

# OWNER'S MANUAL

**AXOPAR 37 XC** 







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## 1. Introduction

## 1.1. Purpose of this manual

This instruction manual contains important information and instructions for properly using your Axopar boat.

In this owner's manual you will find important information that will help you handle and maintain your boat in a safe and easy manner. Furthermore, the manual contains detailed information about the boat and the systems installed, and general information about handling and taking care of your boat.

We advise you to read the manual carefully and familiarize yourself with your boat before you start to use it. This owner's manual is not a substitute for boating safety skills or good seamanship. If this is your first boat or if this boat type is new to you, we ask for your own comfort and safety that you ensure you can handle the boat before you set out for the first time. Your boat dealer, local boat clubs and national motorboat or yacht federations will gladly inform you about local sea schools or recommend approved instructors.

You should ensure that the anticipated wind and wave conditions correspond to the design category of your boat, and that you and your crew are able to handle the boat in these conditions.

This owner's manual is not a detailed maintenance or troubleshooting guide. If problems occur, you should contact the boat manufacturer or their representative. When you are in need of maintenance or repair and alteration work, you should always turn to competent and trained workshops. Changes that can affect the boat's security features must be assessed, carried out and documented by competent professionals. The boat manufacturer cannot be held responsible for unauthorized modifications. Every change to the boat's center of gravity (from highly mounted heavy equipment or a new engine type etc.) will significantly affect the stability, trim and performance of the boat.

Keep this manual in a safe place and pass it on to the new owner if you sell your boat. If the manual is mislaid or destroyed, a copy can be ordered from your dealer.

See the purchase agreement or order for the scope of your purchase. In case something does not work satisfactorily with your boat or its equipment, you can check the service documents for possible service and repair measures. In the event of uncertainty, you should always contact your dealer.

## 1.2. Safety symbols

This instruction manual contains danger, warning, caution and notice statements informing the user or authorized service representatives of any potential harm to the product or person.

Hazard is defined as a source of potential injury to a person.

All abnormal use is forbidden, including disregarding information on safety.

**▲ DANGER** 

**Danger** indicates an imminently hazardous situation which, if not avoided, **will** result in death or serious injury.

**⚠ WARNING** 

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

**△ CAUTION** 

**Caution** indicates a potentially hazardous situation which, if not avoided, **might** result in minor or moderate injury.



NOTICE

**Notice** indicates a potential situation which, if not avoided, might result in **property damage** or in an **undesirable result or state**.



Note calls attention to information that clarifies or simplifies a procedure.

### 1.3. Document conventions

#### Units

This manual uses SI units in accordance with ISO 1000. In some cases, other units may have been used alongside.

An exception is the wind velocity, which in the Recreational Boat Directive is given in the Beaufort Scale.

#### **Terminology**

In this manual, the right side of the hull is referred to as starboard (STB) and the left side as port.

## 1.4. Copyright

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This Owner's Manual is protected by copyright controlled by Axopar Boats. This manual cannot be wholly or partly reproduced without prior written authorization by Axopar Boats. This material also contains confidential information, which may not be disclosed to others without the prior written consent of Axopar Boats.

### 1.5. Disclaimer

- The material in this manual is for information purposes only.
- Axopar Boats reserves the right to change the products without prior notice to improve reliability, function, design or other characteristics of the products. Axopar Boats assumes no liability for any damages, losses, costs or expenses arising out of or relating to the use of this manual or the products described herein.
- Axopar Boats makes no representations and warranties with respect to this manual, either
  express or implied, including, but not limited to, the implied warranties of merchantability and
  fitness for a particular purpose.

## 1.6. Warranty

The Limited Warranty for the boat and the relevant contact information are enclosed as a separate document.

For any warranty claims, please contact your Axopar dealer mentioned on the cover page.



# 2. Safety

#### **△ WARNING**

Necessary safety equipment is required on the boat at all times.

The boat owner is responsible for making sure that all safety equipment, eg. fire extinguishers, meet the rules and regulations of the local authorities.

#### **△ WARNING**

Overloading the boat can damage the engine, even when shut off.

When loading the boat, never exceed the maximum recommended load of the boat. Always load the boat carefully and distribute loads appropriately to maintain design trim. Avoid placing heavy equipment or material high up in the boat.

#### **⚠ WARNING**

Do not exceed the maximum number of persons allowed in the boat. The total weight of the persons on board and their personal luggage must never exceed the maximum load of the boat.

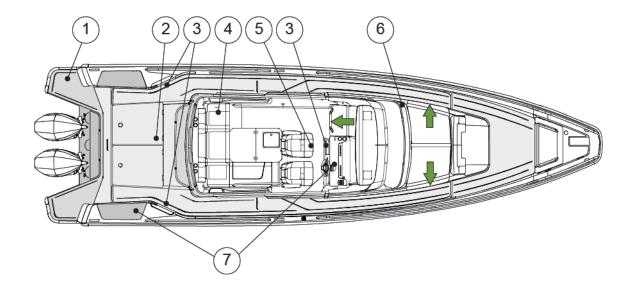
When out on the water, always use the seats intended for passengers.

### **⚠ WARNING**

The specified tank capacity is not necessarily fully available, depending on the trim and load on board. The tank should always be kept at least 20% full.

The liquids in the built-in tanks are not included in the maximum load shown on the builder's plate.

# 2.1. Safety diagram





- (1) Swim ladder
- (2) Life raft storage
- (3) Fire extinguisher
- (4) Fire blanket
- (5) Main switch
- (6) Shut-off valve for LPG system
- (7) Gas cylinder

## 2.2. Fire protection and control

The most common fire sources are the engine and the stove. If there is a fire in your boat, it may result in an explosion.

Fire usually spreads very fast - be quick to extinguish the fire.

Fire should be put down by extinguishing, that is, depriving the fire of oxygen. Using water in fuel-based fires does not help.

#### **△ WARNING**

If the fire reaches the fuel containers, an explosion may occur and cause a large area around the boat to burn.

- Keep the bilge clean and check it regularly for fuel and gas fumes or fuel and oil leaks.
- Do not hang curtains or other flammable material near or above the LPG cooker or other equipment with naked flames.
- Never leave the boat unattended when the cooker or heater is switched on.
- Never refuel or replace gas containers when the engines are running.
- Never smoke when handling fuel or gas.
- Never block evacuation routes or emergency exits.
- Never block access to safety equipment such as fuel valves or main power switches.
- Never block access to fire extinguishers, visible or concealed.
- Never modify the boat's systems (especially electrical, fuel or gas systems).

In case of fire, use the fire extinguisher on your boat. The exact location can be found in the **safety diagram**.

If the fire starts to get out of control, leave the burning boat to save lives.

## 2.2.1. Fire control equipment

This boat must be fitted with hand-held fire extinguishers with the following output and locations:



- The fire extinguisher must have a fire rating of at least 13A/89B (2 kg).
- The total fire rating of a fire extinguisher (or several) must be at least 8A/68B and for an individual extinguisher at least 5A/34B.
- Fire extinguishers are located in the right side of the aft seats and STB side of the aft deck.
- · A fire blanket should be kept beside the LPG cooker.
- Check the correct locations of the equipment in the safety diagram.

Kindly note that the fire extinguishers are not included in the manufacturer's delivery.

### 2.2.2. Boat owners' and users' responsibilities

It is the boat owner's and users' responsibility to ensure that:

- The fire control equipment is accessible at all times.
- The fire extinguishing equipment is checked regularly at the intervals specified for the equipment.
- Equipment with expired date is replaced immediately with equivalent or better equipment.
- The crew and guests are advised of the location of and instructions for use of fire control equipment, and the location of evacuation routes and emergency exits.

### 2.2.3. Checklist: Fire in the engine

- Stop the engine.
- Steer the boat up against the wind, if possible.
- · Make sure all passengers have life jackets.
- If necessary:
  - Evacuate the passengers.
  - Call for sea rescue.
- Shut off fuel, LPG and main power switches.
- · Put out possible smoldering fires with water.

#### 2.2.4. Checklist: After fire

- · Open doors and windows for better ventilation.
- Make sure that the fire extinguishing equipment is refilled or replaced after use.

### 2.3. Carbon monoxide

There is a carbon monoxide monitor system in the boat. The system alarm is located in the main switch panel.

For the exact location of the CO monitor, see the figure Safety diagram.



- With regular intervals, check that the monitor system is functioning.
- · When the boat is in use, do not turn the system switch off.

#### **▲ DANGER**

Carbon monoxide (CO) is colorless, odorless, tasteless, and extremely dangerous gas.

All engines, generators, and fuel burning appliances produce CO as exhaust.

Prolonged exposure to low concentrations or very quick exposure to high concentrations will cause brain damage or death.

Open all doors, curtains, windows, and hatches to let fresh air circulate when running the engine or generator or burning any fuel while the boat is anchored, moored or docked.

Symptoms of carbon monoxide poisoning are dizziness, ears ringing, headache, nausea and unconsciousness. A poisoning victim's skin often turns cherry red.

Because carbon monoxide gas (CO) is odorless, colorless and tasteless, it is unlikely to be noticed until a person is affected.

- If CO poisoning is suspected, have the victim breath fresh air deeply.
- If breathing stops, resuscitate.
- A victim often revives, but then relapses because organs are damaged by the lack of oxygen.
   Seek immediate medical attention.

Dangerous concentrations of carbon monoxide are present if:

- · the engine or generator exhaust systems leak
- insufficient fresh air is circulating where people are present
- fumes move from the rear of the boat into the cockpit and cabin area.

To minimize the danger of CO accumulation when the engine and generator are running or when using burning fuel applications:

- Be sure to have sufficient ventilation when using canvas or window-type side curtains when underway, anchored, moored or docked.
- If the convertible top is installed, operate with the forward hatch open and leave the cabin door open.
- Operate all burning fuel appliances, such as charcoal, propane, LPG, CNG or alcohol cooking devices, in areas where fresh air can circulate.

Do not use such devices where there is no noticeable air movement, especially in the cabin, when anchored, moored or docked.

- Do not idle the engine without moving the boat for more than 15 minutes at a time.
- · Inspect the exhaust system regularly.

High levels of carbon monoxide may accumulate in the following ways:

- · Blocking hull exhausts while operating at slow speed or if exhausts are submerged.
- · Using canvas curtains.
- · Winds blowing exhaust toward boat occupants.
- Operating engine or generator in a confined space.
- Operating with the bow high.



### 2.4. Life raft

Your boat is not equipped with a life raft by the manufacturer.

#### Storing a life raft

If you decide to acquire a life raft for your boat, we recommend that you stow it to the aft of the boat, so that it is easily accessible in case of emergency.

### Using the life raft

The life raft shall be tied to the stern of the boat and prepared for use.

In an emergency, the life raft is easiest and safest to board from the swimming deck. Switch off the engine before using the life raft.

Follow the life raft manufacturer's instructions.



## 3. Product overview

## 3.1. Purpose of use

The boat is a recreational boat, thus not suitable for professional use.

## 3.2. Identification

Each boat is supplied with a unique identification code, containing 14 characters and a hyphen.

The height of the code text is 6 mm and it is applied to the starboard side of the stern.

Example: FI – AXO7A001F920	Data
FI	Country of manufacturer: Finland
-	Hyphen
AXO	Manufacturer: Axopar
7A	Boat model:  • A - S Spyder  • B - ST Sun Top  • C - XC Cross Cabin
001	Boat number
F	Month of manufacture:  • A = January  • B = February  • C = March  • etc.
9	Last digit of the manufacturing year
20	Model year

# 3.3. Builder's plate

The builder's plate is always fitted close to the steering position in the boat.

Eurofins Expert Services Oy has inspected that the boat fulfils the Recreational Boat Directive and related standards' requirements.

Boat type	Boat model
Design category	CE classification



Max. load	Buoyancy
	Total weight of persons including personal luggage (excluding tank contents)
Max. no	Maximum number of persons on board

### 3.4. CE certification

This boat is classified to CE categories B and C.

The category is determined according to the maximum number of persons allowed onboard.

The CE certification indicates that a boat is designed and built in such a way that it retains its stability and buoyancy in given circumstances and meets other important requirements that are characteristic of the category in question. One of these requirements is that the boat must be easy to maneuver.

The CE categories classification also signifies that a boat is designed and constructed to withstand the following parameters in respect of stability, buoyancy, and other relevant essential requirements stated.

Category	Description
A. Ocean	The boat is designed for extended voyages, where conditions experienced may exceed wind force 8 on Beaufort Scale and include significant wave heights of at least 4 meters.  Under such conditions, the boat must be largely self-sufficient.
B. Offshore	The boat is designed for offshore voyages, where conditions up to and including wind force 8 on Beaufort Scale and significant wave heights up to and including 4 meters may be experienced.
C. Inshore	The boat is designed for voyages in coastal waters, large bays, estuaries, lakes and rivers, where conditions up to and including wind force 6 Beaufort Scale and significant wave heights up to and including 2 m may be experienced.

## 3.5. Conformity

Safety		
Basic data	EN ISO 8666:2018	
Hull identification	ISO 10087:2006	
Builder's plate	RDC ANNEX I: A 2.2	
Owner's manual	EN ISO 10240:2004/A1:2015	
Preventing falling overboard	EN ISO 15085:2003/A2:2018	
Life raft stowage	RSG Guidelines	
Escape	EN ISO 9094:2017	
Anchoring and towing	EN ISO 15084:2018	
Running lights	1972 COLREG	



Emissions control	EN ISO 8099-1:2018
Installations	
Engines and engine spaces	-
Fuel system	EN ISO 10088:2017 EN ISO 11105:2017
Electrical system	EN ISO 10133:2017 EN ISO 13297:2018
Steering system	EN ISO 10592:2017
Gas systems	-
Fire protection	EN ISO 9094:2017
Dimensioning	
Structure	ISO 12215-5:2018 ISO 12215-6:2018
Hydrostatics	
Stability and freeboard	EN ISO 12217-1:2017
Buoyancy and floatation	EN ISO 12217-1:2017
Manufacturer's maximum recommended load	EN ISO 14946:2001/AC 2005
Openings in hull, deck and superstructure	EN ISO 9093-1:2018, EN ISO 12216:2018
Flooding	EN ISO 11812:2018, EN ISO 15083:2018
Handling characteristics	
Handling characteristics	ISO 11592-2:2019
Visibility from the steering position	EN ISO 11591:2011
Emissions	
Exhaust emissions of engines	-
Noise emissions	-

# 3.6. Dimensions and weight

#### **Dimensions**

Dimension	SI units	US units
Hull length (LH)	11.5 m	37 ft 9 in



Dimension	SI units	US units
Overall length (LMAX) (excluding engine)	11.5 m	37 ft 9 in
Hull beam (BH)	3.4 m	10 ft 10 in
Draught at max. load (excluding engine)	0.9 m	2 ft 8 in
Height measured from waterline at light load	3.1 m	10 ft 5 in (WITH LIGHT MAST 86 cm)

#### **Power**

	SI units	US units
Maximum recommended engine power	2 x 261 kW	700 hp

## Weight and loading

	SI units	US units
Hull weight (excluding engine)	2383 kg	5254 lb

	Category B	Category C
Maximum number of persons	10	12
Default weights:		
Adult: 75 kg		
• Child: 37.5 kg		

	Category B		Category C	
	SI units	US units	SI units	US units
Total weight of all persons	750 kg	1653 lb	900 kg	1984 lb
Weight of unloaded boat with maximum weight outb.engines	4448 kg	9806 lb	4697 kg	10355 lb
Maximum recommended load	2247 kg	4954 lb	2397 kg	5285 lb
Boat weight at maximum load	6695 kg	14760 lb	7094 kg	15640 lb



#### of which

	SI units	US units
Maximum recommended engine weight	750 kg	1653 lb
Personal luggage	200 kg	441 lb
Fresh water	95 kg	209 lb
Septic water	80 kg	176 lb
Fuel	556 kg	1226 lb
Optional equipment and fittings	566 kg	1248 lb
Life raft weight	0 kg	0 lb
Total weight of fuel, water and other liquids	1297 kg	2859 lb
Mass on trailer	4928 kg	10864 lb

#### Tank capacity

	SI units	US units
Fuel tank	730 I	193 gal
Fresh water tank	95 I	25 gal
Septic tank	80 I	21 gal

The boat's stability assessment is based on maximum load conditions.

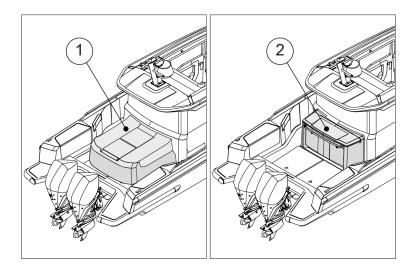
The maximum recommended load only contains the weight components mentioned above.

## 3.7. Boat layout

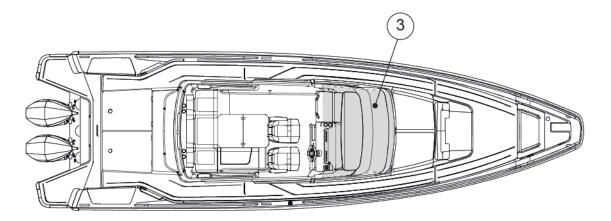
The boat has several deck options. The layout of the equipment and the technical components may vary depending on the chosen accessory alternatives. Boat is equipped with open aft deck in standard level.

The boat can be equipped with a aft cabin (1) and a wetbar (2).





Front cabin of the boat may be equipped with gullwing doors (3).





# 4. Product description

## 4.1. Stability and buoyancy

Pay attention to stability and buoyancy of your boat.

All weight dispositions (for example installing a fishing tower, radar or furling mast, and engine replacement) can have a significant impact on the stability, trim, and performance of your boat.

- The bilge water level should be kept at a minimum.
- The stability of your boat is compromised if any weight is placed in a high position.

In stormy weather, all hatches, compartments and doors should be kept closed to minimize the risk of flooding.

The stability can be diminished when towing or lifting heavy objects using the davit or jib crane. Breaking waves represent a significant danger to stability.

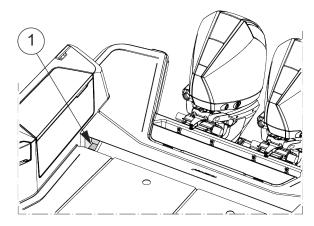


To avoid the risk of flooding, always keep sea valves closed when not in use (for example, the sea valve for the toilet's flushing water).

### 4.1.1. Self-draining systems

The Axopar boat is equipped with self-draining systems for the forward and aft cockpits, which include drain holes.

There are drain holes for water in both aft corners of the deck. The openings are directly connected to the sea. The deck of the boat has been designed to allow the water to drain straight into the sea via the water gullies.



In addition to rainwater, the drain holes are intended to drain water ending up on the deck through splashing or from breaking waves.

The drain holes must be open at all times and the holes regularly cleaned by removing any accumulated debris to prevent clogging.

The system is built so as to drain the water from the deck in normal use. Do not close the taps when using the boat or when the boat is attached to the dock.



There is a recess under front seats which is separately drained. There are two drains on aft corners of the recess. Recess drains via sea-cokes which are located on hull sides of the boat. Access to valves for the sea-cocks are from inspection hatch next to drains.

#### **△ CAUTION**

The self-emptying open space is meant for the removal of such water that ends up on the deck through rain, splashing or from breaking waves. A part of the rain water as well as water condensation in the bilge may end up in the bilge.

Do not leave the boat unattended in the water for a long time. Observe the floating position of the boat and empty the bilge when necessary. Leaving the boat unattended in the water for a long time may cause damage.

**△ WARNING** 

Do not close the drain holes when using the boat.

### 4.1.2. Openings in the hull and deck

There are several inlets through the boat that include valves for opening and closing such inlets. It is recommended to keep these inlets closed if the boat is out of use for a long time, and to open them again when the boat is used again. If the boat is lifted out from water or in rainy conditions, inlets should be kept open.

Check always before and after using the boat that all deck and service hatches are securely closed, especially the inspection hatches in the engine bracket.

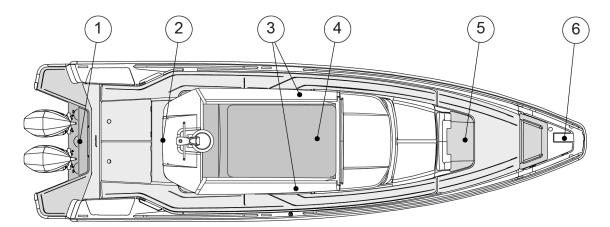
We recommend that you keep the windows, doors, deck hatches, roof hatches, vents and interior doors closed while driving. In stormy weather, always keep them securely closed to minimize the risk of water getting into the boat and to avoid any personal injuries.

In certain conditions and speeds, it is possible that water is sprayed inside through canopies, hatches or other openings, due to negative pressure or other effects. Risk for this can be minimized by closing the canopies, hatches or other openings.

**⚠ WARNING** 

Doors to cabin and toilet, aft cabin hatches, and cabin roof hatch must be kept shut when under way.

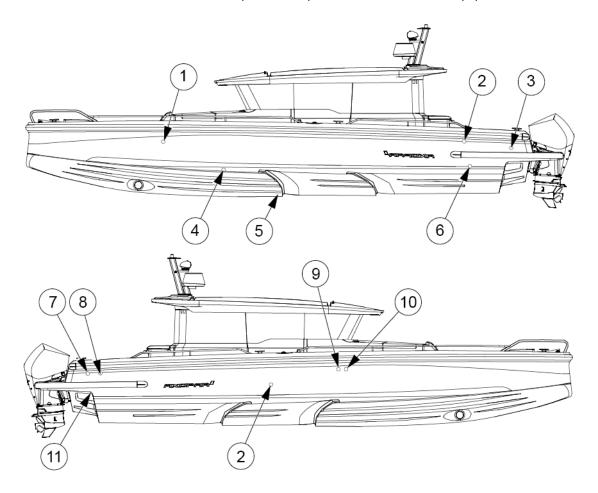
The figure shows the hatches that must be kept closed while under way or when the boat is attached to the dock.





- (1) Inspection hatch of the engine bracket
- (2) Roof hatches of aft cabin or hatches of storage box
- (3) Door of aft cabin
- (4) Roof hatch
- (5) Bow door of fore cabin
- (6) Hatch of bow storage box

The location and number of these components depend on the level of the equipment on the boat.





- (1) Ventilation of fresh water tank
- (2) Ventilation of fuel tank
- (3) Outlet of manual bilge pump
- (4) Outlet of front cabin sink
- (5) Water inlet of toilet seat
- (6) Outlet of Wetbar sink
- (7) Outlet of aft bilge pump
- (8) Ventilation of heater fuel tank
- (9) Outlet of midship bilge pump
- (10) Ventilation of holding tank
- (11) Outlet of aft deck and cockpit draining sea-cocks

### 4.1.3. Bilge system

The bilge system consists of several different pumps that cover all the lower sections of the boat.

Both electric and manual bilge pumps have been installed. The boat also has a sign that displays the draining area of each pump.

The electric bilge pumps are equipped with a float which triggers them automatically if there is water in the bilge space. The pumps can also be controlled from switches on the steering console. The automatic bilge pumps are equipped with an alarm signal which is activated when the pump starts.

The manual bilge pump is controlled with its handle, which is located in the port side stowage casing of the afterdeck. The purpose of the manual bilge pump is to drain aft bilge area.

The electric pumps are submersible. One of them is located under the berth of the aft cabin or under storage hatch and another under the front cabin floor. The bilge water level should remain at a minimum.

The output of each automatic bilge pump is 41 liters per minute. The manual bilge pump's output is 33 liters per minute.

#### **△ CAUTION**

Avoid pollution! The purpose of the boat's electrical bilge pumps is to minimize the risk of accidental discharge of oil polluted water.

The boat owner and user shall check the bilge water regularly for contaminants such as oil, diesel, and glycol. The bilge system comprises several different pumps that cover all areas of the boat. Your boat has electrical as well as manual bilge pumps. There is also a sign in the boat indicating the draining area of each pump respectively.

#### **△ CAUTION**

Do not run dry for long time. The pump will be damaged.

#### **△ WARNING**

- Check the functionality of the bilge pumps regularly.
- · Remove any waste from the intakes.

The combined capacity of the bilge system is not designed to pump out the boat in the event of hull damage.

The pumps are constantly activated and pump out the boat as required. The pumps can also be started manually from the boat's main control panel.



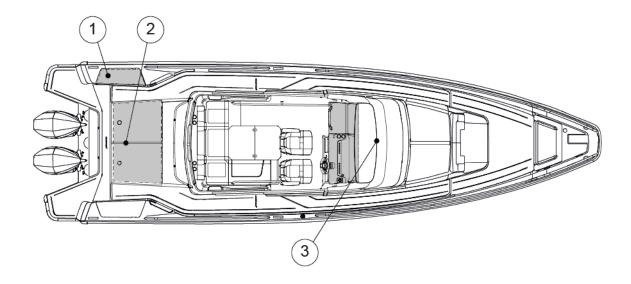
**△ CAUTION** 

The bilge system is not designed for damage control.

**△ WARNING** 

Check the function of all bilge pumps at regular intervals. Clear pump outlets from debris.

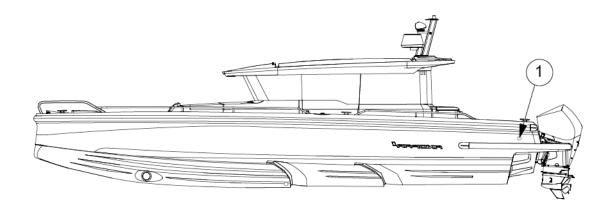
If seacocks are fitted in the fore and aft peak bulkheads, they shall be kept closed and shall only be opened to let water drain into the main bilges.

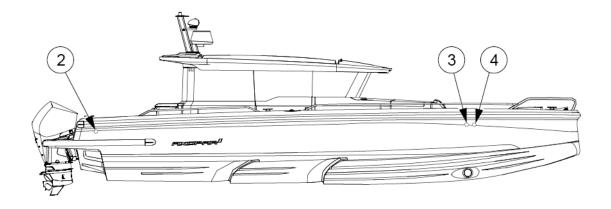


- (1) Manual bilge pump
- (2) Aft electric bilge pump
- (3) Front electric bilge pump

The figure shows the seacocks and outlets through the side. Always check in the spring when launching that the outlets through the side and bottom are tightly closed.







- (1) Outlet of aft bilge pump
- (2) Outlet of manual bilge pump
- (3) Outlet of midship bilge pump
- (4) Outlet of fore bilge pump

## 4.2. Technical systems

## 4.2.1. Electrical system

### **△ WARNING**

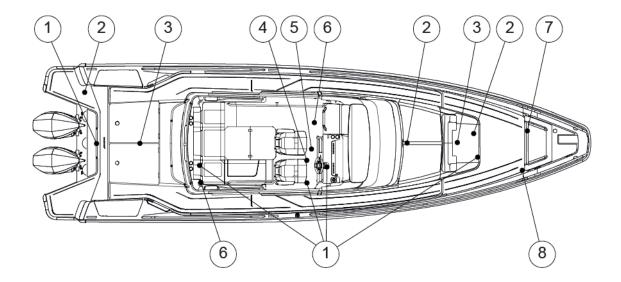
#### Risks of fire, explosion and electric shock!

Improper use of electric DC and AC systems may result in fire or explosion.

Improper use of electric AC systems may result in electric shock.

Follow the instructions carefully.





- (1) 12 V output
- (2) High-current fuses
- (3) Batteries Main switches
- (4) 230 V socket
- (5) Remote controlled main switches
- (6) Fuse panel
- (7) Shorepower charger and fuses
- (8) Shorepower socket

## 4.2.2. 12 V system

The boat is equipped with the 12 V system.

The 12 V system consists of engine driven alternators, battery chargers for shore-side electricity, batteries and equipment. The power supply happens from charger or alternator via diodes for batteries.

Most equipment of the boat uses the 12 V system. The 12 V system is working only when a main switch and a switch in the main switch panel is switched on. Damaged equipment must be maintained before taking back to use. When the electronic circuit is switched on, actuators can be operated from the switchboard in the helmsman's spot.



#### **⚠ WARNING**

- Never switch off the current when the engine is running, because this
  may cause damage to the alternator.
- Never carry out electrical installations when the power is switched on.
- Never modify the boat's electrical system or diagrams; service and maintenance must be carried out by a qualified electrician.
- Never modify the nominal rated amperage of the overvoltage protector.
- Never install or replace electrical equipment with components that cause the circuit's nominal rated amperage to be exceeded.
- Never leave the boat unattended with the electrical system energized, except automatic bilge pump, fire protection, and alarm circuits.

#### 4.2.3. Main switches

The different electronic circuits of the boat are controlled by the main switches on the distribution board.

The main switches allow the batteries to be disconnected from all devices that consume electricity. When the main switches are in the On position, the current is conducted to the distribution board and from there to different parts of the boat.

The background color of the main switch and the text On shows that the electronic circuit is switched on, and when the circuit is switched off, the background color is red and the text says Off.

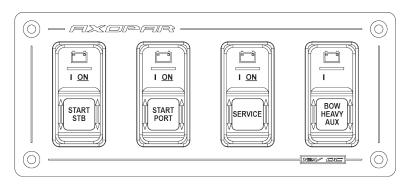
When you leave your boat for any length of time, switch the current off from all main switches and devices but leave the direct supply switches on.

The base drawing of the boat's electrical system is presented in Appendix II.

Main switches of the boat are located in the steering console. Power supply to the engines and devices is enabled by pulling the Start or Service switch to the lower position and pressing On button. In the panel, there is main switch for each engine for devices. The boat's main switch panel is located on the lower part of steering console.

Under aft deck behind hatches are manually operated main switches. These switches are only for emergency use. In normal situations, use switches in the steering console.

Current feed to the engine is achieved by turning the Start switch to the On position, feed to other equipment is achieved by turning the Service switch to the On position and feed to the bow thruster and windlasses is achieved by turning the Aux switch to the On position.





- (1) STB Engine
- (2) PORT Engine
- (3) Service
- (4) Heavy Aux

### 4.2.4. Direct supply switches

Some of the devices in the boat are supplied by direct supply switches. Direct supply switches are intended for such equipment that need current when main switches are turned off.

When pushed down, the switch is on and when pushed up it is off. The switch indicates a short circuit or interference in the electronic circuit by springing up to the "off" position. The switch can be reconnected by pushing it back down to the "on" position. Do not reconnect the switch before you have found out the reason for the interference.

The direct supply switches must be left on even if the current from other circuits is switched off. An appliance that is switched off too early may cause the appliance to overheat and become damaged.



Turning the direct supply switch off too early may cause the device (for example, the heater) to break or catch fire, because the devices have a ventilation feature that works even if the device is otherwise switched off.

 Make sure the device is cooled down before turning it off completely. For more information, see the manual of the device in question.

#### 4.2.5. Fuses

The fuse panel includes fuses for the boat's equipment.

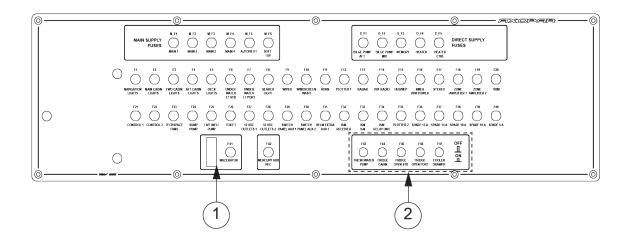
The fuses are in the form of trip switches that break the circuit and spring up when tripped. Do not reset the switch before you have found out the reason for the breaker tripping. After that press the switch back down.

The fuse panel is located on aft wall of the front cabin. The panel has a combined switch and fuse for a septic crusher (1), water pump (2) and fridge (2). The fuse panel also has a 12 V output.



Before connecting an electric circuit, make sure that the circuit is not damaged and that there will be no short circuit or a fire caused by possible damages in the electric circuit. Any damaged equipment must be maintained or changed before they are again taken into use.





### 4.2.6. Heavy duty fuses

There are fuse panels containing fuses for appliances and electronic circuits which require large currents, such as windlasses, in the boat.

The bow thruster's and windlasses' high-current fuses are located under the front deck hatch and the battery charger fuses behind the toilet's wall panel.

The functioning of fuses can be checked from the holes in the fuse's cover. If the metal strip visible in the hole is unbroken, the fuse is operational.

If the metal strip is damaged, meaning that an overload has occurred, contact a qualified nautical electrician. Opening the cover is not recommended, as there is a danger of electric shock and serious injury. The panel contains fuses for the appliances listed below. If it is necessary to open the cover, make sure that all the current cables from the batteries are disconnected.

#### 4.2.7. Batteries

The battery system has been designed and built so that the boat's engine starts even if its start batteries are dead, because then the service battery supplies the current. However, this function does not work the other way around.

The batteries are located under the aft cabin's berth. The location of the batteries is presented in the section *Electrical System*. When you leave your boat, switch off the current from the main switch, but do not forget to check that all direct supply switches are on.

Remove the battery from the boat for winter storage. When removing the battery, detach the negative pole first. Use only AGM (absorbent glass mat) maintenance-free batteries in the boats. When disconnecting batteries, be careful not to touch both poles same time with metal tool.

Your boat is equipped with three batteries, of which the start battery supplies current to the engine and power steering, service battery for other appliances and equipment on the boat. There is also one battery for the bow thruster.

**△ CAUTION** 

Use only AGM maintenance-free batteries in the boats.



### 4.2.7.1. Charging the batteries



 Make sure that the battery compartment is always well ventilated when charging batteries.

Only charge batteries in the boat with boat's own chargers. In other cases, remove batteries from the boat.

Remember that the batteries discharge an explosive oxy-hydrogen gas at a voltage of 14.4 volts. The voltage of a normal battery in unloaded status is 12.3-12.7 V. During charging, the voltage increases and the charging regulator stops the charging process automatically at a preset level. The voltage measurement should be taken at the battery terminals, not the alternator, to achieve the correct result.

#### 4.2.7.2. Charging status

The best method for determining charging status is to measure the specific gravity of the battery acid.

This is done using a hydrometer (acid measurer). Normal specific gravity for a fully charged battery at 20 °C is 1.26-1.28 g/cm<sup>3</sup>.



The specific gravity varies with temperature. Batteries from different manufacturers can have a different specific gravity. Ask your dealer for the correct information.

If the specific gravity varies from cell to cell, the battery is not in good condition, and should be replaced. For winter storage, the batteries can be left on board only if they are fully charged. A partially discharged battery can freeze and crack. Always disconnect the cable terminals from the battery to avoid oxidation.

#### 4.2.7.3. Winter storage

For winter storage, the batteries can be left on board only if they are fully charged.

A partially discharged battery can freeze and crack. Always disconnect the cable terminals from the battery to avoid oxidation. When removing batteries, disconnect the negative pole first and make sure that there are no flammable or explosive materials or liquids nearby. When putting the batteries back in place, connect them in reverse order (positive pole first).

#### 4.2.7.4. Cleaning the batteries

The top of the batteries should be cleaned regularly to avoid current leakage between the cells.

If the battery is located in a separate area, it is normally sufficient to clean it in the spring and autumn.

Make sure that the air holes in the cell plugs are open so that gas can be vented.

The terminals and cable terminals must be lubricated to prevent deposits and corrosion.



### 4.2.8. 110/230 V system

You can choose to equip your boat with the optional extra of 110/230 V AC system with a shore power connection, which will allow you to use devices that run on the standard mains current.

The system obtains its power from an external supply on shore or from the jetty (shore power). In the European market the system used is 230 V and in the American market 110 V.

The system functions when a shore power cable has been connected to the shore power socket connection.

- 1. Turn off the shore power switch before connecting or disconnecting the cable.
- 2. Connect the shore power cable to the boat before connecting it to the shore power.
- 3. Disconnect the shore power cable from the shore power before disconnecting from the boat.
- **4.** Close the hatch of the boat's shore power connection.

The system's main fuse is located in separate control panel. The system includes a battery charger, which starts charging batteries automatically when the boat has been connected to shore power. The location of the components is presented in the section *Electrical System*.

The shore power system should be checked at least biannually. Always disconnect the shore power cable when the system is not in use. Metal casings of installed electrical equipment must always be connected to earth in the boat electrical system. Use electrical equipment equipped with earth protection only.

#### **△ WARNING**

- Do not touch an energized high voltage system.
- Do not change the plug of the shore power cable. Use compatible connectors only.
- Try to minimize the risk of electric shock, short circuit and fire.
- Do not allow the shore power cable to hang in the water. If it does, a hazardous electric field could be created in the water.
- Never modify the connections on the shore power cable. Use compatible connectors only.
- If the earth fault breaker is tripped, disconnect the shore power cable immediately. In such a case contact a qualified electrician for repairs before the system is used again.

#### **△ WARNING**

To avoid an electric shock and risk of fire:

- Switch off the shore power switch before connecting and disconnecting the cable.
- Connect the shore power cable to the boat before connecting it ashore.
- Disconnect the shore power cable ashore before disconnecting it from the boat.
- Close the hatch to the shore power socket on the boat carefully, avoiding getting it wet.



### 4.2.9. Fuel system

The boat is fitted with a separate fixed fuel system and extra water-separating fuel filter on the suction line.

Instead of the fuel system used in the European region, the boats produced for the American region use the EPA (United States Environmental Protection Agency) fuel system regarding NMMA (National Marine Manufacturers Association) certification rules.

See the fuel system drawing in *Appendix II*. For care and maintenance of the fuel system, see the instructions in the engine manual.

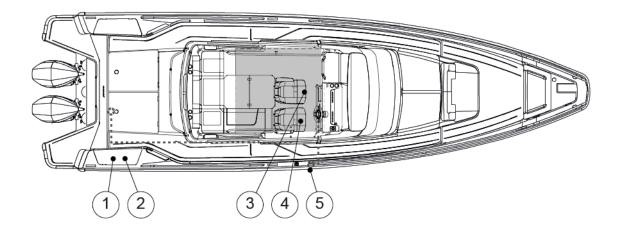
#### **⚠ WARNING**

Do not smoke or handle open flames when refueling.

Remember that it is not allowed to store fuel in spaces not specifically designed for it. Since there is no ventilated storage space on this boat, possible spare fuel cans must be stored on deck.

The fuel tank is located midpart of the keel. Try to prevent damage to the fuel lines.

The inlet pipe for fuel (5) is located in the STB side of the deck. If the boat has been equipped with an extra diesel tank, the inlet fitting (4) and tank (2) are located aft part of the boat. In the normal system, fuel tank valves are located under helsman's seat. EPA fuel system is equipped with automatic fuel valve. Component of the tank is under helsman's seat.



- (1) Diesel tank
- (2) Diesel tank inlet fitting (under hatch)
- (3) Fuel tank
- (4) Fuel filter
- (5) Fuel inlet fitting



#### 4.2.9.1. Refueling the boat

When refueling a boat with composite decks (Esthec or FlexiTeek), the deck should be wetted down with water before refueling. This ensures that any fuel spillage will float on the water and won't penetrate the decking material.

Water reaching the engine's injection system can cause rapid corrosion damage to the precision components in the injection pump components. For this reason, it is vital to check the extra fuel filter regularly for water. Every so often, drain a small quantity of fuel into a suitable container (avoid fuel spillage) and check that there is no condensation water. If there is water in the filter, continue to drain until only clean fuel appears.

The fuel system on the engine is sensitive to air bubbles in the fuel. Always fill the tanks well before they are completely empty. If the system has been run dry, it must be bled before the engine can be started again. See the engine manufacturer's instruction manual before bleeding the fuel system.

#### **△ WARNING**

Fuel-burning open flame appliances consume cabin oxygen and discharge combustion products into the boat.

Ventilation is required when appliances are in use.

Open designated vent openings as indicated when appliances are in use.

- Never use the cooker or oven for heating the boat.
- Never cover ventilation openings.
- Ensure that flued appliances are operating correctly.

The boat owner shall keep information about locations of ventilation openings and types in every space where a gas appliance is installed.

#### **△ WARNING**

- Never block access to safety equipment, fire extinguishers, fuel valves or main power switches.
- Never block any ventilation openings made in the boat because their purpose is to clear the air of fuel fumes.
- Never use a wrong type of fuel in the heater or cooker as this may damage them.
- Never use an open flame when detecting leaks.

## 4.3. Optional equipment

Some of the optional equipment available for your boat is presented below.

## 4.3.1. Fresh water system

You can choose to equip your boat with a fresh water system as an optional extra.

The fresh water system consists of a fresh water tank, pump and accumulator. Your boat may also be equipped with a water supply point in the galley and a deck shower and a water supply point for the wet bar.

The tank is located under front deck. The pump and hydraulic accumulator are next to the tank. The fresh water tank is filled via the inlet pipe on the foredeck.



The fresh water system is turned on by switching on the fresh water pump. The pump switch is located on the fuse panel.

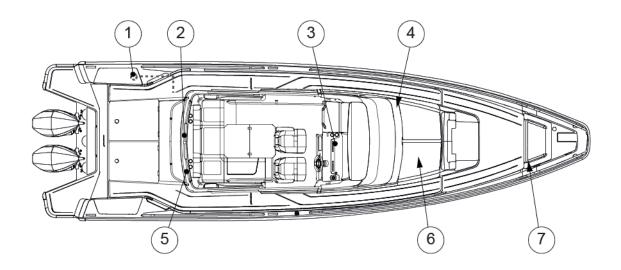
The system maintains a working pressure automatically with the assistance of a hydraulic accumulator, which is why the pump does not need to be shut after use.

Switch the system off when leaving your boat. Do not forget to check filter in the pump regularly.

it is the responsibility of the dealer to disinfect the fresh water tank before sale.

### NOTICE

The fresh water system must be thoroughly emptied for winter storage. It is not recommended to use any anti-freeze products in the fresh water system.

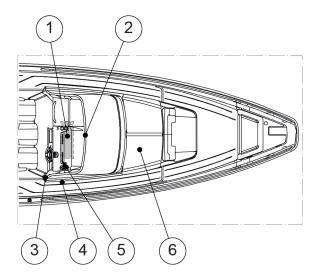


(1)	Deck shower
(2)	Fresh water tank
(3)	Fresh water pump
(4)	Galley tap
(5)	Wetbar tap
(6)	Switch for water system
(7)	Inlet pipe for water tank

## 4.3.2. Septic system

The boat's septic system consists of the toilet seat and related systems and the septic tank with related systems.





- (1) Holding tank
- (2) Shower sump pump
- (3) Deck suction fitting
- (4) Macerator pump
- (5) Toilet
- (6) Septic tank sea-cock

#### 4.3.2.1. Toilet seat

The boat can be equipped with two types of toilets. The manual toilet seat system uses seawater, and the electrical toilet seat system uses fresh water.

#### **NOTICE**

· Never put any other objects but toilet paper in the toilet.

In order to avoid various damages, you must also not pour hotter than lukewarm water into the toilet.

Under no circumstances is it allowed to flush paper towels, fabric or rubber products, hard objects, oil products or solvents down the toilet.

#### Using the manual toilet

- Before using the manual toilet, open the water intake cock, which is located behind the service hatch.
- Close the cock after use.

#### Using the electrical toilet

The electrical toilet is used with a separate operating switch. For more information on the device, see the manual for the toilet.



#### Maintaining the toilet

- · Clean the toilet with a mild cleaner.
- Never use cleaning agents or deodorants which contain pine oil, formaldehyde or chlorine, nor corrosive or petroleum-based agents.

These materials can damage the plastic and rubber parts in the toilet.

- Lubricate the pump shaft with Vaseline to increase the service life of the seal.
- Flush the toilet system thoroughly with fresh water when the boat is not in use.

#### 4.3.2.2. Septic tank



Avoid environmental pollution!

The black water tank is fitted with a deck outlet pump using an international standard type connection. Using the pump, the black water can be emptied to a permanent septic tanks ashore. These facilities must always be used.

In areas where there are no permanent septic tanks, the septic crusher is used to evacuate the contents of the tank straight into the water as follows: Open the sealed sea valve. If possible, empty the tank daily and always in deep waters far from the shore. The location of the pump is indicated on the construction drawing.



The shut-off valve must be closed after the evacuation.

Do not allow the tank to become full. It can lead to paper becoming compacted in the bottom of the tank, making it more difficult to empty.

#### NOTICE

Before the boat is laid-up for winter storage, the whole system must be cleaned and flushed through while the boat is still in the water. The whole system must be thoroughly drained of water when the boat is lifted out of the water. This measure prevents frost damage, bacteria growth and smells.

We do not recommend the use of antifreeze, since it is impossible to guarantee that it reaches all parts of the system.

#### 4.3.2.3. Shower sump pump

The boat's shower floor is equipped with an automatic drainage pump.

The pump comes on automatically when there is water on the shower floor. The pump drains the water from the boat's shower into the sea because the shower is below the waterline.

The pump must be regularly cleared of any accumulated debris and hair. The shower pump must be emptied of water before winter storage.

## 4.3.3. Heating system

The boat can be equipped with a heating system as an optional equipment.



The heater and diesel tank are in the aft part of boat. Heater unit is located under aft deck STB side. The operation panel is located in the steering console. The inlet pipe for the tank is located on the aft deck on STB side.

#### **⚠ WARNING**

Appliances that burn fuel, consume oxygen and discharge toxic combustion products into the boat.

Good ventilation is essential when such an appliance is in use. Open ventilation holes and make sure that they are not blocked and that air flows freely through them.

Never leave the boat unattended when a heater or LPG cooker is in use.

#### NOTICE

Heater components may break if the wrong kind of fuel is used. For more information, see the manufacturer's manual.

• Do not switch off the heater's direct supply current before you have made sure that the appliance has cooled down.

### 4.3.4. Bow thruster

The bow thruster is located under the front deck inside the front cabin.

The bow thruster enhances the maneuverability of the bow when docking or performing other maneuvers which requires increased operator control. The main switch (Aux) for the bow thruster is in the steering console.

The batteries must be disconnected from the electronic circuit before changing a fuse. For more information, see the manufacturer's manual.

#### **△ WARNING**

Incorrect use may cause overheating and short circuiting, and pose a fire risk.

- Use the bow thruster for only short periods at a time.
- Do not exceed four duty cycles (max. 30 seconds long in 25 mins).

If overloading occurs, contact a qualified marine electrician.

### **△ WARNING**

 Do not touch the bow thruster or its fuse if the main switch Aux is switched on.

Even if the current is switched off, we do not recommend changing the windlass fuse, because the high current may cause a fatal electric shock.

#### 4.3.5. Anchor windlass

The boat can be equipped with a fore and aft anchor windlass as an optional extra.

The operating switches for the windlasses are located next to the helmsman. The main switch (Aux) for the windlasses is next to the battery. The anchor windlasses are powered by the Aux battery. Battery and its fuse are located next to the windlasses.

Before using an anchor windlass, always check that the windlass is in working order and that the anchor chain can move freely. It is also important to check that the anchor and chain cannot damage the boat



when lowered. While under way, an anchor windlass must be fixed mechanically to prevent it from coming loose. For more information, see the manufacturer's manual.

#### **⚠ WARNING**

If the windlass loosens when the boat is moving at great speed, it may cause great damage to the boat, its passengers and outsiders.

 Always fix the anchor windlass mechanically in place before getting under way.

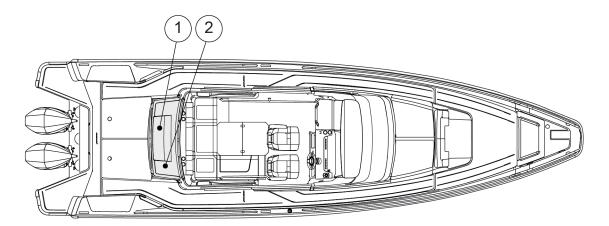
### **△ WARNING**

• Do not touch the anchor windlass or its fuse if the main switch Aux is switched on.

## 4.3.6. LPG system

The boat can be equipped with an LPG system for a cooker as an optional extra. The system is tested and approved before delivery.

The system consists of a cooker (1) and gas cylinder (2). The apparatus is equipped with a shut-off valve (in connection with the cooker) and a decompression valve. A ventilation hole is provided on the outside of the hull in the space where the gas cylinder is installed. A fire blanket must be installed right next to the cooker.



Fuels that produce a naked flame consume oxygen and discharge combustion products into the boat. Good ventilation is therefore essential when an appliance is in use. The cabin door must be kept open when the cooker is in use.

#### **△ WARNING**

Fuel-burning open flame appliances consume cabin oxygen and discharge combustion products into the boat.

Ventilation is required when appliances are in use.

Open designated vent openings as indicated when appliances are in use.

- Before opening the valve to the gas container, make sure that the appliance valves are properly closed.
- Store the fire blanket in the required location.



### **⚠ WARNING**

- Never use an open flame when detecting leaks.
- · Never use the cooker or oven for heating the boat.
- Never leave the boat unattended when LPG appliances are in use.
- Never smoke or use open flames when a gas container is being replaced.
- Never block access to safety equipment, fire extinguishers, fuel valves or main power switches.
- Never block any ventilation openings made in the boat because their purpose is to clear the air of fuel fumes.

The boat owner shall keep information about the locations and types of the ventilation openings in every space where a gas appliance is installed.

NOTICE

Never use a wrong type of fuel in the cooker as this may damage the cooker.

### 4.3.6.1. Lighting the LPG cooker

- 1. Open both shut-off valves.
  - Each burner has an ignition cut-out which cuts the gas supply when the flame is out.
- 2. Press in the knob for the required burner and turn to max. position while holding the lighter beside the burner.
- **3.** Keep the knob pressed in for about 20 seconds after the burner lights. If it is released sooner, the burner may go out.

The reason for the burner going out is that the ignition cut-out might not be hot enough.

If the burner does not light, it may be because a valve is closed, the knob is incorrectly set or the gas container is empty.

### 4.3.6.2. Using the LPG cooker

**△ WARNING** 

- Do not use solutions that contain ammonia.
- · Keep an LPG container in a space designed for it.





- Make sure that you always have free and rapid access to the LPG system.
- The ambient temperature for LPG systems is -20 +60°C.
- Do not use areas intended for LPG containers for storing other equipment.
- Never leave the boat unattended when LPG appliances are in use.
- Do not smoke or use open flames when a container is being replaced.
- Hoses and pipes in the system must be inspected regularly, at least once a year. They must be replaced if there is any deterioration or damage.
  - The LPG hoses outside the cabin shall be replaced every second year, and the LPG hoses inside the cabin every 3 to 5 years.
- Check flue ducts at least once a year. They must be replaced if there is any deterioration or damage.
- Connection gaskets for the regulating valve must always be checked when containers are replaced and replaced annually.

#### Ventilation

Appliances which burn fuel consume oxygen and discharge combustion products into the boat. Good ventilation is essential when an appliance is in use.

- Never use the LPG cooker for heating the boat.
- Never cover ventilation openings.

#### **Valves**

- Close the valves on the supply pipes and the container valve when the appliance is not in use.
- Close the valves before refuelling and immediately in an emergency.
- Check that the appliance valves are closed before opening the container valve.
- Keep the valves of empty cylinders closed and disconnected.
- Fit the protective covers, caps or plugs.
- Store spare or empty containers on an open deck or in drained areas designed for the purpose.

The regulating valve does not last forever. It contains a thin rubber diaphragm which eventually dries out or swells up. If the diaphragm breaks, gas can escape from the cylinder with full pressure into the system, thus causing a fire. We recommend that the valve is replaced every 10 years.

### Inspections

Regularly test the LPG system for leaks by brushing with soapy water or a detergent solution which does not contain ammonia.

Check all connections for leakages.

If a leakage is detected, close the container valve and repair the system before using it again.

Repairs must be carried out by a qualified gas fitter.

## 4.3.7. Solar panels

The boat may be equipped with solar panels.



The solar panels are located on the roof. The solar panel system includes a charger and a transformer which are located under the aft deck.

Follow the recommended instructions for use, maintenance and warranty schedule in the owner's manual of the solar panel.



## 5. Transportation

## 5.1. Lifting the boat

Commission only a reputable lifting company or a boatyard with sufficient lifting capacity to lift the boat. Make sure the company has full insurance cover, in case of any damages.

In addition to the boat's own weight, also take the equipment and other possible loads in the boat into account.

#### **▲ DANGER**

Risk of serious injury or death by dropped load.

• Do not stay under the boat when it is hanging in the crane.

Lift slings may slip on the hull. When appropriate, tie the slings together before lifting.

The position of the slings may need to be adjusted depending on how the boat is loaded.

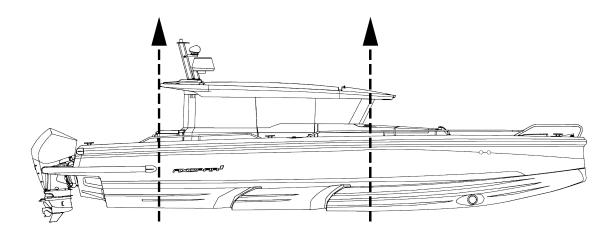
### **△ CAUTION**

Note the location of the log transducer to avoid damaging it.

· Protect the hull sides well to avoid damages.

The lifting beam should be exactly the same width as the boat. Always take great precautions near and around the boat when lifting.

Location of the lift straps is indicated in the following figure.



Before operating any lifting equipment:

- Check and determine applicability of federal, state, or local requirements.
- Follow the lift equipment manufacturer's requirements and recommendations.



- Check the boat's lift points, weights and other information.
- Straddle lift operation is a highly technical area that requires trained and experienced operators.

#### During lifting:

- Have access to the boat interior.
- Ensure that all hull penetrations are closed or secure.
- Check the boat for bilge water before lifting.
  - Excessive quantities of bilge water can shift, changing the balance of the load.
- Check for thru-hull appendages such as knot meters and stabilizers, rub, spray, and splash rails, so that they are not damaged by the lifting equipment.
- Check the hull structure to locate shafts, rudders, struts, and the forward and aft ends of any keels.
- Check the hull's structural configuration, including the location of bulkheads, stringers, engines, and tanks.
- Check bilges for water ingress following launch.
- Transport the boat as close to the ground as practicable.

## 5.2. Transporting the boat

Before lifting your boat onto the trailer, make sure that the trailer is suitable for the boat.

Make sure that there are a sufficient number of supports to distribute the weight properly without excessive point loads, and the capacity and dimensions of the trailer are sufficient to carry the boat and its engine, equipment, battery, boating accessories and fuel on board.



A boat trailer that does not have sufficient capacity or that is poorly maintained can become damaged and cause a danger on the road.

 Make sure that the trailer capacity is sufficient to also carry the weight of the engine, fuel and equipment.

#### **△ CAUTION**

The hull of the boat can be damaged if the boat swings against a single support during transport.

The trailer must be a little nose heavy. Make sure that the boat is securely fastened to the trailer, that it cannot move into any direction, and that the side supports provide an even support for the weight of the boat.

#### Before loading the boat on the trailer:

- · Remove any unnecessary weight from the boat.
- Drain the bilge water.
- Adjust the side supports of the trailer so that the most weight rests on the keel supports, and the side supports only offer lateral support.
- Protect the boat by placing suitable padding between the tie down straps and the boat, if necessary.



- See the engine manual for any instructions on trailering.
- Pay attention to any equipment and accessories in the boat during trailering.
  - Make sure you secure all loose items in the boat.
  - Do not use a hood, canopy, tonneau cover or other similar top or cover on the boat during trailering.

These hoods and covers can become detached at high speeds and damage the boat and cause a danger to traffic.

A hood or other cover flapping in the wind during trailering can damage the boat surface.

- Keep the hood in its dedicated storage compartment during trailering, or remove the hood completely if necessary.
- Make sure that the boat door is properly closed before trailering.



## 6. Operation

The boat owner must take local and international regulations into consideration concerning the boat crew, equipment and handling of the boat. In some countries, a driving license or a separate authorization is required for driving the boat. Special regulations may also apply.

Ensure that the anticipated wind and wave conditions correspond to the design category of the boat and that the crew is able to handle the boat in these conditions. Even though the boat is designed for such conditions, they are still very dangerous. Only a capable, fit and trained crew, using a well maintained boat, can satisfactorily operate in such conditions.

If the boat is fitted with a life raft, carefully read its operation manual. Onboard, the boat shall have the appropriate safety equipment according to the boat type and weather conditions. This equipment is compulsory in some countries. The crew shall be familiar with the use of all safety equipment and the most important actions in different emergency situations. Sailing schools and clubs regularly organize rescue drills.

The equipment in the boat may differ from the equipment used in the figures in this manual. This might be due to any optional equipment chosen or modifications made after producing this manual. In such cases, we recommend that you contact your local dealer for additional information regarding the operation of the equipment in question.

Always maintain the boat properly and make allowance for the deterioration that will occur over time and as a result of heavy use or misuse of the boat. Any boat, no matter how strong it may be, can be severely damaged if not used properly. Inappropriate use of this boat not compatible with safe boating is not allowed. It is always important to adjust the speed and direction of the boat to the sea conditions and own boating experience. The gelcoat parts, especially the colored parts, should be polished and waxed approximately every fourth months to prevent the parts from fading or getting other visual defects.

## 6.1. Handling devices

## 6.1.1. Steering console

The controllers are situated so that the driver can easily manage them from the steering console.

The location and quantity of the devices depend on what optional equipment and engine models have been chosen. See the device manuals for further information on the devices.





- (1) Switch panel
- (2) Chart plotter
- (3) Chart plotter
- (4) Heater control unit
- (5) Bow thruster control panel
- (6) Trim tabs control unit
- (7) Chart plotter remote unit
- (8) VHF
- (9) Builder's plate
- (10) Emergency stop
- (11) Ignition keys
- (12) Engine remote control

## 6.1.2. Windscreen wipers

The boat's windscreen wipers are controlled by the switches in the boat's steering console. When pushed forward, the wipers wipe only once, and when pulled back, they wipe continuously. A switch for the windscreen washer is installed next to the switch for the windscreen wipers.



The windscreen wash-fluid tank is located beside the fresh water tank.

## 6.1.3. Steering system

### 6.1.3.1. Checking and topping up oil

The safety of the boat depends on effective steering. Check the oil level in the pump before casting off.

Hydraulic oil is added to the steering system via the filling plug in the steering wheel pump. The oil level must be approximately 10 mm below the filler hole.

See the manufacturer's manual for the steering system oil recommendation. For steering systems provided by engine manufacturer, see the engine manufacturer's instructions.

### 6.1.3.2. Steering maintenance

Check couplings, mountings and bearings. For maintenance of the steering system, see the manufacturer's instruction manual.

### 6.1.3.3. Steering console switch panel



- (1) Panel lights
- (2) Navigation lights
- (3) Anchor lights
- (4) Deck lights
- (5) Roof lights
- (6) Ambient light
- (7) Underwater light
- (8) Wipers
- (9) Window washer
- (10) Horn
- (11) Bilge mid
- (12) Bilge aft
- (13) Aux
- (14) Aux



## 6.1.4. Starting the engine

See the engine manufacturer's manual for all engine information:

- 1. Set the engine lever in neutral.
- 2. Turn the ignition on and check the fuel level.
- 3. Start the engine by turning the ignition key.
- **4.** Check that the gauges for oil pressure and volt meter show normal values.
- 5. Run the engine to operating temperature at idling speed. Never rev up a cold engine.

### **▲ DANGER**

Risk of carbon monoxide poisoning.

Be aware of the risks with engine exhausts. For example, under turbulence or disadvantageous wind conditions, exhaust can enter the boat. If this happens, avoid idling the engines. If these problems occur under way, do not open the hatches and ventilators, as it can worsen the problems. Instead, you may try solving the problems by changing the boat's speed or weight distribution.



Never step onto the swim ladder when the engine is running. Stop the engine while the steering and propeller are being inspected.

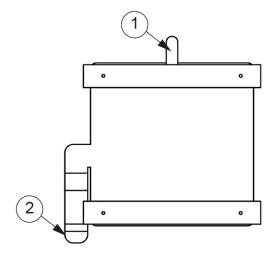
**△ WARNING** 

Do not operate this boat with an engine having capacity of rated power larger than recommended by the manufacturer.

## 6.2. Swivel seat - Driver and passenger seats

The driver and passenger seats are operated with the locking handle.

The locking handle must be in the locked position when the boat speed exceeds 5 knots.





- (1) Moving locking handle
- (2) Rotation locking handle
  - In the moving function, lift the locking handle up to release the lock.
    - This allows you to move seat from back to front.
  - In the rotating function, press the locking handle down to release the lock.
    - This allows you to rotate the seat on the post.

**△** DANGER

Avoid serious injury or death due the ejection.

The locking handle must be in the locked position before boat speed exceed 5 knots.

## 6.3. Inspecting the boat

Due to the safety reasons, the boat must be inspected before and after the use.

## 6.3.1. Checklist: Regular inspection before leaving harbor

### Safety

- · Ensure that all people onboard have own life jacket.
- Sea condition is sufficient for your boat.
- · Dead man's switch is switched to driver.
- Ensure that you have fire extinguisher(s) onboard and they are not expired.
- · Ensure that you have needed ropes and anchor onboard.

#### **Draining and tightness**

- · Check that there is no water on bilge.
- · Check that all bilge pumps work.
- Check that there are no fuel or oil leaks, bilge.
- Check that deck drain system is clean and valves are open.
- Check that all deck hatches are closed tightly.

#### Electric and engine

- Every fuse is in lower position.
- · Main switches are switched on.
- Batteries have enough power.
- · Engine works properly.
- Engine cooling water flow.
- · You have enough fuel onboard.



## 6.3.2. Checklist: After using the boat

- Main switches are switched off.
- Sea-cocks of septic tank and toilet seat are closed.
- · Ensure that direct supply switches are switched on.
- · Bilge is empty of water.
- · Function of every bilge pumps.
- Deck draining works properly and all draining valves are open.
- All deck hatches, roof canvas and doors are closed tightly.

## 6.4. Handling the boat

## 6.4.1. Checklist: Boat handling before leaving harbor

For safe navigation under all weather conditions, proper sound signaling equipment in compliance with regulations (COLREG, 1972) must be carried on board. Make sure that the sound signaling equipment on your boat is compliant with these regulations.

### **△ CAUTION**

According to national regulations in some countries, it is a legal requirement to wear a life vest at all times.

- · Check that the boat and its equipment are in seaworthy condition.
- Always listen to long-term weather forecasts when planning longer trips.
- Always make sure there is enough fuel and freshwater in the tanks.
- Always keep the engine compartment closed when starting the engine.
- Check that all items on board are properly stowed and adequately secured to manage rough sea and wind conditions.
- Make sure that the swim ladder is raised out of the water before moving off
- Make sure that the steering is correctly positioned before starting.
- All persons on board should wear an appropriate life vest when on deck.

## 6.4.2. Leaving the jetty

Before casting off, consider how to best leave the jetty.

- · Check what the wind direction is.
- Using a bow thruster, move the bow out and then engage the propeller.
- If your boat has two engines, move away from the jetty by engaging the engine nearer the jetty astern at idling speed and engaging the other engine ahead at idling speed on.
- The boat will swing out from the jetty astern. As the bow will move against the jetty, fend off properly.



With only one engine this can be a little more challenging, especially if the wind is pressing the boat firmly against the jetty, you have to use a spring to get the stern out.

- · Firmly fend off the bow from the jetty.
- Take a line from the bow around a bollard or cleat, so that it can be easily let go.
- Engage idling speed ahead and turn the rudder so that the stern glides out from the jetty.
- When the boat has reached a position, where it can safely be reversed, release and retrieve the line, quickly center the rudder and engage astern.



Gather in all lines and fenders while you are still in sheltered water. A rope around the propeller can disable a boat.

## 6.4.3. Driving the boat

Going out in a motor boat involves responsibility not just to those on board, but also to others we meet on the water. Showing consideration for others makes boating comfortable. Everyone has the same right to be at sea, whatever kind of boat they go afloat in.

The physical laws that apply to a boat are rather different from, for example, those affecting a car, as are the possibilities of influencing its maneuverability.

You can influence a boat's behavior and the level of comfort on board primarily by adapting the speed to the prevailing sea conditions and by the intelligent use of the trim tabs. A planing boat rides almost level in the water at maximum speed. As the speed of the boat is reduced the trim angle increases and the bow rises slightly. This is normal, and is a prerequisite for good performance.

#### 6.4.3.1. Dead man's switch

If your boat is equipped with a dead man's switch, attach its lanyard to yourself immediately after detaching the mooring lines. For more detailed instructions, see the engine manual.

It is very important that the boat stops if you for some reason fall overboard or stumble on board, particularly if you are alone. However, remember to detach the lanyard from your wrist before docking or beaching operations to prevent the engine from stopping unintentionally.

### 6.4.3.2. Driving at high speed

Although the Axopar boats have passed the CE requirements for swerve tests at full speed, we do not recommend making sharp turns at high speed. When exceeding a certain speed limit any hull construction might lose its grip. This might lead to passengers hurtling out of the boat, especially in a single engine configuration.

- Do not use the boat if it has an engine with a higher power rating than indicated on the capacity
  plate.
- Do not drive the boat at high speed if the engine's rig angle is negative (bow down).
- Do not drive at full speed on congested waterways or if the visibility is limited because of weather conditions or waves.
- Reduce your speed and wake as a matter of courtesy, and also for the safety of yourself and others.
- Observe and obey speed limits and prohibitions associated with a swell.



- Follow the rules of navigation and the requirements of COLREG (Convention on the International Regulations for Preventing Collisions at Sea).
- Always make sure that you have the space needed for avoiding collisions and coming to a halt and for evasive maneuvers.
- Always use a dead man's switch if available.
- · Reduce speed in high seas for increased comfort and safety.
- · Learn your boat's speed potential. Utilize this knowledge for economical and safe cruising.
- Avoid using high speed along with large rudder movements when going astern, because that
  places great strain on the rudder and steering mechanism.
- · Avoid sudden steering maneuvers at high speeds.
- Avoid staying in the bow area when driving at high speeds.

You should avoid sudden changes in direction of travel at high speed. Let the boat come to a stop, and the engine rev down before shifting between forward and reverse. Otherwise excessive strain is put on the engine, which could cause the engine to stop. In the worst case, sea water may enter the engine.

A right-handed propeller rotates clockwise and a left-handed propeller anti-clockwise, seen from the stern. The rotation of the propeller is critical for steering the boat. The right-handed propeller pushes the stern of the boat to starboard when the engine is engaged ahead and to port when it is going astern. The direction of rotation of the propeller has a major impact on the turning radius. A right-handed propeller gives a smaller turning radius to port than to starboard. This is called the propeller's paddlewheel effect.

The boat's propellers have considerable propulsion power that provides powerful acceleration. Take this into consideration to avoid dangerous situations arising from this.



A revolving propeller is life-threatening to a swimmer or a person who has fallen overboard. Use the dead man's switch and turn off the engine when someone is climbing on board.

### 6.4.3.3. Driving in rough seas

Never go out in rough seas, if you are uncertain whether the boat and those on board can cope. Follow these simple rules.

- Be well prepared.
- · Remember to secure loose equipment.
- Always have a sea anchor and other emergency equipment easily accessible.
- Avoid breaking seas that can appear close to land and over shallows.
- If there are significant waves, always reduce speed to guarantee the safety of the persons on board.
- Use the trim tab to trim the bow down to reduce hull slamming in a head sea.

### In a head sea

- · Adjust speed to suit the size of the waves.
- Adjust the trim angle to the size of the waves. Avoid taking seas beam on.



#### In a following sea

Remember to keep the bow high in a following sea. Avoid crashing through waves, maintain low speed. If necessary, deploy the sea anchor to reduce speed.

Planing boats can be particularly exposed in rough following seas. The stern of the boat rises and the rudder does not answer, so the boat broaches while the bow cuts down into the sea.

### 6.4.3.4. Maneuvering in narrow channels

When maneuvering the boat in narrow channels the engine speed should be kept as low as possible so that maneuvers are calm and steady.

In difficult wind and current conditions, more revs might be necessary to make full use of the power of the engine. In these conditions, it is important that maneuvers are made quickly and precisely to prevent the boat from drifting into trouble for example.

A good rule before starting a maneuver under difficult conditions, is to think through the different situations which could arise. Pay attention to the wind and current conditions and decide in advance which maneuver you will make. It is also important to brief crew members on what they should do in different situations.

Always keep in mind that the stability of the boat may be reduced when towing.

**△ CAUTION** 

Even a nonslip molding can be slippery to walk on when the deck is wet.

### 6.4.4. Visibility from helming position

Take the visibility from the helming position into consideration.

Among other things the following factors can considerably reduce visibility.

- · Gear trim angle
- Trim tab angle
- Load and load positioning
- Speed
- Rapid acceleration
- · Changeover from displacement speed to planning
- · Sea conditions
- Rain and thunderstorms
- Darkness and fog
- · Inner lighting when under way in the dark
- Position of curtains
- People and equipment that block the helmsman's view.

The International Regulations for Preventing Collisions at Sea (COLREG) demand that a proper lookout is kept at all times, and the "right of way" rule must be observed. It is essential that these rules are followed.





Make only small adjustments at a time. Holding down the button for the trim tab for any length of time can result in partial loss of control of the boat.

### 6.4.5. Using the trim tabs

A boat does not need trim tabs to get up on the plane or to give good performance. However, trim tabs are a very useful aid when used correctly.

There are two situations in particular where the trim tabs should be used:

- When it is desirable to trim the bow down in a rising sea and at speeds between going up planing and cruising speed.
- When running with a strong beam wind.

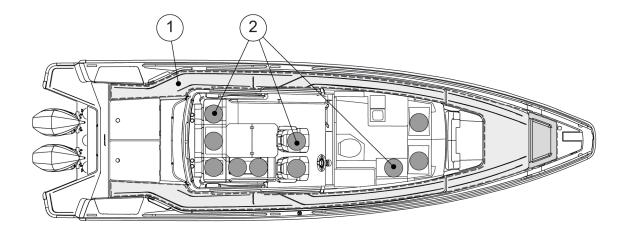
A planing boat always leans into a strong side wind. This reduces the boat's seakeeping qualities, which is why listing to one side should be eliminated as far as possible. Lowering the trim tab on the windward side brings the boat back into normal attitude.

For trimming the bow down, both trim tabs are used in parallel. Begin by retracting both trim tabs completely, then lower both of them a little at a time, so that you retain complete control over how the boat is affected. When running with a following sea, both trim tabs should always be fully raised.

The reason for this is that boats have a tendency to "dive" in a strong following sea, which can result in uncontrollable slowing. Therefore you should run the boat with a high bow angle in a following sea.

## 6.5. Preventing falling overboard

The boat's working decks are areas where people can move about when the boat is being maneuvered. The working deck area is shown in grey in the figure.



- (1) Working deck area
- (2) Seats



- Do not sit, stand or spend time in other parts of the boat while the boat is under way.
- Moving about in the aft part of the afterdeck and on the foredeck while the boat is under way is not recommended.

If a person has fallen into the water, the easiest way to get back on board is to use the swim ladder. The ladder can be pulled down also from the water. Keep the gates in the flat afterdeck area closed while the boat is under way.

### Staying on deck

Staying on the deck is not allowed for safety reasons in speeds exceeding 30 knots.

If the sun deck cushions of the fore deck table are in place, observe the maximum speed of 15 knots to avoid the cushions or table detaching at speed or in high waves.



A revolving propeller is life-threatening to a swimmer or a person who has fallen overboard.

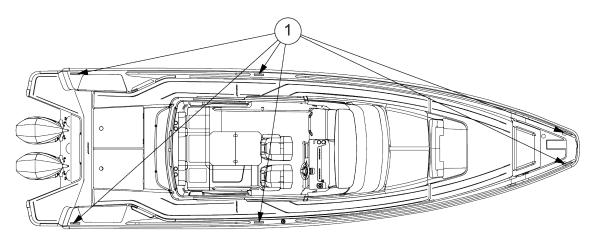
 Use the dead man's switch and turn off the engine when someone is climbing on board.

## 6.6. Anchoring, docking and mooring

## 6.6.1. Fastening points

Fastening points (or cleats) are located both at the stern, midship and bow.

- When anchoring or towing, the forward force is 37,6 kN.
- When mooring the forward force is 30,7 kN.
- · When mooring the rearward force is 26,2 kN.



#### (1) Fastening points



### 6.6.2. Docking

Always brief your crew how you are planning to dock. Fenders and at least one mooring line fore and aft must be in place before approaching the jetty.

It is always easiest to dock against the wind. Try to hold the bow exactly into the wind and maintain sufficient speed for the boat to answer the rudder. If the bow is blown off in one direction, back out and repeat the maneuver. Bring the bow up to the jetty, and make sure you get a line ashore quickly.

Docking with a side wind is a little more difficult. Do not steer parallel to the jetty letting the boat blow in as there is always a risk of the bow being blown off towards other boats or the jetty. Instead, try to maneuver the boat so that the wind comes directly from astern. Then the boat can be maneuvered straight ahead since the wind helps hold the boat on a straight course. It is good to have someone on the foredeck that can go ashore and quickly turn the bow in the desired direction after the boat has stopped completely.

Try to always avoid sharp movements of the throttle, since idling speed in ahead and astern is generally adequate. Sharp movements of the throttle can lead to panic maneuvers.



The tensile strength of the lines or chains should normally not exceed the strength of the fastening point in question.

## 6.6.3. Checklist: Before anchoring

- 1. Check the chart to see if anchoring is permitted in the area.
- 2. Listen to the weather forecast for the area and take note of the expected wind conditions.
- 3. Switch on the echo sounder.
- 4. Study the seabed conditions and make sure that there is good holding ground.
- 5. Check that the safety chain has been released from the anchor.
- 6. Wait until you have reached the intended anchoring point before lowering the anchor.
- 7. Let out the anchor line equal to at least three times the depth of the water.
- 8. Put the engine in astern to check that the anchor has taken hold (only when bow anchoring).
- 9. Note your position on the GPS. Regularly check that the boat has not moved from its position.
- 10. Set the echo sounder to "Anchor Watch".



Always fix the anchor in such a way that it is securely fastened onto the boat. An anchor that falls off when under way may cause serious damage to the boat and mortal danger to the crew.



## 6.6.4. Towing and mooring

### **△ CAUTION**

When towing another boat or being towed, always drive slowly. If the boat you are towing is of the displacement hull type, never exceed its hull speed.

- Always attach the tow line so that it can be detached under load. It is
  the owner's and users' responsibility to ensure that the mooring lines,
  towing lines, anchor chains, anchor lines and anchors are adequate for
  the vessel's intended use.
- Always remember that the stability of the boat may decrease when being towed.



## 7. Maintenance

## 7.1. Maintaining the gelcoat surface

When the boat is not in use, keep the gelcoat surface out of the sun or covered with a canvas tarpaulin. Do not use plastic or other non-porous materials, which can trap moisture between the cover and the surface.

Wash the surface with a mild detergent.

For best results, use a cleaner recommended for fiberglass and follow the instructions on the label of the product.



Do not use automatic dishwasher detergent, abrasives, bleaches, and strong chemicals with acids/bases or ammonia.

Wax the surface at least twice yearly to restore gloss and protect the finish.

Only use wax recommended for fiberglass and follow the instructions carefully.



Never wax a gelcoat surface in direct sunlight.

## 7.2. Maintaining the interiors

### 7.2.1. Wooden interiors

The interior details of the boat, such as the locker doors and drawer fronts and wooden strips, are made of oiled walnut.

- · Clean the wooden interior details with a damp cloth and a small amount of soapy water.
- Treat the wooden surfaces again every year to protect the wood.

## 7.2.2. Plastic and painted surfaces

- 1. Wet the surface evenly with water before the actual cleaning.
- 2. Remove stains.
  - Remove regular stains with a brush and a lightly diluted cleaner.
  - Remove grease with a brush or a sponge and window cleaner.
- 3. Clean the surface afterwards with sponge and water.
- 4. Wipe dry with a piece of cloth.



### 7.2.3. Fabrics

The interior fabrics are washed according to separate washing instructions (marking on the fabric). In case the marking is not visible:

- 1. Wash in 40°C with a light spin cycle.
- 2. Hang to drip dry.

The material may slightly shrink. If you want to avoid shrinking, take the fabrics to a dry cleaner.

### 7.2.4. Doors and hatches

- Clean the tracks of sliding doors and hatches regularly and lubricate, if necessary.
- · Do not lubricate the sliding surfaces of the tracks.
- · Lubricate handles and locks with regular lock lubricant.

## 7.3. Maintaining the cover

New covers may leak initially, since the seams need to swell.

To prevent quick deterioration of the cover, secure it tightly in a folded-up position to prevent flapping.

#### **NOTICE**

- Hang to dry. Never use a drying cabinet or iron to speed up drying.
- Check that the cover is completely dry before stowing. Stowing a moist cover can cause mold damage.
- Store the cover in dry indoor conditions for the winter.
- The cover must not be stored in the boat.

## 7.3.1. Cleaning the cover

The cover should be thoroughly cleaned two or three times a year.



Never use high pressure washers or chemical cleaning agents.

- 1. Let the fabric cover soak for at least 24 hours.
- 2. After soaking, wash the inside and outside of the cover with a sponge or a soft brush.
- 3. Use mild soapy water and plenty of water, max. 30°C.
- 4. Rinse thoroughly with freshwater.We recommend mixing 12% vinegar in the final rinsing water to neutralize the soap residues.
- 5. Hang the cover to drip dry.



## 7.4. Preventing frost damage

- The bilge pump system is fitted with a water lock on the hose.
  - Detach the hose and fully drain the water from the water lock and run the pumps dry.
     Otherwise the pumps may freeze and break.
- Unscrew the frost plug on the underside of the shower fittings.
  - If there is no frost plug, unscrew the shower hose.
- Drain the water tank and all other components containing water in order to avoid frost damage.
- · Run the freshwater pump dry to drain out all the water.
- Make sure that no water remains in the boat under any circumstances. Leave the hatches in the cabin partially open.

## 7.5. Checklist: Before winter lay-up

- 1. Wash the hull and bottom immediately after lifting the vessel out of the water.
- 2. Wash all parts inside, also under the floorboards.
- 3. Leave all lockers, drawers, cabin and wardrobe doors open.
- 4. Remove the carpets.
  - Store the carpets and cushions indoors in a dry place.
  - If this is not possible, make sure that the cushions are dry and position them on their side.
- **5.** Be very thorough about having good ventilation in the boat.
- **6.** If the batteries are left aboard, make sure they are fully charged, otherwise the batteries can freeze and crack.

## 7.6. Checklist: Before launching

- Remove the tarpaulin in good time before launching.
- 2. Wash the hull with a regular shampoo and a soft brush.
- 3. Wax the hull, if necessary.
  - Use a standard boat wax.
- **4.** If there are small scratches on the hull or if some of the surface gelcoat has lost its shine, use a rubbing compound on these areas before polishing.
- 5. Paint the bottom with antifouling paint.
- **6.** If the batteries have been removed, put them back and check the electrolyte level in the cells. Check the condition of the batteries.
- 7. Check all cables, clamps, engine mountings and other fastenings.
- **8.** Check the steering before launching.
- 9. Check the instrumentation.
- Close all water drain plugs.
- 11. Check that the seacocks are tight and in order, check for any frost damage.



- 12. Check all pipes, hoses and cocks.
- 13. Make a note of any frost damage.

### 7.7. Corrective maintenance

## 7.7.1. Chalking

A fine rubbing compound as well as a mild detergent reduce the weathering and chalking accumulated on the surface.



Do not apply rubbing compound in direct sunlight.

- Use only a fine grit compound and follow label directions carefully.
- For best result, wax after compounding.

### 7.7.2. Scratches and nicks

Most scratches and nicks can be removed by using a rubbing compound followed by waxing.

### 7.7.3. Stains

The most stains can be removed by washing with a mild detergent.

- For stubborn stains, use a tine abrasive household cleanser followed by waxing to restore original luster.
- For non-water-soluble stains, such as grease, oil, and rubber heel marks, use a solvent such as acetone, rubbing alcohol, toluene or xylene, followed by a mild detergent.
  - If these solvents are not effective, try a rubbing compound or fine sanding followed by waxing.

## 7.7.4. Deep marks, gouges and holes

Deep marks, gouges and holes should be repaired professionally.

Gelcoats can be well repaired by professionals, and in most cases the repair will be undetectable.

#### NOTICE

In cases where the damage has pierced the gelcoat layer, further exposure to water or chemicals should be avoided.

Failure to observe this precaution may result in extensive and potentially costly damage to the underlying laminate structure.



## 8. Environment

When handling environmentally hazardous substances such as fuel, oils, solvents, grease, bottom coats etc. you should consider the following matters:

- Always read the instructions for each product carefully and handle the product with care.
  - Make sure that used packaging, cans and similar items are discarded in designated collection points.
  - If you are in any doubt whether the product is hazardous or not, contact the supplier or vendor of the product.
- The backwash from boats wears down the shoreline and creates problems for other boats near you.
  - Always adjust your speed to the situation and the surroundings to avoid unnecessary backwash.
- Always drive your boat at the most economical engine revs possible, taking the prevailing conditions in account, to avoid unnecessary emissions and noise.
- Make sure that the engine is properly maintained at regular intervals so that noise and emission levels are minimized.
  - Read the engine manufacturers manual carefully.
- As a boat owner you should be aware of local environmental laws, and respect codes of good practice.
  - Never empty the septic tanks or black water tank into waters.
  - Familiarize yourself with the international regulations on the prevention of marine pollution (MARPOL) and comply with these regulations as far as possible.

## 8.1. Requirements for North America

The EPA standards state that in freshwater lakes, freshwater reservoirs or other freshwater impoundments whose inlets or outlets are such as to prevent the ingress or egress by vessel traffic subject to this regulation, or in rivers not capable of navigation by interstate vessel traffic subject to this regulation, marine sanitation devices certified by the U.S. Coast Guard installed on all vessels shall be designed and operated to prevent the overboard discharge of sewage, treated or untreated, or of any waste derived from sewage.

The EPA standards further state that this shall not be construed to prohibit the carriage of Coast Guard-certified flow-through treatment devices which have been secured so as to prevent such discharges. They also state that waters where a Coast Guard-certified marine sanitation device permitting discharge is allowed include coastal waters and estuaries, the Great Lakes and interconnected waterways, freshwater lakes and impoundments accessible through locks, and other flowing waters that are navigable interstate by vessels subject to this regulation (40 CFR 140.3).



## 9. Appendix I: Checklists

## 9.1. Checklist: Fire in the engine

- · Stop the engine.
- · Steer the boat up against the wind, if possible.
- Make sure all passengers have life jackets.
- If necessary:
  - Evacuate the passengers.
  - Call for sea rescue.
- · Shut off fuel, LPG and main power switches.
- Put out possible smoldering fires with water.

### 9.2. Checklist: After fire

- · Open doors and windows for better ventilation.
- Make sure that the fire extinguishing equipment is refilled or replaced after use.

## 9.3. Checklist: Regular inspection before leaving harbor

#### Safety

- · Ensure that all people onboard have own life jacket.
- · Sea condition is sufficient for your boat.
- Dead man's switch is switched to driver.
- Ensure that you have fire extinguisher(s) onboard and they are not expired.
- Ensure that you have needed ropes and anchor onboard.

### **Draining and tightness**

- · Check that there is no water on bilge.
- · Check that all bilge pumps work.
- · Check that there are no fuel or oil leaks, bilge.
- Check that deck drain system is clean and valves are open.
- · Check that all deck hatches are closed tightly.

### Electric and engine

- · Every fuse is in lower position.
- · Main switches are switched on.
- · Batteries have enough power.



- Engine works properly.
- · Engine cooling water flow.
- · You have enough fuel onboard.

## 9.4. Checklist: After using the boat

- Main switches are switched off.
- · Sea-cocks of septic tank and toilet seat are closed.
- · Ensure that direct supply switches are switched on.
- · Bilge is empty of water.
- · Function of every bilge pumps.
- Deck draining works properly and all draining valves are open.
- · All deck hatches, roof canvas and doors are closed tightly.

## 9.5. Checklist: Boat handling before leaving harbor

For safe navigation under all weather conditions, proper sound signaling equipment in compliance with regulations (COLREG, 1972) must be carried on board. Make sure that the sound signaling equipment on your boat is compliant with these regulations.

### **△ CAUTION**

According to national regulations in some countries, it is a legal requirement to wear a life vest at all times.

- · Check that the boat and its equipment are in seaworthy condition.
- Always listen to long-term weather forecasts when planning longer trips.
- Always make sure there is enough fuel and freshwater in the tanks.
- · Always keep the engine compartment closed when starting the engine.
- Check that all items on board are properly stowed and adequately secured to manage rough sea and wind conditions.
- Make sure that the swim ladder is raised out of the water before moving off.
- Make sure that the steering is correctly positioned before starting.
- All persons on board should wear an appropriate life vest when on deck.

## 9.6. Checklist: Before anchoring

- 1. Check the chart to see if anchoring is permitted in the area.
- 2. Listen to the weather forecast for the area and take note of the expected wind conditions.
- 3. Switch on the echo sounder.
- Study the seabed conditions and make sure that there is good holding ground.



- 5. Check that the safety chain has been released from the anchor.
- 6. Wait until you have reached the intended anchoring point before lowering the anchor.
- 7. Let out the anchor line equal to at least three times the depth of the water.
- 8. Put the engine in astern to check that the anchor has taken hold (only when bow anchoring).
- 9. Note your position on the GPS. Regularly check that the boat has not moved from its position.
- 10. Set the echo sounder to "Anchor Watch".



Always fix the anchor in such a way that it is securely fastened onto the boat. An anchor that falls off when under way may cause serious damage to the boat and mortal danger to the crew.

## 9.7. Checklist: Before winter lay-up

- 1. Wash the hull and bottom immediately after lifting the vessel out of the water.
- 2. Wash all parts inside, also under the floorboards.
- 3. Leave all lockers, drawers, cabin and wardrobe doors open.
- 4. Remove the carpets.
  - Store the carpets and cushions indoors in a dry place.
  - If this is not possible, make sure that the cushions are dry and position them on their side.
- **5.** Be very thorough about having good ventilation in the boat.
- **6.** If the batteries are left aboard, make sure they are fully charged, otherwise the batteries can freeze and crack.

## 9.8. Checklist: Before launching

- 1. Remove the tarpaulin in good time before launching.
- 2. Wash the hull with a regular shampoo and a soft brush.
- 3. Wax the hull, if necessary.
  - Use a standard boat wax.
- **4.** If there are small scratches on the hull or if some of the surface gelcoat has lost its shine, use a rubbing compound on these areas before polishing.
- 5. Paint the bottom with antifouling paint.
- **6.** If the batteries have been removed, put them back and check the electrolyte level in the cells. Check the condition of the batteries.
- 7. Check all cables, clamps, engine mountings and other fastenings.
- 8. Check the steering before launching.
- 9. Check the instrumentation.
- 10. Close all water drain plugs.
- 11. Check that the seacocks are tight and in order, check for any frost damage.



- **12.** Check all pipes, hoses and cocks.
- **13.** Make a note of any frost damage.



# 10. Appendix II: Fuel system



# 11. Appendix III: Electric diagrams