

# YAMAHA

 **YAMAHA**  
YAMAHA MOTOR CO., LTD.  
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Cover photo: Distribution of principal stress of motorcycle piston

# The Yamaha trek.

Getting away from it all isn't a modern phenomenon. Written history is punctuated by the epic comings and goings of heroes. From Homer's songs to Neil Armstrong's "giant step for mankind", the quest for adventure has been constant. It's only been recently, however, that the average man has found the ways and means to enjoy it and discover the spiritual exhilaration that comes with spatial freedom.

It's also taken companies like Yamaha to develop the technology and tools. Floating tools to sail



oceans. Two-wheeled tools to cross continents. Tools with skis to challenge the polar cold. Tools to bring light to the remotest outposts.

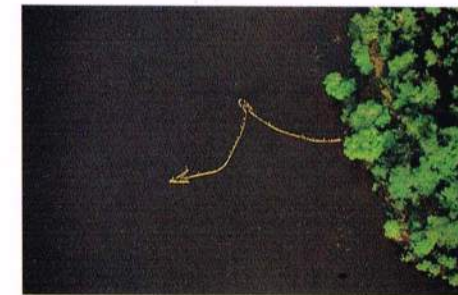
Today, Yamaha is one of the world's largest and most diversified companies in its field. Last year's sales were 40 times those of 1960. During the same period, motorcycle exports alone increased more than 100 fold. Impressive as these figures are, though, they only hint at Yamaha's emergence as a major industrial and technological force affecting the ways people live, work and play.

Almost everyone knows about Yamaha bikes and takes for granted the speed, performance and almost unbreakable toughness that set them

apart. Not many, however, appreciate the wealth of technology and production engineering on which these motorcycles are based. Yet, it is in these fields where Yamaha really excels. The successes in the market and on the track are only the most visible results.

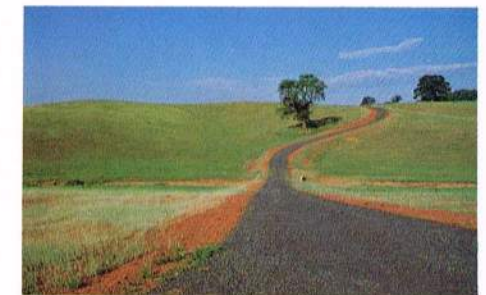
Yamaha's tremendous technological resources have allowed it to diversify naturally into related fields, such as outboard motors, small engines, snowmobiles and generators. The origins of other major Yamaha products, including commercial and pleasure craft, relate more to Yamaha's overall marketing approach. Whatever the development history, though, all Yamaha products share the same solid engineering background and meticulous attention to detail which gives Yamaha users an extra measure of confidence in their machines and themselves.

But diversification at Yamaha means far more than just new markets. It involves a concerted com-



mitment to provide as wide a choice as possible within each product group. For example, Yamaha builds more than 30 different commercial fishing boats and upwards of 40 different motorcycles. And with more products to choose from, the consumer can make fewer compromises.

This approach is certainly not cost-efficient from the maker's point of view, but Yamaha has nevertheless accepted it as part of its overall responsibility to the public it serves.



On other fronts, Yamaha has become active in a number of programs to help Yamaha users get more out of their Yamaha products. The company is also involved in a government-sponsored aid scheme to help developing countries modernize their coastal fishing operations.

Binding all these activities together is a relentless insistence on quality from the design stage to service after the sale. Lessons learned by winning races along with intensive studies into theoretical and applied technology insure advanced concepts. Huge capital investments for the latest production equipment insure that Yamaha products are as reliable as they are innovative. And Yamaha's international stance as a good corporate citizen insures exceptional value whatever the product and wherever the sale is made.

Now, join us on a short trip through this booklet, and discover some of Yamaha's more exciting adventures in a world which it has helped reshape.



# The search for adventure.

The Yamaha adventure stretches from the poles to the south seas. Over land, water and snow. Sometimes, it's high drama, like at the

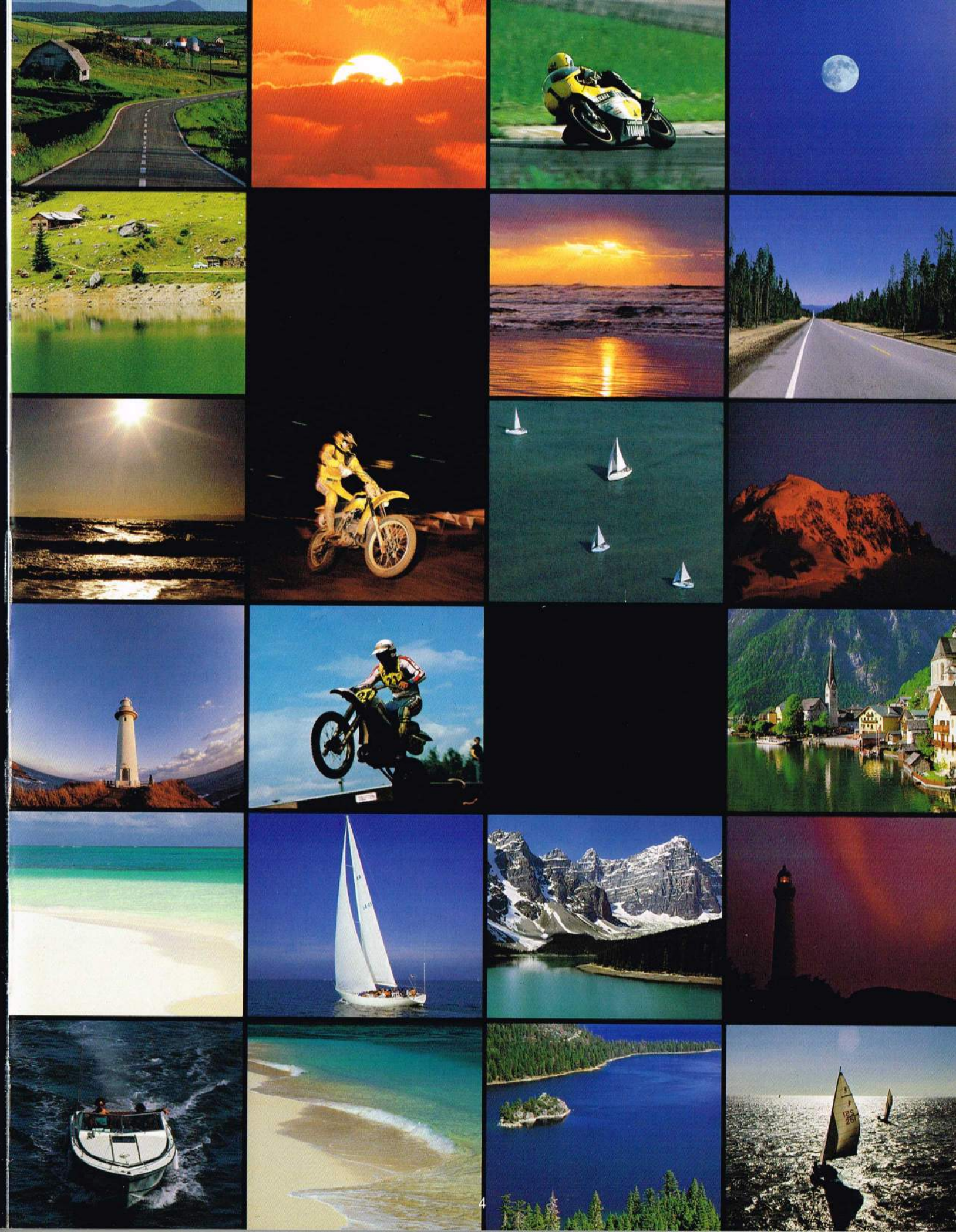


Daytona 200 where Yamaha recently took the checkered flag for the ninth consecutive year. At the other extreme, it might only involve two men aboard an FRP boat harvesting their livelihood in heavy

surf. But magnificent or mundane, the spirit is the same. And that's the Yamaha spirit of winning.

Winning is a tradition at Yamaha, whether against the world's best bikes on the track or against the worst storms at sea. And you'll find the winning spirit in every Yamaha product, from its fastest snowmobiles and outboards to its smallest portable generators and pumps.

Meeting challenges and overcoming them. That's the Yamaha adventure. Why not make it yours?





SANTA ANA RD  
THOMAS RD



## *The race against time.*

On a Yamaha, you're about as close to total freedom as modern technology can take you. No road is too long. No goal too distant. No curve too challenging. Yamaha superbikes are faster than almost anything else on two wheels or four. Yet they handle beautifully and have a special "sit-in" comfort that makes the hours fly by as quickly as the kilometers. Yamaha superbikes, they're machines to explore continents with and a way to discover yourself.



# Comfortable ideas that get you there faster.

At Yamaha, superbikes must be more than just fast. They must represent the highest standards of two-wheel safety, convenience and comfort. They must be totally reliable under all conditions, easy to ride and simple to maintain. Because, in the final analysis, the freedom a superbike gives you is only as good as its mechanical integrity and day-day rideability.

All of this you get with Yamaha. You also get a bigger choice. Yamaha superbikes come with one, two, three, and four cylinders. In more configurations, calibers and "custom" variations than any other maker. That's a fact. And so is Yamaha's unsurpassed performance on the road and on the track.

Take Yamaha's 1100cc entry. It's available in three distinctly different versions, each an object lesson in motorcycle design. In every sense of the word, this is a true superbike. At, with its shaft drive, startlingly smooth 4-cylinder engine and other civilized refinements, it demands only normal skill to handle and

remains mild mannered until you twist the throttle open.

The same can be said about its smaller four-cycle cousins, the 850 triple, the classic 650 and 400 twins, the clockwork smooth 400 four and the brutishly beautiful 500 single.



XS1100L



XS850



SR500

these bikes could probably never have been conceived, let alone mass produced. The bike that most dramatically manifests Yamaha's advanced technology really shouldn't be called a "superbike" in the strictest sense of the word, since it only displaces



XJ650



RD350

350cc. Yet in every other aspect, the liquid cooled RD350 is about as super as a bike can be.

A direct descendent of the legendary TZ road racer, this "middleweight" is powered by a competition-bred liquid cooled two-stroke that puts out an honest 47hp at 8700rpm from its 347cc's.

Handling, braking and safety are equally superlative, with features

like monoshock suspension, wet multiplate clutch and double disc brakes up front.

Even more sophisticated designs are in the works, and by 1981 Yamaha expects to introduce a series of new bikes which will be revolutionary in many important aspects. For others, this might be something to boast about. At Yamaha, it's merely business as usual.

Even the 350cc, two-cycle twin, quite probably the quickest bike in its class, behaves as gentlemanly in the city as it runs wild on the open road.

All of these bikes mirror the lessons Yamaha has learned on the track to give them the handling, road holding, and response needed for high-speed touring and running flat out. In fact, it's fair to say that without Yamaha's victories in racing,



Yamaha Test Course



# King off the road.

From Paris to Dakar, across the Sahara with stops at Timbuktu and Ouagadougou, through 9000km of the worst country in the world head-to-head all the way against the best two and four wheel vehicles anywhere. That's the Oasis Rally, one of the most punishing tests of man and machine yet conceived. It's a new event, only two have been run so far, but already the Oasis Rally has established itself as the premier event of its kind. The winner both times out has been a Yamaha XT500, a remarkable 4-stroke single cylinder off-road bike that's fast becoming a modern classic. And believe it or not, the XT500 is available from any Yamaha dealer right out of the box!







Paris-Dakar Race

# The only places a Yamaha can't go are the places you won't.

Off-road playbikes were the sensation of the seventies. They wouldn't have been nearly so sensational, though, if it weren't for Yamaha technology.

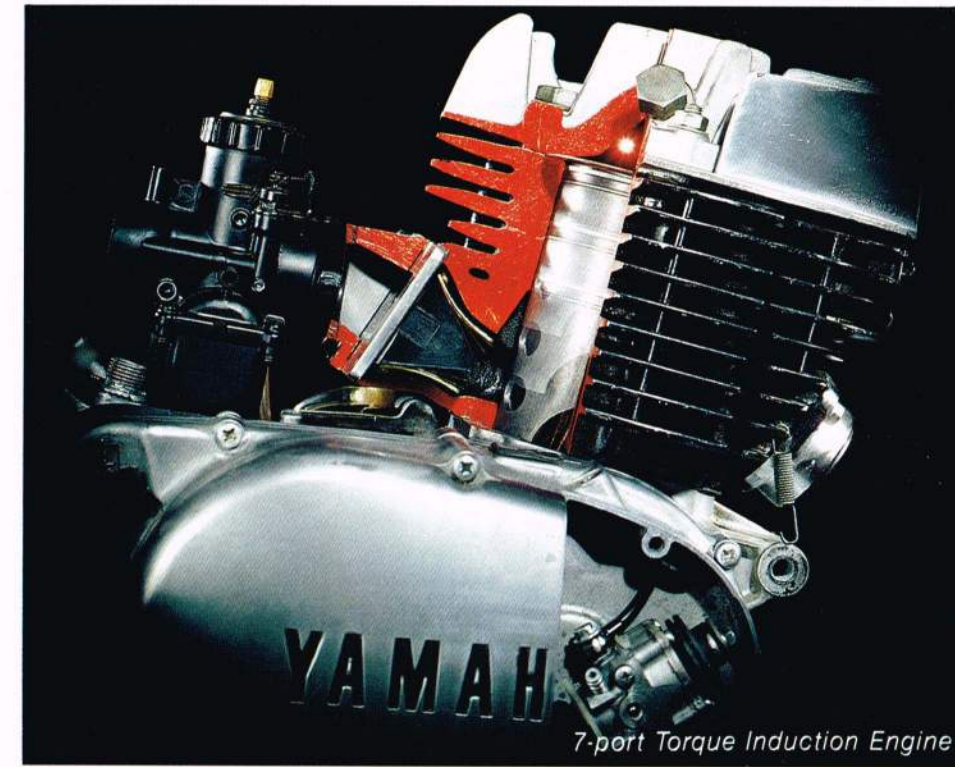
Over the last 10 years, Yamaha innovations have changed the shape

of off-road bikes, given them far more versatility, and attracted tens of thousands to motocrossing and trail riding. And by making bikes tougher, Yamaha has made it a lot easier for the average rider to go where before only experts dared to tread.

One of the biggest advances was monoshock suspension, now a standard feature on the XT250 and Yamaha's other big off-roaders. This remarkable rear suspension system replaces conventional shock absorbers with one, extended travel unit which reaches far up into the bike's frame. Its longer movement and nitrogen gas absorbing mechanism, coupled with its triangulated swing arm suspension, provide 140mm of rear travel. This means bigger bumps bounce the machine—and its rider—less. More power gets to the ground and stays there. And no matter how rough it gets, you can expect a stable, comfortable ride.

Other Yamaha innovations which make it easier in the bush are an improved double cradle frame, enduro-type front forks and waterproof and dustproof brakes. All patterned after those on Yamaha's legendary off-road racers.

With features like these, you might expect that Yamaha offers only a handful of these specialized machines. You'd be wrong, too. Yamaha makes more than 15 off-road and dual purpose bikes: XT four-stroke and DT two-strokes which are at home anywhere on the road or off; IT two-stroke in four different displacements for enduro competition; and YZ professional class two-stroke motocrossers.

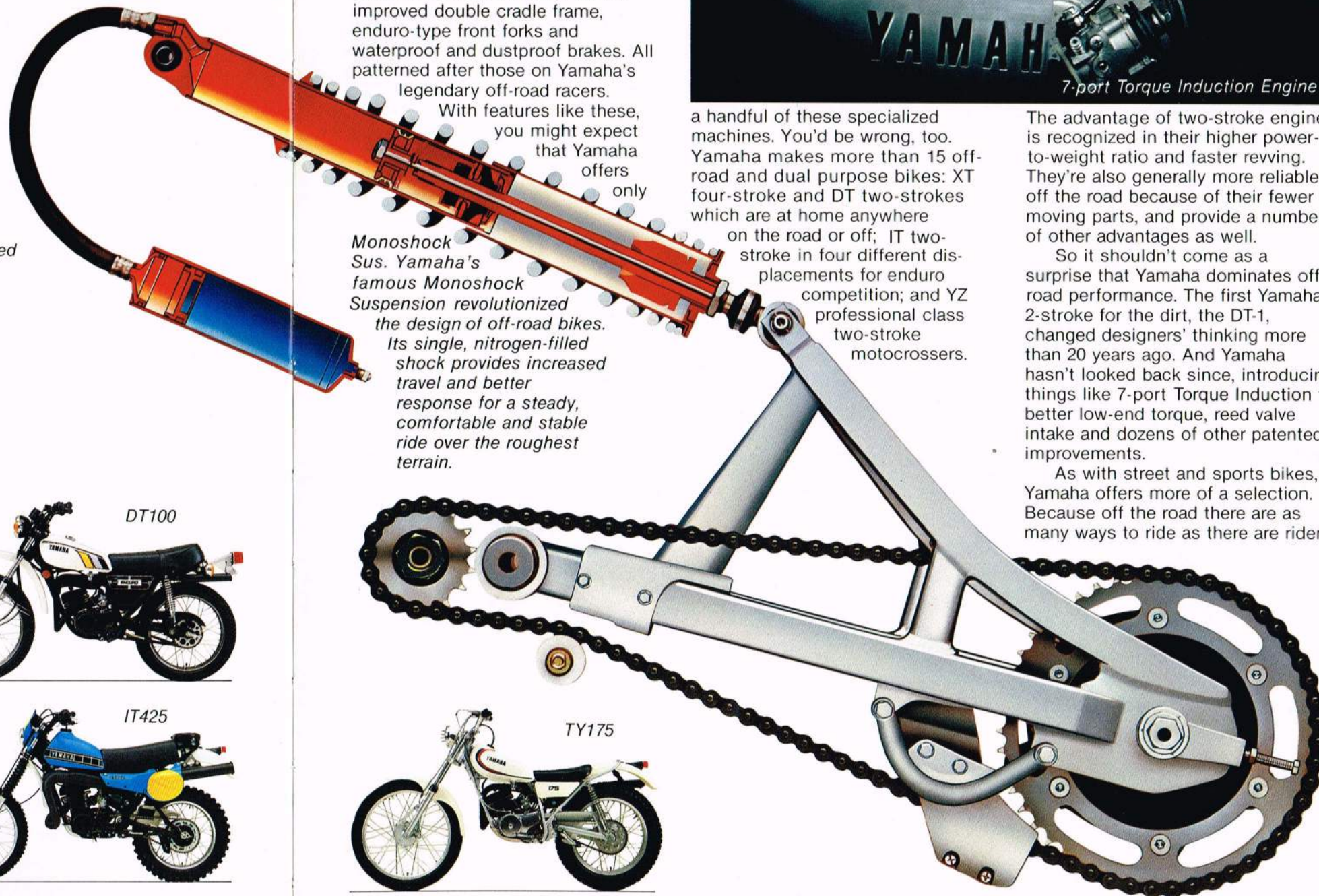


7-port Torque Induction Engine

The advantage of two-stroke engines is recognized in their higher power-to-weight ratio and faster revving. They're also generally more reliable off the road because of their fewer moving parts, and provide a number of other advantages as well.

So it shouldn't come as a surprise that Yamaha dominates off-road performance. The first Yamaha 2-stroke for the dirt, the DT-1, changed designers' thinking more than 20 years ago. And Yamaha hasn't looked back since, introducing things like 7-port Torque Induction for better low-end torque, reed valve intake and dozens of other patented improvements.

As with street and sports bikes, Yamaha offers more of a selection. Because off the road there are as many ways to ride as there are riders



**Monoshock Sus.** Yamaha's famous Monoshock Suspension revolutionized the design of off-road bikes. Its single, nitrogen-filled shock provides increased travel and better response for a steady, comfortable and stable ride over the roughest terrain.



The DT-1, Yamaha's first full-fledged off-road bike.



DT100



DT125



XT500

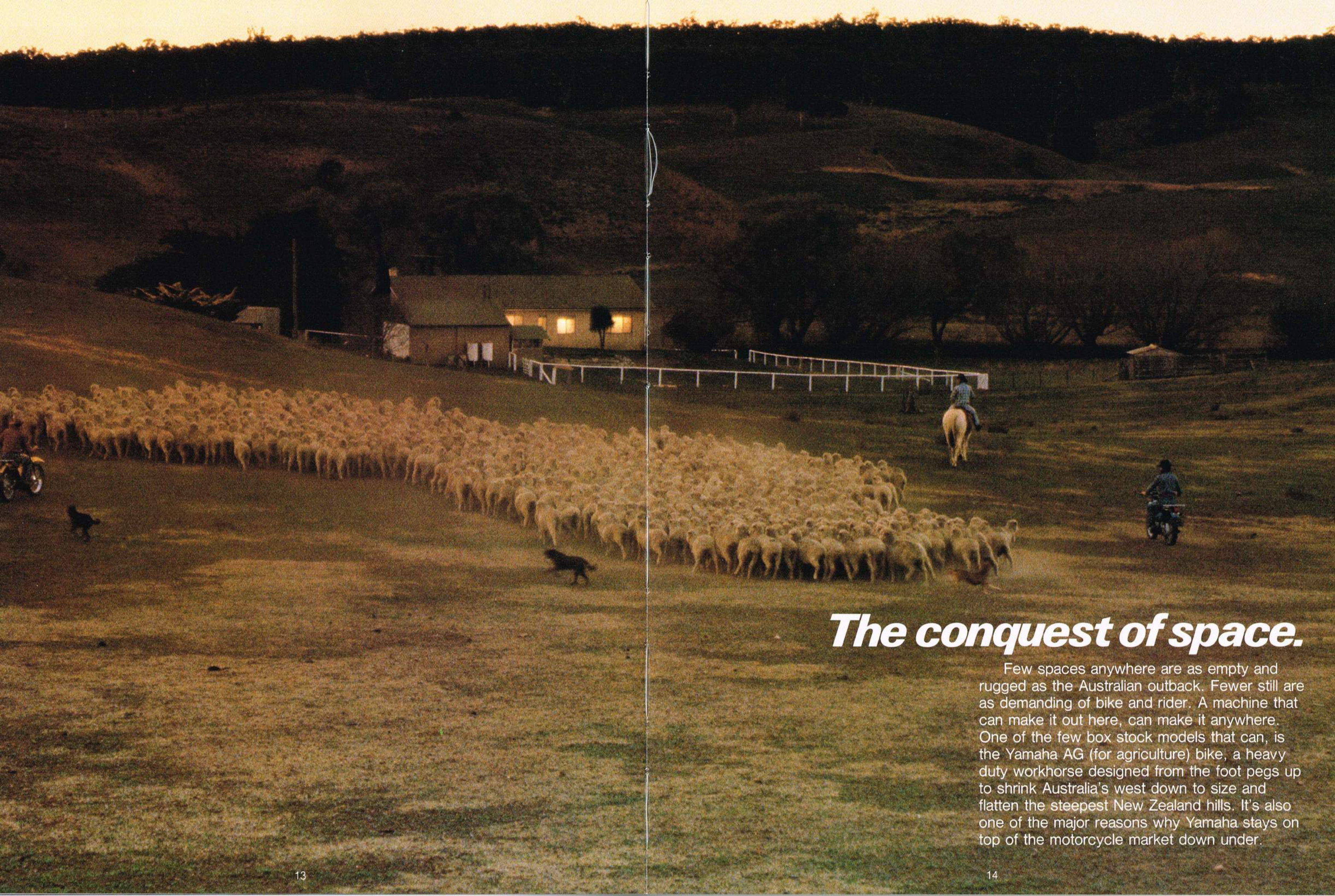


IT425



TY175





## ***The conquest of space.***

Few spaces anywhere are as empty and rugged as the Australian outback. Fewer still are as demanding of bike and rider. A machine that can make it out here, can make it anywhere. One of the few box stock models that can, is the Yamaha AG (for agriculture) bike, a heavy duty workhorse designed from the foot pegs up to shrink Australia's west down to size and flatten the steepest New Zealand hills. It's also one of the major reasons why Yamaha stays on top of the motorcycle market down under.





# With a Yamaha utility bike, you get all work and a lot of play.



AG175

Nothing else characterizes Yamaha's total commitment to its public quite as well as its much copied AG bikes.

For most of us, bikes built to climb 40 percent grades with a sick

ewe strapped across the tank, or run 200km on its wheel rims alone, is more bike than we could ever need. But for ranchers and farmers from Iran to Ireland, it's the ultimate better mousetrap, saving them hours,

dollars and inconvenience every time they kick the starter. It's not a bike for everyone, certainly, but technically it's one of the most beautifully utilitarian motorcycles ever conceived.

At the same time, the AG bike is completely street legal, so after a hard day's work herding sheep, it takes the drover home in style, comfort and quiet.

What the Ag bike is in the outback, Yamaha's utility bikes are in the city. Rugged and versatile, they're used for everything from parcel delivery to powering "triclo" taxis. And after work, they make great family bikes for fun or personal transportation.

The V-Mate series skirted models, with an underbone frame for easier riding, have become a fixture of the urban landscape from Stockholm to Singapore. They offer superb handling, tremendous maneuverability and almost unbelievably low fuel consumption. Yamaha also builds a line of dual-purpose models under the RS/RX designations. Available in several different displacements and specialized versions for different markets, they're rugged enough for day-in day-out commercial use and spunky enough to double as a play bike on weekends.

Hard to classify, but fun any way you look at it, is the Yamaha Tri-Moto. This funny looking three-wheeler goes just about anywhere and packs enough punch to pull a heavy truck. The Tri-Moto is far from being one of Yamaha's best sellers, but for its thousands of users in the wild, it's the best "motorcycle" Yamaha has ever built.

Bikes for fun and bikes for work. At Yamaha, they're both sides of the same coin.



RX125



V80



YB80



YT125





## *Urban renewal.*

While Yamaha can't do much to solve a city's traffic problem, it can do quite a bit to ease the problems of getting around in city traffic. The solution isn't really new. Mopeds have been around a long time. But Yamaha's versions represent something different in terms of riding comfort and all around convenience. Yamaha mopeds, or city bikes as some call them, are lightweight and even lighter on the budget. They make quick trips quicker. They take the work out of walking and the pain out of gas bills. Yamaha mopeds, another idea of how Yamaha technology makes a good idea even better.



# What the transistor did to electronics, Yamaha is doing to mopeds.

If, like many people, you think mopeds are just glorified bicycles, it's time to think again. When you step through a Yamaha moped, you're stepping past years of engineering refinements which have changed the once "ugly duckling" of motorcycling into a truly sophisticated piece of machinery.

Today's Yamaha mopeds are a far cry from the fragile machines with auxiliary pedals which were once so popular. In Japan, where sales are booming, they're called "soft bikes," and thousands who have never been on a motorcycle before are becoming avid riders. For getting around the city, they can't be beat, especially as gas prices continue to soar.

Yamaha makes seven basic models, each available in different versions for different markets. And all are specifically adapted for their export destinations. The most advanced models, like MJ50 (Towny) and MA50, even have shaft drive, instead of the conventional chain.

Other features which Yamaha has developed to make riding easier include automatic transmission, Autolube automatic fuel/oil mixing and automatic choke carburetor.

Human engineering is another important aspect. Just a quick look at a Yamaha moped tells you they're something totally unlike any other. They're designed so that anyone who can ride a bicycle can control them like an expert after a few hours of practice.



LB50/80



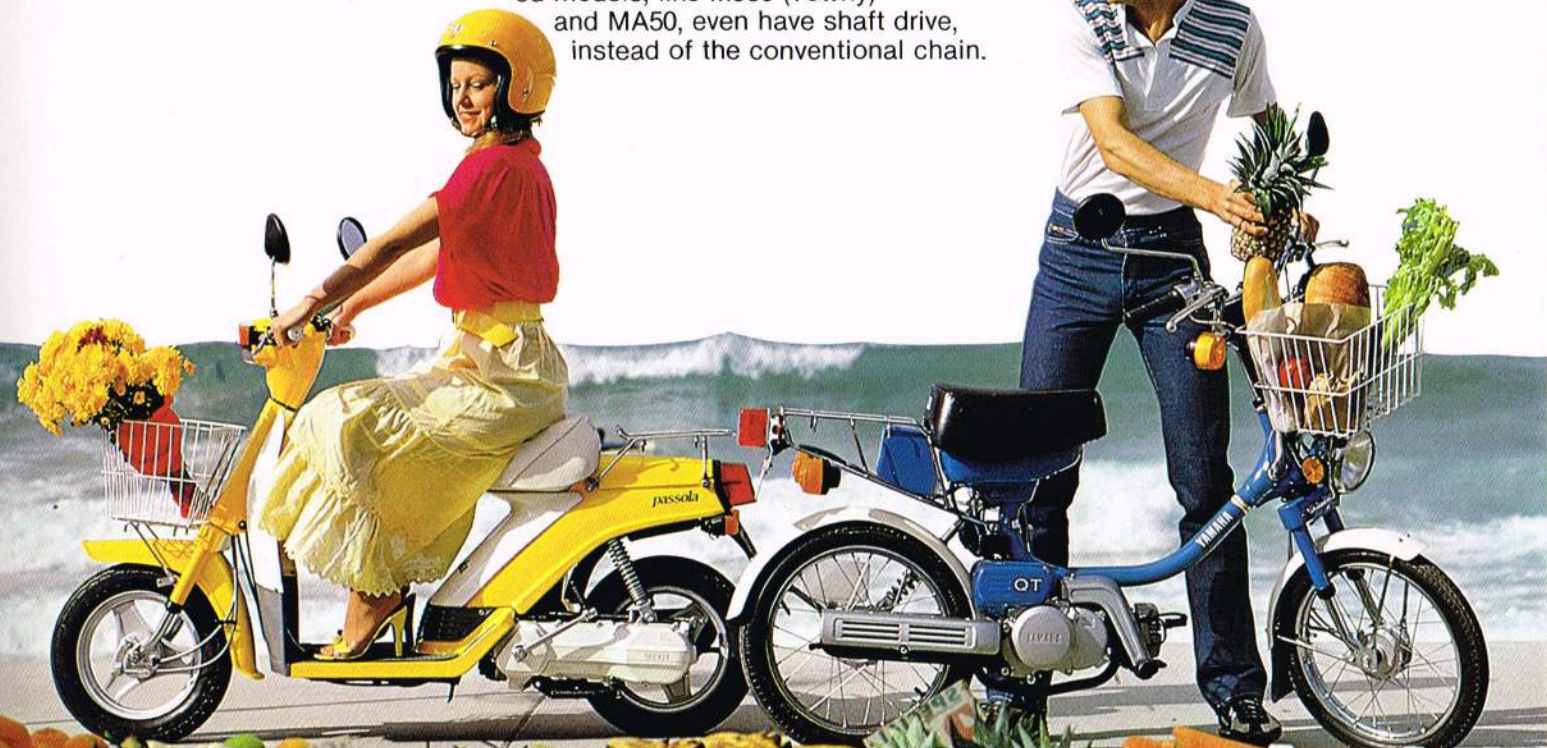
SA50



MA50 (QT50)



MJ50





# *The deep harvest.*

From Aden to Argentina and back to Japan, you'll find Yamaha fishing boats the backbone of many commercial operations. Yamaha is one of the world's most respected names in FRP fishing vessels and utility craft, many of which are powered by Yamaha outboards developed specifically for commercial use. The company is also a major supplier of marine diesels, famed for their reliability in a field where reliability is everything. Yamaha's position in this challenging area is underscored by the fact that many governments have called upon Yamaha to help modernize their fishing industries. All of this reflects Yamaha's broad based diversification and its commitment that whatever the product, the purpose is progress.







But Yamaha does far more than just build boats and engines. It has become an active partner of commercial fishermen in countries all over the world. It has developed special kerosene outboards to power traditional boat designs in developing countries. It has worked closely with Asian fishermen to adapt modern technology to classic fishing patterns. And, by offering the fishing industry lower cost and more efficient tools to do its job, Yamaha has materially aided thousands of independent operators and helped keep fish prices constant in an era of spiralling inflation.



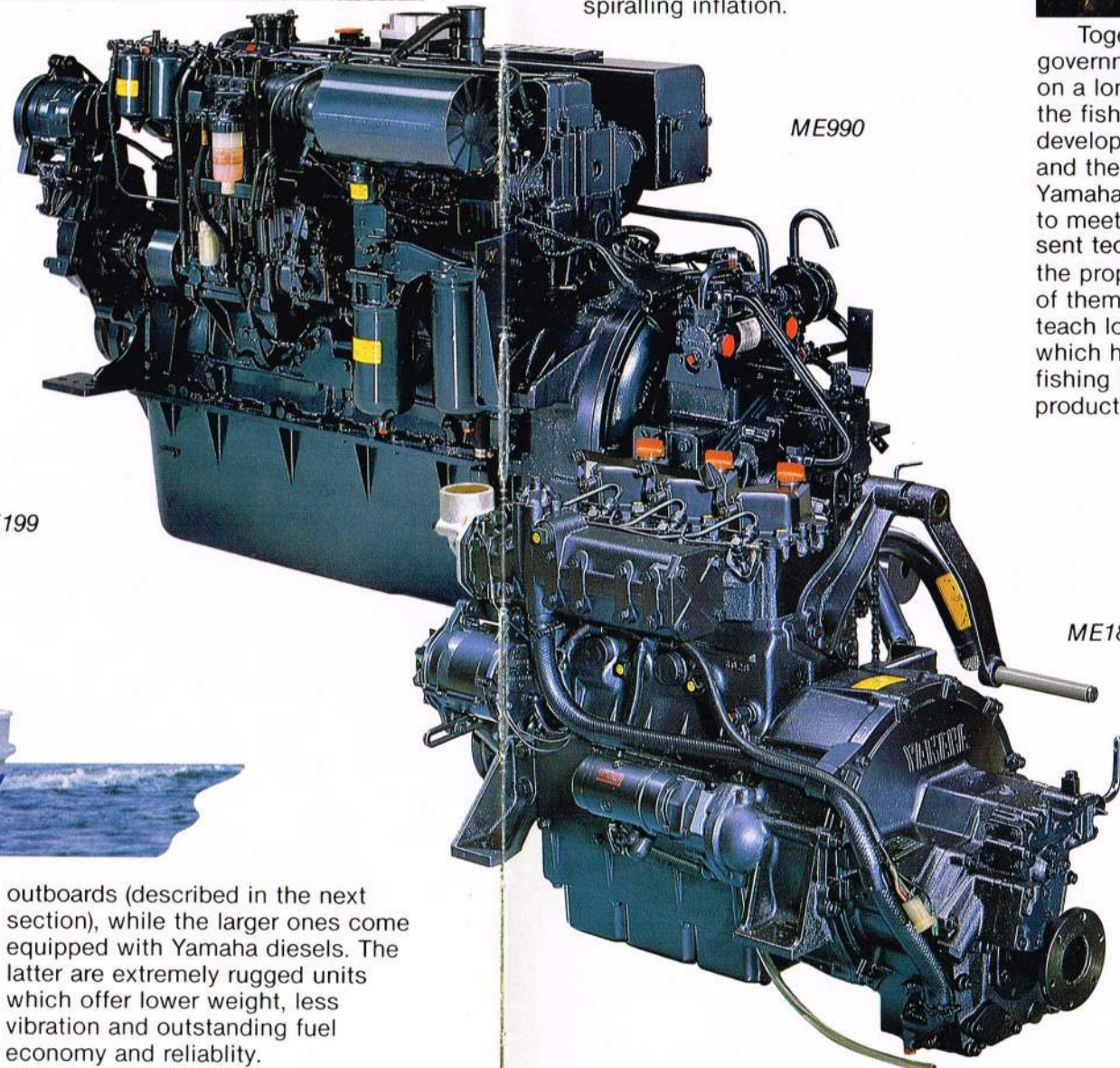
Together with the Japanese government, Yamaha has embarked on a long range program to upgrade the fishing industries of several developing countries in Africa, Asia and the Middle East. On its own, Yamaha has developed special hulls to meet specific local needs and has sent technicians to advise on the proper maintenance and handling of them. It has also sent experts to teach local fishermen the techniques which have made the Japanese fishing industry one of the most productive in the world.

In Japan, Yamaha maintains a close relationship with various fishing organizations and government bodies. Through these contacts, it stays abreast of changing trends, so that it can continue to develop new designs to help fishermen get their jobs done better.

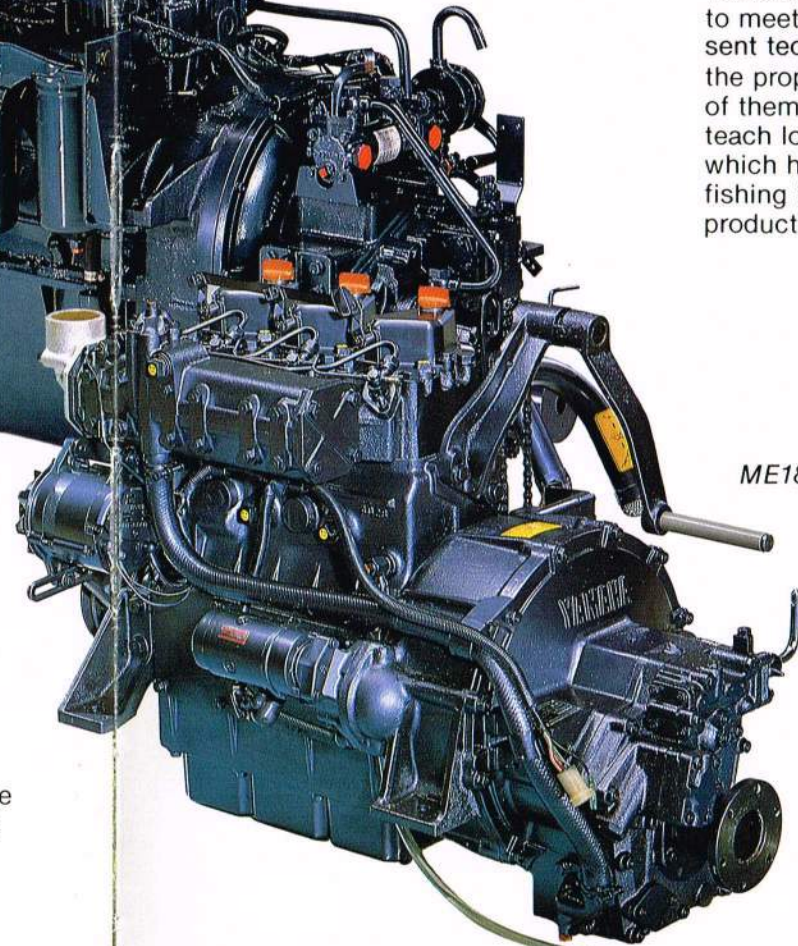
# The fastest name on land is now the most reliable name at sea.

Yamaha makes more than 40 different fishing and utility boats, from skiffs for harvesting kelp near shore to ocean going trawlers. Many of the designs are Yamaha originals, while others are FRP versions of time-tested wooden hulls. The light

weight provided by FRP construction is a tremendous advantage in itself, since far less power is needed and maintenance is only a fraction of that required for metal or wood boats of the same size.



ME990



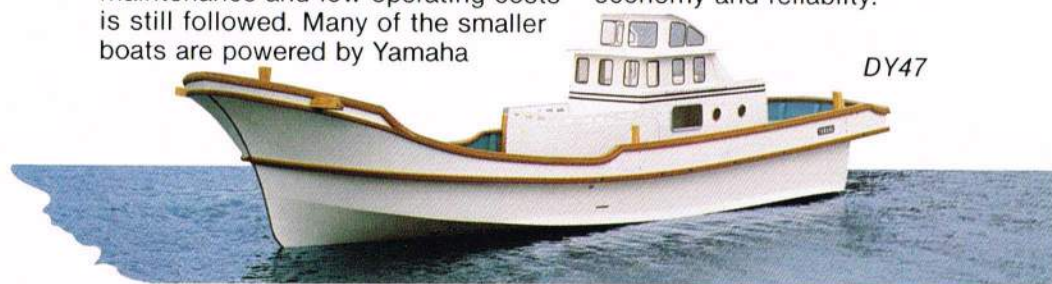
ME180



DX199

These boats range in size from 3.91m open deckers to a 31.3m skipjack trawler. Yamaha built its first fishing boat almost two decades ago, and the original design philosophy which stressed strength, easy maintenance and low operating costs is still followed. Many of the smaller boats are powered by Yamaha

outboards (described in the next section), while the larger ones come equipped with Yamaha diesels. The latter are extremely rugged units which offer lower weight, less vibration and outstanding fuel economy and reliability.



DY47



DT45



SPD27



# *The wild wet.*

Yamaha outboards are used for skiing, fishing, cruising and just about any other kind of pleasure boating you can name. But even more importantly, they're built strong enough for the heaviest commercial use: for transportation up the Amazon; coastal fishing in the China Sea; and water taxis in Bangkok. Part of this strength comes from Yamaha's expertise in two-cycle engine design, part from its extensive experience in all phases of marine activity, and still another part from its intense quality control program. Yamaha outboards, built tough for more fun and more profit.







# Discover fun in the wake of a Yamaha.

Yamaha builds one of the most complete selection of outboards in the business. For the hardest commercial use, there's the Enduro Series, specially strengthened engines which watermen have come to swear by. To cut operating costs, Yamaha also developed a line of revolutionary kerosene powered models which have become the mainstay of many commercial operations. For pleasure boaters, Yamaha offers more than a dozen high-performance units with all the toughness and durability of their commercial cousins.

When Yamaha built its first outboard in 1960, the boating fraternity showed interest because they knew about Yamaha motorcycles. The connection is natural enough, since the engineering required to make a better motorcycle engine is much the same as that required to build a better powerhead. But Yamaha's position today is only marginally related

to its experience with motorcycles. The outboard division, which works closely with the other marine divisions, is completely independent of motorcycle production. It has its own elaborate design and testing facilities, its own sales and service organizations and its own unique reputation for quality and performance.

The complete outboard line includes more than 20 different models from an amazingly sophisticated 2hp single to a mammoth 85hp in-line triple. State-of-the-art engineering, like capacitor discharge ignition, monobloc crankshafts, and fuel recirculation systems are standard on



To help commercial fishermen net more profit, Yamaha publishes a wide range of instructional literature for governments and fishery organizations. Many publications, like the monthly Fishery Journal, have a worldwide distribution.

many ratings. And all Yamaha outboards, for whatever use they were designed, share the meticulous craftsmanship which users have come to expect from products bearing the Yamaha name.

In the last few years, Yamaha has begun to enter the pleasure market in a big way. Mainly it was a matter of marketing, since engineers found it easy to give commercial designs the extra pep pleasure boaters want. At the same time, the fuel economy, rugged overall construction and ease of maintenance, which are the hallmark of Yamaha Enduro Outboards, give the pleasure versions an extra measure of strength which other makers are hard pressed to beat.



In fact, the engines used to pull weekend skiers on the French Riviera or take a family cruising up Scandinavian fjords, differ only in minor details from those hauling products along the Mekong or powering a tender to an oil rig in Indonesia.

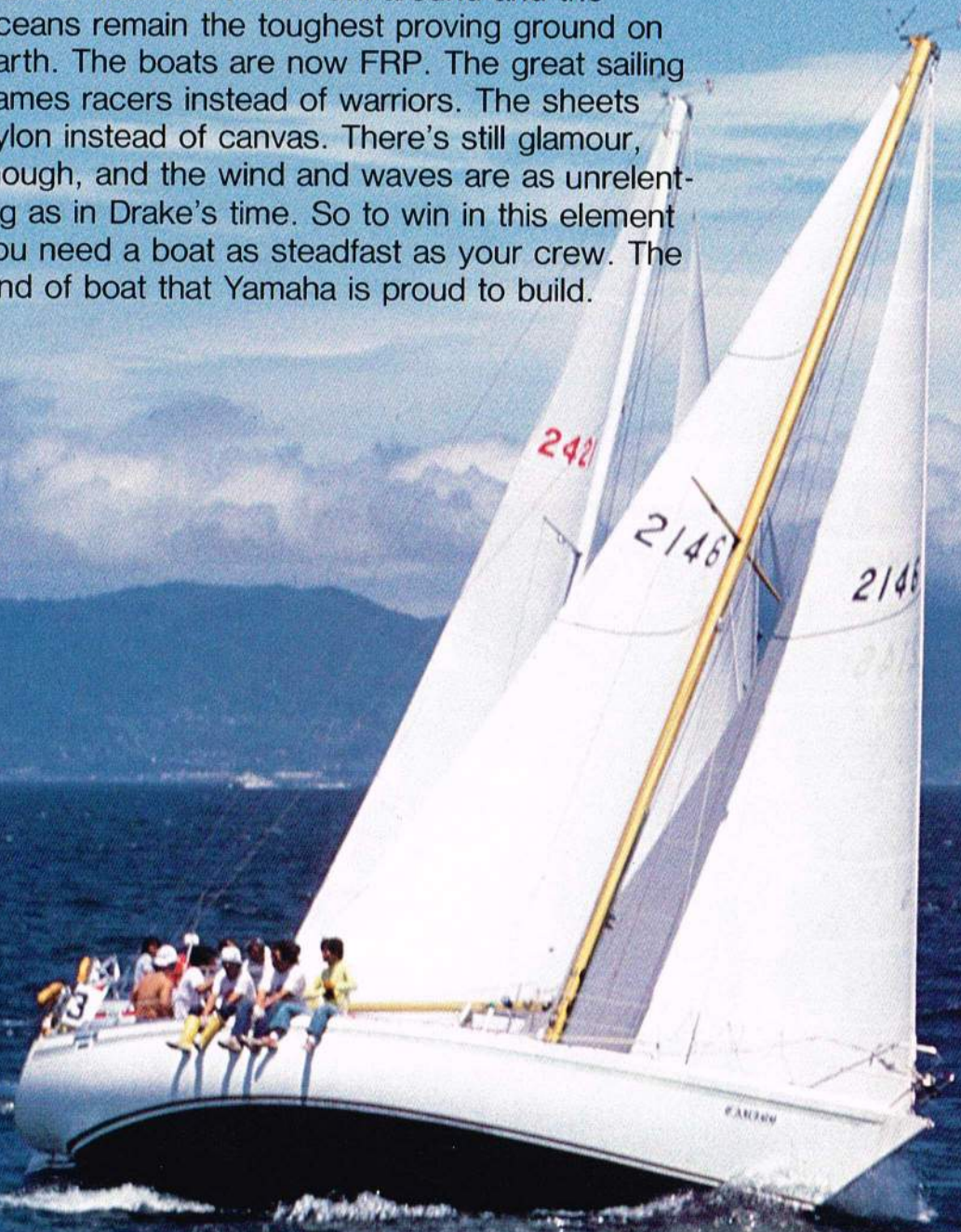
Another reason Yamahas tend to run faster and work longer is the company's vast experience with boat design. Yamaha is one of the world's largest makers of FRP hulls, and this, combined with its vast overall engineering resources, gives Yamaha the broad perspective needed to make any size engine a little bit better.





# *The new age of sail.*

Those ships of wood may have disappeared, but the men of iron are still around and the oceans remain the toughest proving ground on earth. The boats are now FRP. The great sailing names racers instead of warriors. The sheets nylon instead of canvas. There's still glamour, though, and the wind and waves are as unrelenting as in Drake's time. So to win in this element you need a boat as steadfast as your crew. The kind of boat that Yamaha is proud to build.





# Yamaha engineering puts pleasure boating on a

# new tack.

Boat design is a complex undertaking. For the first several hundred years, it was a matter of trial and error. Radical changes were few and far between and it was only recently that the often conflicting demands of seaworthiness and speed were reconciled by the application of modern technology.

Yamaha builds almost 35 different pleasure boats, from one-man dinghies to bluewater sailing ketches. To see how Yamaha used computers and technology to build better boats, however, it's best to look at one of their championship racers;

*The crew of Magician V celebrates their victory after winning the World Quarter-Ton Championship.*



boats like the "Wing of Yamaha" which took first place in the Singlehanded Trans-Pacific Race, or better still, the "Magician V", a stock design which captured the Quarter-ton World title in 1978.

"Magician V" was based on the Yamaha 24 racer/cruiser, which in its normal configuration is equipped for offshore family cruising.



The key to this remarkable boat's success is its integral grid-and-box structure and lightweight hull. This combination, which is shared by the larger 25, 30, 33 and 36 Yamahas, was developed after intensive research in the laboratory and at sea. It provides tremendous strength, and is adaptable enough for both competition and casual sailing.

All Yamaha sailboats take full advantage of Yamaha's extensive experience in FRP boat building to provide a durability and ease of maintenance rare in vessels of any kind. Small details, like making the hatches an integral part of the deck, are carefully thought out to insure an extra measure of safety and reliability in the worst seas.

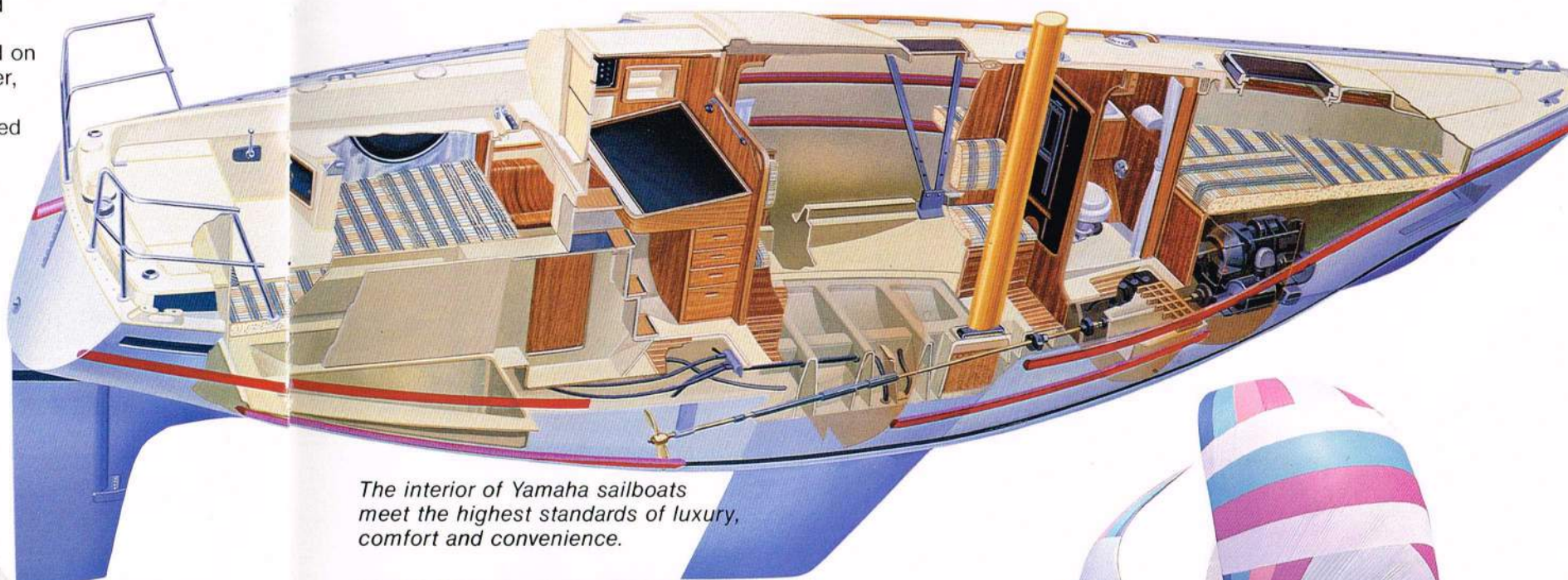
Inside, Yamaha sailboats are surprisingly large, especially for boats that have more than held their own in racing. And everything, from the smallest cleats to the Yamaha-built auxiliary diesels is crafted in the best nautical tradition and to stand up to

the toughest proving ground on earth.

Yamaha power boats come in all shapes and sizes. The smallest is a 3m rowboat. The largest is a 12 meter cabin cruiser. In between, there are boats for any purpose: fishing, speeding, cruising, skiing, or simply lounging away a lazy afternoon. All are made using Yamaha's advanced FRP fabrication techniques

for easy owner maintenance and an extended hull life. And like Yamaha's sailboats and commercial vessels, they're designed to stand up to the worst.

Boats and motors. Both products of experience, built to give you those added measures of safety and response that living on the water demands.



*The interior of Yamaha sailboats meet the highest standards of luxury, comfort and convenience.*



*Hull models are tested in tanks to help find the best possible designs.*







## ***A ball in the snow.***

There's nothing in nature quite so magnificent as a mountain snowscape. There's also nothing that's quite so difficult to negotiate. Getting overland quickly over snow and coping with the cold seemed one of those impossible dreams until the snowmobile. Uphill you had snowshoes, downhill skis, and across the flats sleds. None were fast or efficient, and all required the full strength of the strongest. But now, even the most frigid wastes are accessible, or at least more so, on Yamaha snowmobiles, the machines that do on snow what Yamaha off-road bikes do in the bush.







# As reliable as a husky and a whole lot faster.

The biggest difference between a Yamaha snowmobile and a Yamaha motorcycle is that one runs on skis and the other on wheels. Parts, running gear, shape and application vary considerably, too. But the engineering behind the two products, the theories and practice of engine and suspension design, and the need for enduring reliability are amazingly similar.



SRX440



ET340

Even more important, though, is their superb reliability. Prototypes are tested for endurance at minus 40°C for 2000 hours in a special test room at Iwata. Teams run Yamaha sleds in Alaska and the Alps. Most designs travel upwards of 30,000 kilometers before reaching the production stage.

Yamaha snowmobiles offer all the superb performance and handling the world expects from products bearing the Yamaha name. They've reached speeds above 160km per hour on the straight and compiled an impressive record of successes in cross country events.



ET340T



Every part, from the rollers for the track to carburetors, is subjected to repeated tests to determine if it can stand up to the rigors of snow and cold. Nothing is left to chance. Because, in the far north, one chance is all you get.

As a result, Yamaha snowmobiles have become a favorite for both sport and transportation. In north Europe and north America, Yamahas are used by construction companies, scientific organizations and thousands of just plain people as the sole means of getting around. At ski resorts everywhere, they've become a permanent fixture for fun with vacationers and for rescue work by the ski patrol.

The complete line includes budget models with standard features other maker's call "extras"; family sleds and deluxe versions with everything useful and a full-blown racer with a revolutionary liquid-cooled power plant.



As a tool for pleasure, they have all the speed, maneuverability and comfort that enthusiasts want. As a practical transportation tool in snow-bound regions, they have the reliability, quick starting and easy maintenance that is an absolute necessity. In every sense, they offer the user that particular combination of spartan utility and sheer exhilaration which has characterized Yamaha's production philosophy from the start.





## *Lightweight light.*

Most of us take electricity for granted. But not everyone. Not the lineman repairing a damaged transformer at night. Not the doctor who needs constant standby power at his hospital. Not the radio operator at a remote site hours away from the nearest plug. They, and thousands of others living in areas not yet reached by the electrical grid, depend on portable generators. Generators like those built by Yamaha and powered by Yamaha's small engines, which, in hundreds of different ways have made life brighter and more convenient for tens of thousands around the world.



# Portable pumps, practical performance and power for any purpose.



Generators, pumps, karts or whatever are only as good as what runs them. This applies equally to the largest nuclear facility and the smallest model airplane. The prime mover is the thing. If it's efficient, the system should be too.

With this fact in mind, it shouldn't come as any surprise that Yamaha generators, pumps and other powered products are among the most popular on the market today. Yamaha's ability to build superior two and four stroke engines for motorcycles, outboards and snowmobiles, gives it a commensurate ability to build small engines for any purpose under the sun. Engines which put out more power per cc day-after-day without the need for constant maintenance and adjustment. In short, the right engine for the right job at the right price.



## Generators

All nine of Yamaha's portable generators feature a superb power-to-weight ratio, easy starting, quiet running and simplified operation. The most powerful provide enough electricity to run a houseful of appliances and the smallest is strong enough to power a refrigerator, television and still a couple of lights.

The larger models use heavy duty four-stroke engines, while the

smaller units use lightweight two-strokes, which, with automatic lubrication system-AUTOLUBE-, offer easy operation. Both types are equipped with brushless system, full safety devices and centralized controls. They've become a favorite with campers and owners of vacation homes, yet they're rugged enough for construction work and commercial applications.



Golf Car. G1A



## Small engines to power anything small.

You name the purpose, and Yamaha has a way to power it better. Snowblowers, pumps, sprayers, agricultural machinery, lawn mowers, golf cars, hoists or anything else that needs reliable, long lasting power runs better with a Yamaha. Off-the-shelf, Yamaha offers a tremendous selection of engines. At the same time, Yamaha builds a number of completed products, like pumps and generators, which get their steam from Yamaha engineering.



## Even on four wheels, Yamaha is faster.

In karting competition, few makes have been able to keep up with Yamaha's RC-100S racing kart. This sophisticated and surprisingly fast racing machine is similar in many ways to full scale racing cars, with its disc brakes, balanced front-to-rear weight ratio and transistorized ignition. It's every inch a racing car, even though its only 67 inches long.

Yamaha engines, generators, pumps and karts. They're machines for living built by a company that takes nothing for granted, not even electricity.





# *The quest for quality.*

Quality at Yamaha is more than just building products that meet performance expectations. It involves a wide-ranging program to improve all products at all levels. Research, racing, personnel development, service, and customer relations are every bit as important as production line "zero defect" inspections. Quality also involves constant innovation. Because as society changes, products must change. Keeping pace with these changes, and abreast of technological developments however remote, are some of the secrets of Yamaha's success. And a solid assurance to Yamaha customers that the product they buy today won't be old fashioned tomorrow.





# Designs for today.

Hardly a year goes by without Yamaha bringing out some startling new product that captures the world's imagination.

In the last three years alone, Yamaha has introduced the 3-cylinder, shaft drive XS850, the superb 4-cylinder XS1100, an improved

line of larger kerosene outboards, a "gasohol" motorcycle engine, a trend setting liquid-cooled 2-stroke engine and more than 20 new boats, including the SR-700, an "unsinkable" rescue boat. All new designs and all designed in-house.

Yamaha's design capability is one

of the most comprehensive in the industry. Products and systems developed by Yamaha engineers have helped revolutionize small engine design and have brought major innovations to fields as diverse as coastal fishing and urban transportation.



Computer aid design



Engineers and technicians working in design development have access to the most modern computers and testing equipment available. Special facilities, ranging from laboratory dynamometers and terrain simulators to a 6km test track and special "research labs" as far away as America's Rocky Mountains, let them prove their discoveries under any and all conditions.

As good as these men and their equipment are, much of their work would be in vain if it did not result in practical, marketable products.

This is why Yamaha exerts so much effort in finding out what people want and what society needs. Teams of researchers travel all over the world investigating different conditions, talking to people and collecting mountains of data to send back to the design teams.

As a result, Yamaha consistently comes up with products that are not only timely, but also ahead of their time in a technical sense.

Some outstanding examples of how Yamaha gives the public what it wants:

Boaters wanted a smooth, fuel efficient and compact big outboard. Yamaha developed a three-cylinder 85hp model, with special features like a fuel recirculation system and improved scavenging efficiency to provide more power from less gas. The 3-cylinder in-line configuration, in addition to being smoother, makes this engine one of the lightest and most compact in its class.



In the wide open spaces of America, biking enthusiasts wanted a refined trans-continental tourer. Yamaha built the XS1100 and it's already a legend.

Yachters the world over wanted a boat they could compete in one weekend and relax in another. Yamaha created a spacious racing hull that is now the basis for all its boats over 20 feet. These hulls hold



Construction analysis

full galleys, comfortable berths and plenty of living room. They're also good enough to sail and win against the best of rest.

Housewives, students and thousands of others clamored for easy, quick, safe and economical two-wheel transportation. Yamaha answered with its "Soft Bikes", a series of modernized mopeds which everyone has taken to heart.

European cycling purists dreamed of a middleweight road bike as fast as the big bores but agile enough to twist with the most torturous turns. Yamaha complied with the RD350, a decidedly different liquid-cooled 2-stroke as near to an all-out racer as a street-legal bike can be.

Yamaha also responds to specific needs. Like in Mexico where it built



Three-dimensional precision testing

an entire factory to build the kinds of boats local fishermen needed at a price they could afford.

For an even smaller market, Yamaha designed and built its SR-700, a self-righting high-speed rescue craft that can live and work in the heaviest seas. Already selected as the standard by several government agencies, this water-jet/prop drive, deep-V boat is another example of how Yamaha puts separate technologies together to make the whole stronger than any one of its parts.

Research into peoples needs. Exhaustive efforts create the best possible products at the best possible price. Then, over the years, working in concert with users to refine products until new technology makes a next generation possible. And a energetic approach to all problems. This is Yamaha's policy. And this kind of effort, repeated in every area of activity, has helped Yamaha stay ahead while diversifying in many different directions. And it stands as a



solid guarantee to users that Yamaha products are built right, right from the start.



# Lessons from the track.

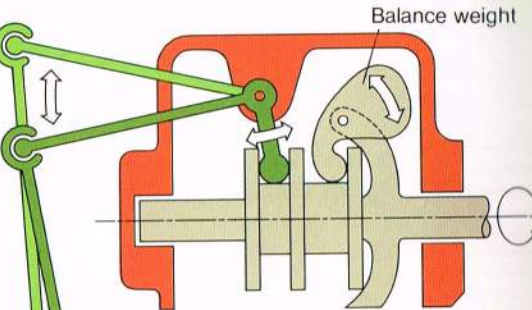
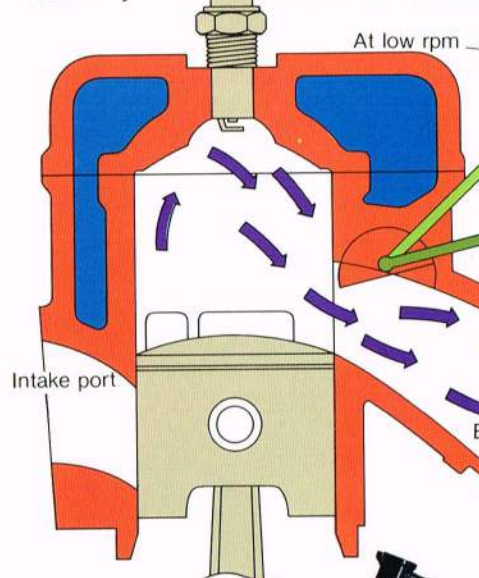
Most people think that Yamaha participates so avidly in racing for the publicity. Publicity is one reason, of course, but there's another one, which in the long run is far more important. And that's technology.

Winning on the track is a vital part of winning the research race, because lessons learned there can be, and are, applied to the design of production bikes.

A fine example of this is Monoshock



suspension, first used in 1975 on Yamaha MX machines and later on its championship TZ road racers. This advanced rear suspension system replaces the conventional side-mounted shock absorbers with a single, nitrogen-filled absorber which slants upward inside the frame. In addition to providing a far longer travel, it more evenly distributes shocks and impacts. The result is far better balance and stability over any terrain. Now, in a



last longer at high speeds. Advanced liquid cooling systems. A revolutionary 8-valve DOHC engine configuration.

Improvements through racing aren't just confined to motorcycles either. Yamaha's competition snowmobiles were the guinea pigs for YP clutch, TS suspension and long travel rear suspension which have made Yamaha's stock sleds the hottest things on ice.

In head-to-head confrontations with the world's best sailboats and nature itself, Yamaha has learned vital lessons which have made its family cruisers faster and more seaworthy than ever before.

YPVS: Construction and operation

slightly modified form, Monoshock is offered as standard equipment on many of Yamaha's off-road and street bikes.

Another recent example is the Yamaha Power Valve System (YPVS), a revolutionary porting arrangement for 2-cycle engines which provides more power at top end and greater torque at low speeds. Investigations are now underway to adapt this innovation to all Yamaha 2-stroke models.

The list goes on and on. Seven-port torque induction to help 2-strokes breathe better. Bonded aluminum pistons that stay cooler to



Racing also acts as a spur to technological progress. To maintain their standing, companies are forced to experiment and develop new and better models each year. This off-the-track competition might not be as exciting as the action on the track, but it's far more important for the average customer, since the real winner is not the manufacturer, but the riding public.



TZ500



# The winning tradition.



Daytona 200 miles. 1980



YZR 500

A complete recount of Yamaha's success on the world's race tracks would fill an entire book this size. Suffice it to say that no other company has quite dominated motorcycle racing like Yamaha, especially in the last few years in which Yamaha has proven virtually unbeatable in motocross and road events. Last year, for example, Yamaha captured the maker and rider trophies in all three major international classes. And as this book goes to press, Yamaha has just won the Daytona 200 for the ninth consecutive year.

## Highlights from the last five years

### 1975

- Yamaha wins the Daytona 200 to make it four in a row.
- Mick Andrews takes the Scottish Six Day Trial Championship.
- Yamaha and Johnny Cecotto take the world 350cc Championship.
- Giacomo Agostini rides his Yamaha to the World 500cc Championship.
- "Wing of Yamaha" captures the single-handed Trans-Pacific Race.

### 1976

- Johnny Cecotto wins the Daytona 200.
- Yamaha sweeps all three classes at the Isle of Man TT. After winning at the Isle of Man, Yamaha withdraws from racing as part of the company's policy to support energy conservation during the oil crisis.

### 1977

- Steve Baker rides to the World F-750 Championship.
- Takazumi Katayama takes the World 350cc Championship.
- Heikki Mikkola captured the world 500cc motocross title for Yamaha.
- Baker gives Yamaha its sixth consecutive victory at the Daytona 200.



### 1978

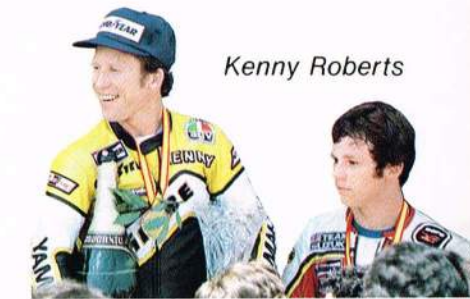
- Kenny Roberts wins the Daytona 200 for Yamaha for the seventh straight year.
- Kenny also takes the World 500 GP crown aboard a Yamaha TZ500.
- Johnny Cecotto wins the world F-750 crown.
- Heikki Mikkola repeats as the World 500cc Motocross champion.
- In the first Paris-to-Dakar Rally, Yamaha sweeps the first two places.



- "Magician V" wins the World Quarter-ton Sailing Championship.

### 1979

- Patrik Pons rides his Yamaha TZ750 to the World F-750 Championship.

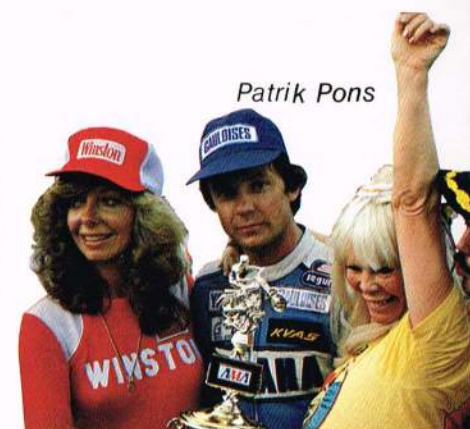


Kenny Roberts

- Kenny Roberts garners the World 500 GP Championship on his Yamaha TZ500.
- Dale Singleton captures the Daytona 200, making it eight years in a row for Yamaha.
- Yamaha XT500's take the top two spots in the grueling Paris-to-Dakar "Oasis Rally".
- Yamaha SRX440 snowmobiles win every race on the Michigan Enduro Circuit.
- Supercross competition in America dominated by Yamaha machines in all classes.



Patrik Pons







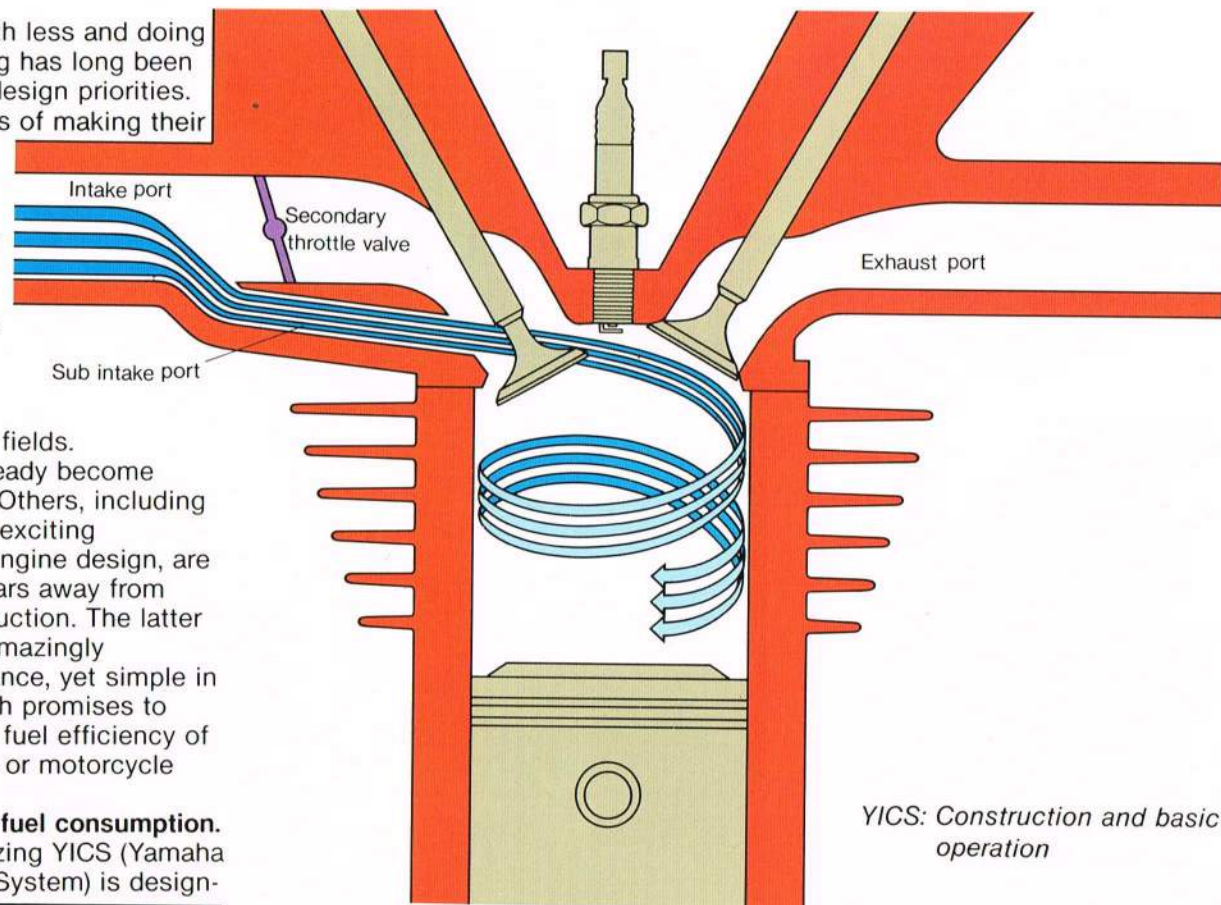
# Ideas for tomorrow.

Doing more with less and doing it without polluting has long been one of Yamaha's design priorities. And in the process of making their engines run cleaner and more economically, Yamaha has come up with a number of important innovations, some of which have promise to pay significant dividends in other fields.

Some have already become practical realities. Others, including some of the most exciting improvements in engine design, are still one or two years away from commercial introduction. The latter includes YICS, an amazingly sophisticated advance, yet simple in construction, which promises to vastly improve the fuel efficiency of any car, truck, bus or motorcycle engine.

## A breakthrough in fuel consumption.

Yamaha's amazing YICS (Yamaha Induction Control System) is design-



YICS: Construction and basic operation

ed to reduce the fuel consumption of any 4-stroke engine. According to fuel consumption tests (the 10-Mode System in Japan and the LA4-Mode System in the United States), users with YICS equipped vehicles can expect to use 10 percent less fuel.

This system can be fitted to any kind of 4-stroke engine, regardless of the number of cylinders, cooling system and cylinder shape, with only a few minor modifications. YICS features simple construction and is remarkably compact. As a result, manufacturing costs are surprisingly

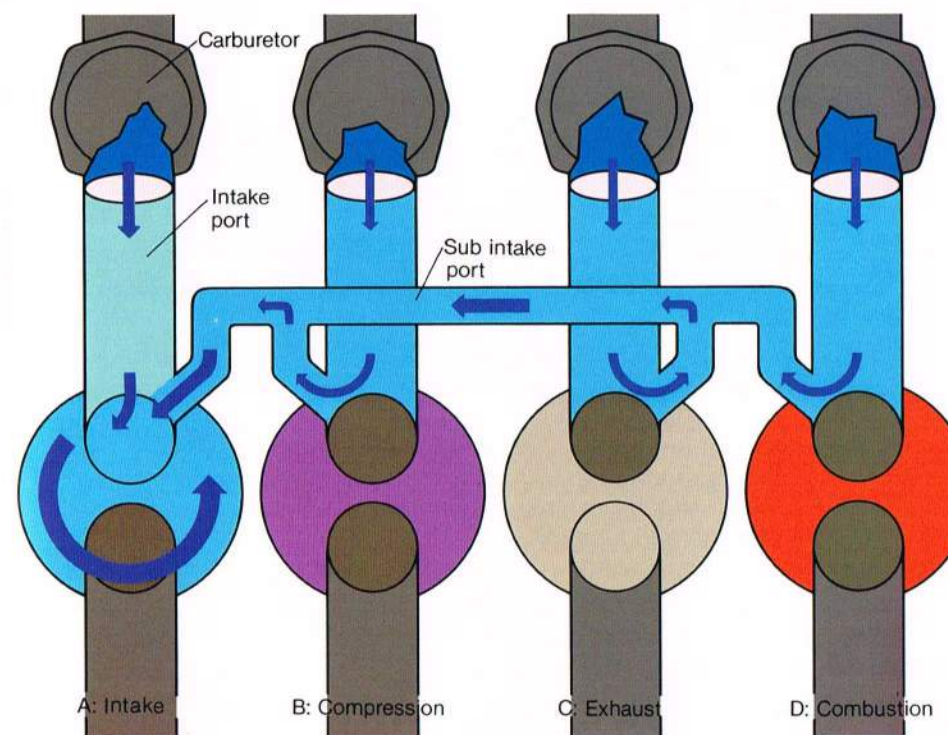
low, and once a system is installed, it is virtually maintenance free. The system can also be installed easily without modifying the carburetor.

Plans are now afoot to offer YICS on some Yamaha motorcycles in 1981, and this system is expected to come into widespread use in the next few years.

As shown in the figure above, a sub-intake port is used to accelerate the velocity of the air-fuel mix as it passes into the cylinder. This increased velocity causes a natural "swirling" action of the air-fuel mix

around the circumference of the cylinder.

This sub-intake passage has a diameter only 1/4th to 1/6th that of the regular intake passage and



YICS: Application for multi-cylinder motorcycle engine

inducts the air-fuel mix into the cylinder at a speed four times greater.

The result of this added movement allows a significant decrease of the time it takes for the fuel to burn. Thus, far greater overall combustion efficiency.

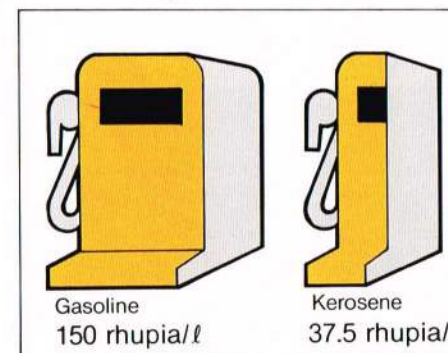
Since engines need more air and fuel when running at high speeds, a diaphragm, controlled by the engine's throttle, opens a secondary throttle valve to allow more air and fuel to enter, thus giving YICS engines the same high speed performance as conventional engines.

The figure above shows YICS installed on a multi-cylinder motorcycle engine. In this case, each cylinder has its own carburetor and all sub-intake passages are linked to work with one another. When the piston in cylinder A begins to move downward, atmospheric pressure inside the cylinder becomes lower than the atmospheric pressure in passages B, C and D, thus allowing the mixture to enter sub-intake ports B, C and D from their respective intake passages. Then, the mixture is inducted into cylinder A through sub-intake port A.

When the piston in cylinder B starts its intake stroke, intake passages A, C and D act to induct the mixture into cylinder B through their sub-intake ports.

The nozzle of each sub-intake port is arranged parallel to the tangent line of the cylinders so that the mixture swirls along the circumference of the cylinder as it enters. And, because all intake passages are linked, negative pressure is only caused at the cylinder into which fuel is being inducted.

The cost savings possible with a Yamaha kerosene outboard can be tremendous. For example, in Indonesia, kerosene costs only 1/5th as much as gasoline.



Gasoline  
150 rrupia/l

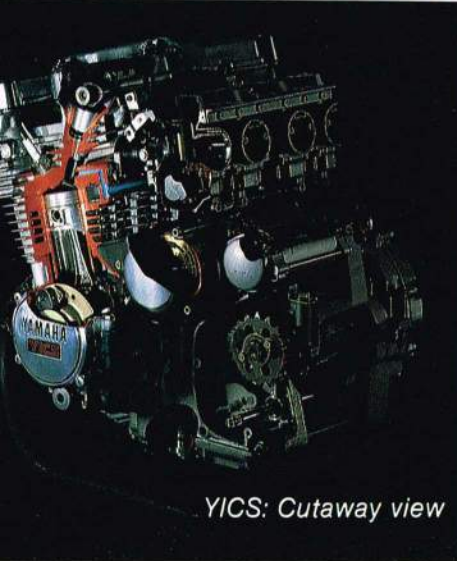
Kerosene  
37.5 rrupia/l

Yamaha signaled its concern for energy conservation fourteen years ago with the introduction of the world's first kerosene-powered outboard. It was an instant success, offering commercial operators far greater fuel economy. Problems relating to cooling, lubrication, durability and combustion were solved and now, after more than a decade of refinements, Yamaha's 8hp, 15hp, and 25hp kerosene engines are the mainstay of many commercial operations around the world.

These remarkable engines use gasoline for starting, and then switch over to kerosene at about 1500rpm. To make this possible, Yamaha developed a special dual carburetor system, which provides performance equal to any conventional outboard.

Yamaha also pioneered the clean 1:100, oil fuel mix for outboards, which, in addition to causing less pollution, literally halves oil costs for users.

The Yamaha 25 kerosene engine, a powerful, economical workhorse for commercial boaters.



YICS: Cutaway view



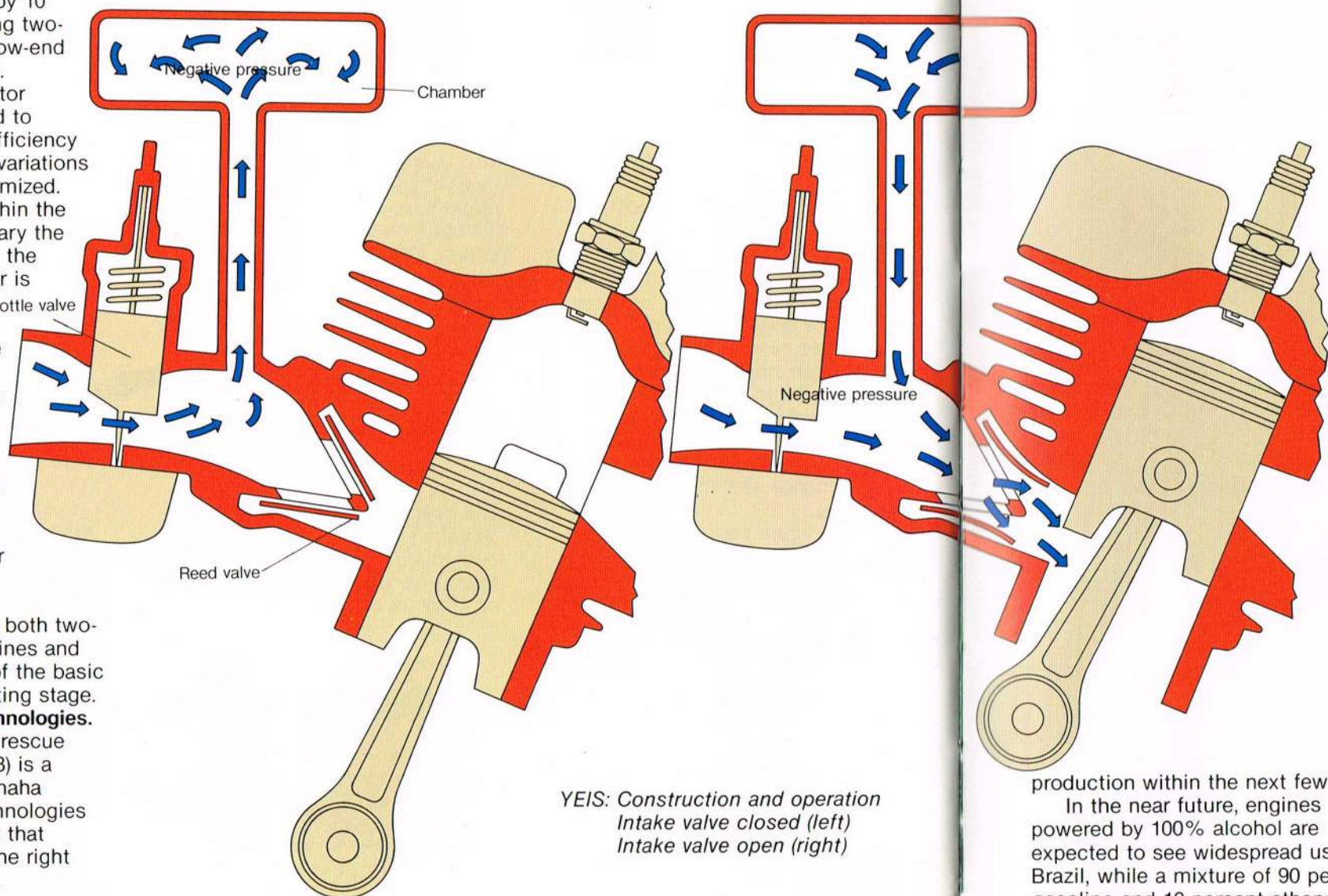


**Engines that don't run on gas.**

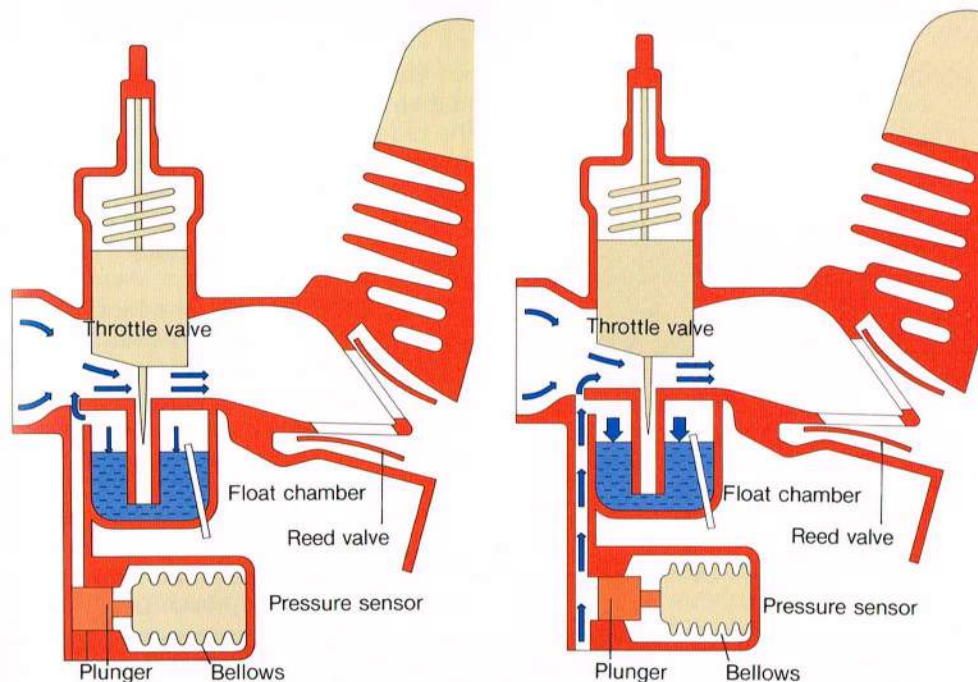
Yamaha is already producing motor-cycles in Brazil which run on a 5:1 mixture of gasoline and alcohol refined from sugar beets. Called gasohol, this fuel is expected to come into wider use as oil prices

continue to rise.

To take this one step further, Yamaha is developing an engine which can run on 100 percent alcohol. A prototype 125cc has been built and research is underway to develop a practical unit for mass



*YEIS: Construction and operation  
Intake valve closed (left)  
Intake valve open (right)*



*Calibmatic: Construction and operation  
High altitude use (left)  
Low altitude use (right)*

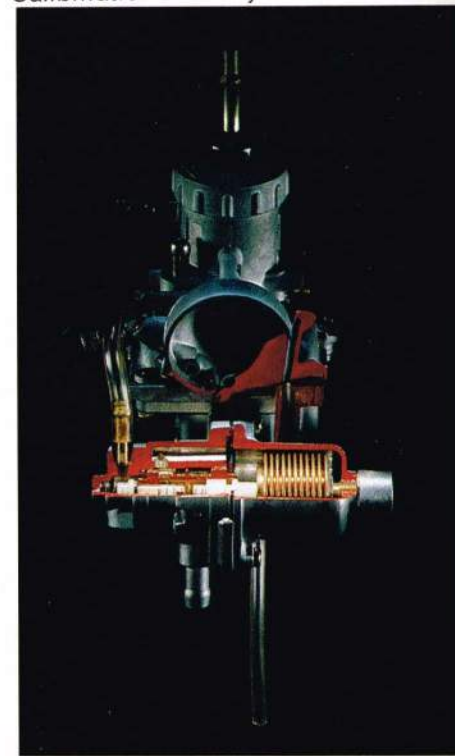
being adopted in many parts of America's midwest.

**High speed at high altitudes**

Getting full power from an engine at high altitudes has always presented a problem. The higher you go, the less air there is.

Yamaha developed its Calibmatic carburetor with a sophisticated air pressure sensor which automatically adjusts itself for variations of altitude. As a result, Yamaha off-road bikes can exhibit the same starting power at 3,000 meters they do at sea level. And, at 2,000m, calibmatic

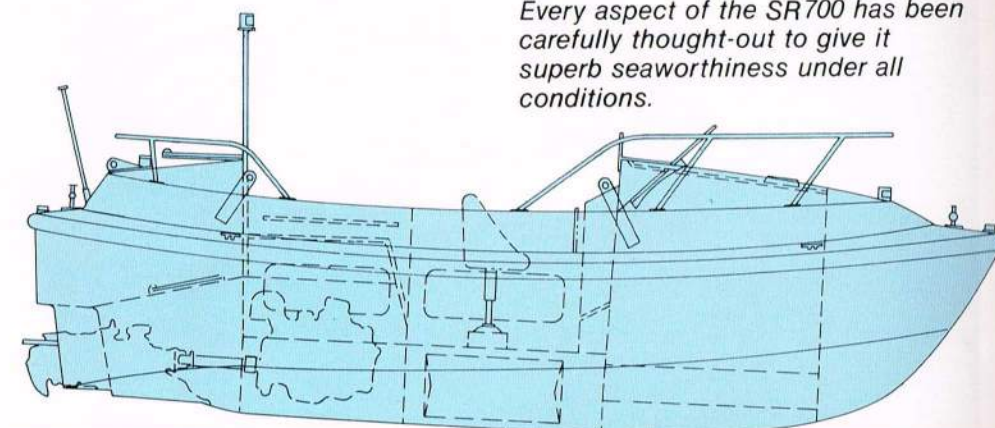
*Calibmatic: Cutaway view*



provides 15% better fuel consumption.

From saving fuel to saving lives, Yamaha innovations have a way of working out better. And Yamaha's continuing research program is a solid guarantee to the customer that when he chooses Yamaha, he's buying a product that represents the highest standards of technological excellence.

*Every aspect of the SR700 has been carefully thought-out to give it superb seaworthiness under all conditions.*



production within the next few years.

In the near future, engines powered by 100% alcohol are expected to see widespread use in Brazil, while a mixture of 90 percent gasoline and 10 percent ethanol is



# Automation which complements craftsmanship.

Yamaha uses the most modern machines but trains its employees in the oldest traditions of craftsmanship. Even production line workers receive special training courses and undergo a period of apprenticeship before they start their jobs.

In the factory, only the highest skilled craftsman are allowed to give a bike or snowmobile its final touches. They also double as quality control inspectors, giving every product the kind of check which only trained eyes can give.

In the final analysis, though, using machines to make other machines is the only practical way to insure quality while keeping a lid on

prices. There is no real substitute for craftsmanship, but machines can free the craftsman for more important tasks. They can also do many repetitive jobs better.

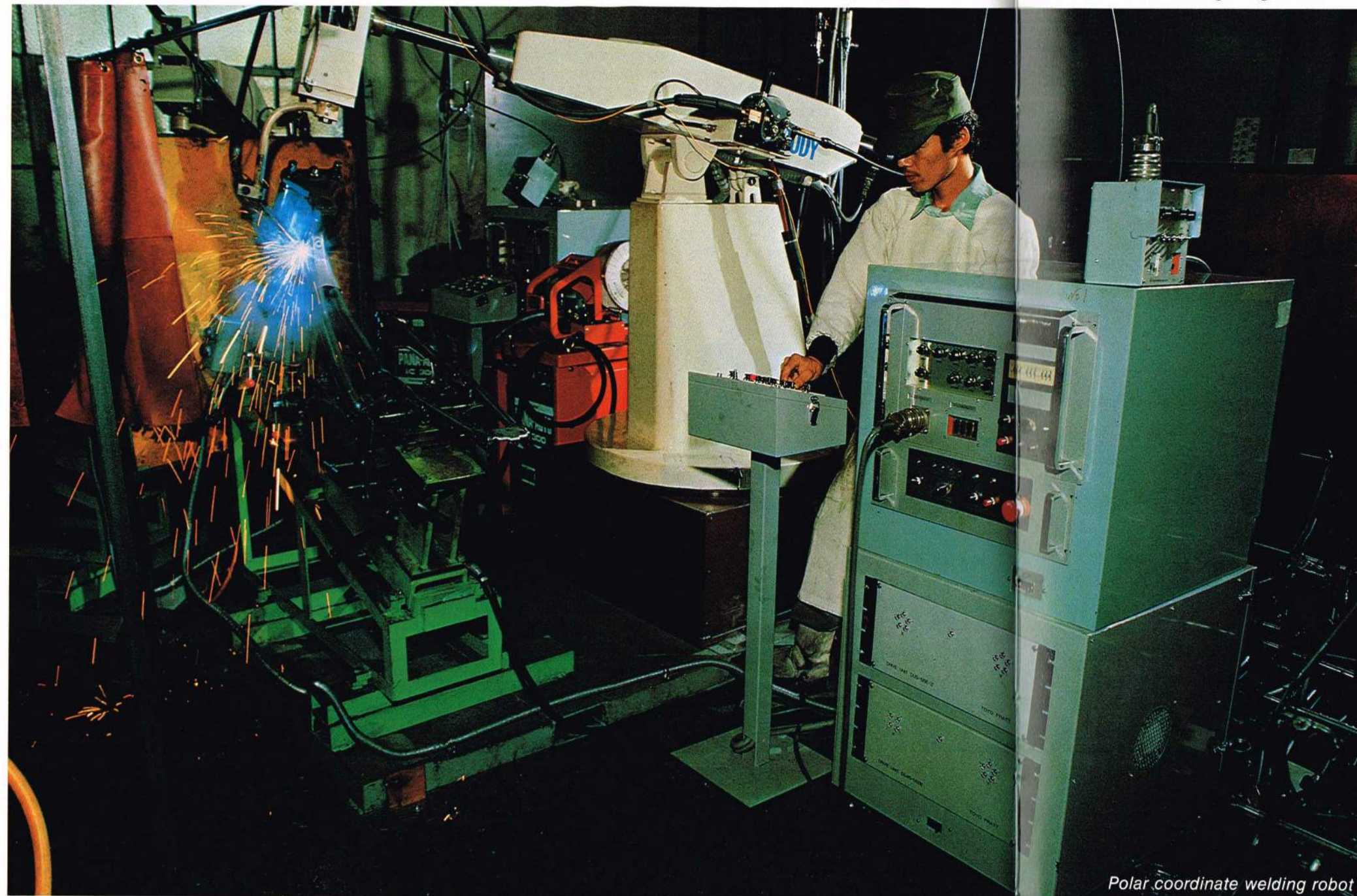
Every Yamaha factory makes full use of the latest automated equipment. Robot arc welders are used to construct Yamaha's famous double-cradle frames. They are more accurate and infinitely faster than any other method and provide a uniformity not even the best craftsman could duplicate. On the outboard motor line, ultra-modern computer controlled boring machines are used for engine block production. Other major steps, like painting, have also been automated to a high degree.

A quick tour through any Yamaha factory would show things like a multi-million dollar automatic in-line welding systems, totally automated 500-ton presses and dozens of

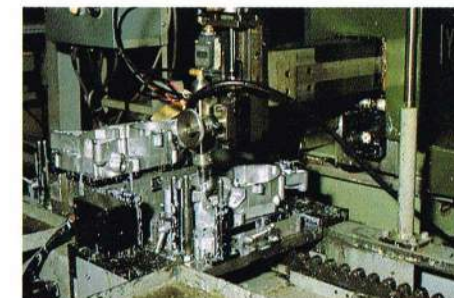
they are proud to help make them exactly that.

Line workers regularly get together for "brain storming" sessions and many of their ideas have paid handsome productivity dividends. Yamaha's "C7" program, a campaign to cut costs by seven percent, has enlisted the active participation of virtually every Yamaha salesman, production worker, engineer and manager.

Pride is not confined to the pro-



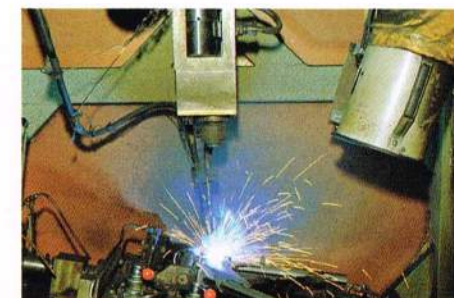
*Polar coordinate welding robot*



*Sealing robot*

computer-driven machine tools.

Yamaha factories are also carefully "human engineered". All are modern, bright, pleasant places in which to work. And they're con-

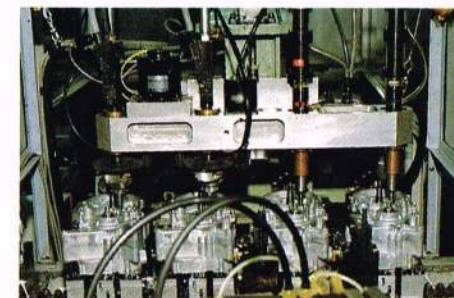


*Double-housing welding robot*

stantly being modernized.

Teams of specialists roam the factories, evaluating existing systems and seeking ways to automate and improve production even more. Even a few seconds saved in a single process can add up to tremendous savings over a year.

Attention to detail like this, and a willingness to invest in the best equipment available, has been a key factor



*Engine screw mounting*

in Yamaha's rapid growth and one of the big reasons Yamaha has been able to consistently offer riders more bike for their money.

Yamaha employees also have what amounts to a personal involvement in the building of each and every Yamaha product. They want Yamaha products to be the best and

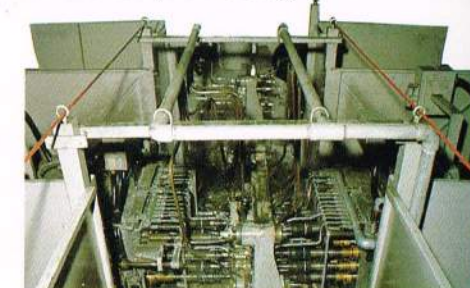


*Large press*

duction line, either. You can find it at all levels of the Yamaha organization, from the company softball team to the boardroom.

This rare combination of highly motivated people, company pride and organized craftsmanship is what gives Yamaha products that extra something that Yamaha users take for granted...quality that won't wear out.

*Crankcase processing*





# Test, checks and a balanced approach.

Making the goal of zero defects a reality isn't easy. It takes a thorough insistence on checking everything...and then rechecking. Both before a product goes into production and while it's being produced.

To help get this done, Yamaha makes full use of the latest testing and analysis equipment. Parts from

outside suppliers are subjected to rigid acceptance inspections and all Yamaha parts are, of course, checked thoroughly at every stage of the production process.

But the quest for quality starts long before a product reaches the manufacturing stage. For example, new prototypes are tested on a dynamometer for 100,000km. All during

this time, fuel consumption, cylinder head temperature, exhaust gas, mechanical stress and hundreds of other factors are monitored and recorded.

To test suspensions, Yamaha built its own special equipment, which can duplicate virtually any road or terrain condition imaginable.

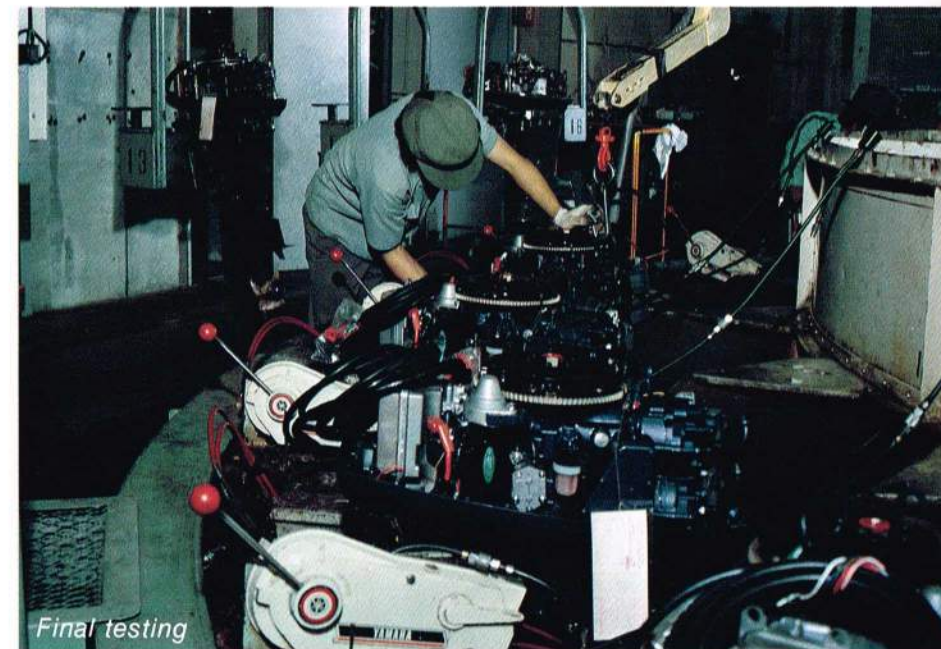


Exhaust gas testing

And after bench testing, all machines and parts are tested in the field time and time again until they break or prove unbreakable.

Individual parts, from the smallest bolt to complete cylinder heads are tested for strength, durability and other criteria using standardized laboratory procedures. Crucial components, such as the engine block, are measured with the most advanced three-dimensional testing instruments to insure accuracy to within 0.1mm.

After computers analyze the data and corrections and modifications made, the product goes back for another round of tests. And only when the computers, and the engineers programming them, are satisfied, does a product get to wear the name Yamaha.



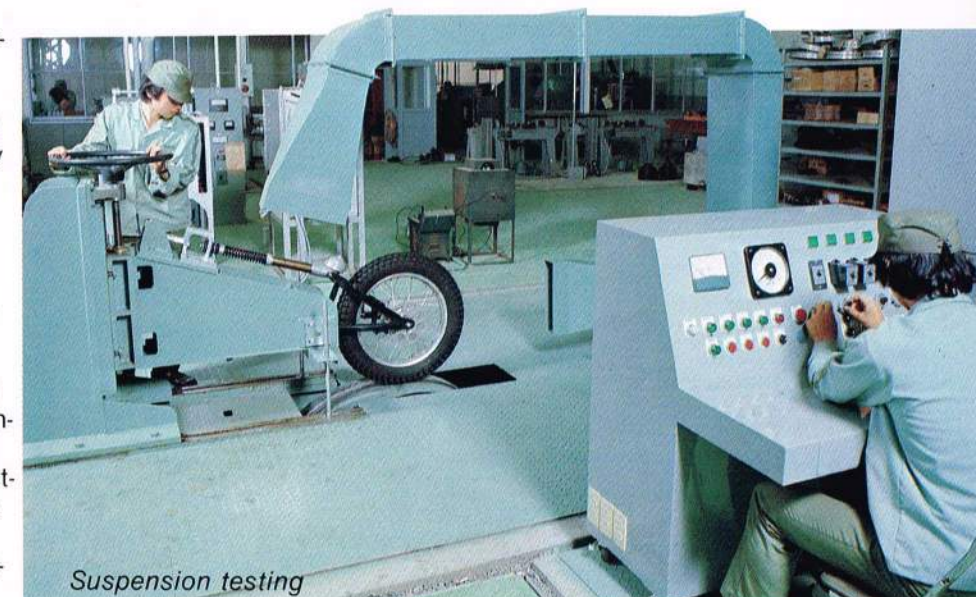
Final testing



Drop testing

To make sure mass produced machines meet the prototype expectations, Yamaha has set up one of the most thorough quality control programs in the industry. Organized as a separate entity answerable only to the highest management echelons, the Quality Control Department operates in six major areas: product validation, organization and training, market evaluation, quality evaluation, inspection, and special projects.

In addition to supervising actual product inspections, the Quality Control Department works closely with suppliers, distributors and others outside of Yamaha's direct control. The department is also in charge of formulating company-wide training programs which are aimed at turning



Suspension testing

every Yamaha employee into a quality control specialist.

Probably the most exacting part of their work, however, is establishing standards. In mass production, even the smallest details must be thought out carefully, since each step is magnified by the several thousand times it is repeated. This job is made easier at Yamaha because of the close relationship between the Quality Control Department and the various production departments. By working together from the design stage on up, many potential problems are eliminated before production begins and any later modifications can be made without compromising either quality or cost effectiveness.



# Service that goes one step beyond.

Even a Yamaha breaks down occasionally. But when it does, service is never far away. In Japan, alone, there are several thousand Yamaha service stations and everywhere in the world the number of authorized service technicians is constantly growing.

Yamaha places emphasis on fast, efficient service and it has become a credo throughout the company that Yamaha service must be as good as Yamaha products. The job is not easy and it has been complicated by Yamaha's explosive growth over the last several years. It takes quite a

while to train outboard or motorcycle mechanics and set up the parts supply networks they require. But Yamaha is doing it, and each year sees a great improvement in the availability and quality of service.

One step toward faster response is represented by Yamaha is automated



parts center. This mammoth facility is equipped with automated handling devices to move its inventory of more than 100,000 parts. All record keeping is done by computers and a request for orders can often be processed on the same day it is received.

To improve service in new markets, Yamaha sends teams of trainers who help distributors and dealers set up their own service programs. Promising technicians are often invited to Japan for advanced training. Over the years, several thousand persons have attended such courses and the knowledge they take back with them has helped Yamaha significantly upgrade the level of service in many countries.

In remote areas, mobile



floating workshops in Africa and South America that bring Yamaha service to distant upriver locations on the Niger and Amazon.

To encourage young people to become involved in motorcycle mechanics, Yamaha has donated hundreds of cutaway engines to technical schools in several different countries. This long term project is characteristic of Yamaha's overall approach to building a service network in an organized manner. And while this might not be the fastest way, it is the best.

Another aspect of service which the public often overlooks is the feedback back to the development engineers.

Yamaha keeps careful track on machine and part failures so that it can improve subsequent products and prevent the same problem from showing up in the future. This extra dimension has paid handsome dividends in terms of product reliability and underscores Yamaha's commitment to take that extra step to give its customers total satisfaction.



Yamaha Parts Center

workshops provide maintenance and repair service to Yamaha outboard owners. There are even several





# Building a better customer.

Yamaha's commitment to its customers extends beyond building great products. Yamaha knows that it takes high-quality skills to enjoy a high-quality product. So the company takes an active interest in helping its users get more out of their Yamaha products. Schools for motorcycling, motocrossing, sailing, boating, and karting have been established worldwide. And this total involvement is another important way in which Yamaha is set apart, both as a manufacturer and as a corporate citizen.

For beginners, Yamaha's famous L.T.R. (Learn To Ride) program has meant learning how to handle a motorcycle right, right from the start. This program, which has spread from Japan to virtually every major market in which Yamaha bikes are sold, has graduated thousands of riders, and been acclaimed by dozens of safety experts.

For junior motocrossers, Yamaha MX schools provide expert guidance on how to handle an off-road bike. Instructors in this popular program come to Japan for training from championship-class riders. In the last few years this program has mushroomed, and there are now MX schools operating full time in the United States, Iran, Peru, the Philippines, Indonesia and several other countries.

Many motocross instructors get their training at Sugo Sports Land, the first resort ever built exclusively for the motorcyclist. Within its 519 acres, enthusiasts will find every kind of road, track and trail to test their skills to the limit. There are separate courses laid out for road racing, trail riding, motocrossing, karting and just plain fun riding. And

like any fine resort, there's no shortage of comfortable hotel rooms, good restaurants, tennis courts, swimming pools and other attractions. Riders from all over Japan visit Sugo and world class races are held at regular intervals.

The Iwata Training Center adjacent to Yamaha's headquarters is used to train LTR instructors, and serves as a model for learning courses elsewhere. For boaters, Yamaha has established several licensed powerboat, water skiing and sailboat schools modeled on the famous Yamaha Marina in central Japan. And throughout the world, Yamaha boat and bike dealers have been encouraged to set up similar programs in their areas.

Yamaha, any way you look at it, it's a people oriented company.



Riders are trained by expert instructors at the Iwata Training Center, near Yamaha's head office.



Yamaha Junior Yachting Schools have become a permanent fixture at harbors around Japan and have been a major reason for the rise in popularity of sailing as a sport.



Yamaha Marina provides a full range of services to boating enthusiasts.

Sugo Sports Land, the first resort built for the cyclists, covers several hundred acres near Sendai city in northern Japan.



Yamaha's LTR (Learn To Ride) program has graduated thousands of cyclists all over the world.





# Worldwide production with a common aim.

When most people think Yamaha, they think "made in Japan". The majority of Yamaha products are manufactured in Japan, that's true. But they're also built in more than twenty other countries. One thing is the same, though, in whatever country a Yamaha product is made. And that's the goal of total quality. The same standards are in force at all plants. The same superior designs are used, as are the same modern machines.

There are many advantages in overseas production, for Yamaha and for the countries in which the products are made. Chief among these are the economic benefits which accrue to the local community. Things like more jobs, technical training programs and an infusion of new capital. Making products in the country in which they are sold also eliminates tariff and transportation charges. As a result, the public is offered the same product at a significantly lower cost.

Overseas production is just one part of Yamaha's international involvement, however. By setting up overseas subsidiaries, Yamaha is better able to respond to local needs. Separate Yamaha corporations have already been established in Canada, the United States, Brazil and Europe.

Today, Yamaha factories operated as separate corporate entities, joint ventures, technological tie-ups or assembly plants can be found on every continent. For their locations, see the map on pages 66 and 67.

The heart of Yamaha's production and corporate activities remains, of course, in Japan. Twelve major factories, employing more than 10,000 workers, are spread throughout the archipelago. The company headquarters and largest plants are in and around Iwata City, Shizuoka Prefecture.

Located near Nagoya, and about two hours from Tokyo by Japan's famous Shinkansen "Bullet Train", Iwata and its surroundings are surprisingly bucolic. But it is here that Yamaha directs its vast worldwide activities. All plants are models of environmental engineering and have been carefully designed not to interfere with the rich natural beauty and unspoiled seacoast in the area.

The same concern for places and people is evident wherever Yamaha sets up shop. And if nothing else, that's another reason why so many people decide to shop with Yamaha.



**Yamaha Head Office and Main Factory**

Administration headquarters, motorcycle and automobile design and engine assembly, outboard motors and snowmobile design, new product development, product testing.



**Sanshin Industries, Ltd.**  
Outboard motor production



**Yamaha Body Works, Ltd.**  
Frame, piston and clutch manufacture



**Yamaha Arai Factory**  
Boat production



**Yamaha Hamakita Factory**  
Engine production including motorcycle engine assembly, engine parts manufacture



**Gamagori Works, Ltd.**  
Large-size fishing boat production



**Yamaha Shido Works, Ltd.**  
Fishing boat production



**Yamaha Amakusa Co., Ltd.**  
Fishing boat production



**Yamaha Nakaze Factory**  
Boat production



**Yamaha Hokkaido Works, Ltd.**  
Development and manufacture of fishing boats



**Yamaha Ofunado Works, Ltd.**  
Fishing boat production



**Showa Works, Ltd.**  
Motorcycle and kart production, snowmobiles and general purpose engine production



## Overseas Joint Ventures

Colombia  
Indonesia  
Iran  
Malaysia  
Mexico  
New Zealand  
Nigeria  
Pakistan  
Sri Lanka

## Technological Tie-ups

Angola  
Argentina  
Bangladesh  
Cameroon  
Ecuador  
Mozambique  
Morocco  
Peru  
Phillipines  
Syria  
Thailand  
Uruguay  
Venezuela



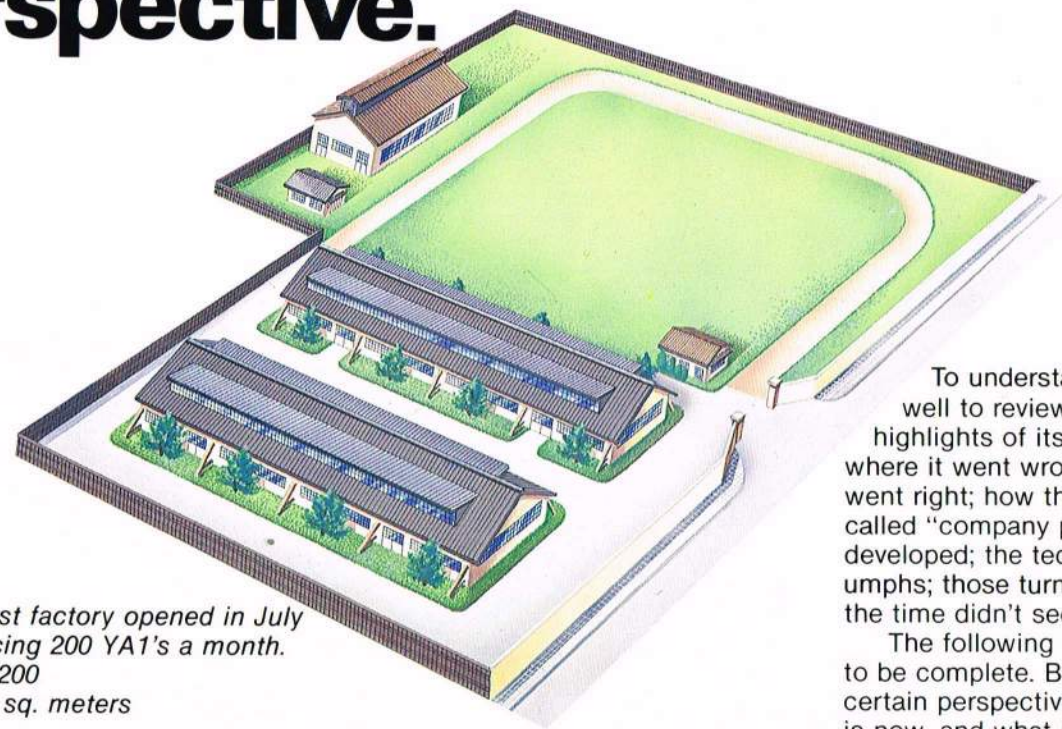


## ***The pursuit of excellence.***

Yamaha's ability to build better products at better prices can only be understood within the larger framework of its capital assets and historical development. The substance of these two important factors has already been hinted at. But for a fuller appreciation of just where Yamaha is and how it got there, it might be well worthwhile to scan the following pages. They don't tell the full story, of course. That would take a book. They do, however, trace the general development of Yamaha from its almost accidental start in the ashes of postwar Japan to its emergence as a huge international concern whose byword from the start has been excellence.



# A concise historical perspective.



Yamaha's first factory opened in July 1955, producing 200 YA1's a month. Employees: 200 Area: 18,600 sq. meters

To understand a company, it's well to review some of the highlights of its development; where it went wrong and where it went right; how that nebulous quality called "company philosophy" developed; the technological triumphs; those turning points which at the time didn't seem so important.

The following review isn't meant to be complete. But it does present a certain perspective of what Yamaha is now, and what it might become in the future.

## The genesis.

No history of Yamaha would be complete without a few words about its parent, Nippon Gakki. Translated literally, Nippon Gakki is "Japan Musical Instrument Company". They started that way and still today make some of the world's best pianos, guitars, drums, and wind instruments. Now, they also make tennis rackets, stereo equipment and many other products only marginally connected with their original purpose.



Its president at the end of world War II was Gen-ichi Kawakami, a visionary of the first order who directed the company's latent capacities toward motorcycle production. The result of this decision was the spin-off of a new corporation in 1955, the present Yamaha Motor Company Limited.

Today, the relationship between Yamaha and Nippon Gakki is still an intimate one, in terms of finance,



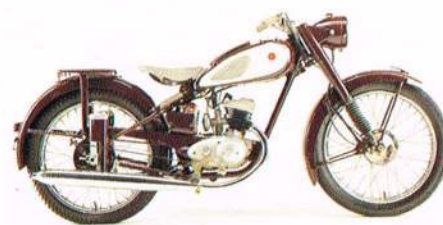
technology, and marketing. Both companies use the name "Yamaha" on their products, be they tennis rackets or sailboats. The cooperation runs so deep that the same acoustic chambers for fine tuning Nippon-Gakki's concert grands are used to test the exhaust noise levels of Yamaha snowmobiles.

## The cornerstone of growth.

Yamaha struggled during its formative years. It was a time of learning. Of some successes like the YA1, the first bike built under the Yamaha marquee and an immediate sensation in the local market. Yamaha street and utility bikes became a common sight on Japan's

streets. Soon, engineers started to develop their own original designs instead of copying German, Italian and English bikes. It was a new direction for Japanese industry, which was still unsure of itself in face of European and American competition. But in the case of Yamaha, it proved to be the right one.

In 1962, Yamaha exported 12,017 motorcycles. The big names in cycling were Triumph, BMW, Norton, Enfield, BSA, Jawa and Harley Davidson. These same companies dominated racing and Yamaha's biggest offering was a small-by-comparison 250cc twin. In America and Europe, motorcycles were built for a handful of enthusiasts, whose



The Yamaha YA1, the bike that started it all.

interest in two-wheelers was often branded as something mildly eccentric.

But a change was in the making. The sporty, light and relatively inexpensive bikes built by Yamaha and other Japanese makers were starting to capture the imagination of the general public. Biking was becoming something "respectable" and thousands were discovering the freedom and fun of cycling as a sport. By 1965, Yamaha was exporting more than 120,000 bikes a year, ten times the figure of only three years before!

It's impossible to set an exact date as the turning point when motorcycling changed from an ex-



pensive sport for the select few into a practical hobby for the millions. But sometime in the mid-60's, along with new trends in music, lifestyles, and consumer awareness, a major change in how people viewed motorcycles took place. In the process, many of the old biking names would go out of business as Japan's "big four" cycle companies came to dominate all aspects of motorcycling from Grand Prix racing to mopeds.

Many factors contributed to this. More disposable income. More leisure time. The emergence of the so called "Youth Culture." Population shifts to the suburbs. More relaxed lifestyles.

But why did only companies like Yamaha capitalize on these changes.

The answer has a lot to do with the way different companies

developed and how their development affected their basic marketing outlooks. Yamaha realized in the late 1950's, long before it became apparent in the west, that motorcycles represented a viable alternative to four-wheel vehicles for general transportation purposes. Yamaha



also saw that the popularity of motorcycles in Japan was not solely because of the utility offered. Certainly, average people purchased motorcycles for transportation. But these same average people were discovering that motorcycling was also fun. Instead of parking their bikes after work, they started using them as a form of leisure. In other words, a new hobby was being discovered by the Japanese public almost by accident.

This did not go unnoticed by Yamaha, and a fundamental corporate decision was made which would have far-reaching results.

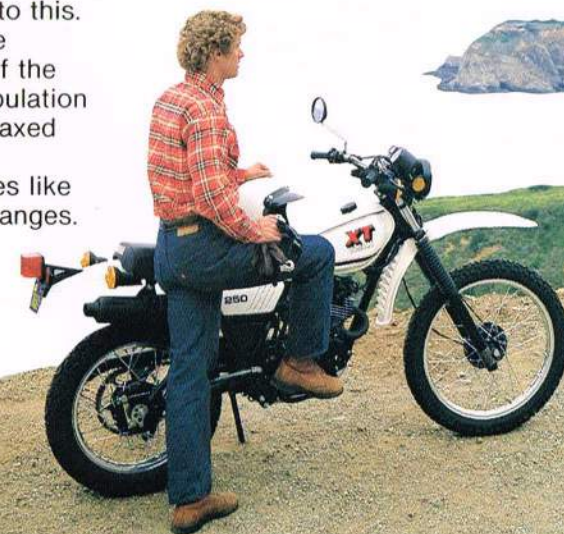
That decision, based on what was happening in Japan, was to build as complete a selection of

bikes as possible to cater to virtually every need and riding habit imaginable. Yamaha was confident that more and more people would discover the fun of riding. And that when this happened, Yamaha must have the motorcycles to meet the demand.

So, instead of concentrating on one type, Yamaha decided to commit itself to motorcycling over a then unimaginably broad range. At the time, it seemed like something of a risk. It was, but it was one that paid off in a big way for both Yamaha and the public it serves.

Today, all Yamaha divisions operate with this same general outlook and concentrate on the overall improvement and expansion of their respective product fields. This concept also has the advantage of stimulating public interest in the products themselves. By offering the user more of a choice and a greater opportunity to get involved, he's more likely to venture into new areas.

Last year, Yamaha sales reached US\$1,540 million and employees numbered 9928. These two figures reflect the size and scope of the company, but not its diversification. So let's take a look at some of the other areas in which Yamaha has become a major force.





**The surge toward diversification.**

As early as 1960, Yamaha built its first outboard motor and pleasure



boat. At the time and in Japan they were good products. But internationally they were far from being competitive. Progress was fast, though. By 1971 Yamaha was mass producing fishing boats, sailboats, powerboats and outboards up to 25hp. 1972 was a banner year. Yamaha radically expanded its outboard range, introduced more than a dozen new pleasure boats and four new commercial fishing vessels. Snowmobiles, which were introduced in 1967, won the world championship in 1970, 1971 and 1972.

How did it happen? How did Yamaha emerge as a bike maker into one of the world's leading producers of leisure products, expanding worldwide in a relatively short span of time.

There's no one answer. And even at Yamaha, few can logically trace the exact causes. Let's leave it at saying that a number of forces converged at a lucky point in time. Yamaha's technology had become mature. The markets were ready. People had more money to spend and more time to spend it in. It was still

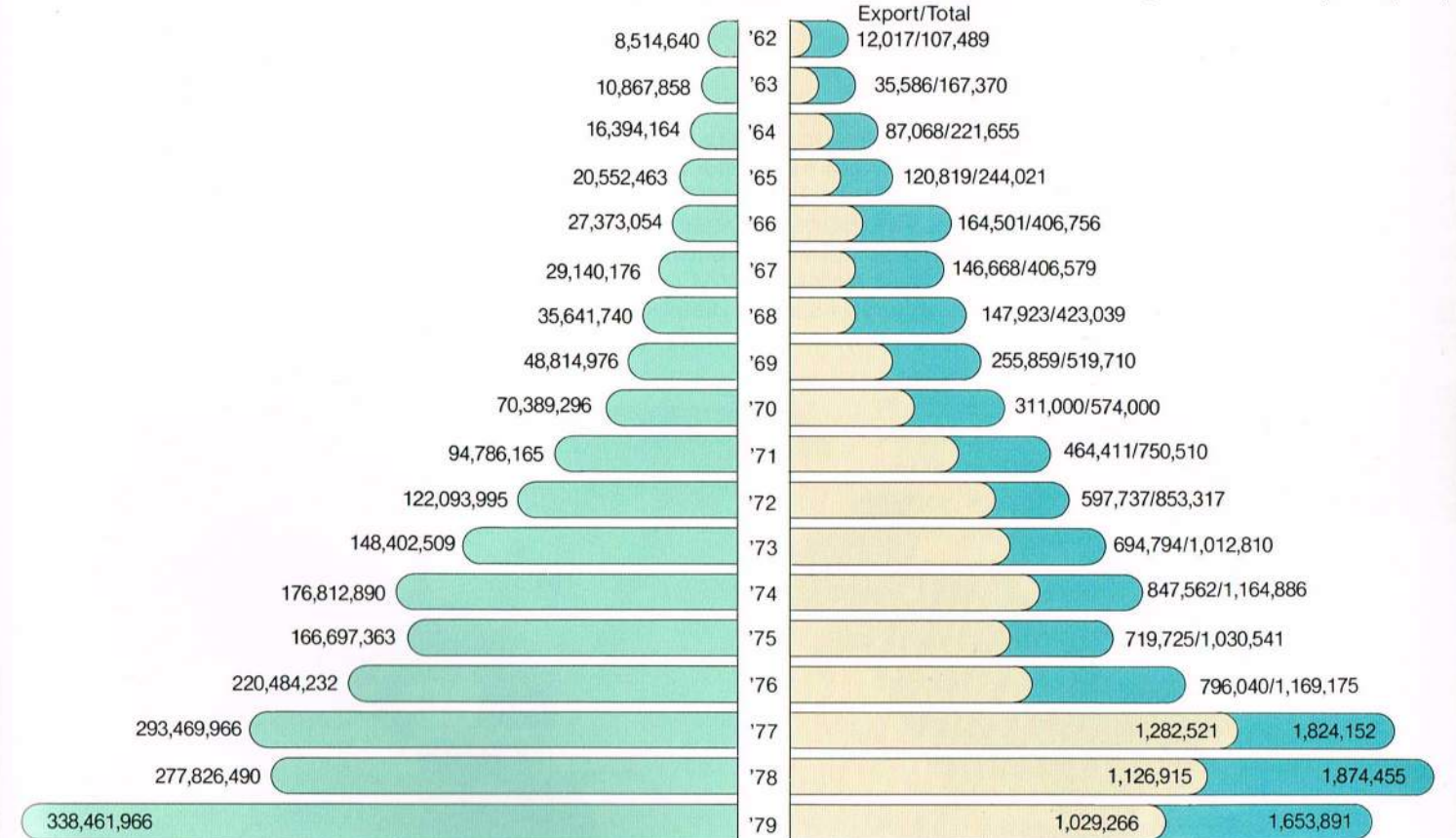


an era of low energy costs and people were turning outward.

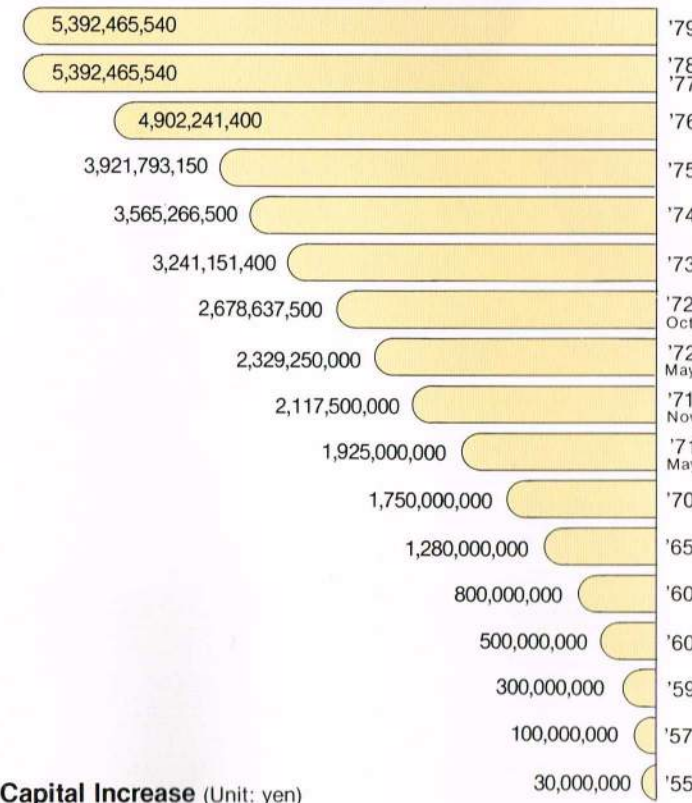
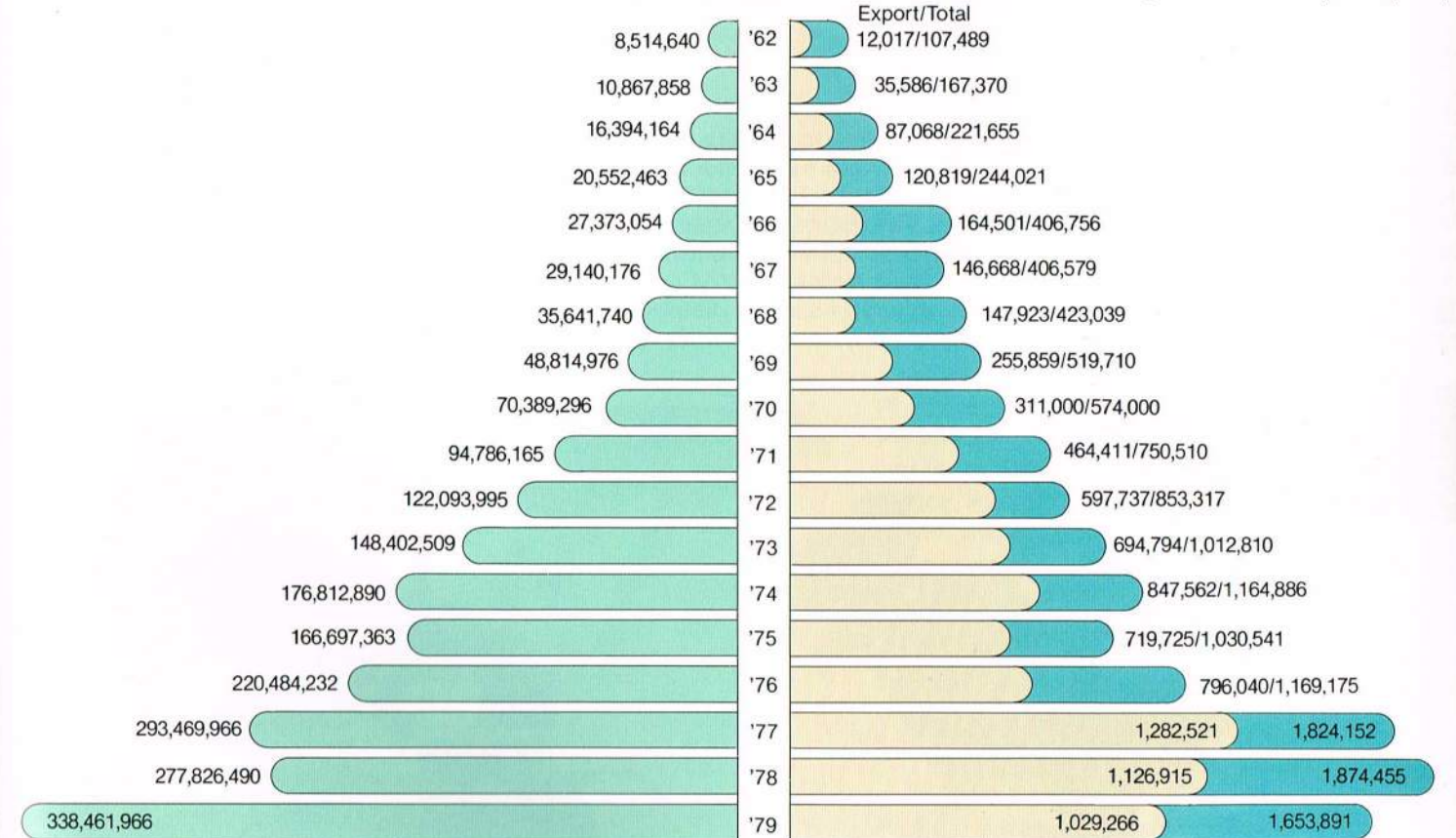
These trends continue today. But other new happenings, like the oil crisis have shifted living patterns in a new direction. Throughout all, Yamaha has kept a steady course; insisting on quality, variety, and good value for the money. It's a formula that's proven successful for a quarter of century, and one that Yamaha is confident will be valid in the future.



**Steady Growth of Gross Sales** (Unit: thousands of yen)

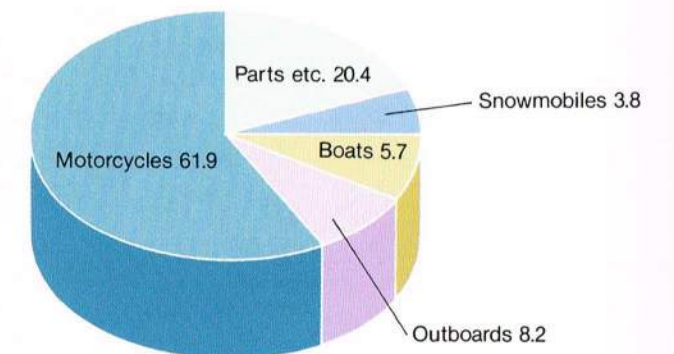


**Production and Export of Motorcycles** (Units)

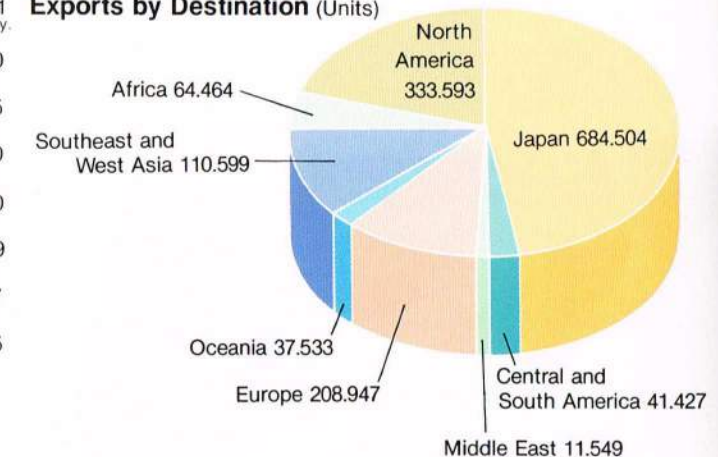


**Capital Increase** (Unit: yen)

**Sales by Product (%)**



**Exports by Destination (Units)**





# Yamaha and the world.

There are few places in the world you won't find Yamaha, and that includes the South Pole, the Sahara Desert, and the surf off the Seychelles. The availability of Yamaha products and Yamaha service are a big plus in the company's favor. In remote locations, users have the

same access to Yamaha technology and expertise that Londoners, Parisians, New Yorkers and Tokyoites have. The extent of Yamaha's worldwide network is shown on the map. And remember that each black dot only represents a distributor, who controls anywhere from ten to

several hundred individual retail outlets. Yamaha is also represented overseas by its own subsidiary companies, joint ventures and other corporate tie-ups which are also shown on the map.



## YAMAHA Overseas Corporations

**YAMAHA MOTOR CORPORATION, U.S.A.**  
P.O.Box 6555, 6555 Katella Avenue, Cypress, California 90630, U.S.A.

**YAMAHA MOTOR CANADA LIMITED.**  
480 Gordon Baker Road, Willowdale, Ontario, M2H 3B4, Canada

**YAMAHA MOTOR N.V.**  
Postbus 7829, 1008 AA Amsterdam, Prof. E.M. Meijerslaan 3, 1183 Av., Amstelveen, Holland

**YAMAHA MOTOR DO BRASIL LTDA.**  
Rodov. Presidente Dutra, Km 386 Guarullos-São Paulo, Brasil

- Yamaha Head Office
- Yamaha Overseas Corporations
- Joint Ventures (Motorcycle)
- Joint Ventures (FRP Boat)
- Technological Tie-ups (Motorcycle)
- Technological Tie-ups (FRP Boat)
- Distributors

