

INBOARD JOYSTICK DOCKING SYSTEM

JC20

Welcome to the World of YANMAR Marine!

Introduction:

- This Operation Manual describes the operation, maintenance and inspection of the Inboard Joystick Docking System.
- Read this Operation Manual carefully before operating the Inboard Joystick Docking System.
- 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 dealer or distributor.
- Make sure this manual is transferred to subsequent owners. This manual should be considered and remain a permanent part of the system.
- 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 system. If you have any questions about such differences, please contact your authorized YANMAR dealer or distributor.
- The specifications and components described in this manual may differ from ones installed on your boat.
- Please read the Operation Manual of Engine with this Operation Manual.
- For information on the thruster, please refer to the thruster operation manual.

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OPERATION MANUAL	MODEL	JC20
	CODE	0AJCS-EN0020

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FOR YOUR SAFETY

Following the precautions described in this manual will enable you to use this system with complete satisfaction. However, failure to observe any of the rules and precautions may result in damage or injury. Read this manual carefully and be sure you fully understand it before beginning operation.

Safety Symbols

These are the warning signs used in this manual and on the product.



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

DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.

WARNING

WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION

CAUTION indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE

NOTICE indicates a situation which can cause damage to the product, personal property and/or the environment or cause the equipment to operate improperly.

Safety Precautions

The Inboard Joystick Docking System is a system suitable for slow operation when docking (or undocking) the boat or cruising inside a marina or harbor. Be sure to comply with the precautions and navigate safely.

Joystick operation

WARNING

- **Operating the Inboard Joystick Docking System is difficult in stormy weather conditions. Do not operate in such conditions. It may result in accidents or cause injuries.**
- **Perform the initial setting and adjustment in an environment without obstacles to avoid unexpected accidents, such as collision with another ship or obstacle.**
- **During initial setting and adjustment (calibration), it is not possible to maneuver or operate the engine by using the control head. Take care to avoid unexpected accidents, such as collision with another ships or obstacle.**
- **Do not operate the boat near to swimmers.**

CAUTION

- **During operation, pay attention to the effect on nearby boats and piers.**
- **During operation, it is not possible to navigate with the control head. Pay attention when navigating the boat.**
- **During operation, note that, the boat will continue to move in the direction that the joystick was tilted.**
- **Operation of this system is affected according to the strength of the waves, wind, and the thruster battery condition. Pay attention when navigating the boat.**

⚠ CAUTION

- During slow-mode operation, the engine speed is lower than in fast-mode, and so the system is more likely to be affected by wind and waves. Pay attention when navigating the boat.
- Be sure to stop the engine before inspecting the system components.
- If you feel any abnormalities in the boat movement during the joystick operation, switch to the control head navigation.
- During operation, the boat can be moved laterally (sideways) and diagonally, which is different from conventional boat movement. Care must be taken that passengers do not fall overboard due to sudden movement of the boat.
- During operation, set the rudder to the center position. If the rudder is not kept in the center, the direction of boat movement will not conform to the direction of joystick lever tilt.
- Always turn off the battery switch or detach the earth cable (-) before inspecting the thruster battery, cable, terminals, connectors and harness.

NOTICE

- This Inboard Joystick Docking System should only be used in combination with the “EXTENDED RUN-TIME BOW THRUSTER for YANMAR” manufactured by Vetus B.V..
YANMAR does not warrant the proper functioning of this Inboard Joystick Docking System if any other bow thruster is used.
 - Do not spray high-pressure water on electrical components (joystick, display etc.) when cleaning, etc.
-

PRODUCT OVERVIEW

The Inboard Joystick Docking System is a system that is used on boats equipped with twin inboard engine shaft drive and a bow thruster. It allows control of the boat movement at low-speed with a joystick lever.

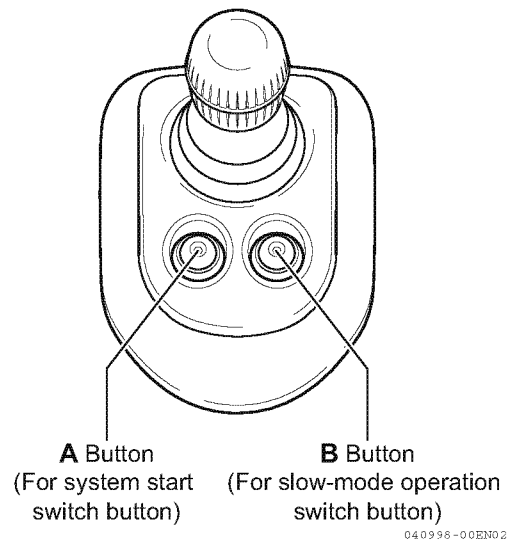
NOTICE

This Inboard Joystick Docking System should only be used in combination with the “EXTENDED RUNTIME BOW THRUSTER for YANMAR” manufactured by Vetus B.V..

YANMAR does not warrant the proper functioning of this Inboard Joystick Docking System if any other bow thruster is used.

Joystick lever with a knob

By tilting the joystick lever to the direction you want to go (ahead, astern, sideways, and diagonal), the boat can be moved in that direction. By twisting the knob on the top of the joystick lever, the boat can also be rotated.



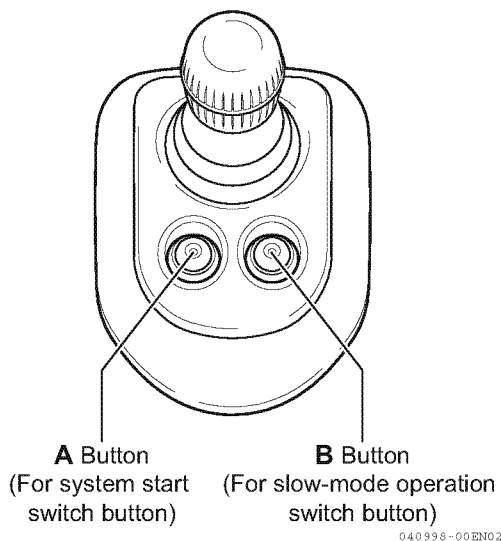
Note: You can switch the A or B button for fast-mode or slow-mode. For details, consult your YANMAR dealer or distributor.

HOW TO OPERATE

Switching to the Inboard Joystick Docking System

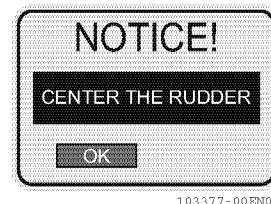
When switching to Inboard Joystick Docking System operation, pay attention to the following items:

- Check that the engines on both sides are operating.
- Ensure that the rudder is set to the center position.
- To operate the system, press the A button and switch to the joystick.
- During operation, it is not possible to operate the engine with the control head.
- During operation, the engine speed is limited.
- During operation, docking or undocking is affected by strong winds and waves. The slow-mode operation is more severely affected by strong winds and waves than the fast-mode operation.
- During operation of the system, if the control head lever is moved to ahead or astern, the Inboard Joystick Docking System is canceled, and operation using the control head is selected.



Fast-mode or slow-mode operation

1. Move the control head shift lever to the neutral position.
2. Move the joystick lever to the center position.
3. Set the rudder to the center position.
4. Press the A button on the joystick. If there are multiple joysticks, select the joystick that you will use.
5. The notice "CENTER THE RUDDER" appears on the display for 2 seconds accompanied by a buzzer sound. Check that the rudder is at the center position.



Note: This notice appears when a rudder sensor is not installed. If a rudder sensor is installed, this appears when the rudder shifts away from center.

CAUTION

If the rudder is not in the center, the direction of boat movement will not conform to the direction of joystick tilt.

6. The A button is lit after a beep and you can operate.
7. By next pressing the B button, the B button lights up (both A and B buttons are lit), and after a beep sound, the system can be operated in slow-mode. In slow-mode, the boat can be navigated with the joystick only, and the engine speed is slower than in fast-mode.
8. To cancel slow-mode operation, press the B button again.
9. The light of the B button turns off, and the system can be operated in fast-mode.

Note: Usually, when the A button is pressed, the system starts in fast-mode. However, depending on the setting, the system may start in slow-mode. For details, consult your authorized YANMAR dealer or distributor.

Canceling (stopping) system operation

To cancel the operation, press the Select button on the control head or operate the two control head handles (or one control head handle) to switch to the ahead (or astern).

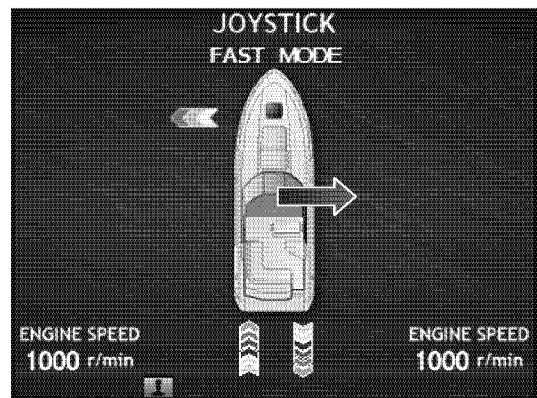
If switching by using the control head, be sure to return the handle to the neutral position. If the handle is not returned to neutral, the engine speed cannot be increased.

By doing so, the boat can no longer be maneuvered by using the joystick, and the joystick button is turned off. After canceling, the boat can be navigated with the steering wheel and control head.

Navigating with the Inboard Joystick Docking System Operation

To navigate the boat, tilt the joystick lever in the desired direction of movement, or twist the top of the joystick lever.

- If you tilt the joystick lever to the direction you want to move the boat (sideways, diagonal, ahead, and astern), the boat will move in that direction. If you twist the top of the joystick lever, the boat will rotate.
- You can adjust the change in boat speed by the degree in which you tilt or twist the joystick lever.
- When the joystick operation is selected, the display shows the following indication, which makes the boat movement by the joystick operation easy to understand.

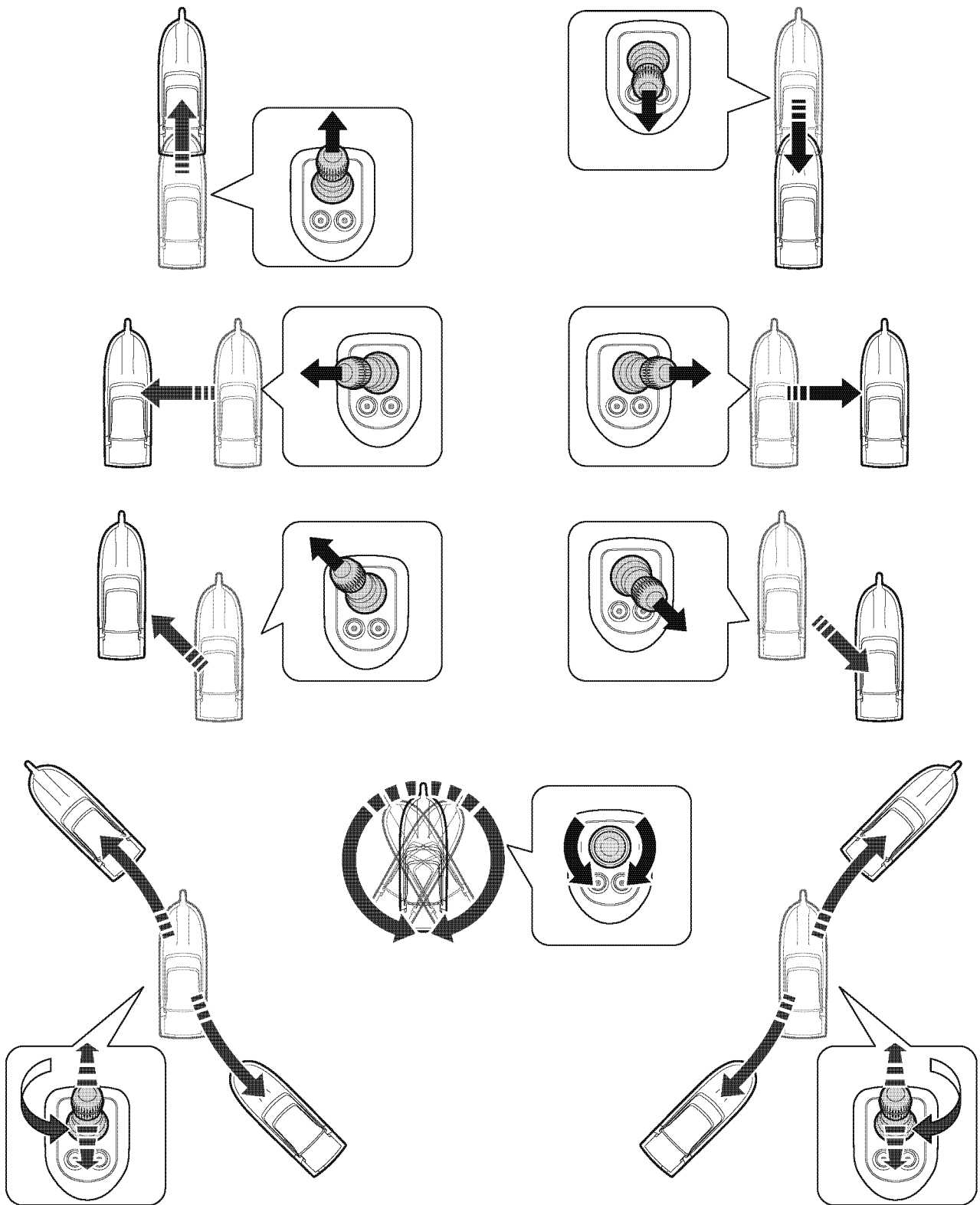


Note: Even if the direction of the joystick is changed quickly between opposite directions (right and left), the thruster cannot immediately change the direction.

NOTICE

Even if you return the joystick lever tilt, the boat still keep on moving for a while.

Operation of the joystick lever and the boat movement



Initial Setting and Calibration of the Inboard Joystick Docking System

Performing initial setting or calibration is not required. However, if adjustments are desired, consult your authorized YANMAR dealer or distributor. Slight adjustments may be made by the following procedure:

Calibration

Calibrate the boat in a place where there is little wind and no tidal current.

● Check before calibration

- Set the rudder to the center position.
- Move the control head shift lever to the neutral position.
- Press the A button on the joystick to switch to the joystick.
- Move the joystick lever to the center position.

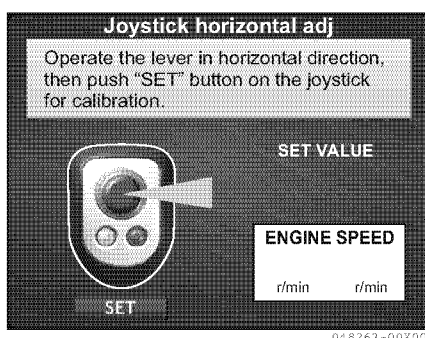
● Calibrating

Calibrate the boat in the sideways direction and diagonal direction. First, calibrate the boat in the sideways direction and then, in the diagonal direction.

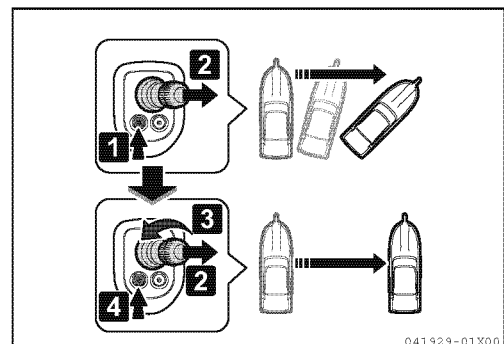
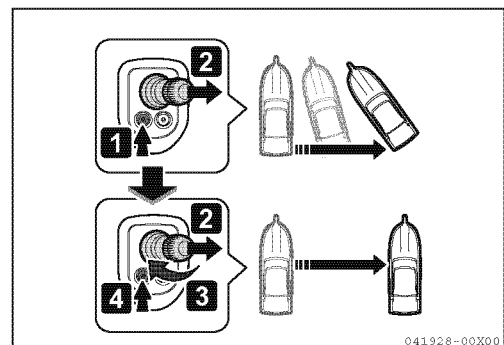
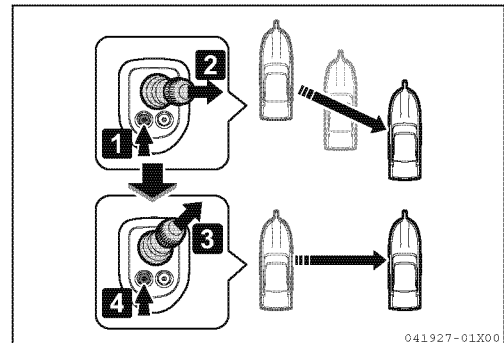
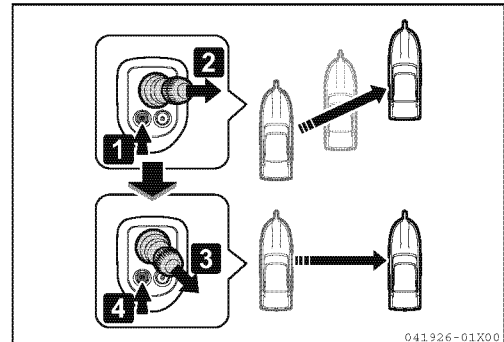
Calibrating the sideways directions

- Press and hold the A button for 5 seconds to start calibrating in the sideways direction, a beep sounds continuously, the A button flashes and you can calibrate in the sideways direction. A beep sounds stops when the calibration is done.

The calibration condition is shown on the display. If you move the joystick within the settings range, the Green Zone is shown and you can calibrate. If you move the joystick outside the range, the Red Zone is shown. In this case, you cannot calibrate. To show the Green Zone, move the joystick in the sideways direction.



- Move the joystick lever to the sideways. The A button changes from flashing to continuously lit, and the system is ready to calibrate.
- If the boat does not move in the sideways direction, operate the joystick lever as shown in the below illustration. While moving in the sideways direction, press the A button to set.



Note: If you calibrate in one sideways direction (left or right), you don't need to calibrate in the opposite sideways direction.

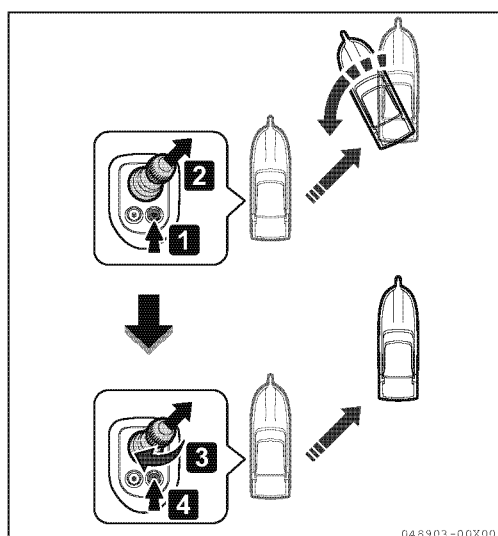
Calibrating the diagonal directions

- Press and hold the B button for 5 seconds, a beep sounds continuously and the B button flashes and you can calibrate in the diagonal direction. A beep sounds stops when the calibration is done.

The calibration condition is shown on the display. If you move the joystick within the settings range, the Green Zone is shown and you can calibrate. If you move the joystick outside the range, the Red Zone is shown. In this case, you cannot calibrate. To show the Green Zone, move the joystick 30 degrees in the diagonal direction.



- Move the joystick lever 30 degrees diagonally forward (left or right). The B button changes from flashing to continuously lit and the system is ready to calibrate.
- If the boat slews while moving, twist the top of the joystick to the opposite direction of slewing as shown in the below illustration, and while maintaining the non-slewing condition, press the B button to calibrate.



Note: If you calibrate in one diagonally forward direction (left or right), you don't need to calibrate in the opposite diagonally forward direction.

● Canceling the calibration

To cancel the calibration, return the joystick lever to the center position and press the A (Sideways direction) or B (Diagonal direction) button. The beep stops and calibration is canceled.

● Re-calibration

If the boat does not move in the direction of joystick after finishing calibration, re-calibrate the boat. You may need to calibrate the boat multiple times before it is stable.

● Resetting the calibration

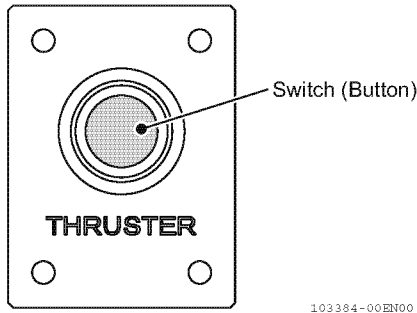
To reset calibration, press and hold the A or B button for 5 seconds in the calibration mode. The saved calibration value is reset to the initial setting value.

● Other settings and adjustment

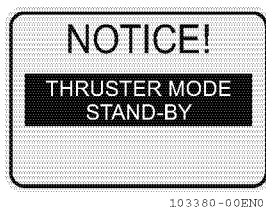
To perform other settings and adjustment, special knowledge and expertise are required. Consult your authorized YANMAR dealer or distributor.

Switching to Independent Thruster (Optional)

The thruster switch (optional) is used to changeover to thruster mode, operating only the thruster independently with the joystick.



1. When the thruster switch (button) is pressed, the switch flashes, and the notice “THRUSTER MODE STAND-BY” appears for 2 seconds together with a buzzer sound. This is the stand-by state.



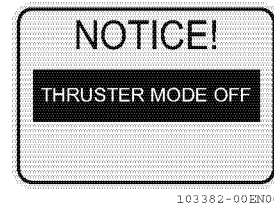
2. When the switch is pressed again, the switch lights up, and the notice “THRUSTER MODE ON” appears for 2 seconds together with a buzzer sound. This is the thruster-mode.



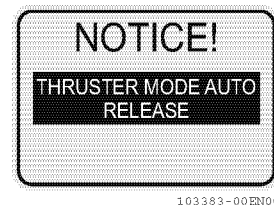
3. Only the thruster can be operated by the joystick.
 - 1- If the joystick is tilted to the right or left, the boat will move in that direction.
 - 2- If the joystick is returned to the center position, the thruster will stop.
 - 3- Even if the joystick is tilted in a ahead/astern/diagonal direction, the thruster will not operate.

Note: Even if the direction of the joystick is changed quickly between opposite directions (right and left), the thruster cannot immediately change the direction.

4. To cancel thruster mode, press the thruster switch (button) again, and the light will turn off.
5. The notice “THRUSTER MODE OFF” appears on the display.



Note: If there is no operation within 10 seconds, stand-by mode is automatically canceled. If there is no operation for 30 minutes in thruster mode, the mode is automatically canceled. At this time, the notice “THRUSTER MODE AUTO RELEASE” appears for 2 seconds accompanied by a buzzer sound and the light turns off.



FAILURES AND CORRECTIVE ACTIONS

Troubleshooting

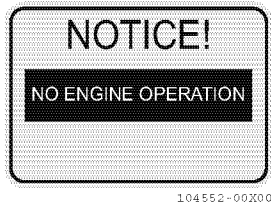
As inspection for failure measures, repair, and replacement require specialized expertise, contact your authorized YANMAR dealer or distributor.

Failures	Probable causes	Corrective actions
The button lamp does not turn on when the A button is pressed.	<ul style="list-style-type: none"> • The engines on both sides are not operating. • Joystick failure • Joystick lamp and internal connection failure 	<ul style="list-style-type: none"> • Operate the engines on both sides • Inspect and replace • Inspect and replace
The beep does not sound when the A button is pressed.	<ul style="list-style-type: none"> • Display buzzer and internal connection failure • The display is set to Mute 	<ul style="list-style-type: none"> • Inspect and repair
Joystick lever does not move, is jammed or broken.	<ul style="list-style-type: none"> • Joystick failure 	<ul style="list-style-type: none"> • Inspect and replace
The boat does not move when the joystick is operated.	<ul style="list-style-type: none"> • The power (A button) for the joystick is not turned on • Joystick failure • Thruster failure • Marine gear forward/reverse solenoid failure 	<ul style="list-style-type: none"> • Turn on the power • Inspect and replace • Inspect and repair • Inspect and replace
The boat moves only slightly when the joystick is operated.	<ul style="list-style-type: none"> • The joystick is in slow-mode operation • Thruster failure • Marine gear forward/reverse solenoid failure • Effected by wind and waves • The boat is too heavy 	<ul style="list-style-type: none"> • Switch to fast-mode operation • Inspect and repair • Inspect and replace
There is a difference between the direction of joystick operation and the direction of boat movement.	<ul style="list-style-type: none"> • Calibration is required • Rudder is not in center position • Engine on one side is stopped • Thruster failure • Effected by wind and waves 	<ul style="list-style-type: none"> • Calibrate • Set rudder to the center position • Restart the stopped engine • Inspect and repair
During operation of the Inboard Joystick Docking System, "WARNING" or "NOTICE" appears on the display.	<ul style="list-style-type: none"> • Joystick failure • Joystick/ECU failure • Thruster failure • Engine on one side is stopped 	<ul style="list-style-type: none"> • Inspect and replace • Inspect and replace • Inspect and repair • Restart the stopped engine

Note: For failure on the thruster, see the thruster manual.

Engine Stop on One Side during Operation

When an engine on one side stops due to any failure during operation, the NOTICE screen is displayed and the buzzer sounds for 2 seconds.



In this case, the boat can be operated in the ahead and astern directions. However, movement of the boat cannot be controlled when maneuvering in sideways and diagonal directions, or when turning the boat on the spot.

In addition, when the "Select" button on the control head is pressed, the boat is then operated by the control head.

The boat cannot be operated by the joystick lever unless the stopped engine is restarted.

Bow Thruster Notice Displayed during Operation

When a bow thruster failure occurs during operation, the NOTICE screen is displayed and the buzzer sounds for 2 seconds.

Even if the thruster stops working due to a failure etc., the joystick or control head handles can still be used to maneuver forward/backwards and turn.

BOW THRUSTER HIGH TEMP



- This notice appears when the thruster overheats.
- When this notice appears, reduce use of the thruster.
- Even if this notice appears, the thruster can still be used. However, continual use will result in the thruster stopping automatically.

BOW THRUSTER NOT WORK



- This notice appears when the thruster does not operate or the thruster battery voltage is too low.
- When this notice appears, check the thruster and the thruster battery.

Please refer to the thruster manual.

PERIODIC MAINTENANCE

Periodic maintenance is as follows.

Periodic maintenance is performed along with periodic maintenance of the engine and marine gear.

Note: For maintenance of the thruster, please refer to the thruster operation manual.

Daily (when starting)

- Check the voltage of the thruster battery.
- Check that no notice for the thruster is shown on the display.
- Check that there is no jamming of the joystick lever.
- Check that the button lamp lights when pressing the A button.
- Check that no warning or notice is shown on the display when pressing the A button.

Initial 50 hours, every 250 hours or 1 year

- Inspect all harnesses and cables for damage.
- Inspect all terminals and connectors for loosening and disconnection.
- Inspect the voltage and electrolyte level of the thruster battery.

CAUTION

Always turn off the battery switch or detach the earth cable (-) before inspecting the thruster battery, cable, terminals, connectors and harness.

**Declaration of Conformity for Recreational Craft Joystick steering control system
requirements of 2013/53/EU**

Name of manufacturer: Yanmar Co., Ltd.

Street: 1-32

Town: Chayamachi, Kitaku, Osaka

Post Code: 530-8311

Country: Japan

Name of Authorized Representative: Yanmar Co., Ltd. Marine Recreational Promotion Division

Street: 5-3-1

Town: Tsukaguchi Honmachi, Amagasaki, Hyogo

Post Code: 661-0001

Country: Japan

Name of Notified Body: Dutch Certification Institute

Street: Nipkowsweg 9

Town: Joure

Post Code: 8501 XH

Country: The Netherlands

ID Number: 0613

Description of Joystick steering control system and applied standards

Product: Joystick steering control system **Type:** JC10 / JC20

Applied standards: ISO 25197:2012

Directive 2013/53/EU

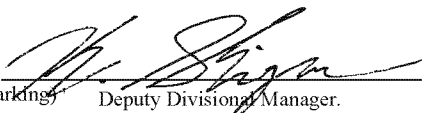
RSG Guidelines 2012

Comments of the EC to the Directive Combined, second edition

I declare on behalf of the manufacturer that the Joystick steering control system will meet the requirements of Module B of the Recreational Craft Directive 2013/53/EU when installed in a recreational craft, in accordance with the manufacturer's supplied instructions and that this (these) must not be put into service until the recreational craft into which it is (they are) to be installed has been declared in conformity with the relevant provisions of the above mentioned Directive.

Name: Kazuo Shigesawa

(Identification of the person empowered to sign on
behalf of the manufacturer or his authorized representative)

Signature and title: 
(or an equivalent marking)

Deputy Divisional Manager.
Marine Recreational Promotion Division
Yanmar Co., Ltd.

Date: (yr/month/day) 2016/ 12 / 15

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<https://www.yanmar.com/cn/>

As of May 1st, 2016

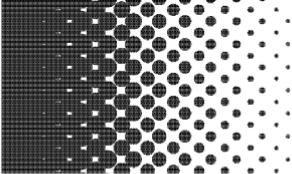
OPERATION MANUAL

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Edited by: YANMAR TECHNICAL SERVICE CO., LTD.



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YANMAR

YANMAR CO., LTD.

<https://www.yanmar.com>

0AJCS-EN0020

