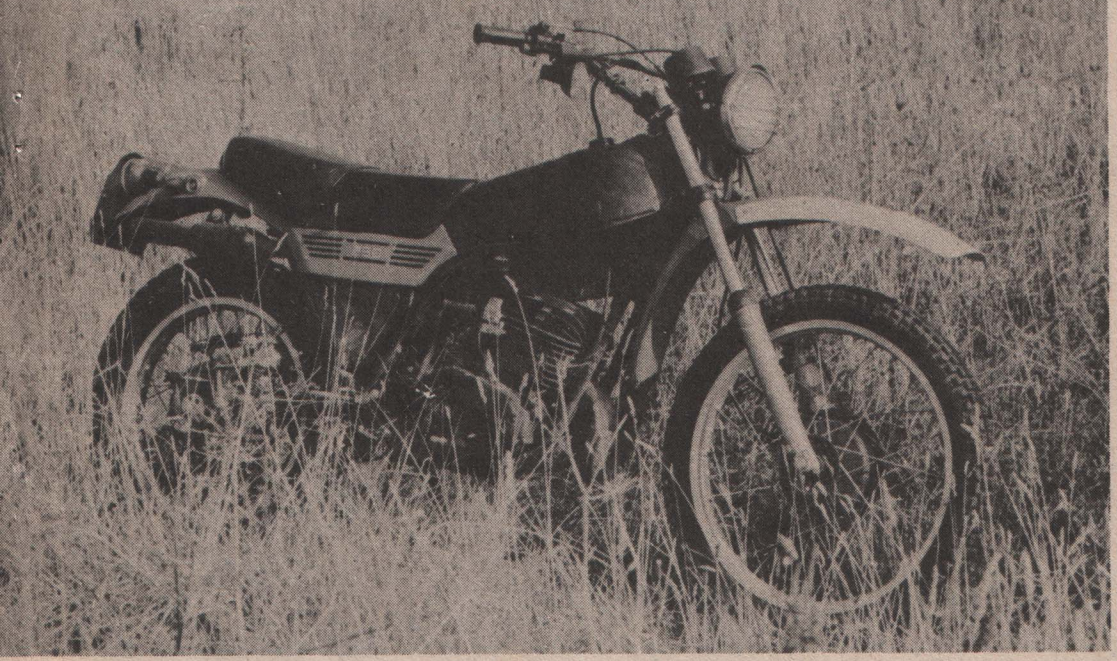
Yamaha DT250
THE UNLIKELY SUPERBIKE



AS FAR as the flexible definition of the word "trail" goes, this is arguably the best trail bike available.

The Yamaha 250 is a reasonable price and suffers from neither the peakiness of a 125 nor the unnecessary power of a 400. If a trail bike is a compromise in design between road and dirt then a 250 is also a compromise in engine size.

Comparing this bike with its opponents one realises why Yamaha sell the most trail bikes (most of them go to the States). It's got the lot: long travel front forks, progressive action conical hub brakes, high level plastic guards, proven engine, well sorted frame geometry, long out-of-the-way exhaust, cantilever back end, well protected road legal fittings, light all-up weight and many trick bits. The specification is as attractive as the bike's appearance.

Yamaha took the lead in trail bikes with their DT1 250 back in 1968 and over the past decade have stayed one step ahead of their opposition. Honda's XL250 is too heavy, as is the new four-stroke Kawasaki, and Suzuki's TS250 is now showing its age.

Success breeds success, and so the trail world's number one manufacturer with their latest range look like going even further ahead in the sales ratings. The small amount of European trail-cum-enduro machines are nothing more than a drop in the ocean compared with the total number of Japanese trail bikes sold in the USA.

This was our reasoning behind buying the DT250 for a long term test. We wanted a good trail bike to replace the KT175 Kawasaki that served us so well during 1976, and the opportunity to own a real live cantilever was too good to miss.

We intended using the bike mostly as a normal commuter with the occasional trail ride and a few competitive endurance races. Although the machine is capable of a sustained 70mph it is not completely at home on the motorways; so few long trips were to be undertaken.

For the run-in period of just under a thousand miles it was treated very gently; a few country roads but mostly to and from the office. The rev counter wasn't taken to the red line until four figures were on the speedo.

Like all trail bikes the DT250 is a delight around town. The light weight and wide steering angle enable it to be thrown around traffic queues and the flexible engine does away with constant gear changing. The only disadvantage is the handlebar width.

For the job of commuting, the beautifully progressive drum brakes are on a par with discs, and "universal" tyres are adequate, as are the six volt lights. A trail bike converted with road tyres, decent mudguarding and conventional handlebars does make an excellent way of riding to the office, especially for workers in central London.

The DT250 has a first gear that can creep along at walking pace as the traffic slows and then have instant pick-up to accelerate out of the queue when a gap arises. So flexible is the engine, that we could have happily used only first, third and fifth for riding around the city.

On the open road, the lightweight machine is easily blown off line by crosswinds and can only cruise at 70mph if the engine revs its guts out.

Petrol consumption is better than Yamaha's RD250 two-stroke but not as good as their four-stroke XS. We averaged 45mpg around town, 50 to 55 on a gentle tour and 39 on the motorway — not the best choice with the small capacity, two gallon petrol tank. Oil consumption averaged 240mpp.

Off-road economy was purely a matter of terrain. Although anything from 30mpg upwards was returned on various rides, the average from most of them worked out at just over 40mpg.

The design of a Japanese trail bike is a 50/50 compromise between the dictates of road and off-road use. Their bikes can therefore be used to ride away from the city and into the hills. When the tarmac ends, a few pounds can be let out of the tyres and the machine then taken over the roughest mountain track.

To a purist, the best set-up for a good road bike has to be completely different to that suitable for rugged tracks. Engine powerband, gear ratios, weight distribution, steering geometry, suspension settings, tyres, brakes, etc., should be opposites. But the Japanese have worked hard at the art of compromise to come up with a "trail" version which, while not being perfect for either use, can tackle both with surprising efficiency.

Our staff would take it home on a Friday night and spend Saturday in the hills. No one was completely comfortable on the motorway but it would hold 60mph to the Yorkshire Moors and then bounce over the biggest rocks in climbing the highest peak. It took two riders and luggage for a weekend tour along the resorts of the south coast. It was continually used as a commuter throughout the year. It was slid inside a Cortina estate car and taken to Scotland for a trail ride. We even entered it in enduros, both in standard trim and modified. This Yamaha did the lot.

Some people may not accept that one design can fall between an XS250 and an MX250 and do both jobs acceptably well. We can only advise them to have a long test on a DT250. Riding is believing.

PERFORMANCE (ROAD)

By 250 road bike standards, the DT expends a lot of revs for relatively little speed. A combination of low gearing and 23bhp cannot make it a competitor for well developed street twins. But around town it can be made to give any bike of the same capacity a run to the next set of traffic lights. If the rider uses the gears and power to the full, then this lightweight machine can be made to fly up to 60mph.

Above that speed the limited engine power cannot overcome the wind drag of such a high machine with wide bars. The most that can be expected is an indicated 70mph as the tacho sits on 6000rpm. Higher speeds demand either a racing crouch or a long downhill run.

Shifting down into fourth accomplishes little as the engine will not rev out. Once the maximum power speed of 6500rpm has been reached it stops breathing. Exceeding the red line of 7000 is only possible in the low gears.

Around the city, the handling has to rate as good. A combination of little weight, miles of ground clearance and light steering make it a delight to nip through traffic. But as the speed rises, so the restrictions of the compromise design begin to show.

Brakes that seemed good at 30mph deteriorate when stopping quickly at 60. Steering that is effortless in town becomes too light and sensitive for maximum stability on the highway. Riding the DT flat out calls for concentration.

Wet roads dictate a sizeable drop in speeds. Tyres that grip a hillside cannot compete with those meant solely for the tarmac. Fortunately, the suspension is soft, which is a great help.

Everyone who rode the cantilever was impressed at the way the softly sprung, long travelling suspension appeared to float over bumpy roads. The rider never took a shaking.

PERFORMANCE (TRAIL)

The practical maximum on a reasonable track is just over 60mph, in fourth or fifth. Any standard 250 Japanese trail bike has a good off-road performance up to 40mph and begins to taper off once 50 has been reached. 70mph is very rarely possible, and the DT is no exception.

Experienced riders usually opt for a 400 model. It not only pulls a higher gear and gives a more effective top speed but has more low down "grunt". Fast trail riders either go for exciting but peaky enduro engines or more cubes.

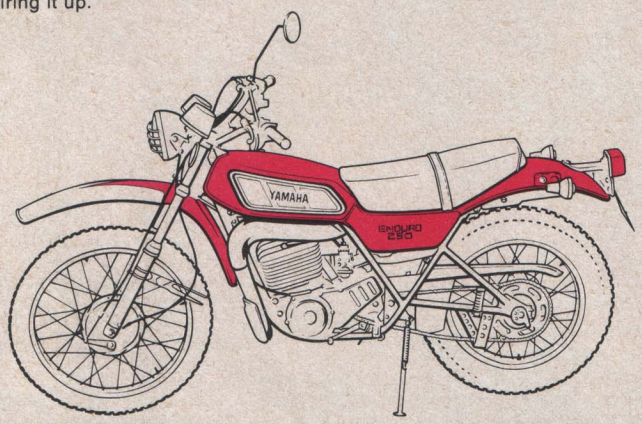
Yamaha's trail 250 will satisfy the majority of people. In first gear it will slog up a steep slope without stalling and rev right out going down the other side. There is no hint of a limited powerband. The choice of gearing for the engine power and weight is perfect.

Only when taking a pillion passenger did the engine fail. The steeper slopes may be no problem with just the rider, but the weight of an extra person is too much. Substantially lower gearing would not be the answer as this would reduce the top speed and, more importantly, render the bike nearly unrideable in slippery going.

This last statement means that a machine is more easily controlled up a greasy hill if the engine is slogging away at low revs, than if it has very low gearing which could put maximum torque on to the ground at 5mph in first gear. We would not advise the sprocket sizes to be altered from the original.

Our most enjoyable trail rides were in Wales. On several occasions we linked up with an organised group from the Welsh Trail Riders Association and rode with them over their beautiful countryside.

For the London to South Wales trip of nearly 150 miles, the DT was put into the back of a Cortina estate car. To accomplish this we had to take off the handlebar mirror, remove the two rear indicators, drain and remove the petrol tank, detach the battery, temporarily block a few breathers, unbolt the handlebars and lay them along the top tube and finally slide it inside the car: it just fitted. The reassembly took only twenty minutes from opening the tailgate to firing it up.



To protect the bike from inevitable "accidents" during off-road riding a few modifications were necessary. It is possible to go overboard on this subject but we did as little as practical to keep the machine close to standard.

The first thing is to protect the valuable paintwork on the petrol tank from scratches. Tank covers can cost big money so we made our own. A few square feet of vinyl was brought from a local store and after ten minutes work with a pair of scissors the "tailored" shape was held in place with carpet tape.

Replacement Yamaha rear lenses and reflectors cost too much, so the whole assembly was removed and put on the shelf. We bought a rubber mudflap for a Kawasaki and cut it to provide a flexible mounting for a cheap rear light and the number plate. With a few screws it was soon in place.

The handlebar levers should not be fully tightened. This way they will turn around on impact instead of breaking.

Although the rear flashers are mounted on very impressive three inch rubber stalks, we did manage to damage one. Removing them before a trail ride only takes a couple of minutes and is worthwhile.

The weight reduction from taking off a few vulnerable parts is very little, even if the plastic instruments are also removed. But a dry weight of 270 pounds is not too much to handle, and taken overall the Yam is a trail enthusiast's delight. The long travelling suspension soaks up the bumps as the rider concentrates on holding the right line.

The steering is light and responsive, the brakes have the right amount of feel and the overall stability gives an amazing feeling of confidence. A tremendous all-round handler for the expert and novice alike.

PERFORMANCE (ENDURO)

With such an advanced trail bike on our fleet we decided to enter it in a few enduro races, in as near to standard condition as possible.

For our first event it was put into the 250 trail class in exactly the same trim as it had been used for pleasure rides in the hills.

The morning was damp after overnight rain. As our bike lined up for the start it was clear to everyone that the conditions were going to be muddy. Tyre pressures were lowered and their locking nuts tightened.

Standard "universal" tyres are no good in such conditions. They soon fill with mud and take on the tread pattern of a smooth balloon. Test rider, Derek Pickard remarked: "The bike was all over the place. It was handling like a wet bar of soap around a bath tub, and the longer the event went, the worse it got.

"Those who had decent knobby tyres could accelerate out of the bends and effectively go around corners. The bikes in the trail class were struggling to stay upright in near hopeless conditions. A few fell; I even ran over one unfortunate chap. I couldn't avoid him and his bike brought me down." Derek finished mid-field.

For the next event we changed only the tyres and found ourselves in the "enduro" class. This category is for proper endurance racing bikes and, as we were soon to learn, a near standard trail machine is well and truly blown off.

The tyres we had chosen were the highly respected Metzeler Six Days pattern, as they are the right kind of compromise between the close knobs of trials universal and the wide spaced knobs on motocross patterns. They are the only true trail/enduro tyre. After many phone calls we found the importer to be Brian Anderson, 150 Fleetwood Road, Dollis Hill, London NW10. The price was £39.

At the start, our near standard DT250 lined-up with a Bultaco Frontera 250. It was the only time the two bikes were level! As the flag dropped, the lighter and more powerful Spanish machine left our city commuter for dead.

Against purpose built Husqvarna and KTM bikes a compromise all-rounder has little chance. True enduro machines are light, have no excess baggage, use the right gearing for a more aggressive powerband and the suspension is tuned into the job.

Although Derek Pickard enjoyed the ride he finished a long way down the field.

"A combination of 300 pounds and only 23 horsepower," he explained, "is useless against bikes that weigh little over 240 and have up to 30 horses and seven gears. I nearly fell off trying to stay with some of them.

"But at least I got to use the bike to its full potential which is more than can be said for the previous mudbath. I had a ball, the engine was thrashed and the suspension took everything the track could throw at it.

"The handling is fantastic for what is meant to be only a trail bike. Frequently it sorted itself out of seemingly hopeless situations, where a lesser machine would have chucked me off. Those forks are just great — they're so good they definitely show up the back end as being oversprung.

"But in fairness to the cantilever set-up," Derek went on to insist," it has a big plus over conventional twin units. Whereas an ordinary bike suffers from the usual rear kick-out under hard throttle as the machine powers out of a rutted section, this arrangement tends to stay in a straight line as the tyre keeps driving. And when you're as bad an enduro racer as I am and need all the help you can get, that counts for a lot."

The DT250 is handicapped in competitive conditions by a rear spring that is rated to carry the occasional passenger. A small amount of adjustment is provided but it is ineffective and next to worthless.

To be fully competitive in the enduro class the machine needs a lighter spring, more top end power and to be fully stripped of excess weight. Although Yamaha do list such a spring for the American market it is not on sale in this country. Raising engine output can be done with different porting and exhaust, but it would ruin the bike's all-round properties. Anyway, Yamaha make a proper enduro bike, the IT250D, which is light, fast and has the minimal equipment.

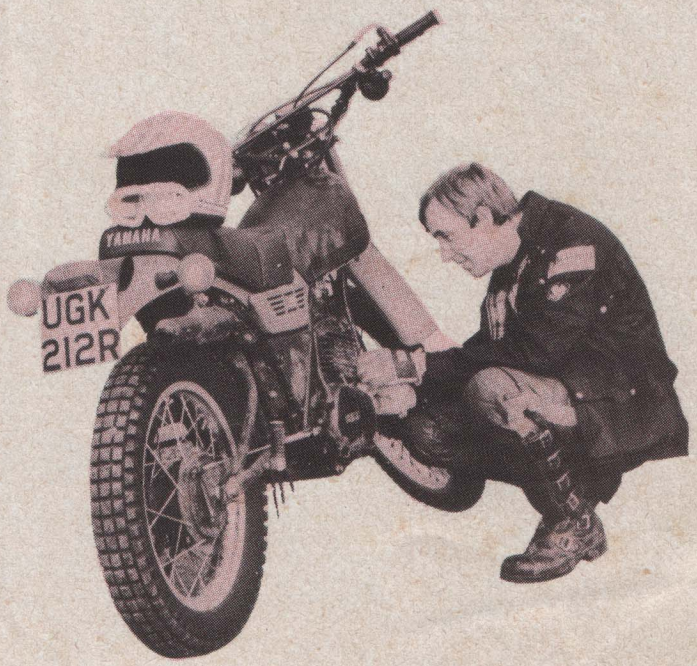
After the one unsuccessful brush with the big guns of the 250 classes we returned to the trail category by refitting the original tyres and praying the weather would be kind. It was and Derek finished in the first five.

"If I was a better rider then maybe I could have come close to even winning that one," he later explained. "It was the only cantilever in my class and it certainly proved a fabulous piece of equipment.

"The engine has as much bottom, mid-range and top end as any other stock bike in the class. In acceleration it had a slight edge on most and had no trouble in staying with the fastest.

"Where I benefited most," he continued, "was over the rough bits. Other bikes were bouncing nearly out of control as the Yam floated over the top.

"All it takes is faith. Believe it will go around a bad bend at high speed, hang on and it will. The handling is so good that it'll make up for rider errors and I certainly made plenty of them. On ability I should have come in about twentieth, but on this Yam I made fifth; that's gotta say something."



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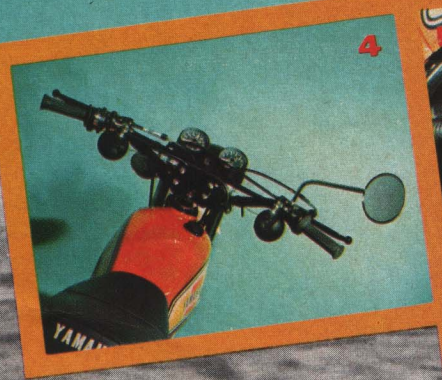

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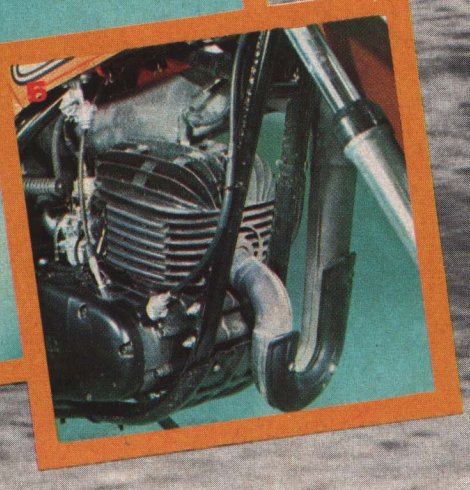

5

trail trial

YAMAHA 'MONOSHOCK' DT250 3,000mile test

1.
Up, up and away – an airborne Derek Pickard puts the DT250 through its paces

2 & 3.
Two sides of a first class trials bike. Lightweight and functional with a conventional twin down tube, single top tube frame and a 247cc engine developing 23bhp at 6500rpm

4.
To keep the weight down to a minimum the DT250 has retained only the basic instruments – speedo and rev counter. High wide bars make for accurate handling over rough terrain

5.
Matt black finish is more for fashion than heat dissipation. The exhaust has been designed to give the correct amount of back pressure to produce full power. Its 28mm Mikuni carburettor breathes through an 8 reed valve

6.
Typical enthusiasts' pose – all admiring their bikes! Actually a well earnt rest after a hard ride

7.
It's down here somewhere . . . Every sensible trials rider should wear suitable clothing. Belstaff weatherproof jacket, padded leather trials jeans, body belt, tough boots like these from Ashmans and protective gloves for the maximum cover-up

8 & 9.
Over hill and down dale – the DT250 makes it look so easy

Delivery Faults

With only two miles on the speedo the bike was ridden from the dealer's showroom into our workshop where we noted the following:

1 Both handlebar levers were set to an awkward angle which strained the hands and made the mirror useless.

2 The clutch cable adjuster had not been tightened after attachment.

3 A white coloured chemical used to protect the seat during freight and storage hadn't been cleaned off properly.

4 Scratches on engine protection bashplate.

5 Clutch made slight grinding noise on take-up.

Subsequent Faults

1 Clutch grinding noise rapidly grew worse during the first day until it made the same metal to metal abrasion sound on every pull-away and gear change.

2 After 450 miles the motor proved harder to start due to an increasing tendency to kick-back. This was cured by closing the contact points to their correct gap and so retarding the previously advanced ignition timing.

3 With only 700 miles on the clock the bike was accidentally dropped on a wet road, bending a few fittings and smashing the tacho.

4 At 750 we decided to put it into the Yamaha importers instead of the dealers for its first service, the crash damage repair and give them the opportunity to investigate the clutch noise.

5 Three weeks later the bike was back on the road having been given a service and a clutch rebuild. However, the oil pump jammed in the open position, the ignition timing was too far advanced and kicked-back, and the clutch grinding noise returned before the bike had covered ten miles.

6 As the dealers hadn't supplied the handbook on delivery and failed to post one as promised, we had to use hard language on the phone. It came two days later.

7 With 1200 miles on the clock the first enduro produced a few spills which split the left twistgrip (forgiveable), tore off the rear number plate (predictable), and damaged the spring mounted rear indicator which is meant to be unbreakable.

8 At 1,300 miles the neutral warning light would sometimes light up in second gear and on some occasions stay off when in neutral.

9 We put it back into Mitsui (the Yamaha importers) before 1400 miles so they could rebuild the clutch.

A fortnight later we picked it up and were told that the ignition had been retimed, a new barrel and piston had been fitted due to an "unfortunate seizure during service testing", and the clutch had been rebuilt. This time, we were informed they had found the real cause of the grinding noise and their extensive overhaul should put an end to the problem. Ten miles later it was grinding again!

10 After 1500 miles we were surprised that the chain was two-thirds worn out. From new it had been regularly treated with Duckhams chain spray. Close examination revealed that while this had deposited a moly-based chemical on the outside it hadn't penetrated the links. So the rollers ran dry and rapidly wore.

From that time the original chain was generously lubricated with ordinary "3 in 1" oil. Instead of having to be replaced after 2000 miles as would have happened, it went on to cover 3500. If we had used the oil from the start then we are confident almost 5000 miles could have been covered before replacement.

11 With 2000 miles on the speedo, several weeks had passed without the bike going into the Mitsui service department. As they were seeing more of the machine than us we thought they had better have it back again. Seriously, they had promised us a complete replacement engine bottom end which included the transmission, to prove that only our motor had the fundamental clutch fault.

When we collected the bike a couple of weeks later they explained how the replacement engine should put an end to our troubles. In other words, this time their work had done the trick; of that they were absolutely, definitely, positive . . . but not quite sure!

It lasted every bit of 25 miles before we heard the noise again.

In the book, where the exact history of the bike is logged we note that a staff member had written at this point "the farce continues."

12 At nearly 3000 miles we were amazed when the engine suffered a momentary seizure.

The bike was being ridden hard up a long hill when it locked. After a few minutes cooling the engine carried on as if nothing had happened.

13 Finally, Mitsui fitted a new engine under guarantee.

SERVICING

Japanese trail bikes aren't known for their super comprehensive toolkits and this one is no exception. Not only is the kit of an absolutely minimal nature, but the tools have to be crammed together in a certain way or the bag won't fit into the very small space allotted to it. We had difficulty in forcing the lid to lock down with just a spare spark plug!

As always, no spare split pins are provided. And since the rear wheel removal calls for three such pins to be extracted, the manufacturers should either provide the necessary spares or take a step forward and use "R" clips.

The kit has nine pieces: the usual pair of pliers, tube spanner that removes the plug, double ended flat spanner (19 and 22mm), three piece screwdriver set, two Allen keys and a wrench that alters the rear spring preload and tightens the spokes. A couple of extra open end spanners with 10, 12, 14 and 17mm sizes should have been included in a redesigned holder.

Just as the bike itself has been kept simple the servicing is straightforward and nothing is difficult. It is advisable though to use a decent toolkit and leave the original correctly arranged in its thimble-sized compartment.

Once the run-in period has been completed and everything is set up correctly then the makers advise the following service schedule:

Every 250 miles: oil the rear chain and top up the oil tank. The latter is awkward because the side panel has to be removed, a thumbscrew undone and the tank pivoted out from the frame before the filler cap is accessible. Fortunately, a dipstick and low level warning light discourage neglect.

Every 1,000 miles: remove, wash and oil the foam air filter. (This is only necessary if the bike is used solely off-road).

Every 2,000 miles: adjust the clutch pushrod and cable; refill the transmission case with 1100cc or 10/30 sae; retension the chain to 25mm free play; check the oil pump setting; set the contact points to 0.35mm and oil the camfelt; clean the plug and reset to 0.6mm; wipe out the fuel filter bowl; adjust the tickover; top-up the battery level; oil all the cables; oil all the locks except the ignition (steering, helmet, and toolkit); grease the swing arm pivot; check the tension of the spokes and various fittings which could work loose; adjust the brakes; examine the wheel nuts and tyres and thoroughly clean the entire machine for an examination (mud can hide faults).

None of the above are any problem. The standard B8ES spark plug proved to be ideal but we didn't like the absence of a primer wheel on the oil pump; it hints at false economy.

Every 4,000 miles: reset the ignition timing to 3.2mm btdc after setting the contact points; change the fork oil; repack the steering head races and wheel bearings; grease the speedo drive and brake pedal pivot; and check the cylinder compression pressure (but no tolerance figures are given).

TYRES

The Yamaha DT250 is equipped with Japanese made Dunlop Trial Universals. Made of nylon construction, they have a four ply rating.

Grip on tarmac is good in the dry, but caution must be exercised in the wet. They are adequate for trail riding and taking all applications into account, their close block pattern is a reasonable compromise.

On many occasions the tyres were removed. We found the Metzeler Six Days enduro type the best for all-round off-road riding and the Continental MX pattern excellent in muddy conditions.

Since wear depends largely on terrain and could substantially alter from rider to rider, we have not included a chart giving tread depth in mm.

DT 250 IN DEPTH

Engine★★★★

Back in 1968, Yamaha brought out the original 247cc DT trail engine. The design is still basically the same. This simple and narrow unit has only had "developed extras" bolted on to improve overall efficiency; the reliability and durability has never been questioned.

The matt black finish is more for contemporary fashion than heat dissipation, as is the radial finned head. As for the black plastic oil pump and generator engine side covers — we sincerely hope that Yamaha stop using plastic at this point.

Suppositions aside, the DT250 is an excellent motor. Starting is first time, warm-up is quick and it does the intended job perfectly. Pulling begins at just above tickover speed and the torque progressively increases. It has 5000 revs of usable power.

Breathing starts out of harm's way at seat height through a washable oiled foam filter. It then goes through the carb and into Yamaha's famous system of reed valves and multi porting.

The exhaust has received the same amount of meticulous development as anything else on the latest DT. It offers the right amount of back pressure to give full power, yet is so quiet that it meets the strictest noise legislation. This has been achieved by a system of complex lengths, diameters and tapers. Total length is an amazing 6ft 6in with not one bit protruding to prove awkward.

Bore 70mm x stroke 64mm, capacity 247cc. 28mm Mikuni carburettor breathes through an 8 reed valve to a 9 port barrel with cast iron sleeve. 6.7:1 compression piston with Dykes top ring and needle roller small end bearing. The big end is roller and both mains are ball. An automatic decompressor geared to the kick lever relieves the starting load.

SPARES

	(ex VAT) £
ENGINE	
Air filter	5.34
Head gasket	2.03
Cylinder head	18.62
Cylinder	63.17
Reed valve (assy)	10.57
Main bearing set	5.78
Crankshaft oil seals	3.84
Exhaust system	29.92
Oil pump	19.94
Crankcases (pair)	49.58
TRANSMISSION	
Primary drive gears	40.66
Clutch spring	.27
Clutch plain plate	1.57
Clutch friction plate	2.59
Gearchange lever	2.74
Gearchange shaft	5.58
Selector fork	4.92
Gearbox sprocket	4.52
Rear chain	13.10
Rear sprocket	7.48
ELECTRICS	
Spark plug	.72
Contact points	3.51
Ignition coil	10.73
Headlight lens	8.15
Headlight bulb	1.15
Rear light (assy)	7.01
Front flasher (assy)	4.92
Rear flasher (assy)	6.07
Rectifier	1.47
Battery	10.51
Ignition switch	7.94
SUSPENSION & WHEELS	
Fork leg	16.83
Fork slider	24.98
Fork seals (pair)	3.52
Brake shoes (pair)	8.10
Front rim	27.69
Rear rim	28.10
Front tyre	24.84
Rear tyre	24.84
Rear suspension unit	77.13
Swing arm bushes	2.78
FITTINGS	
Throttle cable	2.74
Oil pump cable	4.62
Clutch cable	3.51
Front brake cable	3.09
Speedo cable (inner)	2.75
Tacho cable (inner)	2.75
Front mudguard	7.01
Rear mudguard	6.10
Handlebars	6.07
Clutch lever blade	2.64
Petrol tank	59.13
Left side panel	2.29
Seat	20.72
Mirror	2.94
Tachometer	14.82
Speedometer	16.03

Claimed outputs are 23bhp at 6500rpm and 1.14m/kg at 6000rpm.

Transmission★★

No engine has sufficient flexibility to be fully efficient with only four speeds, and six is considered too many for all but peaky race developed motors. Five is generally accepted as the right number for trail bikes.

The machine has standard gearing that is perfect for its power and weight. Only if the bike is used for an odd-ball application or if the stage of tune is raised could different sprockets be used to advantage.

Our bike had a clutch fault from new. Under pull-away a horrible grinding noise would be unavoidable and gear shifts were clunky. Yamaha's UK service department were unable to cure the problem and after a couple of attempts fitted a complete new engine. This replacement unit suffered from the same trouble.

Our long experience of the DT range, and talking to many owners of this current model, has convinced us that Yamaha's latest 250 does not have a bad clutch. It would appear that a few engines assembled in Japan had a fundamental machining imperfection and we copped two of them. Normally we would have given this box four stars but we can only report as we find, and we *did* have two below-average transmissions.

Helical gear drive with a 2.826:1 ratio to a wet 7 plate clutch. 5 speed gearbox selected from a "one down, four up" left foot change with overall ratios of: First, 19.685:1; second, 13.087:1; third, 9.070:1; fourth, 7.771:1 and,fifth, 6.660:1. Final drive is by 103 links of 520 size exposed chain.

Wheels & Brakes★★★★★

Without doubt these are the best in the business. While the tyre sizes are common to most trail bikes, the efficiency of the stoppers varies immensely from maker to maker.

Yamaha's new conical hubs and brakes are unaffected by rain, suffer very little from deep stream crossings and never seem to wear out. The front brake is the best trail bike stopper we've ever experienced. The amount of grip is directly proportional to the pull on the lever, with a degree of sensitivity that other manufacturers cannot approach.

We ran it with two different adjustments: with only an inch of lever pull before the linings would bite for road work, and with nearly three inches of travel for the dirt. The latter works in such a way that the lever nearly touches the throttle when grip begins. For the half inch of final movement, stopping power varies from hardly anything to the most that can be used on an off-road surface. Before over exertion by the right hand could cause wheel lockup the lever would hit the twistgrip rubber.

Yamaha have finally given up the fully floating rear brake geometry that they appeared to copy from Husqvarna a few years ago. Instead, they have realised that if the rear brake lever pull-rod pivot is placed on the swing arm centre line then the brake plate can be locked to the adjacent tube. This arrangement retains all the vital sensitivity of the more complex layout with the advantage of quicker wheel removal.

Some hard trail riders prefer the conventional chromium plated steel rims because they are less susceptible to being damaged by potholes or tyre levers. We can report that, while we owned the bike the excellent section alloy rims incurred no flat spots, despite many bad tracks and rapid tyre changes.

After the initial run-in retensioning, subsequent checks revealed no further loosening of the spokes.

Front 3.00 x 21 and rear 4.00 x 18 Japanese made 4 ply rating Dunlop tyres on Takasago alloy rims. Front 161.5mm SLS and rear 121.5mm SLS brakes. Rear wheel has "snail" cam chain adjustment and no QD facility.

Frame & Suspension★★★★★

This report is becoming a line-up of superlatives, as we have to describe this aspect of the DT as nothing less than excellent.

Apart from the facility for the back end, the frame is the conventional twin down tube, single top tube configuration. Front end geometry cannot be bettered.

Yamaha bought their now famous "cantilever" design from Belgian engineer Lucian Tilkins. He worked on the original UK made Vincent rear suspension layout, but improved and altered it for long travel application. The advantages with the system are: i) the improved rigidity of a triangulated structure as opposed to the unavoidable flexing of conventional tube swing arms, ii) two mass produced suspension units are rarely perfectly matched for spring/damping rates, and iii) a long travelling wheel needs a large capacity long stroking suspension unit. Two overloaded conventional units are weak in comparison.

We were very impressed at the controlled action of the rear end. The only drawback is the choice of spring rating. Because the bike is intended to carry a passenger the single spring is too hard for just rider weight. The only way we could make the rear end move through its full travel was either by hurling the bike over a jump or by carrying a pillion. A small amount of preload adjustment is available but it is insufficient to be effective. Unfortunately, alternative springs with different ratings are not available from Mitsui and we haven't seen such US made "goodies" imported into this country.

If the right spring were fitted then the rear suspension could be described as the greatest but in standard trim it is only very good.

The forks, however, are out of this world. It wasn't many years ago that test reports were heaping abuse on Japanese forks for incorrect springing and damping. Nowadays the situation is coming close to full circle. These latest units are as good as any and better than most from Europe. Their long travel and perfect damping are a credit to their maker.

We are at a loss to understand why the front end should be set up to complement just the rider and be on the soft side with a pillion, whereas the rear is opposite.

Double cradle tubular frame with adjustable ball steering head bearings and greased bronze swing arm bushes. Front forks have 195mm travel and set at 60° 30' with 135mm trail. Rear suspension subframe is fully triangulated and connected to a single big capacity unit that is located within a large diameter top tube and allows 140mm wheel travel from 82mm damper stroke.

Electrics★★

Trail bikes are given no more than the basic legal requirement as anything else would probably weigh too much and get broken.

Although everything in this department worked to its full efficiency it must be said that the headlamp is only of use in well lit streets. No trick parts can be used to increase the standard lighting brilliance. A significant improvement requires a much larger generator and battery; and that's not what trail bikes are all about.

The stone guard on the headlight is good, tucking the front indicators under the handlebars works great and holding the rear ones on flexible rubber stalks is a good idea to overcome the problem of expensive breaks from inevitable trail accidents.

Nearside crankshaft mounted flywheel magneto is 6 volt with an 8.7 amp output to a 6v/6ah battery. Ignition is by points through a Mitsubishi coil and an NGK B8ES plug. Headlight is 35/35 watt, tail light is 5/18 watt and flashers are 21 watt.

Dimensions★★★★★

A good trail bike is long, narrow, light and high; and that's exactly how this bike measures up.

The right length is important to avoid the "twitchiness" a short wheelbase would cause, without being so long as to have a slow steering and heavy front end. Yamaha's layout is just right.

Too much width is as obviously wrong as excess weight. The DT is a 250 single where the total engine width is only 10½ inches.

While the motor has to be mounted as low as practicable, a reasonable amount of ground clearance has to be retained. Yamaha's original trail bikes were rather short and high, and although the DT1/2/3 series did pass over rocks rather easily they felt unstable. The factory has since opted for a little more length and a lower centre of gravity; extra scrapes on the bashplate are the only drawback!

The advantage of a high seat is the ease with which the rider can quickly alter from the sitting to the functional standing position.

Mention should be made that the limit of long travelling rear suspension as we know it, has already been reached. The big governing factor is not the problem of chain tension nor the resultant loadings on frame or suspension units. It is the rider who cannot take any more.

Assuming a normal 18inch wheel is fitted with a normal section off-road tyre, the total diameter becomes about 26ins. With this model there is a mudguard clearance of 6½ins. before the seat. Adding a couple of inches for seat base and padding it totals up to a static height of nearly 35in. Fortunately, the rider sits just forward of the rear spindle which allows the seat to slope downwards. This DT250 has a static seat height of 33in., which reduces to 31 when the suspension takes the weight of the rider. If the kind of travel that some current motocross bikes use were applied to this machine, then the extra 3ins. of wheel travel movement would mean a seat height of 34ins. And that is not humanly practical for this kind of bike.

In standard trim it suits a person of 5ft 9ins. or over just right. Small people cannot easily overcome their handicap by wearing "platform" soles!

2130mm (83.86ins.) overall length, 870mm (34.25ins.) overall width, 1165mm (45.87ins.) overall height, 1420mm (55.91ins.) wheelbase, 225mm (8.86ins.) ground clearance and 130kg (286.6lbs) dry weight, 1 litre oil tank and 9 litre (1-98gals) petrol tank capacities.

Equipment & Finish★★

A lightweight and functional trail bike cannot be weighted down with unnecessary equipment. That is why they don't have such fittings that on road bikes are standardised. Such things as centre stands, powerful electrics, self starters, luggage racks, extra tool carrying space, etc., would prove more of a hindrance to an off-road rider.

Nevertheless, Yamaha have managed to fit a few goodies. These include: a helmet lock, twin instruments, pillion pegs, dual seat and a lockable toolkit.

The general standard of finish is as good as anything from Japan except for one big complaint. How much longer do we have to put up with exhaust systems that are cheaply sprayed matt black? Within a few weeks the original coating starts to wear off and rust sets in. After six months it looks unsightly and cannot be cleaned nor easily resprayed for a lasting effect. Surely, a company that is capable of developing such an excellent all-round motorcycle can improve this aspect of their machine?

Plastic is used to make the engine side cases, mudguards, side panels, indicator bodies, instrument cases, toolkit cover and oil tank.

GOOD BUY?

At the beginning of this test we outlined our reasons for buying this model instead of any other 250 trail bike. After the total test mileage of 5000km we are still pleased we did.

Although all trail bikes contain compromise in every facet of their design, Yamaha have got virtually everything together with this latest DT. The way they have listed their priorities is better than their opponents and the machine is number one in its class.

UGK 212R came from Comerfords Ltd., Thames Ditton, Surrey. Recommended retail price was £610 including VAT. Importers are Mitsui Sales Ltd., of Chessington, Surrey, and the recommended retail price at the time of going to press has risen to £675 including VAT.

We paid £567 including VAT, plus £8 tax, £10.80 for the number plate and pre-delivery check and £9.18 delivery. The total price for putting the bike on the road (excluding insurance) was £595.96 in February, 1977.

The price is reasonable and owners report excellent overall performance. If the exhaust had a better finish and we had not been unlucky with a bum transmission then the model would thoroughly deserve our highest rating of five stars. But taking all things into account we must award it ★★★★

OUR STAR RATING ★ = Poor, ★★ = Below average, ★★★ = Average, ★★★★ = Above average, ★★★★★ = Outstanding.