

CAP CAMARAT 7.5 WA *SERIE 2*



OWNER'S MANUAL



992030
Index B



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INTRODUCTION

Welcome

You have just taken delivery of your new JEANNEAU boat and we thank you for the confidence you have shown us in ordering a vessel of our brand. The whole JEANNEAU team welcomes you aboard.

A JEANNEAU is made to last, in order to bring you all the pleasure you expect from a vessel over a period of many years. Each boat is subject to the utmost attention to detail from the design stage right through to launching.

This manual is meant to help you to enjoy your boat comfortably and safely. It includes the boat specifications, the equipment provided or installed, the systems and tips on her operation and maintenance. Some of the equipment described in this manual may be optional.

Your JEANNEAU dealer will be able to help and advise you in the use and maintenance of your boat.

The initial commissioning of your boat will require a lot of skill and care. The proper working of all your boat's equipment is the result of the quality of the commissioning operations. This is why the initial launch must be overseen by your dealer.

Read this Owner's Manual carefully and take the time to get to know your boat before you use it.

The better you know your vessel the more pleasure you will get from being at the helm.

Keep this manual somewhere safe and should you sell your boat, hand it to the new owner.

You are advised to keep any user's guides supplied by the manufacturers of any equipment for your boat (accessories...), together with your manual.



For all the equipment on your boat,
please read the instruction manuals provided by the manufacturer.

■ This manual has been produced to help you enjoy using your boat in all safety. It contains the details of the boat and of all the equipment provided and installed on your boat, as well as the instructions for their use. Read it carefully and really get to know your boat before using it.

■ This owner's manual is not in any way a navigation or mariner's training manual. If this is your first boat or if you have changed to a type of boat with which you are not familiar, make sure that you learn how to use it and manoeuvre it safely and with ease, before taking the helm alone. Your dealer, or national sailing or motorboat association, or your yacht club will be very happy to tell you about the navigation schools or qualified instructors in your area.

■ Make sure that the wind and sea conditions forecast are appropriate for the design category of your boat and that you and your crew are capable of manoeuvring the boat in these conditions.

■ Even with a well-adapted boat, the wind and sea conditions which correspond to the design categories A,B and C range from storm force winds for category A to severe storm conditions at the upper end of category C and would put the boat at risk from massive waves and extreme gusts. These are dangerous conditions in which only an experienced, fit and well-trained crew, manoeuvring a well-maintained boat, could navigate sufficiently well.

■ This owner's manual is not intended as a detailed maintenance or repairs manual. Should any problems arise please contact your dealer. If a maintenance manual is provided, please use it.

■ Always use the services of an experienced professional for the maintenance of your boat, for fitting accessories and for any modifications. Any alterations which may affect the safety specifications of the boat must be assessed, carried out and recorded by persons qualified to do so. The boat manufacturer cannot be held responsible for any modifications not approved by them.

■ Some countries require you to hold a Certificate of Competency or other qualifications, or other specific regulations may be in force.

■ Always maintain your boat well and make note of any deterioration due to wear and tear or to heavy or inappropriate use.

■ Any boat – no matter how well-built– could suffer serious damage if used recklessly. This is not compatible with safe navigation. Always adjust the speed and heading of your boat according to the sea conditions.

■ If your boat is equipped with a life-raft, read the instruction manual carefully. The crew must have available onboard all the safety gear (lifejackets, harnesses etc) appropriate for the type of boat and for the weather conditions etc.. In some countries it is mandatory to have this safety equipment onboard. The crew must be fully familiarised with the use of the safety gear and with emergency manoeuvres (Man Overboard procedures, towing another vessel etc). Sailing schools and clubs regularly run training sessions for these.

■ It is advised that, when on deck, everyone should wear the appropriate buoyancy aids (lifejackets, personal buoyancy aids) Be advised that in some countries, it is mandatory to wear a buoyancy aid which meets the national regulations at all times.

Notes on reading this manual

The various symbols used throughout the manual for crucial safety information are as follows:



DANGER

Indicates the existence of a serious inherent danger with a high risk of death or serious injury if the appropriate precautions are not taken.



WARNING

Indicates the existence of a danger which could lead to injury or death if the appropriate precautions are not taken.



WARNING

Indicates either a reminder of safety procedures or alerts you to dangerous manoeuvres or operations, which could result in injuries to those onboard or in damage to the boat or to components of it, or to the environment.

ADVICE-RECOMMENDATION

Indicates a recommendation or advice for carrying out manoeuvres appropriate for the planned manoeuvres.

- While some of the information and illustrations in this manual may show details which are slightly different from those found on your boat, the key information remains the same. Future versions of this manual will show any possible modifications as required.
- Due to the constant desire to improve the products, SPBI S.A. reserves the right to make any changes considered necessary to the design or to the equipment.
That is the reason why the specifications and information given are not contractual, they may be modified without prior notice or up dates.
- This owner's manual complies with the European Directive 94/25/CE of the 16 June 1994 amended by the European Directive 2003/44/CE of the 16 June 2003;
and with the standard NF EN ISO 10240 of February 2005 .



- This owner's manual is written in several languages. French is the authentic reference language.
- This owner's manual was written and made up into pages by SPBI S.A.. Any reproduction of this manual, direct or indirect, provisional or permanent, by whatever means this may be, whether in whole or in part, and any modification of this manual by a third party for commercial reasons, are forbidden.



1 TECHNICAL SPECIFICATIONS

1.1 CONSTRUCTION

Model	CAP CAMARAT 7.5 WA Series2
Architect / Interior design	Michael PETERS / Sarrazin Design
Builder	SPBI S.A
Principal means of propulsion	Motor
Hull construction material	Laminated sandwich glass / Polyester / Balsa wood & Sinter
Deck construction material	Laminated sandwich glass / Polyester / Foam & Sinter
Application - Hull.....	injection
Application - Deck.....	Wet laid fibre

1.2 GENERAL DIMENSIONS

L.O.A (L_{max})*	with options: 7,90 m
.....	standard: 7,19 m
(Including removable parts that can be dismantled without affecting the boat's structure(bow roller, pulpit, platform))	
Hull length (L_h)*	6,96 m
<i>(Excluding: removable parts that can be dismantled, without affecting the structure of the boat)</i>	
Overall width (B_{max})*	2,52 m
<i>(Including: removable parts that can be dismantled, without affecting the structure of the boat)</i>	
Beam(B_h)*	2,50 m
<i>(Excluding: removable parts that can be dismantled, without affecting the structure of the boat)</i>	
Air draught – Empty vessel (without bimini)	1,74 m
Draught - Boat fully laden (without engine)	0,49 m
Wetted surface area	Approximately 14 m ²

1.3 ENGINE

Nominal maximum propulsion power	1 x 221 Kw
Maximum recommended engine size	1 x 365 kg

1.4 ELECTRICITY

Circuit type - Direct current.....	12V
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1.5 CAPACITIES

Total mass of the liquid content of fixed tanks when they are full.....	370 kg
Fuel capacity.....	280 l
Fresh water capacity.....	80 l
Sewage water capacity (WC).....	80 l

It may not be possible to use these capacities fully depending on the trim and load of the boat.

It is recommended to keep a reserve of 20% in the fuel tanks.



2 DESIGN CATEGORIES AND DISPLACEMENT

- Some of the data is shown on the manufacturer's plate fixed to the boat. The explanation of the data is given in the appropriate chapters of this manual.
- The recommended maximum load includes the weight of all the people onboard, of provisions, personal belongings, of all equipment not included in the weight of the boat in ballast, of the cargo (if relevant) and of all liquids contained in fixed tanks when full (fuel, water, grey water, black water).
- The maximum recommended weight shown on the manufacturer's plate does not include the weight contained in the fixed tanks of liquid when full (fuel, water, grey water, black water).

Design category	C	D
Maximum number of people to be allowed onboard	9	9
Maximum number of people to be allowed on the flybridge	1 928 kg	
Light displacement	1 680 kg	
Recommended maximum load	3 608 kg	

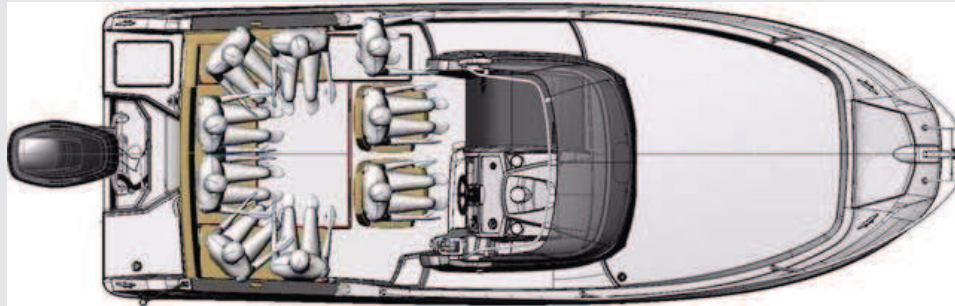
If some of those onboard are children, the total number of people allowed onboard may be increased, provided that:

- The total weight of the children does not exceed 37,5 kg;

and that

- the total weight of all allowed onboard (based on about 75 kg per adult) is not exceeded.

- Do not exceed the recommended maximum number of people onboard. However many people are onboard, the total, combined load of people and any gear or equipment must never exceed the recommended maximum load.
- Always use the seats or positions provided.



- When loading the boat, never exceed the recommended maximum load. Always load the boat with care and distribute the loads in order to maintain the theoretical trim (more or less horizontal).
- Avoid placing heavy loads high up in the boat.



2.1 DESIGN CATEGORIES

Category A: At high sea

The boat is designed to sail in winds that may exceed Beaufort force 8 and in waves of a significant height of 4 metres and more.

This craft is largely self-sufficient. Abnormal conditions such as hurricanes are excluded. Such conditions may be encountered on extended voyages, for example across oceans, or inshore when unsheltered from the wind and waves for several hundred nautical miles.

Category B: In open sea

The boat is designed to sail in winds not exceeding Beaufort force 8 and in corresponding seas (waves of a significant height of less than or equal to 4 metres).

Such conditions may be encountered on offshore voyages of sufficient length, or on coastal waters when unsheltered from the wind and waves for several dozens of nautical miles.

These conditions may also be experienced on inland seas of sufficient size for the wave height to be generated.

Category C: Near to the coast

The boat is designed to sail in winds not exceeding Beaufort force 6 and in corresponding seas (waves of a significant height of less than or equal to 2 metres). You may meet with such conditions in exposed inland waters, in estuaries and in coastal waters with moderate weather conditions.

Category D: In sheltered waters

The boat is designed to sail in winds that may exceed Beaufort force 4 and in waves of a significant height of 0,5 metres and more.

Such conditions may be encountered in sheltered inland waters, and in coastal waters in fine weather.

NOTE:

- The significant wave height is the mean height of the highest one-third of the waves, which approximately corresponds to the wave height estimated by an experienced observer. Some waves will be double this height.

- The creation of different design categories results from the need to distinguish between different levels of risk according to the construction of the boats.

"The parameters for the characteristics are established to define the conditions of navigation which each category may encounter; they serve purely to evaluate the boat designs and are not to be used to limit the geographical areas in which these boats may operate".

- One boat may be classed in several design categories at the same time, each with their different maximum capabilities.



3 STABILITY AND BUOYANCY

3.1 STABILITY DATA

- This boat has been assessed as capable of supporting the weight of the crew, even in the event of flooding.
- Fully laden displacement was used to evaluate the stability and buoyancy of the boat. The value of this displacement can be found in paragraph "Technical specifications" at the beginning of this manual.
- Any change to the disposal of weight on board (for example, the addition of a raised structure for fishing, radar, change of engine etc) can noticeably affect the boat's stability, trim and performance.
- It is important to keep water in the bilges to a minimum.
- The boat's stability is affected by adding to the weight of the superstructure.
- When under way, it is advisable to shut the hatches, lockers and doors to minimise the risk of flooding.
- The boat's stability can be reduced when towing a boat or when using a davit or boom to lift a heavy load.
- Breaking waves are a serious threat to stability.



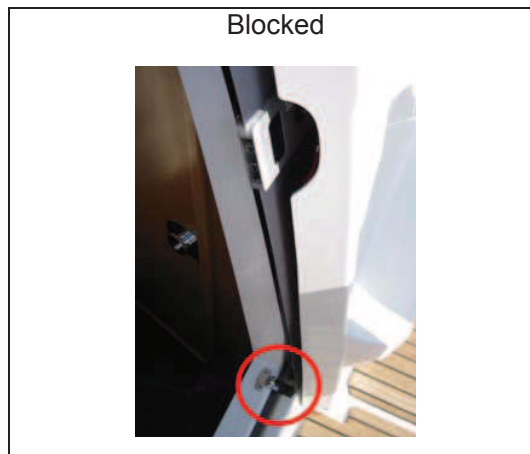
- Reduce speed in waves.
- Always adjust the speed and heading of your boat according to the sea conditions.
- All of the watertight hatches must remain closed when at sea.

3.2 ACCESS TO THE BOAT

Access to the cockpit



Access to companionway



Access - Aft quarterdeck



A trapdoor located on the stern deck at the level of the engine well allows access to:

- The engine tightening on the aft bulkhead.

This access trapdoor must be closed BY HAND without using any particular tool (especially a winch handle or cap spanner).



- It is imperative that the cockpit and fuel tank compartment must be kept closed and locked when under way.
- When at sea close the guardrail side-opening or openings.
- Slamming an access hatch may cause injury : always close the hatch gently and carefully.
- Do not allow children to open or close the hatches unsupervised.



- It is imperative that companionway access is kept closed when at sea.
- Close the deck hatches and portholes before each trip.
- Close all access doors and hatches in heavy weather or when the sea is rough.

ADVICE-RECOMMENDATION

- When under way, keep hull valves and fillers in the closed position to minimise the risk of flooding.



4 MANOEUVRABILITY

- It is important to take additional precautions in very strong winds or in a confused sea or breaking waves.
- Maximum rated power of boat propulsion: 1 x 221 Kw.
- Do not install an engine in this boat with a higher rated power than that indicated on the manufacturer's plate.
- Use negative trim to go from cruising speed to planing speed, and at low speeds (applicable to boats equipped with a system for directing the propeller thrust).
- Do not drive the boat at high speed with a negative trim of the propulsion equipment (bow down). This can make the boat heel and cause it to be unstable when turning.
- Do not drive at top speed in areas of heavy boat traffic or in situations of reduced visibility, strong winds or heavy seas. Reduce the boat's speed and wake out of courtesy and for your own safety and the safety of others. Observe speed limits and "NO WASH" signs.
- Observe the rules of priority as defined in the Navigation Rules and imposed by the international regulations for preventing collisions at sea (Collision Regulations - COLREG).
- Ensure that you always have sufficient room to stop or manoeuvre if necessary in order to avoid a collision.
- Avoid abrupt manoeuvres at full speed.
- Do not sit on the forward section of the cockpit when the boat is moving at high speed.
- Reduce speed in big waves for your comfort and safety.

4.1 VISIBILITY FROM THE STEERING STATION

Visibility from the steering station may be obstructed when the boat is trimmed at a steep angle or due to other factors caused by one or more of the following conditions:

- Angle of engine trim control switch (in boats equipped with an engine trim control switch);
- Angle of hull trim control switch (in boats equipped with a hull trim control switch or trim tabs);
- Load and load distribution;
- Speed;
- Rapid acceleration;
- Transition from displacement mode to planing mode;
- Sea conditions;
- Rain and mist;
- Darkness and fog;
- Lights on inside the boat;
- Position of the upper and side awnings;
- Persons and removable equipment in the helmsman's field of visibility.

The international rules for preventing collisions at sea (COLREG) and the navigation rules demand constant vigilance and observance of priority rules. Observance of these rules is essential.



- Manoeuvrability is reduced at excessive speeds.
- There is a risk of loss of control during tight turns.
- Reduce speed before making a turn in any direction.

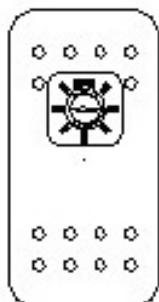


4.1.1 Navigation lights

The navigation lights run on DC power.

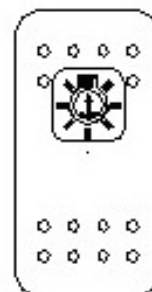
Control: Steering station

Navigation lights



Mooring light

Location: Starboard aft quarterdeck



The only function of the samson post is to support the navigation light. Any other use is dangerous and forbidden.

MANOEUVRABILITY

Mooring light / Connection





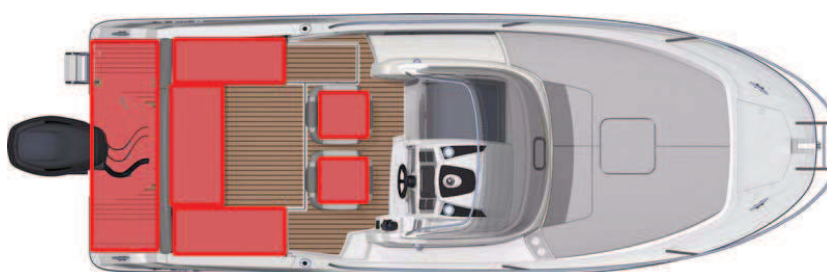
5 SAFETY

5.1 PREVENTING MAN OVERBOARD SITUATIONS AND THE MEANS OF GETTING SOMEONE BACK ONBOARD

5.1.1 Prevention of man overboard

- The zones outside the working deck area are the hatched areas below 
- The "working deck" means those areas outside where people stand or walk during normal use of the boat.

SAFETY



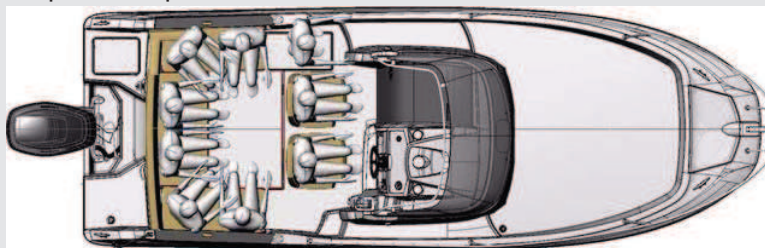
NOTE: Standing on the sunbed is prohibited.



Ref 1: Fitting a means of climbing back onboard.

Ref 2: Mooring cleats.

- Use the positions provided for each crew member.



5.1.2 Getting back onboard

The means for getting back onboard must be able to be deployed by one person alone in the water, with no other help.

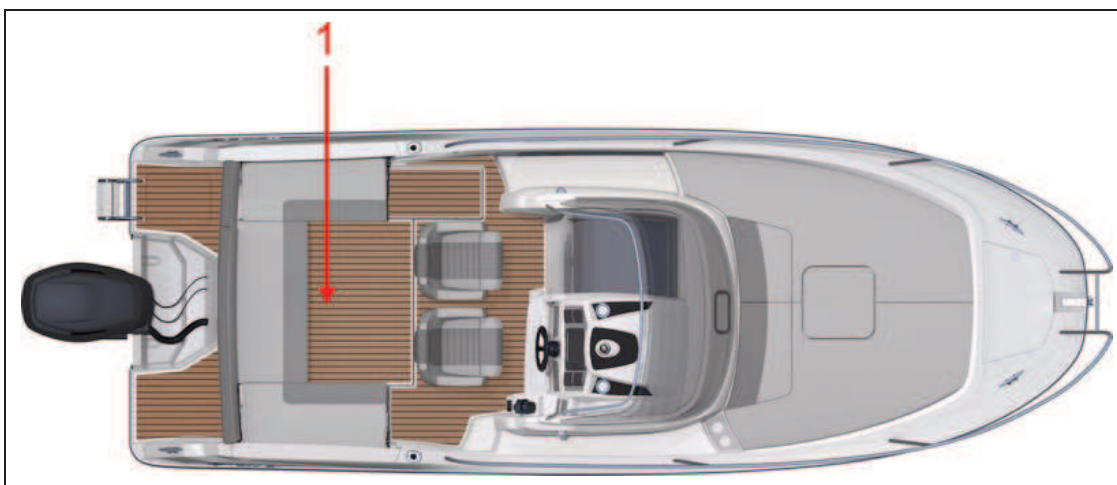
Fitting a means of climbing back onboard:



- Some types of equipment for getting back onboard have a locking device when folded up: It is advisable to have the means for getting back on board permanently deployed when the boat is in use (at anchor, moored or at sea).
- Make sure that the means for getting back onboard are readily accessible and easy to use by someone alone in the water.



5.2 STORING THE LIFE-RAFT



SAFETY

The life-raft(not supplied) must be stored in the space provided for it (Ref 1). A pictogram helps to locate it easily.



Before putting to sea, carefully read the launching instructions shown on the liferaft.

When at sea, never padlock or lock the stowage locker for the life-raft.

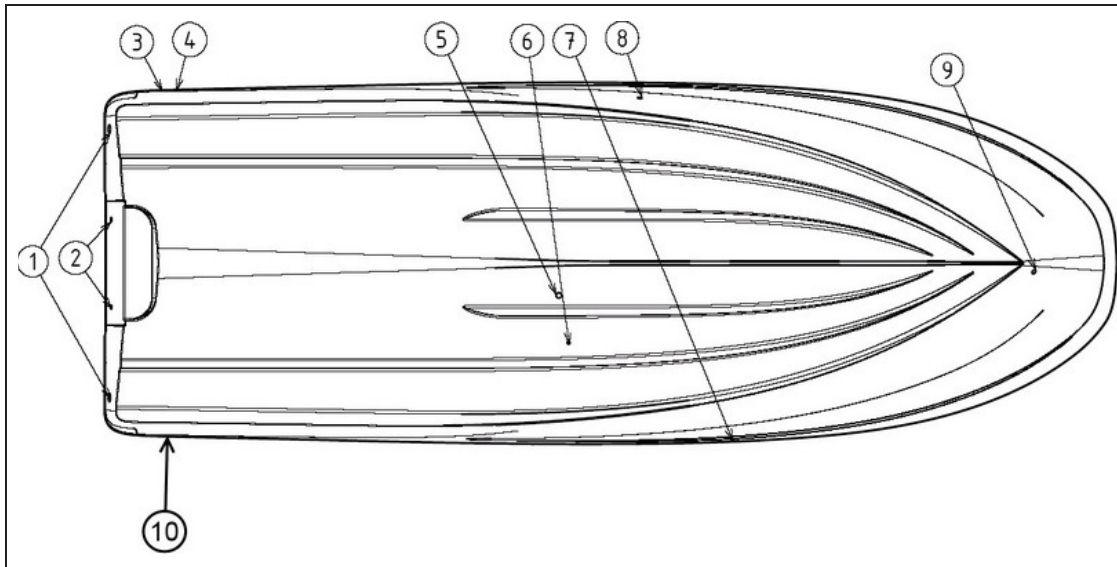
5.3 SECURING MOVEABLE ITEMS



- Ensure that movable items are firmly secured when the boat is under way.
- Don't store anything below the floorboards.

5.4 INFORMATION ABOUT THE RISKS OF FLOODING AND ABOUT THE BOAT'S STABILITY

5.4.1 Openings in hull



Reference	Designation	Valve
1	Cockpit scupper	Not
2	Drainage - Aft quarterdeck	Not
3	Draining of aft electric bilge pump	Not
4	Draining of manual bilge pump	Not
5	WC evacuation to sea	Yes
6	Sea water intake - WC	Yes
7	"WASTE" pump out drain plug	Not
8	Galley sink drain	Not
9	Chain locker scupper	Not
10	Forward electrical bilge pump draining	Not



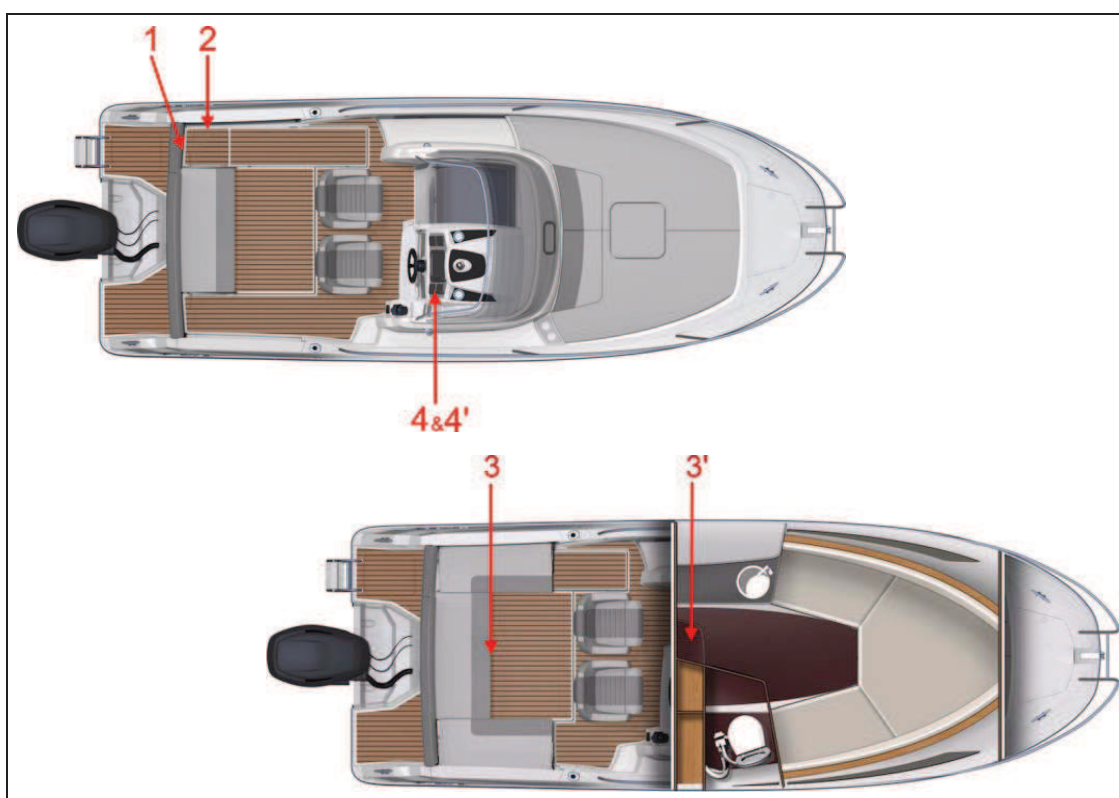
5.4.2 Drainage system

General points

- The inner moulding of the hull has channelling: the drainage channels. The drainage channels allow the water to drain down to the lowest point in the boat, where it can be discharged. So it is important to allow the water to flow freely down to this lowest point of the boat, which includes.
- Regularly cleaning the lowest point of the boat and the drainage channels.

SAFETY

Diagram of the layout - Bilge pumps



Reference	Designation	Rate
1	Manual bilge pump	32p/minute (*)
2	Manual bilge pump lever	
3 & 3'	Electric bilge pump	30p/minute
4	Switch - Forward electrical bilge pump	
4'	Switch - Aft electrical bilge pump	

(*) 45 strokes/minute

If 70 stroke/minute: rate 35p/minute

Main drainage system

Electric bilge pumps

- The bilge pumps are powered by DC.
- Location of the electric bilge pumps: Ref 3 & 3'.



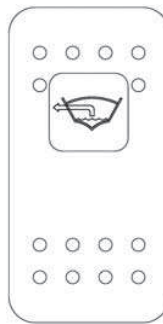
Ref 3



Ref 3'



Control: Steering station
Ref 4



- The electric bilge pump must only be used to discharge stagnant water at the bottom of the bilge. It must not be used to pump out any oil-based products (petrol, oil) or inflammable liquids.

Operation:

I- Turn on the battery switches.

II- Switch on the bilge pump switch (Ref 4) and keep it pressed down for as long as is necessary to drain the water using the bilge pump.

If the boat is equipped with an automatic bilge pump, the switch has an always-on position.



Secondary drainage system

Manual bilge pump

The manual bilge pump is in the cockpit (Ref 1).

The bilge pump lever is located close to it (Ref 2).

Operation:

I- Put the lever on the manual bilge pump.

II- Repeatedly work the lever up and down to its fullest extent.

The manual bilge pump lever must remain accessible at all times.

SAFETY

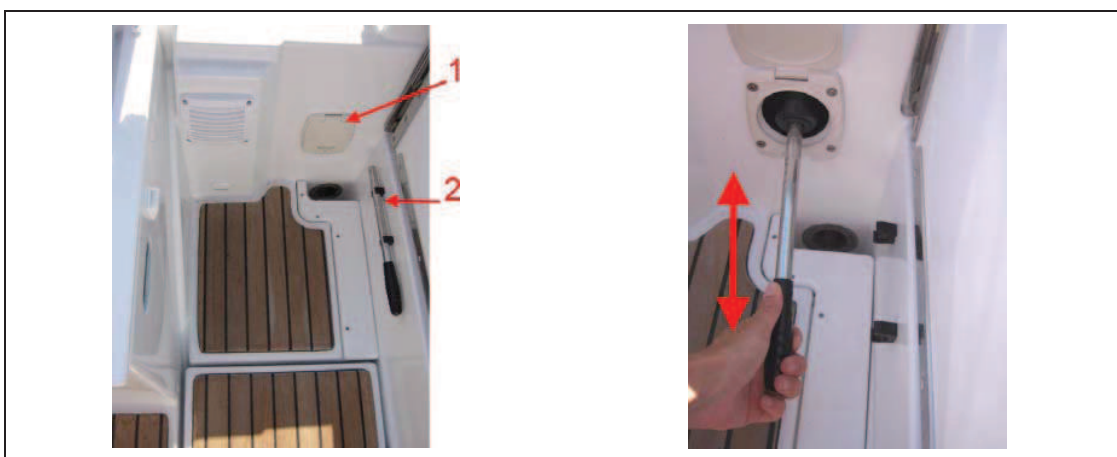
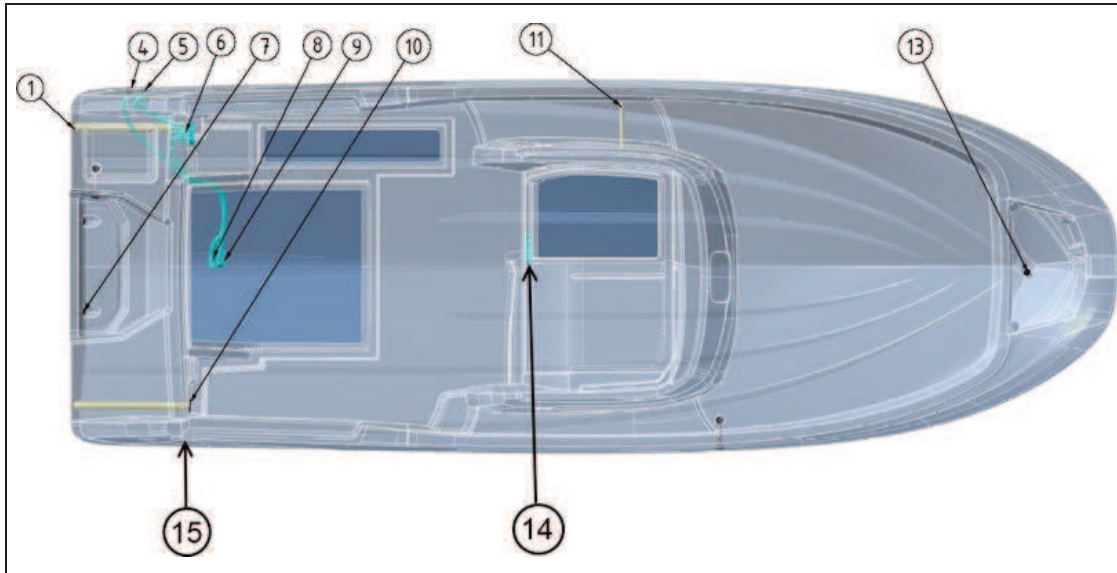


Diagram of the layout - Drainage system



Reference	Designation
1	Cockpit scupper
4	Draining of aft electric bilge pump
5	Draining of manual bilge pump
6	Manual bilge pump
7	Scuppers - Aft quarterdeck
8	Stuffing box - Manual bilge pump suction
9	Aft electric bilge pump
10	Cockpit drainage
11	Galley sink drain
13	Chain locker scupper
14	Forward electrical bilge pump
15	Forward electrical bilge pump draining



Bilge pump maintenance

Please refer to the manufacturer's notes on the instructions for checking and maintaining the bilge pumps.



- The drainage system is not designed to control water coming from breaches in the hull.
- Keep the water level in the bilges to the minimum.
- Never store anything right at the bottom of the boat: Allow bilge water to flow freely down to the lowest point of the boat.

SAFETY

SAFETY PRECAUTIONS

- Check that each bilge pump is working at regular intervals.
- Clear the bilge pump points or strainers of any debris that could clog them.

5.5 EMERGENCY SYSTEMS IN CASE OF STEERING GEAR FAILURE

1. Stop the engine.
2. Drop anchor to avoid drifting.
3. Find out if you can solve the problem yourself by looking at the engine manual.
4. Request help.



6 INFORMATION RELATING TO FIRE RISKS AND RISKS OF EXPLOSION

6.1 PROPULSION ENGINES AND OTHER FUEL-BURNING EQUIPMENT



The risks associated with motorisation are described in the **MOTORISATION** chapter.

- Boats equipped with a 25kW or larger outboard engine must have onboard one or more portable fire extinguishers with a total combined capacity of at least 8A / 68B.



The risks associated with other fuel-burning equipment are described in the **OTHER FUEL-BURNING EQUIPMENT** chapter.

6.2 ELECTRICAL SYSTEM



The risks associated with the electrical systems are described in the **ELECTRICITY** chapter.

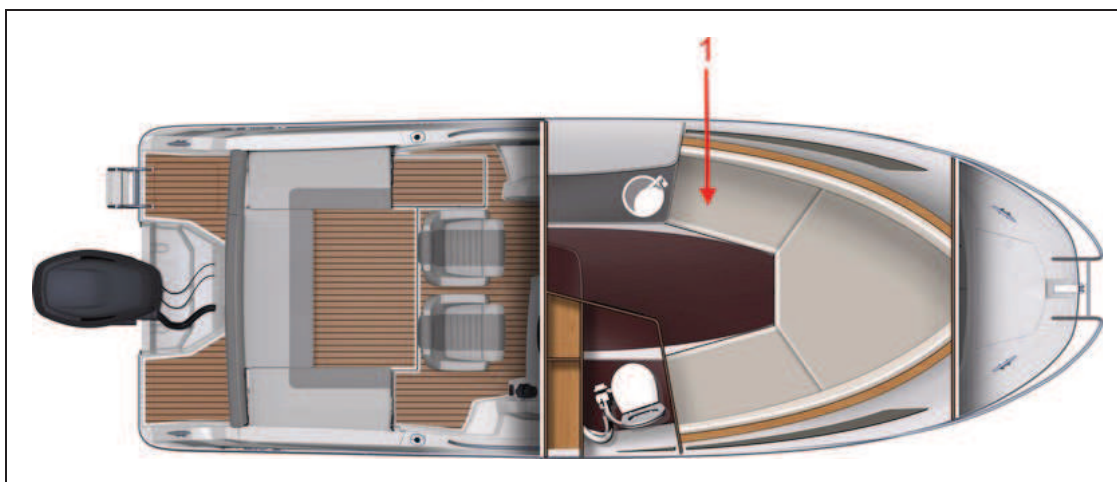
6.3 FIRE-PREVENTION AND FIRE-FIGHTING EQUIPMENT

6.3.1 Fire-fighting equipment

Portable fire-extinguishers and fire blanket (not supplied)

- When in use, this boat must be equipped with portable fire extinguishers of the following extinguishing capacity and located in the following places:

The location of the portable fire extinguishers is shown by the pictogram below:

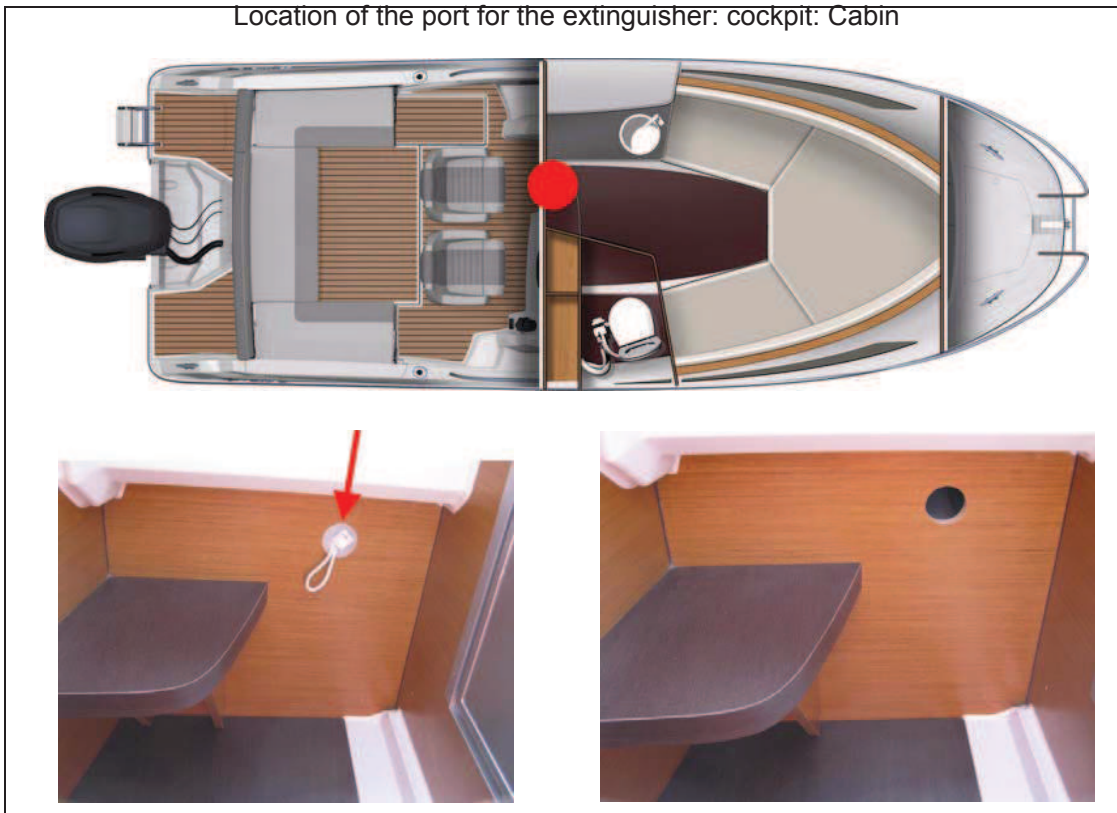


Reference	Designation	Location	Minimum extinguishing capacity
1	Portable fire extinguisher	Cabin	8A / 68B



The fuel tank compartment is provided with an opening to allow the extinguisher contents to be discharged without the need to open the normal access hatches.

Location of the port for the extinguisher: cockpit: Cabin



INFORMATION RELATING TO FIRE RISKS AND RISKS OF EXPLOSION

Maintenance of the fire-fighting equipment

The owner/person operating the boat must:

- Get the fire-fighting equipment checked at the frequency shown on the equipment;
- Replace portable fire extinguishers, if outdated or discharged, by extinguishing apparatus of equal capacity;
- Provide at least one fire bucket with a lanyard, in a readily accessible place, for protection on deck.

Responsibility of the owner/boat operator

It is the responsibility of the owner/boat operator to:

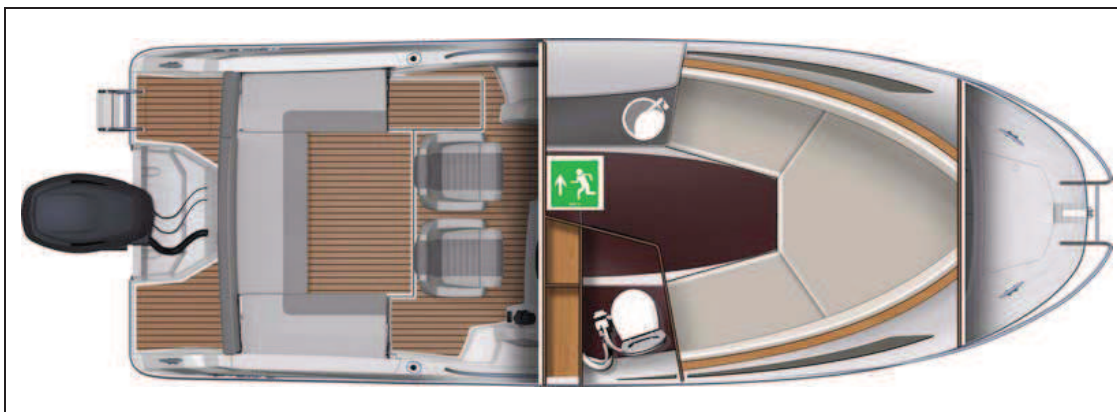
- Make sure that fire fighting equipment (portable extinguishers) is immediately available when the boat is occupied;
- Ensure that any drainage points in the engine compartment (or in the petrol tank compartment) are readily accessible;
- Show the members of the crew:
 - The location and use of the fire-fighting equipment;
 - The location of the drainage points in the petrol tank compartment;
 - The location of evacuation routes and fire exits.

Notes for the attention of the boat user

General points

- Check that the bilges are clean and frequently check that there are no fuel/gas vapours or fuel leaks.
- In the case of replacement of components of the fire-fighting equipment, use only the appropriate components of the same code designation or having the equivalent technical capacity and fire resistance.
- Do not install free-hanging curtains or other fabrics near or above the cooking appliances or other equipment with a naked flame.

6.4 EMERGENCY EXITS IN CASE OF FIRE



Designation	Location
Emergency exit	Companionway

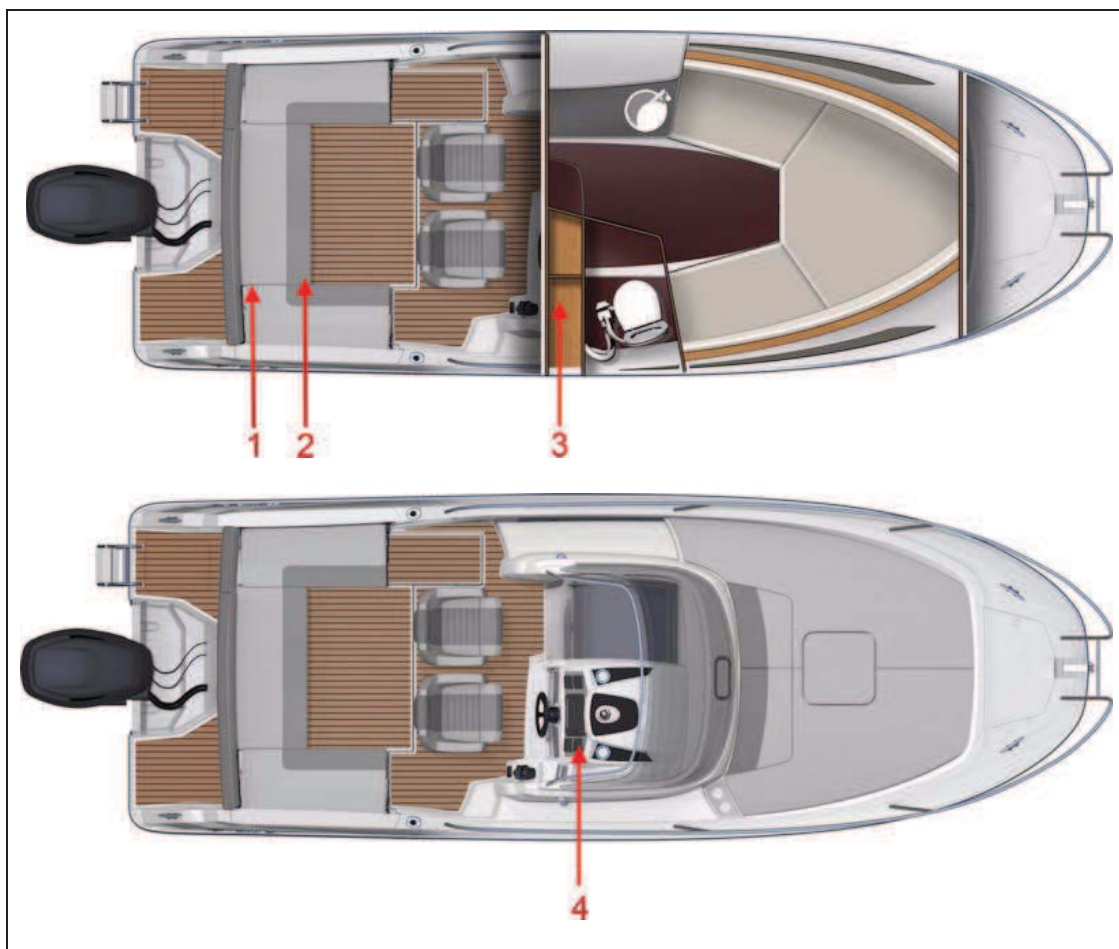


Never:

- Obstruct the passages leading to the emergency exits and the hatches;
- Obstruct or block safety controls, for instance fuel shut off valves, gas taps, electrical system circuit-breakers;
- Obstruct access to the portable extinguishers;
- Leave the boat unsupervised when cooking equipment and/or heating equipment is in use;
- Modify any of the boat's installations (especially the electrical, fuel or gas installations) or allow unqualified personnel to proceed with modifying these installations;
- Fill the fuel tanks or replace gas bottles while the engine is running or while cooking or heating equipment is in use;
- Use gas lamps in the boat;
- Smoke when handling fuel or gas.

7 ELECTRICAL SYSTEM

7.1 GENERAL INFORMATION ABOUT THE ELECTRICAL SYSTEM



DC INSTALLATION

Reference	Designation
1	Service battery
2	Engine battery, Battery switch, Separator - Batteries
3	Fuses
4	Switches / Circuit breakers - Steering station



- The risks of fire or explosion may result from careless use of the DC and AC systems.
- The risks of electrocution may result from careless use of the AC system.



Never:

- work on a live electrical system;
- modify the electrical system of the vessel or the relevant diagrams: It is important that the installation, maintenance and any modifications be carried out by a technician qualified in marine electricity;
- change or modify the strength of the safety devices protecting against power surges;
- install or replace electrical equipment or materials with components which exceed the system's nominal electrical power capacity;
- leave the boat unsupervised when the electrical system is live, apart from when the automatic bilge pump and the boat's fire protection and security systems are in use.

7.2 DC INSTALLATION (12 V)

7.2.1 Battery use and distribution

General points

On board electrical power is direct current.

The boat's electrical system comprises service batteries and the engine battery or batteries. The service batteries serve as the power supply for all the boat's electrical components. The engine battery is used solely to power the engine's starter motor.

Battery charging is carried out either:

- by the alternator linked to the engine when the engine is running,
- by the battery charger (if the boat has one).

It is imperative that when the boat is first launched, a professional engineer connects the batteries.

Always check the condition of the batteries and charge system before putting to sea.



Battery set

Location: Cockpit locker.

Engine battery: 110A



Service battery: 110A



DC INSTALLATION

Maintenance

- Avoid charging batteries to a voltage greater than 14,6 V.
- Keep the batteries clean and dry.
- Regularly check that the terminals and connection cables are clean. If necessary, apply a thin coating of paraffin on the terminals, to prevent corrosion.
- Regularly recharge all of the batteries onboard.
- Continuously maintain the charged batteries: this determines their length of life.
- Avoid long periods of electrical inactivity (for example when wintering the boat).



- All work carried out on a battery must only be carried out by someone qualified to do so. Whenever working on a battery, wear safety goggles and protective clothing.
- Never smoke or produce a spark near a battery: risk of an explosion.
- If any acid accidentally splashes on your skin or in your eyes thoroughly rinse it off immediately with fresh water. See a doctor immediately.
- Never touch the battery terminals: danger of electric shock.
- Refer to the manufacturer's instructions for use and maintenance.
- **IT IS IMPERATIVE TO DISCONNECT THE BATTERY CHARGER BEFORE DISCONNECTING THE BATTERY TERMINALS FOR MAINTENANCE.**

Maintenance of lead batteries

- Every year check the water levels in the batteries, and if they are low top them up with distilled water.
- Keep all metallic objects away from the batteries.
- Lead batteries contain sulphuric acid: Be careful not to knock them over whenever handling them.



7.2.2 Battery switch

- Manual battery switches: to make the system live, manually turn the positive and negative battery isolator switches.

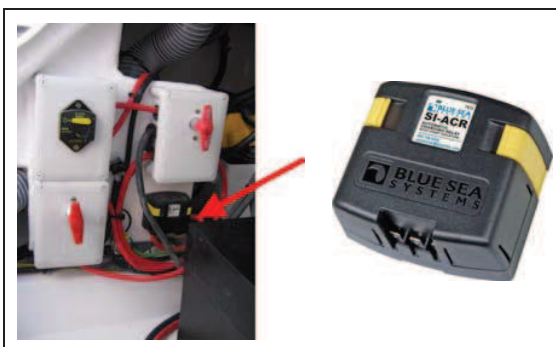
Location: Cockpit locker



- Turn off all battery breakers before leaving the vessel: **risk of damage to the whole battery bank.**
- Avoid operating the battery switches when the batteries are charging.
- Never switch off the battery breakers when the boat's engine is running (risk of damage to the charging circuit).

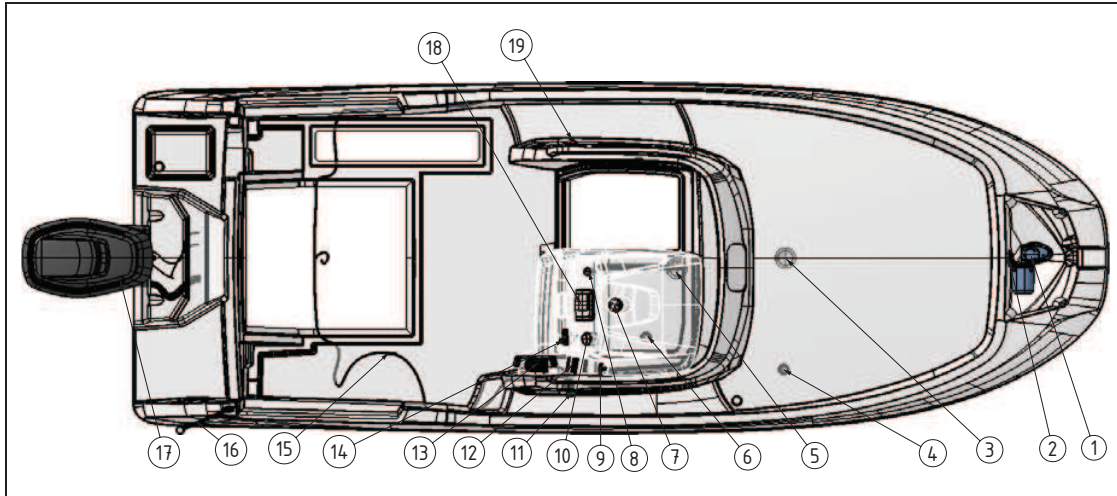
7.2.3 Power distributor

- The electronic charge dividers isolate the battery banks from each other and allow the charge to be directed automatically to the battery with the lowest charge. They give the advantage of preventing a drop in voltage.
- The charge divider is electronic. It is designed to distribute the charging current with a low voltage drop between the battery banks (engine and service batteries). It prevents the current from circulating from one battery to another. When the voltage of the charger or alternator is available, the charge divider's green indicator comes on.



7.2.4 Electrical layout - 12 V

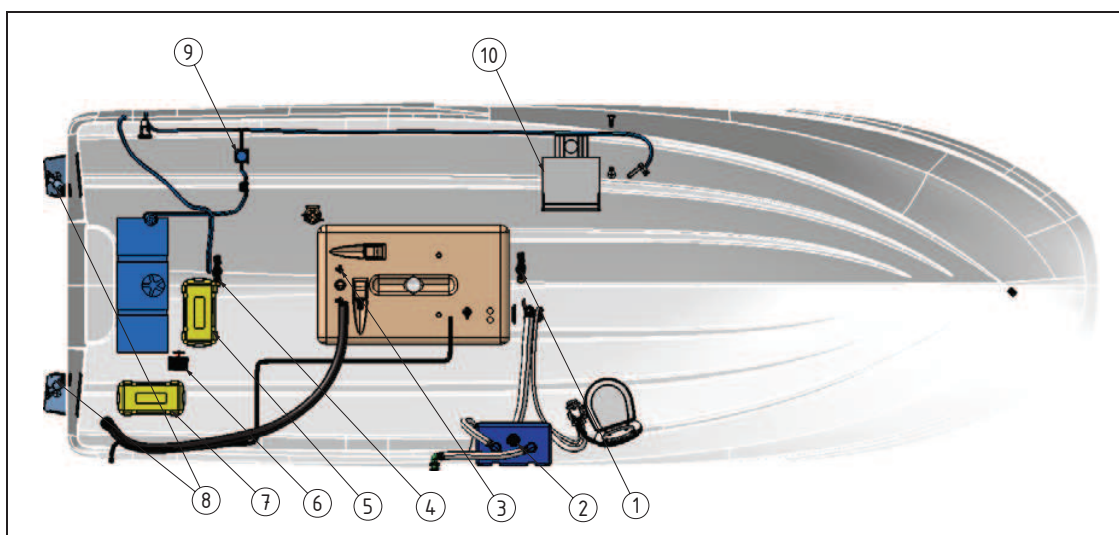
DECK



Reference	Designation
1	Windlass
2	Windlass relay
3	Lighting
4	Cabin lighting
5	Lighting
6	Cabin lighting
7	Compass light
8	Fuel gauge indicator
9	12 V socket
10	ScreenEngine control
11	Starboard navigation light
12	Switches / Circuit breakers
13	Accelerator
14	Starting the engine
15	Cockpit lighting
16	Mooring light (Samson post)
17	Outboard
18	Electronic instrument
19	Port navigation light



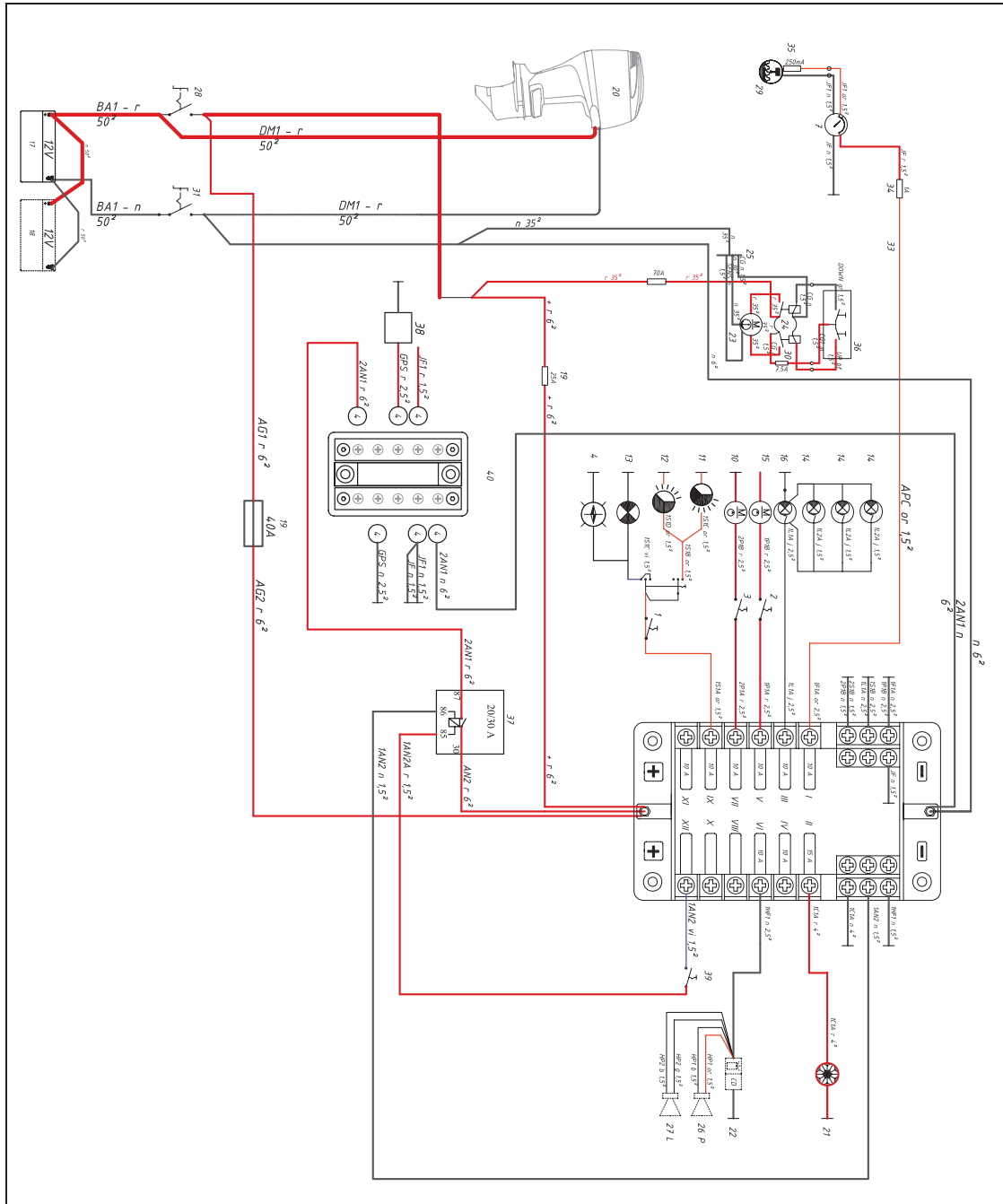
HULL



DC INSTALLATION

Reference	Designation
1	Electric bilge pump
2	Masher (Pump - WC evacuation to sea)
3	Fuse - Fuel gauge
4	Electric bilge pump
5	Engine battery
6	Positive battery isolator switch
7	Service battery
8	Flaps
9	Water unit
10	Fridge

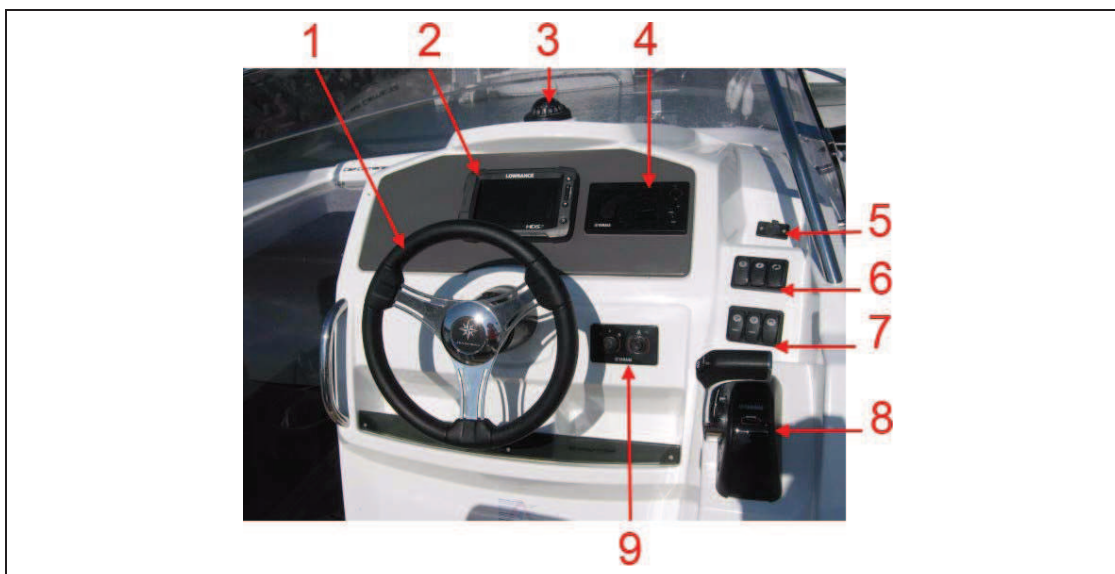
7.2.5 *1 DC electrical schematic diagram - 12 V





Reference	Designation
1	Switch - Navigation lights
2	Switch - Electric bilge pump
3	Switch - Water unit
4	Compass light
5	Rev counter - Motor
6	Trim indicators
7	Fuel gauge indicator
8	Starting - Motor
9	12 V socket
10	Water unit
11	Port navigation light
12	Starboard navigation light
13	Mooring light (Samson post)
14	Interior lighting
15	Electric bilge pump
16	Lighting - WC
17	Engine battery
18	Service battery
19	Fuse
20	Outboard
21	Fridge
22	Hifi
23	Electric windlass
24	Windlass relay
25	Windlass fuse
26	Speaker - starboard
27	Speaker - port
28	Positive battery isolator switch
29	Fuel gauge transmitter
30	Windlass fuse
31	Battery switch of negative terminal
32	Electronic instruments
33	Plus after contact - Motor
34	Fuse
35	Fuse - Fuel gauge
36	Windlass remote control
37	Relay box
38	Electronic instruments
39	Switch
40	Connection

7.2.6 Steering station



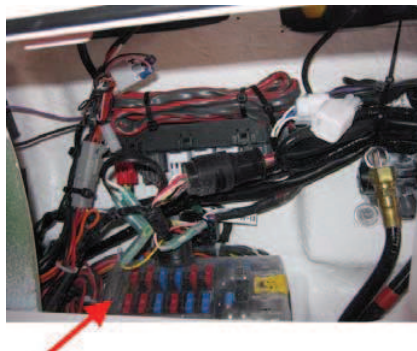
Reference	Designation
1	Steering wheel
2	Electronic instrument
3	Steering compass
4	Engine panel
5	12 V socket
6	Switches / Circuit breakers - from left to right: - Navigation lights - Electronic instrument - Water unit
7	Switches / Circuit breakers - from left to right: - Electric bilge pump - Electric bilge pump - Deck wash pump
8	Engine control lever
9	Starting - Motor



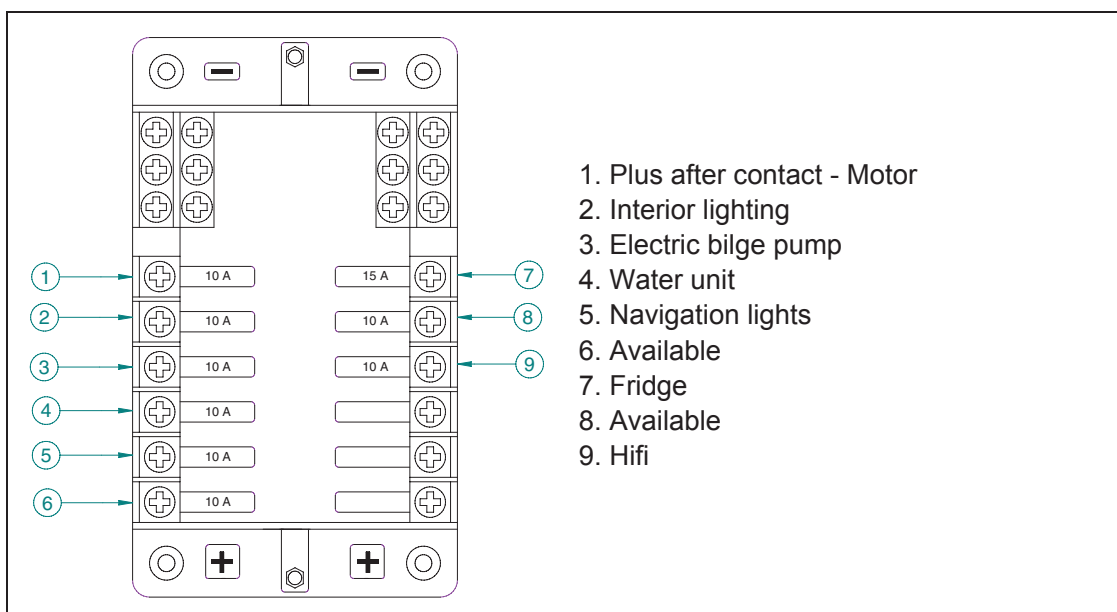
7.2.7 Fuses

- A fuse protects an electrical circuit from a power surge. If it blows, you must replace it with another fuse of the same rating.

Access: behind the helm position



DC INSTALLATION



When replacing fuses/circuit-breakers, always ensure replacements are of the right capacity (see the colour-codes)



7.2.8 Anodes

General points

- The sacrificial anodes protect the boat's metal components from electrolysis.
- A sacrificial anode is an expendable part, that by eroding (oxydisation), allows the current to flow. The anodes used are made of a metal that is more readily reductive than the metal they are protecting.
- On a new boat, all the underwater metallic components try to be at the same electric potential, which leads to the rapid deterioration of the anodes in the first few weeks in the water.

Location: on the housing.

Maintenance

- At least 2 times a year, check the corrosion on all of the anodes. Change the anode if necessary (Before it lost 50% of its weight).
- Use the appropriate anodes for the cruising area: fresh water/magnesium anodes; Sea water/zinc anodes.
- If the motor mountings are raised, the anodes are out of the water: in this case the anodes can no longer protect the sterndrive: take note of the skipper's recommendations.
- When the boat is stored at a dry dock, the corrosion protection is not as effective due to oxidation of the anodes: even the new anodes oxidize the surface. Before returning the boat into the water, clean the anodes.

Cleaning anodes

- Use sandpaper. Do not use metal brushes or steel tools to clean the boat, it may damage the galvanic protection.

Replacing the anodes

- The anodes are fastened with screws and nuts. First, remove the screws and nuts that hold the anode, then clean the contact surface. Press the new anode to obtain a good electrical contact.



- Never cover the anodes in antifoul.
- During the first few weeks that the boat is in the water, check the anodes and if necessary replace them: they erode very rapidly during this period.



8 DOMESTIC APPLIANCES

8.1 FRIDGE

General points

- The fridge is composed of 3 components: the compressor, the evaporator and the condenser. These components are connected by a closed circuit refrigerant gas circuit. The fridge is air-cooled.
- The fridge is DC powered. It is designed to chill food and drink. Any other use is dangerous and forbidden.
- A breaker protects the electrical circuit.
- The icebox without an evaporator keeps the food and drink chilled.
- The ON/OFF start button is located on the fridge.
- The thermostat is in the inside compartment of the fridge. It enables the selection of the desired temperature setting for the inside of the fridge.
- The refrigeration power can be affected by:
 - The ambient temperature,
 - The quantity of food to chill,
 - The frequency of opening the door.

Maintenance

- Clean the evaporator with a damp cloth at least once a year. Never use cleaners which are abrasive, acid or which contain solvents for cleaning the evaporator.
- Regularly clean the fridge/icebox door seal with a damp cloth.
- Regularly defrost the fridge.
- When winterising the boat, leave the fridge door/icebox cover open to prevent mould and smells from developing.

ADVICE-RECOMMENDATION

- Refer to the manufacturer's instructions for use and maintenance.
- Never heat or use tools to defrost the inside of the fridge more quickly (risk of damaging the interior surface).
- Never obstruct the heat exchanger of the fridge.

Location: Galley



Control

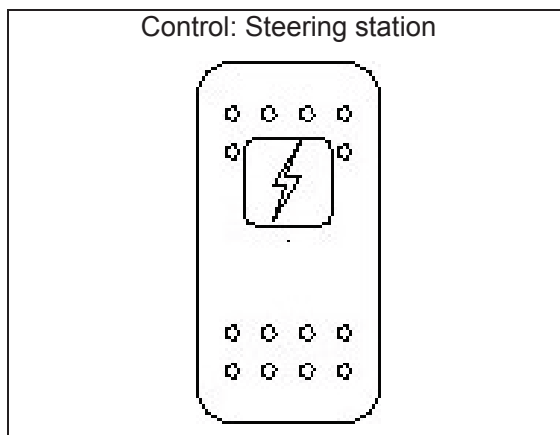




9 ONBOARD COMFORT

9.1 ELECTRONIC EQUIPMENT

The onboard electronics are powered by direct current.



ONBOARD COMFORT

LEAD LINES

- Do not store material on top of the sensors.
- Do not cover the sensors in antifoul when antifouling the hull.
- Regularly clean the sensors.

ADVICE-RECOMMENDATION

- Place the protective covers on the repeaters when unused for long periods.
- When sailing store the protective covers inside the boat to avoid losing them.
- The various repeater displays are back-lit.
- Regularly clean the fascias of the repeaters with fresh water.
- Refer to the manufacturer's instructions for use and maintenance.



10 WATER SYSTEMS

10.1 GENERAL POINTS

- It is essential to rinse the entire on-board water system the first time the boat is used (The water system is protected in the factory by a dietary anti-freeze).
- The water tanks may have had an anti-algae treatment using a copper sulphate based product. It is advisable to renew the treatment according to the area in which the boat is sailing.
- Purge all the water circuits when winterizing to prevent damage due to freezing.
- Clean/change the filters regularly.



- Regularly check water-tightness of joints in the water system installations. Check that screws and bolts are well tightened and replace them if they are worn or corroded.

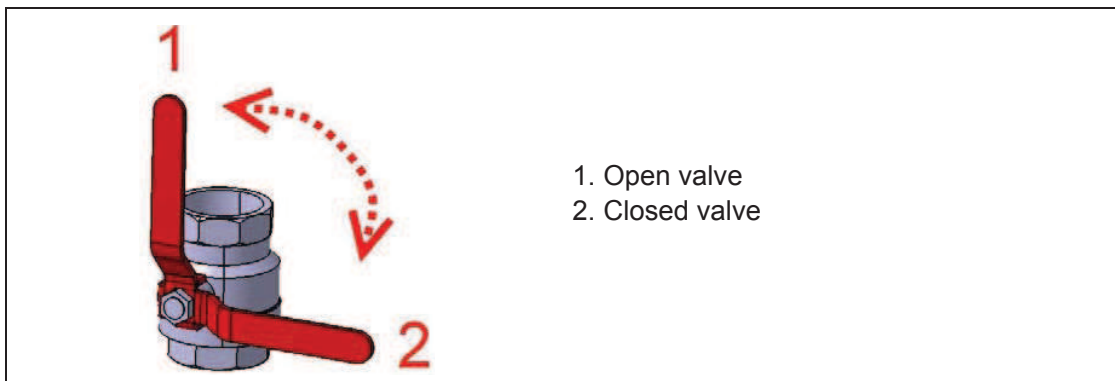
- Disconnect shore water supply before leaving the boat (if fitted).

- If the boat is sailing in temperatures below freezing, it is possible to use anti-freeze in the water systems: use a non-toxic anti-freeze marked for dietary use.

NEVER USE AUTOMOBILE ANTI-FREEZE: RISK OF POISONING.

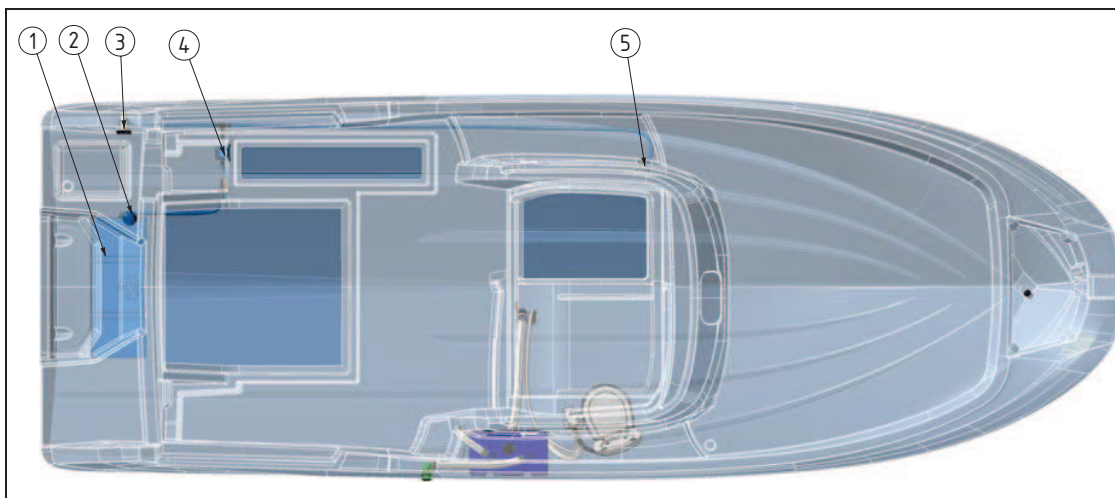
10.2 USING A VALVE

The valve is shut when the valve handle is at right angles to the pipe, the valve is open when the valve handle is in line with the pipe.



- Valves have a lifespan of approximately 5 years. It is essential to have all valves on board checked by a professional every 5 years and possibly replace them.

10.3 FRESH WATER SYSTEM



Reference	Designation
1	Fresh water tank
2	"WATER" deck filler
3	Cockpit shower
4	Water unit
5	Galley sink

Water tank

Location: Cockpit locker

Capacity: 80 litre



WATER filler

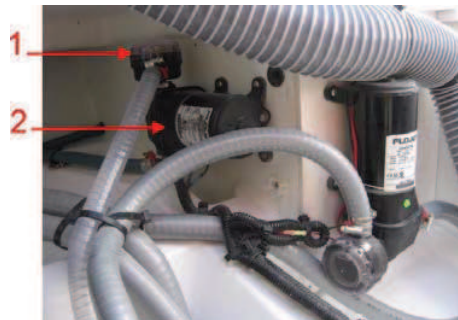
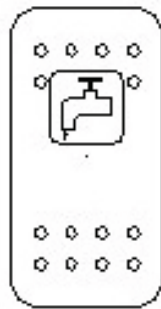


10.4 MAIN PLUMBING EQUIPMENT

10.4.1 Water unit

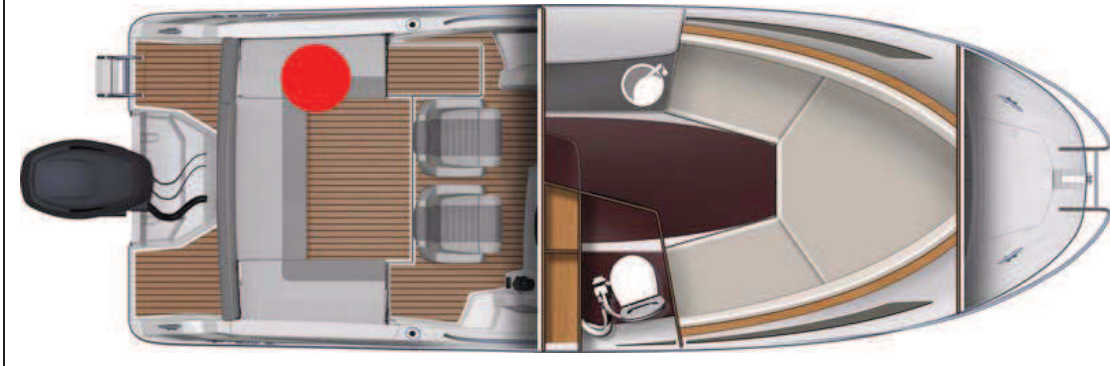
- The water unit is supplied by direct current.
- It serves to feed all the boat's plumbing equipment with fresh water. It is fitted with a pressure switch that activates the flow when the pressure in the water system falls.
- The water unit must only be used with the fresh water supply. All other use (with sea water or bilge water, with oil products) is prohibited.
- Make sure that the water unit is never run dry.
- The pressure and capacity of the water unit depend on the temperature of the stored fresh water supply.

Control: Steering station



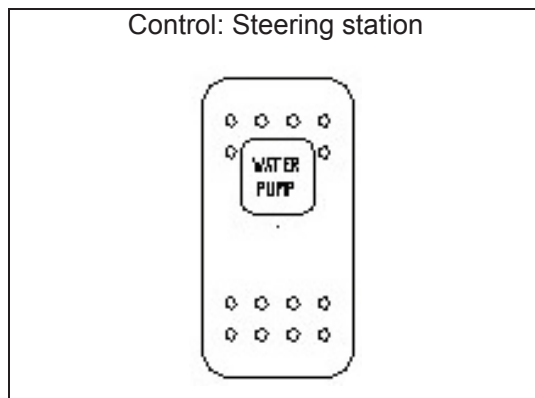
1. Filter
2. Water unit

Access: Cockpit locker



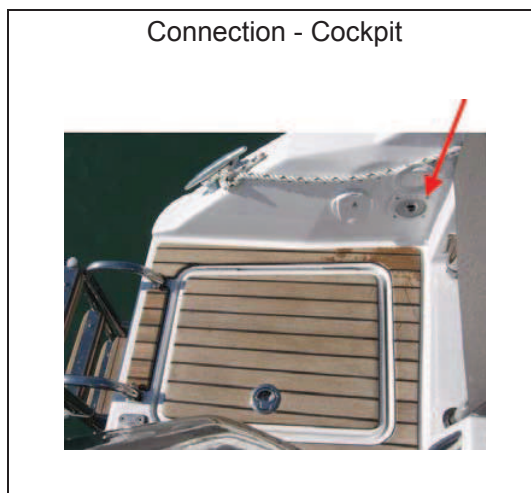
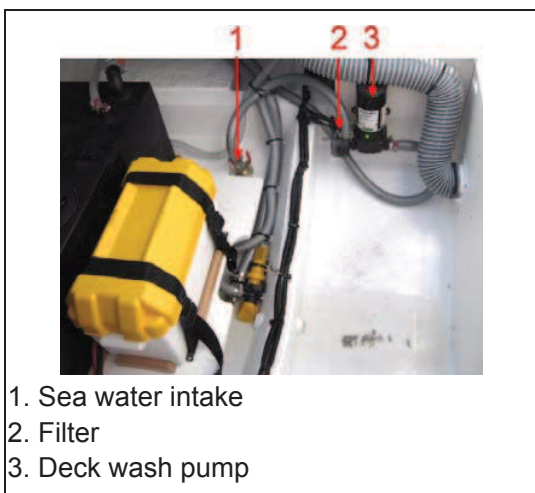
10.4.2 Deck wash pump (Sea water)

- The deck wash pump is supplied by direct current.
- The deck wash pump allows the deck or the boat's tender to be washed.



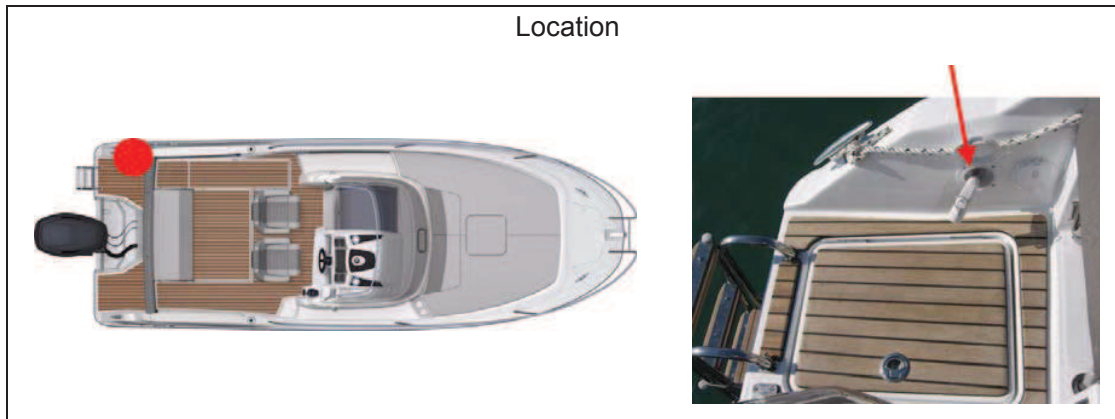
Operation

- Open the sea water intake valve.
- Select sea water/fresh water supply.
- Attach a hose to the connector provided in the cockpit.
- Start the pump.



10.4.3 Cockpit shower

- The cockpit shower allows the use of fresh water for rinsing off.



10.5 BLACK WATER SYSTEM (WC)

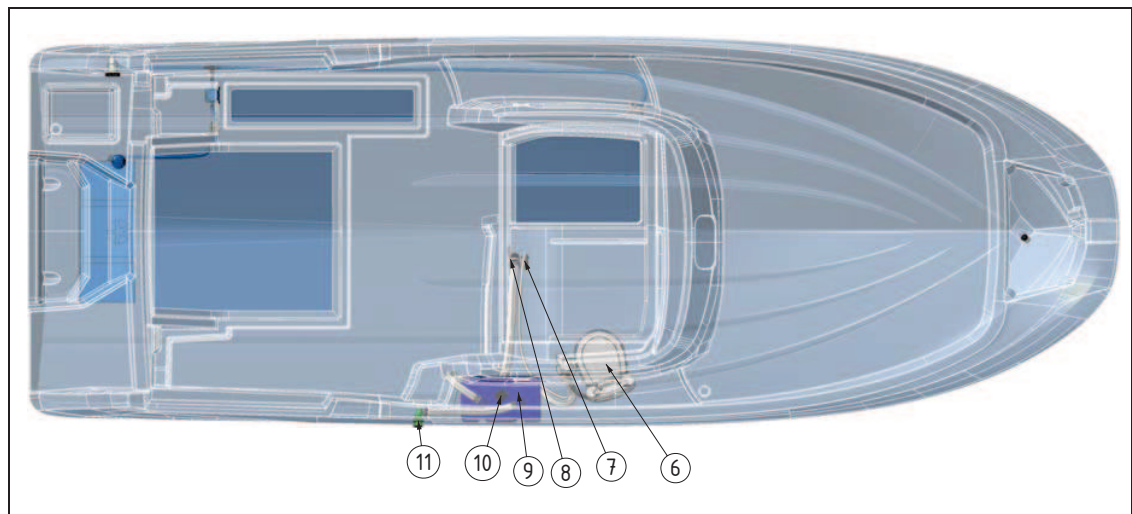
General points

- Black water is human waste including the flushing water from the toilets.
- Close the valves after each use and above all when the boat is unattended.
- Regularly check the valves and thru-hull seacocks for proper operation and watertightness.
- Regularly check the tightness of the flexible pipe clamps and connections.

ADVICE-RECOMMENDATION

- Respect local regulations regarding the emptying of black water tanks.

10.5.1 Location diagram of black water system



WATER SYSTEMS

Reference	Designation
6	Marine toilet
7	Sea water intake - WC
8	WC evacuation to sea
9	Black water tank
10	WC evacuation gate valve - Deck (Filler cap 'WASTE')
11	Black water tank

YOUR BOAT IS FITTED WITH A BLACK WATER TANK

To minimise the smells coming from this tank, we advise the following use and maintenance:

1) Holding tank

- A black water tank is used solely for the temporary collection of water coming from the toilets.
- The tank can be emptied in 2 ways:
 - By connection to a pumping system that empties the tank by suction. This system uses the "WASTE" deck connection.
 - Via the thru-hull fitting emptying directly into the sea (on condition that this is allowed by law in the country where the boat is sailing).
- Only use water soluble toilet paper to avoid any blockage.

Note: Sanitary towels and other items (paper handkerchiefs, dressings etc) in the toilets and black water tank will inevitably lead to blockages.

- Faecal matter causes formation of unpleasant odours in the black water tanks, to which the use of salt water for flushing the toilets also contributes. Algae present in salt water also give off unpleasant odours.
- Completely empty the black water system before leaving the vessel unattended in temperatures below freezing.
- Ask for information about the laws in force in your country or your marina about discharging your waste waters into the sea.

2) Use of toilets

- Every time the toilets are used, flush afterwards with copious amounts of water in the bowl using the toilet pump (manual or electric).
- When you are leaving the boat for several days, flush with fresh water, using for example the head's shower. Sea water that stagnates in the bowl gives off bad smells.



3) Maintenance of black water tank

- The risk of unpleasant odours forming increases when the waste water remains in the tank for a long time.
- Whenever possible empty the tank regularly even before it is full.
- Every time the tank is emptied put in about 5 litres of fresh water and add an appropriate detergent additive (available from chandleries). A very simple method is soda salts, which clean and disinfect at the same time.
- Before winterising, flush the tank with copious amounts of fresh water filling it through the 'WASTE' deck connection. Leave at least 5 litres of fresh water mixed with a detergent additive.
- Disinfecting: Disinfect the tank once a year by filling it with a solution of Javel water (1 to 1000).

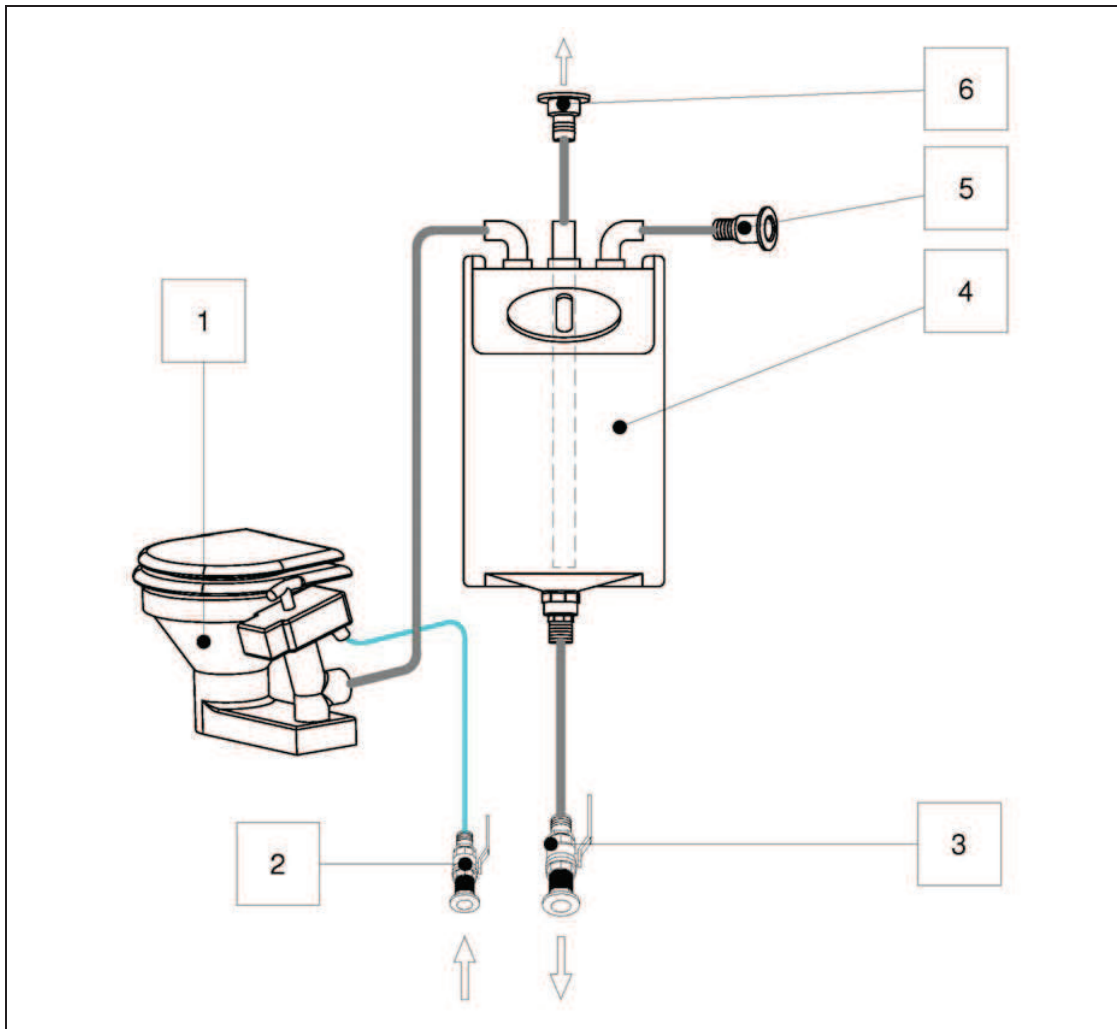


- Never use automobile anti-freeze in the black water system: risk of poisoning.

ADVICE-RECOMMENDATION

- Respect local regulations regarding the emptying of black water tanks.

Layout diagram of black water system
Emptying by gravity



Reference	Designation
1	WC
2	Seawater intake valve
3	Thru-hull seacock
4	Black water tank
5	Vent hole
6	"WASTE" deck connection



Using a marine toilet fitted with a tank emptied by gravity

- I. Open the sea water intake valve (Ref 2).
- II. Fill the bowl by using the manual toilet pump.
- III. Using the toilet (Ref 1).
- IV.a. To empty the organic waste in the tank:
 - Make sure the thru-hull seacock (Ref 3) is closed.
 - Empty the bowl using the manual toilet pump.
- IV.b. In the case of a direct discharge into the sea:
 - Open the thru-hull seacock (Ref 3).
 - Empty the bowl using the manual toilet pump.
- IV.c. To discharge through the deck:
 - Open the deck connection marked "WASTE" (Ref 6).
 - Use the pump-out system where fitted at a port.



Refer to the manufacturer's instructions for use and maintenance.

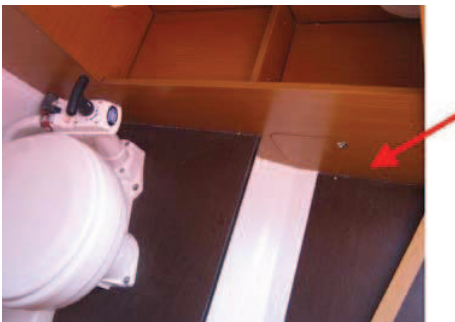
Black water tank
Access: Head
Capacity: 64 litre



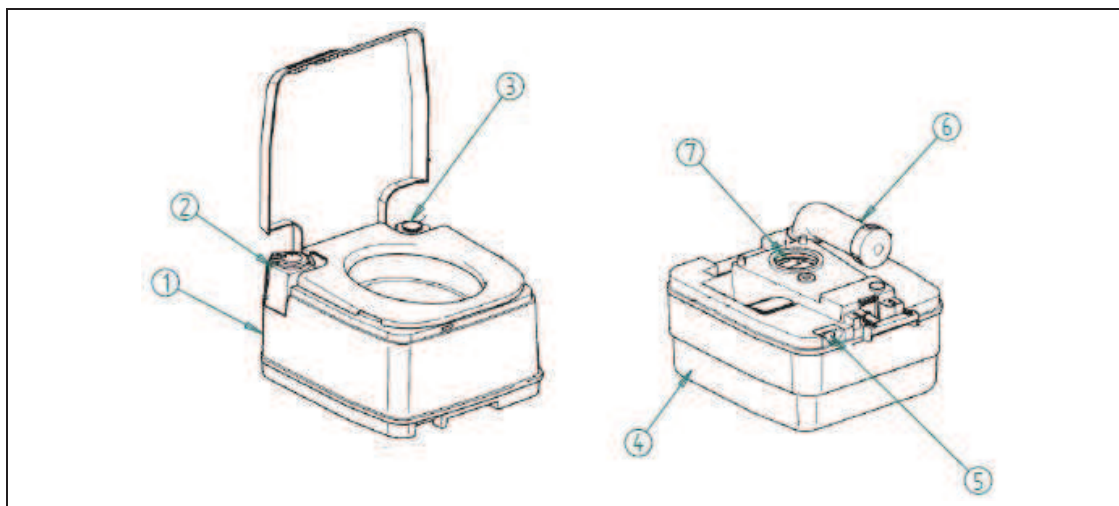
Filler cap 'WASTE'



Seawater intake valve - WC
Thru-hull seacock - WC



CHEMICAL TOILET



Reference	Designation
1	Fresh water tank (Upper)
2	Pump
3	Fresh water tank cap
4	Black water tank (Lower)
5	Gauge
6	Evacuation pipe
7	Filler flap

General points

The chemical toilets have two tanks: a tank for flushing and a tank for faecal matter. The system is completed by the use of chemical additives which dissolve faecal matter and minimise the smell.

Operation

- Use an additive for sanitation for use with chemical toilets (use the recommended dose and follow the instructions on the bottle of the sanitation additive).
- Clean and dry the chemical toilets before storing them.
- Empty the black water tank in an authorised area or down a normal toilet.
- Regularly replace the gasket between the two tanks.

ADVICE-RECOMMENDATION

- Refer to the manufacturer's instructions for use and maintenance.
- Do not use detergents (chlorine, solvent).

10.6 WASTE WATER SYSTEM

General points

- Close the valves after each use and above all when the boat is unattended.
- Regularly check the valves and thru-hull seacocks for proper operation and watertightness.
- Regularly check the tightness of the flexible pipe clamps and connections.

ADVICE-RECOMMENDATION

- Observe local regulations regarding the emptying of grey water tanks.

11 ENGINE

11.1 INFORMATION ABOUT THE RISKS OF FIRE AND OF EXPLOSION OF ENGINES

- Make sure that the coolant is circulating properly.
- Ensure that ventilation openings in the compartment fuel tank are not obstructed.
- Stop the engine and refrain from smoking during fuel tank filling.
- Get your fuel circuit checked regularly by a professional engineer.
- Avoid any contact between inflammable materials and the hot sections of the engine.
- Never switch off or de-energise the electric system when the engine is running.
- Never block the access of the fuel supply valve.
- Do not obstruct or modify the ventilation system.
- Never turn the engine over when the boat is on land.
- Fuel stored outside the fuel tanks (jerrycans, spare cans) must be kept in a well-ventilated place.
- Regularly check that the petrol tank compartment is clean and dry.
- Take all necessary precautions to avoid contact with naked flames and other hot areas.

ENGINE

Engine water intake valve:
Located directly on the saildrive



Fuel supply valve

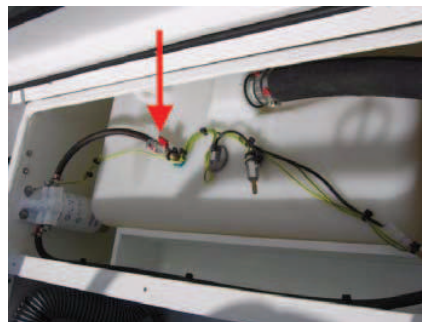
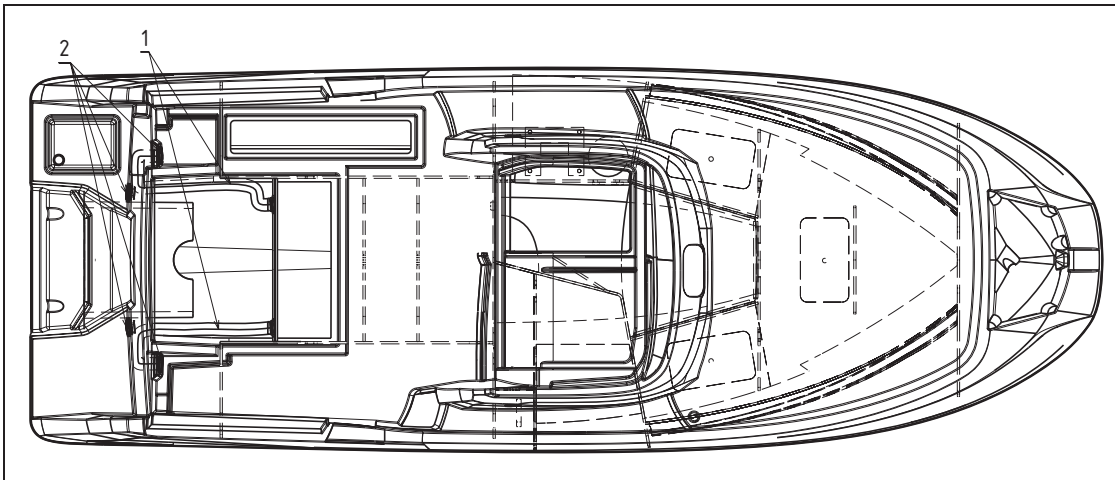


Diagram of the layout - Ventilation

- petrol tank compartment



Reference	Designation
1	Pipe - Ventilation
2	Ventilation grid

11.2 DANGER FROM MOVING MECHANICAL PARTS

- Keep away from the moving parts of the engine (belts and moving parts or hot components) and the drive shafts etc..
- Be careful if you have long hair, bulky clothing, rings etc (at risk of being caught).



11.3 GENERAL POINTS

- Don't install an engine more powerful or heavier than recommended on this boat, this risks compromising the boat's stability.
 - Make sure you have enough fuel before sailing.
 - Don't close the fuel supply valve between each use of the engine (unless for a lengthy absence).
 - Get the whole propulsion system checked at least once a year by a professional engineer.
- "see the chapter on ""Manoeuvrability""".

Type of motorisation

Your vessel is fitted with a gasoline-powered outboard engine.

Filling up with fuel

- Fill the fuel tank using the deck filler marked "PETROL" for this.
- Fuel capacity: 280 litre.
- Reservoir location: Cockpit locker.
- Regularly check that the O ring on the filler cap is in good condition, to prevent any water ingress.

Access - Aft quarterdeck

A trapdoor located on the stern deck at the level of the engine well allows access to:

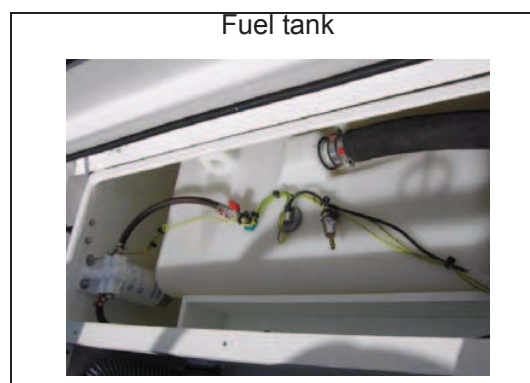
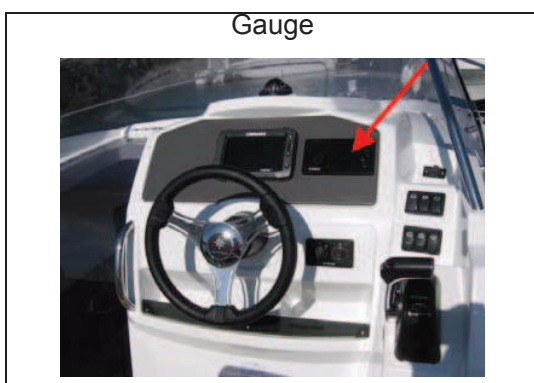
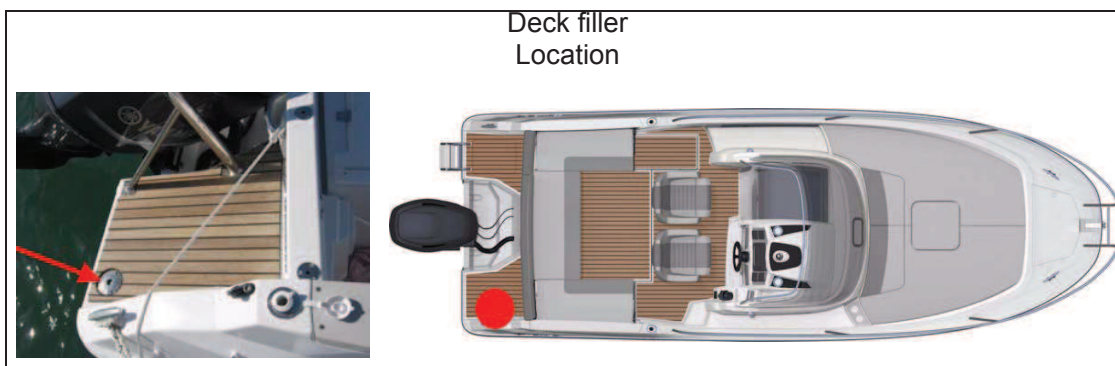
- The engine tightening on the aft bulkhead.

This access trapdoor must be closed BY HAND without using any particular tool (especially a winch handle or cap spanner).



Gauge

- The fuel level is given by the gauge to the indicator on the steering station.
- Some of the gauges must be calibrated when you first fill the tanks: please consult your dealer.



- The tanks' nominal capacity cannot be fully used due to the load and the need to maintain the correct trim. A 20% reserve should be kept.

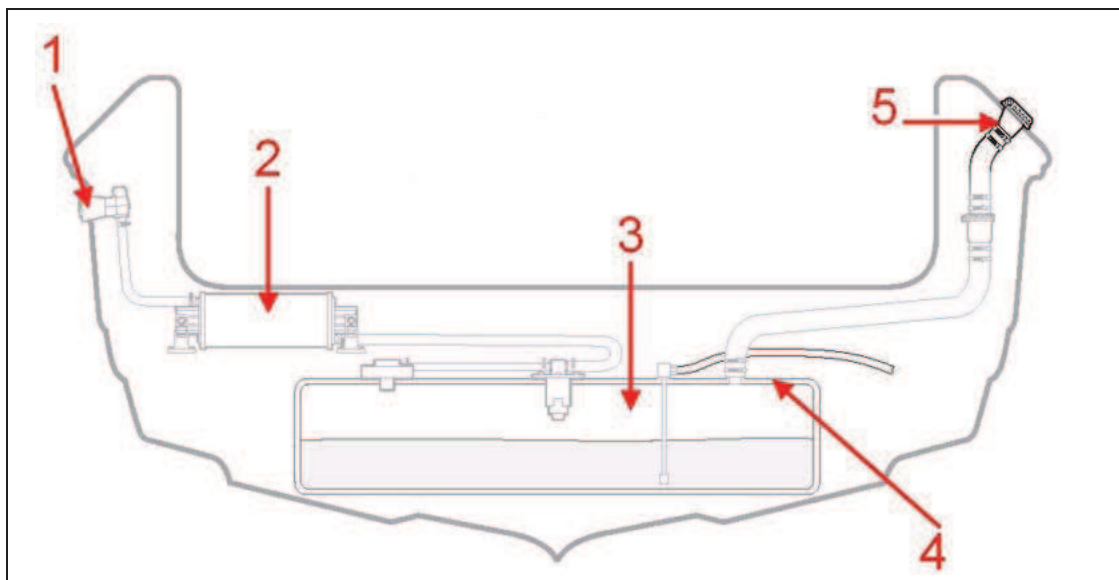
ADVICE-RECOMMENDATION

- Regularly check that the O ring on the filler cap is in good condition, to prevent any water ingress.
- Keep the fuel tank as full as possible to prevent condensation.
- Be careful with any possible risk of oil and fuel spillage.
- Follow the engine manufacturer's instructions exactly.
- **Never switch off the battery breakers when the boat's engine is running (risk of serious damage to the charging circuit).**

EPA version (United States Environmental Protection Agency)

- The maintenance of the complete petrol circuit system must be done professionally every year. It is advisable to clean the circuit only with soapy water. All the fuel circuit connections must be checked once a year.
- When cleaning the boat, be careful not to damage the valves, vent or fuel circuit filler.

Installation configuration for each fuel tank (Standards EPA)



Reference	Designation
1	Vent hole
2	Canister
3	Petrol tank
4	Fuel supply valve
5	Deck filler

11.4 STARTING THE ENGINE

Before starting the engine, it is imperative:

- to open the fuel supply valve;
- to switch on the battery supply by using the battery isolator switches;
- **to put the control lever in neutral;**
- **to attach the circuit-breaker to the pilot.**

Make a habit of looking to see if sea water is pumped out with the exhaust gases as soon as you start the engine. If no water runs out, stop the engine immediately. Check the coolant flow.



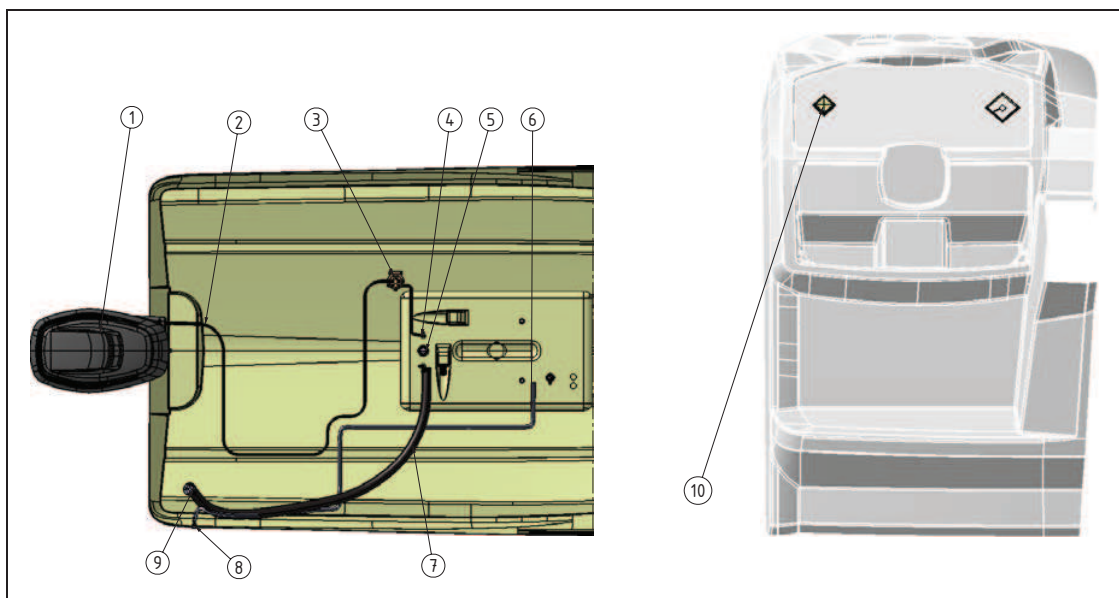
- Before using the engine, make sure you carefully read the handbook provided by the engine manufacturer.

- Always start the engine with the control lever in neutral.
- Learn how to judge the necessary distance of deceleration for the vessel to come to a complete stop (The reverse gear is not a brake).
- Attach the cutout to the pilot at engine start.



- To avoid the engine being started accidentally disconnect the circuit breaker when the engine is not running.

11.5 FUEL CIRCUIT



ENGINE

Reference	Designation
1	Outboard
2	Supply pipe - Fuel
3	Fuel filter
4	Fuel supply valve
5	Fuel gauge transmitter
6	Anti-flooding valve
7	Pipe filling
8	Vent hole
9	Deck filler
10	Fuel gauge indicator

11.6 ENGINE WATER INTAKE VALVE

The sea water intake plays a major role in keeping the engine running well.

- Keep the strainer under the hull as clean as possible;
- Brush the strainer whenever the boat is lifted out;
- Don't cover the strainer in antifoul.

Sea water intake
Located directly on the saildrive



11.7 FUEL FILTER

Engine running problems may have different origins, including dirty fuel. The injection pump may wear out if there is water in the system. The water results either from the condensation resulting from an insufficiently filled tank, or from a filler cap either not closed properly or with a damaged seal.

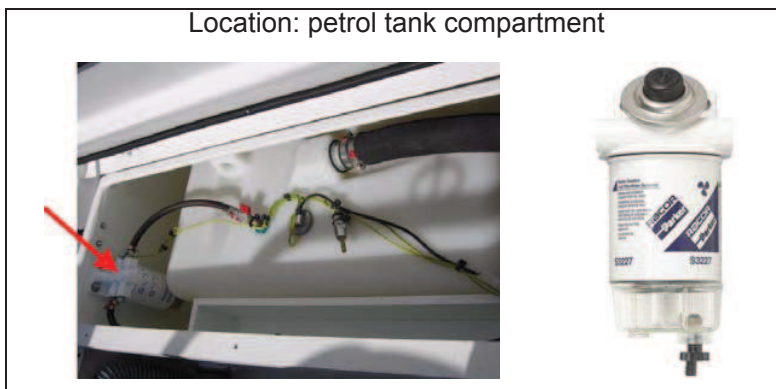
In order to prevent any water infiltration, the fuel runs through two filters:

- One filter is an integral part of the engine, its role is to filter fuel very finely. Please refer to the engine manufacturer's notes for any maintenance and for the frequency of filter changes.
- In some cases a second filter is located on the pipes connecting the tank to the engine, acting as water collector and pre-filter.

Maintenance

- Purge the impurities by unscrewing the screw located at the base of the decanting bowl (without removing it). Let the liquid run into a receptacle until the fuel runs clear. Do this several times a year.
- Change the pre-filter at least once a year.

Location: petrol tank compartment



11.8 ENGINE INSTALLATION

- The boat is designed for a single outboard engine.



11.9 ENGINE CONTROL

- The engine manufacturer's notes provide detailed explanations on how to operate the engine and keep it running well.
- Read the manufacturer's notes on use and maintenance of the engine.

Control lever

- The control lever is fitted with a safety system which prevents the engine from starting when in gear.
- The trim adjustment control is built into the handle. By raising/lowering the footing for the outboard engine you can delicately adjust the fore and aft trim of the boat.
- The trim indicator is located at the steering station.





11.10 FLAPS

General points

- The flaps (trim control system) allow the pilot to adjust the boat's trim under way and thus to reduce fuel consumption.
- The flaps run on DC power.
- A fuse protects the electrical circuit.
- They are operated by means of a push button situated on the wheelhouse and their position is adjustable.
- The flaps only work when the boat's engines are running.

ADVICE-RECOMMENDATION

- Refer to the manufacturer's instructions for use and maintenance.
- Adjust the flaps gradually to avoid abrupt hull movements. At high speeds, take care when adjusting the flaps.
- Retract the flaps fully if there is a heavy swell on the stern of the boat.

General points

The flaps are controlled electrically.

The actuator is mechanical.

The flaps need to be protected by an anode (see the chapter on Electricity).

Operation

When the tabs are lowered, the bow of the boat has a tendency to lift out of the water.

When the tabs are raised, the bow of the boat has a tendency to drop.

Maintenance

Clean the tabs regularly with clean water.

During lift-outs, repaint the tabs and actuator with antifouling. Do not cover the section below the anode or the anode itself with antifouling.

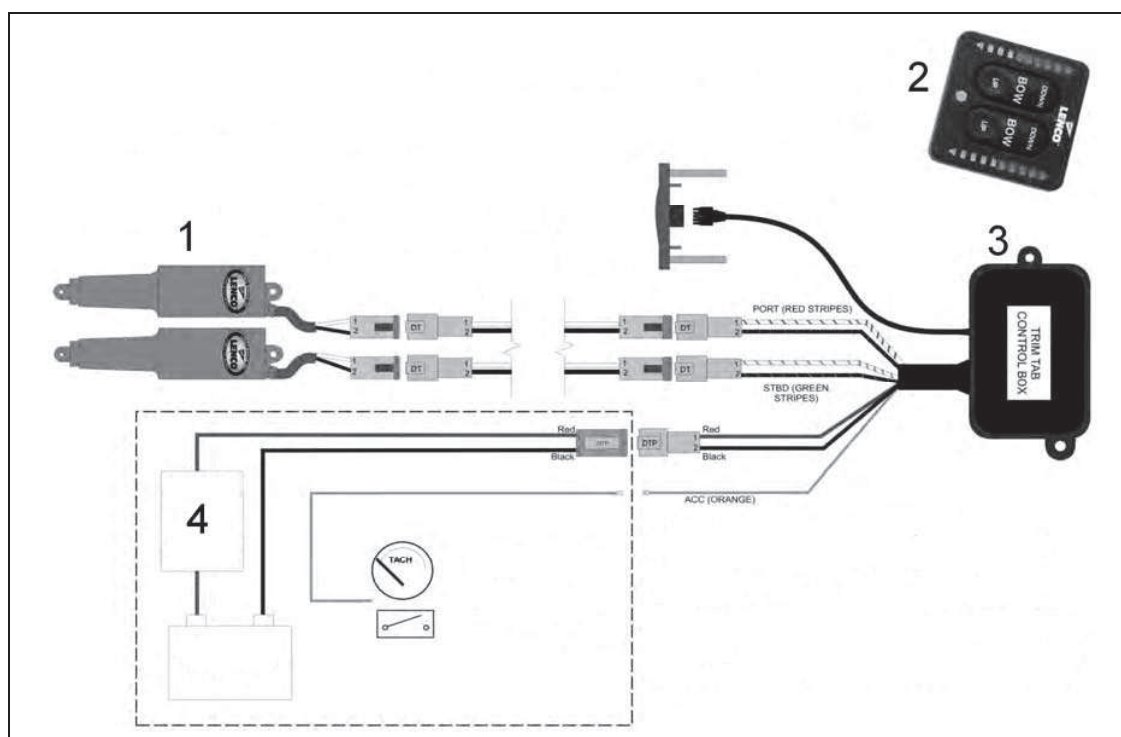
Control
Location: Steering station



Flaps



Layout diagram



ENGINE

Reference	Designation
1	Mechanical actuator
2	Control panel
3	Control box
4	Fuse

11.11 ACCESS TO THE ENGINE

The access to the engine is via:

- The cockpit.

11.12 PROPELLER

- The propeller delivered with the boat represents the end result of trials carried out in collaboration with the engine manufacturer. Never change the propeller without first consulting a professional engineer.
- Propeller efficiency will drop if the propeller blades are damaged in any way or dirty: regularly clean the blades carefully.
- During a lift-out, check the propeller: it should turn freely on its axis and there should be no play.
- Single-engined boats are equipped with a right-hand pitched propeller.



- Respect speed limits.

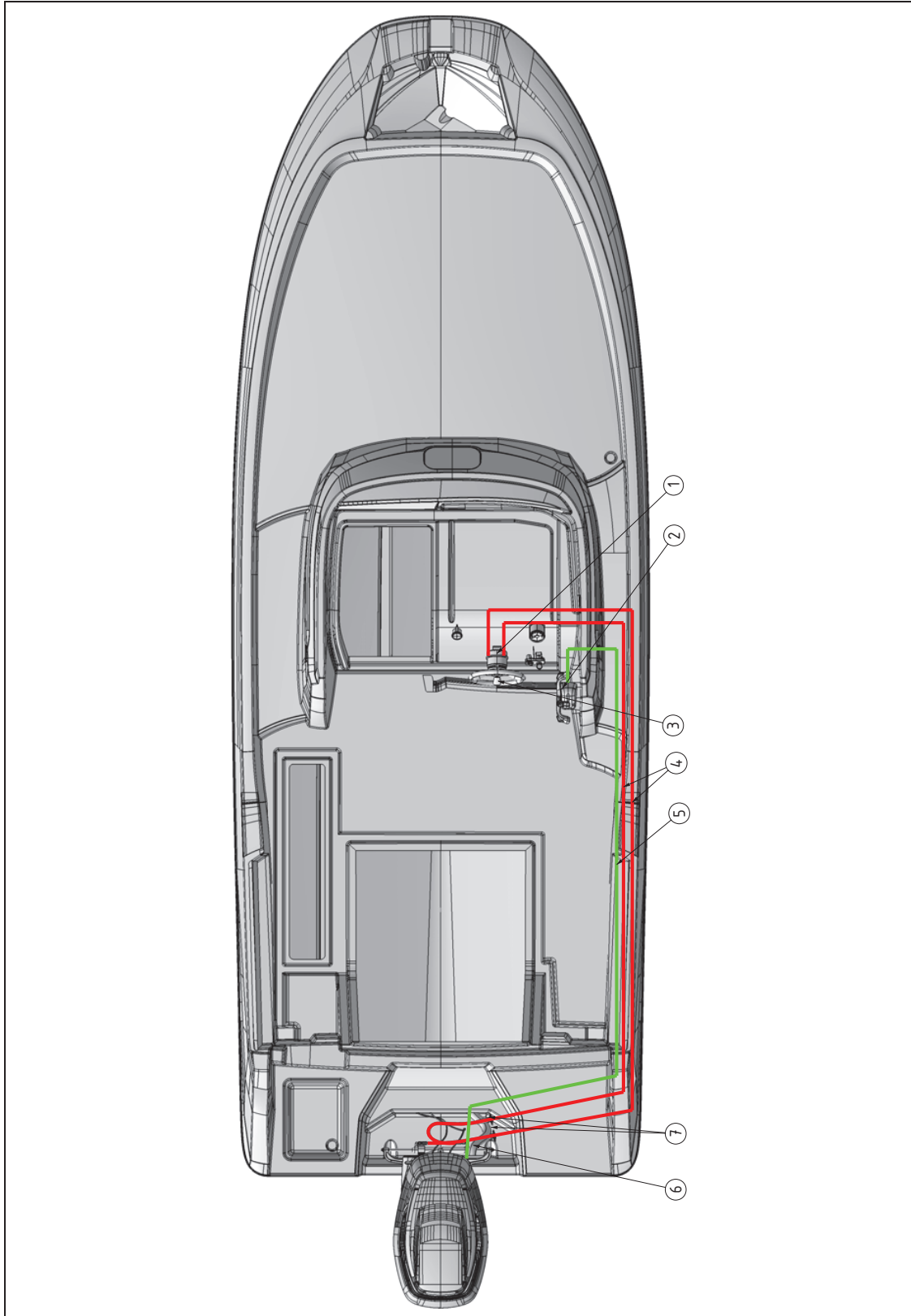


12 STEERING SYSTEM

12.1 GENERAL POINTS

- The steering system is hydraulic.
- The steering system is an important safety feature. For this reason, the annual inspection of the whole system must be carried out by a professional engineer.

12.2 LAYOUT DIAGRAM



Reference	Designation
1	Steering pump (Steering rack)
2	Engine control lever
3	Steering wheel
4	Hydraulic steering
5	Reverser / Accelerator
6	Hydraulic piston
7	Watertight bellows

12.3 HYDRAULIC STEERING

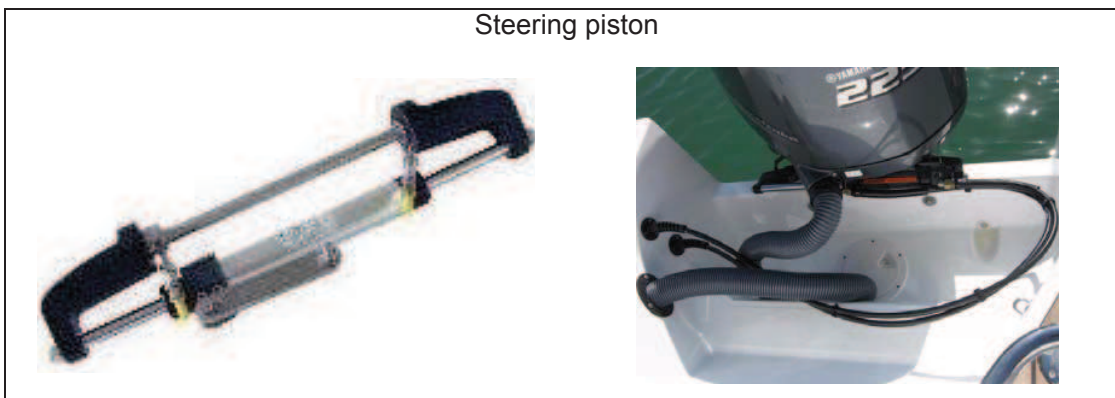
General points

- Steering is achieved by rotating the engine base. This rotation is done using a hydraulic ram.
- Protect the ram from any risk of impact, scratches or any other type of degradation. No impurities must ever penetrate the inside of the ram.
- Nothing must impede the movement of the ram: regularly ensure that the ram is able to function smoothly:

when moving the engine from hard to port to hard to starboard;

when fully raising the engine.

Steering piston



Replenishing and bleeding the circuit

- This task must be carried out by a professional engineer: please consult your dealer.
- Use only oil ISO 22.
- The whole of the hydraulic circuit must be kept scrupulously clean: any impurity risks causing the deterioration of the steering gear.

After each winter, check

that rotating the wheel to starboard turns the boat to starboard;

that the circuit is properly bled;

that there are no leaks in the connections, the pumps, the ram or the flexible hydraulic hoses;

that the pump is filled with oil to the correct level(25 mm of air must be left in the pump : this space is vital for the hydraulic circuit to work properly, it allows the oil to expand);

that the nuts and screws are fully tightened to the correct torque as shown in the manufacturer's instructions;

that the hydraulic hoses have not been flattened or deformed.

ADVICE-RECOMMENDATION

- Refer to the manufacturer's instructions for use and maintenance.
- Do not step on the hydraulic ram.
- It is vital periodically to grease the inside of the engine drive-shaft.



13 DECK FITTINGS

13.1 GENERAL POINTS

13.1.1 Polyester

- Regularly brush the deck using a gentle de-greasing agent then rinse the deck with fresh water.
- Use as few cleaning agents as possible.
- Don't use solvents or aggressive detergent agents.
- Don't discharge cleaning agents into the water: Consult the harbourmaster's office to find out the conditions of water use and the maintenance area for cleaning your vessel.
- Don't use a pressure washer.

13.1.2 Plexiglas (PMMA)

- Rinse plexiglas with fresh water.
- Use a polish paste for thin scratches.
- Consult your dealer concerning deep scratches.

ADVICE-RECOMMENDATION

Never use solvents, alcohol, acetone or detergents on the plexiglass.

13.1.3 STAINLESS STEEL

Stainless steel is an alloy of iron and carbon (steel) with the addition of chromium. This chromium provokes the formation of a protective film which separates the steel from the atmosphere outside. This coating is usually invisible as it's so thin. So in spite of its name this steel is not stainless and requires a minimum of maintenance:

- The use of chrome tools is preferable whenever handling stainless steel;
- Re-nourish the protective film regularly with passivation paste.

13.1.4 Solid wood on exterior wooden panelling

- Wood exposed to harsh conditions, such as salty air and UV rays tends to become whiter and to lose its natural colour. This phenomenon has no effect on the intrinsic qualities of the wood, but can spoil its aesthetic appeal.
- To maintain the colour of the wood, regularly wash the woodwork in fresh water using a sponge (if necessary, use a mild soap).
- It is recommended to oil the external woodwork regularly using teak oil to protect them from the harsh conditions.

ADVICE-RECOMMENDATION

Never use detergents, acetone or other harsh products on the wood.

13.1.5 Exterior cushions

- Bring the removable cushions inside (washed with soapy water then dried) when the vessel is unoccupied.
- Put canvas sheets/protective covering over the fixed upholstery.

Maintenance

To maintain the quality of the fabric, you are advised to spray it regularly with clarified water and to brush it with a soft brush (brush for clothes). It is advisable to clean thoroughly every 2 years.

Stain removal

Follow these steps for routine cleaning:

- Remove as much debris as possible using a soft brush;
- Spray the fabric with water;
- Prepare a cleaning solution using mild soap and water (Do not use detergent);
- Wash with a soft brush;
- Wait for soapy solution to act;
- Rinse thoroughly in fresh water;
- Dry in the open air.

ADVICE-RECOMMENDATION

Never:

- Use a heat source (hairdryer/clothes dryer);
- Use detergent, silicone, acetone, chlorine-based products or hot water;
- Use a high pressure cleaner.

13.2 EQUIPMENT

13.2.1 Water ski mast

- the water-ski pole is only to be used for pulling someone standing on a wake-board or on water skis. Any other use is dangerous and forbidden (particularly pulling one or more people on a towed rubber ring).
- the water ski pole is attached to the aft deck using the fixings provided for this.



- Refer to the manufacturer's instructions for use and maintenance.
- Pay careful attention to the safety regulations relevant to the cruising area and to the local byelaws regarding water skiing and wake-boarding.

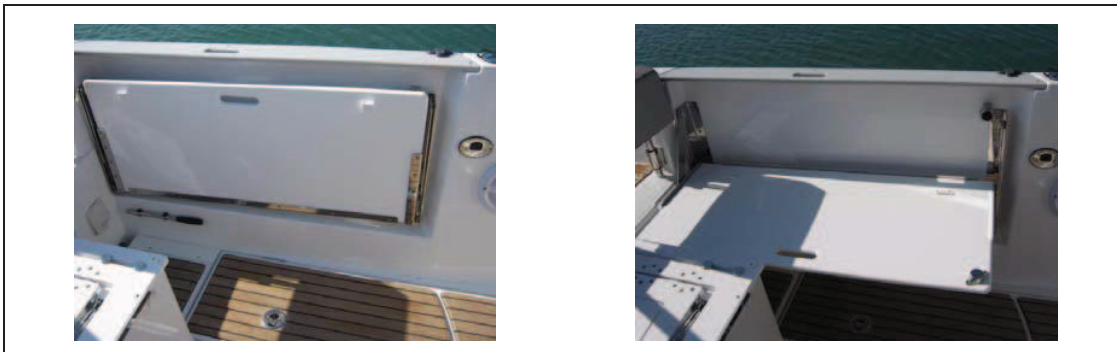
Water ski mast



13.2.2 Rod holder



13.2.3 Seat cockpit



13.2.4 Pilot seat





13.3 BERTHING, ANCHORING, TOWING

13.3.1 Anchor points

Responsibility

It is the responsibility of the owner/user of the boat to ensure that the berthing lines, towing cables, chains and mooring lines and the anchors are adequate for the intended use of the boat, i.e. that the lines or chains do not exceed 80 % of the breaking strength of the corresponding anchor point.

	MOORING LINES / MOORING / TOWING
Reference (Diagram on next page)	A&B
Anchor Point Breaking Strength	19,8 kN
Mooring Line/Chain Breaking Strength	15,9 kN

If non-metal anchor points are installed on the boat, their limited lifespan must be taken into account. They must be replaced as soon as they show signs of deterioration, visible surface cracks or permanent deformation.

13.3.2 Towing

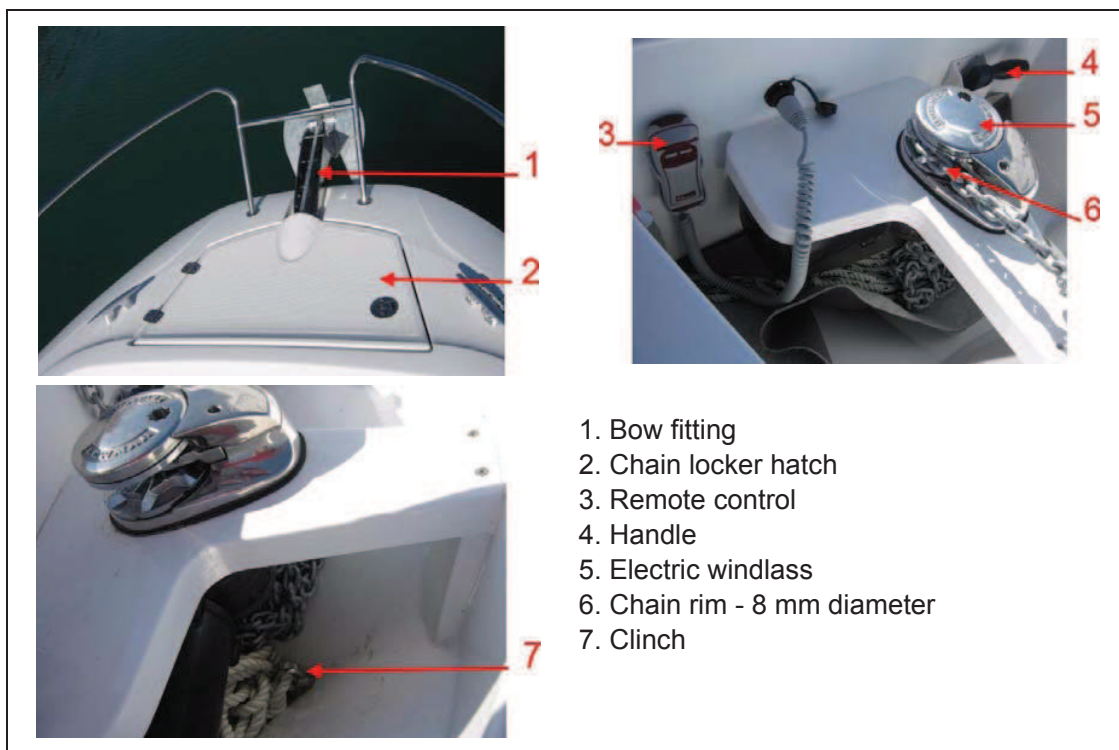
Responsibility: It is important that the owner thinks through the actions required when securing a towing cable onboard.

Location of attachment points



- Generally the breaking strength of lines/chains must not exceed 80% of the breaking strength of the anchor points.
- Always tow or be towed at low speed. Never exceed the maximum speed of a displacement hull during a tow.
- Be particularly vigilant when the end of a towing cable is being thrown or received (risk of the end becoming caught in the propeller).
- A towing cable must always be secured in such a way that it can be released under load.
- Do not try to stop the boat by using a boathook or your foot, hand or any other part of your body.

13.4 MAIN ELEMENTS OF THE CHAIN LOCKER



DECK FITTINGS



Windlass operations are dangerous:

- Always keep the anchor chain or rode free and unfouled.
- Carry out manoeuvres carefully and always wear shoes.
- Avoid wearing baggy clothing, long hair that's loose and jewellery that could get caught in the engine when it is running.

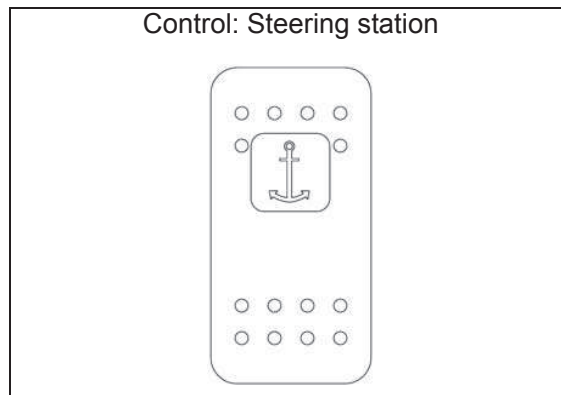
13.5 ELECTRIC WINDLASS

General points

- The windlass is DC powered.
- The windlass is designed for anchoring purposes: Any other use is dangerous and forbidden.
- An operation relay is fitted to the electrical circuit.
- A circuit-breaker protects the power supply to the windlass.
- The windlass operation is activated by an operational interlock relay which is powered by the engine's alternator: the windlass only works when the boat's engine is running.
- The controls to raise/lower the windlass are protected by a circuit-breaker positioned between the batteries and the windlass relay.
- Your boat may be equipped with a chain meter: this shows the length of chain let out.

Operation

- Before lowering the anchor, make sure that the chain or anchor rode is securely attached to the clinch.
- Activate the circuit-breaker then use the control to start the windlass.



- **When at sea, secure the chain or anchor rode to secure points such as the chain stopper or the anchor rode to the belaying cleat (the windlass must not be used as the only method of securing the chain or rode).**
- In the case of dual control, be careful to use just one control at a time.
- When raising the anchor, use the boat's engine to move towards the position of the anchor, until the boat is just over it: never use the windlass as a winch to move the boat forward.
- When out at sea, cut the electrical supply to the windlass.
- Cut the electrical supply when using the windlass manually.



Maintenance

- once a year, dismantle, carefully wash and grease all the moving parts of the windlass.
- Regularly grease the supply terminals of the electric motor of the windlass and of the relay control box.

Emergency anchoring procedure

In the event of an electrical fault, it is possible to lower the anchor manually: Put the handle in the space provided for this to release the chain grab. Then let the chain run out using the handle to control its speed as it runs.



The handle serves only to release the chain grab in order to lower the anchor manually should the electric windlass break down. The handle cannot be used to raise the anchor manually.

ADVICE-RECOMMENDATION

- Before anchoring check the depth of water, the power of the current and the nature of the sea bed.
- Check the swinging area once the boat is at anchor.
- After each trip rinse the windlass and anchor chain or rode with fresh water.

13.6 MOORING

Operation

- Before lowering the anchor, make sure that the chain or anchor rode is securely attached to the clinch.

ADVICE-RECOMMENDATION

- Before anchoring check the depth of water, the power of the current and the nature of the sea bed.
- Check the swinging area once the boat is at anchor.
- After each trip rinse the windlass and anchor chain or rode with fresh water.



14 HULL FITTINGS

14.1 UPHOLSTERY

SYNTHETIC FABRIC

Stain removal

If you can remove the fabric:

- Clean in the washing machine (use the program for delicate fabric) at 30°.
- Do not iron.
- Never use Javel water.
- Do not dry-clean.
- Do not use a clothes drier.

If you cannot remove the fabric:

- Clean with the vacuum cleaner,
- Clean with a foam for synthetic fabrics (see foam use instructions).

COATED FABRIC (PVC)

Maintenance

- The PVC must be regularly cleaned with soapy water to maintain its appearance and avoid accumulation of debris. Try to avoid using the following products: lacqueurs, aggressive cleaning products, detergents, xylene or acetone-based products which can cause permanent damage or make the fabric deteriorate. The use of such products is at the owner's risk.

Stain removal

- All stains must be quickly removed to avoid formation of permanent stains.
- Use mild water to remove the stains found on the fabric surface. Use only clean, white, damp pieces of cloth.
- Difficult stains can be removed using a mixture of water (25%) and white spirit.
- Rinse with clean water.
- Dry with a soft piece of cloth.

ACRYLIC (bimini fabric type)

Maintenance

To maintain the quality of the fabric, you are advised to spray it regularly with clarified water and to brush it with a soft brush (brush for clothes). It is advisable to clean thoroughly every 2 years.

Stain removal

Follow these steps for routine cleaning:

- Remove as much debris as possible using a soft brush;
- Spray the fabric with water;
- Prepare a cleaning solution using mild soap and water (Do not use detergent);
- Wash with a soft brush;
- Wait for soapy solution to act;
- Rinse thoroughly in fresh water;
- Dry in the open air.



14.2 INTERIOR WOODWORK

- Clean the interior varnish using a de-greasing shampoo on a damp cloth.
- Polish the interior varnishing with a chamois leather.
- If there are any stains or light scratches, it is possible to polish the varnish. Doing this can give the polished area more of a shine than the rest of the varnishing onboard.
- If there are deeper scratches, it is possible to sand the scratched area lightly and then re-varnish it (consult your dealer).

14.3 INTERIOR MAINTENANCE

- Take advantage of fine weather to air the interior upholstery.
- Remove the cushions during lengthy periods of absence.
- Make sure the bilges are clean and dry.
- For lengthy periods of absence, leave the icebox and fridge doors open to prevent mould from developing.
- Install a dehumidifier in the saloon and leave open all the cabin doors and storage spaces (cupboards, iceboxes...).

ADVICE-RECOMMENDATION

If the stains persist or if in doubt, consult a cleaning specialist.

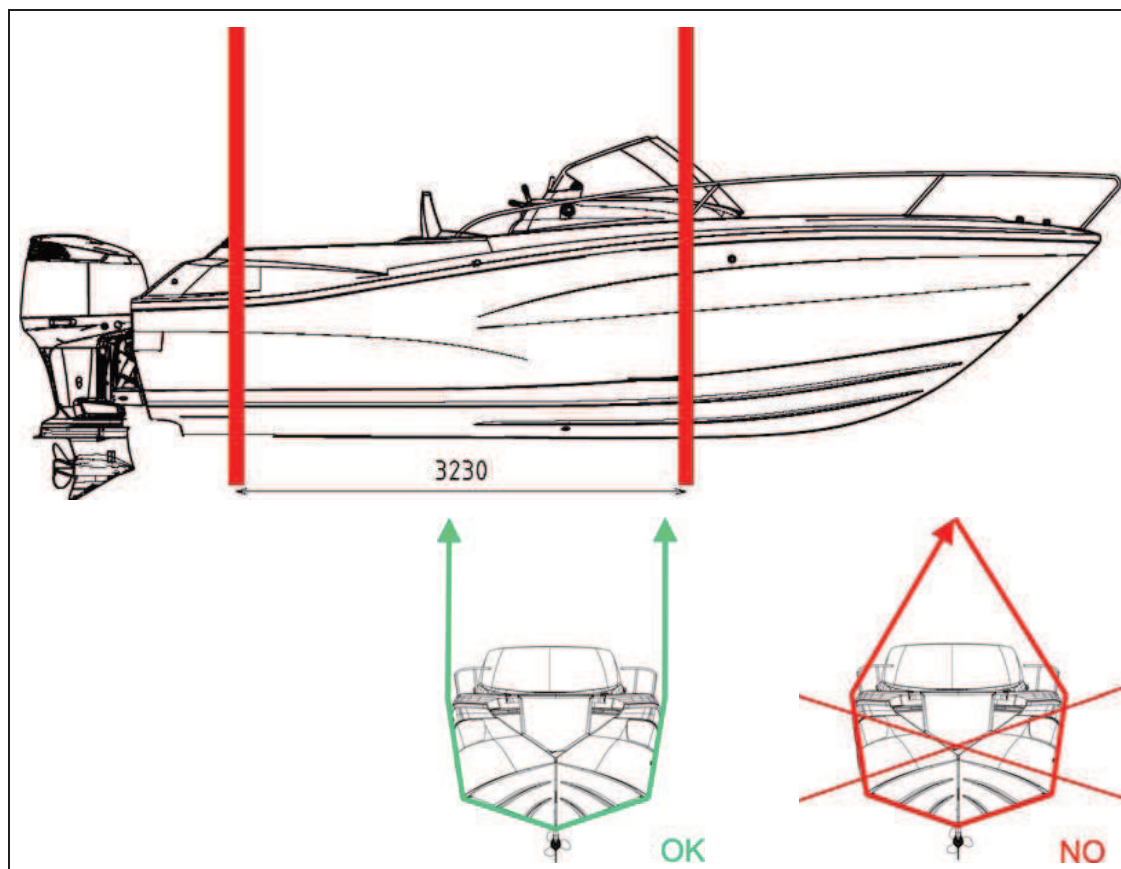
When winterising the boat, make sure the curtains are pulled to prevent the fabrics from being exposed to the sun's rays for a lengthy period (risk of fading).

Never:

- Use a heat source (hairdryer/clothes dryer);
- Use detergent, silicone, acetone, chlorine-based products or hot water;
- Use a high pressure cleaner.

15 HANDLING, TRANSPORT

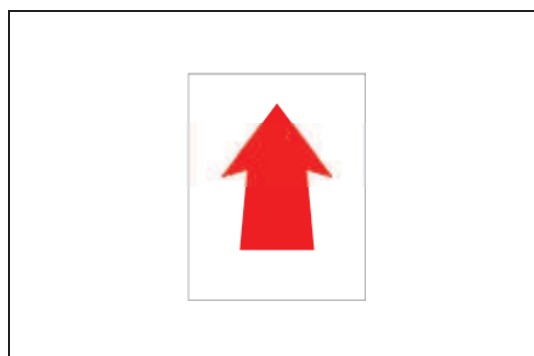
15.1 LIFTING PLAN



HANDLING, TRANSPORT

Note: Measurements are expressed in mm.

The position of the lifting slings is shown in the pictogram below:



15.2 LIFTING

- Before the first application of antifouling to the hull, you can lightly the hull using 400 µm or more wet and dry sandpaper.
- The lower hull of your boat should be covered with an anti-fouling paint which will prevent the adhesion of marine growth.
- The nature of the water where you keep your boat and the frequency of lifting it out determines the choice of antifouling.
- All bronze or steel surfaces, including the propellers, should be protected by a suitable antifoul paint.
- During the refit, check the anodes (see corresponding chapters).

Before applying the antifoul NEVER:

- Do any sandblasting;
- Use any other solvents than ethylic alcohol;
- Use detergents under pressure;
- Use scrapers;
- Use grinding tools.

If cleaning off existing antifouling requires high pressure washing:

- Ensure the water temperature does not exceed 15 degrees;
- The water pressure must not exceed 150 bars;
- The distance between the hose nozzle and the hull must not be less than 10 centimetres.

The wet surface area of the boat is about: Approximately 14 m².



- Follow the manufacturer's recommendations scrupulously when applying antifouling.
- Never cover with antifouling:
 - the anodes;
 - the sea water strainers;
 - the sensors of the electronic instruments.
- Avoid using copper or tin-based antifouling: these are banned in some countries.

15.3 UPPER LIMIT OF ANTIFOUL



Note: Measurements are expressed in mm.

HANDLING, TRANSPORT

15.4 LAUNCH/LIFT OUT

The initial commissioning of your boat will require a lot of skill and care. The proper working of all your boat's equipment is the result of the quality of the commissioning operations. This is why the initial launch must be overseen by your dealer.

Before launching

- Replace the log in its housing.
- Check the cleanliness of the sea water strainers.
- Check the anodes (see the chapter on Electricity).
- Check the propeller (see the chapter on Steering).
- Prepare enough fenders and lines.
- Check the opening of the fuel supply tap (see the chapter on motorisation).



Do not remain onboard or beneath the boat during the handling operations.



- When placing the slings make sure that the positioning marks are still visible.
- Submerge the sling fully under the engine mounting.

Towing ring

(used only for towing purposes)





15.5 WINTER STORAGE

- Take advantage of laying up the boat to carry out a full inventory of the equipment.
- Check the expiry dates of the safety equipment.
- Have the liferaft overhauled.
- Empty the complete water system inside and outside and rinse it through with a mix of water and vinegar (do not use a chlorinated product).
- Empty and rinse the complete black water system.
- Dry out and clean the boat's bilges.
- Grease and close all the valves and through-hull fittings.
- Close all the boat's seacocks.
- Remove the depth sounder and log sensors.
- Put the covers back on the electronic screens.
- Install a dehumidifier in the saloon and leave open all the cabin doors and storage spaces.
- Air all of the cushions and upholstery for a good while before putting them back onboard and arranging them so as to limit the surface areas touching.
- Close the black-out curtains.
- Leave open the fridge/icebox doors to prevent mould and smells from developing.
- Protect the boat as well as possible with fenders.
- Make sure the boat is properly moored.
- Grease all mechanical and moving parts (bolts, hinges, locks...).
- Remove the movable upholstery.
- Disconnect the batteries. Make sure you recharge them during the winter period if the boat is left inactive for too long.

ADVICE-RECOMMENDATION

- The winterisation of the engine requires the skills of a professional engineer: please consult your dealer.
- This is not an exhaustive list of recommendations: Your dealer will give you the advice you need and will carry out the technical maintenance of your boat.

15.6 TRANSPORT

Light displacement: 1 928 kg

included:

- All structural elements;
- the interior structure and furnishings;
- Interior equipment (plumbing circuit, galley, ventilation system etc);
- Exterior equipment (cockpit table, bathing ladder, steering system, exterior upholstery etc);
- The heaviest engine(s) recommended by the builder.

Total mass of the liquid content of fixed tanks when they are full: 370 kg

Weight of boat on trailer: $1\,928\text{ kg} + 370\text{ kg} =$ 2 298 kg

NOTE: Components that should not be on the boat during transportation or when towed:

- tableware, bed-linen etc, food and drink supplies, tools, spare parts;
- individual safety equipment;
- electronic equipment and portable navigation equipment.



- If the boat can be transported by trailer be careful to use a trailer that is appropriate for the boat and its weight.
- the weight of liquids is calculated on the basis of full tanks.



16 ENVIRONMENT

Waste management:

- Throw all packaging in the recycling containers provided for this.
- Once a piece of equipment has completely stopped working, find out about the relevant recycling regulations from your nearest recycling centre or from your dealer.
- Make sure you follow the relevant local laws when you scrap it.
- Some onboard equipment can have a toxic effect on the environment and on human health, caused by the specific substances they contain: Do not throw any equipment in household waste containers and absolutely not in the sea.
- Dead batteries are toxic to health and to the environment. So, batteries must not be put in with household waste, but must be recycled separately. Contact the harbour master or a specialist company about recycling them.



- Make sure you know the local environmental regulations and follow the codes of best practice.
- Do not pump out the toilets or the contents of the black water tank near the coast or in areas where it's forbidden. Use the pump-out facilities available in ports or marinas to empty the contents of the black water tank before leaving port.
- Make sure you know the international regulations to prevent pollution in the marine environment (Convention MARPOL) and follow these as much as possible.

attwood
PRESSURE RELIEF SYSTEM DECK FILL
99DFV Series

INSTALLATION INSTRUCTIONS 1104 6948 Rev. B
SAY THESE INSTRUCTIONS

CAUTION:

The vessel manufacturer must comply with the requirements of CFR 40 1060.202. Any questions can be directed to www.attwoodmarine.com

Failure to follow these instructions may result in accidental fuel system over-pressurization. Users must follow these instructions to ensure vessel function and operation

EMISSION-RELATED INSTALLATION INSTRUCTIONS

Failing to follow these instructions when installing the Attwood Pressure Relief System Deck Fills in a piece of non-road equipment violates federal law (40 CFR 1060.105(b)), subject to fines or other penalties as described in the Clean Air Act.

FEATURES:

Attwood Pressure Relief System Deck Fills are sturdy, non-corrosive plastic. Bonding and grounding are not required because they are non-metallic. When latched, Deck Fills are water-resistant. They meet all requirements for ISO 10080, ABYC, and USCG.

WARNING! The use of Attwood 99DFV Series Deck Fills will result in a pressurized fuel system designed to meet the dural emission requirements of CFR 40. Care must be taken to prevent pressurized fuel from reaching flexible fuel distribution lines and/or engine. Pressurized fuel may cause engine operation issues. See engine manufacturer's instructions. Install the Attwood 99DFV Series Fuel Demand Valve on the fuel tank in order to prevent pressurized fuel from exiting fuel tank.

REQUIRED FOR INSTALLATION

- Pencil
- Drill
- 1-1/4" (32mm) bit or hole saw
- 2-1/4" (57mm) dia. hole saw (see Figure 1)
- Drill bit for fastener pilot holes — 3/32" (2.4mm) to 3/16" (5mm) depending on deck material
- (4) #8 stainless steel fasteners appropriate for specific deck material
- File for smoothing holes
- Screwdriver
- Marine-grade urethane-based sealant (Attwood #30106-6 recommended, **DO NOT USE A SILICONE-BASED SEALANT!**)
- 1-1/2" (38mm) I.D. fill hose
- 5/8" (16mm) I.D. vent hose
- Stainless Steel clamps to match hose diameters

MOUNTING LOCATION AND REGULATIONS

Select location that meets these conditions.

1. Conforms to all ABYC, U.S. Coast Guard, and EPA regulations. (See end of this document for information availability.)
2. Surface must be flat, in an area where spilled fuel cannot enter the boat.
3. Below-deck area must allow adequate clearance to install and route hoses)
4. To the tank and should also all for predominantly vertical orientation of the fill hose.
5. Fill and vent hose installation must meet regulations: —A.B.C. 7c and U.S. Coast Guard Safety Standards for Small Boat Fuel Systems (33 CFR 183).
6. Deck thickness must be 1/2" (13mm) or less.
7. Straight Deck Fills cannot be mounted on a vertical surface +/- 30°. Angled Deck Fills can be mounted on a vertical surface right side up with hinge on top +/- 15°.

INSTALLATION INSTRUCTIONS

1. Cut and orient mounting template (Figure 1) to match final position of Deck Fill. Attach template to deck.

- Note:** Deck Fill should be oriented to allow for standard fuel nozzles to be correctly inserted at the pump.
2. Mark and drill pilot hole positions for large and small holes.
 3. Remove template. Drill 1-1/4" dia. (32mm) hole first. Drill 2-1/4" (57mm) hole. Use file to remove burrs and deck material between holes.
 4. "Dry Fit" the Deck Fill neck into hole. (Figure 2)
 5. Mark position and drill small pilot holes for deck fasteners (fasteners not provided).
 6. Remove Deck Fill Neck. Apply a thin bead of marine-grade, urethane-based sealant (Attwood #30106-6 recommended) to underside of the Deck Fill.
 7. Press Deck Fill neck into hole.
 8. Fasten Deck Fill with #8 screws appropriate for the deck material (fasteners not provided). Torque to 30 +/- 3 in-lb. Do not over-torque.
 9. Clean any sealant spilled around Deck Fill edges.
 10. Attach and clamp 1-1/2" (38mm) fill hose using two (2) clamps. Use corrosion-resistant metallic clamps with nominal band widths of at least 1/2" (12mm). The first clamp should be 1/4" (6mm) from the end of the hose. The second hose clamp should be located above the barb leaving a small gap (at least 1/4") between the clamps. Torque to 36 +/- 4 in-lb.
 11. Attach and clamp 5/8" (16mm) maximum vent hose using at least one (1) corrosion-resistant metallic clamp with nominal band width of at least 5/16" (8mm). Torque hose clamp to 36 +/- 4 in-lb.
 12. Attach and clamp 5/8" vent hose using one (1) clamp. Torque hose clamp to 36 +/- 4 in-lb. Ensure 5/8" vent hose connects with 5/8" port on 99DFV Series vent valves.
 13. Leak test installed deck fill per USCG CFR 33 183.580 at pressure of 3 psi for no less than 10 minutes. Inspect all connections for leaks by a method other than pressure decay.

Important safety instructions (for all Attwood 99FL/99GV/99CC/99CV/99DF components):

When a fuel system is configured with Attwood 99DFV Series Deck Fills, the following safety precautions must be taken:

1. Use an Attwood 99CV Series Inlet Control valve between the liquid reservoir and the deckfill to prevent the accidental backflow of fuel. Use only an Attwood 99CV Series Inlet Control Valve in-line with the fuel fill hose. No other fill hose valves should be installed in order to ensure the safety of the fuel system and vessel. The Attwood 99CV Series Inlet Control valves includes features to allow vapor and liquid to pass the valve in order to ensure the system does not become accidentally over pressurized.
2. Install an Attwood 99FL Series Fill Limit Vent Valve in the vent line between the liquid reservoir and the deck fill vent in order to prevent the accidental backflow of fuel.
3. Install an Attwood 99DFV Series Integrated Fuel Demand Valve in fuel distribution line to prevent tank pressure from pressurizing fuel line.

CARE AND MAINTENANCE

Care should be taken, when cleaning the boat, to prevent contaminating the valves and deckfills. Cleaning with only mild soapy water is recommended. All connections should be checked annually.

MANUFACTURER REQUIREMENTS

The information below applies only to EPA CFR 40 1060.135. The vessel manufacturer is responsible to meet all additional regulatory labeling requirements including EPA, CARB, USCG and others as necessary. The below information is for reference only. The vessel manufacturer should refer to CFR 40 for complete labeling guidelines.

In order to meet the requirements of CFR 40 1060.135, the vessel must be labeled with respect to evaporative emissions in the following manner when installing certified components:

Excerpt from CFR 40 1060.135

(a) You must affix a permanent and legible label identifying each engine or piece of equipment before introducing it into U.S. commerce. The label must be—

- (1) Attached to one piece so it is not removable without being destroyed or defaced
- (2) Bound to a part of the engine or equipment needed for normal operation and not normally requiring replacement
- (3) Durable and readable for the equipment's entire life.
- (4) Written in English
- (5) Readily visible in the final installation. It may be under a hinged door or other readily opened cover. It may not be hidden by any cover attached with screws or any similar devices. Labels on marine engines must be visible from the helm.

(c) If you produce equipment without certifying with respect to evaporative emissions, the equipment label specified in paragraph (a) of this section must—

- (1) State: "MEETS U.S. EPA CARB STANDARDS USING CERTIFIED COMPONENTS;"
- (2) Include your corporate name

Below is an example of a label specified by CFR40 1060.135 for use with certified components;

**MEETS U.S. EPA EVAP STANDARDS USING
CERTIFIED COMPONENTS**
CORPORATE NAME

Please refer to CFR 40 1060.135 to review EPA vessel labeling requirements. The NMMA has a program to supply OEM builders with labels. Please refer to the NMMA website below for further information regarding the NMMA label program; www.nmma.org/certification/products-labels/labels.aspx

TWO-YEAR WARRANTY & LIABILITY

Generally: Attwood Pressure Relief System Deck Fills are covered by a two (2) year limited warranty from the date of a Vessel's first retail sale.

Pre-requisites to Warranty Eligibility: For the warranty coverage described herein to apply, the following conditions must be met:

- Component must have been properly installed per Attwood installation instructions; and
- The component cannot have been altered or abused by Boat Company or its customers.

Warranty Terms for Components:

Attwood warrants that any Attwood Pressure Relief System Deck Fills are free from defects in materials and workmanship and are designed, built, and equipped to conform to the time of sale to Boat Company with the 40CFR1060 requirements. For two (2) years from the date of the vessel's first retail sale, Attwood will, at its sole option, repair or replace any components that fail due to a defect in material or workmanship. ATTWOOD PROVIDES NO WARRANTIES WITH RESPECT TO ANY PART OR COMPONENT NOT MANUFACTURED BY ATTWOOD, INCLUDING FUEL TANKS. Boat Company is responsible for the installation of all Systems, whether installed by Boat Company or under its direction.

A.B.Y.C.
American Boat & Yacht Council
3009 Solomons Island Road
Edgewater, Maryland 21037
www.abyc.org

E.P.A.
401 "M" Street, SW
Washington, DC 20590
www.epa.gov

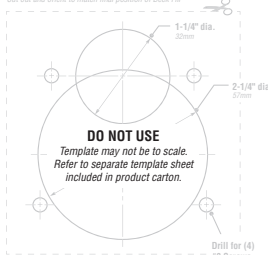
National Marine Manufacturers Association (NMMA)
231 S. LaSalle Street
Suite 2030
Chicago, IL 60604
www.nmma.org

U.S. Coast Guard
200460
Washington, DC 20460
www.uscgboating.org

ISO
iso.org

FIGURE 1 - MOUNTING TEMPLATE

Cut out and orient to match final position of Deck Fill



**FIGURE 3
Full Pressure Relief System**

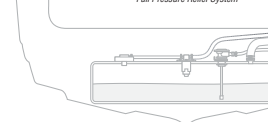
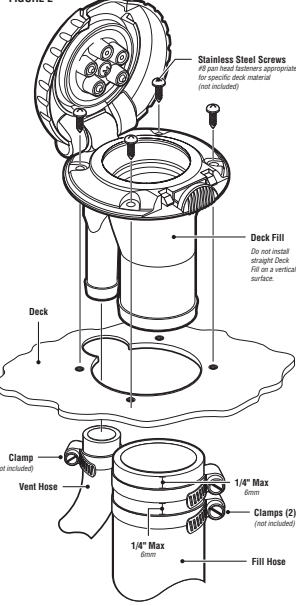


FIGURE 2



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DINGHY

DINGHY : CERTIFICATES OF STANDARDS EPA



INTEGRATED FUEL DEMAND VALVE

99FDV Series

INSTALLATION INSTRUCTIONS
SAVE THESE INSTRUCTIONS

212

69487 Rev. C

CAUTION:

The vessel manufacturer must comply with the requirements of CFR 40 1060.202. Any questions can be directed to www.attwood.com

Failure to follow these instructions may result in accidental fuel system over-pressurization. Users must follow these instructions to ensure vessel function and operation

EMISSION-RELATED INSTALLATION INSTRUCTIONS

Failing to follow these instructions when installing the Attwood Integrated Fuel Demand Valves in a place of nonroad equipment violates federal law (40 CFR 1060.105(b)), subject to fines or other penalties as described in the Clean Air Act.

FEATURES:

Attwood's Integrated Fuel Demand Valve meets EPA regulations. The Fuel Demand Valve comes in five (5) different heights of anti-siphon shut off protection (0", 10", 15", 20" and 30") and can be oriented in twelve (12) different positions providing optimal orientation. The Fuel Demand Valve also has a manual override built into the top.

REQUIRED FOR INSTALLATION

- Pliers for removal and assembly of retainer clip
- Appropriate hose fitting (1/2" NPT)
- Marine-grade urethane-based sealant (Attwood #30106-6 recommended, **DO NOT USE A SILICONE-BASED SEALANT**)
- Wrench for fitting

LOCATION

- Mount of flat surface where risk of torsional loads being applied to the Integrated Fuel Demand Valve is minimal
- Locate in position where consumers will not kick or step on the valve
- A heat shield (99FDVHS1) is recommended to protect against fire unless the Fuel Demand Valve passes USCG fire test in the as-installed position. If heat shield is required, see separate installation sheet.

INSTALLATION INSTRUCTIONS

1. Locate built in Fuel Demand Valve aluminum base on tank
2. Remove clip and transport plug (Figure 1)
3. Install necessary barb fitting (1/2" NPT, not supplied). Use thread sealant.
4. Torque up to 8 ft-lb where applicable. Do not over torque.
5. Ensure sealing surface (interior of insert) is clean of debris
6. Remove shipping cover from valve assembly.
7. Lubricate O-ring with a petroleum based lubricant such as motor oil. Insert Fuel Demand Valve to predetermined orientation (Figure 2). Once inserted, apply slight downward pressure on Valve and install retainer clip fully into slot.
8. Once installed, apply slight upward pressure to Fuel Demand Valve to ensure it is locked into position.
9. Pressure test tank to ensure connection integrity, per CFR 33 163.580, at pressure of 3 psi for no less than 10 minutes. Inspect all connections for leak by method other than pressure decay.

MANUFACTURER REQUIREMENTS

Manufacturer must determine required amount of anti-siphon protection for specific vessel configuration per CFR 33. Manufacturer must select an Integrated Fuel Demand Valve with at least that much anti-siphon protection. Manufacturer must ensure that engine fuel distribution line vacuum requirements are met. See engine manufacturer for details.

The information below applies only to EPA CFR 40 1060.135. The vessel manufacturer is responsible to meet all additional regulatory labeling requirements including EPA, CARB, USCG and others as necessary. The below information is for reference only. The vessel manufacturer should refer to CFR 40 for complete labeling guidelines.

In order to meet the requirements of CFR 40 1060.135, the vessel must be labeled with respect to evaporative emissions in the following manner when installing certified components;

Excerpt from CFR 40 1060.135

(a) You must affix a permanent and legible label identifying each engine or piece of equipment before introducing it into U.S. commerce. The label must be—

- (1) Attached in one piece so it is not removable without being destroyed or defaced.
- (2) Secured to a part of the engine or equipment needed for normal operation and not normally requiring replacement.
- (3) Durable and readable for the equipment's entire life.
- (4) Written in English.
- (5) Readily visible in the final installation. It may be under a hinged door or other readily opened cover; it may not be hidden by any cover attached with screws or any similar designs. Labels on marine vessels must be visible from the helm.

(c) If you produce equipment without certifying with respect to evaporative emissions, the equipment label specified in paragraph (a) of this section must—

- (1) State "MEETS U.S. EPA EVAP STANDARDS USING CERTIFIED COMPONENTS."
- (2) Include your corporate name.

Below is an example of a label specified by CFR 40 1060.135 for use with certified components;

MEETS U.S. EPA EVAP STANDARDS USING CERTIFIED COMPONENTS

CORPORATE NAME

Please refer to CFR 40 1060.135 to review EPA vessel labeling requirements. The NMMA has a program to supply OEM builders with labels. Please refer to the NMMA website below for further information regarding the NMMA label program.

www.nmma.org/certification/products/labelsanddecals.aspx

TWO-YEAR WARRANTY & LIABILITY

Generally, Attwood Integrated Fuel Demand Valves are covered by a two (2) year limited warranty from the date of a Vessel's first retail sale.

Pre-requisites to Warranty Eligibility: For the warranty coverage described herein to apply, the following conditions must be met:

- Component must have been properly installed per Attwood installation instructions; and
- The component cannot have been altered or abused by Boat Company or its customers.

Warranty Terms for Components:

Attwood warrants that any Attwood Integrated Fuel Demand Valves are free from defects in materials and workmanship and are designed, built, and equipped to conform at the time of sale to Boat Company with the 40CFR 1060 requirements. For two (2) years from the date of a Program Boat's first retail sale, Attwood will, at its sole option, repair or replace any components that fail due to a defect in material or workmanship. ATTWOOD PROVIDES NO WARRANTIES WITH RESPECT TO ANY PART OR COMPONENT NOT MANUFACTURED BY ATTWOOD, INCLUDING FUEL TANKS. Boat Company is responsible for the installation of all systems, whether installed by Boat Company or under its direction.

A.B.Y.C.
American Boat & Yacht Council
3069 Solomon's Island Road
Edgewater, Maryland 21037
www.abycnc.org

U.S. Coast Guard
Washington, DC 20460
www.uscgboating.org

E.P.A.
401 "M" Street, SW
Washington, DC 20560
www.epa.gov

National Marine Manufacturers Association (NMMA)
231 S. LaSalle Street
Suite 2050
Chicago, IL 60604
www.nmma.org

ISO
iso.org

FIGURE 1

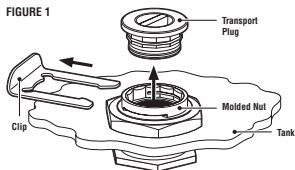


FIGURE 2

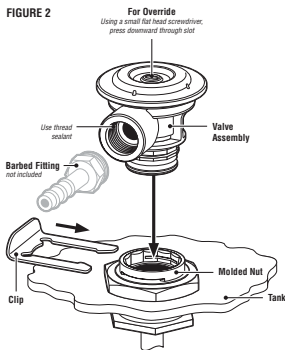


FIGURE 3

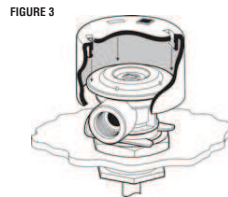
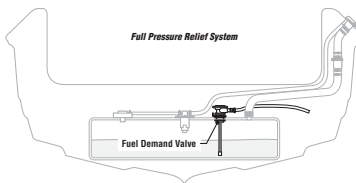
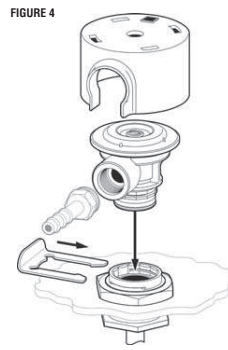


FIGURE 4



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INLET CONTROL VALVE 991CV Series

INSTALLATION INSTRUCTIONS
SAVE THESE INSTRUCTIONS

11/04

09492 Rev. B

CAUTION:

The vessel manufacturer must comply with the requirements of CFR 40 1060.202. Any questions can be directed to www.atwoodmarine.com

Failure to follow these instructions may result in accidental fuel system over-pressurization. Users must follow these instructions to ensure vessel function and operation

EMISSION-RELATED INSTALLATION INSTRUCTIONS

Failing to follow these instructions when installing the Atwood Inlet Control Valves in a piece of nonroad equipment violates federal law (40 CFR 1060.105(c)), subject to fines or other penalties as described in the Clean Air Act.

FEATURES:

Atwood's Inlet Control Valve allows proper fuel flow into the fuel tank during refueling. As the fuel tank reaches full liquid capacity, the Inlet Control Valve works in conjunction with the Fuel Limit Vent Valve to ensure no spillback/wellback and automatic nozzle shutoff. The Inlet Control Valve also prevents fuel from draining into the hose/deckfill area during vessel operation and trailering. The Inlet Control Valve includes features to allow vapor and liquid to pass the valve in order to ensure the system does not become accidentally over-pressurized.

REQUIRED FOR INSTALLATION

- 1-1/2" (38mm) I.D. Fill Hose
- (4) Hose Clamps, 1-1/2" (38mm), trade size 028, 300-grade all-stainless (both hand and screw)
- 5/16" (8mm) Nut Driver or Medium Flathead Screwdriver for hose clamp installation
- Torque Monitoring Device to ensure proper torque level for all fasteners

INSTALLATION INSTRUCTIONS

- Ensure that the 1-1/2" (38mm) hose has a clean, perpendicular cut before Inlet Control Valve installation. Loosely install two (2) all-stainless, 1-1/2" (38mm) wide, trade-size 028 hose clamps over hose. (Figure 1)
- Install Inlet Control Valve with "FLOW" and arrow pointing towards the Fuel Tank and "TOP" identification facing up in horizontal or angled applications. This orientation is not required in complete vertical applications. Ensure that the hose is fully inserted, bottoming the end on the chamfer of the Inlet Control Valve.
- Place and fasten hose clamp 1/4" (6mm) from hose end. Fasten to 36 +/- 4 in.-lbs. Do not overtorque.
- Place and fasten hose clamp adjacent to first hose clamp. Fasten to 36 +/- 4 in.-lbs. Do not overtorque.
- Inspect second hose to install onto inlet side of Inlet Control Valve, ensuring a clean, perpendicular cut. Loosely install two (2) hose clamps over hose and install hose onto Inlet Control Valve, bottoming the end of hose at the base of the Inlet Control Valve inlet.
- Place and fasten hose clamp 1/4" (6mm) from hose end. Fasten to 36 +/- 4 in.-lbs. Do not overtorque.
- Place and fasten hose clamp adjacent to first hose clamp. Fasten to 36 +/- 4 in.-lbs. Do not overtorque.
- If the Inlet Control Valve is installed in the engine compartment, a heat shield (991CV000HS1) is required. Please reference separate instruction sheet for heat shield installation.

NOTES:

- Trade Size 028 (1-1/4" min., 2-1/4" max. dia.), 1-1/2" (38mm) wide
- 1/2" (13mm) stainless steel band, housing and 5/16" (8mm) hex screw
- Inspect screw torque annually
- Do not step on Valves
- 1/2" (13mm) Clearance required around component
- Not intended for siphoning through Inlet Control Valve under any circumstances

LOCATION

- Install anywhere between the Deck Fill and tank. A minimum of 6" (15.2cm) is required between the Deck Fill and Inlet Control Valve.
- Must be installed in a readily accessible location
- Fill hose must be self draining between Deck Fill and Inlet Control Valve for all expected boat conditions.
- Fill hose must be self draining between Inlet Control Valve and tank for all expected boat condition.

Important safety instructions

(for all Atwood 99FL/99GV/99CC/991CV/99DF components):

When a fuel system is configured with Atwood 99FL and/or 99GV Series Vent Valves, the following safety precautions must be taken:

- Use only an Atwood 991CV series Inlet Control Valve in-line with the Fuel Fill Hose. No other fill hose valves should be installed in order to ensure the safety of the fuel system and vessel. The Atwood 991CV series Inlet Control Valves include features to allow vapor and liquid fuel to pass the valve in order to ensure the inlet valve does not create an accidentally sealed fuel tank/system.
- Use only an Atwood 99DF series Deckfill. The Atwood 99DF series Deckfill includes overpressure relief safety valves that allow unintended pressure to be released in the event that the tank becomes accidentally overfilled and/or over-pressurized.

MANUFACTURER REQUIREMENTS

The information below applies only to EPA CFR 40 1060.135. The vessel manufacturer is responsible to meet all additional regulatory labeling requirements including EPA, CARB, USCG and others as necessary. The below information is for reference only. The vessel manufacturer should refer to CFR 40 for complete labeling guidelines.

In order to meet the requirements of CFR 40 1060.135, the vessel must be labeled with respect to evaporative emissions in the following manner when installing certified components:

Excerpt from CFR 40 1060.135

- You must affix a permanent and legible label identifying each engine or piece of equipment before introducing it into U.S. commerce. The label must be—
 - Attached in one place so it is not removable without being destroyed or defaced.
 - Secured in a part of the engine or equipment needed for normal operation and not normally requiring replacement.
 - Durable and readable for the equipment's entire life.
 - Written in English.
 - Readily visible in the final installation. It may be under a hinged door or other readily opened cover. It may not be hidden by any cover attached with screws or any similar designs. Labels on marine vessels must be visible from the helm.
- If you produce equipment without certifying with respect to evaporative emissions, the equipment label specified in paragraph (a) of this section must—
 - State: "MEETS U.S. EPA EVAP STANDARDS USING CERTIFIED COMPONENTS."
 - Include your corporate name.

Below is an example of a label specified by CFR40 1060.135 for use with certified components:

MEETS U.S. EPA EVAP STANDARDS USING
CERTIFIED COMPONENTS

CORPORATE NAME

Please refer to CFR 40 1060.135 to review EPA vessel labeling requirements.
The NMMA has a program to supply OEM builders with labels. Please refer to the NMMA website below for further information regarding the NMMA label program:
www.nmma.org/certification/products/labelsandlabels.aspx

TWO-YEAR WARRANTY & LIABILITY

Generally: Atwood Inlet Control Valves are covered by a two (2) year limited warranty from the date of a Vessel's first retail sale.

Pre-requisites to Warranty Eligibility: For the warranty coverage described herein to apply, the following conditions must be met:

- Component must have been properly installed per Atwood installation instructions; and
- The component cannot have been altered or abused by Boat Company or its customers.

Warranty Terms for Components:

Atwood warrants that any Atwood Inlet Control Valves are free from defects in materials and workmanship and are designed, built, and equipped to conform at the time of sale to Boat Company with the 40CFR.1060 requirements. For two (2) years from the date of a Program Boat's first retail sale, Atwood will, at its sole option, repair or replace any components that fail due to a defect in material or workmanship. ATWOOD PROVIDES NO WARRANTIES WITH RESPECT TO ANY PART OR COMPONENT NOT MANUFACTURED BY ATWOOD, INCLUDING FUEL TANKS. Boat Company is responsible for the installation of all Systems, whether installed by Boat Company or under its direction.

A.B.Y.C.

American Boat & Yacht Council
3900 Solomons Island Road
Edgewater, Maryland 21037
www.abycinc.org

E.P.A.

401 "M" Street, SW
Washington, DC 20593 www.epa.gov

National Marine

Manufacturers Association
(NMMA)
221 S. LaSalle Street
Suite 200
Chicago, IL 60604
www.nmma.org

FIGURE 1

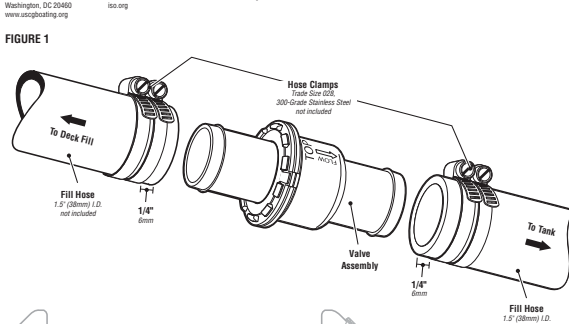
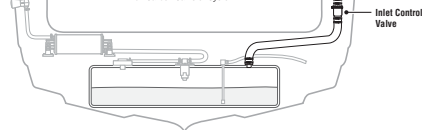


FIGURE 2
Full Carbon Canister System



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