase shield is fitted to protect the unit from rocks.

Other features to assist the cross-country rider include conventional hub brakes (better in mud than discs), rubber-mounted direction indicators which do not break off in minor accidents (when the machine slides to the ground in slippery going) and trail tyres which give reasonable grip on both tarmac and dirt.

The 125cc Range

The smaller brother of the DT175MX, the DT125LC, is a newer and far more sophisticated model. The power unit is a brand new, water-cooled, single-cylinder two-stroke that in standard form develops 16.2bhp, just a fraction less than the DT175. For the British market it is offered in 12 horse-power form so that it can be ridden by learners. Bore and stroke are 56 x 50mm and maximum power is developed at 7000rpm. Gearbox is a six-speeder and the complete machine, with Monoshock rear suspension, weighs only 212lb.

The same engine powers Yamaha's sports lightweight, the RD125LC (in Yamaha designations the LC stands for liquid-cooled, the factory wisely preferring to use the word liquid rather than water which would abbreviate to wc!). Again, this is offered in two stages of tune – a 21 horsepower version with a top speed of around 90mph, and a 12 horsepower restricted model for the British market.

In this sports-roadster state of tune the engine revs to 10,000. To assist the rider to get the best out of the tuned engine, which produces peak power over a relatively narrow rev range, a racing style, close ratio gearbox is fitted.

Unlike the trail model the RD125LC has a front disc brake, though a drum is retained at the rear. The frame is Monoshock and the specification includes a racey-looking windscreen, a streamlined cowl under the radiator and a three-gallon tank that blends into the dual seat. Again, weight has been kept down and the RD125LC tips the scales at only 215lb.

Yamaha's third machine in the popular 125cc bracket is the RS125. Aimed at the commuter market the factory describes it as: 'rugged, reliable and fun to ride.' The air-cooled, single-cylinder engine produces 12bhp at 7500rpm and drives via a five-speed gearbox.

The frame is conventional with twin shocks at the rear and a telescopic fork at the front. Wheels are spoked with a disc front brake and drum rear, and the neatly styled fuel tank holds just over two gallons. As with all but the smaller models, the RS125 comes with full equipment to carry a pillion passenger, i.e. dual seat and footrests.

The 100cc Range

Yamaha offer five models in the 100cc range which is popular because insurance for bikes with an engine capacity under 100cc is markedly less expensive. Top of the range in this category is the RXS100 powered by a 50 x 50mm, 98cc, single-cylinder engine with a five-speed gearbox. Frame is of the two rear-shock type. Wheels are spoked with a disc brake at the front and a drum at the rear.

A cheaper roadster in this class is the RS100, which is almost identical to the RS125 except that it has a smaller engine (52 x 45.6mm – 97cc), and a drum front brake instead of a disc. Power is only marginally less at 11bhp at 8500rpm.

The budget priced roadster is the YB100 which looks more like an overgrown moped than a true motor cycle. The engine is unusual for a modern-day Yamaha because it features a rotary valve. Another feature is that the gearbox is only a four-



The rugged AG100, built for farm work, has proved popular in Australia and New Zealand and is now on sale in Europe.

speeder. But the power (10bhp at 8000rpm) is impressive and, coupled to a weight of only 185lb, ensures that the YB100 has a lively performance and a top speed of over 60mph. It is not likely perhaps to impress the younger rider but is ideal for the commuter.

The other two 100cc machines are both dual purpose mounts: the DT100 for the road and trail

rider and the AG100 for the farmer. The DT's single-cylinder unit has bore and stroke of 52 x 45.6 to give 97cc. This produces 10bhp at 7500rpm while the AG100's similar engine, tuned for a wider spread of power for getting around the farm, develops 8.5bhp at 6250rpm. Both have five-speed gearboxes.

Unlike the DT125LC, the DT100 is an older style machine with twin-shock rear suspension and air-cooled engine. And Yamaha are likely to keep it in production for a few years as a lower priced alternative to the DT125LC, especially in Third

World markets where rugged, simple, go-anywhere lightweights are certain to be in demand.

Popular in New Zealand and Australia, the AG100 has been developed specifically for farm use. It has a fully enclosed rear chain and front and rear carrying racks to which light loads can be secured. Additionally, there are bars to protect the crankcase and the chaincase from rocks and trees, and tough, plastic mudguards, which will flex and spring back into shape, are fitted front and rear. Even the tyres are special; they can be run flat for a limited mileage without coming off the rim or being damaged. The idea is to provide a motor cycle which is robust, trouble-free and can go anywhere that a Land Rover-type vehicle can, at a fraction of the cost.

The 80cc Range

On the next step down the capacity ladder are the 80cc machines. In this bracket Yamaha offer six very different machines, ranging from the super-sport RD80LC to the CV80 Beluga scooter.

Yamaha have made a name for themselves by being in the forefront when it comes to sports lightweights, and the RD80LC is designed to keep them there. As the LC implies, the single-cylinder (49 × 42mm - 79cc) engine is water-cooled. Revving at 6500, it produces nearly 9bhp to give a top speed of close to 70mph.

To get the best performance from the tuned engine, a six-speed, close-ratio, race-style gearbox is fitted and the impressive, black-finished engine/gearbox unit slots into a neat

Monoshock chassis with a heavy-duty hydraulic telescopic front fork. The fuel tank holds over two gallons and blends neatly into the seat unit.

Powered by an air-cooled version of the engine, but with five-speed transmission, the RD80MX is a slightly cheaper and less sophisticated sports roadster, while the DT80MX is for the rider who wants a bike that is suitable for green lane riding as well as road work. In fact, it is powered by the same engine as the RD80MX (40 × 42mm, 9bhp at 6000rpm) mounted in a moto cross style Monoshock frame. It is an ideal lightweight in many ways, good for commuting and short-distance touring.

The 80cc range is completed by three machines aimed at the fringe, non-motor-cycling market. The LB2-80 Chappy is a fat-tyred fun-bike in the style of Honda's Monkey bike. The engine is mounted with the cylinder sticking forward horizontally and drives via a two-speed automatic transmission. These fat-tyred, small machines usually steer extremely badly and are best avoided. In fact it is difficult to see exactly what market the Chappy is aimed at.

More practical are the step-through V80 and the oddly named Beluga scooter. The V80 scooterette features full-sized wheels and three-speed transmission with an automatic clutch. The engine is a reed-valve, single-cylinder unit, designed to give lots of power at low revs, and it is ideal for the short-distance commuter.

The Beluga (defined by Chamber's Twentieth Century Dictionary as 'the white whale . . .') is a neatly styled 80cc version of the Passola, the little Yamaha 50cc scooter that started the scooter revival. Its features include two-speed automatic





transmission, automatic choke, excellent weather protection, dual seat, built-in flashing direction indicators, a luggage rack and a luggage compartment. But I must admit to being puzzled by the choice of name

The 50cc Range

Yamaha have always been strong in the 50cc class and their famous FS1E set the style for sports mopeds in the 'seventies and won friends around the world for the Japanese factory, many of whom graduated to larger Yamaha when the time came for a switch. In fact, there is still an FS1 in the range – the FS1SE – but this is a customised, restricted lightweight that lacks both the performance and sporting good looks of its famous predecessor.

Top sports model in the 50cc range is in fact the RD50MX. This is a scaled-down motor cycle with Monoshock rear suspension, telescopic fork, cast alloy wheels and provision to carry a pillion passenger. As sold in the United Kingdom it is fitted with a restricted engine so that sixteen-year-old learners can ride it.

The trail model, DT50MX has the same engine but with a high-level exhaust system and a moto cross style frame. Both have a five-speed gearbox. There are also four commuter bikes: the MJ50M Towny light motor cycle, the V50M step-through, the CA50 Salient scooter and the cheaper, more spartan, SA50 Passola scooter. Both these last two are fitted with an electric self-starter.

Hot shot lightweight – the RD80LC with water-cooled engine and sporty styling.