

CHANTEY  
Special

## Passing on Yamaha Outboard DNA: Unyielding Determination



Yamaha Kumamoto Products Co., Ltd. (YKP)

Yamaha outboard motors hold the largest market share in the world and are used in more than 180 countries and regions around the globe. Today, they are manufactured at four factories: the Fukuroi South Factory (YMC) and Yamaha Kumamoto Products Co., Ltd. (YKP) in Japan, Thai Yamaha Motor Co., Ltd. (TYM) in Thailand and Yamaha Motor da Amazonia Ltda. (YMDA) in Brazil. For this issue's Chantey Special, we highlight the second factory, YKP. Founded in 1998, this year marks its 20<sup>th</sup> anniversary.

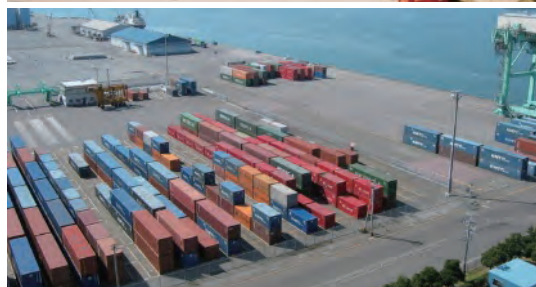
### The Location

YKP is located in the city of Yatsushiro in Kumamoto Prefecture on Japan's southwestern island of Kyushu. Yatsushiro is largely an agricultural center and is the biggest domestic producer (about 80%) of the rush used for creating tatami mats. A locally produced *banpeiyu* pomelo fruit is also registered in the Guinness World Records as the heaviest pomelo in the world. Lately, Yatsushiro has also become one of Japan's largest tomato producing areas.

The Yatsushiro Myoken Festival held every November in Yatsushiro is listed on the UNESCO Intangible Cultural Heritage List and its parade of *mikoshi* (portable shrines), *shishimai* (lion dances) and more can stretch for more than a kilometer. Also, Yatsushiro Port located nearby YKP is the largest container port in Kumamoto Prefecture. The construction of the first cement factory in Kyushu here in 1890 led to several companies building factories in Yatsushiro, soon turning it into an industrial city.



The Yatsushiro Myoken Festival has a 400-year-long history.



Yatsushiro Port is designated as a major port by the Ministry of Land, Infrastructure, Transport and Tourism.

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## Trusted Around the World: Outboard Motors Manufactured by YKP

Yamaha outboard motors are designed and manufactured under the basic concepts of achieving light weight, compactness and excellent reliability and durability. The unmatched lineup of models is also a hallmark of our business, with offerings ranging from 2 hp to 425 hp and including eco-friendly 4-strokes, the easy-to-use and feature-packed Portable Series, the tough Enduro Series primarily for commercial-use markets and economy-focused kerosene-powered models.

Of these, YKP currently manufactures 4 to 90 hp 2-strokes and 8 to 25 hp 4-stroke models, with total annual production and shipments at approximately 140,000 units and some 98% of that destined for export. In terms of shipment destinations and types, 2-stroke models exported to Asian countries like Indonesia are on the rise. In August 2015, YKP surpassed two million units in cumulative outboard production.



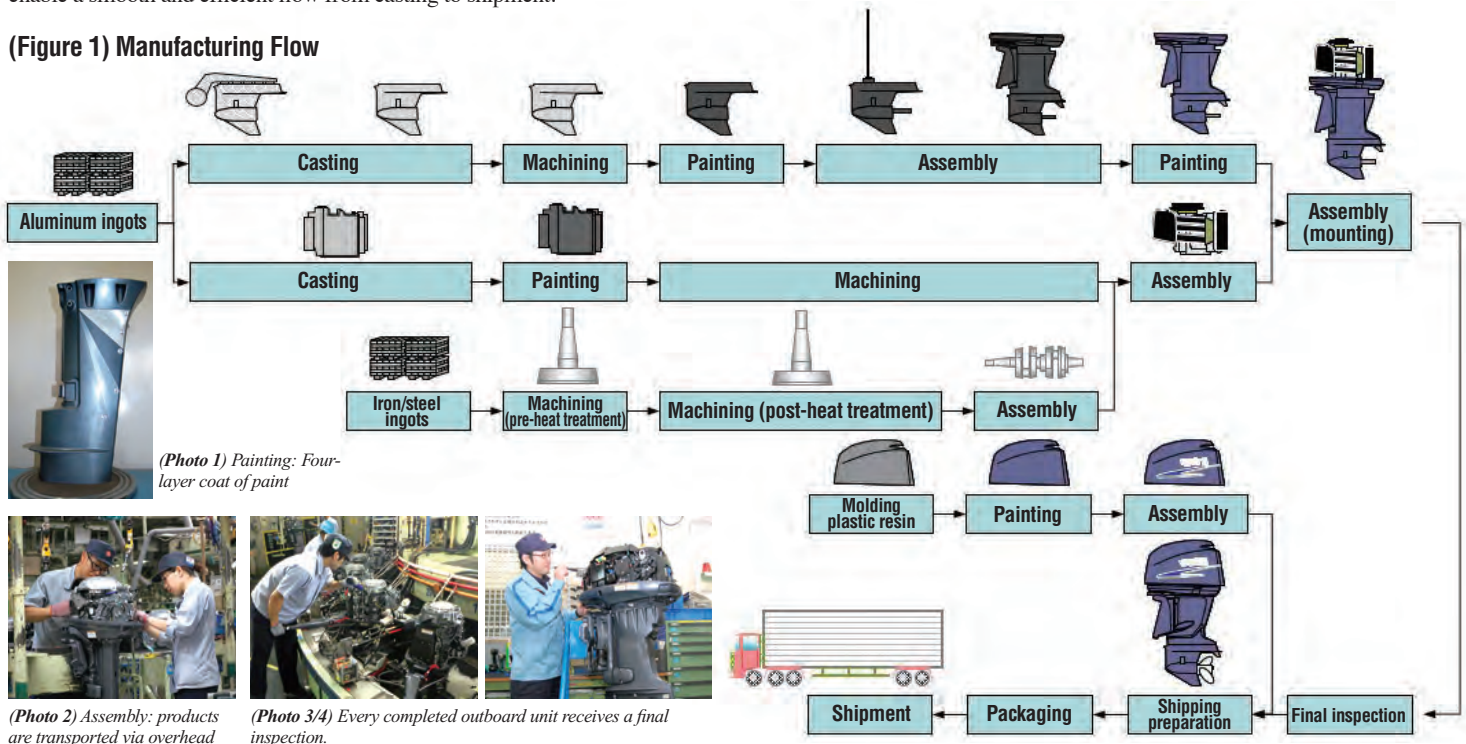
It takes about 13 days to manufacture one outboard (assuming a 2-stroke 40 hp model).

## Manufacturing Products to Enrich Marine Lifestyles Around the World

The most prominent feature of YKP is its systematic approach for everything in the manufacturing process, from casting and machining parts and forming (molding) plastic resin parts to assembly, painting and final packaging/shipment (Figure 1). While some parts are procured from other companies, over 90% of the parts that go into the outboards are cast in-house at the factory. Should problems arise or defects be discovered at any stage of the manufacturing process, this feedback is sent immediately to all of the prior stages of production and solutions are quickly enacted, hence breakdowns with outboards built at YKP are so few in number. The factory buildings at YKP are also lined up according to the steps of the manufacturing process to enable a smooth and efficient flow from casting to shipment.

Furthermore, YKP's exclusive painting technology is among the world's best. Although Japan has relatively clean waters, many countries do not and water temperature also differs greatly by region. For these reasons, YKP-manufactured outboards are given a high-quality four-layer coat of paint providing substantial rust protection (Photo 1). "Our outboards have so few breakdowns that we've even had some worries due to fewer orders!" chuckles one YKP sales representative. The factory complex is divided into three main buildings: Building 1 is for casting and machining parts, Building 2 is for molding and painting top cowlings, and Building 3 is for painting, assembly (Photo 2), final inspections and shipping (Photo 3/4).

(Figure 1) Manufacturing Flow



## A Short Message from YKP

YKP constantly strives for innovation in order to shine as the No. 1 mid-range outboard motor factory in the world, always thinking and acting with a customer-oriented viewpoint and always endeavoring to meet high goals from our home in Yatsushiro. We do our utmost everyday to be a company that not only delivers value that exceeds customer expectations but also helps us to grow and better ourselves in the process.

Always challenge innovation with passion, and shine at Yatsushiro as World's No. 1 Mid-Range Outboard Motor Factory.





# Digesting Food and Outboard Motor Combustion

In our last issue, we explained how fueling works for outboard motors using people and food as a comparison. Let's continue with that theme and talk about how an outboard motor combusts its air-fuel mixture like how we digest food.

Let's begin with how humans digest food and absorb its nutrients and how an outboard motor ignites and burns the air-fuel mixture that is its "food" during combustion.

**Human digestion of food:** We dissolve the food we eat in our stomachs and then absorb the nutrients from it in our intestines to produce the chemical energy we need to live.

**Outboard motor combustion:** The air-fuel mixture in the cylinder is ignited and the energy of the resulting rapid expansion of burned gasses is converted into kinetic energy.

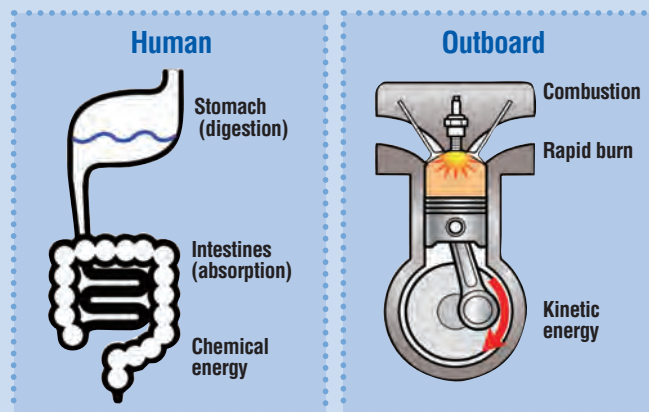
## 1. The Quality of Food vs. Quality of Gasoline in the Air-Fuel Mixture

For human beings and outboards alike, not just anything that goes into our mouths or the engine's intake manifold can be consumed and successfully converted into energy. In each case, the things we can consume are limited. Below are some examples of things we and outboards can't consume without causing food poisoning or engine trouble. But we should also note that in both cases, there are people and motors that can consume slightly degraded food or fuel with no problem (like a commercial-use outboard) and some that easily get an upset stomach or engine trouble with the same food or fuel (like a pleasure-use outboard).

Human	Outboard
 Rotten food      Unclean food	 Degraded gasoline
 Foods causing allergic reactions (depending on the individual)	 Gasoline with impurities
	 <b>DIESEL FUEL</b> Diesel fuel or heavy crude oil

## 2. Digestion

We humans break down the food in our stomachs and absorb the energy it contains. An outboard ignites and burns the air-fuel mixture (food) in its engine (stomach), causing a rapid expansion of gasses—often likened to an explosion—that is converted into kinetic energy.



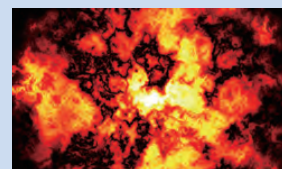
Combustion is a form of oxidation. Combustion occurs when the reaction between the involved substances is rapid, but when the speed of this reaction is taken even further, it creates an explosion. For example, when tree branches or charcoal are burned (**Photo A**), that is combustion. But if a large amount of magnesium is accidentally set on fire during a science experiment or when volatile gasoline is ignited, this results in an explosion (**Photo B**).

Humans don't cause explosions when they eat something (although eating very spicy food can "overheat" your "exhaust system" and cause damage...), but gasoline is a prime component of the air-fuel mixture that is an outboard engine's "staple food" so consuming it causes an explosive expansion of gasses.

Oxidation is the process of oxygen (O<sub>2</sub>) causing a chemical reaction with another substance. For example, when the carbon (C) in charcoal oxidizes (burns), it results in smoke with a high concentration of carbon dioxide (CO<sub>2</sub>) (**Photo A**), and when hydrogen (H<sub>2</sub>) oxidizes (explodes), it produces water vapor (H<sub>2</sub>O) (**Photo B**).



A. Combustion of charcoal/carbon (C)



B. Hydrogen explosion

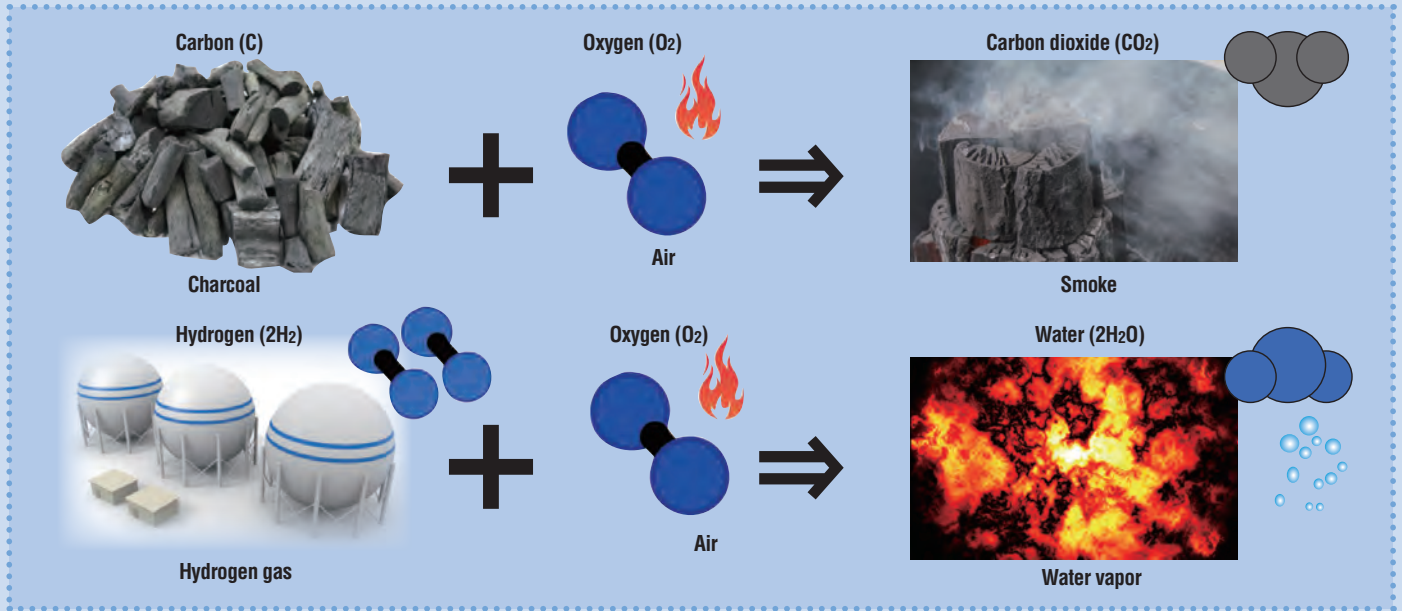
When these processes are written as chemical equations they are as follows:

**A. Oxidation of carbon:**

$C + O_2 = CO_2$ : produces smoke with a high concentration of carbon dioxide (combustion)

**B. Oxidation of hydrogen:**

$2H_2 + O_2 = 2H_2O$ : produces water vapor (in a hydrogen explosion)



**3. Digestion and Combustion in an Outboard Motor**

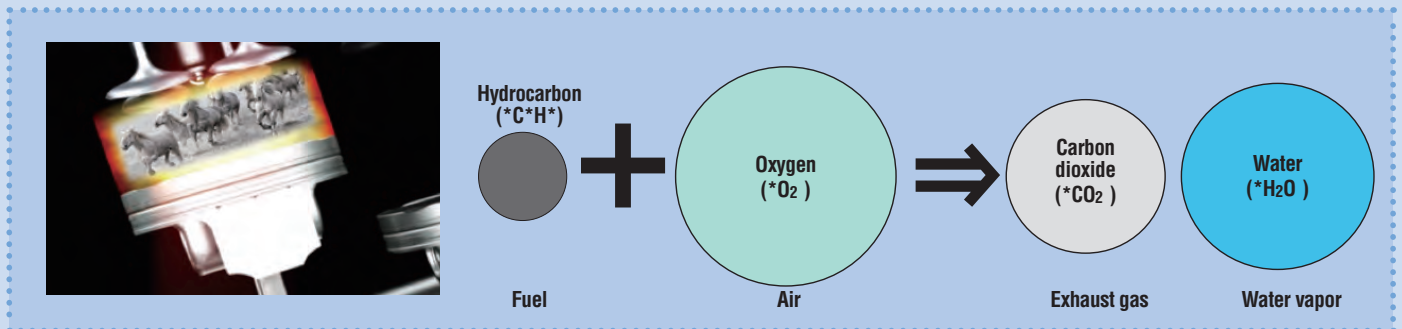
The combustion of the gasoline in the air-fuel mixture an outboard “eats” is a form of oxidation, so we say that the combustion that takes place in an engine is the oxidation (O<sub>2</sub>) of one of the main ingredients of gasoline: hydrocarbons (CH). This process results in carbon dioxide (CO<sub>2</sub>) and water (H<sub>2</sub>O). When written as chemical equations:

**Oxidation of fuel:**

$C_7H_{16} + 11O_2 = 7CO_2 + 8H_2O$ : produces carbon dioxide and water vapor

$2C_8H_{18} + 25O_2 = 16CO_2 + 18H_2O$

Note: These chemical equations may differ depending on the type of gasoline and its ingredients (additives).



Because of the extremely high temperature of the exhaust gas, its water component leaves the engine as high-temperature water vapor (steam), so no water that could cause rust remains inside the engine.

It goes without saying that when the hydrocarbons and oxygen chemically bond in violent combustion in the engine like this, the force produced by these explosive reactions—although small in scale—results in a large amount of vibration and noise when the engine is running.

For example, when an outboard like the F300B is running at full power, it’s the equivalent of a 50-horse herd running around in each of the engine’s six cylinders (6 cylinders × 50 horses = 300 horsepower), a space less than 10 cm in diameter and height. Perhaps that helps make it easier to imagine the magnitude of the shocks occurring in the engine.

In the next issue, we will talk about the required concentration of oxygen in the air necessary for combustion. I hope you will look forward to it!

# One-Point Advice for WaveRunner Test Rides 1

The reaction from most people after their first ride on a WaveRunner is, "Wow, that was fun! I want to ride one again!" People can quickly experience the fun these products offer firsthand, so the best form of promotion is to hold test-ride events to get potential customers to try riding one. Of course, circumstances will differ depending on the market, with some already holding these events on a regular basis while it remains difficult for others to do so. We hope this new series of One-Point Advice columns will provide information that encourages dealerships to hold more test rides and aid in delivering more effective results.

If your market holds WaveRunner test rides often, we're sure you have some great ideas to include when putting on the event. We would like to introduce them to readers through this series, so please share them with us!

## Practical Use of Buoys for Test Rides

### Set Up Buoys

In this issue, we talk about possible courses to set up for test rides using buoys.

The exhilaration of riding a WaveRunner is simply like nothing else. Just being able to skim across the water and freely move in any direction you want is incredibly fun. But try holding a test-ride event with some buoys set up to create a course to follow. You will immediately discover a type of fun different from just riding around freely, even if there's just one buoy set up as a target.



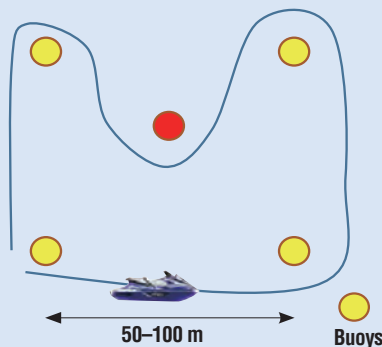
### Course Examples

#### 1) Closed course

Set up the buoys to create a course to go around with a decent amount of speed.

\*Do not allow participants to run the course chasing, running alongside or trying to pass other WaveRunners. Make sure only one craft is allowed to be running on each of the straights.

Example of a closed course layout

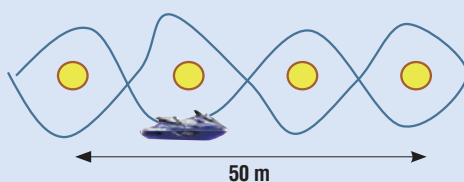


#### 2) Slalom course

The objective is to run this course navigating smoothly between the buoys with rhythmical throttle work and body weight shifting.

\*Allow only one WaveRunner to run the course at a time.

Example of a slalom course layout

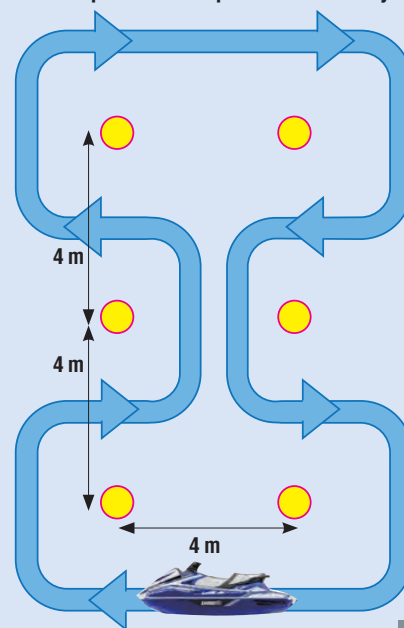


#### 3) RiDE practice course

Circulate the course at slow speed using the RiDE system to go between the buoys.

\*Allow only one WaveRunner to run the course at a time.

Example of a RiDE practice course layout



# News Round-up

Activities from distributors around the world, and more



Japan

## EXULT 43 Luxury Salon Cruiser Stars at Japan International Boat Show 2018



The Japan International Boat Show 2018 was held this year from March 8 to 11. In addition to promoting our world-renowned outboard motors, Yamaha is working in many fields to stimulate growth in the marine recreation and leisure market, like building and marketing a wide range of boats, running our boat rental program and holding courses for getting a boat operator's license. As a comprehensive marine product manufacturer, Yamaha presented visitors with the richly diverse appeal of the marine lifestyle from the lavish booth and display areas set up at the show. What drew particular attention among the Yamaha models on display was our new EXULT 43 top-of-the-line luxury salon cruiser. The exterior boasts standout presence with its Integrated Hull design, which eliminates the conventional gunwale and accentuates the hull's beautiful shape. The cabin's salon room and other onboard interior areas bring together the finest materials and Japanese craftsmanship throughout, making use of curved lines and surfaces to create a bright, open and luxurious atmosphere. Following the boat show's conclusion, this model was featured by several Japanese media outlets and it continues to be a



popular topic in the space.

Also, with the large number of inquiries we received about Yamaha's boat license courses and boat rental program, this year's show indicated the yearly growth in interest in marine recreation in Japan.



China

## The 23<sup>rd</sup> China (Shanghai) International Boat Show



From April 26 to 29, 2018, the 23<sup>rd</sup> China (Shanghai) International Boat Show (CIBS) was held at the Shanghai New International Expo Centre. CIBS is the most comprehensive and longest-established boat and yacht exhibition in China. Like last year, holding numerous events from other industries at the show this year helped fuel a big turnout—especially on Saturday and Sunday—and families made up a large part of show visitors. Compared to last year's total turnout of about 30,000, this year's count was up to around 40,000. This time, the Yamaha Sports Active Area was designed as a waterfront scene where visitors could experience the fun and excitement of marine recreation. In the outboard motor area, the display centered around the strong-selling 4-stroke large-horsepower model lineup. The F90C and F115B models were also officially announced for the Chinese market and videos introducing the Yamaha brand and promoting the company as a comprehensive marine manufacturer were shown on a large LED screen. Also, the finalist



photographs from the 2018 Yamaha Social Media Photo Contest were displayed at the show venue, and visitors cast their votes for best photo.

Plans are in place to continue promoting the Yamaha brand this year at other boat shows around China to spur further growth in sales.



Japan

## Marine Clean-up Campaign at Lake Hamana



Since 2013, Yamaha Motor has been conducting a Marine Clean-up Campaign every year at Lake Hamana, and this year it was held on May 18. The campaign was initially launched by volunteers from the former Water Vehicle Business Unit, but each year the effort grew in scale, with more than 100 participants from throughout the Marine Business Unit taking part this year.

What makes this cleanup project unique is that Yamaha boats and WaveRunners make it possible for volunteers to approach and collect refuse from shore areas difficult to access from land, thus contributing to the preservation of the lake. This time, the volunteers cleaned about four kilometers of the lake's shores for half a day, collecting about 110 kg of refuse. Going forward, Yamaha will continue with efforts like this to preserve the marine environment and contribute to local communities.





Udagawa and Kudo competing against top sailors in the 2018 World Cup Series in Hyères, France

# Revs Report



## Feature

### 470 Class Dinghies Built by Yamaha

As a licensed builder of 470 Class racing dinghies, Yamaha Motor is not only fielding a sailing team but is also running a hull development project. Operating within international regulations, Yamaha is leveraging its technical strengths of 3D shape measurement, modal analysis, FEM (finite element method) analysis, etc., while working in collaboration with leading figures in Japanese competitive sailing to design and build a hull that will allow top sailors to perform at their very best. At present, testing of the second prototype hull is complete and work is underway towards creating the final hull.



During testing, two boats are sailed together while gathering a variety of data for hull development.

### YAMAHA Sailing Team 'Revs' Report on Their Efforts

On May 24, 2018 at Yamaha Motor headquarters in Japan, YAMAHA Sailing Team 'Revs' gave a report on their recent activities. The sailors currently competing in Europe also briefly returned to Japan for the report and the team received encouragement from YMC top management, including Chairman Hiroyuki Yanagi and President Yoshihiro Hidaka. The team and executives also listened intently to the explanation of the hull development project, and President Hidaka assured everyone that they have Yamaha's full support going forward.



The team's sailors and staff got encouragement from Yamaha management after the report.

# Competing in Europe Before the World Championships

**Y**AMAHA Sailing Team 'Revs' is striving to be selected to represent Japan at the 2020 Olympics, and has been gaining valuable experience by competing in major regattas being held in Europe since April this year.

The two sailing pairs of Daichi Takayama/Kimihiko Imamura and Mano Udagawa/Ayano Kudo on YAMAHA Sailing Team 'Revs' went to compete in the 49<sup>th</sup> Trofeo Princesa Sofia Iberostar—one of Europe's largest regattas drawing hundreds of boats—held in Mallorca, Spain from March 30 to April 7. From there, they went to Hyères in southern France for Round 3 of the 2018 World Cup Series held from April 22 to 29. Both regattas were run in unstable wind conditions that prevented the sailors from displaying their full potential and getting good results, but they were able to find important points to work on to grow and improve. Both pairs will next be competing in the 2018 World Cup Series Final in Marseille, France and then in the Hempel Sailing World Championships Aarhus 2018 in Denmark at the end of July, an event that will gather competitors from all the Olympic sailing classes.

As for the pair of Sho Kaminoki/Taisei Hikida, who were undergoing rehabilitation from injuries last year, they are competing in races in Japan while making adjustments in their technique.

### Scheduled Entries for 2018

Date	Event	Venue
July 30–Aug. 12	Hempel Sailing World Championships Aarhus 2018	Aarhus, Denmark
Aug. 20–26	470 Class Japan Championships 2018	Enoshima, Japan
Sept. 9–16	2019 World Cup Series – Round 1, Enoshima	Enoshima, Japan
Sept. 21–24	ASAF Sailing Cup JSF Enoshima Olympic Week 2018	Enoshima, Japan

Meet the  
Yamaha Family

# Flying a Five-Star Banner for Yamaha in Vancouver

Canada is the second largest country in the world, and with coastlines on three oceans and the largest number of lakes in the world, it has a strong maritime tradition. Situated on the west coast is Vancouver, one of the country's biggest and most cosmopolitan cities. The region's warm (for Canada) climate means people can enjoy marine and powersport recreation year-round.

It was back in 1974 that Gordon Aulenback founded G.A. Checkpoint and began his partnership with Yamaha. Located in the Greater Vancouver area and right on the waters of Burrard Inlet, we have been a Five-Star Dealer since 2003 and later attained Platinum Five-Star status, not just for our dedication to providing top-quality service, but also for striving to contribute to marine recreation in Canada. We will also be celebrating our 45th anniversary next year, with 3 of our 32 employees having been with Gordon since day one.

Besides individual customers, we have forged long-standing relationships with commercial and B2B customers and have been supplying outboards and marine products to fishing camps for over two decades.

Vancouver, BC



G.A. Checkpoint



With the upcoming anniversary, the dealership is moving to a roughly 10,000 m<sup>2</sup> property to expand operations and continue working to exceed customer expectations with a high level of service.

*From Steve Cyr, G.A. Checkpoint*



## Information

### 2019 Yamaha Calendar Orders Commencing Soon

As many of you know, Yamaha produces two official calendars every year: the Marine Calendar and the Racing Calendar. The "Seascape" Marine Calendar features breathtaking photos of Yamaha boats and outboards on waters around the world, while the Racing Calendar is designed with carefully selected shots of road racing—including MotoGP star Valentino Rossi—and motocross that capture the extremes and emotions seen in top-level competition. We want to communicate the world of marine recreation and the aura of racing to our dealers around the world as well as our customers, so please consider using them to decorate your showroom or as gifts for your customers.



Size: A2 horizontal / Pages: 1 cover, 12 pages / Full color printing \*For both calendar  
\*If you have questions about the calendars, please contact your Yamaha sales representative.  
\*The design, colors, photos used, etc., may differ from the actual calendar.

YAMAHA OUTBOARDS WEBSITE

<https://global.yamaha-motor.com/business/outboards/index.html>

WAVERUNNER WEBSITE

<https://global.yamaha-motor.com/business/waverunner/>

Yamaha Outboards Channel

<https://www.youtube.com/user/Yamahaoutboardmotors>

Yamaha Outboards Channel on YouTube

View waterside scenes and scenes of Yamaha outboards in use around the world