

3ym20 installation manual

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The model takes into account factors including the age of a rating, whether the ratings are from verified purchasers, and factors that establish reviewer trustworthiness. Das ist ein Negativkauf mfg Pichler Sorry, we failed to record your vote. Please try again I was looking specifically for belt dimensions but there was no information of this type for any replacement items. Sorry, we failed to record your vote. Please try again. The illustrations used in this manual are intended as representative reference views only. We reserve the right to make any change at any time without notice. All Rights Reserved No part of this publication may be reproduced or used in any form by any means graphic, electronic, or mechanical, including photocopying, recording, taping, or information storage and retrieval systems without the written permission of YANMAR CO., LTD. OPERATION MANUAL MODEL CODE 2YM15, 3YM20, 3YM30E, 3YM30 0AYMMG00202 All Rights Reserved, Copyright Yanmar Marine offers engines, drive systems and accessories for all types of boats, from runabouts to sailboats, and from cruisers to mega yachts. In marine leisure boating, the worldwide reputation of Yanmar Marine is second to none. We design our engines to respect nature. This means quieter engines, with minimal vibrations, cleaner than ever. All of our engines meet applicable regulations, including emissions, at the time of manufacture. To help you enjoy your Yanmar YM series engine for many years to come, please follow these recommendations Read and understand this Operation Manual before you operate the machine to ensure that you follow safe operating practices and maintenance procedures. Keep this Operation Manual in a convenient place for easy access. If this Operation Manual is lost or damaged, order a new one from your authorized Yanmar Marine dealer or distributor. Make sure this manual is transferred to subsequent owners. This manual should be considered a permanent part of the engine and remain with it.

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Constant efforts are made to improve the quality and performance of Yanmar products, so some details included in this Operation Manual may differ slightly from your engine. If you have any questions about these differences, please contact your authorized Yanmar Marine dealer or distributor. The specifications and components instrument panel, fuel tank, etc. described in this manual may differ from ones installed on your vessel. Please refer to the manual provided by the

manufacturer of these components. Refer to the Yanmar Limited Warranty Handbook for a complete warranty description. YM Series Operation Manual 1 In all states, 2009 and later compressionignition engines must be designed, built and equipped to meet the United States EPA emissions standards. Yanmar warrants the emission control system on your YM series engine for the periods of time listed below. Emission Control Certification Model Year YM15 EPA marine CI Tier 3 3YM20 EPA marine CI Tier 3 3YM30E EPA marine CI Tier 3 intermediate NTE 3YM30 EPA marine CI Tier 3 intermediate Note Since 2013, the 3YM30 does not comply with the EPA regulation. 2 YM Series Operation Manual. Engine Model Engine Serial No. Date Purchased Dealer Dealer Phone YM Series Operation Manual 3 Keep the labels from becoming dirty or torn and replace them if they are lost or damaged. Also, if you need to replace a part that has a label attached to it, make sure you order the new part and label at the same time. A This safety alert symbol appears with most safety statements. It means attention, become alert, your safety is involved. Please read and abide by the message that follows the safety alert symbol. DANGER Indicates a hazardous situation which, if not avoided, will result in death or serious injury. WARNING Indicates a hazardous situation which, if not avoided, could result in death or serious injury. CAUTION Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

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YM Series Operation Manual 5 Improper practices or carelessness can cause burns, cuts, mutilation, asphyxiation, other bodily injury or death. This information contains general safety precautions and guidelines that must be followed to reduce risk to personal safety. Special safety precautions are listed in specific procedures. Read and understand all of the safety precautions before operation or performing repairs or maintenance. Before You Operate DANGER The safety messages that follow have DANGER level hazards. Never permit anyone to install or operate the engine without proper training. Read and understand this Operation Manual before you operate or service the engine to ensure that you follow safe operating practices and maintenance procedures. Safety signs and labels are additional reminders for safe operating and maintenance techniques. Consult authorized Yanmar Marine dealer or distributor for additional training. During Operation and Maintenance WARNING The safety messages that follow have WARNING level hazards. Explosion Hazard While the engine is running or the battery is charging, hydrogen gas is being produced and can be easily ignited. Keep the area around the battery wellventilated and keep sparks, open flames and any other form of ignition out of the area. Fire and Explosion Hazard Diesel fuel is flammable and explosive under certain conditions. Never use a shop rag to catch the fuel. Wipe up all spills immediately. Never refuel with the engine running. Fire Hazard Undersized wiring systems can cause an electrical fire. Store any containers containing fuel or other flammable products in a wellventilated area, away from any combustibles or source of ignition. Store any equipment in a designated area away from moving parts. Never use the engine compartment for storage. 6 YM Series Operation Manual. Keep hands, feet and tools away from all moving parts.

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SAFETY Exhaust Hazard Never block windows, vents or other means of ventilation if the engine is operating in an enclosed area. All internal combustion engines create carbon monoxide gas during operation and special precautions are required to avoid carbon monoxide poisoning. Alcohol and Drug Hazard Never operate the engine while under the influence of alcohol or drugs, or when feeling ill. Exposure Hazard Always wear personal protective equipment including appropriate clothing, gloves, work shoes, and eye and hearing protection as required by the task at hand. Sudden Movement Hazard Never operate the engine while wearing a headset to listen to music or radio because it will be difficult to hear the warning signals. Burn Hazard Some of the engine surfaces become very hot during operation and shortly after shutdown. Keep hands and other body parts away from hot engine surfaces. YM Series Operation Manual 7 Poor Lighting Hazard Ensure

that the work area is adequately illuminated. Always install wire cages on portable safety lamps. Tool Hazard Always use tools appropriate for the task at hand and use the correct size tool for loosening or tightening machine parts. Flying Object Hazard Always wear eye protection when servicing the engine or when using compressed air or highpressure water. Dust, flying debris, compressed air, pressurized water or steam may injure your eyes. Coolant Hazard Wear eye protection and rubber gloves when you handle engine coolant. If contact with the eyes or skin should occur, flush eyes and wash immediately with clean water. NOTICE The safety messages that follow have NOTICE level hazards. It is important to perform daily checks as listed in the Operation Manual. Periodic maintenance prevents unexpected downtime, reduces the number of accidents due to poor engine performance and helps extend the life of the engine. Consult authorized Yanmar Marine dealer or distributor if you need to operate the engine at high altitudes.

At high altitudes the engine will lose power, run rough and produce exhaust gases that exceed the design specifications. Always be environmentally responsible. Follow the guidelines of the EPA or other governmental agencies for the proper disposal of hazardous materials such as engine oil, diesel fuel and engine coolant. Consult the local authorities or reclamation facility. Never dispose of hazardous materials by dumping them into a sewer, on the ground, or into ground water or waterways. If a Yanmar Marine Engine is installed at an angle that exceeds the specifications stated in the Yanmar Marine Installation Manuals, engine oil may enter the combustion chamber causing excessive engine speed, white exhaust smoke and serious engine damage. This applies to engines that run continuously or those that run for short periods of time. 8 YM Series Operation Manual. This will prevent water from being forced past the seawater pump and eventually finding its way into the engine. The result of water entering the engine could cause seizure or other serious problems. If you have an installation with two or three engines, and only one engine is operating, please note that if the propeller shaft thruhull stuffing box is lubricated by engine water pressure and the engines are interconnected, care must be taken that water from the running engine does not enter the exhaust of the nonrunning engines. This water could cause seizure of the nonrunning engines. Consult authorized Yanmar Marine dealer or distributor for a complete explanation of this condition. If you have an installation with two or three engines, and only one engine is operating, it is important to limit the amount of throttle applied to the running engine. If you observe black smoke or movement of the throttle does not increase engine speed, you are overloading the engine that is running. Failure to do so may cause the running engine to overheat or cause excess carbon buildup which may shorten the engine s life.

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Never turn off the battery switch if equipped or short the battery cables during operation. Damage to the electrical system will result. YM Series Operation Manual 9 YM Engines Figure X00 1 Part Number Part Number Part Number YM Series Operation Manual The 3YM20 is a 3cylinder engine and is naturally aspirated. The 3YM30E, 3YM30 is a 3cylinder engine and is naturally aspirated. The engines are equipped with a marine gear or sail drive unit. These engines are designed for pleasure craft use and complied with EPA regulation Tier3 marine from 2009 year. It is recommended that new vessels be propped so the engines can operate at 100 to 200 min 1 above the Maximum Rated output power engine speed 3700 to 3800 to allow for some added weight and hull resistance. The engine must be able to reach the Maximum Rated Power engine speed 3600 under full load at all times. Failure to do so can lead to reduced vessel performance, lead to increased smoke levels and cause permanent damage to your engine. The engine must be installed correctly with coolant lines, exhaust gas lines and electrical wiring. Any auxiliary equipment attached to the engine should be easy to use and accessible for service. To handle the drive equipment, propulsion systems including the propeller and other inboard equipment, always observe the instructions and cautions given in

the operation manuals supplied by the shipyard and equipment manufacturers. The YM series engines are designed to be operated at maximum throttle 3600 min⁻¹ for less than 5% of total engine time 30 minutes out of every 10 hours and cruising speed 3400 min⁻¹ or less. The laws of some countries may require hull and engine inspections, depending on the use, size and cruising area of the boat. The installation, fitting and surveying of this engine all require specialized knowledge and engineering skills. See Yanmars local subsidiary in your region or your authorized Yanmar Marine dealer or distributor.

YM Series Operation Manual 11 A new Yanmar diesel engine must be operated at suitable speeds and power settings during the breakin period to make the sliding parts, such as piston rings, breakin properly and to stabilize engine combustion. During the breakin period, the engine coolant temperature gauge should be monitored; temperature should be between 71 and 87 C 160 and 190 F. During the first 10 hours of operation, the engine should be run at maximum engine speed minus 400 to 500 min⁻¹ approximately 60 to 70% of load most of the time. This will ensure the sliding parts break in properly. During this period, avoid operating at maximum engine speed and load to avoid damaging or scoring sliding parts. **NOTICE** Do not operate at WOT wide open throttle for more than a minute at a time during the first 10 hours of operation. Do not operate the engine at low idle or at low speed and light load for more than 30 minutes at a time. Since unburned fuel and engine oil will adhere to the piston rings when operating at low speeds for long periods, this will interfere with proper movement of the rings and the engine oil consumption may increase. Low idle speed does not allow breakin of sliding parts. If operating engine at low speed and light load, you must race the engine to clean the carbon from the cylinders and fuel injection valve. Perform this procedure in open waters With the clutch in NEUTRAL, accelerate from the lowspeed position to the highspeed position briefly. Repeat this process five times. Once past the initial 10 hours until 50 hours, the engine should be used over its full operating range, with special emphasis on running at relatively high power settings. This is not the time for an extended cruise at idle or low speed.

The boat should be run at maximum speed minus 400 min⁻¹ most of the time approximately 70% load, with a 10 minute run at maximum minus 200 min⁻¹ approximately 80% load every 30 minutes and a 4 to 5 minute period of operation at WOT wide open throttle once each 30 minutes. During this period, be sure not to operate your engine at low speed and light load for more than 30 minutes. If operating engine at low speed and light load by necessity, just after the low idle operation, be sure to race the engine. To complete engine breakin, perform After Initial 50 Hours of Operation maintenance procedures. After Initial 50 Hours of Operation on page YM Series Operation Manual. Your engine may have different equipment from that illustrated. Please replace if damaged or lost. The engine nameplate is attached to the engine rocker arm cover. The marine gear nameplate Figure 8 is attached to the marine gear. Check the marine gears model, gear ratio, oil used, oil quantity and serial number. Check the sail drive model and serial number. Drain the filter periodically. The filter element should be replaced periodically. The water separator if equipped should be drained periodically. Pumps fuel from the tank to the fuel injection system. Pushing the manual lever on the side of the feed pump supplies fuel to the engine when fuel priming is needed. Moving the fuel feed lever up and down feeds the fuel. The lever is used to bleed air from the fuel system after running out of fuel. Filler port for engine oil. Filters fine metal fragments and carbon from the engine oil. Filtered engine oil is distributed to the engine s moving parts. The filter is a cartridge type and the element should be replaced periodically. See Changing the Engine Oil on page 61. Filler port for marine gear lube oil. Located on top of the marine gear case. There are two cooling systems closed cooling with coolant fresh water and seawater. The engine is cooled by the closed cooling circuit.

The closed circuit is cooled by seawater using a heat exchanger. The centrifugal water pump circulates coolant inside the engine. The circulating pump is driven by a Vribbed belt. Pumps

seawater from outside vessel to the engine. The seawater pump is gear-driven and has a replaceable rubber impeller. Do not operate it without seawater, as this will damage the impeller. The cap has a pressure regulating valve. When the cooling water temperature rises, the pressure rises inside the coolant system. The pressure valve in the filler cap releases vapor and hot water overflow to the reservoir. When the engine stops and the coolant cools, the pressure in the coolant tank drops. The filler cap vacuum valve then opens to send water back from the reservoir. This minimizes coolant consumption. The closed cooling system coolant level can easily be checked and refilled in this tank. A heat exchanger that cools high temperature engine oil using coolant. The intake silencer guards against dirt in the air and reduces the noise of air intake. Nameplates are provided on the engine and the marine gear and have the model, serial number and other data. See Nameplates on page 16 Starter motor for the engine; powered by the battery. Driven by a belt and generates electricity and charges the battery. Gauge stick for checking the engine oil level. YM Series Operation Manual 17 24 PRODUCT OVERVIEW CONTROL EQUIPMENT The equipment in the control room makes remote control operation possible. It consists of the instrument panel, which is connected to the engine by a wire harness, and the remote control handle, which is connected by control cables to the engine control lever and marine gear. Instrument Panel Equipment and Functions The instrument panel is located at the helm. The following instruments enable you to start or stop the engine and to monitor its condition during operation.

B20Type Alarm lamps 2 Tachometer Figure X00 3 LCD 4 Switches pushbuttons Control panel switches All switches are pushbuttons X00 Start switch Pushing this switch operates the starter and starts the engine. Stop switch Pushing this switch stops the engine X00 Glow switch Pushing this switch for the specified time heats the glow plug in the combustion chamber. It becomes red-hot, facilitating fuel ignition. This assists starting in cold weather. Shows number of operating hours. Can be used as a guide for periodic maintenance checks. The hourmeter is located at the bottom of the tachometer. When the power switch is pushed, the gauges will illuminate for easier viewing. Note The LCD on the instrument panel show hourmeter, display brightness and battery voltage. Indicators and Alarms Optional When a sensor detects a problem during operation, the indicator on the instrument panel will light and an alarm will sound. Indicators are located on the instrument panel and the alarms are located on the back of the panel. Under normal operating conditions, the indicators are off. Battery Low Charge Indicator When the alternator output is too low, the indicator will light. When charging begins, the indicator will turn off. Continuing operation at temperatures exceeding the maximum limit will result in damage and seizure. Check the load and troubleshoot the cooling system. Engine Oil Low Pressure Indicator and Alarm When the engine oil pressure falls below normal, the oil pressure sensor will send a signal to the indicator, causing it to light and the alarm to sound. Stop operation to avoid damage to the engine. Check the oil level and troubleshoot the lubrication system. Water in Sail Drive Seal Indicator and Alarm When water is detected between the seals of the sail drive, the indicator will light and the alarm will sound.

YM Series Operation Manual 19 26 PRODUCT OVERVIEW LCD control hourmeter, display brightness, battery voltage You can switch scroll between displays by pressing the buttons on the bottom. Switching screens by pressing the right button Pressing the left button switches the screens in the opposite direction. Press the power switch. After 4 seconds, the LCD shows the hourmeter. Pressing the right button on the bottom of the LCD shows the temperature display. This feature is not available on this engine. Pressing the right button again shows the LCD brightness settings. To set the brightness of the backlight Press the left button continuously and the digits of the LCD start flashing. In this condition, press the right button to decrease the brightness and the left button to increase the brightness. The brightness changes in 6 steps of 20 %. To set the desired brightness, do not touch the buttons for 3 seconds. Note Continuously pressing means holding the button for approx. 2 seconds. Next, press the right button to show the pressure display. Press again to show the battery voltage. Pressing the button once more returns the display to the initial hourmeter. Press

the left button to switch between displays. Press and hold both buttons until SET UP appears. Press the left button and go to the screen UNIT. Press the left button and go to the next screen ENGINE. Confirm that the display says ENGINE. Note The preset value of speed pulse is indicated on the box of each panel. Next, press the left button and select the speed pulse value for each engine model. Figure 2 PRODUCT OVERVIEW 1 2 Engine type select Scroll 3 Select Engine model YM with HITACHI alternator Speed pulse value Scroll YM with VALEO alternator After confirming the value is changed correctly, press the right button to return to the ENGINE screen. Press the left button again to go from the ENGINE screen to the EXIT screen.

After confirming the display, press the right button to restart the panel and return to the hourmeter display. 7 Exit setup 6 Select 8 Return to LCD control Figure EN03 YM Series Operation Manual 21 28 PRODUCT OVERVIEW Alarms Checking the Warning Devices Before and after engine start, make sure that the instruments and warning devices operate correctly. If the engine runs out of coolant or lubricating oil and the instruments and warning devices fail, they can not give you warning to prevent accidents. This can also lead to incorrect operation and cause further malfunctions of the engine. Before Engine Start 1. Turn on the battery switch. 2. Push the power switch on. All alarm lamps light up for 4 seconds. After 4 seconds, the charge lamp and the lubricating oil pressure alarm lamp light up, and the hourmeter is displayed. The alarm buzzer sounds until the engine starts. After Engine Start After engine start, make sure that the warning devices operate correctly and according to After start in the below table. All alarm lamps turn off. The above check tells you whether the electric circuit for the warning lamps and alarm buzzer operate correctly. If they do not operate correctly, inspection and repair are required. Consult your dealer or distributor for repairs. Figure 3 Buzzer F1A 3 AMP Fuse ACC Output Figure E00 YM Series Operation Manual 23 30 PRODUCT OVERVIEW SingleHandle Remote Control Head 2 Figure Figure Note Direction of travel will vary depending on installation location. 1 Low Speed FWD or REV 2 Low Speed FWD or REV 3 NEUTRAL Power to the propeller shaft is cut off and the engine idles 4 Maximum Engine Speed FWD or REV 5 Maximum Engine Speed FWD or REV A single handletype Figure 14 should be used to operate the marine gear clutch NEUTRAL, FORWARD and REVERSE and to control the engine speed.

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