

# Silver<sup>®</sup>

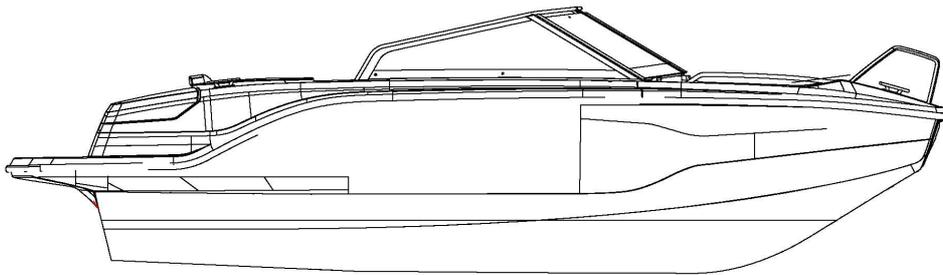
TIME WELL SPENT — SINCE 1991



## Owner's manual

Puma BR | Tiger BR | Tiger DC | Viper DC | Raptor DC | Raptor ST

***Silver***  
**PUMA<sup>BR</sup>**



**Silver Puma Bowrider**

**Owner's manual**

## **FOREWORD**

Congratulations on choosing a Silver Boat!

This manual will familiarise you with the features of your new vessel and help with its care and maintenance. It has been written to help you learn to handle your craft safely and avoid any problems. Make sure that you have received manuals for all equipment fitted on your boat. Supplement this manual with the specifications and manuals of equipment you purchase later for your boat. Space has been left for your own notes at the end of the manual. Please read this manual carefully and familiarise yourself with the craft before using it.

If this is your first craft, or you are changing to a type of craft you are not familiar with, please ensure that you obtain sufficient handling and operating experience before assuming command of the craft. This is highly important for your own comfort and safety. Your dealer or national sailing association or yacht club will be happy to advise you of local boating schools or competent instructors.

This owner's manual is not a detailed maintenance or troubleshooting guide. In case of difficulty please contact the dealer. Always use qualified and competent people for the maintenance, repair and modification of the boat. Modifications that may affect the safety characteristics of the craft must be assessed, executed and documented by competent people. The manufacturer is not responsible for modifications they have not approved.

Always keep your boat in a good condition and be aware that the boat requires maintenance and servicing. Any craft, no matter how strong it may be, can be severely damaged if not used properly. Always adjust the speed and direction of the craft to prevailing weather conditions.

**We wish you enjoyable and relaxing times on board your Puma Bowrider**

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01740 VANTAA  
Finland

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

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## BEFORE YOU SET OFF

Familiarise yourself with this owner's manual.

Always check at least the following before leaving:

- **Weather conditions and forecast**  
Take the wind, waves and visibility into account. Are the design category, size and equipment of your boat, as well as the skills of the skipper and crew, adequate for the waters you are headed for? Hull windows and hatches must be battened down during high wind and rough seas to prevent water incursion.
- **Loading and stability**  
Do not overload the craft and distribute loads appropriately. Heavy items are to be placed in the storage compartments under the aft seat. Also note that the boat is less stable if people stand up when on board.
- **Passengers**  
Ensure that there are personal flotation devices or lifejackets for all people on board. Agree on crew tasks before setting off.
- **Fuel and fuel system**  
Make sure that the boat has enough fuel, including a 20 % reserve for heavy weather or other unforeseen eventualities.
- **Engine and manoeuvring equipment**  
Check the function and condition of steering and remote control and carry out routine checks according to the engine manual.
- **Seaworthiness**  
Check the boat's seaworthiness: no fuel or water leaks, safety equipment available on board, etc. Check that there is no water in the bilge.
- **Fastening of equipment**  
Check that all onboard items are positioned so that they will stay in place even in rough seas and high winds. Please note that the seat cushions may fly overboard if they are not fixed properly with press studs.
- **Nautical charts**  
Unless you are navigating in completely familiar waters, ensure you have nautical charts on board that cover a large enough area! Your boat is equipped with a chart plotter, so learn how to use it before setting off. Ensure that the plotter charts are of the latest edition.
- **Leaving the berth**  
Agree with the crew who will release each mooring line, etc. Be careful not to let mooring lines or the anchoring line become fouled in the propeller during manoeuvring.
- **Obligatory equipment**  
What is considered obligatory equipment varies between different countries. Find out what is required for your boat.

**You will find additional instructions concerning the engine in the separate engine manual.**

# 1 General

The owner's manual will help you familiarise yourself with the properties and features of your new boat and with its care and maintenance. Separate manuals for installed equipment are attached and are referred to in many sections of the owner's manual. You can supplement this user manual by adding the manuals of devices which are installed afterwards. There is also space for your own notes at the end of the manual.

The craft has a running serial number, a WIN-code (Watercraft Identification Number). The WIN-code can be found on the starboard side of the transom just below the bathing platform. We recommend that you write down the WIN-code in this manual. When contacting the dealer, please provide the WIN code and the type of craft. This helps in delivering the correct spare parts.

## 1.1 DECLARATION OF CONFORMITY

### Recreational Craft Directive 2013/53/EC

**Manufacturer:** Oy Esmarin Composites Ltd.  
**The module used:** B, EC type-approval

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#### THE INSURANCE IS TAKEN OUT BY THE PERSON PLACING THE PRODUCT ON THE MARKET

**Placed on the market by** TerhiTec Oy / Oy Brandt Ab  
**Address:** Sorvitie 4  
**Postal code:** 63700  
**Country (code):** FIN

**Place:** Ähtäri  
**(written in):** Finland

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#### NOTIFIED BODY

**Name:** Eurofins Expert Services  
**Address:** Kivimiehentie 4  
**Postal code:** 02150  
**Country (code):** FIN  
**EC type-examination certificate:**

**Identification number:** no 0809  
**Place:** Espoo  
**(written in):** Finland  
EUFI 29-20006087-C

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#### PLEASURE BOAT DATA

<b>Mark of a pleasure boat:</b>	Silver
<b>Model or number:</b>	Puma Bowrider
<b>Design category:</b>	C
<b>Type of boat*:</b>	03
<b>Frame type*:</b>	01
<b>Cover*:</b>	03
<b>Building material*:</b>	02
<b>Propulsion*:</b>	02
<b>Engine type*:</b>	01
<b>Maximum permissible engine power (kW):</b>	86
<b>Trunk length and width (m):</b>	5,77 / 2,13
<b>Depth (m):</b>	Approx. 0,35

\* The purpose of the codes later on this page

*I declare that the above named recreational craft meets all applicable essential safety requirements as specified on the following page.*

**Vantaa 1.1.2021**

**Peter Krusberg**  
Product Development Manager, Silver boats, Z – series

<b>Type of boat:</b>	<b>Deck:</b>
01 purjevene	01 covered
02 inflatable	02 partially covered
03 other: motorboat	03 open:
<b>Type of frame:</b>	<b>Propulsion:</b>
01 single frame	01 sail
02 monirump	02 petrol engine
03 mio:	03 diesel engine
	04 electric motor
	05 oarrot
	06 more:
<b>Building material:</b>	<b>Engine type:</b>
01 aluminium, aluminium alloys	01 outboard motor
02 plastics, reinforced plastics	02 inboard motor
03 steel, steel alloys	03 z- or stern-drawing equipment
04 tree	04 other:
05 more:	

The standards and requirements to which the boat is built:

	General requirements	
	Basic information	EN ISO 8666:2018
A2.1	Watercraft marking system	ISO 10087:2019
A2.2	Manufacturer's plate	EN ISO 14945:2004
A2.5	Owner's Handbook	EN ISO 10240:2019
	<b>Organisation and equipment</b>	
A2.3	Preventing falls overboard	EN ISO 15085:2003/A1:2018
A3.7	Storage of life rafts	
A3.8	Exit	
A3.9	Anchoring, mooring and towing	EN ISO 15084:2018
A5.7	Marine lights, signal lanterns and audible warning devices	EN ISO 16180:2018
A5.8	Combating emissions	
	<b>Installations</b>	
A5.1	Engines and engine compartments	
A5.2	Fuel system	EN ISO 10088:2017, EN ISO 11105:2020
A5.3	Electrical system	EN ISO 10133:2017, EN ISO 13297:2018
A5.4	Guidance system	EN ISO 10592:2017
A5.5	Gas system	
A5.6	Fire prevention	EN ISO 9094:2017
	<b>Dimensioning</b>	
A3.1	Structure	EN ISO 12215-5:2019, EN ISO 12215-6:2018
	<b>Hydrostatics</b>	
A3.2	Stability and reserve lane	EN ISO 12217-3:2017
A3.3	Carrying capacity and buoyancy	EN ISO 12217-3:2017
A3.6	Manufacturer's recommendation for the maximum load	EN ISO 14946:2021
A3.4	Openings in the body, deck and superstructure	EN ISO 9093:2021
A3.5	Filling with water	EN ISO 15083:2018, EN ISO 11812:2018
	<b>Steering features</b>	
A4	Steering features	EN ISO 11592-1:2019
A2.4	Visibility from the main steering position	EN ISO 11591:2019

## 2 Definitions

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

- DANGER!** Denotes an extreme hazard that will result in a high probability of death or permanent injury if proper precautions are not taken.
- WARNING!** Denotes a hazard that can result in injury or death if proper precautions are not taken.
- NOTE!** Denotes a reminder of safe practices or directs attention to unsafe practices which could result in personal injury or damage to the craft or components or the environment.

SI system units are used in this manual. In some cases, other units have been added in brackets. An exception is wind speed, for which the Beaufort scale is used in the Recreational Craft Directive.

## 3 Warranty

The boat and its factory-installed equipment have a two-year warranty, starting on the first day of use. Please contact your dealer regarding any potential warranty issues. Please remember to provide the WIN code. If possible, please provide a digital photograph of the subject of your claim. This usually speeds up the claims process.

## 4 Before use

### 4.1 Registration

Registration regulations vary between different countries. Find out what is required in relation to your own boat.

### 4.2 Insurance

Boat insurance can compensate damage occurring on water or during transport and lifting. Check who has insurance liability each time when having the boat lifted. Insurance also has an indirect effect on safety at sea: In the event of a serious accident or damage, you must, above all, concentrate on saving people. Insurance companies will be able to give more information about different insurance alternatives. Check who has insurance liability each time when having the boat lifted or transported!

## 5 Characteristics and use of your boat

### 5.1 General

This user manual is not intended to be a complete service or repair manual; it simply guides the user on how to use the boat in the proper manner.

### 5.2 Basic information

Recreational crafts can be constructed according to 4 categories (A, B, C and D) under the Recreational Craft Directive 2013/53/EC. This boat has been constructed according to design category C. The meanings of the various design categories are explained below.

**Category A:** The boat is built for conditions where wind speed can exceed 8 Beaufort (approx. 21 m/s), and where the significant height of the waves (please refer to note below) can exceed 4 metres. In such circumstances the boats are largely self-sufficient. Category A does not include abnormal conditions such as hurricanes. Such conditions may be encountered on extended voyages, for example when crossing oceans, or in coastal areas where there is an open expanse of sea for several hundred nautical miles off the coast.

**Category B:** The boat is built for conditions where wind speeds can reach a maximum of 8 Beaufort (approx. 21 m/s), and where the corresponding significant height of the waves (please refer to note below) is 4 metres at most. 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:** The boat is built for conditions where wind speeds can reach a maximum of 6 Beaufort (approx. 14 m/s), and where the corresponding significant height of the waves (please refer to note below) is 2 metres at most. Such conditions may be encountered on exposed inland waters, in estuaries, and in coastal waters in moderate weather conditions.

**Category D:** The boat is built for conditions where wind speeds can reach a maximum of 4 Beaufort (approx. 8 m/s), and for corresponding seas (significant wave height does not exceed 0.3 metres, and the height of the greatest waves does not exceed 0.5 metres). Such conditions may be encountered on protected inland waters, and in coastal areas during fine weather conditions.

**Note:** Significant wave height is a term used in boat design. In practice, significant wave height means the average height of the highest third of all wave heights measured in the waters. If the significant wave height is 2.0 m, the mean height of all waves is roughly 1.2 m.

**Maximum recommended load:** See *technical specifications*  
See also section 5.4 "Loading".

**Main dimensions and capacities:** See *technical specifications*  
Craft length, width, draught, total weight, etc., and tank capacities are shown in the technical specifications.

**Builder's plate:**  
Part of the aforementioned information is given on the builder's plate, which is affixed next to the remote control. Supplementary information is provided in the appropriate sections of this manual.

**Technical specification**

Model	SILVER Puma BOWRIDER
Design category	C
Overall length (excluding water-skiing or swimming ladders)	5,77 m
Width	2,13 m
Weight without engine, fluids and equipment	Approximately 680 kg
Weight in trailer transport with the largest machine	Approximately 1 089 kg Includes boat (approx. 680 kg) and outboard engine (259 kg), plus an estimate of the weight of liquids and equipment (150 kg). NOTE! This is not the maximum weight of liquids and equipment.
Weight in trailer transport with the largest machine in accordance with the standard	Approximately 1 089 kg Includes the boat (approx. 680 kg) and 115 hp engine (259 kg) and an estimate of the weight of liquids and equipment (150 kg). NOTE! This is not the maximum weight of liquids and equipment.
Maximum load/ number of persons	595 kg 6 people
The maximum load includes	450 kg / 6 people (à 75 kg) + personal equipment 30 kg + equipment 25kg + fuel 90 kg
Maximum load on the CE plate	505 kg Incl. persons 6 x 75 kg = 450 kg + personal equipment 30 kg + equipment 25kg = total 505 kg
Mass of the boat under full load	Approximately 1579 kg Includes boat 680 kg + engine 259 kg + battery 20 kg + basic equipment 50 kg + personal equipment 30 kg + fuel 90 kg + people 450 kg
Maximum engine power	86 kW / 115 hp
Fuel tank capacity	120 litres
Maximum draught with full load, engine up	Approximately 0,35 m
Maximum height above water level with light load	1,3 m
Building material	High-strength plastic
Colour code (body and cover)	RAL 9016
Hydraulic hoses	5 m
Top speed achieved in the boat test	About 40 knots

## 5.3 Maximum recommend number of passengers

The boat's maximum recommended number of passengers is 6 persons.

### **WARNING!**

Do not exceed the maximum recommended number of passengers. Regardless of the number of passengers, the total weight of people and equipment must never exceed the maximum recommended load (please refer to Section 5.4, "Loading"). Always remain seated on the boat. All persons on board must remain seated while the boat is moving.

## 5.4 Loading

The maximum load of the boat is 595 kg. This includes the following weights:

- a) Total weight of persons on board 450 kg (one adult 75 kg, child 37.5 kg)
- b) Weight of liquids in fixed tanks 90 kg (fuel)
- c) Weight of personal equipment (e.g. hobby equipment and overnight gear) 30 kg
- d) Boating equipment 25kg

### **NOTE!**

The maximum permitted load only includes the weights mentioned above.

### **WARNING!**

**Never exceed the maximum recommended load when loading the craft.** Always load the craft carefully and distribute loads appropriately so that the boat is on an even keel. Heavy equipment should usually be placed in the storage compartment under the aft seat. If the boat is carrying the maximum number of passengers, heavy items should be placed in the bow so that the boat will not be tail-heavy. Always avoid placing heavy items high up.

## 5.5 Engine and propeller

The maximum engine power for the boat is 115 hp (86 kW). Do not use the boat with an engine that has an output higher than the kW limit given on the CE plate (115 hp) . Using a more powerful engine than specified on the CE plate will void the boat's warranty. Follow the dealer's instructions when choosing the propeller for your boat.

## 5.6 Prevention of water incursion and stability

### 5.6.1 Hull and deck through fittings and closing valves

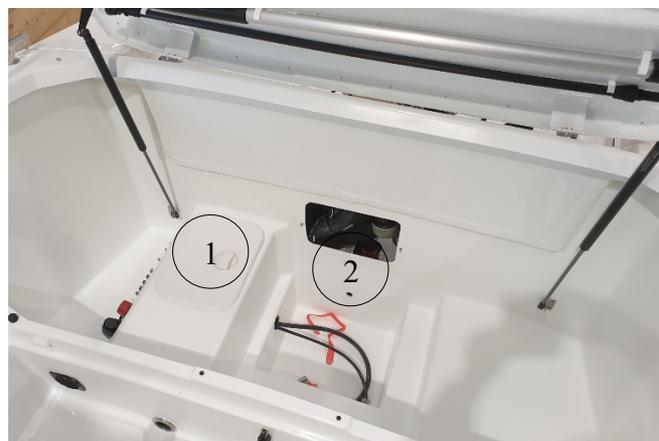
The boat has a rainwater drainage system, which means that rainwater in the open space of the boat is drained when the boat is on the water. The system also functions when the boat is out of water, provided that the bow is higher than the stern and closing valve is open. The rainwater drainage valve is located underneath the aft sofa (see picture on next page). This drain valve is meant to be shut only when at heavy load to prevent potential water incursion. **In other loading conditions the drainage valve should remain open to let rainwater drain from the boat.**

The boat is fitted with an electric bilge pump, located in the tank compartment of the boat, between the fuel tank and the transom. The pump automatically drains the bilge of the boat. It has a capacity of approximately 40 l/min. The manual switch for the bilge pump is located in the panel to the right of the steering wheel. The switch has a light that comes on when there is water in the bilge of the boat. When the light comes on, you should immediately check the level of water in the midsole by opening the hatch in the rear wall of the rear seat storage compartment. A small amount of water, such as condensation water, will be quickly drained by the pump, but if the light comes on again after a while, you should go ashore and lift the boat up and find out what is causing the leak.

To access the pump, open the hatch in the rear wall of the storage compartment under the rear seat.



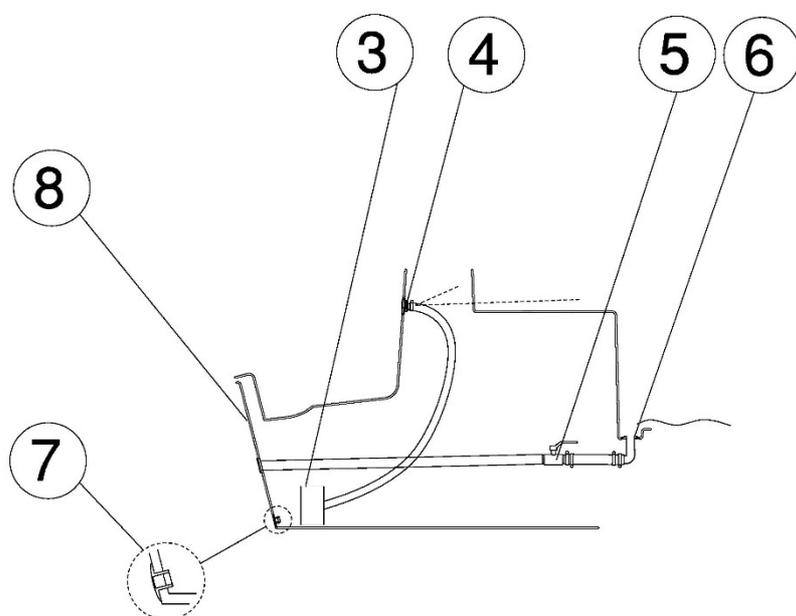
- (1) The tap is open when the handle is parallel to the drain hose.
- The faucet is closed when the faucet is at a 90-degree angle to the drain hose.
- The tap has a small metal safety ring to prevent movement, which must be pulled up before the handle can be moved to another position.



The boat has an electric bilge pump in the bilge (location shown in the picture below). The function of the bilge pump is automatic meaning that it will automatically empty the bilge if

there will appear water. The capacity of the electric bilge pump is about *40 l/min*. On the right hand of the steering wheel, you find the manual switch to turn on the electric bilge for testing/checking the function. In the switch there is a light that will turn on if there is water in the bilge. If the light turns on you should immediately check the bilge by open the inspection hatch in the plywood bottom plate underneath the middle hatch in the aft sofa. If the bilge is empty, you can continue boating but if the light turns on again and pump starts to empty the bilge you have to immediately drive to the shore and nearest harbour or landing-stage and thereafter lift up the boat from water to find out the reason to the leakage.

The electric bilge pump can be checked by removing the plywood plate underneath the middle hatch of the aft sofa. The pump can be lifted up by gripping the hose as it is only submerged in a kind of pocket.



Rainwater drainage system and bilge pump system

- |                                  |  |
|----------------------------------|--|
| 3. Electric bilge pump           | 6. Rainwater drainage through fitting      |
| 4. Bilge pump hose               | 7. Drain plug for bilge                    |
| 5. Rainwater drainage pipe valve | 8. Shut-off flap, aft end of drainage pipe |

The owner of the boat is responsible for ensuring that there is at least one baler or bucket in the boat.

**WARNING!**

The bilge pump system is not intended to cope with a leak caused by running aground or other equivalent damage (hull damage).

**SAFETY MEASURE!**

Regularly check to ensure that there is no debris around suction grid of the bilge pump.

**WARNING!** Always keep the drainage pipe valve shut when the pipe's inboard end is constantly under water due to heavy loading. The shut-off flap on the transom only prevents water from entering the boat when reversing!

**NOTE!** Make sure that water can flow unobstructed through the drainage pipe. Debris such as autumn leaves may obstruct the water flow, which can cause the boat to fill with water and sink. The bilge pump system does not work in conditions below 0°C.

**NOTE!** There is always some condensed water in the bilge. The hull bushings may also allow water to seep through, particularly as the boat ages. Always remember to check the bilge before you leave the boat at quay or buoy, and always before setting off. Have any leaks repaired at an authorised repair shop.

**WARNING!** The boat's handling properties may become extremely dangerous if there is water in the bilge.

## 5.6.2 Stability and buoyancy

Please note that stability will be reduced by any weight added high up on the boat. Any change in the distribution of weight on board may significantly affect the stability, trim and performance of your boat. Please remember that large breaking waves always present a serious danger to stability.

## 5.7 Preventing fires and explosion hazards

### 5.7.1 Refuelling

Shut off the engine and extinguish any cigarettes before starting to refuel. During refuelling, do not use switches or appliances that can cause a spark.

When refuelling at a service station, do not use a plastic funnel, since it will prevent the tension between the refuelling nozzle and filling vent from being discharged.

Do not stow any loose items under the aft sofa that could prevent fuel flow to the engine if they shift. Check the fuel hoses annually for wear, especially at through fittings.

Please note that, depending on the trim of the boat or the boat's heeling angle, it might not be possible to use the full capacity of the fuel tank.

If the boat is on trailer behind a car when refuelling, please note that the fuel tank ventilation does not work efficiently if the bow of the boat is downwards.

If the refuelling gun is knocked off when you are refuelling, you must turn the gun at least twenty degrees to prevent the spray from hitting the safety tether inside deck fill. Note also that the tank ventilation outlet is inside the deck fill. Do not fill gasoline in the ventilation opening.

**WARNING!** Vaporised fuel is highly explosive. Observe these instructions and the utmost caution during refuelling. The smell of fuel always means that there is vaporised fuel on your boat.

### 5.7.2 Fire protection

The boat is equipped with a portable 2 kg fire extinguisher class 8A 68 B, which is the minimum power requirement for extinguishers. For the extinguisher to remain reliable, it should be inspected annually by an authorised inspector. In the event that the fire extinguisher is replaced, the capacity of the new one must be at least equivalent to the old.

The fire extinguisher is located in the "glove box" storage compartment in front of the co-driver, and there is a red extinguisher sign on the outside of the compartment indicating that the extinguisher is inside the storage compartment.

Ensure that firefighting equipment is readily accessible even when the boat is loaded. Inform members of the crew about the location and operation of fire-fighting equipment. The fire extinguisher is located in the storage compartment of the aft sofa on port side (left-hand side) in the open deck space. There is a red extinguisher sign outside sofa showing the location of the extinguisher.

Remember:

- Never hinder access to safety equipment, for instance the switches to the electric system.
- Never hinder access to fire extinguishers located in a box.
- Never leave the boat unsupervised while the cooker or heater is on.
- Never make alterations to any of the boat's systems (especially the electricity or the fuel systems) or allow an unqualified person to make alterations to any of the boat's systems.
- Never refill a fuel tank when the boat's engine is running, or the cooker or heater is on.
- Never smoke while handling fuel or gas.

## 5.8 Main power switches and circuit breakers

Operation of the main power switch(es):

- Circuit switched ON when green colour
- Battery disconnected/OFF when red colour

Switch off the main switch (1) when leaving the boat.



(2) Circuit fuses are located next to the main switch. Fuse sizes are shown in the wiring diagram. Do not change the amperage ratings of the fuses or install components in the electrical system that exceed the rated amperage of the circuit. Electric circuit fuses are located to the left of main power switch. Fuse sizes are presented in the electrical diagram. Do not change the circuit breaker amperages or install any components that exceed the nominal amperage of the circuit in the electric system.

(3) 12V outlet for portable 12v refrigerator.

(4) USB plug for My Silver 4G modem.

Remember also to switch off the main power switch before making any electrical installations.

All fuses are automatic circuit breakers. In the event of a fault current, the circuit breaker will trip. You can reset the circuit breaker by pushing it back in. If the circuit breaker immediately trips again, there is a short-circuit somewhere in the electrical system or in a component. You must leave repairing the boat's electrical system to a professional electrician.

**NOTE!** Remember also to switch off the main power switch before making any electrical installations.

**NOTE!** Never switch off the main switch while the engine is running! It can cause serious damage to the engine's electric system.

**NOTE!** Do not perform electric installations (such as changing lamps) when the power is on. Leave any larger installations to professionals.

**NOTE!** When connecting or disconnecting the battery, do not touch both terminals simultaneously with metal objects.

## 5.9 Operation

If this is your first boat or a boat type new to you, take someone with experience of a similar boat with you the first few times you operate it.

### 5.9.1 Controls

You will quickly learn how to control your boat, but changing weather conditions, such as wind and waves, will always present new challenges for the driver. The remote control combines the functions of throttle, forward and reverse gears, and the adjusting of the engine trim angle. The boat is equipped with hydraulic steering.

### 5.9.2 Emergency switch

The emergency switch is a device that you have to attached to the remote control or to the ignition key panel (depending on what outboard motor brand). The other end you should attach around your knee. The emergency switch automatically switches off the engine when detached from the remote control. It is very important that the boat will come to a halt if the driver, for whatever reason, loses his/her balance and is flung from the helm.

**NOTE!** Never take control of the boat without having attached the emergency switch to yourself. If you attach the emergency switch to your arm, do not steer the boat with that arm, because the chain may be tangled in the steering wheel during tight turns.

**NOTE!** The engine will not start if the emergency switch is not attached to the switch on the remote control.

**DANGER!** A rotating propeller presents a life-threatening danger to a swimmer or a person who has fallen overboard. Always use the emergency switch to turn off the engine when a swimmer or water skier is about to re-enter the boat from the water.

### 5.9.3 Gearshift and throttle

The engine is put into gear by pushing the button on the gear/throttle handle upwards with your fingers and by pushing or pulling the gear/throttle lever forward or backward, depending on the direction in which you are planning to go. When the engine is in gear, you can adjust the boat's speed using the same gear/throttle lever.

When the boat is travelling forward slowly, you can use the reverse gear for braking when approaching the dock, for instance. Shifting into reverse must not be done if the boat is travelling at higher speeds, because it will damage the engine.

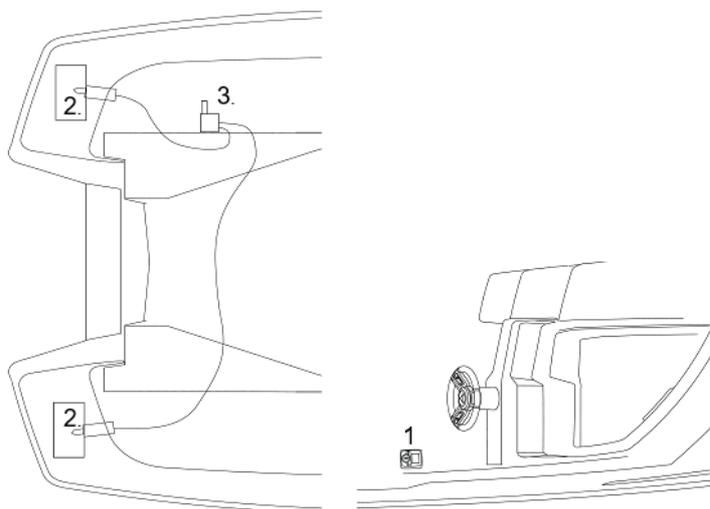
### 5.9.4 Adjusting the trim angle

These are the main rules when adjusting the trim angle:

- When bringing the boat to plane, keep the 'bow down' position.
- When the boat is planing and seas are calm, keep lifting the bow until you can feel that both the engine and the boat move very easily. In calm waters, the engine should normally be trimmed up at least 3 scale marks on the trim indicator on the revolution counter. If the engine is trimmed up too much, the speed of the boat will be reduced. If the boat is trimmed too low, the boat will run slowly, and the engine will run heavily. To achieve good fuel economy, it is important to drive the boat with the right engine trim angle.
- In heavy head seas, lower the bow to allow it to slice through the waves better, thus providing a smoother ride.
- In following seas, raise the bow to avoid 'diving' into the waves.

#### **WARNING!**

Do not drive the boat at high speeds in heavy waves with the engine trimmed up (bow up), as there is a risk of sudden heeling when the propeller hits the water again after a flight. Likewise, do not drive at high speed with the engine completely trimmed down (bow down) since this can cause the boat to pitch unexpectedly when the bow hits the water. The boat may become unstable when turning if the bow is too low.



### 5.9.5 Trim flap system (additional equipment)

1. Control panel at helms man position
2. Distribution unit
3. Trim flaps

**WARNING!** If you use the trims manually, adjust the trim controllers carefully at high speeds. They will change the behaviour of the boat radically.

**WARNING!** Waves reduce manoeuvrability and make the boat heel. Accordingly, reduce speed when encountering heavier seas.

### 5.9.6 Starting the engine

1. Switch the power on using the main power switch.
2. Lower the engine to the driving position by pressing the Power Trim button on the gear/throttle handle.
3. Check that the gear/throttle handle is in the neutral position and that the emergency switch is attached to the bottom of the remote control.
4. Switch on the current, using the start key, without starting the engine and wait a few seconds for the warning lights to light up.
5. Start the engine by turning the ignition key clockwise until the engine starts. If everything is in order, the engine should start within 1-2 seconds. If the engine does not start, you should not try to start it for more than 10 seconds at a time.
6. After the engine has started, let it idle for a few minutes before setting off. (Please refer to the engine manual!)

For more detailed information, please refer to the engine manual.

### 5.9.7 Driving

It is easy to drive when the weather is fine, and the sea is calm. However, always remember to keep an adequate lookout. In order to maintain the best possible visibility from the driver's position, you should do this:

- Ensure that passengers do not restrict your visibility.
- Do not drive near planing speed for long periods, as the bow comes up and reduces visibility.
- When visibility is poor, look over the windshield.
- Remember to also keep a lookout behind you, particularly on shipping lanes.

Use navigation lights in darkness.

Always adjust your speed to prevailing conditions and the environment. Take into account the following:

- waves (also consult the passengers on what is a comfortable speed);
- your own bow wake (greatest at planing speed, smallest at speeds under 5 knots);
- visibility (islands, fog, rain, driving against the sun);
- familiarity with the route (time required for navigation);
- width of the route (other traffic, noise and bow wake near shore).

- Make sure to always maintain a sufficient distance to avoid collision. The distance must be sufficient to stop the boat or to take evasive action.

When running at low speed, a planing boat's directional stability is poorer than at higher speeds. So be careful in narrow passages and, particularly, when meeting other boats.

You must learn the rules of traffic on sea lanes and follow the international regulations on how to avoid collisions at sea, COLREG. Navigate with care and use new or updated nautical charts.

The running position of the boat greatly affects its handling characteristics and fuel consumption as well as visibility from the driver's position. You can affect the running position by:

- placing the load properly – the general rule being that you should place as little weight in the bow as possible; and
- adjusting the trim angle.

The combination of the right running position with the right speed also makes driving in rough seas safer and more comfortable.

**WARNING!**

A high speed and sudden manoeuvring in rough seas can lead to loss of control over the boat and large heeling angles.

**NOTE!**

The boat is not designed to jump waves. The warranty does not cover damage caused by flight. It is possible to check whether the engine has been airborne from the engine history on the repair shop's computer.

### 5.9.8 Approaching and leaving the dock

Practise boat manoeuvring skills where there is ample space to learn how to approach a dock before entering a crowded marina.

A very gentle application of throttle does not generate sufficient steering power. Sharp but short throttle applications enable efficient steering movements when approaching the dock.

Ensure that everyone on board who does not have to stand up is seated when you are approaching the dock. Sudden steering movements may cause the boat to heel and injure somebody.

Before docking, prepare the mooring lines at stern and bow. Approach the dock bow first at a slight angle. Just before touching the dock, steer into it and shift into reverse. Apply throttle quickly and sharply. The boat will stop and turn parallel to the dock. If possible, make the approach into the wind or current, whichever is the strongest. This makes departing easier, as the wind or current will push the bow out from the dock. The easiest

way to depart is to first push the stern as far away from the dock as possible, and then slowly reverse away from the dock into open water.

The propeller is designed to have the best grip in forward gear. Therefore, propeller performance is weaker in reverse. The steering response is also not as good in reverse as in forward gear.

**WARNING!** The boat is fast. If you are planing, it takes time to come to a stop. Slowdown in time before anchoring, beaching or docking. Learn to estimate the distance the boat needs to stop. Remember that steering control is poor if there is no traction.

**WARNING!** Do not try to stop the boat with your hands, and do not put your arm or foot between the boat and the dock, the shore or another vessel! Practise beaching and docking under favourable conditions! Use moderate but firm engine power!

**NOTE!** When securing your boat, take into consideration the possibility of changes in wind direction, rising or sinking of the water level, bow wakes, etc. You can get more information from your insurance company, for example.

### 5.9.9 Using the canopy

The canopy is designed to withstand a maximum speed of 30 knots at sea, and 50 km/h in road transport. All press studs must be properly fastened when using the canopy. The canopy's design allows raising just the front part. We recommend that you remove the sides and back of the canopy to make it fit into the canopy box more easily. Then, fold the upper parts of the sides entirely on top of the roof, so that no fabric remains where the corners of the canopy supports are. Finally, roll up the roof part along with the sides folded on top of it, and lower the canopy into the canopy box.

**NOTE!** The boat should not be driven in rain with the canopy down. The equipment in the open deck space is not water-tight and must be protected from the rain.

**NOTE!** The windscreen and canopy do not necessarily form a watertight seal.  
Water may enter the boat between the canopy and windshield when the canopy is up.

### 5.9.10 Windshield door

The windshield door must always be kept shut and locked when the boat is moving. The door has not been designed to be used as a railing when getting in or out of the boat.

**WARNING!** The door must be kept closed in rough seas or strong or gusty winds, since it may slam shut. The door is heavy and may cause injury if it strikes someone when slamming shut.

**WARNING!** Large waves or gusts of wind may slam the door shut also when the boat is stationary. It is thus recommended to always keep the door closed when the passage through the bow deck is not being used.

## 5.10 Proper use – other recommendations and guidelines

### 5.10.1 Man overboard

It is always a serious situation when someone falls overboard. Rescue procedures should be practised in advance during good weather, because it is too late for practice when someone has actually fallen into the water.

It is always easiest to help a person climb back on board at the stern of the boat. A rope loop attached to the boat helps lifting. The boat's swim ladder extends 30 cm into the water. If a child has fallen overboard, an adult carrying an extra life-saving device or a fender must always jump in after the child; however, someone must always remain on board the boat.

It is very important to maintain visual and verbal contact with a person that has fallen overboard.

**DANGER!** A rotating propeller presents a life-threatening danger to a swimmer or a person who has fallen overboard. Always use the emergency switch to turn off the engine when a swimmer or water skier is about to re-enter the boat from the water.

Potential life-raft, the recommended location is under the back seat.

### 5.10.2 Securing loose equipment

Stow all heavy equipment, such as anchors, and secure them firmly before setting off.

### 5.10.3 Respect for the environment

Conservation of the environment is a matter of honour for every boater. Therefore, you should avoid:

- fuel and oil leaks;
- emptying rubbish and waste into the water or on the shore;
- letting detergents or solvents get into the water;

- loud noise both on the water and at the marina; and
- producing an unnecessarily high bow wake, especially in narrow passages and shallow waters.

Service the engine well and run it at the most economical speed, which will also keep exhaust emissions low.

Please also consider other local environmental legislation and regulations. In Finland, under 'everyman's right' anyone may move around on private land, except in the vicinity of residential buildings, as long as they cause no damage or inconvenience. 'Everyman's right' also allows movement and temporary anchorages on privately owned waters, swimming and going on shore at uninhabited locations, unless landing is specifically prohibited by a notice from the authorities. It is not allowed to anchor next to a shoreline where there are one or more residences. Docking at a private dock owned by someone else or landing on a shore where there are residences is also not allowed without permission.

Please make sure to familiarise yourself with the International Convention for the Prevention of Pollution From Ships (MARPOL) and respect it to the greatest possible extent.

It is allowed to camp out on islands as long as no damage is caused to the landowner. It is not allowed to camp out next to residential buildings or in or near cultivated fields. You may not light a campfire unless you have the landowner's permission. Everyman's right allows the picking of naturally growing berries and mushrooms without damaging trees or the environment in general. Please check the regulations concerning movement in the natural environment in your area.

#### 5.10.4 Anchoring and mooring the boat

Always moor your boat carefully, even in sheltered places, because conditions can change rapidly. Mooring lines should be equipped with absorbers to dampen any jolts. Please refer to the section Towing for the location of bollards. To prevent abrasion, use fenders that are large enough.

The forward endurance of the bow bollards is at least 23 kN, or c. 2,300 kg. The backward endurance of the stern bollards is at least 16.0 kN, or c. 1,600 kg.

The minimum anchor weight for the boat is 5 kg. Drop anchor far enough from shore. A reasonable grip is attained if the anchor line length is 4–5 times the water depth.

#### **WARNING!**

Do not try to stop the boat with your hands, and do not put your arm or foot between the boat and the dock, the shore or another vessel!

#### **NOTE!**

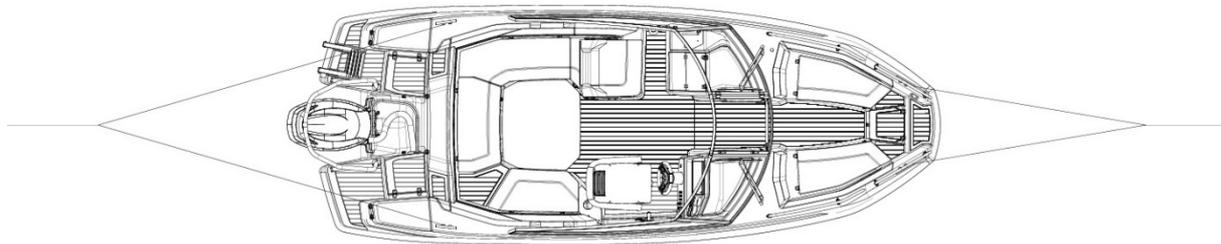
When securing your boat, take into consideration the possibility of changes in wind direction, rising or sinking of the water level, bow wakes, etc. You can get more information from your insurance company, for example.

### 5.10.5 Towing

When towing another boat, use a floating line that is strong enough for the task. Begin towing slowly, avoid jerks, and do not overload the engine.

The owner of the boat should consider the measures necessary for securing the boat's towrope.

If you are towing, or if your boat has to be towed, attach the towline to the bow or stern bollards as per the following image

**WARNING!**

When towing, the towline is under high tension. If it should break, the end that snaps off may lash back fast enough to cause serious injury or death. Always use a thick enough line and keep to one side of the towline.

**NOTE!**

When towing another boat or being towed, always drive at low speed. If the boat has a displacement hull, never exceed hull speed while towing.

**NOTE!**

The towline should always be fastened so that it can be unfastened under load.

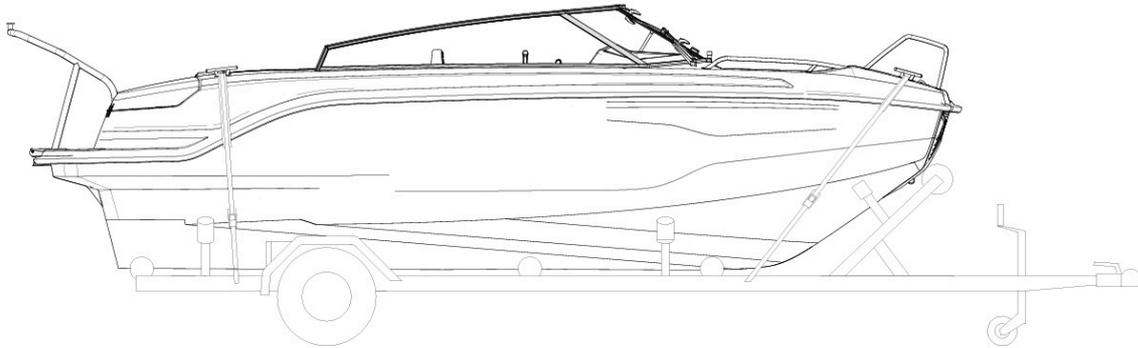
### 5.10.6 Trailer transport

Weight data for trailer transport may be found in the technical specifications. The trailer's keel supports should bear most of the weight of the boat. Adjust the side supports so that the boat will not rock sideways. For more information, please turn to your dealer.

Clean the supports of sand and dirt so that they will not scratch the bottom of the boat. Double-check that the trailer is securely coupled to the trailer tow hitch!

The place for lifting the boat out of the water should be sheltered, and the ramp should extend deep enough into the water. Reverse the trailer so deep into the water that the rearmost keel support is just above the water. Drive the boat carefully towards the rearmost keel support. Fasten the hoist cable to the towing eye and

reel the boat up onto the trailer, making sure that the boat remains straight on the trailer's centre line. Remember to trim up the engine before reeling the boat onto the trailer so that it will not hit the bottom.



Picture: Securing the boat to the trailer

Tie the boat properly before beginning transport. The sling ropes at the bow should be directed down and back, and the sling ropes at stern should be directed down and front. Do not leave any loose equipment or extra load on the boat when it is being transported. Remove the seat cushions and close all hatches properly.

The engine should be in the driving position during transport. However, ensure that there remains adequate clearance. If the clearance is not sufficient in this position, you can transport the engine raised. In this case, the engine must be supported with a suitable support to protect the transom.

If the boat is kept on the trailer between transports, you must loosen the sling ropes for the duration and tighten them before the next transport.

**NOTE!**

The trailer should be slightly front-weighted. Make sure that the boat is fastened tight enough to the trailer and that the weight of the boat is divided equally between side supports. If the boat swings against a side support during transport, it may sustain hull damage.

When letting the boat down from the trailer, remember to fasten the bow rope to the boat beforehand so that you can release the cable/rope from the trailer hook as soon as the boat is in the water. Be careful with the winch handle!

### 5.10.7 Docking

The storage cradle should be sufficiently steady and suitable for this particular boat and engine combination. A sturdy plank (2x4"), should be placed between the "V" trestles to

support the keel and to bear most of the weight of the boat. The boat must not rest on the side supports. The side supports should not be placed at the corners on the bottom, and point loads should be avoided. The supporting structures should be strong, particularly near the transom, to support the added weight of the engine.

Only use reputable lifting companies or boat yards with sufficient lifting capacity. In addition to the boat's tare weight (please refer to the technical specification), also take into consideration accessories and other possible loads in the boat.

When the boat is being lifted, the lines must be placed under the boat and the boat must remain horizontal during lifting.

**NOTE!** Do not lift the boat by its bollards.

**DANGER!** Never stand under a boat that is suspended from a crane.

## 6 Servicing and maintenance

Keep your boat and its equipment clean and tidy. This increases comfort and safety on board, and also the boat's resale value.

Familiarise yourself with the service procedures shown in the engine manual (see annex). Have your engine serviced according to the instructions in the manual.

### 6.1 Washing and waxing the boat

Normally it is sufficient to just wash and wax the deck and sides. Special boat cleaning agents are most suitable for the purpose. Use mild detergents. Do not use strong solvents (pH value must not exceed 11); they can cause glossy reinforced plastic surfaces to fade. Mildly abrasive polishes can be used to remove chafes and embedded dirt from the deck. Fibre glass surfaces can be washed with a pressure washer.

Useful tip: When the boat has been washed with tap water, a thin chalk-like layer of lime and minerals will remain on the boat's surface after it has dried. The problem can be eliminated by adding a few drops of pine oil soap into a bucket of rinsing water, which will soften it.

Useful tip: Water and lime stains on stainless steel rails can be removed using Lemon Pled furniture spray. Your railings will shine like the day they came off the assembly line.

Useful tip: If the boat's ropes smell bad after the season, immerse them for a couple of hours in a bucket of water with a bottle of apple vinegar and a splash of fabric conditioner added. Allow the lines to dry properly, and they will be as good as new.

## 6.2 Care instructions for seat cushions

Always use the canopy or harbour cover when it is raining to protect the open deck space and seat cushions. Although the seat cushions are made of water-resistant material, water can get in through their seams. If the cushions remain damp for any length of time, they may get mouldy and be ruined. If the mattresses get wet, the fabric can be removed by unzipping the mattress and dried in the sun, at room temperature or in a sauna (50°C). The warranty does not cover cushions spoilt by rain or damp.

**NOTE!** To keep the boat's seat cushions in good condition over the winter, they should be stored in a dry, well-ventilated space.

**NOTE!** Wet cushions should not be placed in storage, because they gather mould easily.

The press studs of the seat cushions should be sprayed with silicon spray every now and then, otherwise they may become so tight that the fabric will tear when trying to open them. The warranty does not cover ripped seat cushions. Use very little silicon spray at a time in order not to stain the cushions.

## 6.3 Care instructions for the canopy

Store the canopy over winter in a dry and well-ventilated place. The warranty does not cover torn or mouldy canopies.

## 6.4 Care instructions for the windshield

The boat's windscreen is made of tempered glass and can be cleaned with ordinary glass cleaners.

Useful tip: When wiping the boat's windshield dry after cleaning, avoid using circular motions. This can leave circular smudges on the windshield that become visible in sunlight, impeding visibility. Wipe off any streaks with dry newspaper or cotton cloth using first horizontal, then vertical motions. Repeat this a few times and you'll bring the windshield to a brilliant shine.

## 6.5 Care instructions for the stainless-steel components

To keep the boat's stainless-steel parts, such as rails, handles and bollards, shining as good as new, you should keep the parts clean and waxed. The edges of the mounting flanges of the rails should also be cleaned. Any dirt that remains under the edge of the flange will begin to look like rust. In regular use (i.e. no damage), the parts should be cleaned and waxed at

least twice every summer. Rail maintenance should also be performed when the boat is put into winter storage.

## 6.6 Care instructions for the steering system

The hydraulic steering does not require maintenance under normal circumstances. If the steering starts to feel loose, there is a leak somewhere in the system. Leaks must be repaired immediately!

**WARNING!** A hydraulic steering system that has a leak or trapped air in the hoses is extremely dangerous.

## 6.7 Care instructions for electrical components

Electrical components like main switches, other switches and couplings do not normally need to be serviced if the boat is stored in a dry and well-ventilated place for the winter. If, however, you wish to protect electrical components against oxidation, the best way to do it is by spraying them every now and then with a moisture repellent antioxidant.

## 6.8 Minor superficial repairs

You can repair minor surface damage to the boat's hull or deck yourself. However, achieving a neat, unnoticeable repair requires a considerable amount of skill:

1. Protect the area around the damage with tape.
2. Bevel the edges of the damaged area and clean with acetone.
3. If the damage is deeper than 2 mm, it is advisable to smooth it with an appropriate polyfiller before painting.
4. Mix topcoat with 1.5-2 % hardener.
5. Fill the repair with more topcoat than needed, so that its surface remains slightly proud of the surrounding area.
6. Carefully put tape over the repair.
7. After the topcoat has hardened, remove the tape and sand the repair using 600 and 1200 paper applying water.
8. Buff using abrasive paste and wax.

The colours used on this boat are specified in the *technical specifications*. One point to consider is that a paint called *gelcoat* has been used in manufacturing the boat, but the surface is always repaired with a paint called *topcoat*. Gelcoat paint does not harden without a mould surface, whereas paraffin has been added to topcoat to allow it to harden.

**NOTE!** Some post-delivery installations and alteration work may cause damage to the structure of the boat or impair safety if not performed correctly. Please contact the dealer if you are planning any modifications.

## 7 Winter storage

Preparing your boat for winter storage is an annual routine. Have your boat lifted in good time before the water freezes. Your boat is not designed for use in ice, and it is not meant to be used in temperatures below zero (for example, the rainwater drainage system will freeze up). It is advisable to perform all maintenance, repair, and inspection procedures in connection with placing the boat in winter storage.

Familiarise yourself with the service procedures shown in the engine manual. We recommend that you leave them to an authorised service agent. Do not forget to service the remote control and steering system. Make sure to perform their maintenance according to their separate instructions and manuals.

### 7.1 Measures before winter storage

Wash the bottom of the boat immediately after the boat has been lifted. Algae and slime will come off easier if they are not left to dry. Empty the engine of its cooling water according to the manual.

Give the engine and other equipment their winter servicing, following their separate manuals. If your boat is stored outside or in a humid place over the winter, empty it of textiles and other equipment that may corrode or become mouldy in damp conditions. Wash the ropes in fresh water. Replace any worn ropes. Leave through fitting valves open. Remove the drain plug for the winter.

Empty the septic tank and the freshwater tank of the boat. Pour two litres of a mixture that contains 50 % ethylene glycol and 50 % water into the toilet and press the flush button for about two seconds.

Check the condition of the hull and rub down any scrapes to let possible moisture inside the laminate dry. Repair any damage in the spring before launching the boat.

Remove all food from the boat and wipe all the surfaces on which food has been handled with a disinfectant. This will prevent the formation of mould.

Always cover your boat so that snow cannot gather inside. Always make sure, however, that it is adequately ventilated. A winter storage cover is available as an optional accessory for your boat.

### 7.2 Measures before launching the boat

Repair any damage to the gelcoat surface according to section 6.10.

In sea areas, antifouling paint should be used to prevent the hull from becoming covered with vegetation. Fouling of the bottom and especially the propeller increases fuel consumption significantly. However, if the boat is anchored at the inlet of a stream or in a

land-locked lake, or if it is lifted out of the water at least once every two weeks, it is normally not necessary to use antifouling paint. Carefully follow the paint manufacturer's instructions when applying the paint. When sanding old antifouling paint, remember that the dust is toxic.

Antifouling paint is not necessary in fresh water (lake areas). We nevertheless recommend using an epoxy primer if the boat will be in the water for several months each year. Fresh water, and warm fresh water in particular, is more readily absorbed by the laminate than sea water.

**NOTE!** Do not paint over the zinc anodes or the piston rods of hydraulic trim tabs. Do not apply paints containing copper on aluminium parts. Remember to follow the paint manufacturer's instructions.

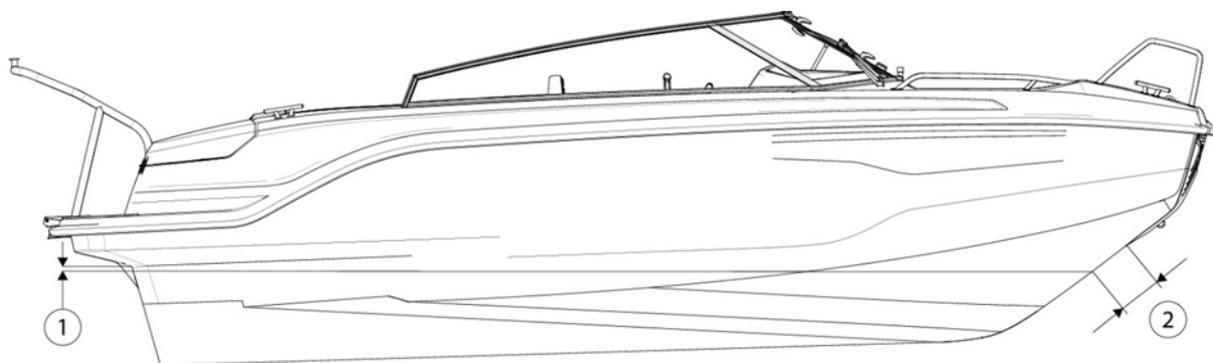
Useful tip: Do not throw away a used paint brush. A dried and hardened paint brush that has been used for antifouling paint can be reused if you first soak it for a couple of hours in a mix of 2 litres of hot water, 100 ml of vinegar, and 50 ml of baking powder.

Perform the necessary service procedures required for the engine according to the engine manual. Check the functioning of electric equipment and remove any oxidation from fuse connectors etc.

Remember that petrol goes stale over time, and you must always start the engine with fresh petrol in the spring.

When the boat has been launched you should open all valves in the through fittings (bushings) and check to ensure that there are no leaking hoses or connectors. The locations of through fittings are shown in section 5. Bring your safety equipment back on board before setting out.

### 7.2.1 Antifouling



Picture: Antifouling top line

**Antifouling top line with Honda 100 hp / 166 kg engine**

- (1) Aft corner: 190 mm from the bottom of the swim platform straight down
- (2) Bow: 280 mm downwards from the bottom of the bumper, along the bow rail

**Antifouling top line with Honda 115 hp/217 kg engine**

- (1) Aft corner: 150 mm from the bottom of the swim platform straight down
- (2) Bow: 300 mm downwards from the bottom of the bumper, along the bow rail

**NOTE!**

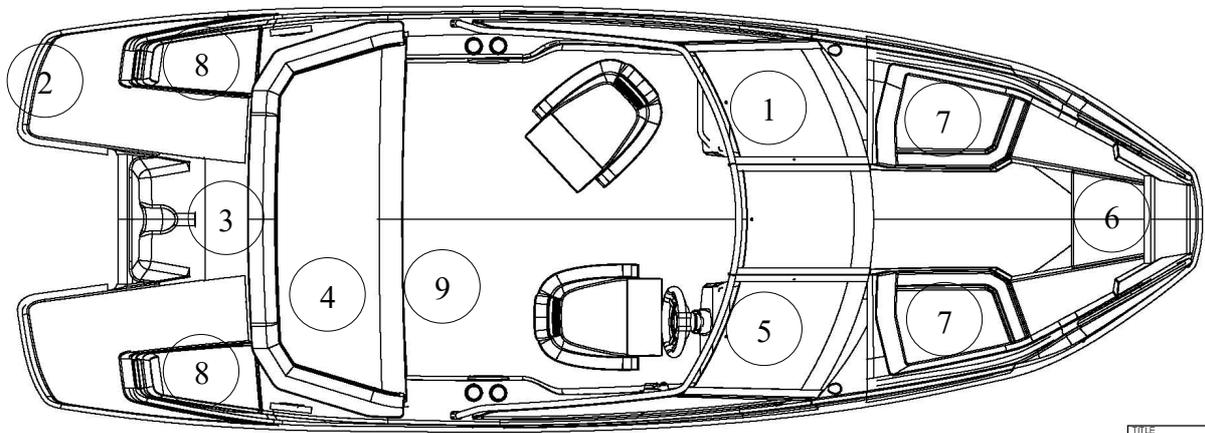
The dimensions are the antifouling paint line, not the actual waterline of the boat. (Waterline about 20 mm lower with Honda 100 hp.)

**NOTE!**

Do not paint the zinc anodes or the piston rods of the hydraulic cylinders of the engine plunger or trim levels. Follow the instructions of the paint manufacturer.

## 8 Layout

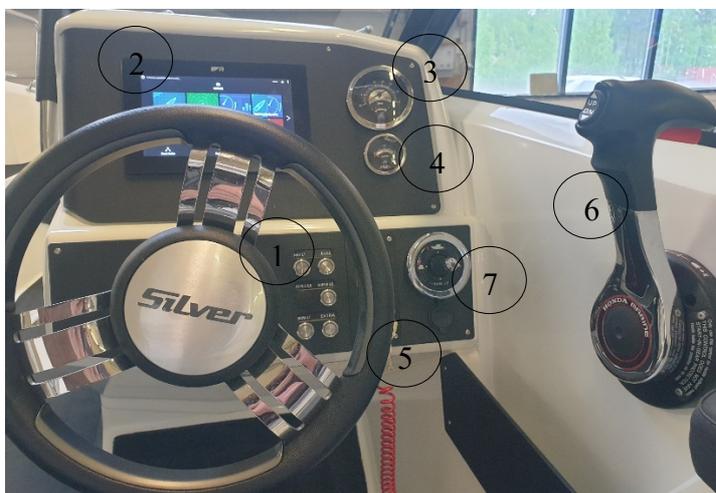
### 8.1 General lay-out



1. 2 kg fire extinguisher in the glove compartment in front of the co-driver
2. Swim ladder
3. Fuel deck fill and tank ventilation
4. Storage space under the aft seat:
  - Self-relieving shut-off valve (see section 5.6)
  - bilge pump
  - fuel filter
  - main power switch, 12 V outlet and fuses
  - canopy storage space
5. Steering position
6. Storage space for ropes
7. Storage spaces
8. Fender / rope storage
9. Self-draining outlet hole



(1.) 2 kg fire extinguisher



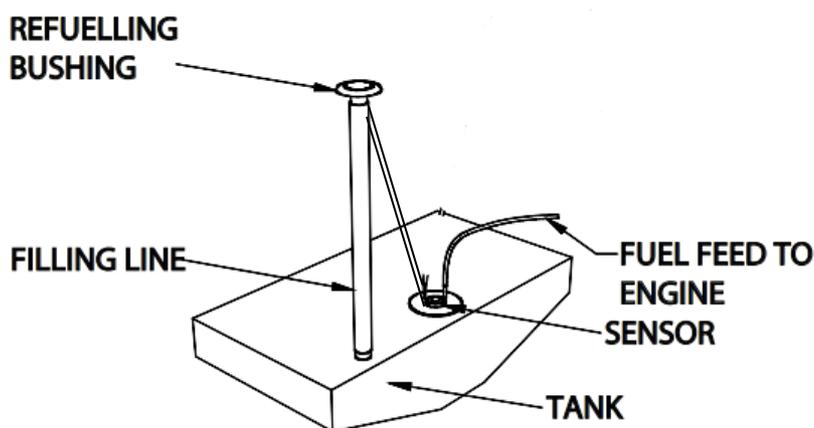
1. Circuit breakers:
  - Navigation lights
  - Bilge pump
  - Windscreen wiper left (optional)
  - Windscreen wiper right (optional)
  - Extra
2. Chart plotter
3. RPM and trim angle
4. Fuel gauge
5. Power lock and kill switch
6. Remote control (gear, throttle and trim switch)
7. Trim flap control (optional)

**WARNING!** Handle boat hatches with care. Be careful not to get your finger or toe caught in the hatch when closing it.

**WARNING!** It is not recommended that children use the rear storage compartment hatch cover alone due to its large size, weight and wind area. The tailgate lid should never be left in the open position without adult supervision. Wind or waves may affect the ability of the hatch to remain open, especially if the thrust of the gas springs has deteriorated over time. Replace the gas springs if necessary.

## 8.1 Fuel system

Tank diagram



The boat is equipped with a built-in fuel tank. A fuel filter is installed in the fuel line, also functioning as a water separator. The filter must be changed at least once a year. When a new or removed filter has been mounted, the fuel line must be filled with a ball pump before starting the engine.

**NOTE!** The condition of the fuel hoses must be inspected annually, and every effort should be made to prevent damage to them. Damaged fuel hoses must be replaced. If you replace fuel hoses, make sure the new hoses have an ISO 7840 label.

The refill cap is situated under the anchor box hatch on the starboard (right) side in the stern.

The cap of the fuel tank contains the text GAS, PETROL or FUEL, which refers to petrol 95E or 98E (recommendation).

## 8.2 Steering system

The boat is equipped with hydraulic steering. With hydraulic steering, the steering wheel's position changes constantly, which is why the boat is equipped with a symmetrical steering wheel.

The hydraulic steering does not require maintenance under normal circumstances. If the steering starts to feel loose, there is a leak somewhere in the system. Leaks must be repaired immediately!

**NOTE!** If you replace any component in the steering system, please note that all components must conform to the ISO 10592 standard and bear the CE mark.

**WARNING!** A hydraulic steering system that has a leak or trapped air in the hoses is extremely dangerous.

## 8.3 Electrical system

The electrical system includes the following main components:

1. Battery
2. Wire harness
3. Main power panel with main circuit breaker and fuses
4. Circuit breakers on dashboard
5. 2 x 12 V outlets
6. 1 USB outlet for My Silver 4G module on the main power panel
7. Navigation lights
8. 2 windscreen wipers (optional: right and left)
9. Trim flaps (optional)
10. Blue tooth speaker (optional)

In addition, the boat's electrical system also includes the engine, which acts as both a power source and a consumer.

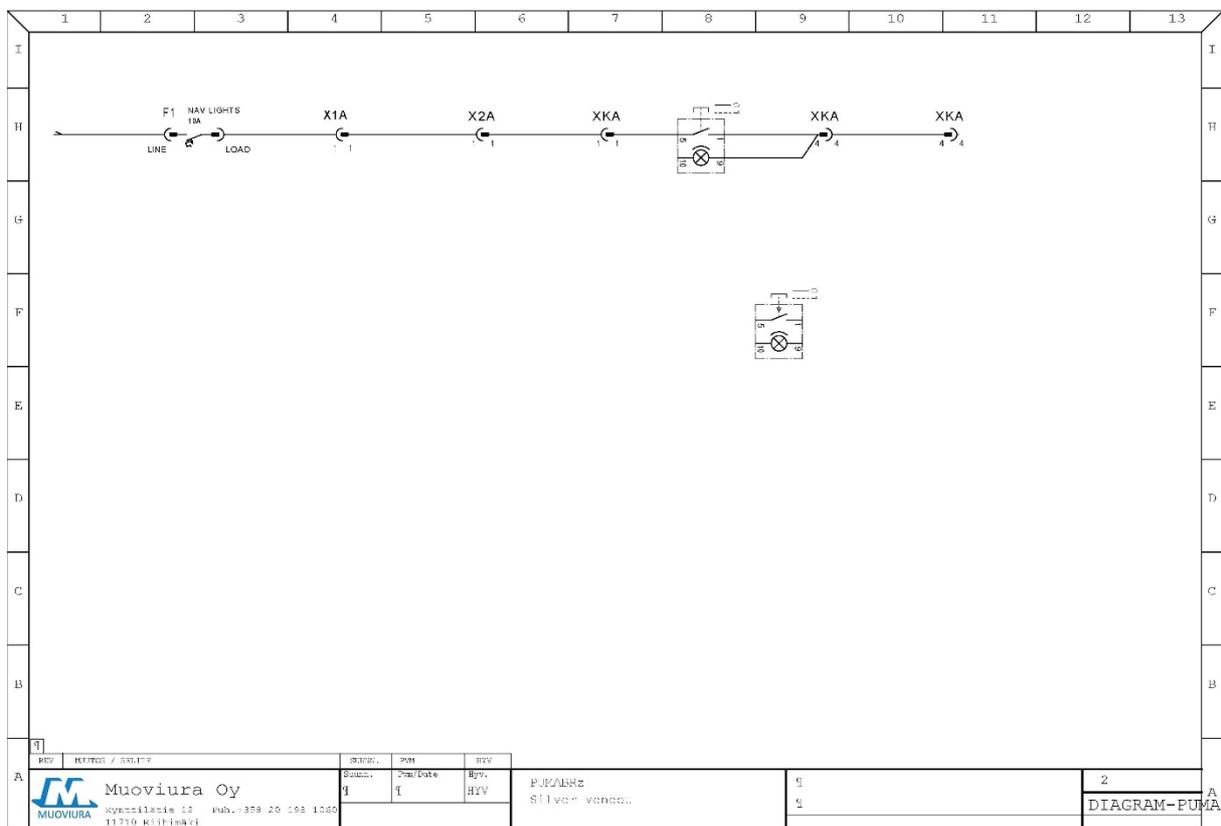
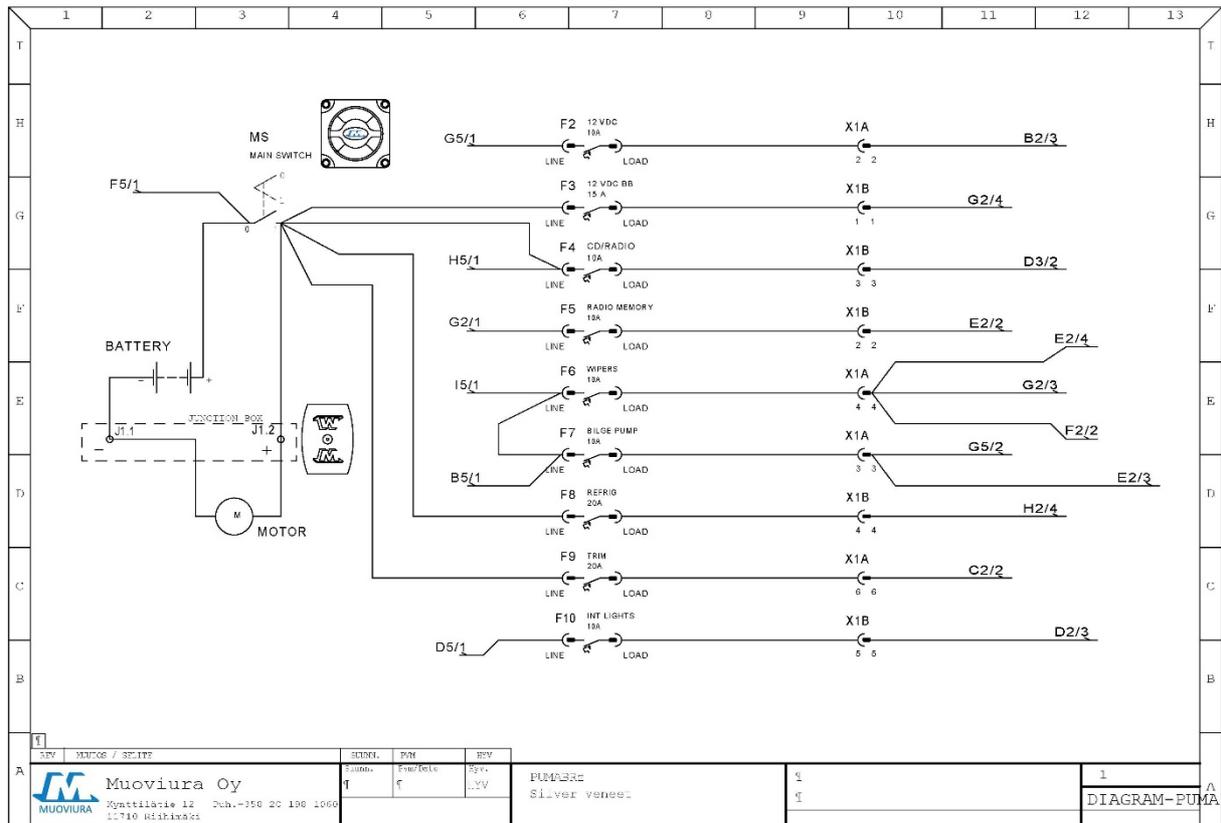
When removing or attaching the battery, be careful not to touch both terminals of the battery with a metal object at the same time.

Charge batteries only with a charger suitable for charging them.

Do not modify the boat's electrical system or related drawings; modifications and maintenance should be left to a professional.

**NOTE!** The main circuit breaker must not be turned OFF if the engine is running as this may destroy the engine's electrical system.

## 8.4 Wiring diagrams



***Silver***<sup>®</sup>  
**TIGER**

**Silver Tiger Bowrider**

**Owner's manual**

## **FOREWORD**

Congratulations on choosing a Silver Boat!

This manual will familiarise you with the features of your new vessel and help with its care and maintenance. It has been written to help you learn to handle your craft safely and avoid any problems. Make sure that you have received manuals for all equipment fitted on your boat. Supplement this manual with the specifications and manuals of equipment you purchase later for your boat. Space has been left for your own notes at the end of the manual. Please read this manual carefully and familiarise yourself with the craft before using it.

If this is your first craft, or you are changing to a type of craft you are not familiar with, please ensure that you obtain sufficient handling and operating experience before assuming command of the craft. This is highly important for your own comfort and safety. Your dealer or national sailing association or yacht club will be happy to advise you of local boating schools or competent instructors.

This owner's manual is not a detailed maintenance or troubleshooting guide. In case of difficulty please contact the dealer. Always use qualified and competent people for the maintenance, repair and modification of the boat. Modifications that may affect the safety characteristics of the craft must be assessed, executed and documented by competent people. The manufacturer is not responsible for modifications they have not approved.

Always keep your boat in a good condition and be aware that the boat requires maintenance and servicing. Any craft, no matter how strong it may be, can be severely damaged if not used properly. Always adjust the speed and direction of the craft to prevailing weather conditions.

**We wish you enjoyable and relaxing times on board your Tiger Bowrider**

Oy Brandt Ab  
Tuupakantie 7 B  
01740 VANTAA  
Finland

[info@brandt.fi](mailto:info@brandt.fi)  
[www.silverboats.com](http://www.silverboats.com)

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

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## BEFORE YOU SET OFF

Familiarise yourself with this owner's manual.

Always check at least the following before leaving:

- **Weather conditions and forecast**  
Take the wind, waves and visibility into account. Are the design category, size and equipment of your boat, as well as the skills of the skipper and crew, adequate for the waters you are headed for? Hull windows and hatches must be battened down during high wind and rough seas to prevent water incursion.
- **Loading and stability**  
Do not overload the craft and distribute loads appropriately. Heavy items are to be placed in the storage compartments under the aft seat. Also note that the boat is less stable if people stand up when on board.
- **Passengers**  
Ensure that there are personal flotation devices or lifejackets for all people on board. Agree on crew tasks before setting off.
- **Fuel and fuel system**  
Make sure that the boat has enough fuel, including a 20 % reserve for heavy weather or other unforeseen eventualities.
- **Engine and manoeuvring equipment**  
Check the function and condition of steering and remote control and carry out routine checks according to the engine manual.
- **Seaworthiness**  
Check the boat's seaworthiness: no fuel or water leaks, safety equipment available on board, etc. Check that there is no water in the bilge.
- **Fastening of equipment**  
Check that all onboard items are positioned so that they will stay in place even in rough seas and high winds. Please note that the seat cushions may fly overboard if they are not fixed properly with press studs.
- **Nautical charts**  
Unless you are navigating in completely familiar waters, ensure you have nautical charts on board that cover a large enough area! Your boat is equipped with a chart plotter, so learn how to use it before setting off. Ensure that the plotter charts are of the latest edition.
- **Leaving the berth**  
Agree with the crew who will release each mooring line, etc. Be careful not to let mooring lines or the anchoring line become fouled in the propeller during manoeuvring.
- **Obligatory equipment**  
What is considered obligatory equipment varies between different countries. Find out what is required for your boat.

**You will find additional instructions concerning the engine in the separate engine manual.**

# 1 General

The owner's manual will help you familiarise yourself with the properties and features of your new boat and with its care and maintenance. Separate manuals for installed equipment are attached and are referred to in many sections of the owner's manual. You can supplement this user manual by adding the manuals of devices which are installed afterwards. There is also space for your own notes at the end of the manual.

The craft has a running serial number, a WIN-code (Watercraft Identification Number). The WIN-code can be found on the starboard side of the transom just below the bathing platform. We recommend that you write down the WIN-code in this manual. When contacting the dealer, please provide the WIN code and the type of craft. This helps in delivering the correct spare parts.

## 1.1 DECLARATION OF CONFORMITY

### Recreational Craft Directive 2013/53/EC

**Manufacturer:** Fenix Marin Oy

**Module used:** B, EC Type-examination

---

#### THIS DECLARATION IS PREPARED BY

**Marketer:** TerhiTec Oy /Oy Brandt Ab

**Address:** Sorvitie 4

**Postal code:** 63700

**City:** Ähtäri

**Country: (code):** FIN

**(spelled out):** Finland

---

#### NOTIFIED BODY

**Name:** Eurofins Expert Services

**ID number:** no. 0537

**Address:** Post Box 47

**Postal code:** 02151

**City:** Espoo

**Country (code):** FIN

**(spelled out):** Finland

**EC type examination certificate:**

EUFI 29-190005156

---

#### DESCRIPTION OF THE RECREATIONAL CRAFT

**Brand name of the recreational craft**

Silver

**Model or number**

Tiger Bowrider

**Design category**

C

<b>Boat type*</b>	<b>03</b>
<b>Hull type*</b>	<b>01</b>
<b>Deck*</b>	<b>03</b>
<b>Construction material*</b>	<b>02</b>
<b>Propulsion*</b>	<b>02</b>
<b>Engine type*</b>	<b>01</b>
<b>Maximum permitted engine power (kW)</b>	<b>111</b>
<b>Length and width of hull (m)</b>	<b>6.06 / 2.36</b>
<b>Draught (m)</b>	<b>0,4</b>

\* Please refer to codes on next page

*I declare under my own and sole responsibility that the recreational craft mentioned above complies with all applicable essential requirements as specified on the following page.*

**Vantaa, 1<sup>st</sup> of November 2019**

**Peter Krusberg**  
**Product Development Manager, Silver Boats, Z- series**

<b>Boat type:</b>	<b>Deck:</b>
01 sailboat	01 decked
02 inflatable	02 partly decked
03 other: motorboat	03 open:
<b>Hull type:</b>	<b>Propulsion:</b>
01 monohull	01 sails
02 multihull	02 petrol engine
03 other:	03 diesel engine
	04 electrical motor
	05 oars
	06 other:
<b>Construction material:</b>	<b>Engine type:</b>
01 aluminum, aluminum alloys	01 outboard
02 plastic, fibre reinforced plastic	02 inboard
03 steel, steel alloys	03 z or sterndrive
04 wood	04 other:
05 other:	

	<b>General requirements</b>	
	Basic information	EN ISO 8666:2002
A2.1	Vessel identification	ISO 10087:2006
A2.2	Builder's plate	RCD annex I, 2.2
A2.5	Owner's manual	EN ISO 10240:2004
	<b>Arrangements and equipment</b>	
A2.3	Protection from falling overboard	EN ISO 15085:2003 / A1:2009
A3.7	Storage of life rafts	RSG Guidelines
A3.8	Exit	EN ISO 9094-1:2003
A3.9	Anchoring, mooring and towing	EN ISO 15084:2003
A5.7	Navigation lights, shapes and sound signals	1972 COLREG
A5.8	Discharge prevention	EN ISO 8099:2000
	<b>Installation requirements</b>	
A5.1	Engines and engine spaces	
A5.2	Fuel system	EN ISO 10088:2013, EN ISO 11105:1997
A5.3	Electrical system	EN ISO 10133:2012, EN ISO 28846:1993/A1:2000
A5.4	Steering system	EN ISO 10592:1995 / A1:2000
A5.5	Gas system	EN ISO 10239:2014
A5.6	Fire protection	EN ISO 9094-1:2018
	<b>Dimensions</b>	
A3.1	Structure	EN ISO 12215-5:2008, EN ISO 12215-6:2008
	<b>Hydrostatics</b>	
A3.2	Stability and freeboard	EN ISO 12217-1:2015
A3.3	Carrying and floatation capacity	EN ISO 12217-1:2015
A3.6	Manufacturer's recommendation for the maximum load	EN ISO 14946:2001 / AC 2005
A3.4	Openings in hull, deck and superstructure	EN ISO 9093-1:1997, EN ISO 12216:2002
A3.5	Water incursion	EN ISO 15083:2003, ISO 8849:2003
	<b>Handling characteristics</b>	
A4	Handling characteristics	EN ISO 11592:2001, RSG Guidelines RFU 114, EN ISO 8665:2006
A2.4	Visibility from the principal steering station	EN ISO 11591:2011

## 2 Definitions

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

- DANGER!** Denotes an extreme hazard that will result in a high probability of death or permanent injury if proper precautions are not taken.
- WARNING!** Denotes a hazard that can result in injury or death if proper precautions are not taken.
- NOTE!** Denotes a reminder of safe practices or directs attention to unsafe practices which could result in personal injury or damage to the craft or components or the environment.

SI system units are used in this manual. In some cases, other units have been added in brackets. An exception is wind speed, for which the Beaufort scale is used in the Recreational Craft Directive.

## 3 Warranty

The boat and its factory-installed equipment have a two-year warranty, starting on the first day of use. Please contact your dealer regarding any potential warranty issues. Please remember to provide the WIN code. If possible, please provide a digital photograph of the subject of your claim. This usually speeds up the claims process.

## 4 Before use

### 4.1 Registration

Registration regulations vary between different countries. Find out what is required in relation to your own boat.

### 4.2 Insurance

Boat insurance can compensate damage occurring on water or during transport and lifting. Check who has insurance liability each time when having the boat lifted. Insurance also has an indirect effect on safety at sea: In the event of a serious accident or damage, you must, above all, concentrate on saving people. Insurance companies will be able to give more information about different insurance alternatives. Check who has insurance liability each time when having the boat lifted or transported!

## 5 Characteristics and use of your boat

### 5.1 General

This user manual is not intended to be a complete service or repair manual; it simply guides the user on how to use the boat in the proper manner.

### 5.2 Basic information

Recreational crafts can be constructed according to 4 categories (A, B, C and D) under the Recreational Craft Directive 2013/53/EC. This boat has been constructed according to design category C. The meanings of the various design categories are explained below.

**Category A:** The boat is built for conditions where wind speed can exceed 8 Beaufort (approx. 21 m/s), and where the significant height of the waves (please refer to note below) can exceed 4 metres. In such circumstances the boats are largely self-sufficient. Category A does not include abnormal conditions such as hurricanes. Such conditions may be encountered on extended voyages, for example when crossing oceans, or in coastal areas where there is an open expanse of sea for several hundred nautical miles off the coast.

**Category B:** The boat is built for conditions where wind speeds can reach a maximum of 8 Beaufort (approx. 21 m/s), and where the corresponding significant height of the waves (please refer to note below) is 4 metres at most. 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:** The boat is built for conditions where wind speeds can reach a maximum of 6 Beaufort (approx. 14 m/s), and where the corresponding significant height of the waves (please refer to note below) is 2 metres at most. Such conditions may be encountered on exposed inland waters, in estuaries, and in coastal waters in moderate weather conditions.

**Category D:** The boat is built for conditions where wind speeds can reach a maximum of 4 Beaufort (approx. 8 m/s), and for corresponding seas (significant wave height does not exceed 0.3 metres, and the height of the greatest waves does not exceed 0.5 metres). Such conditions may be encountered on protected inland waters, and in coastal areas during fine weather conditions.

**Note:** Significant wave height is a term used in boat design. In practice, significant wave height means the average height of the highest third of all wave heights measured in the waters. If the significant wave height is 2.0 m, the mean height of all waves is roughly 1.2 m.

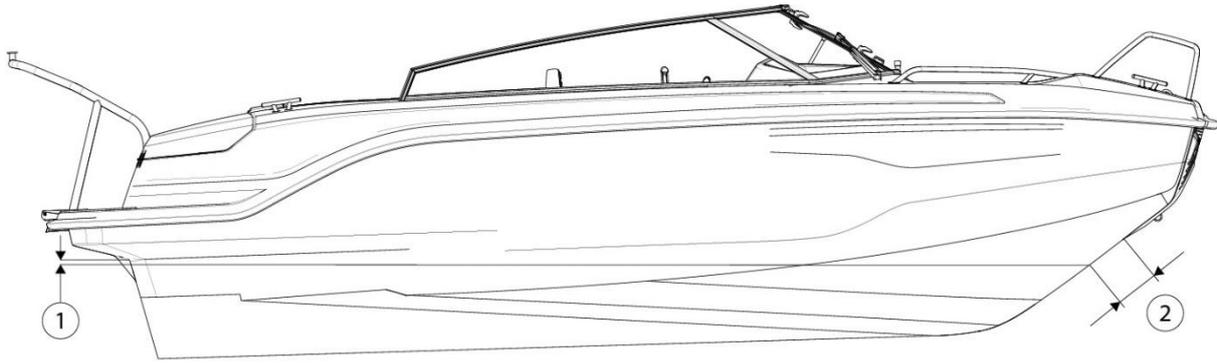
**Maximum recommended load:** See *technical specifications*  
See also section 5.4 “Loading”.

**Main dimensions and capacities:** See *technical specifications*  
Craft length, width, draught, total weight, etc., and tank capacities are shown in the technical specifications.

**Builder’s plate:**  
Part of the aforementioned information is given on the builder’s plate, which is affixed next to the remote control. Supplementary information is provided in the appropriate sections of this manual.

## Technical specifications

Model	SILVER TIGER BOWRIDER
Design category	C
Overall length (swim ladder not included)	6.06 m
Width	2.36 m
Weight without engine, fluids and equipment	approx. 1100 kg
Weight on trailer with largest recommended engine	approx. 1551 kg Includes the boat (approx. 1100 kg), outboard engine 150 hp (261 kg) and the estimated weight of fluids and equipment (190 kg). NOTE! This is not the maximum weight of fluids and equipment.
Weight on trailer with the largest engine that complies with the standard	approx. 1551 kg Includes the boat (approx. 1100 kg) and a 150 hp engine (261 kg) and the estimated weight of fluids and equipment (190 kg). NOTE! This is not the maximum weight of fluids and equipment.
Maximum weight of load / Maximum number of passengers	750 kg 8 persons
Maximum load includes	600 kg / 8 persons (75 kg each) + personal equipment 40 kg + fuel 80 kg + fresh water 30 kg as additional equipment
Maximum load on builder's plate (CE sign)	640 kg Includes passengers 8 x 75 kg = 600g + personal equipment 40 kg = a total of 640 kg
Weight at full load	3434 kg Includes the boat 1,100 kg + engine 261 kg + battery 20 kg + basic equipment 60 kg + personal equipment 40 kg + fuel 80 kg + water 30 kg + passengers 600 kg
Maximum engine power	111 kW / 150 hp
Weight of largest recommended engine	261 kg
Fuel tank capacity	107 litres
Maximum draught at full load, engine up	0.43 m
Maximum height from water line at light load	1.3 m
Construction material	Glass fibre reinforced polyester
Colour code:	RAL 9016
Hydraulic hoses	5.5 m
Maximum speed at boat test	approx. 40 knots

**Antifouling line:**

- No 1, stern      20 mm downwards from lower corner of bath platform
- No 2, bow      210 mm downwards along the bow from lower edge of bumper

**NOTE!**

The measurements indicate the upper limit of antifouling **paint**, **not the boat's water line.**

### 5.3 Maximum recommend number of passengers

The boat's maximum recommended number of passengers is 8 persons.

**WARNING!**

Do not exceed the maximum recommended number of passengers. Regardless of the number of passengers, the total weight of people and equipment must never exceed the maximum recommended load (please refer to Section 5.4, "Loading"). Always remain seated on the boat. All persons on board must remain seated while the boat is moving.

### 5.4 Loading

The boat's maximum permitted load is 750 kg. This load includes the following weights:

- a) The total weight of passengers 600 kg (the default weight of an adult is assumed to be 75 kg and that of a child 37.5 kg)
- b) Liquids 110 kg (fuel 80 kg and fresh water 30 kg)
- c) Personal equipment (e.g. recreational and overnighting equipment) 40 kg

**NOTE!**

The maximum permitted load only includes the weights mentioned above.

**WARNING!**

**Never exceed the maximum recommended load when loading the craft.** Always load the craft carefully and distribute loads appropriately so that the boat is on an even keel. Heavy equipment should usually be placed in the storage compartment under the aft seat. If the boat is carrying the maximum number of passengers, heavy items should be placed in the bow so that the boat will not be tail-heavy. Always avoid placing heavy items high up.

## 5.5 Engine and propeller

The maximum engine power for the boat is 150 hp (111 kW). Do not use the boat with an engine that has an output higher than the kW limit given on the CE plate (150 hp) . Using a more powerful engine than specified on the CE plate will void the boat's warranty. Follow the dealer's instructions when choosing the propeller for your boat.

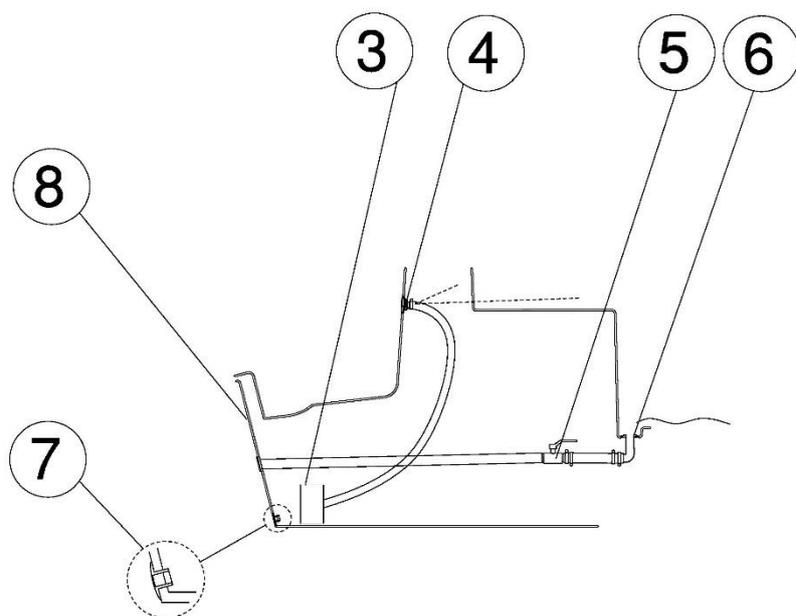
## 5.6 Prevention of water incursion and stability

### 5.6.1 Hull and deck through fittings and closing valves

The boat has a rainwater drainage system, which means that rainwater in the open space of the boat is drained when the boat is on the water. The system also functions when the boat is out of water, provided that the bow is higher than the stern and closing valve is open. The rainwater drainage valve is located underneath the middle hatch of the aft sofa. This drain valve is meant to be shut only when at heavy load to prevent potential water incursion. **In other loading conditions the drainage valve should remain open to let rainwater drain from the boat.**

The boat has an electric bilge pump in the bilge (location shown in the picture below). The function of the bilge pump is automatic meaning that it will automatically empty the bilge if there will appear water. The capacity of the electric bilge pump is about *40 l/min*. On the right hand of the steering wheel you find the manual switch to turn on the electric bilge for testing/checking the function. In the switch there is a light that will turn on if there is water in the bilge. If the light turns on you should immediately check the bilge by open the inspection hatch in the plywood bottom plate underneath the middle hatch in the aft sofa. If the bilge is empty you can continue boating but if the light turns on again and pump starts to empty the bilge you have to immediately drive to the shore and nearest harbour or landing-stage and thereafter lift up the boat from water to find out the reason to the leakage.

The electric bilge pump can be checked by removing the plywood plate underneath the middle hatch of the aft sofa. The pump can be lifted up by gripping the hose as it is only submerged in a kind of pocket.



Rainwater drainage system and bilge pump system

- |                                  |  |
|----------------------------------|--|
| 3. Electric bilge pump           | 6. Rainwater drainage through fitting      |
| 4. Bilge pump hose               | 7. Drain plug for bilge                    |
| 5. Rainwater drainage pipe valve | 8. Shut-off flap, aft end of drainage pipe |

The owner of the boat is responsible for ensuring that there is at least one baler or bucket in the boat.

**WARNING!** The bilge pump system is not intended to cope with a leak caused by running aground or other equivalent damage (hull damage).

**SAFETY MEASURE!** Regularly check to ensure that there is no debris around suction grid of the bilge pump.

**WARNING!** Always keep the drainage pipe valve shut when the pipe's inboard end is constantly under water due to heavy loading. The shut-off flap on the transom only prevents water from entering the boat when reversing!

**NOTE!** Make sure that water can flow unobstructed through the drainage pipe. Debris such as autumn leaves may obstruct the water flow, which can cause the boat to fill with water and sink. The bilge pump system does not work in conditions below 0°C.

**NOTE!** There is always some condensed water in the bilge. The hull bushings may also allow water to seep through, particularly as the boat ages. Always remember to check the bilge before you leave the boat at quay or buoy, and always before setting off. Have any leaks repaired at an authorised repair shop.

**WARNING!** The boat's handling properties may become extremely dangerous if there is water in the bilge.

## 5.6.2 Stability and buoyancy

Please note that stability will be reduced by any weight added high up on the boat. Any change in the distribution of weight on board may significantly affect the stability, trim and performance of your boat. Please remember that large breaking waves always present a serious danger to stability.

## 5.7 Preventing fires and explosion hazards

### 5.7.1 Refuelling

Shut off the engine and extinguish any cigarettes before starting to refuel. During refuelling, do not use switches or appliances that can cause a spark.

When refuelling at a service station, do not use a plastic funnel, since it will prevent the tension between the refuelling nozzle and filling vent from being discharged.

Hint: If you are afraid of getting fuel on the synthetic teak deck during refuelling, wet the deck with water. You can also hold a rag in front of the fuel filler to prevent fuel from splashing on the deck.

Always keep a spare can of fuel on board. The anchor boxes at the stern are especially suitable for storing the spare canister as there is no risk of vaporised fuel coming into contact with battery compartments or the electrical system from either of these boxes.

Do not stow any loose items under the aft sofa that could prevent fuel flow to the engine if they shift. Check the fuel hoses annually for wear, especially at through fittings.

Please note that, depending on the trim of the boat or the boat's heeling angle, it might not be possible to use the full capacity of the fuel tank.

If the boat is on trailer behind a car when refuelling, please note that the fuel tank ventilation does not work efficiently if the bow of the boat is downwards.

**WARNING!** Vaporised fuel is highly explosive. Observe these instructions and the utmost caution during refuelling. The smell of fuel always means that there is vaporised fuel on your boat.

### 5.7.2 Other fuel-operated systems (diesel heater optional accessory)

The diesel-operated heater (optional accessory) has its own user manual and the operation is not described in this manual. The fuel tank for the heater is located underneath the aft sofa. Turn off the heater when refuelling the diesel tank. When handling diesel, do not use switches or appliances that can cause a spark. Always clean any spilled fuel immediately.

**NOTE!** If the boat is equipped with a heater (optional accessory), do not block the exhaust grates when the heater is switched on. This will cause the heater to overheat and engage the overheat protector.

### 5.7.3 Fire protection

The boat is equipped with a portable 2 kg fire extinguisher class 8A 68 B, which is the minimum power requirement for extinguishers. For the extinguisher to remain reliable, it should be inspected annually by an authorised inspector. In the event that the fire extinguisher is replaced, the capacity of the new one must be at least equivalent to the old.

The fire extinguisher is located underneath the aft sofa hatch on port side.

Ensure that firefighting equipment is readily accessible even when the boat is loaded. Inform members of the crew about the location and operation of fire-fighting equipment. The fire extinguisher is located in the storage compartment of the aft sofa on port side (left-hand side) in the open deck space. There is a red extinguisher sign outside sofa showing the location of the extinguisher.

Remember:

- Never hinder access to safety equipment, for instance the switches to the electric system.
- Never hinder access to fire extinguishers located in a box.
- Never leave the boat unsupervised while the cooker or heater is on.
- Never make alterations to any of the boat's systems (especially the electricity or the fuel systems) or allow an unqualified person to make alterations to any of the boat's systems.
- Never refill a fuel tank when the boat's engine is running, or the cooker or heater is on.
- Never smoke while handling fuel or gas.

## 5.8 Main power switches and circuit breakers

Operation of the main power switch(es):

- Circuit switched ON when green colour
- Battery disconnected/OFF when red colour

If your boat is equipped with 2-battery-system switch the power off from both main switches when leaving the boat, and always switch both switches on when using it.



Electric circuit fuses are located to the left of main power switch(es). Fuse sizes are presented in the electrical diagram. Do not change the circuit breaker amperages or install any components that exceed the nominal amperage of the circuit in the electric system.

Remember to always use both main switches when switching the power off or on. Remember also to switch off the main power switch before making any electrical installations.

All fuses are automatic circuit breakers. In the event of a fault current, the circuit breaker will trip.

You can reset the circuit breaker by pushing it back in. If the circuit breaker immediately trips again, there is a short-circuit somewhere in the electrical system or in a component. You must leave repairing the boat's electrical system to a professional electrician.

**NOTE!** Remember also to switch off the main power switch before making any electrical installations.

**NOTE!** Never switch off the main switch while the engine is running! It can cause

serious damage to the engine's electric system.

**NOTE!** Do not perform electric installations (such as changing lamps) when the power is on. Leave any larger installations to professionals.

**NOTE!** When connecting or disconnecting the battery, do not touch both terminals simultaneously with metal objects.

## 5.9 Operation

If this is your first boat or a boat type new to you, take someone with experience of a similar boat with you the first few times you operate it.

### 5.9.1 Controls

You will quickly learn how to control your boat, but changing weather conditions, such as wind and waves, will always present new challenges for the driver. The remote control combines the functions of throttle, forward and reverse gears, and the adjusting of the engine trim angle. The boat is equipped with hydraulic steering.

### 5.9.2 Emergency switch

The emergency switch is a device that you have to attached to the remote control or to the ignition key panel (depending on what outboard motor brand). The other end you should attach around your knee. The emergency switch automatically switches off the engine when detached from the remote control. It is very important that the boat will come to a halt if the driver, for whatever reason, loses his/her balance and is flung from the helm.

**NOTE!** Never take control of the boat without having attached the emergency switch to yourself. If you attach the emergency switch to your arm, do not steer the boat with that arm, because the chain may be tangled in the steering wheel during tight turns.

**NOTE!** The engine will not start if the emergency switch is not attached to the switch on the remote control.

**DANGER!** A rotating propeller presents a life-threatening danger to a swimmer or a person who has fallen overboard. Always use the emergency switch to turn off the engine when a swimmer or water skier is about to re-enter the boat from the water.

### 5.9.3 Gearshift and throttle

The engine is put into gear by pushing the button on the gear/throttle handle upwards with your fingers and by pushing or pulling the gear/throttle lever forward or backward, depending on the direction in which you are planning to go. When the engine is in gear, you can adjust the boat's speed using the same gear/throttle lever.

When the boat is travelling forward slowly, you can use the reverse gear for braking when approaching the dock, for instance. Shifting into reverse must not be done if the boat is travelling at higher speeds, because it will damage the engine.

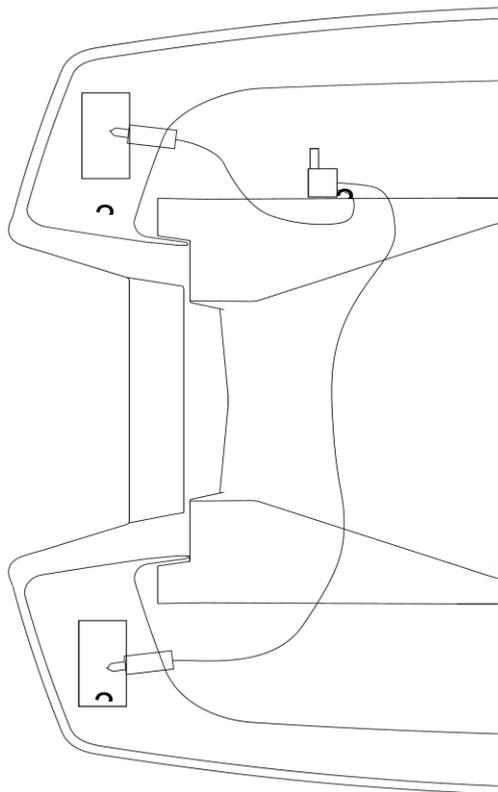
### 5.9.4 Adjusting the trim angle

These are the main rules when adjusting the trim angle:

- When bringing the boat to plane, keep the 'bow down' position.
- When the boat is planing and seas are calm, keep lifting the bow until you can feel that both the engine and the boat move very easily. In calm waters, the engine should normally be trimmed up at least 3 scale marks on the trim indicator on the revolution counter. If the engine is trimmed up too much, the speed of the boat will be reduced. If the boat is trimmed too low, the boat will run slowly, and the engine will run heavily. To achieve good fuel economy, it is important to drive the boat with the right engine trim angle.
- In heavy head seas, lower the bow to allow it to slice through the waves better, thus providing a smoother ride.
- In following seas, raise the bow to avoid 'diving' into the waves.

#### **WARNING!**

Do not drive the boat at high speeds with the engine trimmed up (bow up), as there is a risk of sudden heeling when the propeller hits the water again after a flight in heavy waves. Likewise, do not drive at high speed with the engine completely trimmed down (bow down) since this can cause the boat to pitch unexpectedly when the bow hits the water. The boat may become unstable when turning if the bow is too low.



### Trim flap system

1. Control panel at helms man position
2. Distribution unit
3. Trim flaps

**WARNING!**

If you use the trims manually, adjust the trim controllers carefully at high speeds. They will change the behaviour of the boat radically.

**WARNING!**

Waves reduce manoeuvrability and make the boat heel. Accordingly, reduce speed when encountering heavier seas.

### 5.9.5 Starting the engine

1. Switch the power on using the main power switch.
2. Lower the engine to the driving position by pressing the Power Trim button on the gear/throttle handle.
3. Check that the gear/throttle handle is in the neutral position and that the emergency switch is attached to the bottom of the remote control.
4. Switch on the current, using the start key, without starting the engine and wait a few seconds for the warning lights to light up.
5. Start the engine by turning the ignition key clockwise until the engine starts. If everything is in order, the engine should start within 1-2 seconds. If the engine does not start, you should not try to start it for more than 10 seconds at a time.
6. After the engine has started, let it idle for a few minutes before setting off. (Please refer to the engine manual!)

For more detailed information, please refer to the engine manual.

### 5.9.6 Driving

It is easy to drive when the weather is fine and the sea is calm. However, always remember to keep an adequate lookout. In order to maintain the best possible visibility from the driver's position, you should do this:

- Ensure that passengers do not restrict your visibility.
- Do not drive near planing speed for long periods, as the bow comes up and reduces visibility.
- When visibility is poor, look over the windshield.
- Remember to also keep a lookout behind you, particularly on shipping lanes.

Use navigation lights in darkness.

Always adjust your speed to prevailing conditions and the environment. Take into account the following:

- waves (also consult the passengers on what is a comfortable speed);
- your own bow wake (greatest at planing speed, smallest at speeds under 5 knots);
- visibility (islands, fog, rain, driving against the sun);
- familiarity with the route (time required for navigation);
- width of the route (other traffic, noise and bow wake near shore).
- Make sure to always maintain a sufficient distance to avoid collision. The distance must be sufficient to stop the boat or to take evasive action.

When running at low speed, a planing boat's directional stability is poorer than at higher speeds. So be careful in narrow passages and, particularly, when meeting other boats.

You must learn the rules of traffic on sea lanes and follow the international regulations on how to avoid collisions at sea, COLREG. Navigate with care and use new or updated nautical charts.

The running position of the boat greatly affects its handling characteristics and fuel consumption as well as visibility from the driver's position. You can affect the running position by:

- placing the load properly – the general rule being that you should place as little weight in the bow as possible; and
- adjusting the trim angle.

The combination of the right running position with the right speed also makes driving in rough seas safer and more comfortable.

**WARNING!** A high speed and sudden manoeuvring in rough seas can lead to loss of control over the boat and large heeling angles.

**NOTE!** The boat is not designed to jump waves. The warranty does not cover damage caused by flight. It is possible to check whether the engine has been airborne from the engine history on the repair shop's computer.

### 5.9.7 Approaching and leaving the dock

Practise boat manoeuvring skills where there is ample space to learn how to approach a dock before entering a crowded marina.

A very gentle application of throttle does not generate sufficient steering power. Sharp but short throttle applications enable efficient steering movements when approaching the dock.

Ensure that everyone on board who does not have to stand up is seated when you are approaching the dock. Sudden steering movements may cause the boat to heel and injure somebody.

Before docking, prepare the mooring lines at stern and bow. Approach the dock bow first at a slight angle. Just before touching the dock, steer into it and shift into reverse. Apply throttle quickly and sharply. The boat will stop and turn parallel to the dock. If possible, make the approach into the wind or current, whichever is the strongest. This makes departing easier, as the wind or current will push the bow out from the dock. The easiest way to depart is to first push the stern as far away from the dock as possible, and then slowly reverse away from the dock into open water.

The propeller is designed to have the best grip in forward gear. Therefore, propeller performance is weaker in reverse. The steering response is also not as good in reverse as in forward gear.

**WARNING!** The boat is fast. If you are planing, it takes time to come to a stop. Slowdown in time before anchoring, beaching or docking. Learn to estimate the distance the boat needs to stop. Remember that steering control is poor if there is no traction.

**WARNING!** Do not try to stop the boat with your hands, and do not put your arm or foot between the boat and the dock, the shore or another vessel! Practise beaching and docking under favourable conditions! Use moderate but firm engine power!

**NOTE!** When securing your boat, take into consideration the possibility of changes in wind direction, rising or sinking of the water level, bow wakes, etc. You can get more information from your insurance company, for example.

### 5.9.8 Using the canopy

The canopy is designed to withstand a maximum speed of 30 knots at sea, and 50 km/h in road transport. All press studs must be properly fastened when using the canopy. The canopy's design allows raising just the front part. We recommend that you remove the sides and back of the canopy to make it fit into the canopy box more easily. Then, fold the upper parts of the sides entirely on top of the roof, so that no fabric remains where the corners of the canopy supports are. Finally, roll up the roof part along with the sides folded on top of it, and lower the canopy into the canopy box.

**NOTE!** The boat should not be driven in rain with the canopy down. The equipment in the open deck space is not water-tight and must be protected from the rain.

**NOTE!** The windscreen and canopy do not necessarily form a watertight seal.  
Water may enter the boat between the canopy and windshield when the canopy is up.

### 5.9.9 Windshield door

The windshield door must always be kept shut and locked when the boat is moving. The door has not been designed to be used as a railing when getting in or out of the boat.

**WARNING!** The door must be kept closed in rough seas or strong or gusty winds, since it may slam shut. The door is heavy and may cause injury if it strikes someone when slamming shut.

**WARNING!** Large waves or gusts of wind may slam the door shut also when the boat is stationary. It is thus recommended to always keep the door closed when the passage through the bow deck is not being used.

## 5.10 Proper use – other recommendations and guidelines

### 5.10.1 Man overboard

It is always a serious situation when someone falls overboard. Rescue procedures should be practised in advance during good weather, because it is too late for practice when someone has actually fallen into the water.

It is always easiest to help a person climb back on board at the stern of the boat. A rope loop attached to the boat helps lifting. The boat's swim ladder extends 30 cm into the water. If a child has fallen overboard, an adult carrying an extra life-saving device or a fender must always jump in after the child; however, someone must always remain on board the boat.

It is very important to maintain visual and verbal contact with a person that has fallen overboard.

**DANGER!** A rotating propeller presents a life-threatening danger to a swimmer or a person who has fallen overboard. Always use the emergency switch to turn off the engine when a swimmer or water skier is about to re-enter the boat from the water.

Potential life-raft, the recommended location is under the back seat.

### 5.10.2 Securing loose equipment

Stow all heavy equipment, such as anchors, and secure them firmly before setting off.

### 5.10.3 Respect for the environment

Conservation of the environment is a matter of honour for every boater. Therefore, you should avoid:

- fuel and oil leaks;
- emptying rubbish and waste into the water or on the shore;
- letting detergents or solvents get into the water;
- loud noise both on the water and at the marina; and
- producing an unnecessarily high bow wake, especially in narrow passages and shallow waters.

Service the engine well and run it at the most economical speed, which will also keep exhaust emissions low.

Please also consider other local environmental legislation and regulations. In Finland, under 'everyman's right' anyone may move around on private land, except in the vicinity of residential buildings, as long as they cause no damage or inconvenience. 'Everyman's right' also allows movement and temporary anchorages on privately owned waters, swimming and

going on shore at uninhabited locations, unless landing is specifically prohibited by a notice from the authorities. It is not allowed to anchor next to a shoreline where there are one or more residences. Docking at a private dock owned by someone else or landing on a shore where there are residences is also not allowed without permission.

Please make sure to familiarise yourself with the International Convention for the Prevention of Pollution From Ships (MARPOL) and respect it to the greatest possible extent.

It is allowed to camp out on islands as long as no damage is caused to the landowner. It is not allowed to camp out next to residential buildings or in or near cultivated fields. You may not light a campfire unless you have the landowner's permission. Everyman's right allows the picking of naturally growing berries and mushrooms without damaging trees or the environment in general. Please check the regulations concerning movement in the natural environment in your area.

#### 5.10.4 Anchoring and mooring the boat

Always moor your boat carefully, even in sheltered places, because conditions can change rapidly. Mooring lines should be equipped with absorbers to dampen any jolts. Please refer to the section Towing for the location of bollards. To prevent abrasion, use fenders that are large enough.

The forward endurance of the bow bollards is at least 23 kN, or c. 2,300 kg. The backward endurance of the stern bollards is at least 16.0 kN, or c. 1,600 kg.

The minimum anchor weight for the boat is 5 kg. Drop anchor far enough from shore. A reasonable grip is attained if the anchor line length is 4–5 times the water depth.

**WARNING!** Do not try to stop the boat with your hands, and do not put your arm or foot between the boat and the dock, the shore or another vessel!

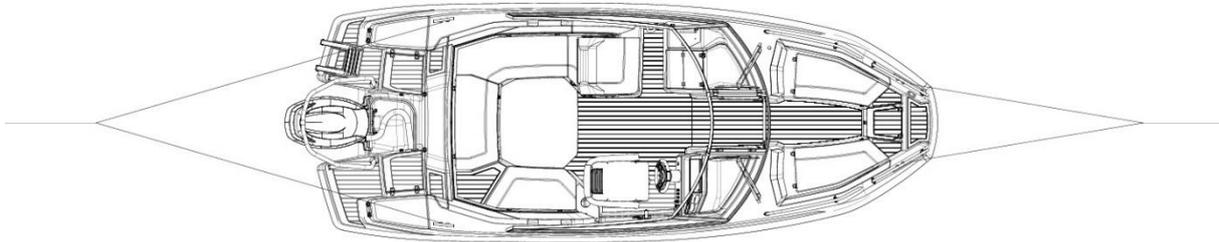
**NOTE!** When securing your boat, take into consideration the possibility of changes in wind direction, rising or sinking of the water level, bow wakes, etc. You can get more information from your insurance company, for example.

#### 5.10.5 Towing

When towing another boat, use a floating line that is strong enough for the task. Begin towing slowly, avoid jerks, and do not overload the engine.

The owner of the boat should consider the measures necessary for securing the boat's towrope.

If you are towing, or if your boat has to be towed, attach the towline to the bow or stern bollards as per the following image

**WARNING!**

When towing, the towline is under high tension. If it should break, the end that snaps off may lash back fast enough to cause serious injury or death. Always use a thick enough line and keep to one side of the towline.

**NOTE!**

When towing another boat or being towed, always drive at low speed. If the boat has a displacement hull, never exceed hull speed while towing.

**NOTE!**

The towline should always be fastened so that it can be unfastened under load.

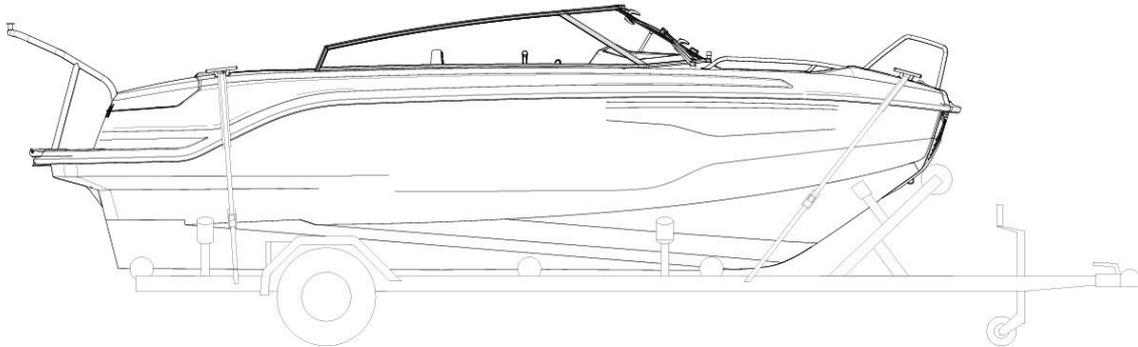
### 5.10.6 Trailer transport

Weight data for trailer transport may be found in the technical specifications. The trailer's keel supports should bear most of the weight of the boat. Adjust the side supports so that the boat will not rock sideways. For more information, please turn to your dealer.

Clean the supports of sand and dirt so that they will not scratch the bottom of the boat. Double-check that the trailer is securely coupled to the trailer tow hitch!

The place for lifting the boat out of the water should be sheltered, and the ramp should extend deep enough into the water. Reverse the trailer so deep into the water that the rearmost keel support is just above the water. Drive the boat carefully towards the rearmost keel support. Fasten the hoist cable to the towing eye and reel the boat up onto the trailer, making sure that the boat remains straight on the trailer's centre line. Remember to trim up the engine before reeling the boat onto the trailer so that

it will not hit the bottom.



### Securing the boat to the trailer

Tie the boat properly before beginning transport. The sling ropes at the bow should be directed down and back, and the sling ropes at stern should be directed down and front. Do not leave any loose equipment or extra load on the boat when it is being transported. Remove the seat cushions and close all hatches properly.

The engine should be in the driving position during transport. However, ensure that there remains adequate clearance. If the clearance is not sufficient in this position, you can transport the engine raised. In this case, the engine must be supported with a suitable support to protect the transom.

If the boat is kept on the trailer between transports, you must loosen the sling ropes for the duration and tighten them before the next transport.

#### **NOTE!**

The trailer should be slightly front-weighted. Make sure that the boat is fastened tight enough to the trailer and that the weight of the boat is divided equally between side supports. If the boat swings against a side support during transport, it may sustain hull damage.

When letting the boat down from the trailer, remember to fasten the bow rope to the boat beforehand so that you can release the cable/rope from the trailer hook as soon as the boat is in the water. Be careful with the winch handle!

### 5.10.7 Docking

The storage cradle should be sufficiently steady and suitable for this particular boat and engine combination. A sturdy plank (2x4"), should be placed between the "V" trestles to support the keel and to bear most of the weight of the boat. The boat must not rest on the side supports. The side supports should not be placed at the corners on the bottom, and

point loads should be avoided. The supporting structures should be strong, particularly near the transom, to support the added weight of the engine.

Only use reputable lifting companies or boat yards with sufficient lifting capacity. In addition to the boat's tare weight (please refer to the technical specification), also take into consideration accessories and other possible loads in the boat.

When the boat is being lifted, the lines must be placed under the boat and the boat must remain horizontal during lifting.

**NOTE!** Do not lift the boat by its bollards.

**DANGER!** Never stand under a boat that is suspended from a crane.

## 6 Servicing and maintenance

Keep your boat and its equipment clean and tidy. This increases comfort and safety on board, and also the boat's resale value.

Familiarise yourself with the service procedures shown in the engine manual (see annex). Have your engine serviced according to the instructions in the manual.

### 6.1 Washing and waxing the boat

Normally it is sufficient to just wash and wax the deck and sides. Special boat cleaning agents are most suitable for the purpose. Use mild detergents. Do not use strong solvents (pH value must not exceed 11); they can cause glossy reinforced plastic surfaces to fade. Mildly abrasive polishes can be used to remove chafes and embedded dirt from the deck. Fibre glass surfaces can be washed with a pressure washer.

Useful tip: When the boat has been washed with tap water, a thin chalk-like layer of lime and minerals will remain on the boat's surface after it has dried. The problem can be eliminated by adding a few drops of pine oil soap into a bucket of rinsing water, which will soften it.

Useful tip: Water and lime stains on stainless steel rails can be removed using Lemon Pled furniture spray. Your railings will shine like the day they came off the assembly line.

Useful tip: If the boat's ropes smell bad after the season, immerse them for a couple of hours in a bucket of water with a bottle of apple vinegar and a splash of fabric conditioner added. Allow the lines to dry properly, and they will be as good as new.

## 6.2 Care instructions for seat cushions

Always use the canopy or harbour cover when it is raining to protect the open deck space and seat cushions. Although the seat cushions are made of water-resistant material, water can get in through their seams. If the cushions remain damp for any length of time, they may get mouldy and be ruined. If the mattresses get wet, the fabric can be removed by unzipping the mattress and dried in the sun, at room temperature or in a sauna (50°C). The warranty does not cover cushions spoilt by rain or damp.

**NOTE!** To keep the boat's seat cushions in good condition over the winter, they should be stored in a dry, well-ventilated space.

**NOTE!** Wet cushions should not be placed in storage, because they gather mould easily.

The press studs of the seat cushions should be sprayed with silicon spray every now and then, otherwise they may become so tight that the fabric will tear when trying to open them. The warranty does not cover ripped seat cushions. Use very little silicon spray at a time in order not to stain the cushions.

## 6.3 Care instructions for the canopy

Store the canopy over winter in a dry and well-ventilated place. The warranty does not cover torn or mouldy canopies.

## 6.4 Care instructions for the windshield

The boat's windscreen is made of tempered glass and can be cleaned with ordinary glass cleaners.

Useful tip: When wiping the boat's windshield dry after cleaning, avoid using circular motions. This can leave circular smudges on the windshield that become visible in sunlight, impeding visibility. Wipe off any streaks with dry newspaper or cotton cloth using first horizontal, then vertical motions. Repeat this a few times and you'll bring the windshield to a brilliant shine.

## 6.5 Care instructions for the stainless steel components

To keep the boat's stainless steel parts, such as rails, handles and bollards, shining as good as new, you should keep the parts clean and waxed. The edges of the mounting flanges of the rails should also be cleaned. Any dirt that remains under the edge of the flange will begin to look like rust. In regular use (i.e. no damage), the parts should be cleaned and waxed at least

twice every summer. Rail maintenance should also be performed when the boat is put into winter storage.

## 6.6 Care instructions for the steering system

The hydraulic steering does not require maintenance under normal circumstances. If the steering starts to feel loose, there is a leak somewhere in the system. Leaks must be repaired immediately!

**WARNING!** A hydraulic steering system that has a leak or trapped air in the hoses is extremely dangerous.

## 6.7 Care instructions for electrical components

Electrical components like main switches, other switches and couplings do not normally need to be serviced if the boat is stored in a dry and well-ventilated place for the winter. If, however, you wish to protect electrical components against oxidation, the best way to do it is by spraying them every now and then with a moisture repellent antioxidant.

## 6.8 Minor superficial repairs

You can repair minor surface damage to the boat's hull or deck yourself. However, achieving a neat, unnoticeable repair requires a considerable amount of skill:

1. Protect the area around the damage with tape.
2. Bevel the edges of the damaged area and clean with acetone.
3. If the damage is deeper than 2 mm, it is advisable to smooth it with an appropriate polyfiller before painting.
4. Mix topcoat with 1.5-2 % hardener.
5. Fill the repair with more topcoat than needed, so that its surface remains slightly proud of the surrounding area.
6. Carefully put tape over the repair.
7. After the topcoat has hardened, remove the tape and sand the repair using 600 and 1200 paper applying water.
8. Buff using abrasive paste and wax.

The colours used on this boat are specified in the *technical specifications*. One point to consider is that a paint called *gelcoat* has been used in manufacturing the boat, but the surface is always repaired with a paint called *topcoat*. Gelcoat paint does not harden without a mould surface, whereas paraffin has been added to topcoat to allow it to harden.

**NOTE!** Some post-delivery installations and alteration work may cause damage to the structure of the boat or impair safety if not

performed correctly. Please contact the dealer if you are planning any modifications.

## 7 Winter storage

Preparing your boat for winter storage is an annual routine. Have your boat lifted in good time before the water freezes. Your boat is not designed for use in ice and it is not meant to be used in temperatures below zero (for example, the rainwater drainage system will freeze up). It is advisable to perform all maintenance, repair and inspection procedures in connection with placing the boat in winter storage.

Familiarise yourself with the service procedures shown in the engine manual. We recommend that you leave them to an authorised service agent. Do not forget to service the remote control and steering system. Make sure to perform their maintenance according to their separate instructions and manuals.

### 7.1 Measures before winter storage

Wash the bottom of the boat immediately after the boat has been lifted. Algae and slime will come off easier if they are not left to dry. Empty the engine of its cooling water according to the manual.

Give the engine and other equipment their winter servicing, following their separate manuals. If your boat is stored outside or in a humid place over the winter, empty it of textiles and other equipment that may corrode or become mouldy in damp conditions. Wash the ropes in fresh water. Replace any worn ropes. Leave through fitting valves open. Remove the drain plug for the winter.

Empty the septic tank and the freshwater tank of the boat. Pour two litres of a mixture that contains 50 % ethylene glycol and 50 % water into the toilet and press the flush button for about two seconds.

Check the condition of the hull and rub down any scrapes to let possible moisture inside the laminate dry. Repair any damage in the spring before launching the boat.

Remove all food from the boat and wipe all the surfaces on which food has been handled with a disinfectant. This will prevent the formation of mould.

Always cover your boat so that snow cannot gather inside. Always make sure, however, that it is adequately ventilated. A winter storage cover is available as an optional accessory for your boat.

### 7.2 Measures before launching the boat

Repair any damage to the gelcoat surface according to section 6.10.

In sea areas, antifouling paint should be used to prevent the hull from becoming covered with vegetation. Fouling of the bottom and especially the propeller increases fuel consumption significantly. However, if the boat is anchored at the inlet of a stream or in a land-locked lake, or if it is lifted out of the water at least once every two weeks, it is normally not necessary to use antifouling paint. Carefully follow the paint manufacturer's instructions when applying the paint. When sanding old antifouling paint, remember that the dust is toxic.

Antifouling paint is not necessary in fresh water (lake areas). We nevertheless recommend using an epoxy primer if the boat will be in the water for several months each year. Fresh water, and warm fresh water in particular, is more readily absorbed by the laminate than sea water.

**NOTE!** Do not paint over the zinc anodes or the piston rods of hydraulic trim tabs. Do not apply paints containing copper on aluminium parts. Remember to follow the paint manufacturer's instructions.

Useful tip: Do not throw away a used paint brush. A dried and hardened paint brush that has been used for antifouling paint can be reused if you first soak it for a couple of hours in a mix of 2 litres of hot water, 100 ml of vinegar, and 50 ml of baking powder.

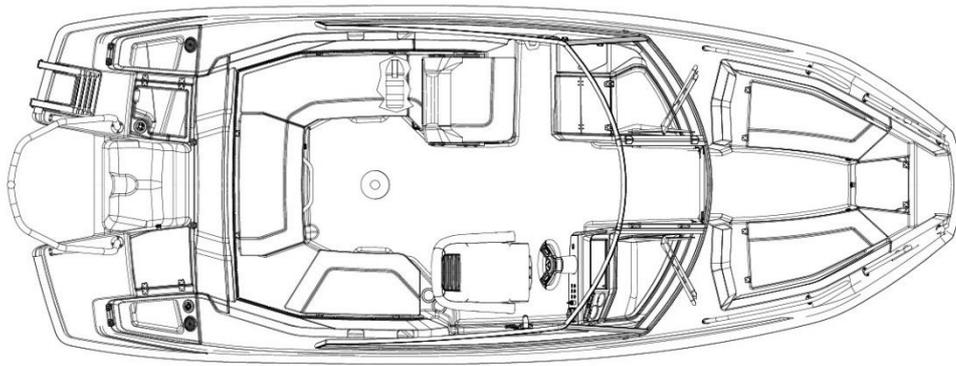
Perform the necessary service procedures required for the engine according to the engine manual. Check the functioning of electric equipment and remove any oxidation from fuse connectors etc.

Remember that petrol goes stale over time, and you must always start the engine with fresh petrol in the spring.

When the boat has been launched you should open all valves in the through fittings (bushings) and check to ensure that there are no leaking hoses or connectors. The locations of through fittings are shown in section 5. Bring your safety equipment back on board before setting out.

## 8 Layout

### 8.1 General lay-out

**WARNING!**

Handle the boat's hatches with care and watch your fingers and toes. **Please pay particular attention to the bow anchor box hatch, which is equipped with an elastic band that holds the hatch closed while driving.**

**WARNING!**

It is not recommended that children do not use the bow anchor box hatch, as their fingers or toes could get caught in it.

### 8.2 Fuel system

The boat is equipped with a built-in fuel tank. A fuel filter is installed in the fuel line, also functioning as a water separator. The filter must be changed at least once a year. When a new or removed filter has been mounted, the fuel line must be filled with a ball pump before starting the engine.

**NOTE!**

The condition of the fuel hoses must be inspected annually, and every effort should be made to prevent damage to them. Damaged fuel hoses must be replaced. If you replace fuel hoses, make sure the new hoses have an ISO 7840 label.

The refill cap is situated under the anchor box hatch on the starboard (right) side in the stern. The location of the fuel tank refill cap is marked on the deck by the  symbol.

The cap of the fuel tank contains the text GAS, PETROL or FUEL, which refers to petrol 95E or 98E (recommendation).

## 8.3 Steering system

The boat is equipped with hydraulic steering. With hydraulic steering, the steering wheel's position changes constantly, which is why the boat is equipped with a symmetrical steering wheel.

The hydraulic steering does not require maintenance under normal circumstances. If the steering starts to feel loose, there is a leak somewhere in the system. Leaks must be repaired immediately!

**NOTE!** If you replace any component in the steering system, please note that all components must conform to the ISO 10592 standard and bear the CE mark.

**WARNING!** A hydraulic steering system that has a leak or trapped air in the hoses is extremely dangerous.

## 8.4 Electrical system

The electrical system contains the following main components:

1. Starter battery
2. Operation battery (option)
3. Wire harness
4. Main switch (two main switches as option)
5. Battery compartment fuse panel
6. 5 x switch
7. 2 x 12 V power outlet
8. 1 USB output in chart reader
9. Navigation lights
10. Windshield wiper 2 pcs (right and left sides)
11. Fresh water pump (option)
12. Cabin light
13. Refrigerator (option)
14. Trim flap system (option)
15. Radio (option)
16. Bow light (option)

In addition, the engine is an essential part of the boat's electrical system; it both generates and consumes power.

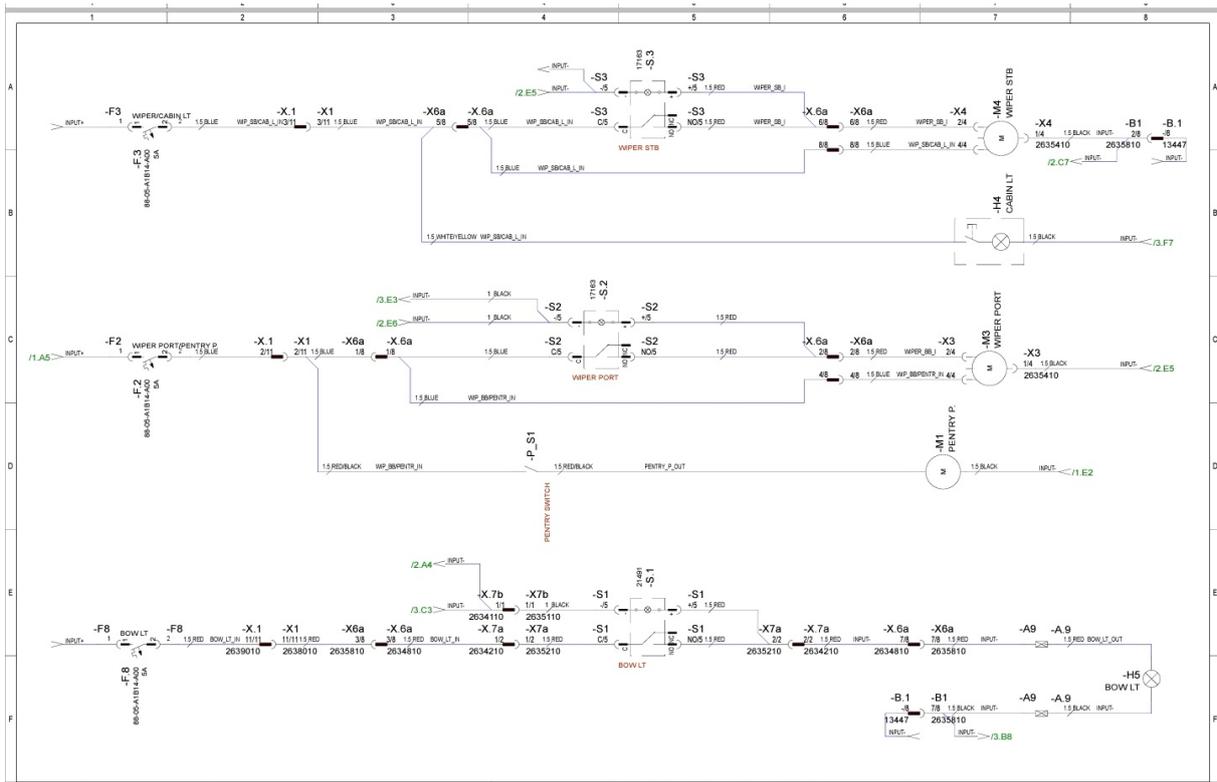
If you connect or disconnect the battery, take care not to touch both battery terminals with a metal object at the same time.

Only recharge the batteries with the boat's battery charger or one with equivalent power. Charging the battery with excessive current creates an explosion risk.

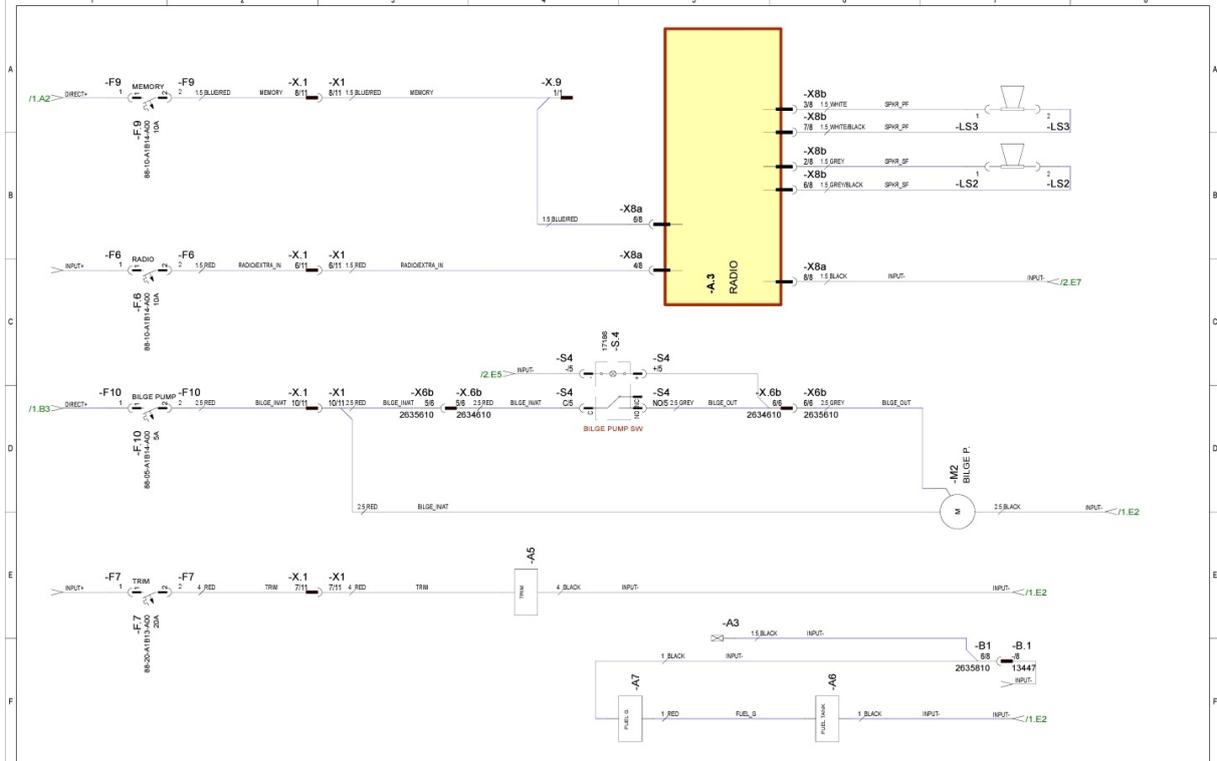
Do not alter the onboard electric system or relevant drawings; alterations and maintenance work have to be carried out by a professional.

Wiring diagrams (10 diagrams on the next 5 pages)

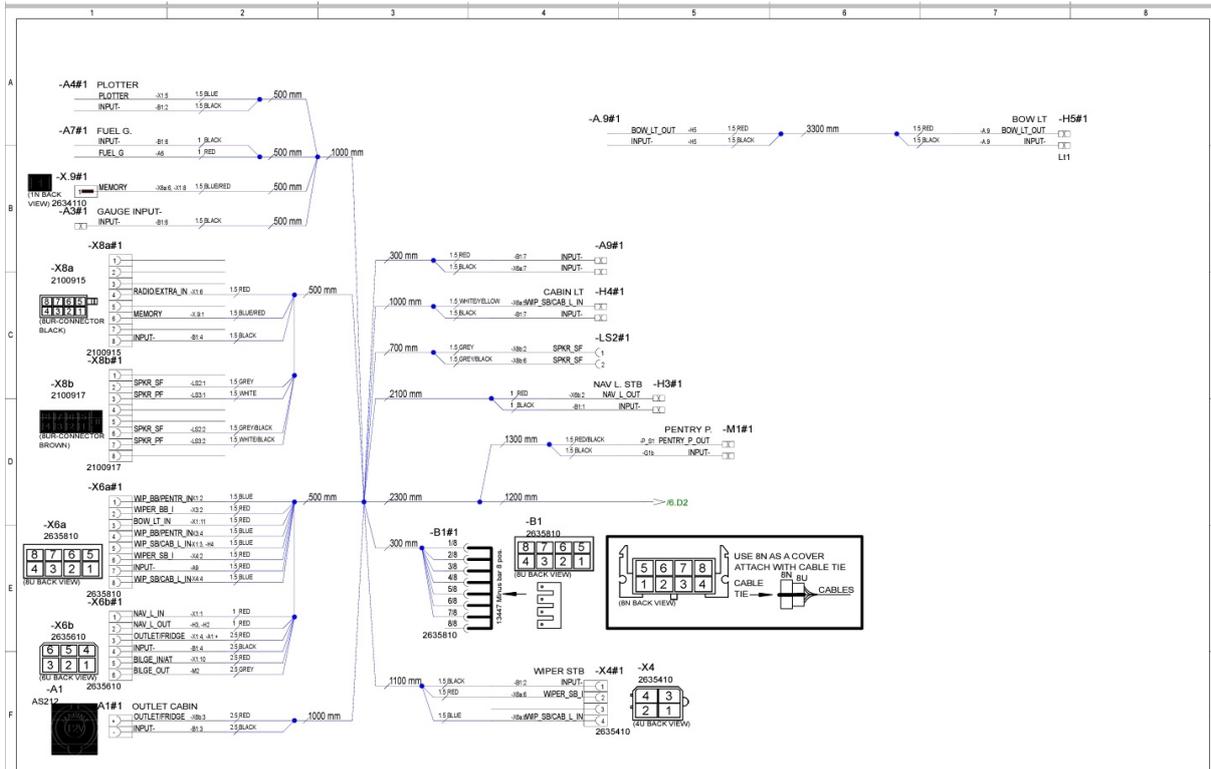




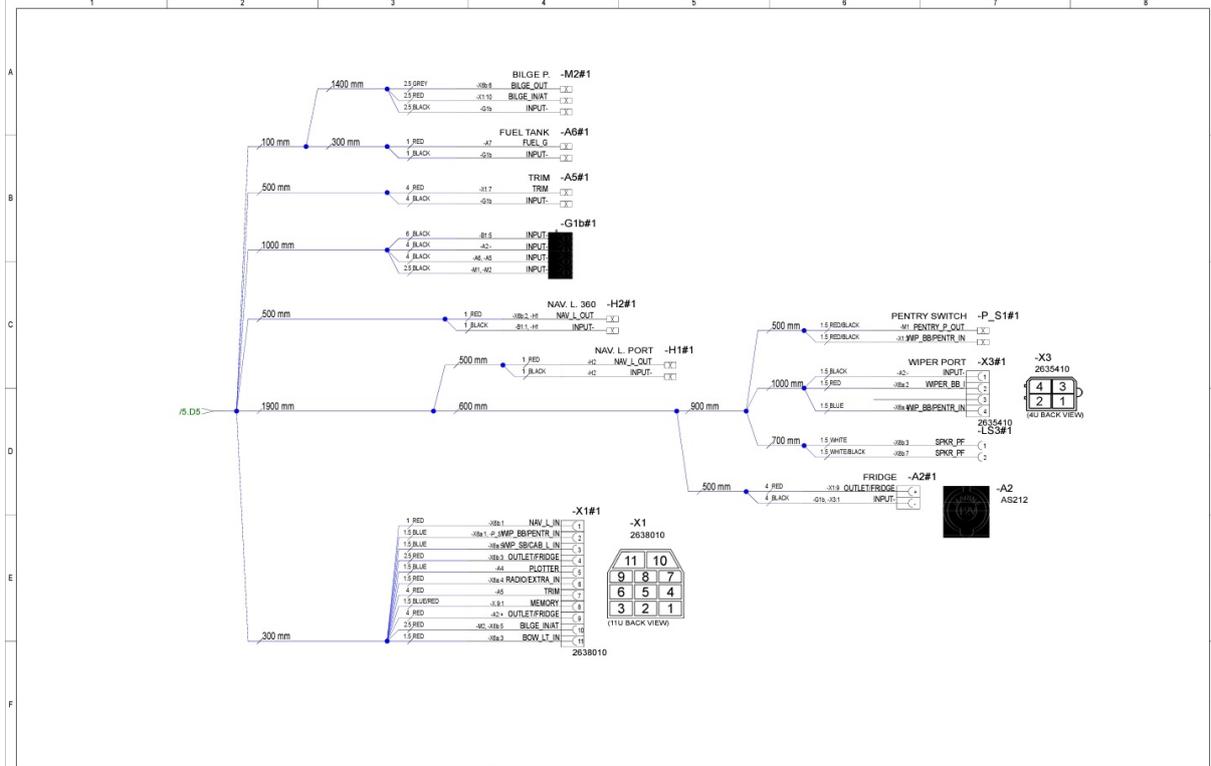
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9.6.2019	PN	B7: NAME CHANGED TO THE SILVER TIGER	Sheet rev	8	Copyright by	Boat model		Loc	3 / 10
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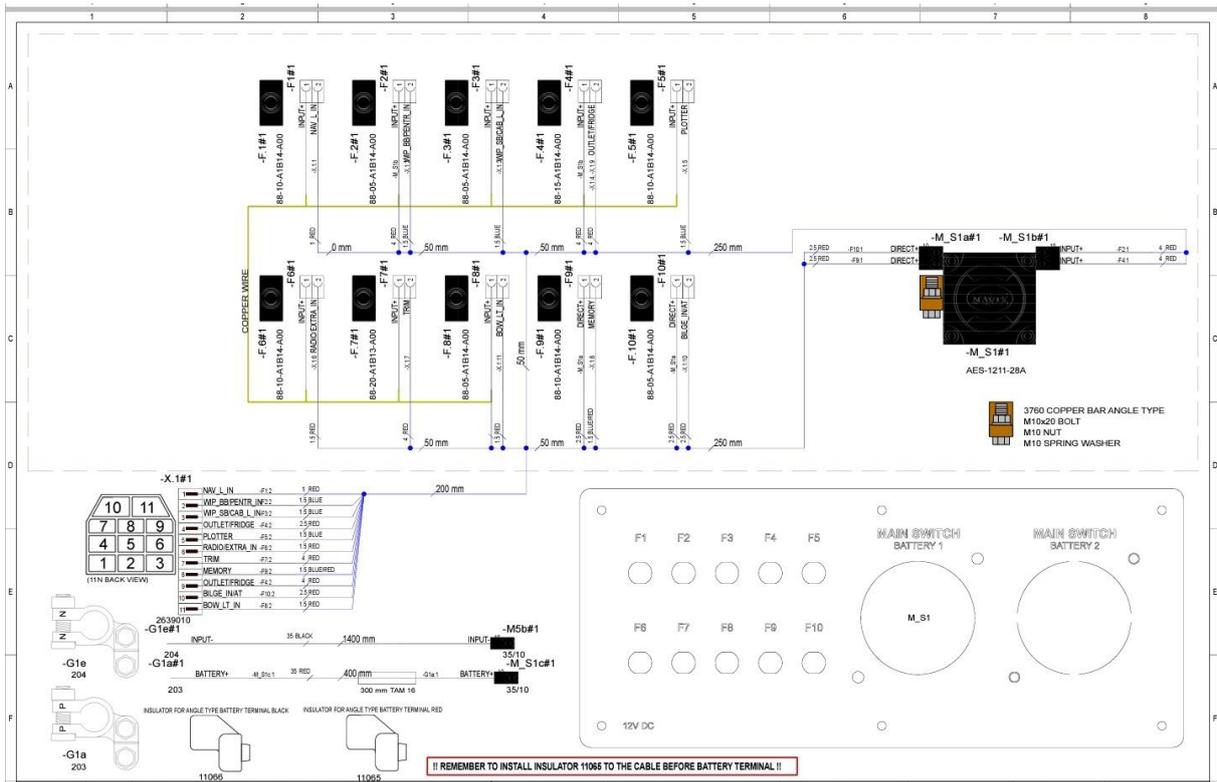
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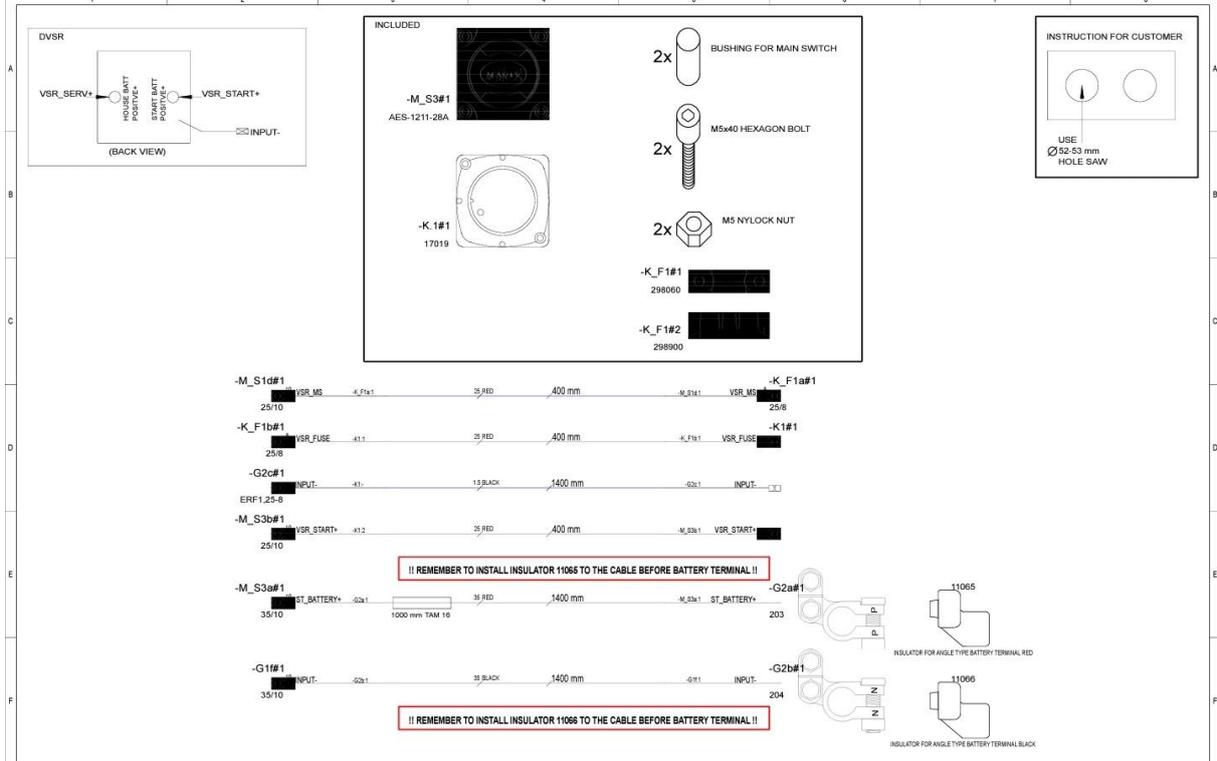
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22.12.2016	SJ	A2: CHANGED WIRE LENGTHS, ADDED TAM26	Drawing by	RN		Boat	60 DC	HARNESS	HL
9.6.2019	PN	A3: CHANGED WIRE LENGHTS	Sheet rev.	4	Copyright by			Loc	S / 10
Date of modification		Modified by	Description	Project rev.	B	Boat model	Title	Loc	Sheet



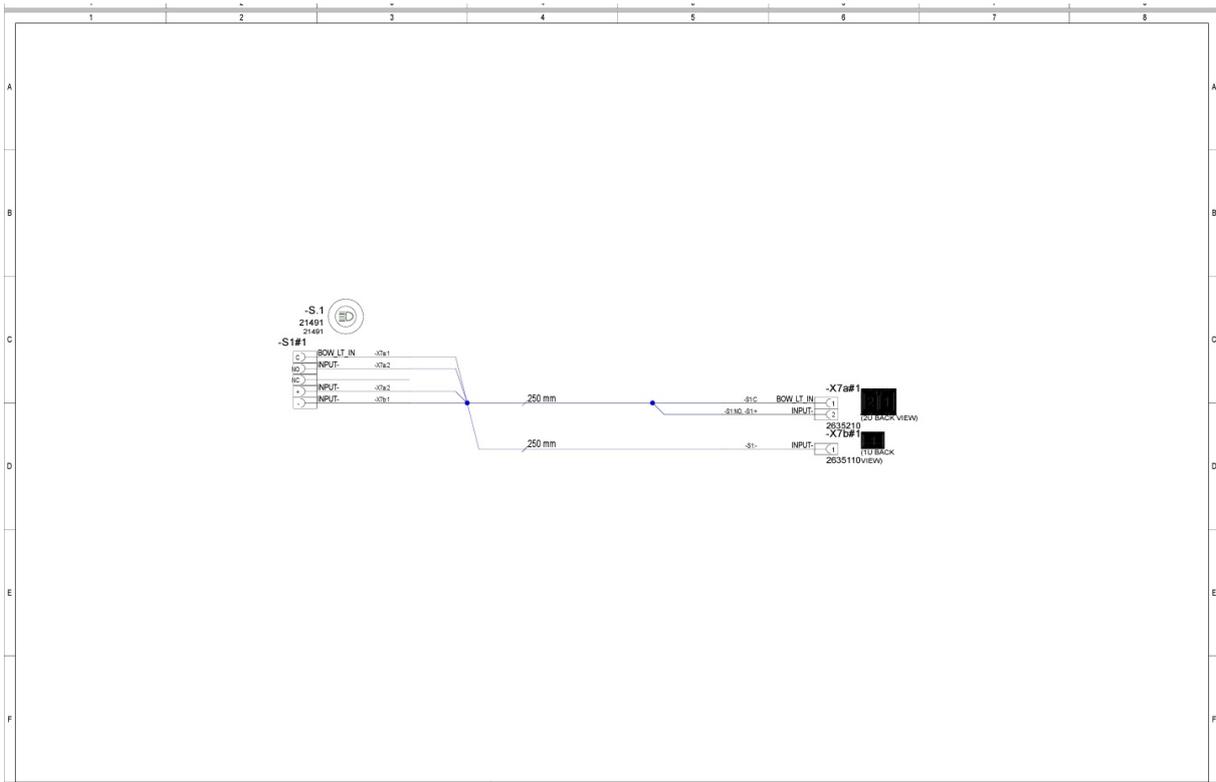
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Date of modification		Modified by	Description	Project rev.	B	Boat model	Title	Loc	Sheet



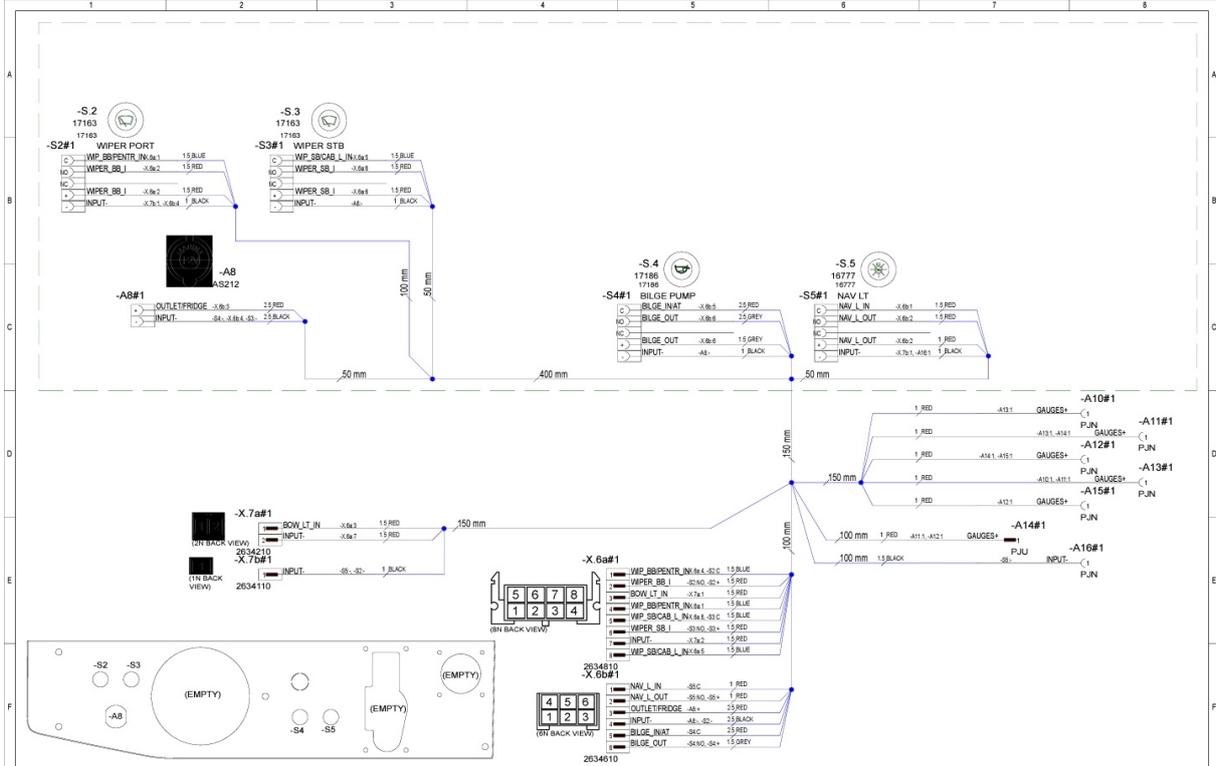
9.6.2019	PN	B4: ADDED CABLE (BATTERY MINUS) & COPPER BAR ANGLE	Date	27.9.2016	NAVIX	Silver Tiger	21477	21314	
22.12.2016	SJ	A2: ADDED TAM16 & INSULATORS FOR BATTERY TERMINALS	Drawing by	RN	DESIGN SOLUTIONS	60 DC	Sub-product code	BATTERY HARNESS	Project ID
6.3.2019	PN	A3: FUSE F:2 CHANGED TO 5A, PANEL MODIFIED	Sheet rev.	4	Copyright by	DESIGN SOLUTIONS	HL		7 / 10
Date of modification		Modified by	Description	Project rev.	B	Boat model	Title	Loc	Sheet



27.9.2016	RN	A1: INTRODUCED DRAWING	Date	27.9.2016	NAVIX	Silver Tiger	21477	21319	
22.12.2016	SJ	A2: ADDED TAM16 & INSULATORS FOR BATTERY TERMINALS	Drawing by	RN	DESIGN SOLUTIONS	60 DC	Sub-product code	DUAL BATTERY ASSEMBLY	Project ID
9.6.2019	PN	B3: ADDED VSR & VSR CABLES & FUSE 60A	Sheet rev.	3	Copyright by	DESIGN SOLUTIONS	HL		8 / 10
Date of modification		Modified by	Description	Project rev.	B	Boat model	Title	Loc	Sheet



27.9.2016	RN	A1: INTRODUCED DRAWING	Date	28.9.2016	NAVIX	Silver Tiger	Sub-product code	21321	Product code	Project ID
10.6.2019	PN	B1: NOT MODIFIED	Drawing by	RN	designed solutions	60 DC	BOW LT SW ASSEMBLY	HL		9 / 10
Date of modification	Modified by	Description	Project rev.	B	Copyright by	Boat model	Title	Loc		Sheet



11.11.2019	AR	B7: PANEL MODIFIED	Date	27.9.2016	NAVIX	Silver Tiger	Sub-product code	31071	Product code	Project ID
13.03.2019	TT	A5: ADDED -S2; NEW PANEL. REMOVED -X.5a; -X.5.b	Drawing by	RN	designed solutions	60 DC	SWITCH PANEL	HL		10 / 10
9.6.2019	PN	B6: D1 REMOVED, PANEL MODIFIED	Sheet rev.	7	Copyright by	Boat model	Title	Loc		Sheet

***Silver***<sup>®</sup>  
**TIGER**

**Silver Tiger Day Cruiser**

**Owner's manual**

## FOREWORD

Congratulations on choosing a Silver Boat!

This manual will familiarise you with the features of your new vessel and help with its care and maintenance. It has been written to help you learn to handle your craft safely and avoid any problems. Make sure that you have received manuals for all equipment fitted on your boat. Supplement this manual with the specifications and manuals of equipment you purchase later for your boat. Space has been left for your own notes at the end of the manual. Please read this manual carefully and familiarise yourself with the craft before using it.

If this is your first craft, or you are changing to a type of craft you are not familiar with, please ensure that you obtain sufficient handling and operating experience before assuming command of the craft. This is highly important for your own comfort and safety. Your dealer or national sailing association or yacht club will be happy to advise you of local boating schools or competent instructors.

This owner's manual is not a detailed maintenance or troubleshooting guide. In case of difficulty please contact the dealer. Always use qualified and competent people for the maintenance, repair and modification of the boat. Modifications that may affect the safety characteristics of the craft must be assessed, executed and documented by competent people. The manufacturer is not responsible for modifications they have not approved.

Always keep your boat in a good condition and be aware that the boat requires maintenance and servicing. Any craft, no matter how strong it may be, can be severely damaged if not used properly. Always adjust the speed and direction of the craft to prevailing weather conditions.

**We wish you enjoyable and relaxing times on board your Tiger DC**

Oy Brandt Ab  
Tuupakantie 7 B  
01740 VANTAA  
Finland

[info@brandt.fi](mailto:info@brandt.fi)  
[www.silverboats.com](http://www.silverboats.com)

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

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## BEFORE YOU SET OFF

Familiarise yourself with this owner's manual.

Always check at least the following before leaving:

- **Weather conditions and forecast**  
Take the wind, waves and visibility into account. Are the design category, size and equipment of your boat, as well as the skills of the skipper and crew, adequate for the waters you are headed for? Hull windows and hatches must be battened down during high wind and rough seas to prevent water incursion.
- **Loading and stability**  
Do not overload the craft and distribute loads appropriately. Heavy items are to be placed in the storage compartments under the aft seat. Also note that the boat is less stable if people stand up when on board.
- **Passengers**  
Ensure that there are personal flotation devices or lifejackets for all people on board. Agree on crew tasks before setting off.
- **Fuel and fuel system**  
Make sure that the boat has enough fuel, including a 20 % reserve for heavy weather or other unforeseen eventualities.
- **Engine and manoeuvring equipment**  
Check the function and condition of steering and remote control and carry out routine checks according to the engine manual.
- **Seaworthiness**  
Check the boat's seaworthiness: no fuel or water leaks, safety equipment available on board, etc. Check that there is no water in the bilge.
- **Fastening of equipment**  
Check that all onboard items are positioned so that they will stay in place even in rough seas and high winds. Please note that the seat cushions may fly overboard if they are not fixed properly with press studs.
- **Nautical charts**  
Unless you are navigating in completely familiar waters, ensure you have nautical charts on board that cover a large enough area! Your boat is equipped with a chart plotter, so learn how to use it before setting off. Ensure that the plotter charts are of the latest edition.
- **Leaving the berth**  
Agree with the crew who will release each mooring line, etc. Be careful not to let mooring lines or the anchoring line become fouled in the propeller during manoeuvring.
- **Obligatory equipment**  
What is considered obligatory equipment varies between different countries. Find out what is required for your boat.

**You will find additional instructions concerning the engine in the separate engine manual.**

# 1 General

The owner's manual will help you familiarise yourself with the properties and features of your new boat and with its care and maintenance. Separate manuals for installed equipment are attached and are referred to in many sections of the owner's manual. You can supplement this user manual by adding the manuals of devices which are installed afterwards. There is also space for your own notes at the end of the manual.

The craft has a running serial number, a WIN-code (Watercraft Identification Number). The WIN-code can be found on the starboard side of the transom just below the bathing platform. We recommend that you write down the WIN-code in this manual. When contacting the dealer, please provide the WIN code and the type of craft. This helps in delivering the correct spare parts.

## 1.1 DECLARATION OF CONFORMITY

### Recreational Craft Directive 2013/53/EC

**Manufacturer:** Fenix Marin Oy

**Module used:** B, EC Type-examination

---

#### THIS DECLARATION IS PREPARED BY

**Marketer:** TerhiTec Oy /Oy Brandt Ab

**Address:** Sorvitie 4

**Postal code:** 63700

**City:** Ähtäri

**Country: (code):** FIN

**(spelled out):** Finland

---

#### NOTIFIED BODY

**Name:** Eurofins Expert Services

**ID number:** no. 0537

**Address:** Post Box 47

**Postal code:** 02151

**City:** Espoo

**Country (code):** FIN

**(spelled out):** Finland

**EC type examination certificate:**

EUFI 29-190005156

---

#### DESCRIPTION OF THE RECREATIONAL CRAFT

**Brand name of the recreational craft**

Silver

**Model or number**

Tiger Day Cruiser

**Design category**

C

<b>Boat type*</b>	<b>03</b>
<b>Hull type*</b>	<b>01</b>
<b>Deck*</b>	<b>02</b>
<b>Construction material*</b>	<b>02</b>
<b>Propulsion*</b>	<b>02</b>
<b>Engine type*</b>	<b>01</b>
<b>Maximum permitted engine power (kW)</b>	<b>111</b>
<b>Length and width of hull (m)</b>	<b>6.06 / 2.36</b>
<b>Draught (m)</b>	<b>0,4</b>

\* Please refer to codes on next page

*I declare under my own and sole responsibility that the recreational craft mentioned above complies with all applicable essential requirements as specified on the following page.*

**Vantaa, 1<sup>st</sup> of November 2019**

**Peter Krusberg**  
**Product Development Manager, Silver Boats, Z- series**

<b>Boat type:</b>	<b>Deck:</b>
01 sailboat	01 decked
02 inflatable	02 partly decked
03 other: motorboat	03 open:
<b>Hull type:</b>	<b>Propulsion:</b>
01 monohull	01 sails
02 multihull	02 petrol engine
03 other:	03 diesel engine
	04 electrical motor
	05 oars
	06 other:
<b>Construction material:</b>	<b>Engine type:</b>
01 aluminum, aluminum alloys	01 outboard
02 plastic, fibre reinforced plastic	02 inboard
03 steel, steel alloys	03 z or sterndrive
04 wood	04 other:
05 other:	

	<b>General requirements</b>	
	Basic information	EN ISO 8666:2002
A2.1	Vessel identification	ISO 10087:2006
A2.2	Builder's plate	RCD annex I, 2.2
A2.5	Owner's manual	EN ISO 10240:2004
	<b>Arrangements and equipment</b>	
A2.3	Protection from falling overboard	EN ISO 15085:2003 / A1:2009
A3.7	Storage of life rafts	RSG Guidelines
A3.8	Exit	EN ISO 9094-1:2003
A3.9	Anchoring, mooring and towing	EN ISO 15084:2003
A5.7	Navigation lights, shapes and sound signals	1972 COLREG
A5.8	Discharge prevention	EN ISO 8099:2000
	<b>Installation requirements</b>	
A5.1	Engines and engine spaces	
A5.2	Fuel system	EN ISO 10088:2013, EN ISO 11105:1997
A5.3	Electrical system	EN ISO 10133:2012, EN ISO 28846:1993/A1:2000
A5.4	Steering system	EN ISO 10592:1995 / A1:2000
A5.5	Gas system	EN ISO 10239:2014
A5.6	Fire protection	EN ISO 9094-1:2018
	<b>Dimensions</b>	
A3.1	Structure	EN ISO 12215-5:2008, EN ISO 12215-6:2008
	<b>Hydrostatics</b>	
A3.2	Stability and freeboard	EN ISO 12217-1:2015
A3.3	Carrying and floatation capacity	EN ISO 12217-1:2015
A3.6	Manufacturer's recommendation for the maximum load	EN ISO 14946:2001 / AC 2005
A3.4	Openings in hull, deck and superstructure	EN ISO 9093-1:1997, EN ISO 12216:2002
A3.5	Water incursion	EN ISO 15083:2003, ISO 8849:2003
	<b>Handling characteristics</b>	
A4	Handling characteristics	EN ISO 11592:2001, RSG Guidelines RFU 114, EN ISO 8665:2006
A2.4	Visibility from the principal steering station	EN ISO 11591:2011

## 2 Definitions

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

- DANGER!** Denotes an extreme hazard that will result in a high probability of death or permanent injury if proper precautions are not taken.
- WARNING!** Denotes a hazard that can result in injury or death if proper precautions are not taken.
- NOTE!** Denotes a reminder of safe practices or directs attention to unsafe practices which could result in personal injury or damage to the craft or components or the environment.

SI system units are used in this manual. In some cases, other units have been added in brackets. An exception is wind speed, for which the Beaufort scale is used in the Recreational Craft Directive.

## 3 Warranty

The boat and its factory-installed equipment have a two-year warranty, starting on the first day of use. Please contact your dealer regarding any potential warranty issues. Please remember to provide the WIN code. If possible, please provide a digital photograph of the subject of your claim. This usually speeds up the claims process.

## 4 Before use

### 4.1 Registration

Registration regulations vary between different countries. Find out what is required in relation to your own boat.

### 4.2 Insurance

Boat insurance can compensate damage occurring on water or during transport and lifting. Check who has insurance liability each time when having the boat lifted. Insurance also has an indirect effect on safety at sea: In the event of a serious accident or damage, you must, above all, concentrate on saving people. Insurance companies will be able to give more information about different insurance alternatives. Check who has insurance liability each time when having the boat lifted or transported!

## 5 Characteristics and use of your boat

### 5.1 General

This user manual is not intended to be a complete service or repair manual; it simply guides the user on how to use the boat in the proper manner.

### 5.2 Basic information

Recreational crafts can be constructed according to 4 categories (A, B, C and D) under the Recreational Craft Directive 2013/53/EC. This boat has been constructed according to design category C. The meanings of the various design categories are explained below.

**Category A:** The boat is built for conditions where wind speed can exceed 8 Beaufort (approx. 21 m/s), and where the significant height of the waves (please refer to note below) can exceed 4 metres. In such circumstances the boats are largely self-sufficient. Category A does not include abnormal conditions such as hurricanes. Such conditions may be encountered on extended voyages, for example when crossing oceans, or in coastal areas where there is an open expanse of sea for several hundred nautical miles off the coast.

**Category B:** The boat is built for conditions where wind speeds can reach a maximum of 8 Beaufort (approx. 21 m/s), and where the corresponding significant height of the waves (please refer to note below) is 4 metres at most. 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:** The boat is built for conditions where wind speeds can reach a maximum of 6 Beaufort (approx. 14 m/s), and where the corresponding significant height of the waves (please refer to note below) is 2 metres at most. Such conditions may be encountered on exposed inland waters, in estuaries, and in coastal waters in moderate weather conditions.

**Category D:** The boat is built for conditions where wind speeds can reach a maximum of 4 Beaufort (approx. 8 m/s), and for corresponding seas (significant wave height does not exceed 0.3 metres, and the height of the greatest waves does not exceed 0.5 metres). Such conditions may be encountered on protected inland waters, and in coastal areas during fine weather conditions.

**Note:** Significant wave height is a term used in boat design. In practice, significant wave height means the average height of the highest third of all wave heights measured in the waters. If the significant wave height is 2.0 m, the mean height of all waves is roughly 1.2 m.

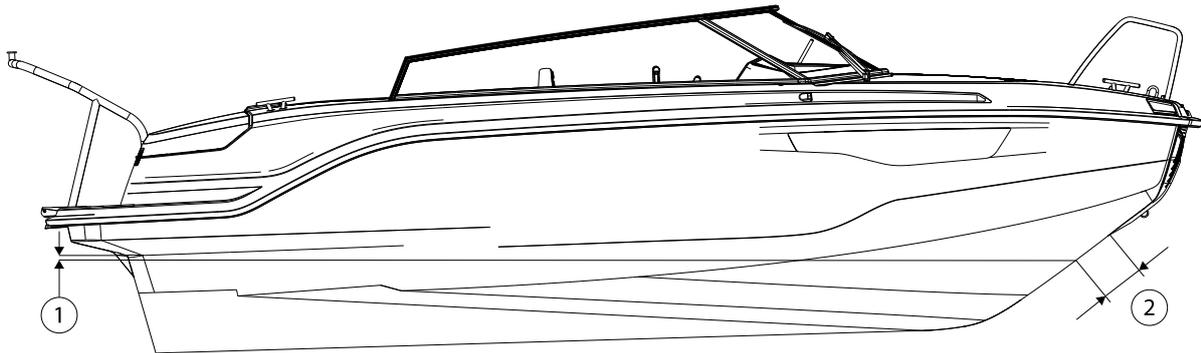
**Maximum recommended load:** See *technical specifications*  
See also section 5.4 "Loading".

**Main dimensions and capacities:** See *technical specifications*  
Craft length, width, draught, total weight, etc., and tank capacities are shown in the technical specifications.

**Builder's plate:**  
Part of the aforementioned information is given on the builder's plate, which is affixed next to the remote control. Supplementary information is provided in the appropriate sections of this manual.

## Technical specifications

Model	SILVER TIGER DC
Design category	C
Overall length (swim ladder not included)	6.06 m
Width	2.36 m
Weight without engine, fluids and equipment	approx. 1100 kg
Weight on trailer with largest recommended engine	approx. 1551 kg Includes the boat (approx. 1100 kg), outboard engine 150 hp (261 kg) and the estimated weight of fluids and equipment (190 kg). NOTE! This is not the maximum weight of fluids and equipment.
Weight on trailer with the largest engine that complies with the standard	approx. 1551 kg Includes the boat (approx. 1100 kg) and a 150 hp engine (261 kg) and the estimated weight of fluids and equipment (190 kg). NOTE! This is not the maximum weight of fluids and equipment.
Maximum weight of load / Maximum number of passengers	750 kg 8 persons
Maximum load includes	600 kg / 8 persons (75 kg each) + personal equipment 40 kg + fuel 80 kg + fresh water 30 kg as additional equipment
Maximum load on builder's plate (CE sign)	640 kg Includes passengers 8 x 75 kg = 600g + personal equipment 40 kg = a total of 640 kg
Weight at full load	3434 kg Includes the boat 1,100 kg + engine 261 kg + battery 20 kg + basic equipment 60 kg + personal equipment 40 kg + fuel 80 kg + water 30 kg + passengers 600 kg
Maximum engine power	111 kW / 150 hp
Weight of largest recommended engine	261 kg
Fuel tank capacity	107 litres
Maximum draught at full load, engine up	0.43 m
Maximum height from water line at light load	1.3 m
Construction material	Glass fibre reinforced polyester
Colour code:	RAL 9016
Hydraulic hoses	5.5 m
Maximum speed at boat test	approx. 40 knots

**Antifouling line:**

- No 1, stern      20 mm downwards from lower corner of bath platform
- No 2, bow      210 mm downwards along the bow from lower edge of bumper

**NOTE!**

The measurements indicate the upper limit of antifouling **paint**, **not the boat's water line.**

### 5.3 Maximum recommend number of passengers

The boat's maximum recommended number of passengers is 8 persons.

**WARNING!**

Do not exceed the maximum recommended number of passengers. Regardless of the number of passengers, the total weight of people and equipment must never exceed the maximum recommended load (please refer to Section 5.4, "Loading"). Always remain seated on the boat. All persons on board must remain seated while the boat is moving.

### 5.4 Loading

The boat's maximum permitted load is 750 kg. This load includes the following weights:

- a) The total weight of passengers 600 kg (the default weight of an adult is assumed to be 75 kg and that of a child 37.5 kg)
- b) Liquids 110 kg (fuel 80 kg and fresh water 30 kg)
- c) Personal equipment (e.g. recreational and overnighting equipment) 40 kg

**NOTE!**

The maximum permitted load only includes the weights mentioned above.

**WARNING!**

**Never exceed the maximum recommended load when loading the craft.** Always load the craft carefully and distribute loads appropriately so that the boat is on an even keel. Heavy equipment should usually be placed in the storage compartment under the aft seat. If the boat is carrying the maximum number of passengers, heavy items should be placed in the bow so that the boat will not be tail-heavy. Always avoid placing heavy items high up.

## 5.5 Engine and propeller

The maximum engine power for the boat is 150 hp (111 kW). Do not use the boat with an engine that has an output higher than the kW limit given on the CE plate (150 hp) . Using a more powerful engine than specified on the CE plate will void the boat's warranty. Follow the dealer's instructions when choosing the propeller for your boat.

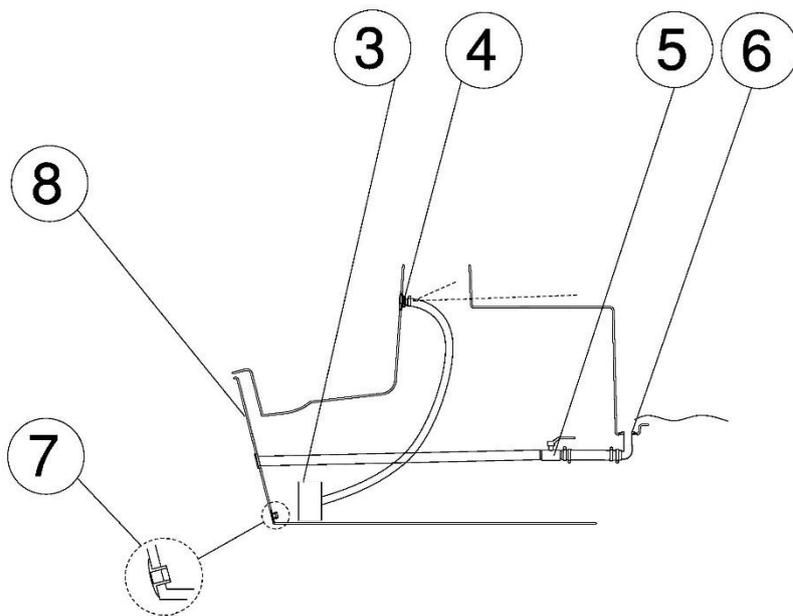
## 5.6 Prevention of water incursion and stability

### 5.6.1 Hull and deck through fittings and closing valves

The boat has a rainwater drainage system, which means that rainwater in the open space of the boat is drained when the boat is on the water. The system also functions when the boat is out of water, provided that the bow is higher than the stern and closing valve is open. The rainwater drainage valve is located underneath the middle hatch of the aft sofa. This drain valve is meant to be shut only when at heavy load to prevent potential water incursion. **In other loading conditions the drainage valve should remain open to let rainwater drain from the boat.**

The boat has an electric bilge pump in the bilge (location shown in the picture below). The function of the bilge pump is automatic meaning that it will automatically empty the bilge if there will appear water. The capacity of the electric bilge pump is about *40 l/min*. On the right hand of the steering wheel you find the manual switch to turn on the electric bilge for testing/checking the function. In the switch there is a light that will turn on if there is water in the bilge. If the light turns on you should immediately check the bilge by open the inspection hatch in the plywood bottom plate underneath the middle hatch in the aft sofa. If the bilge is empty you can continue boating but if the light turns on again and pump starts to empty the bilge you have to immediately drive to the shore and nearest harbour or landing-stage and thereafter lift up the boat from water to find out the reason to the leakage.

The electric bilge pump can be checked by removing the plywood plate underneath the middle hatch of the aft sofa. The pump can be lifted up by gripping the hose as it is only submerged in a kind of pocket.



Rainwater drainage system and bilge pump system

- |                                  |  |
|----------------------------------|--|
| 3. Electric bilge pump           | 6. Rainwater drainage through fitting      |
| 4. Bilge pump hose               | 7. Drain plug for bilge                    |
| 5. Rainwater drainage pipe valve | 8. Shut-off flap, aft end of drainage pipe |

The owner of the boat is responsible for ensuring that there is at least one baler or bucket in the boat.

**WARNING!** The bilge pump system is not intended to cope with a leak caused by running aground or other equivalent damage (hull damage).

**SAFETY MEASURE!** Regularly check to ensure that there is no debris around suction grid of the bilge pump.

**WARNING!** Always keep the drainage pipe valve shut when the pipe's inboard end is constantly under water due to heavy loading. The shut-off flap on the transom only prevents water from entering the boat when reversing!

**NOTE!** Make sure that water can flow unobstructed through the drainage pipe. Debris such as autumn leaves may obstruct the water flow, which can cause the boat to fill with water and sink. The bilge pump system does not work in conditions below 0°C.

**NOTE!** There is always some condensed water in the bilge. The hull bushings may also allow water to seep through, particularly as the boat ages. Always remember to check the bilge before you leave the boat at quay or buoy, and always before setting off. Have any leaks repaired at an authorised repair shop.

**WARNING!** The boat's handling properties may become extremely dangerous if there is water in the bilge.

## 5.6.2 Stability and buoyancy

Please note that stability will be reduced by any weight added high up on the boat. Any change in the distribution of weight on board may significantly affect the stability, trim and performance of your boat. Please remember that large breaking waves always present a serious danger to stability.

## 5.7 Preventing fires and explosion hazards

### 5.7.1 Refuelling

Shut off the engine and extinguish any cigarettes before starting to refuel. During refuelling, do not use switches or appliances that can cause a spark.

When refuelling at a service station, do not use a plastic funnel, since it will prevent the tension between the refuelling nozzle and filling vent from being discharged.

Hint: If you are afraid of getting fuel on the synthetic teak deck during refuelling, wet the deck with water. You can also hold a rag in front of the fuel filler to prevent fuel from splashing on the deck.

Always keep a spare can of fuel on board. The anchor boxes at the stern are especially suitable for storing the spare canister as there is no risk of vaporised fuel coming into contact with battery compartments or the electrical system from either of these boxes.

Do not stow any loose items under the aft sofa that could prevent fuel flow to the engine if they shift. Check the fuel hoses annually for wear, especially at through fittings.

Please note that, depending on the trim of the boat or the boat's heeling angle, it might not be possible to use the full capacity of the fuel tank.

If the boat is on trailer behind a car when refuelling, please note that the fuel tank ventilation does not work efficiently if the bow of the boat is downwards.

**WARNING!** Vaporised fuel is highly explosive. Observe these instructions and the utmost caution during refuelling. The smell of fuel always means that there is vaporised fuel on your boat.

### 5.7.2 Other fuel-operated systems (diesel heater optional accessory)

The diesel-operated heater (optional accessory) has its own user manual and the operation is not described in this manual. The fuel tank for the heater is located underneath the aft sofa. Turn off the heater when refuelling the diesel tank. When handling diesel, do not use switches or appliances that can cause a spark. Always clean any spilled fuel immediately.

**NOTE!** If the boat is equipped with a heater (optional accessory), do not block the exhaust grates when the heater is switched on. This will cause the heater to overheat and engage the overheat protector.

### 5.7.3 Fire protection

The boat is equipped with a portable 2 kg fire extinguisher class 8A 68 B, which is the minimum power requirement for extinguishers. For the extinguisher to remain reliable, it should be inspected annually by an authorised inspector. In the event that the fire extinguisher is replaced, the capacity of the new one must be at least equivalent to the old.

The fire extinguisher is located underneath the aft sofa hatch on port side.

Ensure that firefighting equipment is readily accessible even when the boat is loaded. Inform members of the crew about the location and operation of fire-fighting equipment. The fire extinguisher is located in the storage compartment of the aft sofa on port side (left-hand side) in the open deck space. There is a red extinguisher sign outside sofa showing the location of the extinguisher.

Remember:

- Never hinder access to safety equipment, for instance the switches to the electric system.
- Never hinder access to fire extinguishers located in a box.
- Never leave the boat unsupervised while the cooker or heater is on.
- Never make alterations to any of the boat's systems (especially the electricity or the fuel systems) or allow an unqualified person to make alterations to any of the boat's systems.
- Never refill a fuel tank when the boat's engine is running, or the cooker or heater is on.
- Never smoke while handling fuel or gas.

## 5.8 Main power switches and circuit breakers

Operation of the main power switches:

- Clockwise position → Circuit switched on when green colour
- Counter-clockwise position → Battery disconnected when red colour

If your boat is equipped with 2-battery-system switch the power off from both main switches when leaving the boat, and always switch both switches on when using it.



Electric circuit fuses are located to the left of main power switch(es). Fuse sizes are presented in the electrical diagram. Do not change the circuit breaker amperages or install any components that exceed the nominal amperage of the circuit in the electric system.

Remember to always use both main switches when switching the power off or on. Remember also to switch off the main power switch before making any electrical installations.

All fuses are automatic circuit breakers. In the event of a fault current, the circuit breaker will trip.

You can reset the circuit breaker by pushing it back in. If the circuit breaker immediately trips again, there is a short-circuit somewhere in the electrical system or in a component. You must leave repairing the boat's electrical system to a professional electrician.

**NOTE!** Remember also to switch off the main power switch before making any electrical installations.

**NOTE!** Never switch off the main switch while the engine is running! It can cause

serious damage to the engine's electric system.

**NOTE!** Do not perform electric installations (such as changing lamps) when the power is on. Leave any larger installations to professionals.

**NOTE!** When connecting or disconnecting the battery, do not touch both terminals simultaneously with metal objects.

## 5.9 Operation

If this is your first boat or a boat type new to you, take someone with experience of a similar boat with you the first few times you operate it.

### 5.9.1 Controls

You will quickly learn how to control your boat, but changing weather conditions, such as wind and waves, will always present new challenges for the driver. The remote control combines the functions of throttle, forward and reverse gears, and the adjusting of the engine trim angle. The boat is equipped with hydraulic steering.

### 5.9.2 Emergency switch

The emergency switch is a device that you have to attached to the remote control or to the ignition key panel (depending on what outboard motor brand). The other end you should attach around your knee. The emergency switch automatically switches off the engine when detached from the remote control. It is very important that the boat will come to a halt if the driver, for whatever reason, loses his/her balance and is flung from the helm.

**NOTE!** Never take control of the boat without having attached the emergency switch to yourself. If you attach the emergency switch to your arm, do not steer the boat with that arm, because the chain may be tangled in the steering wheel during tight turns.

**NOTE!** The engine will not start if the emergency switch is not attached to the switch on the remote control.

**DANGER!** A rotating propeller presents a life-threatening danger to a swimmer or a person who has fallen overboard. Always use the emergency switch to turn off the engine when a swimmer or water skier is about to re-enter the boat from the water.

### 5.9.3 Gearshift and throttle

The engine is put into gear by pushing the button on the gear/throttle handle upwards with your fingers and by pushing or pulling the gear/throttle lever forward or backward, depending on the direction in which you are planning to go. When the engine is in gear, you can adjust the boat's speed using the same gear/throttle lever.

When the boat is travelling forward slowly, you can use the reverse gear for braking when approaching the dock, for instance. Shifting into reverse must not be done if the boat is travelling at higher speeds, because it will damage the engine.

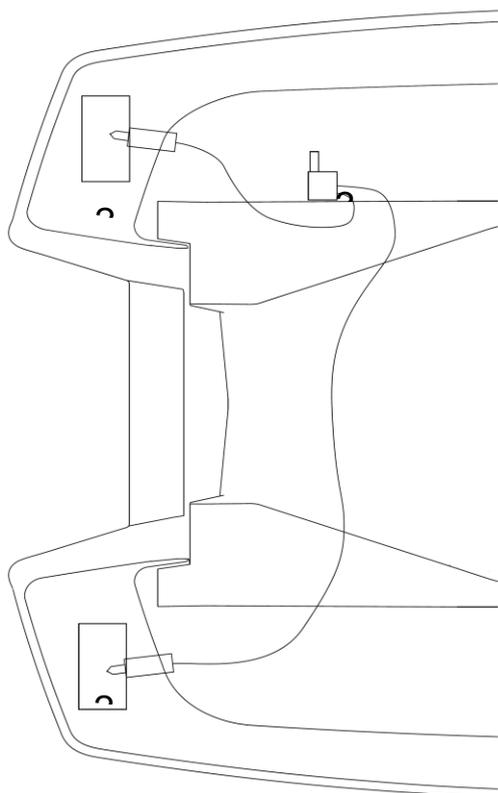
### 5.9.4 Adjusting the trim angle

These are the main rules when adjusting the trim angle:

- When bringing the boat to plane, keep the 'bow down' position.
- When the boat is planing and seas are calm, keep lifting the bow until you can feel that both the engine and the boat move very easily. In calm waters, the engine should normally be trimmed up at least 3 scale marks on the trim indicator on the revolution counter. If the engine is trimmed up too much, the speed of the boat will be reduced. If the boat is trimmed too low, the boat will run slowly, and the engine will run heavily. To achieve good fuel economy, it is important to drive the boat with the right engine trim angle.
- In heavy head seas, lower the bow to allow it to slice through the waves better, thus providing a smoother ride.
- In following seas, raise the bow to avoid 'diving' into the waves.

#### **WARNING!**

Do not drive the boat at high speeds with the engine trimmed up (bow up), as there is a risk of sudden heeling when the propeller hits the water again after a flight in heavy waves. Likewise, do not drive at high speed with the engine completely trimmed down (bow down) since this can cause the boat to pitch unexpectedly when the bow hits the water. The boat may become unstable when turning if the bow is too low.



### Trim flap system

1. Control panel at helms man position
2. Distribution unit
3. Trim flaps

#### **WARNING!**

If you use the trims manually, adjust the trim controllers carefully at high speeds. They will change the behaviour of the boat radically.

#### **WARNING!**

Waves reduce manoeuvrability and make the boat heel. Accordingly, reduce speed when encountering heavier seas.

### 5.9.5 Starting the engine

1. Switch the power on using the main power switch.
2. Lower the engine to the driving position by pressing the Power Trim button on the gear/throttle handle.
3. Check that the gear/throttle handle is in the neutral position and that the emergency switch is attached to the bottom of the remote control.
4. Switch on the current, using the start key, without starting the engine and wait a few seconds for the warning lights to light up.
5. Start the engine by turning the ignition key clockwise until the engine starts. If everything is in order, the engine should start within 1-2 seconds. If the engine does not start, you should not try to start it for more than 10 seconds at a time.
6. After the engine has started, let it idle for a few minutes before setting off. (Please refer to the engine manual!)

For more detailed information, please refer to the engine manual.

### 5.9.6 Driving

It is easy to drive when the weather is fine and the sea is calm. However, always remember to keep an adequate lookout. In order to maintain the best possible visibility from the driver's position, you should do this:

- Ensure that passengers do not restrict your visibility.
- Do not drive near planing speed for long periods, as the bow comes up and reduces visibility.
- When visibility is poor, look over the windshield.
- Remember to also keep a lookout behind you, particularly on shipping lanes.

Use navigation lights in darkness.

Always adjust your speed to prevailing conditions and the environment. Take into account the following:

- waves (also consult the passengers on what is a comfortable speed);
- your own bow wake (greatest at planing speed, smallest at speeds under 5 knots);
- visibility (islands, fog, rain, driving against the sun);
- familiarity with the route (time required for navigation);
- width of the route (other traffic, noise and bow wake near shore).
- Make sure to always maintain a sufficient distance to avoid collision. The distance must be sufficient to stop the boat or to take evasive action.

When running at low speed, a planing boat's directional stability is poorer than at higher speeds. So be careful in narrow passages and, particularly, when meeting other boats.

You must learn the rules of traffic on sea lanes and follow the international regulations on how to avoid collisions at sea, COLREG. Navigate with care and use new or updated nautical charts.

The running position of the boat greatly affects its handling characteristics and fuel consumption as well as visibility from the driver's position. You can affect the running position by:

- placing the load properly – the general rule being that you should place as little weight in the bow as possible; and
- adjusting the trim angle.

The combination of the right running position with the right speed also makes driving in rough seas safer and more comfortable.

**WARNING!**

A high speed and sudden manoeuvring in rough seas can lead to loss of control over the boat and large heeling angles.

**NOTE!**

The boat is not designed to jump waves. The warranty does not cover damage caused by flight. It is possible to check whether the engine has been airborne from the engine history on the repair shop's computer.

### 5.9.7 Approaching and leaving the dock

Practise boat manoeuvring skills where there is ample space to learn how to approach a dock before entering a crowded marina.

A very gentle application of throttle does not generate sufficient steering power. Sharp but short throttle applications enable efficient steering movements when approaching the dock.

Ensure that everyone on board who does not have to stand up is seated when you are approaching the dock. Sudden steering movements may cause the boat to heel and injure somebody.

Before docking, prepare the mooring lines at stern and bow. Approach the dock bow first at a slight angle. Just before touching the dock, steer into it and shift into reverse. Apply throttle quickly and sharply. The boat will stop and turn parallel to the dock. If possible, make the approach into the wind or current, whichever is the strongest. This makes departing easier, as the wind or current will push the bow out from the dock. The easiest way to depart is to first push the stern as far away from the dock as possible, and then slowly reverse away from the dock into open water.

The propeller is designed to have the best grip in forward gear. Therefore, propeller performance is weaker in reverse. The steering response is also not as good in reverse as in forward gear.

- WARNING!** The boat is fast. If you are planing, it takes time to come to a stop. Slowdown in time before anchoring, beaching or docking. Learn to estimate the distance the boat needs to stop. Remember that steering control is poor if there is no traction.
- WARNING!** Do not try to stop the boat with your hands, and do not put your arm or foot between the boat and the dock, the shore or another vessel! Practise beaching and docking under favourable conditions! Use moderate but firm engine power!
- NOTE!** When securing your boat, take into consideration the possibility of changes in wind direction, rising or sinking of the water level, bow wakes, etc. You can get more information from your insurance company, for example.

### 5.9.8 Using the canopy

The canopy is designed to withstand a maximum speed of 30 knots at sea, and 50 km/h in road transport. All press studs must be properly fastened when using the canopy. The canopy's design allows raising just the front part. We recommend that you remove the sides and back of the canopy to make it fit into the canopy box more easily. Then, fold the upper parts of the sides entirely on top of the roof, so that no fabric remains where the corners of the canopy supports are. Finally, roll up the roof part along with the sides folded on top of it, and lower the canopy into the canopy box.

**NOTE!** The boat should not be driven in rain with the canopy down. The equipment in the open deck space is not water-tight and must be protected from the rain.

**NOTE!** The windscreen and canopy do not necessarily form a watertight seal.  
Water may enter the boat between the canopy and windshield when the canopy is up.

### 5.9.9 Windshield door

The windshield door must always be kept shut and locked when the boat is moving. The door has not been designed to be used as a railing when getting in or out of the boat.

**WARNING!** The door must be kept closed in rough seas or strong or gusty winds, since it may slam shut. The door is heavy and may cause injury if it strikes someone when slamming shut.

**WARNING!** Large waves or gusts of wind may slam the door shut also when the boat is stationary. It is thus recommended to always keep the door closed when the passage through the bow deck is not being used.

### 5.9.10 Stairs, sharp windshield corner and cabin door

Great care must be taken when using the stairs, particularly when the cabin door is partly open.

**WARNING!** The bow anchor box hatch is equipped with a rubber band that holds the hatch closed while driving.

**WARNING!** It is not recommended that children do not use the hatch, as their fingers or toes could get caught in it.

## 5.10 Proper use – other recommendations and guidelines

### 5.10.1 Man overboard

It is always a serious situation when someone falls overboard. Rescue procedures should be practised in advance during good weather, because it is too late for practice when someone has actually fallen into the water.

It is always easiest to help a person climb back on board at the stern of the boat. A rope loop attached to the boat helps lifting. The boat's swim ladder extends 30 cm into the water. If a child has fallen overboard, an adult carrying an extra life-saving device or a fender must always jump in after the child; however, someone must always remain on board the boat.

It is very important to maintain visual and verbal contact with a person that has fallen overboard.

**DANGER!** A rotating propeller presents a life-threatening danger to a swimmer or a person who has fallen overboard. Always use the emergency switch to turn off the engine when a swimmer or water skier is about to re-enter the boat from the water.

Potential life-raft, the recommended location is under the back seat

### 5.10.2 Securing loose equipment

Stow all heavy equipment, such as anchors, and secure them firmly before setting off.

### 5.10.3 Bow cabin sliding door

**NOTE!** The sliding door of the cabin must be kept closed while driving.

### 5.10.4 Respect for the environment

Conservation of the environment is a matter of honour for every boater. Therefore, you should avoid:

- fuel and oil leaks;
- emptying rubbish and waste into the water or on the shore;
- letting detergents or solvents get into the water;
- loud noise both on the water and at the marina; and
- producing an unnecessarily high bow wake, especially in narrow passages and shallow waters.

Service the engine well and run it at the most economical speed, which will also keep exhaust emissions low.

Please also consider other local environmental legislation and regulations. In Finland, under 'everyman's right' anyone may move around on private land, except in the vicinity of residential buildings, as long as they cause no damage or inconvenience. 'Everyman's right' also allows movement and temporary anchorages on privately owned waters, swimming and going on shore at uninhabited locations, unless landing is specifically prohibited by a notice from the authorities. It is not allowed to anchor next to a shoreline where there are one or more residences. Docking at a private dock owned by someone else or landing on a shore where there are residences is also not allowed without permission.

Please make sure to familiarise yourself with the International Convention for the Prevention of Pollution From Ships (MARPOL) and respect it to the greatest possible extent.

It is allowed to camp out on islands as long as no damage is caused to the landowner. It is not allowed to camp out next to residential buildings or in or near cultivated fields. You may not light a campfire unless you have the landowner's permission. Everyman's right allows the picking of naturally growing berries and mushrooms without damaging trees or the environment in general. Please check the regulations concerning movement in the natural environment in your area.

### 5.10.5 Anchoring and mooring the boat

Always moor your boat carefully, even in sheltered places, because conditions can change rapidly. Mooring lines should be equipped with absorbers to dampen any jolts. Please refer to the section Towing for the location of bollards. To prevent abrasion, use fenders that are large enough.

The forward endurance of the bow bollards is at least 23 kN, or c. 2,300 kg. The backward endurance of the stern bollards is at least 16.0 kN, or c. 1,600 kg.

The minimum anchor weight for the boat is 5 kg. Drop anchor far enough from shore. A reasonable grip is attained if the anchor line length is 4–5 times the water depth.

**WARNING!** Do not try to stop the boat with your hands, and do not put your arm or foot between the boat and the dock, the shore or another vessel!

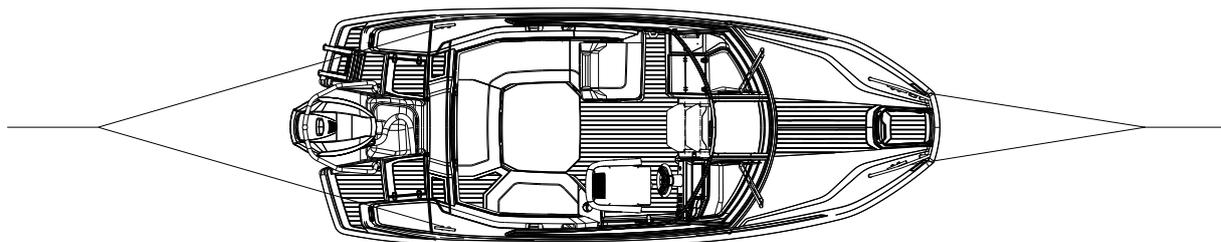
**NOTE!** When securing your boat, take into consideration the possibility of changes in wind direction, rising or sinking of the water level, bow wakes, etc. You can get more information from your insurance company, for example.

### 5.10.6 Towing

When towing another boat, use a floating line that is strong enough for the task. Begin towing slowly, avoid jerks, and do not overload the engine.

The owner of the boat should consider the measures necessary for securing the boat's towrope.

If you are towing, or if your boat has to be towed, attach the towline to the bow or stern bollards as per the following image.



**WARNING!** When towing, the towline is under high tension. If it should break, the end that snaps off may lash back fast enough to cause serious injury or death. Always use a thick enough line and keep to one side of the towline.

**NOTE!** When towing another boat or being towed, always drive at low speed. If the boat has a displacement hull, never exceed hull speed while towing.

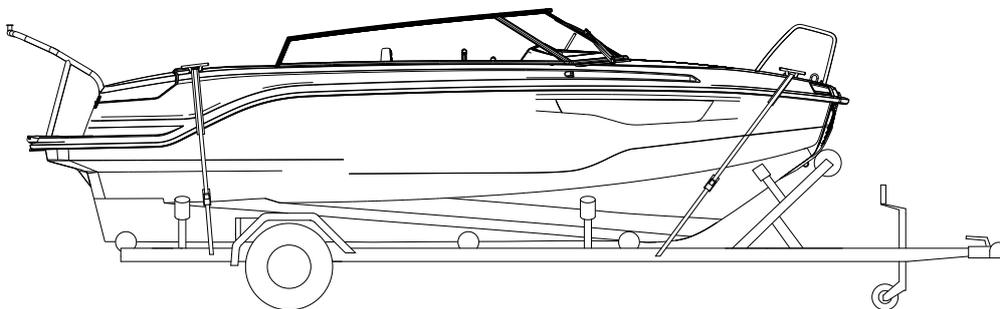
**NOTE!** The towline should always be fastened so that it can be unfastened under load.

### 5.10.7 Trailer transport

Weight data for trailer transport may be found in the technical specifications. The trailer's keel supports should bear most of the weight of the boat. Adjust the side supports so that the boat will not rock sideways. For more information, please turn to your dealer.

Clean the supports of sand and dirt so that they will not scratch the bottom of the boat. Double-check that the trailer is securely coupled to the trailer tow hitch!

The place for lifting the boat out of the water should be sheltered, and the ramp should extend deep enough into the water. Reverse the trailer so deep into the water that the rearmost keel support is just above the water. Drive the boat carefully towards the rearmost keel support. Fasten the hoist cable to the towing eye and reel the boat up onto the trailer, making sure that the boat remains straight on the trailer's centre line. Remember to trim up the engine before reeling the boat onto the trailer so that it will not hit the bottom.



#### Securing the boat to the trailer

Tie the boat properly before beginning transport. The sling ropes at the bow should be directed down and back, and the sling ropes at stern should be directed down and front. Do not leave any loose equipment or extra load on the boat when it is being transported. Remove the seat cushions and close all hatches properly.

The engine should be in the driving position during transport. However, ensure that there remains adequate clearance. If the clearance is not sufficient in this position, you can transport the engine raised. In this case, the engine must be supported with a suitable support to protect the transom.

If the boat is kept on the trailer between transports, you must loosen the sling ropes for the duration and tighten them before the next transport.

**NOTE!** The trailer should be slightly front-weighted. Make sure that the boat is fastened tight enough to the trailer and that the weight of the boat is divided equally between side supports. If the boat swings against a side support during transport, it may sustain hull damage.

When letting the boat down from the trailer, remember to fasten the bow rope to the boat beforehand so that you can release the cable/rope from the trailer hook as soon as the boat is in the water. Be careful with the winch handle!

### 5.10.8 Docking

The storage cradle should be sufficiently steady and suitable for this particular boat and engine combination. A sturdy plank (2x4"), should be placed between the "V" trestles to support the keel and to bear most of the weight of the boat. The boat must not rest on the side supports. The side supports should not be placed at the corners on the bottom, and point loads should be avoided. The supporting structures should be strong, particularly near the transom, to support the added weight of the engine.

Only use reputable lifting companies or boat yards with sufficient lifting capacity. In addition to the boat's tare weight (please refer to the technical specification), also take into consideration accessories and other possible loads in the boat.

When the boat is being lifted, the lines must be placed under the boat and the boat must remain horizontal during lifting.

**NOTE!** Do not lift the boat by its bollards.

**DANGER!** Never stand under a boat that is suspended from a crane.

## 6 Servicing and maintenance

Keep your boat and its equipment clean and tidy. This increases comfort and safety on board, and also the boat's resale value.

Familiarise yourself with the service procedures shown in the engine manual (see annex). Have your engine serviced according to the instructions in the manual.

### 6.1 Washing and waxing the boat

Normally it is sufficient to just wash and wax the deck and sides. Special boat cleaning agents are most suitable for the purpose. Use mild detergents. Do not use strong solvents (pH value must not exceed 11); they can cause glossy reinforced plastic surfaces to fade. Mildly

abrasive polishes can be used to remove chafes and embedded dirt from the deck. Fibre glass surfaces can be washed with a pressure washer.

Useful tip: When the boat has been washed with tap water, a thin chalk-like layer of lime and minerals will remain on the boat's surface after it has dried. The problem can be eliminated by adding a few drops of pine oil soap into a bucket of rinsing water, which will soften it.

Useful tip: Water and lime stains on stainless steel rails can be removed using Lemon Pled furniture spray. Your railings will shine like the day they came off the assembly line.

Useful tip: If the boat's ropes smell bad after the season, immerse them for a couple of hours in a bucket of water with a bottle of apple vinegar and a splash of fabric conditioner added. Allow the lines to dry properly, and they will be as good as new.

## 6.2 Care instructions for seat cushions

Always use the canopy or harbour cover when it is raining to protect the open deck space and seat cushions. Although the seat cushions are made of water-resistant material, water can get in through their seams. If the cushions remain damp for any length of time, they may get mouldy and be ruined. If the mattresses get wet, the fabric can be removed by unzipping the mattress and dried in the sun, at room temperature or in a sauna (50°C). The warranty does not cover cushions spoiled by rain or damp.

**NOTE!** To keep the boat's seat cushions in good condition over the winter, they should be stored in a dry, well-ventilated space.

**NOTE!** Wet cushions should not be placed in storage, because they gather mould easily.

The press studs of the seat cushions should be sprayed with silicon spray every now and then, otherwise they may become so tight that the fabric will tear when trying to open them. The warranty does not cover ripped seat cushions. Use very little silicon spray at a time in order not to stain the cushions.

## 6.3 Care instructions for the canopy

Store the canopy over winter in a dry and well-ventilated place. The warranty does not cover torn or mouldy canopies.

## 6.4 Care instructions for the windshield

The boat's windscreen is made of tempered glass and can be cleaned with ordinary glass cleaners.

Useful tip: When wiping the boat's windshield dry after cleaning, avoid using circular motions. This can leave circular smudges on the windshield that become visible in sunlight, impeding visibility. Wipe off any streaks with dry newspaper or cotton cloth using first horizontal, then vertical motions. Repeat this a few times and you'll bring the windshield to a brilliant shine.

## 6.5 Care instructions for the stainless steel components

To keep the boat's stainless steel parts, such as rails, handles and bollards, shining as good as new, you should keep the parts clean and waxed. The edges of the mounting flanges of the rails should also be cleaned. Any dirt that remains under the edge of the flange will begin to look like rust. In regular use (i.e. no damage), the parts should be cleaned and waxed at least twice every summer. Rail maintenance should also be performed when the boat is put into winter storage.

## 6.6 Care instructions for the steering system

The hydraulic steering does not require maintenance under normal circumstances. If the steering starts to feel loose, there is a leak somewhere in the system. Leaks must be repaired immediately!

**WARNING!** A hydraulic steering system that has a leak or trapped air in the hoses is extremely dangerous.

## 6.7 Care instructions for electrical components

Electrical components like main switches, other switches and couplings do not normally need to be serviced if the boat is stored in a dry and well-ventilated place for the winter. If, however, you wish to protect electrical components against oxidation, the best way to do it is by spraying them every now and then with a moisture repellent antioxidant.

## 6.8 Minor superficial repairs

You can repair minor surface damage to the boat's hull or deck yourself. However, achieving a neat, unnoticeable repair requires a considerable amount of skill:

1. Protect the area around the damage with tape.
2. Bevel the edges of the damaged area and clean with acetone.
3. If the damage is deeper than 2 mm, it is advisable to smooth it with an appropriate polyfiller before painting.
4. Mix topcoat with 1.5-2 % hardener.

5. Fill the repair with more topcoat than needed, so that its surface remains slightly proud of the surrounding area.
6. Carefully put tape over the repair.
7. After the topcoat has hardened, remove the tape and sand the repair using 600 and 1200 paper applying water.
8. Buff using abrasive paste and wax.

The colours used on this boat are specified in the *technical specifications*. One point to consider is that a paint called *gelcoat* has been used in manufacturing the boat, but the surface is always repaired with a paint called *topcoat*. Gelcoat paint does not harden without a mould surface, whereas paraffin has been added to topcoat to allow it to harden.

**NOTE!** Some post-delivery installations and alteration work may cause damage to the structure of the boat or impair safety if not performed correctly. Please contact the dealer if you are planning any modifications.

## 7 Winter storage

Preparing your boat for winter storage is an annual routine. Have your boat lifted in good time before the water freezes. Your boat is not designed for use in ice and it is not meant to be used in temperatures below zero (for example, the rainwater drainage system will freeze up). It is advisable to perform all maintenance, repair and inspection procedures in connection with placing the boat in winter storage.

Familiarise yourself with the service procedures shown in the engine manual. We recommend that you leave them to an authorised service agent. Do not forget to service the remote control and steering system. Make sure to perform their maintenance according to their separate instructions and manuals.

### 7.1 Measures before winter storage

Wash the bottom of the boat immediately after the boat has been lifted. Algae and slime will come off easier if they are not left to dry. Empty the engine of its cooling water according to the manual.

Give the engine and other equipment their winter servicing, following their separate manuals. If your boat is stored outside or in a humid place over the winter, empty it of textiles and other equipment that may corrode or become mouldy in damp conditions. Wash the ropes in fresh water. Replace any worn ropes. Leave through fitting valves open. Remove the drain plug for the winter.

Empty the septic tank and the freshwater tank of the boat. Pour two litres of a mixture that contains 50 % ethylene glycol and 50 % water into the toilet and press the flush button for about two seconds.

Check the condition of the hull and rub down any scrapes to let possible moisture inside the laminate dry. Repair any damage in the spring before launching the boat.

Remove all food from the boat and wipe all the surfaces on which food has been handled with a disinfectant. This will prevent the formation of mould.

Always cover your boat so that snow cannot gather inside. Always make sure, however, that it is adequately ventilated. A winter storage cover is available as an optional accessory for your boat.

## 7.2 Measures before launching the boat

Repair any damage to the gelcoat surface according to section 6.10.

In sea areas, antifouling paint should be used to prevent the hull from becoming covered with vegetation. Fouling of the bottom and especially the propeller increases fuel consumption significantly. However, if the boat is anchored at the inlet of a stream or in a land-locked lake, or if it is lifted out of the water at least once every two weeks, it is normally not necessary to use antifouling paint. Carefully follow the paint manufacturer's instructions when applying the paint. When sanding old antifouling paint, remember that the dust is toxic.

Antifouling paint is not necessary in fresh water (lake areas). We nevertheless recommend using an epoxy primer if the boat will be in the water for several months each year. Fresh water, and warm fresh water in particular, is more readily absorbed by the laminate than sea water.

**NOTE!** Do not paint over the zinc anodes or the piston rods of hydraulic trim tabs. Do not apply paints containing copper on aluminium parts. Remember to follow the paint manufacturer's instructions.

Useful tip: Do not throw away a used paint brush. A dried and hardened paint brush that has been used for antifouling paint can be reused if you first soak it for a couple of hours in a mix of 2 litres of hot water, 100 ml of vinegar, and 50 ml of baking powder.

Perform the necessary service procedures required for the engine according to the engine manual. Check the functioning of electric equipment and remove any oxidation from fuse connectors etc.

Remember that petrol goes stale over time, and you must always start the engine with fresh petrol in the spring.

When the boat has been launched you should open all valves in the through fittings (bushings) and check to ensure that there are no leaking hoses or connectors. The locations of through fittings are shown in section 5. Bring your safety equipment back on board before setting out.

## 8 Layout

### 8.1 General lay-out

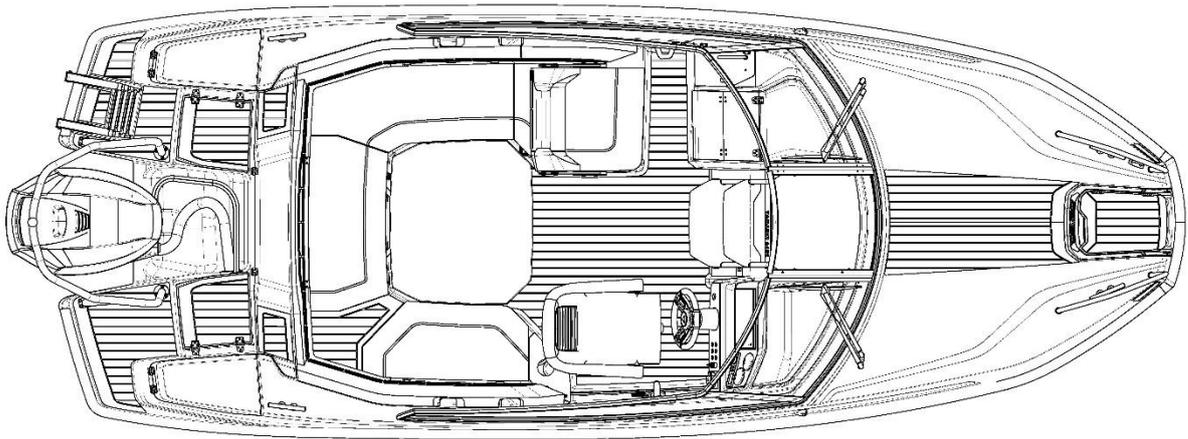


Image: General lay-out from above

#### **WARNING!**

Handle the boat's hatches with care and watch your fingers and toes. **Please pay particular attention to the bow anchor box hatch, which is equipped with an elastic band that holds the hatch closed while driving.**

#### **WARNING!**

It is not recommended that children do not use the bow anchor box hatch, as their fingers or toes could get caught in it.

### 8.2 Fuel system

The boat is equipped with a built-in fuel tank. A fuel filter is installed in the fuel line, also functioning as a water separator. The filter must be changed at least once a year. When a new or removed filter has been mounted, the fuel line must be filled with a ball pump before starting the engine.

#### **NOTE!**

The condition of the fuel hoses must be inspected annually, and every effort should be made to prevent damage to them. Damaged fuel hoses must be replaced. If you replace fuel hoses, make sure the new hoses have an ISO 7840 label.

The refill cap is situated under the anchor box hatch on the starboard (right) side in the stern. The location of the fuel tank refill cap is marked on the deck by the  symbol.

The cap of the fuel tank contains the text GAS, PETROL or FUEL, which refers to petrol 95E or 98E (recommendation).

## 8.3 Steering system

The boat is equipped with hydraulic steering. With hydraulic steering, the steering wheel's position changes constantly, which is why the boat is equipped with a symmetrical steering wheel.

The hydraulic steering does not require maintenance under normal circumstances. If the steering starts to feel loose, there is a leak somewhere in the system. Leaks must be repaired immediately!

**NOTE!** If you replace any component in the steering system, please note that all components must conform to the ISO 10592 standard and bear the CE mark.

**WARNING!** A hydraulic steering system that has a leak or trapped air in the hoses is extremely dangerous.

## 8.4 Electrical system

The electrical system contains the following main components:

1. Starter battery
2. Operation battery (option)
3. Wire harness
4. Main switch (2 main switches as option)
5. Battery compartment fuse panel
6. 5 x switch
7. 2 x 12 V power outlet
8. 1 USB output in chart reader
9. Navigation lights
10. Windshield wiper 2 pcs (right and left sides)
11. Fresh water pump (option)
12. Cabin light
13. Refrigerator (option)
14. Trim flap system
15. Radio (option)
16. Bow light (option)

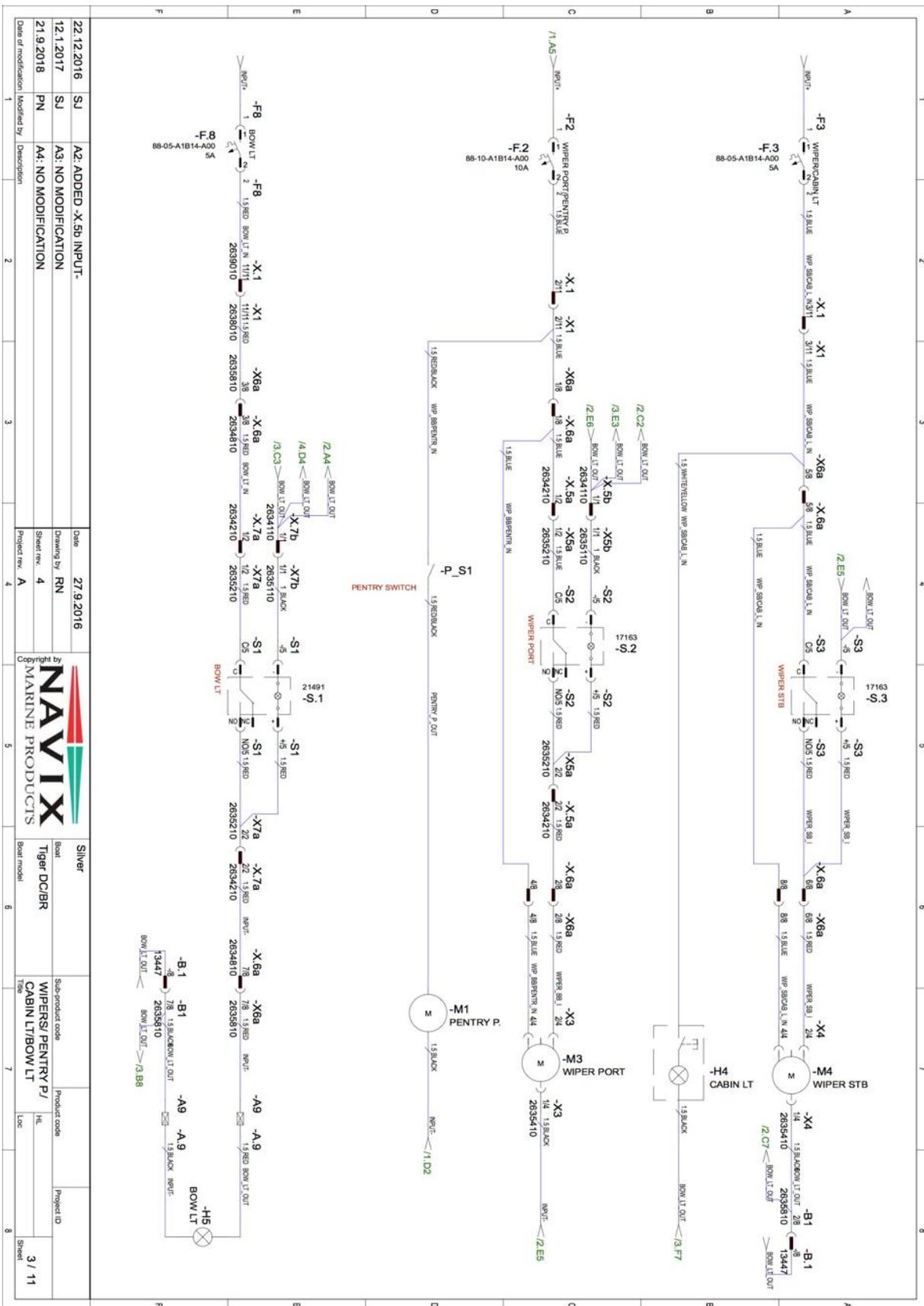
In addition, the engine is an essential part of the boat's electrical system; it both generates and consumes power.

If you connect or disconnect the battery, take care not to touch both battery terminals with a metal object at the same time.

Only recharge the batteries with the boat's battery charger or one with equivalent power. Charging the battery with excessive current creates an explosion risk.

Do not alter the onboard electric system or relevant drawings; alterations and maintenance work have to be carried out by a professional.





22.12.2016	SJ	A2. ADDED -X-5b INPUT-	Date	27.9.2016	Silver	Boat	Tiger DOBR	Sub-product code	WIPERS/ PENTRY P/ CABIN LT/BOW LT	Product code	HL	Project ID	
12.1.2017	SJ	A3. NO MODIFICATION	Drawing By	RN									
21.9.2018	PN	A4. NO MODIFICATION	Sheet rev.	4									
Date of modification		Modified by		Description		Boat model		Title		Loc		Sheet	
1		2		3		5		7		8		8	



Boat model

Sub-product code

Product code

Project ID

3 / 11



***Silver***<sup>®</sup>  
**VIPER**<sup>DC</sup>

**Silver Viper Day Cruiser**

**Owner's manual**

## **FOREWORD**

Congratulations on choosing a Silver Boat!

This manual will familiarise you with the features of your new vessel and help with its care and maintenance. It has been written to help you learn to handle your craft safely and avoid any problems. Make sure that you have received manuals for all equipment fitted on your boat. Supplement this manual with the specifications and manuals of equipment you purchase later for your boat. Space has been left for your own notes at the end of the manual. Please read this manual carefully and familiarise yourself with the craft before using it.

If this is your first craft, or you are changing to a type of craft you are not familiar with, please ensure that you obtain sufficient handling and operating experience before assuming command of the craft. This is highly important for your own comfort and safety. Your dealer or national sailing association or yacht club will be happy to advise you of local boating schools.

This owner's manual is not a detailed maintenance or troubleshooting guide. In case of difficulty please contact the dealer. Always use qualified and competent people for the maintenance, repair and modification of the boat. Modifications that may affect the safety characteristics of the craft must be assessed, executed and documented by competent people. The manufacturer is not responsible for modifications they have not approved.

Always keep your boat in a good condition and be aware that the boat requires maintenance and servicing. Any craft, no matter how strong it may be, can be severely damaged if not used properly. Always adjust the speed and direction of the craft to prevailing weather conditions.

**We wish you enjoyable and relaxing times on board your Viper DC**

Oy Brandt Ab  
Tuupakantie 7 B  
01740 VANTAA  
Finland

[info@brandt.fi](mailto:info@brandt.fi)  
[www.silverboats.com](http://www.silverboats.com)

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

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## BEFORE YOU SET OFF

Familiarise yourself with this owner's manual.

Always check at least the following before leaving:

- **Weather conditions and forecast**  
Take the wind, waves and visibility into account. Are the design category, size and equipment of your boat, as well as the skills of the skipper and crew, adequate for the waters you are headed for? Hull windows and hatches must be battened down during high wind and rough seas to prevent water incursion.
- **Loading and stability**  
Do not overload the craft and distribute loads appropriately. Heavy items are to be placed in the storage compartments under the aft seat. Also note that the boat is less stable if people stand up when on board.
- **Passengers**  
Ensure that there are personal flotation devices or lifejackets for all people on board. Agree on crew tasks before setting off.
- **Fuel and fuel system**  
Make sure that the boat has enough fuel, including a 20 % reserve for heavy weather or other unforeseen eventualities.
- **Engine and manoeuvring equipment**  
Check the function and condition of steering and remote control and carry out routine checks according to the engine manual.
- **Seaworthiness**  
Check the boat's seaworthiness: no fuel or water leaks, safety equipment available on board, etc. Check that there is no water in the bilge.
- **Fastening of equipment**  
Check that all onboard items are positioned so that they will stay in place even in rough seas and high winds. Please note that the seat cushions may fly overboard if they are not fixed properly with press studs.
- **Nautical charts**  
Unless you are navigating in completely familiar waters, ensure you have nautical charts on board that cover a large enough area! Your boat is equipped with a chart plotter, so learn how to use it before setting off. Ensure that the plotter charts are of the latest edition.
- **Leaving the berth**  
Agree with the crew who will release each mooring line, etc. Be careful not to let mooring lines or the anchoring line become fouled in the propeller during manoeuvring.
- **Obligatory equipment**  
What is considered obligatory equipment varies between different countries. Find out what is required for your boat.

**You will find additional instructions concerning the engine in the separate engine manual.**

# 1 General

The owner's manual will help you familiarise yourself with the properties and features of your new boat and with its care and maintenance. Separate manuals for installed equipment are attached and are referred to in many sections of the owner's manual. You can supplement this user manual by adding the manuals of devices which are installed afterwards. There is also space for your own notes at the end of the manual.

The craft has a running serial number, a WIN-code (Watercraft Identification Number). The WIN-code can be found on the starboard side of the transom just below the bathing platform. We recommend that you write down the WIN-code in this manual. When contacting the dealer, please provide the WIN code and the type of craft. This helps in delivering the correct spare parts.

## 1.1 DECLARATION OF CONFORMITY

### Recreational Craft Directive 2013/53/EC

**Manufacturer:** Fenix Marin Oy

**Module used:** B, EC Type-examination

---

#### THIS DECLARATION IS PREPARED BY

**Marketer:** TerhiTec Oy /Oy Brandt Ab

**Address:** Sorvitie 4

**Postal code:** 63700

**City:** Ähtäri

**Country: (code):** FIN

**(spelled out):** Finland

---

#### NOTIFIED BODY

**Name:** Eurofins Expert Services

**ID number:** no. 0537

**Address:** Post Box 47

**Postal code:** 02151

**City:** Espoo

**Country (code):** FIN

**(spelled out):** Finland

**EC type examination certificate:**

EUFI 29-19003175-C1

---

#### DESCRIPTION OF THE RECREATIONAL CRAFT

**Brand name of the recreational craft**

Silver

**Model or number**

Viper Day Cruiser

**Design category**

C

<b>Boat type*</b>	<b>03</b>
<b>Hull type*</b>	<b>01</b>
<b>Deck*</b>	<b>02</b>
<b>Construction material*</b>	<b>02</b>
<b>Propulsion*</b>	<b>02</b>
<b>Engine type*</b>	<b>01</b>
<b>Maximum permitted engine power (kW)</b>	<b>221</b>
<b>Length and width of hull (m)</b>	<b>6.72 / 2.42</b>
<b>Draught (m)</b>	<b>approx. 0.445</b>

\* Please refer to codes on next page

*I declare under my own and sole responsibility that the recreational craft mentioned above complies with all applicable essential requirements as specified on the following page.*

**Vantaa, 10<sup>th</sup> of October 2020**

**Peter Krusberg**  
**Product Development Manager, Silver Boats, Z- series**

<b>Boat type:</b>	<b>Deck:</b>
01 sailboat	01 decked
02 inflatable	02 partly decked
03 other: motorboat	03 open:
<b>Hull type:</b>	<b>Propulsion:</b>
01 monohull	01 sails
02 multihull	02 petrol engine
03 other:	03 diesel engine
	04 electrical motor
	05 oars
	06 other:
<b>Construction material:</b>	<b>Engine type:</b>
01 aluminum, aluminum alloys	01 outboard
02 plastic, fibre reinforced plastic	02 inboard
03 steel, steel alloys	03 z or sterndrive
04 wood	04 other:
05 other:	

	<b>General requirements</b>	
	Basic information	EN ISO 8666:2018
A2.1	Vessel identification	ISO 10087:2006
A2.2	Builder's plate	RCD annex I, A 2.2
A2.5	Owner's manual	EN ISO 10240:2004 / A1:2015
	<b>Arrangements and equipment</b>	
A2.3	Protection from falling overboard	EN ISO 15085:2003 / A2:2018
A3.7	Storage of life rafts	RSG Guidelines
A3.8	Exit	EN ISO 9094:2017
A3.9	Anchoring, mooring and towing	EN ISO 15084:2018
A5.7	Navigation lights, shapes and sound signals	1972 COLREG
A5.8	Discharge prevention	EN ISO 8099-1:2018
	<b>Installation requirements</b>	
A5.2	Fuel system	EN ISO 10088:2017, EN ISO 11105:2017
A5.3	Electrical system	EN ISO 10133:2017, EN ISO 13297:2018
A5.4	Steering system	EN ISO 10592:2017
A5.6	Fire protection	EN ISO 9094:2017
	<b>Dimensions</b>	
A3.1	Structure	EN ISO 12215-5:2018, EN ISO 12215-6:2018
	<b>Hydrostatics</b>	
A3.2	Stability and freeboard	EN ISO 12217-1:2017
A3.3	Carrying and floatation capacity	EN ISO 12217-1:2017
A3.6	Manufacturer's recommendation for the maximum load	EN ISO 14946:2001 / AC 2005
A3.4	Openings in hull, deck and superstructure	EN ISO 9093-1:2018, EN ISO 12216:2018
A3.5	Water incursion	EN ISO 15083:2018
	<b>Handling characteristics</b>	
A4	Handling characteristics	EN ISO 11592-1:2016
A2.4	Visibility from the principal steering station	EN ISO 11591:2011

## 2 Definitions

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

- DANGER!** Denotes an extreme hazard that will result in a high probability of death or permanent injury if proper precautions are not taken.
- WARNING!** Denotes a hazard that can result in injury or death if proper precautions are not taken.
- NOTE!** Denotes a reminder of safe practices or directs attention to unsafe practices which could result in personal injury or damage to the craft or components or the environment.

SI system units are used in this manual. In some cases, other units have been added in brackets. An exception is wind speed, for which the Beaufort scale is used in the Recreational Craft Directive.

## 3 Warranty

The boat and its factory-installed equipment have a two-year warranty, starting on the first day of use. Please contact your dealer regarding any potential warranty issues. Please remember to provide the WIN code. If possible, please provide a digital photograph of the subject of your claim. This usually speeds up the claims process.

## 4 Before use

### 4.1 Registration

Registration regulations vary between different countries. Find out what is required in relation to your own boat.

### 4.2 Insurance

Boat insurance can compensate damage occurring on water or during transport and lifting. Check who has insurance liability each time when having the boat lifted. Insurance also has an indirect effect on safety at sea: In the event of a serious accident or damage, you must, above all, concentrate on saving people. Insurance companies will be able to give more information about different insurance alternatives. Check who has insurance liability each time when having the boat lifted or transported!

## 5 Characteristics and use of your boat

### 5.1 General

This user manual is not intended to be a complete service or repair manual; it simply guides the user on how to use the boat in the proper manner.

### 5.2 Basic information

Recreational crafts can be constructed according to 4 categories (A, B, C and D) under the Recreational Craft Directive 2013/53/EC. This boat has been constructed according to design category C. The meanings of the various design categories are explained below.

**Category A:** The boat is built for conditions where wind speed can exceed 8 Beaufort (approx. 21 m/s), and where the significant height of the waves (please refer to note below) can exceed 4 metres. In such circumstances the boats are largely self-sufficient. Category A does not include abnormal conditions such as hurricanes. Such conditions may be encountered on extended voyages, for example when crossing oceans, or in coastal areas where there is an open expanse of sea for several hundred nautical miles off the coast.

**Category B:** The boat is built for conditions where wind speeds can reach a maximum of 8 Beaufort (approx. 21 m/s), and where the corresponding significant height of the waves (please refer to note below) is 4 metres at most. 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:** The boat is built for conditions where wind speeds can reach a maximum of 6 Beaufort (approx. 14 m/s), and where the corresponding significant height of the waves (please refer to note below) is 2 metres at most. Such conditions may be encountered on exposed inland waters, in estuaries, and in coastal waters in moderate weather conditions.

**Category D:** The boat is built for conditions where wind speeds can reach a maximum of 4 Beaufort (approx. 8 m/s), and for corresponding seas (significant wave height does not exceed 0.3 metres, and the height of the greatest waves does not exceed 0.5 metres). Such conditions may be encountered on protected inland waters, and in coastal areas during fine weather conditions.

**Note:** Significant wave height is a term used in boat design. In practice, significant wave height means the average height of the highest third of all wave heights measured in the waters. If the significant wave height is 2.0 m, the mean height of all waves is roughly 1.2 m.

**Maximum recommended load:** See *technical specifications*  
See also section 5.4 "Loading".

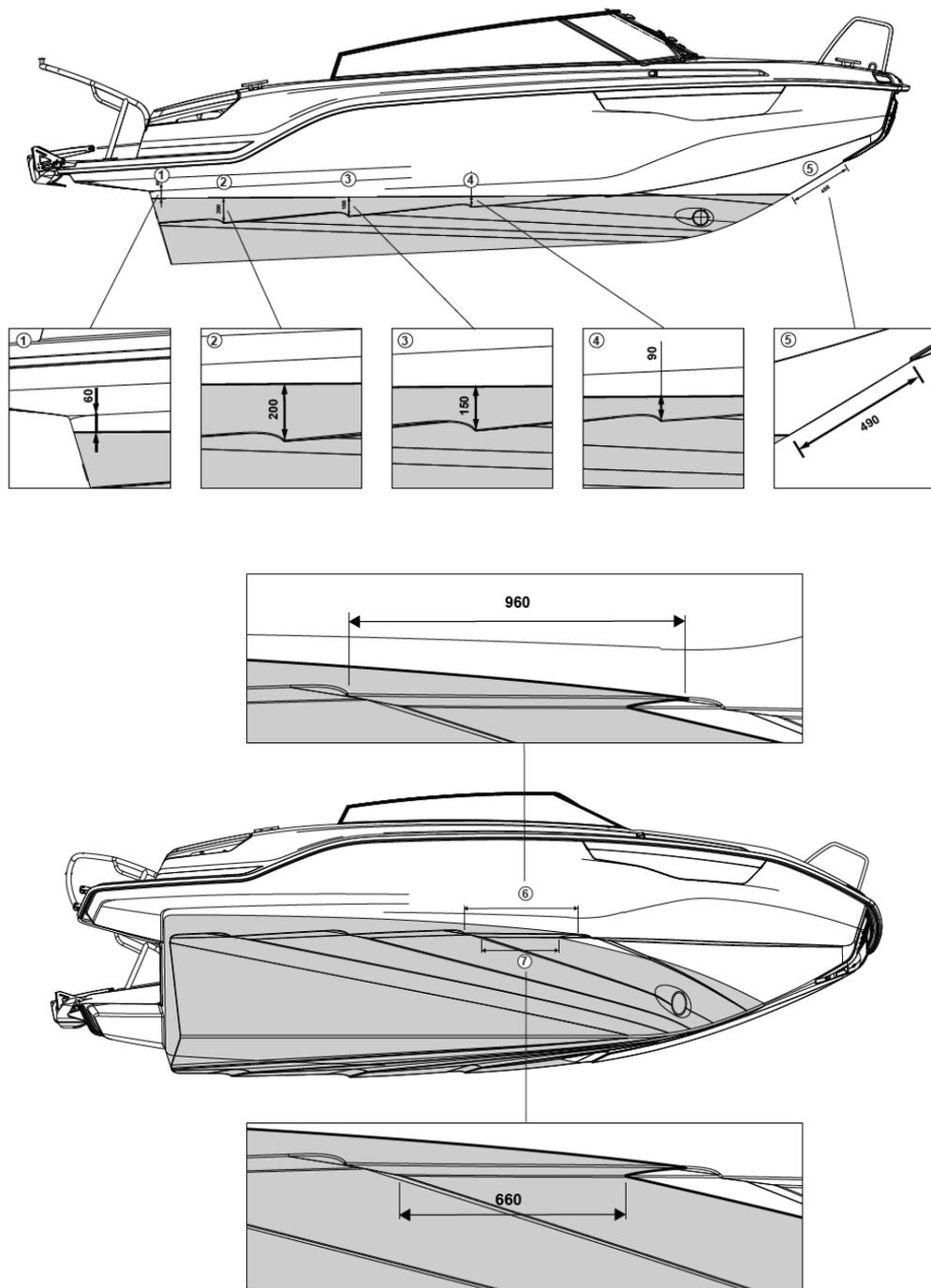
**Main dimensions and capacities:** See *technical specifications*  
Craft length, width, draught, total weight, etc., and tank capacities are shown in the technical specifications.

**Builder's plate:**  
Part of the aforementioned information is given on the builder's plate, which is affixed next to the remote control. Supplementary information is provided in the appropriate sections of this manual.

## Technical specifications

Model	SILVER VIPER DC
Design category	C
Overall length	6.72 m
Width	2.42 m
Weight without engine, fluids and equipment	approx. 1350 kg
Weight on trailer with largest recommended engine	approx. 1898 kg Includes the boat (approx. 1350 kg), outboard engine 300 hp (313 kg) and the estimated weight of fluids and equipment (235 kg). NOTE! This is not the maximum weight of fluids and equipment.
Weight on trailer with the largest engine that complies with the standard	approx. 1898 kg Includes the boat (approx. 1350 kg) and a 300 hp engine (313 kg) and the estimated weight of fluids and equipment (235 kg). NOTE! This is not the maximum weight of fluids and equipment.
Maximum weight of load / Maximum number of passengers	820 kg 8 persons
Maximum load includes	600 kg / 8 persons (75 kg each) + personal equipment 40 kg + fuel 105 kg + sewage 30 kg and fresh water 30 kg
Maximum load on builder's plate (CE sign)	640 kg Includes passengers 8 x 75 kg = 600g + personal equipment 40 kg = a total of 640 kg
Weight at full load	2568 kg Includes the boat 1350 kg + engine 313 kg + battery 2 x 20 kg + basic equipment 45 kg + personal equipment 40 kg + fuel 105 kg + fresh water 45 kg + sewage 30 kg + passengers 600 kg
Maximum engine power	221 kW / 300 hp
Weight of largest recommended engine	313 kg
Fuel tank capacity	140 litres
Maximum draught at full load, engine up	0.45 m
Maximum height from water line at light load	1.3 m
Construction material	Glass fibre reinforced polyester
Colour code:	RAL 9016
Hydraulic hoses	5.5 m
Maximum speed at boat test	approx. 53 knots

Antifouling limit



## 5.3 Maximum recommended number of passengers

The boat's maximum recommended number of passengers is 8 persons.

### **WARNING!**

Do not exceed the maximum recommended number of passengers. Regardless of the number of passengers, the total weight of people and equipment must never exceed the maximum recommended load (please refer to Section 5.4, "Loading"). Always remain seated on the boat. All persons on board must remain seated while the boat is moving.

## 5.4 Loading

The boat's maximum permitted load is 820 kg. This load includes the following weights:

- a) The total weight of passengers 600 kg (the default weight of an adult is assumed to be 75 kg and that of a child 37.5 kg)
- b) Liquids 180 kg (fuel 105 kg, fresh water 45 kg and sewage 30 kg)
- c) Personal equipment (e.g. recreational and overnighting equipment) 40 kg

### **NOTE!**

The maximum permitted load only includes the weights mentioned above.

### **WARNING!**

**Never exceed the maximum recommended load when loading the craft.** Always load the craft carefully and distribute loads appropriately so that the boat is on an even keel. Heavy equipment should usually be placed in the storage compartment under the aft seat. If the boat is carrying the maximum number of passengers, heavy items should be placed in the bow so that the boat will not be tail-heavy. Always avoid placing heavy items high up.

## 5.5 Engine and propeller

The maximum engine power for the boat is 300 hp (221 kW). Using a more powerful engine than specified on the CE plate will void the boat's warranty. Follow the dealer's instructions when choosing the propeller for your boat.

## 5.6 Prevention of water incursion and stability

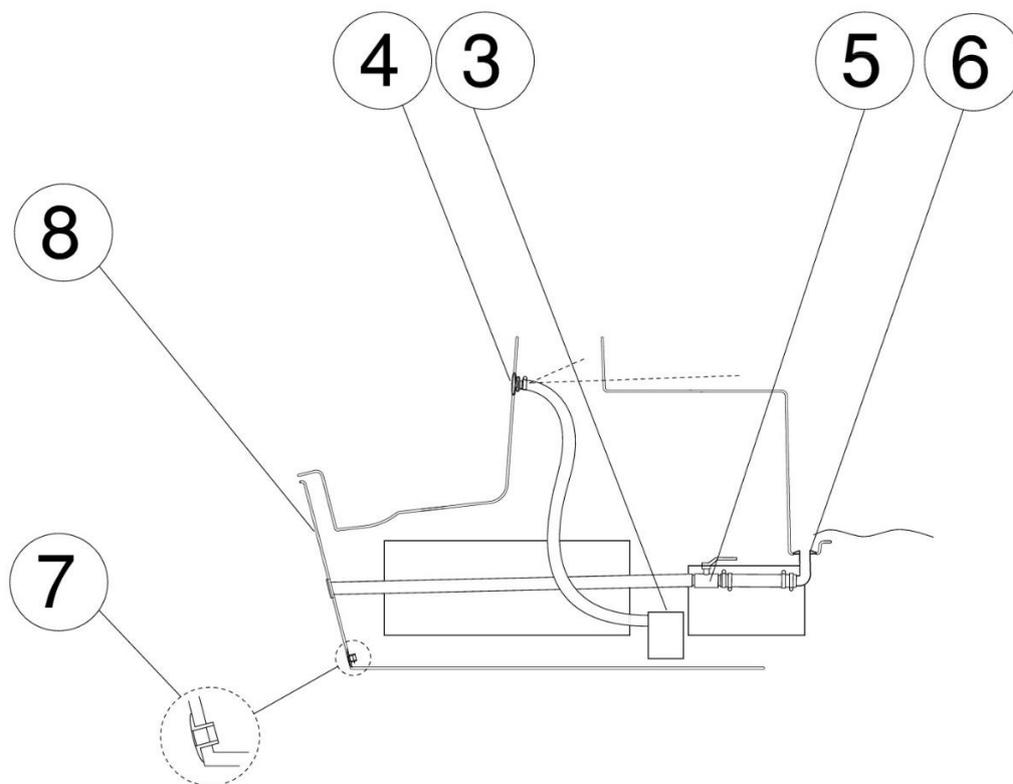
### 5.6.1 Hull and deck through fittings and closing valves

The boat has a rainwater drainage system, which means that rainwater in the open space of the boat is drained when the boat is on the water. The system also functions when the boat

is out of water, provided that the bow is higher than the stern and closing valve is open. The rainwater drainage valve is located underneath the plywood plate of the middle hatch of the aft sofa. This drain valve is meant to be shut only when at heavy load to prevent potential water incursion. **In other loading conditions the drainage valve should remain open to let rainwater drain from the boat.**

The boat has an electric bilge pump in the bilge (location shown in the picture below). The function of the bilge pump is automatic meaning that it will automatically empty the bilge if there will appear water. The capacity of the electric bilge pump is about *40 l/min*. On the right hand of the steering wheel you find the manual switch to turn on the electric bilge for testing/checking the function. In the switch there is a light that will turn on if there is water in the bilge. If the light turns on you should immediately check the bilge by open the inspection hatch in the plywood bottom plate underneath the middle hatch in the aft sofa. If the bilge is empty you can continue boating but if the light turns on again and pump starts to empty the bilge you have to immediately drive to the shore and nearest harbour or landing-stage and thereafter lift up the boat from water to find out the reason to the leakage.

The electric bilge pump can be checked by removing the plywood plate of the middle hatch of the aft sofa.



Rainwater drainage system and bilge pump system

- |                                  |   |
|----------------------------------|---|
| 3. Electric bilge pump           | 6. Rainwater drainage through fitting   |
| 4. Bilge pump hose               | 7. Drain plug for bilge                 |
| 5. Rainwater drainage pipe valve | 8. Engine well drainage through fitting |

The owner of the boat is responsible for ensuring that there is at least one baler or bucket in the boat.

**WARNING!** The bilge pump system is not intended to cope with a leak caused by running aground or other equivalent damage (hull damage).

**SAFETY MEASURE!** Regularly check to ensure that there is no debris around suction grid of the bilge pump.

**WARNING!** Always keep the drainage pipe valve shut when the pipe's inboard end is constantly under water due to heavy loading. The shut-off flap on the transom only prevents water from entering the boat when reversing!

**NOTE!** Make sure that water can flow unobstructed through the drainage pipe. Debris such as autumn leaves may obstruct the water flow, which can cause the boat to fill with water and sink. The bilge pump system does not work in conditions below 0°C.

**NOTE!** There is always some condensed water in the bilge. The hull bushings may also allow water to seep through, particularly as the boat ages. Always remember to check the bilge before you leave the boat at quay or buoy, and always before setting off. Have any leaks repaired at an authorised repair shop.

**WARNING!** The boat's handling properties may become extremely dangerous if there is water in the bilge.

## 5.6.2 Stability and buoyancy

Please note that stability will be reduced by any weight added high up on the boat. Any change in the distribution of weight on board may significantly affect the stability, trim and performance of your boat. Please remember that large breaking waves always present a serious danger to stability.

## 5.7 Preventing fires and explosion hazards

### 5.7.1 Refuelling

Shut off the engine and extinguish any cigarettes before starting to refuel. During refuelling, do not use switches or appliances that can cause a spark.

When refuelling at a service station, do not use a plastic funnel, since it will prevent the tension between the refuelling nozzle and filling vent from being discharged.

Hint: If you are afraid of getting fuel on the synthetic teak deck during refuelling, wet the deck with water. You can also hold a rag in front of the fuel filler to prevent fuel from splashing on the deck.

Always keep a spare can of fuel on board. The anchor boxes at the stern are especially suitable for storing the spare canister as there is no risk of vaporised fuel coming into contact with battery compartments or the electrical system from either of these boxes.

Do not stow any loose items under the aft sofa that could prevent fuel flow to the engine if they shift. Check the fuel hoses annually for wear, especially at through fittings.

Please note that, depending on the trim of the boat or the boat's heeling angle, it might not be possible to use the full capacity of the fuel tank.

If the boat is on trailer behind a car when refuelling, please note that the fuel tank ventilation does not work efficiently if the bow of the boat is downwards.

**WARNING!** Vaporised fuel is highly explosive. Observe these instructions and the utmost caution during refuelling. The smell of fuel always means that there is vaporised fuel on your boat.

### 5.7.2 Other fuel-operated systems (diesel heater optional accessory)

The diesel-operated heater (optional accessory) has its own user manual and the operation is not described in this manual. The fuel tank for the heater is located underneath the aft sofa. Turn off the heater when refuelling the diesel tank. When handling diesel, do not use switches or appliances that can cause a spark. Always clean any spilled fuel immediately.

**NOTE!** If the boat is equipped with a heater (optional accessory), do not block the exhaust grates when the heater is switched on. This will cause the heater to overheat and engage the overheat protector.

### 5.7.3 Fire protection

The boat is equipped with a portable 2 kg fire extinguisher class 8A 68 B, which is the minimum power requirement for extinguishers. For the extinguisher to remain reliable, it should be inspected annually by an authorised inspector. In the event that the fire extinguisher is replaced, the capacity of the new one must be at least equivalent to the old.

The fire extinguisher is in the storage compartment behind the driver.

Ensure that firefighting equipment is readily accessible even when the boat is loaded. Inform members of the crew about the location and operation of fire-fighting equipment. The fire extinguisher is located in the storage compartment behind the driver in the open deck space. There is a red extinguisher sign outside sofa showing the location of the extinguisher.

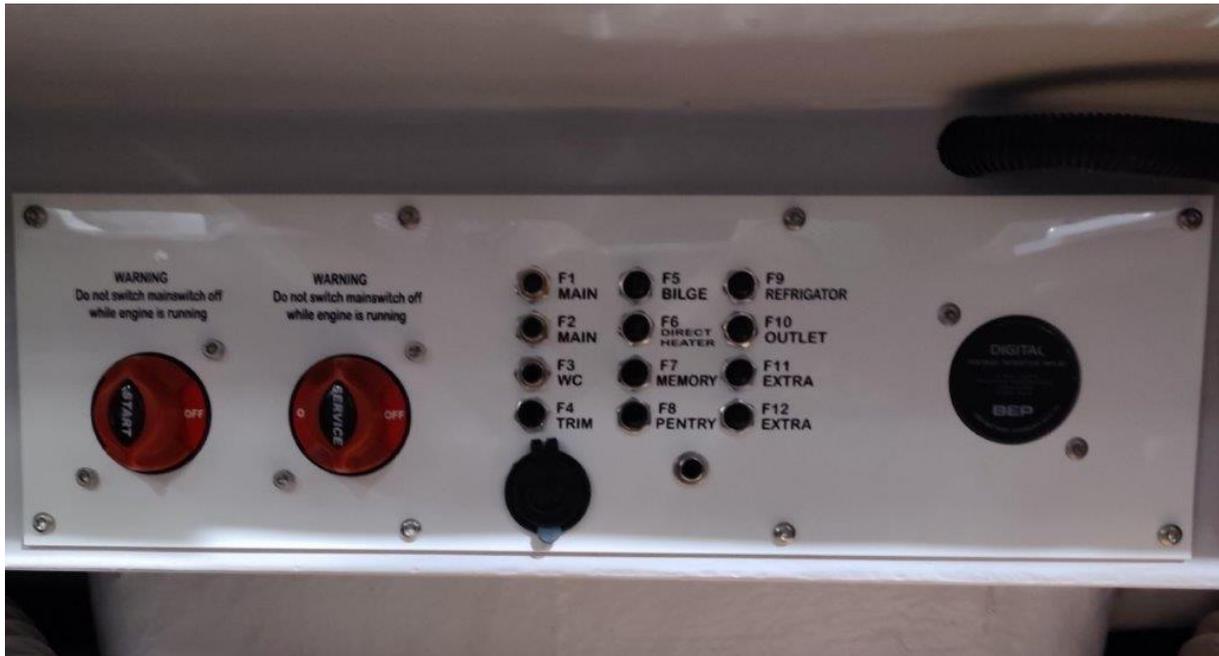
Remember:

- Never hinder access to safety equipment, for instance the switches to the electric system.
- Never hinder access to fire extinguishers located in a box.
- Never leave the boat unsupervised while the cooker or heater is on.
- Never make alterations to any of the boat's systems (especially the electricity or the fuel systems) or allow an unqualified person to make alterations to any of the boat's systems.
- Never refill a fuel tank when the boat's engine is running, or the cooker or heater is on.
- Never smoke while handling fuel or gas.

## 5.8 Main power switches and circuit breakers

Operation of the main power switches:

Switch the power off from both main switches when leaving the boat, and always switch both switches on when using it.



Electric circuit fuses are located to the left of main power switch(es). Fuse sizes are presented in the electrical diagram. Do not change the circuit breaker amperages or install any components that exceed the nominal amperage of the circuit in the electric system.

Remember to always use both main switches when switching the power off or on. Remember also to switch off the main power switch before making any electrical installations.

All fuses are automatic circuit breakers. In the event of a fault current, the circuit breaker will trip.

You can reset the circuit breaker by pushing it back in. If the circuit breaker immediately trips again, there is a short-circuit somewhere in the electrical system or in a component. You must leave repairing the boat's electrical system to a professional electrician.

**NOTE!** Remember also to switch off the main power switch before making any electrical installations.

**NOTE!** Never switch off the main switch while the engine is running! It can cause serious damage to the engine's electric system.

**NOTE!** Do not perform electric installations (such as changing lamps) when the power is on. Leave any larger installations to professionals.

**NOTE!** When connecting or disconnecting the battery, do not touch both terminals simultaneously with metal objects.

## 5.9 Operation

If this is your first boat or a boat type new to you, take someone with experience of a similar boat with you the first few times you operate it.

### 5.9.1 Controls

You will quickly learn how to control your boat, but changing weather conditions, such as wind and waves, will always present new challenges for the driver. The remote control combines the functions of throttle, forward and reverse gears, and the adjusting of the engine trim angle. The boat is equipped with hydraulic steering.

Centre console switches



Port side of the steering wheel:

BOW LT = Bow light (optional accessory), WIPER BB = Wiper, port side, WIPER SB = Wiper, starboard

DEFROSTER = Defroster, NAV LIGHTS = Navigation lights, BILGE = Bilge pump

### 5.9.2 Emergency switch

The emergency switch is a device that you have to attached to the remote control or to the ignition key panel (depending on what outboard motor brand). The other end you should attach around your knee. The emergency switch automatically switches off the engine when detached from the remote control. It is very important that the boat will come to a halt if the driver, for whatever reason, loses his/her balance and is flung from the helm.

**NOTE!** Never take control of the boat without having attached the emergency switch to yourself. If you attach the emergency switch to your arm, do not steer the boat with that arm, because the chain may be tangled in the steering wheel during tight turns.

**NOTE!** The engine will not start if the emergency switch is not attached to the switch on the remote control.

**DANGER!** A rotating propeller presents a life-threatening danger to a swimmer or a person who has fallen overboard. Always use the emergency switch to turn off the engine when a swimmer or water skier is about to re-enter the boat from the water.

### 5.9.3 Gearshift and throttle

The engine is put into gear by pushing the button on the gear/throttle handle upwards with your fingers and by pushing or pulling the gear/throttle lever forward or backward, depending on the direction in which you are planning to go. When the engine is in gear, you can adjust the boat's speed using the same gear/throttle lever.

When the boat is travelling forward slowly, you can use the reverse gear for braking when approaching the dock, for instance. Shifting into reverse must not be done if the boat is travelling at higher speeds, because it will damage the engine.

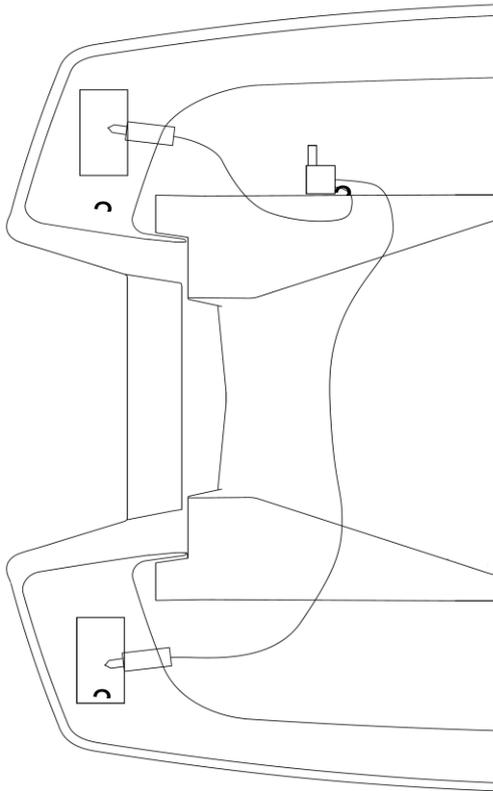
### 5.9.4 Adjusting the trim angle

These are the main rules when adjusting the trim angle:

- When bringing the boat to plane, keep the 'bow down' position.
- When the boat is planing and seas are calm, keep lifting the bow until you can feel that both the engine and the boat move very easily. In calm waters, the engine should normally be trimmed up at least 3 scale marks on the trim indicator on the revolution counter. If the engine is trimmed up too much, the speed of the boat will be reduced. If the boat is trimmed too low, the boat will run slowly, and the engine will run heavily. To achieve good fuel economy, it is important to drive the boat with the right engine trim angle.
- In heavy head seas, lower the bow to allow it to slice through the waves better, thus providing a smoother ride.
- In following seas, raise the bow to avoid 'diving' into the waves.

**WARNING!**

Do not drive the boat at high speeds with the engine trimmed up (bow up), as there is a risk of sudden heeling when the propeller hits the water again after a flight in heavy waves. Likewise, do not drive at high speed with the engine completely trimmed down (bow down) since this can cause the boat to pitch unexpectedly when the bow hits the water. The boat may become unstable when turning if the bow is too low.



## Trim flap system

1. Control panel at helms man position
2. Distribution unit
3. Trim flaps

**WARNING!**

If you use the trims manually, adjust the trim controllers carefully at high speeds. They will change the behaviour of the boat radically.

**WARNING!**

Waves reduce manoeuvrability and make the boat heel. Accordingly, reduce speed when encountering heavier seas.

### 5.9.5 Starting the engine

1. Switch the power on using the main power switches.
2. Lower the engine to the driving position by pressing the Power Trim button on the gear/throttle handle.
3. Check that the gear/throttle handle is in the neutral position and that the emergency switch is attached to the bottom of the remote control.
4. Switch on the current, using the start key, without starting the engine and wait a few seconds for the warning lights to light up.
5. Start the engine by turning the ignition key clockwise until the engine starts. If everything is in order, the engine should start within 1-2 seconds. If the engine does not start, you should not try to start it for more than 10 seconds at a time.
6. After the engine has started, let it idle for a few minutes before setting off. (Please refer to the engine manual!)

For more detailed information, please refer to the engine manual.

### 5.9.6 Driving

It is easy to drive when the weather is fine and the sea is calm. However, always remember to keep an adequate lookout. In order to maintain the best possible visibility from the driver's position, you should do this:

- Ensure that passengers do not restrict your visibility.
- Do not drive near planing speed for long periods, as the bow comes up and reduces visibility.
- When visibility is poor, look over the windshield.
- Remember to also keep a lookout behind you, particularly on shipping lanes.

Use navigation lights in darkness.

Always adjust your speed to prevailing conditions and the environment. Take into account the following:

- waves (also consult the passengers on what is a comfortable speed);
- your own bow wake (greatest at planing speed, smallest at speeds under 5 knots);
- visibility (islands, fog, rain, driving against the sun);
- familiarity with the route (time required for navigation);
- width of the route (other traffic, noise and bow wake near shore).
- Make sure to always maintain a sufficient distance to avoid collision. The distance must be sufficient to stop the boat or to take evasive action.

When running at low speed, a planing boat's directional stability is poorer than at higher speeds. So be careful in narrow passages and, particularly, when meeting other boats.

You must learn the rules of traffic on sea lanes and follow the international regulations on how to avoid collisions at sea, COLREG. Navigate with care and use new or updated nautical charts.

The running position of the boat greatly affects its handling characteristics and fuel consumption as well as visibility from the driver's position. You can affect the running position by:

- placing the load properly – the general rule being that you should place as little weight in the bow as possible; and
- adjusting the trim angle.

The combination of the right running position with the right speed also makes driving in rough seas safer and more comfortable.

**WARNING!**

A high speed and sudden manoeuvring in rough seas can lead to loss of control over the boat and large heeling angles.

**NOTE!**

The boat is not designed to jump waves. The warranty does not cover damage caused by flight. It is possible to check whether the engine has been airborne from the engine history on the repair shop's computer.

### 5.9.7 Approaching and leaving the dock

Practise boat manoeuvring skills where there is ample space to learn how to approach a dock before entering a crowded marina.

A very gentle application of throttle does not generate sufficient steering power. Sharp but short throttle applications enable efficient steering movements when approaching the dock.

Ensure that everyone on board who does not have to stand up is seated when you are approaching the dock. Sudden steering movements may cause the boat to heel and injure somebody.

Before docking, prepare the mooring lines at stern and bow. Approach the dock bow first at a slight angle. Just before touching the dock, steer into it and shift into reverse. Apply throttle quickly and sharply. The boat will stop and turn parallel to the dock. If possible, make the approach into the wind or current, whichever is the strongest. This makes departing easier, as the wind or current will push the bow out from the dock. The easiest way to depart is to first push the stern as far away from the dock as possible, and then slowly reverse away from the dock into open water.

The propeller is designed to have the best grip in forward gear. Therefore, propeller performance is weaker in reverse. The steering response is also not as good in reverse as in forward gear.

- WARNING!** The boat is fast. If you are planing, it takes time to come to a stop. Slowdown in time before anchoring, beaching or docking. Learn to estimate the distance the boat needs to stop. Remember that steering control is poor if there is no traction.
- WARNING!** Do not try to stop the boat with your hands, and do not put your arm or foot between the boat and the dock, the shore or another vessel! Practise beaching and docking under favourable conditions! Use moderate but firm engine power!
- NOTE!** When securing your boat, take into consideration the possibility of changes in wind direction, rising or sinking of the water level, bow wakes, etc. You can get more information from your insurance company, for example.

### 5.9.8 Using the canopy

The canopy is designed to withstand a maximum speed of 30 knots at sea, and 50 km/h in road transport. All press studs must be properly fastened when using the canopy. The canopy's design allows raising just the front part. We recommend that you remove the sides and back of the canopy to make it fit into the canopy box more easily. Then, fold the upper parts of the sides entirely on top of the roof, so that no fabric remains where the corners of the canopy supports are. Finally, roll up the roof part along with the sides folded on top of it, and lower the canopy into the canopy box.

**NOTE!** The boat should not be driven in rain with the canopy down. The equipment in the open deck space is not water-tight and must be protected from the rain. A canopy or a mooring cover must be used when docked in port.

**NOTE!** The windscreen and canopy do not necessarily form a watertight seal.  
Water may enter the boat between the canopy and windshield when the canopy is up.

### 5.9.9 Windshield door

The windshield door must always be kept shut and locked when the boat is moving. The door has not been designed to be used as a railing when getting in or out of the boat. The door must be held on to as it is opened until it is attached to the stopper. Likewise, it must be held on to until it is closed. In other words, do not let go of the door when opening or closing it.

**WARNING!** The door must be kept closed in rough seas or strong or gusty winds, since it may slam shut. The door is heavy and may cause injury if it strikes someone when slamming shut.

**WARNING!** Large waves or gusts of wind may slam the door shut also when the boat is stationary. It is thus recommended to always keep the door closed when the passage through the bow deck is not being used.

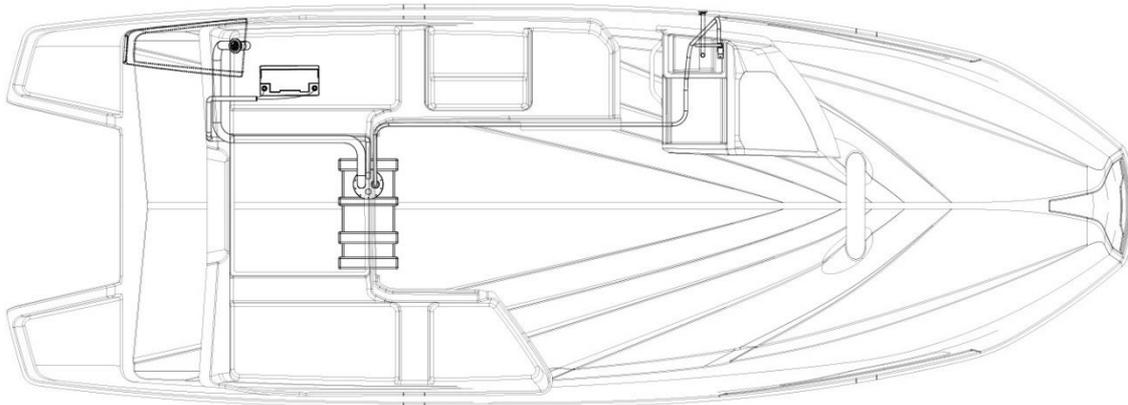
#### 5.9.10 Stairs, sharp windshield corner and cabin door

Great care must be taken when using the stairs, particularly when the cabin door is partly open.

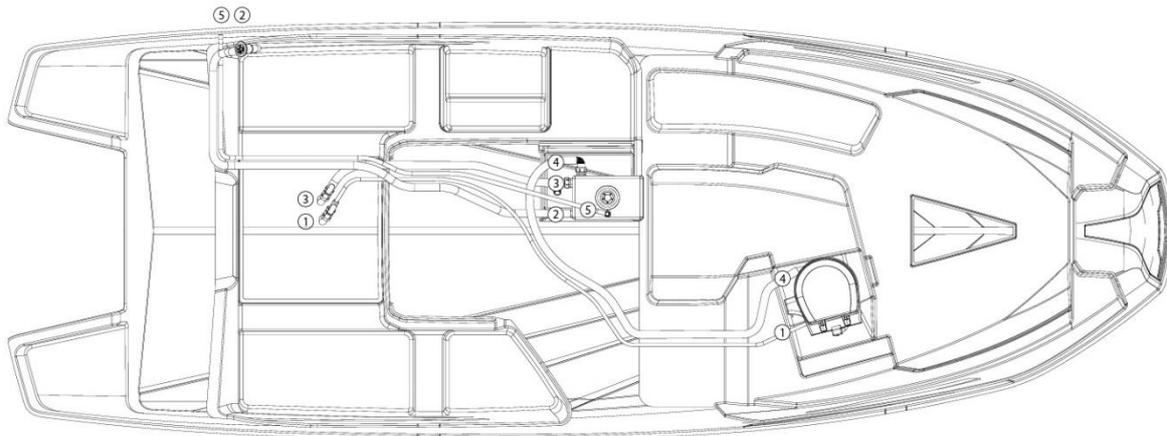
**WARNING!** The bow anchor box hatch is equipped with a rubber band that holds the hatch closed while driving.

**WARNING!** It is not recommended that children do not use the hatch, as their fingers or toes could get caught in it.

#### 5.9.11 Fresh water system



## 5.9.12 Toilet system



## 5.10 Proper use – other recommendations and guidelines

### 5.10.1 Man overboard

It is always a serious situation when someone falls overboard. Rescue procedures should be practised in advance during good weather, because it is too late for practice when someone has actually fallen into the water.

It is always easiest to help a person climb back on board at the stern of the boat. A rope loop attached to the boat helps lifting. The boat's swim ladder extends 30 cm into the water. If a child has fallen overboard, an adult carrying an extra life-saving device or a fender must always jump in after the child; however, someone must always remain on board the boat.

It is very important to maintain visual and verbal contact with a person that has fallen overboard.

#### **DANGER!**

A rotating propeller presents a life-threatening danger to a swimmer or a person who has fallen overboard. Always use the emergency switch to turn off the engine when a swimmer or water skier is about to re-enter the boat from the water.

Potential life-raft, the recommended location is under the back seat

### 5.10.2 Securing loose equipment

Stow all heavy equipment, such as anchors, and secure them firmly before setting off.

### 5.10.3 Bow cabin sliding door

#### **NOTE!**

The sliding door of the cabin must be kept closed while driving.

#### 5.10.4 Respect for the environment

Conservation of the environment is a matter of honour for every boater. Therefore, you should avoid:

- fuel and oil leaks;
- emptying rubbish and waste into the water or on the shore;
- letting detergents or solvents get into the water;
- loud noise both on the water and at the marina; and
- producing an unnecessarily high bow wake, especially in narrow passages and shallow waters.

Service the engine well and run it at the most economical speed, which will also keep exhaust emissions low.

Please also consider other local environmental legislation and regulations. In Finland, under 'everyman's right' anyone may move around on private land, except in the vicinity of residential buildings, as long as they cause no damage or inconvenience. 'Everyman's right' also allows movement and temporary anchorages on privately owned waters, swimming and going on shore at uninhabited locations, unless landing is specifically prohibited by a notice from the authorities. It is not allowed to anchor next to a shoreline where there are one or more residences. Docking at a private dock owned by someone else or landing on a shore where there are residences is also not allowed without permission.

Please make sure to familiarise yourself with the International Convention for the Prevention of Pollution From Ships (MARPOL) and respect it to the greatest possible extent.

It is allowed to camp out on islands as long as no damage is caused to the landowner. It is not allowed to camp out next to residential buildings or in or near cultivated fields. You may not light a campfire unless you have the landowner's permission. Everyman's right allows the picking of naturally growing berries and mushrooms without damaging trees or the environment in general. Please check the regulations concerning movement in the natural environment in your area.

#### 5.10.5 Anchoring and mooring the boat

Always moor your boat carefully, even in sheltered places, because conditions can change rapidly. Mooring lines should be equipped with absorbers to dampen any jolts. Please refer to the section Towing for the location of bollards. To prevent abrasion, use fenders that are large enough.

The forward endurance of the bow bollards is at least 23 kN, or c. 2,300 kg. The backward endurance of the stern bollards is at least 16.0 kN, or c. 1,600 kg.

The minimum anchor weight for the boat is 5 kg. Drop anchor far enough from shore. A reasonable grip is attained if the anchor line length is 4–5 times the water depth.

**WARNING!** Do not try to stop the boat with your hands, and do not put your arm or foot between the boat and the dock, the shore or another vessel!

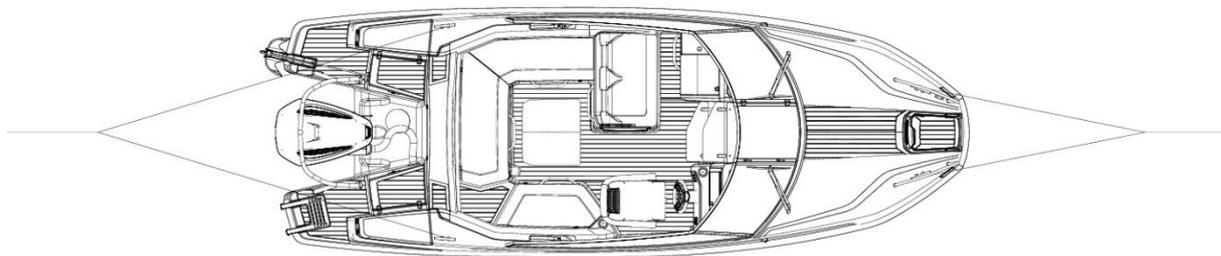
**NOTE!** When securing your boat, take into consideration the possibility of changes in wind direction, rising or sinking of the water level, bow wakes, etc. You can get more information from your insurance company, for example.

### 5.10.6 Towing

When towing another boat, use a floating line that is strong enough for the task. Begin towing slowly, avoid jerks, and do not overload the engine.

The owner of the boat should consider the measures necessary for securing the boat's towrope.

If you are towing, or if your boat has to be towed, attach the towline to the bow or stern bollards as per the following image.



**WARNING!** When towing, the towline is under high tension. If it should break, the end that snaps off may lash back fast enough to cause serious injury or death. Always use a thick enough line and keep to one side of the towline.

**NOTE!** When towing another boat or being towed, always drive at low speed. If the boat has a displacement hull, never exceed hull speed while towing.

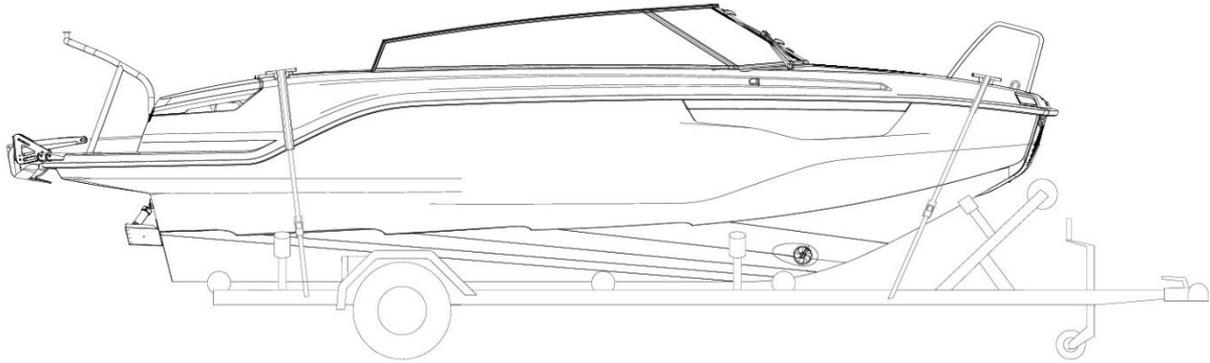
**NOTE!** The towline should always be fastened so that it can be unfastened under load.

### 5.10.7 Trailer transport

Weight data for trailer transport may be found in the technical specifications. The trailer's keel supports should bear most of the weight of the boat. Adjust the side supports so that the boat will not rock sideways. For more information, please turn to your dealer.

Clean the supports of sand and dirt so that they will not scratch the bottom of the boat. Double-check that the trailer is securely coupled to the trailer tow hitch!

The place for lifting the boat out of the water should be sheltered, and the ramp should extend deep enough into the water. Reverse the trailer so deep into the water that the rearmost keel support is just above the water. Drive the boat carefully towards the rearmost keel support. Fasten the hoist cable to the towing eye and reel the boat up onto the trailer, making sure that the boat remains straight on the trailer's centre line. Remember to trim up the engine before reeling the boat onto the trailer so that it will not hit the bottom.



Tie the boat properly before beginning transport. The sling ropes at the bow should be directed down and back, and the sling ropes at stern should be directed down and front. Do not leave any loose equipment or extra load on the boat when it is being transported. Remove the seat cushions and close all hatches properly.

The engine should be in the driving position during transport. However, ensure that there remains adequate clearance. If the clearance is not sufficient in this position, you can transport the engine raised. In this case, the engine must be supported with a suitable support to protect the transom.

If the boat is kept on the trailer between transports, you must loosen the sling ropes for the duration and tighten them before the next transport.

**NOTE!**

The trailer should be slightly front-weighted. Make sure that the boat is fastened tight enough to the trailer and that the weight of the boat is divided equally between side supports. If the boat swings against a side support during transport, it may sustain hull damage.

When letting the boat down from the trailer, remember to fasten the bow rope to the boat beforehand so that you can release the cable/rope from the trailer hook as soon as the boat is in the water. Be careful with the winch handle!

### 5.10.8 Docking

The storage cradle should be sufficiently steady and suitable for this particular boat and engine combination. A sturdy plank (2x4"), should be placed between the "V" trestles to

support the keel and to bear most of the weight of the boat. The boat must not rest on the side supports. The side supports should not be placed at the corners on the bottom, and point loads should be avoided. The supporting structures should be strong, particularly near the transom, to support the added weight of the engine.

Only use reputable lifting companies or boat yards with sufficient lifting capacity.

When the boat is being lifted, the lines must be placed under the boat and the boat must remain horizontal during lifting.

**NOTE!** Do not lift the boat by its bollards.

**DANGER!** Never stand under a boat that is suspended from a crane.

## 6 Servicing and maintenance

Keep your boat and its equipment clean and tidy. This increases comfort and safety on board, and also the boat's resale value.

Familiarise yourself with the service procedures shown in the engine manual (see annex). Have your engine serviced according to the instructions in the manual.

### 6.1 Washing and waxing the boat

Normally it is sufficient to just wash and wax the deck and sides. Special boat cleaning agents are most suitable for the purpose. Use mild detergents. Do not use strong solvents (pH value must not exceed 11); they can cause glossy reinforced plastic surfaces to fade. Mildly abrasive polishes can be used to remove chafes and embedded dirt from the deck. Fibre glass surfaces can be washed with a pressure washer.

Useful tip: When the boat has been washed with tap water, a thin chalk-like layer of lime and minerals will remain on the boat's surface after it has dried. The problem can be eliminated by adding a few drops of pine oil soap into a bucket of rinsing water, which will soften it.

Useful tip: Water and lime stains on stainless steel rails can be removed using Lemon Pled furniture spray. Your railings will shine like the day they came off the assembly line.

Useful tip: If the boat's ropes smell bad after the season, immerse them for a couple of hours in a bucket of water with a bottle of apple vinegar and a splash of fabric conditioner added. Allow the lines to dry properly, and they will be as good as new.

## 6.2 Care instructions for seat cushions

Always use the canopy or harbour cover when it is raining to protect the open deck space and seat cushions. Although the seat cushions are made of water-resistant material, water can get in through their seams. If the cushions remain damp for any length of time, they may get mouldy and be ruined. If the mattresses get wet, the fabric can be removed by unzipping the mattress and dried in the sun, at room temperature or in a sauna (50°C). The warranty does not cover cushions spoilt by rain or damp.

**NOTE!** To keep the boat's seat cushions in good condition over the winter, they should be stored in a dry, well-ventilated space.

**NOTE!** Wet cushions should not be placed in storage, because they gather mould easily.

The press studs of the seat cushions should be sprayed with silicon spray every now and then, otherwise they may become so tight that the fabric will tear when trying to open them. The warranty does not cover ripped seat cushions. Use very little silicon spray at a time in order not to stain the cushions.

## 6.3 Care instructions for the canopy

Store the canopy over winter in a dry and well-ventilated place. The warranty does not cover torn or mouldy canopies.

## 6.4 Care instructions for the windshield

The boat's windscreen is made of tempered glass and can be cleaned with ordinary glass cleaners.

Useful tip: When wiping the boat's windshield dry after cleaning, avoid using circular motions. This can leave circular smudges on the windshield that become visible in sunlight, impeding visibility. Wipe off any streaks with dry newspaper or cotton cloth using first horizontal, then vertical motions. Repeat this a few times and you'll bring the windshield to a brilliant shine.

## 6.5 Care instructions for the stainless steel components

To keep the boat's stainless steel parts, such as rails, handles and bollards, shining as good as new, you should keep the parts clean and waxed. The edges of the mounting flanges of the rails should also be cleaned. Any dirt that remains under the edge of the flange will begin to look like rust. In regular use (i.e. no damage), the parts should be cleaned and waxed at least

twice every summer. Rail maintenance should also be performed when the boat is put into winter storage.

## 6.6 Care instructions for the steering system

The hydraulic steering does not require maintenance under normal circumstances. If the steering starts to feel loose, there is a leak somewhere in the system. Leaks must be repaired immediately!

**WARNING!** A hydraulic steering system that has a leak or trapped air in the hoses is extremely dangerous.

## 6.7 Care instructions for electrical components

Electrical components like main switches, other switches and couplings do not normally need to be serviced if the boat is stored in a dry and well-ventilated place for the winter. If, however, you wish to protect electrical components against oxidation, the best way to do it is by spraying them every now and then with a moisture repellent antioxidant.

## 6.8 Minor superficial repairs

You can repair minor surface damage to the boat's hull or deck yourself. However, achieving a neat, unnoticeable repair requires a considerable amount of skill:

1. Protect the area around the damage with tape.
2. Bevel the edges of the damaged area and clean with acetone.
3. If the damage is deeper than 2 mm, it is advisable to smooth it with an appropriate polyfiller before painting.
4. Mix topcoat with 1.5-2 % hardener.
5. Fill the repair with more topcoat than needed, so that its surface remains slightly proud of the surrounding area.
6. Carefully put tape over the repair.
7. After the topcoat has hardened, remove the tape and sand the repair using 600 and 1200 paper applying water.
8. Buff using abrasive paste and wax.

The colours used on this boat are specified in the *technical specifications*. One point to consider is that a paint called *gelcoat* has been used in manufacturing the boat, but the surface is always repaired with a paint called *topcoat*. Gelcoat paint does not harden without a mould surface, whereas paraffin has been added to topcoat to allow it to harden.

**NOTE!** Some post-delivery installations and alteration work may cause damage to the structure of the boat or impair safety if not

performed correctly. Please contact the dealer if you are planning any modifications.

## 7 Winter storage

Preparing your boat for winter storage is an annual routine. Have your boat lifted in good time before the water freezes. Your boat is not designed for use in ice and it is not meant to be used in temperatures below zero (for example, the rainwater drainage system will freeze up). It is advisable to perform all maintenance, repair and inspection procedures in connection with placing the boat in winter storage.

Familiarise yourself with the service procedures shown in the engine manual. We recommend that you leave them to an authorised service agent. Do not forget to service the remote control and steering system. Make sure to perform their maintenance according to their separate instructions and manuals.

### 7.1 Measures before winter storage

Wash the bottom of the boat immediately after the boat has been lifted. Algae and slime will come off easier if they are not left to dry. Empty the engine of its cooling water according to the manual.

Give the engine and other equipment their winter servicing, following their separate manuals. If your boat is stored outside or in a humid place over the winter, empty it of textiles and other equipment that may corrode or become mouldy in damp conditions. Wash the ropes in fresh water. Replace any worn ropes. Leave through fitting valves open. Remove the drain plug for the winter.

Empty the septic tank and the freshwater tank of the boat. Pour two litres of a mixture that contains 50 % ethylene glycol and 50 % water into the toilet and press the flush button for about two seconds.

Check the condition of the hull and rub down any scrapes to let possible moisture inside the laminate dry. Repair any damage in the spring before launching the boat.

Remove all food from the boat and wipe all the surfaces on which food has been handled with a disinfectant. This will prevent the formation of mould.

Always cover your boat so that snow cannot gather inside. Always make sure, however, that it is adequately ventilated. A winter storage cover is available as an optional accessory for your boat.

### 7.2 Measures before launching the boat

Repair any damage to the gelcoat surface according to section 6.10.

In sea areas, antifouling paint should be used to prevent the hull from becoming covered with vegetation. Fouling of the bottom and especially the propeller increases fuel consumption significantly. However, if the boat is anchored at the inlet of a stream or in a land-locked lake, or if it is lifted out of the water at least once every two weeks, it is normally not necessary to use antifouling paint. Carefully follow the paint manufacturer's instructions when applying the paint. When sanding old antifouling paint, remember that the dust is toxic.

Antifouling paint is not necessary in fresh water (lake areas). We nevertheless recommend using an epoxy primer if the boat will be in the water for several months each year. Fresh water, and warm fresh water in particular, is more readily absorbed by the laminate than sea water.

**NOTE!** Do not paint over the zinc anodes or the piston rods of hydraulic trim tabs. Do not apply paints containing copper on aluminium parts. Remember to follow the paint manufacturer's instructions.

Useful tip: Do not throw away a used paint brush. A dried and hardened paint brush that has been used for antifouling paint can be reused if you first soak it for a couple of hours in a mix of 2 litres of hot water, 100 ml of vinegar, and 50 ml of baking powder.

Perform the necessary service procedures required for the engine according to the engine manual. Check the functioning of electric equipment and remove any oxidation from fuse connectors etc.

Remember that petrol goes stale over time, and you must always start the engine with fresh petrol in the spring.

When the boat has been launched you should open all valves in the through fittings (bushings) and check to ensure that there are no leaking hoses or connectors. The locations of through fittings are shown in section 5. Bring your safety equipment back on board before setting out.

## 8 Layout

## 8.1 General lay-out

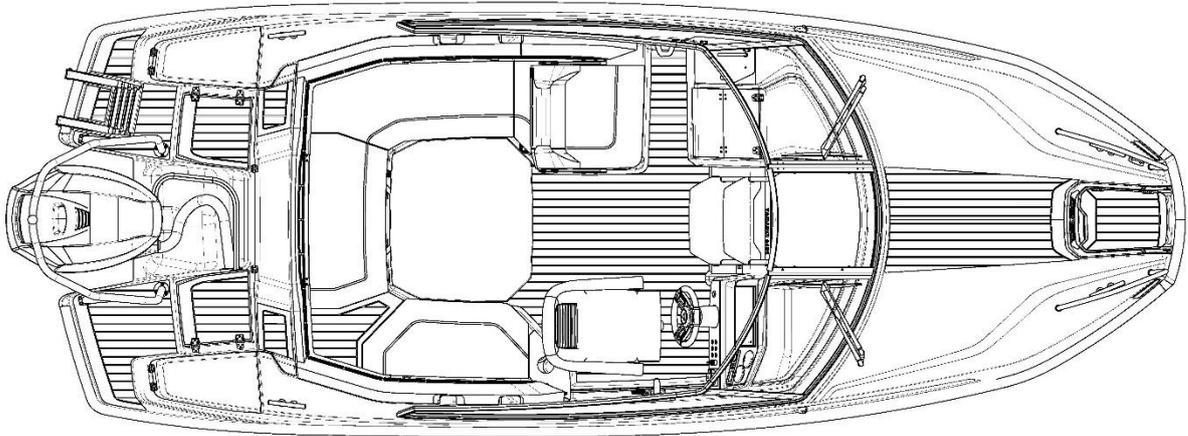


Image: General lay-out from above

### **WARNING!**

Handle the boat's hatches with care and watch your fingers and toes. **Please pay particular attention to the bow anchor box hatch, which is equipped with an elastic band that holds the hatch closed while driving.**

### **WARNING!**

It is not recommended that children do not use the bow anchor box hatch, as their fingers or toes could get caught in it.

## 8.2 Fuel system

The boat is equipped with a built-in fuel tank. A fuel filter is installed in the fuel line, also functioning as a water separator. The filter must be changed at least once a year. When a new or removed filter has been mounted, the fuel line must be filled with a ball pump before starting the engine.

### **NOTE!**

The condition of the fuel hoses must be inspected annually, and every effort should be made to prevent damage to them. Damaged fuel hoses must be replaced. If you replace fuel hoses, make sure the new hoses have an ISO 7840 label.

The refill cap is situated under the anchor box hatch on the starboard (right) side in the stern. The location of the fuel tank refill cap is marked on the deck by the  symbol.

The cap of the fuel tank contains the text GAS, PETROL or FUEL, which refers to petrol 95E or 98E (recommendation).

## 8.3 Steering system

The boat is equipped with hydraulic steering. With hydraulic steering, the steering wheel's position changes constantly, which is why the boat is equipped with a symmetrical steering wheel.

The hydraulic steering does not require maintenance under normal circumstances. If the steering starts to feel loose, there is a leak somewhere in the system. Leaks must be repaired immediately!

**NOTE!** If you replace any component in the steering system, please note that all components must conform to the ISO 10592 standard and bear the CE mark.

**WARNING!** A hydraulic steering system that has a leak or trapped air in the hoses is extremely dangerous.

## 8.4 Electrical system

The electrical system of the boat contains the following main components:

1. Starter battery and operation battery
2. Wire harness
3. Main switch panel with main switches and 13 circuit breakers
4. Cabin fuse panel with 9 circuit breakers
5. 6 switches in the panel below the wheel
6. 1 USB output in cabin
7. 1 USB output in centre console
8. Navigation lights (sides and mast)
9. Headlights/searchlights (optional accessories)
10. Trim flap system (optional accessory)
11. 2 windshield wipers (port side optional)
12. Cabin light
13. Defroster for driver
14. Toilet system
15. Refrigerator (optional accessory)
16. Radio (optional accessory)
17. Bow thruster (optional accessory)
18. Anchor winch, stern or bow (optional accessory)

In addition, the engine is an essential part of the boat's electrical system; it both generates and consumes power.



If you connect or disconnect any batteries, take care not to touch both battery terminals with a metal object at the same time.

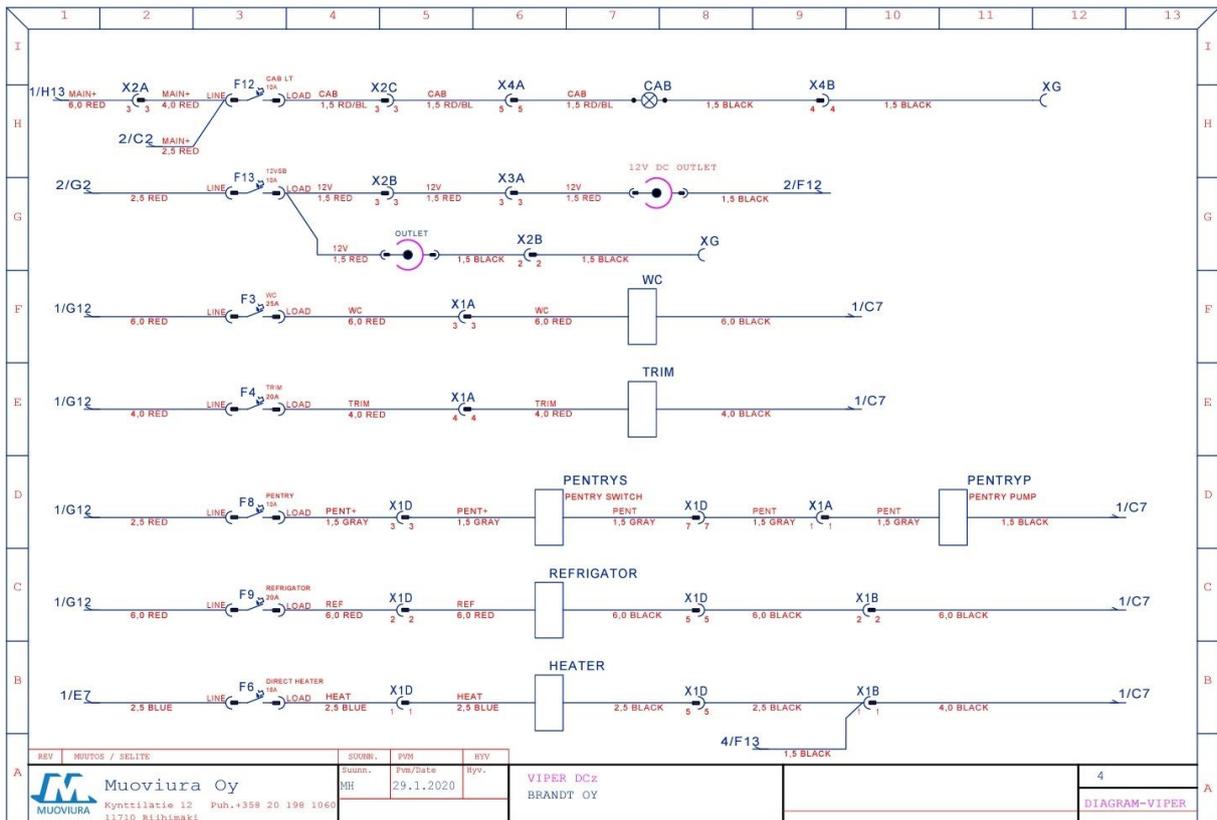
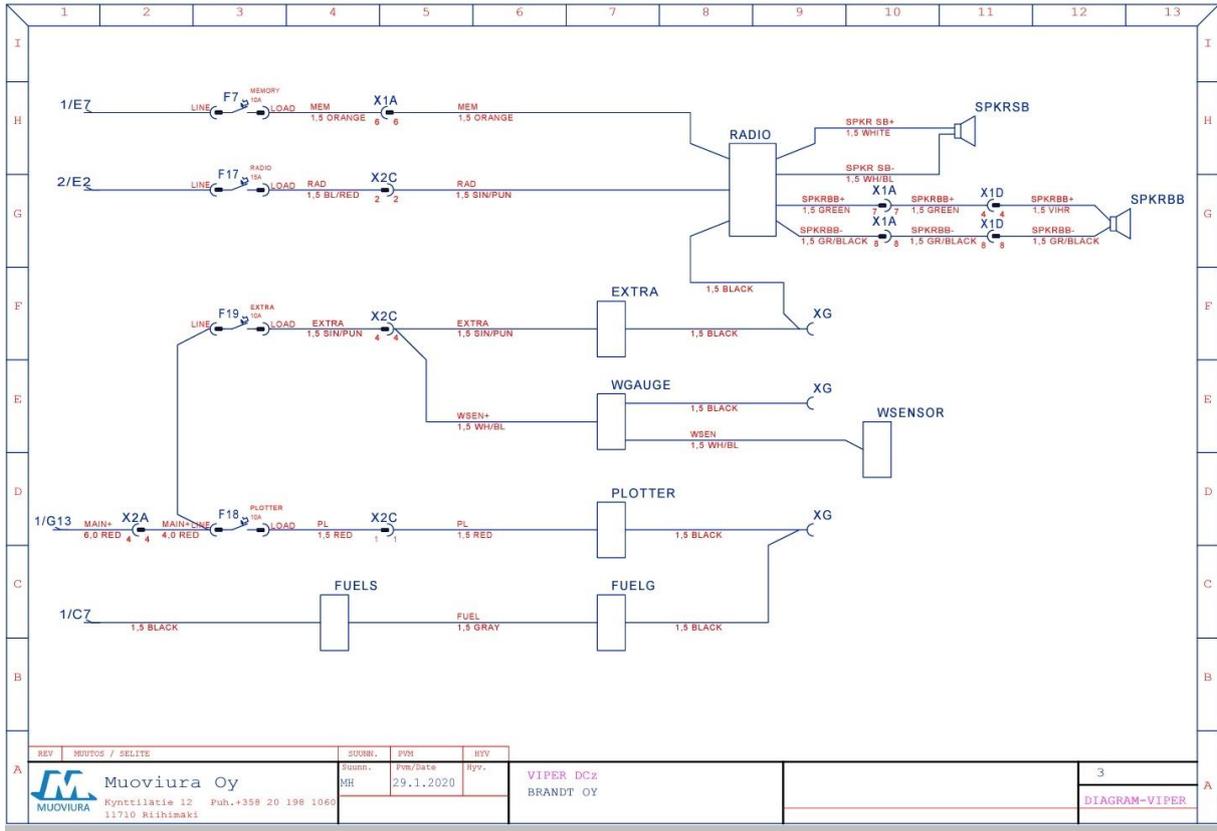
Only recharge the batteries with the boat's battery charger or one with equivalent power. Charging the battery with excessive current creates an explosion risk.

Do not alter the onboard electric system or relevant drawings; alterations and maintenance work have to be carried out by a professional.

**NOTE!** Main switches may not be switched OFF if the motor is running as this may damage the electrical system.

## 8.5 Wiring diagram





***Silver***<sup>®</sup>

# **RAPTOR**

**Silver Raptor Day Cruiser**

**User Manual**

## **FOREWORD**

Congratulations on choosing a Silver Raptor boat!

This user manual will familiarize you with the features of your new boat and help you to care for and maintain it. It has been designed to help you learn how to handle your boat safely and avoid potential problems. Please check that you have received all the instruction manuals for the equipment installed on your boat when it was delivered. Add the information and instruction manuals for any equipment you purchase later to the manual. There is space for your own notes at the end of the manual. Read this manual carefully and familiarize yourself thoroughly with the details of your boat before taking it out on the water.

The user manual is not a detailed maintenance or troubleshooting guide. In case of problems, contact your boat dealer. Always use qualified and trained personnel for maintenance, repairs and modifications. Modifications that may affect the safety features of the boat must be assessed, implemented and documented by qualified personnel. The boat manufacturer is not responsible for modifications that it has not approved.

Always keep your boat in good condition and bear in mind that it requires maintenance and servicing. Any boat, regardless of its strength, can be significantly damaged if not used properly. Always adjust the speed and direction of the boat to the prevailing weather conditions.

**We wish you pleasant and relaxing moments on the water with your Silver Raptor boat!**

TerhiTec Oy  
Sorvitie 4  
63700 Ähtäri  
Finland

[www.silverboats.com](http://www.silverboats.com)

**Keep this user manual in a safe place and pass it on to the next owner if you sell your boat.**

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## BEFORE YOU LEAVE

Read this user manual.

Always check at least the following before setting out on the water:

- **Weather conditions and forecast**  
Take into account the wind, waves and visibility. Are your boat's design class, size and equipment, as well as the skills of the skipper and crew, adequate for the waters you are going to? In strong winds and high waves, portholes, hatches and doors must be closed to prevent water from entering the boat.
- **Load and stability**  
Do not overload the boat; distribute the load correctly. Heavy items should be placed in the storage compartments under the rear bench. Also note that the stability of the boat is reduced when people are standing on it.
- **Passengers**  
Ensure that all participants have flotation devices or life jackets. Agree on each person's responsibilities during the trip before departure.
- **Fuel and fuel system**  
Check that there is sufficient fuel, including a 20% reserve in case of bad weather or other unforeseen circumstances.
- **Engine and steering equipment**  
Check the operation and condition of the steering and remote-control devices and carry out the checks specified in the engine manual.
- **Seaworthiness of the boat**  
Check the seaworthiness of the boat in other respects as well: no fuel or water leaks, safety equipment on board, etc. Check that there is no water in the boat's bilge.
- **Securing of goods**  
Check that all items are secured so that they will remain in place even in rough seas and strong winds. Note that seat cushions may fly off if their fasteners are not secured.
- **Nautical charts**  
If you are not travelling on a familiar route, make sure you have nautical charts covering a sufficiently large area! Your boat is equipped with a chart plotter, so learn how to use it before you set sail. Make sure your nautical charts are the latest edition.
- **Departure maneuvers**  
Agree with the crew who will untie which ropes, etc. Check that the mooring ropes or anchor rope do not get caught in the propeller during departure or arrival.
- **Mandatory equipment**  
According to maritime traffic legislation, every motorized watercraft must have the following equipment in working order:
  - 1) An approved life jacket, buoyancy aid or survival suit for each person on board. The size and buoyancy of the suit must correspond to the size and weight of the person.
  - 2) Bailing equipment
  - 3) Oars or paddles or anchor with rope
  - 4) Approved hand-held fire extinguisher, minimum class 8A68B. The fire extinguisher must be inspected once a year. (The boat is equipped with an approved fire extinguisher as standard. Please note as the fire extinguisher is installed in the boat during the manufacturing stage, the one-year inspection stamp may expire shortly after the new

boat is put into service. According to water traffic legislation, the boat operator is responsible for ensuring that the fire extinguisher inspection stamp is valid.

**Additional instructions for the engine can be found in the separate instruction manual.**

## 1 General

The user manual will help you familiarize yourself with the features, care and maintenance of your new boat. The manuals for the equipment installed on the boat are included and referred to in several places. You can, of course, supplement the manual with instruction manuals for equipment purchased later. Space is provided at the end of the manual for your own notes.

The boat has a serial number, the WIN code (Watercraft Identification Number). The WIN code is marked on the transom of the boat, below the right-hand side of the swim platform.

In some contexts, the old name CIN code (Craft Identification Number) is still used instead of the WIN code. It is the same code.

The last two digits of the WIN code indicate the model year of the boat. The third last digit indicates the year of manufacture. The boat register data always mentions the year of manufacture.



Essential requirements (referring to the numbering in Annex I to the Directive)	Harmonised standards Full application	Harmonised standards Partial application, see Other technical specifications <sup>1</sup>	Other technical specifications	Other means of compliance See technical	Specify the harmonised standards <sup>2</sup> or other technical specifications  (including year of publication, e.g. "EN ISO 8666:2002")
<b>General requirements (2)</b>					
Essential information – main dimensions	<input checked="" type="checkbox"/>				EN ISO 8666:2020/A11:2021
Watercraft identification number – WIN (2.1)	<input checked="" type="checkbox"/>				EN ISO 10087:2022
Watercraft manufacturer's plate (2.2)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	RCD Annex I: A 2.2, EN ISO 14945:2021
Prevention of falling overboard and re-entry into the boat (2.3)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	EN ISO 15085:2003/A2:2018
Visibility from the main steering position (2.4)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	EN ISO 11591:2020
Owner's manual (2.5)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	EN ISO 10240:2020
<b>Requirements for structure, strength and tightness (3)</b>					
Structure (3.1)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	EN ISO 12215-5:2019, EN ISO 12215-6:2018
Stability and safety (3.2)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	EN ISO 12217-1:2017
Carrying capacity and buoyancy (3.3)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	EN ISO 12217-1:2017
Openings in hull, deck and superstructure (3.4)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	EN ISO 9093:2021, EN ISO 12216:2018
Water ingress (3.5)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	EN ISO 11812:2018, EN ISO 15083:2020, EN ISO 8849:2021
Manufacturer's recommendation for maximum permissible load (3.6)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	EN ISO 14946:2021
Storage of life rafts (3.7)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	RSG Guidelines
Escape route (3.8)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	EN ISO 9094:2017
Anchoring, mooring and towing (3.9)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	EN ISO 15084:2018
<b>Steering characteristics (4)</b>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	EN ISO 11592-1:2016, EN ISO 8665:2017
<b>Engines and engine compartments (5.1)</b>					
Inboard engines (5.1.1)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	-
Ventilation (5.1.2)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	EN ISO 11105:2020
Unprotected parts (5.1.3)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	-
Outboard motor start-up (5.1.4)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Engine declaration of conformity
<b>Fuel system (5.2)</b>					
General information on the fuel system (5.2.1)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	EN ISO 10088:2023, EN ISO 11105:2020, EN ISO 7840:2021
Fuel tanks (5.2.2)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	EN ISO 21487:2018
<b>Electrical system (5.3)</b>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	EN ISO 13297:2021, EN ISO 8849:2021, EN ISO 8846:2017
<b>Control system (5.4)</b>					
General requirements for control systems (5.4.1)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	EN ISO 10592:2022
Backup systems (5.4.2)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	-
<b>Gas system (5.5)</b>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	EN ISO 10239:2017
<b>Fire protection (5.6)</b>					
General fire protection (5.6.1)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	EN ISO 9094:2017
Firefighting equipment (5.6.2)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	EN ISO 9094:2017
<b>Navigation lights, shapes and sound signalling devices (5.7)</b>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1972 COLREG, EN ISO 16180:2018
<b>Pollution control (5.8)</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Engine declaration of conformity
<b>Annex I.B – Exhaust emissions<sup>3</sup></b>					
<b>Annex I.C – Noise emissions<sup>4</sup></b>					
Noise emission levels (I.C.1)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Engine conformity certificate
Owner's manual (I.C.2)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Engine Declaration of Conformity

<sup>1</sup> Non-harmonised standards, rules, regulations, guidelines, etc.

<sup>2</sup> Standards published in the Official Journal of the European Union

<sup>3</sup> See the engine manufacturer's declaration of conformity

<sup>4</sup> Applies only to boats with inboard or stern drive engines without a built-in exhaust system

## 2 Definitions

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

**IMMEDIATE DANGER!** Indicates a serious hazard that will result in death or serious injury unless proper precautions are taken.

**DANGER!** Indicates a potential hazard that could result in death or serious injury if proper precautions are not taken.

**WARNING!** Indicates a potential hazard that could result in injury if appropriate precautions are not taken.

**NOTE** Indicates important information related to the risk of damage to the boat, its parts or other property, but not to personal injury.

The manual uses SI units. In some cases, other units are added in brackets. An exception to this is wind speed, which is given in Beaufort in the Recreational Craft Directive.

## 3 Warranty

The boat and its equipment are covered by a 2-year warranty, starting from the date of commission. Contact your dealer for any warranty issues. Remember to provide the WIN code. If possible, take a photo of the subject of the complaint. This usually speeds up the processing of warranty issues.

## 4 Before use

### 4.1 Registration

In accordance with the Water Traffic Act, sailing boats and motorboats with a hull length of at least 5.5 meters, and all watercraft with an engine power of at least 15 kilowatts, i.e. more than 20 horsepower, must be registered in the Finnish boat register. More detailed instructions on registration are available from the Finnish Transport and Communications Agency Traficom. In Finland, the operator of a boat to be registered must be at least 15 years of age.

Registration regulations vary between different countries. Find out what is required in relation to your own boat if used outside Finland.

## 4.2 Insurance

Boat insurance can cover damage that occurs on the water or during transport and docking. Make sure you have insurance coverage when lifting the boat. Insurance also has an indirect effect on safety on the water: in the event of a serious accident, you can focus on rescuing people first and foremost. Insurance companies can provide more detailed information on the various insurance options. Make sure you have insurance coverage when lifting and transporting your boat!

## 4.3 Training

There is a wealth of literature on boating. Navigation courses are organized by **the Finnish Navigation Association ([www.suomennavigaatioliitto](http://www.suomennavigaatioliitto))** in cooperation with adult education centers.

Information on boating schools is available from: **Finnish Sailing and Boating ([www.spv.fi](http://www.spv.fi))**. These provide a good foundation for your skills, but confidence in handling, navigating, mooring and anchoring a boat can only be achieved after long practical training.

## 5 Characteristics and use of your boat

### 5.1 General

The purpose of this user manual is not to be a complete maintenance guide or repair manual, but to instruct the user on how to use their boat properly.

### 5.2 Basic boat information

The basic information about the **Silver Raptor DC** boat is as follows:

Manufacturer/manufacturer's representative:

**Fenix Marin Oy, Mahliankatu 5, 37600 Valkeakoski**

Type: **Silver Raptor DC**

Design class: **C**

The design class refers to the following:

**Design category A:** The boat is designed for use in conditions where the wind force is less than 10 Beaufort (approx. 25 m/s) and the significant wave height is commensurate. The conditions described are typically encountered on long voyages, such as ocean crossings, or on the coast when the voyage is exposed to wind and waves for several hundred nautical miles. Depending on atmospheric conditions, gusts can reach approx. 32 m/s.

**Design category B:** The boat is designed for use in conditions where the wind force is up to 8 Beaufort (approx. 21 m/s) and the waves are correspondingly high (significant wave height up to 4 m, see **Note** below). Such conditions are typically encountered on sufficiently long open sea voyages or in coastal waters when the voyage is exposed to wind and waves for several tens of nautical miles. The conditions described may also be encountered on lakes that are large enough for the wave height in question to develop. Depending on atmospheric conditions, gusts may reach approx. 27 m/s.

**Design category C:** The boat is designed for use in conditions where the steady wind speed is no more than 6 Beaufort (approx. 14 m/s) and the waves are correspondingly small (significant wave height no more than 2 m, see **Note** below). Such conditions are typically encountered on open lakes, river estuaries and coastal waters in moderate weather conditions. Depending on atmospheric conditions, gusts may reach approx. 18 m/s.

**Design category D:** The boat is designed for use in conditions where the wind force is up to 4 Beaufort (approx. 8 m/s) and the waves are correspondingly high (significant wave height up to 0.3 m, occasional maximum waves 0.5 m high). Such conditions are typically encountered on sheltered inland waters and

in coastal waters in good weather. Depending on atmospheric conditions, gusts may reach approx. 12 m/s.

**Note:** Significant wave height is the average height of the highest third of the waves, which roughly corresponds to the wave height estimated by an experienced observer. Some individual waves may be approximately twice as high.

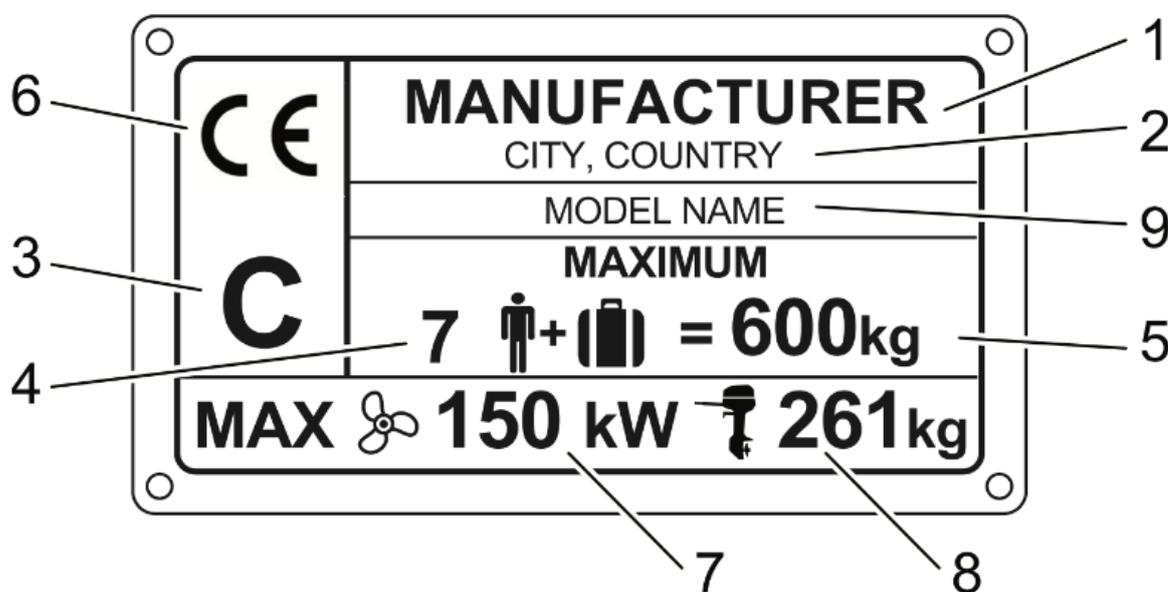
**Maximum recommended load:** See *technical specifications. Table 1.*  
See also section 5.4 "Loading".

**Main dimensions and capacities:** See *technical specifications. Table 1.*

The length, width, draught, total weight, etc. of the boat, as well as tank capacities, are specified in the technical specifications.

#### Manufacturer's plate:

Part of the above information is provided on the manufacturer's plate (**Figure 1**) which is attached to the boat *next to the steering position*. Additional information is provided in the relevant sections of this manual.



**Figure 1.** Information provided on the manufacturer's plate:

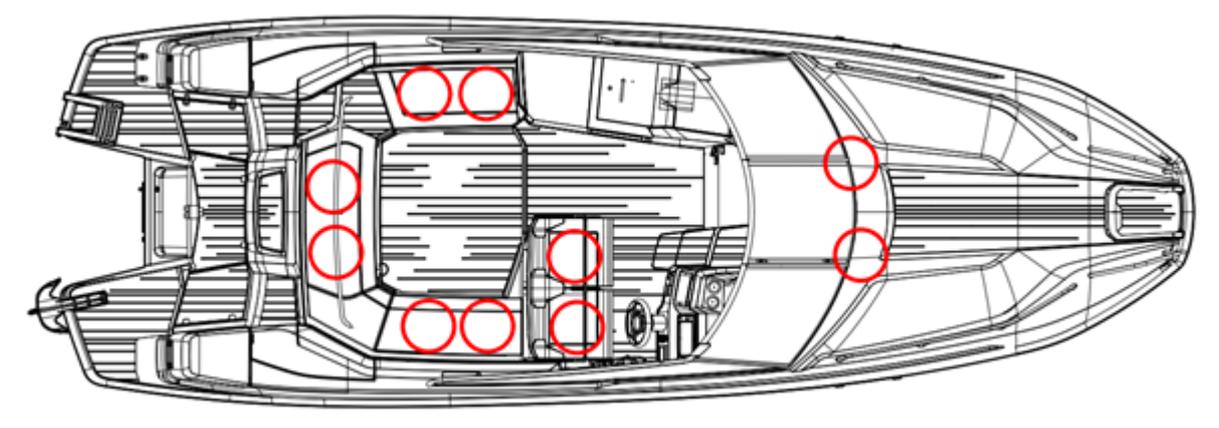
1. manufacturer's name, 2. manufacturer's/manufacturer's representative's contact details and, where applicable, the identification number of the notified body, 3. boat design category, 4. maximum number of persons, 5. maximum recommended load (kg), 6. CE marking, 7. Maximum power of outboard motor(s) [kW], 8. Maximum weight of outboard motor(s) [kg], 9. Boat model.

**Table 1: Technical specifications**

Model	SILVER RAPTOR DC
Design category	C
Overall length (excluding swim ladder)	8.05 m
Width	2.76 m
Weight without engine, fluids and equipment	Approximately 1980 kg
Weight when transported on a trailer with the standard maximum engine	Approximately 2,800 kg Includes boat (approx. 1,980 kg) and 350 hp engine (375 kg) as well as estimated weight of fluids and equipment (340 kg). NOTE This is not the maximum weight of fluids and equipment.
Maximum load/maximum number of persons	1070 kg 10 persons
Maximum load includes	750 kg / 10 persons (75 kg each) + personal equipment 50 kg + fuel 195 kg + fresh water 45 kg + wastewater 30 kg
Maximum load on CE plate	800 kg Includes 10 x 75 kg = 750 kg + personal equipment 50 kg = total 800 kg
Boat weight at full load	Approximately 3,700 kg Includes boat 1,980 kg + engine 375 kg + batteries 40 kg + basic equipment 80 kg + personal equipment 50 kg + fuel 195 kg + water 45 kg + septic tank 30 kg + life raft 30 kg + persons 750 kg
Maximum engine power	258 kW / 350 hp
Maximum engine weight	375 kg
Liquid tank capacity	Fuel tank 260 liters, septic tank 30 liters, Water tank 43 liters
Maximum draught with full load, engine up	0.5 m
Maximum height above waterline with light load	1.7
Height from keel to top of windscreen	2.25
Construction material	Reinforced plastic
Colour code (frame and cover)	RAL 9016
Hydraulic hoses	2 x 2.6 m 2 x 3.6 m
Top speed achieved in boat test	Approximately 46 knots

### 5.3 Maximum recommended number of passengers

The maximum recommended number of passengers on board is 10. *Seating positions are shown in Figure 2.*



**Figure 2.**

○ Seating positions

**WARNING!**

Do not exceed the maximum number of people recommended. Regardless of the number of people on board, the total weight of persons and equipment must never exceed the maximum recommended load (see section 5.4 "Load"). Always use the seats or seating positions provided in the boat. While the boat is in motion, all persons on board must be seated.

### 5.4 Loading

The maximum permissible load for the boat is 1070 kg. This includes the following weights:

- total weight of persons on board 750 kg (assumed weight of one adult 75 kg, child 37.5 kg)
- the weight of liquids in fixed tanks (fresh water, wastewater, fuel, etc.) is 240 kg
- weight of personal equipment (e.g. recreational equipment and overnight gear) 50 kg
- weight of other cargo (septic tank full) 30 kg.

**NOTE!**

The maximum load only includes the weight components mentioned above.

**WARNING!**

**When loading the boat, never exceed the maximum recommended load.** Always load the boat carefully and distribute the load appropriately so that the boat floats straight. Heavy items should normally be placed in the storage space under the rear seat. If the boat is carrying the maximum number of

passengers, heavy items should be placed in the front cabin to prevent the boat from becoming rear-heavy. Avoid placing heavy items high up.

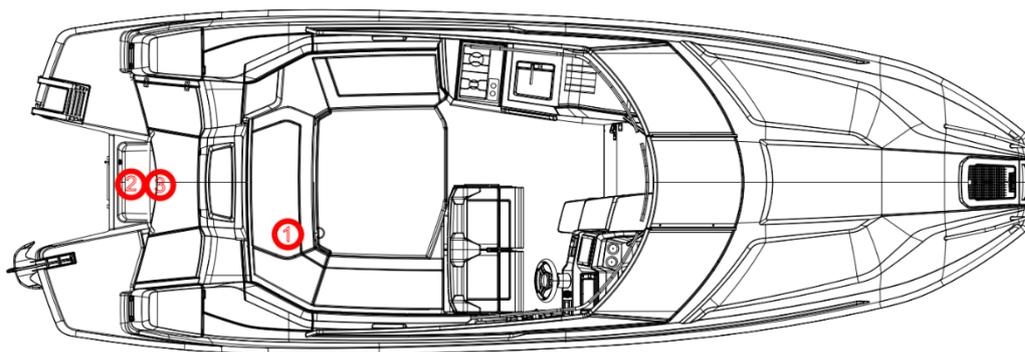
## 5.5 Boat drainage system

The boat has a rainwater drainage system, which means that rainwater is drained from the open space when the boat is in the water. The rainwater drainage system also works on land, if the bow is higher than the stern and the rainwater drainage valve is open. The rainwater drainage valve is located under the maintenance hatch below the centre hatch of the rear seat. The valve is only intended to be closed when carrying the maximum permissible load to prevent water from entering the boat. **In other cases, the valve must always be open to allow rainwater to drain from the boat.**

NOTE! The open space in the boat should be protected from rain with either a driving canopy or a harbour cover. Although the cushions in the open area are made of water-resistant material, water can seep through the seams, causing the foam inside the cushion to absorb water. The control console panels, switches and power outlets are also not waterproof.

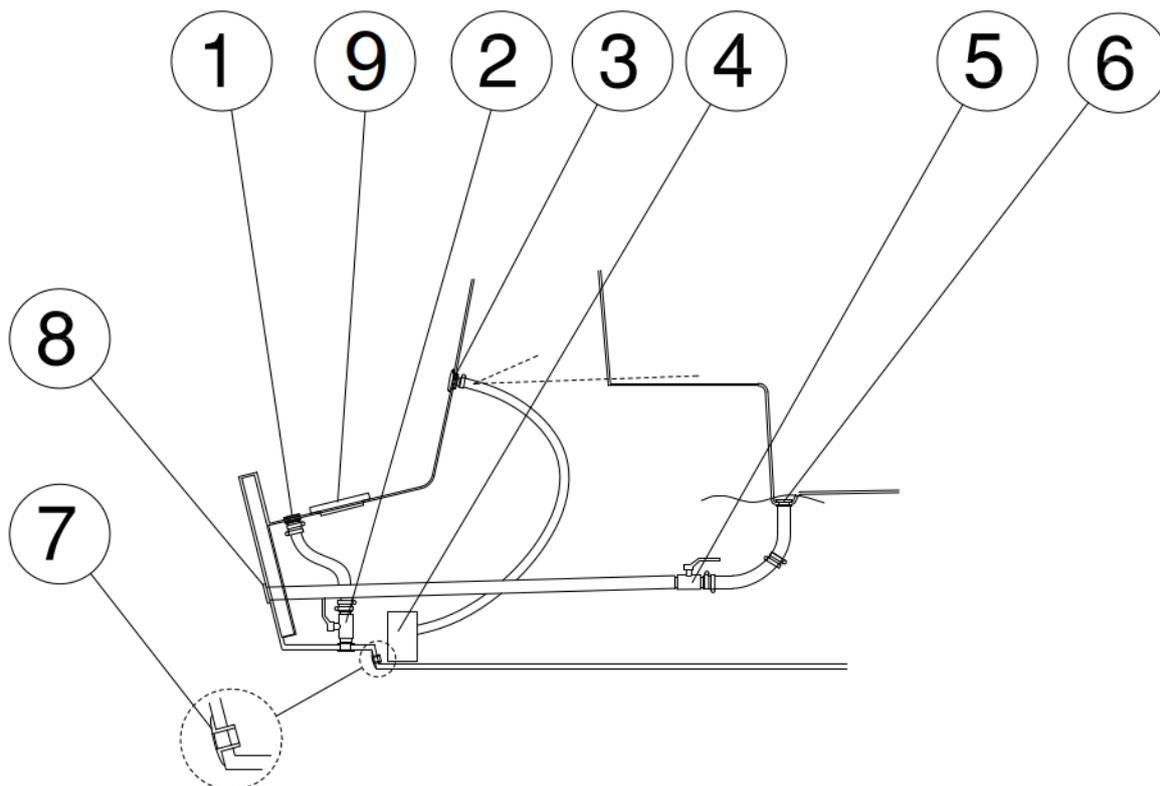
An electric bilge pump is installed in the boat between the fuel tank and the transom. The capacity of the electric bilge pump is approx. 45 l/min.

The bilge pump can be accessed through a hatch in the engine compartment. NOTE! If you open the hatch, remember to close it carefully, because the hatch can go under water if the boat is heavily loaded.



**Figure 3.**

1. Open space drainage shut-off valve
2. Electric/automatic bilge pump
3. Shut-off valves for emptying the engine well



**Figure 4: Boat drainage system**

- |  |                                       |
|--|---------------------------------------|
| 1. Engine compartment drainage outlets (2 pcs) | 5. Open space drainage shut-off valve |
| 2. Engine compartment drainage shut-off valves | 6. Open space drainage outlet         |
| 3. Bilge pump drain                            | 7. Bilge space drain plug             |
| 4. Electric/automatic bilge pump               | 8. Non-return valve                   |

It is the boat owner's responsibility to keep a hand pump, bucket or at least a bailer on board.

**NOTE!**

A small amount of condensation always accumulates in the bilge. The fittings may also allow a small amount of water to pass through, especially as the boat ages. Always check the bilge before leaving the boat at the dock or buoy and before setting out on the water. Have any leaks repaired by an authorised service centre.

**WARNING!**

The bilge pump system is not designed to control leaks caused by hull damage resulting from grounding or other damage.

**NOTE!**

Check regularly that there is no debris at the end of the bilge pump suction hose. You can check the electric bilge pump by removing the service hatch in the engine compartment.

**WARNING!**

The maintenance hatch at the bottom of the engine compartment must be closed carefully so that it screws into place properly, and

the hatch must also be tightened securely. A carelessly closed hatch can lead to serious leakage.

**WARNING!**

Always close the drain pipe when its inner end is constantly below the waterline due to the load. The shut-off valve in the transom prevents water from entering only when reversing!

**NOTE!**

Ensure that water can flow freely out of the drain pipe. Any debris, such as leaves in autumn, can prevent water from flowing, causing the boat to fill with water and sink. The drainage system does not work in freezing conditions.

**WARNING!**

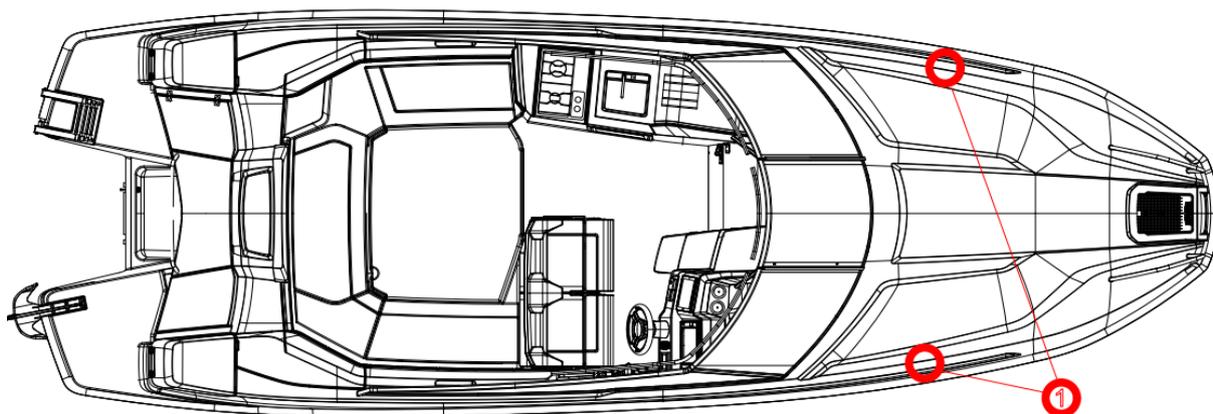
The boat's handling characteristics may become life-threatening if there is water in the boat's intermediate floor.

### 5.5.1 Stability and buoyancy

Please note that the stability of the boat is reduced by any additional weight added to the top of the boat. Any changes in the distribution of weight can significantly affect the stability, handling and performance of the boat. However, please remember that large breaking waves always pose a serious threat to stability.

### 5.5.2 The hull windows

The hull windows of the boat must be kept closed while the boat is in motion. Also close the hull windows when leaving your boat at a jetty or buoy. In rough weather, hatches, lockers and doors must be kept closed to minimise the risk of flooding.



**Figure 5.** Hull windows must be kept closed while the boat is in motion. 

## 5.6 Preventing the risk of fire or explosion

### 5.6.1 Refuelling

Before refuelling, switch off the engine, gas stove and, of course, cigarettes. During refuelling, do not use any devices that may cause sparks.

If the nozzle kicks back while refuelling, you must turn the nozzle at least 20 degrees so that the spray does not hit the chain mounting screw directly.

Hint: If you are afraid that petrol will splash onto the synthetic teak deck while refuelling, it is a good idea to wet it with water before refuelling. You can also place a cloth over the filler neck to prevent petrol from splashing onto the deck.

Always carry spare fuel with you. Store spare fuel cans in the rear anchor boxes, not in the rear seat storage compartments (for fire safety reasons).

Do not store loose items under the rear seat that could block the fuel supply to the engine when moving. Check the fuel lines annually, especially at the feed-through points, for wear.

Please note that the full capacity of the tanks may not always be available, depending on the trim or heel angle of the boat.

**WARNING!** Vapourised fuel is highly explosive. Exercise extreme caution and follow these instructions when refuelling. The smell of fuel always indicates that there is vapourised fuel in your boat.

### 5.6.2 Other fuel-operated systems (gas stove and diesel heater)

The gas stove and diesel heater (optional) have separate operating instructions and are therefore not described in detail in this user manual. The heater's fuel tank is in the storage compartment on the left side of the rear seat (under the plywood panel). When refuelling the diesel tank, switch off the heater. Do not use switches or devices that may cause sparks when handling gas or diesel. Clean up any spilled fuel immediately.

Light the gas stove with a match or cigarette lighter.

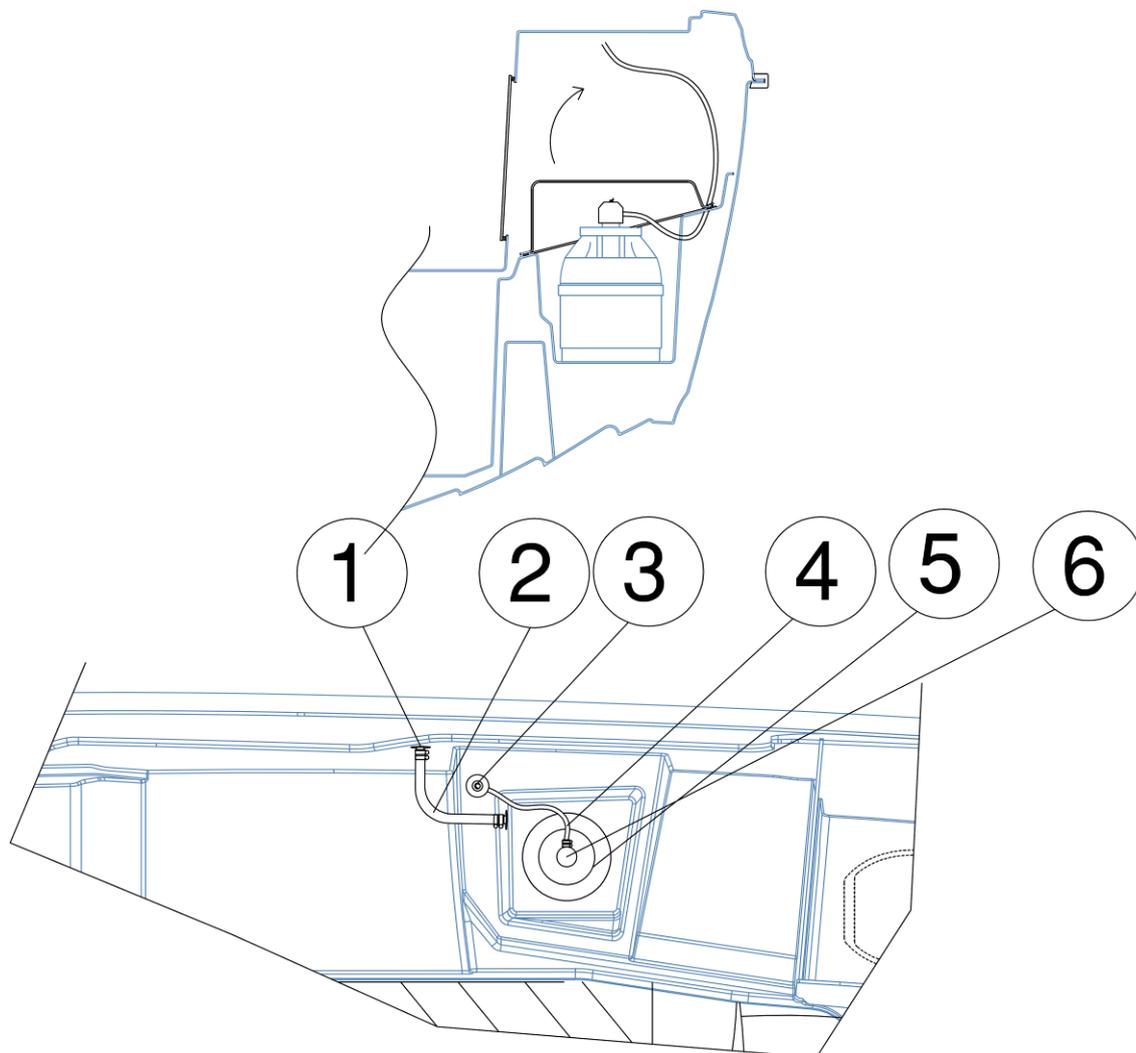
**NOTE!** Only use liquefied petroleum gas, which is propane or a mixture of propane and butane, in gas stoves.

**NOTE** Always keep the gas compartment door closed. The gas compartment is ventilated to the outside air through the side of the boat. A possible gas leak does not pose a danger to those on board when the gas compartment door is properly closed.

**NOTE** Always close the gas cylinder valve when leaving the boat.

**NOTE**

When cooking, use potholders if there is even the slightest risk that the boat may be exposed to waves.



**Figure 6.** Gas stove

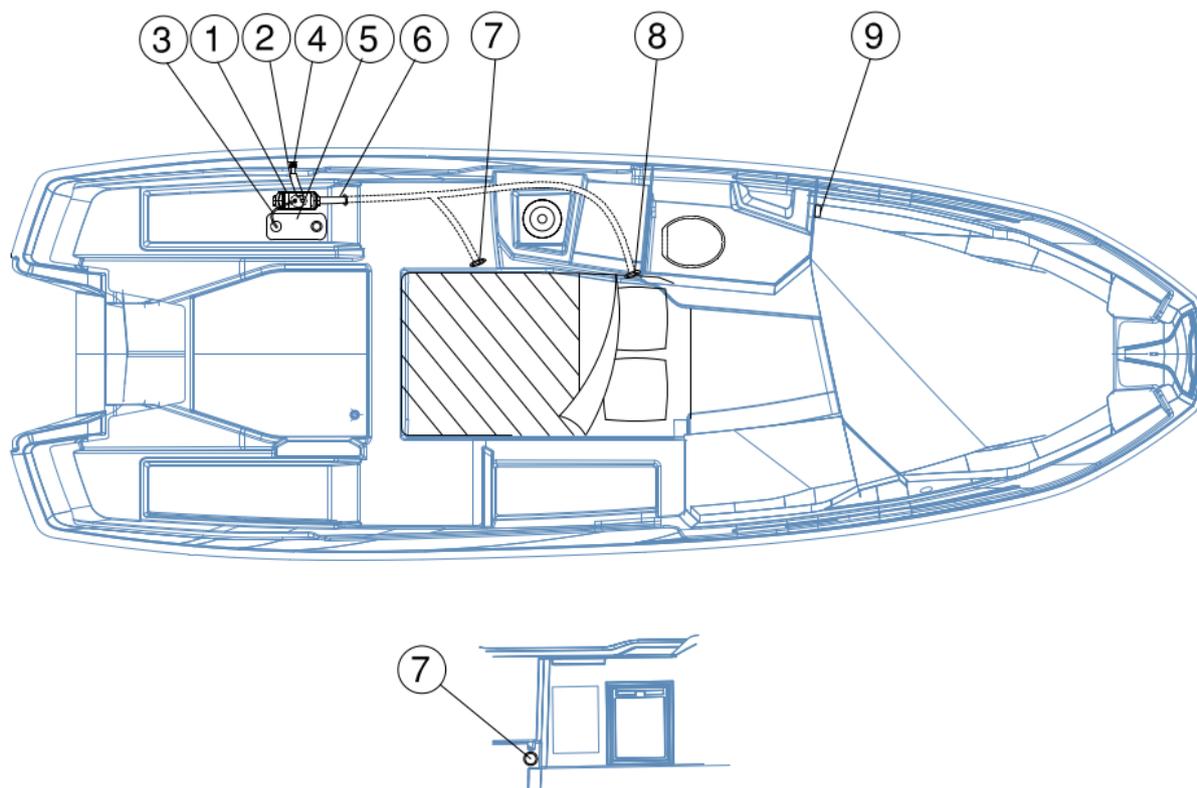
- |                                    |  |
|------------------------------------|--|
| 1. Hull penetration                | 4. Gas hose                                |
| 2. Gas tank ventilation hose       | 5. Gas cylinder (5 kg composite, optional) |
| 3. Gas hose connector to the stove | 6. Low pressure regulator                  |

**NOTE!**

When lowering the stove cover, there must be nothing on the stove that could get caught. When the boat is moving, the gas stove cover must be lowered, and the sink cover must be in place.

**NOTE**

If you use potholders, remove them before closing the stove cover.



**Figure 7.** Heating system (optional)

- |                              |   |
|------------------------------|---|
| 1. Heater                    | 6. Air hose                               |
| 2. Exhaust pipe              | 7. Air vent to open space                 |
| 3. Fuel hose                 | 8. Air vent to cabin                      |
| 4. Exhaust pipe feed-through | 9. Control switch / temperature regulator |
| 5. Fuel tank                 |   |

**NOTE**

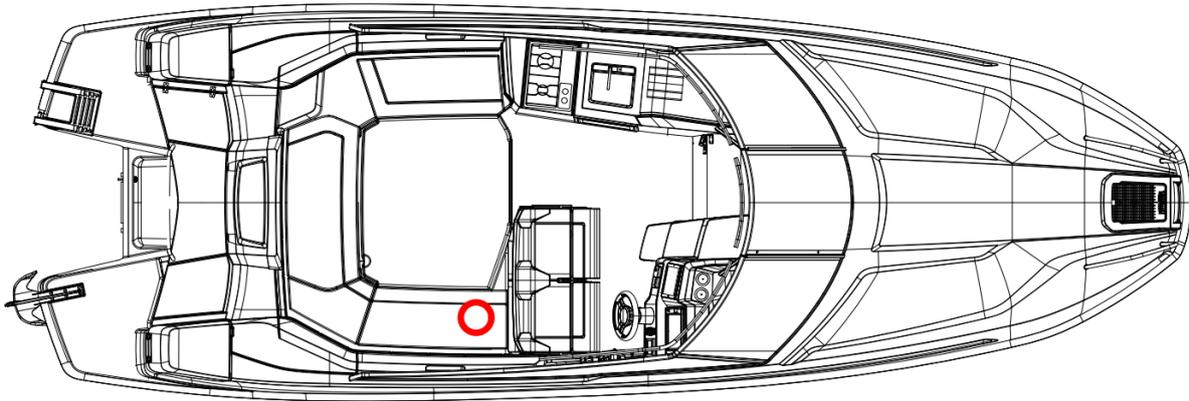
If a heater (optional extra) is installed in the boat, do not block the air vents when the heater is on, as this will cause the heater to overheat and the overheating protection may be activated.

### 5.6.3 Fire protection

The boat is equipped with a 2 kg hand-held fire extinguisher, class 13A 89B C. To ensure that the extinguisher is in working order, it must be inspected once a year by an authorised inspector. If the hand-held fire extinguishers are replaced, they must be replaced with hand-held fire extinguishers with at least the same extinguishing capacity as the old ones.

Ensure that fire extinguishing equipment is easily accessible even when the boat is loaded. Inform all crew members of the location and operation of firefighting equipment. The fire extinguisher is located in the storage compartment of the right-hand seat in the open space, immediately behind the driver's seat.

### Location of the hand-held fire extinguisher



**Figure 8.**

○ Hand-held fire extinguisher

### Never

- block access to safety equipment, such as electrical system switches
- block access to hand-held fire extinguishers stored in storage compartments
- leave the boat unattended when the stove is in use
- modify any of the boat's systems (especially the electrical or fuel systems) or allow an unqualified person to make modifications to any of the boat's systems
- fill any fuel tanks while the equipment is in use
- smoking when handling fuel or gas.

## 5.7 Main switches and fuses

### Main switch operation:

- The switch shows a green colour -> circuit connected (in the picture, the power is turned on)
- Switch shows red colour -> circuit disconnected

Turn off both main switches when leaving the boat and always turn both on when using the boat.



**Figure 9.** Main switches and fuses

- |                                      |  |
|--------------------------------------|--|
| 1. Main power switch                 | 5. Rear anchor winch (optional) fuse             |
| 2. Main switch for operating current | 6. Direct feed switch for refrigerator*          |
| 3. Fuse panel                        | 7. Heater (optional) direct power supply switch* |
| 4. Bow thruster fuse                 | *Switched on when the button is pressed.         |

Do not switch off the direct supply if you want the refrigerator or heater to continue operating during your absence. The refrigerator (Refrigerator F1) is number 6 and the heater (Heater F2) is number 7.

The circuit breakers are located above the main switches. The sizes of the circuit breakers are also shown in the electrical diagram. Do not change the amperage ratings of the circuit breakers or install components in the electrical system that exceed the rated amperage of the circuit.

All fuses (except for the bow thruster and anchor winch) are automatic fuses. In the event of a fault current, the automatic fuse trips and remains off. You can "reset" the fuse by pressing it back in. If the fuse trips again, there is a short circuit in the electrical system or in one of the components. Repairs to the boat's electrical system must be carried out by a qualified electrician.

**NOTE!** Also switch off the power when performing electrical installations.

**NOTE** Never turn off the power at the main switch while the engine is running! This may damage the engine's electrical system.

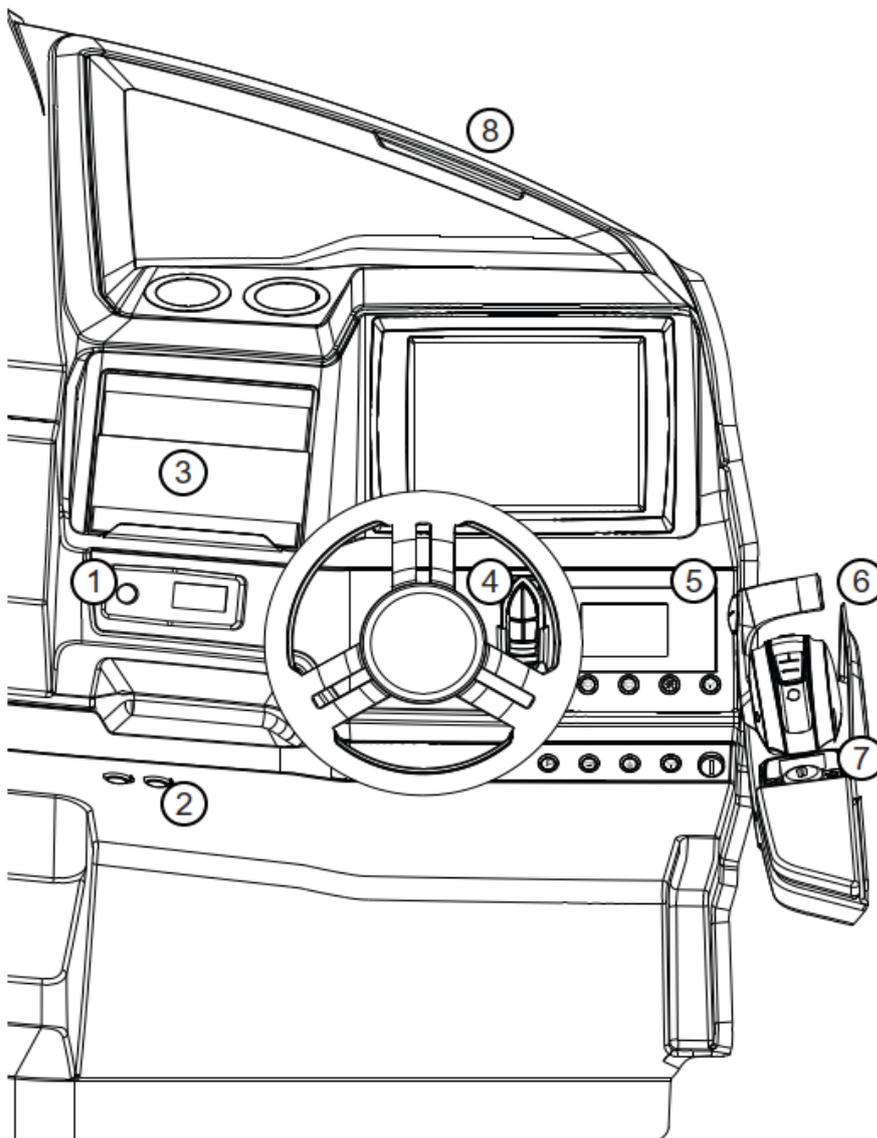
**NOTE!** Do not carry out electrical installations while the power is on. Have larger electrical installations carried out by a professional.

**WARNING!** When disconnecting or connecting batteries, be careful not to touch both terminals of the battery with a metal object at the same time.

## 5.8 Operation

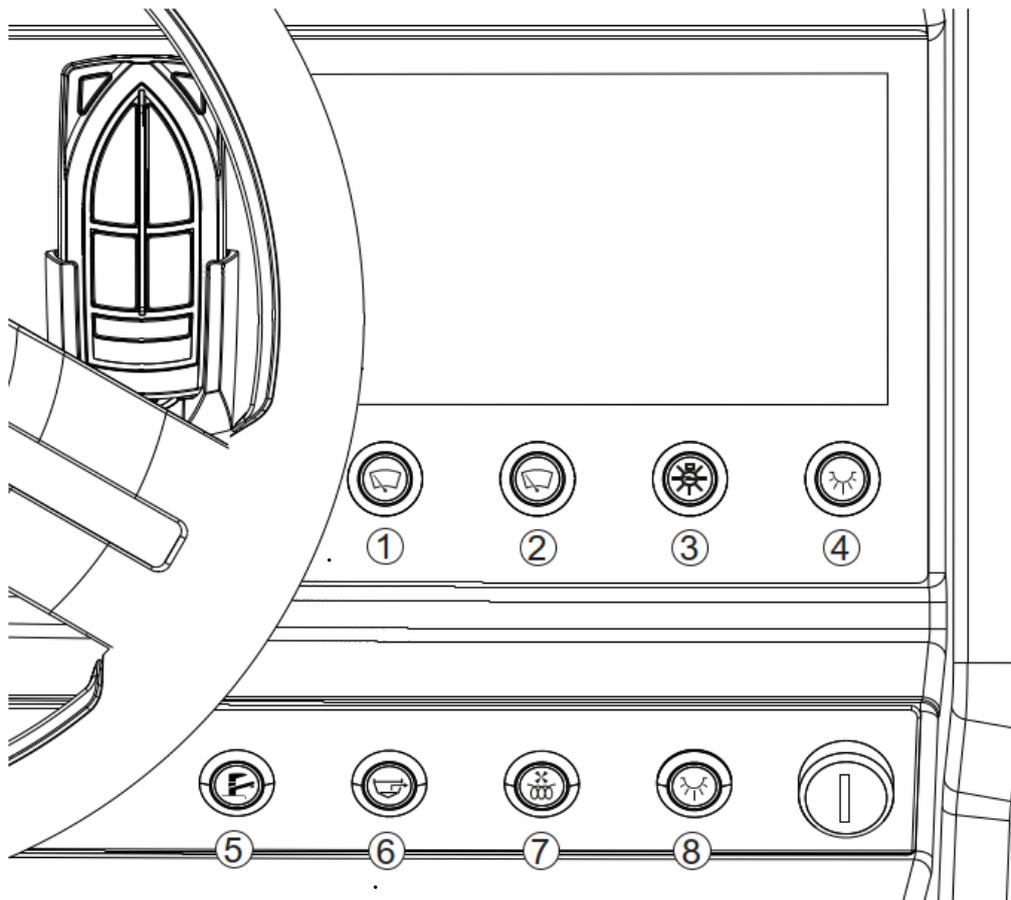
### 5.8.1 Controls

Controlling the boat is easy to learn but changing conditions such as wind and waves constantly present the driver with new situations. The remote-control device combines throttle, forward and reverse gears, and engine trim angle adjustment. The boat is equipped with hydraulic steering.



**Figure 10.** Controls

1. Radio
2. 12 V – standard and USB
3. Tablet holder / glove compartment / inside the hatch is the hydraulic steering oil filler
4. Remote control for bow thruster and stern anchor winch (optional)
5. Outboard motor gauges/devices
6. Remote control for outboard motor
7. Mente Marine automatic trim system control panel
8. Defrosting nozzle



**Figure 11.** Control console buttons

- |                        |                            |
|------------------------|----------------------------|
| 1. Windscreen wiper BB | 5. Fresh water pump        |
| 2. Windscreen wiper SB | 6. Bilge pump              |
| 3. Navigation lights   | 7. Windscreen defroster    |
| 4. Deck lights         | 8. Search light/ bow light |

### 5.8.2 Emergency switch

A safety switch is a device with one end attached to a switch located under the remote-control unit and the other end attached to, for example, a life jacket. The safety switch automatically shuts down the engine when it is disconnected from the switch on the

remote-control unit. It is extremely important that the boat stops if, for some reason, the operator loses their balance and is thrown from the helm.

**NOTE!** Never operate the boat without attaching the safety switch to yourself. If you attach the safety switch to your arm, do not steer the boat with that hand, as the chain may get caught in the steering wheel during sharp turns.

**NOTE!** The engine will not start unless the safety switch is attached to the switch on the remote control.

**DANGER!** A rotating propeller is life-threatening to anyone who has fallen into the water or is swimming. Use the emergency stop switch and turn off the engine whenever a swimmer or water skier gets into the boat.

### 5.8.3 Gears and throttle

You can engage the gear by pressing the button on the gear/throttle lever with your fingers pointing upwards and pushing or pulling the gear/throttle lever forwards or backwards, depending on which direction you want to move in. Once the gear is engaged, you can adjust the speed of the boat using the same gear/throttle lever.

When the boat is moving slowly forward, reverse can be used as a brake, for example when approaching a jetty. Reverse gear must not be engaged when the boat is moving slowly forward. This will damage the engine.

### 5.8.4 Adjusting the engine trim angle

The basic rules for adjusting the engine trim angle are as follows:

- When lifting the boat into a glide, keep the bow down.
- When the boat is gliding and the waves are small, raise the bow until the engine and boat are running smoothly. If the engine is trimmed too high, the boat's speed will decrease. If you drive with too little trim, the boat will move slowly, and the engine will run heavily. To achieve good fuel economy, it is important to drive with the correct engine trim (= correct trim angle).
- In heavy head seas, lower the bow to soften the ride.
- In following waves, raise the bow so that it does not "dive" into the waves.

**WARNING!** Do not drive the boat at high speeds with the engine trimmed up (= bow up) as there is a risk that the boat will tilt sharply when the propeller hits the water after flying through the air in heavy waves. Similarly, do not drive at high speeds with the engine trimmed completely negative (= bow down), as this may cause the boat to tilt unexpectedly when the bow hits the water. If the bow is too low, instability may occur when turning.

The boat is equipped with Mente Marine - automatic trim system. Using the trims manually while driving, especially in rough weather, adds unnecessary challenges to driving. The trim levels are used to adjust the boat's position according to the conditions. The correct position keeps engine consumption as low as possible.

The system can also be used in the same way as manual trims to find the desired running position for the boat. Once the correct position has been found, it can be locked into memory, and the automatic system takes care of the rest.

Pressing the Auto button (*Figure 12*) activates the trim tabs automatically.



**Figure 12:** Mente marine - control panel buttons

The Mente Marine automatic trim system does not control the outboard motor trim. The outboard motor trim should be used in the same way as on a boat without an automatic trim system.

**WARNING!**

If you are using the trims manually, adjust the trim controls carefully at high speeds. They will change the boat's handling dramatically.

**WARNING!**

Waves reduce the boat's manoeuvrability and cause it to tilt. Take this into account by reducing speed as the waves increase.

### 5.8.5 Starting the engine

1. Turn on the power using the main power switch. Always turn on both the engine battery (Start) and the auxiliary switch (Aux).
2. Lower the engine to the running position by pressing the Trim switch on the gear/throttle lever down with your thumb.
3. Check that the gear/throttle handle is in the neutral position and that the safety switch is connected to the remote-control switch.

4. Turn on the power without starting the engine and wait a few seconds for the warning lights to come on.
5. Start the engine by turning the ignition key clockwise until it starts. The engine should start within 1-2 seconds. If the engine does not start, do not continue starting for more than 10 seconds at a time.
6. Once the engine has started, let it idle for a few minutes before driving off. (See the engine manual!)

More detailed operating instructions can be found in the engine manual.

### 5.8.6 Driving

Driving in fair and calm weather is easy. However, remember that adequate visibility is essential. To ensure the best possible visibility from the driver's seat:

- position passengers so that your field of vision is not restricted
- do not drive near planing speed for long periods, as the bow will rise and obstruct your view
- in poor visibility, look over the windscreen
- especially on shipping lanes, remember to also look behind you

Use your navigation lights when it gets dark.

Always adjust your speed to the prevailing conditions and the environment. Take following into account:

- waves (also ask passengers for their opinion on a comfortable speed)
- your own wake (largest when planing, smallest at displacement speed, i.e. less than 5 knots)
- visibility (islands, fog, rain, glare from the sun)
- knowledge of the route (time needed for navigation)
- narrowness of the route (other watercraft, noise and wake waves on the shores)
- make sure you always have enough distance to avoid a collision, which is sufficient to stop or swerve.

When travelling slowly, a planing boat has poorer directional stability than at higher speeds. Therefore, be careful in narrow areas and especially when encountering other boats.

The boat's running position has a significant impact on handling characteristics, as well as fuel consumption and visibility from the helm. You can affect the running position by

- placing the load properly. The general rule is to keep as little weight as possible in the bow.
- adjusting the engine trim angle

The correct trim position combined with the appropriate speed also makes driving in waves more comfortable and safer.

**WARNING!** High speed and sudden steering manoeuvres in high waves can cause you to lose control of the boat, high tilt angles, and result in serious injury or death.

**NOTE!** The boat is not designed to be bounced on waves in such a way that it completely leaves the water. The warranty does not cover damage caused by airborne flight. Possible airborne flights can be checked from the engine history using a computer.

### 5.8.7 Approaching and departing from the dock

Practise handling the boat when approaching the dock in a place where there is plenty of space before driving your boat into a narrow harbour for the first time.

Very cautious throttling does not provide the necessary steering power. Effective steering manoeuvres when approaching the dock are achieved by using the throttle firmly but in short bursts.

Ensure that all persons on board who are not required to stand remain seated while you are manoeuvring the boat towards the dock. Sudden steering movements can cause the boat to tilt and result in injuries.

Before approaching the dock, prepare the mooring lines at the bow and stern. Approach the dock at a slight angle with the bow first. Just before touching the dock, turn the steering wheel towards the dock and shift into reverse. Accelerate briefly and sharply. The boat will stop and turn parallel to the dock. If possible, approach the dock into the wind or against the current, whichever is stronger. This makes it easy to continue your journey when the wind or current pushes the boat away from the dock. The best way to pull away is to first push the stern as far away from the dock as possible. Then slowly reverse away from the dock into open water.

The propeller is designed to provide the best traction when moving forward. When reversing, the propeller's power is therefore weaker. The boat also does not respond to steering as well when reversing as when moving forward.

**WARNING!** The boat is fast. It will not stop immediately when you apply the brakes. Slow down in good time before approaching the shore or a jetty. Learn to estimate the distance required to stop the boat. Remember that the boat is difficult to steer when the engine is not running.

**WARNING!** Do not try to stop the boat by hand, and do not put your hands or feet between the boat and the jetty, shore or another boat! Practise landing in good conditions! Use engine power moderately but decisively!

**NOTE** When mooring your boat, consider changes in wind direction,

rising or falling water levels, stern waves, etc. Further instructions are available from insurance companies, for example.

### 5.8.8 Use of the canopy

The canopy is designed to withstand speeds of up to 30 knots on the water and 50 km/h on the road when on a trailer. The canopy must be securely fastened during transport. The canopy is designed so that it is possible to keep only the front part of the cover up. To make it easier to fit the canopy into the cover box, we recommend that you remove the sides and rear of the canopy. Then fold the upper parts of the sides completely over the roof so that there is no fabric left at the corners of the canopy arches. Finally, carefully roll up the roof section and the folded side sections and place the canopy in the canopy box.

**NOTE!** The boat should not be used in the rain without a canopy. The equipment in the open area of the boat is not waterproof and must be protected from rain.

**NOTE!** The windscreen and canopy structure may not be completely watertight. When the canopy is on, water may enter the boat between the canopy and the windscreen.

### 5.8.9 Windscreen door

The windscreen door must always be kept closed and locked when the boat is in motion. The door is not designed to be used as a handrail when entering or exiting the boat.

**WARNING!** When sailing, in strong winds or gusts, the door must be kept closed, as there is a risk that the door may slam shut. The door is heavy and may cause personal injury if it hits a person when it slams shut.

**WARNING!** When the boat is stationary, large waves or gusts of wind may cause the door to slam shut unexpectedly. For this reason, it is recommended that the door be kept always closed when not travelling via the foredeck.

### 5.8.10 Stairs, sharp corners of the windscreen and cabin door

Great care should be taken on the stairs, especially if the cabin door is open.

**NOTE!** When driving the boat, lock the cabin door with the locking latch, otherwise the door may close at high speed.

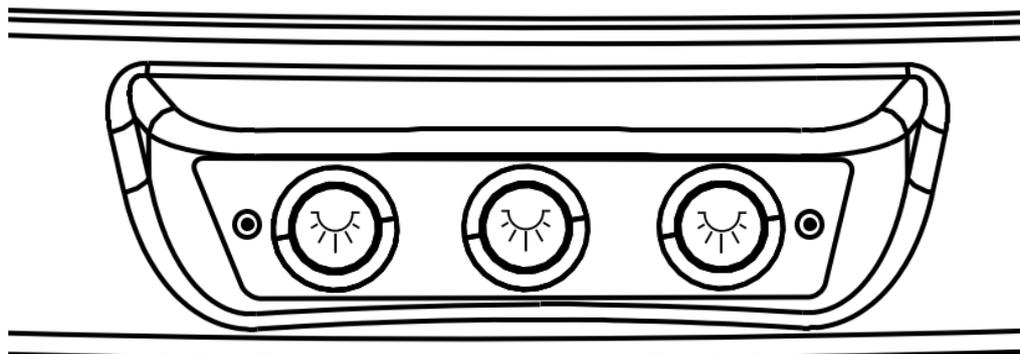
**WARNING!** Be careful of the upper corner of the left windscreen when climbing the stairs, so that your head does not hit the sharp corner.

The front anchor box hatch is equipped with a rubber band that keeps the hatch closed while driving.

**WARNING!** The hatch is not recommended for use by children, as their fingers or toes may get caught.

### 5.8.11 Cabin lights

The picture below (*Figure 13*) shows the cabin light switch located on the cabin ceiling.



**Figure 13.** Cabin light switches

1. Left switch – LED light on the left side
2. Right switch – LED light on the right side
3. Middle switch – toilet light switch. To turn on the toilet light on the back wall, touch it with your finger.

## 5.9 Correct use – other recommendations and instructions

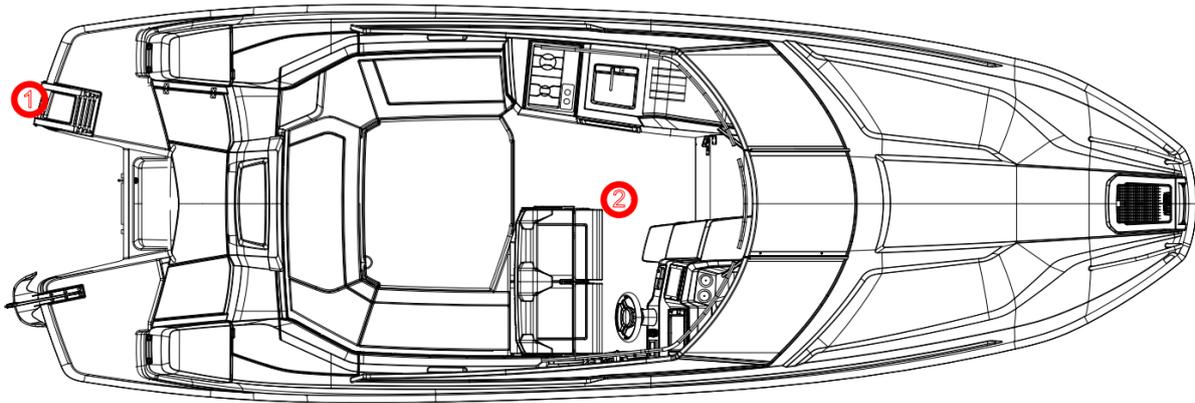
### 5.9.1 Man overboard

Man overboard – situation is always serious. It is advisable to practise this in advance in good weather, as there will be no opportunity to do so in the event of an accident.

If someone falls overboard, always help them back into the boat from the stern. A rope loop attached to the boat makes lifting easier. The boat's swimming ladder extends about 55 cm below the water. If a child has fallen into the water, an adult must always jump in after

them, taking extra life jackets or a flotation device with them, but someone must also remain in the boat.

It is very important to maintain eye contact and communication with the person who has fallen overboard.



**Figure 14.** 1. Swimming ladder 2. Place for life raft

### 5.9.2 Storage of life raft

There is a place for the life raft under the deck, as shown in *Figure 14*. The maximum weight of the life raft is 28 kg.

#### **DANGER!**

The rotating propeller is life-threatening to anyone who has fallen into the water or is swimming. Use the emergency stop switch and always turn off the engine when a swimmer or water skier boards the boat.

### 5.9.3 Securing loose equipment

Secure all heavy equipment, such as anchors, in place before departure.

### 5.9.4 Bow cabin sliding door

#### **NOTE**

The cabin sliding door must be kept closed while driving.

### 5.9.5 Respect for the environment

The Finnish archipelago and lakes are unique, and preserving their natural environment is a matter of honour for boaters. Therefore, avoid

- fuel or oil spill
- disposing of rubbish or waste in the water or on the shore
- discharging detergents or solvents into the water
- loud noise both on the water and in harbours
- unnecessarily high wake, especially in narrow or shallow waters

Maintain your engine well and drive at an economical speed, which will also keep exhaust emissions low.

Everyone who spends time in nature is in Finland covered by the so-called everyman's right, which allows them to move around on other people's land without causing damage or disturbance, except in yards. This right also allows movement on waterways and temporary anchoring, swimming and landing on uninhabited shores, unless this is specifically prohibited by official regulations. Anchoring next to inhabited shores is prohibited. It is also prohibited to moor at another person's jetty or inhabited shore without permission.

Familiarise yourself with the international rules for the prevention of marine pollution (MARPOL) and respect them as much as possible.

You may camp on islands unless it causes damage to the landowner. Camping is prohibited near yards and farmland. You may only light a campfire with the landowner's permission. Boaters may also pick wild berries and mushrooms, as long as they do not damage trees or nature. Check the rules for outdoor activities in your area.

### 5.9.6 Use of toilets and septic tanks

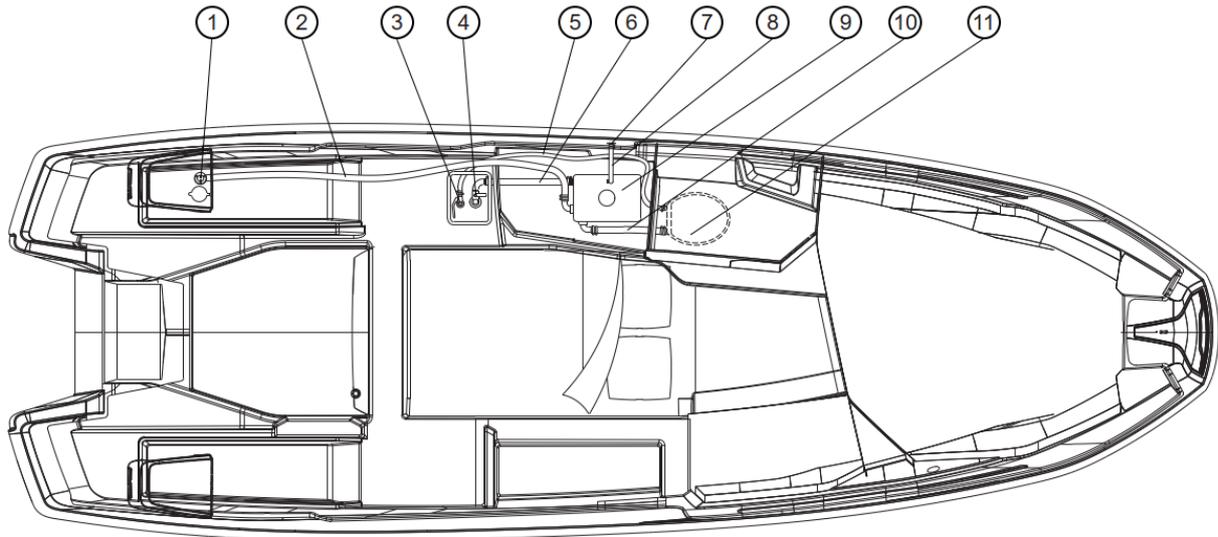
The toilet uses sea or lake water for flushing. When flushed, the waste goes into the septic tank. The flush water shut-off valve is located under the maintenance hatch in the floor of the storage space on the left-hand side (BB) of the open space. In normal use, the valve can be kept open.

The toilet is flushed using an electric pump. The push button is located on the rear wall of the toilet.

The septic tank (= toilet waste tank) has a capacity of 30 litres and is located under the refrigerator. The suction drain cover complies with standard ISO 8099 and is located under the hatch of the rear anchor box on the left (BB) side.

**NOTE!**

There is a latch at the bottom of the toilet door, which must be kept locked during driving.



**Figure 15.** Septic tank system

- |  |  |
|--|--|
| 1. Septic tank suction drain                       | 7. Septic tank vent                      |
| 2. Septic tank suction hose                        | 8. Septic tank vent hose                 |
| 3. Toilet flush water inlet pipe                   | 9. Septic tank                           |
| 4. Valve for emptying the septic tank into the sea | 10. Hose from toilet seat to septic tank |
| 5. Toilet flush water intake hose                  | 11. Toilet seat                          |
| 6. Hose for emptying the septic tank into the sea  |  |

The septic tank filling cap is marked WASTE, which means toilet waste.

Empty the septic tank at marinas using their suction equipment.

The valve for emptying the septic tank into the sea is located under the maintenance hatch at the bottom of the storage space on the left-hand side (BB) of the open space.

The septic tank sea discharge valve must be kept closed under normal circumstances, as the discharge of untreated toilet waste into the sea or lakes in Finnish territorial waters is prohibited under the Ship Waste Act.

Mildly alkaline general-purpose cleaning agents can be used to clean the septic tank and associated hoses, etc. Glycol can be used as an antifreeze agent. However, when stored in freezing conditions, the system should be as empty as possible.

### 5.9.7 Mooring and anchoring your boat

Always moor your boat carefully in a sheltered place, as conditions can change quickly. Mooring ropes should be equipped with shock absorbers to dampen jerks. See the mooring points in the section on towing. Use sufficiently large fenders to prevent chafing.

The forward strength of the bow cleats is at least 23 kN, or approximately 2,300 kg. Similarly, the backward strength of the stern cleats is 16.0 kN, or approximately 1,600 kg.

The boat must be equipped with an anchor weighing 7.5 kg or more. Lower the anchor far enough from the shore. Reasonable holding power is achieved when the rope is 4-5 times the depth of the water.

**WARNING!** Do not attempt to stop the boat with your hands, and do not place your hands or feet between the boat and the jetty, shore or another boat.

**NOTE!** When mooring your boat, take into account changes in wind direction, rising or falling water levels, stern waves, etc. Further instructions are available from insurance companies, among others.

### 5.9.8 Towing

When towing another boat, use a sufficiently strong, buoyant tow rope. Start towing carefully, avoid jerks, and do not overload the engine.

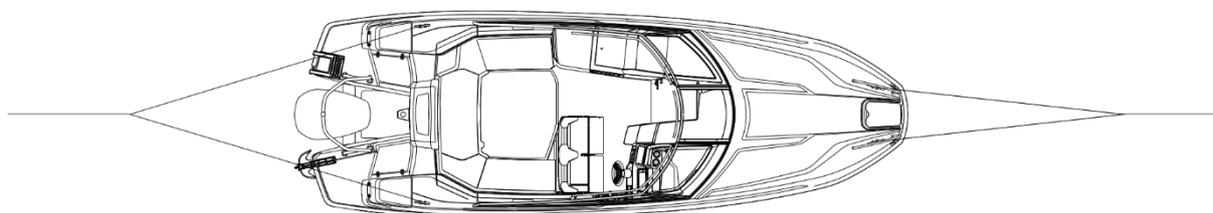
The boat owner must consider what measures are necessary to secure the boat's tow rope.

When towing or if your boat needs to be towed, attach the tow rope to the stern or bow bollards as shown in the picture.

**WARNING!** The tow rope is under high tension. If it breaks, the broken end may reach life-threatening speeds. Always use a rope that is thick enough and do not stand in the line of the rope.

**NOTE** When towing or being towed, always use low speed. If you are towing a displacement hull boat, never exceed the hull speed.

**NOTE** The tow rope must always be attached in such a way that it can be detached under load.



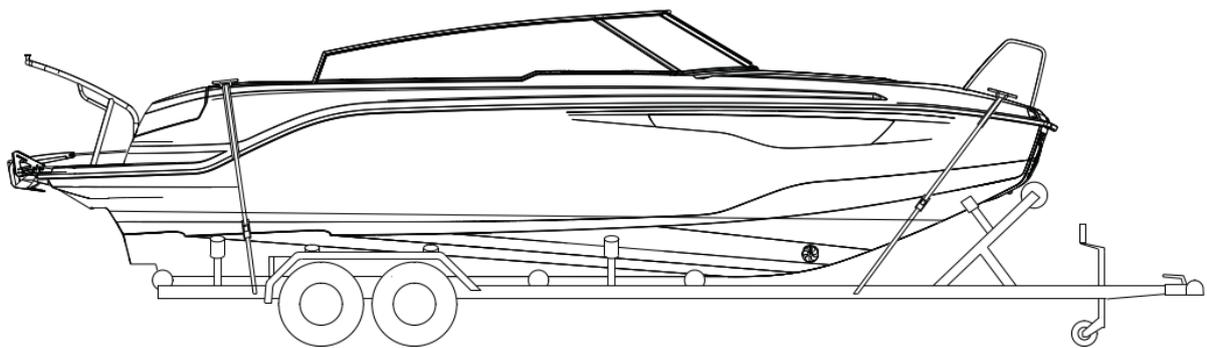
**Figure 16.** Attaching the tow rope to bollards

### 5.9.9 Trailer transport

Weight information for trailer transport can be found in the technical specifications. The trailer's keel supports should bear most of the boat's weight. Adjust the side supports so that the boat cannot sway sideways. If necessary, ask your dealer for more information on the correct support method and trailer size.

Clean any sand and dirt from the supports so that they do not scratch the bottom. Check once again that the trailer and the car's tow bar are securely locked!

The lifting site must be sheltered, and the trailer ramp must extend deep enough. Drive the trailer deeply that the rear keel support is just below the waterline. Carefully drive the bow of the boat onto the rear keel support. Attach the winch cable/rope to the towing eye and reel the boat onto the trailer, making sure that the boat remains straight and always centred on the trailer. To prevent the engine from hitting the bottom, remember to trim the engine up before lifting the boat onto the trailer.



**Figure 17.** Securing the boat to the trailer

Secure the boat firmly to the trailer before starting transport. The bow straps should be oriented "down and back" and the stern straps "down and forward". Do not leave any loose items or excess load in the boat during transport. Remove the seat cushions and close all hatches securely.

The engine should be in the running position during transport. However, ensure that there is sufficient ground clearance. If there is insufficient ground clearance in this position, the engine can be transported in a tilted position. In this case, it must be supported with a suitable support device to protect the transom.

If the boat is stored on a trailer between transports, the straps must be loosened for storage and tightened before the next transport.

**NOTE!**

The trailer should be slightly front-heavy. Ensure that the boat is securely fastened to the trailer and that the weight of the boat is evenly distributed on the side beams. If a swaying boat hits a single support during transport, the hull may be damaged.

When lowering the boat from the trailer, remember to attach the bow rope to the boat in advance so that you can remove the trailer cable/strap from the towing eye as soon as the boat is in the water. Beware of the winch handle!

### 5.9.10 Docking

The winter storage cradle must be strong enough for the specific boat/engine combination. A strong plank (e.g. 2x4") should be placed between the V-blocks to support the keel and bear most of the boat's weight. The side supports must not bear the weight of the boat. The side supports must not touch the corners at the bottom and point loads must be avoided. The support structure must be strong, especially near the transom, so that it can also bear the weight of the engine.

Only entrust the lifting to a reliable crane company or boat yard with sufficient lifting capacity. In addition to the boat's own weight (see technical specifications), take into account the equipment and other loads on the boat.

When lifting the boat, place slings under the bottom and ensure that the boat remains horizontal during lifting.

**NOTE!** The boat must not be lifted by its keel.

**DANGER!** Do not go under the boat when it is suspended from the crane.

## 6 Maintenance of the boat and equipment

Keep your boat and its equipment clean and tidy. This increases comfort and safety as well as the resale value of the boat.

Familiarise yourself with the maintenance procedures described in the engine manual. Service your engine according to the engine manual.

### 6.1 Washing and waxing the boat

Washing and waxing is usually sufficient for maintaining the deck and sides. Special boat cleaning agents are best suited for washing. Use mild cleaning agents. Do not use strong solvents (pH value must not exceed 11), as they may dull the shine of reinforced plastic surfaces. You can use mildly abrasive polishing agents to remove scuffs or stubborn dirt. Fibreglass surfaces can be washed with a pressure washer.

General tip: When washed with tap water, a thin, chalky layer of limescale and minerals remains on the boat after it dries, due to the hardness of the water. This can be removed by adding a few drops of pine soap solution to a bucket of rinse water.

General tip: If your boat ropes smell bad after the season, soak them for a couple of hours in a bucket of water with a bottle of apple cider vinegar and a dash of fabric softener. Let them dry thoroughly and they will be like new.

## 6.2 Care instructions for seat cushions

Always protect the open area of the boat and the cushions in the open area from rain with a canopy or harbour cover. Even though the seat cushions and driver's seat are made of water-resistant material, their seams allow water to pass through. If the cushions remain damp for a long time, they will become mouldy and ruined. If the cushions get wet, the fabric can be removed by opening the zip on the cushion and dried, for example, in the sun, at room temperature or in a sauna (50 °C). The warranty does not cover seat cushions that have been damaged by rain or moisture.

**NOTE!** To keep the boat's seat cushions in good condition over the winter, they should be stored in a dry and well-ventilated area.

**NOTE!** Wet cushions should not be placed in storage areas, as they will mould easily.

The seat cushion stud buttons should be treated with silicone Vaseline from time to time, otherwise they may stick so tightly that the fabric may tear when removing them. The warranty does not cover damaged seat cushions. Apply a very small amount of silicone Vaseline at a time to prevent the cushions from becoming sticky.

## 6.3 Care instructions for the canopy

Store the canopy in a dry and well-ventilated place over the winter. The warranty does not cover damaged or mouldy canopies.

## 6.4 Windscreen care instructions

The boat's windscreen is made of tempered glass and can be cleaned with normal glass cleaning agents.

## 6.5 Care instructions for acid-resistant parts

To keep the boat's acid-resistant parts, such as railings, handles and bollards, bright and like new, the boat owner must keep the parts clean and waxed. The edges of the handrail

mounting flanges should also be cleaned. Dirt that remains under the edge of the flange will gradually start to look like rust. If there is no damage, the parts should be cleaned and waxed at least twice during the summer. Handrail maintenance should also be carried out in the autumn when the boat is moved to winter storage.

General tip: Water spots and limescale stains can be removed from acid-resistant railings with Lemon Pled furniture spray or by treating them with half a lemon.

## 6.6 Care instructions for the electronic remote control

If you experience problems with the operation of the electronic remote-control device, have it serviced immediately by an authorised service centre.

## 6.7 Care instructions for the steering system

Hydraulic steering does not normally require maintenance. If the steering becomes "loose", there is a leak in the system. The leak must be repaired immediately!

### **WARNING!**

A hydraulic steering system with a leak or air in it is life-threatening.

## 6.8 Care instructions for electrical components

Electrical components such as main circuit breakers, all other circuit breakers and connectors do not normally require maintenance if the boat is stored in a dry and well-ventilated place during the winter. However, if you want to protect the boat's electrical components against oxidation, the best way to do this is to spray them with a moisture and corrosion inhibitor.

## 6.9 Minor surface repairs

You can repair minor surface damage to the hull or deck yourself. However, achieving a neat and inconspicuous result requires skill:

1. Protect the area around the repair with tape.
2. Sand the edges of the dent to a bevel and clean with acetone.
3. If the damage is more than 2 mm deep, fill it with filler before painting.
4. Mix 1.5-2% hardener into the topcoat.
5. Apply the topcoat to the area to be repaired so that the surface is slightly higher than the surrounding surface.
6. Carefully place tape over the repair.
7. Once the topcoat has hardened, remove the tape and, if necessary, sand the repair area smooth with 600 and 1200 grit wet sandpaper.
8. Polish the repair with polishing compound and wax.

The colours used on the boat are listed *in the technical specifications*. It is good to know that a paint called gelcoat is used in the manufacture of the boat, but afterwards the surface is always repaired with a paint called topcoat. Gelcoat paint does not harden without a mould surface, but paraffin has been added to the topcoat to enable hardening.

**NOTE!**

Certain retrofits and modifications, if done incorrectly, can damage the boat's structure or pose a safety hazard. Contact your dealer if you are planning to make any modifications to the boat.

## 7 Winter storage of the boat

Preparing your boat for winter is an annual routine. Lift your boat out of the water well before the ice sets in. Your boat is not designed for use in ice and is not intended for use in temperatures below 0 °C (e.g. the rainwater drainage system will freeze). When winterising your boat, it is a good idea to go through all maintenance, repair and inspection tasks.

Refer to the maintenance procedures in the engine manual. We recommend that you have this work carried out by an authorised service centre. Also remember to service the remote control and steering system. Carry out this maintenance in accordance with the separate instructions and manuals.

### 7.1 Measures to be taken before winter storage

Wash the bottom of the boat immediately after hauling it out of the water. Algae and slime are easiest to remove before they dry. Drain the cooling water from the engine according to the manual.

Perform winter maintenance on the engine and other equipment in accordance with the separate manuals. If you store your boat outdoors or in damp conditions over the winter, remove any textiles and other equipment that may become mouldy or otherwise damaged by moisture. Wash the ropes in fresh water. Replace worn ropes. Leave the through-hull valves open. Remove and leave the drain plug loose for the winter.

Empty the boat's septic tank and freshwater tank. Pour 2 litres of a 50% glycol/50% water mixture into the toilet bowl and press the flush button for about 2 seconds.

Check the condition of the hull and sand down any dents so that any moisture that may have penetrated the laminate can dry out. Repair any damage in the spring before launching the boat.

Remove all food from the boat and wipe all surfaces where food has been handled with a disinfectant. This will prevent mould from forming.

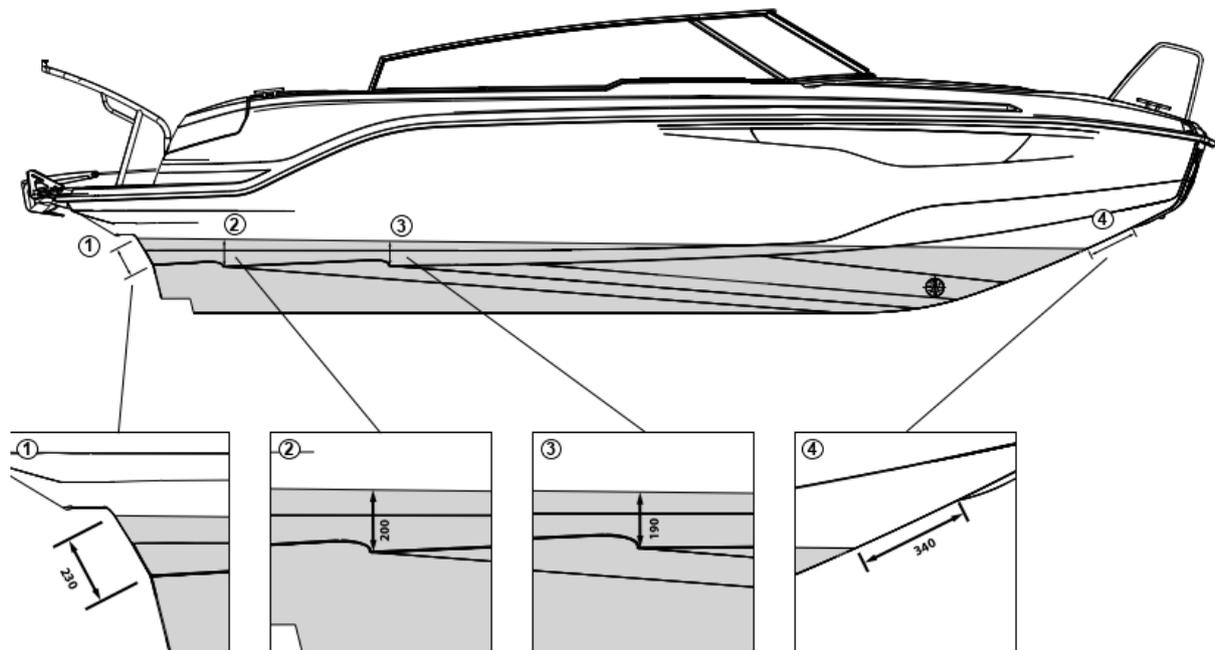
Cover your boat so that snow cannot accumulate inside it. However, always ensure adequate ventilation. A winter cover for your boat is available as an accessory.

### 7.2 Measures to take before launching in the spring

Repair or have repaired any dents in the gelcoat in accordance with section 6.

In marine areas, prevent vegetation from attaching to the hull by applying antifouling paint. Fouling of the hull and especially the propeller significantly increases fuel consumption. When painting, carefully follow the paint manufacturer's instructions. If you are sanding off old toxic paint, remember that the resulting sanding dust or slurry is toxic.

Antifouling paint is not necessary in lake areas. However, we recommend using an epoxy primer if the boat is in the water for several months each year. Fresh water, especially warm fresh water, is more easily absorbed into laminate than sea water.



**Figure 18.** Upper line of antifouling paint

**NOTE!**

Do not paint zinc anodes or the piston rods of the engine spark hydraulic cylinders. Do not use copper-containing paints on aluminium parts. Follow the paint manufacturer's instructions.

General tip: Do not throw away used paint brushes. Hardened antifouling paint brushes can be restored by soaking them for a couple of hours in a mixture of two litres of hot water, one decilitre of vinegar and half a decilitre of baking powder.

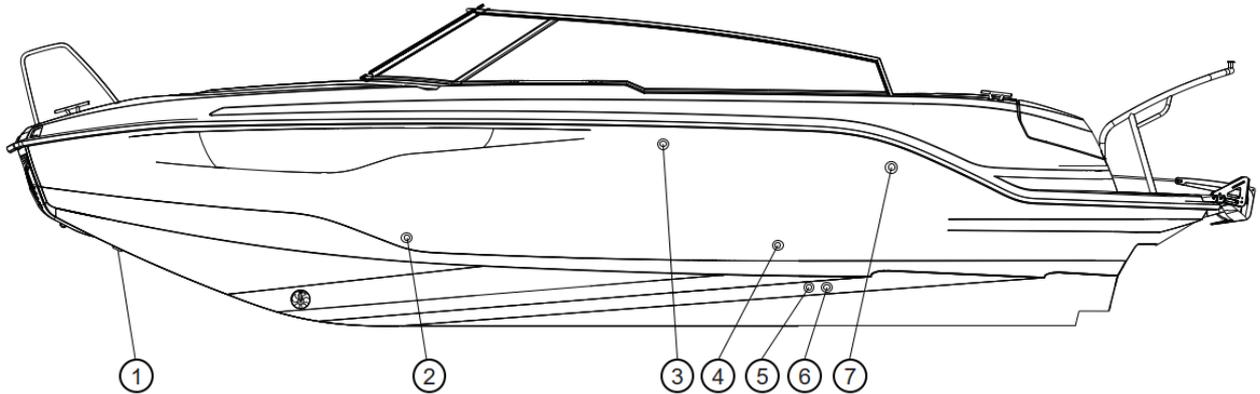
Perform the maintenance required by the engine in accordance with the engine manual. Check the operation of electrical equipment and remove oxidation from fuse connections and other connections.

Remember that petrol expires, so always start with fresh petrol in the spring.

After launching the boat, open all the through-hull valves and check that there are no leaks in the hoses or connectors. The location of the through-hulls is shown in chapter 5.

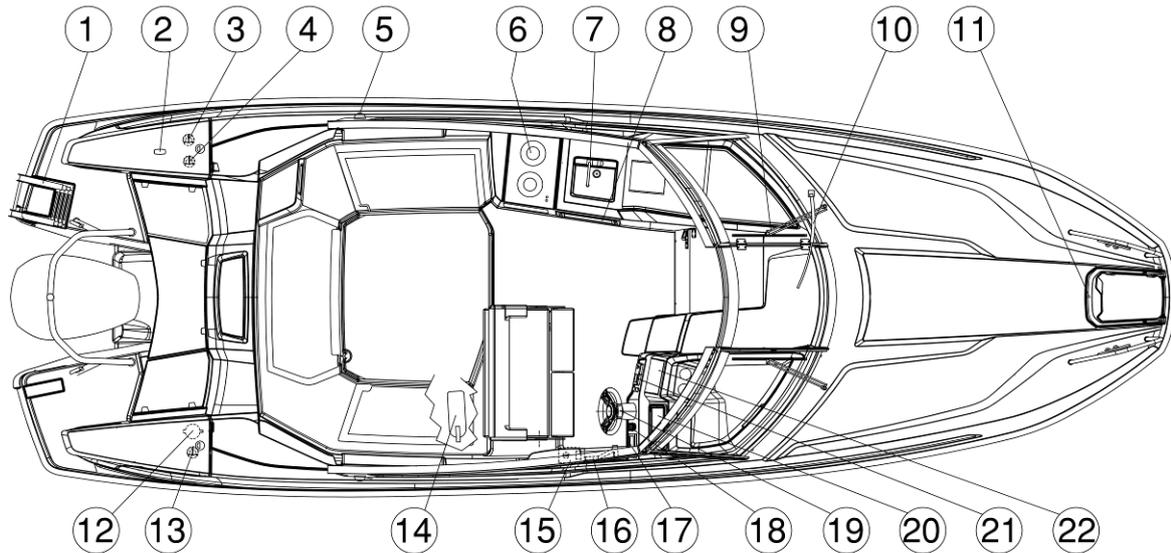
## 8 Layout

### 8.1 General layout



**Figure 19.** Through-hull fittings on the port side

- |  |                                    |
|--|------------------------------------|
| 1. Bow anchor box drain                              | 5. Septic tank sea drain           |
| 2. Toilet washbasin and sink                         | 3. Septic tank vent                |
| 3. Septic tank vent                                  | 6. Toilet flush water inlet        |
| 4. Gas cylinder compartment ventilation pass-through | 7. Heater exhaust gas feed-through |



**Figure 20.** General layout from above

- |                               |                                       |
|-------------------------------|---------------------------------------|
| 1. Telescopic swimming ladder | 12. Swimming platform shower          |
| 2. Light mast base            | 13. Fuel filler cap                   |
| 3. Septic tank suction drain  | 14. Fire extinguisher                 |
| 4. Fresh water tank filler    | 15. Trim control panel                |
| 5. Navigation lights          | 16. Electric remote control           |
| 6. Gas stove                  | 17. Engine gauge                      |
| 7. Fresh water tap / sink     | 18. Remote control for bow thruster   |
| 8. Refrigerator               | 19. Steering wheel                    |
| 9. Windscreen wiper           | 20. Chart plotter                     |
| 10. Windscreen door pump      | 21. Radio                             |
| 11. Landing steps             | 22. Glove compartment / tablet holder |

The septic tank filling hose is marked WASTE, which means toilet wastewater.

The water tank filler cap is marked WATER, which means fresh water.

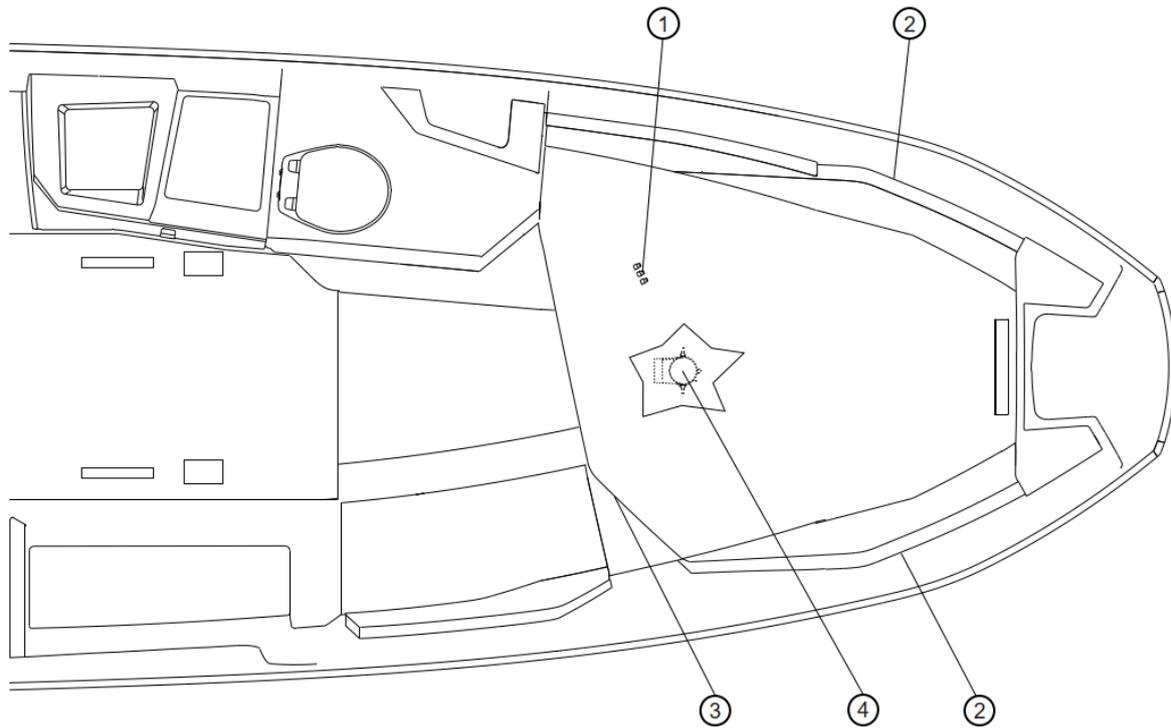
The fuel tank cap is marked GAS, PETROL or FUEL, which means petrol 95E or 98E.

**WARNING!**

Handle the boat's hatches with care and avoid getting your fingers or toes caught between them.

**WARNING!**

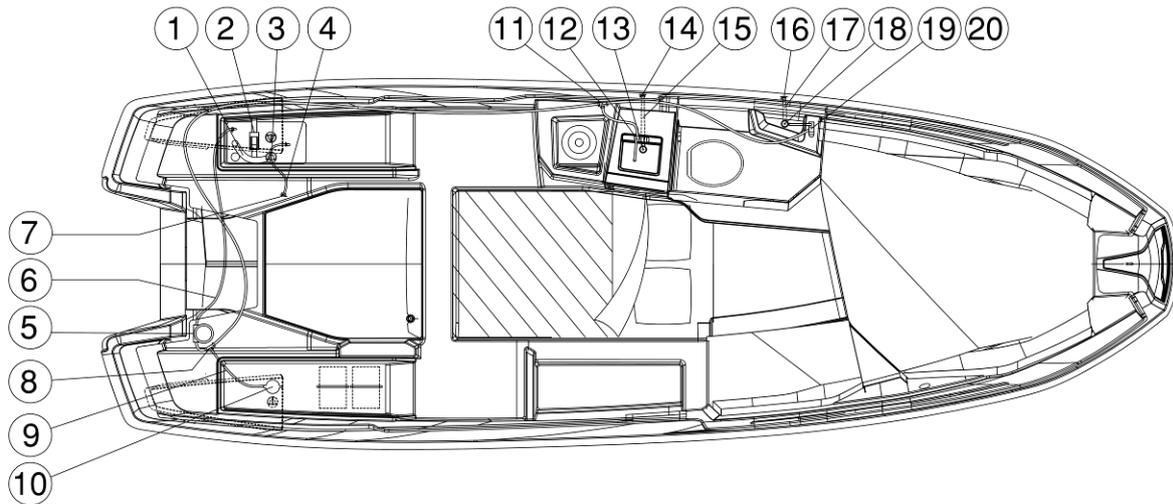
The use of the bow anchor box hatch is not recommended for children, as their fingers or toes may get caught.



**Figure 21.** Cabin layout

- 1. Cabin light switches
- 2. Cabin side lights

- 3. Bed storage space
- 4. Bow thruster (under the berth)



**Figure 22.** Fresh water system

- |  |   |
|--|---|
| 1. Water tank filling hose                           | 11. Water hose connector for toilet tap |
| 2. 45-litre water tank                               | 12. Water tap                           |
| 3. Water tank filling valve                          | 13. Washbasin bottom drain              |
| 4. Water tank vent hose                              | 14. Washbasin drain                     |
| 5. Pressure water pump                               | 15. Washbasin drain hose                |
| 6. Water hose from water tank to pressure water pump | 16. Toilet washbasin outlet             |
| 7. Water tank vent pipe                              | 17. Toilet washbasins drain hose        |
| 8. Water hose branch piece for shower                | 18. Bottom outlet for toilet washbasin  |
| 9. Shower water hose                                 | 19. Toilet washbasins tap               |
| 10. Swimming pool shower                             | 20. Washbasin                           |

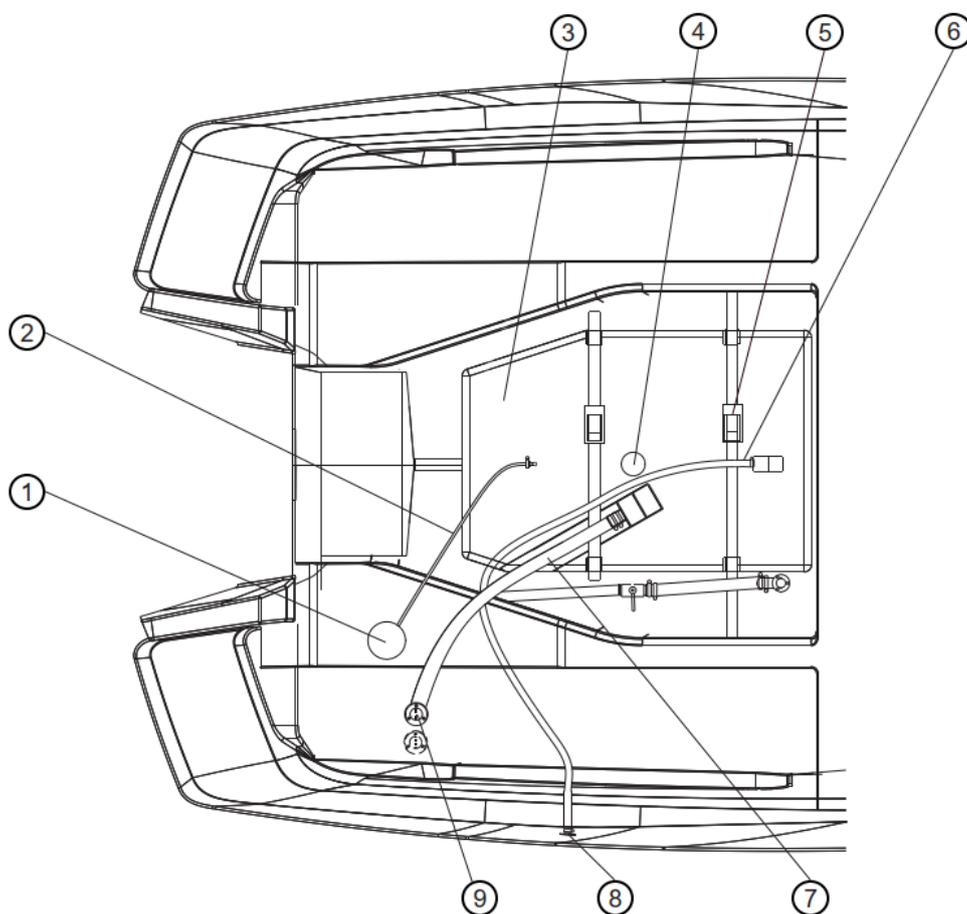
The water tank filler cap is marked WATER, which means fresh water.

## 8.2 Fuel system

The boat is equipped with a fixed fuel tank. A fuel filter is installed in the fuel line, which also acts as a water separator. The filter must be replaced at least once a year. Once a new filter or a filter that has been removed has been installed, the fuel line must be pumped full with a ball pump before starting the engine.

### NOTE

The condition of the fuel hoses must be checked at regular intervals and damage to them must be prevented. Defective fuel hoses must be replaced. If you replace the fuel hoses, make sure that they are marked ISO 7840.



**Figure 23.** Fuel system

- |  |                          |
|--|--------------------------|
| 1. Fuel filter (BB in rear anchor box) | 6. Fuel tank vent hose   |
| 2. Fuel tank supply hose               | 7. Fuel tank filler hose |
| 3. Fuel tank                           | 8. Fuel tank vent cap    |
| 4. Fuel tank sensor                    | 9. Fuel filler cap       |
| 5. Fuel tank fastening strap           |                          |

The fuel tank filler cap is marked with the symbol "  " on the boat's deck. The fuel tank cap is marked FUEL, which means petrol 95E or 98E.

## 8.3 Steering system

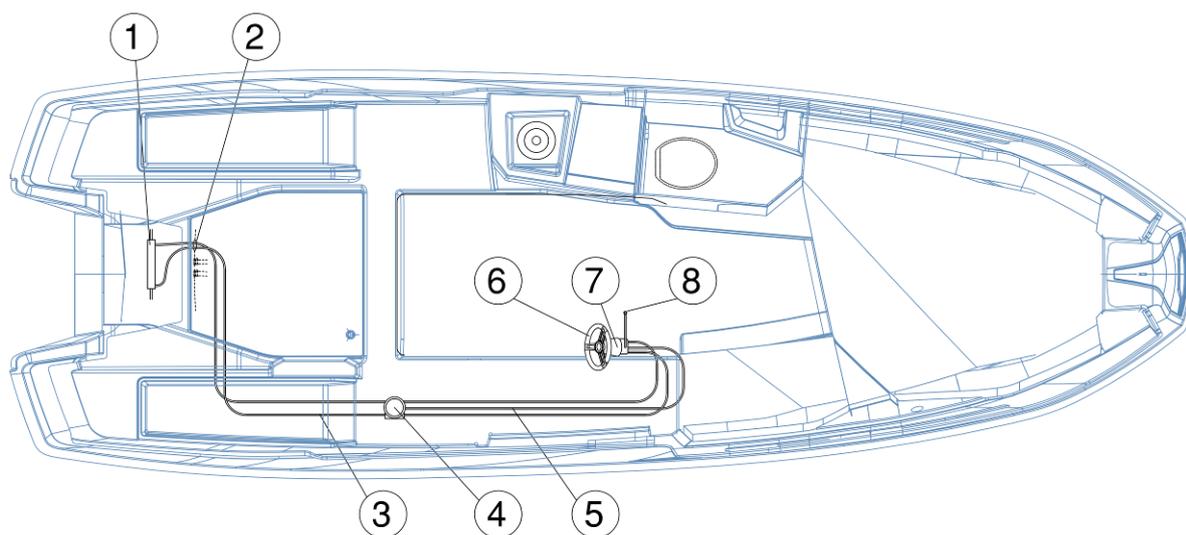
The boat is equipped with hydraulic steering. One of the features of the hydraulic steering system is that the position of the steering wheel changes continuously, which is why the boat has a symmetrical steering wheel. The lengths of the hydraulic hoses are:

- 2 x 3.6 m
- 2 x 2.6 m

Hydraulic steering does not normally require maintenance. If the steering becomes "loose", there is a leak in the system. The leak must be repaired immediately!

**NOTE!** If you replace any component in the steering system, you must ensure that all components comply with the requirements of ISO 10592 and are CE marked.

**WARNING!** A hydraulic steering system with a leak or air in it is life-threatening.



**Figure 24.** Steering system

- |                                |                                   |
|--------------------------------|-----------------------------------|
| 1. Hydraulic steering cylinder | 5. Oil overflow pipe              |
| 2. Hydraulic hose feed-through | 6. Steering wheel                 |
| 3. Hydraulic hose              | 7. Tilt control pump              |
| 4. Power steering (optional)   | 8. Hydraulic steering oil filling |

## 8.4 Electrical system

The electrical system consists of the following main components:

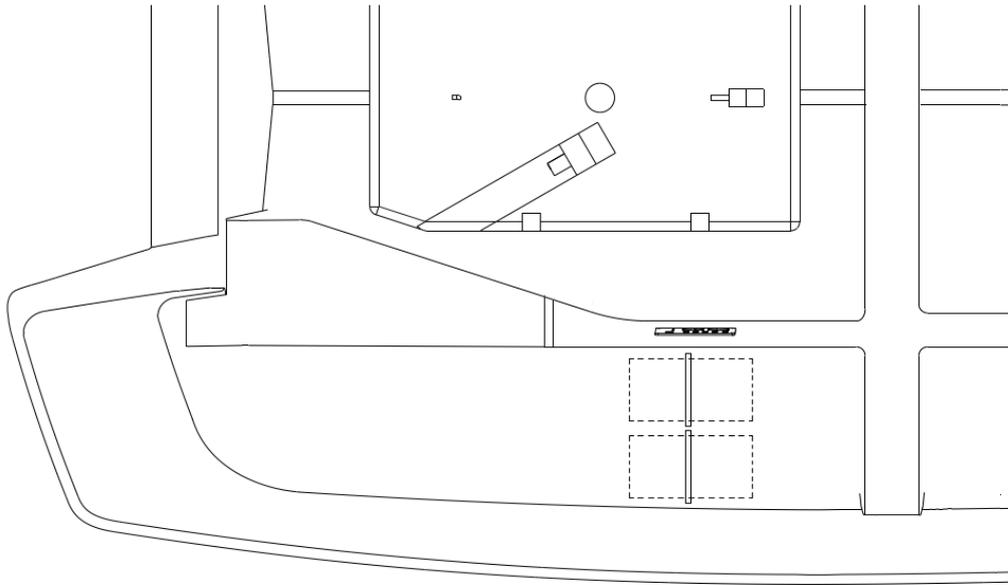
1. Starter battery
2. Service battery
3. Wiring harness
4. 2 main power switches
5. Battery compartment fuse panel
6. 8 circuit breakers
7. 2 x 12V outputs
8. 5 USB outputs
9. Running lights
10. Deck lights
11. Driving/search lights
12. Windscreen wipers (right and left side)
13. Pressure water pump
14. Toilet seat
15. Toilet light
16. Defroster
17. Cabin lights + switches
18. Refrigerator
19. Mente Marine trim system
20. Radio
21. Bow thruster

In addition, the boat's electrical system also includes the engine, which acts as both a power source and a consumer.

When disconnecting or connecting batteries, be careful not to touch both terminals of the battery with a metal object at the same time.

Do not modify the boat's electrical system or related drawings; modifications and maintenance should be left to a professional.

Solar panels for the bow deck are available as an accessory for the boat.

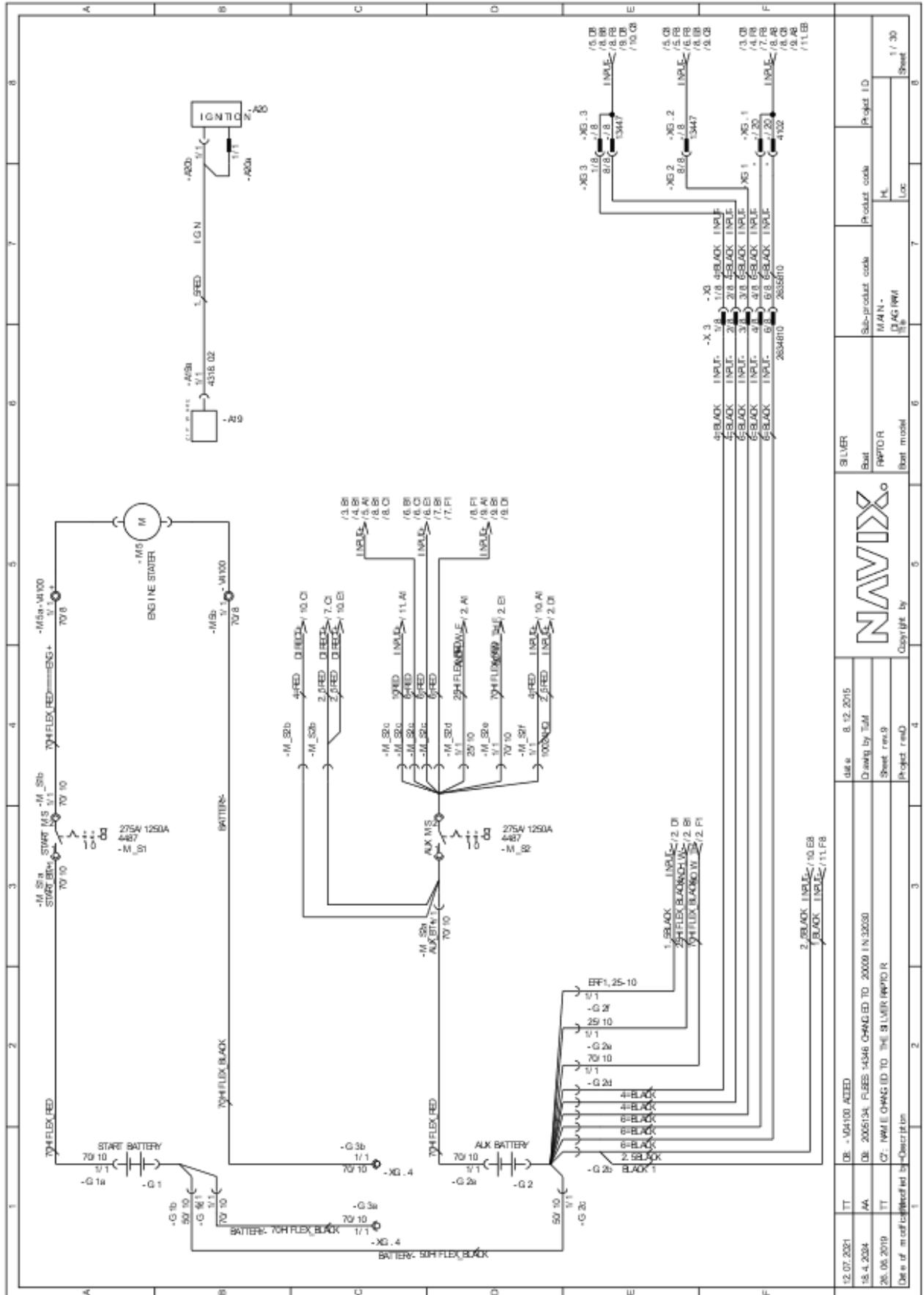


**Figure 25.** Electrical system

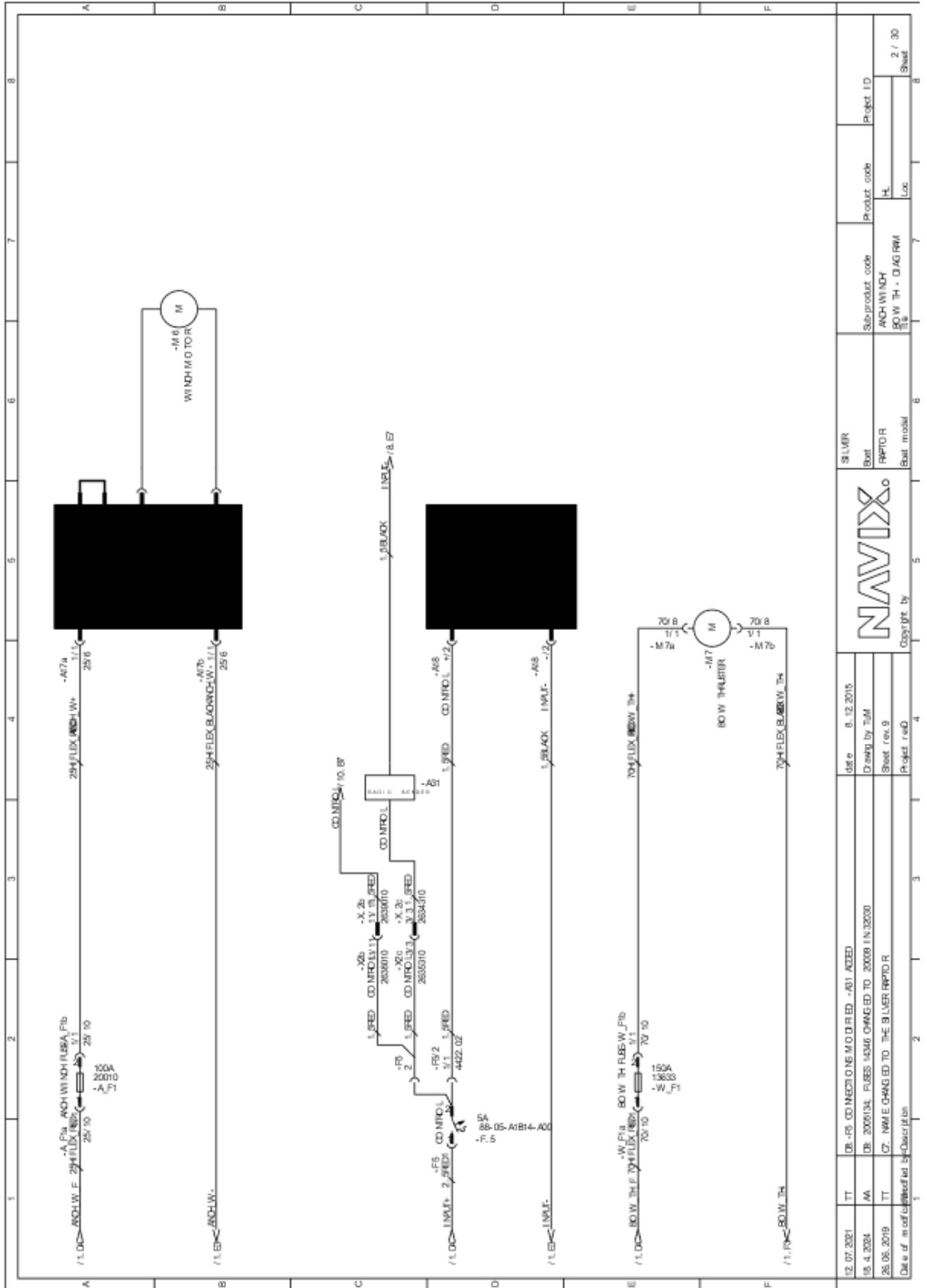
1. Battery (starting and service battery)  
2. Main circuit breakers and fuse panel

3. Bow thruster fuse  
4. Stern anchor winch fuse

### 8.5 Wiring diagram



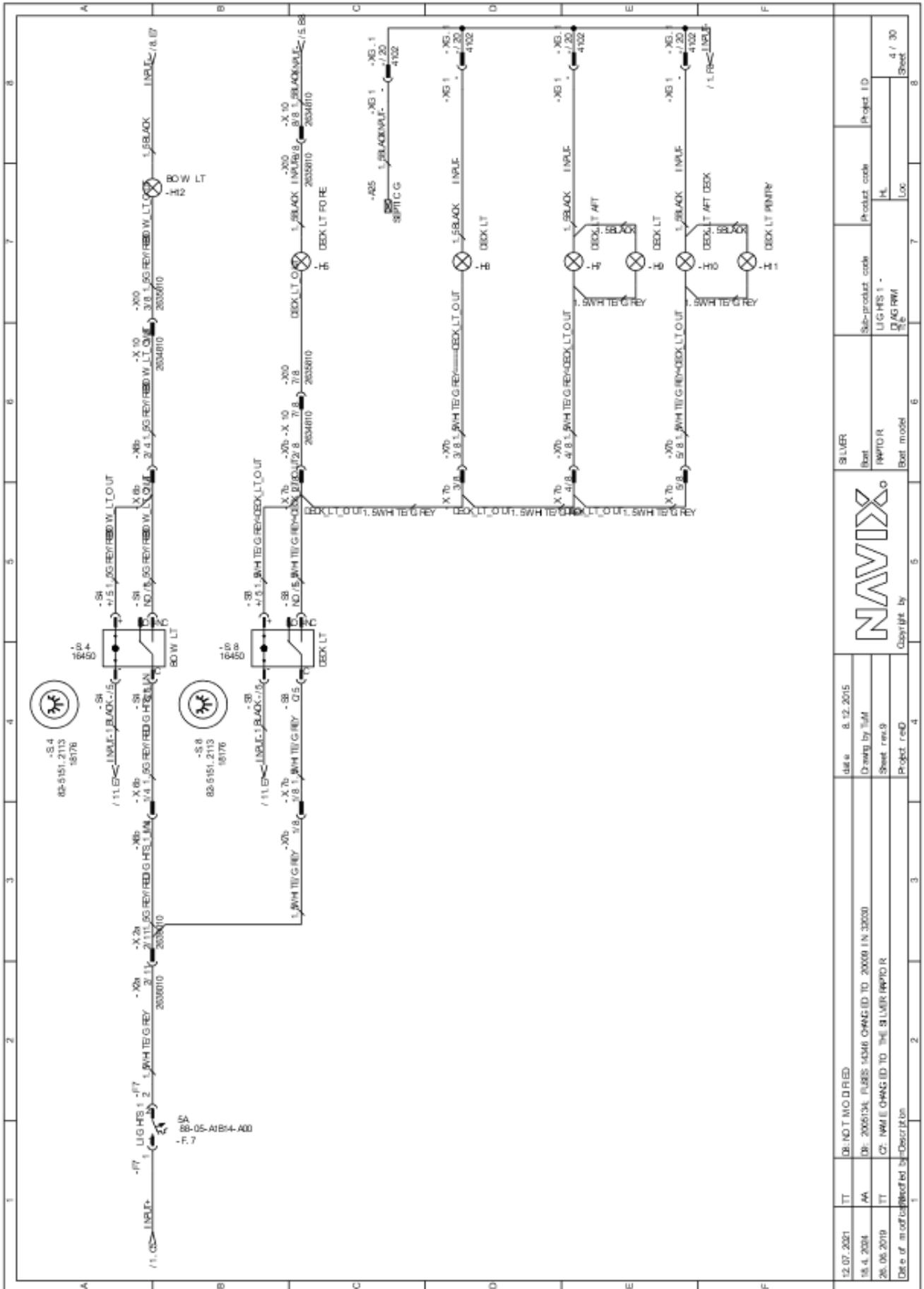
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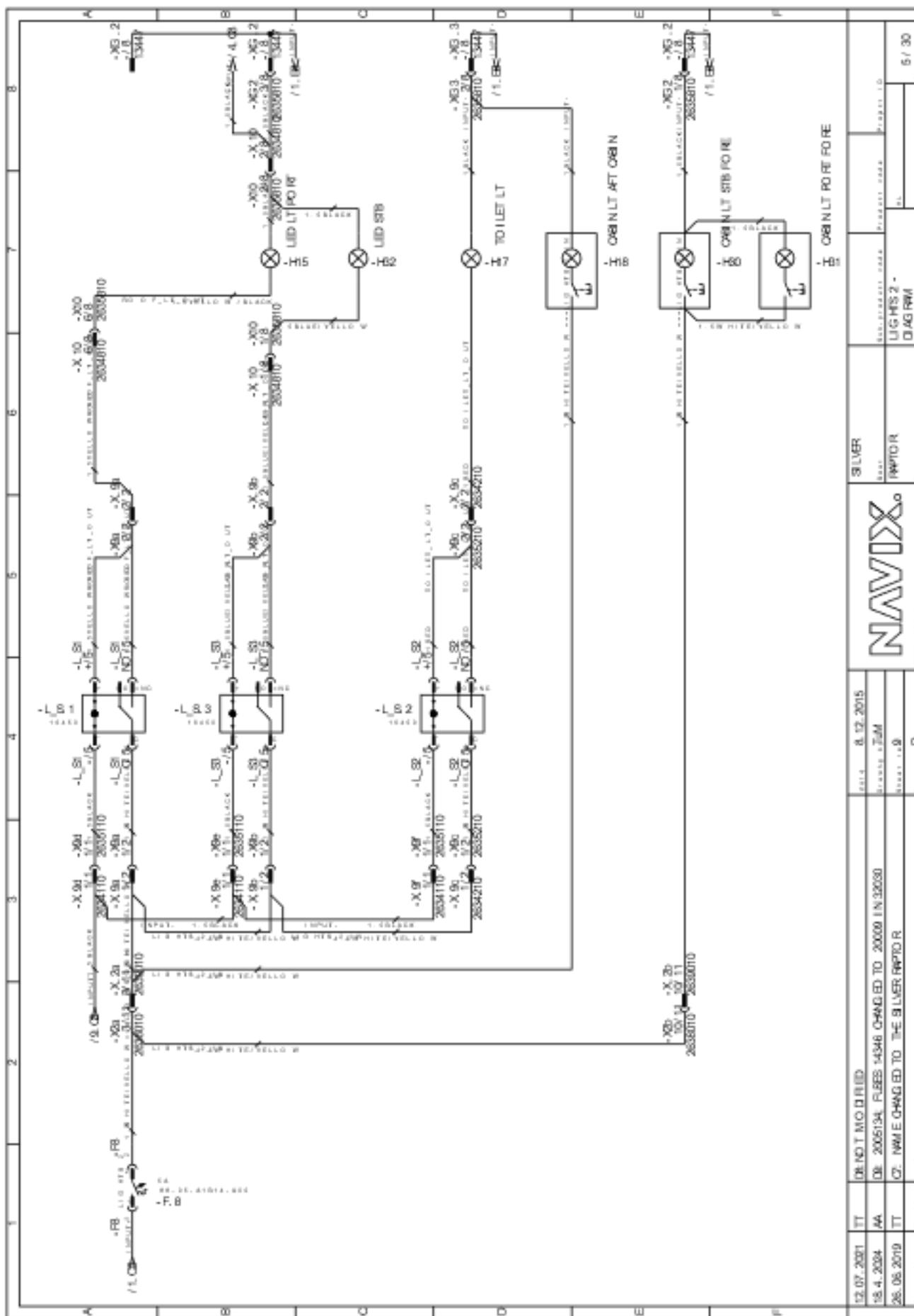
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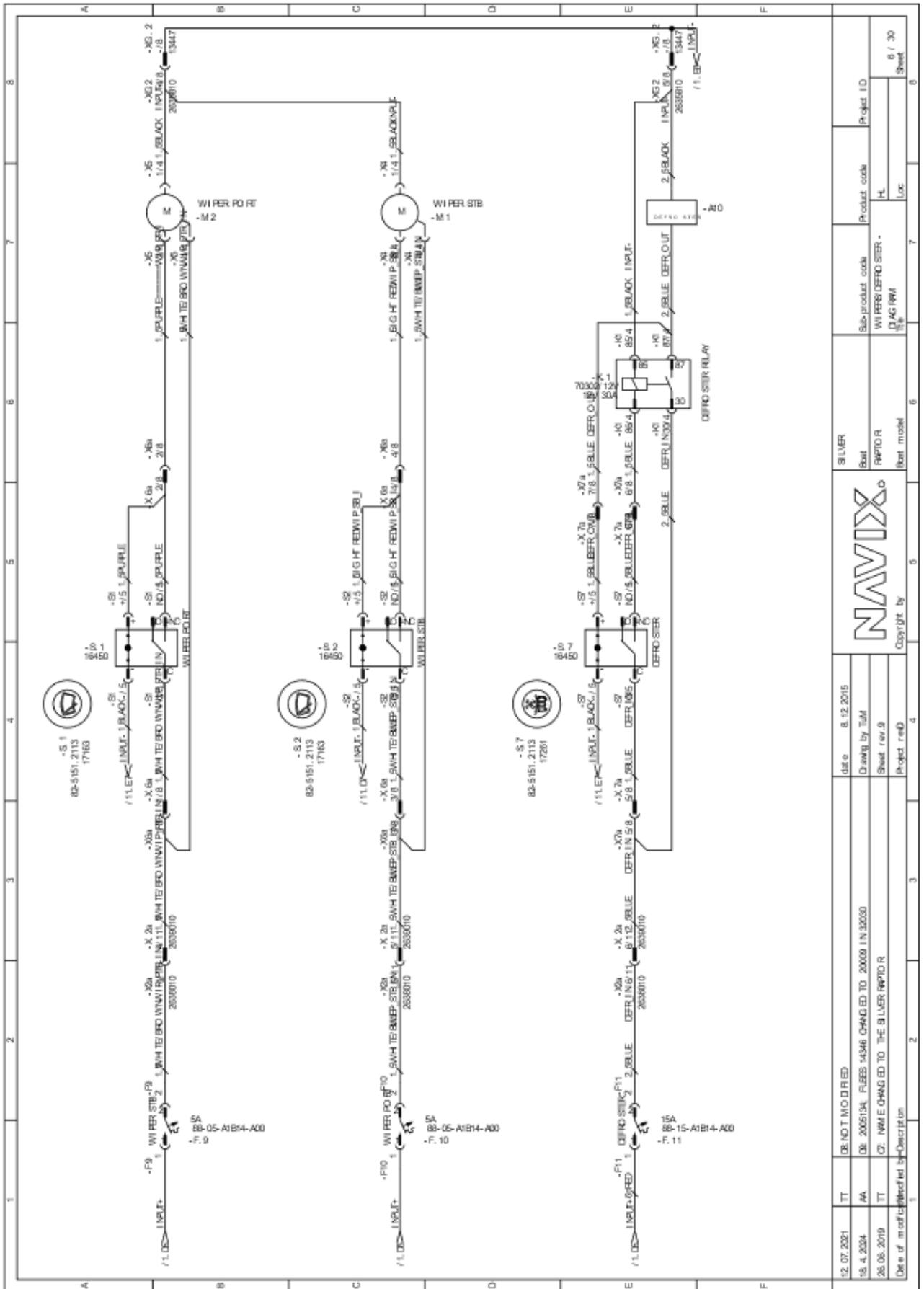


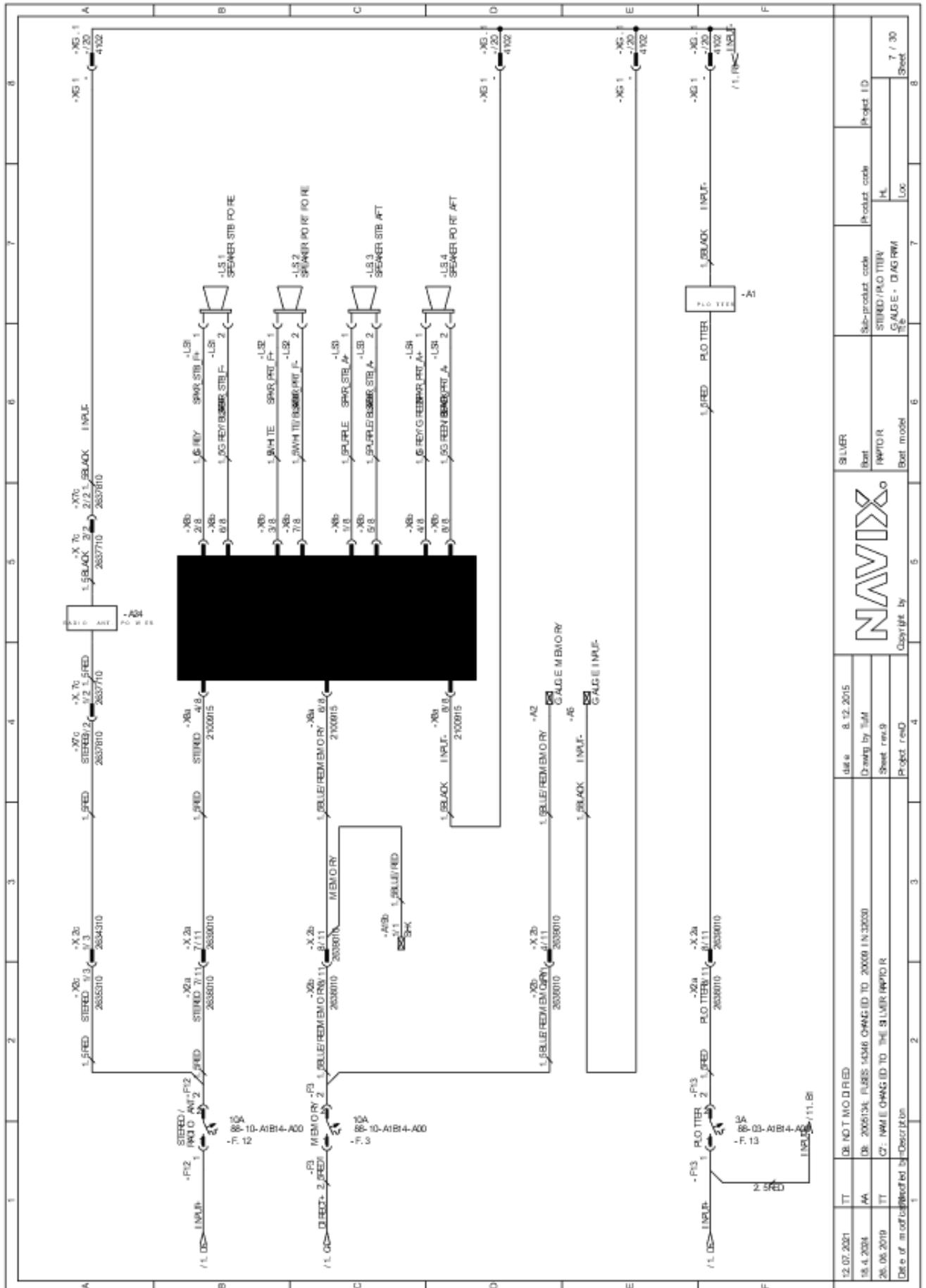


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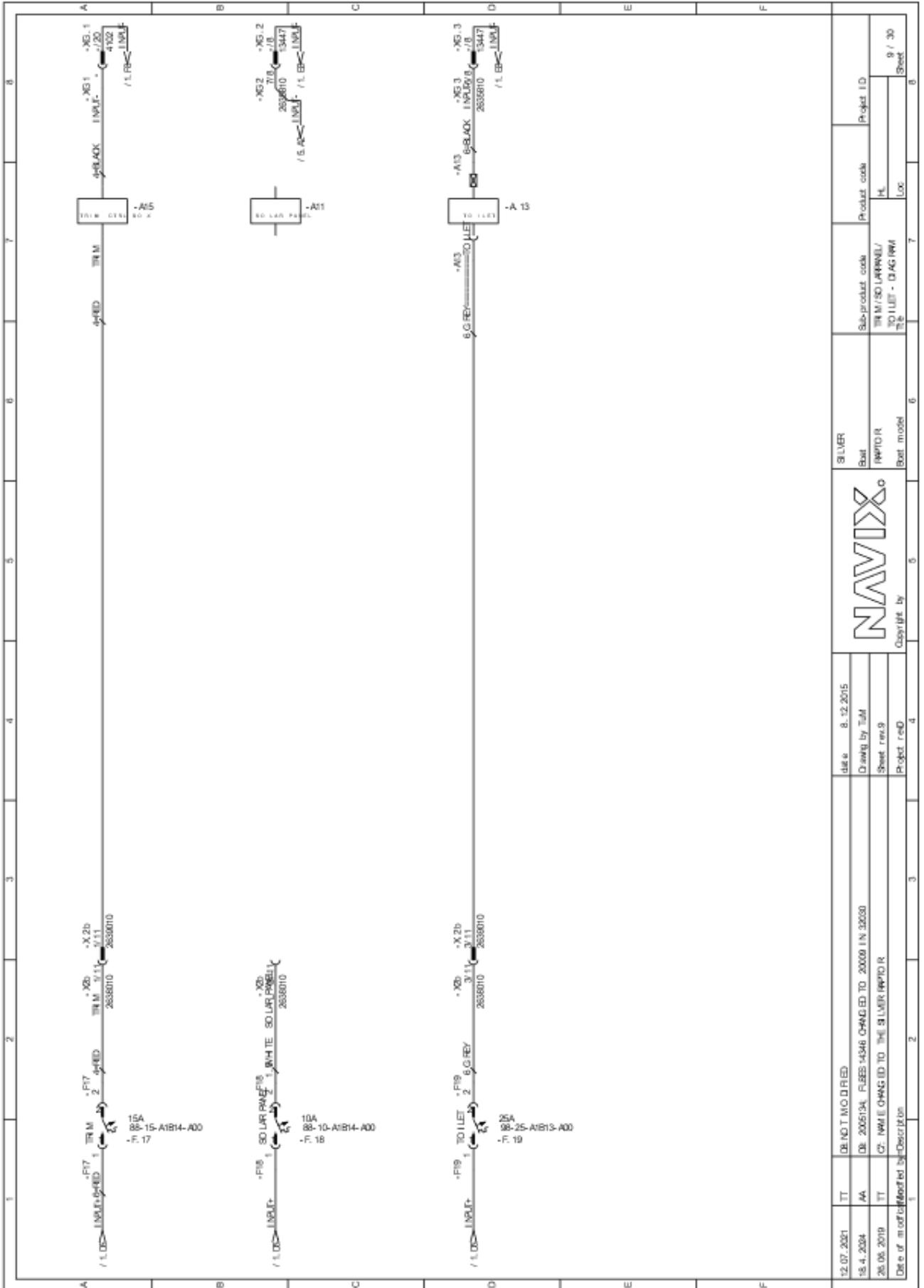


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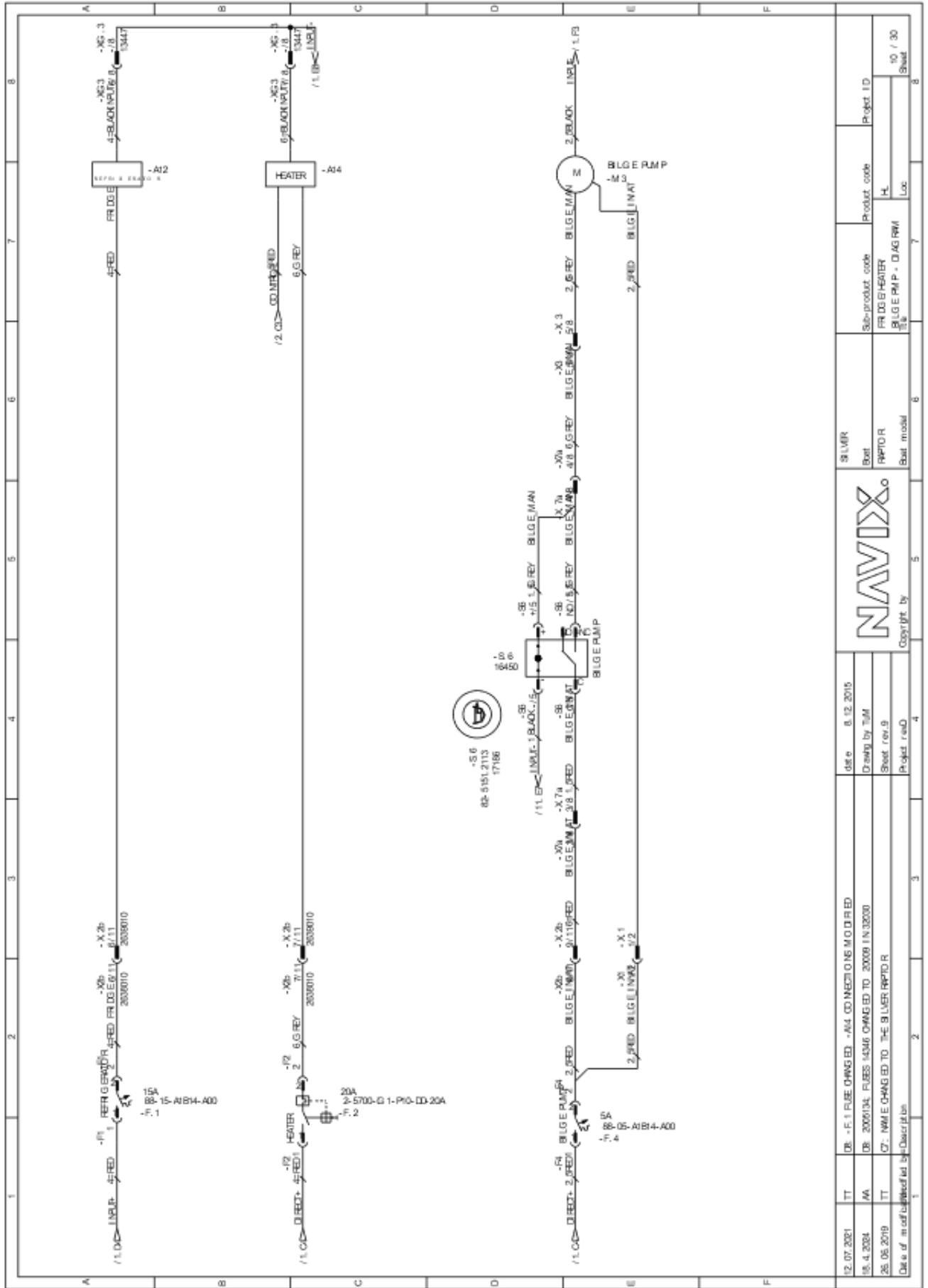








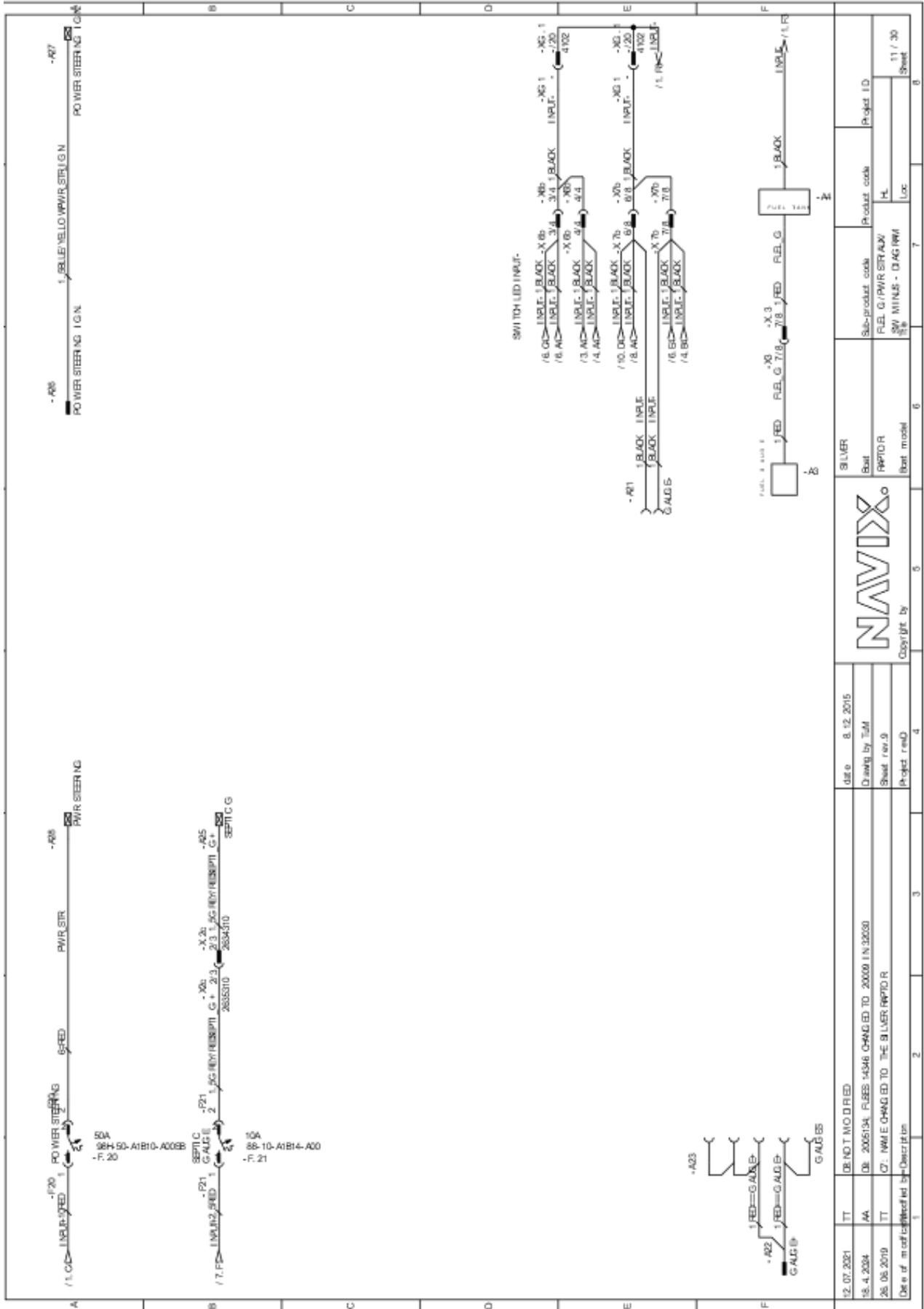
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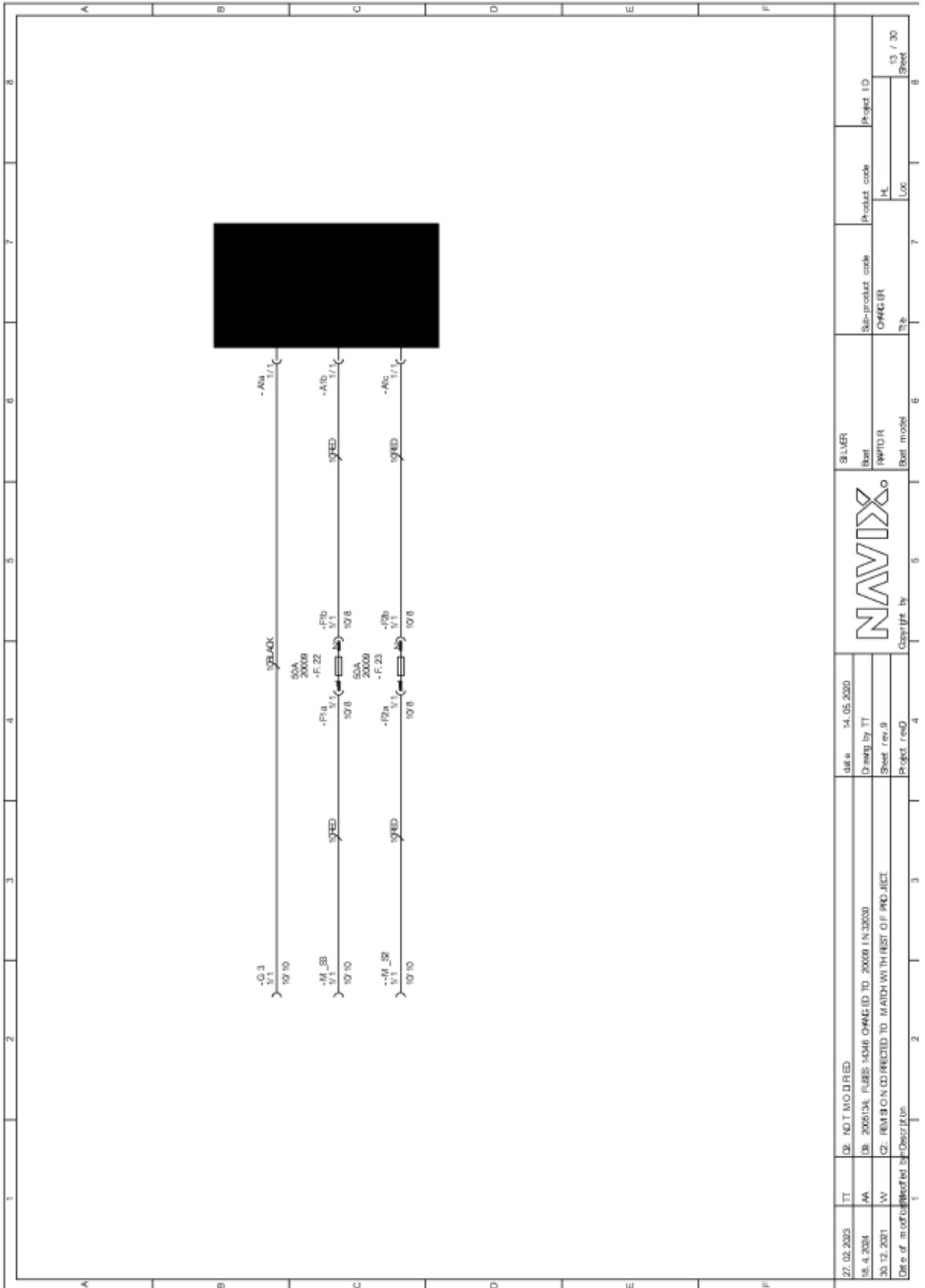


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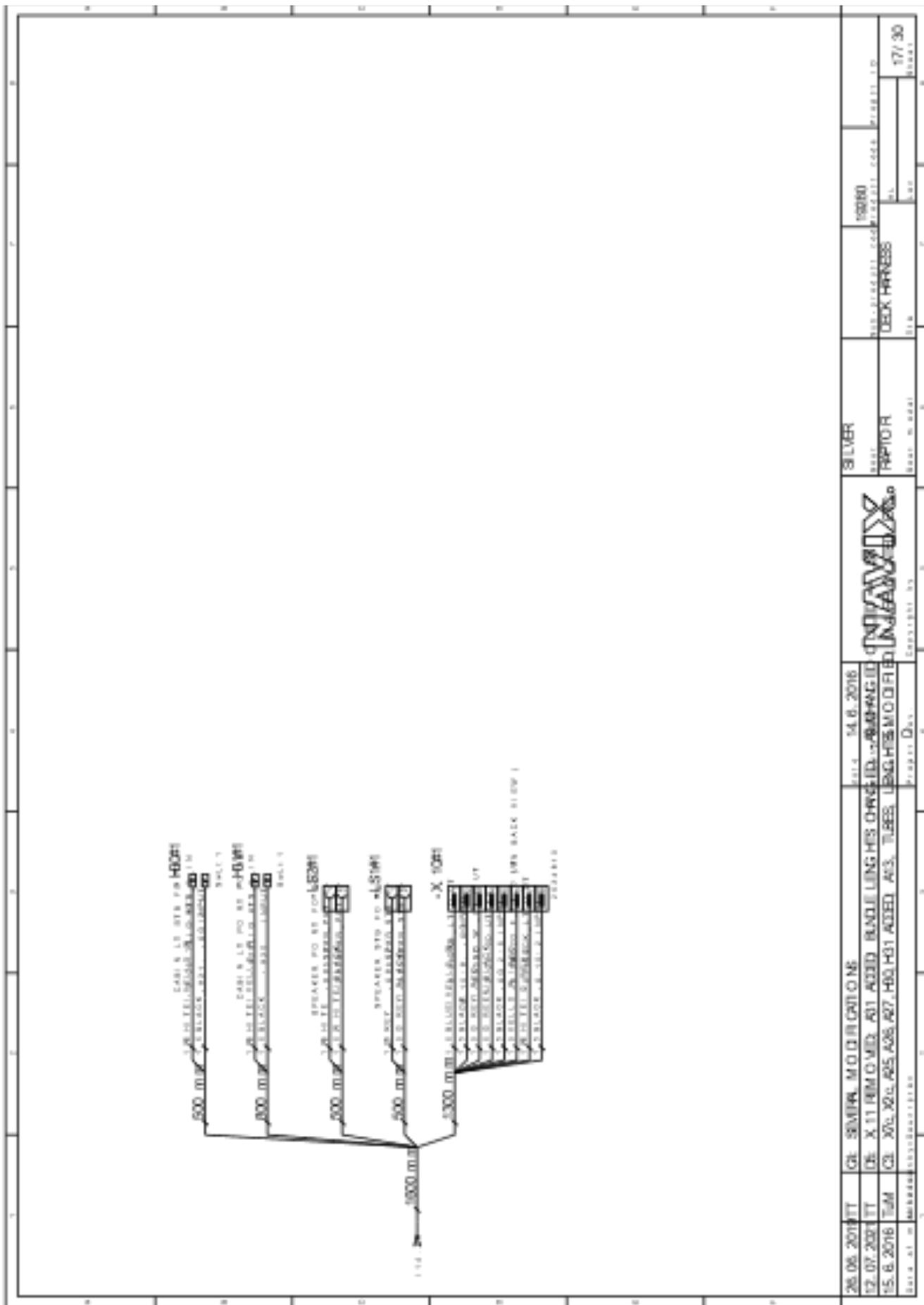


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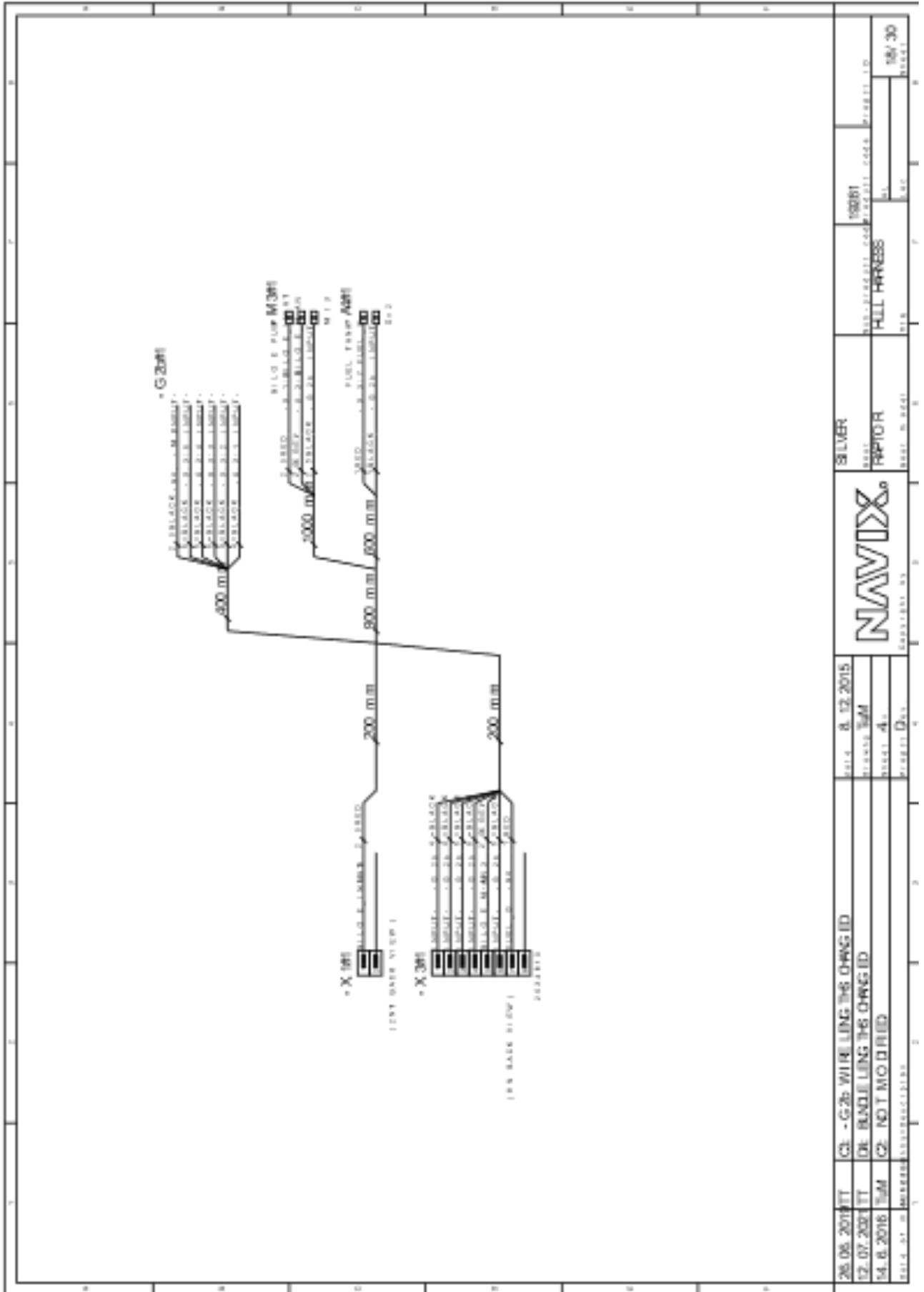






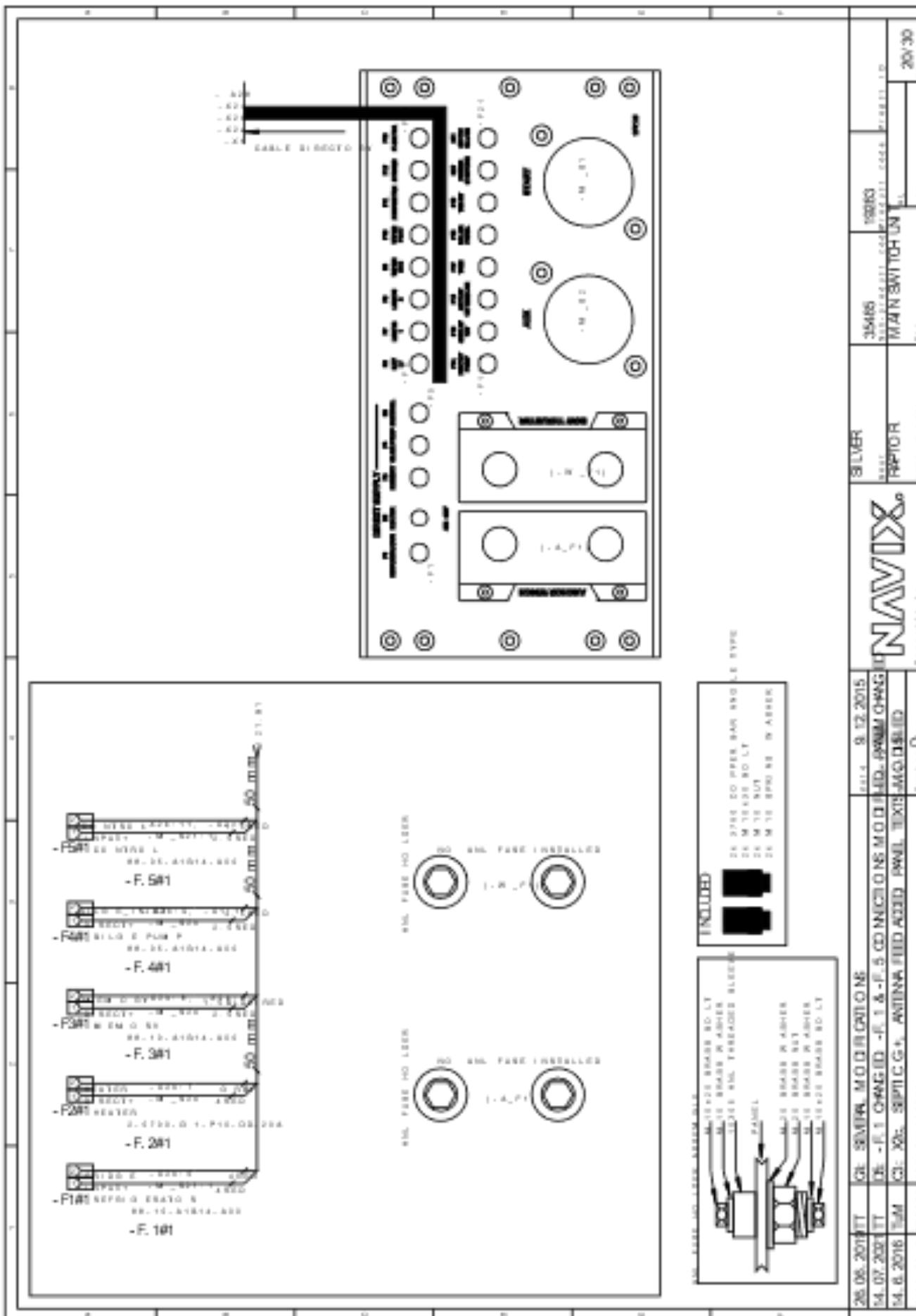


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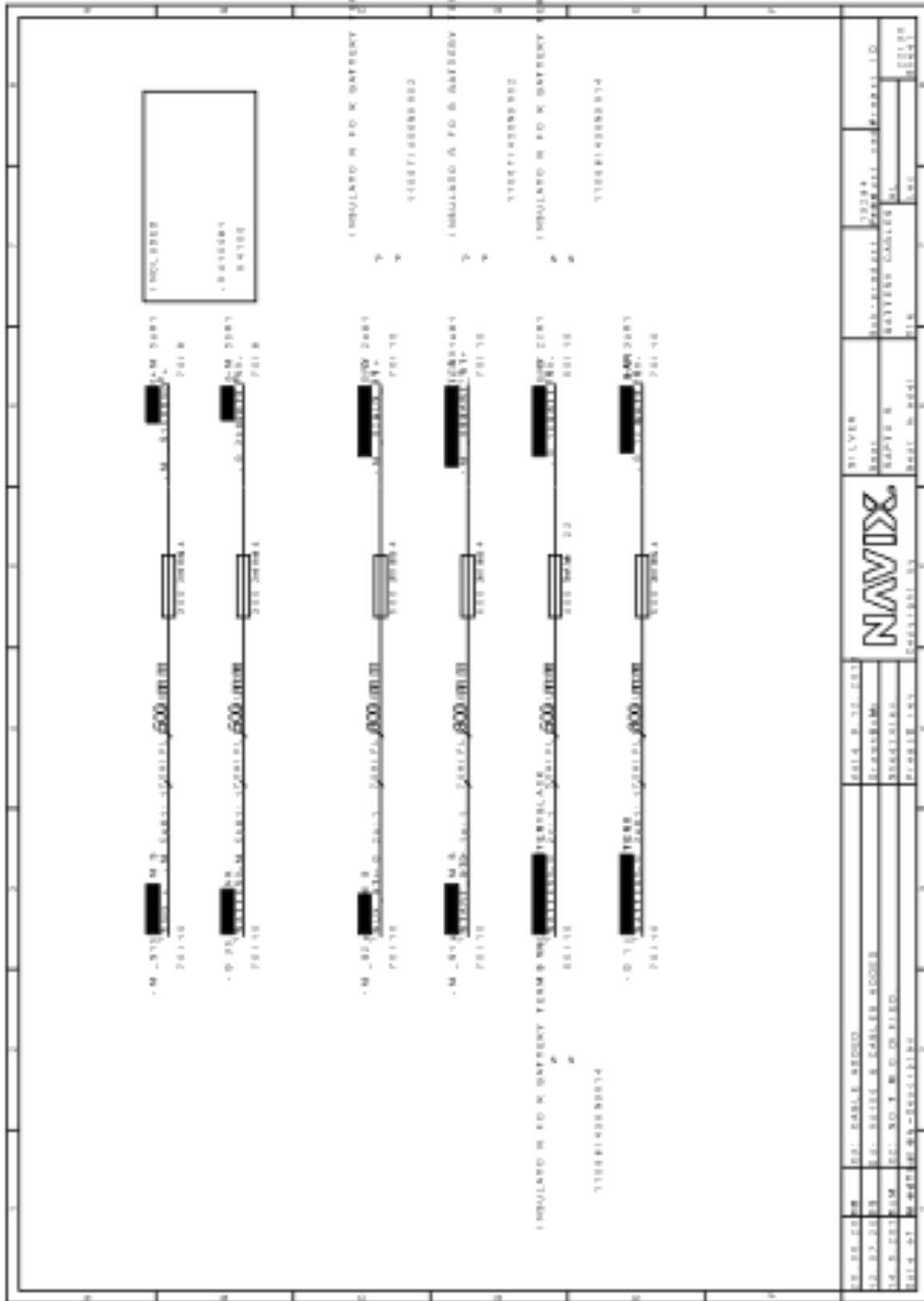


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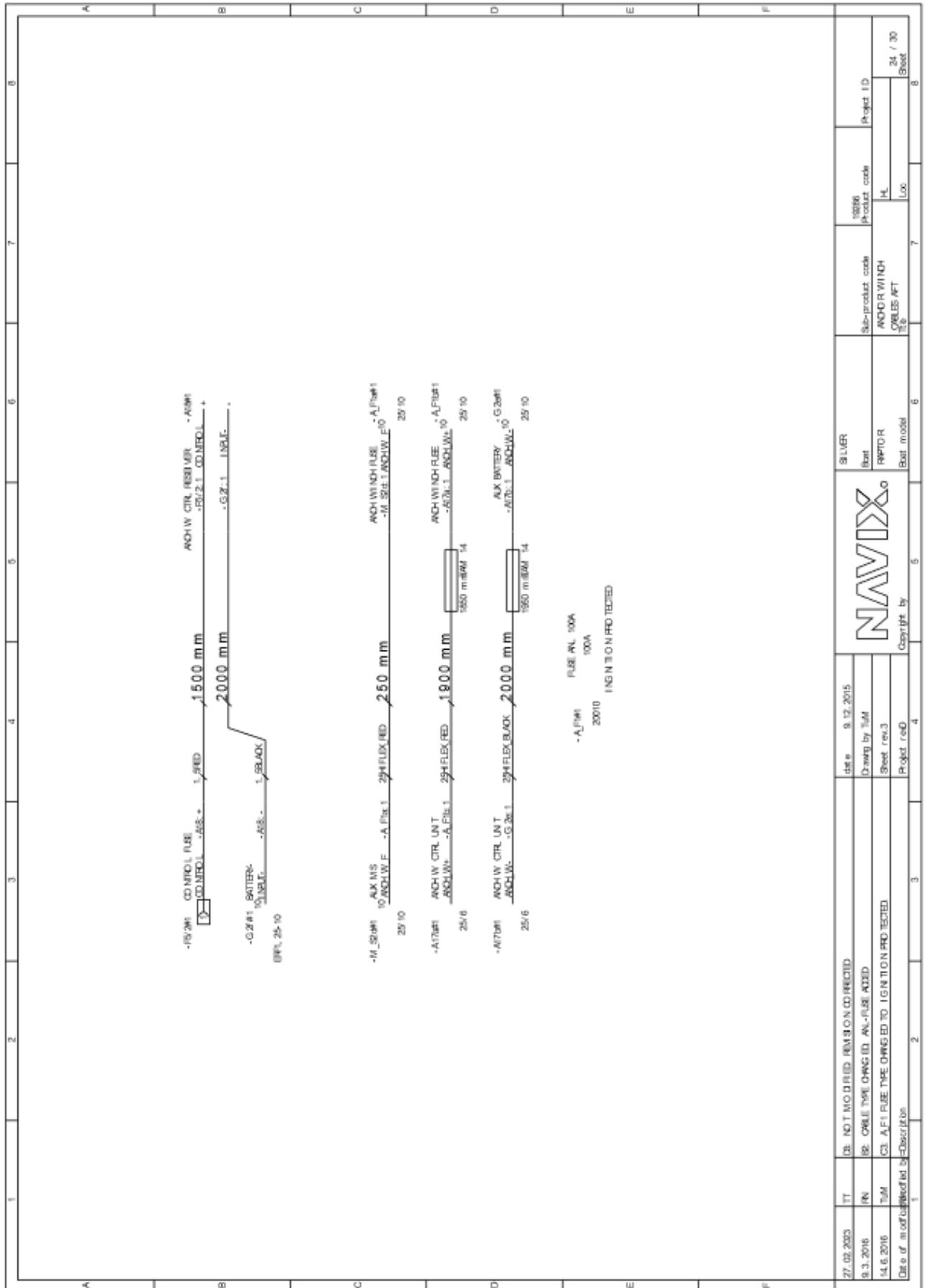












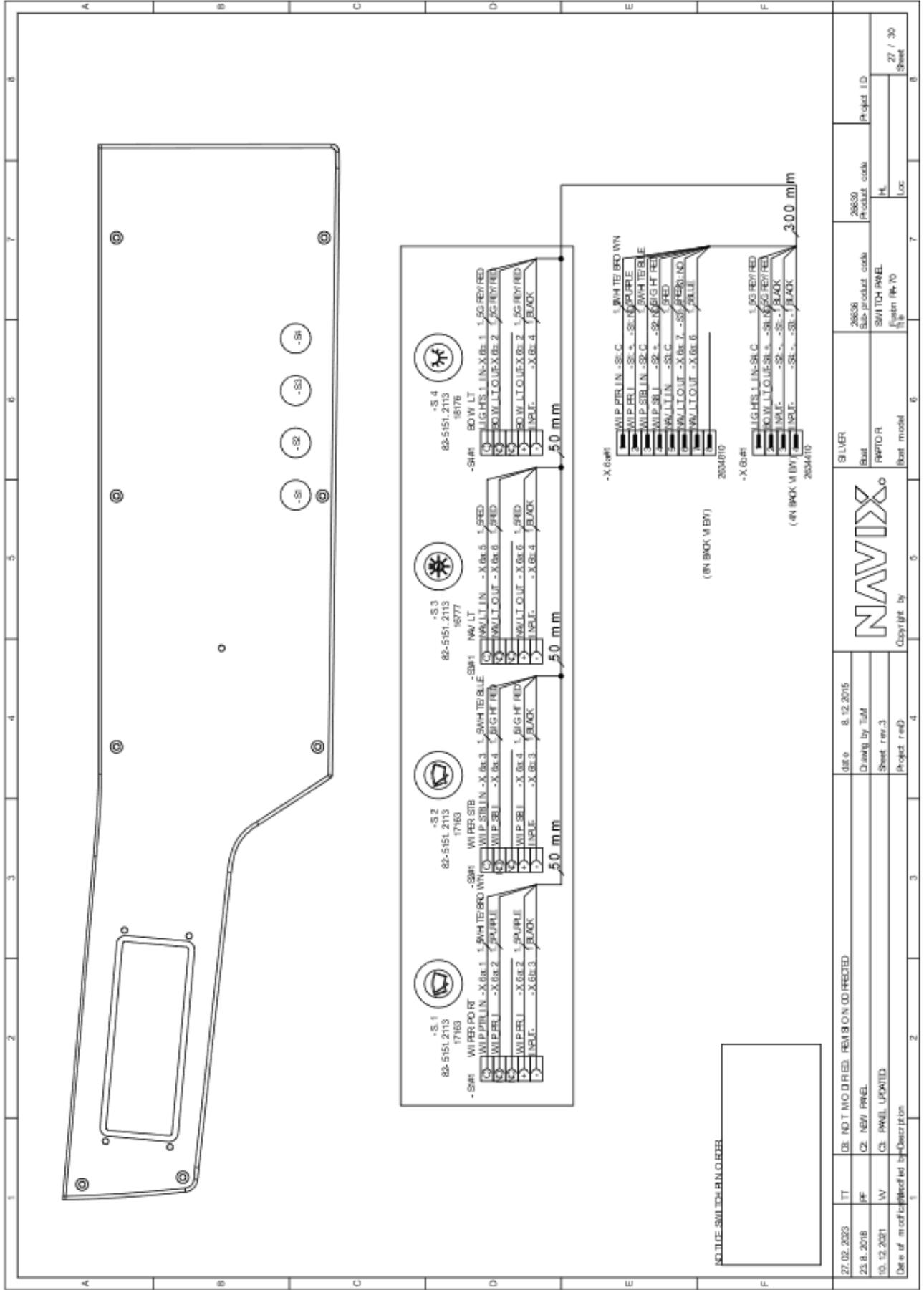
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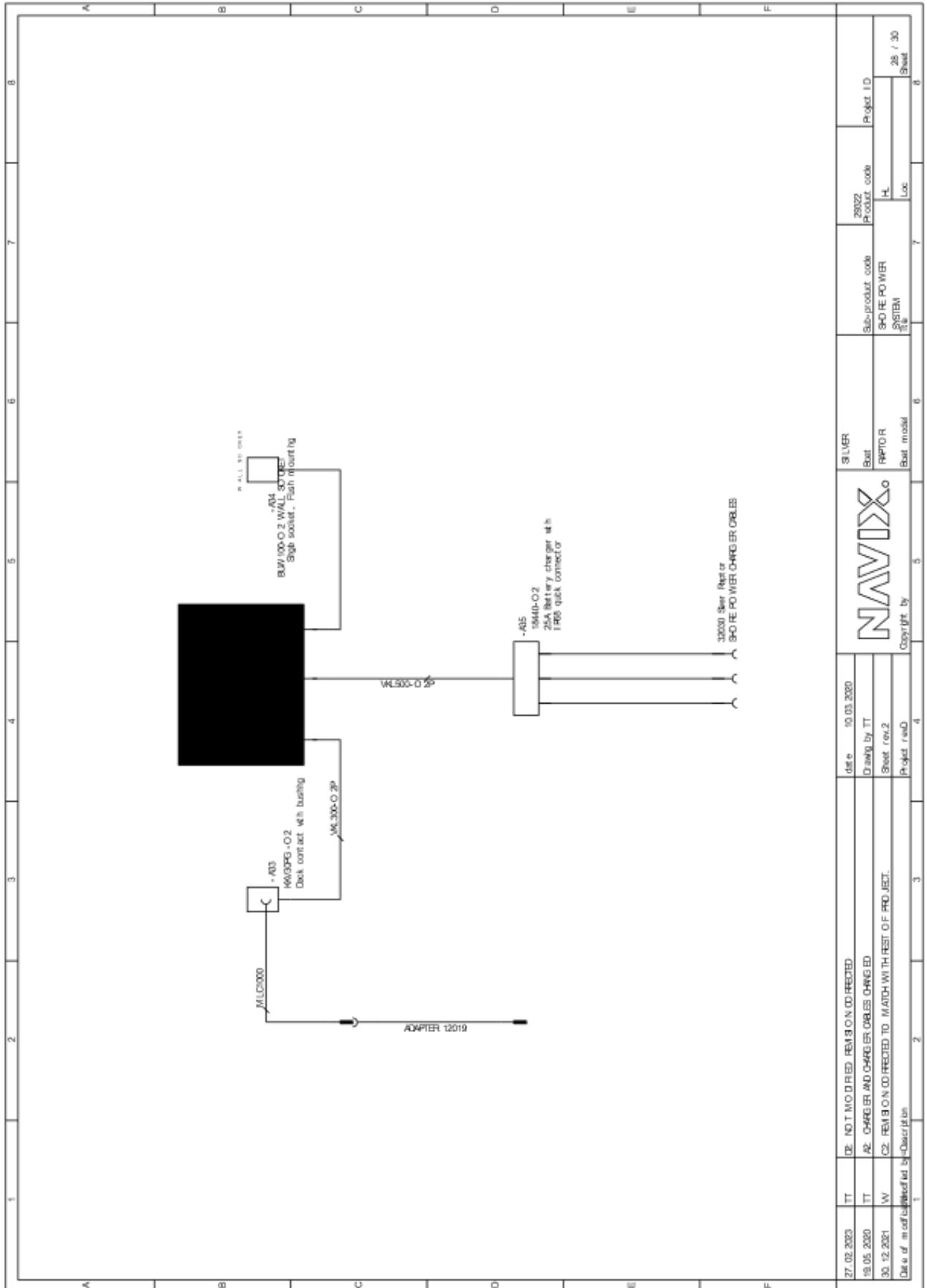




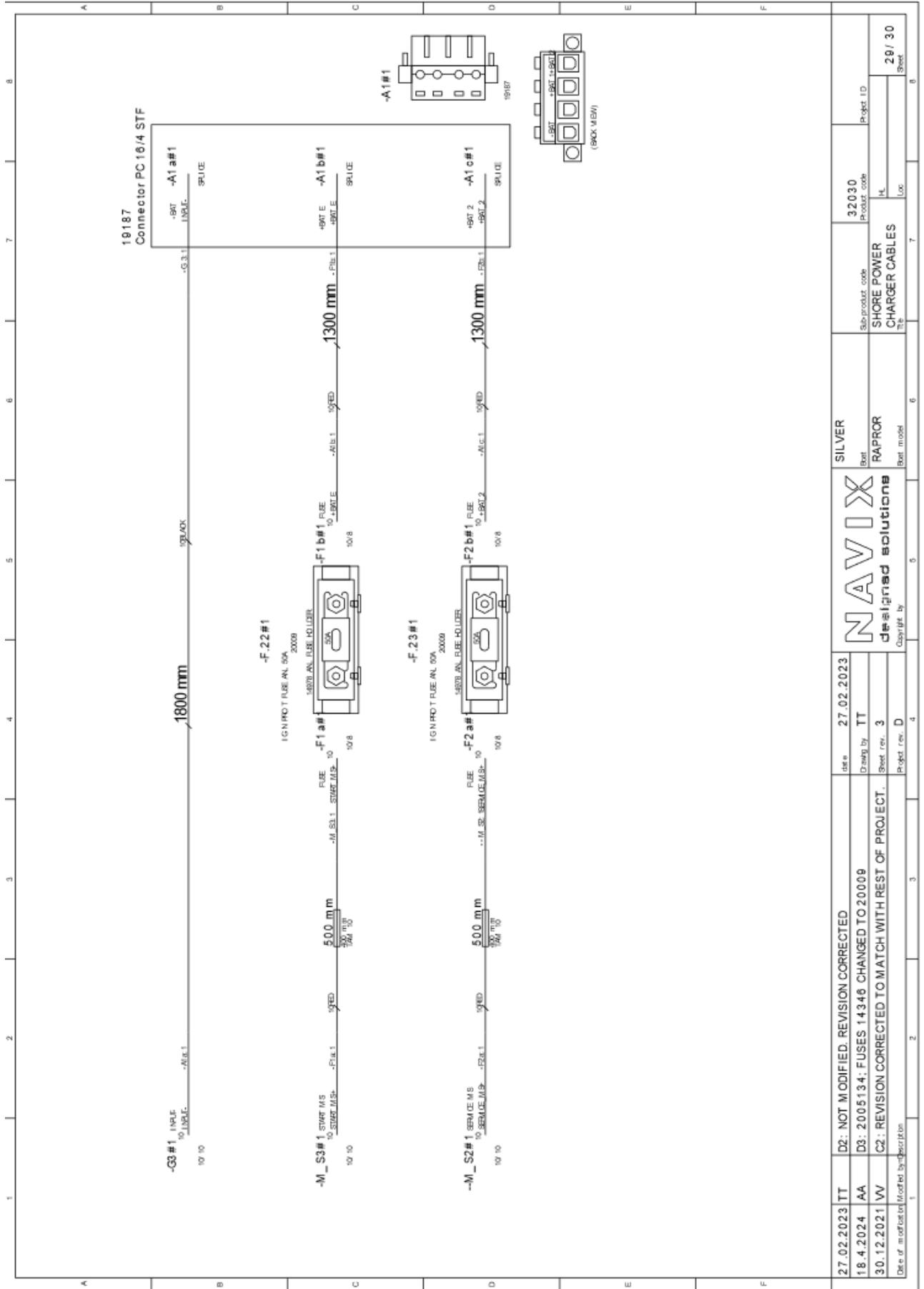


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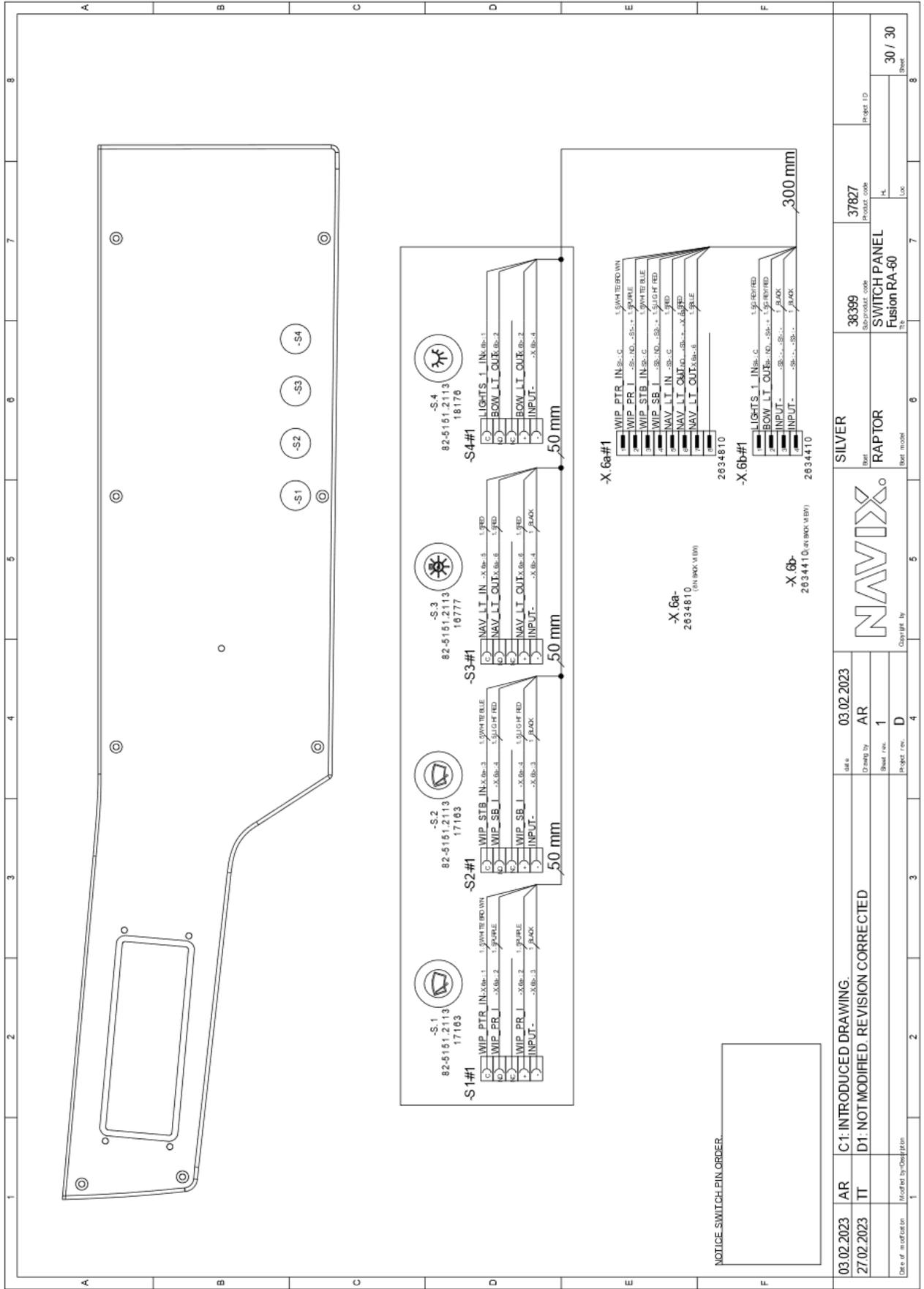
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		6		1	12		
		7			13		
		8			14		

***Silver***<sup>®</sup>  
**RAPTOR**

**Silver Raptor ST**

**User Manual**

## **FOREWORD**

Congratulations on choosing a Silver Raptor boat!

This user manual will familiarise you with the features of your new boat and help you to care for and maintain it. It has been designed to help you learn how to handle your boat safely and avoid potential problems. Please check that you have received all the instruction manuals for the equipment installed on your boat when it was delivered. Add the information and instruction manuals for any equipment you purchase later to the manual. There is space for your own notes at the end of the manual. Read this manual carefully and familiarise yourself thoroughly with the details of your boat before taking it out on the water.

The user manual is not a detailed maintenance or troubleshooting guide. In case of problems, contact your boat dealer. Always use qualified and trained personnel for maintenance, repairs and modifications. Modifications that may affect the safety features of the boat must be assessed, implemented and documented by qualified personnel. The boat manufacturer is not responsible for modifications that it has not approved.

Always keep your boat in good condition and bear in mind that it requires maintenance and servicing. Any boat, regardless of its strength, can be significantly damaged if not used properly. Always adjust the speed and direction of the boat to the prevailing weather conditions.

**We wish you pleasant and relaxing moments on the water with your Silver Raptor boat!**

TerhiTec Oy  
Sorvitie 4  
63700 Ähtäri  
Finland

[www.silverboats.com](http://www.silverboats.com)

**Keep this user manual in a safe place and pass it on to the next owner if you sell your boat.**

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## BEFORE YOU LEAVE

Read this user manual.

Always check at least the following before setting out on the water:

- **Weather conditions and forecast**  
Take into account the wind, waves and visibility. Are your boat's design class, size and equipment, as well as the skills of the skipper and crew, adequate for the waters you are going to? In strong winds and high waves, portholes, hatches and doors must be closed to prevent water from entering the boat.
- **Load and stability**  
Do not overload the boat; distribute the load correctly. Heavy items should be placed in the storage compartments under the rear bench. Also note that the stability of the boat is reduced when people are standing in it.
- **Passengers**  
Ensure that all passengers have life jackets or buoyancy aids. Agree on the tasks required of each person during the trip before departure.
- **Fuel and fuel system**  
Check that there is sufficient fuel, including a 20% reserve in case of bad weather or other unforeseen circumstances.
- **Engine and steering equipment**  
Check the operation and condition of the steering and remote-control devices and carry out the checks specified in the engine manual.
- **Seaworthiness of the boat**  
Check the seaworthiness of the boat in other respects as well: no fuel or water leaks, safety equipment on board, etc. Check that there is no water in the boat's bilge.
- **Securing of goods**  
Check that all items are secured so that they will remain in place even in rough seas and strong winds. Note that seat cushions may fly off if their fasteners are not secured.
- **Nautical charts**  
If you are not travelling on a familiar route, make sure you have nautical charts covering a sufficiently large area! Your boat is equipped with a chart plotter, so learn how to use it before you set sail. Make sure your nautical charts are the latest edition.
- **Departure manoeuvres**  
Agree with the crew who will untie which ropes, etc. Check that the mooring ropes or anchor rope do not get caught in the propeller during departure or arrival.
- **Mandatory equipment**  
According to maritime traffic legislation, every motorised watercraft must have the following equipment in working order:
  - 1) An approved life jacket, buoyancy aid or survival suit for each person on board. The size and buoyancy of the suit must correspond to the size and weight of the person.
  - 2) Bailing equipment
  - 3) Oars or paddles or anchor with rope
  - 4) Approved hand-held fire extinguisher, minimum class 8A68B. The fire extinguisher must be inspected once a year. (The boat is equipped with an approved fire extinguisher as standard. Please note as the fire extinguisher is installed in the boat during the manufacturing stage, the one-year inspection stamp may expire shortly after the new

boat is put into service. According to water traffic legislation, the boat operator is responsible for ensuring that the fire extinguisher inspection stamp is valid.

**Additional instructions for the engine can be found in the separate instruction manual.**

## 1 General

The user manual will help you familiarise yourself with the features, care and maintenance of your new boat. The manuals for the equipment installed in the boat are included and referred to in several sections. You can, of course, supplement the manual with instruction manuals for equipment purchased later. Space is provided at the end of the manual for your own notes.

The boat has a serial number, the WIN code (Watercraft Identification Number). The WIN code is marked on the transom of the boat, below the right-hand side of the swim platform.

In some contexts, the old name CIN code (Craft Identification Number) is still used instead of the WIN code. It is the same code.

The last two digits of the WIN code indicate the model year of the boat. The third last digit indicates the year of manufacture. The boat register data always mentions the year of manufacture.

## 1.1 Declaration of conformity with the Recreational Craft Directive 2013/53/EU

### EU-vaatimustenmukaisuusvakuutus huviveneen suunnittelun, rakenteen ja melupäästöjen osalta direktiivin 2013/53/EU mukaisesti (Valmistaja tai valtuutettu edustaja täyttää)

Huviveneen valmistajan nimi: Fenix Marin Oy

Osoite: \_\_\_\_\_

Kunta: \_\_\_\_\_ Postinumero: \_\_\_\_\_ Maa: \_\_\_\_\_

Valtuutetun edustajan nimi (jos käytetty): Terhi Tec Oy

Osoite: Fenix Marin Oy

Kunta: Ähtäri Postinumero: 63700 Maa: Suomi

Suunnittelun ja valmistuksen arvioinnissa käytetty moduuli:  A  AI  B+C  B+D  B+E  B+F  G  H

Ilmoitetun laitoksen nimi suunnittelun ja valmistuksen arvioinnin osalta (jos vaaditaan): Eurofins Expert Services Oy

Osoite: Kivimiehentie 4

Kunta: Espoo Postinumero: 02150 Maa: Suomi Tunnusnumero: 0809

Ilmoitetun laitoksen sertifiikaatin<sup>1</sup> numero (jos käytetty): EUFI29-24002469-C1 Pvm: 2 / 6 / 2025

Melupäästöjen arvioinnissa käytetty moduuli (jos käytetty):  A  AI  G  H

Ilmoitetun laitoksen nimi melupäästöjen arvioinnin osalta (jos vaaditaan): \_\_\_\_\_

Osoite: \_\_\_\_\_

Kunta: \_\_\_\_\_ Postinumero: \_\_\_\_\_ Maa: \_\_\_\_\_ Tunnusnumero: \_\_\_\_\_

Ilmoitetun laitoksen sertifiikaatin<sup>1</sup> numero (jos käytetty): \_\_\_\_\_ Pvm:  / /

Muut sovelletut yhteisön direktiivit: \_\_\_\_\_

#### HUVIVENEEN TIEDOT:

Vesikulkuneuvon tunnusnumero: **F I - S L V Z**

Huviveneen merkki: Silver Malli tai tyyppi: Raptor ST

#### Rakennetyyppi:

kiinteärunkoinen  ilmatäytteinen  kovapohjainen kumivene (RIB)

#### Runkotyyppi:

yksirunko  monirunko

#### Rungon rakennusmateriaali:

alumiini, alumiiniseokset  lujitemuovi  
 teräs, terässeokset  puu  
 muu (tarkenna): \_\_\_\_\_

Huvivene  
Suunnitteluluokka suurimman  
suositellun henkilömäärän mukaan:

Suunnitteluluokka	Henkilömäärä	Suurin kuorma (kg)
A	-	-
B	-	-
C	10	1070
D	-	-

Rungon pituus L<sub>r</sub>: 8,05m

Rungon leveys B<sub>r</sub>: 2,76m

Suurin syväys T: \_\_\_\_\_m

#### Kansi:

umpinainen  
 osittain katettu  
 avoin

#### Kulkuneuvon pääasiallinen käyttövoima:

purje, purjeiden projektiopinta-ala A<sub>r</sub>: \_\_\_\_\_m<sup>2</sup>  
 ihmisvoima  
 kone/moottori  
 muu (tarkenna): \_\_\_\_\_

#### Asennettu moottorityyppi (jos sovellettavissa):

polttomoottori, diesel (CI)  
 polttomoottori, bensiini (SI)  
 polttomoottori, LPG/CNG  
 sähkö  
 muu (tarkenna): \_\_\_\_\_

#### Asennettu propulsiotyyppi (jos sovellettavissa):

perämoottori  
 sisämoottori akselivedolla  
 Z- tai perävetolaite  
 ruoripotkuri (pod drive)  
 S-vetolaite (saildrive)  
 muu (tarkenna): \_\_\_\_\_

Vetolaitteistossa kiinteä pakoputkisto (jos sovellettavissa): kyllä  ei

Suurin suositeltu koneteho: 258 kW

Asennettu koneteho: \_\_\_\_\_kW

Propulsiovoimoiden lukumäärä: 1#

Suurin suositeltu moottorin paino<sup>2</sup>: 375kg

Tämä vaatimustenmukaisuusvakuutus on annettu yksin valmistajan vastuulla. Vakuutan valmistajan nimissä että yllämainittu huvivene täyttää direktiivin 2013/53/EU artiklassa 4 (1) ja liitteessä I määritellyt vaatimukset.

#### Nimi ja toimit:

(valmistajan tai valtuutetun edustajan puolesta allekirjoittamaan valtuutetun henkilön tunnistet)

#### Allekirjoitus ja titтели:

(tai vastaava merkintä)

Päivä ja aika (pp/kk/vvvv): / /

<sup>1</sup> Dokumentti saattaa moduulista riippuen olla nimetty eri tavoin (AI: Stability and buoyancy report, B: EC type examination certificate, G: Certificate of conformity, etc.)

<sup>2</sup> Vain perämoottorilla varustetuille venille

Essential requirements (referring to the numbering in Annex I to the Directive)	Harmonised standards Full application	Harmonised standards Partial application, see Other technical specifications <sup>1</sup>	Other technical specifications	Other means of compliance See technical	Specify the harmonised standards <sup>2</sup> or other technical specifications  (including year of publication, e.g. "EN ISO 8666:2002")
<b>General requirements (2)</b>					
Essential information – main dimensions	<input checked="" type="checkbox"/>				EN ISO 8666:2020/A11:2021
Watercraft identification number – WIN (2.1)	<input checked="" type="checkbox"/>				EN ISO 10087:2022
Watercraft manufacturer's plate (2.2)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	RCD Annex I: A 2.2, EN ISO 14945:2021
Prevention of falling overboard and re-entry into the boat (2.3)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	EN ISO 15085:2003/A2:2018
Visibility from the main steering position (2.4)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	EN ISO 11591:2020
Owner's manual (2.5)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	EN ISO 10240:2020
<b>Requirements for structure, strength and tightness (3)</b>					
Structure (3.1)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	EN ISO 12215-5:2019, EN ISO 12215-6:2018
Stability and safety (3.2)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	EN ISO 12217-1:2017
Carrying capacity and buoyancy (3.3)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	EN ISO 12217-1:2017
Openings in hull, deck and superstructure (3.4)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	EN ISO 9093:2021, EN ISO 12216:2018
Water ingress (3.5)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	EN ISO 11812:2018, EN ISO 15083:2020, EN ISO 8849:2021
Manufacturer's recommendation for maximum permissible load (3.6)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	EN ISO 14946:2021
Storage of life rafts (3.7)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	RSG Guidelines
Escape route (3.8)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	EN ISO 9094:2017
Anchoring, mooring and towing (3.9)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	EN ISO 15084:2018
<b>Steering characteristics (4)</b>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	EN ISO 11592-1:2016, EN ISO 8665:2017
<b>Engines and engine compartments (5.1)</b>					
Inboard engines (5.1.1)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	-
Ventilation (5.1.2)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	EN ISO 11105:2020
Unprotected parts (5.1.3)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	-
Starting the outboard motor (5.1.4)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Engine declaration of conformity
<b>Fuel system (5.2)</b>					
General information on the fuel system (5.2.1)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	EN ISO 10088:2023, EN ISO 11105:2020, EN ISO 7840:2021
Fuel tanks (5.2.2)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	EN ISO 21487:2018
<b>Electrical system (5.3)</b>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	EN ISO 13297:2021, EN ISO 8849:2021, EN ISO 8846:2017
<b>Control system (5.4)</b>					
General requirements for control systems (5.4.1)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	EN ISO 10592:2022
Backup systems (5.4.2)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	-
<b>Gas system (5.5)</b>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	EN ISO 10239:2017
<b>Fire protection (5.6)</b>					
General fire protection (5.6.1)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	EN ISO 9094:2017
Firefighting equipment (5.6.2)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	EN ISO 9094:2017
<b>Navigation lights, shapes and sound signalling devices (5.7)</b>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1972 COLREG, EN ISO 16180:2018
<b>Pollution control (5.8)</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Engine declaration of conformity
<b>Annex I.B – Exhaust emissions<sup>3</sup></b>					
<b>Annex I.C – Noise emissions<sup>4</sup></b>					
Noise emission levels (I.C.1)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Engine Declaration of Conformity
Owner's manual (I.C.2)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Engine declaration of conformity

<sup>1</sup> Non-harmonised standards, rules, regulations, guidelines, etc.

<sup>2</sup> Standards published in the Official Journal of the European Union

<sup>3</sup> See the engine manufacturer's declaration of conformity

<sup>4</sup> Applies only to boats with inboard or stern drive engines without a built-in exhaust system

## 2 Definitions

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

<b>IMMEDIATE DANGER!</b>	Indicates a serious hazard that will result in death or serious injury unless proper precautions are taken.
<b>DANGER!</b>	Indicates a potential hazard that could result in death or serious injury if proper precautions are not taken.
<b>WARNING!</b>	Indicates a potential hazard that could result in injury if appropriate precautions are not taken.
<b>NOTE</b>	Indicates important information related to the risk of damage to the boat, its parts or other property, but not to personal injury.

The manual uses SI units. In some cases, other units are added in brackets. An exception to this is wind speed, which is given in Beaufort in the Recreational Craft Directive.

## 3 Warranty

The boat and its equipment are covered by a 2-year warranty, starting from the date of commissioning. Please contact your dealer for any warranty issues. Remember to provide the WIN code. If possible, take a photo of the item you are complaining about. This usually speeds up the processing of warranty claims.

## 4 Before use

### 4.1 Registration

In accordance with the Water Traffic Act, sailing boats and motorboats with a hull length of at least 5.5 metres, and all watercraft with an engine power of at least 15 kilowatts, i.e. more than 20 horsepower, must be registered in the Finnish boat register. More detailed instructions on registration are available from the Finnish Transport and Communications Agency Traficom. In Finland, the operator of a boat to be registered must be at least 15 years of age.

Registration regulations vary between different countries. Find out what is required in relation to your own boat if used outside Finland.

## 4.2 Insurance

Boat insurance can cover damage that occurs on the water or during transport and docking. Make sure you have separate insurance coverage when lifting the boat. Insurance also has an indirect impact on safety on the water: in the event of a serious accident, you can focus on rescuing people first and foremost. Insurance companies can provide more detailed information on the various insurance options. Make sure you have insurance coverage when lifting and transporting your boat!

## 4.3 Training

There is a wealth of literature on boating. Navigation courses are organised by **the Finnish Navigation Association ([www.suomennavigaatioliitto](http://www.suomennavigaatioliitto))** in cooperation with adult education centres.

Information on boating schools is available from: **Finnish Sailing and Boating ([www.spv.fi](http://www.spv.fi))**. These provide a good foundation for your skills, but confidence in handling, navigating, mooring and anchoring a boat can only be achieved after long practical training.

## 5 Characteristics and use of your boat

### 5.1 General

The purpose of this user manual is not to be a complete maintenance guide or repair manual, but to instruct the user on how to use their boat properly.

### 5.2 Basic boat information

The basic information about the **Silver Raptor ST** boat is as follows:

Manufacturer/manufacturer's representative:

**Fenix Marin Oy, Mahliankatu 5, 37600 Valkeakoski**

Type: **Silver Raptor ST**

Design class: **C**

The design category refers to the following:

**Design category A:** The boat is designed for use in conditions where the wind force is less than 10 Beaufort (approx. 25 m/s) and the significant wave height is commensurate. The conditions described are typically encountered on long voyages, such as ocean crossings, or on the coast when the voyage is exposed to wind and waves for several hundred nautical miles. Depending on atmospheric conditions, gusts can reach approx. 32 m/s.

**Design category B:** The boat is designed for use in conditions where the wind force is up to 8 Beaufort (approx. 21 m/s) and the waves are correspondingly high (significant wave height up to 4 m, see **Note** below). Such conditions are typically encountered on sufficiently long open sea voyages or in coastal waters when the voyage is exposed to wind and waves for several tens of nautical miles. The conditions described may also be encountered on lakes that are large enough for the wave height in question to develop. Depending on atmospheric conditions, gusts may reach approx. 27 m/s.

**Design category C:** The boat is designed for use in conditions where the steady wind speed is no more than 6 Beaufort (approx. 14 m/s) and the waves are correspondingly small (significant wave height no more than 2 m, see **Note** below). Such conditions are typically encountered on open lakes, river estuaries and coastal waters in moderate weather conditions. Depending on atmospheric conditions, gusts may reach approx. 18 m/s.

**Design category D:** The boat is designed for use in conditions where the wind force is up to 4 Beaufort (approx. 8 m/s) and the waves are correspondingly high (significant wave height up to 0.3 m, occasional maximum waves 0.5 m high). Such conditions are typically encountered on sheltered inland waters and

in coastal waters in good weather. Depending on atmospheric conditions, gusts may reach approx. 12 m/s.

**Note:** Significant wave height is the average height of the highest third of the waves, which roughly corresponds to the wave height estimated by an experienced observer. Some individual waves may be approximately twice as high.

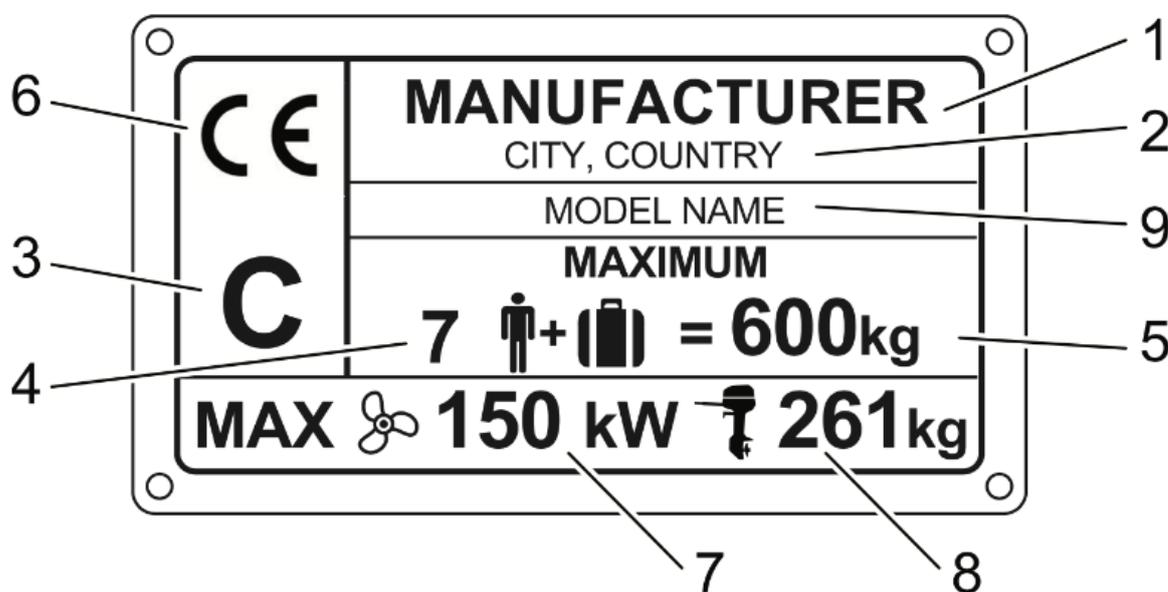
**Maximum recommended load:** See *technical specifications. Table 1.*  
See also section 5.4 "Loading".

**Main dimensions and capacities:** See *technical specifications. Table 1.*

The length, width, draught, total weight, etc. of the boat, as well as tank capacities, are specified in the technical specifications.

#### Manufacturer's plate:

Part of the above information is provided on the manufacturer's plate (Figure 1) which is attached to the boat *next to the steering position*. Additional information is provided in the relevant sections of this manual.



**Figure 1.** Information provided on the manufacturer's plate:

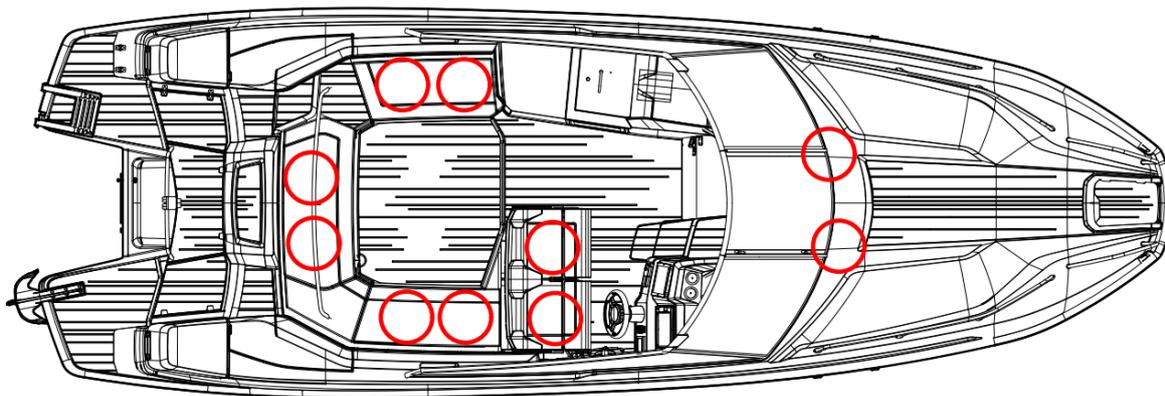
1. manufacturer's name, 2. manufacturer's/manufacturer's representative's contact details and, where applicable, the identification number of the notified body, 3. boat design class, 4. maximum number of persons, 5. maximum recommended load (kg), 6. CE marking, 7. Maximum power of outboard motor(s) [kW], 8. Maximum weight of outboard motor(s) [kg], 9. Boat model.

**Table 1. Technical specifications**

Model	SILVER RAPTOR ST
Design category	C
Overall length (excluding swim ladder)	8.05 m
Width	2.76 m
Weight without engine, fluids and equipment	Approximately 2492 kg
Weight when transported on a trailer with the standard maximum machine	Approximately 3208 kg Includes boat (approx. 2492 kg) and 350 hp engine (375 kg) and estimated weight of fluids and accessories (340 kg). NOTE This is not the maximum weight of fluids and accessories.
Maximum load/ Maximum number of persons	1070 kg 10 persons
Maximum load includes	750 kg / 10 persons (75 kg each) + personal equipment 50 kg + fuel 195 kg + fresh water 45 kg + waste water 30 kg
Maximum load on CE plate	800 kg Includes persons 10 x 75 kg = 750 kg + personal equipment 50 kg = total 800 kg
Boat weight at full load	Approximately 4038 kg Includes boat 2492 kg + engine 375 kg + batteries 40 kg + basic equipment 80 kg + personal equipment 50 kg + fuel 195 kg + water 45 kg + septic tank 30 kg + life raft 30 kg + persons 750 kg
Maximum engine power	258 kW / 350 hp
Maximum engine weight	375 kg
Liquid tank capacity	Fuel tank 260 litres, Septic tank 30 litres, Water tank 43 litres
Maximum draught with full load, engine up	0.5 m
Maximum height above waterline with light load	1.7
Height from keel to top of windscreen	2.25
Construction material	Reinforced plastic
Colour code (frame and cover)	RAL 9016
Hydraulic hoses	2 x 2.6 m 2 x 3.6 m
Top speed achieved in boat test	Approximately 46 knots

## 5.3 Maximum recommended number of passengers

The maximum recommended number of passengers on board is 10. *Seating positions are shown in Figure 2.*



**Figure 2.**

○ Seating positions, seating for two persons in the cabin

### **WARNING!**

Do not exceed the maximum recommended number of persons. Regardless of the number of persons on board, the total weight of persons and equipment must never exceed the maximum recommended load (see section 5.4 "Load"). Always use the seats or seating positions provided in the boat. While the boat is in motion, all persons on board must be seated.

## 5.4 Loading

The maximum permissible load for the boat is 1070 kg. This includes the following weights:

- total weight of persons on board 750 kg (assumed weight of one adult 75 kg, child 37.5 kg)
- the weight of liquids in fixed tanks (fresh water, wastewater, fuel, etc.) is 240 kg
- weight of personal equipment (e.g. recreational equipment and overnight gear) 50 kg
- weight of other cargo (septic tank full) 30 kg.

### **NOTE!**

The maximum load only includes the weight components mentioned above.

### **WARNING!**

**When loading the boat, never exceed the maximum recommended load.** Always load the boat carefully and distribute the load appropriately so that the boat floats straight. Heavy items should normally be placed in the storage space under the rear seat. If the boat is carrying the maximum number of

passengers, heavy items should be placed in the front cabin to prevent the boat from becoming rear-heavy. Avoid placing heavy items high up.

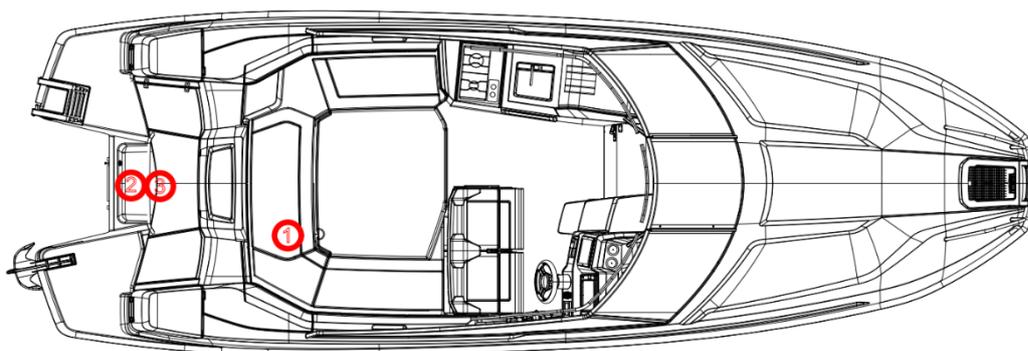
## 5.5 Boat drainage system

The boat has a rainwater drainage system, which means that rainwater is drained from the open space when the boat is in the water. The rainwater drainage system also works on land, if the bow is higher than the stern and the rainwater drainage valve is open. The rainwater drainage valve is located under the maintenance hatch below the centre hatch of the rear seat. The valve is only intended to be closed when carrying the maximum permissible load to prevent water from entering the boat. **In other cases, the valve must always be open to allow rainwater to drain from the boat.**

NOTE! The open space in the boat should be protected from rain with either a driving cover or a harbour cover. Although the cushions in the open area are made of water-resistant material, water can seep through the seams, causing the foam inside the cushion to absorb water. The control console panels, switches and power outlets are also not waterproof.

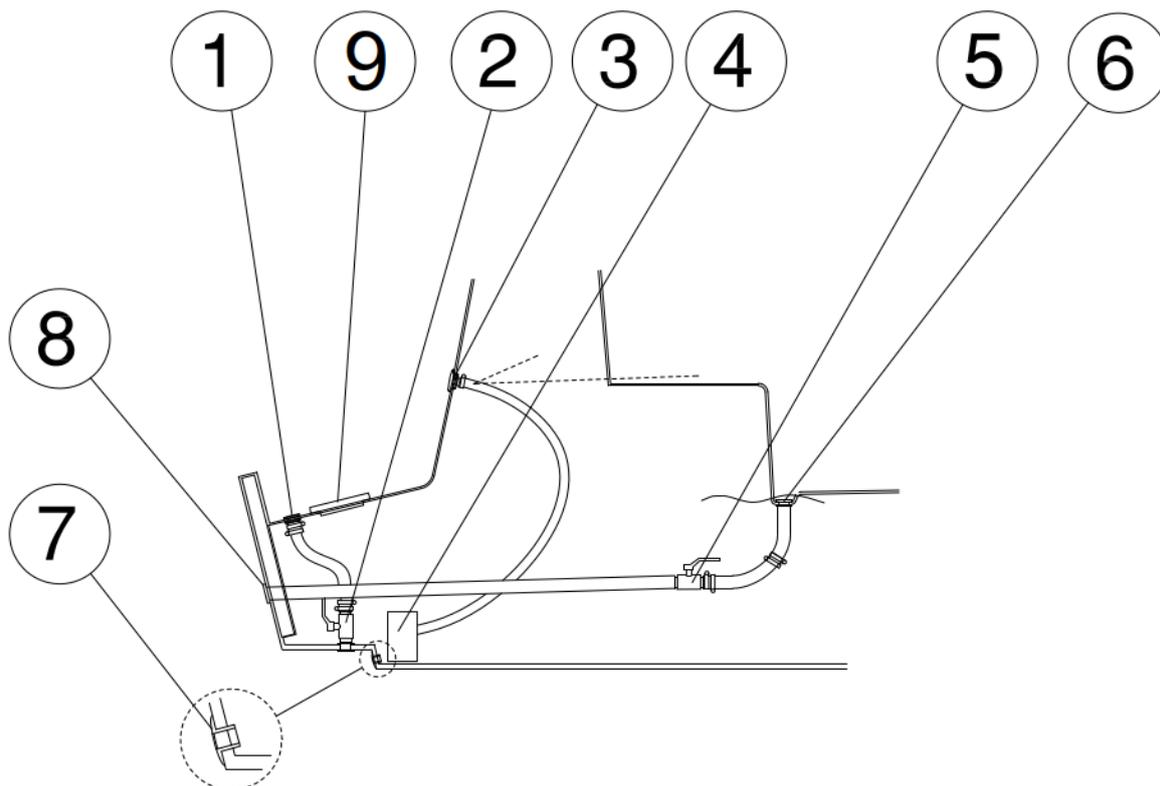
An electric bilge pump is installed in the boat between the fuel tank and the transom. The capacity of the electric bilge pump is approx. 45 l/min.

The bilge pump can be accessed through a hatch in the engine compartment. NOTE! If you open the hatch, remember to close it carefully, as the hatch may become submerged under heavy loads.



**Figure 3.**

1. Open space drainage shut-off valve
2. Electric/automatic bilge pump
3. Shut-off valves for emptying the engine well



**Figure 4:** Boat drainage system

- |  |                                       |
|--|---------------------------------------|
| 1. Engine compartment drainage outlets (2 pcs) | 5. Open space drainage shut-off valve |
| 2. Engine compartment drainage shut-off valves | 6. Open space drainage outlet         |
| 3. Bilge pump drain                            | 7. Bilge space drain plug             |
| 4. Electric/automatic bilge pump               | 8. Non-return valve                   |

It is the boat owner's responsibility to keep a hand pump, bucket or at least a bailer on board.

**NOTE!**

A small amount of condensation always accumulates in the bilge. The fittings may also allow a small amount of water to pass through, especially as the boat ages. Always check the bilge before leaving the boat at the dock or buoy and before setting out on the water. Have any leaks repaired by an authorised service centre.

**WARNING!**

The bilge pump system is not designed to control leaks caused by hull damage resulting from grounding or other damage.

**NOTE!**

Check regularly that there is no debris at the end of the bilge pump suction hose. You can check the electric bilge pump by removing the service hatch in the engine compartment.

**WARNING!**

The maintenance hatch at the bottom of the engine compartment must be closed carefully so that it screws into place properly, and

the hatch must also be tightened securely. A carelessly closed hatch can lead to serious leakage.

**WARNING!**

Always close the drain pipe when its inner end is constantly below the waterline due to the load. The shut-off valve in the transom prevents water from entering only when reversing!

**NOTE!**

Ensure that water can flow freely out of the drain pipe. Any debris, such as autumn leaves, can prevent water from flowing, which can cause the boat to fill with water and sink. The drainage system does not work in freezing conditions.

**WARNING!**

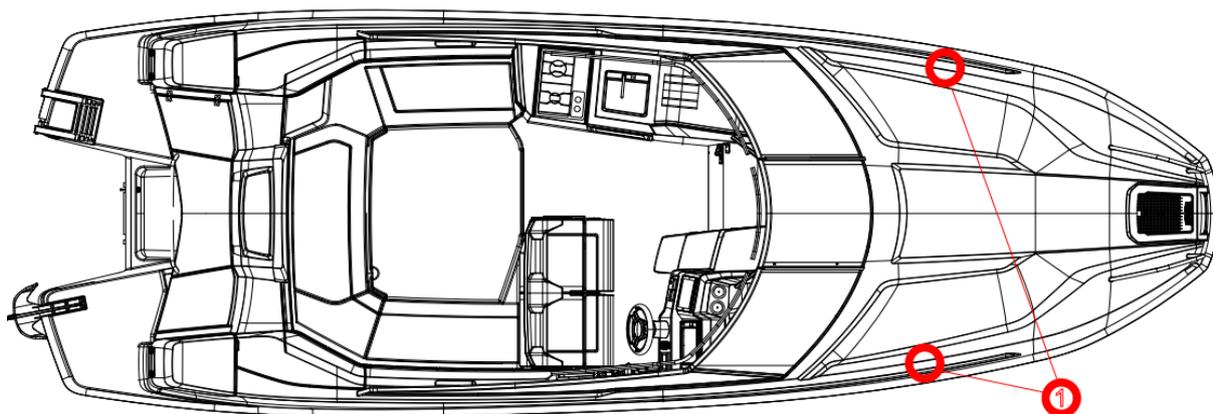
The boat's handling characteristics can become life-threatening if there is water in the boat's intermediate floor.

### 5.5.1 Stability and buoyancy

Please note that the stability of the boat is reduced by any additional weight added to the top of the boat. Any changes in the distribution of weight can significantly affect the stability, handling and performance of the boat. However, please remember that large breaking waves always pose a serious threat to stability.

### 5.5.2 The hull windows

The hull windows of the boat must be kept closed while the boat is in motion. Also close the hull windows when leaving your boat at a jetty or buoy. In rough weather, hatches, lockers and doors must be kept closed to minimise the risk of flooding.



**Figure 5.** Side windows must be kept closed while driving 

## 5.6 Prevention the risk of fire or explosion

### 5.6.1 Refuelling

Before refuelling, switch off the engine, gas stove and, of course, cigarettes. During refuelling, do not use any devices that may cause sparks.

If the nozzle kicks back while refuelling, you must turn the nozzle at least 20 degrees so that the spray does not hit the chain mounting bolt directly.

Tip: If you are afraid that petrol will splash onto the synthetic teak deck while refuelling, it is a good idea to wet it with water before refuelling. You can also place a cloth over the filler neck to prevent petrol from splashing onto the deck.

Always carry spare fuel with you. Store spare fuel cans in the rear anchor boxes, not in the rear seat storage compartments (for fire safety reasons).

Do not store loose items under the rear seat that could block the fuel supply to the engine if they move. Check the fuel lines annually, especially at the feed-through points, for wear.

Please note that the full capacity of the tanks may not always be available, depending on the trim or heel angle of the boat.

**WARNING!** Vapourised fuel is highly explosive. Exercise extreme caution and follow these instructions when refuelling. The smell of fuel always indicates that there is vapourised fuel in your boat.

### 5.6.2 Other fuel-burning systems (gas stove and diesel heater)

The gas stove and diesel heater (optional) have separate operating instructions and are therefore not described in detail in this user manual. The heater's fuel tank is located in the storage compartment on the left side of the rear seat (under the plywood panel). When refuelling the diesel tank, switch off the heater. Do not use switches or devices that may cause sparks when handling gas or diesel. Clean up any spilled fuel immediately.

Light the gas stove with a match or cigarette lighter.

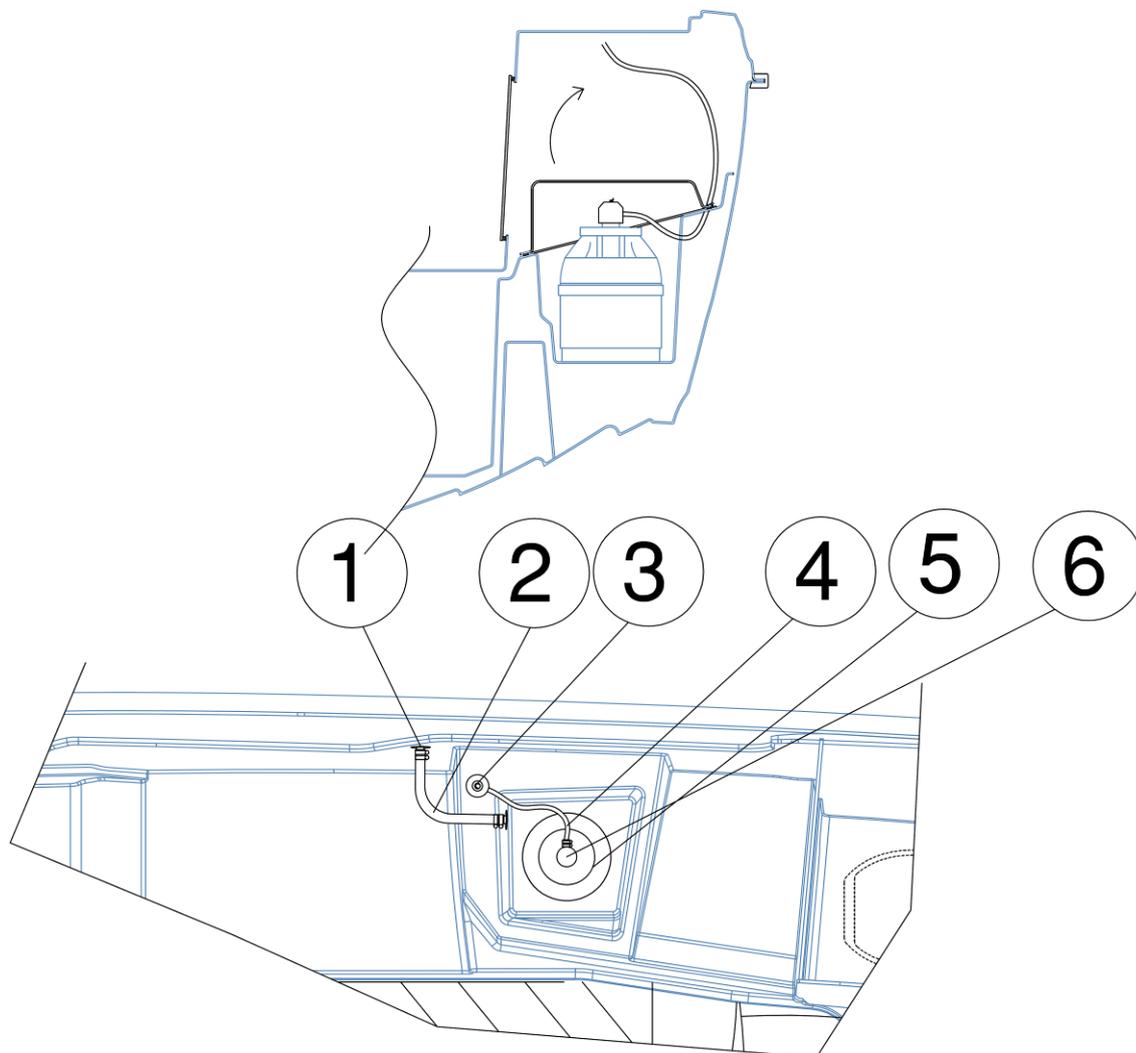
**NOTE!** Only use liquefied petroleum gas, which is propane or a mixture of propane and butane, in gas stoves.

**NOTE** Always keep the gas compartment door closed. The gas compartment is ventilated to the outside air through the side of the boat. A possible gas leak does not pose a danger to those on board when the gas compartment door is properly closed.

**NOTE** Always close the gas cylinder valve when leaving the boat.

**NOTE**

When cooking, use potholders if there is even the slightest risk that the boat may be exposed to waves.



**Figure 6.** Gas stove

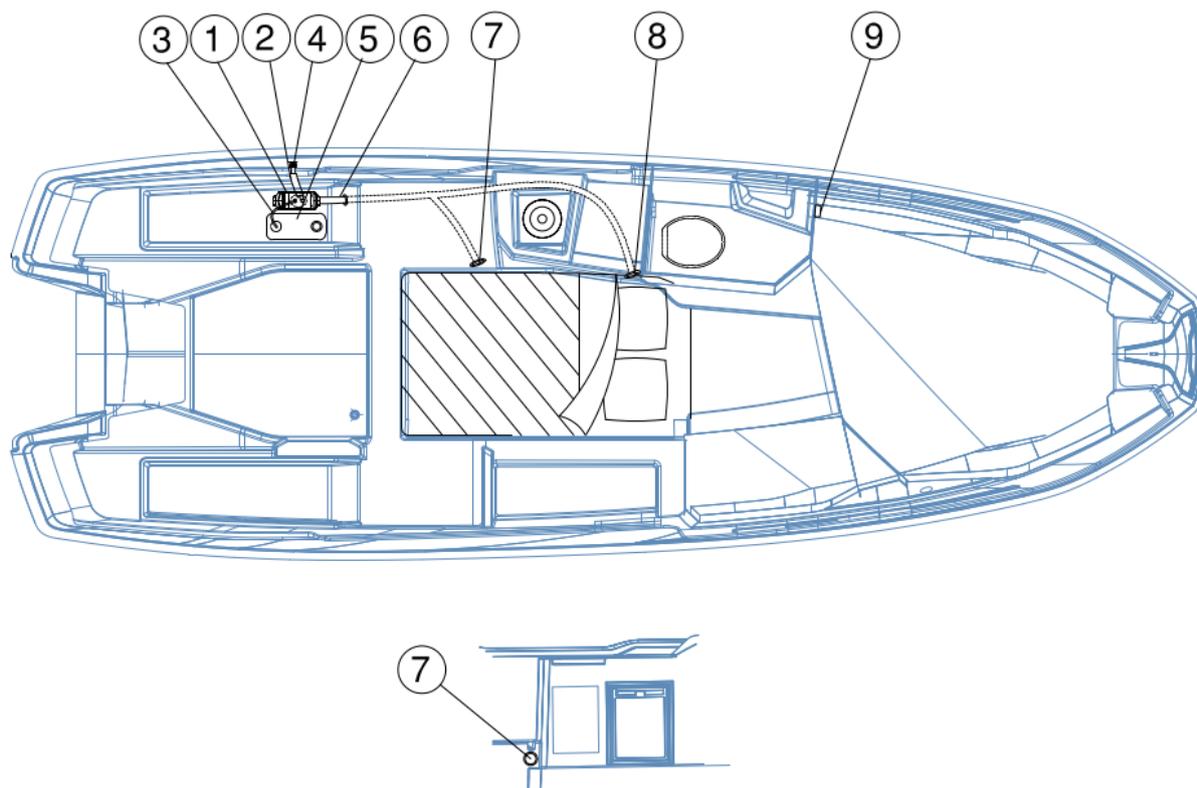
- |                                    |  |
|------------------------------------|--|
| 1. Hull penetration                | 4. Gas hose                                |
| 2. Gas cylinder ventilation hose   | 5. Gas cylinder (5 kg composite, optional) |
| 3. Gas hose connector to the stove | 6. Low pressure regulator                  |

**NOTE!**

When lowering the stove cover, there must be nothing on the stove that could get caught. When the boat is moving, the gas stove cover must be lowered, and the sink cover must be in place.

**NOTE**

If you use potholders, remove them before closing the stove cover.



**Figure 7.** Heating system (optional)

- |                              |   |
|------------------------------|---|
| 1. Heater (Webasto)          | 6. Air hose                               |
| 2. Exhaust pipe              | 7. Air vent to open space                 |
| 3. Fuel hose                 | 8. Air vent to cabin                      |
| 4. Exhaust pipe feed-through | 9. Control switch / temperature regulator |
| 5. Fuel tank                 |   |

**NOTE**

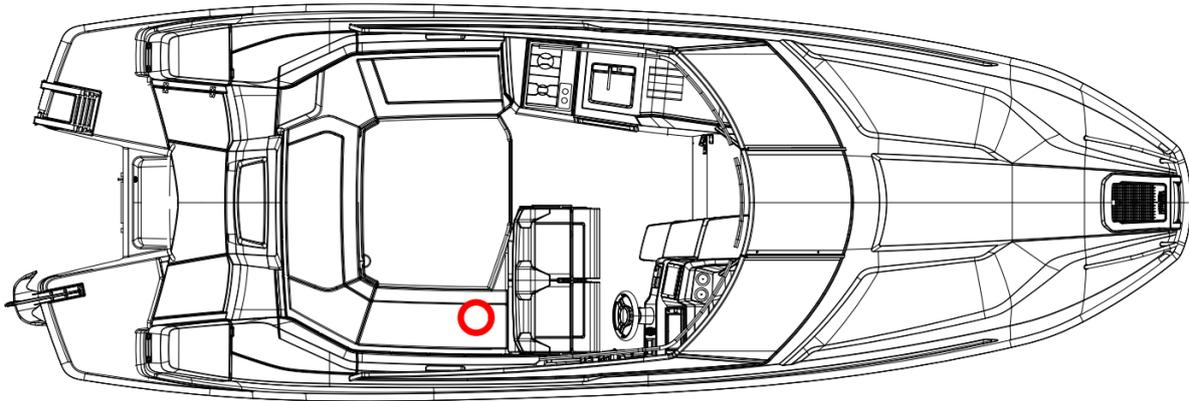
If a heater (optional extra) is installed in the boat, do not block the air vents when the heater is on, as this will cause the heater to overheat and the overheating protection may be activated.

### 5.6.3 Fire protection

The boat is equipped with a 2 kg hand-held fire extinguisher, class 13A 89B C. To ensure that the extinguisher is in working order, it must be inspected once a year by an authorised inspector. If the hand-held fire extinguishers are replaced, they must be replaced with hand-held fire extinguishers with at least the same extinguishing capacity as the old ones.

Ensure that fire extinguishing equipment is easily accessible even when the boat is loaded. Inform all crew members of the location and operation of firefighting equipment. The fire extinguisher is located in the storage compartment of the right-hand seat in the open space, immediately behind the driver's seat.

### Location of the hand-held fire extinguisher



**Figure 8.**

○ Hand-held fire extinguisher

### Never

- block access to safety equipment, such as electrical system switches
- block access to hand-held fire extinguishers stored in storage spaces
- leave the boat unattended when the stove is in use
- modify any of the boat's systems (especially the electrical or fuel systems) or allow an unqualified person to make modifications to any of the boat's systems
- fill any fuel tanks while the equipment is in use
- smoking when handling fuel or gas.

## 5.7 Main switches and fuses

### Main switch operation:

- The switch shows a green colour -> circuit connected (in the picture, the power is turned on)
- Switch shows red colour -> circuit disconnected

Turn off both main switches when leaving the boat and always turn both on when using the boat.



**Figure 9.** Main switches and fuses

- |                                      |  |
|--------------------------------------|--|
| 1. Main power switch                 | 5. Rear anchor winch (optional) fuse     |
| 2. Main switch for operating current | 6. Refrigerator direct feed switch*      |
| 3. Fuse panel                        | 7. Heater (optional) direct feed switch* |
| 4. Bow thruster fuse                 |  |

\*Switched on when the button is pressed.

Do not switch off the direct supply if you want the refrigerator or heater to operate during your absence. The refrigerator (Refrigerator F1) is number 6 and the heater (Heater F2) is number 7.

The circuit breakers are located above the main switches. The sizes of the circuit breakers are also shown in the electrical diagram. Do not change the amperage ratings of the circuit breakers or install components in the electrical system that exceed the rated amperage of the circuit.

All fuses (except for the bow thruster and anchor winch) are automatic fuses. In the event of a fault current, the automatic fuse trips and remains off. You can "reset" the fuse by pressing it back in. If the fuse trips again, there is a short circuit in the electrical system or in one of the components. Repairs to the boat's electrical system must be carried out by a qualified electrician.

**NOTE!** Also switch off the power when carrying out electrical installations.

**NOTE** Never turn off the power at the main switch while the engine is running! This may damage the engine's electrical system.

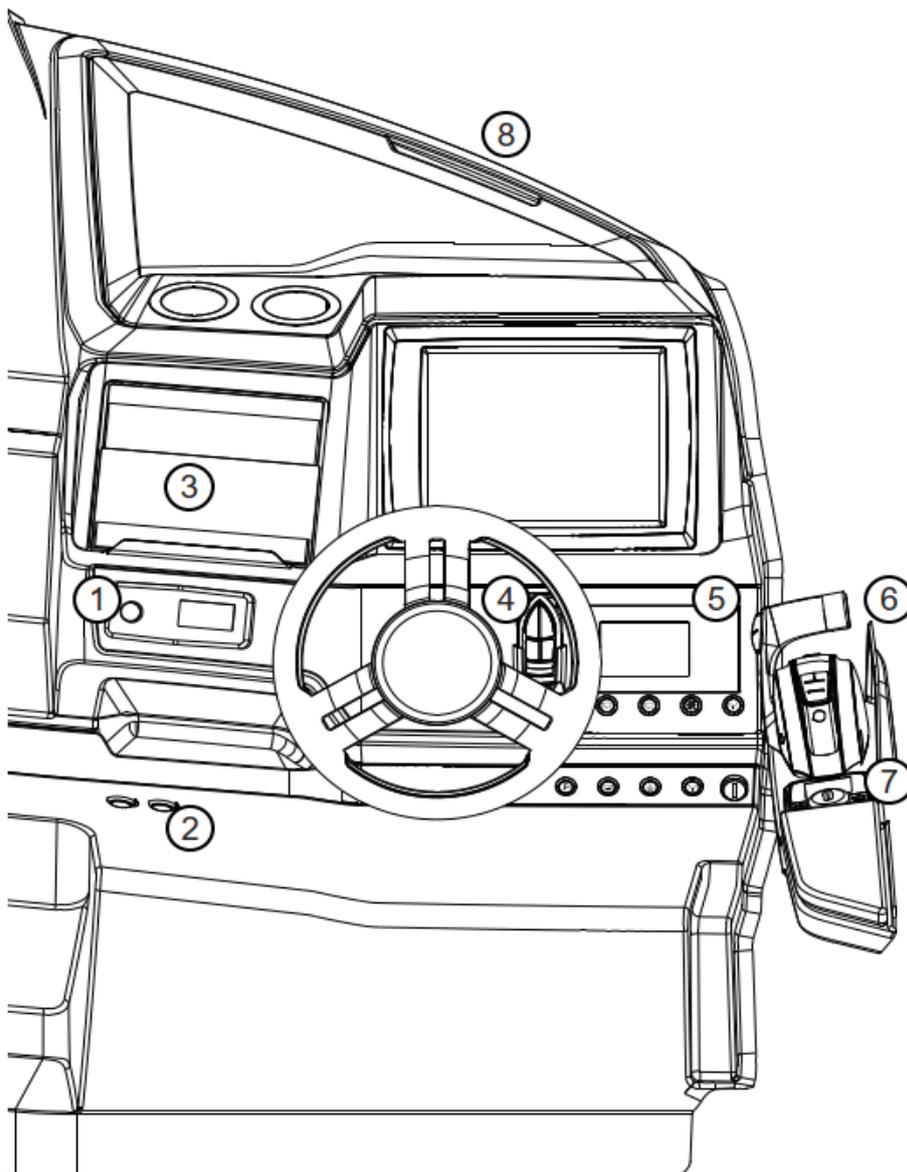
**NOTE!** Do not carry out electrical installations while the power is on. Have larger electrical installations carried out by a professional.

**WARNING!** When disconnecting or connecting batteries, be careful not to touch both terminals of the battery with a metal object at the same time.

## 5.8 Operation

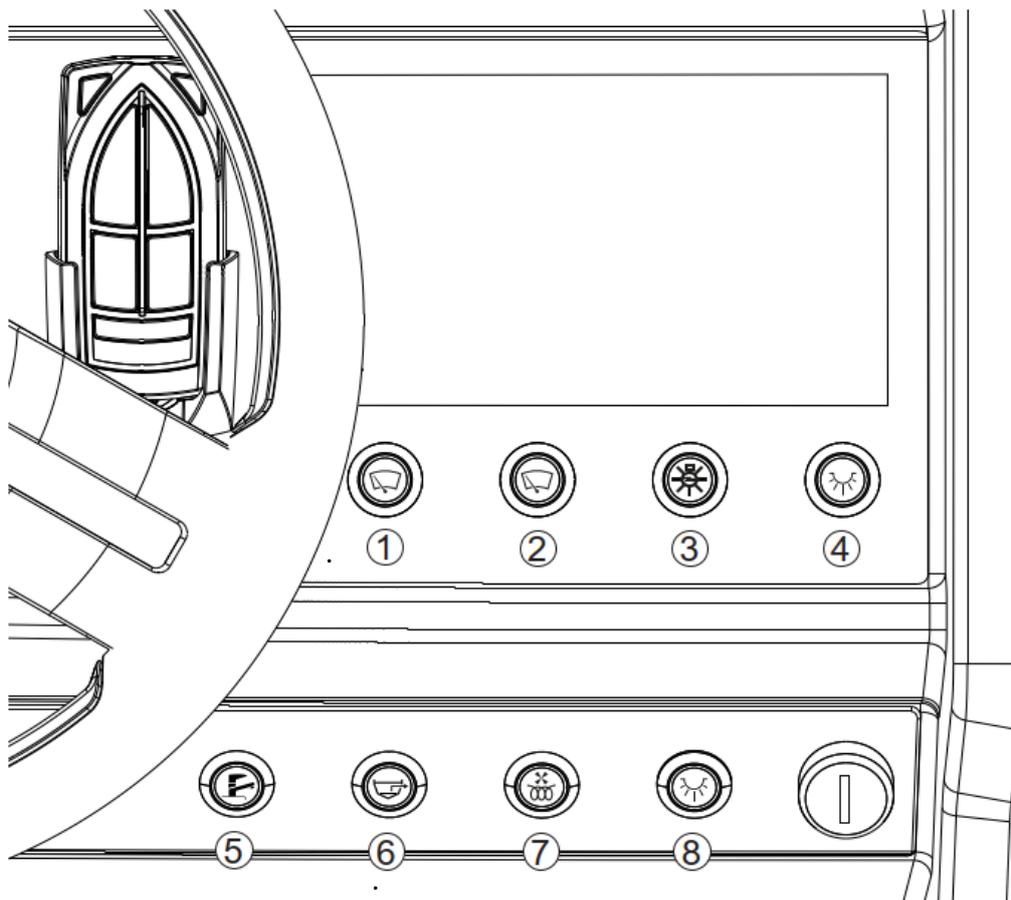
### 5.8.1 Controls

Controlling the boat is easy to learn but changing conditions such as wind and waves constantly present the driver with new situations. The remote-control device combines throttle, forward and reverse gears, and engine trim angle adjustment. The boat is equipped with hydraulic steering.



**Figure 10.** Controls

1. Radio
2. 12 V – standard and USB
3. Tablet holder / glove compartment / inside the hatch is the hydraulic steering oil filler
4. Remote control for bow thruster and stern anchor winch (optional)
5. Outboard motor gauges/devices
6. Remote control for outboard motor
7. Mente Marine automatic trim system control panel
8. Defrosting nozzle



**Figure 11.** Control console buttons

- |                        |                             |
|------------------------|-----------------------------|
| 1. Windscreen wiper BB | 5. Pressure water pump      |
| 2. Windscreen wiper SB | 6. Bilge pump               |
| 3. Navigation lights   | 7. Windscreen defroster fan |
| 4. Deck lights         | 8. Search light/ bow light  |

### 5.8.2 Emergency switch

A safety switch is a device with one end attached to a switch located under the remote-control unit and the other end attached to, for example, a life jacket. The safety switch automatically shuts down the engine when it is disconnected from the switch on the

remote-control unit. It is extremely important that the boat stops if, for some reason, the driver loses their balance and is thrown from the helm.

**NOTE!** Never operate the boat without attaching the safety switch to yourself. If you attach the safety switch to your arm, do not steer the boat with that hand, as the chain may get caught in the steering wheel during sharp turns.

**NOTE!** The engine will not start unless the safety switch is attached to the switch on the remote control.

**DANGER!** A rotating propeller is life-threatening to anyone who has fallen into the water or is swimming. Use the emergency stop switch and turn off the engine whenever a swimmer or water skier boards the boat.

### 5.8.3 Gears and throttle

You can engage the gear by pressing the button on the gear/throttle lever with your fingers pointing upwards and pushing or pulling the gear/throttle lever forwards or backwards, depending on which direction you want to move in. Once the gear is engaged, you can adjust the speed of the boat using the same gear/throttle lever.

When the boat is moving slowly forward, reverse can be used as a brake, for example when approaching a jetty. Reverse gear must not be engaged when the boat is moving slowly forward. This will damage the engine.

### 5.8.4 Adjusting the engine trim angle

The basic rules for adjusting the engine trim angle are as follows:

- When lifting the boat into a glide, keep the bow down.
- When the boat is gliding and the waves are small, raise the bow until the engine and boat are running smoothly. If the engine is trimmed too high, the boat's speed will decrease. If you drive with too little trim, the boat will move slowly, and the engine will run heavily. To achieve good fuel economy, it is important to drive with the correct engine trim (= correct trim angle).
- In heavy head seas, lower the bow to soften the ride.
- In following waves, raise the bow so that it does not "dive" into the waves.

**WARNING!** Do not drive the boat at high speeds with the engine trimmed up (= bow up) as there is a risk that the boat will tilt sharply when the propeller hits the water after flying through the air in heavy waves. Similarly, do not drive at high speeds with the engine trimmed completely negative (= bow down), as this may cause the boat to tilt unexpectedly when the bow hits the water. If the bow is too low, instability may occur when turning.

The boat is equipped with Mente marine -automatic trim system. Using the trims manually while driving, especially in rough weather, adds unnecessary challenges to driving. The trim levels are used to adjust the boat's position according to the conditions. The correct position keeps engine consumption as low as possible.

The system can also be used in the same way as manual trims to find the desired running position for the boat. Once the correct position has been found, it can be locked into memory, and the automatic system takes care of the rest.

Pressing the Auto button (*Figure 12*) activates the trim tabs automatically.



**Figure 12:** Mente marine - control panel buttons

The Mente Marine automatic trim system does not control the outboard motor trim. The outboard motor trim should be used in the same way as on a boat without an automatic trim system.

**WARNING!**

If you are using the trims manually, adjust the trim controls carefully at high speeds. They will change the boat's handling dramatically.

**WARNING!**

Waves reduce the boat's manoeuvrability and cause it to tilt. Take this into account by reducing speed as the waves increase.

### 5.8.5 Starting the engine

1. Turn on the power using the main power switch. Always turn on both the engine battery (Start) and the auxiliary switch (Aux).
2. Lower the engine to the running position by pressing the Trim switch on the gear/throttle lever down with your thumb.
3. Check that the gear/throttle lever is in the neutral position and that the safety switch is connected to the remote-control switch.

4. Turn on the power without starting the engine and wait a few seconds for the warning lights to come on.
5. Start the engine by turning the ignition key clockwise until it starts. The engine should start within 1-2 seconds. If the engine does not start, do not continue starting for more than 10 seconds at a time.
6. Once the engine has started, let it idle for a few minutes before driving off. (See the engine manual!)

More detailed operating instructions can be found in the engine manual.

### 5.8.6 Driving

Driving in fair and calm weather is easy. However, remember that adequate visibility is essential. To ensure the best possible visibility from the driver's seat:

- position passengers so that your field of vision is not restricted
- do not drive near planing speed for long periods, as the bow will rise and obstruct your view
- in poor visibility, look over the windscreen
- especially on shipping lanes, remember to also look behind you

Use your running lights when it gets dark

Always adjust your speed to the prevailing conditions and the environment. Take following into account:

- waves (also ask passengers for their opinion on a comfortable speed)
- your own wake (largest when planing, smallest at displacement speed, i.e. less than 5 knots)
- visibility (islands, fog, rain, glare from the sun)
- knowledge of the route (time needed for navigation)
- narrowness of the route (other watercraft, noise and wake waves on the shores)
- make sure you always have enough distance to avoid a collision, which is sufficient to stop or swerve.

When travelling slowly, a planing boat has poorer directional stability than at higher speeds. Therefore, be careful in narrow areas and especially when encountering other boats.

The boat's running position has a significant impact on handling characteristics, as well as fuel consumption and visibility from the helm. You can affect the running position by

- placing the load properly. The general rule is to keep as little weight as possible in the bow.
- adjusting the engine trim angle

The correct trim position combined with the appropriate speed also makes driving in waves more comfortable and safer.

**WARNING!** High speed and sudden steering manoeuvres in high waves can cause you to lose control of the boat, high tilt angles, and result in serious injury or death.

**NOTE!** The boat is not designed to be bounced on waves in such a way that it completely leaves the water. The warranty does not cover damage caused by airborne flight. Possible airborne flights can be checked from the engine history using a computer.

### 5.8.7 Approaching and departing from the dock

Practise handling the boat when approaching the dock in a place where there is plenty of space before driving your boat into a narrow harbour for the first time.

Very cautious throttling does not provide the necessary steering power. Effective steering manoeuvres when approaching the dock are achieved by using the throttle firmly but in short bursts.

Ensure that all persons on board who are not required to stand remain seated while you are manoeuvring the boat towards the dock. Sudden steering movements can cause the boat to tilt and result in injuries.

Before approaching the dock, prepare the mooring lines at the bow and stern. Approach the dock at a slight angle with the bow first. Just before touching the dock, turn the steering wheel towards the dock and shift into reverse. Accelerate briefly and sharply. The boat will stop and turn parallel to the dock. If possible, approach the dock into the wind or against the current, whichever is stronger. This makes it easy to continue your journey when the wind or current pushes the boat away from the dock. The best way to pull away is to first push the stern as far away from the dock as possible. Then slowly reverse away from the dock into open water.

The propeller is designed to provide the best traction when moving forward. When reversing, the propeller's power is therefore weaker. The boat also does not respond to steering as well when reversing as when moving forward.

**WARNING!** The boat is fast. It will not stop immediately when you apply the brakes. Slow down in good time before approaching the shore or a jetty. Learn to estimate the distance required to stop the boat. Remember that the boat is difficult to steer when the engine is not running.

**WARNING!** Do not try to stop the boat by hand, and do not put your hands or feet between the boat and the jetty, shore or another boat! Practise landing in good conditions! Use engine power moderately but decisively!

**NOTE** When mooring your boat, take into account changes in wind

direction, rising or falling water levels, stern waves, etc. Further instructions are available from insurance companies, among others.

### 5.8.8 Using the canopy

The boat cover consists of three parts: two side panels and one rear panel. The canopy is installed by fastening it at the top with a zip and at the bottom with fastening pins. The canopy can be stored in the canopy compartment inside the rear backrest.

**NOTE!** The boat should not be used in the rain without a cover. The equipment in the open area of the boat is not watertight and must be protected from rain.

**NOTE!** The windscreen and cover may not be completely waterproof. When the canopy is on, water may enter the boat between the canopy and the windscreen.

### 5.8.9 Windscreen door

The windscreen door must always be kept closed and locked when the boat is in motion. The door is not designed to be used as a handrail when entering or exiting the boat.

**WARNING!** When sailing, in strong winds or gusts, the door must be kept closed, as there is a risk that the door may slam shut on its own. The door is heavy and may cause personal injury if it hits a person when it slams shut.

**WARNING!** When the boat is stationary, large waves or gusts of wind can cause the door to slam shut unexpectedly. For this reason, it is advisable to keep the door always closed when not travelling via the foredeck.

### 5.8.10 Stairs, sharp corner of the windscreen and cabin door

Great care should be taken on the stairs, especially if the cabin door is open.

**NOTE!** When moving around the boat, lock the cabin door with the locking latch, otherwise the door may close at high speed.

**WARNING!** Be careful of the upper corner of the left windscreen when climbing the stairs, so that your head does not hit the sharp corner.

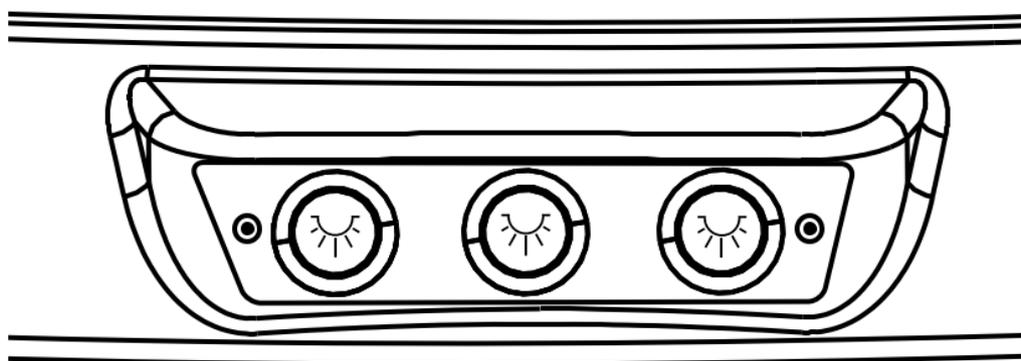
The front anchor box hatch is equipped with a rubber band that keeps the hatch closed while driving.

**WARNING!**

The hatch is not recommended for use by children, as their fingers or toes may get caught.

### 5.8.11 Cabin lights

The picture below (*Figure 13*) shows the cabin light switch located on the cabin ceiling.



**Figure 13.** Cabin light switches

1. Left switch – LED light on the left side
2. Right switch – LED light on the right side
3. Middle switch – toilet light switch. To turn on the toilet light on the back wall, touch it with your finger.

### 5.8.12 Electric fabric ceiling

The boat has an electric motor-operated fabric ceiling. The system includes two remote controls and two control switches for operating the ceiling.

The remote control (*Figure 13.1*) activates the electric fabric ceiling.



**Figure 13.1** Remote control for powering the roof hatch.

When using the roof hatch, activate it by pressing the ON button on the remote control. When the roof hatch is not in use, deactivate it by pressing the OFF button.

The operating switches (Figure 13.2) are used to open and close the roof hatch.



Figure 13.2 Location of the control switches

The operating switches are used to open and close the sunroof. The sunroof is not completely watertight.

**NOTE!** The boat should not be used in the rain with the roof open. Equipment in the open area of the boat is not watertight and must be protected from rain.

**NOTE** When the roof hatch is not in use, remember to switch it off. There is a risk of the batteries running down.

**NOTE** The roof hatch is not completely waterproof.

**NOTE** Driving speed and wind conditions may cause the open fabric roof to flap. Flapping may damage the roof. Adjust the position of the fabric roof to avoid damage.

## 5.9 Correct use – other recommendations and instructions

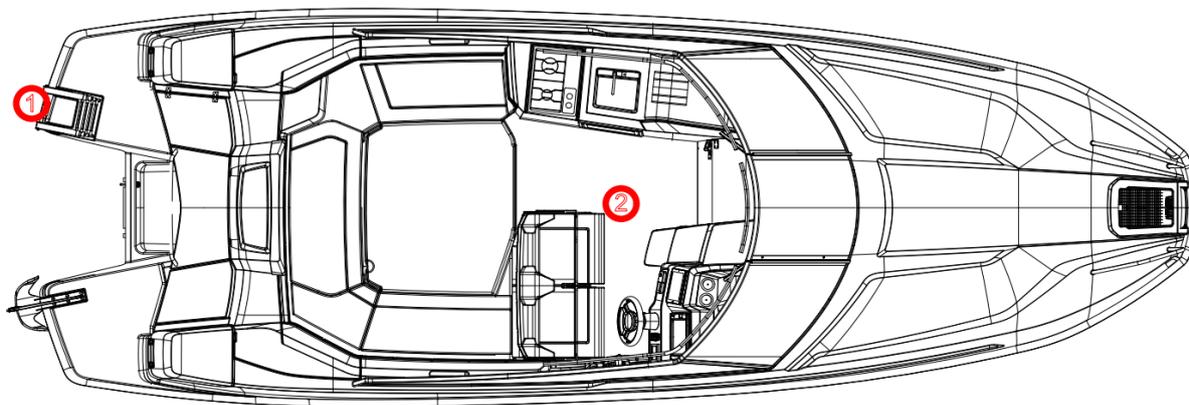
### 5.9.1 Man overboard

Man overboard – this is always a serious situation. It is advisable to practise this in advance in good weather, as there will be no opportunity to do so in the event of an accident.

A person who has fallen from a boat into the water should always be helped back into the boat from the stern. A rope loop attached to the boat makes lifting easier. The boat's swimming ladder extends approximately 55 cm below the waterline. If a child has fallen into

the water, an adult must always jump in after them, taking extra life jackets or a flotation device with them, but someone must also remain in the boat.

It is very important to maintain eye contact and verbal communication with the person who has fallen in.



**Figure 14.** 1. Swimming ladder 2. Place on the life raft

### 5.9.2 Storage of life raft

The life raft is stored under the deck as shown in *Figure 10*. The maximum weight of the life raft is 28 kg.

#### **DANGER!**

The rotating propeller is life-threatening to anyone who has fallen into the water or is swimming. Use the emergency stop switch and always turn off the engine when a swimmer or water skier boards the boat.

### 5.9.3 Securing loose equipment

Secure all heavy equipment, such as anchors, in place before departure.

### 5.9.4 Bow cabin sliding door

#### **NOTE**

The cabin sliding door must be kept closed while driving.

### 5.9.5 Respect for the environment

The Finnish archipelago and lakes are unique, and preserving their natural environment is a matter of honour for boaters. Therefore, avoid

- fuel or oil spills
- disposing of rubbish or waste in the water or leaving it on the shore
- discharging detergents or solvents into the water
- loud noise both on the water and in harbours
- unnecessarily high wake, especially in narrow or shallow waters

Maintain your engine well and drive at an economical speed, which will also keep exhaust emissions will remain low.

Everyone who spends time in nature is covered by the so-called everyman's right, which allows them to move around on other people's land without causing damage or disturbance, except in yards. This right also allows movement on waterways and temporary anchoring, swimming and landing on uninhabited shores, unless this is specifically prohibited by official regulations. Anchoring next to inhabited shores is prohibited. It is also prohibited to moor at another person's jetty or inhabited shore without permission.

Familiarise yourself with the international rules for the prevention of marine pollution (MARPOL) and respect them as much as possible.

You may camp on islands unless it causes damage to the landowner. Camping is prohibited near yards and farmland. You may only light a campfire with the landowner's permission. Boaters may also pick wild berries and mushrooms, as long as they do not damage trees or nature. Check the rules for outdoor activities in your area.

### 5.9.6 Use of toilets and septic tanks

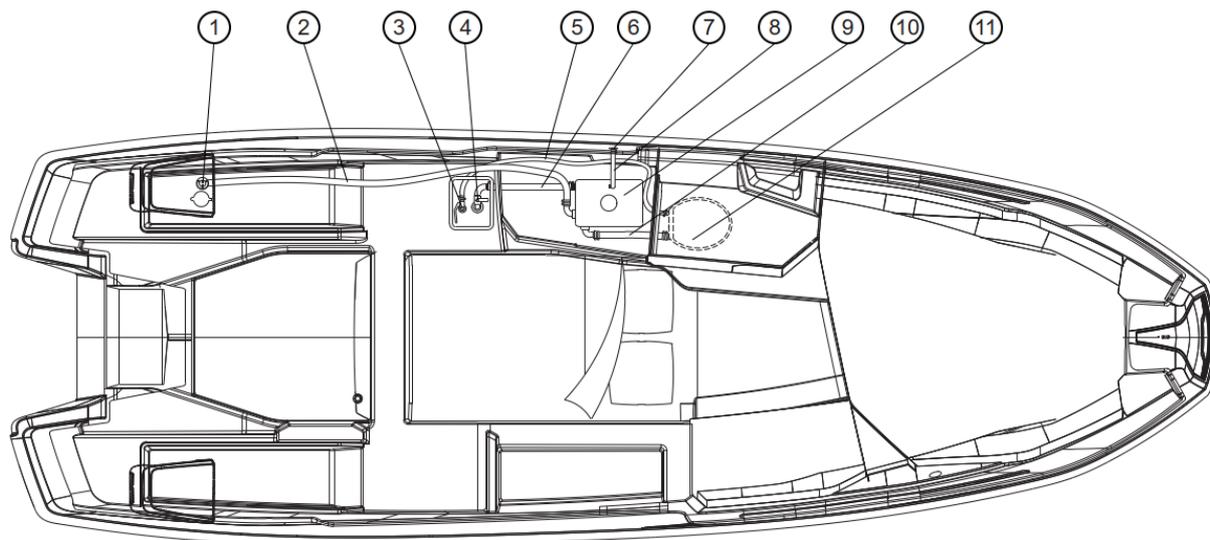
The toilet uses sea or lake water for flushing. When flushed, the waste goes into the septic tank. The flush water shut-off valve is located under the maintenance hatch in the floor of the storage space on the left-hand side (BB) of the open space. In normal use, the valve can be kept open.

The toilet is flushed using an electric pump. The push button is located on the rear wall of the toilet.

The septic tank (= toilet waste tank) has a capacity of 30 litres and is located under the refrigerator. The suction drain cover complies with standard ISO 8099 and is located under the hatch of the rear anchor box on the left (BB) side.

**NOTE!**

There is a latch at the bottom of the toilet door, which must be kept locked during driving.



**Figure 15.** Septic system

- |   |  |
|---|--|
| 1. Septic tank suction drain                      | 7. Septic tank vent pipe                 |
| 2. Septic tank suction drain hose                 | 8. Septic tank vent hose                 |
| 3. Toilet flush water inlet                       | 9. Septic tank                           |
| 4. Septic tank sea discharge valve                | 10. Hose from toilet seat to septic tank |
| 5. Toilet flush water inlet hose                  | 11. Toilet seat                          |
| 6. Hose for emptying the septic tank into the sea |  |

The septic tank filling cap is marked WASTE, which means toilet waste.

Empty the septic tank at marinas using their suction equipment.

The valve for emptying the septic tank into the sea is located under the maintenance hatch at the bottom of the storage space on the left-hand side (BB) of the open space.

The septic tank sea discharge valve must be kept closed under normal circumstances, as the discharge of untreated toilet waste into the sea or lakes in Finnish territorial waters is prohibited under the Ship Waste Act.

Mildly alkaline general-purpose cleaning agents can be used to clean the septic tank and associated hoses, etc. Glycol can be used as an antifreeze agent. However, when stored in freezing conditions, the system should be as empty as possible.

### 5.9.7 Mooring and anchoring your boat

Always moor your boat carefully in a sheltered place, as conditions can change quickly. Mooring ropes should be equipped with shock absorbers to dampen jerks. See the mooring points in the section on towing. Use sufficiently large fenders to prevent chafing.

The forward strength of the bow cleats is at least 23 kN, or approximately 2,300 kg. Similarly, the backward strength of the stern cleats is 16.0 kN, or approximately 1,600 kg.

The boat must be equipped with an anchor weighing 7.5 kg or more. Lower the anchor far enough from the shore. Reasonable holding power is achieved when the rope is 4-5 times the depth of the water.

**WARNING!** Do not attempt to stop the boat with your hands, and do not place your hands or feet between the boat and the jetty, shore or another boat.

**NOTE!** When mooring your boat, take into account changes in wind direction, rising or falling water levels, stern waves, etc. Further instructions are available from insurance companies, among others.

### 5.9.8 Towing

When towing another boat, use a sufficiently strong, buoyant tow rope. Start towing carefully, avoid jerks, and do not overload the engine.

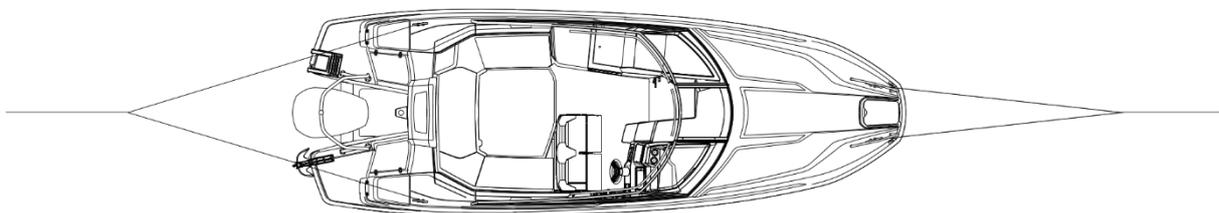
The boat owner must consider what measures are necessary to secure the boat's tow rope.

When towing or if your boat needs to be towed, attach the tow rope to the stern or bow bollards as shown in the picture.

**WARNING!** The tow rope is under high tension. If it breaks, the broken end may reach life-threatening speeds. Always use a rope that is thick enough and do not stand in the line of the rope.

**NOTE!** When towing or being towed, always use low speed. If you are towing a boat with a displacement hull, never exceed the hull speed.

**NOTE** The tow rope must always be attached in such a way that it can be detached under load.



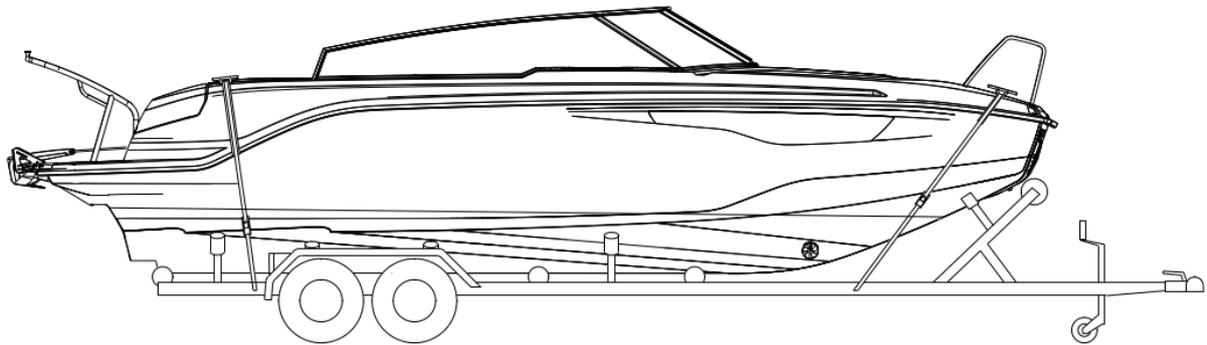
**Figure 16.** Attaching the tow rope to the bollards

### 5.9.9 Trailer transport

Weight information for trailer transport can be found in the technical specifications. The trailer's keel supports should carry most of the boat's weight. Adjust the side supports so that the boat cannot sway sideways. If necessary, ask your dealer for more information on the correct support method and trailer size.

Clean any sand and dirt from the supports so that they do not scratch the bottom. Check once again that the trailer and car tow bar are securely locked!

The lifting site must be sheltered, and the trailer ramp must extend deep enough. Drive the trailer deeply that the rear keel support is just below the waterline. Carefully drive the bow of the boat onto the rear keel support. Attach the winch cable/rope to the towing eye and reel the boat onto the trailer, making sure that the boat remains straight and always centred on the trailer. To prevent the engine from hitting the bottom, remember to trim the engine up before lifting the boat onto the trailer.



**Figure 17.** Securing the boat to the trailer

Secure the boat firmly to the trailer before starting transport. The bow straps should be oriented "down and back" and the stern straps "down and forward". Do not leave any loose items or excess load in the boat during transport. Remove the seat cushions and close all hatches securely.

The engine should be in the running position during transport. However, ensure that there is sufficient ground clearance. If there is insufficient ground clearance in this position, the engine can be transported in a tilted position. In this case, it must be supported with a suitable support device to protect the transom.

If the boat is stored on a trailer between transports, the straps must be loosened for storage and tightened before the next transport.

**NOTE!**

The trailer should be slightly front-heavy. Ensure that the boat is securely fastened to the trailer and that the weight of the boat is evenly distributed on the side beams. If a swaying boat hits a single support during transport, the hull may be damaged. When lowering the boat from the trailer, remember to attach the bow rope to the boat in advance so that you can remove the trailer cable/strap from the towing eye as soon as the boat is in the water. Beware of the winch handle!

### 5.9.10 Docking

The winter storage cradle must be strong enough for the specific boat/engine combination. A strong plank (e.g. 2x4") should be placed between the V-blocks to support the keel and carry most of the boat's weight. The side supports must not support the boat. The side supports must not touch the corners at the bottom and point loads must be avoided. The support structure must be strong, especially near the transom, so that it can also bear the weight of the engine.

Only entrust the lifting to a reliable crane company or boat yard with sufficient lifting capacity. In addition to the boat's own weight (see technical specifications), take into account the equipment and other loads on the boat.

When lifting the boat, place slings under the bottom and ensure that the boat remains horizontal during lifting.

**NOTE!** The boat must not be lifted by its keel.

**DANGER!** Do not go under the boat when it is suspended from the crane.

## 6 Maintenance of the boat and equipment

Keep your boat and its equipment clean and tidy. This will increase comfort and safety, as well as the resale value of the boat.

Familiarise yourself with the maintenance procedures described in the engine manual. Service your engine according to the engine manual.

### 6.1 Washing and waxing the boat

Washing and waxing is usually sufficient for the deck and sides. Special boat cleaning agents are best suited for washing. Use mild cleaning agents. Do not use strong solvents (pH value must not exceed 11), as they may dull the shine of reinforced plastic surfaces. You can use mildly abrasive polishing agents to remove scuffs or stubborn dirt. Fibreglass surfaces can be washed with a pressure washer.

General tip: When washed with tap water, a thin, chalky layer of limescale and minerals remains on the boat after it dries, due to the hardness of the water. This can be removed by adding a few drops of pine soap solution to a bucket of rinse water.

General tip: If your boat ropes smell bad after the season, soak them for a couple of hours in a bucket of water with a bottle of apple cider vinegar and a dash of fabric softener. Let them dry thoroughly and they will be like new.

### 6.2 Care instructions for seat cushions

Always protect the open area of the boat and the cushions in the open area from rain with a canopy or harbour cover. Even though the seat cushions and driver's seat are made of water-resistant material, their seams allow water to pass through. If the cushions remain damp for a long time, they will become mouldy and ruined. If the cushions get wet, the fabric can be removed by opening the zip on the cushion and dried, for example, in the sun, at room temperature or in a sauna (50 °C). The warranty does not cover seat cushions that have been damaged by rain or moisture.

**NOTE!** To keep the boat's seat cushions in good condition over the winter, they should be stored in a dry and well-ventilated area.

**NOTE!** Wet cushions should not be placed in storage areas, as they will easily become mouldy easily.

The seat cushion snaps should be treated with silicone Vaseline from time to time, otherwise they may stick so tightly that the fabric may tear when removing them. The warranty does not cover damaged seat cushions. Apply a very small amount of silicone Vaseline at a time to prevent the cushions from becoming sticky.

### 6.3 Care instructions for the canopy

Store the canopy in a dry and well-ventilated place over the winter. The warranty does not cover damaged or mouldy canopies.

### 6.4 Windscreen care instructions

The boat's windscreen is made of tempered glass and can be cleaned with normal glass cleaning agents.

### 6.5 Care instructions for acid-resistant parts

To keep the boat's acid-resistant parts, such as railings, handles and bollards, bright and like new, the boat owner must keep the parts clean and waxed. The edges of the handrail mounting flanges should also be cleaned. Dirt that remains under the edge of the flange will gradually start to look like rust. If there is no damage, the parts should be cleaned and waxed at least twice during the summer. Handrail maintenance should also be carried out in the autumn when the boat is moved to winter storage.

General tip: Water spots and limescale stains can be removed from acid-resistant railings with Lemon Pled furniture spray or by treating them with half a lemon.

### 6.6 Care instructions for the electronic remote control

If you experience problems with the operation of the electronic remote-control device, have it serviced immediately by an authorised service centre.

### 6.7 Steering system maintenance instructions

Hydraulic steering normally requires no maintenance. If the steering becomes "loose", there is a leak in the system. The leak must be repaired immediately!

**WARNING!**

A hydraulic steering system with a leak or air in it is life-threatening.

### 6.8 Maintenance instructions for electrical components

Electrical components such as main power switches, all other switches and connectors do not normally require maintenance if the boat is stored in a dry and well-ventilated place during the winter. However, if you want to protect the boat's electrical components against oxidation, the best way to do this is to spray them with a moisture and corrosion inhibitor.

## 6.9 Minor surface repairs

You can repair minor surface damage to the hull or deck yourself. However, achieving a neat and inconspicuous result requires skill:

1. Protect the area around the repair with tape.
2. Sand the edges of the dent to a bevel and clean with acetone.
3. If the damage is more than 2 mm deep, fill it with filler before painting.
4. Mix 1.5-2% hardener into the topcoat.
5. Apply the topcoat to the area to be repaired so that the surface is slightly higher than the surrounding surface.
6. Carefully place tape over the repair.
7. Once the topcoat has hardened, remove the tape and, if necessary, sand the repair area smooth with 600 and 1200 grit wet sandpaper.
8. Polish the repair with polishing compound and wax.

The colours used on the boat are listed *in the technical specifications*. It is good to know that a paint called gelcoat is used in the manufacture of the boat, but afterwards the surface is always repaired with a paint called topcoat. Gelcoat paint does not harden without a mould surface, but paraffin has been added to the topcoat to enable hardening.

**NOTE!**

Certain retrofits and modifications, if done incorrectly, can damage the boat's structure or pose a safety hazard. Contact your dealer if you are planning to make any modifications to the boat.

## 7 Winter storage of the boat

Preparing your boat for winter storage is an annual routine. Lift your boat out of the water well before the ice sets in. Your boat is not designed for use in ice and is not intended for use in temperatures below 0 °C (e.g. the rainwater drainage system will freeze). When winterising your boat, it is a good idea to go through all maintenance, repair and inspection tasks.

Refer to the maintenance procedures in the engine manual. We recommend that you have this work carried out by an authorised service centre. Also remember to service the remote control and steering system. Carry out this maintenance in accordance with the separate instructions and manuals.

### 7.1 Measures to be taken before winter storage

Wash the bottom of the boat immediately after hauling it out of the water. Algae and slime are easiest to remove before they dry. Drain the cooling water from the engine according to the manual.

Perform winter maintenance on the engine and other equipment in accordance with the separate manuals. If you store your boat outdoors or in damp conditions over the winter, remove any textiles and other equipment that may become mouldy or otherwise damaged by moisture. Wash the ropes in fresh water. Replace worn ropes. Leave the through-hull valves open. Remove and leave the drain plug loose for the winter.

Empty the boat's septic tank and freshwater tank. Pour 2 litres of a 50% glycol/50% water mixture into the toilet bowl and press the flush button for about 2 seconds.

Check the condition of the hull and sand down any dents so that any moisture that may have penetrated the laminate can dry out. Repair any damage in the spring before launching the boat.

Remove all food from the boat and wipe down all surfaces that have come into contact with food with disinfectant. This will prevent mould from forming.

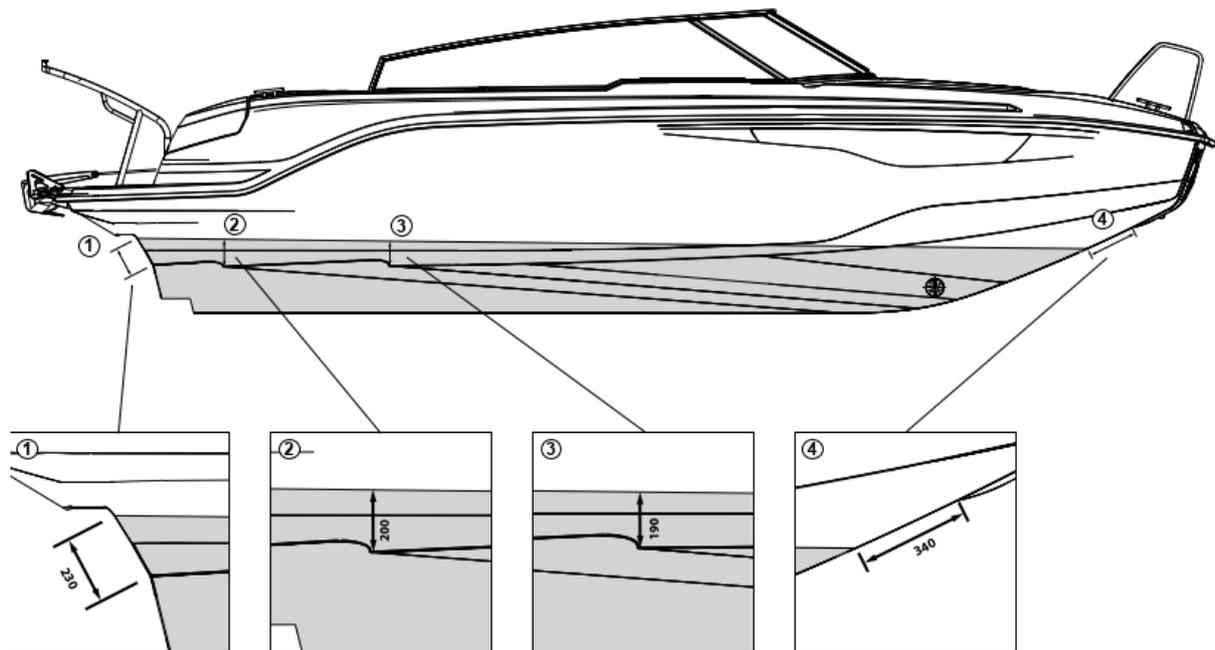
Cover your boat so that snow cannot accumulate inside it. However, always ensure adequate ventilation. A winter cover for your boat is available as an accessory.

### 7.2 Measures to be taken before launching in spring

Repair or have repaired any dents in the gelcoat in accordance with section 6.

In marine areas, prevent vegetation from attaching to the hull with antifouling paint. Fouling of the hull and especially the propeller significantly increases fuel consumption. When painting, carefully follow the paint manufacturer's instructions. If you are sanding off old toxic paint, remember that the resulting sanding dust or slurry is toxic.

Antifouling paint is not necessary in lake areas. However, we recommend using an epoxy primer if the boat is in the water for several months each year. Fresh water, especially warm fresh water, is more easily absorbed into laminate than sea water.



**Figure 18.** Upper line of antifouling paint

**NOTE!**

Do not paint zinc anodes or the piston rods of the engine spark hydraulic cylinders. Do not use copper-containing paints on aluminium parts. Follow the paint manufacturer's instructions.

General tip: Do not throw away used paint brushes. Hardened antifouling paint brushes can be restored by soaking them for a couple of hours in a mixture of two litres of hot water, one decilitre of vinegar and half a decilitre of baking powder.

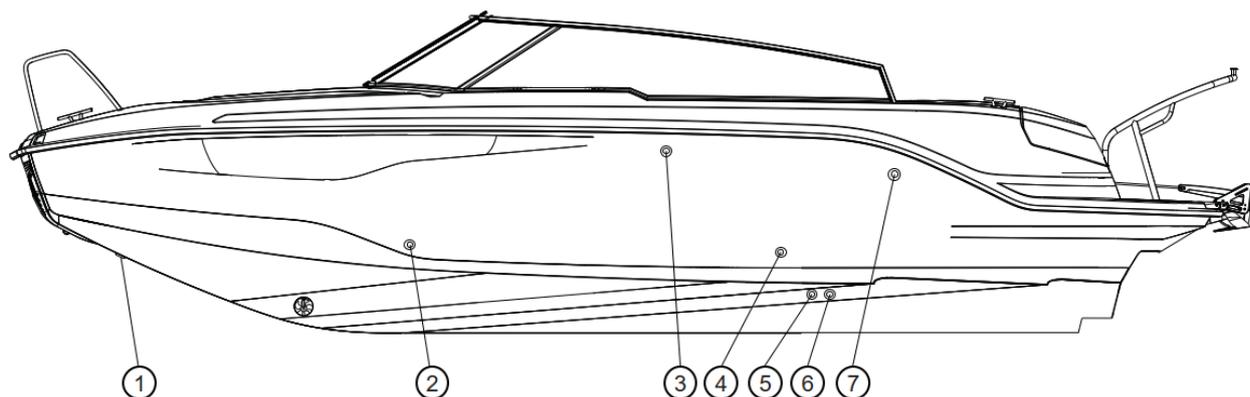
Perform the maintenance required for the engine in accordance with the engine manual. Check the operation of electrical equipment and remove oxidation from fuse connections and other connections.

Remember that petrol expires, so always start with fresh petrol in the spring.

After launching the boat, open all the through-hull valves and check that there are no leaks in the hoses or connectors. The location of the through-hulls is shown in chapter 5.

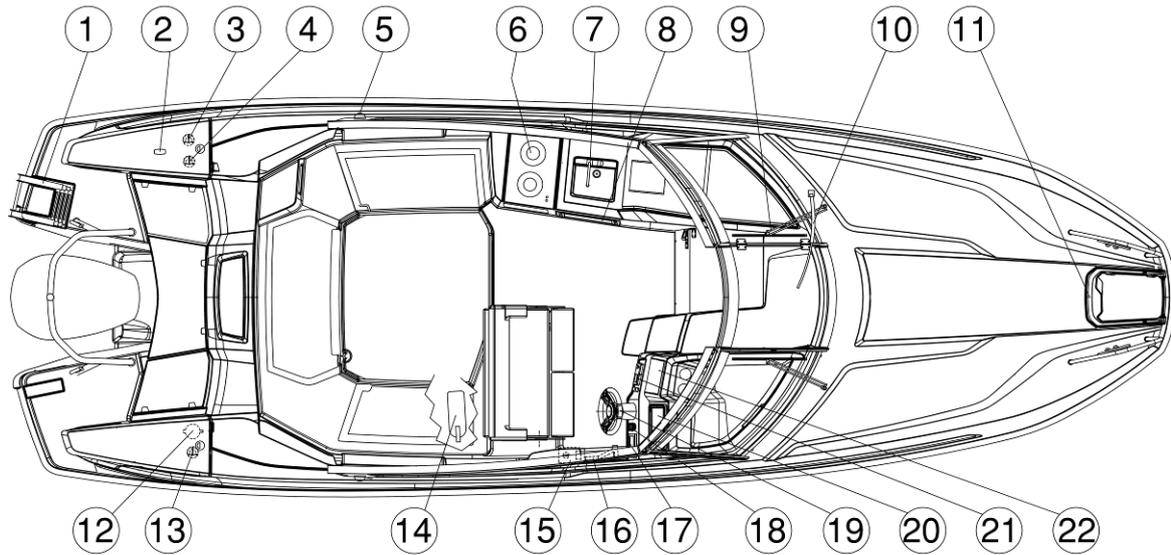
## 8 Layout

### 8.1 General layout



**Figure 19.** Through-hull fittings on the port side

- |  |                                    |
|--|------------------------------------|
| 1. Bow anchor box drain                              | 5. Septic tank sea drain           |
| 2. Toilet washbasin and sink                         | 6. Toilet flush water inlet        |
| 3. Septic tank vent                                  | 7. Heater exhaust gas feed-through |
| 4. Gas cylinder compartment ventilation pass-through |                                    |



**Figure 20.** General layout from above

- |                                |                                       |
|--------------------------------|---------------------------------------|
| 1. Telescopic swimming ladder  | 12. Swimming platform shower          |
| 2. Light mast base             | 13. Fuel filler cap                   |
| 3. Septic tank suction drain   | 14. Fire extinguisher                 |
| 4. Fresh water tank filler cap | 15. Trim control panel                |
| 5. Navigation light            | 16. Electric remote control           |
| 6. Gas stove                   | 17. Engine gauge                      |
| 7. Fresh water tap / sink      | 18. Bow thruster remote control       |
| 8. Refrigerator                | 19. Steering wheel                    |
| 9. Windscreen wiper            | 20. Chart plotter                     |
| 10. Windscreen door pump       | 21. Radio                             |
| 11. Landing steps              | 22. Glove compartment / tablet holder |

The septic tank filling hose is marked WASTE, which means toilet wastewater.

The water tank filler cap is marked WATER, which means fresh water.

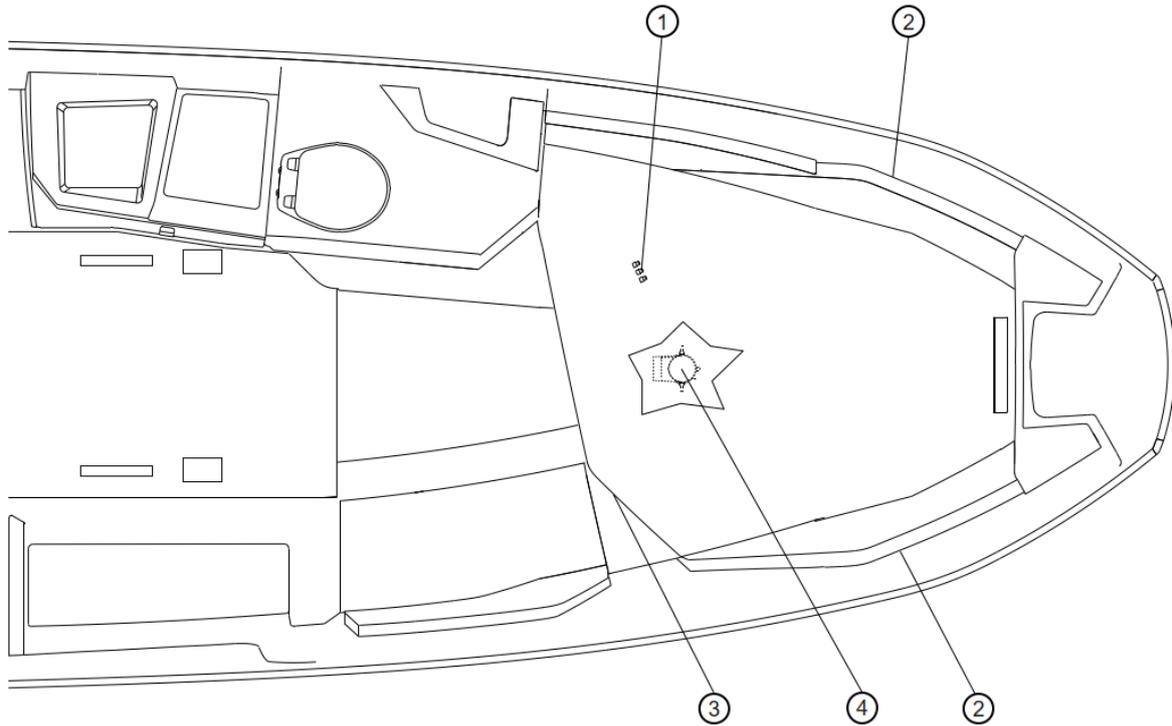
The fuel tank cap is marked GAS, PETROL or FUEL, which means petrol 95E or 98E.

**WARNING!**

Handle the boat's hatches with care and avoid getting your fingers or toes caught between them.

**WARNING!**

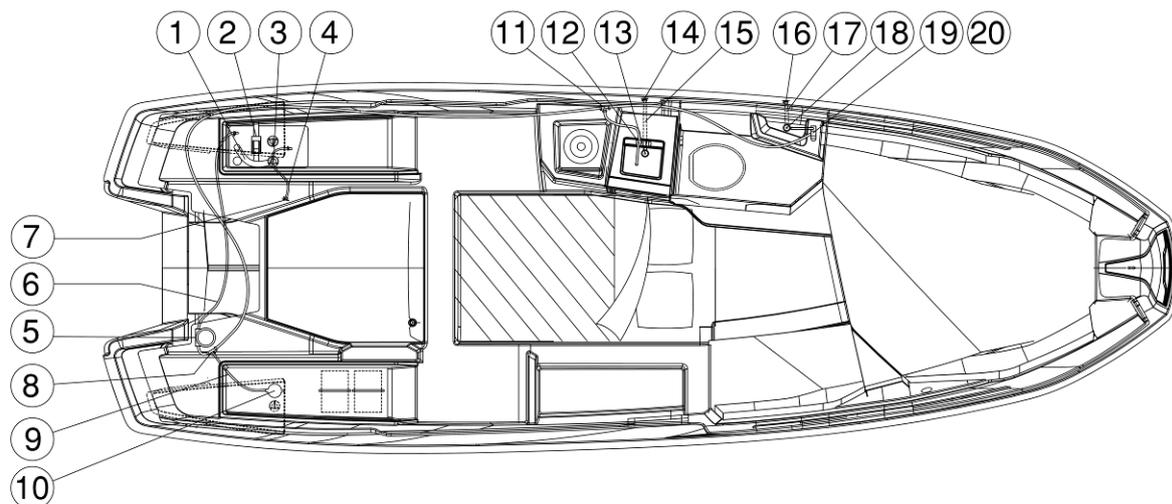
The use of the bow anchor locker hatch is not recommended for children, as their fingers or toes may get caught.



**Figure 21.** Cabin layout

- 1. Cabin light switches
- 2. Cabin side lights

- 3. Bed storage space
- 4. Bow thruster (under the berth)



**Figure 22.** Fresh water system

- |  |  |
|--|--|
| 1. Water tank filling hose                           | 12. Water tap                          |
| 2. 45-litre water tank                               | 13. Washbasin bottom drain             |
| 3. Water tank filler cap                             | 14. Washbasin drain                    |
| 4. Water tank vent hose                              | 15. Washbasin drain hose               |
| 5. Pressure water pump                               | 16. Toilet washbasin                   |
| 6. Water hose from water tank to pressure water pump | 17. Toilet washbasins drain hose       |
| 7. Water tank vent pipe                              | 18. Bottom outlet for toilet washbasin |
| 8. Water hose branch piece for shower                | 19. Toilet washbasins tap              |
| 9. Shower water hose                                 | 20. Washbasin                          |
| 10. Swimming pool shower                             |  |
| 11. Water hose connector for toilet tap              |  |

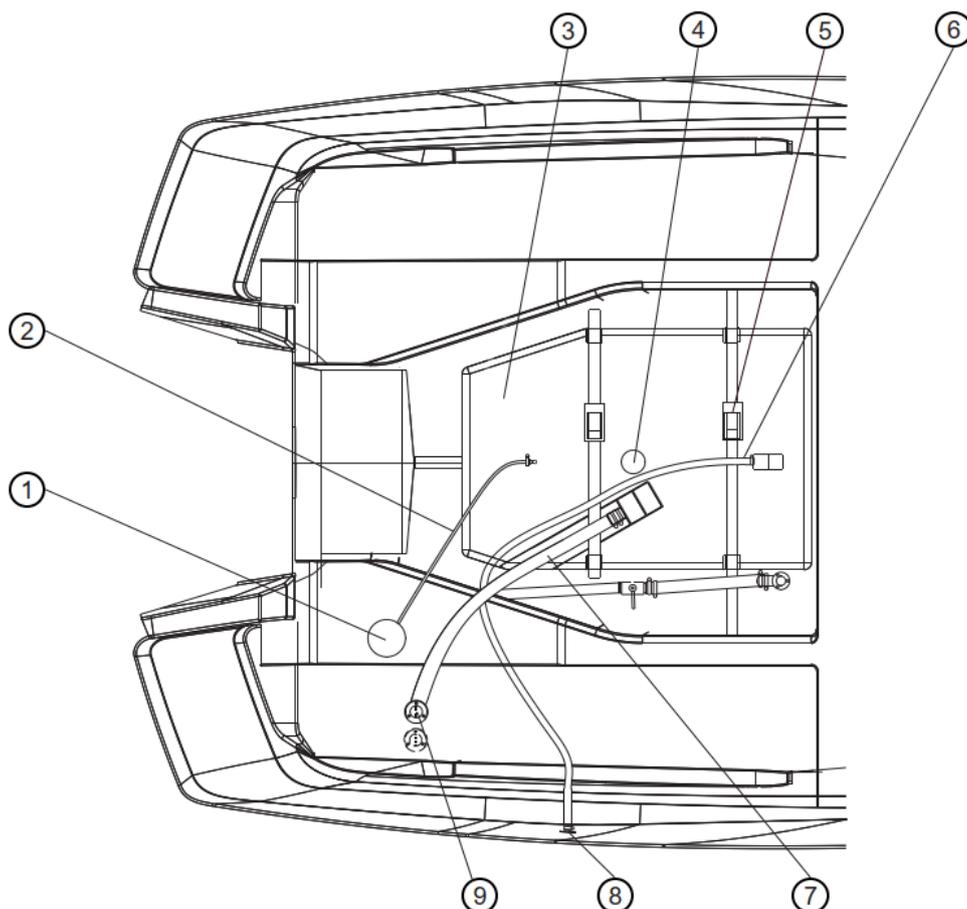
The water tank filler cap is marked WATER, which means fresh water.

## 8.2 Fuel system

The boat is equipped with a fixed fuel tank. A fuel filter is installed in the fuel line, which also acts as a water separator. The filter must be replaced at least once a year. Once a new filter or a filter that has been removed has been installed, the fuel line must be pumped full of a ball pump before starting the engine.

### NOTE

The condition of the fuel hoses must be checked at regular intervals and damage to them must be prevented. Defective fuel hoses must be replaced. If you replace the fuel hoses, make sure that they are marked ISO 7840.



**Figure 23.** Fuel system

- |  |                          |
|--|--------------------------|
| 1. Fuel filter (BB in rear anchor box) | 6. Fuel tank vent hose   |
| 2. Fuel tank supply hose               | 7. Fuel tank filler hose |
| 3. Fuel tank                           | 8. Fuel tank vent cap    |
| 4. Fuel tank sensor                    | 9. Fuel filler cap       |
| 5. Fuel tank fastening strap           |                          |

The fuel tank filler cap is marked with the symbol "🛢️" on the boat's deck. The fuel tank cap is marked FUEL, which means petrol 95E or 98E.

### 8.3 Steering system

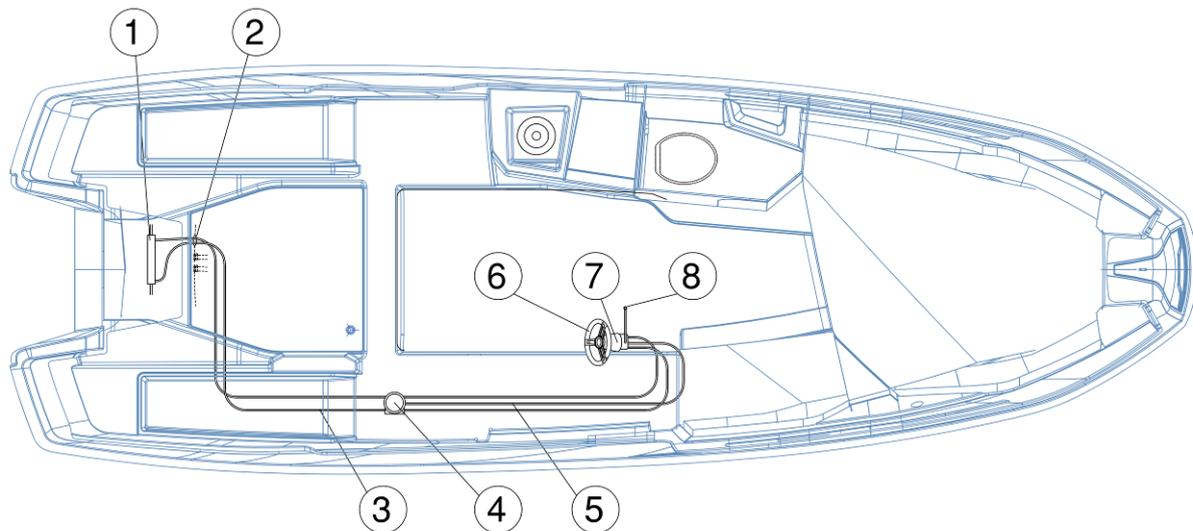
The boat is equipped with hydraulic steering. One of the features of the hydraulic steering system is that the position of the steering wheel changes continuously, which is why the boat has a symmetrical steering wheel. The lengths of the hydraulic hoses are:

- 2 x 3.6 m
- 2 x 2.6 m

Hydraulic steering does not normally require maintenance. If the steering becomes "loose", there is a leak in the system. The leak must be repaired immediately!

**NOTE!** If you replace any component in the steering system, you must ensure that all components comply with the requirements of ISO 10592 and are CE marked.

**WARNING!** A hydraulic steering system with a leak or air in it is life-threatening.



**Figure 24.** Steering system

- |                                |                                  |
|--------------------------------|----------------------------------|
| 1. Hydraulic steering cylinder | 5. Oil overflow pipe             |
| 2. Hydraulic hose feed-through | 6. Steering wheel                |
| 3. Hydraulic hose              | 7. Tilt control pump             |
| 4. Power steering (optional)   | 8. Hydraulic control oil filling |

## 8.4 Electrical system

The electrical system consists of the following main components:

1. Starter battery
2. Service battery
3. Wiring harness
4. 2 main power switches
5. Battery compartment fuse panel
6. 8 circuit breakers
7. 2 x 12V outputs
8. 5 USB outputs
9. Running lights
10. Deck lights
11. Driving/search lights
12. Windscreen wipers (right and left side)
13. Pressure water pump

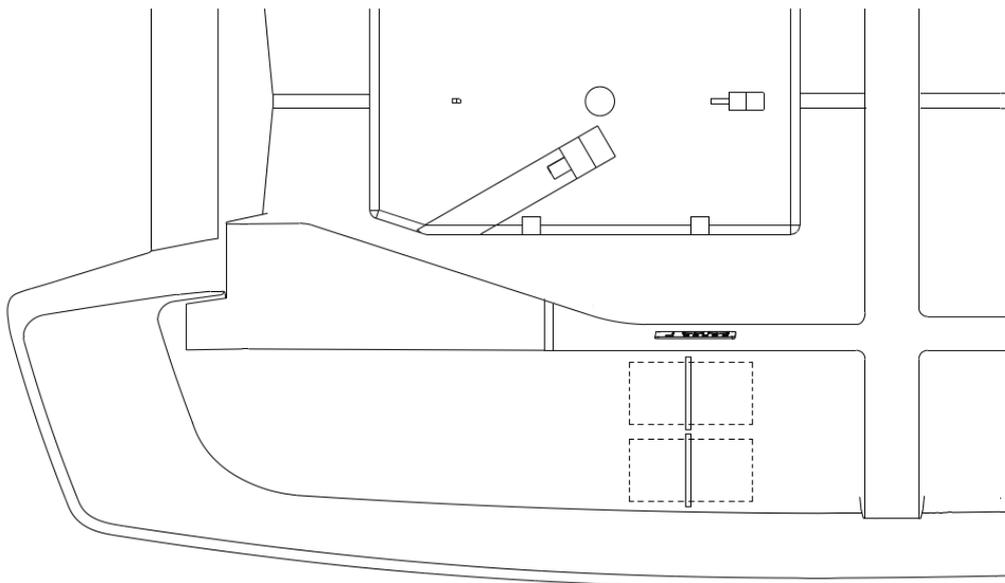
14. Toilet seat
15. Toilet light
16. Defroster
17. Cabin lights + switches
18. Refrigerator
19. Mente Marine trim system
20. Radio
21. Bow thruster

In addition, the boat's electrical system also includes the engine, which acts as both a power source and a consumer.

When disconnecting or connecting batteries, be careful not to touch both terminals of the battery with a metal object at the same time.

Do not modify the boat's electrical system or related drawings; modifications and maintenance should be left to a professional.

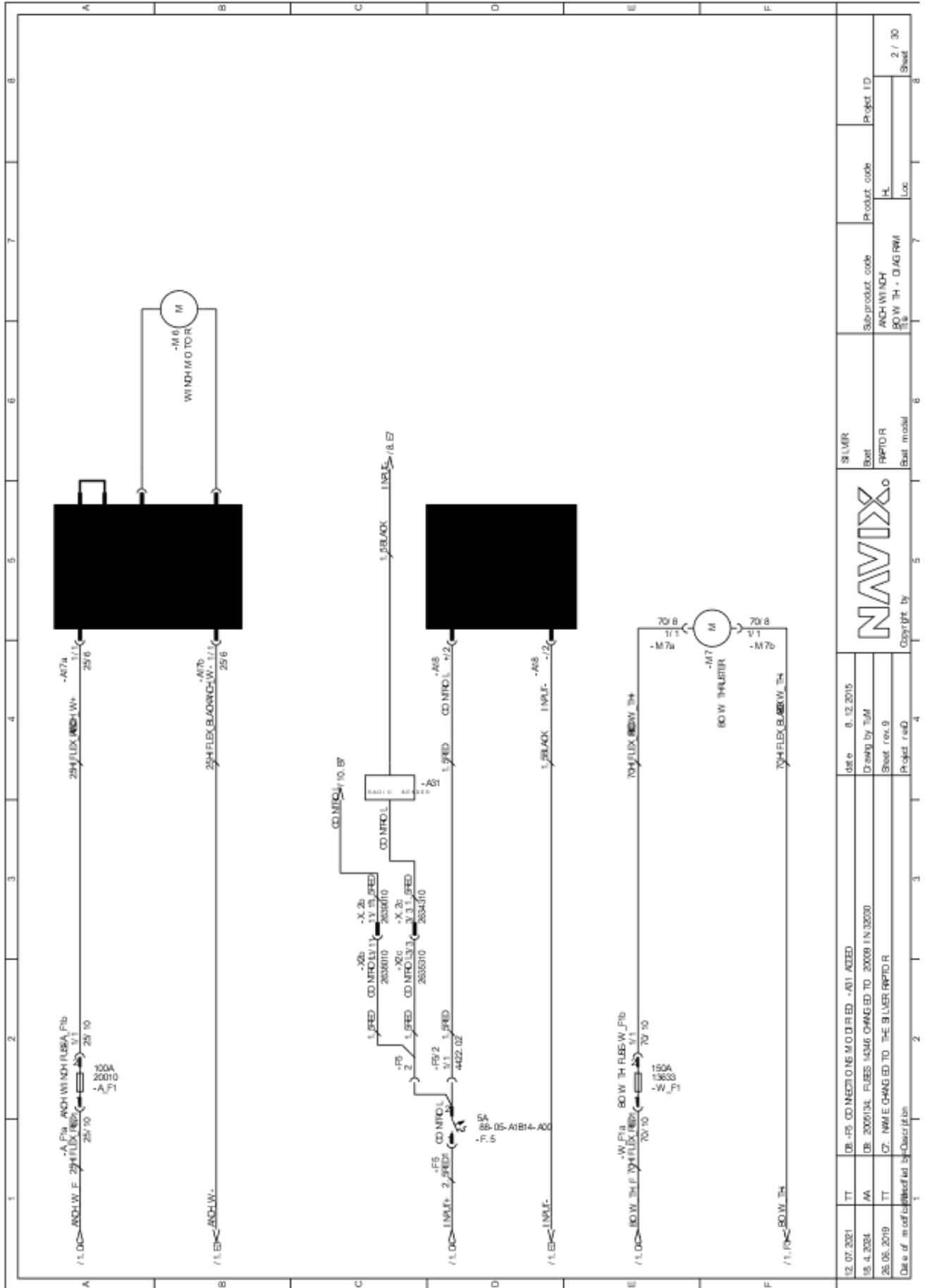
Solar panels for the bow deck are available as an accessory for the boat.



**Figure 25.** Electrical system

1. Battery (starting and service battery)
2. Main circuit breakers and fuse panel
3. Bow thruster fuse
4. Stern anchor winch fuse



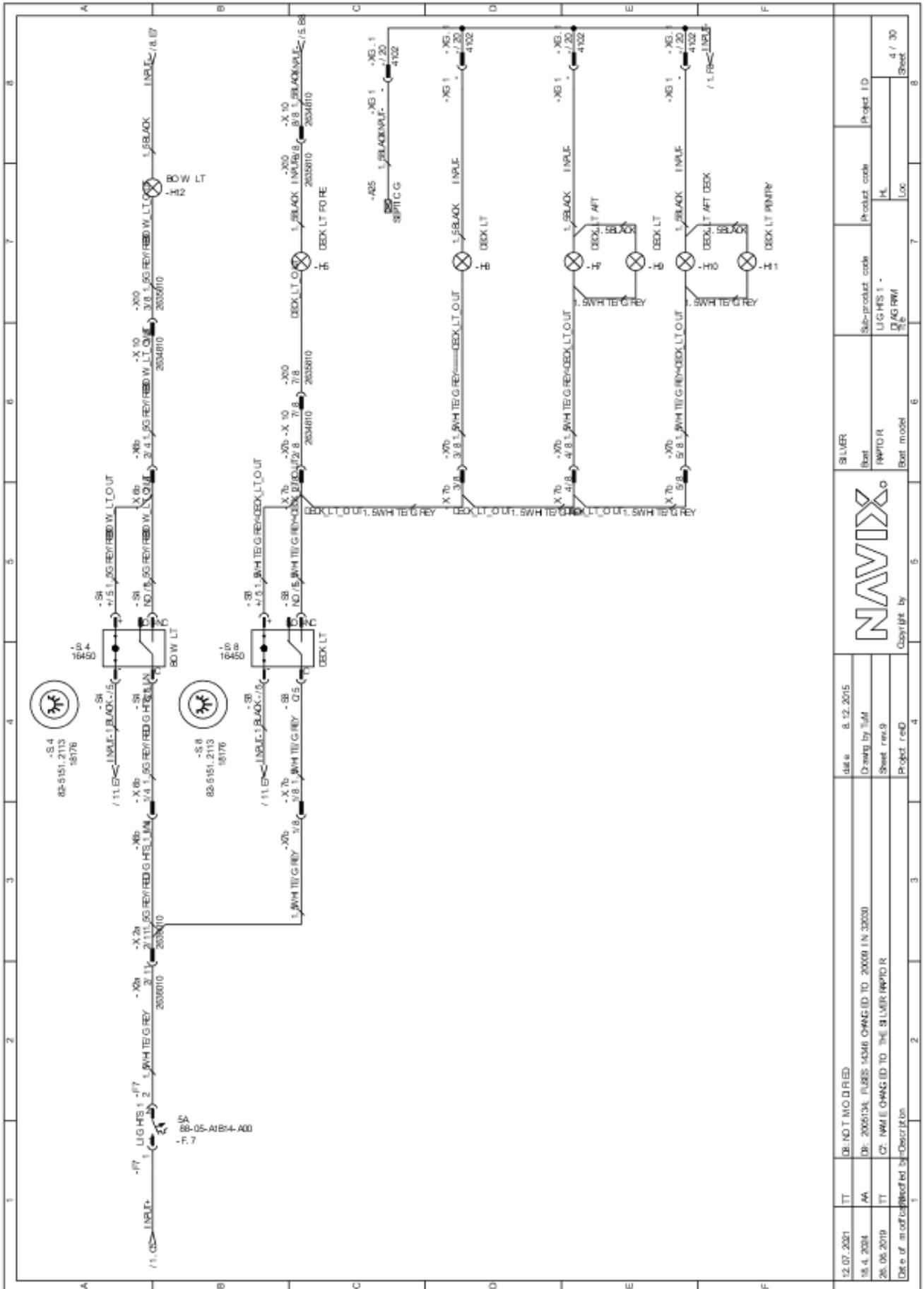


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26.06.2019	TT	CT: NAME CHANGED TO THE SILVER RPTDR	Sheet	rev.9	RPTDR	BO W TH - DIAG RW	HL	2 / 30
Date of modification		Description	Project	rev.	Boat model	Loc	Loc	Sheet



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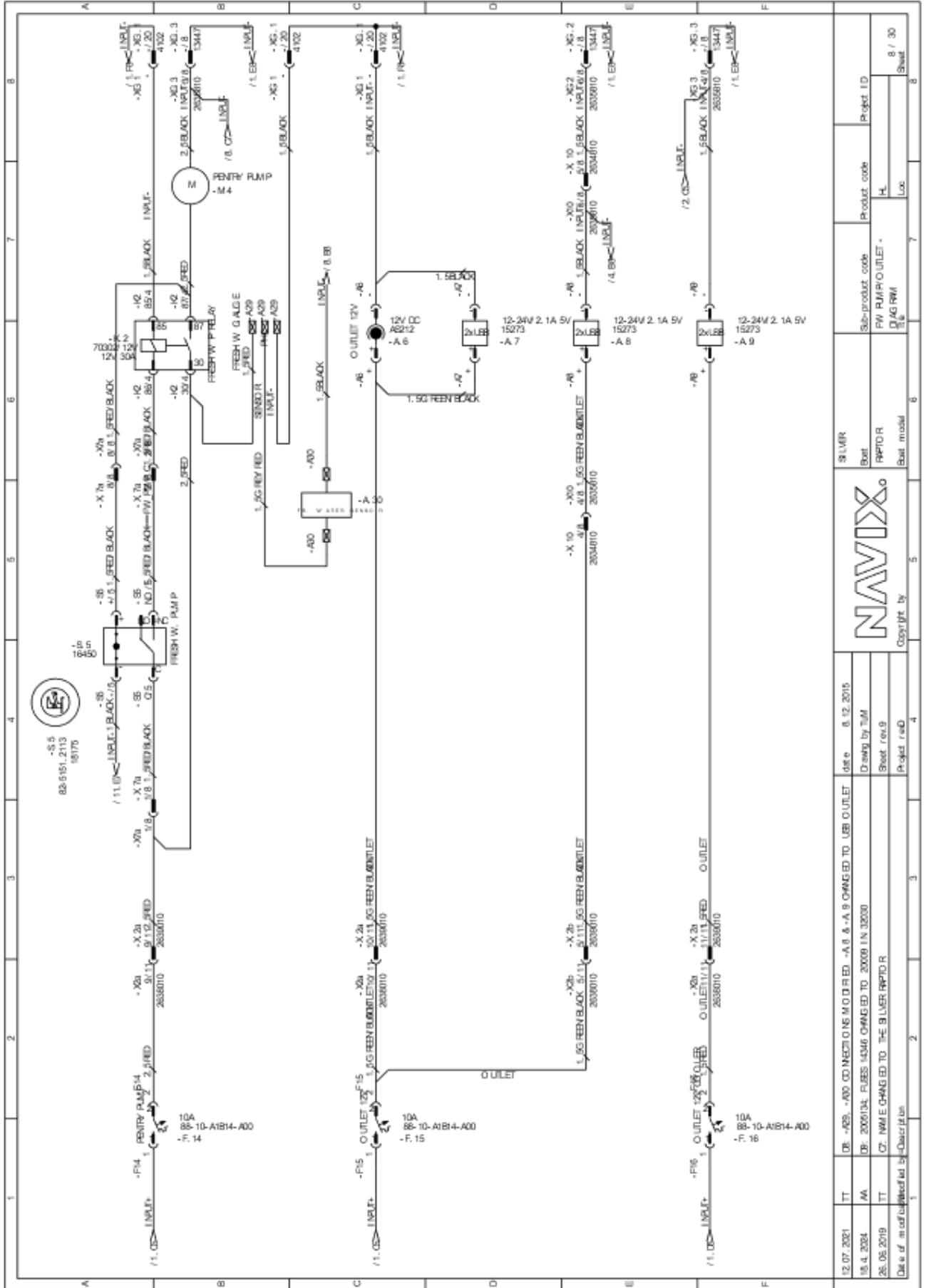


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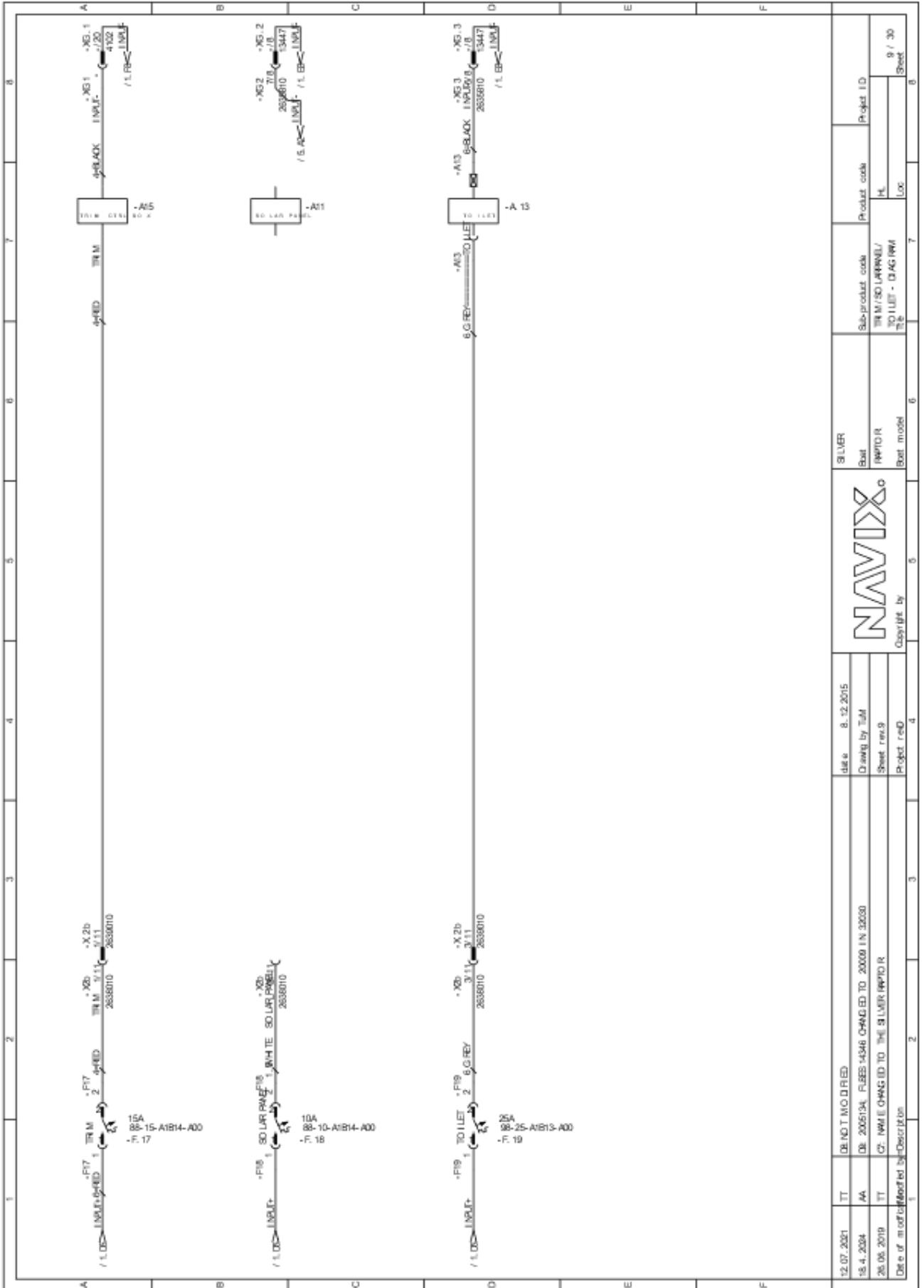




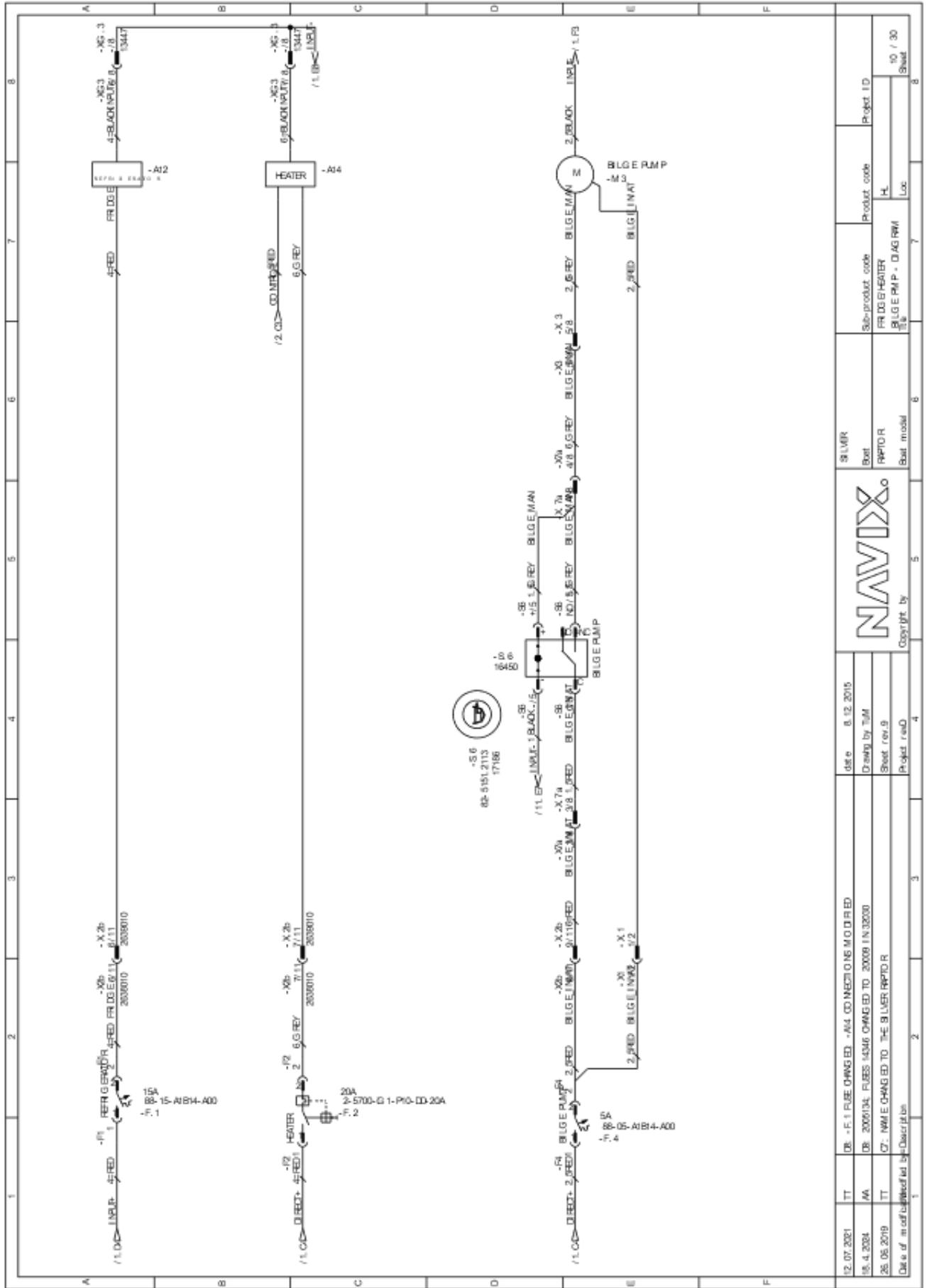




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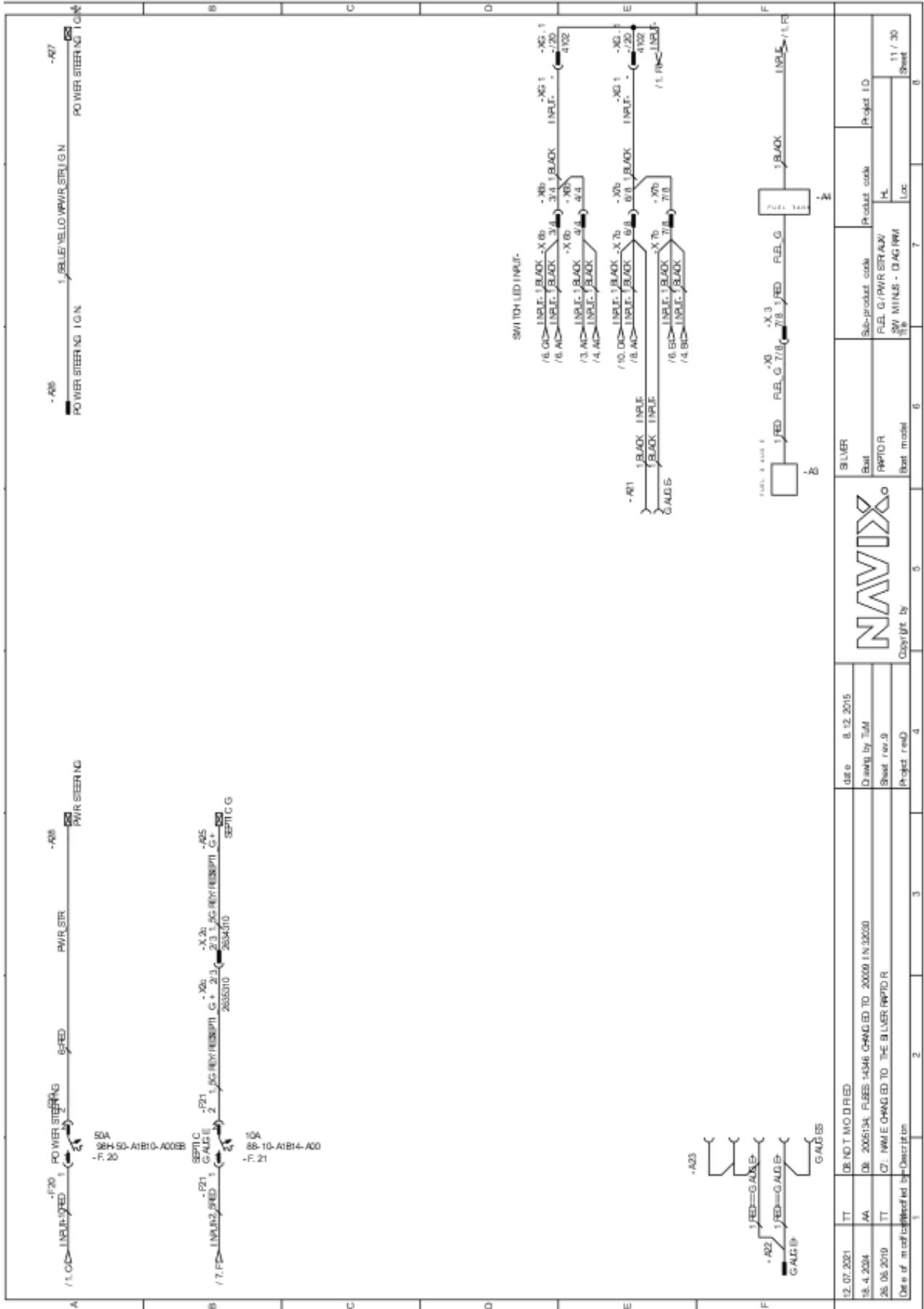
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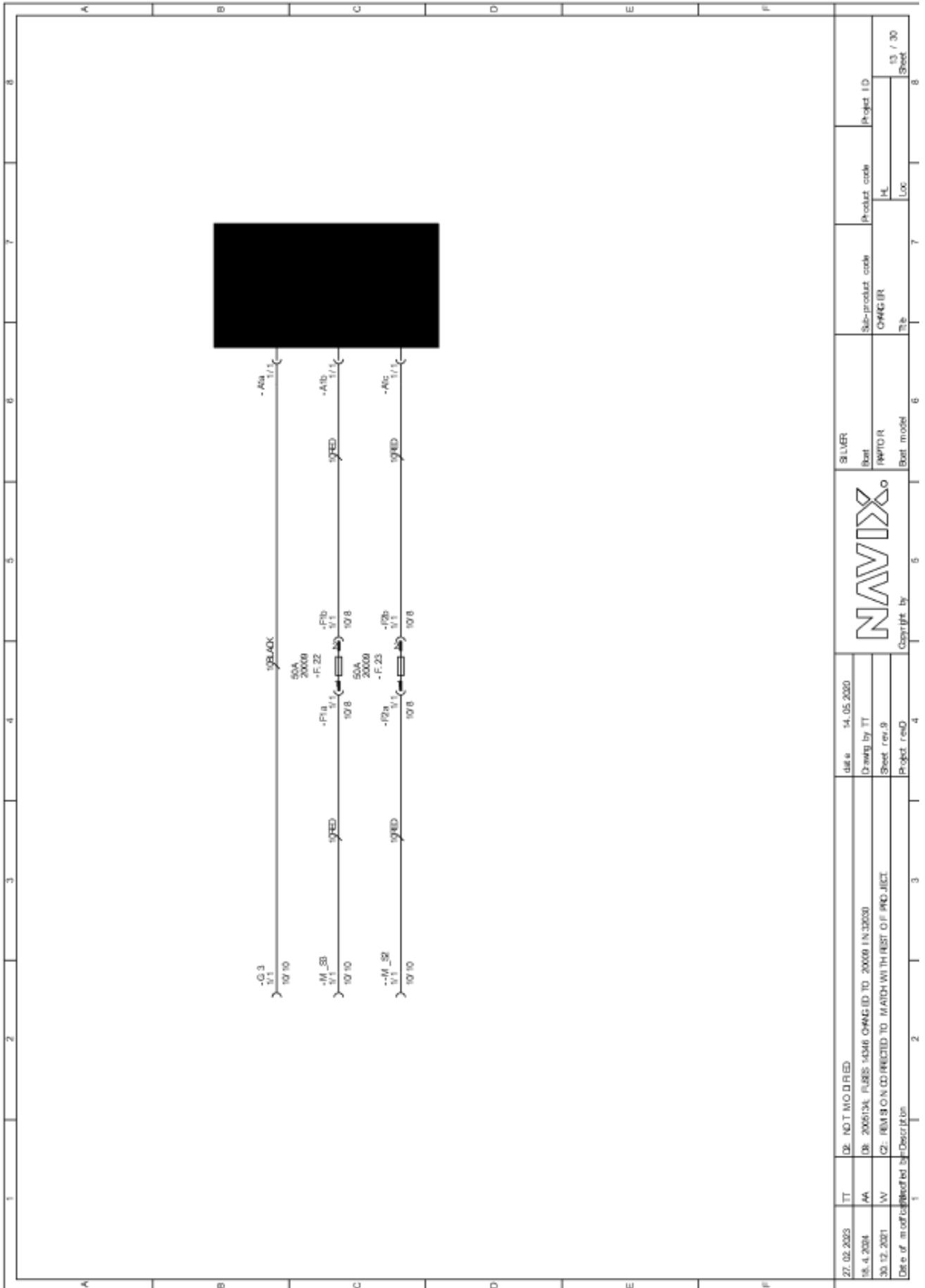
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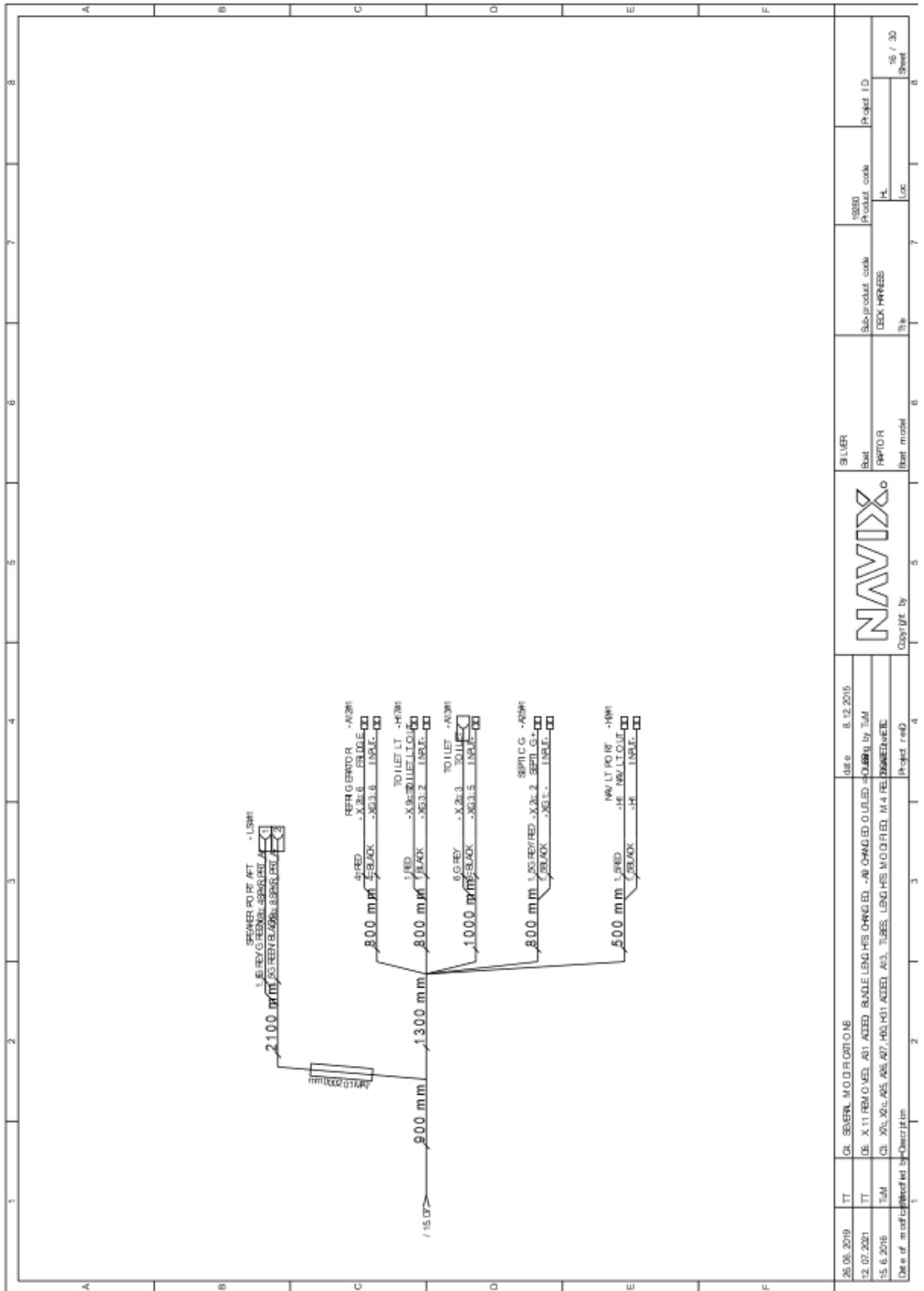
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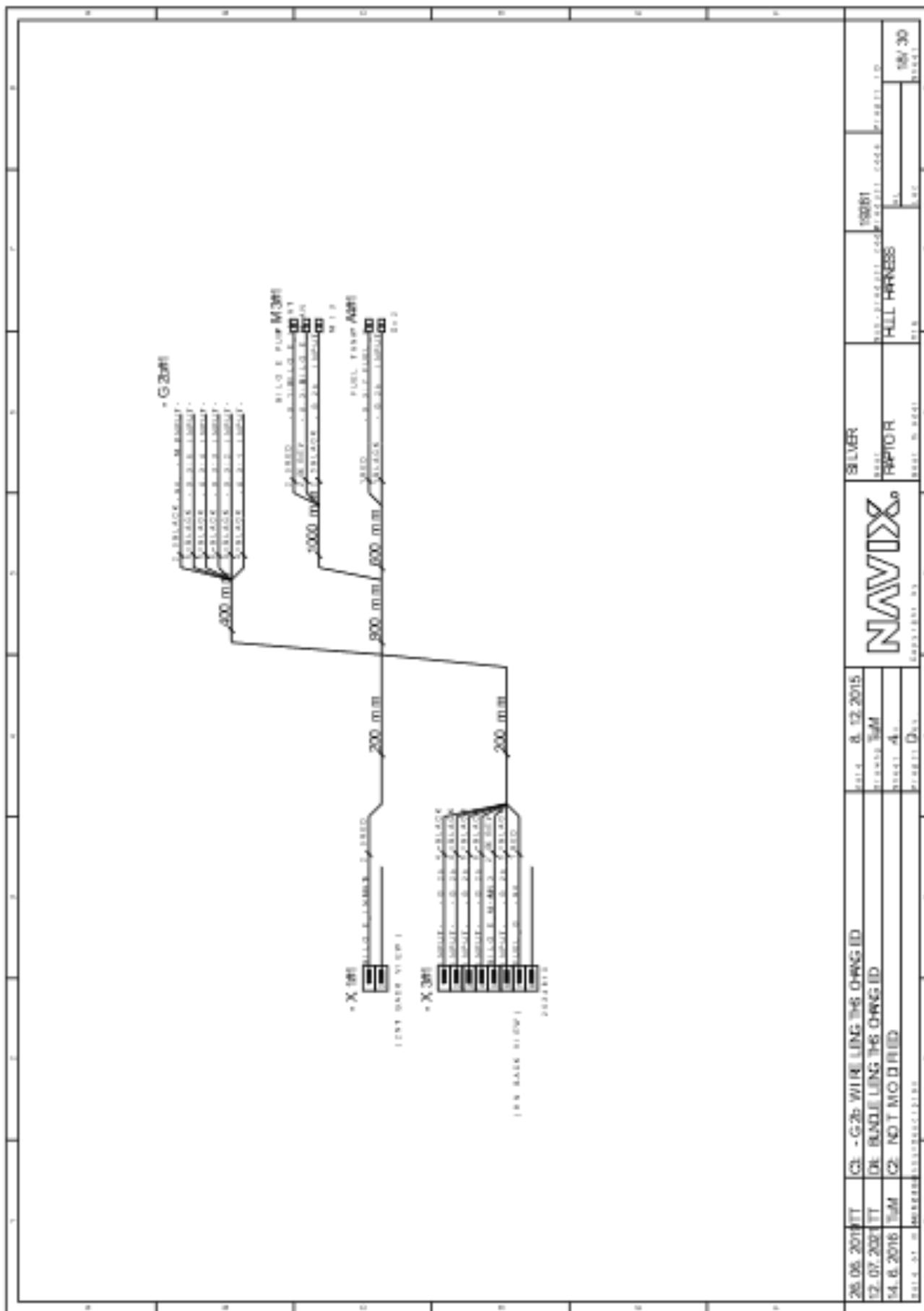






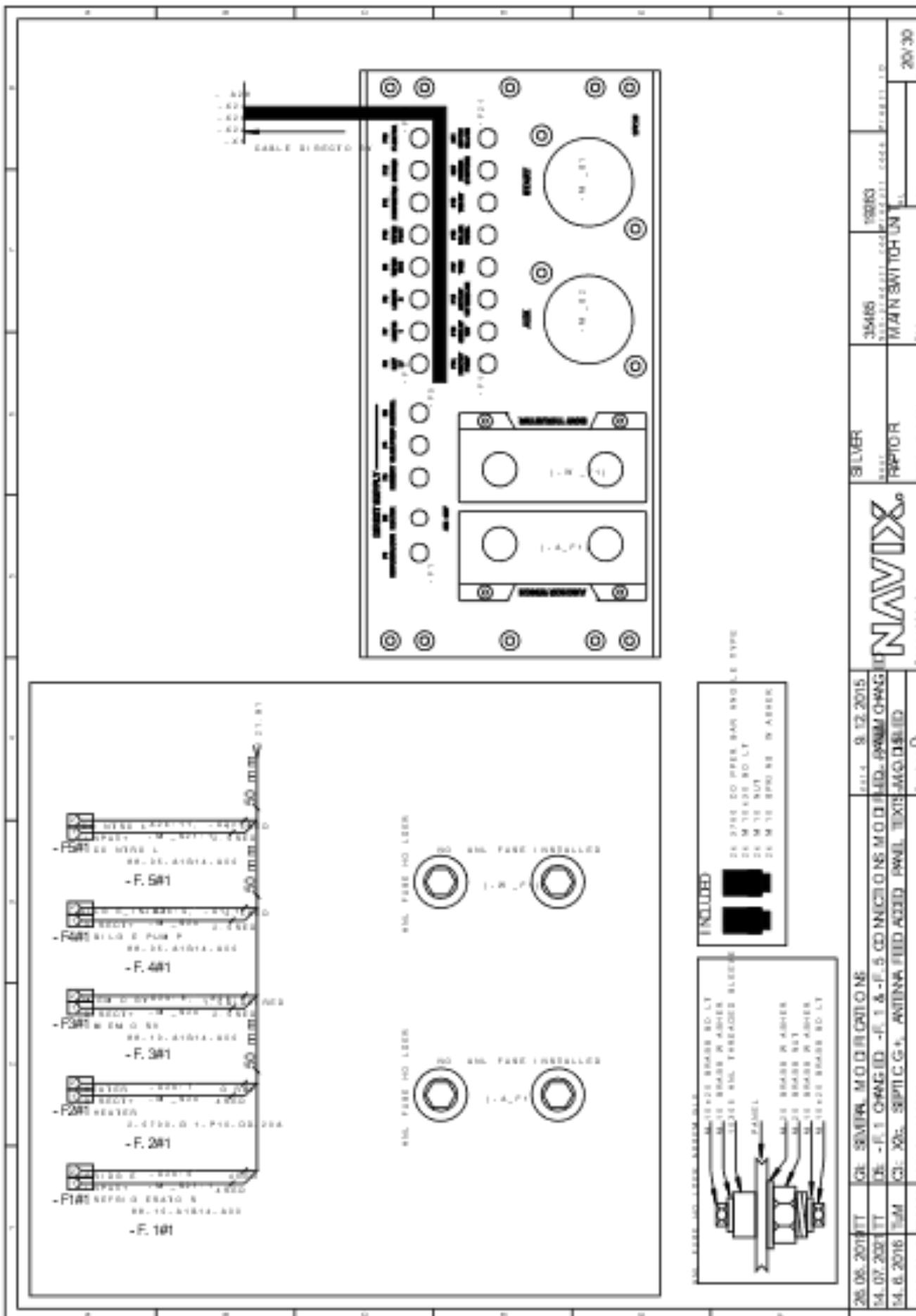
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15.6.2016	TJM	CL X02, X03, A05, A06, A07, H01, H01 ADDED. A03, TUBES LENGTHS MODIFIED. M4 REDESIGNED BY TJM	DATE	08.12.2015	HAPTOR	File	DESK DRAWING	Loc	16 / 30
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28.08.2015	BT	C1 - G2b WIRE LING THE CHANG ID	SILVER	190881	10/30
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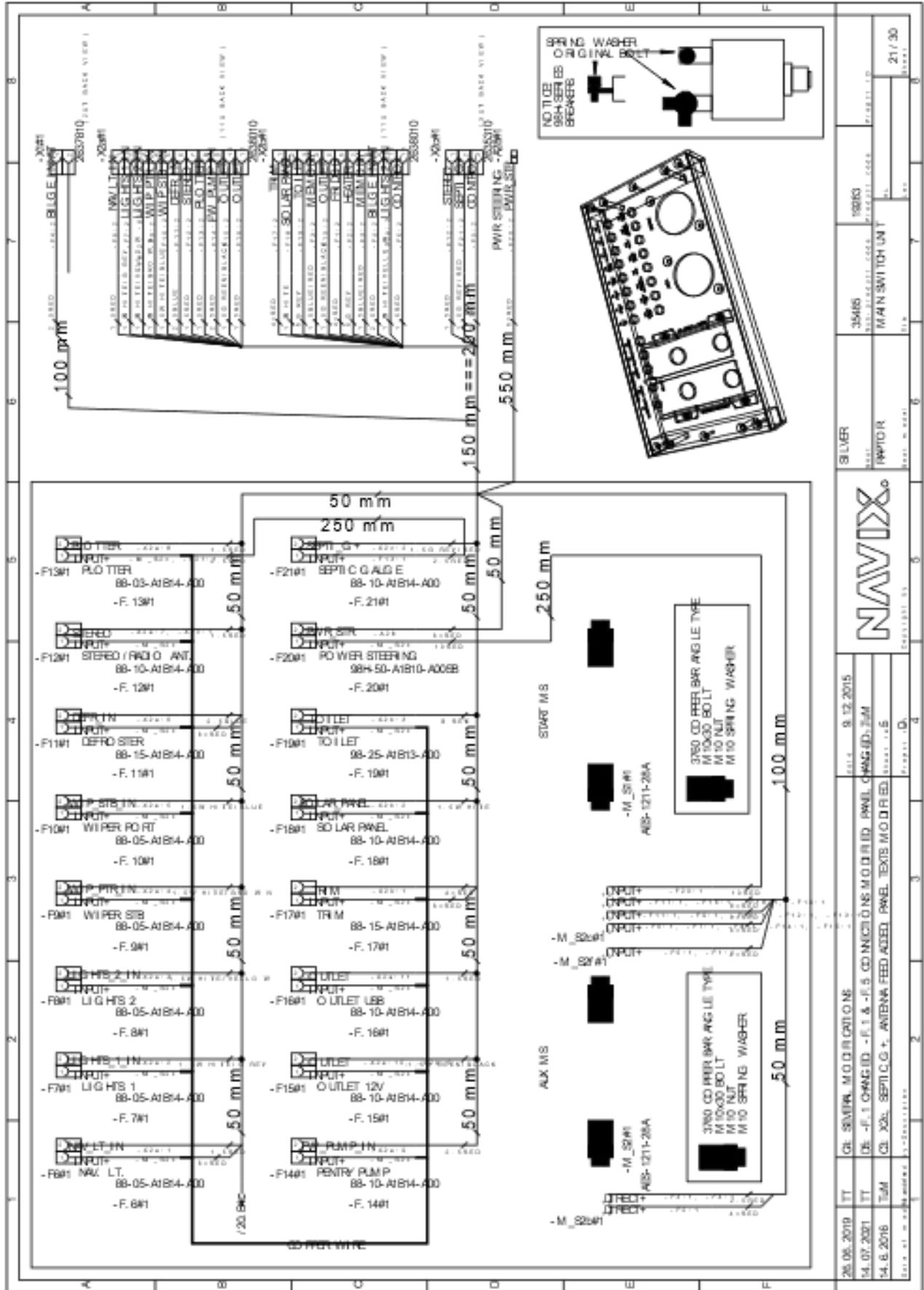
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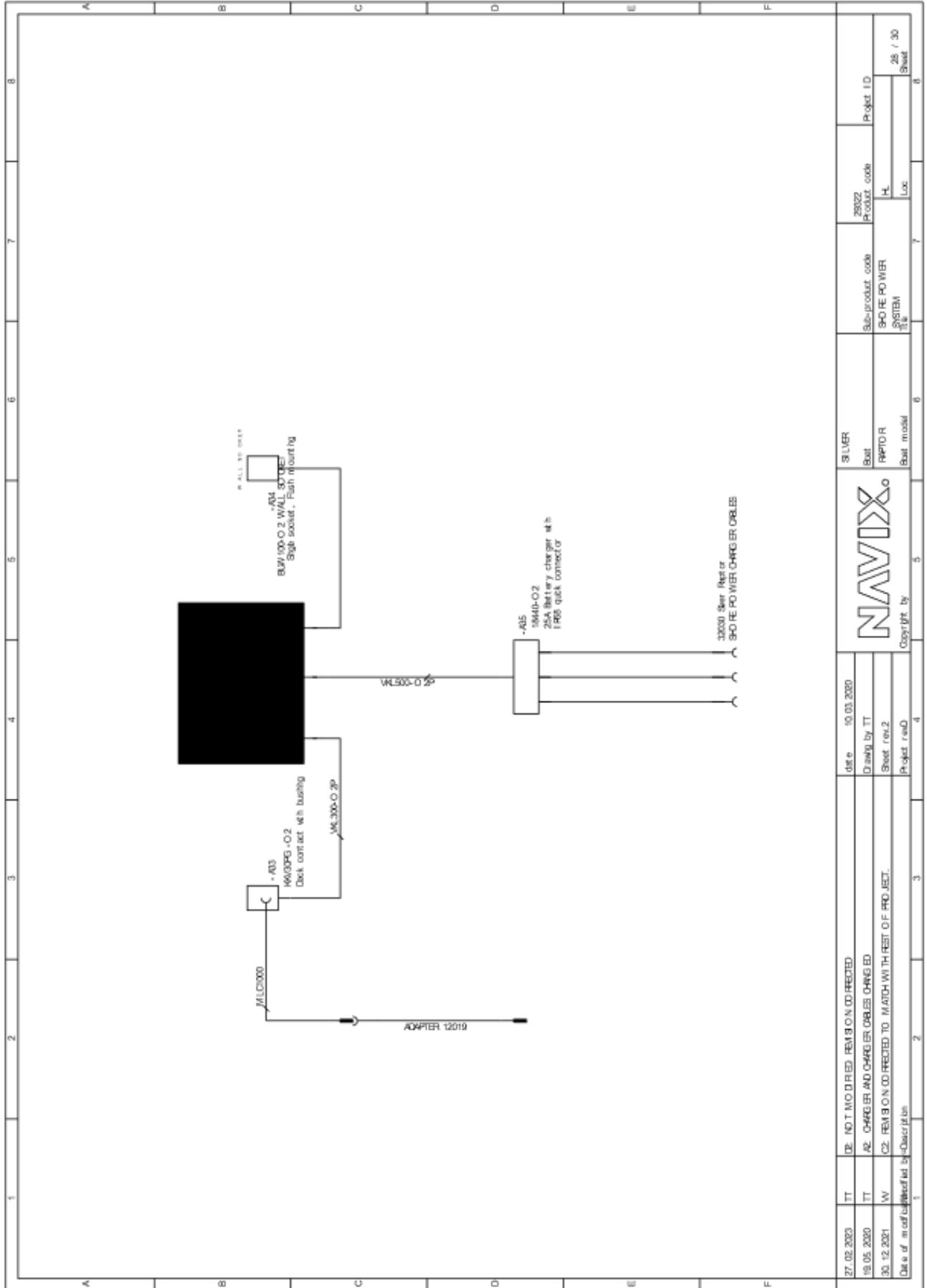




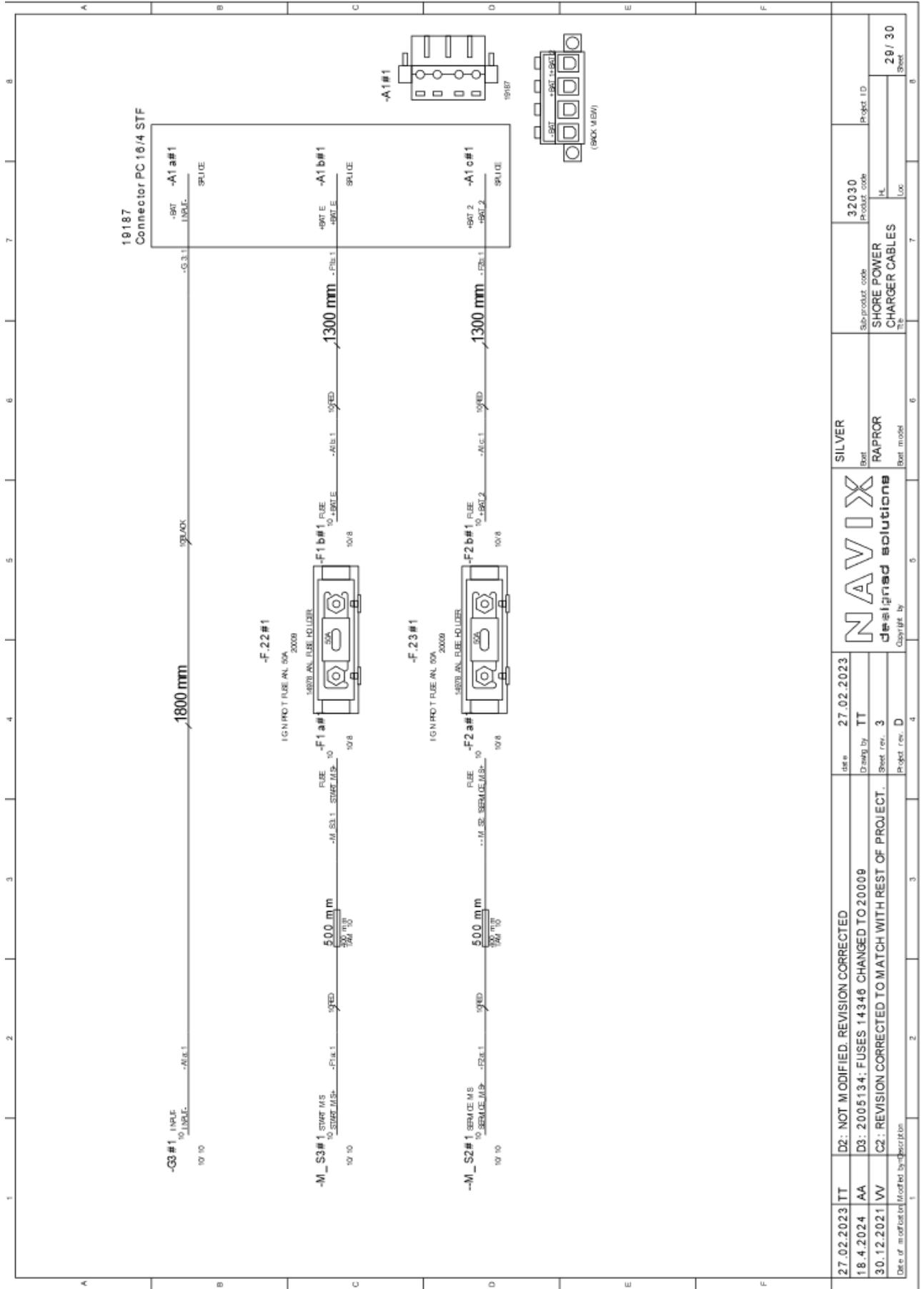




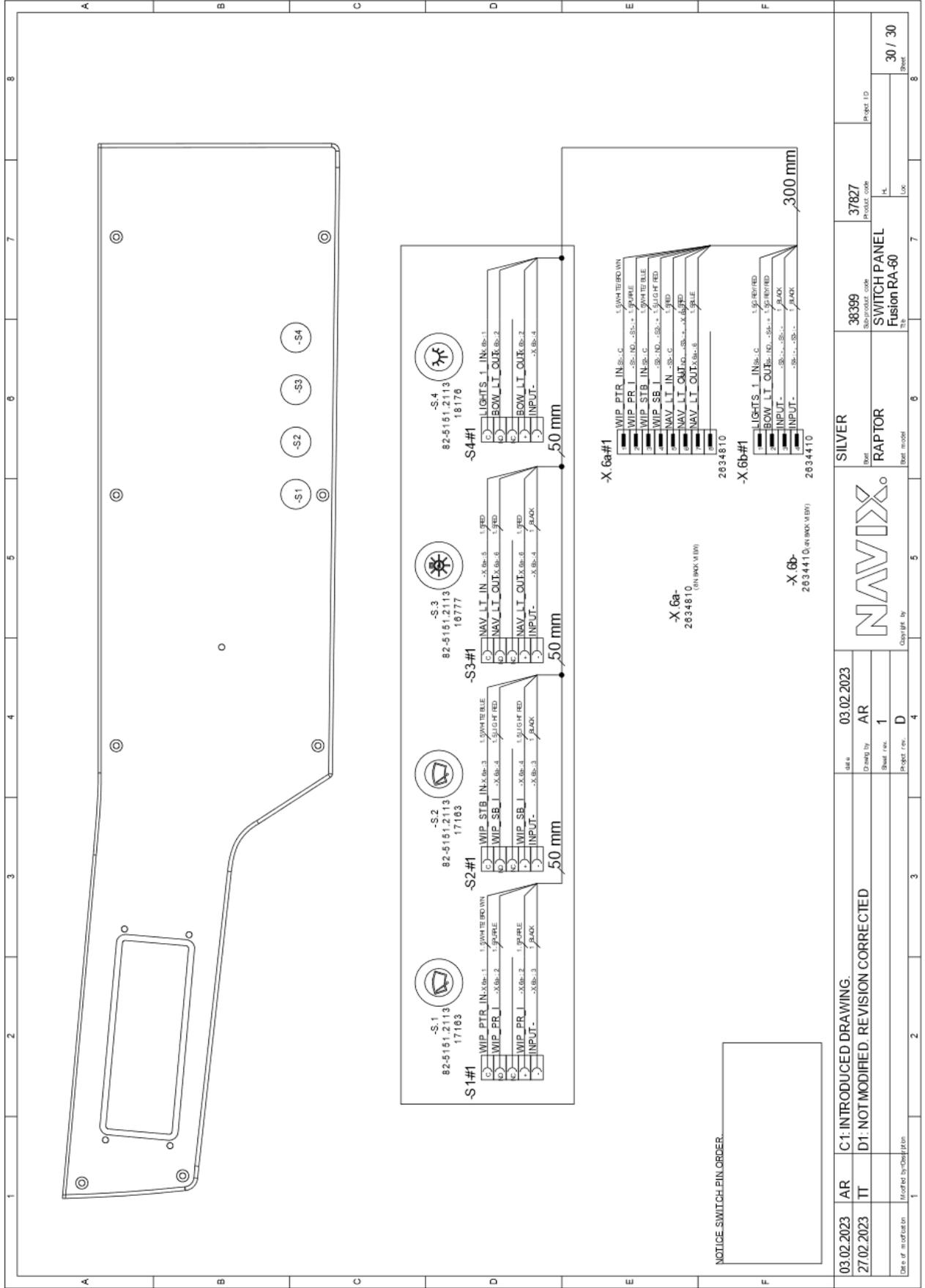




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30.12.2021	IV	C2: REMAINING TO MATCH WITH REST OF PROJECT.	Sheet rev.2		Rest model		Loc	Sheet
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27.02.2023	TT	DE: NOT MODIFIED. REVISION CORRECTED	date	27.02.2023	SILVER	Subproduct code	32030	Product code	Project ID
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NOTICE SWITCH PIN ORDER.

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Date of modification	Modified by/Description	Project no.	Copyright by	Part model	Part name	Product code	Sheet
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