YAMAHA CIRCUIT

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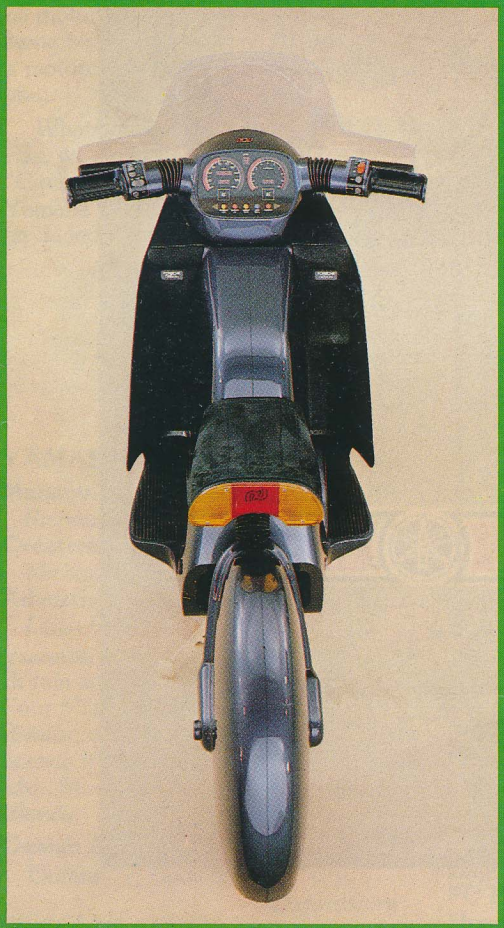
AUGUST/SEPTEMBER 1980

The 1990 Motor-cycle! Is this what we'll be riding in ten years time?



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CIRCUIT MAGAZINE by YAMAHA

for all motorcyclists

This issue of Yamaha Circuit marks a milestone in the history of the magazine. After five years of controlled circulation to Yamaha dealers and motorcycle clubs, the publication is now available every two months via newsagents throughout the British Isles and Ireland.

Yamaha machines and riders have always made an important contribution to all branches of motorcycle sport and added greatly to the pleasures of the everyday motorcyclist. That is why we have made the decision that Circuit magazine is to be produced "by Yamaha for *all* motorcyclists".

As far as Yamaha is concerned, *all* motorcyclists are part of the same big, friendly family. If you are a motorcyclist, then Circuit is for you.

Whatever brand of bike you ride, we'd like to have you as a "Circuit" reader. If you are a Yamaha owner as well, then that's an added bonus for both of us!

Richard Cox

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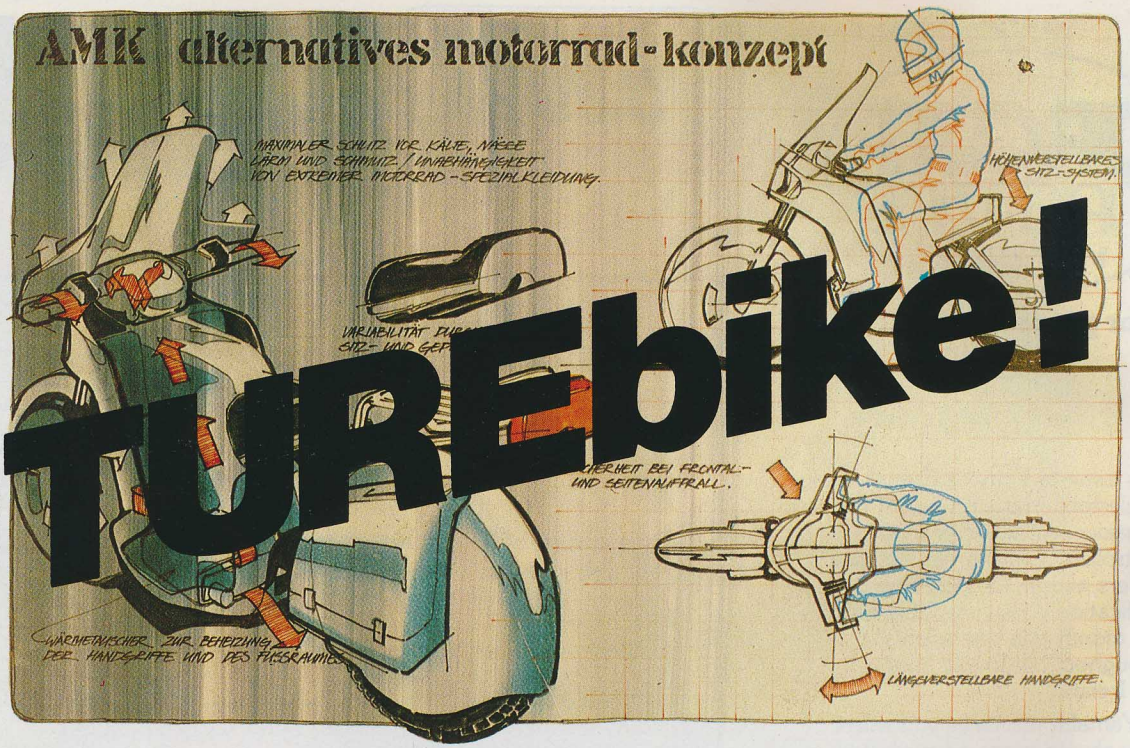


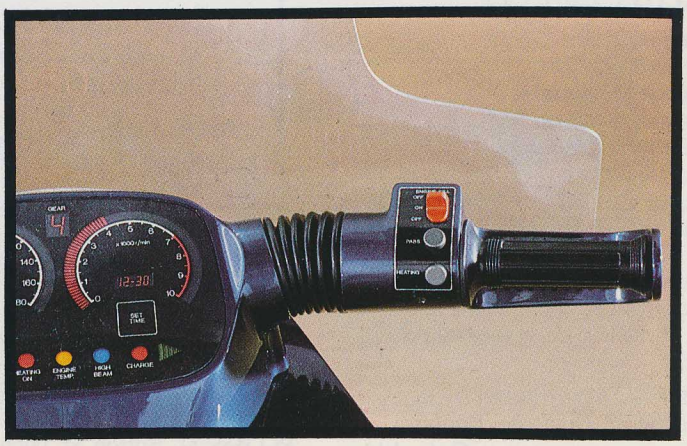
FUTUREbike!

by Porsche!

Is this what we'll be riding in ten years time?

Trying to gaze into the motorcycle crystal ball is no new occupation for magazine editors. In fact, articles on "The Motorcycle of the Future" seem to appear with monotonous regularity. One thing, however, always seems to be lacking when "futurebikes" are discussed ... and that is any thought as to what role the motorcycle will be playing in future society.

Invariably, the "futurebike" is depicted as some radical, high-speed racer or near-racer. Hub-centre steering, "kneeler" riding positions, monococque chassis and such comparatively advanced engineering theories always seem to feature in discussions on the subject and the result always ends up as a superb handling, high speed vehicle.



Now most of us do probably dream of days on open roads, high speeds and the sort of safety at speed that technology can deliver via sophisticated chassis and braking systems.

Most of us are also realistic enough to accept that it's just not like that these days and that things certainly aren't going to get any better in future.

Today's 140mph bikes are, quite frankly, way over-powered for today's roads. Without doubt bikes are generally going to get slower during the next decade.

Instead of the street motorcycle being first cousin to the racer, as is now the case, the relationship between racing and road machines is more likely to parallel that between today's Formula One Grand Prix cars and the average family saloon.

Any good designer has to have the ability to part the mists of time and see a little way into the future ... whether he's designing motorcycles, clothing or kitchen sinks.

Such a man is Ferdinand Alexander Porsche, of Porsche Design, Austria. If there is such a thing as a 'thoroughbred' designer, then "Butzi" Porsche is just that.

His grandfather designed the original Volkswagen and the rear-engined sports cars which made the family name famous to automotive fans all over the world. His father carried on that tradition in superb style and Ferdinand Alexander Porsche himself is truly a designer and stylist 'extraordinaire'.

He heads up Porsche Design at Zell-am-See in Austria, where a six man team of Britons, Germans and Austrians design all manner of things, mainly for 'outside' customers. At the moment, manufacturers in Austria, Germany, Switzerland, the USA and Japan produce such diverse Porsche-designed items as wristwatches, sunglasses, children's car seats, pipes, toys, crash helmets and spectacle frames!

Obviously, Porsche Design are still heavily involved in the automotive business and, in recent years, have been working a great deal with motorcycle manufacturers. Ferdinand Porsche himself is very much involved in the motorcycle business. He is also the Yamaha importer for Austria!

Recently, the highly-influential German motorcycle magazine, "Das Motorrad", asked Ferdinand Porsche to gaze into his particular crystal ball and produce his own 'machine of the future'.

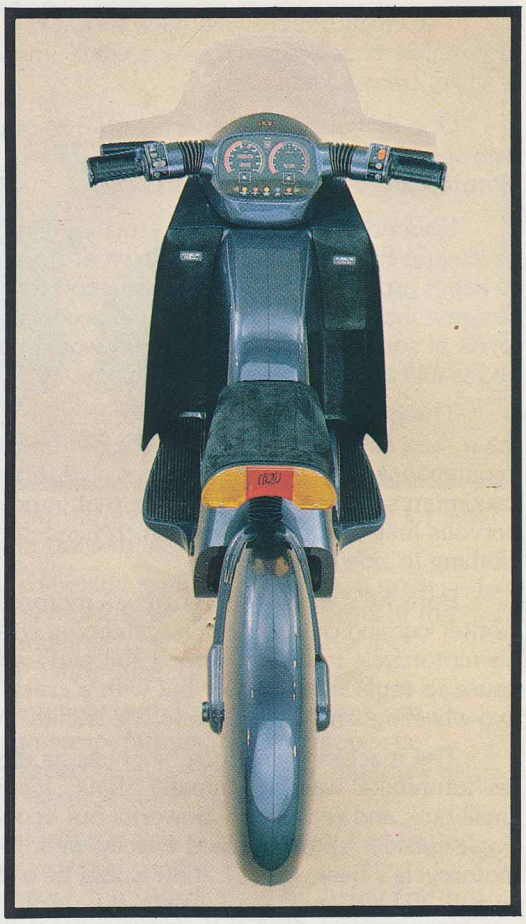
The result was surprisingly provocative ... and staggeringly logical. Porsche did a great deal more than expand upon the inherent design possibilities of two-wheeled vehicles.

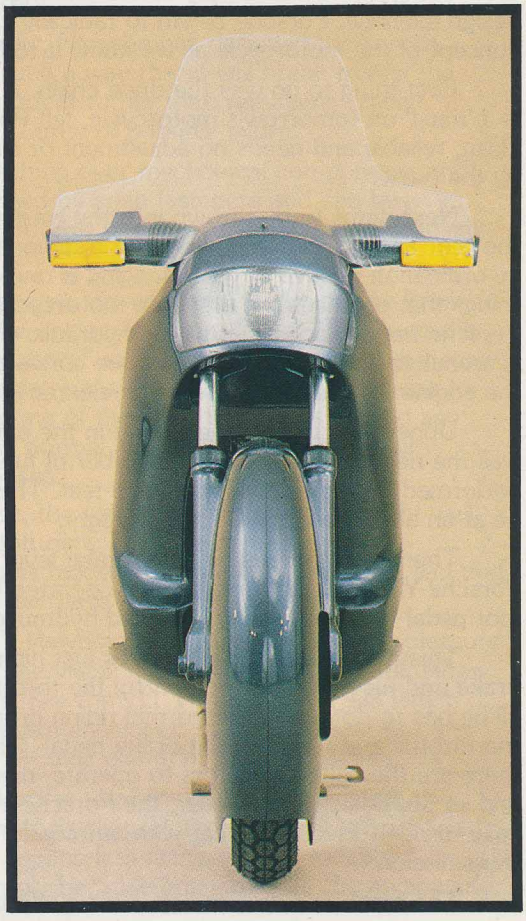
He considered what the future itself has to offer the road-user and what role the motorcycle would be playing in future society.

The Porsche vision of the future is not a pleasant one for the speed enthusiast. Even-more crowded roads, horrifyingly expensive petrol, less 'disposable' income for even comparitively-affluent families ... things that we are watching develop right now and which certainly seem likely to get worse rather than better.

People in ten years time will probably find it extremely difficult to afford two cars. The 'little runabout for the wife' may well be as scarce as a string of polo ponies or a private plane is for today's 'Mr Average'.

In fact, 1990 might well turn out to be '1950 Revisited'. Rocketing petrol prices and general inflation to match might well mean that even one car per family will be a luxury. The motorcycle could well be the only alternative to the bus for the average citizen.





The clock could swing back forty years and the motorcycle once again become a vitally-important form of utility transportation.

One thing is virtually certain. In ten year's time the high-speed, multi-cylinder 'plaything' will be motorcycling's minority group.

Inspired, or depressed, by this vision of the future, Ferdinand Porsche's team sat down at their clean sheets of paper armed only with the conviction that they had to design a motorcycle that would be 'acceptable' at all levels of society. A motorcycle that would be a genuine and viable alternative to the family car.

The primary needs for the future, felt the Porsche team, was a motorcycle that needed virtually no owner-maintenance, was as simple as possible to ride, provided maximum safety (and visibly gave that impression to a nervous first-time buyer) and which needed no special clothing to ride it.

Porsche's vision of tomorrow's motorcyclist is a worker coming out of his office, stepping straight on to his motorcycle in his pin-striped suit and - after a brief pause to replace his bowler hat with a crash helmet - two-wheeling smoothly out into the traffic.

The machine that Porsche chose as the basis for his 'futurebike' was the Yamaha SR500. It's light weight, small bulk and reasonably powerful but economical single-cylinder engine fulfilled exactly what he thought a motorcycle's basic specification would be a decade away.

Using the SR500 simply as the starting point for his design exercise, Porsche began to radically change the concept of the motorcycle as we know it today.

First thing to go was the drive chain. A shaft drive is a 'must' on tomorrow's motorcycle, felt Porsche. It is clean, reliable and needs no adjustment or maintenance by the owner.

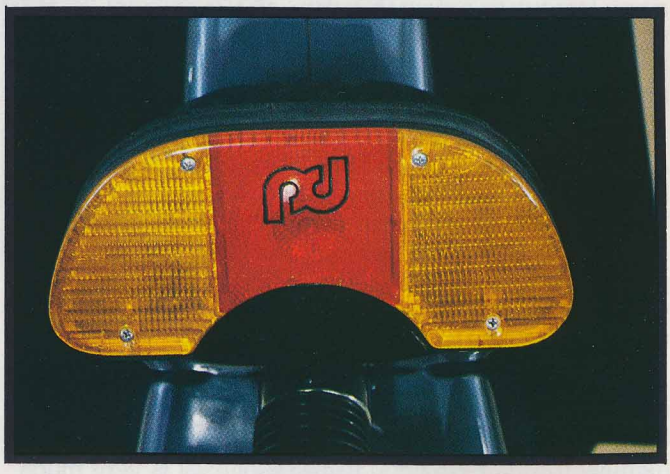
Next items to be thrown into the trashcan were the gear and the clutch levers! The traditional hand/foot co-ordination needed in gearchanging is one of the things that confuses the first-time motorcyclist so Porsche has replaced that with a hydraulic electric gearchange and an automatic torque converter. Starting the engine, of course, is strictly by electric starter.

Uppermost in Porsche's mind in the early stages was the need to cut down the number of functions performed by the rider's hands and feet. These should be at an absolute minimum, he thought.

Therefore, there is no front brake lever on the Porsche-Yamaha. Both brakes are operated by a right-foot pedal via an integrally-balanced hydraulic system.

This means that the rider uses just his right foot to brake and his right hand to control the throttle. That's all he has to do during the normal riding process ... twist the throttle and tread on the brake pedal. Obviously there are the usual indicators to operate, dipswitches and so on. Basically, however, the Porsche-Yamaha is as easy to ride (drive?) as a car with automatic transmission.

The machine's suspension is via a variant of the



famous Yamaha 'monoshock' system ... but not because Porsche particularly needed the fine handling that the monoshock provides. His reasons for choosing the monoshock chassis were simply because it allowed him to do away with the sub-frame that carries rear wheel, shock absorbers, seat, rear fender, etc. on a normal-suspension machine.

The monoshock simply has a sub-frame to carry the rear wheel, with everything else mounted on the main frame.

To carry the seat, Porsche designed an ingenious 'piano stool' mechanism which is fully adjustable to suit the individual rider's needs. There is 10cm of adjustment via a special spindle arrangement that can be either hydraulically or electrically operated.

A great safety factor for the novice rider in heavy traffic is the ability to be able to place both feet flat on the floor. Porsche's adjustable seat mechanism just about guarantees that and the design team have taken out international patents on the idea, feeling that it will be a very necessary part of 'tomorrow's bike'.

Making the machine suit as varied a rider range as possible was most important to Porsche. Therefore, as well as fully-adjustable seat height, the bike also features adjustable handlebars ... both vertically and horizontally. Theoretically, the combination of adjustable seat height and handlebars means that the Porsche-Yamaha can accommodate any rider from a seven-foot tall basketball player to a short-legged chimpanzee!

Visibly, of course, the most radical aspect of the Porsche design is the moulded plastic sheathing which covers the entire machine.

You don't even have to call this a motorcycle if you don't feel like it" says Porsche. "It's a two-wheeled roadster, a two-wheeled utility vehicle".

Porsche's theory is that tomorrow's rider will want to stay totally clean when he rides the machine ... and he'll also want a machine that he can simply hose down. No one really enjoys the lengthy and difficult cleaning process demanded by today's machine, feels Porsche. Additionally, eliminating the need for special clothing greatly aids the decision process when a commuter is trying to decide whether to take the bike or the bus. The complete enclosure of mechanical parts, added to the integral weatherproof fairing, means that the Porsche-Yamaha could be ridden in normal street clothing in all but the foulest weather.

Also integral with the plastic moulding is a toolbox and, in alternative versions drawn up by the Porsche team, such things as luggage carriers, top-boxes and a parcel holder within the main bodywork.

A neat idea is a luggage rack that by the fitting of a detachable seat pad, turns into a dualseat.

Beneath the engine is a heat exchanger which circulates heat up into the handlebars. Vented mouldings and flexible bellows cover the bars and these mouldings wrap around the rider's hands to direct warm air on to them. The heater is operated by a simple off/on switch. There is no need for the variable system as used in cars.

Safety is, of course, a prime consideration and the Porsche-Yamaha includes padded knee-protectors in the fairing. They serve two purposes. In the event of a minor collision, they protect the knees against impact. In a major accident, such as a head-on collision with a car, they are designed to act as 'catapult pads' to actually launch the rider up, and hopefully over, the other vehicle or obstacle! Obviously the landing is going to hurt somewhat ... but not half as much as the direct impact with another vehicle or even static object. It could mean the difference between grazes and the graveyard.

After extensive testing, German insurance company safety experts recommended such pads as safety devices even for today's machines. The knee-pads also serve another purpose. They act as covers for side compartments in the fairing.

The total sheathing itself is, of course, a great safety factor in protecting the rider. By means of the fairing, with its integral running boards, he is well-guarded against minor impact.

At the points where the sheathing is in close proximity to high temperatures, the thermoplastic material is reinforced by glassfibre/plastic mixtures as these are more heat-resistant.

The windshield is made of bulletproof Lexan, the same space-age material used in racing helmet faceshields and even the shields used by Army and riot police for close-combat duties. It is both scratch-proof and splinter-proof.

Additionally, Porsche has designed the screen-mountings in such a way that it will break free in the event of an accident rather than remaining rigidly-mounted as a source of possible injury.

The sheathing over mechanical components and wheels is retained by snap fasteners and can be removed in about five minutes for servicing or roadside repairs.

About the only conventional things on the Porsche-Yamaha are the engine and front forks. "The engine is perfectly satisfactory" says Porsche, "and though people are always coming up with 'better' front suspension for motorcycles, none of the ideas so far has proved any better than the normal hydraulic front fork for all practical purposes."

Of course, the traditional motorcyclist might well object to the futuristic Porsche-Yamaha with the mechanical parts hidden from view. Some might feel that it would even decrease the riding pleasure.

Porsche's viewpoint is that as far as riding pleasure goes, it is not the visual impact that is important. After all, sports cars, like the 911 Turbo and V8 928 which bear his name, are enveloped in sleek bodywork - and they certainly provide plenty of driving pleasure.

And as for the total enclosure depreciating the mystique of motorcycling, Porsche's reply is brief and to the point: "Is anyone less fascinated by today's aeroplanes simply because you can't see the engine any more?"

Early Days

With 1980 marking the 25th year of Yamaha motorcycle manufacturing it is an appropriate time to take a look back at the company that has for so long been one of the leaders in its particular field.

Torakusu Yamaha, whose name has now become immortalised in the industrial and consumer-goods world, was born in 1851 and acquired his knowledge of intricate mechanical devices by spending 10 years apprenticed to an English clockmaker in Japan. His apprenticeship lasted until he was 30 years old, at which point he made of the most significant decisions of his life. He had been sent to repair a clock at the Hammamatsu Hospital and fell in love with the area, deciding to leave the clockmaker's employ and make Hammamatsu his home.

This meant starting in business on his own account, a large gamble but one which he was coping with reasonably successfully until the next significant point in his career ... at the age of 36. It was at this time that the Hammamatsu Elementary School had acquired an organ ... an instrument which soon became a means of entertainment for the whole town. On certain days each month, most of the townsfolk would gather in the school grounds to listen to its melodies!

However, after less than three months, disaster struck. The American-made organ broke and no spare parts were available. Mr Yamaha was called in and made himself the hero of the town by getting the organ playing once more!

While repairing the instrument, Yamaha studied its construction and came to the conclusion that he could build one just as good. With the aid of a metal-worker friend, Kisaburo Kawai, he did just that! Next step was to take that first Yamaha instrument to Tokyo for the necessary certification by the Institute of the Arts. There was one rather large problem, however, Tokyo was 200 miles away and there was no transport available.

The solution was a simple one ... but arduous. Yamaha and Kawai slung the organ between them on a pole and carried it all the way to Tokyo!

Unfortunately, despite their efforts, the story didn't have a totally happy ending. The instrument was hopelessly out of tune and the Institute refused to certify it!

However, the authorities were so impressed by Yamaha's determination that they invited him to stay on at the Institute and study for a while. He remained there for a month and then, armed with the extra knowledge, went back to Hammamatsu to build a second organ.

When this one was taken back to Tokyo (history doesn't record whether Yamaha and Kawai had managed to find some alternative means of transport by this time) it passed the tests easily and was highly praised by the Institute.

On the strength of this Yamaha and Kawai went into business and so was born Yamaha's parent company, Nippon Gakki. It is now one of the largest industrial combines in the world and Yamaha instruments are still rated as among the best by musicians ranging from rock and roll to classical.

Yamaha motorcycles came into being as the result of the foresight of one of the later Nippon Gakki presidents, Kauchi Kawakami. He was made president in 1926 after the company had been almost crippled by the double blows of a long workers strike and the burning down of the Tokyo factory in the famous 1923 earthquake.

Kawakami rejuvenated the company, brought it back from the brink and then, some 25 years later, decided that it was time to diversify. The musical instrument market was a good one, he thought, but did not offer enough growth potential.

Various things were considered, from automotive parts to sewing machines. To the eternal gratitude of millions of motorcycle enthusiasts, however, the decision was taken to move on to two wheels.

The very first Yamaha in 1955 was a neat little two-stroke, the YA1 125cc single cylinder machine that was nicknamed "Red Dragonfly".

Special versions of these were entered in Japan's most famous race at that time ... the Mount Asami Volcano event where bikes raced on a surface of compounded volcanic ash. To the amazement of the established teams the new Yamaha dominated the race ... thus forging a traditional link between racing and production machines that has lasted unbroken until this day.

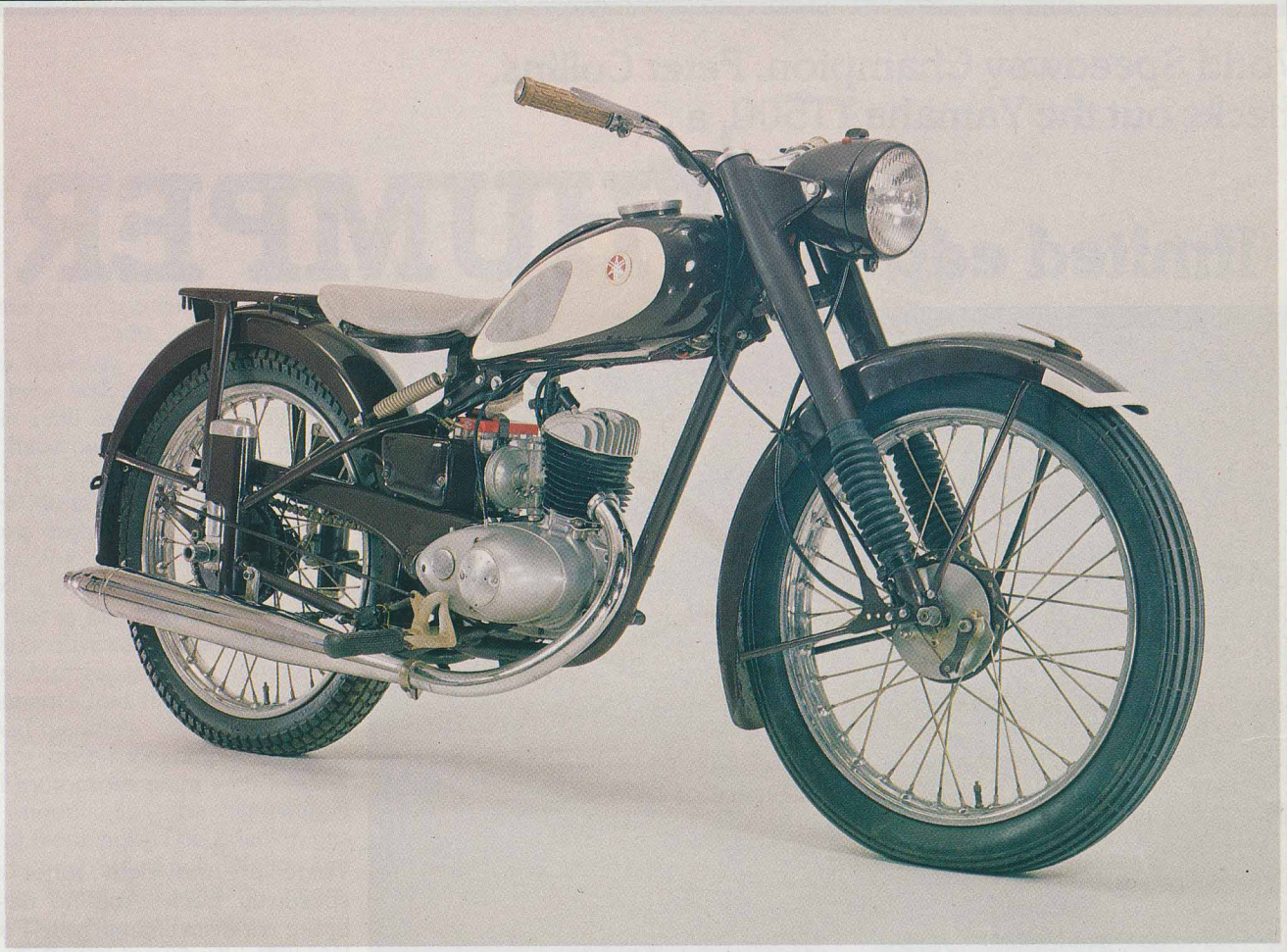
Most of the young Japanese enthusiasts wanted the bike that had won the Mount Asami race and sales shot upwards.

They have continued to rise ever since. In those early days in 1955, Yamaha had 200 workers making 200 machines a month.

Twenty five years later, almost 10,000 people work for Yamaha in countries as far apart as Holland, the USA, Japan and Brazil. The company has expanded to make motorcycles, snowmobiles, automotive engines, generators, sailboats, power boats, outboard marine engines, karts, swimming pools and even administers a network of leisure centres!

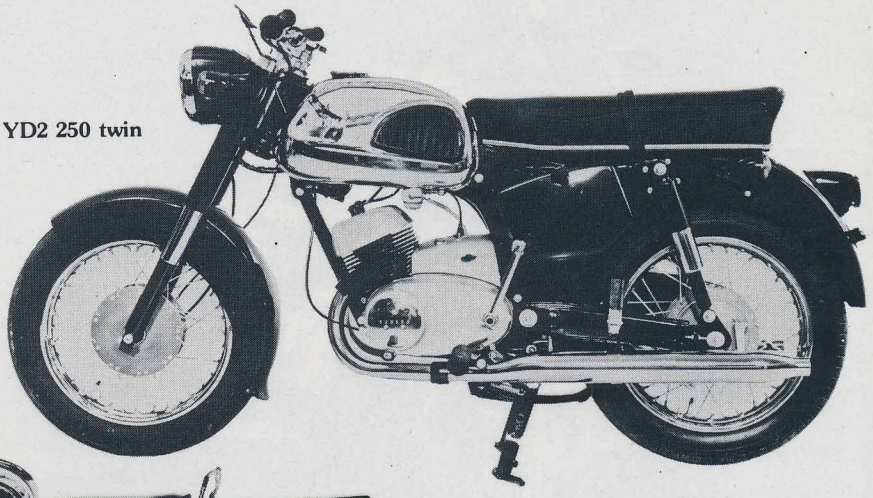
Motorcycle output is almost 2 million machines a year, with over 1 million being exported into the world markets. Approximately 100,000 outboard engines, 150,000 boats and 50,000 snowmobiles are also produced by Yamaha each year!

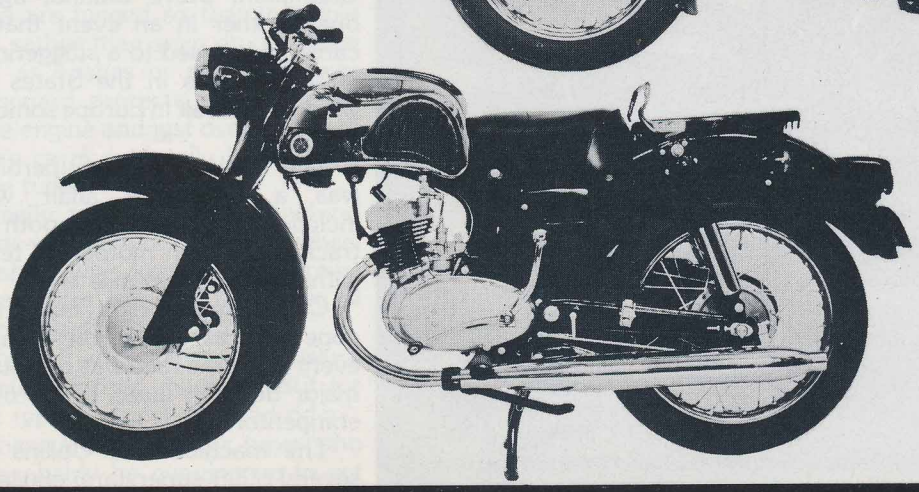
Mr Kawakami, the architect of all this, retired a few years ago, a man satisfied that the giant that he created continues to expand from strength to strength.



The "Red Dragonfly"

The 1957 YD2 250 twin

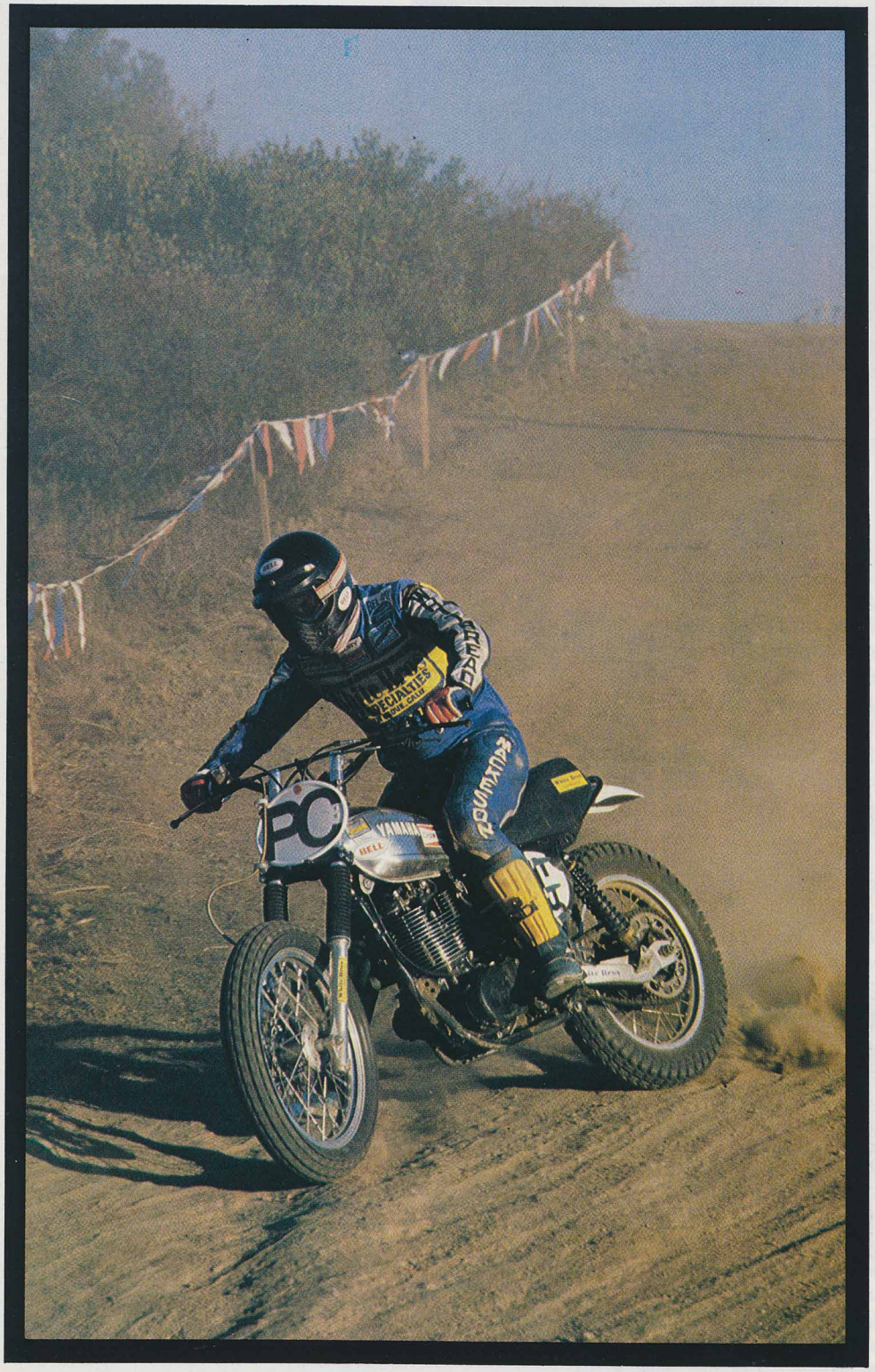




The 1957 YA3 125

World Speedway Champion, Peter Collins, checks out the Yamaha TT500, a .....

limited edition THUMPER



There are no right turns on a speedway track. And no need to brake - or even change gear! Former World/British Speedway Champion, Peter Collins had therefore rarely done any of these things at racing speeds until he contested an American 'made for TV' racing spectacular late last year. Staged in California and called 'The Superbikers', the race pitted riders of the calibre of Collins, Kenny Roberts, Hakan Carlqvist, Gerrit Wolsink, Brad Lackey, Freddie Spencer, Dave Aldana and American Grand National Champion, Steve Eklund, against one another in an event that the cameras beamed to a staggering 45 million viewers in the States (and which should air in Europe sometime this year).

The track for 'The Superbikers' was a composite affair which included road race, smooth dirt track and rough motocross terrain within a single two-mile lap.

Choosing the right machine to cope with all of this on each and every lap of the race was obviously a major decision faced by all of the competitors.

The machine that Collins (and several other superstars) chose was

a Yamaha not too familiar to British fans .... the TT500.

It is, however, a bike that enthusiasts here will become acquainted with in 1980 as a limited number of them have been released for sale in the UK via the new Yamaha competitions department.

Many enthusiasts, at first glance, dismiss the TT500 as simply 'an XT500 with the lights taken off'. In fact, that is far from the case. The TT500 is obviously based on the XT model but features a number of refinements that turn it into a pure off-road machine.

Front forks, for example, are long-travel motocross units with leading axle mount for the lightweight conical front hub. The 2 gallon gas tank is constructed in light alloy and its lines blend well with the short, deeply-padded competition seat. The swinging arm is specially fabricated in tough box-section aluminium which carves off weight while actually increasing rigidity. Its movement is controlled by adjustable nitrogen/oil shocks.

The five speed gearbox has wide ratios which enable the awesome torque of the 500cc four-stroke motor to be utilised 'on demand' and the short-throw gear lever allows 'knife-through-butter' racing-style gear changes.

Both the gear and rear brake levers are hinged so that they fold back rather than snag on obstacles such as bushes or rocks. A large sumpguard protects the underside of the engine and just over 2 litres of oil are carried actually in the main frame tubes.

Finally, a 3.00 x 21 front wheel and a wide-section 4.60 x 18 rear wheel are shod with knobby motocross-pattern tires beneath the curve of flexible plastic mudguards.

So ... the TT500 is obviously a 'serious' off-road machine. But for what type of British off-road rider?

There are three basic types who will probably be queuing up to get their name on the exclusive 'limited sale' list in the UK.

First, there is the trail rider who wants the pleasant rumble of a four-stroke engine in his ears as he hustles down a 'green road'. For the first time, the trail rider can buy a purpose-built off-road four-stroke rather than just riding, or modifying a dual-purpose model.

The TT500 delivers the smooth, torquey ride of the big 'thumper' and has the added benefit over its 'dual purpose' brethren of reduced weight and motocross-style handling. No manufacturer other than Yamaha offers this option for their big four-stroke singles.

Because of its competition style refinements, the TT500 should also find favour with the serious enduro competitor who prefers four strokes to two and with motocross riders of the same persuasion.

There is a well-supported British Four-Stroke Championship and the TT500 would be a good basic tool with which to contest that series. Especially as there are plenty of tuning goodies available from the USA to enhance the handling even more and to boost the power output from 33bhp to as much as 47 horse-power!

The machine that Peter Collins rode was provided by Yamaha Motor Corp. USA and then modified for all-out performance by TT500 tuning specialists, White Brothers of 11611M Salinaz Drive, Garden Grove, California 92643, USA.

So Peter had a chance to try the TT500 both in standard and modified trim. "I have a Yamaha YZ400 in England which I ride around the local motocross course for fun and for keeping fit" said Peter.

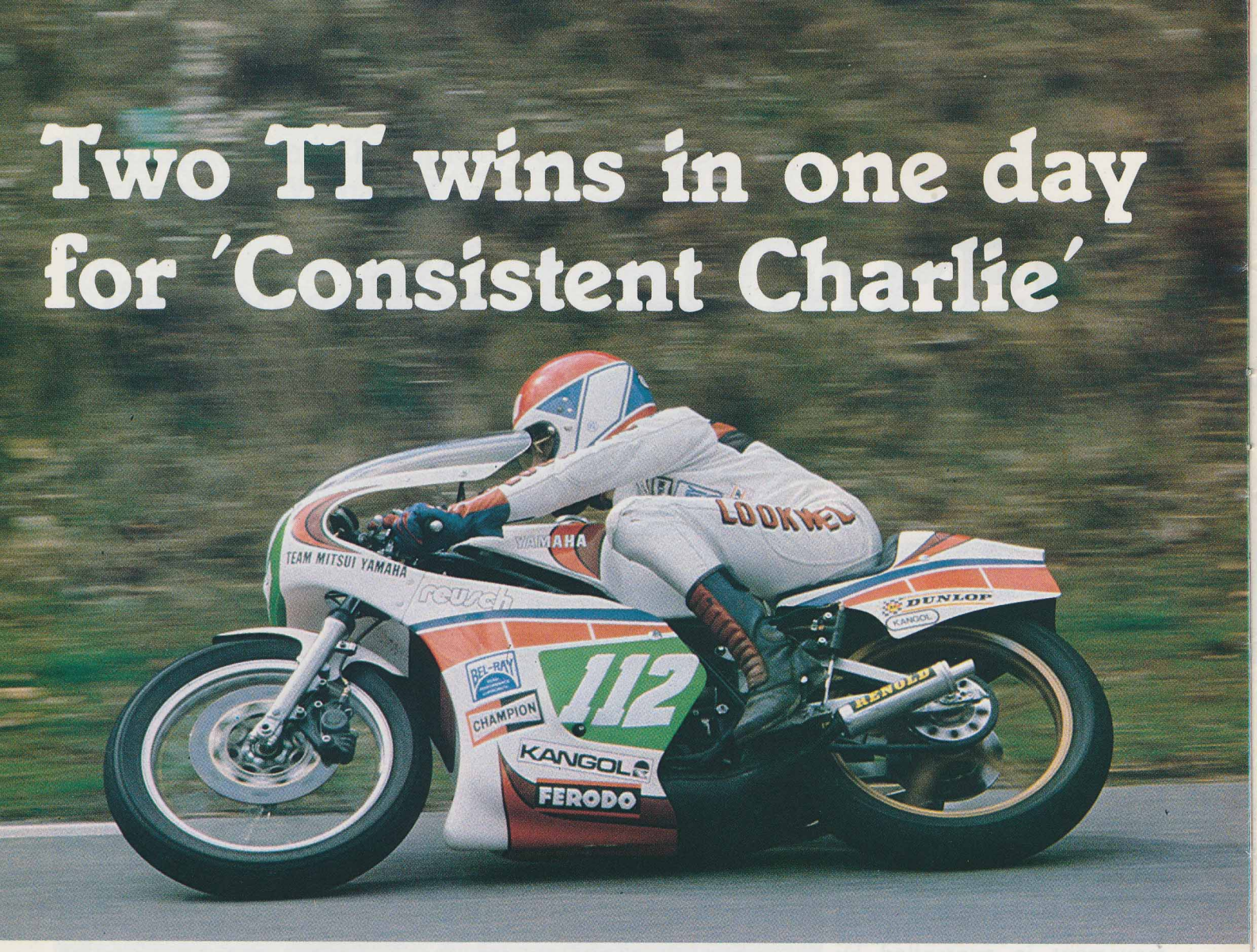
"When I rode the standard TT500, I was impressed with its smooth power. It obviously wasn't as fast as my YZ400 but I felt that I could go as quickly on it because of its torque and wide power band.

"When I got the modified bike for the race, I was amazed at the power. It felt as though the engine was damn near as quick as my speedway bikes!

"The TT500 was as competitive as any other bike on the track and, in fact, although Yamaha USA had very kindly provided me with a YZ400 motocrosser as well, I chose the big 'thumper' for the race.

"In fact, I shall be giving serious consideration to trading in my own YZ for one of the TT500s when they become available in England. Better get my name on the list!"

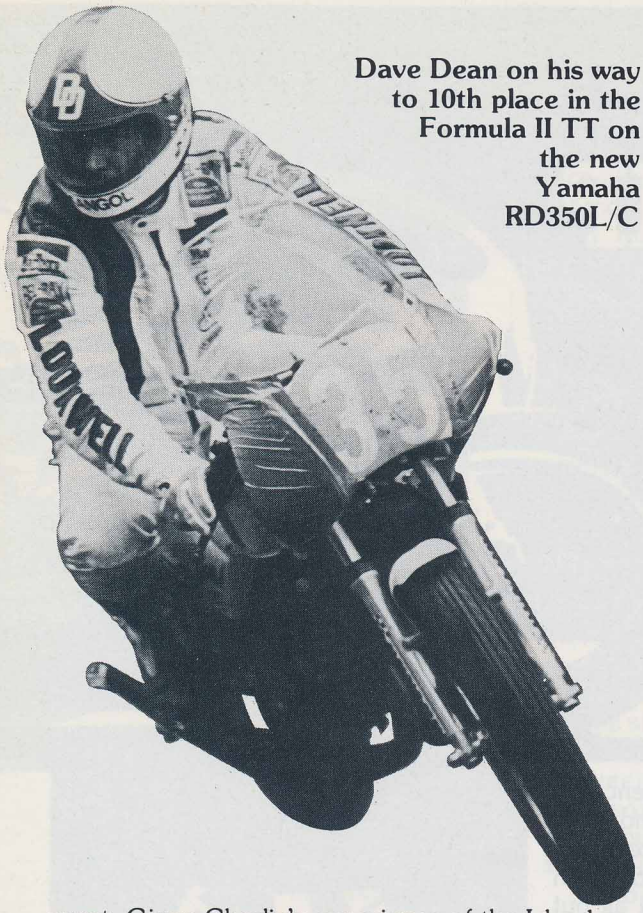
Two TT wins in one day for 'Consistent Charlie'



Consistency and stamina are said by many to be the two attributes most needed for success over the Isle of Man TT circuit, and in this years races Mitsui teamster Charlie Williams proved he possessed plenty of both! His consistency over what has to be the most difficult road circuit in the world was there for everyone to see with eight wins in as many years. In 1980 he proved he has more than enough stamina by completing over three hours strength-sapping racing at an overall average approaching 100mph, to notch two memorable victories in just one day.

The first event of the day was the Formula Two which marked the first competitive outing of Yamaha's latest roadster, the RD350LC, and what a dream debut it turned out to be. Charlie had already said before leaving for the Isle of Man, that he thought the virtually street-standard machine would be at a disadvantage against the special racing bikes developed for this class over the years, but he added, "I'm sure the fans will be impressed by the RD350's performance". As it turned out the race-bred roadster did more than merely impress. Charlie scorched away from the start and after just seven miles he had already pulled out a lead of 13 seconds over Malcolm Lucas aboard a 600 Honda. His main rival, also Honda mounted, was Bill Smith, whose machine had already carried Alan Jackson to three Formula Two world championships, but by the end of lap one even he was a full minute behind a determined Charlie. Yamaha's policy of developing new street bikes from well-proven racing machinery means that mechanical failures are a rare occurence indeed. So, with virtually no fears regarding the reliability of his mount, Charlie was able to treat the fans to a superb display of style and composure which, despite a somewhat leisurely re-fuelling stop brought him his eighth TT victory and gave the RD350LC a winning debut. The exciting potential of the RD350LC was underlined by the performance of Mitsui's number two rider David Dean. Dave, who won the Yamaha/Marlboro Clubman's Championship last year and was immediately snapped up by the Mitsui/Yamaha road race team, showed that his ability is not confined to the short circuits. In his first outing in the Isle of Man he averaged 88.72mph to finish an extremely creditable tenth.

Only a few hours after his Formula Two victory Charlie Williams was once again at the starting line facing another four laps around the twists, turns and bumps of the Isle of Man - this time in the 250cc



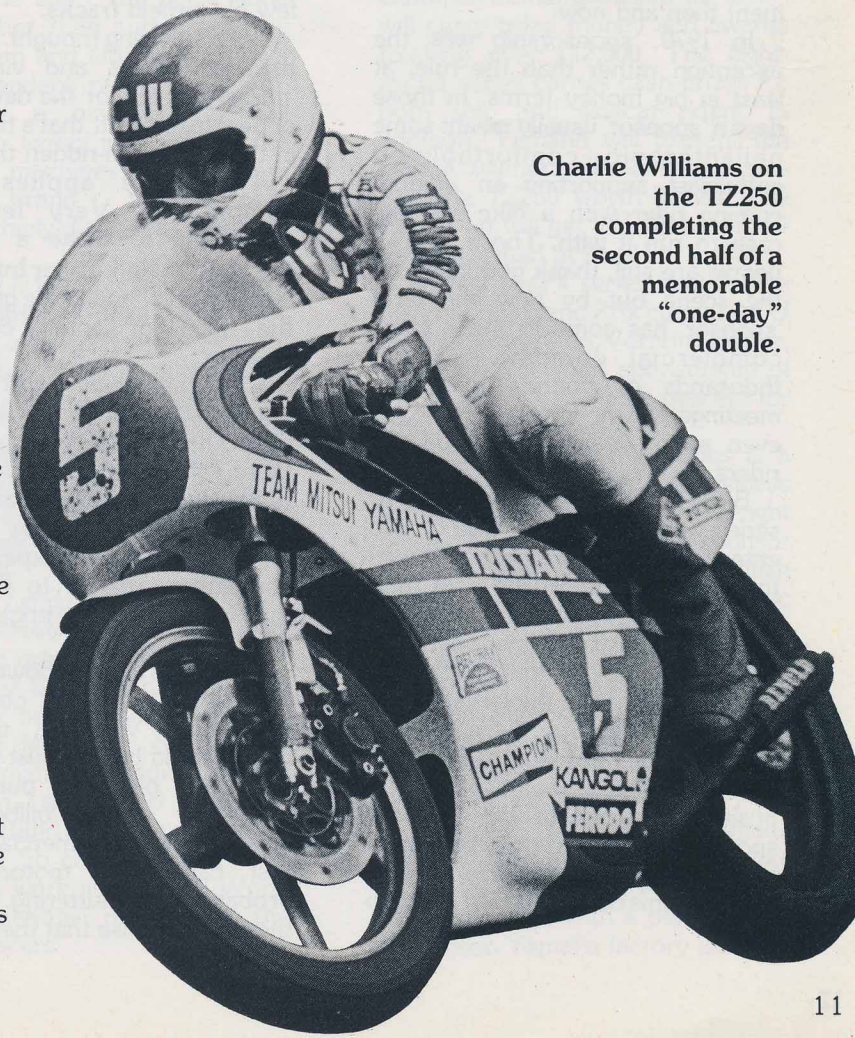
Dave Dean on his way to 10th place in the Formula II TT on the new Yamaha RD350L/C

event. Given Charlie's experience of the Island course and the current overwhelming superiority of the Yamaha in the lightweight division it was hardly surprising that he was a firm pre-race favourite. Due to the notoriously unpredictable Manx weather, the lightweight event had been shortened from six to four laps, but even so few of the sixty starters could have relished the conditions ahead. Swirling mist cut visibility on the higher parts of the course drastically, and much of the circuit was still wet from the morning rain and mist. Charlie, however, soon showed that he was more than a match for any freak conditions that the island climate could produce. By the end of the first lap he was twenty seconds ahead of second place man Donny Robinson and on the subsequent lap he had stretched his lead to a full half-minute. Although the circuit conditions were steadily improving Charlie decided that he could ease off the power and still maintain his lead, but this decision almost cost him the race. As he came into Windy Corner for the last time he glanced at the signboard to find that his lead had been cut to a mere six seconds. The panic, however, was short-lived as Charlie gave the TZ250 its head and he eventually completed the second half of his incredible double with eleven seconds to spare.

Charlie Williams' two wins in one day, amazing though they were, were not the only successes for Yamaha during TT week. Their stranglehold on the lightweight division was demonstrated by the fact that of the thirty-six finishers, no less than thirty-four were Yamaha mounted, and there was also success at the other end of the scale. Irishman Joey Dunlop took his 750 to a new lap record of 114.41 on the fifth lap of the Classic event and then promptly went one better by hoisting the outright TT lap record to an unbelievable 115.22mph. The sidecar race saw yet another record fall to Yamaha when Jock Taylor and Benga Johansson aboard their 700cc outfit lapped the island circuit at 106.08mph to chop an amazing 28 seconds off the old record.

The world famous road races were not the only events in which Mitsui team members were involved at the Isle of Man. During practice week there were several off-road events taking place and in the biggest of these, the Isle of Man Grand National moto-cross, Andy Roberton was unlucky not to emerge as victor. He led the first race from start to finish, but in the second leg he was unable to get among the leaders. In the third, and final, race he led right from the start, and by the last lap he was so far in front that he had time to remount after falling and still run out a comfortable winner. Unfortunately his two wins from three events was not enough to give him the overall win he was looking for, and he had to be content with second place, just five points behind the eventual winner.

Even though the TT races lost their world championship status some years ago, racing fans still arrive in their thousands from all over the world to sample the unique magic of the Island. The members of the Mitsui/Yamaha road-race team, and Charlie Williams in particular, added to this magic with a superb display of riding ability that could rarely, if ever, be seen on the short circuits of the world.



Charlie Williams on the TZ250 completing the second half of a memorable "one-day" double.

SPONSORSHIP

- it's for the good of the sport

As motorcycle racing moves into the eighties, with more and more sponsorship money flowing into the sport, it seems strange to think back to the start of the last decade and compare the commercial involvement then and now.

In 1970, sponsorship was the exception rather than the rule, at least in big money terms. In those days a 'sponsor' usually meant some philanthropic, comfortably-off enthusiast supporting an up-and-coming rider with a bike and the cash to run it with. Those kind of people are still, thank goodness, on the scene but by now the term 'sponsor' has come to mean some commercial company putting thousands of pounds into race meetings, season-long race series or even racing teams with superstar riders.

Back in 1970, very few events or series were sponsored. One or two enterprising race promotors sensed the value of the sport and 'sold' their meetings to a sponsor and so increased their profit margins.

Now it is entirely different. Despite the man-in-the street's view of a race promotor as a bloated capitalist, the hard facts are that the ever-increasing cost of doing business has meant that without sponsorship support probably half of the big-time motorcycle racing events in this country would cease to exist.

Not only that, the absence of these big-time meetings and their contribution to the upkeep of Britain's race tracks would mean that the 'club' races would all but cease to exist except perhaps on a few old airfield tracks.

It's a sobering thought. Just a few big-time events and virtually no 'nursery' races for the development of new talent. But that's the way it is in these inflation-ridden times.

The same applies to the competitors. Very few riders attempting to make a name for themself at National or International level can even make the grid without the help of some commercial sponsor.

Cost of machinery and spares has unavoidably risen and the shrinking pound has meant that it is more and more difficult to keep the machines running successfully throughout the season. Even getting to race meetings is a major expense for the competitor, thanks to OPEC and their influence on the price of a gallon of petrol.

What this all boils down to is that, whether you like commercial involvement or not, motorcycle racing could barely exist without it.

Those old-time purists who muttered about 'billboards on wheels' when commercial sponsors first came into motorsport are probably still muttering. But even they must realise that these days it's

a choice between 'billboards on wheels' or no wheels at all!

Just what does a commercial sponsor get out of involvement in sport - and in particular, motorcycle racing?

Obviously big business doesn't do it for the sake of being a 'fairy godmother' .... even though that factor, believe it or not, is a strong one.

Basically, what any company is after is exposure to the public, the people who buy their products.

Companies such as Castrol, Champion, Shell, Girling and others who are directly involved with the motorcycle industry realise that they can support the sport and also reap the publicity benefits.

'Outside the sport' commercial interests such as Marlboro and Akai, for example, have more hard-headed reasons. They have no reasons to support one particular sport over another ... only if their marketing surveys tell them that the type of people who attend motorcycle races are the right 'target audience' for their consumer products.

We should all be grateful that motorcycle sport is regarded by these giants as being the 'right' audience, for the amounts of money that they are usually prepared to invest are usually far in excess of the industry-linked contributions.

The whole point is that, wherever sponsorship money comes from and for whatever reasons - it is almost the lifeblood of motorcycle racing in the eighties.

Without sponsorship support, riders would either not be able to race at all or would have to try and get more prize or appearance money from race promotors. Promotors have their own financial problems these days and without sponsorship support they would either have to cut their race schedules or ask the spectator to pay more at the gate. To complete the vicious circle, the average spectator is finding his spending-money hacked to ribbons by inflation and would be quite justified in thinking 'why should I be the one to foot all the bills, all the time?'

The nett result would be no motorcycle racing so, next time you see a billboard, or a fairing covered in decals, say a private word of thanks for the sponsors. And, if you need a certain product and have a choice between a motorcycle racing sponsor and a non-involved company ... support the one who supports our sport!

Traditionally, a motorcycle manufacturer's financial commitment to the sport has never gone much further than support of the factory team and limited help for a few 'independent' riders.

Or else a manufacturer will 'sponsor' a series in which all the competing machines have to be of their own brand ... nothing more than a thinly-disguised publicity exercise.

Yamaha is the only manufacturer involved with the British market who is actively involved in sponsorship activities for the good of the sport rather than for simply selfish reasons. Obviously Yamaha still benefits from these activities but, unlike other brands, provide sponsorship support regardless of the machine used by the winning rider.

In fact, Yamaha has always been the only factory with the interests of the private rider primarily at heart. When other factories had dropped completely out of racing, or were supporting just their own works teams, Yamaha continued to build 'production' racers so that the privateer could obtain competitive machinery. So competitive, in fact, that riders were able to win World Championships on 'over the counter' racers!

This year, for example, Yamaha are offering road race machines in four capacity classes - 125cc, 250cc, 500cc and 750cc. It's also possible to convert the 250 to a 350, for use in a class that continues to attract entries despite pressure to discontinue it.

Independent riders can obtain any of these bikes from Yamaha ... in contrast to rivals who just offer a limited number of machines in a single class, or no 'customer' race bikes at all.

Yamaha motocross machines from 50cc upwards are offered for general sale, right up to the YZ465 ... the biggest, most powerful production motocrosser on the market.

As well as making sure that the independent rider gets competitive machinery, Yamaha are helping to strengthen British motorcycle sport in 1980 by some significant contributions both at International and grass-roots level.

For the second year in succession, Yamaha will join Marlboro and the Daily Express sponsorship the British Clubman's Championship for road racers.

Entitled the 'Marlboro/Yamaha Clubman's Championship' the series will carry prize money and awards totalling over £12,000. The eight-round series carries cash prizes for both solo and sidecar riders. In addition, Yamaha will present the overall winner with a brand new Yamaha TZ250 worth £3,584. The runner-up will get a Yamaha TZ250 engine, valued at £1,616.

At last year's series final on the Silverstone Grand Prix circuit, ACU road race supremo, Vernon Cooper, predicted 'the joint sponsorship of this series has started a new era for Britain's club racers.'

Sponsorship of this series is a good example where big business proves to have its heart in the right place. Marlboro already sponsor such attention-getters as the British Grand Prix and the TransAtlantic Trophy Series so obviously they aren't helping out club racers purely and simply to sell cigarettes. Like Yamaha, Marlboro believe that club racing is the only way to foster new British talent and they are simply doing their bit to help.

Last year, the Marlboro/Yamaha championship pinpointed the talents of young Dave Dean, whose efforts were rewarded with a place on the full British Yamaha factory team for

1980!

Says George Machin, Marlboro Sales Director, 'being able to help a future star up the ladder is as rewarding to us as any Grand Prix.'

Yamaha are also helping to nurture young British talent on the motocross scene by supporting two motocross series for the off-road 'up and comers'.

Along with the Castrol Oil company, Yamaha are backing the most comprehensive Youth Championship ever devised.

The 'schoolboy' class of racing organised under the auspices of the Auto Cycle Union is Britain's breeding ground for future champions ... as proved emphatically in 1979 when former British schoolboy champion, Graham Noyce, achieved the absolute pinnacle of the World 500cc Championship.

This year there are no less than five classes of Schoolboy competition: Cadet riders (ages 6-7), Juniors (8-10), Intermediates (11-13), Seniors (14-15) and Experts (15-17).

There will be Yamaha/Castrol trophies in the four lower-age brackets and the Expert winner will get what must be very young rider's dream, a brand new Yamaha YZ125 motocross racer with which to break into the ranks of adult racing!

Though the ACU is the governing body of Britain's national and international motorcycle sport it is not 'the only game in town'.

The Amateur Motorcycle Association (AMCA) has grown over the years from a loosely-knit group of Midlands clubmen into a fine organisation offering amateur motocross, professional events and even overseas links with Holland and other countries. It is true 'racing for the sport', with riders even having to help organise the meetings that their own clubs put on.

In recognition of the fine work done by this group, Castrol and Yamaha are also backing the 1980 AMCA 125cc Championship. Spread over nine rounds throughout the season, the Yamaha/Castrol 125 AMCA Championship carries the grand prize of a Yamaha YZ125 to the series winner. Runners-up will receive Yamaha/Castrol trophies and other product-line prizes.

Continuing their theme of encouragement for young riders, and linking it to a strong dealer support programme for 1980, Yamaha have also launched their Dealer-Supported Rider Programme. This is designed to provide support for up-and-coming young riders via their local Yamaha dealers, allowing the dealers to buy race machines at nominal cost.

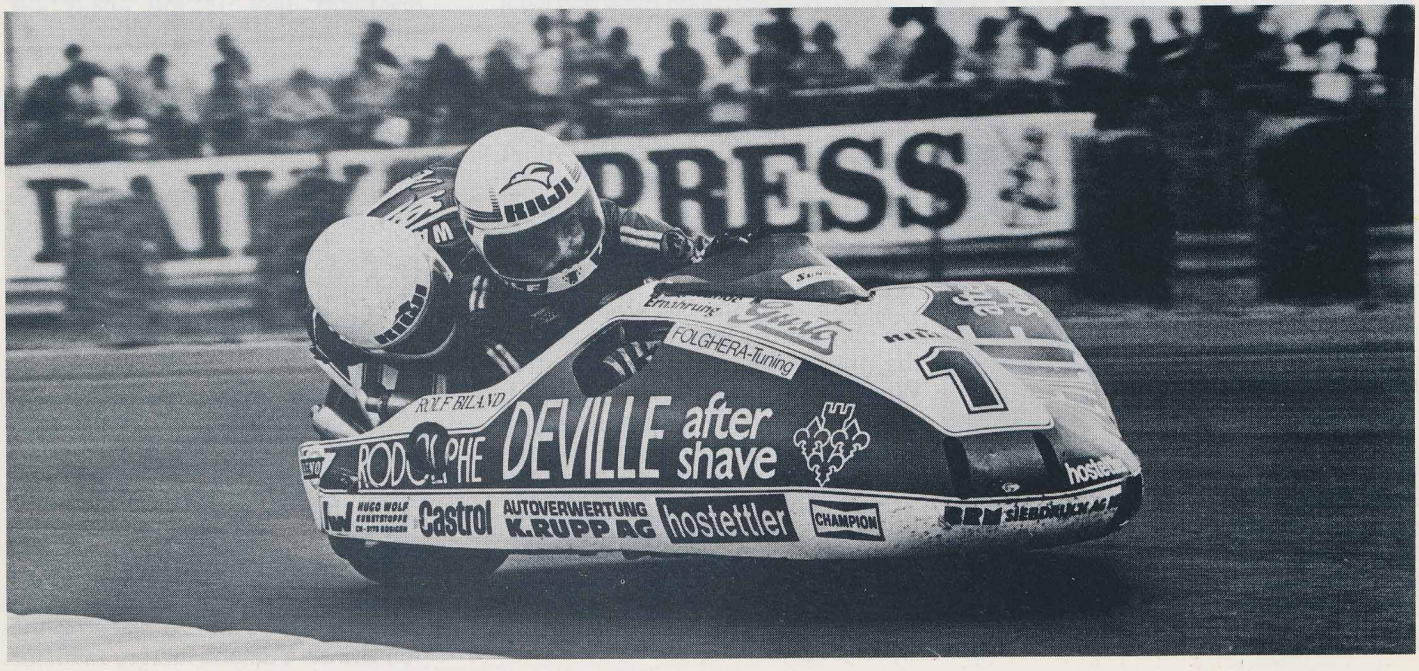
Already seven dealers are involved in the scheme, with 13 riders on their books, and it is anticipated that many more will become involved by the time the season is completed.

KLM Motors (Kingswood) Ltd. are sponsoring Carl and Paul Maynard on YZ125 machines, D.Watson Motorcycles has Stephen Watson on a YZ250, Claremont Motorcycles is entering Carl Handley (YZ250) and Alan Dawson (YZ465), Fowlers of Bristol have two YZ250 pilots, David Curley and Paul James, Roger Barret Motorcycles have YZ125s for Kevin Froud and Mark Cooper, Shirlaws Motorcycles will enter Alan Ines (YZ250) and Bill Robertson (YZ125), G & S Motorcycles support Terry Challinor on a YZ250 and Nick Aldridge on a YZ125, Northern Ireland dealer Albert Clark will field William Johnston (YZ250) while Ian Burns and Anthony Vincent compete on YZ one-two-fives for Denis Barnfield Ltd.

Yamaha's final involvement in motorcycle sport sponsorship is at the other end of the scale ... at full International Grand Prix level.

Only once during 1980 did the Motocross Grand Prix circus come to town - at Hawkstone Park on June 21/22nd for the 250cc British Grand Prix.

Yamaha joined with Girling (famed for their shock absorbers) to sponsor this event, their combined injection of cash was aimed at making sure that the British Grand Prix was recognised as one of the very best events on the World Championship calendar.



Bike stars at the Monaco Grand Prix

World Champions show off the SR250SE

Kenny Roberts, Barry Sheene and Patrick Pons swooping side-by-side through the sinuous curves of the Monaco Grand Prix circuit? It sounds like a true road race enthusiasts dream but, in fact, it really happened during this year's Formula One four-wheeled Grand Prix in Monte Carlo!

Unfortunately, the trio of road race World Champions were not on their howling, four-cylinder GP five-hundreds. Instead they demonstrated one of Yamaha's milder-mannered bikes to car racing fans .... the slickly-styled, easy-to-ride, SR250SE. With its eye-catching "US Custom" styling, light weight, low seat height and smooth, in-traffic performance, the SR250SE has a big future, Yamaha feels, with car drivers looking towards the economy of two-wheeled transport for commuting or "second car" use.

Therefore, they utilised the opportunity to present the SR250SE "US Custom" to the world's automobile press, gathered at Monte Carlo in May for this year's GP event.

The bikes were introduced at a glittering press reception in the de-luxe Loews Monte Carlo hotel and then a fleet of them made available for use by the GP racing teams. Superstars like Alan Jones, Mario Andretti, Emerson Fittipaldi, John Watson and even World Champion-turned-TV personality, Jackie Stewart, used the motorcycles to get around the crowded streets of Monte Carlo during the GP weekend.

All of them pronounced the SR250SE to be "the perfect round-town motorcycle".

View the new SR250SE and the rest of the 1980 Yamaha range at your local dealer. Check his location via the Yellow Pages.

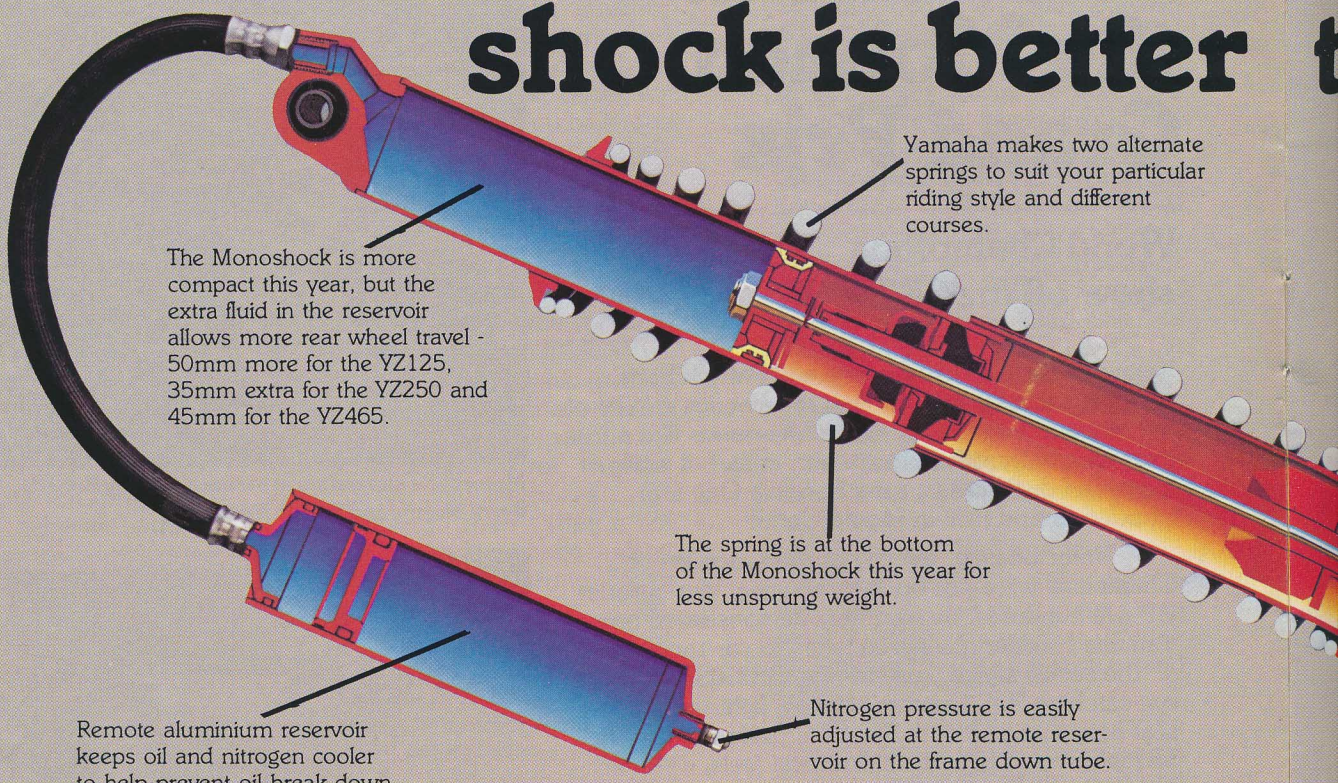
Motorcycle superstars at Monaco - Kenny Roberts, Barry Sheene and Patrick Pons

Former Grand Prix superstar, Jackie Stewart was one of the celebrities at the SR250SE introduction and used one of the bikes for transportation all week long.

Mario Andretti, America's top Grand Prix driver, checks out Yamaha's US Custom model with Paul Butler of the Yamaha Product Development department.

Motorcycle superstar, Giacomo Agostini was 14 times World Champion - twice with Yamaha in the latter stages of his career. He now drives F1 cars in the Aurora Series and was at Monaco checking out the GP scene.

YAMAHA'S mono s
shock is better t



Yamaha makes two alternate springs to suit your particular riding style and different courses.

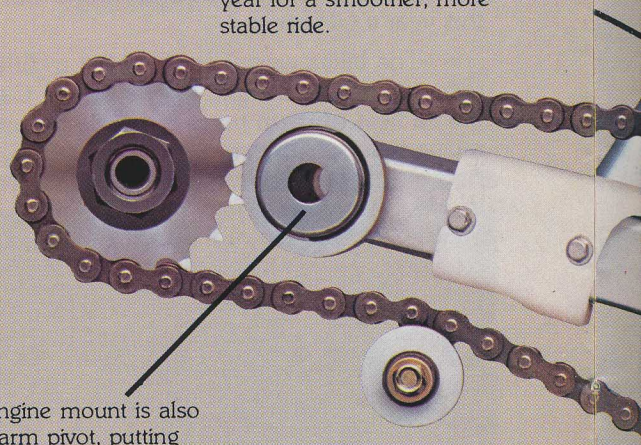
The Monoshock is more compact this year, but the extra fluid in the reservoir allows more rear wheel travel - 50mm more for the YZ125, 35mm extra for the YZ250 and 45mm for the YZ465.

The spring is at the bottom of the Monoshock this year for less unsprung weight.

Remote aluminium reservoir keeps oil and nitrogen cooler to help prevent oil break down and shock fade.

Nitrogen pressure is easily adjusted at the remote reservoir on the frame down tube.

A light, strong and rigid boxed-aluminium, triangulated swing arm means no flex or wobble. And it's longer this year for a smoother, more stable ride.



The rear engine mount is also the swing arm pivot, putting the pivot as close as possible to the drive sprocket.

The illustration on these pages depicts the monoshock system fitted to Yamaha's 1980 motocross machines.

Other monoshock models in the Yamaha range such as the DT, XT250 and RD250/350LC machines utilise another, well-proven, version of the system with tubular rear sub-frame, suspension spring at the upper end of the unit and no remote fluid reservoir for the shock absorber. See illustration on following pages.

shock suspension - why one than two!

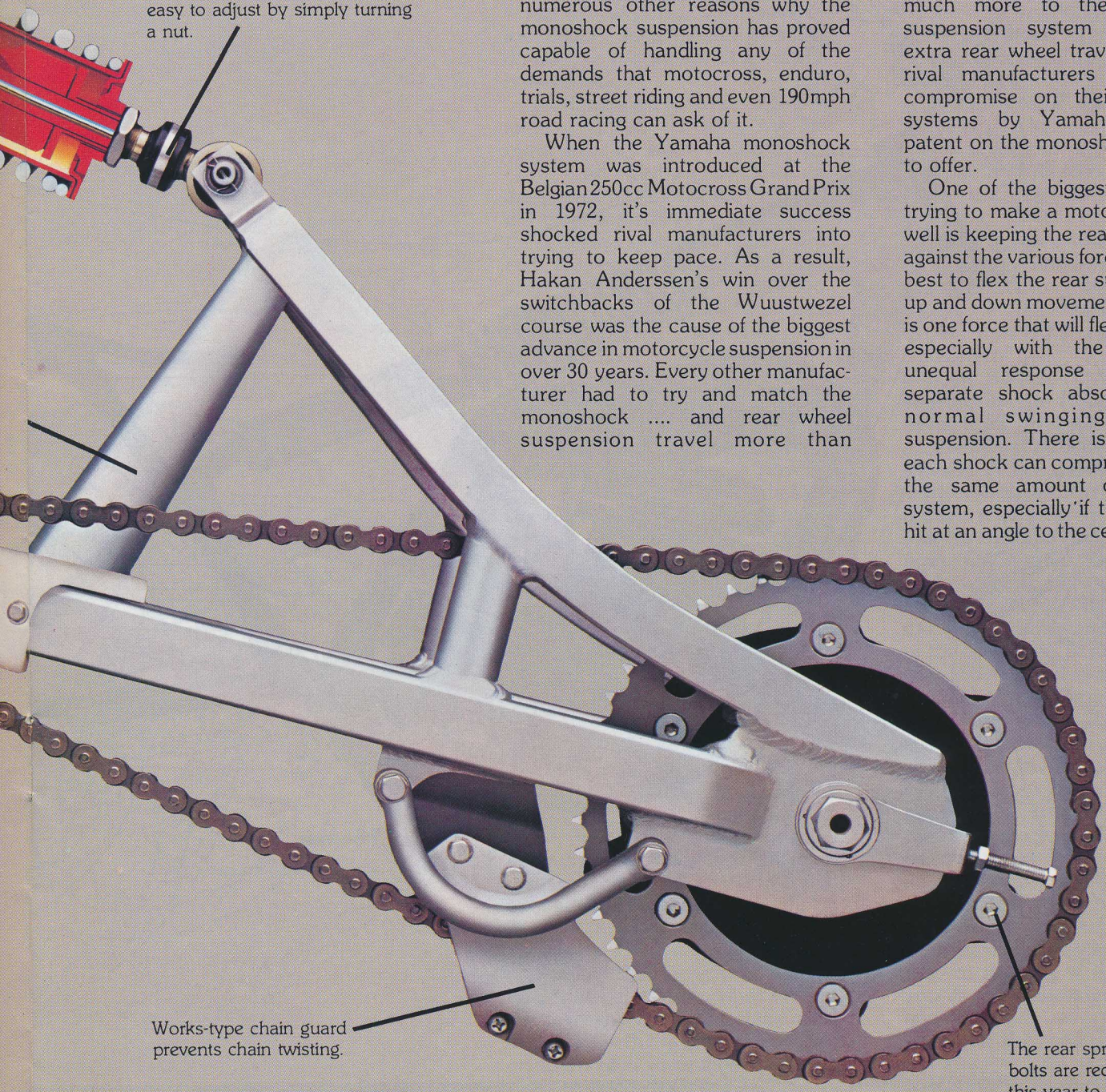
A common misconception about Yamaha's patented 'monoshock' suspension is that the system was invented purely and simply to increase rear wheel travel.

Certainly, that was one of the aims of Belgian engineer, Lucien Tilkens, when he developed the 'monoshock' for the 1973 motocross season. There are, however, numerous other reasons why the monoshock suspension has proved capable of handling any of the demands that motocross, enduro, trials, street riding and even 190mph road racing can ask of it.

When the Yamaha monoshock system was introduced at the Belgian 250cc Motocross Grand Prix in 1972, it's immediate success shocked rival manufacturers into trying to keep pace. As a result, Hakan Anderssen's win over the switchbacks of the Wuustwezel course was the cause of the biggest advance in motorcycle suspension in over 30 years. Every other manufacturer had to try and match the monoshock .... and rear wheel suspension travel more than doubled virtually overnight! A bye-product of this was that manufacturers then had to build special long-travel front forks to match the increased movement of the rear end. All of a sudden, bumps that would have unseated a motocross rider were being taken flat-out!

But, as we said in opening, there's much more to the monoshock suspension system than simply extra rear wheel travel. More than rival manufacturers - forced to compromise on their suspension systems by Yamaha's exclusive patent on the monoshock - are able to offer.

One of the biggest problems in trying to make a motorcycle handle well is keeping the rear wheel in line against the various forces doing their best to flex the rear sub-frame. The up and down movement of the wheel is one force that will flex the frame ... especially with the unavoidable unequal response of the two separate shock absorbers of the normal swinging arm rear suspension. There is no way that each shock can compress to exactly the same amount on a normal system, especially if the bumps are hit at an angle to the centreline of the

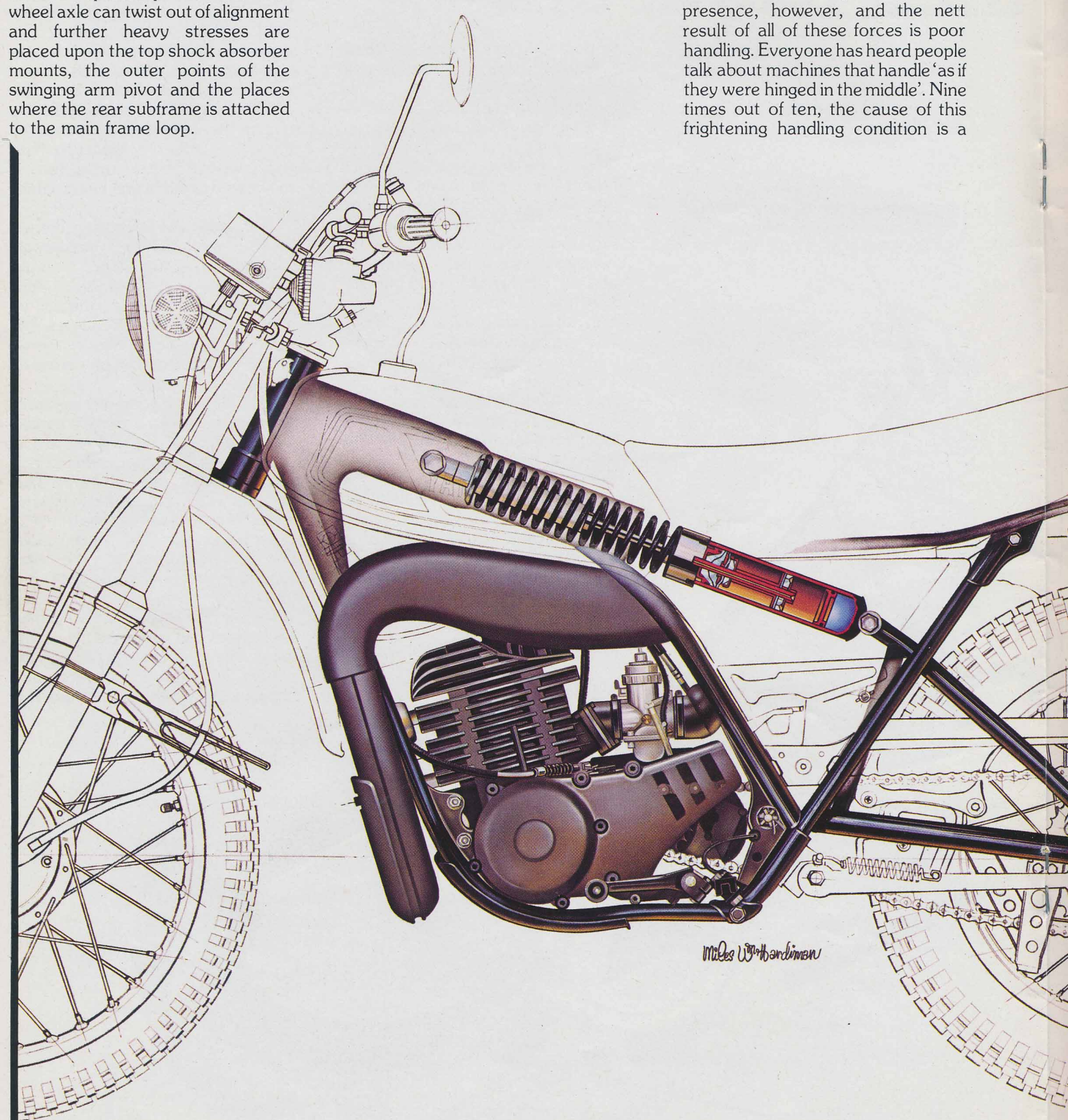


bike. The result is rear wheel deflection and frame flex.

This deflection and flexing of the rear wheel places stress on the frame at four separate points. The rear wheel axle can twist out of alignment and further heavy stresses are placed upon the top shock absorber mounts, the outer points of the swinging arm pivot and the places where the rear subframe is attached to the main frame loop.

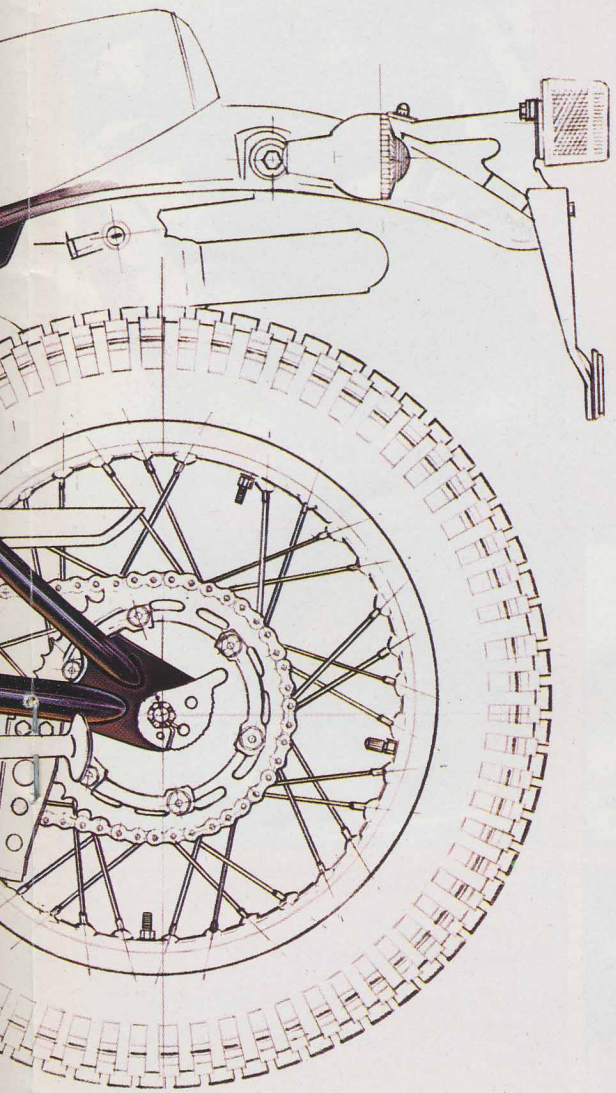
Another force constantly trying to flex the frame is the pull of the rear chain ... not so much during constant running but certainly under heavy bursts of acceleration.

Obviously all of these forces are comparatively minute and not immediately visible to the naked eye. Stroboscopic filming of frame behaviour has proved their presence, however, and the nett result of all of these forces is poor handling. Everyone has heard people talk about machines that handle 'as if they were hinged in the middle'. Nine times out of ten, the cause of this frightening handling condition is a



weak rear subframe.

Yamaha's monoshock system has eliminated this problem at a single stroke. The rear sub-frame that carried the rear wheel is of triangulated construction to resist all side forces. And because it is not subject to the unequal responses of two side-mounted shock absorbers, there is no flexing of the rear end over the bumps of either road or trail.



The single centre-mounted shock absorber only moves along the centreline of the bike. Therefore the rear sub-frame does not have to cope with the side forces that cause frame twist and flex.

There is another reason for the long, centre-mounted shock absorber. Because of its mounting position between the steering head and rear sub-frame it is long enough to allow immense rear wheel travel and large enough to allow a more than adequate capacity of damping medium (oil & nitrogen).

The long shock absorber allows a much slower movement of the rear wheel as the piston which controls the shock damping has probably double the movement of a conventional shock.

Old-timers are fond of quoting the famous Vincent as being 'the first monoshock' and indeed, the combined genius of Vincent designers Phil Vincent and Phil Irving did have something pretty close to the Yamaha system all those years ago. However, one essential point was missing. Instead of the long shock absorber joining steering head to sub-frame, the Vincent had its oil-tank mounted longitudinally above the engine and then short suspension units (two coil springs and a hydraulic damper) linking the back of the oil tank to the rear sub-frame. These units had a travel of probably just two or three inches and the high rate of rebound gave the Vincent a pogo-stick ride on rough country that really did give a 'hinge in the middle' effect. On smooth roads the Vincent was fine ... but over a series of bumps, watch out! The oscillations would make your eyes cross!

In contrast, the long shock absorber of the Yamaha system works oh-so-slo-o-o-wly to allow the rear wheel to actually roll over the bumps rather than bouncing off them.

So, next time some grizzled veteran approaches you as you sit on your monoshock Yamaha in a pub car park and says 'Vincent did that in 1948', you can set the record straight!

The fact that the slow action and long travel of the monoshock keeps the rear wheel of the machine more in contact with the ground moves us on to the next advantage offered by this system. In any form of motorcycle racing, when the rear wheel is off the ground, time is being wasted. Engine power is simply spinning out into the atmosphere rather than being converted to forward motion by contact with the track surface.

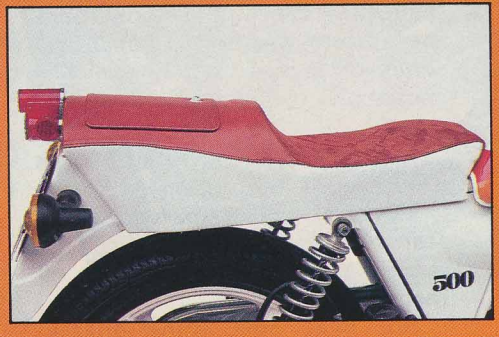
Also, the constant contact between rear wheel and road surface is a big safety feature both for racing and normal street or trail riding. The loss of adhesion due to rear wheel bounce, and then that sudden 'bite' as the wheel touches down again, definitely does not help the rider in controlling the machine. Particularly if the bumps come when the bike is heeled over in a corner. That is why the monoshock system has also been as successful in road racing as it is in the dirt.

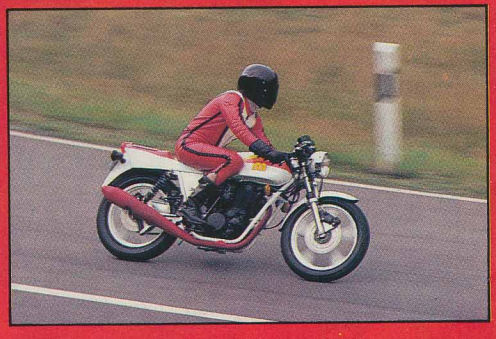
It is safer **and** quicker, because the rider can keep the power on all the time instead of having to play with the throttle to compensate for when the rear wheel is off the ground.

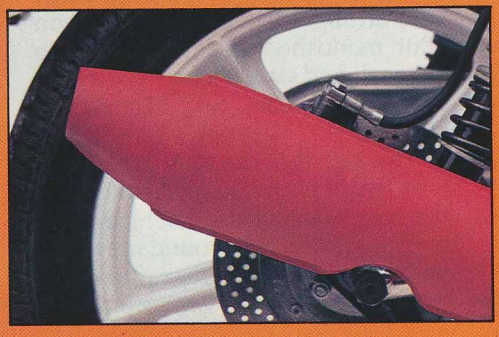
There is yet another bye-product of the long, centre-mounted shock absorber. Its long, slow movement results in the machine handling better under the extreme weight transfers of heavy acceleration and braking. Because the suspension is soaking up the forces transmitted from front to rear under heavy acceleration, the bike is less prone to wheelie. Which means faster, more controllable starts. In reverse, heavy braking produces rear to front forces that try to stand the machine on its nose. Once more, the long shock soaks up more of these forces. Thus the steering under heavy braking is more controllable and the tendency of the rear wheel to hop clear of the road is eliminated in all but the most extreme braking situations. Therefore another benefit of the system is that it also permits harder rear wheel braking. Conventional systems dictate that a rider has to be more careful with the rear brake as the more violent forward weight transfer allows the wheel to break adhesion easier and so 'lock up' and skid under heavy brake application.

Add up all of the advantages of the Yamaha monoshock system and it is easy to see why it has become so successful. It allows faster, smoother and - above all - **safer** riding whether on or off the road. No wonder its introduction is regarded as a milestone in motorcycle history!

Superspe







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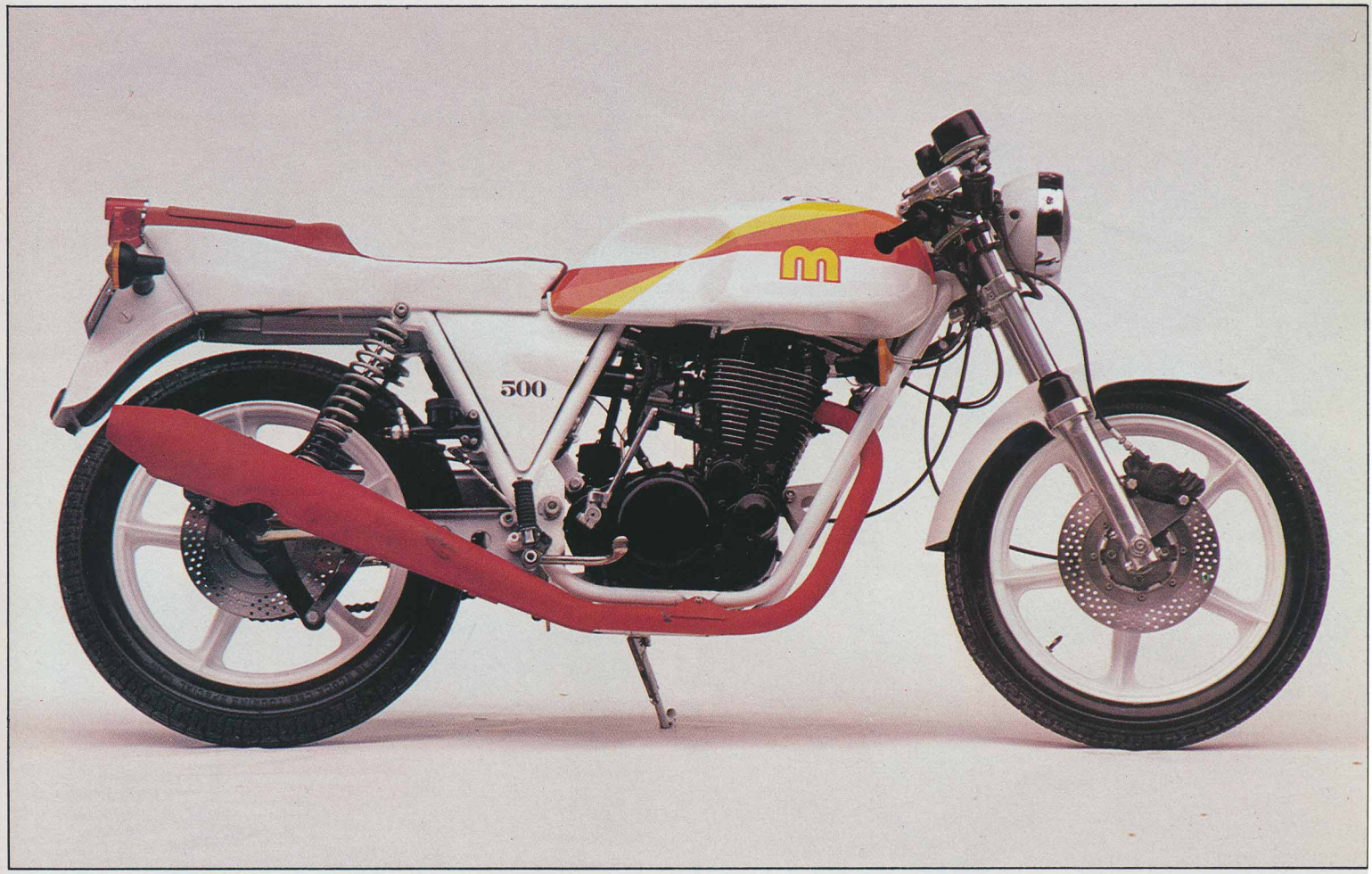
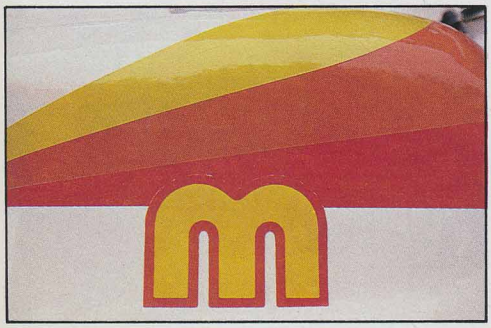
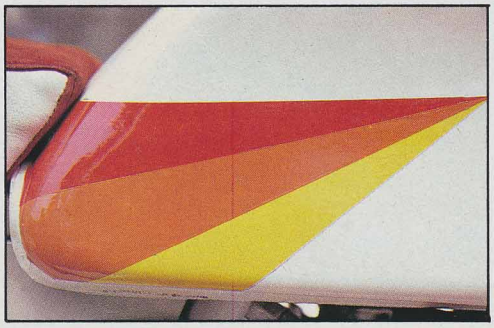
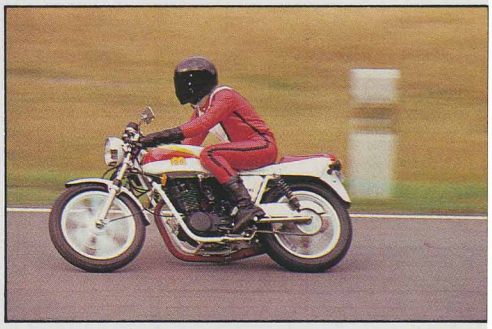








300 miles in 3rd gear....

About to begin a test session with the RD350

The popular conception of how today's high-technology motorcycles are developed is that a lot of "faceless" boffins feed data in and out of a computer and finally put a machine on the market because the computer says it is "right".

Nothing could, in fact, be further from the truth. Today's bikes may be complicated pieces of design, but their final production form is still confirmed by extensive, incredibly-tough "seat of the pants" road-testing. Actually, Yamaha's chief tester in Europe, Dave Bean, says that today's bikes get tougher road-testing than machines did in the old days of the British industry when allegedly motorcycles were built "by enthusiasts for enthusiasts".

"The testing I do for Yamaha" says Dave "is tougher than anything I ever did for any British company."

Dave should know. At 36 years

At speed on the XJ650

old he has completed over 20 years as a test rider and development engineer in the motorcycle industry.

Leaving school at 15 years old, he joined the original Norton company at Bracebridge Street - when Nortons were kings of the road and racetrack. He began testing bikes like Norton's "Dominator" twins and, when Norton was merged into The Associated Motorcycles Group, expanded his riding activities to AJS and Matchless machines.

From there he went to BSA as chief tester, finally ending up at that company's Umberslade Hall development centre in the dual-capacity of chief tester and research engineer.

Following the BSA demise, Dave continued in a freelance capacity as an engineer and tester. He had a long association with famous British road racer and Triumph's chief tester, Percy Tait, and one of his post-BSA jobs was to maintain Percy's factory Suzuki road racers.

It was about this time that Yamaha - unique among Japanese factories - decided that machines destined for the European market should be tested and finally-developed on European roads, by European riders.

Up until that time (in the early seventies) bikes sold here were designed either for the Japanese domestic scene or for America. European riders got what they were given - and are still treated that way by some Japanese companies.

Not by Yamaha, however. "European riders deserve European-style bikes" was the factory dictum and therefore the Yamaha Motor N.V. European headquarters in Amsterdam began to take an active role in product development.

First bike to be "Europeanised" was the XS650 twin. It handled well enough on the slow, crowded roads of Japan or on the arrow-straight American Freeways but was definitely not up to the demands of European riders.

Percy Tait was called in to sort out the suspension and, when other business commitments began to take up too much of Percy's time, Dave Bean was called in. Dave's first task was to assist in development of the XS1100.

"The prototype was incredibly fast" remembers Dave. "It was doing over 160mph on the German autobahns and would smoke the rear tyre on dry road in the first three gears!

"It had to be de-tuned but a standard one straight 'out of the box' still lapped the Nardo test-track in Italy at 142mph!"

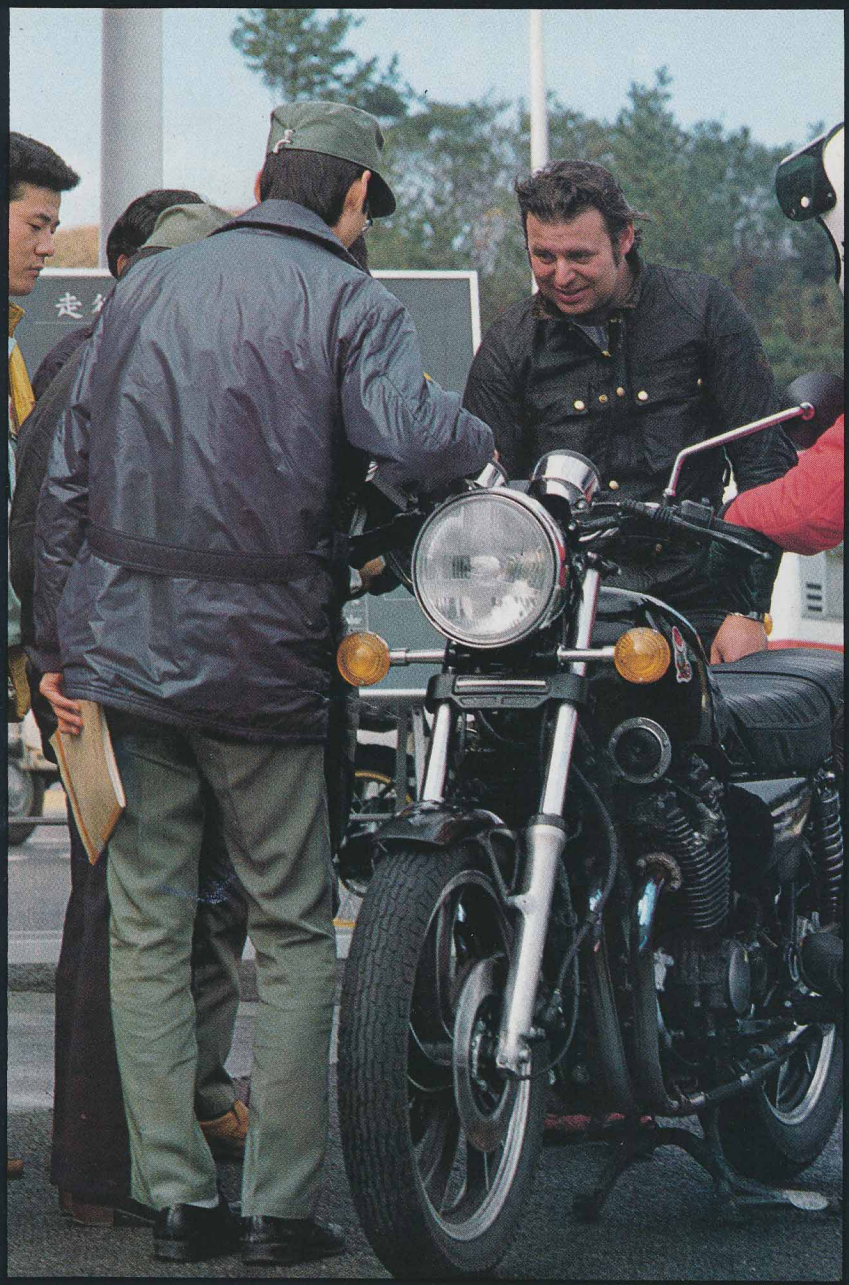
Nardo, in Southern Italy, is where a great deal of Yamaha testing is done. A joint project of the Fiat empire and the Italian government, it is an incredible complete circle, Nine miles in circumference!

One benefit of a circular track is that any lap time always represents a "mean speed" as the wind comes from every possible direction during the course of a single lap. For every point at which the wind is giving assistance, there is a point opposite where it is slowing the machine down.

When Dave Bena takes a bike out on to the Nardo track, the machine is equipped with a little radio-telemetry unit beamed into the trackside computer.

At the end of a day's testing, the engineers receive a computer print-out giving wind and weather conditions, barometric pressures and the performance of the bike around every inch of every lap!

Yamahas that Dave has thrashed around Nardo include the XS1100, the XS850 and, just lately, a lot of time with the exciting XJ650 four and



Dave Bean confers with engineers after a gruelling test workout on the Yamaha XJ650

RD250 and 350 liquid-cooled twins.

A typical day's testing on the Nardo bowl puts each machine through over 1000 miles of flat-out running. Each session of "endurance" testing covers some 10,000 miles at sustained high speeds to plumb the depths of the bike's capabilities.

Prior to Nardo, prototypes are put through miles and miles of actual highway testing on roads as varied as British motorways and German autobahns to back-roads in Britain, Holland and Italy.

The bikes are wired for all manner of instrumentation for pressure and temperature checks and so on. Still a great factor, however, is the "feel" of the machine to the rider.

"We look out for any undue vibrations or quirks in handling, braking and the like", says Dave " and the engineers take just as much notice of our opinions as they do the instrument readings". Towards the end of the testing of any Yamaha prototype it is deliberately abused - and abused far worse than any normal rider is likely to do.

No engine or transmission adjustments are made, no oil changes or fresh plugs. Even worse, bikes in this sorry state are regularly run 1500rpm "in the red"!

"I remember an incredibly tough session with the XS850" says Dave "where we ran it absolutely flat-out in the third of its five gears for three hundred miles! Finally it blew a head gasket but that was all. When the engine was stripped, everything else was fine!"

So rest assured that when you buy a Yamaha, just about any abuse that you are capable of has already been heaped upon the unprotesting machine!

YAMAHA 1980

XJ650

ENGINE

Type	D.O.H.C., 4 stroke, 4 cylinder
Displacement	653 cc
Bore/stroke	63,0 x 52,4 mm
Compression ratio	9,2 : 1
Max. horsepower	53,8 Kw (73 HP) /9.000
Max. torque	59,2 Nm (6.0 Kg-m) at 7.500
Lubrication system	Wet sump
Starting system	Electric
Gearbox	5 speed

DIMENSIONS

Overall length		2170 mm
Overall width		730 mm
Overall height		1130 mm
Wheelbase		1435 mm
Min. ground clearance		140mm
Weight		206 kg
Fuel tank capacity		19.5 lit
Tyres:	Front	3.25-19-4PR
	Rear	120/90-18
Brakes:	Front	Dual discs
	Rear	Drum

MOST IMPORTANT
Specifications and availability of certain models in the Yamaha range are subject to the legal and insurance requirements of the countries in which they are sold. We advise that you check with your national importer for the complete range of Yamaha motorcycles available in your country.

See the 1980 Yamahas at your local dealer. Check his location via Yellow Pages.

1980 marks something more than just the start of another decade for Yamaha motorcycles. It signifies the celebration of 25 years of motorcycle manufacturing.

It is fitting therefore, that this year's Yamaha range is unequalled by any of their competitors as far as types of machines offered to the general public.

From the lowest end of the scale - with a comprehensive range of mopeds - right through to the awesome XS1100, Yamaha offers more choice of machinery than any other manufacturer.

For example, one of the biggest sensations of the 1980 Yamaha range is the rejuvenation of the sporting two-stroke street machine. Yamaha has always remained faithful to the sporting two-strokes that made the company famous, even with most of their competitors turning away from this type of engine because of stringent emission and noise regulations for road-going motorcycles all over the world.

Yamaha has always maintained tha a two-stroke can meet these regulations just as well as a four-stroke and the new range of super-sporting two-stroke middleweights is proof enough that they have the technology to achieve this.

Not that Yamaha ignores the four-stroke. Far from it! Yamaha have the most varied four-stroke range on today's market. For 1980 they offer four-strokes from 250 to 1100cc .... with one, two, three and four cylinders! There's a new 250cc four-stroke single, derived from the hugely popular XT500 and SR500 "thumpers". There are twins in 250, 400 and 650cc sizes. An all-new four-cylinder 650 joins the big XS1100 four and the three-cylinder 750cc power unit that won "Machine of the Year" awards from several European magazines when it was introduced three years ago has now grown into an unburstable 850cc powerhouse.

RD250LC

ENGINE

Type	2 stroke, water cooled, twin
Displacement	247 cc
Bore/stroke	54,0 x 54,0 mm
Max. horsepower	26,1 Kw (35,5 HP) /8.500
Max. torque	30,2 Nm (3,1 Kg-m) /8.000
Lubrication system	Autolube
Starting system	Kick
Gearbox	6 speed

DIMENSIONS

Overall length	2055 mm
Overall width	750 mm
Overall height	1090 mm
Seat height	785 mm
Wheelbase	1360 mm
Min. ground clearance	170mm
Weight	140 kg
Fuel tank capacity	17 lit
Tyres: Front	3.00-18-4PR
Rear	3.50-18-4PR
Brakes: Front	Disc
Rear	Drum

RD350LC

ENGINE

Type	2 stroke, twin-cylinder, LC
Displacement	347 cc
Bore/stroke	64,0 x 54,0 mm
Compression ratio	6,9 : 1
Max. horsepower	34.6 Kw (47 HP) /8.500
Max. torque	40.2 Nm (4.1 Kg-m) /8.000
Lubrication system	Autolube
Starting system	Kick
Gearbox	6 speed

DIMENSIONS

Overall length	2055 mm
Overall width	750 mm
Overall height	1090 mm
Wheelbase	1365 mm
Min. ground clearance	170 mm
Seat height	785 mm
Weight (Net)	140 kg
Fuel tank capacity	17,0 lit
Tyres: Front	3.00-18-4PR
Rear	3.50-18-4PR
Brakes: Front	Double discs
Rear	Drum

Since this colour section went to press, Yamaha have decided to match the impressive performance of the RD350LC with equally impressive stopping power by the use of double disc brakes at the front.

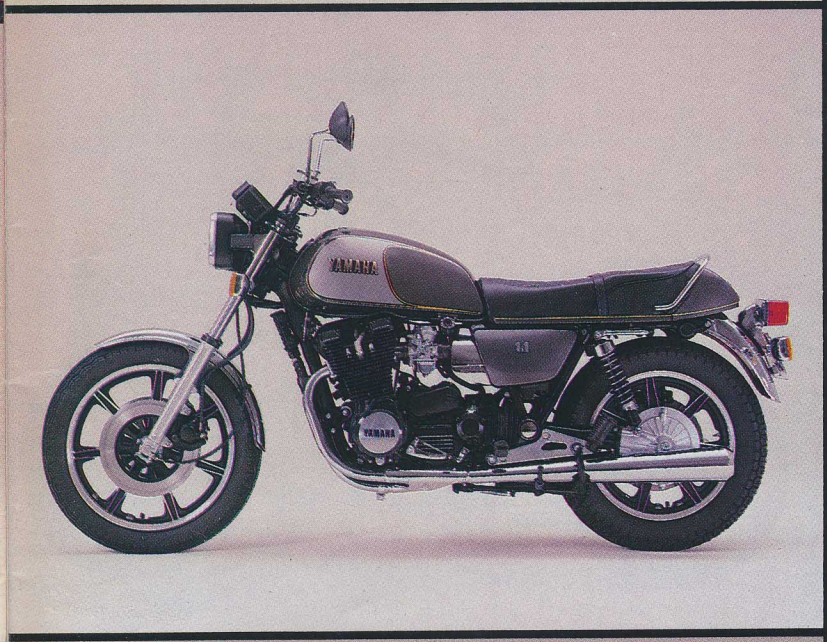
XT250

ENGINE

Type	S.O.H.C., 4 stroke, air cooled, single
Displacement	249 cc
Bore/stroke	75,0 x 56,5 mm
Compression ratio	9,2 : 1
Max. horsepower	15 Kw (21 HP) /8.000
Max. torque	19,6 Nm (2,0 Kg-m) /6.500
Lubrication system	Wet sump
Starting system	Kick
Gearbox	5 speed

DIMENSIONS

Overall length	2135 mm
Overall width	885 mm
Overall height	1170 mm
Seat height	840 mm
Wheelbase	1395 mm
Min. ground clearance	255 mm
Weight	113 kg
Fuel tank capacity	8 lit
Tyres: Front	3,00-21-4PR
Rear	4,60-17-4PR
Brakes: Front	Drum
Rear	Drum



XS1100

ENGINE

Type	D.O.H.C., 4 stroke, 4 cylinder
Displacement	1101 cc
Bore/stroke	71.5 x 68.6 mm
Compression ratio	9.2 : 1
Max. horsepower	69.9 Kw (95 PS) /8.500
Max. torque	90.2 Nm (9.2 Kg-m) /6.000
Lubrication system	Pressure-fed wet sump
Starting system	Electric & kick
Gearbox	5 speed

DIMENSIONS

Overall length	2260 mm
Overall width	775 mm
Overall height	1145 mm
Wheelbase	1545 mm
Seat height	810mm
Min. ground clearance	150 mm
Weight (Net)	256 kg
Fuel tank capacity	24 lit
Tyres: Front	3.50V-19-4PR
Rear	4.50V-17-4PR
Brakes: Front	Dual discs
Rear	Disc

XS850

ENGINE

Type	D.O.H.C., 4 stroke, air cooled, triple
Displacement	826 cc
Bore/stroke	71,5 x 68,6 mm
Compression ratio	9,2 : 1
Max. horsepower	58,1 Kw (79 HP) /8.500
Max. torque	69,8 Nm (7,1 Kg-m) 7.500
Lubrication system	Wet sump
Starting system	Electric/Kick
Gearbox	5 speed

DIMENSIONS

Overall length	2155 mm
Overall width	675 mm
Overall height	1120 mm
Wheelbase	1465 mm
Min. ground clearance	130 mm
Weight	236 kg
Fuel tank capacity	24 lit
Tyres: Front	3.25;19-4PR
Rear	4.00-18-4PR
Brakes: Front	Dual discs
Rear	Disc

SR250SE

ENGINE

Type	S.O.H.C. 4 stroke, single
Displacement	239,6 cc
Bore/stroke	73,5 x 56,5 mm
Max. horsepower	12 Kw (17 HP) /7.500
Max. torque	18,3 Nm (1,8 Kg-m) /5.000
Lubrication system	Wet sump
Starting system	Electric
Gearbox	5 speed

DIMENSIONS

Overall length	2025 mm
Overall height	1135 mm
Overall width	810 mm
Seat height	740 mm
Wheelbase	1335 mm
Min. ground clearance	145 mm
Weight	121 kg
Fuel tank capacity	11 lit
Tyres: Front	3,00-19-4PR
Rear	120/90-16-4PR
Brakes: Front	Drum
Rear	Drum

XS250SE

ENGINE

Type	S.O.H.C., 4 stroke, air cooled, twin
Displacement	248 cc
Bore/stroke	55,0 x 52,4 mm
Max. horsepower	49,1 Kw (26 HP) /8.500
Max. torque	20,6 Nm (2,1 Kg-m) /8.000
Lubrication system	Wet sump
Starting system	Electric/Kick
Gearbox	5 speed

DIMENSIONS

Overall length	2065 mm
Overall width	870 mm
Overall height	1140 mm
Seat height	770 mm
Wheelbase	1375 mm
Min. ground clearance	135 mm
Weight	169 kg
Fuel tank capacity	2,6 lit
Tyres: Front	3,00-18-4PR
Rear	120/90-16
Brakes: Front	Disc
Rear	Drum

XS400SE

ENGINE

Type	S.O.H.C., 4 stroke, air cooled, twin
Displacement	391 cc
Bore/stroke	69,0 x 52,4 mm
Max. horsepower	27 Kw (37 HP) /9.000
Max. torque	31,6 Nm (3,2 Kg-m) /7.500
Lubrication system	Wet sump
Starting system	Electric/Kick
Gearbox	5 speed

DIMENSIONS

Overall length	2065 mm
Overall width	870 mm
Overall height	1140 mm
Seat height	770 mm
Wheelbase	1380 mm
Min. ground clearance	135 mm
Weight	169 kg
Fuel tank capacity	14 lit
Tyres: Front	3,00-18-4PR
Rear	120/90-16
Brakes: Front	Disc
Rear	Drum

SR500

ENGINE

Type	S.O.H.C., 4 stroke, single
Displacement	499 cc
Bore/stroke	87 x 84 mm
Compression ratio	9.0 : 1
Max. horsepower	24.2 Kw (33 PS) /6.500
Max. torque	38.2 Nm (3.9 Kg-m) /5.500
Lubrication system	Dry sump
Starting system	Kick
Gearbox	5 speed

DIMENSIONS

Overall length	2170 mm
Overall width	930 mm
Overall height	1140 mm
Wheelbase	1400 mm
Seat height	810 mm
Min. ground clearance	165 mm
Weight (Net)	161 kg
Fuel tank capacity	12 lit
Tyres: Front	3.50-19-4PR
Rear	4.00-18-4PR
Brakes: Front	Disc
Rear	Drum

XS650SE

ENGINE

Type	S.O.H.C., 4 stroke, air cooled
Displacement	653 cc
Bore/stroke	75,0 x 74,0 mm
Compression ratio	8,5 : 1
Max. horsepower	36,9 Kw (50,1 HP) /7.000
Max. torque	52,0 Nm (5,3 Kg-m) /6.000
Lubrication system	Wet sump
Starting system	Electric/Kick
Gearbox	5 speed

DIMENSIONS

Overall length	2130 mm
Overall width	930 mm
Overall height	790 mm
Wheelbase	1435 mm
Min. ground clearance	135 mm
Weight	212 kg
Fuel tank capacity	11,5 lit
Tyres: Front	3,5-19-4PR
Rear	130/90-16-4PR
Brakes: Front	Disc
Rear	Disc

XS750SE

ENGINE

Type	4 stroke, three cylinders, air cooled
Displacement	747 cc
Bore/stroke	68,0 x 68,6 mm
Max. horsepower	50 KW (68 HP) /8.000
Max. torque	63,7 Nm (6,5 Kg-m) /6.500
Compression ratio	9,2 : 1
Lubrication system	Wet sump
Starting system	Kick
Gearbox	5 speed

DIMENSIONS

Overall length	2155 mm
Overall width	740 mm
Overall height	1120 mm
Seat height	820 mm
Wheelbase	1465 mm
Min. ground clearance	130 mm
Weight (Net)	236 kg
Fuel tank capacity	17 lit
Tyres: Front	3.25-19-4PR
Rear	4.00-18-4PR
Brakes: Front	Dual discs
Rear	Disc

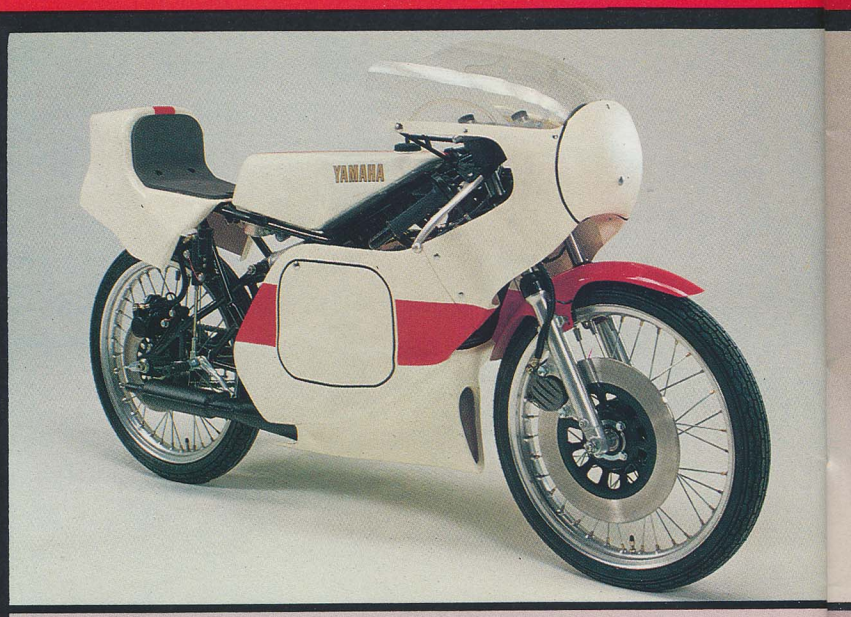
TZ125

ENGINE

Type	2 stroke, water cooled, single
Displacement	123 cc
Bore/stroke	56 x 50 mm
Compression ratio	7,9 : 1
Max. horsepower	30 bhp at 12,000 rpm
Max. torque	1.85 Kg-m at 11,500 rpm
Lubrication system	Mixture oil/fuel (15 : 1)
Gearbox	6 speed

DIMENSIONS

Overall length	1790 mm
Overall width	520 mm
Overall height	895 mm
Seat height	685 mm
Wheelbase	1205 mm
Min. ground clearance	155 mm
Weight	72 kg
Fuel tank capacity	9.5 lit
Tyres: Front	2.50-18-4PR
Rear	2.50-18-4PR
Brakes: Front	Disc
Rear	Disc



YZ80

ENGINE

Type	2 stroke, single
Displacement	79cc
Bore/stroke	49,0 x 42,0 mm
Compression ratio	8,1 : 1
Max. horsepower	12.5 Kw (17 HP) /11.500
Max. torque	10.3 Nm (1.05 Kg-m) /11.500
Lubrication system	Mixture oil/fuel (20 : 1)
Starting system	Kick
Gearbox	6 speed

DIMENSIONS

Overall length	1745 mm
Overall width	785 mm
Overall height	990 mm
Wheelbase	1185 mm
Min. ground clearance	225 mm
Seat height	740 mm
Fuel tank capacity	4,7 lit
Weight (Net)	62 kg
Tyres: Front	2,75-17-4PR
Rear	3,60-14-4PR
Brakes: Front	Drum
Rear	Drum

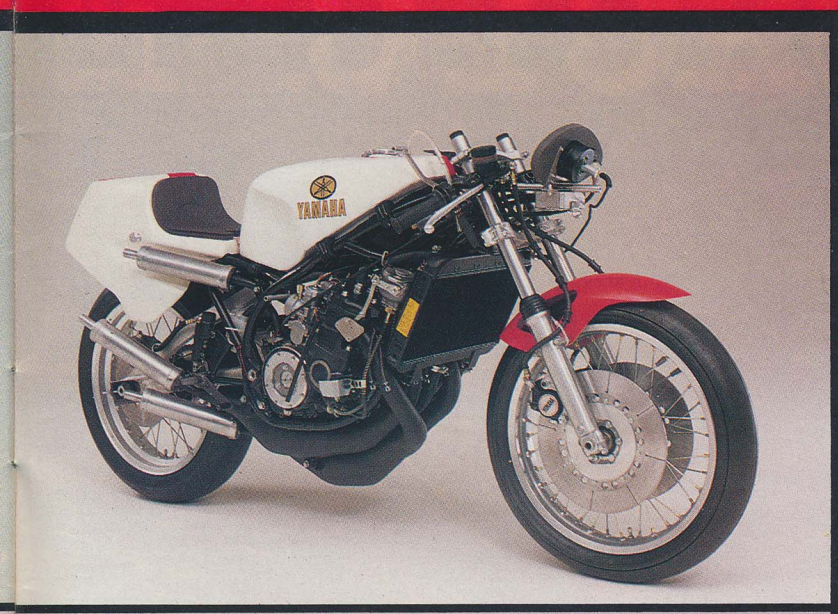
YZ250

ENGINE

Type	2 stroke, single
Displacement	246 cc
Bore/stroke	70,0 x 64,0 mm
Compression ratio	8,1 : 1
Max. horsepower	29.5 KW (40 HP) /8.000
Max. torque	37.0 Nm (3.77 Kg-m) /6.500
Lubrication system	Mixture oil/fuel
Starting system	Kick
Gearbox	6 speed

DIMENSIONS

Overall length	2155 mm
Overall width	935 mm
Overall height	1195 mm
Wheelbase	1455 mm
Min. ground clearance	310 mm
Seat height	935 mm
Weight (Net)	97kg
Fuel tank capacity	7,6 lit
Tyres: Front	3,00-21-4PR
Rear	5,10-21-4PR
Brakes: Front	Drum
Rear	Drum



TZ500

ENGINE

Type	2 stroke, 4 cylinder
Displacement	497 cc
Bore/stroke	56 x 50.5 mm
Compression ratio	7,9 : 1
Max. horsepower	110 bhp plus at 10,500 rpm
Max. torque	7.7 Kg-m at 10,250 rpm
Lubrication system	Mixture oil/fuel (15 : 1)
Starting system	Push
Gearbox	6 speed

DIMENSIONS

Overall length	2020mm
Overall width	500mm
Height	965 mm
Wheelbase	1365 mm
Min. ground clearance	120 mm
Seat height	900 mm
Weight	139 kg
Fuel tank capacity	31.5 lit
Tyres: Front	3,25-18-4PR
Rear	4.00/5.75-18-4PR
Brakes: Front	Disc 298 mm (twin)
Rear	Disc 218 mm

YZ125

ENGINE

Type	2 stroke, single
Displacement	123 cc
Bore/stroke	56,0 x 50,0 mm
Compression ratio	8,5 : 1
Max. horsepower	19.5 Kw (26.5 HP) /1.100
Max. torque	17,6 Nm (1.80 Kg-m) /9.500
Lubrication system	Mixture oil/fuel (32 : 1)
Starting system	Kick
Gearbox	6 speed

DIMENSIONS

Overall length	2115 mm
Overall width	950 mm
Overall height	1215 mm
Wheelbase	1430 mm
Min. ground clearance	340mm
Seat height	940 mm
Weight (Net)	85 kg
Fuel tank capacity	6,5 lit
Tyres: Front	3,00-21-4PR
Rear	4,00-18-4PR
Brakes: Front	Drum
Rear	Drum

YZ465

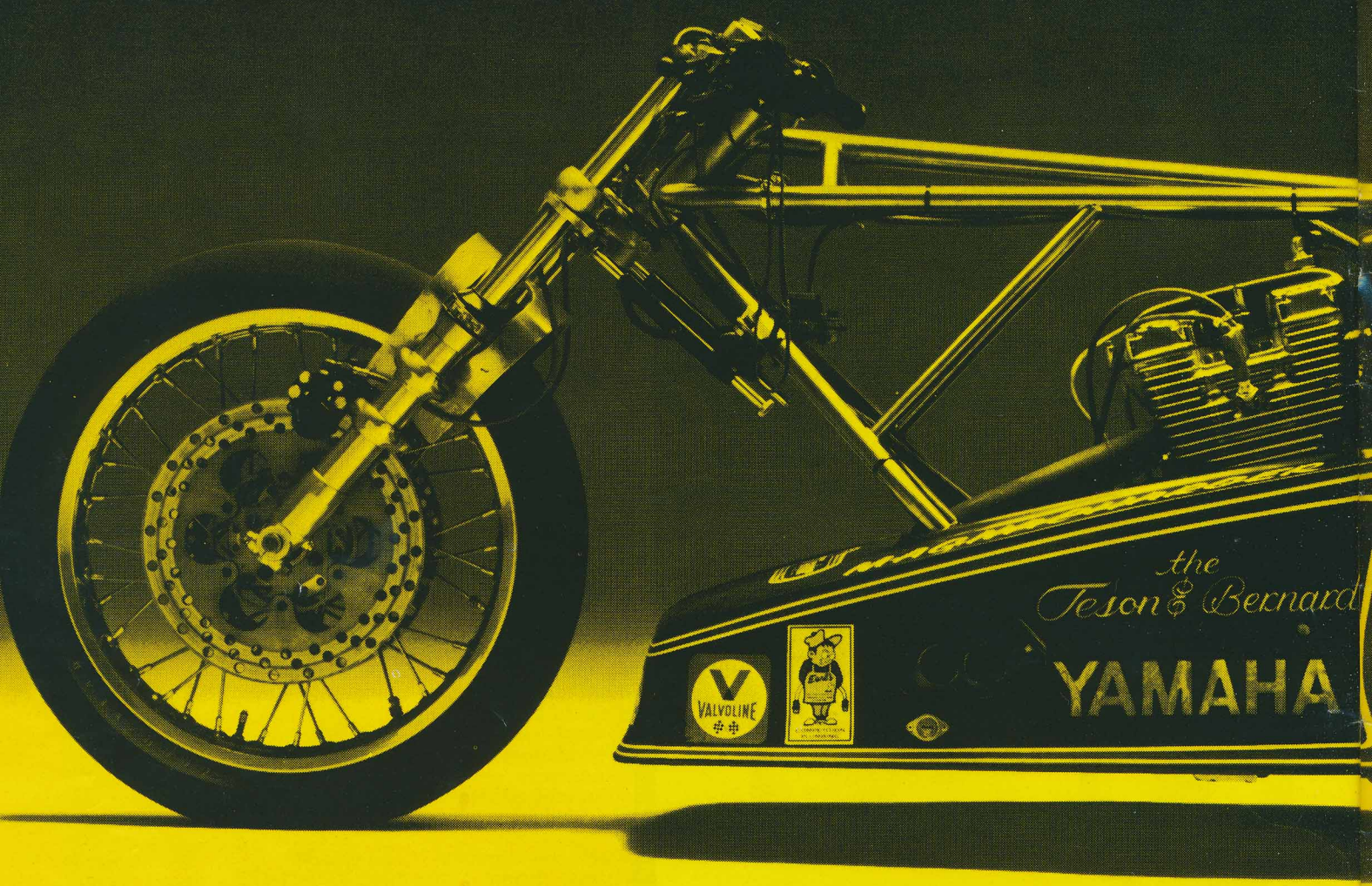
ENGINE

Type	2 stroke, single
Displacement	465 cc
Bore/stroke	85,0 x 82,0 mm
Compression ratio	7,0 : 1
Max. horsepower	38.2 KW (52 HP) /7.000
Max. torque	55.5 Nm(5.65 Kg-m) /6.000
Lubrication system	Mixture oil/fuel (32 : 1)
Starting system	Kick
Gearbox	5 speed

DIMENSIONS

Overall length	2175 mm
Overall width	935 mm
Overall height	1195 mm
Wheelbase	1480 mm
Min. ground clearance	310 mm
Seat height	935 mm
Weight (Net)	102 kg
Fuel tank capacity	9,0 lit
Tyres: Front	3,00-21-4PR
Rear	5,10-18-4PR
Brakes: Front	Drum
Rear	Drum

MOTORCYCLE



Motorcycle or missile? One look at the Ron Teson/Jim Bernard Yamaha XS1100 dragster in action and that question has to be asked!

With rider Bernard stretched almost prone across the top of the thundering supercharged four-cylinder motor, the Yamaha can rocket down a quarter-mile drag strip quicker than a normal motorcyclist can get across an intersection from the traffic lights!

It is, purely and simply, the world's fastest-accelerating motorcycle. This fact is confirmed by the world record that the machine set on the Indianapolis, USA drag strip in September. From a standing start Bernard covered the quarter-mile in a vision-blurring 7.57 seconds. His speed as he crossed the quarter-mile mark was no less than 183.67mph! To make a world drag racing record official, the rider must back up his time with another run that is within one per cent of the record-breaker ... and he has to do it at the same strip, in the same race meeting.

The day after his record, Bernard loosed the big Yamaha off again. This time it was an even higher terminal speed, 184.42mph! The elapsed time for the quarter-mile was 7.61 seconds ... good enough to verify the earlier 7.57 seconds record time.

Ron Teson is the wizard who built the monster Yamaha. He had already achieved fame with the first motorcycle ever to break into the seven-second bracket. In an age of multi-engined drag racers, Teson started a trend back towards simplicity by getting into the "sevens" with a supercharged, single-engined 970cc Honda.

But the Honda soon became out-dated. Teson needed another power unit that had the potential for further development. That power unit was the Yamaha XS1100!

At the limit of its development, Teson's Honda put out 350hp. The Yamaha currently puts out over 400hp and Ron figures that when he has carried its development to the limits that he pushed his Honda to, the XS1100 will produce over 500 horsepower!

That's the same horsepower as a top Formula One GP car ... from about one third the capacity!

or MISSILE?

Despite the huge horsepower output, the XS1100 retains a great many of its stock features. That's why Teson chose the Yamaha as the basis for his new machine.

The one-piece crankshaft with its plain-bearing, automobile-type connecting rods is far better suited to an engine that is to be supercharged on nitromethane rocket fuel than are the roller-bearing cranks favoured by other manufacturers for their big "fours".

Apart from a special camshaft and stiffer valve springs, the XS1100 cylinder head is left standard. Valves are stock and the ports have not been touched! The crankshaft, crankcase and cylinder are also standard.

A supercharger pumps the fuel/air mix into the engine. The man who constructed the supercharger is Jerry Magnuson ... and he is also responsible for the motor's primary transmission. This is via two huge straight-cut spur gears, the smaller of which is almost seven inches in diameter!

From there the power goes to a semi-automatic gearbox with an automatic clutch. Teson carved off the normal transmission as it was obviously never designed to handle 500hp!

The clutch is operated by spinning centrifugal weights which press the plates together as engine speed rises. Bernard changes gear by simply pressing a large red button on the handlebars. This forces oil from a pressurised tank through a valving system that hydraulically shifts the gearbox into the higher of its two ratios.

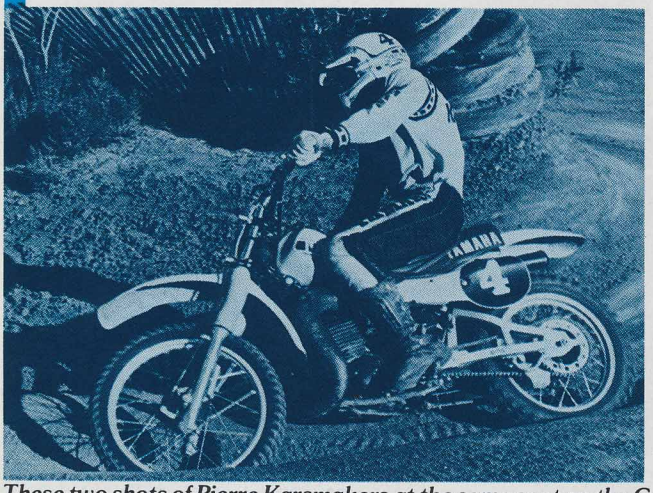
Finally, the power gets to the rear wheel via a hefty drive chain and on to the road through a 12.5 inch wide rear tire borrowed from a drag-racing car.

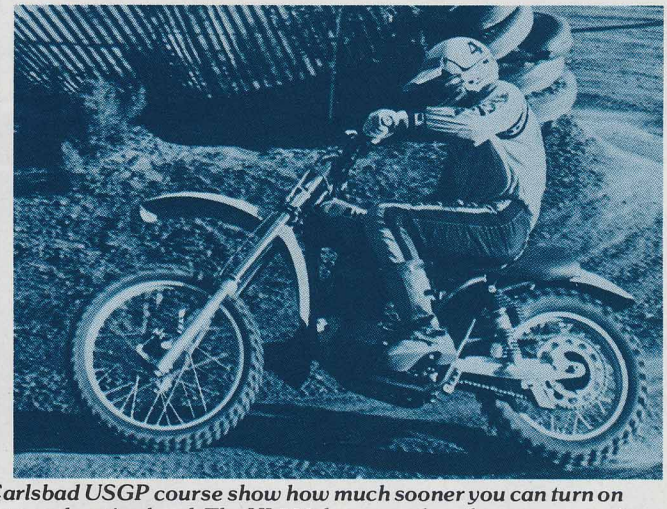
Once Bernard is under way, it is all but impossible to steer the machine with the handlebars. He simply has to hang on and change its direction by slight shifts of his body weight!

Teson, Bernard and Magnuson only started working with the Yamaha XS1100 power unit in January 1979. By September they had the world record. What comes next?

"I'm confident that this machine will be the first motorcycle to cover a quarter-mile in the six-second bracket" says Ron Teson. "And a terminal speed of 200mph is within reach!"

FOUR-STROKE





These two shots of Pierre Karsmakers at the same spot on the Carlsbad USGP course show how much sooner you can turn on the power with the HL500. With the YZ465 (left) he has yet to start accelerating hard. The HL500, however, has the power tuned on all the way as can be seen by the fact that the front forks are fully-extended and rear shocks compressed by weight transfer to the rear under heavy acceleration.

Although all of the Japanese motorcycle manufacturers offer a four-stroke off-road machine in their range these days, there is only one of them which has dared to lay its reputation on the line in World Championship competition. That one, of course, is Yamaha. In 1977, a combination of Yamaha's basic XT500 four-stroke power unit, the engineering expertise of former World Motocross Champions, Torsten Hallman and Sten Lundin, and the riding ability of another ex-World Champ, Bengt Aberg, led to the first Grand Prix victory by a four-stroke motorcycle in almost ten years!

Torsten Hallman and his partner, Stafan Eneqvist, are the Swedish importers of Yamaha and they saw a competition potential in the XT500 power unit which very few other people recognised. Together with fellow Swedes, Lundin and Aberg, they embarked upon a project to design and build a special XT500-based machine for the 1977 Grand Prix season.

Throughout that season Aberg scored several good placings and everything finally clicked together in the Luxembourg GP just before the season's end. Bengt won the event and the four-stroke was no longer the forgotten dinosaur of the motocross world.

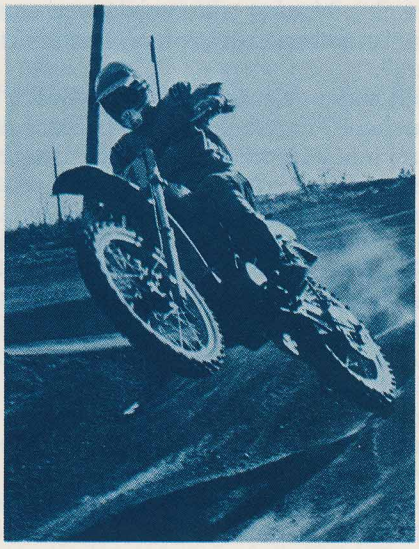
In 1978 the Yamaha HL500 was unveiled - an exact replica of Aberg's GP-winner. The model designation was, in fact, a tribute to the machine's creators ... Hallman and Lundin, whose initials form the HL prefix.

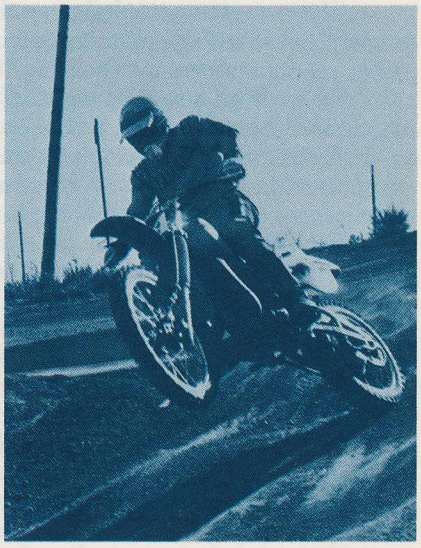
True to expectations, the HL500 found a ready market with the four-stroke enthusiasts. But what of those customers who have an open mind on the merits of four-strokes versus two-strokes.

Yamaha already builds some of the best two-stroke motocross racers in the world ... as proved by Heikki Mikkola's successive World Championships in 1977 and 1978 and countless other Grand Prix and International wins all over the world.

The production YZ models have always been virtually identical to Yamaha's factory racers so, with such a machine as this already available, why should someone choose the four-stroke HL500 instead?

Frankly, under most conditions, the two-stroke is the faster machine and is more likely to bring success to the rider capable of handling its power.





Flying the HL500 (left) and the YZ465 downhill from a banked hairpin turn.

OR TWO?

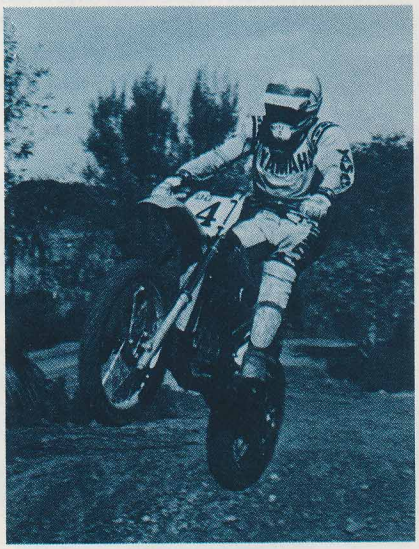
So, why buy the less-powerful four-stroke? Quite honestly, because the very power of the YZ two-stroke can be an embarrassment rather than an advantage to less-experienced riders. In fact, there are many types of circuits where even top-line Grand Prix racers would willingly trade the outright power of the two-stroke for the smooth ride of the "thumper".

To outline the type of situation where four strokes are better than two - and vice versa - we enlisted the aid of one of the big names of motocross, Pierre Karsmakers. Dutchman Pierre has several Grand Prix wins to his credit and also has the distinction of having held both the Dutch and the American National Championships!

It was in America where we caught up with Pierre, training for the American Motorcycle Association's Four-Stroke National Championships on the famous United States Grand Prix course at Carlsbad in California.

Pierre combined his training on the HL500 with sessions on a new YZ465 model and was thus able to graphically demonstrate the advantages of one machine against the other.

Karsmakers was no stranger to the four-stroke power unit for in the 1978/79 winter he used an HL500 to win a special four-stroke event at the Valkenswaard Eurocircuit in Holland. He was aiming to win at Carlsbad to make himself the "number one" four-stroke rider on both sides of the Atlantic.



In the air with the HL500

Without a doubt, the HL500 is the finest four-stroke motocross machine available to the general public. The XT500 engine has had its power output boosted by means of a special cylinder head with 47mm inlet valve and 39mm exhaust. A special camshaft gives longer valve openings while fuel is supplied via a huge 38mm Mikuni carburetor.

All this adds up to a 38bhp power unit delivering smooth, controllable horsepower right up to the 7,000rpm maximum power point. Maximum torque is delivered midway through the rev-band, 4.15kg-m at 4,000rpm.

The chrome-moly frame utilises the large-diameter top-tube as a 2.7 litre oil tank, with a gauze filter aiding the normal engine oil filter in keeping the oil clean.

A special alloy swinging arm is terrifically strong, despite only weighing 3 kilograms. In conjunction with a De Carbon shock absorber, it gives 250mm of rear wheel travel.

The front forks and wheel from the YZ model are used on the HL500, so that front and rear suspension travel are equal to that of the YZ monoshocks.

Obviously the power of the two-stroke far exceeds that of the HL500. Peaking at 7,000rpm, the YZ465 puts out no less than 52 horsepower! It also develops maximum torque of 5.66kg-m at 5000rpm!

But, as we said earlier, this much power can be an embarrassment to less-experienced riders ... or even to the superstars on certain types of terrain.

"I would choose the HL500 for any track that had mainly hard and slippery surfaces" says Pierre Karsmakers. "Surfaces like hard clay with a coating of dust, or smooth grass".

"On this type of track, the smooth power delivery of the HL500 would make for quicker lap times. It would be going forward all the time, whereas the YZ, with all that power, would be spending a lot of its time either spinning the rear wheel or getting sideways!"

Pierre went on, "I would also choose the HL500 for tracks that featured a lot of deep muddy sections. It would suffer a little because of its greater weight (115kg as compared to the 102kg of the YZ465) but the fact that it develops maximum torque at only 4,000rpm would enable it to pull through the mud like a tractor."

The HL500 would not be as good as the YZ in deep sand, however. "For sand you need a lightweight bike that develops its power with a rush" says Pierre. "That way you burst free of the sand and virtually float on top of it. You can't do that with mud ... which is why you need power like a tractor."

So ... if you are facing a choice between the HL500 or the YZ400 there are several factors to consider. First of all, personal preference. Many people simply prefer the roar of a four-stroke to the two-stroke's buzz-saw rattle.

Next, consider the main types of track that you will be riding upon and match your choice of machine to them.

Finally, and this is most important of all, make sure that you choose the bike that has the power output most suited to your riding abilities. The YZ465 undoubtedly has the edge in horsepower. But it's no good to you if you can't handle all the power available. Far better that you choose the smooth controllability of the HL500.

After all, horsepower isn't everything in motocross. Pierre Karsmakers proved that by achieving his aim of winning the American Four-Stroke Nationals at Carlsbad and in the process posted faster lap times than he had ever set on factory two-strokes over the US Grand Prix course! The reason for this was that the HL500 was much easier to control on the hard, dust-covered Californian clay.

"Horses for courses" is still the name of the game in motocross!

MICK ANDREWS returns to the fold

One of the most revered 'balance artists' in trials riding is 35 year old Derbyshire dalesman, Mick Andrews ... a superstar on the feet-up scene since his first season almost 20 years ago.

Just old enough to hold a motorcycle licence when that season opened, Mick was so impressive in his first few trials that he was signed to ride big 500cc and 350cc four-stroke 'thumpers' for the AJS factory team before the season was over!

Not only that, Mick also joined the factory motocross team as well, riding mainly trials in the winter and motocross throughout the regular summer season.

He excelled at both sports to the point that he was a leading contender in British Championship motocross and a top placeman at many World Championship motocross Grands Prix.

His unique abilities to combine the delicate skills of trials riding with the speed and hurly burly of motocross, gained him a place on the British team for the International Six Days Trial in 1964 and since that time he has won four Gold Medals in that event for unpenalised performances.

However, after a number of seasons combining both trials and motocross, Mick decided to concentrate entirely upon the former. That concentration of effort paid dividends in full when he developed the OSSA 250cc trials bike for that Spanish factory in 1969 and went on to win the World Championship for them in both 1970 and 1971.

Mick has always been an incredible development rider, with the knack of being able to actually turn his ideas into reality in terms of building an effective competition machine.

It was this skill, as well as his undoubted riding abilities, that made Yamaha interested in securing Mick's services. He switched to Yamaha in 1973 and rode as the sole factory trials rider until the end of 1977, when the trials machine development programme ceased.

As well as innumerable successes in competition for Yamaha, Mick was able to make a material contribution to the development of the TY range of trials bikes that is today still a strong seller in the off-road range.

Highlight of his years with Yamaha were wins in the classic Scottish Six Days Trial in 1974 and 1975. Added to three previous wins in 1970, 1971 and 1972, this meant that Mick equalled Sammy Miller's all-time victories record in what most people consider to be the greatest trial of them all.

Can Mick break that record? He is confident that he can before his career comes to an end.

In fact, this year is proving to be a good one for Mick. After a couple of years back with OSSA, he has now returned to Yamaha once again, riding under the Mitsui banner.

He celebrated his return with a win in the British round of the World Championship, his first win in that series for almost five years!

As well as remaining one of the best riders in the world, Mick also continues to utilise his talents as a development engineer.

Even when he went back to OSSA for actual competition events in 1978 and 1979, Mick retained his connection with Yamaha. He has a dealership in Matlock, Derbyshire and, together with his friend, John Shirt, is the constructor of the Majesty/Yamaha trials machines. These bikes are based on the standard TY175 and TY250 machines but are modified to Championship-competition level.

Chassis modifications give increased ground clearance and full six inches of rear wheel movement while engines are modified for even smoother power delivery.

The Majesty/Yamahas are made in 200cc, 250cc and 320cc capacities. The 200 is a bored-out TY175 while the 320 is, of course, an 'oversized' TY250.

By the way, the name 'Majesty' was a natural choice, combining by lucky coincidence Mick and John's initials plus Yamaha's TY models designation!

Mick will ride a 320 Majesty/Yamaha for the Mitsui/Yamaha team in British Championship and World Championship events as well as other classics at home and abroad.

The quality of the Majesty/Yamahas was emphasised last year when the French off-road magazine, 'Moto Verte' assembled four of the world's top trials riders to conduct a comparison test on the current selection of over 300cc trials machines on today's market. The Majesty/Yamaha was voted top of the list!

Why does five times SSDT winner Mick Andrews ride Yamaha?

Mick Andrews, five times Scottish Six Days Trial winner, twice European Trials champion and several times British Trials champion has good reasons to ride a Yamaha.

Four very good reasons, in fact.

Fuss-free running.

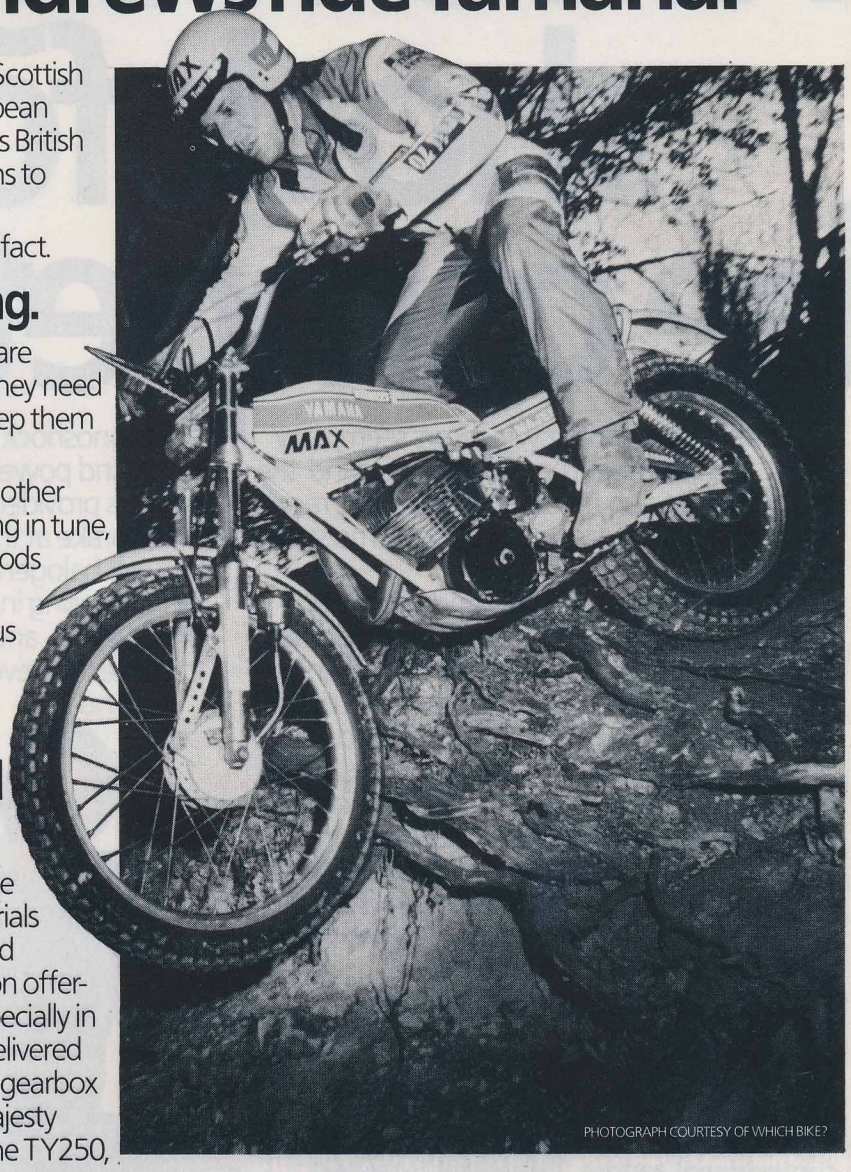
Mediterranean machines are well-known for their fussiness. They need a lot of fettling and tuning to keep them running well.

Yamaha trials bikes on the other hand have a reputation for staying in tune, and one piece, for very long periods with little attention.

And with Yamaha's famous Autolube you can forget about mixing petrol and oil in the petrol tank.

Unquestioned reliability.

Bulletproof engines are one of the hallmarks of all Yamaha trials bikes. They're all well-proven, solid designs with reed-valve induction offering a good spread of power, especially in the lower and mid-ranges. All delivered to the rear wheel via a six speed gearbox in the case of the TY175 and Majesty 200, and five speed 'boxes on the TY250, Majesty 320 and Majesty 250.



PHOTOGRAPH COURTESY OF WHICH BIKE?

High quality finish.

The standard of finish on the Yamahas is enough to put many an expensive road bike to shame. Careful attention to construction and detailing are, again, all hallmarks of the Yamaha engineering philosophy making sure the TYs and Majesties outlast the competition. On, and off the sections.

Low price.

You probably think that all this has to be paid for somewhere. Wrong. Compared to most of the competition the Yamahas have got them beat on price as well as reliability and finish.

So, if you're up to International standard you'll most likely want one of the Majesty Yamahas like Mick's. But if you're a clubman or the occasional green-laner and like to spend your time out on the trail rather than fiddling in the shed, you've now got four good reasons to buy a TY.

YAMAHA

You know you're gonna beat 'em on a Yamaha

Have we got a shock for the competition.

As mad as motorcycle racers seem, they won't compromise. They always demand the best. And that also means the safest. The race-track leaves little room for mistakes. The street even less.

Everything a racer demands from our race-proven TZ and YZR250s like taut, predictable handling, safe, progressive braking, and, of course, instant but reliable power, is built into the RD250. Hence RD... Race Developed.

A rigid twin loop frame, teflon-bushed front forks, six-speed gearbox, CDI ignition, and powerful 35.5 bhp, Torque Induction, two-stroke twin-cylinder engine, now liquid cooled for increased reliability, all echo the racetrack.

And, of course, our unique Monoshock rear suspension.

Apart from eliminating rear-wheel wobble caused by swing-arm flex or ill-matched dampers as on a conventional system, our Monoshock also increases wheel travel.

And powerful, dependable braking, wet or dry, is provided by a disc brake up front and a drum brake at the rear.

A halogen headlamp, rear-set footrests, self-cancelling indicators, cranked clutch and brake levers, and our famous Autolube all go to make the new RD250 easy to ride.

And safe.

YAMAHA

You know you're gonna beat 'em on a Yamaha

RRP £1,030 INCL. VAT. ALL RD MODELS NOW CARRY A 12 MONTH UNLIMITED MILEAGE WARRANTY.