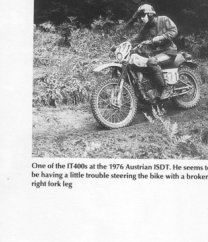
6 The IT blues



One of the IT400s at the 1976 Austrian ISDT. He seems to be having a little trouble steering the bike with a broken right fork leg

Back in 1966 as the prototype models of the DT1 were being developed in the desert of southern California, the concept that was driving the development was of a motorcycle that would perform as well, if not better, on rough terrain as on the street. The developers, with their experience riding and competing in the desert, had attempted to produce a motorcycle that was functionally suited to the peculiarities of rough riding. They had been only partially successful as production-line deadlines had forced the use of intermediate test results and the resulting stock DT1 was not a serious dirtbike. Fortunately, this was not important. The T series appealed to the thousands of Americans who wanted to buy into the concept of getting back to nature and to be seen to be buying in. That the machines gave the impression of being able to take their owners into places where no man had passed before, was sufficient for 90 per cent of the owners. Only ten per cent actually wanted to go there.

For these people, the DT1 was barely adequate. It did, however, form the base from which more serious off-road machines were to develop, in the direction of both motocross and enduro riding. As far as the enduro riders were concerned, there were once again two types of riders, those wishing to get back to nature and those wishing to conquer it. Those wishing to get away from it all, needed strong reliable motorcycles that would get them to their destination,

sooner or later, without any hurry, taking their time to see, feel, smell, hear this new world that was opened up to them. DTs would be good enough for them, if there was nothing else available. Those who saw nature as a challenge would not be happy with anything short of the sharpest weapon with which to triumph over everything nature placed in their way. They were the competition riders whose contest between each other was to show who was best able to overcome Mother Nature.

The enduro competition riders were such a small minority that they were not initially catered for by any of the Japanese manufacturers. Their requirements were not fully understood and it was left to them to produce what they needed based on whatever was available. In addition, there were two different types of enduro terrain, the deserts typical of the southern states of California, Arizona, Nevada, Texas, etc., and the tighter wooded terrain of the north. Machines suitable for one were not suitable for the other. In the desert, power and stability are of prime importance, whereas in the woodlands, quick steering and agility are necessary. So it was that riders developed their own machines, often based around motocross machines which came the closest to meeting their needs. European enduro machines were available, but the high price counted heavily against them.

As the YZ and MX series of motocross machines were developed at Yamaha, many of them began finding their way into places they had never expected to see. In southern California, MX400s began to dominate the desert racing, for, with their beefy engine and good straight-line stability, they met some of the basic requirements of the enduro rider. In woodland they would have been less successful, being too bulky and cumbersome in the tighter sections. Yamaha noticed the numbers of MX machines being bought for use off the motocross track and decided that there might just be a large enough market for them to exploit, since the machines they would offer as genuine enduro would borrow heavily from other models in the company's range of off-road machines. The stage was set for the introduction of the IT series at the end of 1975.

Once again influenced by the California-type of enduro run in wide open spaces, a single IT model was offered for sale in 1976, the IT400C. A casual inspection would have suggested to the insider that the new enduro model was little more than a YZ400C with lights and a new paint job. That was exactly what it was. Of the 790 components that together formed the IT400, only 61 of them were unique to the model. Yamaha had produced an enduro model for the cost of developing 61 components, not complete, meaning that development costs were zero. This was absolutely the best way to test unknown waters, since a failure to penetrate the market would be disappointing but little more. The chances of failure were very real, since Honda's MR enduro series had had a troubled couple of years since their introduction in 1974. Kawasaki had had a nasty experience in the 1973 International Six Day Trial (ISDT) held in the US, with all five of their prototype enduro machines had given up the ghost leading to the cancellation of the whole prototype development. With 90 per cent of the IT borrowed from other models, Yamaha could fail and not get their fingers burned.

But where their fellow countrymen had faltered Yamaha scored a resounding success. In the 1976 Austrian ISDT, three IT400s with carefully prepared engines and modified chassis, won gold medals, the most coveted of prizes in the enduro world. While the ISDT machines had been extensively modified, the IT400 was a sound basis for further development work. The few differences between the IT and the YZ resulted both from the need to make the machine socially acceptable in the off-circuit environment and to adapt it to its slight functional change. Changes that fell in the first category were primarily the

need for extra silencing of the YZ400C pipe, which knocked off a couple of horsepower and in so doing made the 400 slightly tamer. Also the lighting consisted of the head and tail-lights from the TY250.

The transition from motocrosser to enduro mount was accompanied by slightly higher gearing accomplished by new ratios for first and fifth gear and an altered final drive ratio. First gear was now slightly too high, but could not be compensated by lowering the final drive ratios since the high gearing was suitable for the other ratios. The IT was prevented from drowning by the use of a snorkel type of cover fitting over the air filter and feeding the engine from under the seat. The recently introduced air-assisted front forks of the YZ series were not adopted but their replacements were very good, although a rather soft spring allowed the IT to bottom out occasionally.

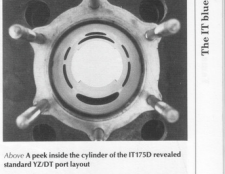
The first generation of monoshock suspension was in use at the back end, with the damper fitted with a nitrogen-charged chamber at its base. The spring rate and damping properties had been matched to the slightly heavier IT. The damper, mounted high in the frame, contributed to the rather poor handling in tight sections, and at low speeds, by keeping the centre of gravity high and combining with the slow steering to give the bike a tendency to flop over in turns. The brakes were standard YZ items and consequently excellent up front and remarkably insensitive at the back. An incredible thirst forced the use of a large 12-litre tank giving the bike an effective range of 50 to 70 miles.

Reflecting the great blue beyond beckoning to the truly adventurous motorcycle owner and the weather every enduro rider hopes for, the IT was, painted in a striking sky blue colour. The colour scheme was to stay with the IT series and result in some of the most visually striking and exciting of all off-road motorcycles.

So the IT400C was a good baseline from which to build serious enduro machines. If it sold well, the new models would need to undergo some development to improve the handling, reduce the weight and get the brakes sorted. When brought up to the standard of the excellent engine power and competent suspension, the IT series would not be simply proficient but truly outstanding. Perhaps the last domain of the European off-road machines would be conquered.

Sure enough, 1977 saw the expansion of the IT series, with a 175 and 250 joining the 400. The 175 class was still a very active one in the world of enduro competition in contrast to motocross racing where it had largely disappeared. In 1976, Yamaha had produced a one-off YZ175 and it had been a decent machine, but without a future as a motocrosser. Many had been used in enduro races with only a few concessions to the change of environment in which it was being raced. Once the decision had been made to introduce an IT with a capacity of 175 cc, it was necessary to choose a design process to be adopted. Either the IT175D could be a modified YZ175C or it could be a totally new model making use of the latest YZ technology. Having learnt from their experience with the IT400, that an enduro-equipped YZ was only partially successful, Yamaha decided on the second option.

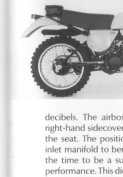
As on the YZ, the 175 was basically a bored-out 125 with short-stroke dimensions of 66 mm by 50 mm, giving a displacement of 171 cc. The traditional YZ porting was used, with two main transfers, two auxiliary transfers, an inlet and exhaust port and the boost port above the inlet port. The two-ring piston had a bridged window in the inlet skirt, through which charge passed from the crankcase to the boost port on the downstroke and fresh charge from the carburettor on the upstroke. The four-petal reed valve was fed by the same 34 mm carburettor that had been used on the YZ, and the new exhaust exited the manifold and dropped down several inches before sweeping up left to thread through the frame rails and exit in a sizeable stinger that brought the noise down to an acceptable 90



Above **A peek inside the cylinder of the IT175D revealed standard YZ/DT port layout**

Top left **The IT400C as it went into production in 1976—95 per cent of the bike came from the YZ series**

Left **A year later came the first version of the most successful model in Yamaha's enduro line-up, the IT175**



decibels. The airbox was mounted under the right-hand sidecover and drew in air from under the seat. The position of the airbox forced the inlet manifold to bend to the left, considered at the time to be a sure way to ruin an engine's performance. This did not occur with the 175 and later experience with the YZs proved this to be incorrect.

An 11-plate clutch passed the power on to the six-speed gearbox, with a new set of ratios. First gear was incredibly low, intended for the slow plodding in the tighter rocky sections. This was fine, except second gear which although quite low was a mile higher than first. The gap should have been a little smaller. All other ratios were spot on, culminating in a high top gear for blasting along fireroads and open desert. CDI ignition was fitted with an external flywheel, which helped increase the inertia of the crankshaft and improve traction.

The frame on the IT175 was of the latest YZ design with the new De Carbon-type Kayaba monoshock damper located within the fabricated backbone. The rake of the IT was slightly higher than that of the YZs, to ensure straight-line stability. Less travel was present on the front and rear suspension than on the YZs, but the operation was good. The springs in the front forks tended to sag after a couple of hundred miles, and they were a little too soft for some riders. Both ends absorbed bumps very well, providing a really cushy ride. Handling was extremely good, with rocksteady straight-line stability and yet, despite the slow 32-degree rake, surprisingly

agile on tight trails. True to tradition, the front brake was excellent and, breaking with tradition, so was the rear.

A great deal of thought had gone into the ergonomics of the machine as witnessed by some of the small details found on the IT. A clear plastic bubble protected the front headlamp—much more effective than the coarse wire grids used by most machines. A pukka quickly detachable (QD) rear wheel was provided, with open axle slots in the swinging-arm allowing the wheel to be slipped out after the axle locking nut had been loosened. A small hook was welded to the upper fork of the swinging-arm to retain the rear brake activation rod while the wheel was being installed or removed. A tool bag was mounted on the rear subframe behind the seat, and filled with a good selection of tools that unfortunately were of the usual poor-quality steel and therefore useless.

The IT175 was really an outstanding little bike that would rev like a motocrosser, handle very confidently, brake well and prove absolutely reliable. There were more powerful 175 enduros available, but their advantage would only be significant in the WFO desert races. The only strong criticisms levied against the bike were an inaccurate odometer, an absolutely essential requirement for the serious enduro rider, and a seat whose foam stuffing packed down too quickly, making the ride unnecessarily uncomfortable. Furthermore, the ground clearance left something to be desired, and although the substantial bash plate did a good job protecting the engine, some obstacles could not be easily cleared. But there was one thing that made the IT175 quite simply the most attractive machine in its class. Priced at $998, it was between $600 and $880 cheaper than the European competition. The remarkable low price guaranteed the success of

The agility and reliability of the IT175D, combined with a good power delivery and incredibly low price, guaranteed its success

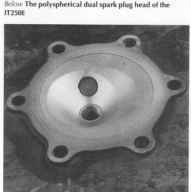
what was anyway an extremely good enduro mount for beginners through to experts.

The IT250D was developed in a similar fashion to the 175 and had all the enduro features included. Although the same engine dimensions, the porting and pipe design were such as to rub off the sharp edges of the YZ power delivery. In fact the engine of the YZ250D had not been peaky and had delivered bags of mid-range torque, very suitable for enduro applications. The gearing was raised closely by a combination of transmission and final drive ratios, and it was necessary to drop a tooth on the drive shaft sprocket to match the engine characteristics. Since the design was functionally so similar to that of the 175, most of the good and the bad points applied to the 250 as well. Weight was a rather high 115 kg, which along with the slightly detuned engine meant that the IT was definitely not the fastest enduro machine in its class. The excess weight also made the lofting of the front wheel more difficult than it should have been. Priced at $1348, the IT was an attractive alternative to the expensive European models, although the experts paid for the improved steering and extra speed. Suzuki's PE250 was also available for the same approximate price and had a slight edge over the IT in terms of handling qualities although the suspension was too soft. Whereas the IT175 was really unchallenged in its class, the 250 was not the clear-cut choice.

The IT400C had served its purpose in testing the waters of the enduro market and for 1977, the hastily assembled bitza was replaced by a totally new motorcycle designed from scratch to be an enduro motorcycle. Although almost all engine components were new, the 400D adhered to the same broad design concepts as its predecessor. Engine dimensions were not altered, compression ratio, carburettor and transmission all bore the same values as the C model, but the new cylinder porting and exhaust, combined with revised jetting and ignition to

Below **By 1977, the IT400 was no longer a modified YZ, but purpose-built for enduro riding and consequently a better machine than the 400C**

Below **The polyspherical dual spark plug head of the IT250E**



produce a far tamer open class enduro machine. Narrower crankcases necessitated new crank and transmission shafts and smaller gears were also cut. The new engine fitted into the Mark 2 monoshock chassis common to IT250D models. The only significant difference for the rider was the lower centre of gravity the new design gave, making the 400 a little more manoeuvrable. No other attempt was made to improve the 400's chassis and it remained a slow steerer with only adequate suspension travel.

Despite being far from perfect, the 175 and 400 ITs remained unaltered in 1978. Although they had been by and large good packages, their flaws, if left unattended, would quickly develop into glaring deficiencies. In 1978, the slow steering and inadequate ground clearance began to be seen as serious problems. Fortunately for

Yamaha, the enduro market was not especially cut-throat, with only Suzuki offering comparable machines at a comparable price. Consequently the loss of a year would not necessarily prove fatal as it might in the motocross world. Inevitably, one thing did change for 1978, and that was the price. With the 175 increasing by $140 and the 400 by only $70, it was clear the 175D had been underpriced. What was not clear was if this had been a clever marketing ploy to guarantee good sales or a mess-up by someone in the pricing team. But the negligence of the two IT models was good business for the after-sales accessory manufacturers, with anything from new suspensions to replacement air filters being offered.

Not the complete IT series stagnated in 1978. The IT250E was an update on the D model, with a number of small but important changes. In the engine, the port timing was not altered but the direction of the transfer ports was changed to aim the fresh charge at the crown of the piston rather than towards the cylinder head. This could be attributed to the age-old argument of whether the exhaust gases are best scavenged directly by the streams of charge issuing from the transfers, or by a rising column of gas. The latter was achieved by directing the transfer ports towards each other so that the charge would collide above the piston, ramming itself to a halt and rise as a wedge, drawn by the exhaust suction wave. The rising column school of thought seemed to have prevailed. Also the location of the spark plug in the cylinder head was altered. It was moved towards the inlet side of the engine, a move that was claimed to improve thermal loads on the cylinder and especially the piston. Pipe and carburettor were unaltered.

Perhaps the single most noticeable improvement for the rider was the six-speed gearbox. It was now possible to define a set of gears where the lowest speed was slow enough to plonk through tight sections whilst the top gear would pull 85 to 90 mph when riding WFO. The rideability of the IT was improved enormously, with a gear available for every situation.

Unfortunately, the updates were restricted to the engine, when it was clearly the chassis that needed the most work. The same complaints were still valid, with well-matched suspension, but not enough travel, clumsy slow-speed steering, inadequate clearance for the footpegs and levers and a rather heavy feel to the bike in general. Suzuki had cured the suspension problem on their PEs and were consequently gunning for the IT. In fact the 1978 PE was probably a better machine than the IT due to its superior handling but there was not that much in it. They were both excellent value for money.

Thankfully, in 1979 Yamaha took the necessary steps to cure the sole major problem on the ITs. Whereas on the YZ-line it had taken incremental changes through three model years to bring the rake down to a figure needed for the quick steering so essential on the track, a single frame update for 1979 put the ITs into the right ballpark. The frame change, common to all three models, was to bring the rake back from 31·5 degrees to 29·5 degrees. This simple modification seemed to be the panacea for all the handling ills of the ITs, for the clumsy slow steering on tight trails was replaced by a sensitivity

The IT250E was given an extra transmission gear and reworked porting to produce a good engine compromised by a poor chassis

that allowed body language to do as much of the steering as the handlebars. The steeper rake seemed to have been taken as far as it could without affecting stability, for by and large the ITs performed as well as ever. Slight deterioration could be found (the 175 would shake its head a little in deep sand above 50 mph, 90 mph WFO runs along fireroads on the 400 would find the front end fluttering a little), but the price was a reasonable one.

Another update that was common to all the ITs was the use of a chrome-molybdenum frame and swinging-arm in place of the previous mild-steel items. This enabled the weight of the chassis to be pared down in the case of the 250 and 400, and by so doing bring the machines closer to that of the competition. The ITs were still a touch overweight but the couple of kilos difference was not enough to cause any problems. On the 175, the frame was toughened up rather than reduced in weight for it already had a healthy power-to-weight ratio. The suspension travel was increased somewhat on all three models, although only the rear wheel benefited on the 175. Since this bike was considerably lighter than the other two, it could be argued that the resulting 195 mm front wheel travel and 210 mm rear wheel travel was adequate, especially as greater travel might result in increased seat height. Out on the trail it was only just adequate, another 20–30 mm at both ends would have been perfect. On the 250 and 400, the figures were 230 mm up front and 205 at the rear end and were plainly too low.

None of the engines changed significantly in the transition from E to F models. For the 175, the inlet and exhaust port were lowered 1 mm, giving the engine a touch more mid-range. The lower plain piston ring was replaced by a Keystone design which is claimed to keep the ring grooves cleaner and prevent the rings from sticking. The gearbox and clutch were not touched since gearchanges had always been smooth and precise and the ratios well chosen.

Both the 250 and 400 followed in the footsteps of the YZ design of 1978 when narrower, lighter crankcases had been introduced. The drive shaft in the new design was moved closer to the swinging-arm pivot, helping to reduce the variation in tension that the drive chain would be subjected to as the wheel passed through its arc of travel. On the 250, the exhaust port was lowered 2 mm, in the search for more mid-range power. Carburation and pipe changes complemented the cylinder change. The clutch lost a friction plate and drive plate and all the gear ratios were new, matching the engine characteristics perfectly.

The 400 underwent slightly more extensive updates, with new longer stroke dimensions of 82 × 75 mm, in keeping with Yamaha's goal of increased mid-range. The flywheels of the crankshaft were heavier, intending to provide the extra inertia that is so useful when picking a path through a slow section. Carburation of the 38 mm Mikuni was modified for the 400F and the reed cage was widened 10 mm to try to flow a little more charge into the engine. The clutch was not altered, but top gear was lowered and all the others raised, to match the new engine. The engine of the 400F was a vast improvement on its predecessors, being almost perfect for enduro riders, with excellent power available from 4000 rpm up to the peak of 6000 rpm. Even under this range of engine speed, there was enough power available to pull itself back into the meatier section of the powerband without the need to change gear. The basic functional competence of the machine, combined with the numerous small details such as snail-cam chain tensioners, drainage hole for the bash plate, tommy-bar release mechanism for the front axle, Volcanduro tyres with built-in rim protectors, etc., made the 400, and indeed the 250 and 175, front-liners in their class in 1979.

Yamaha celebrated the turn of the decade by introducing a fourth model into the IT line-up, a 125. This was largely uncharted territory as far

as commercial enduro machines were concerned, the 125 class in both international trials and enduro events being composed mostly of modified motocross machines. The engine was based on that of the YZ125F, with the engine detuned to produce a wider, lower powerband. The piston used two thicker rings than those found in the YZ, where thinner more expensive rings were necessary to ensure no flutter developed at the higher engine speeds of the motocross model. The skirt of the piston was windowed in traditional IT form and the engine fed by a 30 mm Mikuni replacing the YZ's 32 mm item. Thicker reed-valve petals were fitted to match the intended top engine speed of around 9500 rpm in contrast to the 11,000 rpm of the YZ. The ratios in the gearbox were borrowed from the IT175 and matched to the smaller engine output by lowering the primary transmission ratio and final reduction. The frame was of the contemporary monoshock encasing spine variety, with a tight 28.5-degree rake and shortish wheelbase.

The light weight and quick steering geometry combined as could be expected to make the little machine very easy to steer at low speeds and rather lively at the high speeds the powerful motor was capable of producing. The 32 mm diameter front fork stanchions seemed a little wimpy, but fork flex was not the most serious of the suspension problems. Both ends were too soft for average-weight adult riders, especially under race conditions. Almost continuous bone-shaking bottom-outs were to be encountered when travelling at speed over rough ground. Heavier duty springs were available and offered an improvement, but the real culprit was the lack of wheel travel, especially at the rear end. All the other goodies associated with the IT series were

Top left **For 1979, the IT series was cosmetically almost identical and also sharing a much-needed chassis update**

Left **The ITs could take you where no man had been before**

present, although the tools were substituted for a single multi-function wrench that attached to the front downtube of the frame. As a playbike, the IT125G was quite adequate in stock form, although more fun could have been found with one of its larger brothers. For racing, some serious suspension upgrades were necessary before the powerful little engine could do its stuff properly.

It is clear from the updates made to the existing models in the IT line-up, that Yamaha already considered the 175 to be the most important machine. This must have been a reflection of the sales figures for a purely objective judgement would probably choose the 250 as being the class offering the best compromise between the scaled-down motorcycle impression of the 175 and the rather gross 400. However, it was the 175 that underwent the most radical changes, and they would have been of greatest benefit to competition riders. Rather than wait around for a model year for a motocross-proven chassis, the IT175G shared the same design as the YZ G models. The monoshock came out of its hiding place within the frame backbone and bolted to lugs welded to the top of the backbone, which now passed under the damper assembly. In addition, a single large-diameter front downtube tied the headstock to the duplex cradle supporting the engine. The main advantage of the new design was the lowering of the centre of gravity it achieved by pulling the upper frame tubes under the rear damper. In point of fact, it was the monoshock itself that was the main source of the high slung weight of all the single shock Yamahas, so the improvement was only marginal.

As on the YZs, this change was accompanied by the provision of a box-section aluminium swinging-arm and an aluminium rear damper with an external reservoir that bolted on the front downtube. Both preload and rebound damping could be adjusted without removing either machine equipment or the unit itself. As a final concession to the state-of-the-art chassis design, 36 mm forks with air caps were fitted, with the recommendation of running them at 0 psi. The total suspension package was therefore the most tunable ever presented on an enduro machine, reflecting the expertise the company were expecting 175 owners to have.

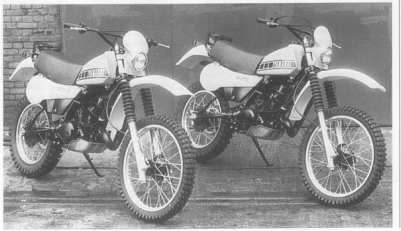
A totally new engine was also part of the IT175G package. It was based very closely on the YZ125G, including the mirror-image swap of component location so that the drive chain was now on the bike's right-hand side. One unusual feature found in the engine that had been given the customary detuning to produce character-istics more suitable for an enduro machine, was the 32 mm power-jet carburettor, previously only seen on the Yamaha TZ350F road-racer. An extra jet was tapped into the inlet tract of the carburettor which flowed more charge from a pipe fed directly from the float bowl when the intake velocity exceeded a certain value, i.e. at high engine speeds. It was therefore possible to enrich the engine in its upper range of engine speed without giving it the blubbers at the low end. Gearbox ratios were more on the 175, with first gear lower and sixth higher, and the ratios between spread to cover the gap.

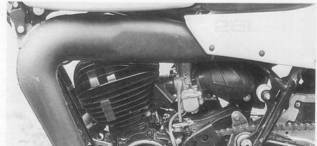
So the IT175G was a new machine, with a lot going for it on paper. The chassis was a notice-able improvement, as good as anything in the class, although ground clearance was still insuffi-cient. The engine on the other hand was a bit of a failure. Both the low and top end seemed to have suffered, since it could not lug up steep inclines the F had managed to conquer and it was almost 1 bhp down on maximum power out-put. In addition the opposition in the form of Suzuki, now joined by Kawasaki, had engines that produced 2–3 bhp more and that's notice-able on a 175. So the IT had to make do with its good handling and hope that someone would breathe on its engine for 1981.

On the other hand, the 250 and 425 seemed to have been almost neglected. Changes were

Above **For 1980, the IT175 received the same chassis upgrade as was applied to the YZ models that year**

Below **Although updated for 1980, the IT250G and 425G lagged behind the 175 with its state-of-the-art chassis**





Left **The engine of the IT250G produced too little low-end power, with too rapid transition into a generous mid-range**

Right **This stripped-down IT465H shows the updated chassis that was at last provided to all the IT bikes**

made but they seemed just small detail changes in comparison. Engine updates for the 250 were restricted to a new cylinder, pipe, rejetted carburettor and revised CDI ignition. The product was a slight increase in mid-range power. However, this increase did seem to be, as on the 175, at the cost of low-end power. This became evident in situations when the frightening WFO speeds that could be reached by the 250 could not be used and it was necessary to use the slogging power of the engine to climb a muddy hill. It couldn't be done, as the rear tyre would either break away or the engine would stall. On the 425, this wasn't a problem. It had bags of power throughout the range. Apart from the increase in bore by 3 mm, requiring a new cylinder and piston, nothing in the engine was touched. The extra few ccs displacement confirmed the big IT's place as the combined rocketship and tractor of the wastelands. Both models shared the same chassis and both frame and suspension were revised. Although not getting the new G-series frame as found on the 175, it did receive some attention in the form of the quickening of the rake another 0·5 degrees. The 38 mm front forks were fitted with air caps to allow the pumped-up air pressure to be bled off, or to provide a very small amount of air pressure to assist the coil springs. The forks were good, soaking up the rough stuff without any problems. Finally, steel-bodied monoshocks dating from the YZ E series were utilized, which increased rear wheel travel by a welcome 45 mm. Anyone used to the accessibility of the new G-series dampers, would have found the need to remove the petrol tank to alter the rebound damping and the complete monoshock for the preload an unacceptable chore. The chassis of the IT250C and 425G was an improvement over the F version, but enduro riders had seen the way the road was heading on the 175 and couldn't wait to see it happen on the other IT machines.

Their wish came true on the 250 and 465 models for 1981, and it was the turn of the 175 to mark time for a year, with the sole distinguishing feature between model years being the new all-white cosmetics of the IT line-up. Not too much activity took place around the 125 either.

Sales had been a little disappointing in 1980, and Yamaha were already wondering if it was worth keeping the 125 in the range. It survived 1981 in slightly modified form over the G model. A revised CDI ignition added a touch more power to the mid-range of the engine, making the little IT's best feature better. The 32 mm front forks were replaced by 35 mm items with 20 mm more travel. The new units were flex free, but the travel at either end was still inadequate. Hand guards were added to protect the rider's hands from sticks and stones while on the trail. This equipment had been provided a year before on the other IT machines. Those were the changes for 1981, not enough to turn a good bike into a fantastic one or to avoid its discontinuation at the end of the model year.

The main improvement undergone by the 250 and new 465 cc displacement top-of-the-range model, was the use of the YZ G-series chassis as found on the IT175G. On the 250, steering geometry was left untouched, but the wheelbase grew by 20 mm, reflecting a change the YZs had undergone during the same transition. On the 465, the rake was also reduced another 1 degree, bringing it down to 28·5 degrees. Front fork stanchions of 38 mm diameter were very rigid, with the provision of air caps for those who wished to disregard Yamaha's recommendation that they be used with 0 psi air pressure. The rear damper was now aluminium-bodied, with the external reservoir and preload and rebound damping adjustments at its base. The aluminium swinging-arm was also conspicuous in contrast to the matt black of the engine. The massive aluminium bash plate of old was discarded as too much dirt-collecting weight. Instead, an additional rail was added under the engine welded at one end to the main downtube/engine cradle join and supported at the other end by two heavy-duty brackets welded to the cradle frame tubes. The 465 got the benefit of a twin-leading-shoe front brake to haul its bulk down from high speed. It was the best front brake fitted to any enduro machine at the time.

Some engine changes were also made. The mid-range-based engine of the 250 got more, and a little assistance was given to the low end

in the form of YEIS, also making its début on the motocross machines. The 36 mm Mikuni needed rejetting as a consequence. The resulting engine power curve was smooth and straight from right off the throttle stop to WFO, making the bike a lot easier to ride. Overall gearing was raised a little by adding two teeth to the rear wheel sprocket, but internal ratios remained the same. Although hardly in need of more low-end grunt, the 425 had followed the line taken in the YZ series and grown a 7 mm longer stroke to displace the 465 ccs. Narrower crankcases were used, a heavier crankshaft to add some flywheel inertia, a slight lowering in primary gearing and a massive increase in final gearing took place. The rest of the transmission remained intact, so overall the ratios were slightly higher, which gave the more powerful 465 mill absolutely no problems. It had a clear edge over the 425 in power.

Both 250 and 465 responded well to the engine and chassis updates. The characteristics of the bikes that were the responsibility of the chassis could hardly be faulted, and as a package, the 465H was very close to being as good as the enduro-dominating Husqvarna. The 250 was perhaps a little weak in the engine area and really in need of some tune-up tips to extract more power. Yamaha's newly introduced wrench report series remained unmercifully silent and it was left to the backstreet tuning wizards that seem to abound in the US to come up with the goods.

With the J-series ITs appearing at the end of 1981, it seemed to be a case of *déjà vu*, with the 175 undergoing a major upgrade whilst the 250 and 465 marked time. Once again the IT175 got the benefit of the same changes to the chassis as the YZ series, namely rising-rate suspension. Most noticeable feature of the 1982 175, except for the return to the sky blue cosmetics for all the ITs, was the massive extruded aluminium swinging-arm. This was now just a single fork, in place of the lower and upper forks used on the traditional monoshock set-up, with a set of three pivot and rocker arms in front of the rear wheel attaching the arm to the rear damper. The rear shock had been retained in more or less the same position and attitude as previously so that the monoshock concept was not seen as discarded after nearly ten years' assertion that the system was the best there was. There was a mild rising rate of resistance to further compression achieved through the geometry of the rocker arm linkage and this worked well with some of the YZs and poorly with others. On the IT, it worked just fine. Whereas the YZ linkage components were aluminium, those on the IT were mild-steel sprayed with aluminium paint.

Front forks were beefed up with the 38 mm units that had been based on the 250 and 465 of 1981. The sliders in the forks were Teflon coated to reduce friction. In the engine, new cylinder, head and pipe combined to produce a stronger yet better balanced engine. The inlet port of the cylinder was opened up to gaping proportions, and was provided with a double vertical bridge to support the piston skirt. The power-jet 32 mm carburettor was replaced by a plain 34 mm unit and an YEIS bottle tapped into the inlet tract. This seemed to work well, since the 175 had the most low end ever, providing plenty of torque for the tighter sections. The gearbox ratios were brought closer together by raising first and second, and lowering fourth through to sixth. The new ratios matched the engine well, with its super-strong mid-range and top end.

At last, Yamaha had produced an enduro bike everyone could enthuse about. With a loss of 5 kg the weight had come down handily and the extra-low end helped the slow situations enormously. The suspension was good, with generous travel at both ends almost on a par with the motocross machines. Inevitably it was too soft as delivered, but higher-rate springs were available as replacements. For 1982, it was probably the best in class, its closest competitor being the bitza CanAm Qualifier, with its Rotax disc-valved

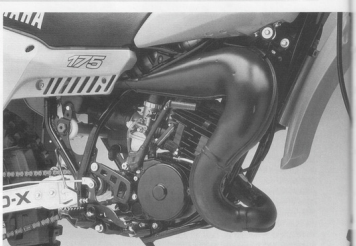
By 1981, the IT465 rivalled Husqvarna for the title of best open class enduro machine

engine, Öhlin shocks and Marzocchi forks.

Only a few very minor chassis changes were made to the 250 and 465. These were a wider and longer front mudguard, Teflon-coated fork seals were supplied, a stronger front wheel hub, polyurethane rollers replaced the spring-loaded drive chain tensioner and a new, straighter shift lever. These new parts had to be enough to tide the two bikes over to the next model year when no doubt they would be decked out in the trick parts that had been used on the 175 in 1982.

And sure enough, as the wraps came off the 1983 IT K-series line-up, the 250 and 490 models were the YZ lookalikes, while the 175 lagged behind with its year-old design. Apart from a new set of decals and a new paint job, the 175 was not altered. The 250 and 465 stretched to 490 received updates to both engine and chassis. The highlight of the chassis changes was the adop-

Above **Once again the IT175 was treated to a simultaneous upgrade with the YZ series, when the J version received rising-rate rear suspension in 1982**



Right **The bulbous exhaust pipe of the IT175J did its work well as the engine produced excellent well-balanced power**

tion of the 'mark two' version of the rising-rate rear suspension. The initial version as used on the IT175 had worked well with the smaller bikes but the YZ250J and YZ490J had been disappointing. The new design featured a rear damper placed considerably lower in the frame and a new aluminium linkage system. On the YZ, the new lightweight rear damper had provision for setting both compression and rebound damping. The compression-damping adjustment was not present on the ITs. On the front end were state-of-the-art 43 mm Kayaba forks with an internal blow-off valve that was intended to open under the high pressure build-up caused by a sudden suspension jolt. The opening of the valve would allow fork oil to pass through a larger orifice than when it was closed and hence allowed the fork to respond better to a sudden sharp movement. The new frames found on the 250 and 490 were also modified to improve the steering sensitivity of the machines. The 250 frame had steepened a full degree, whilst that of the 490 made do with a 0·5-degree steeper rake. This was compensated by a 35 mm longer wheelbase for both machines. The 250 joined its big brother in the use of twin leading-shoe front brakes.

The 1983 IT250K was the last 250 in the IT range and was less proficient than its brothers, with too little low-end power

The engine dimensions of the 250 followed the lead taken by the YZ series with a move to a square 68 mm bore and stroke. New head, cylinder and exhaust pipe were the result of this, along with a 38 mm carburettor as used on the YZs. All the internal ratios of the gearbox were raised as well as the overall gearing which lost two teeth on the rear wheel sprocket. As with its predecessors, there was really insufficient low-end power in the 250K mill. Once the revs were up a bit it pulled well and the top end was very strong. But an enduro machine needs a good low end and the IT250K didn't have it.

A 2 mm increase in bore brought the largest IT up to a displacement of 487 cc. This increase in displacement added to the power output throughout the low to mid-range, and an extra punch was added to the low end by the addition of the YEIS bottle. A number of other minor changes were implemented. A straight-cut primary transmission gear was used for the first time. The kickstart mechanism was given some attention, with a thinner shaft, wider gears and a larger securing bolt fitted. The shifting of the large IT should have been a little smoother than before due to a slight change in the profile of the gears. The gear ratios themselves remained the same. The engine retained its reputation as being both a lugger and fireroad flyer, as required. Plenty of power was available at both low and top end. The suspension was very good allowing the rough stuff to be taken at speed, although it did bottom out fairly regularly but thankfully quite softly. It was left to the rider to decide on a relatively cushy run with occasional bottoming or to stiffen up the rear end with some more preload and eliminate the bottoming at the cost of a harsher ride.

A summary of the situation of 1983 shows that the IT175 was selling well and of a comparable ability to its green competitor, the KDX. In the US, the 250 was less successful, eclipsed rather by both the KDX and the KTM and Husqvarna mounts. It was the best IT250 Yamaha had made

Above **Despite being the best of the under-200 cc ITs, the 200L was bettered by the Kawasaki, with its superb rear suspension**

Above *left* **Always an attractive bike to look at, the performance of the IT250 never quite lived up to its image**

but the gap between it and the class-leading Husky was still too large. Finally in the open class, it was again IT against Husky and they were really very close, the Swedish machine getting the nod by virtue of its superior low-speed handling. By 1983 Yamaha had realized that their corporate economic situation was not a healthy one. Cutbacks were announced in both machine production and in the company offices throughout the world. The IT250, with its rather average performance was one of the victims and disappeared from the US enduro line-up, although it remained available in Europe and Australia in unchanged form for another year. This left two sole survivors—the IT175, Yamaha's enduro blue-eyed boy, and the IT490.

The IT490 got two new items in the transition from K to L, a new set of decals and a new voltage regulator to prevent a rash of blown bulbs that the 490K had suffered. It was still the only opposition to the outrageously expensive Husqvarna and KTM 500s and it was almost as good. The 175 underwent a serious update and grew 25 cc in the process, to remain competitive with the full-capacity bikes of the 200 cc class. The extra displacement was achieved by increasing the stroke by 7 mm, to give an actual displacement of 195 cc. The 34 mm Mikuni and YEIS were retained, but some pretty radical porting changes, similar to those on the motocross machines, were used. The extra inlet sub-port feeding directly into the crankcase was common to the 125 and 250 YZs of 1984. Both big- and small-ends of the conrod were beefed up to handle the extra power the engine produced. The primary transmission was raised slightly as were the top two gears in the transmission.

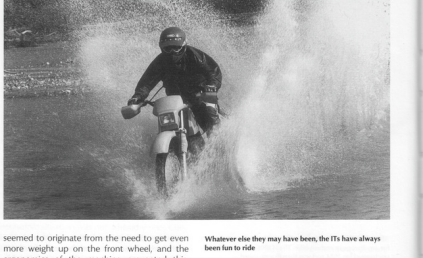
Naturally enough, the 200 benefited from the latest chassis and suspension components. The same linkage for the rear suspension was fitted as had been used on the other models in 1983, although the dimensions were slightly different. At the front end the 38 mm Kayabas were replaced by the superb 43 mm units common to all the 125, 250 and 490s of the YZ range. These forks had a built-in compression-damping adjustment capability that varied the size of the orifices through which the fork oil passed. Air caps were provided but as always it was recommended that the bike be run without any air pressure. More weight was pushed on to the front end by pulling

Above **The last of the big-bore ITs, and more than a match for any European enduro bike. The IT490K was almost unchanged for 1984 and was then discontinued**

Below **The IT490K engine displaying its YEIS boost bottle that helped it produce the stump-pulling torque it was capable of**

back the steering head 20 mm, although the overall wheelbase remained the same thanks to a longer swinging-arm. Weight was lost in a big way, so that the IT came on to the scales a fighting 93 kg.

The IT200L was a marked improvement over the 175. Its engine was excellent, being able to lug at slow speeds up steep hills or rev out when given the chance. Since it was still strongest on the mid-range, the best technique for going places fast was to short shift slightly, to keep the engine in the meatiest part of the powerband. The gap between the first three gears was perhaps a bit too large, but the tough clutch could be slipped to keep the revs up without any problem. The front suspension was perfect, period. As tradition seems to dictate, the rear end was too soft, requiring considerable preload to stiffen it up. If the preload and rebound-damping adjustments were juggled enough, a satisfactory set-up could be achieved. Steering was quick enough but not very precise. This



Whatever else they may have been, the ITs have always been fun to ride

seemed to originate from the need to get even more weight up on the front wheel, and the ergonomics of the machine prevented this. When pitted against arch rival the KDX200, there was not a lot to choose between them, but the mediocre rear suspension and steering inaccuracy counted against the IT and gave the KDX the nod.

For 1985, the IT200N found itself alone in the Yamaha enduro line-up. Most unfortunately, Yamaha had decided to axe the IT490 from the series, despite the quality of the machine. A few 490s and 250s were still available in Europe during 1985, but no more machines were assembled in Japan. For once the European manufacturers had won a battle and the Japanese had retreated to the markets they already owned. After the massive revision in 1984, it was hardly surprising that the 200N model was virtually identical. The sole change was a swap to a six-petal fibre reed in place of the previous steel items. A slight increase in low-end power output could be discerned but it was not significant.

After ten years of building enduro machines, only a single model is offered just as at the start. During the wildly optimistic days at the end of the 1970s, there was a time when it was thought that a four-bike range could be supported. With the drop in interest in off-road riding in general at the end of the 1980s this was not practical. The sole survivor, the IT200, has a pedigree built from the experience of some 27 IT machines and many, many more YZs. So it might be only a 200, and it might be the only Yamaha enduro machine available, but its bloodline stretches back to the first IT400s splattered with the mud of the Austrian Alps and even further to the monoshock YZ. Hakan Andersson first rode to victory that Sunday in May 1973. The IT200 is a fully qualified survivor.

Model	YZ465G/H	YZ490J	YZ490K	YZ490L/N	IT125G/H
Year	1980	1982	1983	1984–1985	1980–1981
Chassis/engine id.	3R5/4V4	5X6	23X-000101/ 23X-100101*	40T/43R	3R9-000101/ 3R9-050101
Bore (mm)	85	87	87	87	56
Stroke (mm)	82	82	82	82	50
Capacity (cc)	465	487	487	487	123
Compression ratio (to 1)	7·0	7·0	7·4	6·9	8·1
bhp @ rpm	41·92 @ 7000	48·3 @ 6500	49·8 @ 7500	47·1 @ 6500	16·87 @ 9000
Torque (kgm) @ rpm	4·76 @ 6000	5·51 @ 6000	5·36 @ 6000	5·25 @ 6500	1·48 @ 8000
Oil system	mix	mix	mix	mix	mix
Engine cooling	air	air	air	air	air
Carburettor (mm)	VM38SS	VM38SS	VM38SS	VM40SS	VM30SC
Ignition system	CDI	CDI	CDI	CDI	CDI
Ignition timing (mm)	2·0	2·0	2·0	2·0	
Primary drive gearing	2·63	2·63	2·63	2·63	3·23
Final drive gearing	46/14	44/14	46/14	46/14	46/12
Box gearing first	2·14	1·75	1·75	1·75	3·09
Box gearing second	1·75	1·32	1·32	1·32	2·07
Box gearing third	1·32	1·05	1·05	1·05	1·50
Box gearing fourth	1·05	0·83	0·83	0·83	1·19
Box gearing fifth	0·83	—	—	—	1·00
Box gearing sixth	—	—	—	—	0·84
Fuel (1)	9·5 (9·0)*	10	9·5	10·5	8·5
Engine oil (1)	—	—	—	—	—
Transmission oil (1)	0·8 (0·75)*	0·8	0·8	0·8	0·65
Front fork oil (cc/leg)	387 (604)*	606	578	530	
Front tyre	3·00 × 21	3·00 × 21	100/80 × 21	100/90 × 21	3·00 × 21
Rear tyre	5·10 × 18	140/90 × 18	150/80 × 18	140/80 × 18	4·10 × 18
Front brake	sls drum	tls drum	tls drum	tls drum (disc)*	sls drum
Rear brake	sls drum	sls drum	sls drum	sls drum	sls drum
Rear suspension	monoshock (3)	monoshock (4)	monoshock (5)	monoshock (5)	monoshock (2)
Front suspension travel (mm)	284 (300)*	300	300	300	180 (200)*
Rear suspension travel (mm)	298 (310)*	320	325	320	200
Rake (°)	30 (28·5)*	28·5	28·5	28·5	28·5
Trail (mm)	132 (120)*	120	119	120	120
Width (mm)	935 (880)*	870	850	850	
Ground clearance (mm)	310 (320)*	320	330	335	284 (300)*
Wheelbase (mm)	1480	1500	1500	1475	1365
Dry weight (kg)	103 (105)*	108	103	104	92·5 (91·5)*
	* = YZ465H		* = Non-USA	* = YZ490N	* = IT125H

Model	IT175D/E	IT175F	IT175G/H	IT175J/K	IT200L/N
Year	1977–1978	1979	1980–1981	1982–1983	1984–1985
Chassis/engine id.	1W2	2W6	3R6-000101/ 3R6-020101/ 4J0-000101/ 4J0-010101*	5X8*/5X9**/ 5Y0***	43G*/49T**/ 49U***
Bore (mm)	66	66	66	66	66
Stroke (mm)	50	50	50	50	57
Capacity (cc)	171	171	171	171	195
Compression ration (to 1)	7·4	7·5	7·9	7·7	8·4
bhp @ rpm	21·5 @ 9500	20·6 @ 8500	19·86 @ 8000	22·73 @ 8500	21·5 @ 7500
Torque (kg) @ rpm	1·73 @ 8000	1·78 @ 7500	1·88 @ 7500	2·08 @ 7500	2·19 @ 7000
Oil system	mix	mix	mix	mix	mix
Engine cooling	air	air	air	air	air
Carburettor (mm)	VM34SC	VM34SS	VM32SS	VM34SS	VM34SS
Ignition system	CDI	CDI	CDI	CDI	CDI
Ignition timing (mm)					
Primary drive gearing	3·23	3·23	3·06	3·06	2·90
Final drive gearing	41/12	41/12	44/12	44/12	44/12
Box gearing first	3·10	3·09	3·09	2·75	2·75
Box gearing second	2·06	2·07	2·08	1·86	1·86
Box gearing third	1·50	1·50	1·50	1·50	1·50
Box gearing fourth	1·18	1·19	1·19	1·25	1·25
Box gearing fifth	1·00	1·00	1·00	1·11	1·08
Box gearing sixth	0·84	0·84	0·82	0·91	0·86
Fuel (1)	9·5	9·5	11	12	11
Engine oil (1)	—	—	—	—	—
Transmission oil (1)	0·65	0·65	0·7	0·7	0·8
Front fork oil (cc/leg)					
Front tyre	3·00 × 21	3·00 × 21	3·00 × 21	3·00 × 21	90/90 × 21
Rear tyre	4·10 × 18	4·10 × 18	4·10 × 18	110/90 × 18	120/90 × 18
Front brake	sls drum	sls drum	sls drum	sls drum	sls drum
Rear brake	sls drum	sls drum	sls drum	sls drum	sls drum
Rear suspension	monoshock (2)	monoshock (2)	monoshock (3)	monoshock (4)	monoshock (5)
Front suspension travel (mm)	175	195	250	260	270
Rear suspension travel (mm)	175	210	250	285	270
Rake (°)	32	29·5	28·5	28·5	28
Trail (mm)	144	127	122	125	115
Width (mm)	851			805	820
Ground clearance (mm)	254	269	290	330	340
Wheelbase (mm)	1410	1375	1420	1430	1440
Dry weight (kg)	96	95·5	93·5	98	93
			* = Australia	* = US & Canada ** = Australasia *** = Europe	* = Australasia ** = US *** = Europe

Model	IT250D	IT250E	IT250F/G	IT250H/J	IT250K
Year	1977	1978	1979–1980	1981–1982	1983
Chassis/engine id.	1W5	2K9	2X7/3R7	4V5	25Y/29V*
Bore (mm)	70	70	70	70	68
Stroke (mm)	64	64	64	64	68
Capacity (cc)	246	246	246	246	246
Compression ratio (to 1)	7·84	7·8	7·9	7·8	7·7
bhp @ rpm		26·1 @ 7500	27·7 @ 8000	32 @ 7500	30 @ 7500
Torque (kgm) @ rpm		2·65 @ 7000	2·51 @ 8000	3·12 @ 7500	2·88 @ 7500
Oil system	mix	mix	mix	mix	mix
Engine cooling	air	air	air	air	air
Carburettor (mm)	VM36SS	VM36SC	VM36SC	VM36SC	VM38SS
Ignition system	CDI	CDI	CDI	CDI	CDI
Ignition timing (mm)	2·3	2·3			
Primary drive gearing	2·67	2·66	2·5 (2·61)*	2·63	2·63
Final drive gearing	46/15	46/14	48/13	50/13	48/13
Box gearing first	2·29	2·71	2·66	2·67	2·67
Box gearing second	1·71	2·07	2·00	2·00	1·93
Box gearing third	1·30	1·60	1·56	1·56	1·50
Box gearing fourth	1·00	1·26	1·25	1·25	1·20
Box gearing fifth	0·84	1·05	1·04	1·05	1·00
Box gearing sixth	—	0·92	0·87	0·87	0·83
Fuel (1)	12	12	12	13	13·5
Engine oil (1)	—	—	—	—	—
Transmission oil (1)	1·2	1·1	1·2	0·85	0·75
Front fork oil (cc/leg)	250	250	250		
Front tyre	3·00 × 21	3·00 × 21	3·00 × 21	3·00 × 21	3·00 × 21
Rear tyre	4·50 × 18	4·50 × 18	4·50 × 18(5·10 × 18)*	5·10 × 18	140/90 × 18
Front brake	sls drum	sls drum	sls drum	sls drum	tls drum
Rear brake	sls drum	sls drum	sls drum	sls drum	sls drum
Rear suspension	monoshock (2)	monoshock (2)	monoshock (2)	monoshock (3)	monoshock (5)
Front suspension travel (mm)	210	210	230 (250)*	270	300
Rear suspension travel (mm)	180	180	205 (250)*	270	300
Rake (°)	31·5	31·5	29·5	29	28
Trail (mm)	142	142	122 (125)*	126	118
Width (mm)	832	832	860		
Ground clearance (mm)	240	240	275 (300)*	295	305
Wheelbase (mm)	1430	1430	1420 (1430)*	1450	1485
Dry weight (kg)	115	109	108 (106)*	106·5	108

*=IT250G

*=Non-USA

Model	IT400C	IT400D/E	IT400F	IT425G
Year	1976	1977–1978	1979	1980
Chassis/engine id.	1K7	1W6	2X8	3R8
Bore (mm)	85	85	82	85
Stroke (mm)	70	70	75	75
Capacity (cc)	397	397	397	425
Compression ratio (to 1)	7·57	7·59	7·4	7·3
bhp @ rpm	32·5 @ 8000		36·7 @ 6500	36·95 @ 6500
Torque (kgm) @ rpm	3·1 @ 7500		4·09 @ 6500	4·23 @ 6000
Oil system	mix	mix	mix	mix
Engine cooling	air	air	air	air
Carburettor (mm)	VM38SS	VM38SS	VM38SS	VM38SS
Ignition system	CDI	CDI	CDI	CDI
Ignition timing (mm)		2·7		
Primary drive gearing	2·70	2·67	2·61	2·61
Final drive gearing	46/15	46/15	46/14	48/13
Box gearing first	2·54	2·54	2·67	2·67
Box gearing second	1·71	1·71	1·75	1·75
Box gearing third	1·30	1·30	1·32	1·32
Box gearing fourth	1·00	1·00	1·00	1·00
Box gearing fifth	0·77	0·77	0·79	0·79
Box gearing sixth	—	—	—	—
Fuel (1)	12	12	12	12
Engine oil (1)	—	—	—	—
Transmission oil (1)	1·0	1·2	0·8	0·85
Front fork oil (cc/leg)		250		
Front tyre	3·00 × 21	3·00 × 21	3·00 × 21	3·00 × 21
Rear tyre	4·50 × 18	4·50 × 18	4·50 × 18	5·10 × 18
Front brake	sls drum	sls drum	sls drum	sls drum
Rear brake	sls drum	sls drum	sls drum	sls drum
Rear suspension	monoshock (1)	monoshock	monoshock (2)	monoshock (2)
Front suspension travel (mm)	210	210	230	250
Rear suspension travel (mm)	180	180	205	250
Rake (°)	31·5	31·5	29·5	29·5
Trail (mm)	138	142	122	125
Width (mm)	864	832		
Ground clearance (mm)	250	240	275	285
Wheelbase (mm)	1425	1430	1420	1430
Dry weight (kg)	115	115	112	111

Model	IT465H/J	IT490K/L
Year	1981–1982	1983–1984
Chassis/engine id.	4V6	26A-000101/26A-100101/29W-000101/29W-003101*/045K-000101**
Bore (mm)	85	87
Stroke (mm)	82	82
Capacity (cc)	465	487
Compression ratio (to 1)	7·1	6·7
bhp @ rpm		34·65 @ 6500
Torque (kgm) @ rpm		4·23 @ 5500
Oil system	mix	mix
Engine cooling	air	air
Carburettor (mm)	VM38SS	VM38SS
Ignition system	CDI	CDI
Ignition timing (mm)		
Primary drive gearing	2·63	2·63
Final drive gearing	44/14	44/14
Box gearing first	2·67	2·67
Box gearing second	1·75	1·75
Box gearing third	1·32	1·32
Box gearing fourth	1·00	1·00
Box gearing fifth	0·79	0·79
Box gearing sixth	—	—
Fuel (l)	13	13·5
Engine oil (l)	—	—
Transmission oil (l)	0·8	0·8
Front fork oil (cc/leg)		
Front tyre	3·00 × 21	3·00 × 21
Rear tyre	5·60 × 18	150/80 × 18
Front brake	tls drum	tls drum
Rear brake	sls drum	sls drum
Rear suspension	monoshock (3)	monoshock (5)
Front suspension travel (mm)	267	300
Rear suspension travel (mm)	272	300
Rake (°)	28·5	28
Trail (mm)	122	118
Width (mm)		
Ground clearance (mm)	311	330
Wheelbase (mm)	1475	1485
Dry weight (kg)	112	112·7

* = Non-USA
** = Europe 1984