JULY 1978

Motor cycling

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YAMAHA DT175

Trail Trial

YAMAHA stopped the compromising! They build bikes for the job for which they are intended. No half measures on the race track, no stones left unturned on the moto-cross scene and when it comes to riding roughshod over the trail, they have a range of bikes from 50cc to 500cc all equipped with knobbly tyres to suite green road riders from sixteen to sixty!

Yamaha have invested heavily in the motorcycle competition world and it has paid dividends with results achieved in World Championships for road racing, moto-cross and trials.

The research and development necessary to build world beaters has also been ploughed back into the bikes built for Mr. Joe Soap Motorcyclist, who wants a reed valved, high-performance roadster similar to that raced by Kenny Roberts or an off-the-road, wheelie popping trail bike developed from the world moto-cross championship winning cantilever model raced by Hakan Andersson.

The DT175 'Enduro' Yamaha has a single-cylinder, seven-port, reed valve two-stroke motor developed from their moto-cross grand prix 125cc motor, but with extra cubes and softer porting to give greater flexibility lower down the rev scale for on or off road use.

However, don't be fooled by the comparatively small capacity of the power unit; drop the clutch too fiercely with a bunch of revs in your right hand and you'll be aviating front wheels like Dave 'wheelie king' Taylor. This we discovered quite unintentionally when aiming for standing quarter mile figures at MIRA.

With 15hp being produced at 7500rpm and maximum torque making itself around 6500rpm, it is pretty obvious that this mini mud plugger obtains its get up an' go towards the top end of the stylish ND tacho.

But enough of this chit chat about the technicalities, because the important part of the test came when the gangling legs of one Samuel Hamilton Miller bestrode the Enduro to put it through its paces as very few other riders can.

His first instruction was to lower the tyre pressures front and rear to 4lbs and 6lbs respectively for extra grip in the mud.

Two prods on the kickstart and DT175 burbled (semi-crackled) into life. Cold or hot, wet or dry, this was quite normal for the Yamaha trailster, providing the cold start button on the carburetter was used if the bike had been left standing for any length of time.

With the motor warmed up, response to the throttle is instantaneous. Sammy Miller proved the point by snicking the bike into first gear and zapping off across some loose, sandy soil, leaving a furrow in the ground where the rear knobbly tyre had fought for grip.

In fact, almost as fast as one could blink, the maestro had chopped from first to third gear to get the feel of the gearchange and the balance of the machine on loose ground.

A couple of twirls around the sandy 'paddock' and Sammy had worked out throttle response, braking and general handling of the bike. Next stage was the off-road riding test in earnest over the SM ten acre trials ground.

First there was the boulder section to tackle. Lumps of rock or concrete, some almost the size of the wheels were piled on top of each other on the approach to a 1-in-3 climb up a 12 foot high, man-made ridge of hills.

Sammy approached the boulders with the motor buzzing strongly in first gear as though he was going to ride through the boulders rather than over them. A slight pull on the handlebars, an extra whiff of throttle and the front wheel of the DT175 pawed its way over the first boulder and on to the second large obstacle as the deflated rear tyre scrabbled for grip.

The front forks dipped, the rear suspension compressed and extended to allow the rear wheel to follow the undulating terrain and, almost like a mountain goat, the Yamaha trail bike romped up and over the rocks with Sammy in masterful control.

Another twitch of the throttle and Sammy popped a triumphant wheelie at the brow of the climb for photographic purposes. Two or three more climbs and Sammy was satisfied.

Next section was in the woods, where a stream ran through slippery, muddy banks which would be difficult to climb even with a genuine trials motorcycle.

Squirming over wet, slippery tree roots, squelching through mud holes and splashing through anything up to a foot of reasonably fast flowing stream appeared a doddle with the maestro at the controls.

Even when the Miller man pushed the Enduro to its limit and stalled the motor, it re-started first or second prod on the kickstart.

After half-an-hour of really tough off-road riding, Sammy blasted out of the woods and disappeared along the track leading to the entrance of the site. As the buzzing exhaust note faded into the distance, we wondered what Sammy had in mind.

A few minutes later he returned to explain. "I just wanted to check out the gearing on the road to see how the machine would perform between sections and also test the brakes."

So what was Sammy Miller's overall impression of the Yamaha DT175 Enduro?

"Very favourable," said Sammy. "The suspension is excellent with plenty of travel at front and rear. I think the front forks could do with a bit stiffer damping, just a matter of changing the oil, you know. However, both wheels follow the terrain very well although I purposely pushed the bike to its limit and I managed to get both front and rear suspension to bottom out.

"Another important point with off-road bikes is ground clearance," continued Sammy. "The Yamaha is definitely better than the Kawasaki 250 which I tested a few weeks ago and I had no trouble with the frame or crankcases grounding when riding in deep ruts."

What about the motor and gearbox?

"Well, the motor is really good, even though you have to keep it on the boil for maximum power. However, it is extremely responsive to the throttle and it doesn't faulter as the going gets tough. What I liked about it was the way it started first or second kick in spite of being soaked with water down in the stream.

"The gearing is a little on the high side for some of the sections I was riding, but this is purely a matter of changing sprockets and is not a serious fault.

"For extra grip, I would like to see a wider section rear tyre. The one fitted is a typical Japanese compromise for on or off-road use and doesn't suit either task particularly well.

"Control positioning is good and the clutch is really light and smooth to operate. I also liked the very positive gearchange," said Sammy.

"That short blast out on to the road proved that the brakes didn't suffer unduly when riding in water. They needed very little time or distance in which to dry out and become fully operative again; in fact, I don't think more than a few drops of water could have got into the hubs as they worked perfectly after the first application.

"The Yamaha is a well-balanced machine and although trafficators are a bit gimmicky for an off-road bike, I suppose they are useful on the road. Mind you, they are tucked fairly well out of harm's way and the rubber-mounted rear units can't come to any grief. I suppose I'm just anti anything that adds extra unnecessary weight to a purpose-built motorcycle.

Did Sammy think that the Enduro could live up to its name by taking part in serious competitions?

"Sure it could," he replied. "It could be entered in the Welsh Two Day Trial with no trouble whatsoever and should prove competitive. With a little bit of weight paring, the bike would go very well indeed. Mind you, it would have to be a fairly lightweight rider who rides it, not some fourteen-stone character."

What was Sammy's overall impression of the bike?

"Well, it certainly looks good. The finish is excellent, although I'm not all that keen on the rear chain tensioner ... it looks rather scrappy and not at all up to Yamaha's normal standards.

"A great deal of thought has gone into the design of the total machine and as I've said; if the gearing, rear tyre size and front fork damping are sorted out, it would be that much more suitable for serious off-road riding or even competition in motorcycle sports enduros."

Obviously, the maestro was suitably impressed and our next task was to take the DT175 to MIRA for its performance check out. The figures obtained speak for themselves.

On the road, we discovered that the Enduro has a happy cruising speed in the region

of 60mph, with very little need to use more than three or four of the gears in the six-speed gearbox. Even when starting off from a standstill, it is quite reasonable to pull away in second gear, except on the steepest of hills.

Once the clutch is released and fully home, cog swaps up and down the ratios could be made without using the clutch.

Roadholding and handling on tarmac in the dry is not too bad, although the knobbly tyres are not the best equipment for riding on wet roads and special care has to be taken not to overdo the angle of lean when cornering.

The high and wide trail handlebars produced a 'sit up and beg' riding position, which gave good low speed control when trickling through traffic and the deeply-padded dual seat gave a comfortable ride with just about enough room for a pillion passenger on short journeys.

Serious long distance riding with two-up shouldn't be contemplated as the machine is obviously not designed for the purpose.

In the engine department, there is gentle performance at the lower end of the rev scale, with a decided power increase at an indicated 5500rpm on the tachometer. Slight vibration is felt through the bars and footrests as the revs increase and such is the design of the motor that as soon as the rev counter hits the 'red line', the motor runs out of breath.

In other words, it's virtually impossible to over-rev this willing little stroker.

Electrically, the machine is quite basic. A flywheel magneto produces the current for a capacitor discharge (contactless) sparks system as well as a trickle charge to the six-volt/six-amp hour battery.

The lighting system is six-volt and adequate for the performance of the machine, while all controls, which are handlebar mounted, provide thumb tip control of all circuits.

No problems were encountered throughout the test period, apart from a rear number plate which fractured due to high-frequency vibration at the tail-end of the machine.

Fuel and oil consumption wise on the Autolube system, we learned that the figures varied considerably depending on how hard the motorcycle was used.

Full throttle in lower gears off the road and the small 7 litre fuel tank seemed to empty at quite a surprising rate. Thirty five to forty five off-road miles and the reserve had to be switched on. On the road, journeys of up to 80 or 90 miles could be made before the tank had to be replenished.

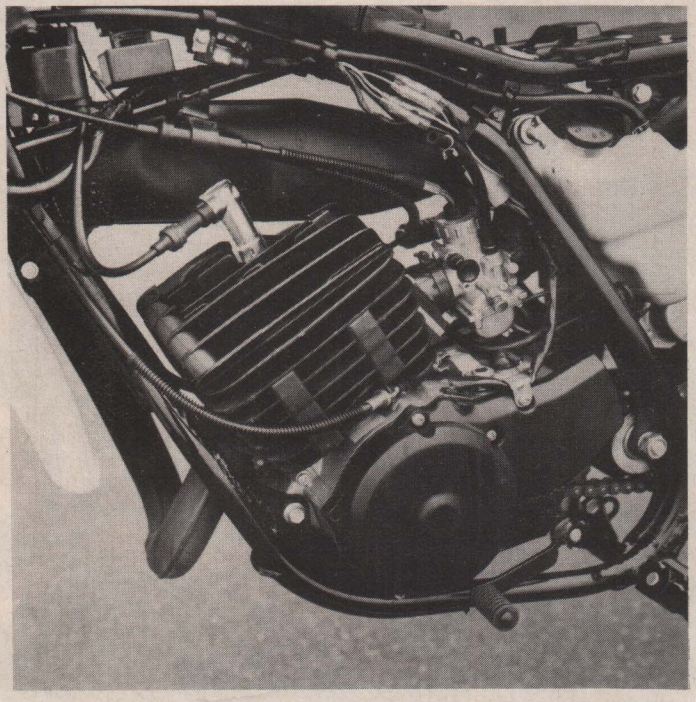
The same could be said of the small oil tank which holds just under two pints of two-stroke oil. Full throttle all the time means a distance of about 200 to 250 miles per pint; while more gentle use will stretch each pint over double the distance.

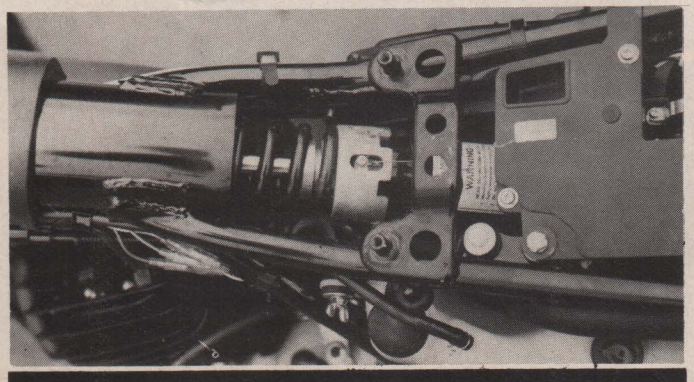
Braking on a dry tarmac surface was also an eye-opener as far as we were concerned, with the drum brakes front and rear putting up some quite outstanding figures.

Generally speaking, we were equally as impressed with the DT175 as had been Sammy Miller. The finish is good, with only minor items such as the non-lockable toolbox below a non-lockable, pull off side panel spoiling the ship for a ha'pporth of tar!

No doubt about it, as I said at the beginning of the test — Yamaha stopped the compromising and build bikes to tackle the job in hand.

Charles E. Deane





Technically Speaking

ENGINE

The power starts to make itself apparent at 5500rpm and as revs increase so slight vibration is felt through the handlebars and footrests. However, coupled with the trail bike gearing, it is easily possible to lift the front wheel in first or second gear to climb obstacles on the trail.

Starting cold or hot was faultless and both induction and exhaust were muted sufficiently to avoid disturbing other 'green road' users when on the trail.

A minimum of blue smoke is blown from the 'spark arrester' thanks to the standard Yamaha Autolube system which meters oil according to the engine/throttle requirements.

Air cooled, single-cylinder, two-stroke with reed valve induction and piston-controlled porting. Bore, 66mm x 50mm stroke. Compression ratio, 6.8:1. Maximum horse-power, 15BHP @ 7000rpm. Maximum torque, 1.646kg/m @ 6500rpm. Carburetter, Mikuni VM24SS (24mm).

TRANSMISSION

Six-speeds in a gearbox offer a wide range of ratios suitable for all occasions, on or off-road.

For serious competition as an enduro machine, the gearing needs to be lowered; yet, for on-road use, the close-ratio high gears would appear to be a suitable compromise, offering a cruising speed or around 60 miles-an-hour.

Clutchless gearchanges are the norm and gearchanging was always positive. Slight transmission judder was apparent when using full throttle at low engine revs, but this smoothed out as the revs increased.

Six-speed constant mesh gearbox with multi-plate, oil bath clutch. Left-hand foot-change gear lever, one down, five up movement. Final drive by roller chain. Gear ratios, 1st, 3.50:1; 2nd, 2.21:1; 3rd, 1.56:1; 4th, 1.19:1; 5th, 0.96:1; 6th, 0.80:1. Final Drive (chain) gear ratio, 0.96:1. Primary drive gear ratio, 3.23:1.

FRAME & FORKS

Nothing but praise was forthcoming from Sammy Miller when it came to the handling of the Enduro 175 on the rough.

The only criticism was lack of damping in the front froks, but it was pointed out that a heavier oil would probably solve the problem.

Seven inches of movement on the front forks and five-and-a-half inches on the cantilever rear suspension was adequate to cope with almost any off-road riding conditions. Also, the frame gave sufficient ground clearance for riding through deep gullies.

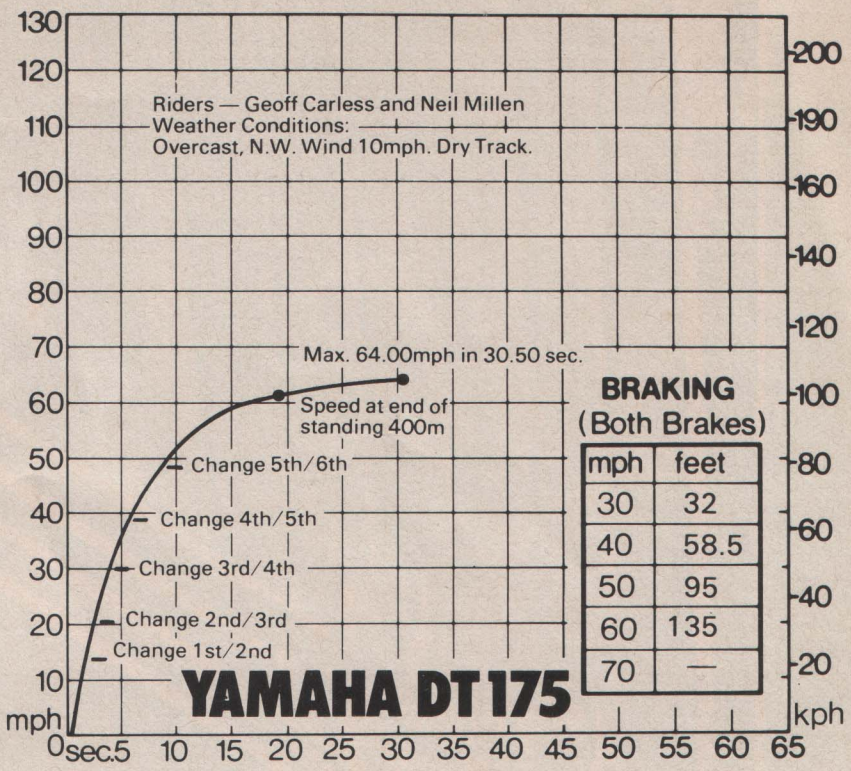
Single down tube to double

MAXIMUM & MINIMUM SPEEDS

GEAR	Solo max.	Prone max.	Min.
1	21.70	—	4.00
2	30.48	—	8.00
3	42.53	—	17.00
4	49.50	—	22.00
5	59.10	—	26.00
6	64.49	—	32.00

SPEEDO CORRECTIONS

Indicated mph	30	40	50	60	70
Actual mph	30.00	39.00	50.00	59.00	—



BRAKING (Both Brakes)

mph	feet
30	32
40	58.5
50	95
60	135
70	—

ACCELERATION FROM REST (secs)

0mph to	20	30	40	50	60	70	80	90	100	110	120	Max.	400m
Solo	2.19	3.75	6.00	9.00	17.63	—	—	—	—	—	—	30.50	19.21
Prone	—	—	—	—	—	—	—	—	—	—	—	→	—

FLEXIBILITY, Top Gear

mph	20-40	40-60	60-80	30-50	50-70
Solo	11.29	12.54	—	12.38	—
Prone	—	—	—	—	—

FUEL CONSUMPTION

mph	30	40	50	60	70	80
mpg	92	78	64	56	—	—
Overall consumption						58 mpg

loop cradle frame. Telescopic front forks with two-way damping (180mm (7.1in.) travel); cantilever rear suspension with single two-way damped hydraulic adjustable shock absorber (145mm (5.7in.) travel).

WHEELS & BRAKES

Equipped with standard chromium plated, steel wheel rims and single leading shoe drum brakes front and rear, there was little to criticise except the diameter of the rear tyre. For extra grip in off-road riding, a larger section tyre could be fitted to the machine.

The brakes gave exceptionally good results on dry, tarmac surface equal to any other motorcycle. They were definitely adequate for the performance of the machine.

Front wheel, 21 x 2.75in; rear wheel, 18 x 3.50in. Single leading shoe drum front brake, 0.00in. diameter. Single leading shoe drum rear brake, 0.00in. diameter.

ELECTRICS

The electrics proved faultless throughout the test, although basic in design. The six-volt lighting system was adequate for the performance of the machine and all controls were easily operated with a simple layout on the handlebars.

The ignition system, which is a flywheel magneto operating through a capacitor discharge (contactless) system operated superbly under adverse conditions. Everything functioned according to plan at all times.

Flywheel magneto supplying energy for CDI ignition and current to 6 volt/6iaamp hour battery. Parking light, trafficators and horn, plus neutral indicator, oil level, main beam and trafficator warning lights.

DIMENSIONS

The DT175 is a purpose-built bike with riding position and styling suited precisely to its task. Pillion footrests are fitted to the rear cantilever suspension, but the dual seat is inadequate for carrying two people unless as a temporary measure over a short distance.

The seat height is a little on the tall side for a short rider, but the well-padded seat is comfortable and absorbs road and trail shocks passed through the long travel suspension to the rider.

Overall length, 2,080mm (81.9in.), Pverall width, 856mm (33.7in.), Overall height, 1120mm (44.1in.), Wheelbase, 1350mm (53.1in.), Ground clearance, 265mm (10.4in.), Seat height, 845mm (33.3in.). Dry weight, 99kg. (218.3lbs.). Fuel tank capacity, 7.0 litres (1.5 gals). Oil tank capacity, 1 litre (1.8 pints).

EQUIPMENT

Wing mirror, toolkit, trafficators, rev counter and pillion footrest are all fitted as standard equipment. A helmet lock and steering lock are also included for obvious reasons, although the toolbox was not lockable, nor the fuel filler cap. The prop stand (there was no centre stand) tucks out of harms way for rough riding.

GENERAL

Price: £530.00 inc. VAT. Test machine supplied by: Mitsui Machinery Sales, Oakcroft Road, Chessington, Surrey.