

5 Sporting Bikes

No factory has done more to foster the growth of motor-cycle sport through selling competition machines than Yamaha. Their excellent road racing, moto cross and trials machines are in use around the world providing their owners with excellent sport and acting as the best possible sales propaganda for Yamaha products.

Road Racing

Most glamorous of the competition range are the road racers, the field in which Yamaha have excelled for 20 years. The top machine is the TZ500 – a water-cooled, four-cylinder two-stroke that develops 110bhp and has a top speed of around 170mph. Bore and stroke are 56 x 50.6mm, peak revs are 11000 and drive is via a six-speed gearbox.

This machine is a production replica of the OW48 Yamaha raced by American Kenny Roberts before the introduction of the vee-four factory bikes, and it is unusual in having the exhaust pipes from the two outer cylinders of the across-the-frame engine exiting from the rear of the block. Those from the centre cylinders project forward in the normal way. This layout was adopted so that the exhaust pipes and bulky

expansion chambers could be tucked away more easily.

An air-suspension front fork and adjustable Monoshock rear suspension are fitted and the complete machine with streamlining, but without fuel, weighs less than 300lb. It is, incidentally, the most expensive machine in the Yamaha range – the 1983 version with spares kit costing around £12,000!

The 500cc TZ500 is a fairly new addition to the range but the 250cc TZ250 has a history dating back to 1972 when the original water-cooled, twin-cylinder racers were offered for sale. Every year since then a batch have been built and sold and with the code letter A added for 1973, B for 1974, and so on. The latest versions, raced in 1983, are the TZ250K series.

Over the years the power has been steadily increased until the factory now claim 55bhp in standard trim and careful tuning by an expert can lift this to over the 60 mark. The engine remains a simple, water-cooled, two-stroke twin, with piston-controlled (not disc valve) ports. Bore and stroke are 56 x 50.6mm and maximum

England's Steve Parrish campaigned a TZ500 successfully during the 1982 and 1983 seasons. Here he is seen in action at the Dutch TT.



agv

STEVE PARSONS

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YAMAHA
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COFFIN

DUNLOP

YAMAHA

CHAMPION

RENOLD

Shell

brembo

revs are 11000 to give a top speed of 150mph under ideal conditions. The gearbox is a six-speeder (the maximum allowed by the Fédération Internationale Motorcycliste for road racing). The frame is a lighter version of the TZ500 set-up and weight has been cut to 240lb. It is worth noting that TZ250 machines usually make up well over half the field in the 250cc class at the Grands Prix and that Jean-Louis

The new YZ250 moto crosser is a replica of the machine on which American Danny La Porte won the 1982 World Championship.

Tournadre won the World Championship in 1982 on a standard model prepared by his father. He was, incidentally, the first Frenchman to win a road-racing World Championship. And, in 1983, young Alan Carter became the first Englishman to win a 250cc classic for seven years when he raced to victory in the French Grand Prix on a TZ250K.

In fact, the TZ250s are so popular that they often make up some 90 per cent of the field in national events, and to assist the up-and-coming clubman the Japanese factory have recently



introduced the TZ125. In 1983 guise this has a single-cylinder, water-cooled, two-stroke engine that produces 31bhp to give this 190lb machine a top speed of around 120mph.

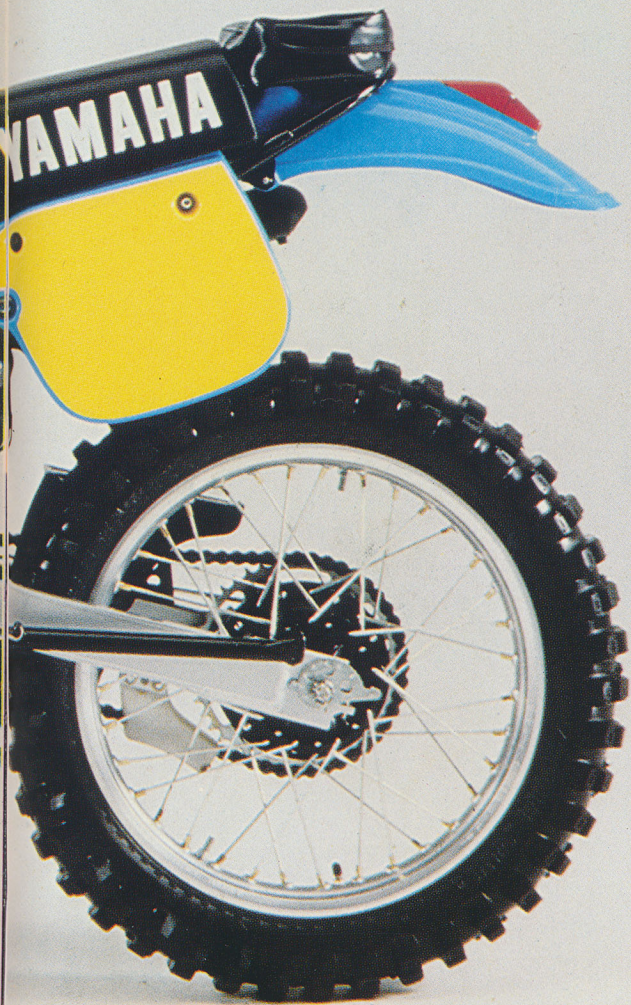
Moto Cross

For moto cross racing Yamaha list six machines: the YZ490, YZ250 and YZ125 for adult riders and the YZ100, YZ80 and YZ50 for schoolboy scramblers. Raced to third place in prototype

form in the 1982 500cc moto cross World Championship by England's Neil Hudson, Yamaha's YZ490 is powered by an air-cooled single-cylinder (87 x 82mm, 487cc) engine that develops a massive 60bhp at only 7000rpm. In fact, top-end power is detuned to give a wide spread of usable power, an essential characteristic for a winning moto cross engine because the rider is almost always accelerating or *Ideal for the schoolboy scrambler the YZ80 is a scaled down version of Yamaha's World Championship challengers.*







braking on twisty, bumpy dirt circuits.

In fact the torque (pulling power) of the engine is so good that Yamaha have cut the gear ratios from five to four – the less gear changes a rider has to make in a fatiguing race the better. The incredible suspension system (telescopic fork at the front, rising-rate cantilever at the rear) provides no less than 12in. of vertical movement for both wheels. The total weight of the bike, without fuel, is 225lb – just over the minimum weight for the class under the rules for international racing (imposed to prevent the use of dangerously light machines).

Unlike its bigger brother the YZ250 has a water-cooled engine – a single-cylinder two-stroke with a bore and stroke of 68 x 68mm, 246cc. Horsepower is a healthy 47 at 8250rpm and, because of the narrower power band of the smaller engine, a five-speed transmission is standard. The frame is virtually the same as the YZ500 and, despite the water-cooling system with radiator, the YZ250 is lighter, tipping the scales at 216lb.

It is worth noting here that Yamaha have produced the most successful quarter-litre moto cross machines in recent years with Neil Hudson winning the 250cc World Championship in 1981 and American Danny La Porte taking over to win the title in 1982.

The YZ125 is also water-cooled and, because these smaller engines have to work harder, the engine is fitted with the power valve system perfected on the road racers. This automatically

Yamaha's range of enduro machines are road-going versions of the moto cross bikes. This is the IT175.



decreases the size of the exhaust port at low revs which keeps the gas speed high and improves acceleration. The 56 x 50mm, 123cc, engine revs to over 11000 and produces 34bhp. To cope with these higher revs and consequent narrow power band, a six-speed gearbox is fitted. Weight has been cut to 194lb despite the use of the latest type frame with long suspension travel.

Because the 80cc class has increased in popularity at the expense of the 100cc, Yamaha have developed their water-cooled YZ80 to such an extent that it now produces only a whisker less power than the air-cooled YZ100 – 21.9bhp at 12250 compared to 22 at 11500.

Dimensions of the single-cylinder, two-stroke engines are 47 x 45.6mm, 79cc and 50 x 50mm, 98cc. Both have six-speed gearboxes but the smaller machine is very much lighter – tipping the scales at only 137lb compared to 194lb. The YZ80 also has the later type of rising-rate rear suspension with shorter suspension unit mounted above the gearbox.

The smallest of the genuine moto crossers, but still tremendous fun to ride, is the YZ50 whose little air-cooled engine (40 x 39.7mm) whacks out 9bhp and revs to 10000.

Complementing the YZ range of moto crossers are two machines for children to ride in gardens, orchards and on farms. These are the PW50 and PW80 models. The PW50 has a single-cylinder, two-stroke engine with automatic clutch and no gears – you simply open the throttle and as the

Mick Andrews helped Yamaha develop their trials machines. Here he puts a production model through its paces.

revs rise the clutch engages and off you go. An unusual feature is shaft drive to the rear wheel, which is safer and maintenance free. The PW80 is a definite step up the ladder with moto cross suspension and three-speed transmission, though the simple, automatic clutch is retained.

Catering for every need Yamaha also market suitable moto cross style sidecars to attach to both these machines.

Enduro and Trials

For the growing band of enduro riders (a form of sport something like car rallying where the competitor uses the public road plus special tests that usually take in moto cross style going) Yamaha market four machines: the TT490, TT250, TT175 and TT125. All are powered by single-cylinder, air-cooled, two-stroke engines (slightly detuned moto cross units) mounted in moto-cross style frames and with lights and other accessories to make them street legal.

Alone among the Japanese manufacturers Yamaha market a genuine one-day trials machine, the TY175. And although not regarded as a potential winner by top-flight riders it remains a firm favourite with clubmen because of its relatively low cost allied to reliability.

The engine of the TY175 is a single-cylinder two-stroke (66 x 50mm, 171cc) which produces 12bhp at 7000 revs. This is specially tuned to give power at low revs because trials riding is all about trickling over obstacles at the slowest possible speed – riders only losing marks when they are forced to use their feet to assist them or when they

stop. Speed seldom comes into the reckoning.

To assist competitors, a special six-speed gearbox with widely spaced ratios is fitted in an attempt to provide the rider with the perfect gear for every section. The complete machine weighs only 178lb, and has a ground clearance of no less than 12 inches – an asset when tackling rocky sections.

Three-wheelers

For rough going of another kind, or simply for use as an off-road fun vehicle, Yamaha offer two balloon-tyred three-wheelers: the YT125 and YT175. These three-wheelers are big business in America and now Yamaha are seeking to expand the market world-wide and to broaden the appeal of these vehicles from purely recreational use to include farmers, forestry workers and others who are looking for low-cost transport over difficult terrain.

As with all the off-road machines the engines are single-cylinder two-strokes. The YT125 has bore and stroke of 56 × 50mm (123cc) and produces a mild 8bhp at 6000rpm. The YT175 is a more highly tuned engine with the 66 × 50mm (171cc) unit whacking out 14.2bhp at 6000. Both are fitted with five-speed gearboxes and their chubby balloon tyres make suspension virtually unnecessary, though the larger machine does have a short-travel telescopic fork. Like all three-

For off-road fun Yamaha offer two balloon-tyred three-wheelers. This is the YT175 with five-speed gearbox and telescopic fork.





wheelers both are great fun to ride, though like sidecars, they demand a special technique, especially when cornering fast.

In all Yamaha offer nearly 50 roadster models in engine sizes from 50 to 1100cc. Add the competition models for trials, moto cross and road racing, including the schoolboy machines, plus the so-called garden bikes for younger children and the grand total goes over the 70 mark . . . surely a model for everyone's needs.

Part of Yamaha's 1984 range, the impressive Ténéré 600 is a replica of the factory's Paris-Dakar endurance machine with single-cylinder, four-stroke engine.



