RAWATER
ALUMINIUM BOATS

Lubja tn 45
Pärnu
80033
Estonia

# Owner's Manual

## Rawater R25 Pilothouse

**Please keep this manual in a secure place and hand it over to the new owner when you sell the craft.**

If this is your first craft, or you are changing to a type of craft you are not familiar with, for your own comfort and safety, ensure that you obtain handling and operating experience before assuming command of the craft. Any boat dealer or national sailing federation or yacht club will be pleased to advise you of local sea schools, or competent instructors.

# Receipt

**CRAFT IDENTIFICATION NUMBER** **EE-RAW**_____

**The owner of the new craft is required to sign this below to acknowledge receipt of this Manual.**

**I, the undersigned, confirm that I have received an Owners Manual on taking delivery of the vessel**

**NAME:** _____

**ADDRESS:** _____

_____

**SIGNATURE:** _____ **DATE:** _____

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# 1 WELCOME

Congratulations on becoming the new owner of a: Rawater R25 Pilothouse

This manual has been compiled to help you to operate your craft with safety and pleasure. It contains details of the craft, the equipment supplied or fitted, its systems and information on their operation, set up, maintenance, prevention of risks and management of those risks. Please read carefully and familiarize yourself with the craft before using it.

## 1.1 Boating Experience

This owner's manual is not a course on boating safety or seamanship. If this is your first craft, or if you are changing to a type of craft you are not familiar with, for your own comfort and safety, please ensure that you obtain handling and operating experience before “assuming command” of the craft.

Any boat dealer or national sailing federation or yacht club will be pleased to advise you of local sea schools, or competent instructors.

Even when your boat is categorized for them, the sea and wind conditions corresponding to the design categories A, B and C range from severe gale conditions for category A, to strong conditions for the top of category C, open to the hazards of a freak wave or gust. These are therefore dangerous conditions, where only a competent, fit and trained crew using a well-maintained craft can satisfactorily operate.

This owner's manual is not a detailed maintenance or trouble-shooting guide. In the case of difficulty, refer to the boat builder or boat builder's representative. If a maintenance manual is provided, use it for the craft's maintenance.

## 1.2 Responsibility

Always use trained and competent people for maintenance, repair or modifications. Modifications that may affect the safety characteristics of the craft shall be assessed, executed and documented by competent people. The boat builder cannot be held responsible for modifications that boat builder has not approved.

In some countries, a driving licence or authorization is required, or specific regulations are in force and carriage requirements may be subject to local regulations.

It is the boat owner/operator's responsibility to:

1 Know the limitations of your boat;
2 Follow the rules of the road;
3 Keep a sharp lookout for people and objects in the water;
4 Ensure that the anticipated wind and sea conditions will correspond to the design category of your boat and that you and your crew are able to handle the boat in these conditions;
5 Never sail when the operator is under the influence of drugs or alcohol;
6 Be aware of the crew/passenger's safety at all times;
7 Reduce speed when there is limited visibility, rough water, people in the water nearby, boats, or structures;
8 Always maintain your craft properly and take into account the deterioration that will occur over time and as a result of heavy use or misuse of the craft.

Any craft, no matter how strong it may be, can be severely damaged if not used properly. Inspect the craft regularly especially after any kind of suspected damage. Always adjust the speed and direction of the craft to sea conditions.

If your craft is fitted with a liferaft, carefully read its operating manual. The craft should have onboard the appropriate safety equipment (lifejackets, harnesses, etc.) according to the type of craft, weather conditions, etc. This equipment is mandatory in some countries. The crew should be familiar with the use of all safety equipment and emergency manoeuvring (man overboard recovery, towing, etc.). Sailing schools and clubs regularly organize training sessions.

All persons should wear a suitable personal floatation device (life jacket/ buoyancy aid) when on deck. Note that, in some countries, it is a legal requirement to wear a personal floatation device that complies with their national regulations.

# 2 ABOUT THIS MANUAL

This manual has been compiled to help you to operate your craft with safety and pleasure. It contains details of the craft; the equipment supplied or fitted its systems and information on their operation. Please read it carefully and familiarise yourself with the craft before using it. Ensure that everyone who will operate the vessel reads this manual before setting out.
This manual complies with the EU Directive and UK Regulations for Recreational Craft (RCD/RCR) and should not be perceived as an exhaustive guide to the vessel. A manual is not a replacement for experience and common sense!

## 2.1 Original Equipment Manufacturer (OEM) Manuals

This manual includes important fundamentals regarding equipment supplied by other manufacturers. More detailed information regarding such equipment can be found in manuals provided by the OEM.

A list of these manuals is given here:

Steering gear
Navigation lights
Bilge pumps
Batteries
Air heater
Hydraulic pack
Instruments
Windlass
Battery charger/monitor
Window wipers
VHF radio
Fridge / freezer
Stereo components
Fire Detection

## 2.2 Safety Labels

The craft and this manual show symbols which advise the owner/operator and crew of imperative safety precautions to follow when operating and/or servicing equipment. The following symbols may be found on your craft. They should be respected at all times.

| | |
|---|---|
|  | Hazard - usually followed by text description (see following section) |
|  | Electrical Hazard |
|  | Fuel fill point: letter 'D' denotes suitability for diesel fuel |
| | |
| | |

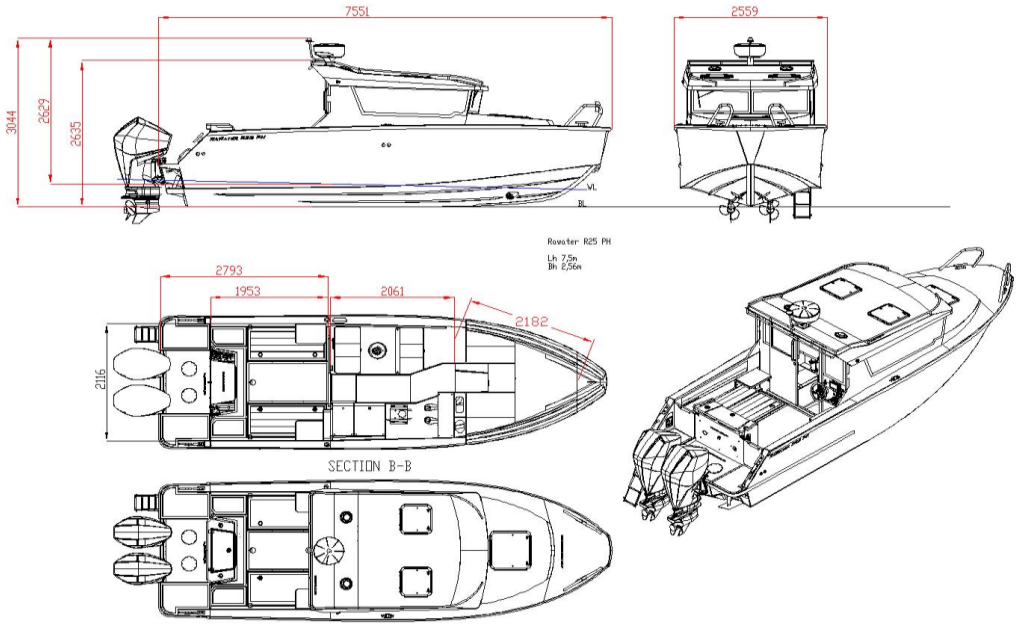
| | |
|---|---|
|  | Read the Owners Manual |
|  | Fire Hazard |
|  | Fuel fill point: letter 'P' (or no letter) denotes suitability for petrol fuel |
|  | Location of fire extinguisher |
| | |

## 2.3 Explanation of Hazard Warnings

| | |
|---|---|
|  Danger | indicates a potentially hazardous situation that, if not avoided, will result in death or serious injury. |
|  Warning | indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury. |
|  Caution | indicates a potentially hazardous situation that, if not avoided, could result in minor or moderate injury. |
|  Notice | indicates information considered important, but not hazard-related, for example, relating to property damage. |
|  Caution | Do not remove or obstruct any safety label. Replace any label which becomes illegible. |

# 3 GENERAL ARRANGEMENT

See also separate drawing end of manual!




## 3.1 Boat Identification & CE Marking Classification

| | | | | | |
|---|---|---|---|---|---|
| Name of Boat | | | | | |
| Type of Boat | Rawater R25 Pilothouse | | | | |
| Manufacturer's Craft Identification Number | EE-RAW25001C525 | | | | |
| Name of Boat Manufacturer | Ravaromet OÜ | | | | |
| Manufacturer's Authorised Representative | | | | | |
| Address | | | | | |
| Design Category | | A | B | C | D |
| Maximum recommended number of people | adults | | | 8 | |

1 For maximum weight limit see: 3.2.2

| | |
|---|---|
| Warning | Do not exceed the maximum recommended number of persons. Regardless of the number of persons on board, the total mass of persons and equipment must never exceed the maximum recommended load. Always use the seats/occupancy areas provided. |

### 3.1.1 Design Category Explanation

A watercraft given design category C is considered to be designed to operate in typical steady winds of Beaufort force 6 or less and the associated significant waves heights of up to 2 m. Typically such conditions might be encountered on exposed inland waters, in estuaries, and in coastal waters in moderate weather conditions. Depending on atmospheric conditions, winds can gust to about 18 m/s.

Boats in each design category shall be designed and constructed to withstand these parameters with respect to stability, buoyancy and other relevant essential requirements set out in this annex and to have good handling characteristics.

## 3.2 Principal Dimensions

### 3.2.1 Hull Size

| | | | |
|---|---|---|---|
| Length of Hull | $L_H$ | 7,490 | (m) |
| Length on waterline | $L_{WL}$ | 6,500 | (m) |
| Length - max. overall | $L_{MAX}$ | 7,250 | (m) |
| Beam of hull | $B_H$ | 2,490 | (m) |
| Beam on waterline | $B_{WL}$ | 2,330 | (m) |
| Beam - maximum | $B_{MAX}$ | 2,580 | (m) |
| Deadrise Angle | β | 20,000 | (deg) |
| Freeboard forward | $F_F$ | 1,105 | (m) |
| Freeboard amidships | $F_M$ | 1,080 | (m) |
| Freeboard aft | $F_A$ | 0,960 | (m) |
| Maximum draft | T | 0,550 | (m) |
| Air draft: max. | $H_A$ | 2,830 | (m) |
| Air draft: min. | $H_{A\ Min}$ | 2,450 | (m) |

## 3.2.2 Weights

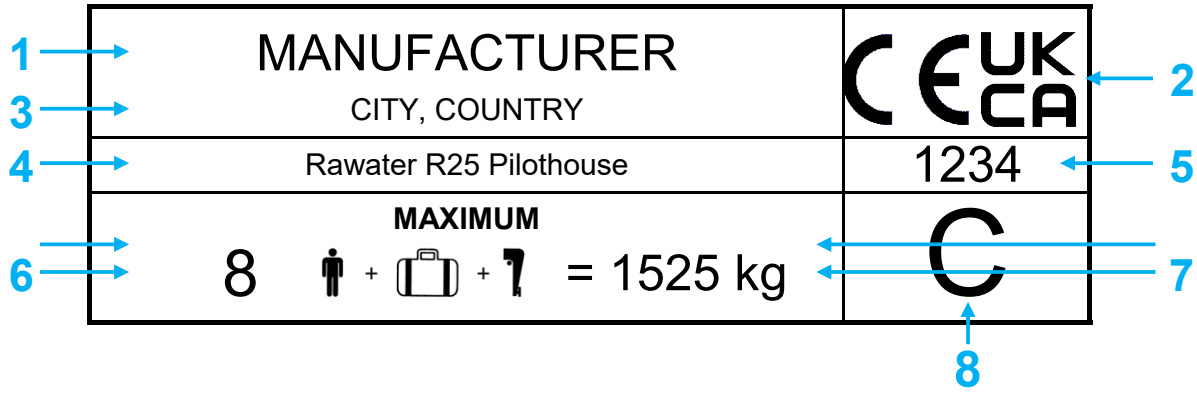
A 'maximum load' has been used for assessing stability and buoyancy, comprising:

All weights in kilograms (kg)

| | | |
|---|---|---|
| Heaviest allowable outboard motor | | 525 |
| Design Category | | C |
| Maximum Number of Persons | | 600 |
| Baggage & other carry on weights & Portable fuel tanks | | 925 |
| Max Load as on Builder's Plate | $m_{MBP}$ | 1000 |
| Maximum capacity of fixed fuel tanks (265 litres) | | 195 |
| Weight of fluids in fixed tanks | | 195 |
| Maximum Recommended Load (ISO 14946) | $m_{ML}$ | 1711 |
| The boat in the 'empty craft condition' has a mass of | $m_{EC}$ | 1910 |
| Unladen weight (lightcraft) without engine | $m_{LCC}$ | 2056 |
| Weight Fully Laden | $m_{LDC}$ | 3767 |
| Trailer Weight | $m_T$ | 2320-2500 kg |

| | |
|---|---|
| Warning | Always use a trailer that is suitable for the boat type and the mass stated above. |

Part of the information is given on the builder's plate affixed on the craft. A full explanation of this information is also given in the relevant sections of this manual.




1 Manufacturer's name, registered trade name or registered trademark
2 CE and/or UKCA marking
3 Contact address
4 Model name
5 Notified body's identification number (if applicable)
6 Maximum recommended number of people
7 Max Load as on Builder's Plate (kg)
8 Design Category

### 3.2.3 Fixed Tanks

| Fuel Tanks | Tank Location | Max. Capacity (L) | | Filler Location | Drain Location |
|---|---|---|---|---|---|
| Petrol | See GA-drawing | Petrol | 245 | See GA-drawing | N/A |
| Diesel | See GA-drawing | Petrol | 20 | See GA-drawing | Tank |

| Holding Tanks | Tank Location | Max. Capacity (L) | Deck Pump Out Location | Discharge Valve Location |
|---|---|---|---|---|
| BW-tank | See GA drawing | 45 | See GA drawing | Not fitted |

| Other Tanks | Tank Location | Max. Capacity (L) | Filler Location | Drain Location |
|---|---|---|---|---|
| Portable water | | | | |

| | |
|---|---|
|  Caution | Some chemicals and coatings are incompatible with aluminium and may not fulfil their intended function and may cause damage. Ensure that fluids are suitable for aluminium before application. |
| | |

### 3.2.4 Lifting Devices

| | |
|---|---|
|  Danger | Before lifting the boat, ensure the bolts retaining the eyes to the structure are secure and that there is no sign of damaged to the eyes or surrounding structure. |
|  Danger | Never attempt to lift the boat if the eyes are loose or if there are signs of damage. |
|  Caution | Never lift the boat with any people or baggage onboard. |
|  Warning | Always follow the instructions provided by the manufacturer of the lifting device. |

# 4 SYSTEMS DESCRIPTIONS

## 4.1 Bilge pumps

Bilge Pumps are fitted as follows:

| Location | Power | Make & Model | Capacity (Litres/min) | Bilge Compartment(s) |
|---|---|---|---|---|
| See GA-drawing | Electric | Osculati Europump Automatic 750 GPH | 35 | Hull |
| See GA-drawing | Manual | Whale manual pump | 25 | Hull |

| | |
|---|---|
| Warning | The combined capacity of the system is not intended to drain the craft in the case of damage. |

Notice

Bilge pumps operate automatically by float switches located alongside the pumps. They can be overridden by manual switches located at the navigation station.

The bilge should always be checked after launch. A small amount of water in the bilge is normal. Large amounts of water or any signs of fuel or oil require immediate investigation. Never pump fuel or oil overboard when your boat is in the water.

Check the function of all bilge pumps at regular intervals. Clear pump inlets 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.

It is recommended that a bailer/bucket is carried aboard for emergency bailing purposes. Ensure the bucket is protected against accidental loss.

| | |
|---|---|
| Warning | Never use flammable solvents (i.e. kerosene) for bilge cleaning, however oily it becomes. |

## 4.2 Electrical System

ALWAYS……

- Check battery and charging system condition before going to sea
- Disconnect and remove the battery when the craft is in winter storage (cold weather areas) or long term storage

NEVER……..

- Work on the electrical installation while the system is energised;
- Modify the craft's electrical system or relevant drawings: installation, alterations and maintenance should be performed by a competent marine electrical technician;
- Alter or modify the rated current amperage of overcurrent protective devices;
- Install or replace electrical appliances or devices with components exceeding the rated current amperage of the circuit;
- Leave the craft unattended with the electrical system energised, except automatic bilge-pump, fire protection and alarm circuits.

| | |
|---|---|
|  Danger | Petrol vapour can explode.<br>Only fit ignition protected, marine parts to replace such items as starters, distributors, alternators, generators, etc. |
|  Warning | Do not use jump leads in the petrol engine/tank space or carry out any activity that could create sparks. |
|  Warning | Protective terminal covers, such as rubber boots on electrical connections, must be in place at all times except when servicing equipment. |

## 4.2.1 DC System

### Description

The direct current (DC) electrical system derives its power from the series of batteries listed below. The batteries supply the components listed in tables below which show the settings of the overload protection breakers/fuses.

Refer to the wiring diagrams at the back of the manual for further details.

The DC system consists of the following circuits:

| Battery Bank | Voltage | Rating | Battery Location | Disconnect Switch |
|---|---|---|---|---|
| START BATTERY x 2 | 12 | 75 Ah | See GA-drawing | See GA-drawing |
| HUPIAKKU, CONSUMPTION BATTERY | 12 | 100 Ah | See GA-drawing | See GA-drawing |
| Keula-akku, front battery | 12 | 65 Ah | Lattialuukku, interior deck hatch | Lattialuukku, interior deck hatch |

The battery selector switch is located at: Hytti, cabin

| Power | Description |
|---|---|
| Solar panels | Optional |
| | |
| Fuel cells | |
| Other | |

Main DC Panel Board Location: See GA-drawing

## DC Fuses

Location of Fuses: See GA drawing & Electrical drawings supplied with boat

| | |
|---|---|
|  Caution | Replace fuses with one of the same amperage rating as the original. A higher rating will render the circuit unprotected against overcurrent. |

Notice The amperage rating is marked on each fuse.

## Removal of Batteries

To remove the battery cables:

1 Turn off all items drawing power from the battery.
2 Turn the battery switch to the OFF position
3 Remove the negative cable first, then the positive cable. To replace the cables, first replace the positive cable, then the negative.

| | |
|---|---|
|  Caution | Ensure that the battery space is well ventilated at all times. |
|  Caution | When charging and (dis)connecting a battery ensure that no water or metal objects can contact the terminals. |

## Battery Disconnection

Battery selector switch location: See GA-drawing
Disconnect switch location(s): See table of batteries on previous page.

Notice Batteries should be disconnected when not in use and especially while the boat is unattended.

| | |
|---|---|
|  Caution | Do not disconnect all batteries while the engine is running; alternator and wiring damage could occur. |

## Battery Maintenance

1, Check the fluid levels in the cells (if appropriate for the battery type) approximately every 4 weeks, and weekly in summer and hot zones.

2, The fluid level must be between the lower and upper markings.

3, Replenish only with distilled water. Do not use metal funnel.

4, Coat battery terminal clamps with silicone grease.

5, Keep batteries clean and dry.

6, The life of some battery types is shortened if drained to zero charge. It is recommended that a battery not be discharged more than 50 percent. If the battery does become run down, recharge it as soon as possible.

7, Running the engine to recharge the battery may not be effective. The alternator only creates charging power at higher engine speeds, idling for long periods will not generate enough power to recharge the battery.

8, If you need to charge a battery, use only a battery charger designed to charge automotive/marine batteries. Use charger only when batteries are disconnected from the boat's electrical circuit. Follow the charger instructions.

9, If your boat will not be used for several weeks remove the batteries from the boat and connect them to a charger.

## 4.2.2 AC System

The alternating current (AC) system is supplied with power by the sources listed below. These supply the components listed in tables below which show the settings of the overload protection breakers/fuses.

Refer to the wiring diagrams at the back of the manual for further details.

The system is:

The AC system consists of the following sources of power:

| Source of power | Number | Location | |
|---|---|---|---|
| | | | Optional |

| | |
|---|---|
|  Caution | The RCD (residual current device) should be tested monthly by pressing the “TEST” button. The RCD should trip “OFF” immediately. Reset the RCD by flicking the switch back to “ON”. If the RCD does not trip “OFF” immediately, there is a fault: disconnect all AC power sources and call a qualified electrician to investigate. |

AC fuses are provided in various circuits as follows:

**230 V AC System**

| Circuit | Rating (A) | Protection | |
|---|---|---|---|
| | | | optional |

## 4.3 Fuel System

The craft has: Permanently installed
Petrol fuel system

The following components are supplied by the fuel system:

| Item | Number | Location |
|---|---|---|
| Outboard | 1-2 | Aktern spegel, transom |

Refer to manufacturer's instructions for details of the above equipment.
For details on tanks, refer to section: 3.2.3

| | |
|---|---|
|  Warning | Do not smoke or use open flame when filling with fuel, when working on the fuel system and when in the engine room. |
|  Danger | Never use a flame to check for leaks |
|  Warning | Inspect fuel lines at least annually. Replace if deterioration or openings are found. |
|  Caution | All components that burn fuel require an air supply. Ensure all air intakes are clear before fuel burning components are running. |
|  Danger | Petrol generators and outboard motors can produce dangerously high levels of carbon monoxide, but don’t forget, diesel engine exhaust fumes have also been linked to illness and deaths.<br>See section 8.5.1 |
|  Warning | If leakage is detected, have the system repaired before further use. System repairs should be made by a competent person. |

## 4.4 Steering System

Notice The boat's steering system has the following components:

| | |
|---|---|
| Steering Hardware: | Wheel |
| Turning device: | Drive unit |
| Mechanism: | Hydraulic |

The craft is fitted with the following steering position(s):

Primary
1 Description & Location of Helm Posiitions (taken from 2.4
2 Helm

| | |
|---|---|
|  Caution | Refer to the system manufacturer's documentation for information pertaining to the steering gear. |
|  Caution | All components of the steering system must undergo periodic inspection & maintenance to ensure safe operating conditions. Refer to the maintenance section of this manual for further details. |
|  Warning | Failure of the steering system will cause loss of control of your boat. Any change in steering such as looseness, tightness, binding, etc., must be checked immediately by a qualified person. |
|  Caution | A kill-chord is provided at the helm so that the engine will cut-out when pulled. The helmsman should connect him/herself to the kill-chord when the engine is running. |

## 4.5 Black Water System

As required by international legislation, all toilets are plumbed directly to a black water holding tank.

The tank may be discharged either though the hull or via the deck pump-out. The location of the discharge fittings are identified in the table below.

In many parts of the world the discharge of black and even grey water is restricted. This vessel has fittings, described below, to meet these restrictions

Notice Refer to the following section for details on tanks: 3.2.3

| Head | Discharge | Location of Valves |
|---|---|---|
| WC-toilet head | Directly to BW-tank | See GA-drawing |

To minimise odours and smell, use marine-grade toilet cleaner and disinfectant in the toilet bowl and flush regularly.

| | |
|---|---|
|  Caution | Never allow holding tanks to be over-filled as this will risk back-flooding to the craft interior. |
|  Caution | Do not allow holding tanks to freeze in cold weather as expansion may risk rupture of fittings. Apply some anti-freeze to the tank in times of cold weather. |
|  Caution | Empty holding tanks when the craft is to be left unattended |

## 4.6 Hydraulic System

The craft is fitted with the following hydraulic systems:

| Component | Location | Controls | Control Location |
|---|---|---|---|
| Steering (see section 4.4). | Location of Steering Components | Breakers | Outboard |
| Engine trim | Transom | Rocker switch | Throttle lever |
| Trim tabs | Transom P&S | Rocker switches | Dashboard |

The hydraulic system can be powered by the following sources:

| Description | Location | Power Source |
|---|---|---|
| Engine trim ram | Within drive unit | Supplied off engine harness |
| Trim tab reservioir | Inside of transom | 12V DC |
| Sestar power steering (if fitted) | See "GA" drawing | 12V DC |

## 4.7 Thrusters

The craft is fitted with thrusters as follows:

| Thruster | Power Source | |
|---|---|---|
| Bow | Electric | optional |
| | | |

These units are controlled by joystick from the steering position.

| | |
|---|---|
|  Caution | Ensure the joysticks are in neutral to prevent the thrusters from running when not required. |

## 4.8 Anchor Windlass

Optional

Notice

The craft is fitted with a powered anchor windlass on the foredeck.

The windlass can be operated by local controls at the unit or by remote control from the steering position.

| | |
|---|---|
|  Warning | Winches and windlasses generate large forces by the push of a button. Always:<br>• keep hands and feet away from the windlass<br>• have experienced crew operate the windlass<br>• prevent accidental pressing of switches |

## 4.9 Seawater System

Notice The craft is fitted with a seawater system. Sea water inlet valves are fitted in the following locations:

See GA-drawing, katso piirustus

Notice The seawater circuits are pressurised by the following pumps:

| Pump locations & descriptions | Controls & breakers |
|---|---|
| 12 VDC pump in storage locker | Switch on topside |
| | |
| | |

Notice The seawater circuits supply water to the following outlets:

Deck washer, kansipesuri (optional)
Livewell in aft storage (optional)

| | |
|---|---|
| Caution | The inlet and at least one outlet valve must be open when the system is in operation. |

# 5 PRE-LAUNCH OBSERVATIONS

## 5.1 Recommended Safety Equipment

| | |
|---|---|
|  Caution | The sea can be unpredictable. Be prepared by carrying the following equipment, as a minimum, at all times. |

1 Life jacket or buoyancy aid for each person
2 Appropriate weatherproof clothing
3 Compass
4 Charts
5 Fire extinguisher(s) - see section 5.4.2
6 Anchor and line
7 At least 2 warps - see section 6.5
8 First aid kit including compress and thermal blanket
9 Bucket
10 Distress flares
11 VHF radio
12 Binoculars
13 Knife in protective sheath
14 Drinking water

## 5.2 Risk of Loss of Stability

The stability and buoyancy of this boat has been assessed on the basis of the weights specified in section: 3.2.2

| | |
|---|---|
|  Caution | Any change in the disposition of the masses aboard (for example, the addition of a fishing tower, a radar, a stowing mast, change of engine, etc.) may significantly affect the stability, trim and performance of the craft |
|  Warning | When loading the craft, never exceed the maximum recommended load. Always load the craft carefully and distribute loads appropriately to maintain design trim (approximately level). Avoid placing heavy weights high up. |
|  Caution | Stability can also be adversely affected by sloshing fluid. Bilge water should be kept to a minimum |

The following deck areas carry restrictions on the number of people:

| Deck | Max |
|---|---|
| avotila (peruskansi), main | 8 |

| | |
|---|---|
| Notice | The following comments should be observed when navigating: |
| Notice | The stability of the boat is further reduced when bringing your catch on board if you handle fishing rods or nets outboard. |
| Warning | Loose equipment can cause damage to the craft and affect stability. Ensure all loose equipment is properly stowed before setting out. |
| Caution | The stability of this boat is significantly reduced at speeds above displacement speed. |
| Caution | Stability may be reduced when towing or lifting heavy weights using a davit or boom. |
| Warning | Towing any thing heavier than a person from wakeboard/sky towers or high ski poles can result in capsize when turning. Heavier items, including inflatable toys, should be towed by a bridle attached to the D Rings on the transom of your vessel. |
| Caution | Breaking waves are a serious stability hazard |

## 5.3 Risk of Flooding

| | |
|---|---|
| Caution | The following openings are marked "WATERTIGHT OPENING - KEEP SHUT WHEN UNDER WAY" and care should be taken to observe this warning: |

1. Peräovi (jos asennettu) transom door (if installed)

| | |
|---|---|
| Caution | In rough weather, hatches, lockers and companionway/doorways should be closed to minimise the risk of water ingress. |
| Caution | Care should be taken to ensure that the cockpit drains are not blocked and that the cockpit can drain freely. |
| Caution | Ensure all limber holes are clear |
| Caution | Check function of bilge pumps regularly & clear debris from their inlets. |

### 5.3.1 Through Hull Fittings including Seacocks

The following skin fittings are fitted in the hull of the craft. They provide the frontline defence against flooding and should be regularly inspected for condition. Valves should be frequently operated to ensure free movement.

In addition, it is recommended that all but drains & bilge discharges are closed when the craft is to be left unattended.

| Ref. | Description | Location | Means of Closure |
|---|---|---|---|
| - | Deck edge / freeboard limit | | |
| - | BELOW WATERLINE | | |
| - | Runkotyhjennys, hull drain | Transom | screwed nailon plug |
| - | Kansipesurin runkoläpivienti, deck washer through hull | See GA-drawing | venttiili, manual valve |
| - | Toilet water intake | See GA-drawing | venttiili, manual valve |
| - | OUTBOARD WELL/TRANSOM | | |
| - | | | |
| - | | | |
| - | | | |

### 5.3.2 Strainers

Notice Bilge pump intakes inside the boat, and intakes of water from outside the boat are fitted with protective baskets to avoid blockage by weed, leaves or other debris. Ensure these are kept clear at all times.

## 5.4 Risk of Fire

Notice Always keep the bilges clean and check for fuel regularly

| | |
|---|---|
|  Caution | NEVER<br>• obstruct portable extinguishers in lockers<br>• obstruct safety controls (shut off valves, switches)<br>• modify craft's systems<br>• use gas lights in craft |

### 5.4.1 Fire Detection

The craft is fitted with a fire detection system, described as follows:

The fire detectors are fitted in the following locations:

CO2 alarm installed as a standard, not required fire alarms as a standard

Notice

The detectors are triggered by SMOKE, rather than heat. These should be tested as part of the boarding routine and weekly if aboard for an extended period.

In the event testing a smoke alarm indicates the alarm is faulty, replace the unit with one of an equivalent type.

The detectors are powered by their own batteries. When the battery needs replacing, it will emit an intermittent beep. The battery should be replaced immediately with one of the same type. Read the detector's user manual for instructions on how to change the battery.

Read the detector's user manual for instructions on maintenance of the unit.

### 5.4.2 Fire Fighting Equipment

| | |
|---|---|
|  Caution | Location and capacity of extinguishers is given below. It is the responsibility of the boat owner/operator to:<br>• check equipment at intervals as stated on equipment,<br>• replace any extinguisher, if used, with one of same rating<br>• inform members of the crew about location and operation of all fire fighting devices |

**Portable Extinguishers**

| Location & Description | Medium | Rating/ Capacity |
|---|---|---|
| Kannettava käsisammutin sisätilan säilytyslaatikossa, BÄRBAR | Powder | 2 KG |
| | | |
| | | |

### 5.4.3 Fire Escapes

The following escapes are provided onboard the boat:

| Opening Type | Location |
|---|---|
| Sliding door | Aft door |
| | |

Notice Exits other than the main companion way & hatches with ladders are labelled

| | |
|---|---|
| Caution | It is the responsibility of the boat owner/operator to inform crew of the location of routes and exits. |
| Caution | Ensure that all escape hatches, doors or other openings are unlocked whenever anyone is aboard. |
| Warning | NEVER obstruct exits |
| Caution | Unlock any locked storage containing any folding or deployable device used to aid escape through a fire exit |

### 5.4.4 General Good Practice

| | |
|---|---|
| Caution | Never block ventilation |
| Caution | Never store petrol in an area not designed to store petrol |
| Warning | Fuel-burning open-flame appliances consume cabin oxygen and release products of combustion into the craft. Ventilation is required when appliances are in use. Open designated vent openings while appliances are in use. Never obstruct ventilation openings and ensure that flued appliances are operating correctly. |

## 5.5 Risk of Falling Overboard

Notice The working deck is the area of the boat that is safe for use at all times. Areas outside the specified working deck should only be used whilst leaving or arriving at a mooring or whilst the boat is not underway.

On this boat, the working deck area is defined as:

See GA-drawing

For maximum weight limit see: 3.2.2

For crew area limits, see section: 5.2

Notice In the event of a member of the crew falling overboard they should be recovered using:

uimatikkaat paapuurin puolella perässä, badstege aktern spegel babord sidan, swimming ladders in port side transom

| | |
|---|---|
|  Caution | Care should be made to ensure the person being recovered is not pushed under the platform if the vessel is pitching. Consider recovery by use of a dinghy if necessary. |
|  Warning | Most slips and falls occur during boarding and disembarking. Be aware that wet decks can be slippery. Wear slip resistant footwear at all times. |

## 5.6 Grounding - Risks & Actions

| | |
|---|---|
|  Caution | After any grounding incident, make a visual inspection internally and consider a haul out and external inspection as soon as practical. |

Ensure that any grounding is discussed with an experienced marine professional to determine whether a survey of the area and any repair actions are required.

Ensure that any repairs to the inner hull matrix, keel and hull shell are undertaken by a professional repair yard after consultation with the vessel’s manufacturer or designer and a repair specification should be developed by either a surveyor, naval architect, or the original yacht manufacturer.

The easiest way to undertake this is to follow the manufacturer’s approved maintenance programme and approved repair facility instructions.

# 6 NAVIGATION & OPERATION

## 6.1 Use of Engines

The craft is fitted with the following motive power:

Engine Brand & Model:

Propeller

No. of engines:

Notice Before starting the engine:

- Check engine compartment for fumes.
- Check fuel lines for damage & leaks.
- Check the bilge water level.
- Ensure that ventilation openings and ducts are clear to prevent overheating

| | |
|---|---|
|  Warning | After starting the engine, ensure the flow of cooling water |
| | Take care not to damage fuel lines and check regularly that they are in good condition |
|  Danger | If a fuel leak or fumes are detected, do not start the engine. Ensure all crew leave the boat and have a qualified person repair the fault as soon as possible. |
|  Warning | Controls installed with the motor must have a start-in-gear protection device. It is the owner's responsibility to ensure this is so, should the engine or its controls be repaired/replaced. |

## 6.2 Handling Characteristics

| | |
|---|---|
| Caution | The owner is responsible for ensuring that normal mode of operation is maintained. This means that the speed of the craft needs to be matched to the prevailing sea state and good seamanship shall be displayed. |
| Warning | Always use the engine cut-off lanyard. |

| | | | |
|---|---|---|---|
| Notice | This craft is primarily intended to be supported by a combination of buoyancy and planing forces | | |
| Notice | Maximum engine power: | 294 kW | 400 hp |
| Notice | Maximum speed: | 48 knots | 89 km/h |
| Notice | Periodic inspection of the propeller for excessive wear or damage is recommended in order to maintain peak performance and to maximise the longevity of the engine. | | |
| Notice | Ensure all crew are informed about the craft's behaviour. | | |
| Notice | Before conducting any rapid acceleration or high-speed manoeuvres, passengers must be warned to sit and hold-on. | | |

| | |
|---|---|
| Caution | Seaways are infinitely variable and all craft can meet conditions that will challenge the boats handling characteristics and/or the helmsman's ability. Proceed with a margin for error at all times. Avoid making sharp turns at speed, particularly in a short seaway. |
| Caution | It is strongly recommended that helmsmen receive adequate training in boat handling before setting to sea for the first time. |
| Caution | Be aware that factors such as altitude, temperature, load, and bottom growth may affect performance. |
| Caution | Do not to install engine(s) with power output higher than recommended by the manufacturer as this could cause loss of craft control and result in serious injury or death. |

## 6.3 Visibility from the Main Steering Position

Notice

Operator vision from the helm can be obstructed by high trim angles of the craft and other factors caused by one or more of the following conditions:

- Propulsion engine trim angles
- Hull trim plane angles
- Loading and load distribution
- Speed
- Rapid acceleration
- Transition from displacement to planing mode
- Sea conditions
- Rain and spray
- Darkness and fog
- Interior lights
- Position of tops and curtains
- Persons or movable gear in operator's field of vision

The international regulations for preventing collisions at sea (COLREG's) and the rules of the road require that a proper lookout be maintained at all times and observance of right of way. Make certain no other vessels are in the path before proceeding.

## 6.4 Navigation Lights

Notice

Night boating requires running lights. The craft is fitted with the following navigation lights:

| Light | Mounting position |
|---|---|
| Port | See GA-drawing |
| Stbd | See GA-drawing |
| All-round white | See GA-drawing |

The running/navigation lights are controlled at the switch board.

| | |
|---|---|
|  Caution | Check for proper operation of navigation lights before heading out and carry replacement bulbs for all navigation lights |
|  Caution | Navigation lights may be marked with expiry dates. Ensure that they are replaced as required. |
|  Caution | Always replace bulbs with one of the same wattage. |

## 6.5 Anchoring, Mooring & Towing

Notice

It is the owners / operators responsibility to ensure that the mooring lines, towing lines, anchor chains, and anchors are adequate for the vessel's intended use. Owners should also consider what action will be necessary when securing a tow line on board.

Breaking strength of forward strong point: 22,2 kN =2,3 tonnesf = 2264 kg

Aft mooring point not required.

| | |
|---|---|
| Caution | The breaking strength of lines / chains should not exceed 80% of the breaking strength of the strong point to which it is attached. |
| Caution | Always tow or be towed at slow speed. Never exceed the hull speed of a displacement craft when towing or being towed. |
| Caution | A tow line shall always be made fast in a way that it can be released when under load. |

Notice

When at anchor, it is damaging to leave the full load of the boat resting on the windlass. It is recommended that the chain be tied onto a local strong point.

## 6.6 Filling With Fuel

| | |
|---|---|
| Caution | Never smoke when refuelling, or inspecting or working with the fuel system. |

Notice

For locations of filler caps, see: 3.2.3

Use the following procedure for filling tanks:

- Open the filler cap & start filling the tank.
- Check the contents of the tank by monitoring the tank level indicator
- Don't fill the tank to its maximum: allow for expansion
- Close deck fittings tightly, but don't over-tighten since this will damage the rubber o-rings
- (make an entry in ship's log)

| | |
|---|---|
| Caution | Fuel is considered chemical waste. Keep an absorbing cloth close by when filling tanks. |

# 7 MAINTENANCE

| | | |
|---|---|---|
|  | IMPORTANT NOTE: | Be aware that hull anodes are installed and at tleast 50% volume remaining |

Regular inspection and maintenance is an essential activity to ensure the boat's longevity and the crew's safety.

This section includes a generic table which details typical inspection and maintenance intervals. This is not specific to your craft and some sections will not apply.

The necessary frequency of service or maintenance depends upon the environment in which the boat operates. The intervals listed in this section should be viewed as maximums.

| | |
|---|---|
|  Caution | Modifications that may affect the safety characteristics of the craft should be assessed, executed and documented by competent people. |
|  Caution | Any change in the disposition of the masses aboard may significantly affect the stability, trim and performance of the boat |

**KEY:** **X - Activity required** **Y - Activity required by qualified individual**

| | | INTERVAL | | | | |
|---|---|---|---|---|---|---|
| **Item** | **Required Maintenance/Service** | **Before Every Use** | **After First 20 Hours** | **Every 25* Or 50 Hours** | **Every 50* Or 100 Hours** | **Every 6 mnth or Annual** |
| **Miscellaneous** | | | | | | |
| Battery | Check water level | X | X | X | | |
| Navigation Lights | Check working | X | | | | |
| Bilge Area | Clean & limber holes free | | | | | X |
| Bilge Blowers | Hose connections tight | | | X | | X |
| Bilge pumps | Float switch operates freely | | | | | X |
| Trim Tabs Fluid | Check and top-up as needed | | X | | | |
| Bilge drain plug | Installed and tight | X | | | | |
| Aluminium anodes | Check and replace | As needed | | | | |
| Hull | Check for loose, damaged or missing parts | Whenever out of the water and always after striking an object | | | | |
| **Controls** | | | | | | |
| Steering | Check for proper operation | | | | | Y |
| Steering | Power steering oil level | X | | | | |
| Rudder bearings | Check lubrication | | | X | | |
| Throttle | Lubricate. Include all shift linkage and pivot points | | X | | X | X |

| | | | | | | |
|---|---|---|---|---|---|---|
| **Electrical** | | | | | | |
| Connections | Check for looseness | | | | | Y |
| **Engine** | | | | | | |
| Alarm | Check | X | | | | |
| Cooling System | Check for leaks with engine running | X | | | | |
| Crank vent system | Clean | | X | | X | |
| Drive belts | Check for wear | X | | | | |
| Exhaust System | Check for leaks | X | X | | X | |
| Flame Arrestor | Clean | | X | | X | |
| Fuel Filter | Replace | | | | X | |
| Mounts (Fasteners) | Tighten | | X | | | X |
| Oil and Filter | Replace | | | | X | X |
| Oil Level | Check | X | | | | |
| Propeller | Inspect for damage | Always after striking object | | | | |
| **Fuel System** | | | | | | |
| Connections & Lines | Check for leaks & wear | X | X | X | | |
| Tanks | Check for leaks & tightness of connections | X | X | X | | |
| Water Separator | Replace | | X | | | X |
| **Exterior** | | | | | | |
| Non-metallic strong points | Inspect and replace if signs of deterioration, visible surface cracks or permanent deformation. | | | | | X |
| Topside & Fittings | Check for loose, damaged or missing parts | | | | | X |
| Closing appliances | Installed and tight | X | | | | |

## 7.1 Maintaining the Electrical System

| | |
|---|---|
| Warning | Work on electrical wiring can create shock hazards or sparks. |

Always disconnect power sources and shut off battery switch, breakers and/or pull fuses before checking electrical wiring or connectors.

| | |
|---|---|
| Caution | To prevent arcing or damage to the alternator, always disconnect battery cables before doing any work on the engine's electrical system. |
| Caution | Power feeds for accessory equipment must not be taken from the voltmeter terminals. |

Notice

Check all wiring for proper support.

Check all wiring insulation for signs of fraying or chafing.

Check all terminals for corrosion - corroded terminals and connectors should be replaced or thoroughly cleaned.

Tighten all terminals securely and spray them with light marine preservative oil.

## 7.2 Winter Storage

Your boat and the systems and fittings on board can be damaged if they are not properly prepared for the winter.

You should refer to the advice given in the various handbooks supplied with this manual.

In addition to this you should, for example, consider the following:

- Remove, charge and store the batteries in a warm & dry ventilated place
- Grease the appropriate steering gear components
- Drain non-fuel tanks
- Drain toilet bowls
- Ensure the engine cooling water has the correct proportion of anti-freeze
- Take away any removable delicate on board electrics and electronics
- Check and protect all the systems on the boat
- Remove all water from the craft and protect it from rain
- Ensure deck drains are clear
- Check the sacrificial anodes and replace as necessary

## 7.3 Maintaining the Power Steering System

| | |
|---|---|
|  Caution | Refer to the engine operator's manual for proper fluid levels and lubricants as well as operating and warranty information. |
| Notice | Lubricate the control valve on the power steering cylinder through the grease fitting with multipurpose lubricant until grease appears around the rubber boot.<br><br>Lubricate control valve through grease fitting with multi-purpose lubricant until grease is visible around rubber boot.<br><br>Coat power steering output shaft and exposed steering cable end with multi-purpose lubricant.<br><br>Lubricate cable end guide pivot point with engine oil.<br><br>Run engine for 20 to 30 minutes and check power steering fluid level. If low, add type "A" automatic transmission fluid to bring level up to the FULL mark on the dipstick.<br>NOTE: If the engine is cold, allow room for expansion.<br><br>Inspect all hydraulic lines and hoses for leaks. Ensure all lines and hoses are free from friction and exposure to extreme heat. Tighten all fittings and clamps as required.<br><br>Check all bolts for tightness. |
|  Warning | Check pump pulley drive belt for wear and proper tension. Avoid over tightening drive belts. Belts that are too tight can cause excessive bearing wear and failure. |

# 8 ENVIRONMENTAL AWARENESS

The previous sections of this manual provide information on how to protect the boat and its crew from the environment. This section gives information on how the environment may be protected from the boat and its crew.

The environment should be understood as including one's neighbours as well as the world of plants and animals.

In many regions of the world, there are strictly enforced regulations regarding environmental protection. It is the responsibility of the owner/operator to be aware of applicable regulations and to ensure compliance with them. (MARPOL)

## 8.1 Leakage of Petrochemicals

| | |
|---|---|
|  Warning | Any oil must be treated as chemical waste. |

ALWAYS: Investigate the source of any oil leaks as soon as possible.

Dispose of recovered spilt oil correctly.

Have oil-absorbing cloths or rolls on board.

NEVER: Dispose overboard of any oil, paint or other chemical that is potentially harmful to the environment. Sanctions are in place in most parts of the world for those who disregard this rule!

## 8.2 Black & Grey Water

| | |
|---|---|
|  Warning | The discharge of effluent into navigable waters is forbidden by law in many areas. If such discharge causes a film or sheen upon or a discoloration of the surface of the water or causes a sludge or emulsion beneath the surface of the water, violators may be subject to a penalty. It is the responsibility of the boat user to ensure that they are aware of local legislation regarding discharge |
|  Caution | Keep bilges clean to avoid the automatic bilge pumps discharging illegal effluent. |

## 8.3 Household Waste

| | | |
|---|---|---|
|  | Warning | When at sea for periods longer than space allows onboard storage of waste, only jettison organic waste. |

ALWAYS Retain any household waste until it can be properly disposed of ashore.

## 8.4 Noise

NEVER Make excessive noise. Most people take to the water for relaxation which is ruined by noise.

## 8.5 Exhaust system

ALWAYS Have the engine & exhaust system inspected & cleaned by a qualified professional at regular intervals.

Inspect the exhaust system to ensure connections are secure.

Check the free flow of exhaust gasses through the silencer (muffler) to ensure that it is unblocked, every time you set out.

Stop if you have any doubts about the exhaust system.

### 8.5.1 Dangers of Carbon Monoxide

| | | |
|---|---|---|
|  | Danger | When carbon-based, appliance and engine fuels, such as gas, LPG, coal, wood, paraffin, oil, petrol and diesel don’t burn completely, CO is produced. |

**CO build-up in the cabin can occur with one or a mix of these factors:**

1. Faulty, badly maintained or misused appliances
2. Exhaust fumes from a boat’s engine or generator
3. Escaped flue gases from solid fuel stoves
4. Blocked ventilation or short supply of air - fuel needs oxygen to burn safely

**Know the danger signs on your boat:**

Routine checking that your boat’s fuel-burning appliances and engines are free from signs of problems and in good condition will help keep you safe.

**Any of the following could be signs that CO is filling your boat:**

1 Staining, sooty smears, or discolouration on surfaces around an appliance or its flue
2 Appliances that are difficult to light, keep lit or burn weakly • Burners with yellow or orange or ‘floppy’ flames that threaten to go out
3 Burners with yellow or orange or ‘floppy’ flames that threaten to go out
4 An unfamiliar or burning smell when an LPG or oil appliance is on
5 Smelling or seeing smoke escaping regularly into the cabin when running your wood-burner or coal stove
6 Smelling engine exhaust fumes regularly inside the cockpit or cabin

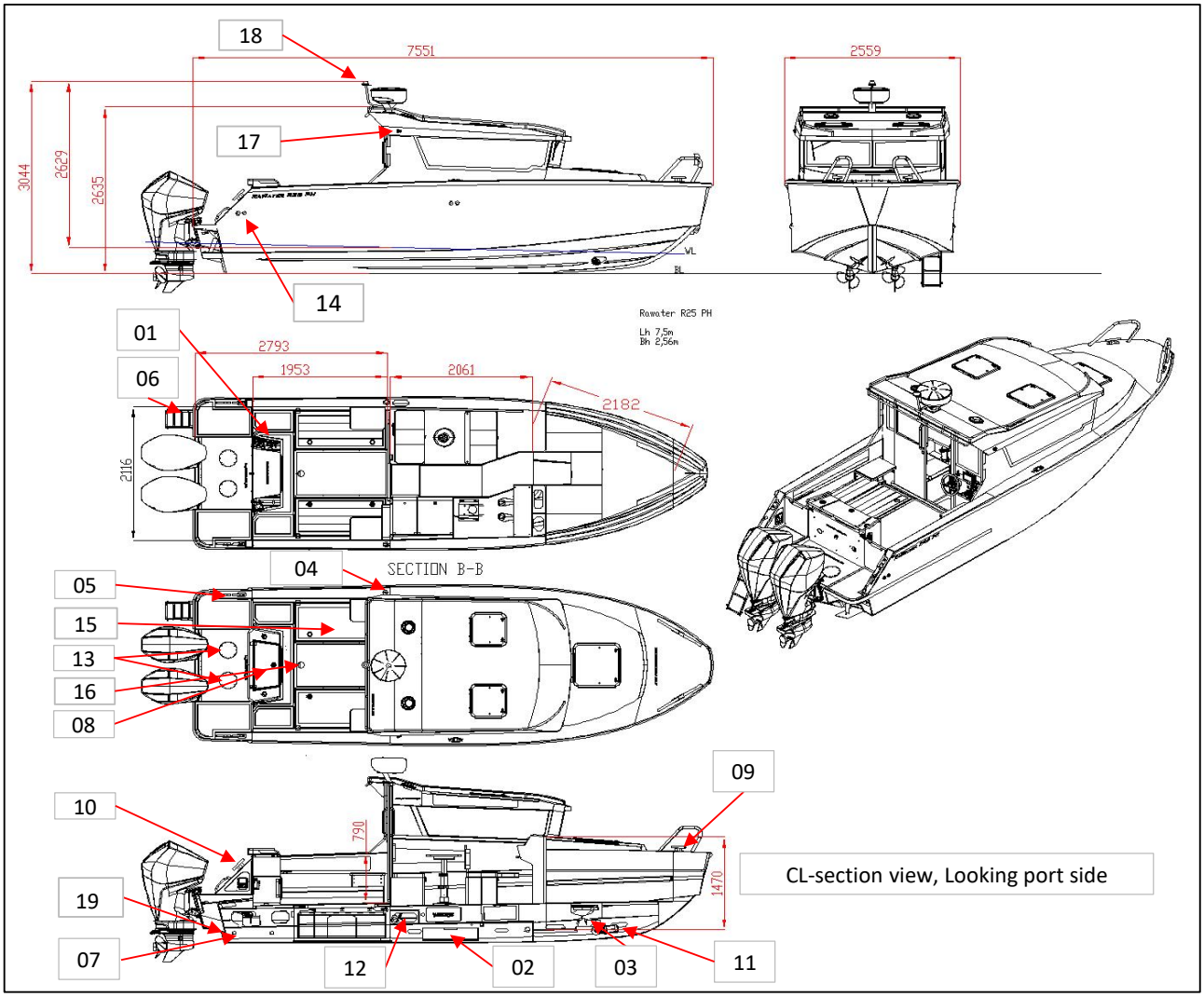
| | |
|---|---|
|  Caution | Check the boat’s exhaust system routinely. Inspect every part for leaks or problems including; manifolds, pipes, joints, hoses, clamps, silencers, and through-hull fittings. |
|  Warning | Do not install or fix a portable generator inside any accommodation space. |
|  Caution | Proprietary conversion kits must be used if adapting a portable generator to fixed use. |
|  Danger | Inefficient petrol engine performance, running the engine cooler than its design temperature or using contaminated or stale fuel, can increase the concentration of CO in exhaust fumes. |
|  Danger | Whether the boat is moving or moored, under certain running and or wind conditions CO at dangerous levels can be deflected or drawn in from engine exhausts. |
|  Notice | Be a good neighbour; see if you can avoid running your engine when moored in a crowded marina, particularly when the air is still. |

## 8.6 Wash / Waves

ALWAYS Adapt your speed to the water in which you are navigating. Consider the comfort and safety of other (particularly small) boats around you.

| | |
|---|---|
|  Caution | Be aware that in some areas speed restrictions are in place to avoid erosion of banks/coastline. |

# R25 Pilothouse GA-Drawing




01 DC-main switches & Automatic fuses
02 Septic tank
03 Toilet head
04 Petrol tank filling gap
05 Diesel tank filling gap
06 Swimming ladders
07 Electric bilge pump, manual bilge pump intake
08 Manual bilge pump handle
09 Cleats fwd
10 Cleats aft
11 Bow thruster (optional)
12 Dieseld heater 4 kW
13 Inspection hatches
14 Bilge outlets
15 Seawater pump & bottom valve (otional)
16 Placement for optional life raft
17 Navigation lights
18 Anchor light, 360 light
19 Hull anodes in transom