

# **OPERATION MANUAL**

INBOARD JOYSTICK DOCKING SYSTEM

**JC30** 

STERNDRIVE JOYSTICK DOCKING SYSTEM

JC30Z

en English

el Greek

(da) Danish

it Italian

de German

no Norwegian

es Spanish
fr French

nl Dutch
pt Portuguese

(fi) Finnish

(SV) Swedish



#### Welcome to the World of YANMAR Marine!

#### Introduction:

- This Operation Manual describes the operation, maintenance and inspection of the Joystick Docking System.
- Read this Operation Manual carefully before operating the 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, contact your authorized YANMAR dealer or distributor.
- The specifications and components described in this manual may differ from ones installed on your boat.
- Read the Operation Manual of Engine with this Operation Manual.
- For information on the thruster, refer to the thruster operation manual.

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#### **OPERATION MANUAL**

JC30, JC30Z

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# peration Manual YANMAR

# 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.

#### **A** DANGER

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

#### **A WARNING**

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

#### **A** 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 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 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.

#### **A** 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.

#### **A** CAUTION

 During slow-mode operation, the engine speed is lower than the speed 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.
- · Care must be taken not to get your hand caught when you inspect the hydraulic cylinder. As the cylinder fluctuates, you may get caught and injured.
- · 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 JC30 operation, set the rudder to the center position. If the rudder is not in the center, the direction of boat movement is not followed by the direction of the joystick lever operation.
- Always turn off the battery switch or disconnect the earth cable (-) before inspecting the thruster battery, cable, terminals, connectors and harness.

#### **NOTICE**

- JC30 Inboard Joystick Docking System should only be used in combination with the "EXTENDED RUN-TIME BOW THRUSTER for YANMAR", "BOW PRO" manufactured by Vetus B.V. or "SEP SERIES" manufactured by Sleipner Motor Ltd. YANMAR does not guarantee the proper functioning of this Inboard Joystick Docking System if any other thruster is used.
- · Do not spray high-pressure water on electrical components (joystick, display etc.) when cleaning, etc.

#### **Electronic helm operation**

#### **A** CAUTION

In the JC30Z Sterndrive Joystick Docking System, the normal navigation of a boat is performed by the electronic steering system.

The electronic steering system consists of the electronic helm, solenoid valve, and cylinder. Before sailing, start the engine, steer the steering fully on the right and left, and make sure that the drive moves in the intended direction.

#### **Electronic helm installation**

#### **NOTICE**

Compass safety distance for electronic helm Follow the compass safe distances to prevent interference to a magnetic compass.

Magnetic compass	
0.80 m	

# PRODUCT OVERVIEW

There are two types of Joystick Control System available, JC30 for inboard shaft drive, and JC30Z for sterndrive. It allows control of the boat movement at low-speed with a joystick lever.

#### ■ JC30 for inboard shaft drive

JC30 Inboard Joystick Docking System is a system that is used on boats equipped with single or twin inboard engine shaft drives, and one or more (bow or bow and stern) thrusters.

#### **■** JC30Z for sterndrive

JC30Z Sterndrive Joystick Docking System is a system that is used on boats equipped with twin engines and twin sterndrives (it cannot be adapted to boats equipped with a single engine and single sterndrive).

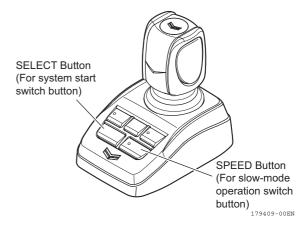
#### **NOTICE**

JC30 Inboard Joystick Docking System should only be used in combination with the "EXTENDED RUNTIME BOW THRUSTER for YANMAR", "BOW PRO" manufactured by Vetus B.V. or "SEP SERIES" manufactured by Sleipner Motor Ltd.

YANMAR does not guarantee the proper functioning of JC30 Inboard Joystick Docking System if any other 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 moves in that direction. The boat turn to the direction when twisting the knob on the top of the joystick lever.



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

# **BEFORE YOU OPERATE (FOR JC30Z)**

### Inspection for JC30Z before Start

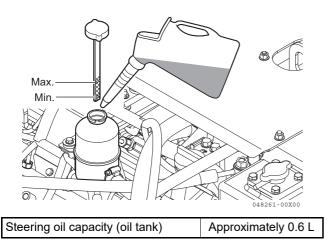
Perform the following inspections before starting the engine or operating the JC30Z Sterndrive Joystick Docking System.

If you find any problems, do not operate the engine until the problems are corrected.

#### Inspection and refilling of the steering oil

- Inspect and refill oil in the steering oil tank attached to the engine.
- Remove the dipstick cap on the tank and inspect the steering oil level. If the steering oil level is insufficient, fill steering oil above the upper mark of the dipstick.

Recommended steering oil Automatic Transmission Fluid (ATF DEXRON III)



#### Inspection around the engine and sterndrive

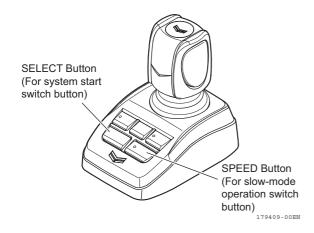
- Oil leaks from the engine steering system.
- Oil leaks from the sterndrive steering system.
- Loose or missing the wiring terminals.
- Loose or missing the bolts.

# **HOW TO OPERATE**

# Switching to the Joystick Control System

When switching to joystick control operation, pay attention to the following items:

- · Check that all engines are operating.
- Ensure that the rudder is set to the center position.
- To operate the system, press the SELECT 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, if the control head lever is moved to ahead or astern, the joystick operation is canceled, and operation using the control head is selected.
- Before operation, be sure to return the control head to the neutral position.



# Switching to the JC30 inboard joystick docking system operation

- 1. Move the control head lever to the neutral position.
- 2. Move the joystick lever to the center position.
- 3. Set the rudder to the center position.
- Press the SELECT 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 buzzer sound. Make sure 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 message appears when the rudder is not centered.

#### **A** CAUTION

If the rudder is not in the center, the direction of boat movement is not synchronized with the direction of joystick operation.

6. When the SELECT button is lit after a beep, operate the joystick.

#### Switching to the JC30Z sterndrive joystick docking system operation

- 1. Move the control head lever to the neutral position.
- 2. Move the joystick lever to the center position.
- 3. Press the SELECT button on the joystick. If there are multiple joysticks, select the joystick that you will use.
- 4. When the SELECT button is lit after beep, operate the joystick.

#### Fast mode or slow mode operation

- 1. When pressing the SPEED button, a buzzer sounds and the SPEED button lights up. Then, you can operate the boat in the slow-mode. In the slow-mode, the boat can be navigated with the joystick only, and the engine speed is slower than the speed in the fast-mode.
- 2. To cancel the slow-mode operation, press the SPEED button again.
- 3. The light of the SPEED button turns off, and the system operates in the fast-mode.

Note: Usually, when the SELECT button is pressed, the system starts in the fastmode. However, depending on the setting, the system may start in the slowmode. For details, consult your authorized YANMAR dealer or distributor.

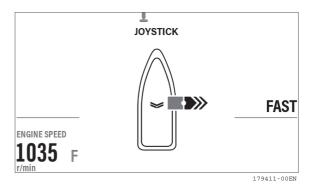
#### Canceling (stopping) system operation

To cancel the operation, press the SEL switch on the control head or operate one of the control head levers. 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 light is turned off. After canceling, the boat can be navigated with the steering wheel and control head.

## **Navigating with the Joystick 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 turn.
- 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 it easier to understand in which direction the boat will move. This is only an operation guide for a joystick. The thrust indication of the thruster may differ from the actual thrust.

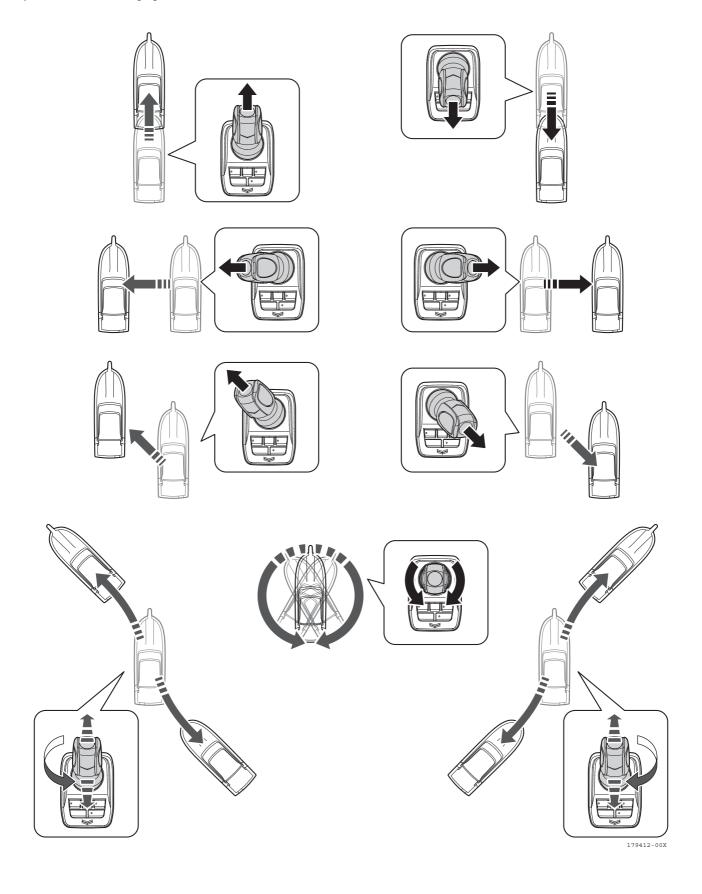


Note: Even if the direction of the joystick is changed quickly between opposite directions (right and left), the thruster cannot immediately change the direction.

#### **NOTICE**

Even if you return the joystick lever to the neutral position, the boat still keeps moving for a while.

# Operation of the joystick lever and the boat movement



# Initial Setting and Calibration of the Joystick Docking System

It is not required to perform initial settings or calibration of the joystick docking system. If you wish to adjust the system, consult your authorized YANMAR dealer or distributor. However, slight adjustment can be made by the steps described below.

#### 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 (only for JC30).
- Move the control head lever to the neutral position.
- Press the SELECT button on the joystick to switch to the joystick.
- Move the joystick lever to the center position.

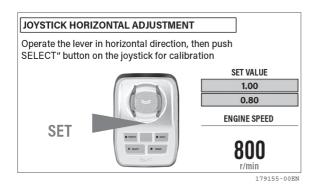
#### Calibration

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

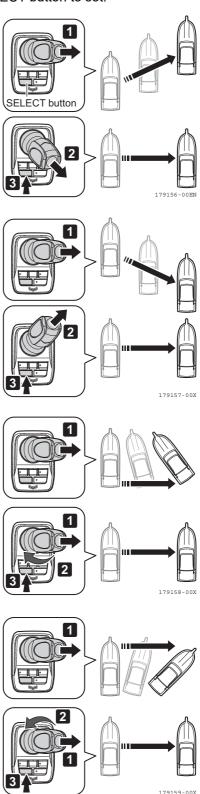
# Calibrating the sideways directions (Bow thruster only)

 Select [Joystick adj] from [System Settings] of the display [Main menu]. Select [Horizontal adj] and calibrate in the sideways direction. A beep sounds continuously, and the SELECT button flashes, and you can calibrate in the sideway direction. The beep sound stops when the calibration is done.

The calibration condition is shown on the display. When the joystick is moved within the settings range, the Green Zone is shown and you can calibrate. When the joystick is moved 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 sideways. The SELECT 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 illustration below. While moving in the sideways direction, press the SELECT button to set.



- Note• When pressing the SELECT button to complete the calibration, hold the lever in the desired direction. If the lever is released, the calibration value is not recorded correctly.
  - If you calibrate in one sideways direction (left or right), you do not need to calibrate in the opposite sideways direction.

#### Calibrating the diagonal directions

 Select [Joystick adj] from [System Settings] of the display [Main menu]. Select [Diagonal adj] and calibrate in the diagonal direction. A beep sounds continuously, and the SELECT button flashes, and you can calibrate in the diagonal direction. The beep sound stops when the calibration is done.

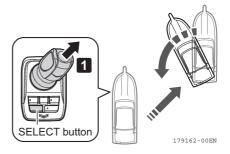
The calibration condition is shown on the display. When the joystick is moved within the settings range, the Green Zone is shown and you can calibrate.

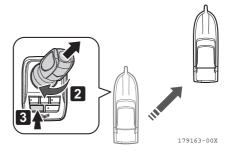
When the joystick is moved outside the range, the Red Zone is shown. In this case, you cannot calibrate.

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 SELECT 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. Press the SELECT button to calibrate while maintaining the non-slewing condition.





Note• When pressing the SELECT button to complete the calibration, hold the lever in the desired direction. If the lever is released, the calibration value is not recorded correctly.

 If you calibrate in one diagonally forward direction (left or right), you do not 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 SELECT 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.

#### Other settings and adjustment

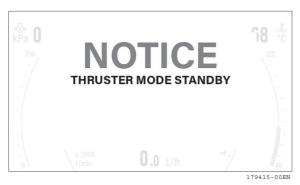
To perform other settings and adjustment, special knowledge and expertise are required. Consult your authorized YANMAR dealer or distributor.

## **Switching to Independent** Thruster (for JC30)

The thruster button is used to changeover to thruster mode, operating only the thruster independently with the joystick.



1. When pressing the thruster button, the button flashes, and the notice "THRUSTER MODE STAN-DYBY" appears for 2 seconds together with a buzzer sound. This is the stand-by state.



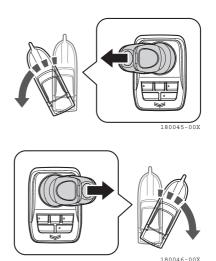
2. When pressing the button again, the button lights up, and the notice "THRUSTER MODE ON" appears for 2 seconds together with a buzzer sound. This is the thruster-mode.



- 3. Only the thruster can be operated by the joystick.
  - 1-When the joystick is tilted to the right or left, the boat will move in that direction (See the illustration below).
    - If thruster is proportional thruster, the thrust starts at about 25% and increases to the maximum value as the joystick is moved further to its outermost position.
  - 2-When the joystick is returned to the center position, the thruster will stop.
  - 3-When the joystick is tilted in a ahead/astern direction, the thruster will not operate.

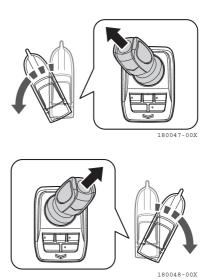
Note: Even if the direction of the joystick is changed quickly between opposite directions (right and left), the thruster cannot immediately change the direction.

#### Only bow thruster

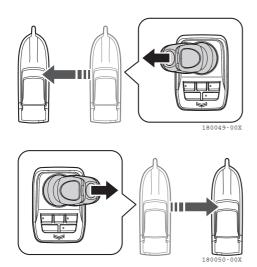


## Bow and stern thruster

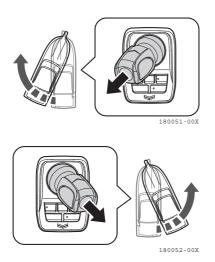
Operating only the bow thruster



#### Operating the bow and stern thruster



Operating only the stern thruster



- 4. To cancel thruster mode, press the thruster button again, and the light will turn off.
- 5. The notice "THRUSTER MODE OFF" appears on the display.

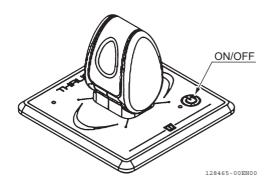


Note: If there is no operation within 10 seconds, stand-by mode is automatically canceled. If there is no operation for 30 minutes in thruster mode, the mode is automatically canceled. At this time, the notice "THRUSTER MODE AUTO RELEASE" appears for 2 seconds accompanied by a buzzer sound and the light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



# **Switching to Independent Thruster (VETUS panel with BOW** PRO thruster) (Optional for JC30)

The thruster panel (VETUS panel) is used to changeover to thruster mode, operating only thruster independently.



- 1. Press the "ON/OFF" switch twice. After pressing the switch once, the LED flashes green, and the buzzer continuously sounds.
- 2. Press the "ON/OFF" switch within 6 seconds after pressing the switch first time. The LED (blue) remains on , and the buzzer sounds, which means that the panel is ready to be used.
- 3. Move the joystick in direction in which the boat is required to move. The thrust starts at about 25% and increases to the maximum value as the joystick is moved further to its outermost position.
  - 1-Helm or joystick can be operated at the same time with Vetus panel operation. (Forward, reverse and turning direction can be operated by the joystick in Joystick operation mode.)

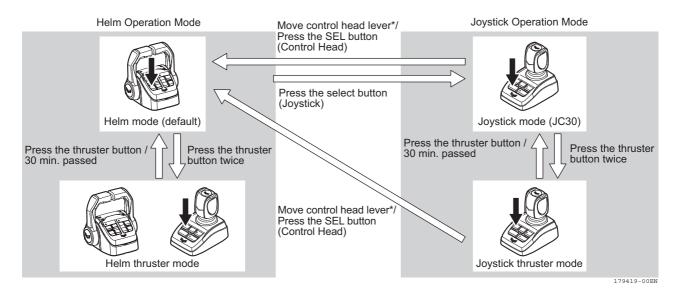
Note: Even if the direction of the joystick is changed quickly between opposite directions (right and left), the thruster cannot immediately change the direction.

4. Press the "ON/OFF" switch again, the buzzer replies with then signal.

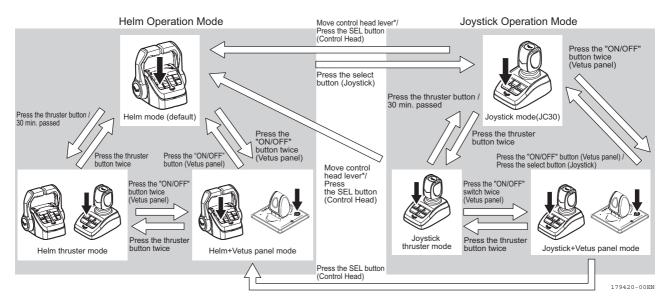
Note: If there is no operation for 30 minutes in thruster mode, the mode is automatically canceled.

#### **JC30 Mode Select Transition**

#### **■ EXTEND RUNTIME bow thruster manufactured by Vetus B.V.**



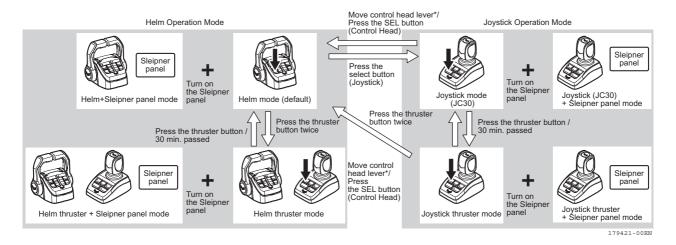
#### ■ BOW PRO thruster manufactured by Vetus B.V.



\*When changing to Helm Operation Mode by moving the control head lever, it is required to return the levers to the Neutral position before the engines responds to the control head.

Helm mode	Control head is used to operate engines
Helm thruster mode	Control head is used to operate engines, joystick is used to operate the thruster
Helm + Vetus panel mode	Control head is used to operate engines, Vetus panel is used to operate the thruster
Joystick mode	Joystick is used to operate engines + thruster, to move boat in direction of the joystick
Joystick thruster mode	Joystick is used to operate both engines together (fwd and rev only), and to operate the thruster
Joystick + Vetus panel mode	Joystick is used to operate both engines together (fwd and rev only), Vetus panel is used to operate the thruster

#### ■ SEP SERIES thruster manufactured by Sleipner Motor Ltd.



\*When changing to Helm Operation Mode by moving the control head lever, it is required to return the levers to the Neutral position before the engines responds to the control head.

Helm mode	Control head is used to operate engines
Helm thruster mode	Control head is used to operate engines, joystick is used to operate the thruster
Helm + Sleipner panel mode	Control head is used to operate engines, Sleipner panel is used to operate the thruster
Helm thruster + Sleipner panel mode	Control head is used to operate engines, joystick is used to operate the thruster and
	Sleipner panel is also used to operate the thruster
Joystick mode	Joystick is used to operate engines + thruster, to move boat in direction of the joystick
Joystick thruster mode	Joystick is used to operate both engines together (fwd and rev only), and to operate
	the thruster
Joystick + Sleipner panel mode	Joystick is used to operate engines + thruster, to move boat in direction of the joystick
	and Sleipner panel is also used to operate the thruster
Joystick thruster + Sleipner panel mode	Joystick is used to operate both engines together (fwd and rev only), and to operate
	the thruster, Sleipner panel is also used to operate the thruster

# **TROUBLESHOOTING**

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

#### ■ JC30 Inboard Joystick Docking System

Symptom	Possible causes	Measures
The button lamp does not turn on when you press the SELECT button on the joystick.	<ul> <li>The engines in the both sides are not operating</li> <li>Joystick failure</li> <li>Joystick lamp and internal connection failure</li> </ul>	<ul> <li>Operate the engines in the both sides</li> <li>Inspect and replace</li> <li>Inspect and replace</li> </ul>
The beep does not sound when you press the SELECT button.	<ul><li>Display buzzer and internal connection failure</li><li>Mute is ON</li></ul>	Inspect and repair     Cancel Mute
Joystick lever does not move, is jammed or broken.	Joystick failure	Inspect and replace
The boat does not move when you operate the joystick lever.	The power (SELECT button) for the joystick is not turned on Joystick failure Thruster failure Marine gear forward/reverse solenoid failure	<ul> <li>Turn on the power</li> <li>Inspect and replace</li> <li>Inspect and repair</li> <li>Inspect and replace</li> </ul>
The boat moves only slightly when you operate the joystick lever.	<ul> <li>The joystick is in the slow-mode operation</li> <li>Thruster failure</li> <li>Marine gear forward/reverse solenoid failure</li> <li>Effected by wind and waves</li> <li>The boat is too heavy</li> </ul>	<ul> <li>Switch to the fast-mode operation</li> <li>Inspect and repair</li> <li>Inspect and replace</li> </ul>
There is a difference between the joystick lever operation direction and the boat movement.	<ul> <li>Calibration is required</li> <li>Rudder is not center position</li> <li>One side engine is stopped</li> <li>Thruster failure</li> <li>Effected by wind and wave</li> </ul>	<ul><li>Calibrate</li><li>Rudder set to the center position</li><li>Restart the stopped engine</li><li>Inspect and repair</li></ul>
Response and moving of the joystick is abnormal.	Joystick failure	Inspect and replace
During the operation, "WARNING" or "NOTICE" appear on the display.	<ul> <li>Joystick failure</li> <li>Joystick/ECU failure</li> <li>One side engine is stopped</li> <li>Thruster failure</li> <li>Thruster battery and/or connecting cable failure</li> </ul>	<ul> <li>Inspect and replace</li> <li>Inspect and replace</li> <li>Restart the stopped engine</li> <li>Inspect and repair</li> <li>Inspect, charge and repair</li> </ul>
The button lamp does not turn on when you press the SPEED button on the joystick.	Not in joystick mode     Joystick lamp and internal connection failure	Switch to joystick mode     Inspect and replace
The button lamp does not turn on when you press the THRUST button on the joystick.	Thrusters are not set up     Joystick lamp and internal connection failure	Check the thruster settings     Inspect and replace

Note: For failure on the thruster, refer to the thruster manual.

# 16 — TROUBLESHOOTING

#### **■** JC30 DTC list

DTC	FMI	SPN	Description	Detail
B1040	3	521252	JOYSTICK X-AXIS SENSOR CIRCUIT	Joystick X-axis sensor input - Too high
B1046	4	321232	JOYSTICK X-AXIS SENSOR CIRCUIT	Joystick X-axis sensor input - Too low
B1044	3	521253	JOYSTICK Y-AXIS SENSOR CIRCUIT	Joystick Y-axis sensor input - Too high
B1047	4	321233	JOYSTICK Y-AXIS SENSOR CIRCUIT	Joystick Y-axis sensor input - Too low
B1045	3	521254	JOYSTICK Z-AXIS SENSOR CIRCUIT	Joystick Z-axis sensor input - Too high
B1048	4	321234	JOYSTICK Z-AXIS SENSOR CIRCUIT	Joystick Z-axis sensor input - Too low
B1038	3	520734	JOYSTICK SELECT-SWITCH CIRCUIT	Joystick SELECT button - Failure
B1039	3	520735	JOYSTICK SPEED-SWITCH CIRCUIT	Joystick SPEED button - Failure
B1049	3	522057	CAN JOYSTICK THRUST-SWITCH CIRCUIT	Joystick THURST button - Failure
P1694	12	516904	JOYSTICK NVRAM ERROR	Joystick NVRAM error
U1205	9	522004	CAN COM ERROR JOYSTICK	CAN communication error - Joystick
U1217	9	523792	CAN COM ERROR THRUSTER CONVERTER	CAN communication error at proportional thruster signal converter
C1065	11	523790	SOFTWARE VERSION ERROR THRUSTER CONVERTER	Proportional thruster signal converter software version mismatch with MARINE-ECU

# ■ JC30Z Sterndrive Joystick Docking System

Symptom	Possible causes	Measures
The button lamp does not turn on when	The engines in the both sides are not	Operate the engines in the both sides
you press the SELECT button on the joy-	operating	
stick.	Joystick wiring failure     Joystick large and internal connection	Inspect and replace
	Joystick lamp and internal connection failure	Inspect and replace
The beep does not sound when you press the SELECT button.	Display buzzer and internal connection failure	Inspect and replace
Press the joystick SELECT button and	Joystick setting is not ON	Turn ON the setting
the lamp lights, but the joystick cannot be	The control head lever is not in the	Place the control head lever in the
operated.	neutral position	neutral position  • Tilt-down
	<ul><li>Sterndrive is in the tilt-up position</li><li>There is no steering oil</li></ul>	Inspect and refill
	Joystick failure	Inspect and refin     Inspect and replace
	Hydraulic valve unit failure	Inspect and repair
	Hydraulic piping failure	Inspect and repair
	Electronic hydraulic cylinder failure	Inspect and repair
	Sterndrive forward/backward failure	Inspect and replace
	Joystick Control System wiring failure	Inspect and repair
The boat moves only slightly when you operate the joystick lever.	<ul><li> Joystick is in the slow-mode operation</li><li> Insufficient steering oil</li></ul>	Switch to the fast-mode operation
	Electronic hydraulic cylinder failure	Inspect and refill
	Hydraulic piping failure  The beautic to a leasure.	Inspect and repair
<u></u>	The boat is too heavy	Inspect and repair
There is a difference between the joystick	Calibration is required  Clastronia hadronia addition failure	Calibrate
lever operation direction and the boat movement.	<ul><li> Electronic hydraulic cylinder failure</li><li> One side engine is stopped</li></ul>	<ul><li>Inspect and repair</li><li>Restart the stopped engine</li></ul>
Electronic helm does not turn on.	Joystick Control System is operating	Canceling the Joystick Control System operation
	Electronic helm failure	Inspect and replace
	Marine ECU failure	Inspect and replace
The boat cannot be operated with the steering for electric helm.	Electronic helm failure	Inspect and replace
The joystick monitor screen does not appear.	The monitoring screen display setting is not turned ON	Turn ON the setting
Response of the joystick is too fast (too	The joystick throttle response (acceler-	Change and adjust the joystick throttle
slow) in the Standard mode.	ation) is not appropriate	response (acceleration)
Response of the joystick is abnormal.	Joystick failure	Inspect and repair
During the Joystick Control System oper-	Joystick failure	Inspect and repair
ation, "ALARM" and "WARNING" appear	Electronic helm failure	Inspect and repair
on the display.	Electronic hydraulic cylinder failure	Inspect and repair
	Hydraulic valve unit failure	Inspect and repair
	<ul><li>One side engine is stopped</li><li>Others</li></ul>	Restart the stopped engine     Inspect and repair
The hutten lamp does not turn an when		
The button lamp does not turn on when you press the SPEED button on the joy-	<ul><li>Not in joystick mode</li><li>Joystick lamp and internal connection</li></ul>	Switch to joystick mode     Inspect and replace
stick.	failure	mopost and replace
The button lamp does not turn on when	YPA is not set up	Check the YPA settings
you press the HOLD button on the joy-	Joystick lamp and internal connection	Inspect and replace
stick.	failure	

#### **■** JC30Z DTC list

DTC	FMI	SPN	Description	Detail
B1040	3	E212E2	JOYSTICK X-AXIS SENSOR CIRCUIT	Joystick X-axis sensor input - Too high
B1046	4	521252	JOYSTICK X-AXIS SENSOR CIRCUIT	Joystick X-axis sensor input - Too low
B1044	3	E040E0	JOYSTICK Y-AXIS SENSOR CIRCUIT	Joystick Y-axis sensor input - Too high
B1047	4	521253	JOYSTICK Y-AXIS SENSOR CIRCUIT	Joystick Y-axis sensor input - Too low
B1045	3	E040E4	JOYSTICK Z-AXIS SENSOR CIRCUIT	Joystick Z-axis sensor input - Too high
B1048	4	521254	JOYSTICK Z-AXIS SENSOR CIRCUIT	Joystick Z-axis sensor input - Too low
B1038	3	520734	JOYSTICK SELECT-SWITCH CIRCUIT	Joystick SELECT button - Failure
B1039	3	520735	JOYSTICK SPEED-SWITCH CIRCUIT	Joystick SPEED button - Failure
B1104	3	2688	CAN JOYSTICK HOLD-SWITCH CIRCUIT	Joystick HOLD button - Failure
P1694	12	516904	JOYSTICK NVRAM ERROR	Joystick NVRAM error
U1205	9	522004	CAN COM ERROR JOYSTICK	CAN communication error - Joystick
B1062	9	523770	STEERING UNIT CH1 BRAKE ERROR	Steering unit Ch1 brake-coil error
B1063	9	523771	STEERING UNIT CH2 BRAKE ERROR	Steering unit Ch2 brake-coil error
B1064	11	523772	STEERING UNIT CH1 SENSOR ERROR	Steering unit Ch1 sensor error
B1065	11	523773	STEERING UNIT CH2 SENSOR ERROR	Steering unit Ch2 sensor error
B1066	2	523774	STEERING UNIT SETTING ERROR	CAN ID setting error
B1067	9	523775	STEERING UNIT CH1 CAN COM ERROR	Steering unit Ch1 CAN communication error
B1068	9	523776	STEERING UNIT CH2 CAN COM ERROR	Steering unit Ch2 CAN communication error
B1069	12	523777	STEERING UNIT CH1 EEPROM ERROR	Steering unit Ch1 EEPROM error
B1070	12	523778	STEERING UNIT CH2 EEPROM ERROR	Steering unit Ch2 EEPROM error
P1823	5	521947	RUDDER CONTROL SOLENOID-1 CIRCUIT	Proportional valve solenoid-1 Disconnection
P1818	6	521947	RUDDER CONTROL SOLENOID-1 CIRCUIT	Proportional valve solenoid-1 Over current
P1821	6	522011	RUDDER CONTROL SOLENOID-1 CIRCUIT	Proportional valve solenoid-1 Short circuit
P1824	5	521948	RUDDER CONTROL SOLENOID-2 CIRCUIT	Proportional valve solenoid-2 Disconnection
P1819	6	521948	RUDDER CONTROL SOLENOID-2 CIRCUIT	Proportional valve solenoid-2 Over current
P1822	6	522012	RUDDER CONTROL SOLENOID-2 CIRCUIT	Proportional valve solenoid-2 Short circuit
C1051	3	521240	RUDDER ANGLE SENSOR HIGH RANGE	Rudder sensor - High input
C1051	4	521240	RUDDER ANGLE SENSOR LOW RANGE	Rudder sensor - Low input
C1056	3	521256	SUB RUDDER ANGLE SENSOR CIRCUIT	Sub rudder sensor - High input
C1060	4	521256	SUB RUDDER ANGLE SENSOR CIRCUIT	Sub rudder sensor - Low input
C1057	11	522000	RUDDER ANGLE SENSOR FAULT	There is too much difference between rudder sensor and sub rudder sensor input values
P1820	7	522001	RUDDER CYLINDER CONTROL FAILURE	Hydraulic cylinder failure
P1825	7	522016	RUDDER CYLINDER CONTROL PRE-FAILURE	Minor hydraulic cylinder failure before getting to the P1820 error code
C1052	13	521996	RUDDER ANGLE CALIBRATION ERROR	Rudder sensor calibration error
U1206	11	522031	AUTOPILOT FAILURE	Autopilot system failure
U1227	9	516913	CAN COM ERROR MARINE-ECU TO AUTOPILOT KEY	CAN communication error - AP key
C1058	11	522003	AUTOPILOT KEY WRONG ASSEMBLY	Autopilot key wrong assembly
P0604	12	516901	AUTOPILOT KEY RAM ERROR	Autopilot key RAM error
P0605	12	628	AUTOPILOT KEY ROM ERROR	Autopilot key ROM error
P062F	12	8621	AUTOPILOT KEY NVRAM ERROR	Autopilot key NVRAM error
C1064	11	522056	GPS SENSOR ERROR FOR YPA	GNSS antenna failure
U1228	9	516914	CAN COM ERROR MARINE-ECU TO YPA KEY	CAN communication error - YPA key

# TROUBLESHOOTING — 19

DTC	FMI	SPN	Description	Detail
U1209	9	522046	CAN COM ERROR MARINE-ECU TO GPS	CAN communication error - GPS
C1058	11	522003	YPA KEY WRONG ASSEMBLY	YPA key wrong assembly
P0604	12	516901	YPA KEY RAM ERROR	YPA key RAM error
P0605	12	628	YPA KEY ROM ERROR	YPA key ROM error
P062F	12	8621	YPA KEY NVRAM ERROR	YPA key NVRAM error

# **Engine Stop on One Side during** Operation (Only in case of twin engine)

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" switch 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.

# **Thruster Notice Displayed during Operation**

When the 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 the following:

- Forward/backwards and turn (Twin engine)
- Forward/backwards (Single engine)

#### 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.

#### 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.

See the thruster manual.

#### THRUSTER LOW VOLTAGE





- This notice appears when supply voltage to the thruster is low.
- When this notice appears, check the thruster battery and circuit.

#### THRUSTER HIGH VOLTAGE





- This notice appears when supply voltage to the thruster is high.
- When this notice appears, check the thruster battery and circuit.

#### THRUSTER OVERLOAD





- This notice appears when thruster load is overload.
- When this notice appears, reduce use of the thruster and check the thruster.

#### THRUSTER WATER LEAK





- This notice appears when the water leak into the thruster.
- When this notice appears, check the thruster body and inside.

#### THRUSTER OVER SPEED





- This notice appears when the thruster rotation is overspeed.
- When this notice appears, check the thruster.

#### THRUSTER POWER LIMITING





- This notice appears when the thruster power limit operated.
- BOW PRO thruster automatically limits its power output to prevent overheating.

#### THRUSTER NOT AVAILABLE





- This notice appears when the thruster select failure.
- When this notice appears, check the thruster and circuit.

#### THRUSTER POWER OFF





- This notice appears when supply power or communication is OFF to the thruster.
- When this notice appears, check the battery volatge and communication signal.

#### THRUSTER TEMPERATURE WARNING





• This notice appears when warns that the motor temperature is getting high.

#### THRUSTER WARNING LOW VOLTAGE





This notice appears when Low motor voltage warning when motor is running.

#### THRUSTER MOTOR OVERCURRENT





- This notice appears when motor current too high.
- · When this notice appears, see the thruster manual.

#### THRUSTER MOTOR OVERTEMP





- This notice appears when motor temperature is high.
- When this notice appears, cool down motor.

#### THRUSTER CONTROLLER OVERTEMP





- This notice appears when PPC temp is high.
- When this notice appears, cool down PPC.

#### THRUSTER LOW VOLTAGE





- This notice appears when low motor voltage alarm when motor is running.
- When this notice appears, check the battery or power.

#### THRUSTER THERMOSWITCH





- This notice appears when thermo switch input is activated and there is an open circuit.
- When this notice appears, cool down the thruster.

#### THRUSTER IPC ERROR





- This notice appears when motor relay fault.
- When this notice appears, see the thruster manual.

#### THRUSTER CRITICAL ERROR





- This notice appears when PPC output fail.
- When this notice appears, see the thruster manual.

#### THRUSTER MOTOR CONTACTOR





- This notice appears when no current on motor relay coil
- When this notice appears, check the thruster motor.

#### THRUSTER MOTOR TEMP SENSOR





- This notice appears when motor temperature sensor fail.
- When this notice appears, check the thruster motor temperature sensor.

#### THRUSTER COOLING FAN FAULT





- This notice appears when cooling fan stopped running, or running too slow.
- When this notice appears, see the thruster manual.

#### THRUSTER SYSTEM ERROR





- This notice appears when fatal error.
- When this notice appears, see the thruster manual.

#### THRUSTER SUPPLY VOLTAGE FAULT





- This notice appears when no power.
- When this notice appears, check power connections.

#### THRUSTER FUSE BLOWN





- This notice appears when fuse blown.
- When this notice appears, replace fuse or check if main cable from battery and main cable to thruster has been switched.

#### THRUSTER MANUAL OVERRIDE





- This notice appears when main switch manually overridden.
- When this notice appears, pull main switch.

# **Emergency Actions when the Electronic Helm Fails (for JC30Z)**

If the electronic helm has a malfunction, you can no longer navigate the boat. In such an emergency, use the hydraulic valve unit backup switch to bring both sterndrive in a straight position. Then you can navigate the boat by changing the speed of the port or starboard engine and return to port.

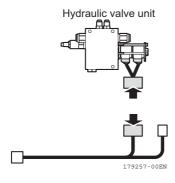
Connect the hydraulic valve unit backup switch stored in the boat with the following procedure to bring both sterndrive in a straight position.

#### **NOTICE**

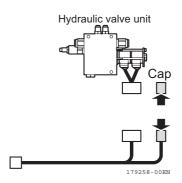
- Do not use the hydraulic valve unit backup switch if only one sterndrive has a failure, because the other sterndrive can be used for navigation.
- Do not use the backup switch except in an emergency.
- The switch must be stored in an easily accessible location on board away from seawater and rainwater within the vessel operator can move to and operate the vessel via the backup switch.

# How to handle the hydraulic valve unit backup switch (for both sterndrives)

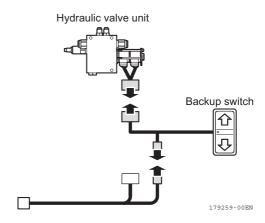
- 1. Stop the engines in both sterndrives and turn off the power.
- 2. Disconnect the harness on port or starboard.



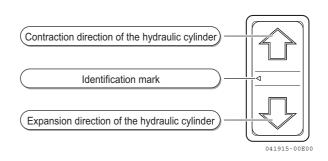
3. Remove the cap of the three pins connector from the harness.



4. Connect the harness for the hydraulic valve unit backup switch stored in the boat to the hydraulic valve unit and the three pins connector with the removed cap.



- 5. Turn on the engine only in the side where the hydraulic valve unit backup switch is connected, and start the engine.
- 6. Press the arrow switch of the hydraulic valve backup switch to adjust the cylinder and bring the sterndrive in a straight condition (center).

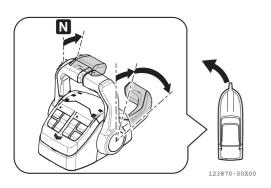


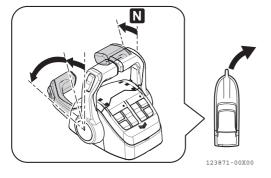
- 7. After adjusting the cylinder, stop the engine, and turn off the power. And remove the backup switch. After that, reinstall the cap.
- 8. And then carry out same procedure for other side drive also.
- Disconnect the harness of the backup switch and connect the harness to the hydraulic valve unit as original condition and then attach the cap for both side.

#### **A** CAUTION

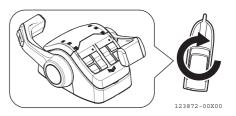
If you connect the backup switch in case of emergency, be sure to remove it after the adjustment. Do not reconnect the backup switch to the original harness until the repair is complete.

- 10. Check whether both sterndrives are in a straight condition. Then start the engines in the both sides. Navigate the boat by changing the speed of the port or starboard engines.
  - If you want to move to the right and left, move the both sterndrives forward and increase the engine speed in the direction you want to move and the opposite side, you can move in that direction.





 To turn the boat, move the sterndrive in the direction you want to turn to backward and the opposite sterndrive to forward.



#### **A** CAUTION

- In such an emergency, you cannot navigate
  the boat in the same way as you do with the
  steering wheel. Be sure to operate the engine
  at a speed of 2000 min<sup>-1</sup> or less. Navigate the
  boat very carefully. Be sure to decrease the
  speed and move slowly when you turn or
  navigate in narrow passages.
- Be sure to contact your authorized YANMAR dealer or distributor for repair immediately after returning to port.

# PERIODIC MAINTENANCE

Perform the periodic maintenance along with periodic maintenance of the engine and marine gear or sterndrive.

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

#### **■** JC30

#### 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 SELECT button.
- Check that no warning or notice is shown on the display when pressing the SELECT 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.

#### ■ JC30Z

#### Daily (when starting)

Inspection of the steering oil quantity
 Inspect that the oil level is close to the upper mark.

#### **NOTICE**

Do not start the engine without having sufficient steering oil. The steering pump may seize.

- Check for oil leaks from the hydraulic cylinder, connecting hose, hydraulic valve unit and the hydraulic piping.
- Check for the presence of rattle and play in the steering wheel of the electronic helm, abnormal operating force, and abnormal noise.
- Check that the button lamp lights when pressing the SELECT button.
- Check that no warning or notice is shown on the display when pressing the SELECT button.

#### Initial 50 hours, every 250 hours or 1 year

- Inspect the harness.
- Inspect each bolt and nut for looseness.
- Inspect the hydraulic hoses for crack.

#### **Every 2 years**

• Replace the hydraulic hoses.

#### **Every 1000 hours**

• Replace the steering oil.

#### **A** CAUTION

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

# **APPENDIX: AUTOPILOT SYSTEM (FOR JC30Z)**

## **Safety Precautions**

Safety precautions are necessary to operate the autopilot system safely. Read and understand all of the safety precautions before operation.

#### **WARNING**

• The autopilot system continuously adjusts the steering of your boat to hold a constant heading when it is activated.

Read the manual of your autopilot system carefully and learn to operate it in calm and open waters.

• The vessel operator has a responsibility of safely operating your boat. Avoid navigational hazards and never leave the helm unattended.

Always be prepared to quickly regain manual control of your boat.

• Never operate the autopilot system near hazards in the water, such as docks, pilings, and other boats.

#### **NOTICE**

• The following models are applicable as YANMAR Autopilot System.

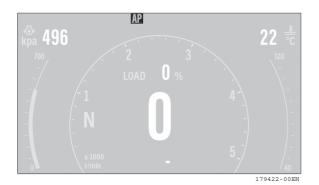
Manufacturer	Model	Note
	GHP™ 20 Marine Autopilot System	The software version should be 2.3
Garmin Ltd.	with GHC™10 helm control unit	or more
Gamili Liu.	GHP Reactor™ 40 Steer-by-wire	
	with GHC™20 helm control unit	_
Raymarine Ltd.	Evolution Autopilot EV-DBW (Parts No. T70164)	
Naymanne Ltu.	with P70R control head	
FURUNO ELECTRIC Co.,LTD	NAVpilot-711C	-
FORUNO ELECTRIC CO.,LID	NAVpilot-300	-
Simrad <sup>®</sup>	Autopilot Controller (AP™ 44 or AP 48)	
Silliau	with NAC™-D	_

<ul> <li>Ensure the appropriate autopilot system manual is included with your purch</li> </ul>	าase.
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## **Operating for Autopilot**

#### ■ Check on the YANMAR Vessel Control System display before operation

When operating the autopilot system, confirm that the autopilot icon appears on the YANMAR Vessel Control System display. Then, operate the autopilot from the autopilot system side.

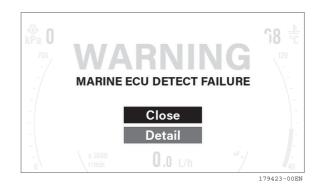


#### ■ Failures and corrective actions

When the poor operation or abnormalities of the autopilot system should arise, the buzzer of the autopilot system sounds and "MARINE ECU DETECT FAIL-URE" appears on the YANMAR Vessel Control System display.

At this time, engine will be in the neutral of idling automatically and the autopilot operation is canceled, and then is changed to the normal steering operation. Be sure to consult with the dealer of the autopilot system for repair.

#### Alarm on the YANMAR Vessel Control System display



- 1. Alarm "MARINE ECU DETECT FAILURE"
- 2. Highlight "Detail" and press the [ENTER] button.

appears.

3. If the display indicates "AUTOPILOT FAILURE", the autopilot operation will be canceled.

# **APPENDIX: YANMAR POSITIONING ASSIST** (FOR JC30Z)

#### Safety Precautions for Use of YANMAR Positioning Assist

YANMAR Positioning Assist is a function that receives the signals transmitted from satellite to your boat to keep the boat's direction and position at place. This function can be used when you need to stay still on the water while waiting for a movable bridge to open, or preparing fenders. Your boat is under way (the propellers are rotating and the boat is moving) when this function is activated.

Pay attention to your operation and take sufficient care for your safety.

If you do not comply with the warnings, there is a risk of death or severe injury.

#### **A WARNING**

#### Stay out of water, propellers are spinning



•When this function is activated, the propellers are rotating and your boat will start moving. Therefore, always make sure there is nobody under water near your boat, and that there are no other boats or other objects around. Also, you must explain to your passengers about the risk of using this function.

#### Boat is considered under way (the propellers are rotating and the boat is moving). Keep proper lookout



- •This function is only an auxiliary function for operating the boat. The operator must keep in mind that the boat is in an operating state (the propellers are rotating and the boat is moving) while this function is activated, and never leave the operator's seat. The person responsible for the operation of the boat shall be responsible for this function with the same responsibility.
- •The accuracy of keeping the same position performed by this function will be affected by waves and winds, tide, and signal quality from the satellite. Depending on the above-mentioned conditions your boat may move. While this function is activated, your boat must stay away from swimmers, boats, and other objects around and maintain enough distance to avoid them (at least 2 boat lengths).
- •While this function is in use, the engine speed and the propeller speed change, creating noises and waves. You must make sure that your boat does not affect the surroundings.



#### Hold on to prevent falling, boat may move suddenly

•Your boat may suddenly move while this system is activated. The operator and passenger must hold on to something to prevent falling or being thrown into water.



#### Read operation manual for safe use of the system

. Before activating this function, read the operation manual throughly, understand the details, and handle this safely.

#### **A** WARNING

#### Read warning message and labels for safety

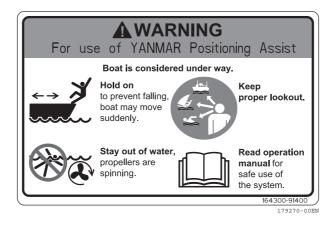
· Before activating this system, the operator and passenger must read the warnings displayed on the screen carefully and the warning labels attached to the boat such as on the helm station or swim platform, and follow the safety cautions.

If you lose a warning label, or it is damaged and cannot be read, contact your authorized YANMAR dealer or distributor for a new label and replace it.

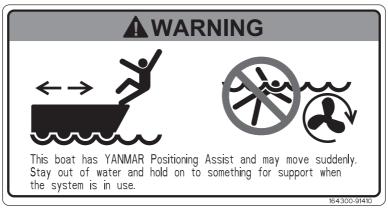
#### Warning message on the Position control display



#### Warning label for helm station

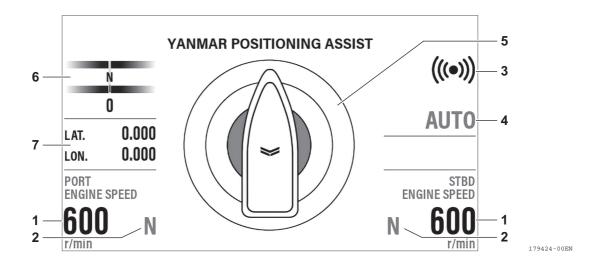


#### Warning label for swim platform



#### Screen

#### ■ Position keeping display page



- 1 Left side is the speed of port engine, right side is the speed of starboard engine
- 2 Left side is the gear shift position of port, right side is the gear shift position of starboard

#### 3 - Satellite signal Reception level

		<b>(((-1))</b> )	(((•)))
No signal reception (Cannot perform position keeping)	Signal level: Weak	Signal level: Mid	Signal level: Strong

#### 4 - Current status of the Positioning Assist System

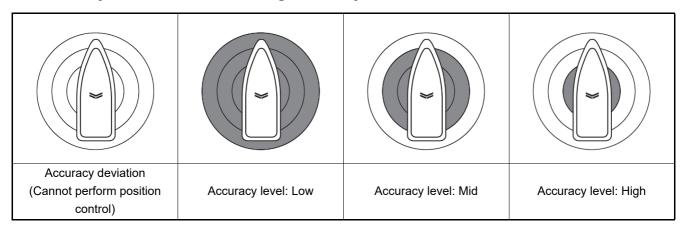
AUTO Positioning Assist System is activated.

Override condition when operating the Joystick.

**OVERRIDE** By setting the joystick to the center position (neutral position),

the Positioning Assist System can be restarted.

## **5 - Accuracy level of the Positioning Assist System**



#### 6 - Compass

#### 7 - Latitude, Longitude

#### **Operating for YANMAR Positioning Assist**

#### ■ Checkup before starting YANMAR Positioning Assist

Pursuing to the instructions in the Operation Manual of the engine and the JC30Z, go through inspection before activating the YANMAR Positioning Assist.

#### ■ How to operate YANMAR Positioning **Assist**

#### **WARNING**

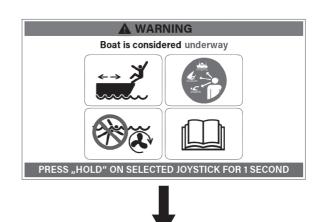
Make sure there is nobody under water near your boat, and that there are no other boats or other objects around and maintain enough distance to avoid them (at least 2 boat lengths).

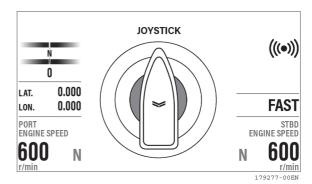
- 1. Follow the "HOW TO OPERATE" part of the JC30Z Operation Manual and change to joystick mode.
- 2. Set the joystick of the selected station to the center position (neutral position).
- 3. Press the HOLD button on the joystick, then the HOLD LED starts blinking.
- 4. Confirm the warning message, and press the HOLD button on the joystick for 1 second or more, and then turn YANMAR Positioning Assist "ON".
  - You can switch to YANMAR Positioning Assist state by pressing the HOLD button on the joystick.
  - When starting the YANMAR Positioning Assist, warning symbols is displayed. Confirm.
  - The system is working properly if you hear two short beeps every two seconds while YANMAR Positioning Assist is on.
  - · Indication is switched to [AUTO] while YANMAR Positioning Assist is on.
  - You cannot switch to the information display page while YANMAR Positioning Assist is on.

#### **A** CAUTION

If any other sound is continuously heard from the display, something abnormal is occurring. In this case, operate the boat manually.

5. Your boat attempts to stay in the direction and position at the point when YANMAR Positioning Assist was turned ON.





179438-00EN

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6. When you want to change the position, tilt the joystick and move your boat (override mode). In the OVERRIDE mode, the display changes from [AUTO] to [OVERRIDE].

Your boat attempts to stay in the direction and position at the point when the joystick was in the center position (neutral position) again.

#### ■ How to stop/cancel YANMAR Positioning Assist

- 1. Press the HOLD button on the joystick again.
- 2. Press the select button of the control head.
- 3. Move the control head handle of the selecting station from the neutral position.
- 4. Press the SELECT button on the joystick.
- 5. Stop the engine.

#### **A** CAUTION

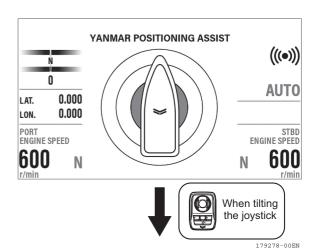
The accuracy level is only a guide. Despite the high accuracy, wave, wind, or tide can affect the boat's movement suddenly.

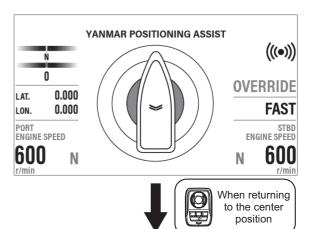
When you use this system in a region where accurate GNSS signal cannot be received, or when it is affected by electromagnetic waves from radar or radio, or large structures and terrain surrounding the device, the accuracy of keeping the same position may change.

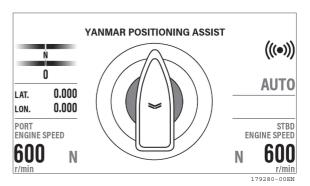
#### **NOTICE**

In the following situations, ALARM and NOTICE will be displayed on the screen, and YANMAR Positioning Assist cannot be started.

- If it is under a situation where the position cannot be detected.
  - · GNSS antenna is still warming up
  - · Not enough number of acquired satellites
  - · High latitude area where the accurate data cannot be obtained (Antarctica, Arctic)
  - · Area where the GNSS signal cannot be received (Obstacle above)
- The boat speed is faster than 2 m/s (≈ 3.9 knot)
- · Either of the engines is stopped
- · A failure that affects the YANMAR Positioning Assist is occurring







# **Troubleshooting YANMAR Positioning Assist**

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

Symptom	Probable causes	Measures
Cannot start YANMAR	GNSS antenna is still warming up	Wait in a place where GNSS
Positioning Assist control		communication can be received
("Notice" indication appears	Joystick of the station is not selected	Select the joystick of the station
once and then disappears)	Either of the engine is stopped	Start the engine, and then both the
		starboard and port engines run
	Boat speed is faster than 2 m/s	Slow down the boat speed
	Joystick is being calibrated	Complete the joystick calibration
	Station protecting	Unlock the station protection
	The latitude of the current area is over 80°	This cannot be used in latitude over 80°
	Error occurring on the VC30 system side	Remove the error on the VC30 system side
Cannot start YANMAR	System line is cut, and cannot CAN	Inspect and replace
Positioning Assist control	communicate	
("ALARM STOP POSITION	GNSS antenna failure	Inspect and replace
KEEPING" is displayed on the		
position control display)		
Cannot start YANMAR	Display is not connected	Connect the display
Positioning Assist control	Marine ECU is not applicable	Inspect and replace
(Other cases)	Joystick failure	Inspect and replace
	YPA is not set up	Check the YPA settings
Accuracy of YANMAR	Joystick calibration is not done correctly	Calibrate the joystick
Positioning Assist control is low	Effected by wind and wave	Check at places where wind and wave are calm
	Error is occurring to the engine or drive	Inspect and replace
	system, or the boat body	
	Reception state of the GNSS signal is not	Make sure that the attaching state of the
	good	GNSS antenna is following the manual,
		and then move to an open space, turn on
		the power, and wait for a while.
There is no sound during the	The buzzer for the display is broken	Inspect and replace
YANMAR Positioning Assist		
control		

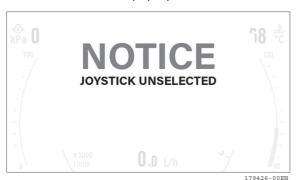
When errors occur on YANMAR Positioning Assist, the display shows pop-ups such as NOTICE or WARNING as shown below. If these pop-ups are displayed, turn off YANMAR Positioning Assist.

#### ■ NOTICE pop-up

Buzzer sounds while the "NOTICE" pop-up is displayed.



• In order to turn off the pop-up, select "Close".



• The pop-up without "Close" automatically turns off.

#### **WARNING**

When the "STOP YANMAR POSITIONING ASSIST" is displayed, turn off YANMAR Positioning Assist, and operate the boat manually.



#### **■** WARNING pop-up

Buzzer sounds when the "WARNING" pop-up is displayed. The buzzer stops and YANMAR Positioning Assist cannot be resumed unless the error is solved.

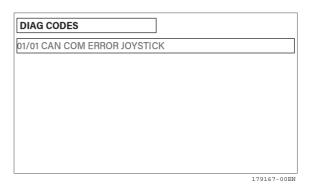


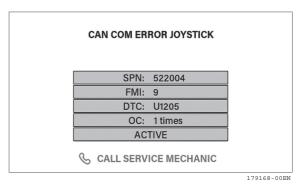
• In order to turn off the pop-up, select "Close".

• Select "Detail" to check the pop-up detail. The pop-up turns off after checking the error detail in the error list.

Note: When the pop-up is off, the buzzer sound is reduced to the sound level set by the user.







# **DTC List**

DTC	FMI	SPN	Description	Detail
C1064	11	522056	GPS SENSOR ERROR FOR YPA	GNSS antenna failure
U1228	9	516914	CAN COM ERROR MARINE-ECU TO YPA KEY	CAN communication error - YPA key
U1209	9	522046	CAN COM ERROR MARINE-ECU TO GPS	CAN communication error - GPS
C1058	11	522003	YPA KEY WRONG ASSEMBLY	YPA key wrong assembly
P0604	12	516901	YPA KEY RAM ERROR	YPA key RAM error
P0605	12	628	YPA KEY ROM ERROR	YPA key ROM error
P062F	12	8621	YPA KEY NVRAM ERROR	YPA key NVRAM error

# Declaration of Conformity for Recrational Craft Joystick steering control system requirements of 2013/53/EU(RCD II )

Name of manufacturer: Yanmar Marine Internationa	l B.V.		
Street: Brugplein 11	Town: <u>Almere</u>		
Post Code: <u>1332 BS</u>	Country: <u>The Netherlands</u>		
Name of Authorized Representative: Yanmar Marine	International Asia Co., Lt	d. Development Division	
Street: 2481 Town: Umegahara, Maibara, Shiga			
Post Code: <u>521-8511</u>	Country: <u>Japan</u>		
Name of Notified Body: <u>International Marine Certific</u>	ation Institute		
Street: Rue Abbé Cuypers 3	Town: Bruxelles		
Post Code: <u>B-1040</u> Country: <u>Bel</u>	<u>gium</u>	ID Number: <u>0609</u>	
Description of Joystick steering control system and a	applied standards  Type: JC30Z		
	Type within the Family: <u>J</u>	C30	
Applied standards: <u>ISO25197:2020</u>	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
I declare on behalf of the manufacturer that the Joystick st of the Recreational Craft Directive 2013/53/EU when insta manufacturer's supplied instructions and that this(these) in which it is (they are)to be installed has been declared in contractive.	illed in a recreational craft, in must not be put into service u	accordance with the ntil the recreational craft into	
Name: Hisanori Mori	Signature and title:	Jesanny Min'	
(Identification of the person empowered to sign on	(or an equivalent marking)	Divisional manager	
behalf of the manufacturer or his authorised representation	ve)	Development Division	
Date: (yr/month/day) 2025 / 9 / 24		Yanmar Marine International Asia Co .,Ltd	
Name: Michihiko Hara	Signature and title:	Vichipiko Ha	
(Identification of the person empowered to sign on	(or an equivalent marking)	Divisional manager	
behalf of the manufacturer or his authorised representation	ve)	Quality Management Division	
Date: (yr/month/day) 2025 / 9 / 24		Yanmar Marine International Asia Co.,Ltd	