OPERATION MANUAL

SAILDRIVE

SD

SD25
SD60
SD110
SD150

en	English	el	Greek
da	Danish	it	Italian
de	German	no	Norwegian
es	Spanish	nl	Dutch
fr	French	pt	Portuguese
fi	Finnish	sv	Swedish

YANMAR

YANMAR MARINE INTERNATIONAL B.V.

https://www.yanmar.com/marine

0ASDM-M00041
Dec.2025-0

California
Proposition 65 Warning

Diesel engine exhaust and some of its constituents are known to the state of California to cause cancer, birth defects, and other reproductive harm.

Disclaimers:
All information, illustrations and specifications in this manual are based on the latest information available at the time of publishing. The illustrations used in this manual are intended as representative reference views only. Moreover, because of our continuous product improvement policy, we may modify information, illustrations and/or specifications to explain and/or exemplify a product, service or maintenance improvement. We reserve the right to make any change at any time without notice.
Yanmar and ***YANMAR*** are registered trademarks of YANMAR MARINE INTERNATIONAL B.V. in Japan, the United States and/or other countries.

In case of exporting this product and providing the related technical material to non-residents in Japan or residents overseas, it is required to comply with the export and trade control laws and regulations of Japan and other relevant countries. Please be sure to follow the necessary procedure.

OPERATION MANUAL	MODEL	SD25, SD60, SD110, SD150
	CODE	0ASDM-M00041

YANMAR MARINE INTERNATIONAL B.V.

■**Yanmar Marine International B.V.**
Brugplein 11, 1332 BS Almere-de Vaart, Netherlands
Phone: +31-36-5493534 Fax: +31-36-5493219
https://www.yanmar.com/marine
e-mail: aftersales@yanmar-marine.com

Overseas Office

■**Yanmar Marine International Asia Co., Ltd.**
5-3-1, Tsukaguchi Honmachi, Amagasaki, Hyogo 661-0001, Japan
Phone: +81-6-6428-3131 Fax: +81-6-6421-2201
https://www.yanmar.com/marine

■**Yanmar Asia (Singapore) Corporation Pte. Ltd. (YASC)**
4 Tuas Lane, Singapore 638613
Phone: +65-6861-3855 Fax: +65-6862-5189
https://www.yanmar.com/sg/

■**YANMAR Marine International Americas Division**
5400 118th Avenue N., Clearwater, FL 33760, USA
Phone: +1-727-803-6565 Fax: +1-727-527-7013
https://www.yanmar.com/marine

■**Yanmar Engine (Shanghai) Co., Ltd.**
Room 1101-1106, No.757 Mengzi Road,
Huangpu District, Shanghai 200023 PRC
Phone: +86-21-2312-0638 Fax: +86-21-6880-8090
https://www.yanmar.com/cn/

As of September 1st, 2025

OPERATION MANUAL

SD25, SD60, SD110, SD150

1st edition: September 2025
2nd edition: December 2025

Issued by: YANMAR MARINE INTERNATIONAL B.V.
Edited by: YANMAR GLOBAL CS CO., LTD.

TABLE OF CONTENTS

TABLE OF CONTENTS

This Page Intentionally Left Blank

INTRODUCTION

This *Operation Manual* describes saildrive models SD series. For engine handling and operation, refer to the respective *Operation Manuals* for engine models in the below table. However, instructions for the marine gear box are not necessary as they are included.

Engine model	Saildrive model
1GM10C	SD25
2YM15	
3YM20	
3YM30AE	
3JH40	SD60-5
4JH45	
4JH57	
4JH80	SD60-4
	SD110
4JH110	
4LV150	SD150

This Page Intentionally Left Blank

SAFETY

YANMAR considers safety of great importance and recommends that anyone that comes into close contact with its products, such as those who install, operate, maintain or service YANMAR products, exercise care, common sense and comply with the safety information in this manual.

This safety alert symbol appears with most safety statements. It means attention, become alert, your safety is involved! Please read and abide by the message that follows the safety alert symbol.

⚠ DANGER

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

⚠ WARNING

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

⚠ CAUTION

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

NOTICE

Indicates a situation which can cause damage to the saildrive, personal property and/or the environment or cause the equipment to operate improperly.

SAFETY PRECAUTIONS

General Information

There is no substitute for common sense and careful practices. Improper practices or carelessness can cause burns, cuts, mutilation, asphyxiation, other bodily injury or death. This information contains general safety precautions and guidelines that must be followed to reduce risk to personal safety. Special safety precautions are listed in specific procedures. Read and understand all of the safety precautions before operation or performing repairs or maintenance.

Before You Operate

⚠ DANGER

- **Never permit anyone to install or operate the saildrive without proper training.**
- **Read and understand this *Operation Manual* before you operate or service the saildrive to ensure that you follow safe operating practices and maintenance procedures.**
- **Safety signs and labels are additional reminders for safe operating and maintenance techniques.**
- **See your authorized YANMAR marine dealer or distributor for additional training.**

Crush Hazard!

- **Never stand under a hoisted saildrive.**
- **If the hoist mechanism fails, the saildrive will fall on you. When you need to transport a saildrive for repair, have a helper assist you to attach it to a hoist and load it onto a truck.**
- **Never use the saildrive lifting eye to lift the engine and saildrive as an assembly. Use the engine lifting eyes to lift the engine and saildrive. Only use the saildrive lifting eye to lift the saildrive as a separate component.**

During Operation and Maintenance

⚠ DANGER

Explosion Hazard!

While the engine is running or the battery is charging, hydrogen gas is being produced and can be easily ignited. Keep the area around the battery well-ventilated and keep sparks, open flame and any other form of ignition out of the area.

Fire Hazard!

Ensure that appropriate fire detection and extinguishing equipment are installed and checked periodically for proper operation.

⚠ WARNING

Fire Hazard!

Undersized wiring systems can cause an electrical fire.

Sever Hazard!

- Never service the saildrive while under tow or if the engine is running at idle speed. The propeller may rotate under these circumstances.

- Never wear jewelry, unbuttoned cuffs, ties or loose fitting clothing and always tie long hair back when working near moving/rotating parts. Keep hands, feet and tools away from all moving parts.
- Always remove any tools or shop rags used during maintenance from the area before operation.
- Never service the saildrive while under tow or if the engine is running at idle speed. The propeller may rotate under these circumstances.
- Always stop the engine before you begin to service the saildrive and secure the propeller so it will not turn.

Alcohol and Drug Hazard!

Never operate the engine while under the influence of alcohol or drugs or when feeling ill.

⚠ WARNING

Exposure Hazard!

Always wear personal protective equipment including appropriate clothing, gloves, work shoes, eye and hearing protection as required by the task at hand.

Entanglement Hazard!

- Never leave the key in the key switch when you are servicing the saildrive. Someone may accidentally start the engine and not realize you are servicing it.
- Never operate the engine while wearing a headset to listen to music or radio because it will be difficult to hear the warning signals.

Burn Hazard!

Some of the engine and saildrive surfaces become very hot during operation and shortly after shut-down. Keep hands and other body parts away from hot surfaces.

Sudden Movement Hazard!

Always stop the engine before beginning service.

⚠ WARNING

Exhaust Hazard!

- Never block windows, vents, or other means of ventilation if the engine is operating in an enclosed area.
- All internal combustion engines create carbon monoxide gas during operation and special precautions are required to avoid carbon monoxide poisoning.

- To prevent accidental equipment movement, never start the engine in gear.
- Before starting the engine, always make sure that all bystanders are clear of the area. Keep children and pets away while the engine is operating.
- Avoid unexpected equipment movement. Shift the saildrive into the NEUTRAL position any time the engine is at idle.

Electrical Shock Hazard!

- Always turn off the battery switch (if equipped) or disconnect the negative battery cable before servicing the saildrive.
- Always keep the electrical connectors and terminals clean. Check the electrical harnesses for cracks, abrasions, and damaged or corroded connectors.

⚠ CAUTION

Poor Lighting Hazard!

Ensure that the work area is adequately illuminated. Always install wire cages on portable safety lamps.

Tool Hazard!

Always use tools appropriate for the task at hand and use the correct size tool for loosening or tightening machine parts.

Exposure Hazard!

Always wear eye protection when servicing the saildrive or when using compressed air or high-pressure water. Dust, flying debris, compressed air, pressurized water or steam may injure your eyes.

Slipping and Tripping Hazard!

Ensure that adequate floor space is set aside for servicing saildrive. The floor space must be clean, flat and free of spilled liquids and debris to prevent slipping or tripping.

NOTICE

It is important to perform daily checks as listed in this *Operation Manual*.

Periodic maintenance prevents unexpected downtime, reduces the number of accidents due to poor saildrive performance and can help extend the life of the saildrive and engine.

Always be environmentally responsible.

Follow the guidelines of the EPA or other governmental agencies for the proper disposal of hazardous materials such as lubrication oil, diesel fuel and engine coolant. Consult the local authorities or reclamation facility.

Never dispose of hazardous materials by dumping them into a sewer, on the ground or into ground water or waterways.

Never attempt to modify the saildrive's design or safety features.

- Never release or modify the limiting devices such as the engine speed limit, fuel injection limit, etc.
- Modification will impair the safety and performance of the product and shorten product life.
- Modifications to the design, safety or limiting features will void the warranty.

NOTICE

If the saildrive oil temperature is too high, stop engine immediately and check the saildrive oil level.

The anode of the saildrive is only calculated for the saildrive. Using the different material propeller may require additional anodes to be installed on the propeller itself.

Failure to use the correct anode material may result in inadequate protection and excessive corrosion of underwater drive system components.
Use only or aluminum anodes in brackish and saltwater applications.
In freshwater applications, use aluminum or magnesium anodes for best results.
Never use magnesium anodes in brackish or salt water, as they will deteriorate rapidly, which will lead to severe damage to the drive system.

Always tighten components to the specified torque. Loose parts can cause equipment damage or cause it to operate improperly.

Only use replacement parts specified. Other replacement parts may affect warranty coverage.

Never attempt to modify the saildrive's design or safety features. Failure to comply may impair the marine gear's safety and performance characteristics and shorten the saildrive's life.
Any alterations to this saildrive may affect the warranty coverage of your saildrive.

PRODUCT OVERVIEW

OVERVIEW

Owner/Operator Responsibilities

The operator must, and assumes all responsibility to:

- Read and understand the *Operation Manual* prior to operating the saildrive;
- Perform all safety checks as necessary to ensure safe operation;
- Comply with and follow all lubrication and maintenance instructions and recommendations; and
- Have an authorized YANMAR dealer/distributor perform periodic checkups.

Conducting normal maintenance service and replacing consumable parts as necessary is the responsibility of the owner/operator and necessary to provide the best durability, performance and dependability of the saildrive while keeping your overall operating expenses to a minimum. Individual operating habits and usage may increase the frequency of performing maintenance service condition. Monitor conditions frequently to determine if the maintenance intervals suggested in the manual are frequent enough for your saildrive.

New Saildrive Break-In:

- On the initial engine start-up, allow the engine to idle for approximately 15 minutes while you check for proper saildrive function and saildrive oil leaks.
- During the break-in period, carefully observe saildrive seal indicators for proper saildrive function.
- During the break-in period, check the saildrive oil levels frequently.

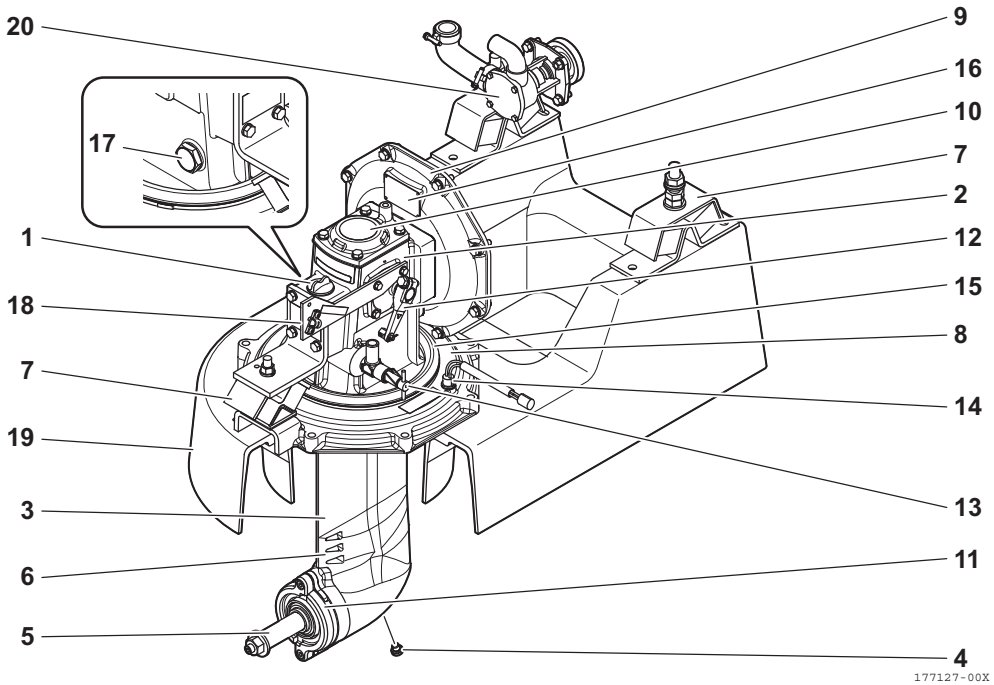
Dealer/Distributor Responsibilities

In general, a dealer's responsibilities to the customer include predelivery inspection and preparation such as:

- Ensure that the vessel is properly equipped.
- Prior to delivery, make certain that the YANMAR saildrive and other equipment are in proper operating condition.
- Make all necessary adjustments for maximum efficiency.
- Familiarize the customer with the on-board equipment.
- Explain and demonstrate the operation of the saildrive and vessel.

COMPONENT IDENTIFICATION

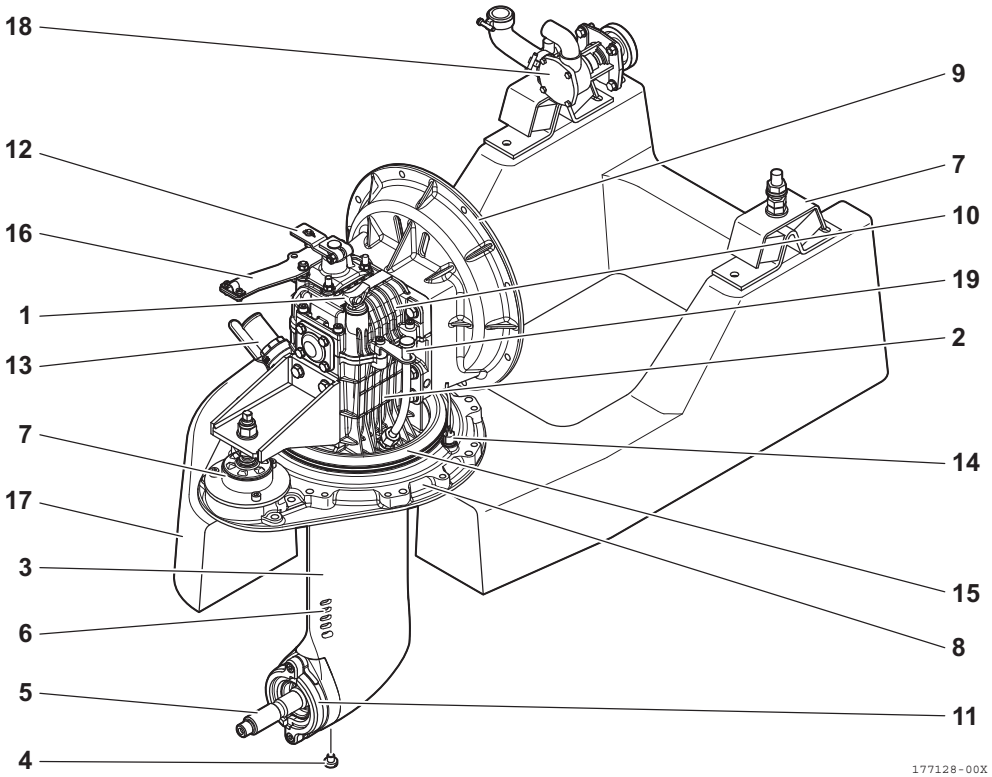
■ SD25



1 – Dipstick
2 – Upper gear case
3 – Lower gear case
4 – Lubricating oil drain plug
5 – Propeller shaft
6 – Seawater inlet
7 – Flexible mount
8 – Seal flange
9 – Mounting flange
10 – Upper cover
11 – Anode
12 – Shift lever
13 – Water cock
14 – Seal sensor
15 – Diaphragm
16 – Nameplate
17 – Anode (safety label)
18 – Bracket (control cable)
19 – Engine bed
20 – Cooling water pump

Figure 1

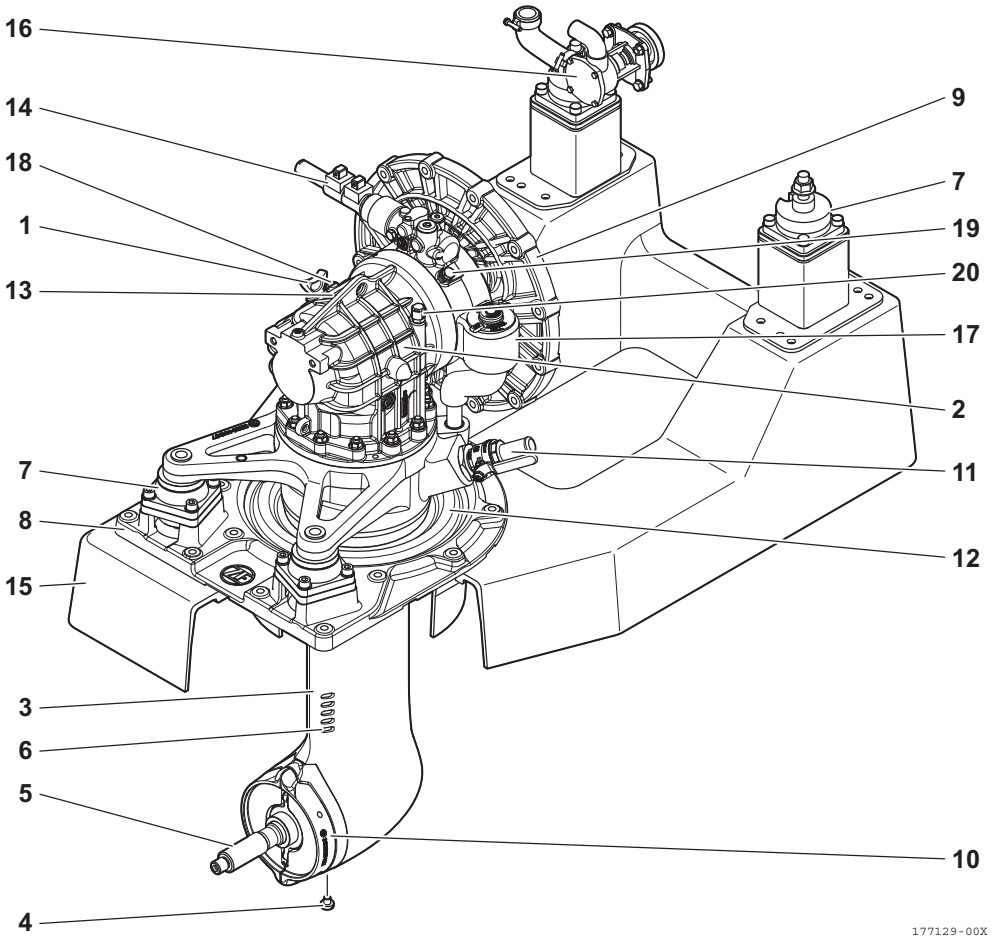
■ SD60



1 – Dipstick
2 – Upper gear case
3 – Lower gear case
4 – Lubricating oil drain plug
5 – Propeller shaft
6 – Seawater inlet
7 – Flexible mount
8 – Seal flange
9 – Mounting flange
10 – Upper cover
11 – Anode
12 – Shift lever
13 – Water cock
14 – Seal sensor
15 – Diaphragm
16 – Bracket (control cable)
17 – Engine bed
18 – Cooling water pump
19 – Oil suction hose with cap

Figure 2

■ SD110/SD150



1 – Dipstick
2 – Upper gear case
3 – Lower gear case
4 – Lubricating oil drain plug
5 – Propeller shaft
6 – Seawater inlet
7 – Flexible mount
8 – Seal flange
9 – Mounting flange
10 – Anode
11 – Water cock
12 – Diaphragm
13 – Nameplate
14 – Solenoid valve
15 – Engine bed
16 – Cooling water pump
17 – Oil filter
18 – Oil suction hose with cap
19 – Negative brake
20 – Breather hose connection

Figure 3

GALVANIC CORROSION

Galvanic corrosion results whenever two or more dissimilar metals (like those found on the saildrive) are submerged in a conductive solution, such as saltwater, polluted water or water with a high mineral content because a chemical reaction takes place causing electrical current to flow between the metals. The electrical current flow causes the metal that is most chemically active, or anodic, to erode. If not controlled, galvanic corrosion may corrode saildrive components.

CORROSION CONTROL

It is the boat designer's responsibility and/or the re-powering engineer's responsibility to design the proper systems and equipment to control and reduce the possibility of galvanic corrosion.

However, it is essential that the owner/operator frequently monitor the anodes for wear, inspect the saildrive for corrosion and replace the anodes often enough to provide a sacrificial surface for the electrical current to attack. Galvanic isolators and isolation transformers are also available from the aftermarket (not supplied by YANMAR). The galvanic isolator is a device that is installed in series with the (AC) grounding (GREEN) conductor of the shore-power cable to effectively block low-voltage DC galvanic current flow but permit the passage of alternating current (AC)*.

The rate of corrosion depends on numerous factors, such as:

- the number, size and location of sacrificial anodes on the saildrive and vessel;
- the marina environment, such as stray current in the water, fresh or salt water and use and isolation of shore power;
- improper application of marine paint or antifouling paint;
- failure to repaint damaged areas; and
- how the vessel is bonded.

Please check with the boat builder, dealer or other professional to determine if your vessel and/or saildrive is adequately protected from galvanic corrosion.

* "The Boatowner's Guide to Corrosion", by Everett Collier.

NOTICE

The anode of the saildrive is only calculated for the saildrive. Changing the material of the propeller may require additional anodes to be installed on the saildrive.

NOTICE

Failure to use the correct anode material may result in inadequate protection and excessive corrosion of underwater drive system components.
Use only aluminum anodes in brackish and saltwater applications. In freshwater applications, use aluminum or magnesium anodes for best results. Never use magnesium anodes in brackish or salt water, as they will deteriorate rapidly, which will lead to severe damage to the drive system.

If sacrificial anodes erode quickly or if signs of corrosion are evident, the owner should take immediate corrective action. YANMAR recommends consulting an engineer specializing in marine electricity and corrosion control to determine the best way to correct the rapid erosion of the anodes.

Electrical Connections and Regulations According to International Rules ISO 60092-507 IEC:2008

It is recommended to perform the boat electric system in conformity with the regulation ISO 60092-507 IEC 2008, or equal local and international rules or laws.

To protect the boat from galvanic current when it is connected to the power source located on the dry land (wharf), it is recommended to install on the boat a galvanic isolator on the ground conductor of the AC power line.

This will prevent the flow of galvanic current with low voltage but will allow a normal supply.

For more information about or to find different solutions of the power system from the dry land, refer to the instructions of ABYC (American Boat and Yacht Council) in chapter E-11 or ISO 60092-507 IEC 2008.

At the same purpose can also be used an isolating transformer with the relevant characteristics of the circuit. Even in this case, refer to the applicable ABYC E-11 or ISO 60092-507 IEC 2008 for more information and suggestions.

Note: We advise you to install an isolating transformer for the electrical power supply from pier.

SHORE POWER

Vessels that are connected to shore power require additional protection to prevent destructive low voltage galvanic currents from passing through the shore power ground wire. Galvanic isolators are available from the aftermarket (not supplied by YANMAR) to block these currents while still providing a path to ground for dangerous shock currents.

NOTICE

If the AC shore power ground is not isolated from the boat ground, sacrificial anodes may be unable to neutralize the increased galvanic potential. Corrosion damage that results from the improper system design or application is not covered by the YANMAR limited warranty.

UNDERWATER DRIVE COATING

The lower gear case coating may be damaged when hit by objects in the water, or when having deposits removed from it. The underwater coating must be inspected at least once per year and when it is believed that an object was hit that may have caused damage, should be repaired and such areas should be repainted immediately.

Observe the following precautions when applying antifouling or marine paint to the bottom of the boat hull:

- Always follow the paint/coating manufacturer's directions for surface preparation and application.
- Always use a high quality primer and topcoat paint specifically designed for aluminum outboards, saildrives or stern-drives.
- Never paint the sacrificial anodes installed on the saildrive.
- Never paint the saildrive with a material that contains copper or tin.
- Never paint over drain holes, sacrificial anodes, or other items specified by the sacrificial anode Manufacturer.

Consult your authorized YANMAR marine dealer or distributor for assistance.

NOTICE

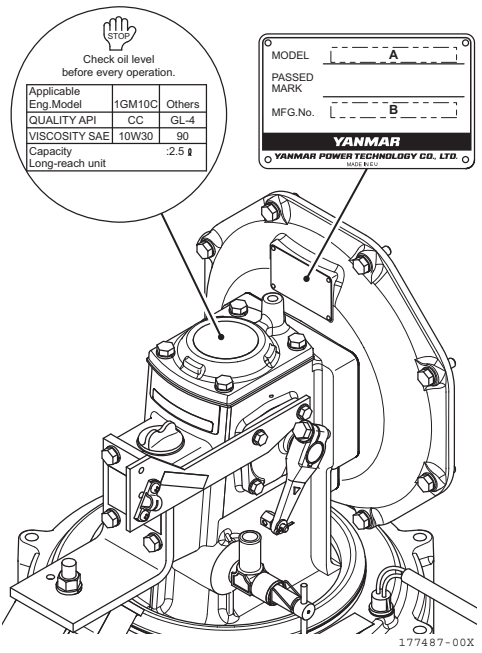
Galvanic corrosion damage, normal maintenance and consumable parts are not covered by the YANMAR limited warranty.

Corrosion damage that results from the improper application of marine paint or antifouling paint is not covered by the YANMAR limited warranty.

GEAR IDENTIFICATION

Name plate:
The name plate is fixed onto the saildrive

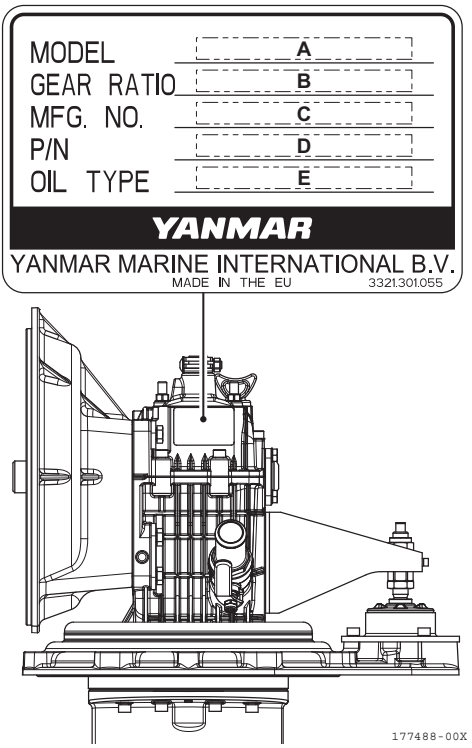
■ SD25



A – Saildrive type
B – Saildrive serial number

Figure 4

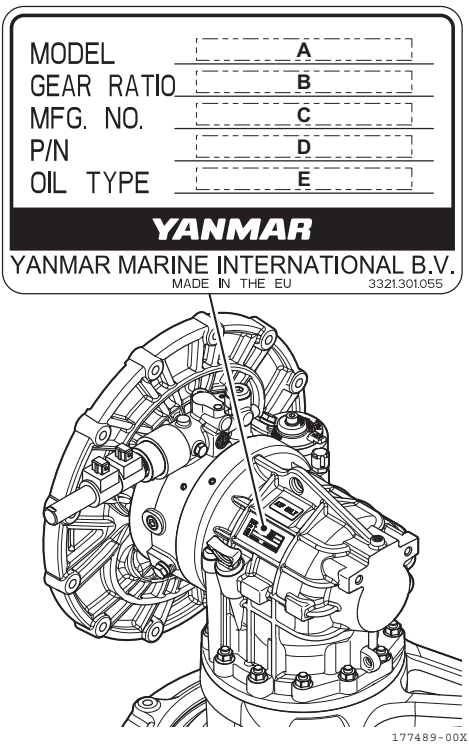
■ SD60



A – Saildrive type
B – Saildrive ratio
C – Saildrive serial number
D – Saildrive part number
E – Lubricating oil specifications

Figure 5

■ SD110/SD150



A – Saildrive type
B – Saildrive ratio
C – Saildrive serial number
D – Saildrive part number
E – Lubricating oil specifications

Figure 6

This Page Intentionally Left Blank

BEFORE YOU OPERATE

This section of the *Operation Manual* describes lubricating oil specifications and how to refill them. It also describes the daily checks for the instrument panel and remote- control device.

Before you operate the saildrive, review the *SAFETY* section on page *3*.

LUBRICATING OIL

The choice of lubricating oil is very important. If an unsuitable oil is used, or an oil change is neglected, it may result in damage and reduce the life of the saildrive. When selecting a lubricating oil, use one of the following:

Lubricating Oil Chart

Saildrive model	SD25			
Engine model	1GM10	2YM15	3YM20	3YM30AE
Lubricating oil for the saildrive	API CD or greater and SAE 10W30 or ATF	API GL4 or GL5 and SAE 80W90 or 90 or ATF		

Use only oil of quality GL-4 or GL-5 in the API service, and SAE No. 90 or 80W-90. (Except model SD25 × 1GM10C)

Use only oil of quality CC or greater in the API service, and SAE No. 10W-30. (Applicable model: SD25 × 1GM10C)

Saildrive model	SD60			
Engine model	3JH40	4JH45	4JH57	4JH80
Lubricating oil for the saildrive	API CD or higher and SAE 15W40 or ATF			

Saildrive model	SD110		SD150
Engine model	4JH80	4JH110	4LV150
Lubricating oil for the saildrive	ATF		

Refilling with Lubricating Oil

■ SD25, SD60, and SD110/SD150

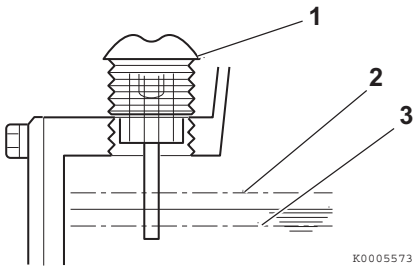
Saildrive model	SD25	SD60	SD110/SD150
Standard unit	2.2 L (2.3 qt)	2.8 L (3.0 qt)	5.0 L (5.3 qt)
Extended leg	2.5 L (2.6 qt) with extension 80 mm	3.0 L (3.2 qt) with extension 75 mm	5.2 L (5.5 qt) with extension 82 mm

NOTICE

The lubricating oil capacity of the standard unit is different from that of the extended leg.

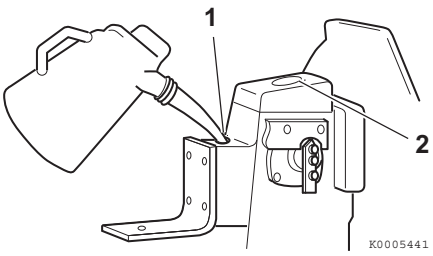
1. Remove the dipstick (yellow cap). Fill with approved lubricating oil.

■ SD25



1 – Dipstick
2 – Upper limit
3 – Lower limit

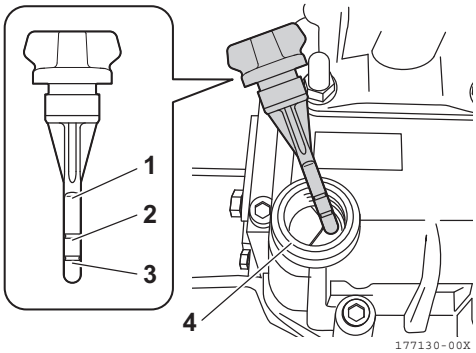
Figure 1



1 – Oil supply port
2 – Oil capacity nameplate

Figure 2

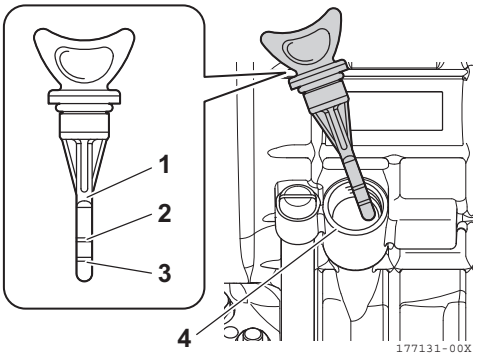
■ SD60



1 – Dipstick
2 – Maximum
3 – Minimum
4 – Upper edge of threaded hole

Figure 3

■ SD110/SD150



1 – Dipstick
2 – Maximum
3 – Minimum
4 – Upper edge of threaded hole

Figure 4

■ Oil level check

NOTICE

Check the oil level 15 minutes after adding the specified quantity of oil.

1. Check the oil level by removing the dipstick. Wipe the dipstick with a clean, lint-free cloth.

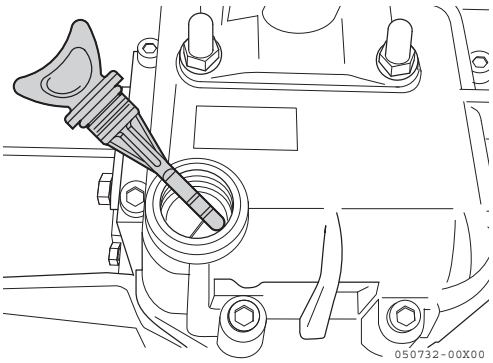


Figure 5

2. Insert the dipstick so that it rests on top of the threads into the case. Remove the dipstick and check the lubricating oil level on the dipstick. The lubricating oil level must be between the marks of minimum and maximum on the dipstick. Add oil as necessary.

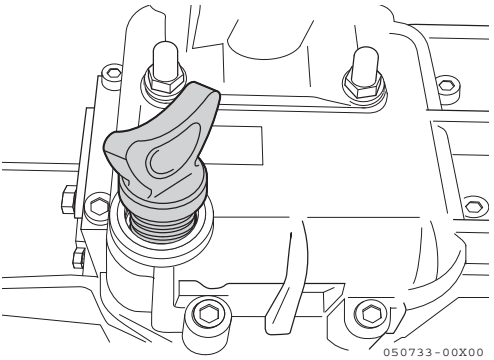
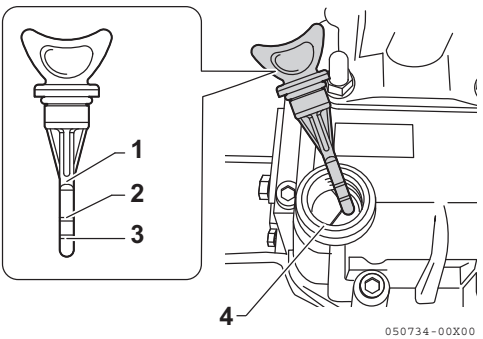


Figure 6



1 – Dipstick
2 – Maximum
3 – Minimum
4 – Upper edge of threaded hole

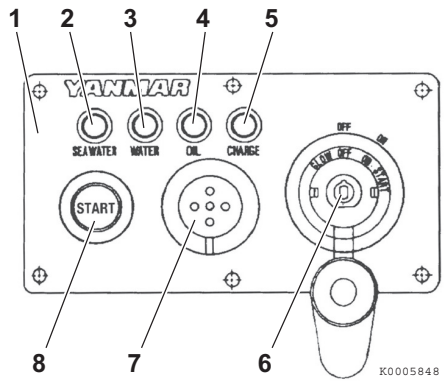
Figure 7

CHECKING THE INSTRUMENT PANEL ALARM SYSTEM

Engine	Drive	Instrument panel							
		A-type	A15	B20	B25	C35	YD25	VC10	VC20
1GM10C	SD25	○		○					
2YM15				○					
3YM20				○					
3YM30AE				○					
3JH40	SD60		○		○	○	○	○	○
4JH45			○		○	○	○	○	○
4JH57			○		○	○	○	○	○
4JH80			○		○	○	○	○	○
	SD110							○	○
4JH110								○	○
4LV150	SD150							○	○

For YD25, VC10 and VC20, see each operation manual for more information.

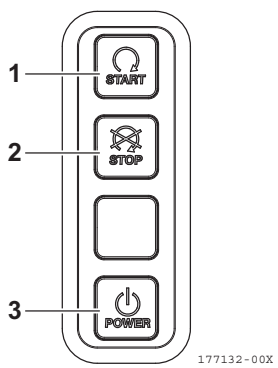
A-type



1 – Instrument panel
2 – Seawater in saildrive warning lamp
3 – Cooling water temperature warning lamp
4 – Engine oil low pressure warning lamp
5 – Battery low charge warning lamp
6 – Key switch
7 – Alarm buzzer
8 – Start switch

Figure 8

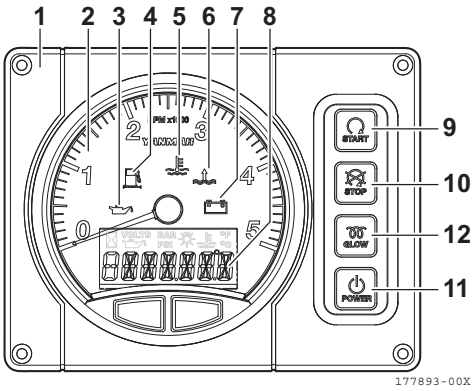
A15 - type



1 – Start switch
2 – Stop switch
3 – Power switch

Figure 9

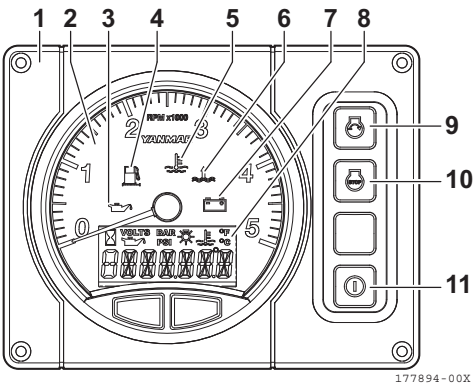
B20 - type



1 – Instrument panel
2 – Tachometer
3 – Engine oil low pressure warning lamp
4 – Water in fuel filter indicator and alarm
5 – Cooling water temperature warning lamp
6 – Seawater in saildrive warning lamp
7 – Battery low charge warning lamp
8 – LCD (Hour meter)
9 – Start switch
10 – Stop switch
11 – Power switch
12 – Glow switch

Figure 10

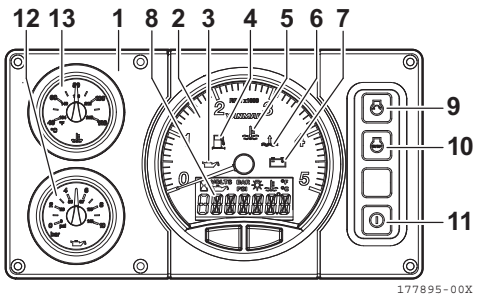
B25 - type



1 – Instrument panel
2 – Tachometer
3 – Engine oil low pressure warning lamp
4 – Water in fuel filter indicator and alarm
5 – Cooling water temperature warning lamp
6 – Seawater in saildrive warning lamp
7 – Battery low charge warning lamp
8 – LCD (Hour meter)
9 – Start switch
10 – Stop switch
11 – Power switch

Figure 11

C35 - type



1 – Instrument panel
2 – Tachometer
3 – Engine oil low pressure warning lamp
4 – Water in fuel filter indicator alarm
5 – Cooling water temperature warning lamp
6 – Seawater in saildrive warning lamp
7 – Battery low charge warning lamp
8 – LCD (Hour meter)
9 – Start switch
10 – Stop switch
11 – Power switch
12 – Engine oil pressure gauge
13 – Cooling water temperature gauge

Figure 12

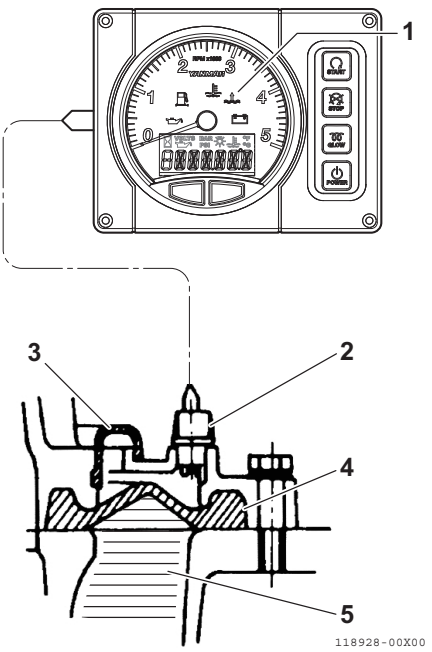
Turn the battery switch on. Turn the key (6, **Figure 8**) or power switch (11, **Figure 10**, **Figure 11**, **Figure 12**) to the ON position and check the lamps on the panel (1, **Figure 8**, **Figure 10**, **Figure 11**, **Figure 12**) with the engine off:

1. The lubricating oil warning lamp should be illuminated. (4, **Figure 8**) (3, **Figure 10**, **Figure 11**, **Figure 12**)
2. The cooling water temperature warning lamp should be out. (3, **Figure 8**) (5, **Figure 10**, **Figure 11**, **Figure 12**)
3. The charge warning lamp should be illuminated. (5, **Figure 8**) (7, **Figure 10**, **Figure 11**, **Figure 12**)
4. The rubber seal warning lamp should be out. (2, **Figure 8**) (6, **Figure 10**, **Figure 11**, **Figure 12**)
5. The warning buzzer should sound.

Note: All the above alarm signals will continue until you push the starting button or turn the key (power switch) to the OFF position.

⚠ WARNING

The rubber seal warning lamp warns of seawater entering the vessel.
The watertight structure of SD25 and SD60 is dual type. Even if the rubber diaphragm A (4, Figure 13) is damaged and seawater enters, the rubber diaphragm B (3, Figure 13) prevents it from entering the vessel. The rubber seal switch between the rubber diaphragms (3, Figure 13) and (4, Figure 13) sounds the warning buzzer and lights the rubber seal lamp on the instrument panel. If this happens, stop the engine and under sail, quickly return to the nearest port for repairs.



1 – ON (Rubber seal lamp)
2 – Rubber seal sensor
3 – Diaphragm (B)
4 – Diaphragm (A)
5 – Seawater

Figure 13

■ Instrument panel for SD110/SD150

SD110 and SD150 are equipped with VC10 or VC20. See the operation manual for the applicable engine model for more information.

⚠ WARNING

Be noted that SD110 and SD150 have no warning system to alert you to water intrusion. The SD110/SD150 has a single-layer waterproof structure. If you notice any damage or leaks in the diaphragm, return to the port immediately, and have it repaired.

DAILY CHECKS

Before starting the saildrive, make sure it is in good operating condition. Make sure you check the following items:

Visual Checks

1. Check for damaged or missing parts.
2. Check for loose, missing or damaged fasteners.
3. Check oil level. *See Refilling with Lubricating Oil on page 20*.
4. Open cooling water cock before operation. Close cooling water cock after operation. *See ENGINE COOLING WATER on page 33*.

⚠ CAUTION

SD110 and SD150 have a breather that is not a sealed structure. Therefore, if the breather hose is not installed properly, and if the lower leg is damaged, seawater may enter through the breather. Be sure to install the breather hose properly so that the outlet is positioned above the sea level.

NOTICE

If any problem is noted during the visual check, the necessary corrective action should be taken before you operate the engine.

SAILDRIVE OPERATION

Before you operate the saildrive, read the following safety information and review the *SAFETY* section on page *3*.

OPERATION

All saildrives have been submitted to a test run before shipment. During normal operation, the saildrive should only be shifted with the engine at idle speed.
In emergency cases it is also admissible to shift at higher speeds. Visual checks for leakage should be made from time to time.

⚠ WARNING

Work on the saildrive must only be performed with the engine and propeller at stop.

⚠ CAUTION

- **Before the first startup, the saildrive must be filled with oil. Start the engine only when the saildrive is in neutral position.**
- **Using the saildrive with an insufficient oil level will damage the gears. An excessive oil level may cause leakage at the shaft seals and the saildrive breather, and raise the operating temperature considerably.**

Boat Sailing, Moving in Tow or Anchoring

When the engine is off, and the boat sails, moves in tow or is anchored, the propeller may turn with the water current.

⚠ WARNING

- **Do not work on the saildrive when being towed, or anchored in a river because the propeller may rotate.**
- **When the engine runs idle, but the propeller shaft should not be driven (such as when charging the battery with the generator), the shifting lever (Figure 1) must be held in the neutral position (N) to prevent the boat from moving.**

SAILING WITHOUT ENGINE RUNNING

■ SD25/SD60

Fixed propeller:
During sailing, keep control handle in ASTERN position if boat speed remains under 10 knots. Over 10 knots please do not use a fixed propeller.

Folding and feathering propeller:
Set the control handle in ASTERN position to fold (feather) the propeller, and then keep the control handle in neutral during sailing.

■ SD110/SD150

Folding propeller:
Keep the control handle in neutral during sailing.

Note: For SD110/SD150, only folding propeller is allowed.

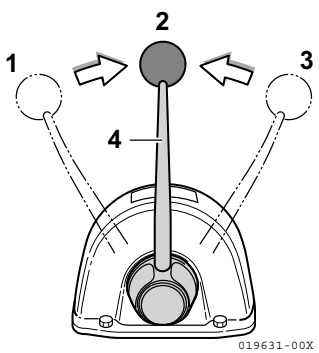
REMOTE CONTROL DEVICE CHECK

NOTICE

Before operating the engine, check saildrive oil level.

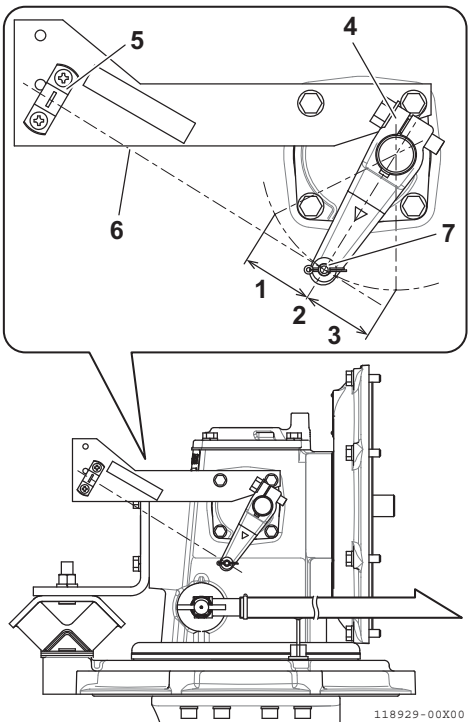
■ SD25

While SD25 is running at low idle, shift the control handle of the remote-control head (single lever control) rapidly through NEUTRAL - AHEAD - NEUTRAL - ASTERN. If a shift operation is done slowly, the tip of the clutch dog is worn away by being hammered, and, consequently, the clutch fails to engage. Confirm that the shift lever of the saildrive moves smoothly to AHEAD, ASTERN and NEUTRAL by remote-control. Because the saildrive SD25 uses a dog clutch, the clutch is not engaged unless the shift lever is moved to the AHEAD or ASTERN position.



1 – Astern
2 – Neutral
3 – Ahead
4 – Control handle

Figure 1



1 – Astern
2 – Neutral
3 – Ahead
4 – Shift lever
5 – Cable clamp
6 – Remote control cable
7 – Pivot

Figure 2

Direction of Rotation

■ SD60

- Shifting to “A”
  = Propeller rotation; Same direction as engine crankshaft
- Shifting to “B”
  = Propeller rotation; Opposite direction from the engine crankshaft

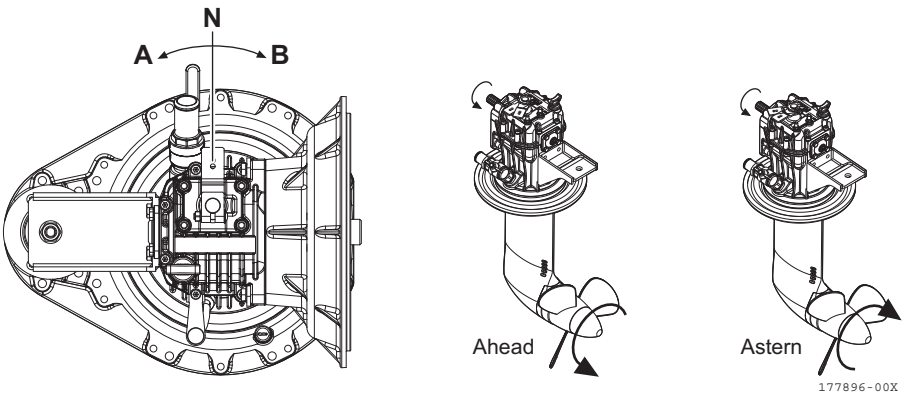


Figure 3

Gear Shift Operation

■ SD60

⚠ CAUTION

Make certain that control rod or cable is easily movable.

1. Lever travel:
   Minimum travel of gear shift lever (O - A = O - B) must be 35 mm (1.3/8 in.) for outer pivot point and 30 mm (1.3/16 in.) for inner pivot point.
2. Lever position: In neutral position perpendicular to control rod or cable. Gear shift lever can be fixed in any position by means of clamping screw. Minimum distance between gear shift lever and cover 0.5 mm (0.02 in.). Opening or loosening of cover requires renewed adjustment (by specialized personnel only).
3. Regular checks are required to ensure the strict observance of item 1 and 2 above.

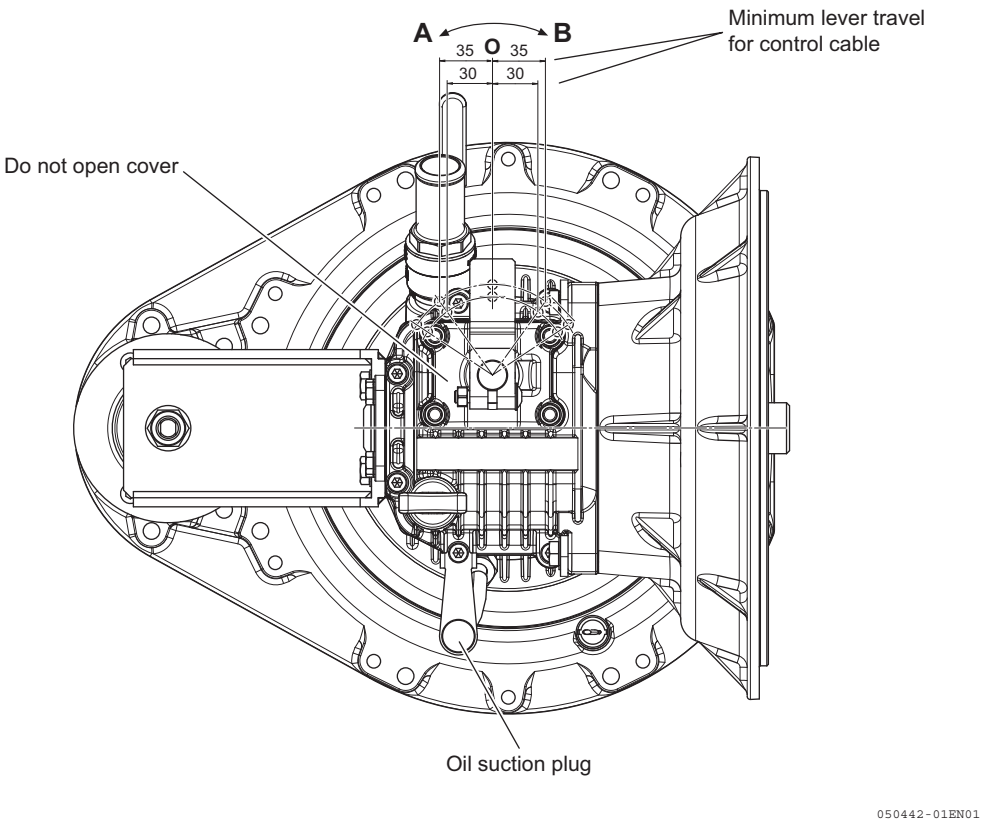
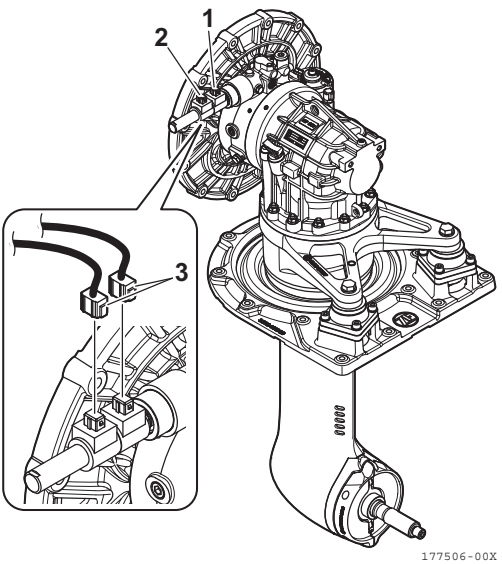


Figure 4

■ SD110/SD150

Connection of the shifting solenoid valve



1 – Solenoid valve for ahead
2 – Solenoid valve for astern
3 – Connector from shift harness

Figure 5

Pay attention to the ahead and astern identification when connecting the connectors.

NOTICE

To be used only out of confines waters with full maneuvering capability.

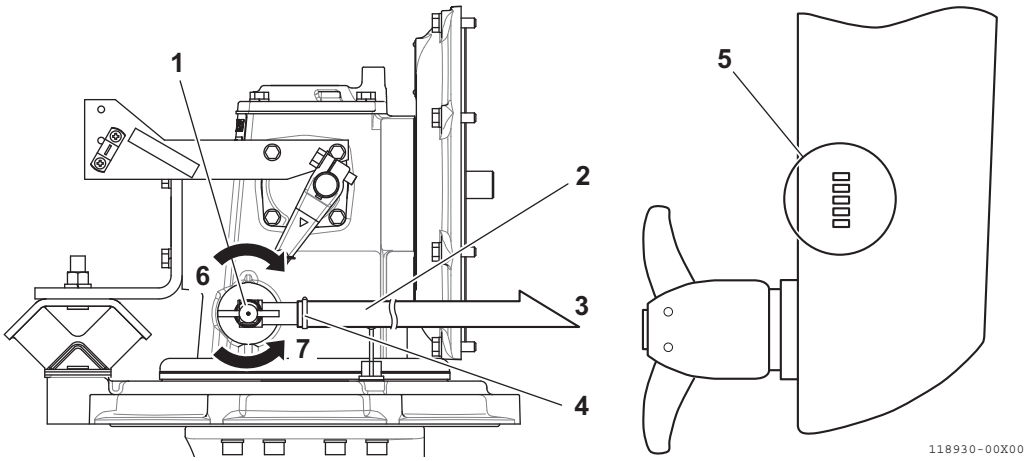
■ Negative break (SD110/SD150)

The saildrive for SD110/SD150 is equipped with a negative shaft break to prevent the propeller form spinning when under sail and the drive is in neutral. The negative break only works in combination with a folding propeller.

ENGINE COOLING WATER

Opening or closing the cooling water system of the engine driving the saildrive is done by the cooling water cock fixed on the upper case of the saildrive. Be sure to open the cock (1, **Figure 6**, **Figure 7**, **Figure 8**) and confirm that cooling water exits from the exhaust in the hull, before leaving the dock.

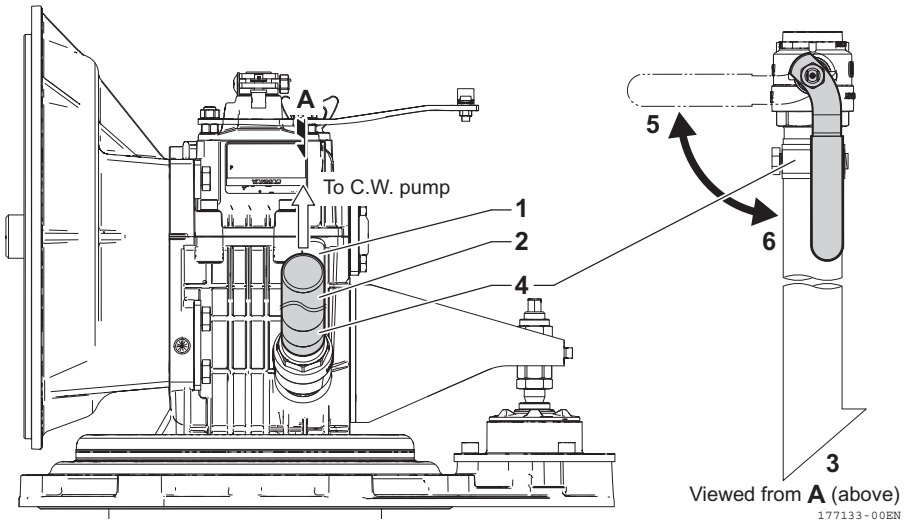
■ SD25



1 – Cooling water cock
2 – Cooling water hose
3 – To cooling water pump
4 – Hose clamp
5 – Seawater inlet
6 – CLOSE
7 – OPEN

Figure 6

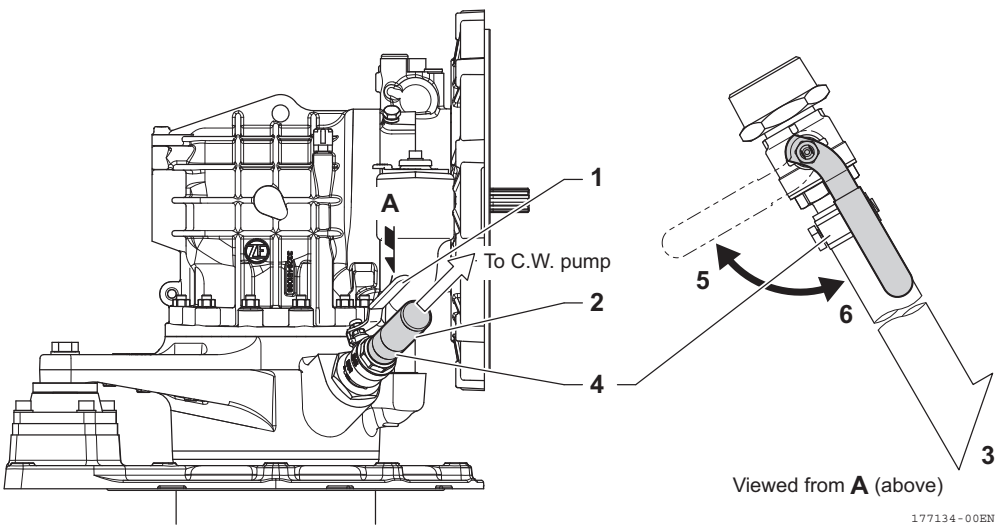
■ SD60



1 – Cooling water cock
2 – Cooling water hose
3 – To cooling water pump
4 – Hose clamp
5 – CLOSE
6 – OPEN

Figure 7

■ SD110/SD150



1 – Cooling water cock
2 – Cooling water hose
3 – To cooling water pump
4 – Hose clamp
5 – CLOSE
6 – OPEN

Figure 8

PERIODIC MAINTENANCE (SD25)

Before you perform maintenance on the saildrive, read the following safety information and review the *SAFETY* section on page *3*.

This section of the *Operation Manual* describes the procedures for proper care and maintenance of the saildrive.

PERIODIC MAINTENANCE

⚠ CAUTION

Establish a periodic maintenance plan according to the saildrive application and make sure you perform the required periodic maintenance at intervals indicated. Failure to follow these guidelines will impair the saildrive's safety and performance characteristics, shorten the saildrive's life and may affect the warranty coverage on your saildrive.

■ The importance of periodic maintenance

Saildrive deterioration and wear occur in proportion to the length of time the saildrive has been in service and the conditions it is subjected to during operation.
Periodic maintenance prevents unexpected downtime, reduces the number of accidents due to poor saildrive performance and helps extend the life of the saildrive.

■ The importance of daily checks

The Periodic Maintenance Table assumes that the daily checks are performed on a regular basis. Make a habit of performing daily checks before the start of each operating day. *See Refilling with Lubricating Oil on page 20*, *CHECKING THE INSTRUMENT PANEL ALARM SYSTEM on page 23* and *ENGINE COOLING WATER on page 33*, and refer to the Operation Manual for your engine.

■ Keep a log of saildrive hours and daily checks

Keep a log of the number of hours the saildrive is run each day and a log of the daily checks performed. Also note the date, type of repair (e.g., replaced bearings), and parts used for any service needed between the periodic maintenance intervals. Failure to perform periodic maintenance will shorten the life of the saildrive.

■ YANMAR replacement parts

YANMAR recommends that you use genuine YANMAR parts when replacement parts are needed. Genuine replacement parts help ensure long saildrive life.

■ Tools required

Before you start any periodic maintenance procedure, make sure you have the tools you need to perform all of the required tasks.

■ Ask your authorized YANMAR marine dealer or distributor for help

Our professional service technicians have the expertise and skills to help you with any maintenance or service-related procedures.

Daily and periodic maintenance is important to keep the saildrive in good operating condition. The following is a summary of maintenance items by periodic maintenance intervals. Periodic maintenance intervals vary depending on saildrive application and are hard to establish definitively. The following should be treated only as a general guideline.

Note: These procedures are considered normal maintenance and are performed at the owner's expense.

PERIODIC MAINTENANCE TABLE

○: Check or Clean ◇: Replace ●: Consult your authorized YANMAR marine dealer or distributor

System	Item	Periodic maintenance interval					
		Dailly	50 hours or after 1 month	Every 100 hours	Every 250 hours or 1 year	Every 2000 hours	Every 7 years
Lubricating oil	Check oil level, fill if necessary	Before operation ○					
	Change lubricating oil		First ◇	◇			
Cooling water	Clean cooling water suction hole				During lifting the boat ○		
Propeller shaft	Lubricate and re-tighten nut				During lifting the boat ○		
Hose fitting	Check properly tight				○		
Grounding circuit for possible corrosion	Check not loose, damaged or corroded				●		
Remote control system	Inspect remote control device				○		
	Inspect and/or replace the clutch shifter				●		
Anode	Inspect and replace anode			During lifting the boat ○◇			
Lower case	Repair case coating				●		
Boat hull water tightness	Inspect rubber diaphragm				○*		●◇*
	Inspect and test seal sensor				●		
Flexible mount	Inspect and/or replace the flexible mount, mounting height of the engine				●		
	Replace the flexible mount					●◇	

* *The diaphragms are important components that prevent the leakage of water into the boat, which could lead to the sinking of the boat. The owner/operator of the boat should always pay attention to the condition of the saildrive and especially check if it shows any irregularities.*
Such diaphragms have a shorter lifespan than the life of the boat itself and for that reason they need to be replaced once every seven (7) years. If the sensor which is located between the diaphragms signals any water ingress, the boat should immediately be brought to the nearest dock for inspection and/or replacement of the diaphragms, even if the seven (7) year period mentioned above has not expired. After the expiry of such seven (7) year period the diaphragms should be replaced and the boat should not be used with the saildrive having diaphragms older than seven (7) years.

WHEN THE VESSEL IS OUT OF THE WATER, PERFORM THE FOLLOWING:

Removing Deposits from the Lower Gear Case

Remove seaweed, seashells and other marine growth from the lower gear case. Completely remove deposits around the cooling water intake (2, **Figure 1**) since the engine may overheat if the cooling water intake amount is insufficient.

Repairing Damaged Coating

The lower gear case coating may be damaged when hit by objects in the water, or when having deposits removed from it. Never use paint containing copper or tin. This will damage the drive and void the warranty. Use a high quality primer and topcoat paint specifically designed for aluminum outboards or stern-drives. Follow the manufacturer's directions for surface preparation and application. Consult your authorized YANMAR marine dealer or distributor for assistance.

Inspecting the Anode

See Inspecting and replacing the anode of each model on page 40.

Inspecting the Folding Propeller

Confirm that the blade of the folding propeller opens smoothly. Inspect for wear on the blade-fixing pins, replacing them when wear is excessive. Apply seawaterproof grease to the pins in the blade gear and propeller shaft.

Check the instructions of the manufacturer of the folding propeller.

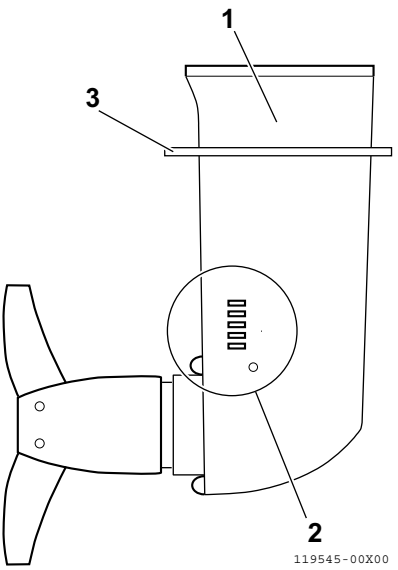
Draining Water

Drain the engine cooling water, together with the water in the saildrive case. If this water is not drained, freezing may cause the engine block and/or the saildrive case to crack.

Check Protector

Before every storage period on shore check protector and replace if needed.

Note: Protector keeps sunlight away from diaphragm A.



1 – Lower gear case
2 – Seawater inlet
3 – Protector

Figure 1

PERIODIC MAINTENANCE PROCEDURES

General Inspection

Perform the following maintenance as daily inspection.

- **Checking the oil level, and filling if necessary**

■ Checking the oil level, and filling if necessary

See Oil level check on page 22.

After Initial 50 Hours of Operation

Perform the following procedures after the first 50 hours of operation.

- **Draining and replacing lubricating oil**

■ Draining and replacing lubricating oil

When the vessel is out of the water, drain the oil by removing the lower gear case drain plug, and the upper gear case oil dipstick.

There is a special procedure of changing lubricating oil from the engine room for easy maintenance. Consult your authorized YANMAR marine dealer or distributor for procedure.

⚠ CAUTION

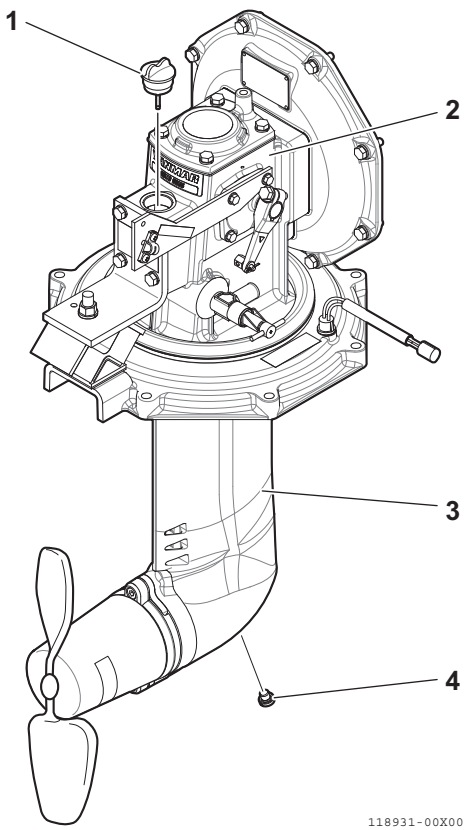
When changing lubricating oil on board a boat (offshore), it is required to keep track of the lubricating oil amount drained and refilled.

⚠ CAUTION

Let the drive unit cool at least 5 minutes after operation before removing the oil drain plug. Hot oil could spurt out forcefully if the drain plug is removed from the drive unit immediately after operation.

Replacing oil

See Refilling with Lubricating Oil on page 20.



1 – Dipstick
2 – Upper gear case
3 – Lower gear case
4 – Lubricating oil drain plug

Figure 2

Every 100 Hours of Operation

Perform the following maintenance every 100 hours of operation.

- **Changing the lubricating oil**
- **Inspecting and replacing the anode**

■ Changing the lubricating oil

See Draining and replacing lubricating oil on page 39.

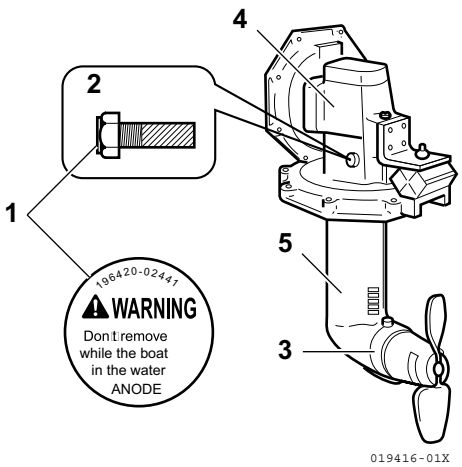
■ Inspecting and replacing the anode

To prevent corrosion of the saildrive body by sea or lake water, replace the anode every 100 hours of operation, once every six months or when it has reduced to half of the original volume (size).

Tightening torque for anode	5.9 ± 1.0 N·m

NOTICE

The anode of the saildrive is only calculated for the saildrive. Changing the material of the propeller may require additional anodes to be installed on the propeller itself.



1 – Safety label
2 – Anode
3 – Anode
4 – Upper gear case
5 – Lower gear case

Figure 3

Anodes are provided on the upper gear case and the lower gear case.
To inspect and replace the anode 2 on the upper gear case only when the vessel is out of the water.

Every 250 Hours or 1 Year

Perform the following maintenance every 250 hours or 1 year of operation.

- **Cleaning cooling water suction hole**
- **Lubricating and re-tightening the nut of the propeller shaft (while lifting the boat)**
- **Checking the hose fitting for proper tightness**
- **Checking the grounding circuit for looseness, damage, or corrosion**
- **Inspecting remote control device**
- **Inspecting and replacing the clutch shifter**
- **Repairing case coating**
- **Inspecting installation/water sealing condition**
- **Inspecting seal sensor**
- **Inspecting and/or replacing the flexible mount**

■ Cleaning cooling water suction hole

See Removing Deposits from the Lower Gear Case on page 38.

■ Lubricating and re-tightening the nuts of propeller shaft (while lifting the boat)

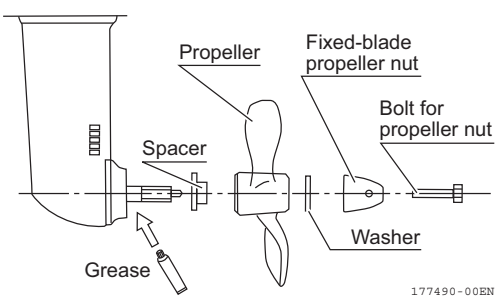


Figure 4

Nut tightening torque

	Fixed blade propeller nut		Bolt for propeller nut	
SD25	M16	6.0 N·m to 7.0 N·m (43 lbf-in to 51 lbf-in)	M8	10.8 N·m to 14.7 N·m (95 lbf-in to 130 lbf-in)

For details of propeller installation, refer to the propeller installation manual provided by the manufacturer.

■ Checking the hose fitting for tightness

See ENGINE COOLING WATER on page 33.

■ Checking the grounding circuit for looseness, damage, or corrosion

Consult your authorized YANMAR marine dealer or distributor for procedure.

■ Inspecting remote control device

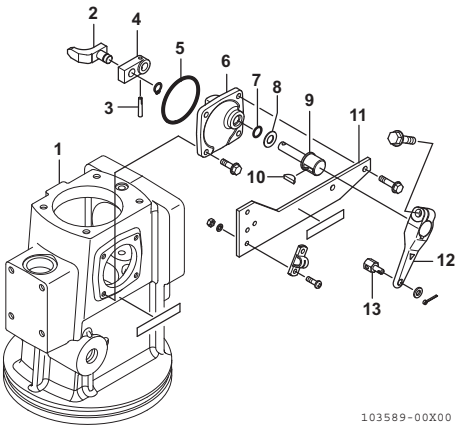
See REMOTE CONTROL DEVICE CHECK on page 29.

■ Inspecting and replacing the clutch shifter

Shifter, Taper pin, Shift arm and Shift shaft (2, 3, 4, 9, **Figure 5**): Check whether partial damage is existed or not.
If any damage is confirmed, replace these parts with new one

Note: Please refer to Parts Catalog for each parts code

Consult your authorized YANMAR dealer or distributor for procedure.



1 – Housing (Upper gear case)
2 – Shifter
3 – Taper pin
4 – Shift arm
5 – O-ring (1A G55)
6 – Shift lever support
7 – O-ring (1A P10A)
8 – Thrust washer
9 – Shift shaft
10 – Woodruff key
11 – Cable Bracket
12 – Shift lever
13 – Pivot

Figure 5

■ Repairing case coating

See Repairing Damaged Coating on page 38.

■ Inspecting installation/water sealing condition

Rubber diaphragms (A) and (B)

The rubber diaphragms (A) and (B) of the saildrive are important parts for the hull and crew safety. Since rubber degenerates during use, be sure to inspect them when any irregularities are shown, or water ingress is signaled. The vessel must be lifted onto a block for this procedure. To replace, consult your YANMAR marine dealer.

⚠ WARNING

Do not re-use the clamp ring.

■ Inspecting seal sensor

*See (**Figure 13**) on page 26.* See your authorized YANMAR marine dealer or distributor for inspection procedure.

■ Inspecting and/or replacing the flexible mount

Replace if clearance is less than 1 mm (1, **Figure 6**). See your authorized YANMAR marine dealer or distributor for procedure.

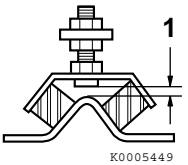


Figure 6

Every 2000 Hours of Operation

Perform the following maintenance every 2000 hours of operation.

- **Replacing the flexible mount**

■ Replacing the flexible mount

See your authorized YANMAR dealer or distributor for procedure. Flexible Mount must be replaced every 2000 hours.

Every 7 Years

Perform the following maintenance every 7 years of operation.

- **Replacing rubber diaphragm, clamp ring**

■ Replacing rubber diaphragm, clamp ring

To replace, consult your YANMAR marine dealer.

This Page Intentionally Left Blank

PERIODIC MAINTENANCE (SD60)

Before you perform maintenance on the saildrive, read the following safety information and review the *SAFETY* section on page *3*.

This section of the *Operation Manual* describes the procedures for proper care and maintenance of the saildrive.

PERIODIC MAINTENANCE

⚠ CAUTION

Establish a periodic maintenance plan according to the saildrive application and make sure you perform the required periodic maintenance at intervals indicated. Failure to follow these guidelines will impair the saildrive's safety and performance characteristics, shorten the saildrive's life and may affect the warranty coverage on your saildrive.

■ The importance of periodic maintenance

Saildrive deterioration and wear occur in proportion to the length of time the saildrive has been in service and the conditions it is subjected to during operation.
Periodic maintenance prevents unexpected downtime, reduces the number of accidents due to poor saildrive performance and helps extend the life of the saildrive.

■ The importance of daily checks

The Periodic Maintenance Table assumes that the daily checks are performed on a regular basis. Make a habit of performing daily checks before the start of each operating day. *See Refilling with Lubricating Oil on page 20*, *CHECKING THE INSTRUMENT PANEL ALARM SYSTEM on page 23* and *ENGINE COOLING WATER on page 33*, and refer to the Operation Manual for your engine.

■ Keep a log of saildrive hours and daily checks

Keep a log of the number of hours the saildrive is run each day and a log of the daily checks performed. Also note the date, type of repair (e.g., replaced bearings), and parts used for any service needed between the periodic maintenance intervals. Failure to perform periodic maintenance will shorten the life of the saildrive.

■ YANMAR replacement parts

YANMAR recommends that you use genuine YANMAR parts when replacement parts are needed. Genuine replacement parts help ensure long saildrive life.

■ Tools required

Before you start any periodic maintenance procedure, make sure you have the tools you need to perform all of the required tasks.

■ Ask your authorized YANMAR marine dealer or distributor for help

Our professional service technicians have the expertise and skills to help you with any maintenance or service-related procedures.

Daily and periodic maintenance is important to keep the saildrive in good operating condition. The following is a summary of maintenance items by periodic maintenance intervals. Periodic maintenance intervals vary depending on saildrive application and are hard to establish definitively. The following should be treated only as a general guideline.

Note: These procedures are considered normal maintenance and are performed at the owner's expense.

PERIODIC MAINTENANCE TABLE

○: Check or Clean ◇: Replace ●: Consult your authorized YANMAR marine dealer or distributor

System	Item	Periodic maintenance interval				
		Dailly	50 hours or after 1 month	Every 250 hours or 1 year	Every 2000 hours	Every 7 years
Lubricating oil	Check oil level, fill if necessary	Before operation ○				
	Change lubricating oil		First ◇	◇		
Cooling water	Clean cooling water suction hole			During lifting the boat ○		
Propeller shaft	Lubricate and re-tighten nut			During lifting the boat ○		
Hose fitting	Check properly tight			○		
Grounding circuit for possible corrosion	Check not loose, damaged or corroded			●		
Remote control system	Inspect remote control device			○		
Anode	Inspect and replace anode			During lifting the boat ○◇		
Lower case	Repair case coating			●		
Boat hull water tightness	Inspect rubber diaphragm			○*		●◇*
	Inspect and test seal sensor			●		
Flexible mount	Inspect and/or replace the flexible mount, mounting height of the engine			●		
	Replace the flexible mount				●◇	

* *The diaphragms are important components that prevent the leakage of water into the boat, which could lead to the sinking of the boat. The owner/operator of the boat should always pay attention to the condition of the saildrive and especially check if it shows any irregularities.*
Such diaphragms have a shorter lifespan than the life of the boat itself and for that reason they need to be replaced once every seven (7) years. If the sensor which is located between the diaphragms signals any water ingress, the boat should immediately be brought to the nearest dock for inspection and/or replacement of the diaphragms, even if the seven (7) year period mentioned above has not expired. After the expiry of such seven (7) year period the diaphragms should be replaced and the boat should not be used with the saildrive having diaphragms older than seven (7) years.

WHEN THE VESSEL IS OUT OF THE WATER, PERFORM THE FOLLOWING:

Removing Deposits from the Lower Gear Case

Remove seaweed, seashells and other marine growth from the lower gear case. Completely remove deposits around the cooling water intake (2, **Figure 1**) since the engine may overheat if the cooling water intake amount is insufficient.

Repairing Damaged Coating

The lower gear case coating may be damaged when hit by objects in the water, or when having deposits removed from it. Never use paint containing copper or tin. This will damage the drive and void the warranty. Use a high quality primer and topcoat paint specifically designed for aluminum outboards or stern-drives. Follow the manufacturer's directions for surface preparation and application. Consult your authorized YANMAR marine dealer or distributor for assistance.

Inspecting the Anode

See Inspecting and replacing the anode of each model on page 53.

Inspecting the Folding Propeller

Confirm that the blade of the folding propeller opens smoothly. Inspect for wear on the blade-fixing pins, replacing them when wear is excessive. Apply seawaterproof grease to the pins in the blade gear and propeller shaft.

Check the instructions of the manufacturer of the folding propeller.

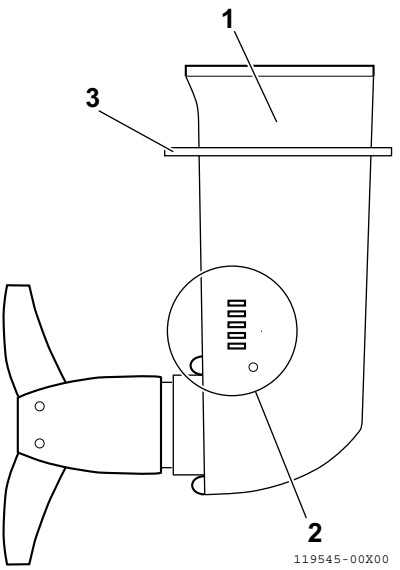
Draining Water

Drain the engine cooling water, together with the water in the saildrive case. If this water is not drained, freezing may cause the engine block and/or the saildrive case to crack.

Check Protector

Before every storage period on shore check protector and replace if needed.

Note: Protector keeps sunlight away from diaphragm A.



1 – Lower gear case
2 – Seawater inlet
3 – Protector

Figure 1

PERIODIC MAINTENANCE PROCEDURES

General Inspection

Perform the following maintenance as daily inspection.

- **Checking the oil level, and filling if necessary**

■ Checking the oil level, and filling if necessary

See Oil level check on page 22.

After Initial 50 Hours of Operation

Perform the following procedures after the first 50 hours of operation.

- **Draining and replacing lubricating oil**

■ Draining and replacing lubricating oil

When the vessel is out of the water, drain the oil by removing the lower gear case drain plug, and the upper gear case oil dipstick.

⚠ CAUTION

Let the drive unit cool at least 5 minutes after operation before removing the oil drain plug. Hot oil could spurt out forcefully if the drain plug is removed from the drive unit immediately after operation.

■ Oil change

Oil change procedure/Drain from lower plug of saildrive

1. Un-screw the oil dipstick.

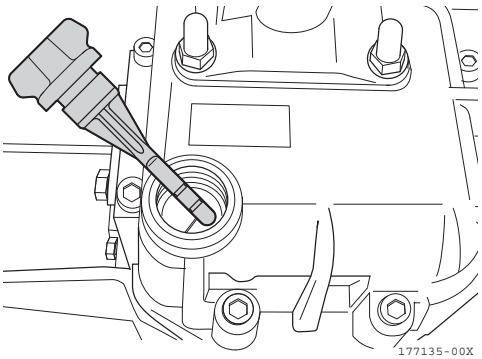


Figure 2

2. Prepare a suitable container to collect the lubricating oil.
   Remove the lower plug and drain the oil.
   Dispose of used oil properly.

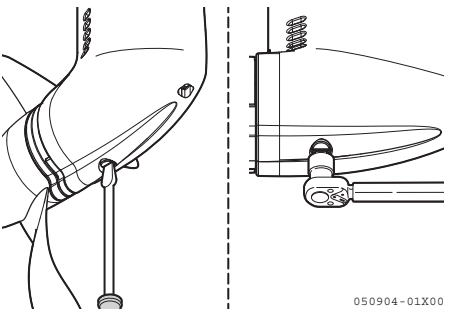


Figure 3

3. Connect a hand oil pump onto the fitting of the oil drain hole in the SD60 drive. Be careful not to damage the thread of the drain hole.

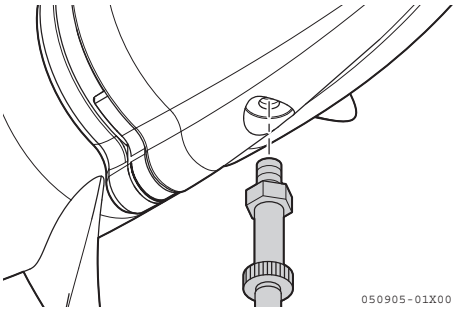


Figure 4

4. Using low pressure pump, add oil. SAE 15W40 (Standard: 2.8 L, Extended leg: 3 L)

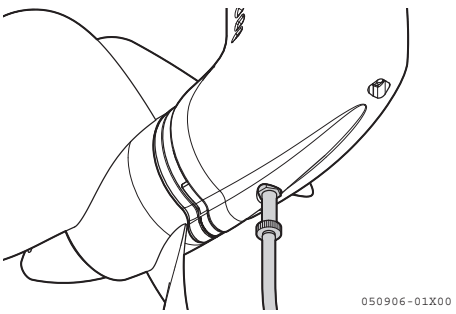


Figure 5

5. Replace the O-ring on the oil cap saildrive, lubricate it and prepare to reassemble it.

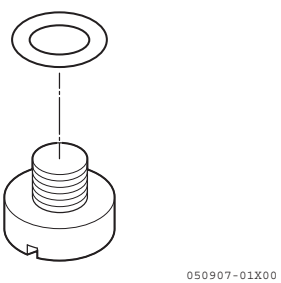


Figure 6

6. Screw in the oil dipstick and tighten by hand.

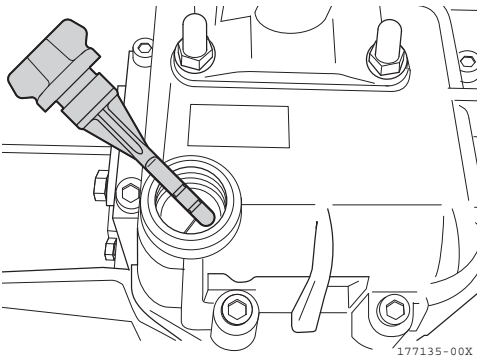


Figure 7

7. Remove the oil pump fitting and quickly install the oil plug. Torque 10 N·m. Add oil at the dipstick hole to reach the proper level as indicated on the dipstick.

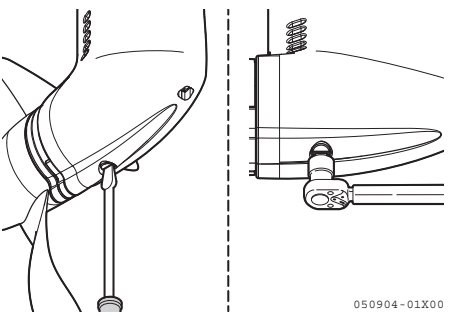


Figure 8

Oil change procedure from engine room for easy maintenance/Suction of saildrive fluid

1. Oil change must be done removing the plug (1, **Figure 9**) from the oil suction pipe (2, **Figure 9**).
   Suction can be done with hand pump (4, **Figure 10**).
2. Push hose of hand pump (4, **Figure 10**) through the suction pipe (2, **Figure 9**) and suck the fluid off.
3. Check that oil is completely removed. (Standard: 2.8 L, Extended leg: 3 L).
4. Un-screw the oil dipstick (3, **Figure 9**).
5. Add oil. SAE 15W40 (Standard: 2.8 L, Extended leg: 3 L)
6. Screw in the oil dipstick (3, **Figure 9**).

NOTICE

The used oil is to be handled as special waste that pollute the environment.
For the safe disposal of used oil, take all the measures required by the relevant local rules and legislations.

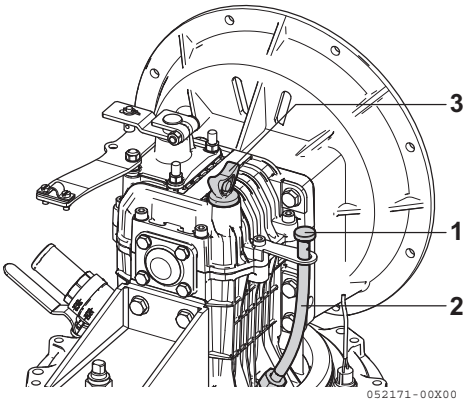


Figure 9

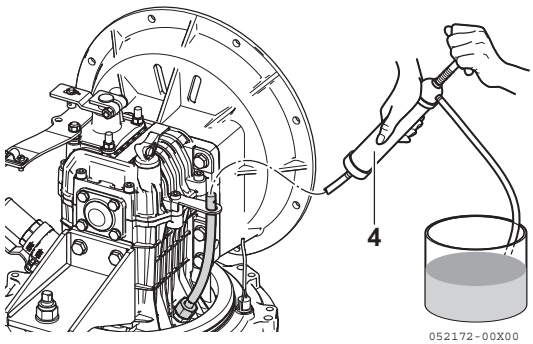


Figure 10

Every 250 Hours or 1 Year

Perform the following maintenance every 250 hours or 1 year of operation.

- **Changing the lubricating oil**
- **Cleaning the cooling water suction hole**
- **Lubricating and re-tightening the nut of the propeller shat (while lifting the boat)**
- **Checking the hose fitting for proper tightness**
- **Checking the grounding circuit for looseness, damage, or corrosion**
- **Inspecting the remote control device**
- **Inspecting and replacing the anode (while lifting the boat)**
- **Repairng the case coating**
- **Inspecting the installation/water sealing condition**
- **Inspecting the seal sensor**
- **Inspecint and/or replacing the flexible mount**

■ Changing the lubricating oil

See Draining and replacing lubricating oil on page 49.

■ Cleaning the cooling water suction hole

See Removing Deposits from the Lower Gear Case on page 48.

■ Lubricating and re-tightening the nut of the propeller shaft (while lifting the boat)

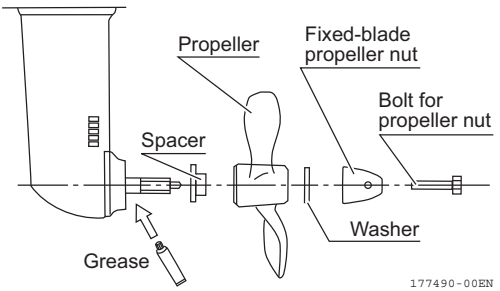


Figure 11

Nut tightening torque

	Fixed blade propeller nut		Bolt for propeller nut	
SD60	M20	8.0 N·m to 10.0 N·m (58 lbf-in to 72 lbf-in)	M10	25.5 N·m to 29.4 N·m (226 lbf-in to 260 lbf-in)

For details of propeller installation, refer to the propeller installation manual provided by the manufacturer.

■ Checking the hose fitting for proper tightness

See ENGINE COOLING WATER on page 33.

⚠ CAUTION

Apply double clamping to the hose connected to the SD60 seawater cock.

■ Checking the grounding circuit for looseness, damage, or corrosion

Consult your authorized YANMAR marine dealer or distributor for procedure.

■ Inspecting the remote control device

See REMOTE CONTROL DEVICE CHECK on page 29.

■ Inspecting and replacing the anode (while lifting the boat)

To minimize galvanic corrosion, the SD60 system has a sacrificial anode placed on the foot of the saildrive.

This anode is not designed to accommodate other hardware or other excessive electrical currents related to additional components or changes to the electrical AC and DC systems on board the vessel.

This replaceable sacrificial anode capacity is for the drive only. When a non-Aluminium propeller is installed, the non-Aluminium propeller must have a additional replaceable sacrificial anode.

The anodes provide protection against corrosion under normal use.

1. Using the 6 mm hex key, remove the M8 screws of the anode.

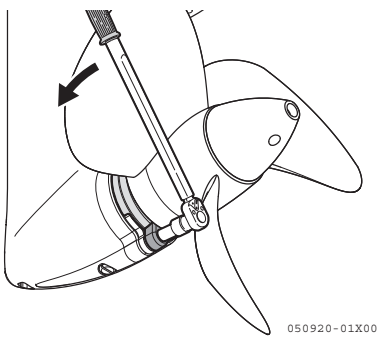


Figure 12

2. Remove the anode of the foot. If necessary, remove using a plastic mallet. The anode is two piece type.
3. Place the new two pieces of anode on the foot.

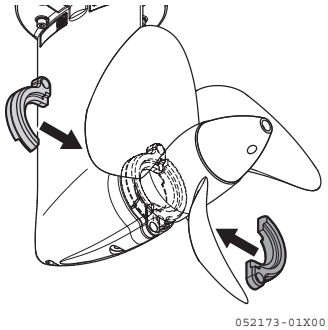


Figure 13

4. Tighten to a torque of 20 N·m.

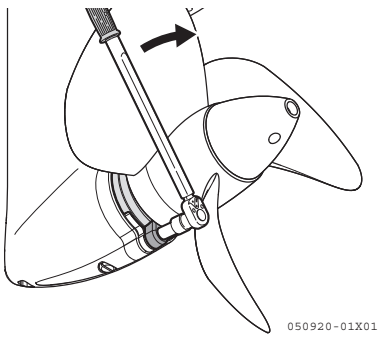


Figure 14

■ Repairing case coating

See Repairing Damaged Coating on page 48.

■ Inspecting installation/water sealing condition

See Inspecting installation/water sealing condition on page 42.

■ Inspecting seal sensor

*See (**Figure 13**) on page 26.* See your authorized YANMAR marine dealer or distributor for inspection procedure.

■ Inspecting and/or replacing the flexible mount

See Inspecting and/or replacing the flexible mount on page 42.

Every 2000 Hours of Operation

Perform the following maintenance every 2000 hours of operation.

- **Replacing the flexible mount**

■ Replacing the flexible mount

See your authorized YANMAR dealer or distributor for procedure. Flexible Mount must be replaced every 2000 hours.

Every 7 Years

Perform the following maintenance every 7 years of operation.

- **Replacing rubber diaphragm, clamp ring**

■ Replacing rubber diaphragm, clamp ring

To replace, consult your YANMAR marine dealer.

PERIODIC MAINTENANCE (SD110/SD150)

Before you perform maintenance on the saildrive, read the following safety information and review the *SAFETY* section on page *3*.

This section of the *Operation Manual* describes the procedures for proper care and maintenance of the saildrive.

PERIODIC MAINTENANCE

⚠ CAUTION

Establish a periodic maintenance plan according to the saildrive application and make sure you perform the required periodic maintenance at intervals indicated. Failure to follow these guidelines will impair the saildrive's safety and performance characteristics, shorten the saildrive's life and may affect the warranty coverage on your saildrive.

■ The importance of periodic maintenance

Saildrive deterioration and wear occur in proportion to the length of time the saildrive has been in service and the conditions it is subjected to during operation.
Periodic maintenance prevents unexpected downtime, reduces the number of accidents due to poor saildrive performance and helps extend the life of the saildrive.

■ The importance of daily checks

The Periodic Maintenance Table assumes that the daily checks are performed on a regular basis. Make a habit of performing daily checks before the start of each operating day. *See Refilling with Lubricating Oil on page 20*, *CHECKING THE INSTRUMENT PANEL ALARM SYSTEM on page 23* and *ENGINE COOLING WATER on page 33*, and refer to the Operation Manual for your engine.

■ Keep a log of saildrive hours and daily checks

Keep a log of the number of hours the saildrive is run each day and a log of the daily checks performed. Also note the date, type of repair (e.g., replaced bearings), and parts used for any service needed between the periodic maintenance intervals. Failure to perform periodic maintenance will shorten the life of the saildrive.

■ YANMAR replacement parts

YANMAR recommends that you use genuine YANMAR parts when replacement parts are needed. Genuine replacement parts help ensure long saildrive life.

■ Tools required

Before you start any periodic maintenance procedure, make sure you have the tools you need to perform all of the required tasks.

■ Ask your authorized YANMAR marine dealer or distributor for help

Our professional service technicians have the expertise and skills to help you with any maintenance or service-related procedures.

Daily and periodic maintenance is important to keep the saildrive in good operating condition. The following is a summary of maintenance items by periodic maintenance intervals. Periodic maintenance intervals vary depending on saildrive application and are hard to establish definitively. The following should be treated only as a general guideline.

Note: These procedures are considered normal maintenance and are performed at the owner's expense.

PERIODIC MAINTENANCE TABLE

○: Check or Clean ◇: Replace ●: Consult your authorized YANMAR marine dealer or distributor

System	Item	Periodic maintenance interval					
		Dailly	50 hours or after 1 month	Every 250 hours or 1 year	Every 750 hours	Every 2000 hours or 2 year	Every 7 years
Lubricating oil	Check oil level, fill if necessary	Before operation ○					
	Change lubricating oil		First ◇	◇			
	Change oil filter			◇			
Cooling water	Clean cooling water suction hole			During lifting the boat ○			
Propeller shaft	Lubricate and re-tighten nut			During lifting the boat ○			
Hose fitting	Check properly tight			○			
Grounding circuit for possible corrosion	Check not loose, damaged or corroded			●			
Electrical system	Check not loose, damaged or corroded			●			
Shaft seal	Inspect shaft seal of input flange			●			
	Inspect shaft seal of output shaft			●	●◇		
	Change the position output shaft seal			●◇			
Remote control system	Inspect remote control device			○			
Anode	Inspect and replace anode			During lifting the boat ○◇			
Lower case	Repair case coating			●			
Negative brake	Check the negative brake			●			
Boat hull water tightness	Inspect rubber diaphragm	Before operation ○*		○*			●◇*
Flexible mount	Inspect and/or replace the flexible mount, mounting height of the engine					●	
	Replace the flexible mount						●◇

* *The diaphragms are important components that prevent the leakage of water into the boat, which could lead to the sinking of the boat. The owner/operator of the boat should always pay attention to the condition of the saildrive and especially check if it shows any irregularities.*
Such diaphragms have a shorter lifespan than the life of the boat itself and for that reason they need to be replaced once every seven (7) years. After the expiry of such seven (7) year period the diaphragms should be replaced and the boat should not be used with the saildrive having diaphragms older than seven (7) years.

WHEN THE VESSEL IS OUT OF THE WATER, PERFORM THE FOLLOWING:

Removing Deposits from the Lower Gear Case

Remove seaweed, seashells and other marine growth from the lower gear case. Completely remove deposits around the cooling water intake (2, **Figure 1**) since the engine may overheat if the cooling water intake amount is insufficient.

Repairing Damaged Coating

The lower gear case coating may be damaged when hit by objects in the water, or when having deposits removed from it. Never use paint containing copper or tin. This will damage the drive and void the warranty. Use a high quality primer and topcoat paint specifically designed for aluminum outboards or stern-drives. Follow the manufacturer's directions for surface preparation and application. Consult your authorized YANMAR marine dealer or distributor for assistance.

Inspecting the Anode

See Inspecting and replacing the anode of each model on page 67.

Inspecting the Folding Propeller

Confirm that the blade of the folding propeller opens smoothly. Inspect for wear on the blade-fixing pins, replacing them when wear is excessive. Apply seawaterproof grease to the pins in the blade gear and propeller shaft.

Check the instructions of the manufacturer of the folding propeller.

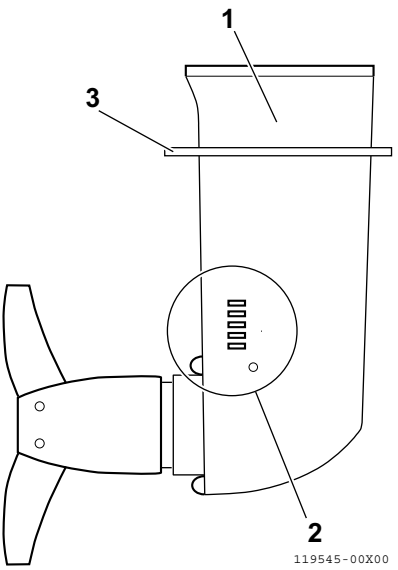
Draining Water

Drain the engine cooling water, together with the water in the saildrive case. If this water is not drained, freezing may cause the engine block and/or the saildrive case to crack.

Check Protector

Before every storage period on shore check protector and replace if needed.

Note: Protector keeps sunlight away from diaphragm A.



1 – Lower gear case
2 – Seawater inlet
3 – Protector

Figure 1

PERIODIC MAINTENANCE PROCEDURES

General Inspection

Perform the following maintenance as daily inspection.

- **Checking the oil level, and filling if necessary**
- **Inspecting installation/water sealing condition**

■ Checking the oil level, and filling if necessary

See Oil level check on page 22.

■ Inspecting installation/water sealing condition

See Inspecting installation/water sealing condition on page 68.

After Initial 50 Hours of Operation

Perform the following procedures after the first 50 hours of operation.

- **Draining and replacing lubricating oil**

■ Draining and replacing lubricating oil

When the vessel is out of the water, drain the oil by removing the lower gear case drain plug, and the upper gear case oil dipstick.

⚠ CAUTION

Let the drive unit cool at least 5 minutes after operation before removing the oil drain plug. Hot oil could spurt out forcefully if the drain plug is removed from the drive unit immediately after operation.

■ Oil change

Oil change procedure/Drain from lower plug of saildrive

1. Un-screw the oil dipstick.

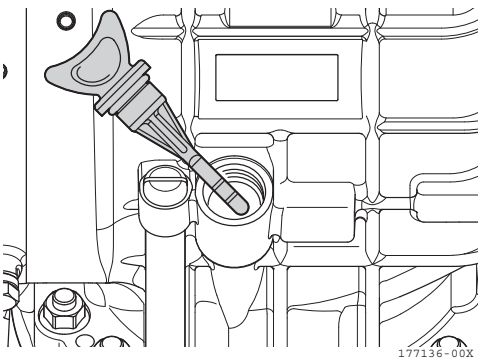


Figure 2

2. Prepare a suitable container to collect the lubricating oil.
   Remove the lower plug and drain the oil.
   Dispose of used oil properly.

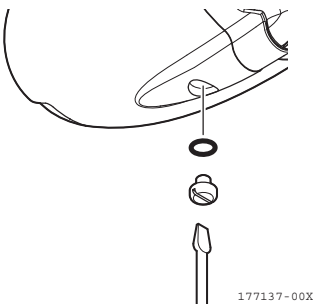


Figure 3

3. Connect a hand oil pump onto the fitting of the oil drain hole in the SD60 drive. Be careful not to damage the thread of the drain hole.

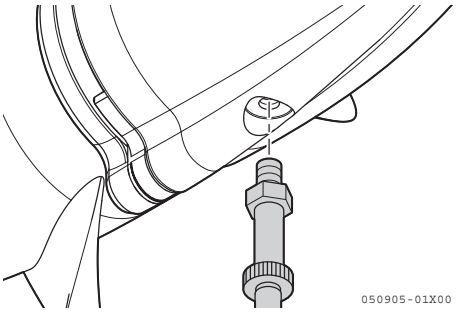


Figure 4

4. Using low pressure pump, add oil.

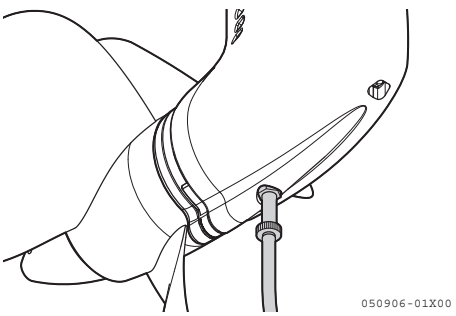


Figure 5

5. Replace the O-ring on the oil cap saildrive, lubricate it and prepare to reassemble it.

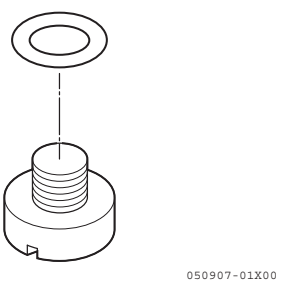


Figure 6

6. Screw in the oil dipstick and tighten by hand.

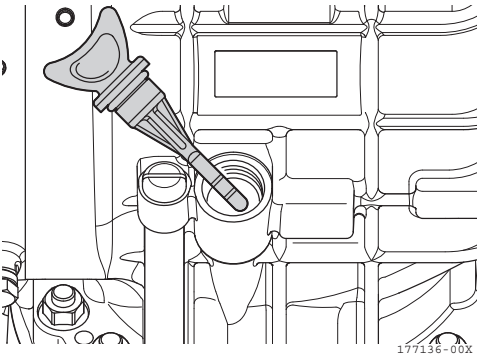


Figure 7

7. Remove the oil pump fitting and quickly install the oil plug.
   Tightening torque: 10 N·m.
   Add oil from the dipstick hole to reach the proper level as indicated on the dipstick.

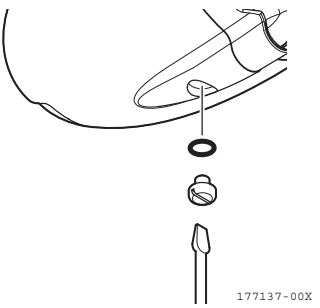


Figure 8

Oil change procedure from engine room for easy maintenance/Suction of saildrive fluid

1. Oil change must be done removing the plug (1, **Figure 9**) from the oil suction pipe (2, **Figure 9**).
   Suction can be done with hand pump (1, **Figure 10**).
2. Push the hose of hand pump (1, **Figure 10**) through the suction pipe (2, **Figure 9**) and suck the fluid off.
3. Un-screw the oil dipstick (3, **Figure 9**).
4. Add oil.
5. Screw in the oil dipstick (3, **Figure 9**).

NOTICE

The used oil is to be handled as special waste that pollute the environment.
For the safe disposal of used oil, take all the measures required by the relevant local rules and legislations.

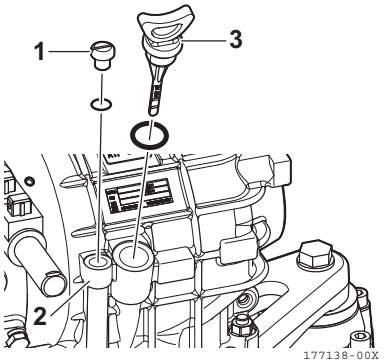


Figure 9

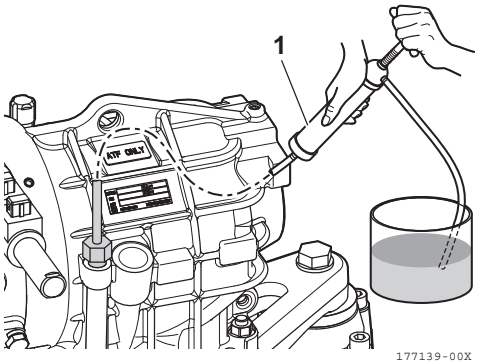


Figure 10

Every 250 Hours or 1 Year

Perform the following maintenance every 250 hours or 1 year of operation.

- **Draining and replacing lubricating oil**
- **Changing lubricating oil filter**
- **Cleaning cooling water suction hole (while lifting the boat)**
- **Lubricating and re-tightening the nut of the propeller shaft (while lifting the boat)**
- **Checking the hose fitting for proper tightness**
- **Checking the ground circuit for looseness, damage, or corrosion**
- **Checking the electrical system for looseness, damage, or corrosion**
- **Inspecting shaft seal of input flange**
- **Inspecting shaft seal of output shaft**
- **Changing the position of output shaft seal**
- **Inspecting remote control device**
- **Inspecting and replacing anode (while lifting the boat)**
- **Repairing case coating**
- **Checking the negative brake**
- **Inspecting installation/water sealing condition**

■ Draining and replacing lubricating oil

See After Initial 50 Hours of Operation on page 59.

■ Changing lubricating oil filter

⚠ CAUTION

- **Make sure fluids are contained during inspection, maintenance, tests, adjustments and repairs of the product. Prepare a container suited to collect the fluid before disassembling a component containing fluids. Dispose of all fluids and filter cartridge in compliance with the current local laws and rules.**
- **Oil and hot components can cause personal injuries. Avoid the contact with skin.**

1. Using the 6 mm hex key, loosen the capscrew (1, **Figure 11**) of the filter cartridge cover assembly (2, **Figure 11**).

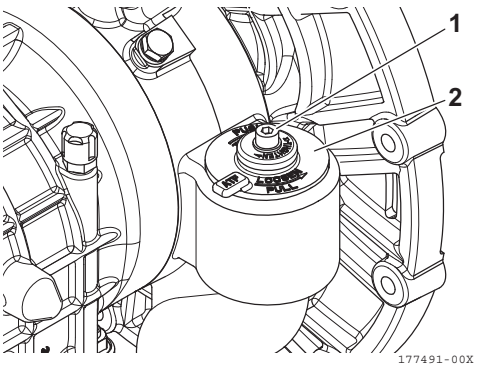


Figure 11

2. Remove the filter assembly (1, **Figure 12**) from the gearbox.

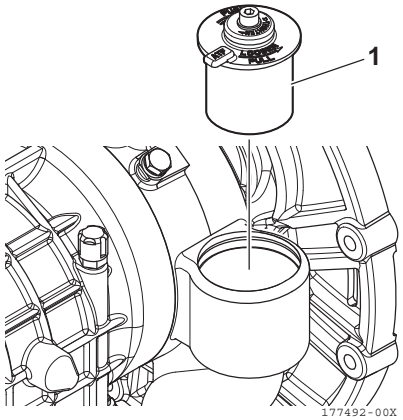


Figure 12

3. Drain lubricating oil. *See After Initial 50 Hours of Operation on page 59*.
4. Remove the filter cartridge (1, **Figure 13**) from the cover assembly (2, **Figure 13**).

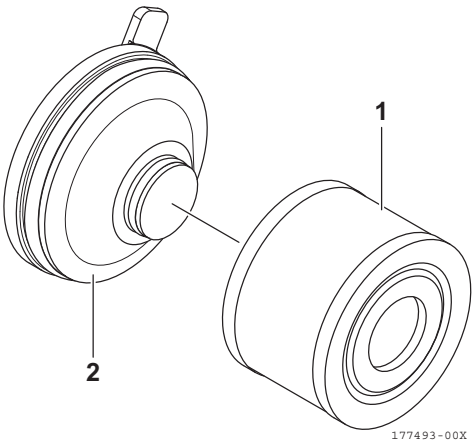


Figure 13

5. Remove the O-ring (1, **Figure 14**) from the cover assembly (2, **Figure 14**).

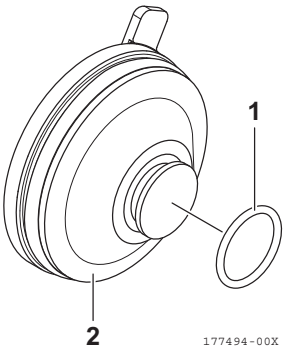


Figure 14

6. If needed, loosen the cap screw (1, **Figure 15**) by few turns for easier removal of O-ring (2, **Figure 15**).

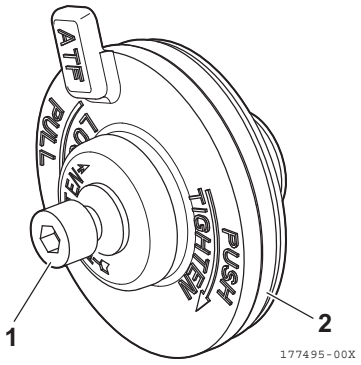


Figure 15

7. Remove the O-ring (1, **Figure 16**) from the cover assembly (2, **Figure 16**).

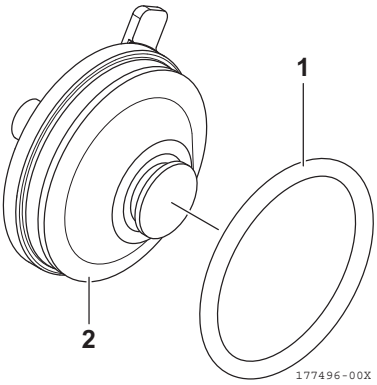


Figure 16

Note: Discard used O-rings. Do not reuse them.

8. If the lower leg plug is removed for draining lubricating oil, insert the plug.

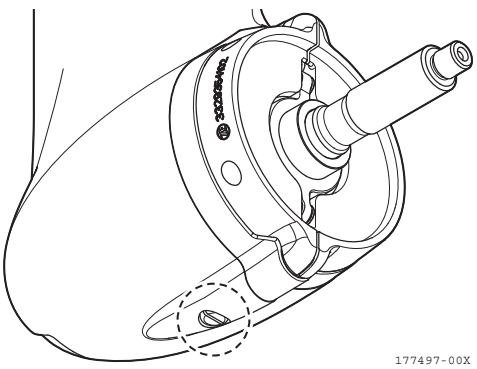


Figure 17

9. Fill lubricating oil through the oil filter cartridge seat (1, **Figure 18**) as specified in the *Lubricating Oil Chart on page 20*.

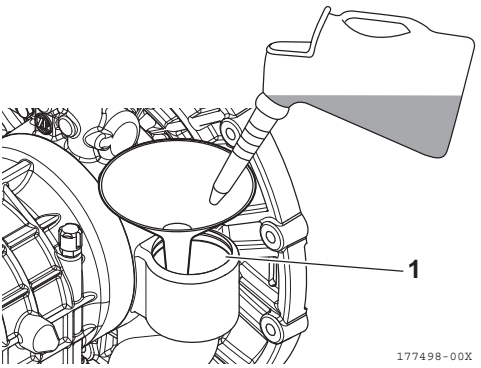


Figure 18

10. Lightly apply lubricating oil to the new O-ring (1, **Figure 19**), and install it in the provided slot on the cover assembly (2, **Figure 19**).

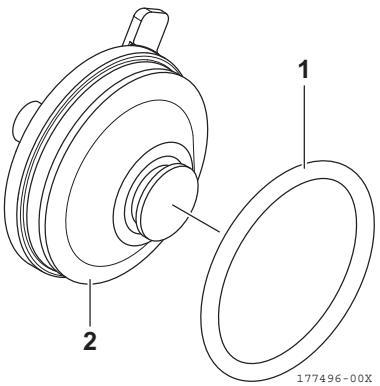


Figure 19

11. Lightly apply lubricating oil to the new O-ring (1, **Figure 20**), and install it in the provided slot on the cover assembly (2, **Figure 20**).

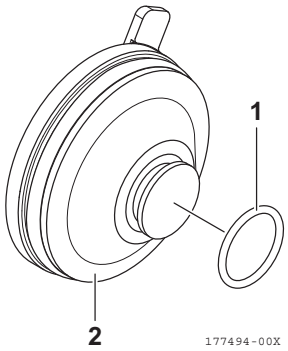


Figure 20

12. Install the new filter cartridge (1, **Figure 21**) to the cover assembly (2, **Figure 21**).

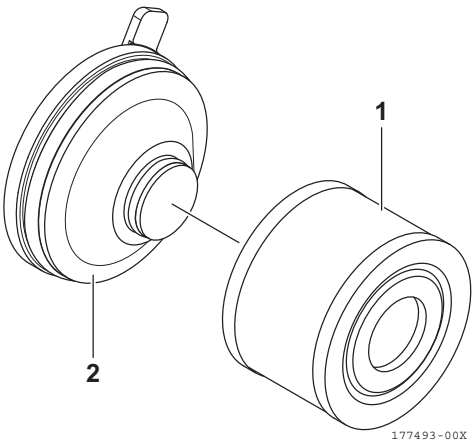


Figure 21

13. Install the oil filter assembly (1, **Figure 22**) to the gear box.

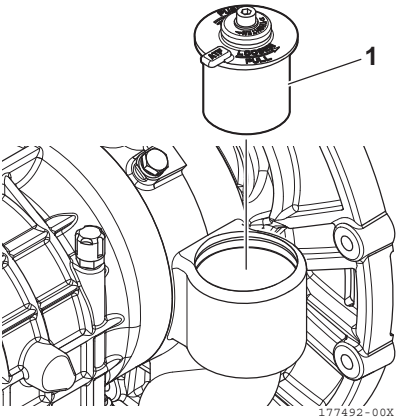


Figure 22

14. Tighten the cap screw (1, **Figure 23**) to the tightening torque of 5 N·m to 8 N·m (3.6 lbf to 5.9 lbf).

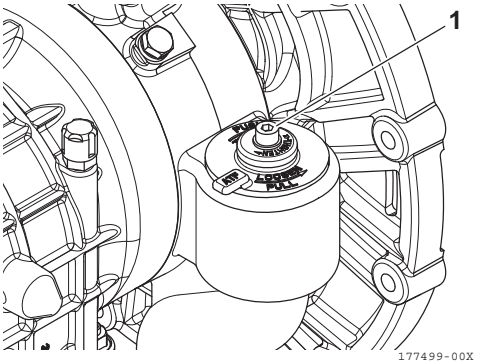


Figure 23

⚠ CAUTION

If the filter assembly is not properly installed, lubricating oil may foam or leak, resulting in decreased efficiency and damage to the transmission.

15. Install the new O-ring (2, **Figure 24**) to the plug (1, **Figure 24**).

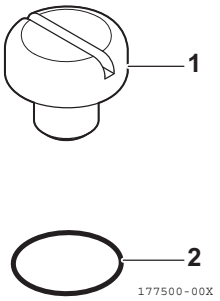


Figure 24

16. Install the plug (1, **Figure 25**) with the new O-ring (2, **Figure 25**). Tighten the plug (1, **Figure 25**) to the torque of 10 Nm using the suitable torque wrench.

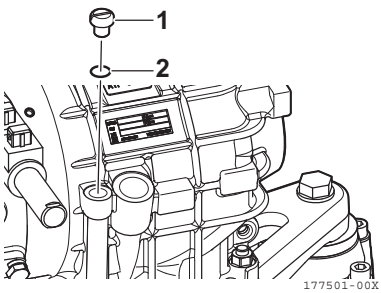


Figure 25

17. Install the dipstick (1, **Figure 26**) with the new O-ring.

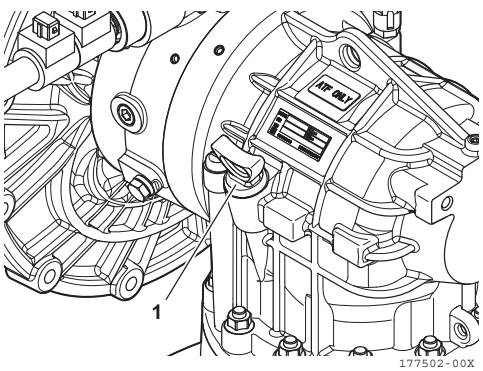


Figure 26

18. When replacement of the lubricating oil filter is complete, check the oil level and make sure it is sufficient. For details, see *Refilling with Lubricating Oil on page 20*.

■ Cleaning cooling water suction hole (while lifting the boat)

See Removing Deposits from the Lower Gear Case on page 58.

■ Lubricating and re-tightening the nut of the propeller shaft (while lifting the boat)

Note: For SD110/SD150, only folding propeller is allowed.

For details of propeller installation, refer to the propeller installation manual provided by the manufacturer.

■ Checking the hose fitting for proper tightness

See ENGINE COOLING WATER on page 33.

■ Checking the ground circuit for looseness, damage, or corrosion

Consult your authorized YANMAR marine dealer or distributor for procedure.

■ Checking the electrical system for looseness, damage, or corrosion

Consult your authorized YANMAR marine dealer or distributor for procedure.

■ Inspecting shaft seal of input shaft

Consult your authorized YANMAR marine dealer or distributor for procedure.

■ Inspecting shaft seal of output shaft

Consult your authorized YANMAR marine dealer or distributor for procedure.

■ Changing the position of output shaft seal

Consult your authorized YANMAR marine dealer or distributor for procedure.

■ Inspecting remote control device

See REMOTE CONTROL DEVICE CHECK on page 29.

■ Inspecting and replacing anode (while lifting the boat)

Disassembly

1. Using the hex key, loosen and remove the fixing screws (1, 2, **Figure 27**) of the anodes (1, 2, **Figure 28**).

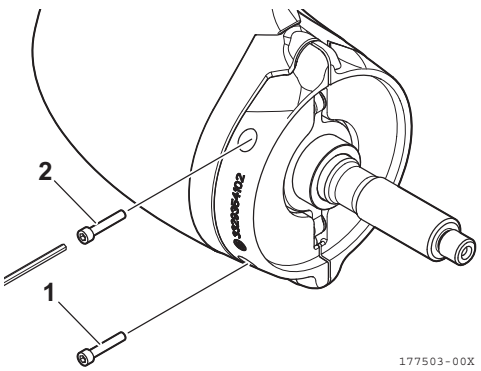


Figure 27

Note: Discard used screws, do not reuse them.

2. Remove the anodes (1, 2, **Figure 28**). Clean the seat of the screws and anodes, removing any residue.

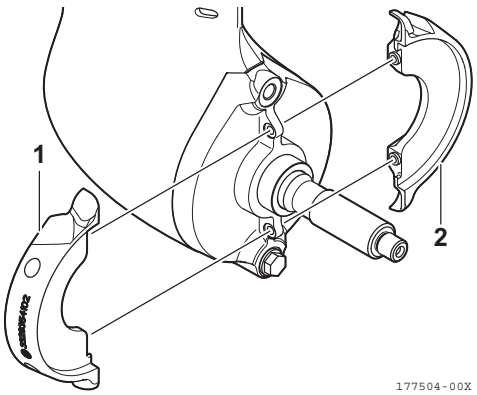


Figure 28

Assembly

1. Assemble the anodes (1, 2, **Figure 29**) on the propeller shaft support (3, **Figure 29**).

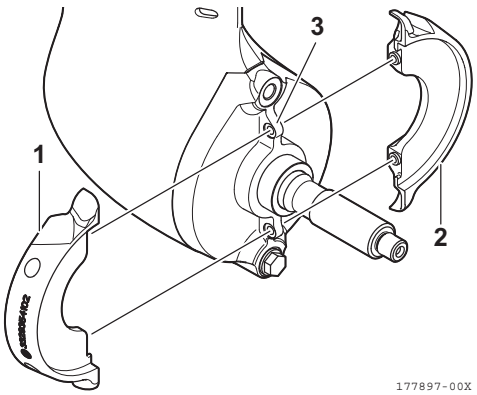


Figure 29

*Note: Pay attention to the direction of assembly of the anodes (1, 2, **Figure 29**). Assemble anode (1, **Figure 29**) on the left side and anode (2, **Figure 29**) on the right.*

2. Using a torque wrench with the hex key, tighten the fixing screws (1, 2, **Figure 30**) of the anodes to a torque of 9 Nm.

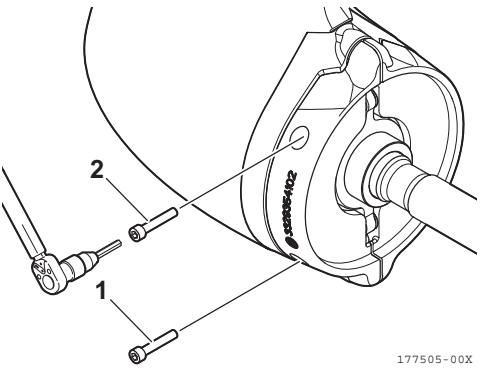


Figure 30

⚠ CAUTION

Use only new YANMAR genuine screws pre-treated with threadlocker.

■ Repairing case coating

See Repairing Damaged Coating on page 58.

■ Checking the negative brake

Consult your authorized YANMAR marine dealer or distributor.

■ Inspecting installation/water sealing condition

Rubber diaphragms

The rubber diaphragms of the saildrive are important parts for the hull and crew safety. Since rubber degenerates during use, be sure to inspect them when any irregularities are shown, or water ingress is signaled. The vessel must be lifted onto a block for this procedure. To replace, consult your YANMAR marine dealer.

⚠ WARNING

Do not re-use the clamp ring.

Every 750 Hours

Perform the following maintenance every 7500 hours of operation.

- **Replacing shaft seal of output shaft**

■ Replacing shaft seal of output shaft

Consult your authorized YANMAR marine dealer or distributor.

Every 2000 Hours or 2 Years

Perform the following maintenance every 2000 hours or 2 years of operation.

- **Replacing shaft seal of output shaft**
- **Inspecting and/or replacing the flexible mount**

■ Replacing shaft seal of output shaft

Consult your authorized YANMAR marine dealer or distributor.

■ Inspecting and/or replacing the flexible mount

Consult your authorized YANMAR marine dealer or distributor.

Every 7 Years

Perform the following maintenance every 7 years of operation.

- **Replacing rubber diaphragm, clamp ring**
- **Replacing the flexible mount**

■ Replacing rubber diaphragm, clamp ring

Consult your authorized YANMAR marine dealer or distributor.

■ Replacing the flexible mount

Consult your authorized YANMAR marine dealer or distributor.

TROUBLESHOOTING

Before performing any troubleshooting procedures within this section, review the *SAFETY* section on page *3*.

If a problem occurs, stop the engine immediately. Refer to the Symptom column in the Troubleshooting Chart to identify the problem.

TROUBLESHOOTING

First of all check, whether all items of operating instructions have been complied with. The following assists you in troubleshooting.

■ SD25, SD60, SD110/SD150

Symptom	Possibly caused by	Remedy
1. High oil temperature	• Oil level high during operation • Oil level low • No water in cooling system • Unknown	• Pump out oil to max. mark on dipstick • Add oil • Check cooling system and repair • Consult authorized YANMAR marine distributor or dealer
2. Oil on saildrive housing	• Loose screws • Loose screw connections • Loose dipstick • Oil level high during operation • Unknown	• Tighten to specification • Tighten, replace • Tighten, replace • Pump out oil to max. mark on dipstick • Consult authorized YANMAR marine distributor or dealer
3. Shifts hard	• Selector control • Linkage • Unknown	• Consult authorized YANMAR marine distributor or dealer • Adjust • Consult authorized YANMAR marine distributor or dealer
4. Slow engagement	• Selector control • Linkage • Unknown	• Consult authorized YANMAR marine distributor or dealer • Adjust • Consult authorized YANMAR marine distributor or dealer
5. No movement of the boat	• Selector control • Improper selector position • Propeller missing • Propeller shaft broken • Saildrive malfunction • Engine malfunction	• Consult service station • Adjust • Replace • Consult authorized YANMAR marine distributor or dealer • Consult authorized YANMAR marine distributor or dealer • Consult authorized YANMAR marine distributor or dealer

EMEGENCY PROCEDURE (SD110/SD150)

Use of safety device in case of power supply failure.

1. Locate the solenoid to be activated.

   1- Solenoid valve for ahead

   2- Solenoid valve for astern

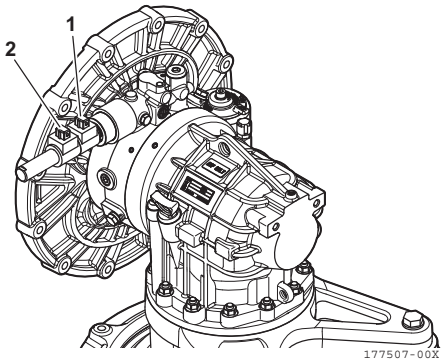


Figure 6

2. Unscrew and remove the cover (1, **Figure 7**).

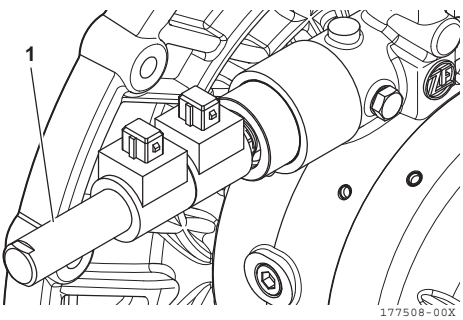


Figure 7

To activate solenoid for ahead manually from the NEUTRAL position, push and turn the red knob.

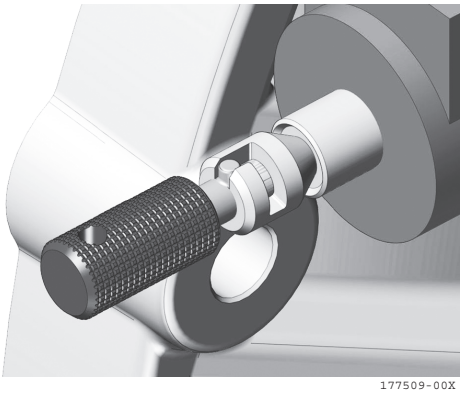


Figure 8 No solenoid activated (neutral)

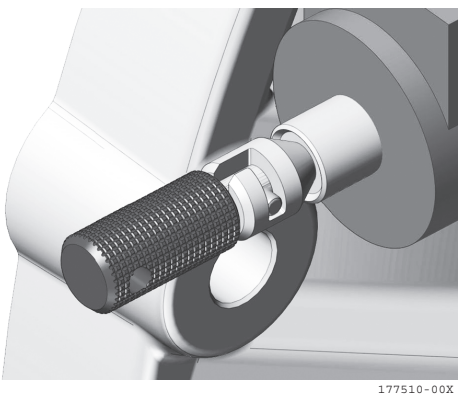


Figure 9 Solenoid for ahead activated

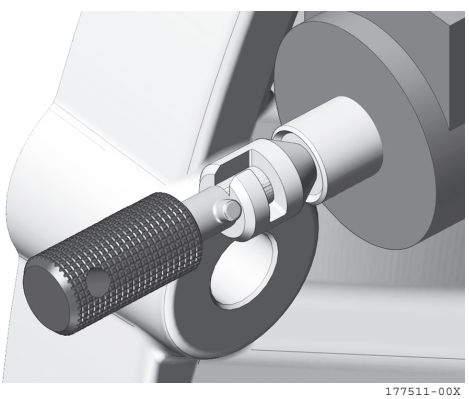


Figure 10 Solenoid for aster activated

3. To activate solenoid for astern manually from the NEUTRAL position, pull out and turn the red knob.
4. Refit and tighten the cover to a maximum torque of 7 N·m.

SPECIFICATIONS

<table>
<tr><th colspan="2">Model</th><th colspan="2">SD25
Standard, Extension</th><th colspan="2">SD60-5
Standard, Extension</th><th colspan="2">SD60-4
Standard, Extension</th></tr>
<tr><td colspan="2">Clutch type</td><td colspan="2">Mechanical dog clutch</td><td colspan="4">Mechanical multiple friction disc clutch</td></tr>
<tr><td rowspan="2">Direction of rotation</td><td>Input shaft</td><td colspan="6">Counterclockwise viewed from stern</td></tr>
<tr><td>Propeller shaft</td><td colspan="2">Counterclockwise viewed from stern</td><td colspan="4">Counterclockwise or clockwise viewed from stern</td></tr>
<tr><td rowspan="2">Reduction ratio</td><td>Ahead</td><td>2.64</td><td>2.64</td><td>2.23</td><td>2.49</td><td>2.23</td><td>2.49</td></tr>
<tr><td>Astern</td><td>2.64</td><td>2.64</td><td>2.23</td><td>2.49</td><td>2.23</td><td>2.49</td></tr>
<tr><td colspan="2">Propeller speed/engine speed (at maximum output)</td><td>1364/3600 min^{-1}</td><td>1212/3200 min^{-1}</td><td>1345/3000 min^{-1}</td><td>1205/3000 min^{-1}</td><td>1425/3200 min^{-1}</td><td>1285/3200 min^{-1}</td></tr>
<tr><td colspan="2">Lubrication system</td><td colspan="6">Oil bath type</td></tr>
<tr><td rowspan="2">Lubrication oil capacity</td><td>Standard unit</td><td colspan="2">2.2 L (2.3 qt)</td><td colspan="4">2.8 L (3.0 qt)</td></tr>
<tr><td>Extended leg</td><td colspan="2">2.5 L (2.6 qt)
with extension 80 mm</td><td colspan="4">3.0 L (3.2 qt)
with extension 75 mm</td></tr>
<tr><td rowspan="2">Dry weight</td><td>Standard unit</td><td colspan="2">30 kg (66.1 lb)</td><td colspan="2">43.6 kg (96.1 lb)</td><td colspan="2">45.1 kg (99.4 lb)</td></tr>
<tr><td>Extended leg</td><td colspan="2">33.4 kg (73.6 lb)</td><td colspan="2">48.2 kg (106.3 lb)</td><td colspan="2">49.7 kg (109.6 lb)</td></tr>
<tr><td colspan="2">Remote control device</td><td>Control head cable</td><td colspan="6">Single control lever, travel 70 mm (2.75 in.)
MORSE 33C (or equivalent)</td></tr>
<tr><td colspan="2">Negative brake</td><td colspan="6">–</td></tr>
<tr><td colspan="2" rowspan="3">Applicable engine model (maximum output at crankshaft)
kW (hp) / min^{-1}</td><td>1GM10C:
6.7 (9.1) / 3600</td><td rowspan="3">3YM30AE:
21.3 (29.0) / 3200</td><td colspan="2">3JH40:
29.4 (40.0) / 3000</td><td colspan="2">4JH80:
58.8 (80) / 3200</td></tr>
<tr><td>2YM15:
10.0 (13.6) / 3600</td><td colspan="2">4JH45:
33.1 (45.0) / 3000</td><td colspan="2" rowspan="2">–</td></tr>
<tr><td>3YM20:
15.3 (20.8) / 3600</td><td colspan="2">4JH57:
41.9 (57.0) / 3000</td></tr>
</table>

<table>
<tr><th colspan="2">Model</th><th colspan="2">SD110
Standard, Extension</th><th colspan="2">SD150
Standard, Extension</th></tr>
<tr><td colspan="2">Clutch type</td><td colspan="4">Hydraulically actuated multi-disc clutch</td></tr>
<tr><td rowspan="2">Direction of rotation</td><td>Input shaft</td><td colspan="4">Counterclockwise viewed from stern</td></tr>
<tr><td>Propeller shaft</td><td colspan="4">Counter clock wise viewed from stern</td></tr>
<tr><td rowspan="2">Reduction ratio</td><td>Ahead</td><td colspan="2">2.51</td><td colspan="2">2.51</td></tr>
<tr><td>Astern</td><td colspan="2">2.51</td><td colspan="2">2.51</td></tr>
<tr><td colspan="2">Propeller speed/engine speed (at maximum output)</td><td>1275/3200 min^{-1}</td><td>1395/3500 min^{-1}</td><td>1275/3200 min^{-1}</td><td>1395/3500 min^{-1}</td></tr>
<tr><td colspan="2">Lubrication system</td><td colspan="4">Oil bath type</td></tr>
<tr><td rowspan="2">Lubrication oil capacity</td><td>Standard unit</td><td colspan="4">5.0 L</td></tr>
<tr><td>Extended leg</td><td colspan="4">5.2 L
with extension (82 mm)</td></tr>
<tr><td rowspan="2">Dry weight</td><td>Standard unit</td><td colspan="4">105 kg (231 lb)</td></tr>
<tr><td>Extended leg</td><td colspan="4">109 kg (240 lb)</td></tr>
<tr><td>Remote control device</td><td>Control head cable</td><td colspan="4">Electrical shift</td></tr>
<tr><td colspan="2">Negative brake</td><td colspan="4">Multi-disc brake</td></tr>
<tr><td colspan="2" rowspan="2">Applicable engine model (maximum output at crankshaft)
kW (hp) / min^{-1}</td><td colspan="2">4JH80:
58.8 (80) / 3200</td><td colspan="2" rowspan="2">4LV150
110 (150) / 3500</td></tr>
<tr><td colspan="2">4JH110
80.9 (110) / 3200</td></tr>
</table>