

Chantey

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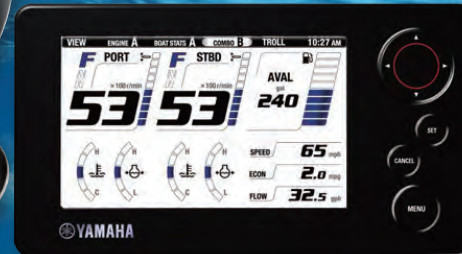


Chantey Special

Yamaha Outboard Motor Rigging Components

Genuine Yamaha rigging components for maximizing outboard motor performance

Yamaha has a large lineup of highly-reliable outboard motors optimized for conditions in the various waters, uses and boat types found around the world. In order to bring out the best possible performance from these outboards, Yamaha offers parts and accessories tailored to a variety of outboard motor uses. These include propellers for high thrust, remote control units compatible with a range of different boats, accurate and easy-to-read instrument gauges and more.

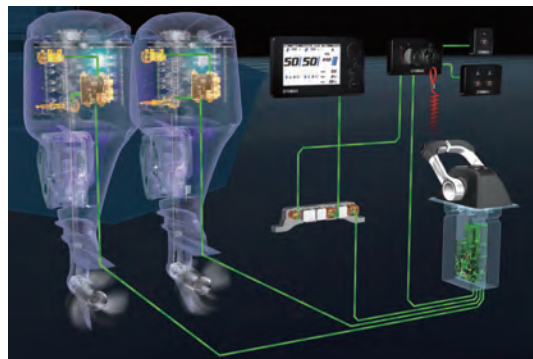


The Digital Network System II that employs Yamaha's latest technologies

The "Digital Network System" relays information like current engine conditions, cruising conditions, warnings and diagnostic messages via digital signals from the outboard motor to the various instruments and gauges at the captain's seat for a convenient and easy-to-use system. The current "Digital Network System II" was developed simultaneously with the new V6-powered outboard motors like the F300B and improves upon the original with even more functions and user-friendliness.

Features

- Cruising conditions, engine monitoring and onboard diagnosis are integrated into one easy-to-use system.
- The boat operator is able to monitor all main engine conditions using far fewer gauges than before.



Give a great outboard motor some great rigging components

As would be expected with items developed for our high performance outboards, Yamaha reliability extends to all Genuine Yamaha components and the extensive lineup offers plenty to choose from for all kinds of boat types. But, what happens if customers were to go with poorer quality components just because they're cheap? Then they can no longer truly call it "an outboard motor from Yamaha." Not only will they be unable to really bring out the very best from the high performance outboard they just bought, but also such components can sometimes be the cause of unexpected problems or even accidents such as fires in some cases.

Remote Control Units

A selection of remote control units suitable for all kinds of boat types, uses, outboard horsepower and more is available. They appear to be no different from any other remote control unit, but these Genuine Yamaha units feature ergonomically designed levers for smooth and easy operation. Particularly, the side mount type 701/703 that integrates ignition, shifting, throttle functions and more all into one device is a favorite of users all over the world.

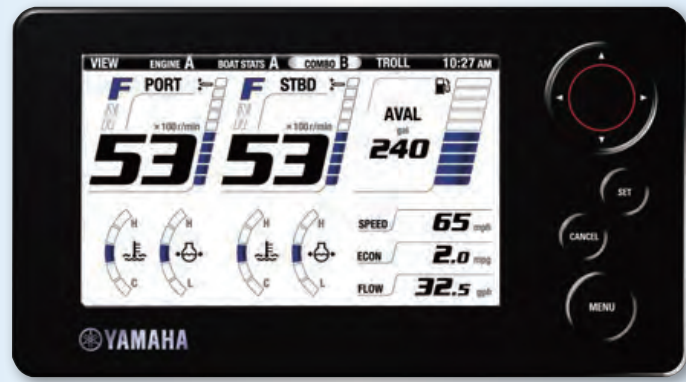
*Top mount type for three engines
For electric throttle and shift control system



Top mount type for single engine

Side mount type for single engine

6Y9 digital gauge



Digital Tachometer

Analog Tachometer



*Digital Tachometer/Round Type
For Digital Network System

*Digital Tachometer/Square Type
For Digital Network System

Instruments

There is a wide range of functional, easy-to-read analog and digital gauges available. Compatible with the "Digital Network System II," the LCD screen on the 6Y9 digital gauge can display speed, rpm, trim, cooling water temperature and pressure, oil pressure, fuel conditions, battery voltage, shift position, clock, multi-engine synchronization and more.

Propellers

It's not an exaggeration to say that picking the right propeller is the next most important thing to choosing the right outboard motor, because the propeller directly influences acceleration, fuel consumption and engine life. Yamaha offers numerous types of propellers to maximize an outboard motor's performance depending on the type of boat and how the customer intends to use it



*Stainless Steel
(black paint finish)*

*Aluminum
(white paint finish)*

*Polished
(three blades)*

*Polished
(four blades)*

Angle Tightening and Bolt Deformation

This time in our “Advice from a veteran mechanic” series, we talk about the angle tightening method and the deformation it causes in the bolt.

The service manuals for mid- to high-horsepower Yamaha outboard motors specify that the cylinder head bolts, crankcase bolts and connecting rod bolts should be fastened with the angle tightening method. For the F300B, it also specifies that the diameter of the cylinder head and crankcase bolts be measured and replaced if they do not meet the designated size limit and that connecting rod bolts should never be reused. Why is this?

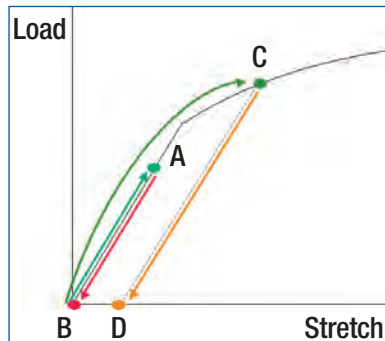
Here we discuss the angle tightening method and the change it causes in the bolt.

Bolt tightening and resulting bolt stretch

Last time, we noted that the opposing forces created in the threads and at the bolt head in a tightened bolt create an axial force that stretches the bolt slightly (A in Fig.). But, when the bolt is loosened, this stretch diminishes (B in Fig.).

Angle tightening applies axial force until the bolt reaches the stretching point and thus creates strong pulling force (tension) (C in Fig.). This causes a slight stretching of the bolt’s length. When the bolt is loosened, the stretch diminishes, but not completely. The bolt remains stretched to some degree (D in Fig.). As a result, the bolt’s diameter will be slightly thinner than before.

If this same bolt is then tightened again with the angle tightening method, the diameter of the bolt receiving the tightening forces is now smaller, so there is no guarantee that it will stretch and produce the same pulling force as the first time. Now, let’s take a look at what actually happens when the connecting rod bolts of an F150A are tightened.



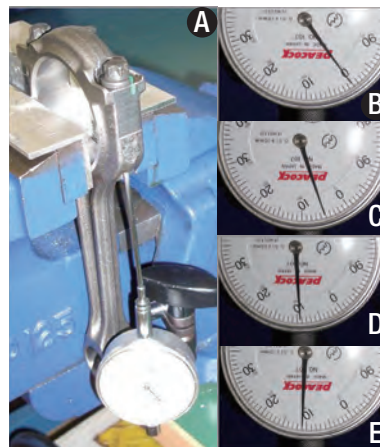
Bolt tightening and resulting bolt stretch

Here, a dial gauge is placed at the end of a connecting rod bolt to measure the amount of stretch occurring (Photo A).

Then, tightening was performed according to the service manual instructions: 1st: 17Nm, 2nd: 23Nm, 3rd: 90°. Next, after loosening, the same bolt was tightened again: 1st: 17Nm, 2nd: 23Nm. By measuring the position of the bolt (end) at the first 23Nm tightening (Photo B) and the second 23Nm tightening (Photo C) we get a measure of the stretch that occurred in the bolt. It was 0.05mm.

From this point, a 90° tightening was performed, followed by loosening and once again a tightening of 1st: 17Nm and 2nd: 23Nm. This time, the stretch of the bolt measured 0.043mm (Photo D).

Then again, a 90° tightening was performed, followed by loosening and again a tightening of 1st: 17Nm and 2nd: 23Nm and the stretch of the bolt measured



(Photo E). The stretch this time was only 0.01mm. This means that the bolt hardly stretched at all, just twisting instead. The fact that the bolt isn’t stretched means there is a lack of pulling force and axial force in the bolt.

There is always a risk in reusing bolts

As this experiment shows, even though the angle tightening method was done correctly, it did not produce enough axial force because of the improper condition of the bolt. So, you can see the importance of using the guidelines in the service manual to judge whether a bolt is usable or not. And, this is especially true when you don’t know the maintenance record of the engine. Carelessly basing your judgment simply on the look of the bolt or the fact that it has only been used once can lead to big trouble later. Also, when a bolt is no longer usable, it is important to make sure you dispose of it properly so it doesn’t get used again by mistake. Remember that verifying whether a bolt is still in usable condition is just as important as performing the tightening job correctly.

Dr. Sugimoto Chantey Editorial Room

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“Enjoying sport fishing”

I had always loved sport fishing, and after joining Yamaha Motor, I got the opportunity to go abroad and work in what can be called the home of sport fishing - the U.S. From a job standpoint, it was a valuable experience to be able to work in the world’s biggest outboard motor market, but also having been able to spend my free time enjoying a number of different types of fishing is now a little asset of mine.

Angling is surely a sport with one of the largest participating populations of all when you consider the number of people in the world who fish as a form of leisure recreation. Considering the number of people who use boats for sport fishing in countries like the U.S., Australia and other places around the world, it’s also an important factor in the outboard motor business. Although it will be only for a short time, I will be bringing you a short series of articles about sport fishing. I would like to leave out difficult discourses and instead share with you some of the unforgettable experiences I had while fishing in the U.S. For the first article, I hope you don’t mind if I talk a bit about the history of the sport.

Enjoying sport fishing stylishly and intellectually

The history of fishing as a form of leisure recreation isn’t as long as many might think. In my country, Japan, it is said to have begun sometime in the latter half of the 18th century, in our “Edo Period.” In other parts of the world we find its

Sport Angler Kurt on “Enjoying sport fishing”



history is a bit longer. In the 17th century, the British writer Izaak Walton wrote a series of essays about sport fishing titled *The Compleat Angler*. In another exceptional example, we find reference to a legend that says the Chinese military strategist Lu Shang of the 11th century BCE enjoyed fishing.

As for the U.S., which boasts one of the largest sport fishing populations, we find that the headquarters of the International Game Fish Association (IGFA) was established in Florida in 1939. Today, it continues on as an organization that seeks to promote angling as a healthy sport with high standards, and among the names of the early officers we find Ernest Hemingway who won the Nobel Prize in Literature.

There are said to be as many as 50 million people in America today who enjoy fishing, which is far more than the number of people who play golf and tennis combined. This says a lot about fishing’s popularity. There are also many sport fishing tournaments held throughout the U.S., and especially popular are the bass fishing competitions held in inland waters like lakes and rivers. These events are

often covered on television programs. Another thing that makes the American angling world unique is the large number of celebrities and members of the cultural elite, like Hemingway in the past, who love the sport. The great challenge and rewarding experience of chasing big game fish out on the open seas may be another manifestation of the American pioneering spirit. For many, it may be that they simply find taking a boat out onto a lake, being surrounded by nature and waiting for a fish to strike to be one of the most enjoyable ways they know to escape and refresh from the stress of their busy daily lives.

Looking around the world, however, we find there are still many places where sport fishing is not yet a part of people’s lives. This may be due to economic factors or the traditional temperament of the people of different regions. But I think that sport fishing may yet spread to

regions like these when more people discover the mental fascination and learning experience of sport fishing that has won it so many followers in countries like the U.S., Australia and Japan, and how enjoyable fishing on a boat out on the water can be.

I would like to recommend that you head out on the water, perhaps with your customers, and find as many opportunities as you can to enjoy the excitement of sport fishing.

Next time, I want to share with you some of my actual experiences fishing in the U.S.

Kurt Takayanagi
Marine Engine Business Unit, YMC

News Round Up

Activities from distributors around the world, and more

Boat Operators Training Program in Maldives

The distributor for Yamaha marine products in the Republic of Maldives since the 1970s, Alia Investments Pvt. Ltd., together with the Center for Career and Technical Education, organized a Boat Operators Training Program from June 5-7 in the capital city of Malé.

In Maldives, outboard motors are mainly used in transportation between the islands. Aimed at boat captains from major clients, the main objectives of the training program were to exchange information on safety, maintenance and usage of Yamaha outboard engines. The Alia service team conducted the technical aspects of the training program. In addition, lectures on maritime accidents and regulations and fire safety techniques were provided by professionals from the Coast Guard, Transport Authority and a firefighting equipment company.



All Participants

It is difficult to meet customers frequently due to the geographical distribution of the resorts and remote islands across the country. Training programs and service campaigns like these help facilitate meeting and engaging in communication with customers directly. Alia Investments plans to conduct more of such training programs to improve customer knowledge as well as deepen the solid relationship with Yamaha.

From Emy Sellen

Overseas Market Development Operation, YMC



Fire Safety Session



Maritime Accidents Seminar



Technical Session

Al-Khorayef/YDS Complete SCM Overhaul

Saudi Arabia distributor Al-Khorayef Commercial Co. Ltd. is the first distributor to implement a supply chain management and logistics overhaul program in this region. With cooperation and support from Yamaha Motor Distribution Singapore Pte. Ltd. (YDS) since May 2011, Al-Khorayef has renovated its spare parts counters at the Jeddah Auto Mall and personal watercraft sales branch and most recently, its Jeddah External Warehouse.

Top management from Al-Khorayef and YDS held a ceremony to commemorate the completion of the warehouse which now sports a modernized, state-of-the-art storage system and location barcodes for greater accuracy in inventory management and streamlined work flow that gets customers the right quantity of parts at the right place and the right time.

The YDS and Al-Khorayef team completed this massive project with resounding success and exceeded expectations. Additionally, Al-Khorayef will send representatives to Singapore for more training with YDS in the quest for even higher quality service as they look to

repeat these successes in other divisions. From Yamaha Motor Distribution Singapore Pte. Ltd. (YDS) & Al-Khorayef Commercial Co. Ltd.



Editor's Note



A series of articles by Kurt Takayanagi about leisure fishing in the U.S. will run starting from this issue of Chantey. These articles will be based on his experiences living in America, where spending time outdoors is very popular. This is a column meant to show that even as the global economic situation remains unstable, the joys of marine leisure and the other world that comes with time spent out on a boat becomes that much more special. We will continue to create more and more interesting articles for you to enjoy as you pick up your next issue of Chantey.

YAMAHA OUTBOARDS WEB SITE <http://www.yamaha-motor.co.jp/global/consumer/outboards/index.html>

WAVERUNNER FAN SITE <http://www.waverunner-fan.com/>

Yamaha Outboards Channel is online on Youtube

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

Yamaha Outboards Channel <http://www.youtube.com/user/Yamahaoutboardmotors>