

XO

220

S OPEN

[WWW.XOBOATS.FI](http://WWW.XOBOATS.FI)

## XO BOATS

### PREFACE

Congratulations on your new Finnish XO boat! We want to thank you for choosing XO and we hope you enjoy the time you spend aboard.

The purpose of this manual is to help you operate your boat with safety and pleasure. The manual contains the details of the boat and the associated or installed equipment and systems, as well as information on its operation and maintenance.

Please read the manual carefully and familiarise yourself with the boat before using it. Naturally, you cannot learn the skills of seamanship and safe boating by reading a User Manual. If this XO is your first boat, or if you are changing to a type of boat you are not familiar with, for your own comfort and safety please ensure that you obtain handling and operating experience before assuming command of your boat. Your dealer, boating clubs and national sailing and yacht federations will be pleased to advise you of local boating schools and competent instructors.

Make sure that your boat's design category is appropriate for the expected wind and wave conditions, and that you and your crew are capable of handling the boat in such conditions. The wind and wave conditions specified for design category C may include gales and high winds, with risk of exceptional waves and gusts. Such conditions are dangerous and can be sufficiently handled only by a

competent and fit crew in a well-maintained boat. This User Manual is not a detailed maintenance or troubleshooting guide. If a problem occurs, please contact your XO dealer. If a repair is required, use only the companies recommended by your XO dealer.

**KEEP THIS MANUAL IN A SAFE PLACE AND HAND IT OVER TO THE NEXT OWNER IF YOU SELL THIS BOAT.**



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**BOAT MODEL: XO 220 S OPEN**

Craft Identification Number – CIN: .....

Engine make and model: .....

Engine serial number: .....

**1ST OWNER**

First name:

Last name:

Place of domicile:

Year of purchase:

**2ND OWNER**

First name:

Last name:

Place of domicile:

Year of purchase:

**3RD OWNER**

First name:

Last name:

Place of domicile:

Year of purchase:

**4TH OWNER**

First name:

Last name:

Place of domicile:

Year of purchase:

**5TH OWNER**

First name:

Last name:

Place of domicile:

Year of purchase:

**6TH OWNER**

First name:

Last name:

Place of domicile:

Year of purchase:





## 1 BEFORE DEPARTURE

**Read this User Manual carefully.**

Before each departure, check at least the following:

### **Weather and weather forecast**

Take the wind, waves and visibility into account. Is your boat's design category, size and equipment, as well as the skills of the helmsman and crew adequate for the waters you are about to boat?

### **Load capacity**

Do not overload the boat and always distribute the load properly. To avoid diminishing your boat's stability, do not place heavy items too high up.

### **Passengers**

Make sure that a life jacket is available for each person on board. Before departure, agree on the tasks to be performed by each person during the outing.

### **Fuel**

Make sure that there is enough fuel on board, including a sufficient reserve in case of bad weather, for example. You should have at least a 20% reserve to allow for the unexpected.

### **Engine and equipment**

Check the operation and condition of steering, electrical devices and battery, and perform all daily inspection procedures specified in the engine manual. Check the boat's seaworthiness in general: check the boat for fuel and water leaks, make sure that the necessary safety equipment is on board, etc. Check that the bilge water level is at the minimum.

### **Ventilation**

Make sure that the fuel tank compartment is properly ventilated to minimise the risk of fire.

### **Securing of equipment**

Make sure that all items on board are secured so that they remain in place in rough seas and high wind.

### **Nautical charts**

If you are not fully familiar with the planned route, make sure that you have nautical charts that cover a large enough area.

### **Departure procedures**

Agree with the crew on whose task it is to detach each line, etc. Make sure that the mooring lines or any other lines do not get caught in the propeller during manoeuvring.

**REFER TO THE SEPARATE ENGINE MANUAL FOR ADDITIONAL INSTRUCTIONS ON THE ENGINE.**



## 2 GENERAL

The purpose of this User Manual is to help you familiarise yourself with the characteristics of your new boat. Separate manuals for the equipment installed on the boat are attached and also referred to in a number of sections of this manual. Naturally, you can complement this manual with manuals of any device installed later on. There is also space reserved for your own notes at the end of this manual.

The warnings and precautions in this manual are defined as follows:

### DANGER!

Indicates a serious hazard that will most likely result in death or permanent injury unless appropriate precautionary measures are taken.

### WARNING!

Indicates a hazard that could result in injury or death unless appropriate precautionary measures are taken.

### NOTE!

Indicates a reminder of safe practice or directs attention to a dangerous practice that could result in injury or damage to the boat or its components.

The units used in this manual are in accordance with the SI system. In some cases, however, other units are added in brackets. An exception to the above is the wind force, which is expressed in the Beaufort scale in the Recreational Craft Directive (RCD).

### 3 WARRANTY

This boat and the equipment installed by the boatbuilder are covered by a warranty as specified in detail below. The engine, trim tabs, compass, any navigation devices and other retrofitted devices are subject to any warranty of their respective manufacturers. Separate warranty cards for these devices and appropriate supplier information are included as an attachment. For other warranty issues, please contact your XO dealer indicated on the front cover.

### 4 BEFORE USING YOUR BOAT

#### 4.1 REGISTRATION

In many countries, even a small motor boat must be registered. Contact the local authorities for the registration requirements in your country. To drive a registered boat, one must usually meet the requirements for minimum age and also possibly have a separate boat driver's licence.

#### 4.2 INSURANCE

Boat insurance can cover for damage when the boat is in use, transported or stored. Remember to check the insurance coverage separately for lifting operations. Insurance also has an indirect effect on safety at sea: in the event of a serious accident, you can focus fully on the essential – saving lives above all else. More detailed information on various insurance alternatives is available from insurance companies.

#### 4.3 TRAINING

There is a lot of boating literature available, and a great deal of beneficial and practical information can also be gained from boating clubs and by attending navigation courses. These can provide a sound basis for your skills, but sureness in handling, navigating, mooring and anchoring the boat is only acquired through practice.

## 5 BOAT CHARACTERISTICS AND OPERATION

### 5.1 GENERAL

This User Manual is not intended to be a comprehensive maintenance guide or repair manual. Instead, the purpose is to help you familiarise yourself with the characteristics of your new boat and show you how to use it properly.

#### 5.2 Principal boat data

XO 220 S:

Boat type: XO 220 S

Design category: C (inshore)

Maximum recommended load: 690 kg

See also Section 5.4 'Load capacity'

#### Design category C can be defined as follows:

Category C: The boat is designed for conditions in which the wind force does not exceed 6 on the Beaufort scale (about 14 m/s) and waves are consistent with the wind force (the significant wave height must not exceed 2 m, with occasional waves of 4 m maximum). Such conditions can occur in open water on lakes, estuaries, and in coastal waters in moderate weather.

#### NOTE!

The significant wave height is the average height of the highest third of the waves. This roughly corresponds to an experienced observer's estimate of the wave height. Waves of double this height may occasionally be experienced.

#### Main dimensions and capacity:

The length, beam, draught, total weight, etc., and fuel tank capacity of the boat are described in Appendix 1 'Technical specifications'.

#### Builder's plate:

Part of the above information is indicated on the builder's plate attached to the boat in the vicinity of the helm station. More detailed information is given in the appropriate sections of this manual. Please note that, for example, the maximum load capacity indicated on the builder's plate does not include fuel, but the fuel is included in the maximum recommended load specified by the manufacturer.

### 5.3 MAXIMUM RECOMMENDED NUMBER OF PERSONS

The maximum recommended number of persons on this boat is 6. The designated seating arrangement is shown in Figure 1.

#### WARNING!

Do not exceed the maximum recommended number of persons on board. Irrespective of the number of persons on board, the total weight of the persons and equipment must never exceed the maximum recommended load (see Section 5.4 'Load capacity'). Always use the seats in the boat. If your boat is not equipped with seats for 6 people, the passengers must sit on the sole in the positions indicated in the figures.

## 5.4 LOAD CAPACITY

The maximum recommended load for XO 220 S is 690 kg. An adult's weight is taken to be 75 kg and a child's 37.5 kg. The maximum recommended total weight of the persons on board is 450 kg. In addition to the maximum recommended weight of persons mentioned above, the boat can be loaded with the following: 30 kg of basic equipment and 150 kg of fuel in the fixed fuel tank. The recommended load includes only the weight components specified above.

### WARNING!

Never exceed the maximum recommended load when loading your boat. Always load up the boat carefully and distribute the load properly so that the designed waterline is maintained (approximately on an even keel). Avoid placing heavy weight in a high position.

## 5.5 ENGINE AND PROPELLER

The maximum rated outboard engine power for XO 220 S is 148 kW. Normally, outboard engines are designed to be installed so that the cavitation plate above the engine propeller is level with the boat's keel line. Always follow the engine manufacturer's instructions when installing the engine and choosing the propeller. In addition, read the engine manual carefully. When starting the engine, check that the cooling water flows properly and make sure that the gear is in the neutral position. If the engine starts when the gear is not in neutral, contact your nearest service centre.

## 5.6 FLOODING AND STABILITY

### 5.6.1 Openings in the hull and deck

The XO boats are not equipped with plugs for draining the deck, but the drain pipes are fitted with shut-off valves. See the general layout of XO 220 S (Appendix 2). XO 220 S has two drain holes located on the deck from where the rainwater is drained. In addition to the 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. Clean out the holes regularly by removing any accumulated debris to prevent clogging. The boat is also equipped with a screw-in transom drain plug at the bottom corner of the transom that can be used for draining the boat when it is laid up ashore or on a trailer.

### NOTE!

The self-draining deck system is intended to drain the majority of rainwater and water ending up on the deck through splashing or from breaking waves. A portion of the rainwater and water condensing in the bilge may end up in the bilge. **DO NOT LEAVE THE BOAT UNATTENDED IN WATER FOR LONG PERIODS. PAY ATTENTION TO THE FLOATING POSITION OF THE BOAT AND DRAIN THE BILGE WHEN NECESSARY. Leaving the boat unattended in water for a long period may lead to damage.**

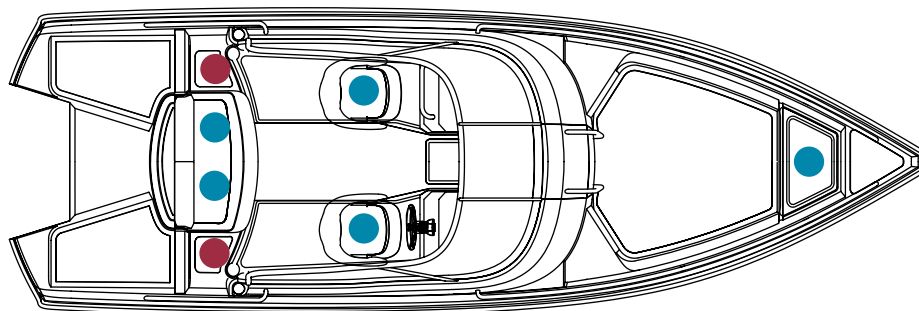
### 5.6.2 Bilge pumps and drainage

The location of draining devices is shown in Figure 2. The bilge pumps are positioned as close to the bottom plate as is practically possible. Despite this, it is completely normal that a small amount

**Loading and seating**

(Figure 1)

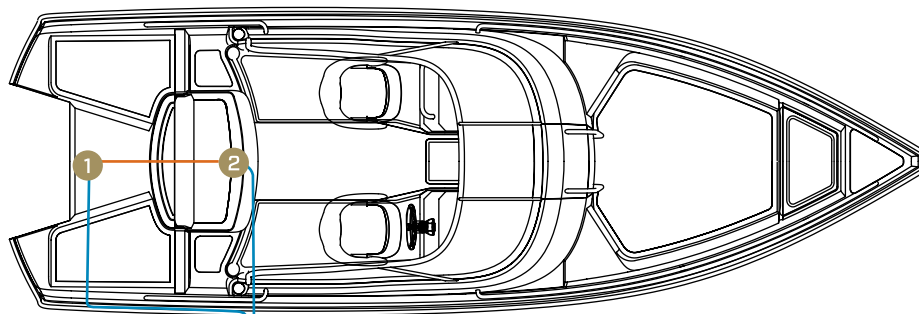
- Seat
- Alternative seat



**Bilge pumps and drainage**

(Figure 2)

- 1 Electric bilge pump
- 2 Manual bilge pump
- Bilge pump intake and intake hose
- Bilge pump discharge hose



of water remains in the bilge so that it cannot be discharged by the bilge pump. XO 220 S is equipped with an automatic, electric bilge pump. It discharges water accumulated in the bilge when the level sensor detects water. The automatic pump is always in the standby mode irrespective of the main switch position, provided that the battery is connected. The bilge pump starts when the sensor has been fully submerged for 5 seconds, and stops once the sensor does not detect water. The pump can also be activated manually with the spring-loaded switch located on the switch panel. Regularly check the electric bilge pump inlet and remove any debris. You can access the pump through the service hatch in the engine well.

#### **WARNING!**

The bilge pump system is not designed to deal with a leak resulting from running aground or other damage.

#### **NOTE!**

Check the amount of bilge water by emptying the bilge manually with the spring-loaded switch located on the switch panel every time before use.

We recommend that the user has at least one bucket or bailer on board.

#### **NOTE!**

Regularly check the operation of the bilge pump. If you notice that the bilge pump does not operate properly, remove any debris from the pump inlet and contact your XO dealer if necessary.

### **5.6.3 Stability, buoyancy and flotation**

The stability of your XO boat is excellent due to its hull design and weight distribution. However, remember that high breaking waves always represent a serious danger to stability. Also note that the stability of your boat will be compromised if any weight is placed in a high position. All changes in the positioning of different weights in the boat can have a significant impact on the stability, trim and performance of your boat. If you are planning such changes, please contact the boat manufacturer. The amount of bilge water should be kept at a minimum because freely moving water in the boat always impairs the boat's stability. Also note that stability can be diminished when towing or being towed.

## **5.7 MINIMISING RISK OF FIRE AND EXPLOSION**

### **5.7.1 Engines and fuel systems**

The XO 220 S is equipped with a fixed fuel tank, which is located in the centre section of the bilge area. Shut down the engine before refuelling. Do not smoke or use a naked flame. Do not use any electrical devices. The fuel fillers are located on both sides of the boat, above the deck drain holes. Lift the spare fuel tank out of the boat for refuelling to prevent fuel from getting in the bilge in case of overfill. When you refuel in a fuel station, do not use a plastic funnel that will prevent discharge of static electricity between the pump nozzle and fill fitting. After filling the tank (for the tank capacity, see Appendix 1 'Technical specifications'), check that no fuel has leaked into the bilge or engine compartment, and immediately remove any spilled fuel. Do not keep spare fuel canisters in an unventilated space or have them loose in the boat, and do not



keep any equipment containing fuel in a place that is not specifically designed for it. At least once a year, check the fuel hoses for wear.

### 5.7.2 Fire-fighting and prevention

Whenever the XO 220 S is used, it must be equipped with fire extinguishers with a minimum fire rating of 8A 68B. The minimum fire rating for an individual fire extinguisher is 5A 34B. A hand-held fire extinguisher is located in the front section of the port seat console, as shown in Figure 3. You must have the hand-held fire extinguishers inspected regularly at specified intervals, depending on the legislation in your country. Contact the local fire authorities for the inspection policy in your country. If you are unsure of the inspection policy in your country, have your hand-held fire extinguishers inspected once a year. The manufacturing date of a hand-held fire extinguisher is indicated on a label attached to the fire extinguisher. Fire extinguishers that are more than ten years old will not be approved unless the pressure vessel is pressure tested again. When replacing a hand-held fire extinguisher, it must be replaced with an extinguisher with an extinguishing capacity that is at least the same as the old one. The owner/user of the boat should make sure that there is at least one easily accessible fire bucket with a line attached to it. Make sure that all fire-fighting equipment is easily accessible when the boat is loaded. Inform all crew members of the location and operation of the fire-fighting equipment. Keep the bilge free of fuel and check the fuel system for leaks regularly. Fuel smell is a sure sign of a fuel leak. If your boat is equipped with a heater, refer to the heater manufacturer's instructions for its safety instructions.

#### SPECIAL WARNINGS

##### Never

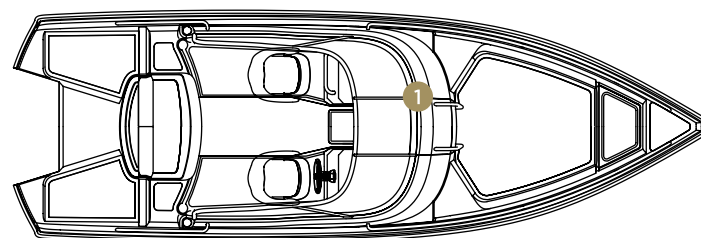
- obstruct access to the safety equipment, fire extinguisher, fuel valves or main switch
- block any ventilation openings as they are designed to vent out any fuel vapour.

##### Also, never

- make changes to your boat's electrical or fuel system, or allow an unqualified person to make changes to any system on the boat
- fill the fuel tank or handle fuel when the engine is running

#### Location of fire extinguishers

(Figure 3)



1 Fire extinguisher

- smoke or use a naked flame when handling fuel
- keep fuel in a space that is not designed for such purpose. If the boat is not equipped with a heater, a spare fuel tank can be stored in place of the heater's tank.
- leave the boat unattended when a cooker or heater is in use.

## 5.8 ELECTRICAL SYSTEM

The boat's wiring diagram is shown in Appendix 3. The main switch is located on the starboard side, behind the helm station. However, the automatic bilge pump is always operational when the battery is connected. When the circuit is closed, the various devices can be operated with the switch panel at the helm station.

The navigation lights are switched on with the running light switch (see Figure 5). Remember to install the removable mast light in position. Windscreen wipers on either side of the boat are operated with appropriate switches. To check the amount of bilge water, activate the bilge pump with its switch (see Figure 5). If you cannot hear the sound of water flowing beside the boat at the stern, the automatic system has drained the water properly.

The electrical system is pre-fitted for adding various optional equipment, and is fully fitted for adding a radio/CD player and two speakers.

The boat is also partially fitted for adding a fuel-burning heater. The layout of controls and electrical equipment is shown in Figures 4, 5 and 6. The fuses for electrical circuits are located in a separate fuse panel inside the helm console (see Figure 4). The XO boats

are equipped with automatic fuses. If such a fuse is tripped as a result of overload, you can easily reset it by pushing down the fuse button that has popped up. The electrical system has two additional circuits, 'Extra 1' (10 A) and 'Extra 2' (10 A) (wiring diagram positions F13-F14 and F17-F19). These circuits are protected with fuses and are designed for connecting retrofitted optional equipment. The wires for these circuits can be found in the switch panel. Do not replace the fuses with fuses that have higher current ratings, and do not add components to the electrical system so that the circuit's nominal amperage rating is exceeded.

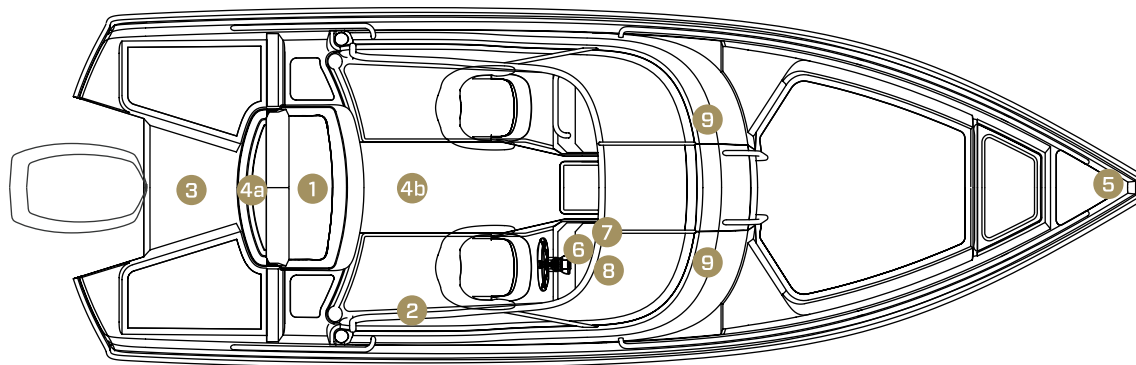
Zinc anodes are installed on the transom. Replace the anodes when they are over 50% of their original size.

### WARNING!

**Never use the hull for earthing. Both the negative and positive sides of all electrical installations must be insulated from the hull.**

## Electrical equipment

(Figure 4)



Location of electrical equipment:

- 1 Battery compartment
- 2 Main switch
- 3 Bilge pump

- 4a Mast light, white, 360°
- 4b Mast light white, 360° (w/ targa arch)
- 5 Navigation lights, red and green
- 6 Switch panel
- 7 Power outlet, 12 V, max. 10 A
- 8 Fuse panel (see Figure 6)
- 9 Windscreen wiper



## CONTROLS

(Figure 5)

### Switch panel:

- ❶ Bilge pump switch
- ❷ Horn
- ❸ Windscreen wiper, port
- ❹ Windscreen wiper, starboard
- ❺ Navigation light switch
- ❻ AUX

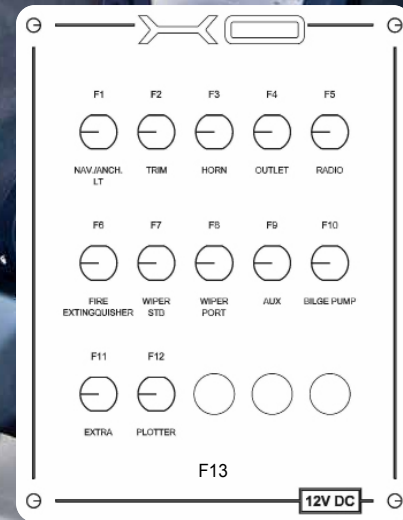
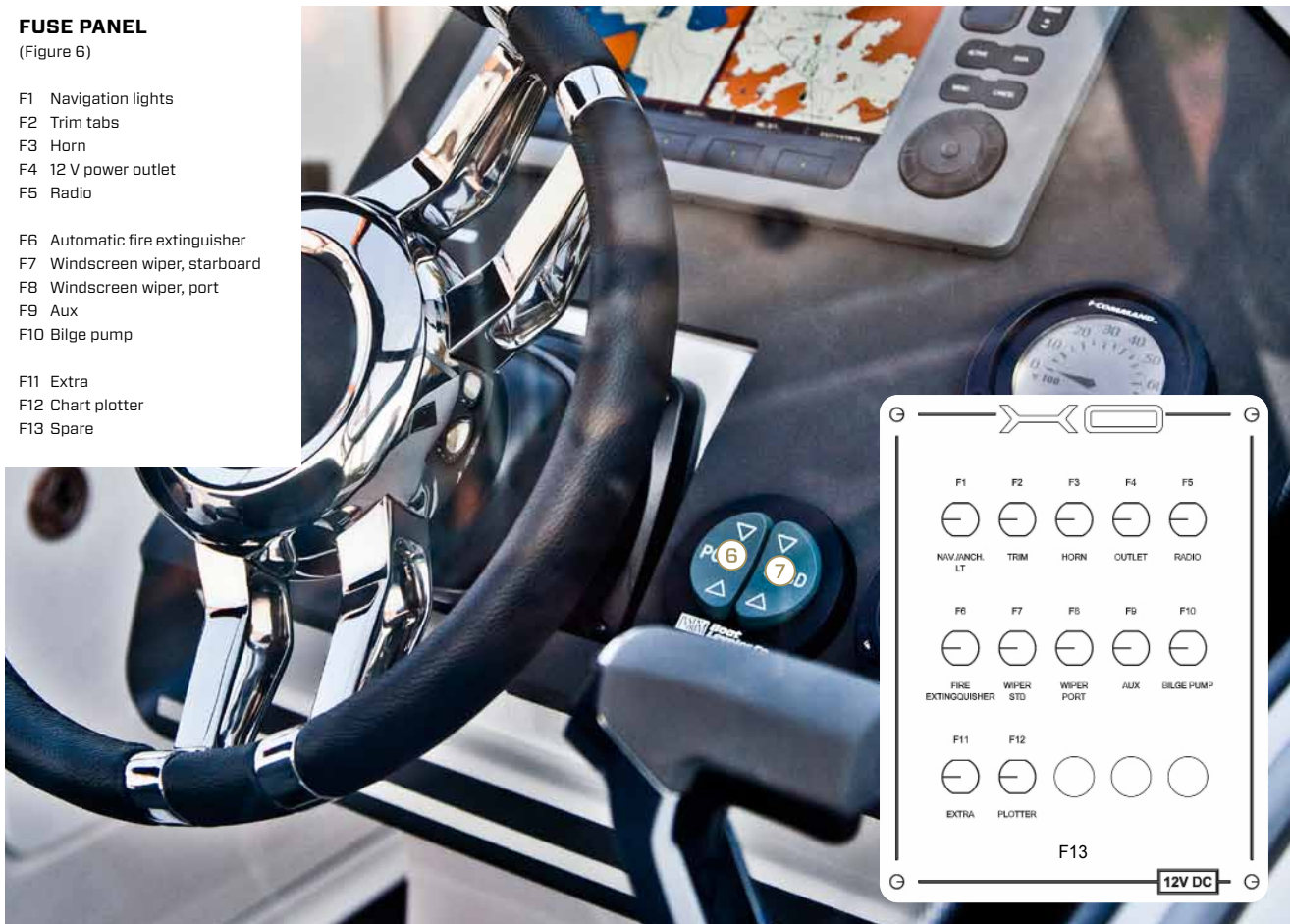
On the next page (Figure 6):

- ❻ Trim tab control, port
- ❼ Trim tab control, starboard

## FUSE PANEL

(Figure 6)

- F1 Navigation lights
- F2 Trim tabs
- F3 Horn
- F4 12 V power outlet
- F5 Radio
  
- F6 Automatic fire extinguisher
- F7 Windscreen wiper, starboard
- F8 Windscreen wiper, port
- F9 Aux
- F10 Bilge pump
  
- F11 Extra
- F12 Chart plotter
- F13 Spare



## NOTE!

- When retrofitting optional equipment on the boat, use the 'Extra 1' or 'Extra 2' circuits. Connect the device to both the power supply and negative wire. Never earth the device to the hull.
- If you leave the boat for a longer period, turn the main switch to the off position. Disconnect the battery from the electrical system before carrying out electrical installations. When you disconnect or connect the batteries, be careful not to simultaneously touch both battery posts or aluminium parts of the boat with a metal spanner or other metal tool.
- Use only the engine or a battery charger to charge the batteries. Charging with too high a current presents a risk of battery explosion. Make sure that the battery compartment is properly ventilated. Charging a battery generates hydrogen gas which can explode if the ventilation is not sufficient.
- Never turn the main switch to the off position when the engine is running, because this can damage the engine. Do not make changes to your boat's electrical system or related diagrams. All changes and servicing must be carried out by a qualified technician specialised in marine electrical systems.

## 5.9 HANDLING CHARACTERISTICS

### 5.9.1 Driving at high speed

The maximum rated engine power is **148 kW (200 hp)**.

Do not use the boat if it has an engine with a higher power rating than that indicated on the builder's plate. Use the engine's electro-hydraulic power trim feature as follows:

- When you are rising the boat to plane, adjust the trim to the 'bow

down' position

- Once the boat is on plane and if the waves are small, lift the bow until the boat starts to porpoise, the propeller loses grip or the engine reaches the upper limit of its normal adjustment range. Then lower the bow from this position slightly so that the ride feels stable. You can use the speed log to optimise the trim.
- When running into a head sea, lower the bow to make the run smoother. In a following sea and a very high head sea, lift the bow slightly to prevent it from diving in.
- Do not drive the boat at high speed when the trim is negative, i.e. when the bow is low, because the boat can heel and become unstable to steer. To adjust the trim, also refer to the engine manufacturer's instructions.

## WARNING!

If you drive at high speed, adjust the trim carefully as it will radically change the behaviour of the boat. Do not drive with the bow too low because the boat can suddenly turn. Do not drive the boat at high speed when the trim is negative (bow low). The boat can heel or become unstable in turns.

## WARNING!

Handling is impaired at speeds exceeding 40 knots. Rapid turns can lead to loss of control. Slow down before sharp turns in either direction. Avoid rapid movements while driving at high speed. Do not drive at full speed if traffic on the waterway is high or visibility is restricted.

### WARNING!

Waves impair the boat's handling and can cause it to heel. Take this into account and reduce speed when waves become higher.

Learn and obey the rules of navigation on waterways, and also familiarise yourself with the rules known as COLREGs (International Regulations for Preventing Collisions at Sea) that you must follow at all times. According to the rules, every vessel must maintain a proper look-out and obey the give-way provisions at all times. Navigate carefully and use new or updated nautical charts. Always adjust your speed in relation to the prevailing conditions and environment.

Pay attention to the following:

- waves (also consult your passengers on their opinion of a comfortable speed)
- your own wake (highest when rising to plane and lowest at displacement speed, i.e. below 10 knots). Always observe no wake zones. Slow down to reduce your wake to be courteous and also for the safety of yourself and others in the area.
- visibility (islands, fog, rain, blinding sun)
- knowledge of the route (time required for navigation)
- narrowness of the route (other traffic, noise and impact of wakes on shore)
- space required for stopping and taking evasive action.

### 5.9.2 DEAD MAN'S SWITCH

Attach the lanyard of the dead man's switch to your person immediately after detaching the mooring lines. For more detailed instructions, refer to the engine manual. It is very important that the boat

stops if you stumble on board or fall overboard for some reason, 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.

### DANGER!

A rotating propeller can be lethal for a swimmer or person who has fallen overboard. Use the dead man's switch and shut down the engine when a swimmer or water skier climbs on board.

### 5.9.3 Visibility from the steering position

Driving in beautiful and calm weather is easy once you ensure proper visibility which also complies with the rules of COLREG. Always ensure that visibility from the steering position is as good as possible:

- position the passengers so that they do not impair the helmsman's visibility
- do not drive continuously at planing threshold speed at which high bow rise impairs visibility
- adjust the engine power trim and possible trim tabs to set the boat position so that the rising bow does not impair visibility
- remember to keep a good lookout astern as well, especially on fairways in case of approaching ships. Use appropriate navigation lights after dark and in limited visibility (fog, heavy rain).

## 5.10 SAFE OPERATION - OTHER RECOMMENDATIONS AND INFORMATION

### 5.10.1 Protection from falling overboard and means of reboarding

Your boat's working decks are indicated in Figure 6. Do not sit, stand or stay on any other section of the boat when moving. Before you get underway, make sure that the aft rails are in the locked position. If someone falls overboard, the easiest way to reboard is via the bathing/rescue ladder on the stern. A person in the water can also deploy the ladder.

### 5.10.2 Securing loose equipment

Secure all heavy equipment (for example, anchors) before getting underway. Pay attention to lightweight items as well because they can be easily taken away by wind. Keep all hatches closed when underway.

### 5.10.3 Respect for the environment

Archipelagos and lakes are unique, and their conservation is a matter of honour for all boaters.

Do your best to avoid the following:

- fuel or oil spills
- disposing rubbish or waste into the water or on shore
- discharging detergents or solvents into the water
- loud noise both out on the water and in harbours
- **generating high wakes, especially in narrow passages and shallow waters.**

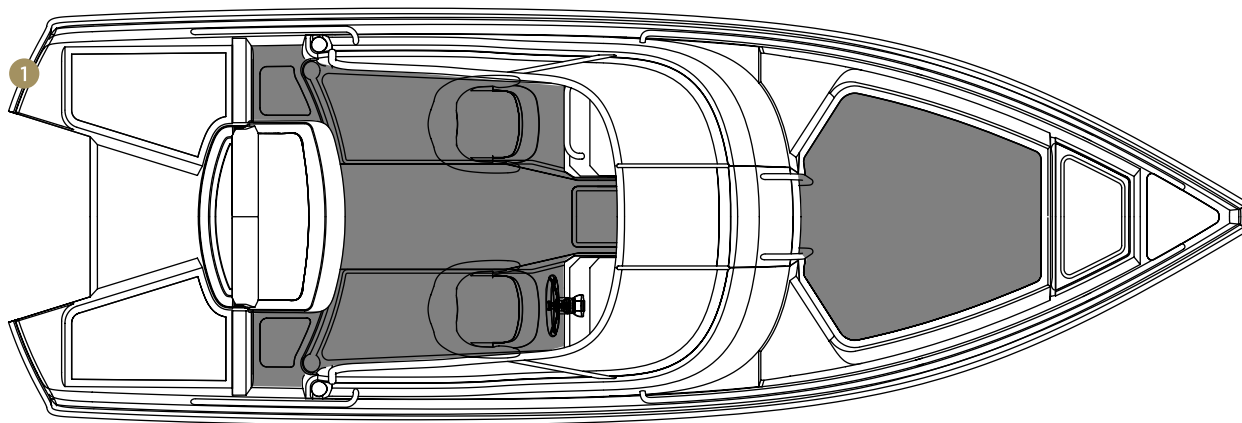
Observe the local environmental legislation and regulations. Familiarise yourself with the international regulations on the prevention of marine pollution (MARPOL) and comply with these regulations as far as possible.



## WORKING DECKS AND BATHING LADDER

(Figure 6)

- 1 Bathing ladder
- Working decks



#### 5.10.4 Anchoring, mooring and towing

Always moor your boat carefully, even in sheltered places, because conditions can change rapidly. The mooring lines should be equipped with appropriate absorbers to dampen shocks. For the location of fastening points, see Figure 7. Do not use other boat components for fastening, towing or anchoring. Use sufficiently large fenders to protect the boat from chafing. The eye on the stem is only designed for docking on a slipway or for fastening the boat to a trailer. It is not to be subjected to lateral forces present when, for example, the boat is secured to a dock. The strength ratings for the fastening points are also shown in Figure 7.

The owner/user of the boat is responsible for ensuring that the mooring, towing and anchoring lines, as well as the anchors and anchor chains are appropriate for the intended use of the boat, and that the tensile strength of the lines and chains does not exceed 80% of that of the corresponding fastening points. However, wear and tear of the lines and knots weakening the lines must be taken into account. If you tow the boat, note that the strength ratings for the front cleats differ from those of the aft cleats. If you are going to beach the boat at an excursion harbour or similar natural harbour, make sure that the depth of the water is sufficient and **DROP YOUR ANCHOR AT A SUFFICIENT DISTANCE FROM THE SHORE**. A fair holding power is achieved if you pay out anchor rode so that its length is 4 to 5 times the depth of the water at the point where you dropped the anchor. The grip is increased the more anchor rode you deploy. The anchor holding power is also significantly increased if the first 3 to 5 metres of the anchor rode is weighted line or chain.

#### WARNING!

**Do not try to stop the boat by hand or place your hand or leg between your boat and a dock, shore or another boat. Practice docking and beaching in good conditions and remember to apply the engine power in a gentle but determined manner.**

When you moor your boat, bear in mind the wind-direction changes, rise and fall of water level, wakes, etc. Additional instructions can be provided by your insurance company, for example. If you tow another boat or if your boat is being towed, always drive slowly and use a floating tow line that is sufficiently strong. Start towing carefully, avoid sudden jerks and do not overload the engine. Make sure that the tow line cannot get caught in the propeller. If the boat you are towing is of the displacement hull type, never exceed its hull speed. If you tow a small dinghy, adjust the length of the tow line so that the dinghy rides downhill on your wake. However, you should pull the dinghy close to the transom in narrow passages and on high waves to minimise wiggling. Carefully secure all equipment in the dinghy in case it capsizes. Cover the dinghy if you tow it on waves in open water to prevent it from being filled by splashing water. If you tow another boat or if your boat is being towed, attach the tow line to the fastening points shown in Figure 8. Attach the tow line so that it can be detached under load.

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

Always attach the tow line so that it can be detached under load.

#### NOTE!

- The tensile strength of the lines or chains should normally not exceed the strength of the fastening point in question.
- Always attach the tow line so that it can be detached under load.
- 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.

#### WARNING!

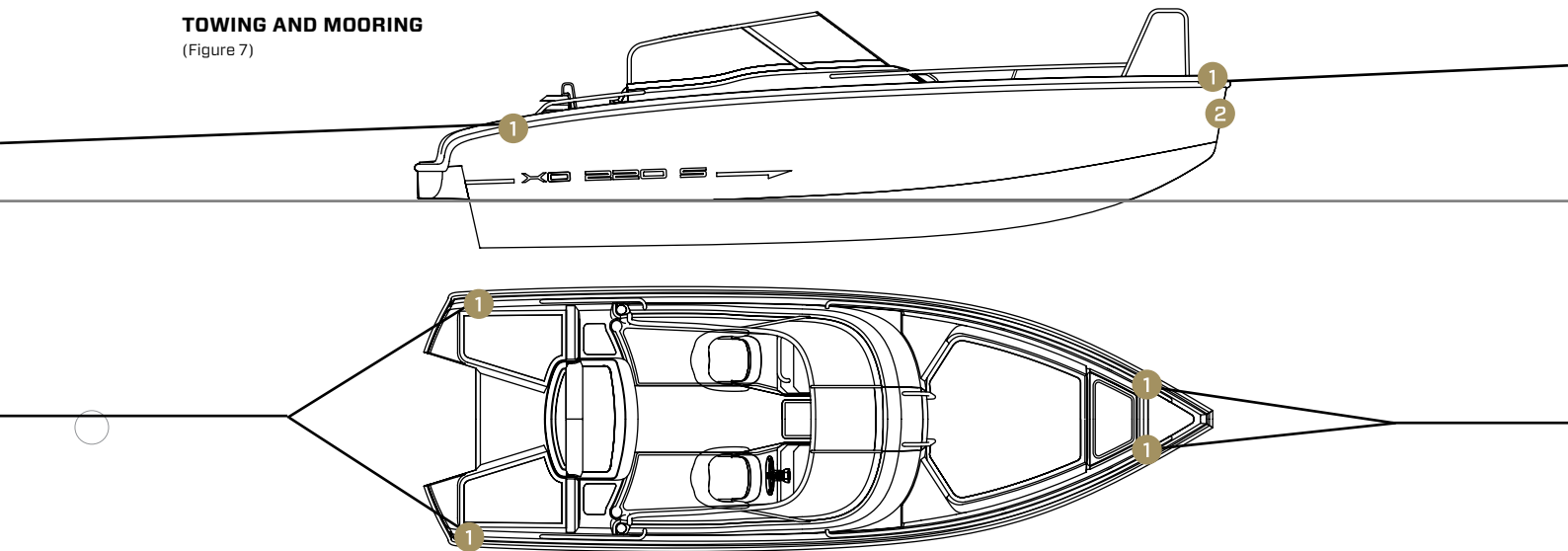
The tow line is subject to high tension. If the line breaks, the loose end could cause death due to high speed. Always use a line that is sufficiently thick, and never stand in line with the tow line.

The strength rating for the front cleat in towing and anchoring is 22 kN.

For mooring purposes, the forward force rating for the front cleats is 18.1 kN and for the aft cleats 15.4 kN.

### TOWING AND MOORING

(Figure 7)



1 Fastening points (cleats) for towing, mooring and anchoring 2 Eye for trawling

### 5.10.5 Trailering

Before lifting your XO boat onto the trailer, make sure that the trailer is suitable for your boat: there is 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. Carefully familiarise yourself with the national road traffic regulations on towing a trailer and associated licence requirements. Also check that the towing capacity of your vehicle is sufficient for the intended combination. Before loading the boat on the trailer, remove any unnecessary weight from the boat and drain the bilge water. Adjust the side supports of the trailer so that the most weight of the boat rests on the keel supports and the side supports only offer lateral support. Use only the eye on the stern to load the boat on the trailer because the other fastening points are not strong enough to withstand the weight of the boat in loading operations. Fasten the boat securely to the trailer before trailering on the road. Protect the boat by placing suitable padding between the tie-down straps and the boat if necessary. Refer to the engine manual for any instructions on trailering.

In addition, 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. Moreover, 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. Moreover, make sure that the boat door is properly closed before trailering.

#### NOTE!

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

#### WARNING!

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.

#### WARNING!

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.

### 5.10.6 Navigation

You must always have a compass and an up-to-date nautical chart on board, even if you navigate using a chart plotter or other such device. The GPS devices are intended to support navigation and they should not be used as the primary navigation tool. The helmsman of the boat must have at least basic navigation skills.

## 6 SERVICE, REPAIRS

### AND WINTER STORAGE

For information on your boat's maintenance, winter storage, service and repairs, please consult your local XO dealer. If you detect any major damage on the aluminium or surface finish, you should have it repaired by an authorised XO dealer. In case of a problem with the engine or a retrofitted equipment, please consult the appropriate supplier first.

#### NOTE!

Make sure that the cleaners, protectors and other surface treatment agents are suitable for aluminium and other surfaces you treat. Always follow the chemical manufacturer's instructions.

## 7 OPTIONAL EQUIPMENT

### 7.1 GENERAL

#### NOTE!

If not carried out properly, many installation and modification operations can damage the boat structure or create a safety hazard. Please contact the manufacturer before you or somebody else does any of the following: construct new earthing points or hatches, fasten or install new equipment on the boat, or mount other metal alloys to aluminium.

#### NOTE!

If you or somebody else installs optional equipment on the boat, use insulating washers made of non-conductive material under the surface that is in contact with the treated aluminium surface (i.e. under the mounting surface of the equipment or screw head).

### 7.2. INSTALLING OPTIONAL EQUIPMENT

XO 220 S can be equipped with a range of optional electrical equipment for which the necessary circuits are already fitted and wires routed. Below is a description of the possible optional equipment and the location of appropriate wiring. For more detailed installation and operating instructions, refer to the instructions supplied by the equipment manufacturer.

#### 7.2.1 Heater

The boat layout features a reservation for installing a diesel-burning heater. The actual heater with the associated systems is to be installed inside the passenger console. For more information, refer to the installation instructions supplied by the heater manufacturer and the heater installation instructions for the XO 220 S.

#### 7.2.2 Radio/CD player

A wire harness for installing a car radio/CD player on the boat is available as an option. The head unit is to be installed on the port console under a sliding cover. The wire harness is equipped with an Euro connector, which contains the constant power supply by-passing the main switch for the radio memory function, the main power supply via the main switch, and the necessary wires for two speakers. The speaker wires are routed to each console, and the speakers are to be installed on the footwell wall.



## APPENDIX 1 TECHNICAL SPECIFICATIONS

The boat is marked with a running serial number known as the CIN (Craft Identification Number). The CIN is marked on the hull, on the starboard side of the stern, on the outer surface of the transom beside the edge strip. You can record the CIN of your boat in the table below. When contacting the builder or a dealer, indicate the CIN and the boat type to make it easier to supply the correct spare parts.

Type identification: XO 220 S Open

CIN:

Engine make and model:

Engine serial number:

Hull material: Marine aluminium, AlMg4,5/ 5083

### XO 220 S Open

#### Main dimensions:

Overall length: 6.75 m

Beam: 2.28 m

Height of the standard equipment on the targa arch above waterline: 2.40 m

(nevertheless, the actual air draught of the boat must be checked separately)

Draught: 0.90 m

#### Weights

Weight, unladen: 1,310 kg

(includes the engine, battery and basic equipment as per the hull length.)(Maximum engine weight: 280 kg)

Weight, fully loaded: 2,000 kg

Weight on a trailer: 1,550 kg

(the weight of persons is subtracted from the fully-laden weight)

Maximum recommended load: 690 kg

Maximum capacity of the fixed fuel tank: 205 l

NOTE: 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.

#### CE category: C

#### Capacity

Maximum recommended number of persons: 6

#### Performance

Maximum rated outboard engine power: 148 kW

Speed at the max. rated power: 42 knots

#### Bilge pumps

Electric bilge pump: 28 l/min

Manual bilge pump: 25 l/min at 45 strokes/min

#### Electrical system

Voltage: 12 V DC

Recommended battery capacity: 100 Ah



### Control cables

Hydraulic steering hoses: 4.50 m (15 ft)

Engine control cables: 4.50 m (15 ft)

### Additional load components

Basic equipment: 30 kg

Contents of the fixed tanks: 170 kg

Liferaft: 30 kg

Other load or equipment: 75 kg

Due to reasons associated with the production technology, the main dimensions and capacities may vary slightly. Please note that the specified tank capacity is not always available, depending on the trim and heel angle of the boat.

### Manufacturer

#### XO Boats Oy

00880 Helsinki

FINLAND

Module used: B (EC type examination)

### Notified body

VTT Expert Services Oy

Identification number: 0537

P.O. Box 1001

FI-02044 VTT

FINLAND

### Description of the recreational craft

Boat make and model: XO 220 S

Design category: C (inshore)

Type examination certificate No.:

Boat type: Open outboard motor boat

Construction material: Aluminium alloys, fibre-reinforced plastic, PE-HD

Maximum rated engine power (kW): 129

Length/beam/draught (m): 6.75/2.28/0.90

The references to relevant harmonised standards and requirements are listed on the next page.

I declare that the recreational craft mentioned above complies with all applicable essential safety requirements in the way specified overleaf, and is in conformity with the type for which the above-mentioned EC type examination certificate has been issued.

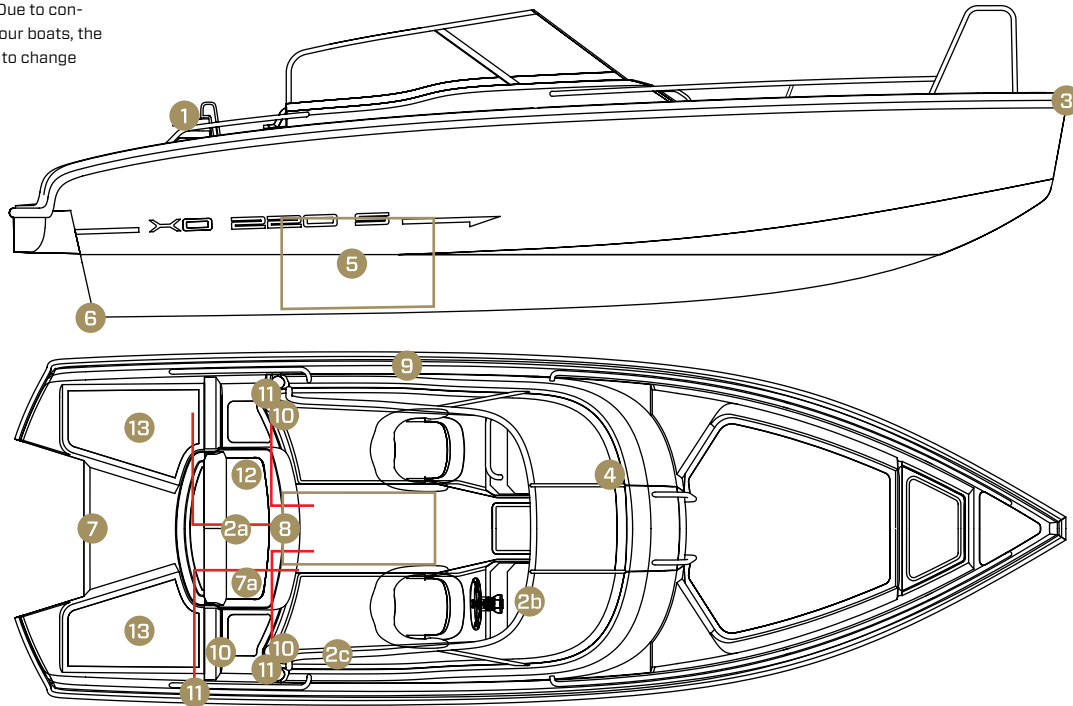
### XO Boats Oy

Henrik Thelen, Managing Director

Date of issue: 1 February 2014

## APPENDIX 2 XO 220 S - GENERAL LAYOUT

The general layout diagrams of the boat are not to scale. Due to constant development of our boats, the information is subject to change without prior notice.



1 Mast light; white, 360°, 10 W

2 a) Battery compartment, b) fuse panel, and c) main switch

3 Navigation lights; 112.5° red and 112.5° green, 10 W

— Fuel fill hose

4 Powder fire extinguisher, 2 kg; rating 13A 89BC

5 Fuel tank

6 Transom drain plug

7 Bilge pump

7a Manual bilge pump

8 Fuel tank service hatch

9 Fuel tank breather

10 Deck drain well

11 Fuel filler

12 Fuel filter/water separator

13 Shut-off valves for deck drains

## APPENDIX 3 GENERAL REQUIREMENTS

Principal data; EN ISO 8666:2002

- 2.1 Craft identification; ISO 10087:1996 / A1:2000
- 2.2 Builder's plate; RCD, Annex I, 2.2
- 2.5 Owner's manual; EN ISO 10240:2004

### Layout and equipment

- 2.3 Man-overboard prevention; EN ISO 15085:2003
- 3.7 Liferaft stowage; RSG Guidelines
- 3.8 Escape; -
- 3.9 Anchoring and towing; EN ISO 15084:2003
- 5.7 Navigation lights; 1972 COLREG
- 5.8 Discharge prevention; -

### Installations

- 5.1 Engines and engine compartments; -
- 5.2 Fuel system; EN ISO 10088:2001, EN ISO 11105:1997
- 5.3 Electrical system; EN ISO 10133:2000, ISO 8846:1990
- 5.4 Steering system; EN ISO 10592:1994/A1:2000
- 5.5 Gas systems; -
- 5.6 Fire protection; EN ISO 9094-1:2003

### Dimensioning

- 3.1 Construction; ISO 12215-3:2002, ISO 12215-5:2008, ISO 12215-6:2008

### Hydrostatics

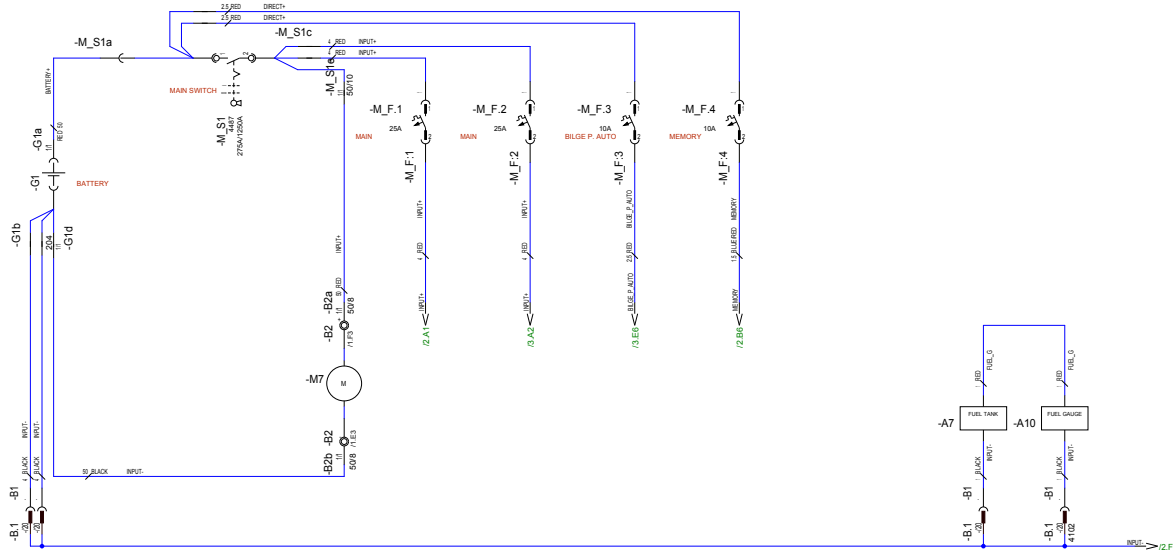
- 3.2 Stability and freeboard; EN ISO 12217:2002 + A1:2009
- 3.3 Buoyancy and flotation; EN ISO 12217:2002
- 3.6 Maximum load capacity; EN ISO 14946:2001/AC 2005
- 3.4 Openings in the hull, deck and superstructure; EN ISO 9093-1:1997, EN ISO 12216:2002
- 3.5 Flooding; EN ISO 11812:2001, EN ISO 15083:2003, ISO 8849

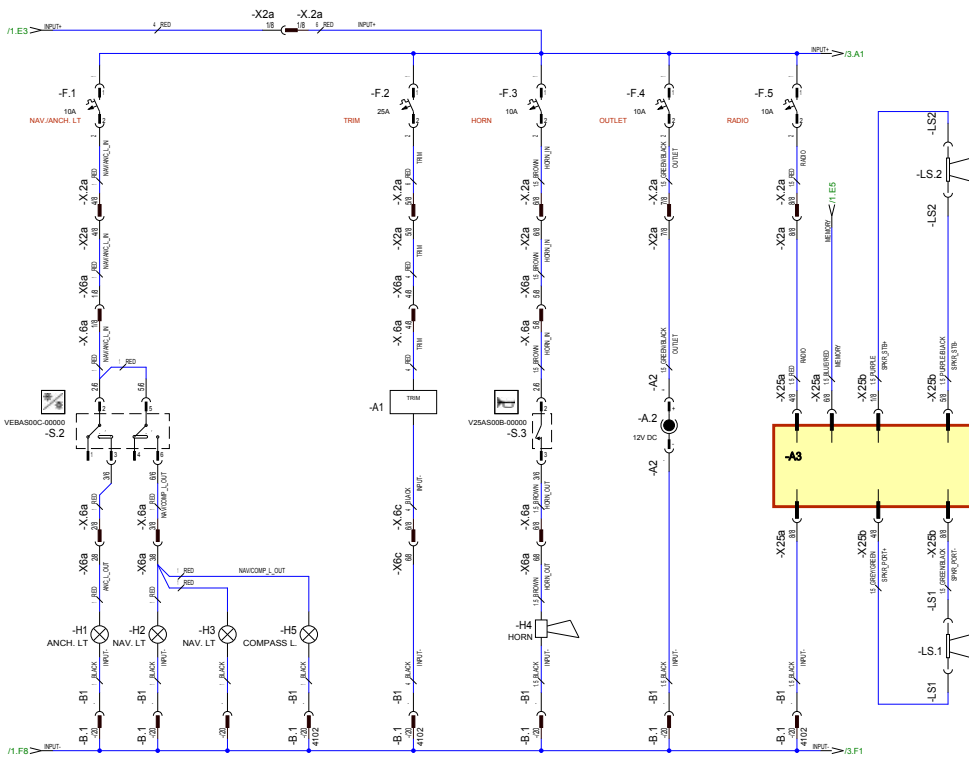
### Handling characteristics

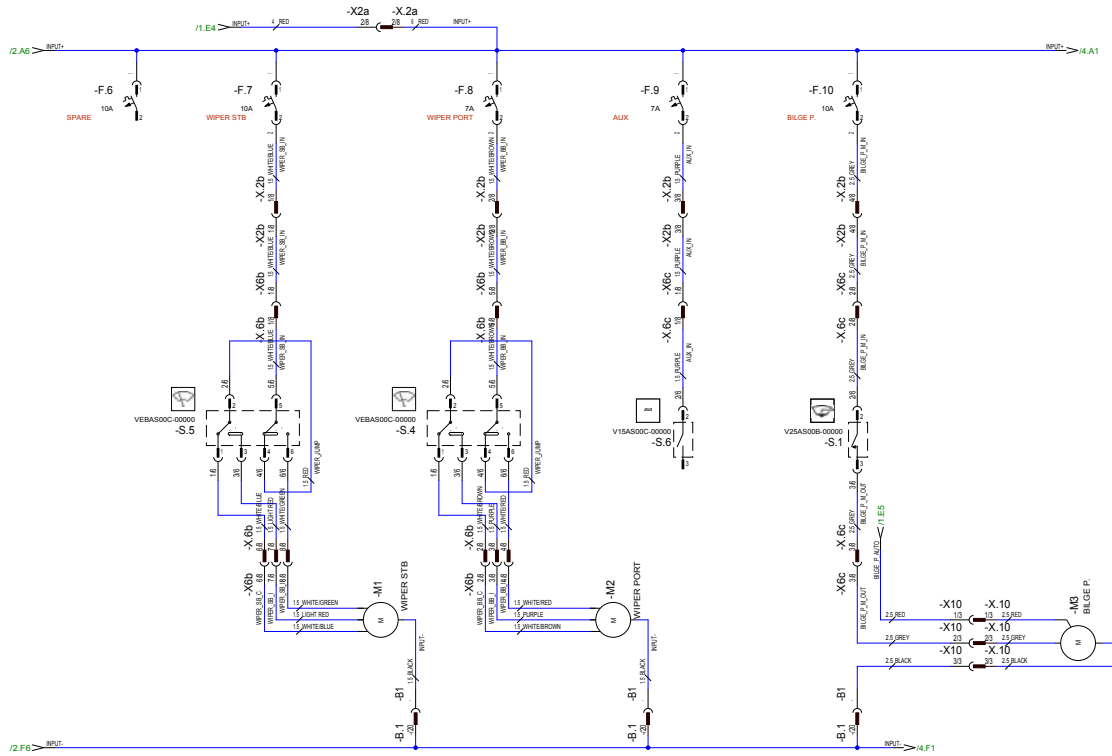
- 4 Handling characteristics; EN ISO 11592:2001, EN ISO 8665:2006
- 2.4 Visibility from the steering position; RSG Guidelines, EN ISO 11591:2000

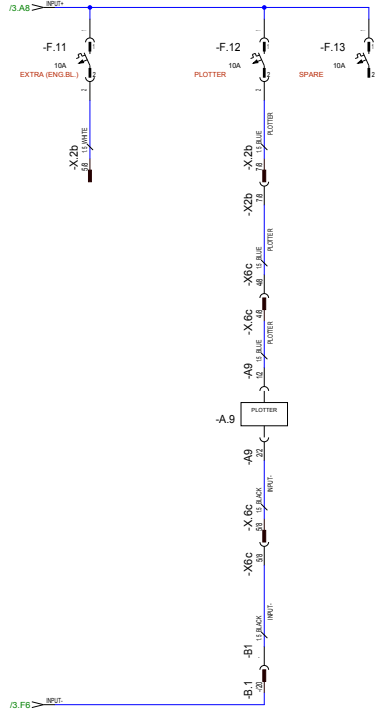
Engine identification; Engine CE marked  
Noise emission levels; Engine CE marked

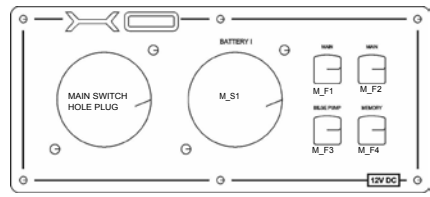
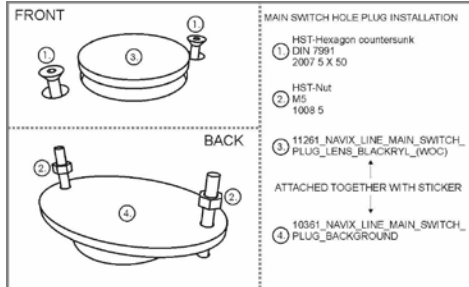
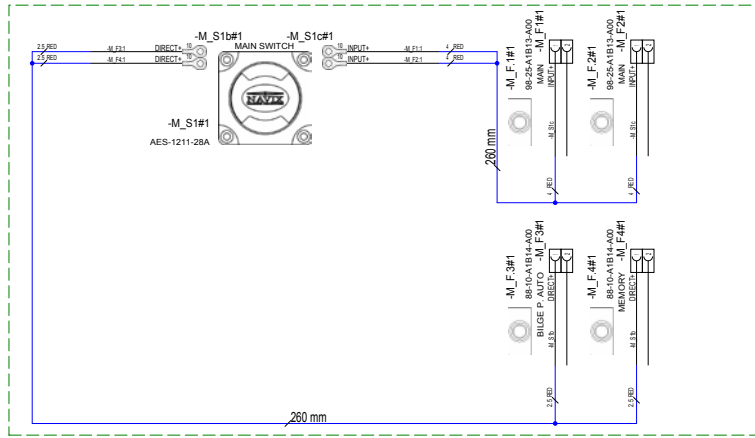
# APPENDIX 4 WIRING DIAGRAM



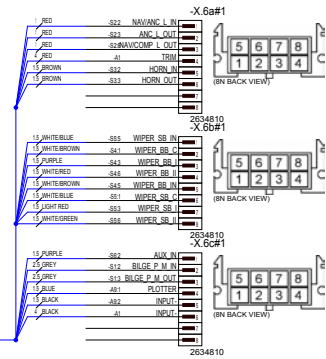
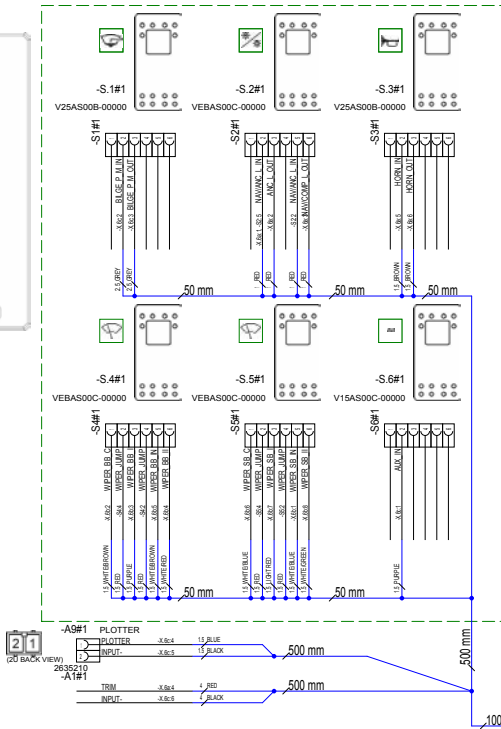
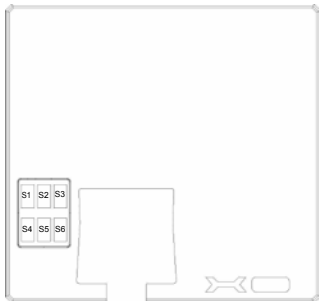


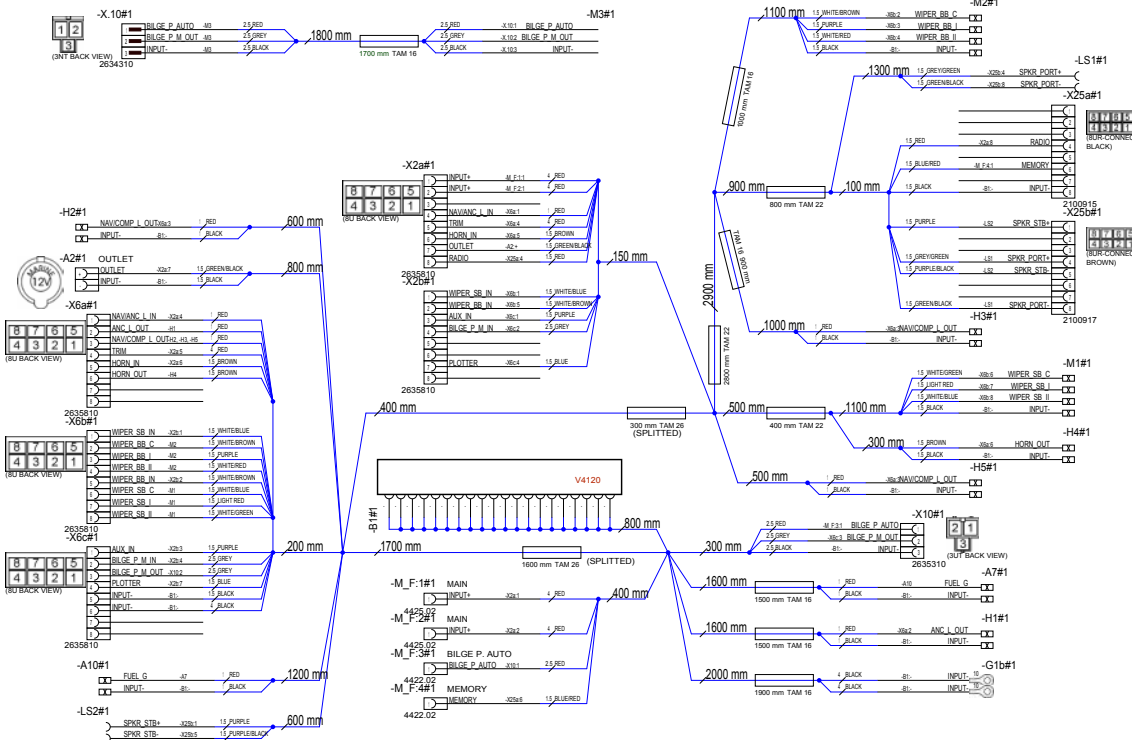


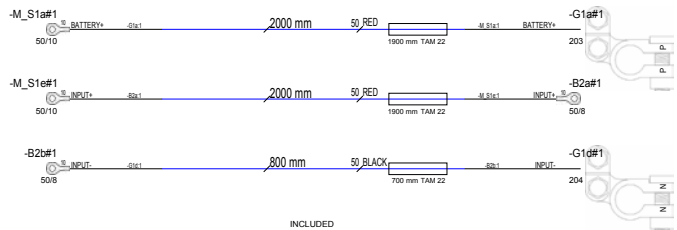




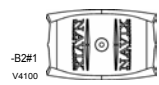








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