1981 No. 4
Yamaha News
YAMAHA
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Inside

The new 115HP model is also featured in the show.

The 20th Tokyo International Boatshow

Yamaha products get into the limelight!

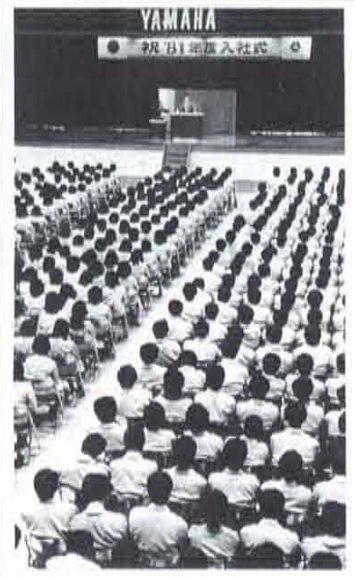
Representing the vivid picture of the growing boat industry, the 20th Tokyo International Boatshow took place at the Harumi International Trade Center for the period from March 25 through March 29.

As usual, the vast east and west exhibition pavilions were filled with grand, glamorous arrays of new sailboats, powerboats, dinghies and marine engines exhibited by 58 manufacturers and distributors.

The '81 Yamaha range of boats and marine engines consisted of 15 sailboats, 6 powerboats, 11 fishing boats, 22 outboard motors, 5 marine diesel engines which were on display all over the spacious Yamaha corner of the east pavilion.

The line-up of popular sailboats included three new models, the Y-30S, the Y-19 and the Y-13 which appealed greatly to a number of enthusiasts looking for something new and better. The brand-new Yamaha 115, the biggest model in the outboard range, was accepted as a manifestation of Yamaha's strong will toward the big-power market.

The sparkling Yamaha sailboat range



The rising generation

In Japan the fiscal year begins on April 1 for most of the companies. It is also on this date that young men fresh from school start their adult life as new employees.

This year about 800 young men joined Yamaha Motor and attended a grand ceremony held at the main office on April 1.

They are the rising generation enthusiastic about bearing the future of the company on their shoulders.

Ultra-modern facilities and equipment ensure the maximum of productivity

Ultra-modern facilities and equipment which have been adopted in the production line of Yamaha motorcycles, are greatly helping to increase overall productivity, ensuring high performance and high quality for each and every product. Included in them are the multijoint assembly robot, multiplex nuts feeder, linear motor conveyor system and non-pollution rapid plating system.
(see pages 10 & 11 for more details)

GP Motocross wins!

Hakan Carlqvist and Andre Vromans riding new YZM500 machines scored their first GP victory in West Germany while Marc Velkeneers gained the highest number of championship points in the 125cc Dutch GP.
(see page 5 for more details)

NEW YZR500

The new Yamaha factory road racer, the YZR500 has been designed and built on the basis of Yamaha's unmatched racer technology for even greater race performance aiming at the 500cc world championship title for the 4th consecutive year.
(see page 7 for more details)

Each and every model in the Yamaha outboard range is superior in both performance and quality.

YAMAHA MARINE DIVISION
The leader in boating

The Yamaha Marine Division which manifested a clear picture of always-growing Yamaha in the 20th Tokyo International Boatshow, is indisputably one of Yamaha's most important work divisions. Its history began when Yamaha introduced its first outboard motors and FRP runabouts on the market in 1960. That was a modest but very successful approach to boat and marine engine manufacturing which was virtually non-existent in Japan in those days. Full-scale production started the following year and Yamaha was off on its first leap toward its present diversified status.

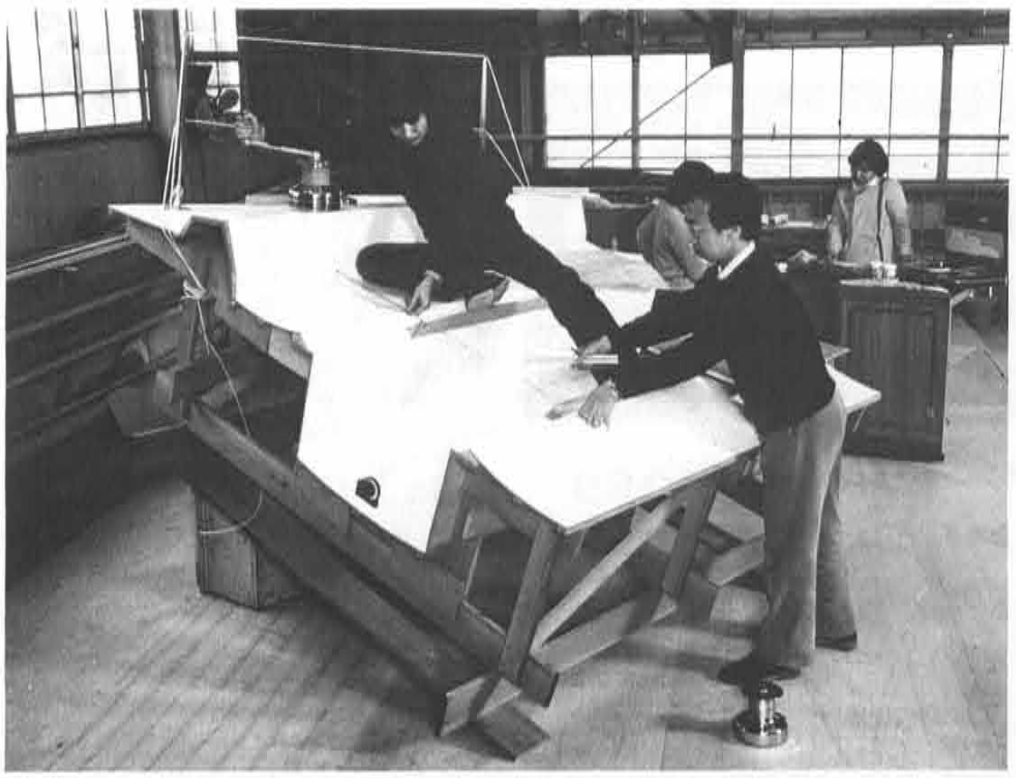
Yamaha was the first manufacturer to put FRP material in practical use for building boats on a mass-production basis in Japan. In addition, outboards were considered as a direct outgrowth of Yamaha's foremost motorcycle engine technology.

Over the period of 20 years since then, Yamaha has achieved a very spectacular growth expanding its production lines to cover a wide range of outboards from 2 HP to 115 HP including three kerosene models, together with marine diesels, as well as about 300 types of FRP boats including motorboats, sailboats, fishing boats, etc. Today, Yamaha is by far the largest boat and outboard manufacturer in Japan.

Latest available statistics show Yamaha's unchallenged market shares in Japan as follows:

- **Outboards—60%**
- **Sailboats—81.7%**
- **Powerboats—79.3%**
- **Fishing & utility boats—78%**

Computer aided refinement of basic drawing.



Full scale mock-up is used to make sure the sailboat has the best human engineering possible.

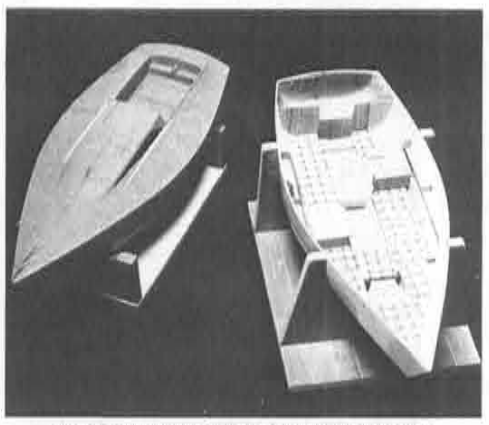
Yamaha outboards are covering both commercial and pleasure markets

Outboards rank top among Marine Division products. One of this product's outstanding advantages is that it is able to power almost any type of small craft easily while it is inexpensive to mount. Starting from around 1960, the use of outboards has rapidly become widespread especially among coastal-water fishermen in Japan. Yamaha has persistently been a vanguard in this growing trend since it marketed the first production model, the P-7G/K (air-cooled 2-stroke single, 7 HP) in 1960. Yamaha has continued to widen the outboard range by introducing new quality models one by one, with contributions to coastal-water fishery promotion in mind.

Similar and even greater efforts have been directed toward the mechanization of local small craft such as canoes, dugouts and other traditional boats in many developing nations particularly since the 1960's when keener attention was turned to more effective utilization of marine resources.

In most of these countries, various fishing equipment, such as fishing boats and marine engines suitable for particular local demands, are selected and supplied to fishermen on a national project basis. Now Yamaha is the only comprehensive supplier of all kinds of outboards, marine diesels, FRP utility boats and fishing boats. Its extensive contributions to the promotion of coastal-water fishery development projects has greatly helped to establish "Yamaha" as number one brand especially in the field of commercial-use outboards overseas.

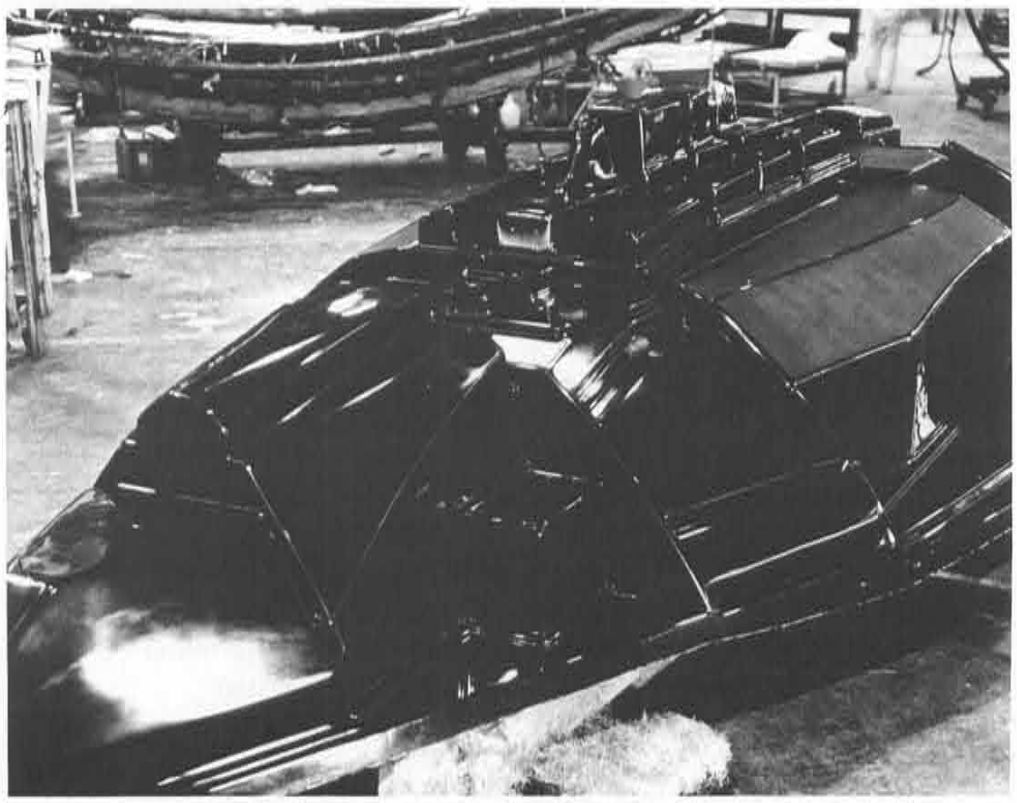
Yamaha's efforts which have been directed toward the pleasure market as well since outboard production started in 1960, are now taking shape in this highly competitive field both here and overseas. The '81 line-up of Yamaha outboards which was displayed during the 20th Tokyo International Boatshow, represented Yamaha's strong will aimed at the pleasure market.



Scale model is used to obtain a three-dimensional feel of the projected prototype.

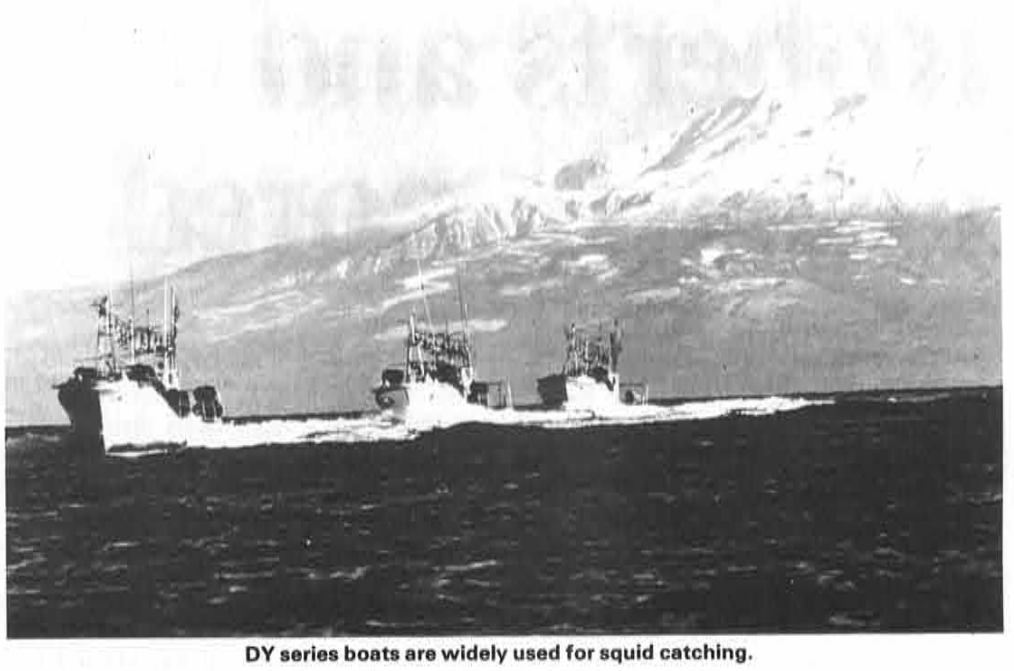
Yamaha sailboats win popularity

Yamaha's first sailboat was marketed in 1965. It was a small catamaran dinghy and its introduction heralded Yamaha's entry into this new field. The market of one-design sailboat, however, was immature in those days and some more years were needed before things took a full-scale upturn. It was in 1970 that Yamaha came back to the sailboat fields with three production models, Yamaha-15, Yamaha-22, and Yamaha-36, developed under licence agreement with Columbia Yacht, USA. Since that year, Yamaha has continued to introduce a number of in-house designed quality boats: the Wing of Yamaha; the Yamaha One Tonner; and the Yamaha Quarter Tonner, as well as popular-priced dinghies, including the Yamaha 14 "Seahopper", the Yamaha 13 "Cicala" and the Yamaha 11 "Mini-Hopper". All of these boats have provided tremendous value for the money and helped launch Japan's first sailing boom.



FRP mold is used to form the hull.

in Japan's industry



DY series boats are widely used for squid catching.

High performance and high quality

To ensure high quality and high performance for each and every sailboat, Yamaha adopts a unique integrated system from preliminary line drawing, through scale model testing, wood mold making and reinforcing, to final inspection for shipment. Quality control is also stressed before and during production. For example, both wooden and FRP molds are subjected to rigid accuracy and tolerance checks after they are built. They must be within 0.1 percent of the specified bow-to-stern, athwart and LOA specifications. During production, items such as gelcoat thickness, glass lamination, and other important factors are checked by inspectors and double-checked using computers.

Marine Division production facilities

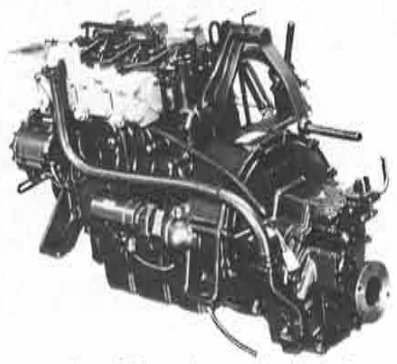
Yamaha outboards are manufactured at Sanshin Industries, Ltd. in Hamamatsu, Shizuoka-ken. Yearly production reached the 240,000 mark in 1980!
Yamaha pleasure boats are built at its Arai plant in Shizuoka-ken, near Yamaha's world headquarters. Fishing boats are built at five plants, each of which specializes in the type of boat most often used in its locality.
These plants are the Amakusa Works in Kumamoto-ken, the Shido Works in Kagawa-ken, the Gamagori Works, which also makes large pleasure boats, in Aichi-ken, the Ofunato Works in Iwate-ken and the Hokkaido Works in Hokkaido. Yearly production of all of the more than 300 types of boats Yamaha makes is now approaching 40,000.
Overseas, Yamaha builds boats in six countries through local companies. These countries, with company name and date of establishment in parenthesis, are: Sri Lanka (Yamaha Lanka Co., Ltd., 1979); Nigeria (Almarine, 1979); Argentina (Voguecraft, 1979); Venezuela (Yamaha Fibra C.A., 1977); Mexico (Imemsa, 1974); Colombia (Eduard Londno e Hijos Sucesores, 1975).

FRP fishing boats of diversified types and sizes

It dates back to 1968 that Yamaha marketed the first series production models of FRP fishing boats such as W-16, W-18, W-22, and W-26. These open-deck type small fishing boats were developed for fisheries in the inland and coastal waters as well as fishing farming.
Yamaha's entry in larger FRP boat building was even earlier. In 1965 Yamaha built a 56-foot tuna long-liner claimed to be the largest fishing boat ever made of FRP in Japan. The boat attested its excellent seaworthiness and performance while engaged in open-sea fishing operations.
It was in 1974 that Yamaha launched a 100-foot skipjack pole and line boat, the largest FRP boat in the Yamaha range. This is an outstanding example of FRP engineering techniques that has established Yamaha as one of the world's leading manufacturers of fishing vessels.
Now Yamaha's diverse manufacturing organization has five regional plants throughout Japan. These plants are turning out about 250 different sizes and types of FRP fishing boats such as the DY, DT, DX, W and J series which are designed and built to meet the particular needs of professional fishermen in respective localities.
These boats offer fishermen new standards of operating convenience, fuel economy and seaworthiness while they require far less maintenance than conventional boats and can exhibit the same performance using a fraction of the power.
In addition, Yamaha has long developed the following activities worldwide:

1. **Promoting the spread of mechanizing local traditional boats (canoe type).**
2. **Development and sale of fishing boats that meet local fishing methods and sea conditions.**
3. **Improvement or modernization of fishing methods and gear for higher work efficiency.**
4. **Local manufacture of F.R.P. fishing boats or offering of extensive technical assistance for it.**
5. **Offering of informative data or know-how concerning fisheries development.**

As part of these extensive, many-sided service and promotion activities, Yamaha is publishing fishery guide literatures such as Fishery in Japan and Fishery Journal, together with various fishery PR films including Costal Fisheries of Japan, in an effort to provide every kind of information essential to all the people who are enthusiastic about the development of coastal-water fisheries in their respective nations.



Small Yamaha marine diesel

Yamaha marine diesels for large-catch fishing

Yamaha marine diesels are also opening up a new market. Diesel-powered fishing boats can operate on the rough sea for an extended period of time. They can utilize a wide sea area as their fishig ground.
These boats can perform such large-catch fishing methods as small-scale trawling and small-scale purse seine more efficiently.

Marine Division Highlights

1960 Started production and sales of outboard motors and fiberglass boats.
1962 First Yamaha Water Skiing School opened.
1965 Yamaha builds its first sailboat, a catamaran dinghy, and its first commercial fishing boats.
1968 Yamaha begins selling FRP utility boats based on the traditional Japanese hull design.
1969 Yamaha wins government contract to supply FRP patrol boats to prefectural marine agencies.
1970 Cruising sailboat introduced and first Yamaha Sailing School opened.
1971 Yamaha wins license to produce International 470 Class sailing dinghies. First Yamaha Boat License School opens.
1972 Yamaha supplies 470 Class boats to Japan Student Yachting Association. Yamaha Sailing Association founded to popularize yachting as a sport. Yamaha signs agreement with Brunswick Corporation (USA) for development of outboard motors.
1974 Yamaha produces FRP beach board. Initial production run is 3,000.
1975 Yamaha's "Wing of Yamaha" wins Singlehanded Transpacific Race.
1976 Yamaha introduces its first marine diesel. Yamaha's "Magician II" wins Japanese One-Ton Championship.
1977 Yamaha produces it 10,000th commercial fishing boat and 60,000th boat. Yamaha helps organize the World 470 Class Championship at the Yamaha Marina on Lake Hamanako.
1978 Yamaha produces it 1,000,000th outboard and cumulative production of boats reaches 200,000. Water-jet boat introduced. Yamah's "Magician V" wins World Quarter-Ton Championship.
1980 Yamaha wins President's Award for advanced production technology from the Japan Reinforces Plastic Society for the Yamaha 10 Duckling, a small sailing dinghy.
1981 Yamaha introduces new 115 HP outboard motor as well as new sailboats, Y-30S, Y-19 and Y-13 during the 20th Tokyo International Boatshow.

High quality and high performance is ensured for each and every boat.

Roberts and Felice honored

From the United States: Kenny Roberts and Jimmy Felice were presented awards for their brilliant '80 achievements at the annual Motor Sport Press Association banquet held early this year. These awards represented their superior contributions rendered for the growth of American motorcycle sports. Roberts received his third straight Motorcycle Racer of the Year award which was his seventh award from the MSPA. Felice received an award given out only two times before — Junior Motorcycle Rider of the Year. The two previous winners were Mark Brelsford and Kenny Roberts.

"Ride Aware" Campaign

From the United States: Kenny Roberts is taking part in the "Ride Aware" media campaign currently being sponsored by the Motorcycle Industry Council. The public service messages, which feature motorcycling and other celebrities, were designed to communicate the industry's concern with safety, noise and the environment.

Print ads featuring Kenny and other selected riders have already appeared in the major enthusiast publications and 9,000 posters have been distributed by the four major manufacturers to their dealers for showroom display. In addition, a series of ads without the celebrity spokesmen, but stressing safety, noise reduction and concern for the environment, have been provided to 1,300 radio stations, while a 3-second "Ride Aware" T.V. public service ad has already been aired on 101 television stations.

Kenny's message stresses ways motorcyclists can improve the sport's image as follows:

"My bike makes a truckload of noise at 150 mph at Daytona. But city riding, that's a whole different thing. I use a muffler designed for my bike, and if it's not working right, I don't ride. Motorcycling is a super sport. But loud, out-of-tune machines make a lousy impression on all the non-riders out there. And that's bad for all of us."

New Yamaha service center in Kwangchow

Yamaha establishes a new service center in Kwangchow

From Kwangchow, China: Securing the cooperation of the Kwangtung Athletic Commission, Yamaha Motor has recently opened a new service center on the premises of the Kwangtung Gymnasium in Kwangchow. The new service center will serve as the headquarters of extensive repair service business including spare parts sale and guidance on correct machine handling in order to meet a possible increase in the popularity of Yamaha motorcycles

It dates back to 1979 that the first China-Japan Goodwill Yamaha Exhibition and Technical Exchange took place in Kwangchow in a very successful manner. In addition, last year three selected members of the Motorcycle Corps, the Kwangchow Athletic Commission, were invited to take a special motocross training course under guidance of Yamaha instructors in Japan, which helped to promote friendly relations between Yamaha and the Commission.

To establish the new service center all arrangements went on smoothly on an ideal international cooperation basis. It is also important to note that motorcycle repair and service business will be performed in close cooperation with the members of the said Motorcycle Corps.

A grand opening ceremony took place on March 15, attended by a number of the Commission members and Yamaha staff concerned. It was unanimously agreed that the new service center should be a symbol of mutual reliance and international friendship.

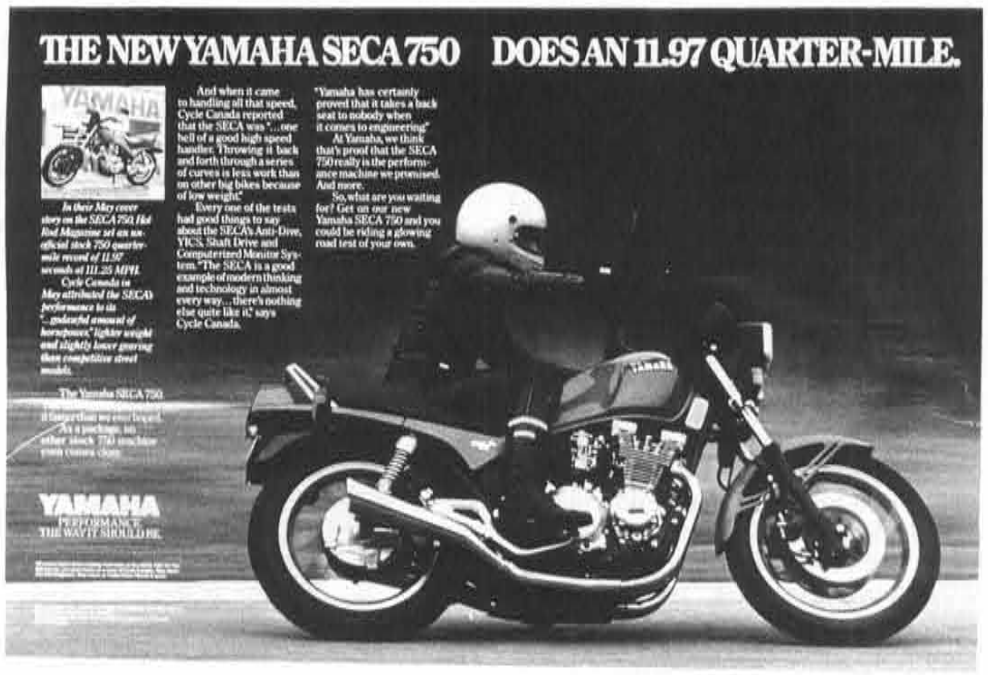
The workshop features all necessary repair/service facilities.

Seca 750 breaks a 12-sec barrier!

From the United States: Shocking the motorcycle world today, the Yamaha Seca 750 became the first standard production bike to break a 12-second barrier in the quarter mile run. The record time of 11.971 sec. at 111.24 mph was set during the performance test of this bike conducted by the staff of Hot Rod magazine in the mid-Feb. This record is even more significant and phenomental in light of the fact that the Seca is a shaft drive machine.

The test rider was Peewee Gleason of American Turbo Pak. He was amazed that the Seca didn't even require a clutch adjustment during the test session. Eight passes through the quarter mile were made, with very consistent times and speeds as follows:

Seconds		mph
12.127	at	109.75
12.046	at	110.56
12.040	at	110.56
12.129	at	110.56
12.178	at	110.29
12.110	at	110.42
12.101	at	110.42
****11.971****	at	****111.24****



Super-smooth handling and exciting performance

The record time reminds everybody that the Yamaha Seca 750 brings both super-smooth handling and exciting performance together. Apart from a proven shaft drive mechanism, the Seca 750 features a number of technical improvements including the Yamaha Induction Control System (Y.I.C.S.), anti-dive suspension system, computerized monitoring system, etc., the combined effect of which have resulted in the record time.

Contributions wanted

We at the Editorial Room of Yamaha News are always looking forward to having you supply us with various editorial materials so that we can make Yamaha News more instrumental to your business. Any sort of news or information would be highly appreciated if it is about Yamaha. Newspaper or magazine clippings will also serve to help us. Please attach some photos, colored or black white to your news or information wherever possible.

At the same time, we like you to clarify the following points:

- **When**
- **Where**
- **Who**
- **Why (for what purpose)**
- **How**

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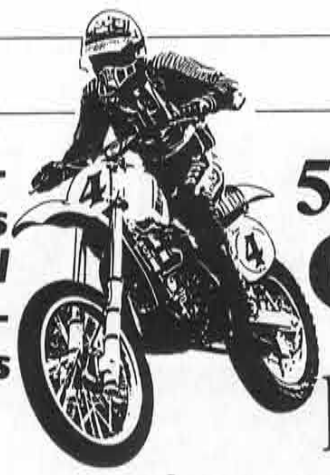
Mike Hailwood killed in car crash

From Great Britain: Mike Hailwood, who was nicknamed "Mike, the Bike" for his brilliant race achievements, were killed in a horrific car crash which happened at Tamworth in Arden, Warwickshire, England on the night of March 24 as he was taking his son David (6 years old) and daughter Michelle (9 years old) for a fish and chip supper. Mike's car was in collision with a lorry and subsequently a lamp post.

He sustained severe head and chest injuries in the crash and underwent emergency brain surgery in the Birmingham Accident Hospital. His condition, however, deteriorated and he died at 3 p.m. on March 26. His daughter Michelle was also killed in the accident but David escaped with minor injuries.

He collected a record of 14 TT wins and 10 world championships in a career spanning 22 years. He lived in a Earlswood, Warwickshire and ran a motorcycle shop with former 250cc world champion Rod Gould (ex-staff of Yamaha Motor N.V. in Amsterdam, Holland).



Moto-cross World Championships

500cc SWISS GP
Carlqvist & Vromans place first

H. Carlqvist

Yamaha factory riders Hakan Carlqvist and Andre Vromans displayed their real ability by winning each race of the Swiss GP, the 2nd round of the 500cc series held at Payerne on April 26.

In the first race Carlqvist forged ahead of B. Lackey (Suzuki) during the latter half of the opening lap. His new works Yamaha proved to be superbly dependable. Carlqvist went on to widen his lead from the others lap by lap. Second spot was firecely competed between Lacky and G. Noyce (Honda) or A. Malherbe (Honda).

Vromans was lying 5th with a front brake trouble. During the final stage of the race Noyce managed to gain the edge on Lackey and finished 2nd eventually about 6 seconds behind Carlqvist.

J-J. Bruno (Suzuki) streaked into the lead almost side by side with B. Lackey (Suzuki) right after the start of the second race, followed by A. Vromans (Yamaha) and H. Carlqvist (Yamaha). The first-stage mixed fight thrilled and excited a crowd of spectators. It was Vromans that got out of it first. His works Yamaha YZM500 was impressively fast and reliable.

He pulled away from the others and established a commanding 16-sec. lead even during the middle stage of the race.

The strongest challenge came from A. Malherbe (works Honda). Reigning world champion Malherbe relentlessly accelerated his machine to chase the leading Yamaha. Gaps between both riders were once reduced to 8 seconds. But the Yamaha ace was unstoppable. Expertly negotiating wet, slippery track conditions, Vromans took the chekered flag first about 8.4 seconds ahead of the Honda ace.

A. Vromans

(Suzuki). First race winner Gebores did not come to the starting line for the second race. He had injured his right ankle in a practice crash. The pain had already become unberable even during the first race. Another 40-minute race was too great for him.

Velkeneers scores his first victory!

125cc DUTCH GP

Belgian works Yamaha rider Mark Velkeneers won the second race of the Dutch GP held on April 5 after placing third in the first race which was won by his teenaged rival Elic Gebores. Velkeneers rode his works Yamaha home ahead of Belgian Jo Maertens (Yamaha) and reigning world champion Harry Everts (Suzuki). First race winner Gebores did not come to the starting line for the second race. He had injured his right ankle in a practice crash. The pain had already become unberable even during the first race. Another 40-minute race was too great for him.

MOTOCROSS RESULTS

125cc class

Round 1, Italian GP, March 29

1st race
1. G. Andreani ..... SWM
2. M. Rinaldi ..... TGM
3. A. Watanabe ..... Suzuki
4. C. Maddii ..... TGM
5. M. Miele ..... KTM

2nd race
1. M. Rinaldi ..... TGM
2. A. Watanabe ..... Suzuki
3. E. Geboers ..... Suzuki
4. G. Rahier ..... Gilera
5. M. Miele ..... KTM

M. Velkeneers (Yamaha) finished 9th in the 2nd race.

Round 2, Dutch GP, April 5

1st race
1. E. Gebores ..... Suzuki
2. H. Everts ..... Suzuki
3. M. Velkeneers ..... Yamaha
4. G. Rahier ..... Gilera
5. H. Seppenwoolde ..... Honda

2nd race
1. M. Velkeneers ..... Yamaha
2. J. Maertens ..... Yamaha
3. H. Everts ..... Suzuki
4. M. Rinaldi ..... TGM
5. G. Rahier ..... Gilera

Round 3, Autrian GP, April 12

1st race
1. A. Watanabe ..... Suzuki
2. M. Velkeneers ..... Yamaha
3. G. Andreani ..... SWM
4. H. Everts ..... Suzuki
5. Y. Khudiakow ..... CZ

2nd race
1. H. Everts ..... Suzuki
2. A. Watanabe ..... Suzuki
3. M. Velkeneers ..... Yamaha
4. C. Maddii ..... Aprilia
5. Y. Khudiakow ..... CZ

Round 4, West German GP, April 26

1st race
1. G. Andreani ..... KTM
2. H. Everts ..... Suzuki
3. M. Rinaldi ..... TGM
4. E. Geboers ..... Suzuki
5. G. Rahier ..... Gilera

2nd race
1. G. Andreani ..... KTM
2. E. Geboers ..... Suzuki
3. M. Rinaldi ..... TGM
4. H. Everts ..... Suzuki
5. M. Miele ..... KTM

250cc class

Round 1, French GP, March 29

1st race
1. S. Schneider ..... Sachs
2. M. Tarkkonen ..... Yamaha
3. J-P. Mingels ..... Yamaha
4. J-C. Laquaye ..... SWM
5. G. Jobe ..... Suzuki

2nd race
1. K. V. de Ven ..... KTM
2. G. Jobe ..... Suzuki
3. H. Kinigadner ..... Puch
4. P. Decendre ..... Husqvarna
5. J. Kristoffersen ..... Yamaha

Round 2, Spanish GP, April 5

1st race
1. G. Jobe ..... Suzuki
2. J-C. Laquaye ..... SWM
3. S. Mortensen ..... KTM
4. F. Kobele ..... Honda
5. R. Boven ..... Husqvarna

2nd race
1. G. Jobe ..... Suzuki
2. N. Hudson ..... Yamaha
3. K. V. de Ven ..... KTM
4. R. Dilffenbach ..... Honda
5. M. Margarotto ..... Maico

500cc class

Round 1, Austrian GP, April 5

1st race
1. A. Malherbe ..... Honda
2. J-J. Bruno ..... Suzuki
3. A. Vromans ..... Yamaha
4. H. Schmit ..... Maico
5. G. Reiter ..... KTM

2nd race
1. A. Malherbe ..... Honda
2. J-J. Bruno ..... Suzuki
3. J. van Velthoven ..... KTM
4. G. Reiter ..... KTM
5. G. Noyce ..... Honda

Round 2, Swiss GP, April 26

1st race
1. H. Carlqvist ..... Yamaha
2. G. Noyce ..... Honda
3. B. Lackey ..... Suzuki
4. A. Malherbe ..... Honda
5. A. Vromans ..... Yamaha

2nd race
1. A. Vromans ..... Yamaha
2. A. Malherbe ..... Honda
3. J-J. Bruno ..... Suzuki
4. H. Carlqvist ..... Yamaha
5. T. Pikkarainen ..... Maico

ROAD RACE GP RESULTS

Austrian GP — April 26

350cc class

1. P. Fernandez ..... Yamaha
2. D. Mang ..... Kawasaki
3. J. Ekerold ..... Yamaha
4. G. Geddes ..... Bimota
5. C. Lavado ..... Yamaha

500cc class

1. R. Mamola ..... Suzuki
2. G. Crossby ..... Suzuki
3. H. Kawasaki ..... Suzuki
4. B. Sheene ..... Yamaha
5. B. Van Dulmen ..... Yamaha

Road Race World Championships

"King" Kenny hits back!

The combination of Kenny Roberts and the new square 4-cylinder 500cc Yamaha won the West German GP (2nd round) at Hockenheim on May 3, watched by a record crowd of more than 150,000.

Setting a record lap at 2m 10.55s (116.26 mph), Kenny finished first about 0.44 sec. ahead of Randy Mamola on a works Suzuki. Kenny and his Yamaha repeated a success in the Italian GP (3rd round) at Monza on May 10. (see our next issue for more details)

M. Fontan wins Moto Journal 200

Mark Fontan (reigning world endurance champion) rode his Sonauto Yamaha-entered 500cc production racer to a win in the Moto Journal 200 at Paul Ricard on April 12. He finished three seconds ahead of Wil Hartog on a new Suzuki racer.

Fontan's team-mate Christian Sarron was third ahead of Dutchman Boet van Dulmen (Yamaha). Italian rider Marco Lucchinelli was fastest in practice but retired from racing after 10 laps when his suzuki machine seized.

RESULTS

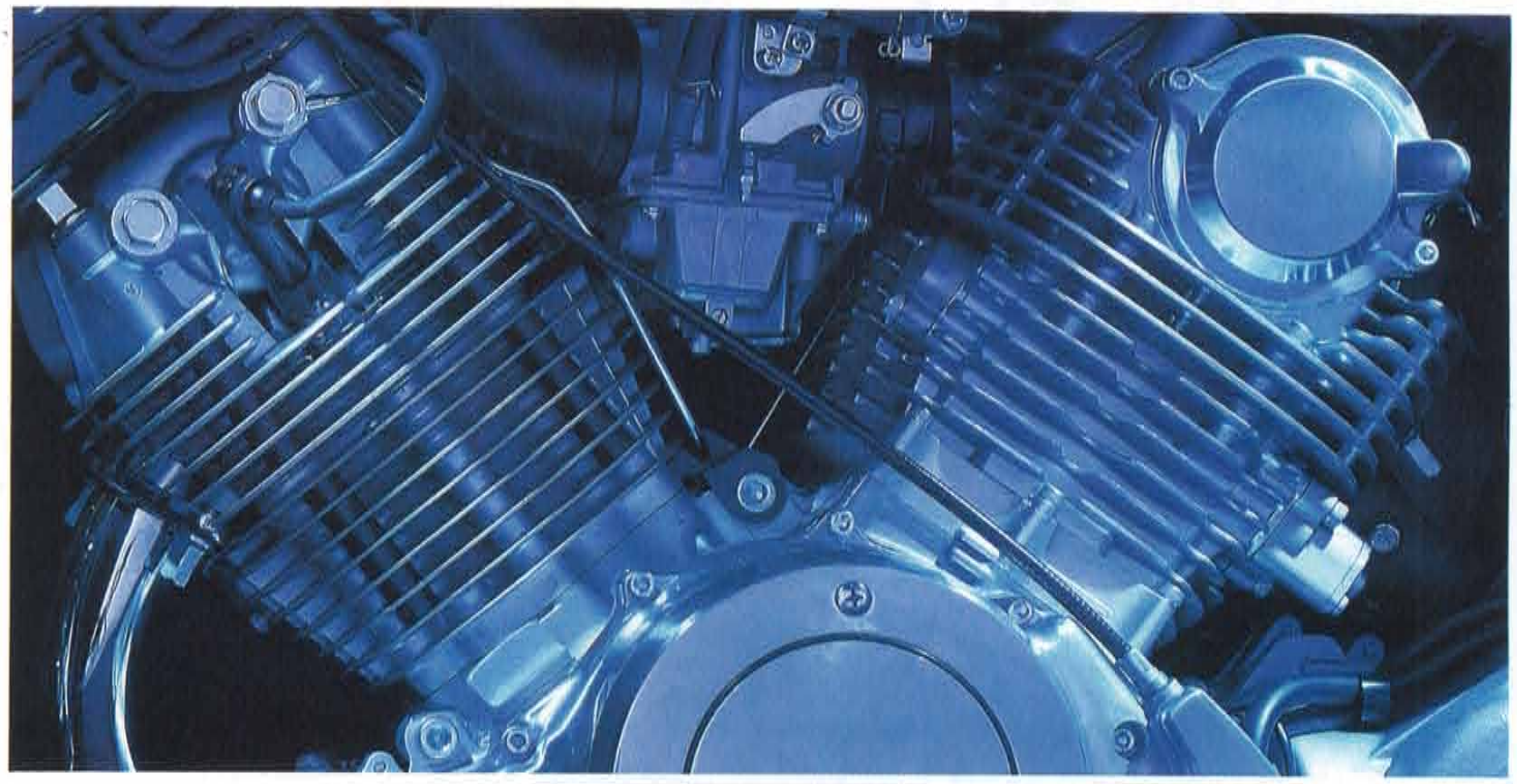
1. M. Fontan ..... Yamaha
2. W. Hartog ..... Suzuki
3. C. Sarron ..... Yamaha
4. B. van Dulmen ..... Yamaha
5. R. Roche ..... Suzuki

Development story

YAMAHA V-TWINS

Number One in the Yamaha vee-twin line-up is the 980cc TR1 - a "European" model, conceived in conjunction with Yamaha's European product development staff and with the European market foremost in mind.

On the other hand, the second of the vee-twins - the XV750 is an "American" model developed via the USA for their own market. It is sold in Europe to satisfy the ever-growing popular demand for "US Custom" style bikes in Europe.
The development story of these models is introduced as follows:



The Yamaha TR1 which has been introduced on the European market is arousing a great sensation among expert journalists as follows:

Motor Cycle News (Great Britain)
YAMAHA'S "V" FOR VICTORY - Yamaha are giving tourers the big V, and claim it is a sign of the times.....

Moto Journal (France)
The Yamaha TR1 is an entirely innovative v-twin bike to satisfy the needs of modern motorcyclists .....

Motorrad (West Germany)
"Classic" and "Modern" are brought together in the Yamaha TR1 V-Twin .....

Heritage of the old v-twins

Even well into the nineteen-seventies, when multi-cylinder street bikes were an accepted and admired part of the motorcycle scene, the big vee-twin was still right up there in the ratings.
It was on the heritage of bikes such as the Brough, the Vincent and the Ducati that Yamaha Europe drew for the TR1. They were looking for the combination of taut handling, high power-to-weight ratio and compact build that only thoroughbred European breeding could produce.
On the other side of the Atlantic, Yamaha Motor USA were - not suprisingly - looking at the vee-twin from a totally-opposite viewpoint.....a laid-back, comfortable cruiser in the accepted American idiom. Hence the construction of the XV750.
The result of this parallel development, half a world apart, was first and foremost a vee-twin to ideally suit each market. The sporting TR1 for Europe and the XV750 cruiser for the American freeways.

A definite form of self-expression

What Yamaha were aiming at was a progressive diversification to satisfy customer's needs. It was felt that today's highly-systematised modern society does cause a certain amount of frustration in addition to its advantages....mainly due to difficulties in expressing one's own individuality. Motorcycling is very definitely a form of self-expression to many people and therefore Yamaha felt that the machine which would take the company "into the eighties" should be as different as possible from anything else on the market.
To this end, the designers and product development staff began the project with a totally clean sheet of paper on the drawing board. Their only design parameters were that the bike should be highly individual, responsive and controllable and should have low fuel consumption to cope with present and future energy restrictions.

No one could deny that multi-cylinder engines had changed motorcycling for the better and a complete range of "multis" with their smooth engine power will always be a feature of the Yamaha range in the foreseeable future.
There are disadvantages, however, in terms of size, cost, the need to be a competent rider to do justice to the engine power and, above all, the fact that every major manufacturer has this segment of the market totally covered.
Bearing all this in mind, the Yamaha development group turned their interest to a twin cylinder machine and it didn't take long to focus exclusively on the vee-twin.

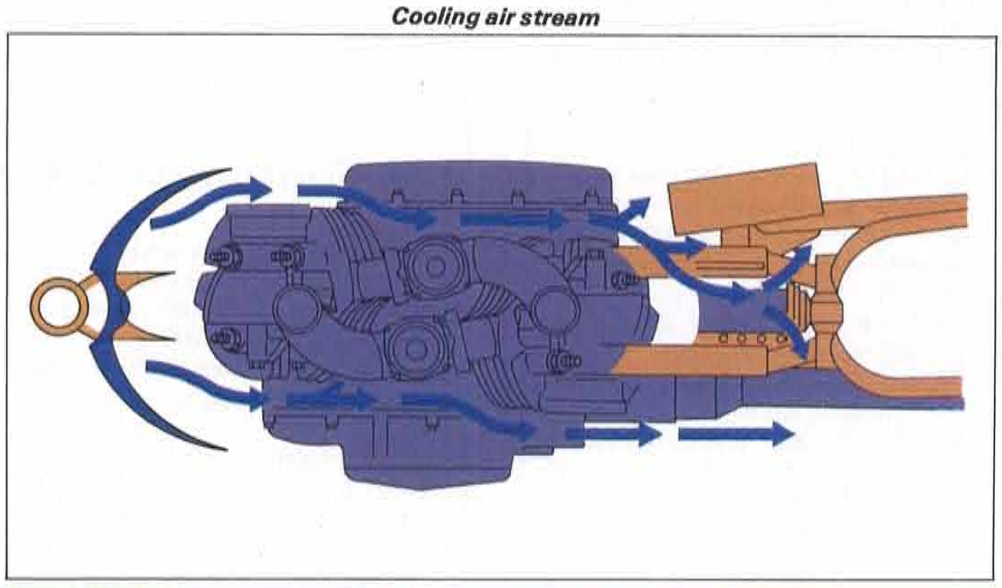
Advantageous in-line layout

The vee-configuration has all the twin cylinder advantages of compact build, lighter weight, ample torque in the low-to-medium speed range and better fuel economy. And it does not have the disadvantage of inherent vibration.
Other advantages of the "vee" is that it has occupied a place in motorcycle history right from the very beginning and it has an exhaust note and "feel" to the engine that is truly exciting to the rider. Instead of the annoying vibration of the big parallel twin or the turbine smoothness of the multi, the vee-twin transmits its power impulses to the rider through seat and handlebars. The vee-twin rider truly feels a "part of his machine".
Having decided upon a vee-twin engine configuration, the next step was to consider whether it should be an "in-line" vee or horizontally opposed.
The advantages of the "in-line" layout soon became obvious. It enabled designers to make the total machine lean and narrow and also gave a more dynamic side view...especially of the engine itself. The narrow chassis design would allow a better riding position and the more centralised weight distribution would result in much better handling.
And, most important, it would not have the torque reaction which hampers gear-changes and general riding characteristics of horizontally-opposed engined machines.

A 75-degree vee

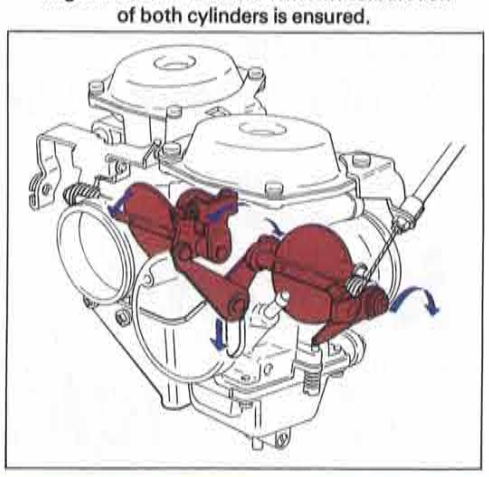
Points discussed in detail were the possibility of breaking completely away from accepted chassis design, location of carburettors and exhaust systems, how to best cool the rear cylinder (seen by many people as a problem with the in-line vee-twin configuration) and how to achieve good emission controls which are so necessary in this motorised age.
Also discussed were the use of alternative chain or shaft final drive systems and how to avoid the long wheelbase that detracted from the handling abilities of certain in-line vee-twins.
Beginning with the engine, the first major decision was to make the unit a 75 degree vee-configuration.
Actually, it is well-known that the best-balanced layout for any twin cylinder unit is a 90 degree vee. One cylinder's moving parts act as a counterweight to the other to provide near-perfect balance and consequent lack of heavy vibration.
Yamaha, however, went to the 75 degree vee for a number of reasons. First and foremost it was a case of eye-appeal. The narrower angle between the cylinders makes a more compact engine unit, especially with the carburettors "filling in" the angle of the vee. Additionally, the use of the 75 degree vee shortens the overall length of the power unit and

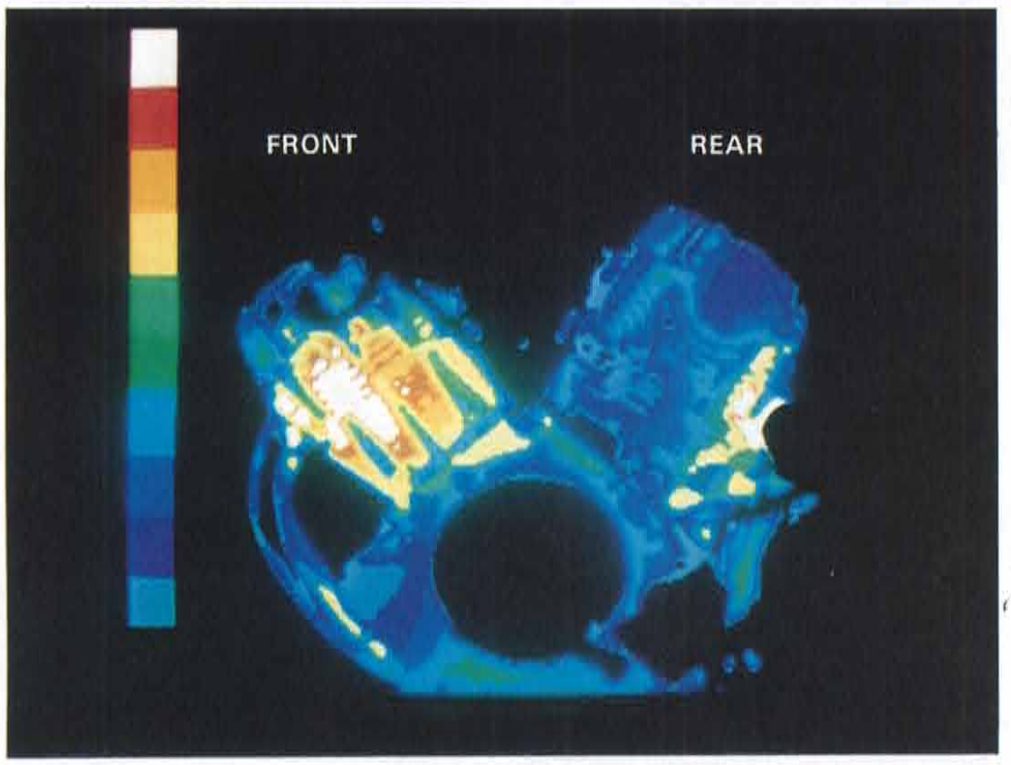
Cooling air stream

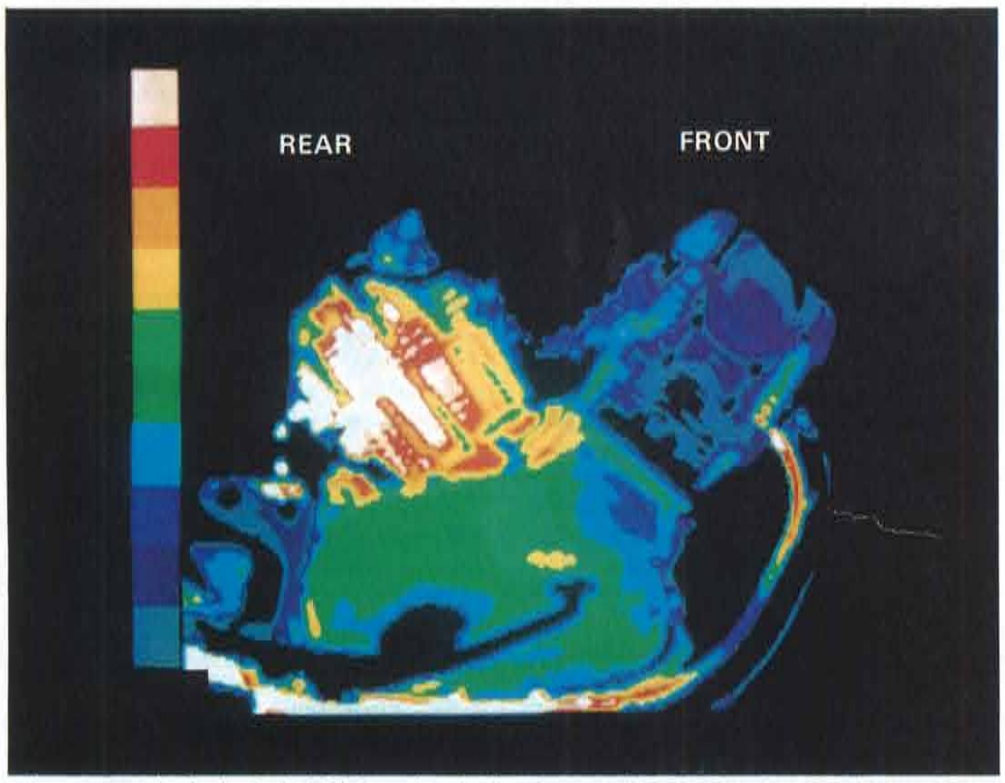


Synchronized throttle control system.

Two SU-type carburetors are mounted in the angle of the vee. Their operation is synchronized via a single cable so that more efficient carburetion of both cylinders is ensured.







Temperature distribution in the V-Twin engine. Cooling the rear cylinder has long been a problem on in-line v-twins. But on the Yamaha V-twin, a bore ring is used to join cylinders and heads, which means a much larger joint surface. This results in faster heat transfer. In addition, air pressure is effectively reduced in a space behind the engine so that air stream is forcibly directed toward the rear cylinder. As you can see, cooling efficiency is so increased that temperature difference between front and rear cylinders causes no adverse effect, resulting in high, dependable performance.

therefore allows a shorter wheelbase chassis for more precise handling.
As far as vibration is concerned, it is at a level barely in excess of that achieved by the 90 degree twin and a little vibration transmitted to the rider was seen by the designers as a plus factor rather than a negative one. It gives that pulsing "feel" which tunes the rider into the behaviour of his engine.

Effective rear cylinder cooling

Still aiming at a compact "engine block" Yamaha mounted two SU-type carburettors in the angle of the vee and perfected an ingenious mechanism to synchronise their operation via a single cable. One butterfly throttle valve opens forward, the other backward and synchronising the operation obviously means more efficient carburation of both cylinders. This naturally gives increased fuel economy and cleaner exhaust emissions...both vitally relevant to the ecological climate of the next decade.
Cooling the rear cylinder has always been held to be a problem on in-line vee-twins but, in fact, it is not half as bad as the average person thinks. In fact, it's probably less of a problem than cooling the centre two cylinders of a typical parallel four, where cooling airstream hits only the front and, to an even lesser degree, rear portions of the cylinders.
At least with the vee-twin layout the cylinders are independent of one another so that the airstream at least cools all the faces of them. Basically, it is a question of directing air around them...not a difficult problem to solve..Additionally, solving the problem is made easier by modern materials and technology.
In designing the Yamaha TR1 chassis, with its pressed-steel monococque as the main frame member, Yamaha saw a way to utilise it as a cooling aid.

Slim and compact

Cylinders and heads are joined without the use of a gasket. Instead a bore ring is used, which means a much larger joint surface between cylinder and head. This results in faster heat transfer between the two components and, therefore, quicker overall heat dissipation. Cylinders and heads are clamped together with long through bolts into the crankcase to increase engine rigidity. This is most important as the engine acts as a stressed unit in the chassis design.
Having the cast-iron cylinder liner shrunk into the alloy barrel, rather than being a simple press fit, also aids the cooling process by allowing fast heat transfer between the parts. In addition the area of the piston around the second ring (which bears the greatest thermal load) is coated with a special anti-friction and anti-thermal compound. A special oil pump which completely scavenges the integral wet sump keeps lubricant temperature down and, finally, the exhaust port has been shortened to increase heat dissipation at one of the most critical points in the engine's temperature sono.
The new Yamaha vee-twin motor was kept as slim as possible and has a width of only 377mm...just 83mm wider than Yamaha's single cylinder XT500! The journals of the crankshaft are set at 180 degrees (opposite one another) and the cylinders are slightly offset to accomodate the positioning of the connected rods on the common crankshaft. Cylinders and heads on each cylinder are interchangeable.

Mono-cross chassis

The new vee-twin engine unit was then integrated by the designers into the first big street version of Yamaha's famous monocross chassis. A pressed-steel monococque box section and the engine unit itself form the main chassis unit from which is suspended the triangulated rear sub-frame. The single, large-capacity De Carbon damper has an automatic temperature compensating device to cope with the heating of the damper fluid under continuous use and its damping effect can be adjusted through six different stages via a remote control setting on the exterior of the machine. Re-positioning the remote control cables on the shock absorber gives even more adjustment possibilities.
The result of all of this innovation and design expertise is the addition to the Yamaha range of two machines ideally suited to the new decade. Individualistic and ecologically-sound in terms of both energy consumption and low air pollution. Socially-responsible machines that depart from the conspicuous consumption of the nineteen-seventies but which still deliver their own particular brand of high excitement.

'81 Yamaha Factory Road Racer

YZR500

The Yamaha YZR500 is reputed to be one of the strongest and the fastest road racing machines ever built and ridden in the world. The 2-stroke engine which powers this machine adopts a proven piston valve parallel 4-cylinder layout, together with a highly effective water-cooling system so that race performance is increased to a maximum. The '81 YZR500 has been developed on the technical basis of the '80 model on which Kenny Roberts achieved a brilliant 500cc victory for the third consecutive year. Its race performance is even greater as power output, maneuverability, and reliability as well as a number of other characteristics have been increased and improved. Here is another exciting news for road race fans! In addition to the '81 YZR500, a new experiment racer is also ready to be ridden in the 500cc series this year. This machine is powered by the newly designed 2-stroke rotary valve square 4-cylinder engine with the Y.P.V.S..

•Engine type: 2-stroke, water-cooled, YPVS, piston valve, parallel 4 cylinders •Displacement: 499cc •Max. power output: 120PS or more/10,500rpm •Max. speed: 270km/h or more •Ignition: C.D.I. •Lubrication: Mixing (30 : 1) •Clutch: Dry multi-plate •Transmission: 6 speeds •Tire (Front): 3.25/4.00-18 (Rear): 4.30/6.30-18 •Suspension (Front): Telescopic (Rear): Swing arm (with Monocross system) •Brake (Front): Double disc (Rear): Single disc •Weight: Less than 138kg

•Engine type: 2-stroke, water-cooled, YPVS, rotary disc valve, square 4 cylinders •Displacement: 499cc •Max. power output: — •Max. speed: — •Ignition: C.D.I. •Lubrication: Mixing (30 : 1) •Clutch: Dry multi-plate •Transmission: 6 speeds •Tire (Front): 3.25/4.00-18 (Rear): 4.30/6.30-18 •Suspension (Front): Telescopic (Rear): Swing arm (with Monocross system) •Brake (Front): Double disc (Rear): Single disc

Siam Yamaha holds grand dealer conferences in celebration of the 15th anniversary of the company's founding

The new RX-S is introduced in a very impressive manner featuring much of the space age image.

From Thailand: On February 26 Siam Yamaha held two grand dealer conferences in Bangkok in celebration of the 15th anniversary of the company's founding, thus renewing a determination for another leap forward.

One was held for motorcycle dealers at the Dusit Thani Hotel. The conference (6th running) was highlighted by the newly introduced RX-S. As usual, selected dealers won official commendation for their excellent business results. Mr. Kasem, President of Siam Yamaha awarded them a trophy of appreciation.

In addition, new PR films and commercials, such as Thai Grand Prix II, Yamaha Today, etc. were shown during the conference. The other was held at the Chavalit Hotel. It was the first conference held for power products dealers. 60 dealers from every part of Thailand attended the conference, reflecting Siam Yamaha's specific enthusiasm about this business division.

Number one dealer in each block was commended for its superior contribution to the market enlargement of Yamaha power products. The basic sales policy for '81 was announced with specific emphasis given to the market trend by means of posters and graphs while the range of Yamaha power products including new models was introduced along with established sales targets and detailed sales tactics.

In honor of Siam Yamaha on this occasion Mr. T. Arata, Managing Director and Mr. Y. Sato, General Manager attended both conferences on behalf of Yamaha Motor.

Power products dealers are greatly interested in Yamaha portable generators, multipurpose engines and water pumps.

Every important matter is being discussed. From left to right: Mr. Okada, staff of Power Products Divison, Mr. Sucharti, Managing Director Arata and Mr. Adisuk.

Power products

Senior sales staff of Siam Yamaha visit Yamaha Motor

From Iwata: Siam Yamaha is putting greater efforts in the sales promotion of Yamaha power products in Thailand. The first dealer conference that was held in February of this year, was a manifestation of these efforts.

In addition, the company dispatched two senior sales staff to Yamaha Motor at Iwata early in April. One was Mr. Adisuk, sales manager and the other Mr. Sucharti, north depot manager. They discussed the details of future sales policy with the staff of Yamaha Motor concerned.

Both managers made a study tour of the Show Works which manufactures various power products. They looked deeply impressed by the advanced production process of these products.

They also learned the method of quality control and parts inspection. To make their first visit more significant, they met some of the Yamaha power products dealers in Japan, thus exchanging lively views on a number of important sales problems.

Yamaha Football Club's goodwill playing tour

Thailand — Singapore — Malaysia — China

From Iwata: The Yamaha Football Club, which was formed in 1972, is a relatively new one in Japan. The Club, however, has attained a very remarkable growth, contributing to the elevation of Yamaha's brand image, until now under the superb leadership of Mr. Ryuichi Sugiyama, who played as the best wing of the bronze medal winning Japanese team in the Mexico Olympics.

Last year the team made a playing tour of Malaysia for the first time. The first overseas playing tour was a great success as it helped to improve the skill of team members while making contributions to the promotion of international friendship.

This year the team made a larger-scale playing tour of four countries, that is, Thailand, Singapore, Malaysia and China, having goodwill matches with selected football teams in respective countries for the period from February 27 through March 15 as follows:

- February 27 (Thailand)
  Yamaha 1 — 3 The Royal Navy Club
- March 3 (Singapore)
  Yamaha 2 — 1 The Singapore Selection Team
- March 6 (Malaysia)
  Yamaha 1 — 3 The Trengganu State Team
- March 8 (Malaysia)
  Yamaha 2 — 0 The Penang State Team
- March 10 (Malaysia)
  Yamaha 2 — 1 The Selangor State Team
- March 15 (China)
  Yamaha 0 — 1 The Kwangtung Selection Team

Apart from these results, the goodwill matches proved to be of a help toward the furtherance of friendly relations between Japan and these countries.

Exchange of pennants between the captains of Yamaha and Kwangtung Selection Teams.

The Yamaha name on football uniforms

From Chile: Sports activities prove to benefit business directly or indirectly.

P. Importadora Yamachile Ltd. carried out an effective advertising of Yamaha's name recently. In Chile, where football is well known as a very popular sport, pro-football players appeared in football uniforms bearing the Yamaha name. This photo shows a line-up of members of the Club Sportivo Audax Italiano, who recently participated in a football championship wearing specially made Yamaha football kits. We think you will agree that they look extremely smart.

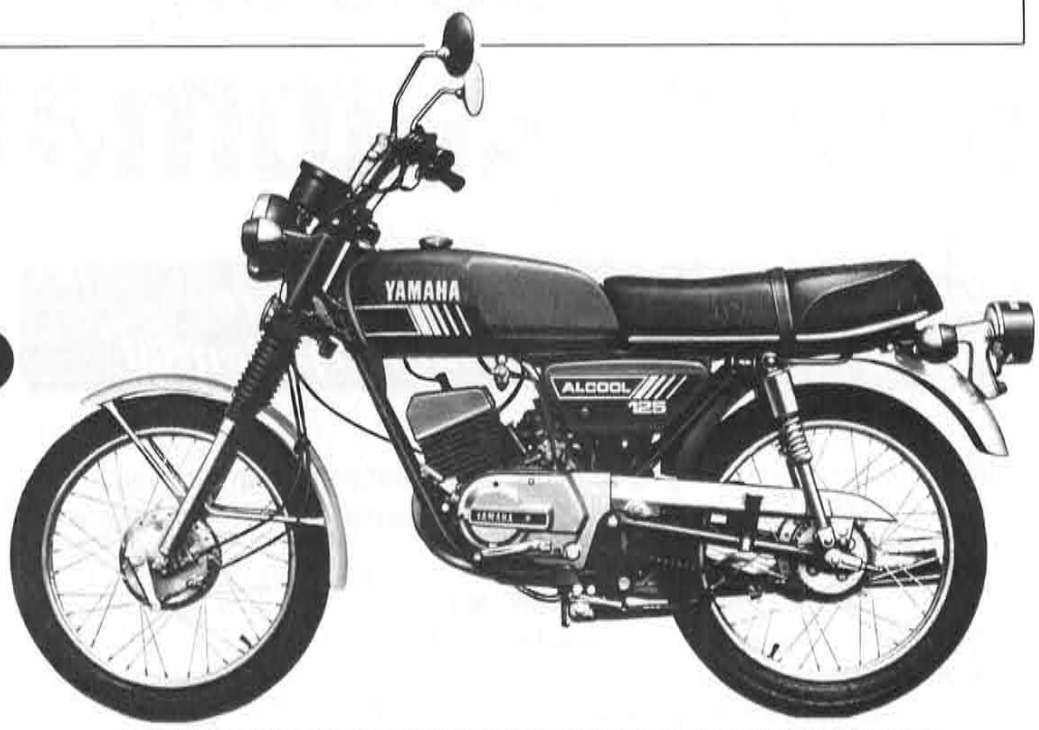
Beer and Golf Car
Both Are the Greatest!

Under the slogan: "Look for the Löwenbräu Golf Car", milledge Bros. Pty. Ltd., Yamaha's Australian importer, recently conducted a sales promotion campaign for beer and Yamaha golf cars at a local golf course, in a tie-up with a beer company. The golf cars, whose loading platforms temporarily remodeled, were loaded up with iced canned beer and young female publicity assistants drove them about the links, displaying their superior handling and performance, and treating visitors to free beer.

Yamaha golf cars were first put on the market in 1978. Since then sales have been steadily increasing every year, and this year 20,000 cars are expected to be sold chiefly in North America and Oceania.

YAMAHA RX125AL

World's first 2-stroke 100% alcohol bike



Yamaha RX125AL is the first 2-stroke 100% alcohol bike ever produced in the world. 6,000 machines will be produced per annum.

Yamaha motor has long continued technical research and development on an entirely-new alcohol bike jointly with Yamaha Motor do Brasil Ltda.
Officially homologated by the Brazilian Government and backed by complete mass-production technology, the brand-new Yamaha RX125AL will make its debut on the Brazilian market in May as the first 2-stroke 100% alcohol bike ever built in the world.
The Yamaha RX125AL was homologated by the Brazilian Government within the shortest period time ever, which manifested the excellence of Yamaha's alcohol engine technology to meet the public need in Brazil, creating a great sensation among all quarters concerned.

Development is brought to a success within two years

Due to crucial oil shortage it has long mandatory to use 20% alcohol blend gasoline called "gasohol" as fuel for motorized vehicles in Brazail where no oil is produced.
Now the Brazilian Government is employing a positive policy toward the use of much more alcohol produced from agricultural products containing much sugar and protein, in order to cope with a recent skyrocketing rise in oil prices.
It dates back to 1979 that the Yamaha group started its technical research and development on a new alcohol bike in the light of such a hard oil situation in Brazil. The first prototype which was introduced during the 23rd Tokyo Motor Show held in autumn of 1979.
This prototype was introduced in Issue No. 1 of '80 Yamaha News.
Even if fuel is switched to alcohol from gasoline or gasohol, the construction or handling method of a motorcycle undergoes no drastic change. From the point of research and development technology, however, this involves a number of complex problems as follows:

1. Alcohol is extremely low in calorie (6,200 kcal/kg against gasoline's 10,600 kcal/kg). Thus nominal fuel consumption is increased.
2. Alcohol is not easily vaporized and prevents the engine from starting smoothly at a low temperature.
3. Alcohol used in Brazil contains 5% water. This can cause the fuel feeding system or engine inside to get rusty.
4. Alcohol is apt to corrode acrylic rubber, plastics, aluminum, etc.

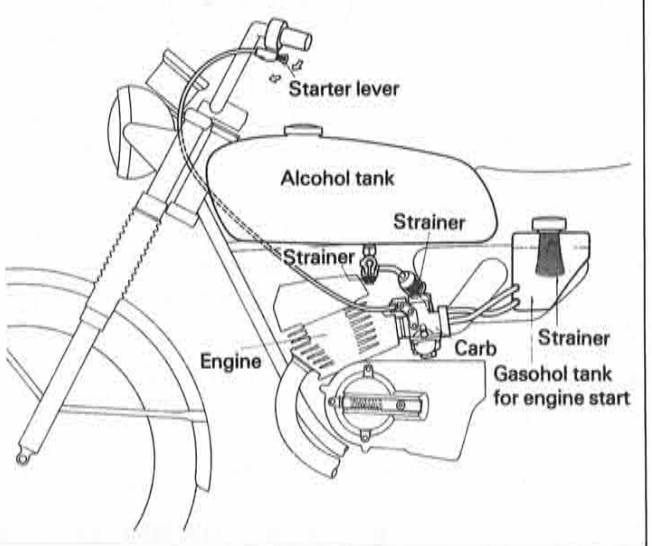
On the other hand, the heat of vaporization is so high that it increases the amount of air intake by self-cooling. Its octane rating is also high, thus helping to obtain a higher compression ratio so that heat efficiency and engine performance are increased.
In the light of these characteristics exclusive to alcohol fuel, the Brazilian Government sets stricter conditions for alcohol bike homologation. In particular, an increase in fuel consumption must be within 25% at full throttle, compared to a gasoline bike. In addition, an increase must not exceed 6% under whatever riding condition, compared to the best data a gasoline bike obtains under the same condition. The engine must start at −10°C as well. The Yamaha RX125AL satisfied all these requirements in the presence of Brazilian authorities concerned.

Yamaha RX125AL is easy to handle

The Yamaha RX125AL is, as a matter of course, designed and engineered by giving specific emphasis to the characteristics of alcohol fuel. Its handling is as easy as a gasohol bike.
Gasohol must be used for starting at low temperature but special carburetor system allows easy, smooth switch to alcohol for normal riding.
Main technical features are as follows:

1. **The newly developed carburetor is so set that alcohol fuel ensures its most stable combustion under all riding conditions.**
2. **The newly developed carburetor supplies optimum air/fuel mixture into the engine even at low temperature or emergency.**
3. **The starter lever on the handle grip allows easy, one-touch changeover from gasohol starting at low temperature to normal starting.**
4. **The automatic return system takes the disengaged starter lever back to its alcohol starting position after gasohol starting is finished at low temperature. This prevents the waste of gasohol.**
5. **Anti-dust, anit-rust and anti-swelling devices and measures are adopted in this model to prevent the fuel feeding system from being badly affected by alcohol fuel, thus giving specific emphasis to maintenance-free advantages.**
6. **A reserve cock prevents the fuel tank from non-gasohol trouble when the engine must be started at low temperature or emergency.**
7. **Fuel economy has been one of the main points for technical reserarch and development of this model. Avirtual increase in fuel consumption is held to some 20%, accordingly.**

Fig. 1 Fuel feeding system



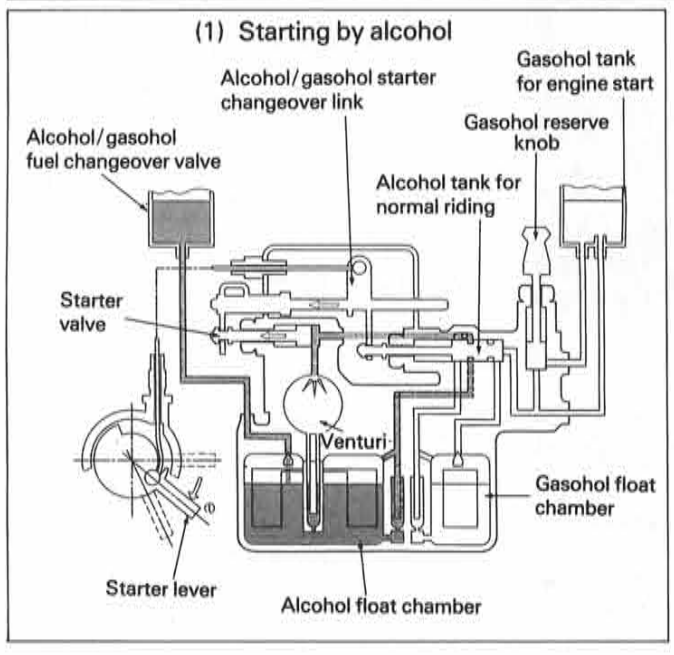
SPECIFICATIONS

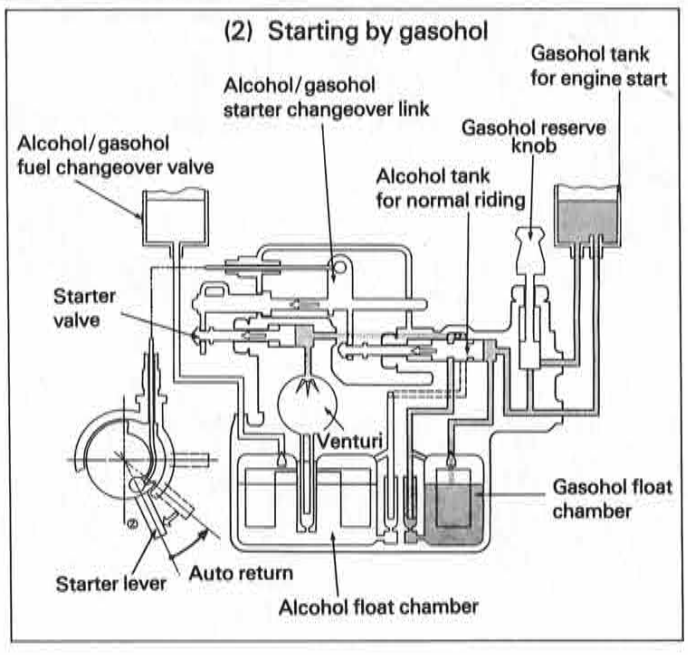
Overall length (mm)	1,870
Overall width (mm)	776
Overall height (mm)	1,065
Seat height (mm)	775
Dry weight (kg)	94
Engine type	2-stroke, water-cooled piston reed valve, single cylinder
Displacement	123cc
Bore × stroke (mm)	56.0 × 50.0
Compression ratio	7.0 : 1
Max. power output (PS/rpm)	12.0/7,500
Climbing ability	25%
Starting method	Primary kick
Ignition system	Magneto
Fuel tank capacity (lit.)	9.5 (alcohol), 0.8 (gasohol for strting)
Oil tank capacity (lit.)	1.5
Transmission	Return type 5 speeds
Tire (front & rear)	2.75-18-4PR
Headlamp	6V 25W/25W

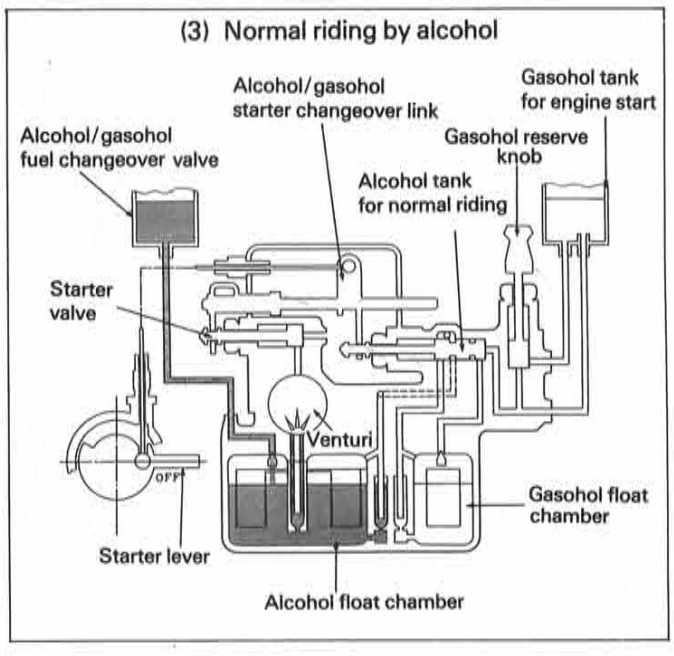
Yamaha Motor do Brasil Ltda. will redesign the RX80 and RX180 to use alcohol fuel, following the RX125.

A homologation certificate is delivered to Mr. Masahiko Fukuta, President of Yamaha Motor do Brasil Ltda. (left) by Dr. Reinaldo Danna, Secretaria de Tecnologia Industrial of Ministerio da Industria e do Comércio (right).

Fig. 2 Carburetor's function







YAMAHA MOTORCYCLES
Highly automated laborsaving

For better product quality and more effective cultivation of human potential

Yamaha Motor is improving its motorcycle production system for overall higher productivity by inducing the following automated laborsaving systems in the assembly line:

1. ***Multijoint assembly robot, CAME No. 1***
2. ***Multiplex screws and nuts feeder***
3. ***Linear motor controlled conveyor***
4. ***High-speed plating system (Y.R.P.S.)***

These automated systems have been developed and put in practical use in accordance with Yamaha's basic production management principle called "airless engineering" — "No space in a workshop should be left unutilized". The main aim of adopting them in the assembly line is to spare employees from simple, tedious jobs as much as possible, thus enabling each and every employee to improve and cultivate his potential for a higher level of work so that higher overall productivity is attained.
These automated systems, if used in the right place, will greatly help to ensure higher mechanical precision for every product while human intellect or knowledge can be concentrated on conceiving the better and better use of these systems. This is considered as an ideal form of collaboration between man and machine in a workshop. This concept can be applied to overseas manufacturing plants of Yamaha motorcycles as well.

Yamaha-original systems

Motorcycle production, unlike car production, allows no easy automation as a single assembly line must be used to turn out a number of different models in small quantity. In addition, compact yet complicated chassis assembly requires the skill that only a man can provide.
The production technology staff of Yamaha Motor have long strived to provide an effective solution to the above problem so that productivity is increased overall and working conditions are ideally improved.
The staff have continued to improve these systems all exclusive to Yamaha through test operations in the production line. Yamaha is the first motorcycle manufacturer to adopt a large number of robots in the assembly line. The linear motor controlled conveyor is also the first of its kind ever put in practical use in Japan.
The multijoint assembly robot is compact in size but has wide capabilities. The multiplex feeder and linear motor controlled conveyor contributes greatly to the promotion of "airless engineering" in a workshop.
The Y.R.P.S. is a high-speed non-pollution plating system.
Now let's take a look at these innovative systems.

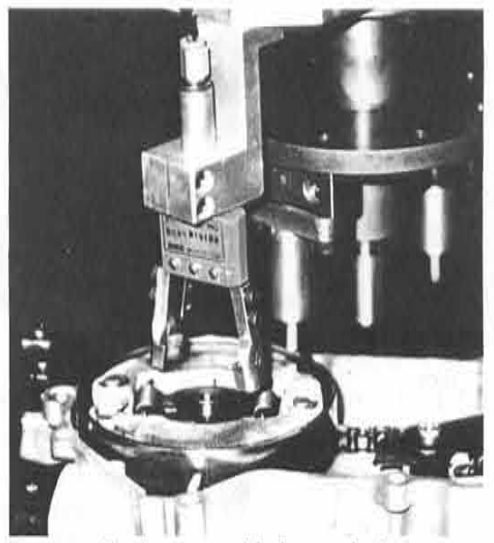
Multijoint assembly robot, CAME No. 1

This robot proves to be a faithful partner who is ready to do the tedious, unhealthy and even dangerous jobs without displacing human labor, thus meeting a pronounced industry tendency that labor unions cooperate with management in the transfer and retraining of employees to other kinds of jobs that will suit human abilities better.
In other words, the robot will allow the human worker to advance to more interesting, challenging and rewarding work, that will probably be better paid as well.
The robot has the following advantages:
(1) It has the same kind of function as man's hand, allowing multipurpose use.
(2) It can perform its assignments more rapidly and more accurately than man's hand.
(3) Its construction is simple and compact. Its manufacturing cost is relatively low.

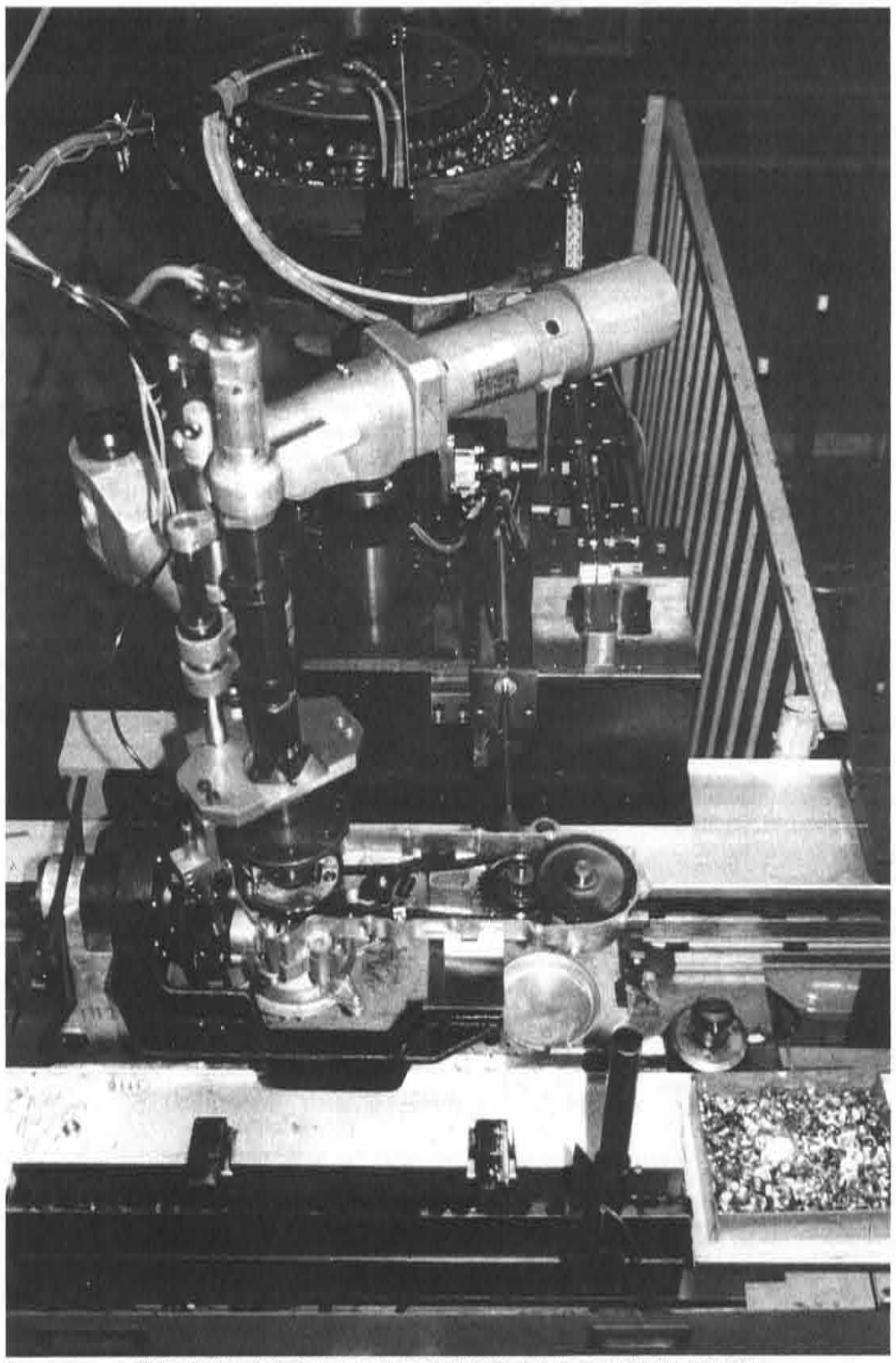
The robot, which is microcomputer controlled, is designed to fit all the kinds of Yamaha produucts in its basic ability. Now a total of 28 robots including 11 for the assembly line of Passol engines have already been adopted in the production line. The number of robots will be increased to 50 within the year. Their use will be widened to cover other work lines including the mechanical processing line in the future.
CAME = Computer Aided Manufacturing Equipment
The robot is the first of its kind to be adopted in the motorcycle assembly line in large quantities. Its arm speed is 120m/min. Its positioning accuracy is ± 0.05mm. 50 robots can perform the same amount of assembly work as 30 workers. Now they are performing the following assignments:
(1) Tightening bolts for engine and drive system.
(2) Applying adhesives to crankcase and chaincase.
(3) Inserting or pressing in oil seals, bearings and other parts.

Main technical features

(1) The operator has only to change robot's computerized memories when assembly model is changed. This allows easy mass-production of many different models.
(2) Its operation speed and accuracy are double those of any conventional robots while its manufacturing cost is only half.


Engine assembly by a robot

(3) It is so compact in size that it is easily fitted into the production line.
(4) Its fitting posture is also easily adjusted as different occasions require.


This photograph shows a robot and feeder system, with the robot in the foreground and the circular-shaped feeder in the background.

Multiplex screws and nuts feeder

A single motorcycle production line is used to turn out many different models. In this case, a great many kinds of parts are also needed. A conventional feeder can supply only a single kind of parts, preventing the smooth progress of production system automation while it is putting the brake on the improvement of overall productivity and the ideal multipurpose use of an assembly line.
The multiplex feeder features the combination of a vibrator and several parts bowls for the automatic supply of many different kinds of parts. This feeder is coupled with the multijoint robot (CAME) to promote the automation of Yamaha's motorcycle production system.
Its parts supply speed is between 12m/min. and 15m/min. Other main technical features are as follows:

(1) A parts bowl is easily detached from the main assembly. A single feeder can automatically supply many different kinds of parts by increasing the number of parts bowls as different occasions require.
(2) All parts bowls are separately operated, stopped and adjusted.
(3) Parts bowls rotating clockwise can be used and layer-arranged together with those rotating anti-clockwise on a single vibration base.
(4) This layer-arrangement saves space and allows the efficient supply of many different kinds of parts.

Linear motor controlled conveyor

This system also proves to be very useful for the motorcycle manufacturing plant.
One unit is only 10 meters long. One unit is connected to another to extend the total length of the system. The system can be moved easily anywhere in a workshop. The linear motor, which is used to send back a pallet after operation is finished, is the first of its kind ever put in practical use in Japan.
The module type free flow conveyor system consists of a chain driven conveyor (operation) and linear motor controlled conveyor (sending back an after-operation pallet).
The system is adopted in the chassis assembly lines of Passol bikes and 4-stroke models.

production system

Main technical features

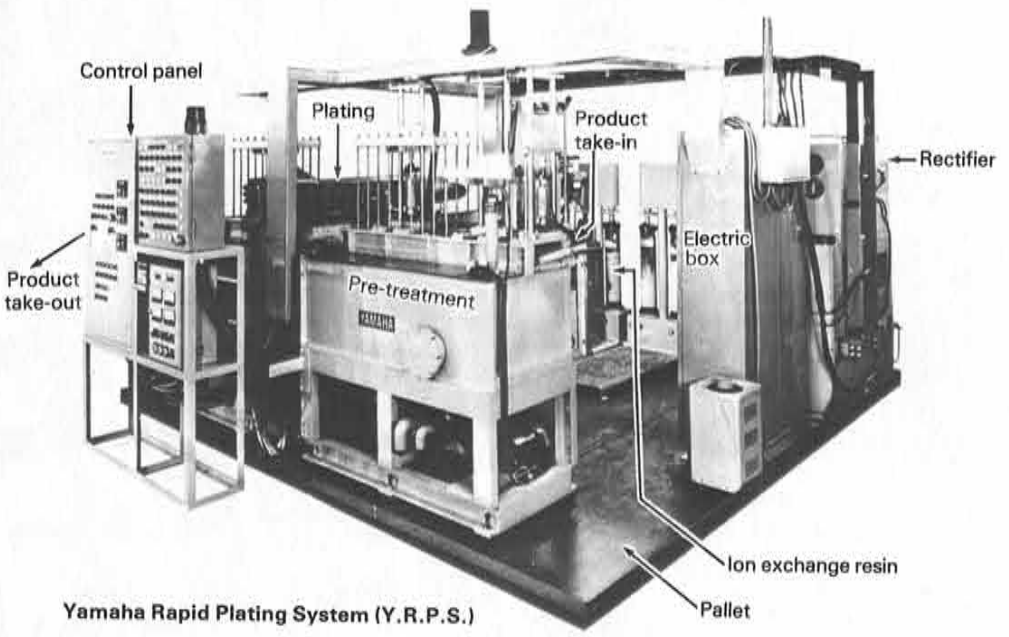
(1) The assembly line in whatever length can be arranged wherever and whenever needed. This helps to increase the flexibility of overall production activities.
(2) The linear motor sends back a pallet and jig more quickly, while it saves the number of pallets and does a great deal toward saving energy.
(3) The free flow conveyor can be positioned in whatever way while a pallet is stationary, to meet the automated assembly system.
(4) Pallet send-back lanes are arranged under the operation conveyor. This saves space.
(5) The system is linear motor driven (non touching type). Wear is held to a minimum and service life is semi-permanent. In addition, the system is vibration-and-noiseproof for extra operation reliability.

Yamaha Rapid Plating System (Y.R.P.S.)

This is a compact high-speed chrome plating system using no large spread-out reservoir. A conventional plating system needs a large-sized reservoir as a large quantity of products must be kept in static plating liquid for a long time. In the Y.R.P.S. plating liquid is rapidly circulated by means of a pump to cause a brisk turbulent flow pass between the product and the anode, thus rarefying the diffused layer of ions around the product so that a large amount of electricity is supplied at low voltage for effective piece to piece plating operation at high speed.
Now let's take a closer look at its noteworthy technical features.

1. Chrome plating speed is increased to 7m/sec. by means of a rapid tubulent flow of plating liquid and rarefied ion layer turning on a larger amount of electricity without increasing voltage and increasing the amount of precipitated metal to 60μ/min. which is about 100 times as much as that of a conventional plating system.
2. In this system the pre-treatment oil removal tank, plating tank and washing tank make up a closed circuit so that plating liquid is continuously recirculated, resulting in very little wastes and preventing poisonous gas or plating liquid from being generated or splashing.
3. Needing no large-sized reservoir, the total system can be arranged within a 4m² space and can be incorporated in the mechanical processing line at the time of pitching machine tools as part of the integrated automation system.
4. In this system products can be plated one by one in succession, sparing the operator from hanging and removing each product on and from the rack.
5. The efficiency of electricity is increased to 50% while that of a conventional system is only 15%. This contributes greatly toward saving energy.
6. The system can be applied to plating other than chrome plating, if liquid is changed. The system also allows for easy partial plating.

The Passol line is using a linear motor controlled conveyor system.

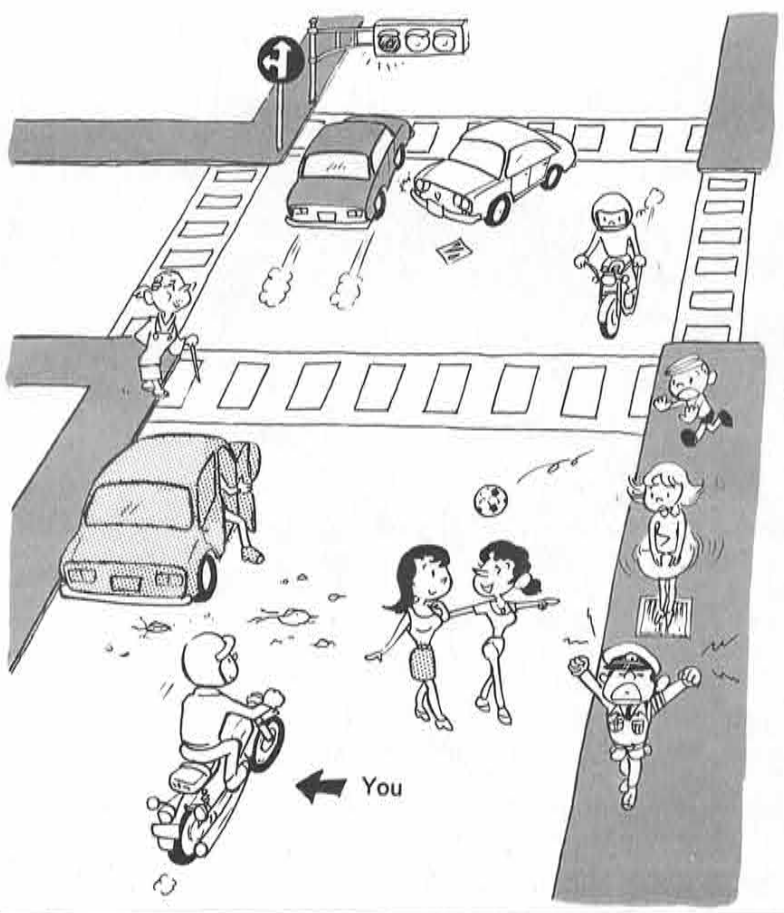


Yamaha Rapid Plating System (Y.R.P.S.)

SAFE RIDING AND PSYCHOLOGY Part 4 — *Are you "seeing correctly" when you drive?*

In the preceding issues we have discussed the following points:

1. *Mistaking one thing for another*
2. *The world you see and the world others see*
3. *Oversight*
4. *The way to look*
5. *To see correctly and to be seen correctly*
6. *How to watch the road*



"To see things" involves various meanings and a lot of controversial points. For example, you and others may see the same object from quite a different angle, while if you concentrate your attention too much on something, you may not notice other things. In this issue we are going to form a conclusion on "to see things while driving."

7. Ability to see correctly improves with discipline.

What can you see in the left illust. in the course of five seconds?

Now, try!

You must be able to catch the following information for safe riding:
a. The signal ahead is green.
b. Turning to the right is forbidden at the intersection ahead.
c. There are hollows in the road ahead.
d. The door of a parked four-wheeled vehicle is going to open.
e. An old lady is stepping from the side walk on to the roadway.
f. There is danger that a boy may run out into the roadway in pursuit of a ball.
g. A four-wheeled vehicle is waiting to turn to the right.

Form the habit of carefully watching informational objects necessary for driving!

In driving a motorcycle there are some definite points which you have to pay attention to.
When a novice driver causes an accident, it is naturally attributed to his inexperience. But in most cases it concerns his judgement or sense perception, not his action. What is essentially necessary for safe riding is to catch and forecast correctly the other party's action. This ability improves with your volitional discipline.
Let's try to acquire the habit of carefully watching informational objects necessary for driving.

8. Why do careless accidents happen?

Beware of "five careless actions".

So-called careless accidents can be grouped into different categories according to causes behind them.

1. Because of the weakened activity of the mind.
   a. Congenitally weakened activity of the mind.
   b. Temporarily weakened activity of the mind because of some cause.
   c. Overstrain.

Any of these makes safe driving impossible.

2. Because of attention distracted to other things.
   a. The attention of a rider centers on his own inner thoughts and feelings (e.g. He is lost in thoughts or worries).
   b. The attention of a rider centers on the people and things around him (e.g. He is engrossed in his chat or his attention is diverted to other things).
   Forget even agonies of broken heart while driving!
3. Because of misjudgement based on carelessness.
   a. While a rider is hesitating about which action to take, the time is up.
   b. Lack of feeling for danger. This is a typical case of inadvertent driving.
4. Because of actions taken by a rider though he knows they are dangerous.
   a. Overconfidence.
   b. Risk-taking (e.g. A rider takes some action while he is fully alive to the danger of it).
   Even if you are a skillful rider, you cannot be off your guard.
5. Because of failuure in action.
   a. Actions maladjusted to the external world (e.g. A rider still does not notice or feel danger).
   b. Inharmoniousness of senses with action (e.g. A rider cannot act according to his own wishes).
   c. Actions out of order (e.g. Confusion in action).
   In short, this is the case where a rider is not well aware of his own awkwardness.

Now we are concluding "Are you seeing correctly" when you drive?"
In the following issues we are going to serialize "Psychology of driving."
Please write to us about your opinions or impressions on this column. We are always looking forward to your replys.

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Introduction to the essence of Yamaha technology

"YAMAHA TECHNICAL NEWS"

Yamaha presents a unique PR film titled "YAMAHA TECHNICAL NEWS" which features the collection of technical highlights extracted from the earlier produced PR film. Yamaha's prime corporate principle is to offer a rich variety of quality products developed on the basis of advanced engine technology. Every technical innovation keeps Yamaha out in front of the competition. Yamaha puts everything it has got into developing high quality, high performance products that meet the demands of the age. Spotlighted in this film are the following technical achievements:

Y.I.C.S. (Yamaha Induction Control System)

This is a unique fuel-saving engine system which has already been adopted in some models of the '81 4-stroke range. The system functions to produce a swirl effect in the cylinder, thus improving combustion efficiency to a maximum.

Y.E.I.S. (Yamaha Energy Induction System)

This system brings both fuel economy and high performance together in a 2-storke engine. The system keeps the speed of intake stream as flat (constant) as possible, allowing for the most ideal carburetor setting at all times.

CALIBMATIC

This is a special carburetor system that can respond to changes in atmospheric pressure. A pressure sensor incorporated in this system detects every change in atmospheric pressure and controls the pressure in the float chamber when a bike is ridden in mountainous regions like Colombia and Bolivia.

Y.P.V.S. (Yamaha Power Valve System)

This system automatically adjusts exhaust timing, the key to improvement of high-speed performance and low-speed torque of 2-stroke engines, depending on engine speed to achieve optimum performance over the entire speed range. Its performance has already proven excellent on the race track.

YAMAHA NEW TURBO SYSTEM

This is a very noteworthy system introduced at the dawn of the "turbo" era. This is a completely new total system with YICS, reed valve, turbo charger and electronic fuel injector.

The new film "YAMAHA TECHNICAL NEWS" introduces the engineering excellence of the above systems in a vivid and convincing manner.

SPECIFICATIONS

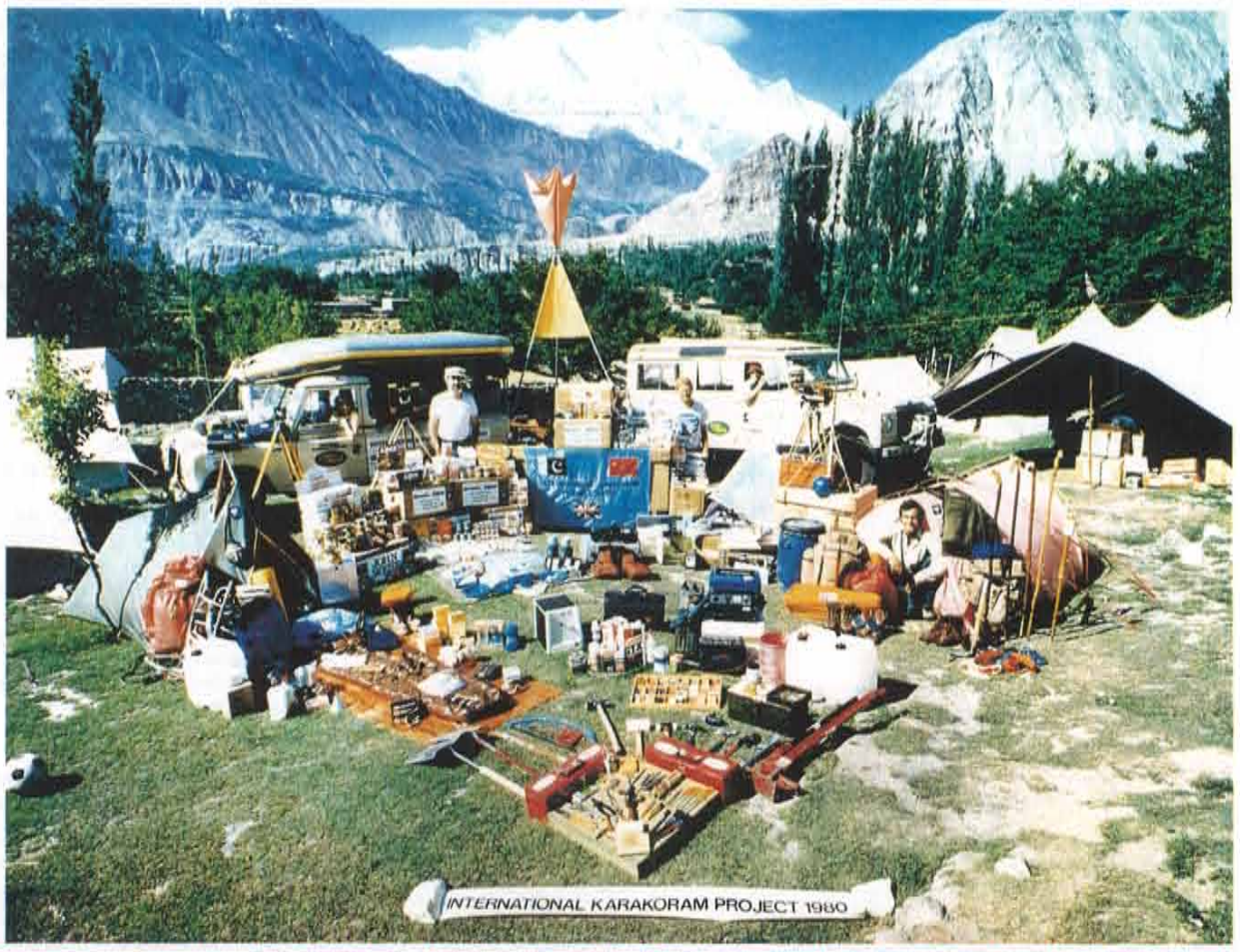
Title: YAMAHA TECHNICAL NEWS
Size: 16 mm, multicolored
Running time: 12 minutes
Narration: English, Spanish, French, German or Chinese
Price: @ ¥45,000 FOB Japan

Please contact your nearest Yamaha importer for more details.

Yamaha portable generators are most reliable

Karakoram Himalaya Expedition Team

Yamaha generators were chosen by The Royal Geographical Society for its '80 international expedition to the world's most extensive, highest and dangerous mountains, the Karakoram Himalaya of Pakistan.
They were used both at Base Camp and at various field work sites. They were light enough to be carried on a pack frame and were often transported this way or in the back of their fleet of Land Rovers. Their main use was to charge the various batteries and power packs used by the scientific instruments that ranged from sophisticated surveying equipment, a new system of radio-echo ice-sounding impulse radar and the 12v car batteries used to power seismic recorders.
In spite of the rarefied atmosphere and extreme cold, the Yamaha. generators taken on the expedition never missed a beat and proved themselves a valuable asset amongst the myriad of equipment taken by the expedition.
To quote Mr. Nigel Winser, the Society's Expedition Officer, "In all my seven years of expedition experience I have never used such reliable generators. They were used and abused throughout their time in the Karakoram and needed no special attention to my knowledge".



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