

Owner's manual



HYDRA 450 BASIC, FISHING, FAMILY,
RESCUE,
HYDRA 450e POWERED, River 460

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Index

Contents

1	Important notes	4
2	Category of design	8
3	Conformity assessment	9
4	Craft identification	10
5	Builder’s plate	10
6	Description of the craft	12
6.1	Main data	12
6.3	Maximum recommended load by manufacturer / loading spec. on	12
6.4	Boat masses	13
6.5	Tank capacities	13
6.6	Main drive	13
6.7	Main dimensions	15
6.8	Clear passage height	16
6.9	Slip, lifting & storage	16
7	Transportation clearance	18
8	Description	19
8.1	Characterization	19
8.2	Construction	20
8.3	Stability	20
8.4	Helms view	20
9	Interior & deck arrangement	22
10	Electrics	23
10.1	DC supply	23
10.2	Electric diagrams	26
11	Systems and equipment	27
11.1	Propulsion / Main drive	27
11.2	Rudder and steering	28
11.3	Fuel system	28
12	Anchor- towing- and mooring equipment	30
13	Rescue	33
13.1	Re- embarking	33
13.2	Life raft	33
13.3	Escape routes	33
14	Firefighting	34
14.1	Regular maintenance and Responsibility of boat owner/operator	35
14.2	Specific warnings	36
15	Environmental protection	37
16	Maintenance and care	39

17	The 10 golden rules of water sports	42
18	Closing remarks	43
19	Additional instruction/service manuals	44
20	Warranty terms.....	45
21	Proof of identity	46
22	Acknowledgement receipt	47

1 Important notes

This manual has been compiled to help you operate your *HYDRA 450* safely and with pleasure. It contains details of the craft, the supplied or fitted equipment, its systems and information on its operation. Please read it carefully and familiarize yourself with the craft before using it.

This owner’s manual is not a training tool in boating safety or seamanship.

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 handling and operating experience before “assuming command” of the craft. Your dealer, national sailing federation or yacht club will be pleased to advise you of local sailing schools or competent instructors. This owner’s manual is not a detailed maintenance or trouble shooting guide. In case of problems, refer to the boat builder or its representative.

Ensure that the anticipated wind and sea conditions correspond to the design category of your boat, and that you and your crew are able to handle the boat in these conditions.

Even if your boat is categorized, the sea and wind conditions corresponding to the design conditions A, B, and C ranging from strong gale to severe conditions, open to the hazards of a rogue wave or gust. Only a competent, fit and trained crew using a well maintained boat can satisfactorily operate in dangerous conditions.

The owner’s manual is not a detailed instruction manual, nor is it a troubleshooting guide. In case of any problems please contact *SHIPYARD* or their representatives. If a service manual was issued, use it for maintenance of the boat.

Always let trained or competent people undertake maintenance. Modifications that may affect the safety characteristics of the craft shall be assessed, executed, and documented by trained staff. The *SHIPYARD* cannot be held responsible for modifications that they have not approved.

Please note that the *SHIPYARD* is released from all liabilities for any damage resulting from negligent disregarding, either due to ignorance or improperly following of these instructions with its given warnings and notes!

In some countries a driving license or authorization is required, or other specific policy or regulations may be in force.



CAUTION

Any change in the disposition of the masses aboard (for example the addition of radar, towing mast or the change of engine, etc.) may significantly affect the stability, trim and performance of your boat.

Always maintain your boat properly and take care of the deterioration that occur over time or as a result of heavy use, or of misuse of the boat.

Any boat - no matter how well it may be designed - can be severely damaged if not used properly. Always adjust the speed and direction of the craft to sea conditions.

If your *HYDRA 450* is fitted with a life raft, read its operating manual properly. At all times your boat should be equipped with appropriate safety and personal protection equipment (life vests, safety harnesses etc.) which corresponds your type of vessel and weather conditions.

SHIPYARD states explicitly that every person aboard should wear life vests at all times and that in some countries legal regulations may require steady wearing of buoyancy aids corresponding to the respective national directions.

The crew must be familiar with the use of all safety equipment (harness, flair, life raft, etc.) and emergency maneuvering (man overboard recovery, towing, etc.). Sailing schools and clubs regularly organize drill sessions. Due to the variety of possible equipment features, this manual does not cover all instructions of built-in equipment. Please refer to the individual instruction manuals provided with the equipment.

Danger classification and safety information:



DANGER

Denotes an extreme intrinsic hazard exists which result in high probability of death or irreparable injury if proper precautions are not taken.



WARNING

Denotes a hazard exists which can result in injury or death if proper precautions are not taken.



CAUTION

Denotes a reminder of safety practices or directs attention to unsafe practices which could result in personal injury or damage to the craft, its components or the environment.

The skipper is responsible for:

- The crew should receive suitable training about how to use the craft and its hazards.
- The craft should not carry more than the manufacturer's recommended load.
- Bilge water should be kept to a minimum.
- Stability may be reduced when towing or lifting heavy weights.
- In rough water, hatches, lockers, and doorways should be closed to minimize the risk of flooding.
- Stability may be reduced when towing or lifting heavy weights.
- Breaking waves are a serious stability hazard.



CAUTION

PLEASE KEEP THIS MANUAL IN A SECURE PLACE, AND HAND IT OVER TO THE NEW OWNER WHEN YOU SELL THE CRAFT.

SHIPYARD explicitly that every person aboard should wear life vests at all times and that in some countries legal regulations may require steady wearing of buoyancy aids corresponding to the respective national directions.

The Conformity assessment (this owner's manual is one part of the assessment) is based on the requirements given by the Directive 2013/53/EU of the European Parliament and of the Council of 20 November 2013 on the approximation of the laws, regulations and administrative provisions of the member states relating to recreational craft, Official Journal No. L 354/90 of 28 December 2013 and all relevant international normative standards applicable for small craft.

***The ROTO d.o.o. wishes you good boating
with your HYDRA 450!***

2 Category of design

Following the European Recreational Craft Directive (2013/53/EU) each boat has to be classified according to a category of design.

Your *HYDRA 450* has been assessed to **design category C** (former „Inshore“) and **design category D** (former „protected waters“).

The **design category C** is described as follows:

„A watercraft given design category C is considered to be designed for wind force up to, and including, 6 (Beaufort scale) and significant wave height up to, and including, 2 m.“

The **design category D** is described as follows:

„A watercraft given design category D is considered to be designed for wind force up to, and including, 4 (Beaufort scale) and significant wave height up to, and including, 0,3 m, with occasional waves of 0,5 m maximum height.“

Remark:

The significant wave height is the average height of the highest third of the waves, which approximately coincides with the estimated by an experienced observer wave height. Some waves reach twice the height.

Craft in each category must be designed and constructed to withstand these parameters in respect of stability, buoyancy, and other relevant essential requirements listed in Annex I, and to have good maneuverability and handling characteristics.

3 Conformity assessment

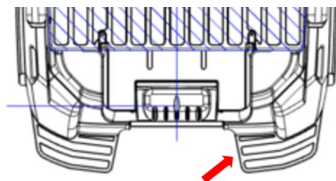
The vessel has been assessed according Module B + F „Type approval“ in compliance with Annex II of the „Resolution Nr. 768/2008/EG of the European Parliament and the Council of 9 July 2008 on a common framework for the marketing of products“, supplemented by further requirements and inspection specifications of Annex VI of the directive (2013/53/EU).

The assessment was done by the following notified body:

Swiss Lloyd GmbH
Landstrasse 123
FL- 9495 Triesen / Liechtenstein

Identification number / Registered with: 2285

4 Craft identification



The manufacturer has affixed a unique identification at the stern of your vessel.

Craft Identification Number:

SI - ROT0A _ _ _ _ _

- SI Origin of production: Slovenia
- ROT Unique code of the manufacturer
- 0A_ _ _ Unique serial number of the manufacturer
- _ Month of the production start (A = January, B = February etc.)
- _ Last digit of the year the production started
- _ _ Model year, intended to put the craft into service

5 Builder’s plate

The builder’s plate has to be mounted close to the main helmstand and informs the skipper about important specifications:

International standards established requirements for the uniform display of information to be exhibited on the builder’s plate of small crafts and recommend the number of persons that may stay aboard based on the category of design.

Notice:






For all persons a life jacket must be aboard.

HYDRA 450
 ROTO d.o.o., Gorička ulica 150, Černelavci,
 Murska Sobota, SI-9000, Slovenia

(€ 2285 category C / D

MAXIMUM
 5/8 ĩ + ĩĩĩ = 550 / 750 kg

MAX 7 45 kW / 121kg

Category of Design C/D	Category of design - see chapter 2
Max.  5/8	Maximum recommended persons by manufacturer while underway in its category of design specific waters.
Max.  +  +  = 550/750 kg	Maximum manufacturer’s recommended load containing 5/8 persons, supply, provision, personal equipment and outboard engine.
Max.  = 45 kW	Maximum engine power recommended by the manufacturer (total)
CE	The CE-Mark is a confirmation from the manufacturer that the craft is designed according the regulations.
2285	ID number of the notified body (Swiss Lloyd).

WARNING

The maximum recommended number of persons shall not be exceeded. Independent from the maximum allowance of person it is not permitted that the load of person and equipment exceeds the overall maximum load.



Never exceed the maximum recommended load by manufacturer (see 6.2).

The carried load must be stowed carefully. Loads must be distributed proper to keep the trim. Heavy loads must be located as low as possible.

6 Description of the craft

6.1 Main data

Length over all	L _{MAX}	4,49	m	/	14.73	ft
Length of hull	L _H	449	m	/	14.73	ft
Length of waterline	L _{WL}	4,20	m	/	13.78	ft
Maximum width	B _{MAX}	1,80	m	/	5.91	ft
Width of hull	B _H	1,80	m	/	5.91	ft
Draught of hull body	t _c	0,26	m	/	0.85	ft
Maximum draught	t _{MAX}	0,36	m	/	1.18	ft
Empty craft condition mass	m _{EC}	375	kg			
Maximum shaft power recommended by the manufacturer	P _{MAX}	45	kW			
Max. engine weight per engine recommended by manufacturer		121	kg			

6.2 Declaration of maximum load (m_{mtl})

	Cat C		Cat D	
Maximum of persons aboard recommended by the manufacturer of 75 kg / 165 lbs each	375	kg /	600	kg
Basic equipment (LH - 2,5)² incl. outboard engine	111	kg /	111	kg
Provisions and items for personal use (incl. safety equipment)	64	kg /	39	kg
Liquids in fixed tanks	51	kg /	51	kg
SUMM	601	kg /	801	kg

* Minimum information set out in EN ISO 14946:2001

6.3 Maximum recommended load by manufacturer / loading spec. on builder's plate (Ch. 5)

The additional load shown on the builder's plate corresponds to the declaration of maximum load in Ch. 6.2, but without the masses of liquids stored in fixed tanks.

	Cat C		Cat D	
Maximum total load recommended by the manufacturer (see 6.2)	601	kg /	801	kg
Less liquids in fixed tanks	-	51	kg /	51
SUMM	550	kg /	750	kg

The indicated masses of the fixed tanks (see 6.2 & 6.3) are in accordance to the largest tank options of the SHIPYARD. The actual tank volumes of your ROTO 450 are listed in section 6.5.

6.4 Boat masses

The boat (**minimally equipped**) has been tested with the following stability conditions:

		Cat C	Cat D
Mass of the craft in light displacement	m_{lc}	402 kg /	402 kg
Mass of the fully loaded craft	m_{ldc}	892 kg /	1.092 kg
Mass of the craft in minimal state condition	m_{moc}	503 kg /	503 kg

The boat (**fully equipped**) has been tested with the following stability conditions:

		Cat C	Cat D
Mass of the craft in light displacement	m_{lc}	486 kg /	486 kg
Mass of the fully loaded craft	m_{ldc}	976 kg /	1.176 kg
Mass of the craft in minimal state condition	m_{moc}	587 kg /	587 kg



INFORMATION

The performance of the boat may sink due to raising load and/or trim. Due to heavy loads a proper drainage of the deck may no longer be guaranteed.

6.5 Tank capacities

Your HYDRA 450 is equipped with the following tanks:

Opt. 1x Fuel tank / Inside aft cockpit bench 35 ltr

6.6 Main drive

The HYDRA 450 is equipped with an outboard engine. For more detailed information please consult the motor manufacturers accompanying operating instructions (see Chapter 20 „Additional manuals“).

Motorization of your HYDRA 450

Type of fuel	Gasoline
Number of engines	1
Manufacturer of the engine	_____
Engine type	_____ SN: _____
Cylinder	_____
Displacement	_____ cm ³
Power (Crankshaft)	_____ kW (at _____ Rpm)
Power (Propeller shaft)	_____ kW (at _____ Rpm)
Engine weight	_____ kg
Max. engine weight	121 kg
Max. engine power	45 kW

CAUTION

Please take notice of the manufacturer’s operation manual regarding periodical service and safe operation of the engine.



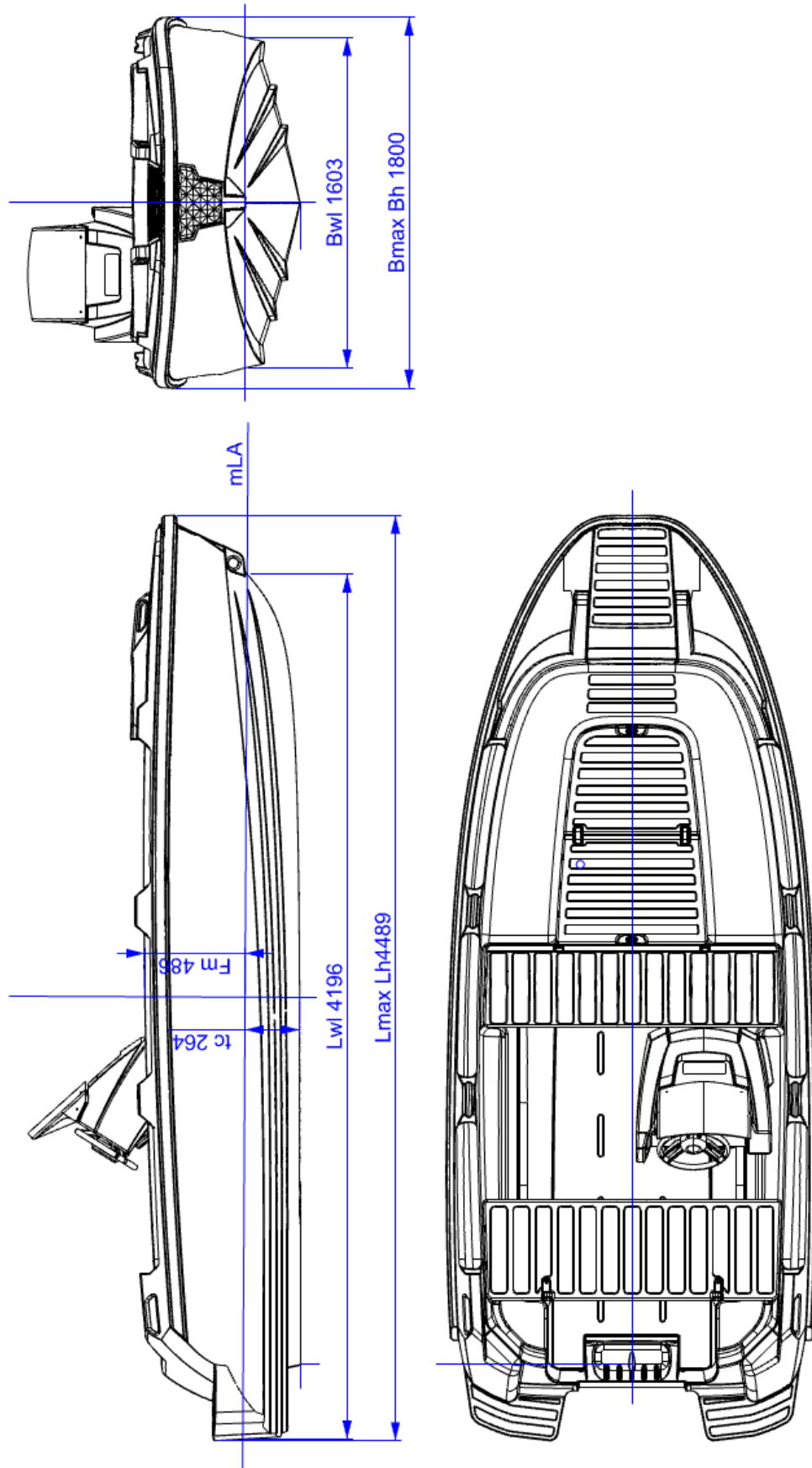
- The craft may not be equipped with any engine exceeding the maximum recommended power or weight;
- Avoid sudden maneuvers at high speed;
- For comfort and safety: reduce speed at swells;
- Do not use the bow cockpit at high speed;
- Always use the automatic vigilance device if available;
- Avoid touching the engines moving parts, the propeller shaft or the steering during operation!

INFORMATION



Please take notice of the manufacturer’s operation manual of each system component. Service and repair should be carried out according the manufacturer’s specifications by a certified system mechanic.

6.7 Main dimensions





INFORMATION

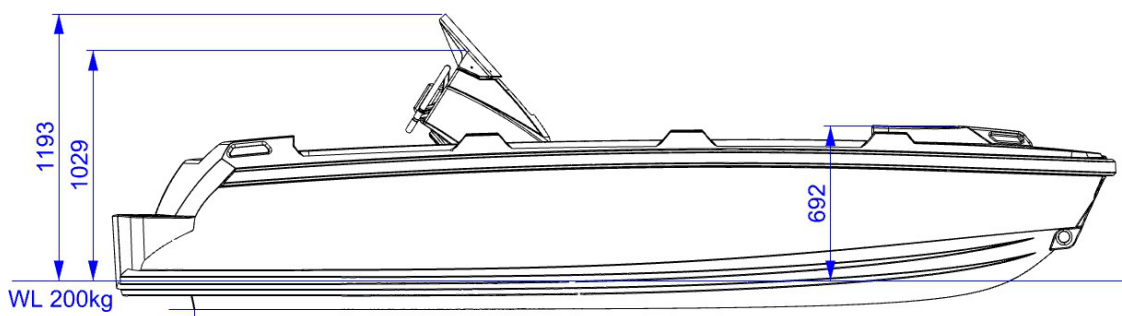
Please consider for your own safety: All measures shown are engineering calculated. Real measures may differ because of load, trim and other environmental influences.

6.8 Clear passage height

The clear passage or clearance height can be a critical measurement during the passage of bridges or electric transmission lines. It describes the vertical distance measured from the waterline (in light craft displacement condition) to the top of the vessel. This height is given without any antennas or an additional equipment installed by the owner. Adjust the height when installing additional equipment and note it below (updated clearance height).

The clearance height of the boat is 1,19m

Updated clearance height:



INFORMATION

Please consider for your own safety: All measures shown are engineering calculated. Real measures may differ because of load, trim and other environmental influences.

6.9 Slip, lifting & storage

Storage

In storage, the vessel should be stored dry and covered. The vessel is stored by docking under both side-shines and on inner step/speed-rails (see illustration above). The boat must not be supported along the keel. As a good rule, the storage points should be as large areas as possible so that you do not get permanent deformations at too high point load in a small area. During storage on land, the drain valve (expanding sealing plug) aft at the engine well must be open so that there is no water on the floor.

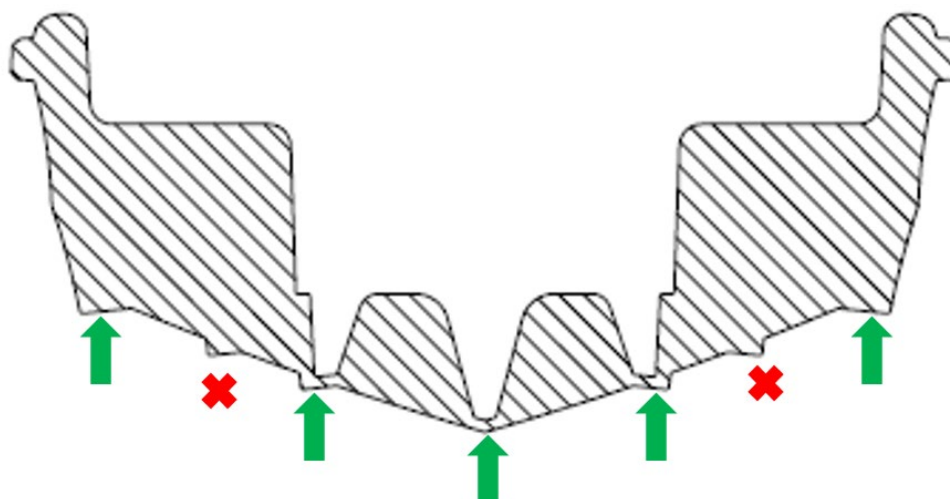
If the vessel is stored outdoors, it must be covered for snow load, so that this slips off and does not remain wet and heavy on board the boat. In such extreme cases, the boat can be deformed and damaged.

The boat can be winter stored over time on a boat trailer but note that a boat trailer with pulleys/wheels is required that runs the entire length of the boat so that the point load is spread over large parts of the hull, and is placed according to illustration.

Lifting, landing and transport

The vessel should not be towed on the ground, as this could cause damage to the bottom. When transporting over land, your *HYDRA 450* should be lifted using lifting straps. When transporting on a trailer, make sure that the hull does not rest against sharp edges, and that the vessel rests in both specified places (see illustration). The boat must not be transported or stored on a standard boat trailer with a few pulleys/supports. The most ideal solution would be boat trailers adapted to rotationally moulded boats with long wheelbases on each side to distribute the point load well over a large area. The boat is secured/strapped in accordance with regulations for transport, but should not be strapped with great force or stand with force on the straps for a long time as this can cause deformations on the boat.

The illustration below shows a cross section of the boat’s bracing system, and the markers indicate where it will be suitable to support the hull. A warning sign has also been installed on board the boat as a reminder.

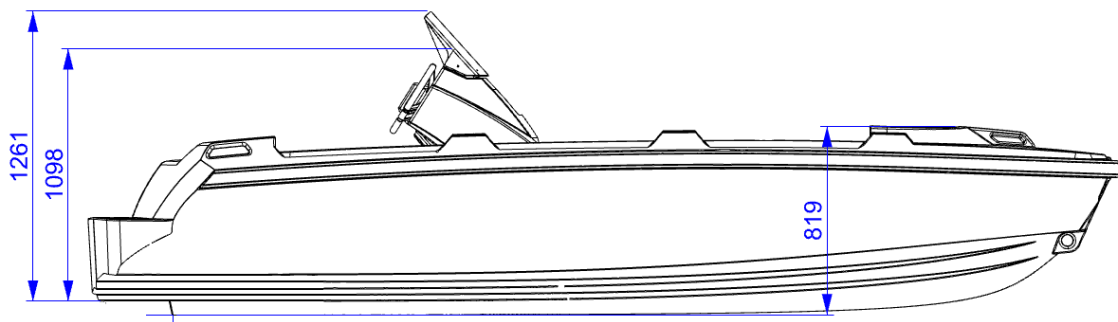


7 Transportation clearance

Consider that in the case of a transport the overall height will depend on the design of the trailer and may change. Before each transport measure the overall height of the boat on the trailer. Ensure not to exceed structural or legal limitations for transportation.

The transport clearance height of the boat is 1,26m

Updated transport clearance height:



8 Description

8.1 Characterization

Your *Hydra 450 BASIC* is the basic version of the *HYDRA 450* boat model. It is suitable for anyone looking for an entry model into the world of motor boats. It is a great model for those who are looking for a solution as a vessel to be rented out, for those who are looking for a work boat, or a boat for fish farms or marinas.

HYDRA 450 BASIC version includes rear and front lockable bench for fuel tank and storage, stainless steel handrails and two aluminium plates in the transom for engine mounting.

HYDRA 450 FISHING version is designed specifically for all fishing enthusiasts. Its green base color with addition of black tones is ideal to blend with the surrounding nature.

HYDRA 450 FISHING version includes rear lockable bench for fuel tank and storage, another front bench with storage box, wooden cover for front with metal plate, stainless steel handrails and two aluminium plates in the transom for engine mounting.

HYDRA 450 FAMILY is a family version of the *HYDRA 450* model with a sporty soul. It is suitable for anyone looking for a safe and reliable boat for daily trips and escapes from everyday life. It is also suitable as an accompanying vessel.

HYDRA 450 FAMILY version includes rear lockable bench for fuel tank and storage, another front bench with storage box, console with windshield and steering wheel, stainless steel handrails and two aluminium plates in the transom for engine mounting.

HYDRA 450 RESCUE version is designed specifically for to attend a vessel in distress, or its survivors, to rescue crew and passengers. Its red base color is ideal to get noticed in case of emergency.

HYDRA 450 RESCUE version includes rear lockable bench for fuel tank and storage, another front bench with storage box, console with windshield and steering wheel, stainless steel handrails and two aluminium plates in the transom for engine mounting.

A wide range of accessories such as bimini, fuel tank, boat trailer and console with windshield and steering wheel are also available.

HYDRA 450 XR1 is a centrally positioned version of the boat. The jockey seat allows higher seating position and amazing balance for single use. It is suitable for everyone who is looking for something different.

Serial equipment includes rear bench for fuel tank and storage, “jockey” seat, centrally mounted console with windshield and steering wheel, stainless steel handrail and two aluminium plates in the transom for engine mounting.

HYDRA 450 XR2 is a centrally positioned version of the boat. Two Jockey seats provide a unique motorboat driving experience. A higher sitting position and better balance are another advantage of this model. *HYDRA 450 XR2* is suitable for everyone who is looking for something different.

Serial equipment includes two “jockey” seats, centrally positioned console with windshield and steering wheel, stainless steel handrails and two aluminium plates in the transom for engine mounting.

8.2 Construction

Your *HYDRA 450* is made of high-quality polyethylene plastic. The material is very impact resistant and durable at normal temperatures. It is fully moulded with a tight cavity which gives the boat very good buoyancy. *HYDRA 450* is designed with wide step/speed-rails and wide shine in the hull, which gives the boat good planning properties, very good stability, and safe driving characteristics. Holes in polyethylene plastic are difficult to close as ordinary adhesive systems do not adhere over time. Therefore, under no circumstances should holes be made in the boat to install equipment yourself, without first consulting with the manufacturer.

Use of heat:

Polyethylene loses its strength when heated significantly beyond normal temperatures. Therefore, do not use open flames or other heat on board the boat. In the event of ignition or excessive heating, it will produce heavy smoke (non-toxic), the plastic will become shiny, brittle and lose its mechanical properties, and the boat will no longer meet the current requirements and rules for safe use at sea.

8.3 Stability

Your *HYDRA 450* has been designed according the requirements set up by the chosen design category (see chapter 2) to operate safely and stably. In general, the *HYDRA 450* fulfills the requirements of EN ISO 12217-3:2017 (Boats of length under 6m) about stability and buoyancy.



CAUTION

The hull is not designed to resist local damage caused by stiff and/or sharp objects. In case the hull is damaged, immediate repair is necessary.

8.4 Helms view

The helmstand of your *HYDRA 450* has a visibility field according ISO 11591.

Helmsman's visibility field can be influenced by the trim of the boat or other operating conditions:

- sea conditions
- darkness and fog
- heel and trim
- interior illumination
- load and load balance
- roofs and tarps
- speed
- people or movable equipment on deck



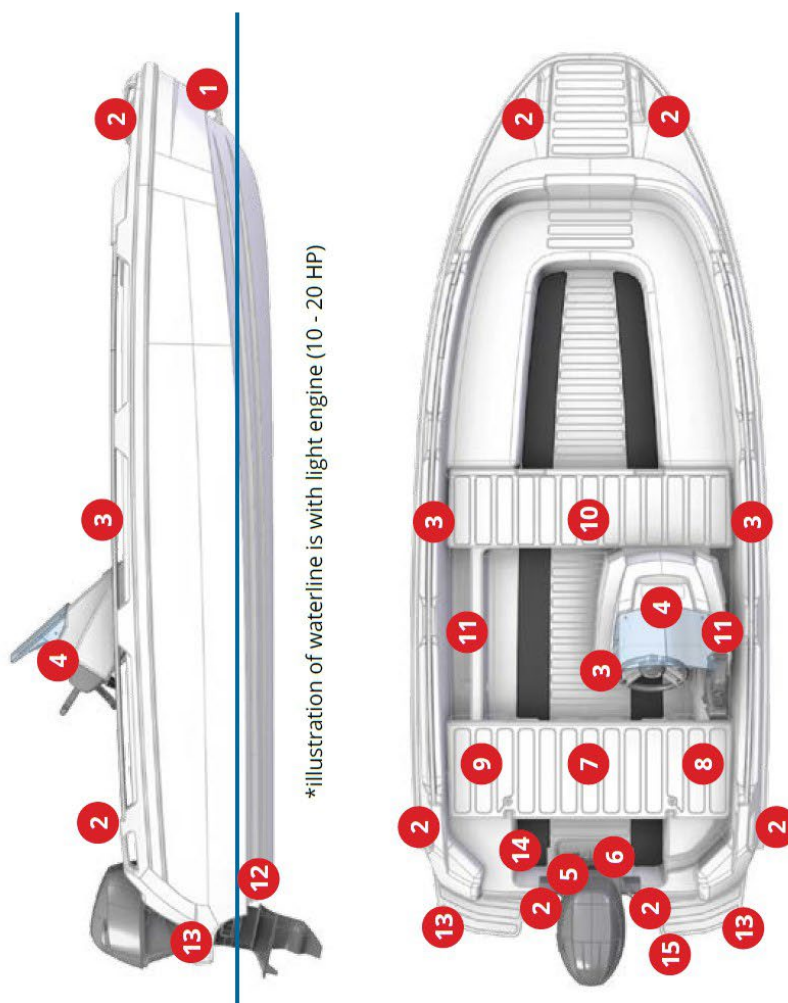
CAUTION

According to the Convention on the International Regulations for Preventing Collisions at Sea (COLREGs) and national laws the boat leader has to make sure to have always an unrestricted view. The adherence to these regulations is indispensable.

9 Interior & deck arrangement

List of parts:

1. Towing point/winch point
2. Mooring points 6pcs. bow and stern
3. Handrail / handle
4. Steering console with windscreen, steering wheel, and space for throttle / gear control, chart plotter and gauges (*all optional)
5. Transom/engine mounting plate
6. Drainage hole with expanding sealing plug
7. Large storage space for fuel tank and equipment
8. Small storage space for smaller items
9. Battery compartment
10. Large storage space for equipment
11. Open storage compartments for ropes, boat hook etc.
12. Drainage plugs 3 pcs. into chambers / double bottom. For service personnel only!
13. Bathing platforms with the possibility of mounting a rescue / bathing ladder (*optional)
14. CE sign
15. WIN number (“hull number”)



10 Electrics

10.1 DC supply

Power supply

The 12V DC power system supplies the most consumers aboard and includes the following components:

#	Application	V	Total cap.	Position	Type
1x	Starting battery	12	_____Ah	Below aft cockpit bench on _____ Ps.	_____ - maintenance free

The battery is switched in a way that it gets charged while the engine is operating.

Consider that the power from batteries is limited.

When the voltage sinks below 10,5V you need to recharge the batteries. Budget carefully with the remaining capacity when you are at sea without a chance of charging your batteries.

INFORMATION



Consider that the power from batteries is limited. Therefore check the voltmeters on your DC switchboard. When the voltage sinks below 10,5V you need to recharge the batteries. Budget carefully with the remaining capacity when you are at sea without a chance of charging your batteries.

DC consumer

- Navigation lights
- Instruments
- Comfort consumers (interior lights, courtesy light, refrigerator, DC sockets etc.)

DC switchboard and battery monitoring

The DC switchboard is situated _____.

Advices in handling batteries

Severe injuries may be caused handling with wrenches connected to the positive pole (+). Do not wear any jewelry e.g. to avoid any contact with metal parts of the hull.

The same can happen connecting the positive pole (+) while the negative pole (-) is already connected.

Removal instruction

Never touch the positive pole while the negative pole (linked with the main wire and engine) is still connected.

Remove the connection of the negative pole first!
This protects from short circuits with any metal parts of the ship.

Transportation

Batteries are quite heavy!

The battery must be transported in its original or equivalent package and in an upright position. If the battery is in its package, use soft slings to avoid damage.

Do not stand below a battery when it is hoisted.

Use a suitable cart or trolley for long distance transport.

Please ensure a firm grip that the battery cannot fall down. Larger batteries have handles or supporting loops. If it is too bulky, ask a second person for help.

Attention: Always set batteries down gently!

Battery installation

Usually the batteries are charged continuously by the battery charger on board. In any case of battery replacement, please refer to the manufacturer's instructions.

Important: Observe the removal instructions already listed.

Please note that even though the batteries have been installed correctly, there are still other potential dangers.

If consumers are already switched on during installation, a more or less powerful spark can jump when the battery is connected, which can ignite the oxyhydrogen gas that may have been produced when the batteries were charged.

Important: Therefore, switch off all consumers before installing the battery!

Further sources of danger from lead batteries

- Commercially available batteries are usually lead-acid accumulators. The batteries in a boat work with high electric current to start the engine(s).
- More likely than a gas explosion is a mechanical damage to the battery housing. Acid can leak from the battery and can cause chemical burn. Be careful not to touch the acid and expose your face or eyes. In case of contact with acids proceed as described above (rinse with water, contact a medic).
- Occasionally, the acid also spreads via the fingers to the face or eye. In these cases, the same measures (see burns above) are required as for acid contact caused by the explosions (rinsing with plenty of water; check by a physician).

Charging

In case of poorly ventilated rooms and/or multiple batteries charging at high currents (charging station) it is possible that the accumulation of electrolytic gas can become high and the concentration can explode.

Chemical burn

Electrolytic gas detonation can rip the battery housing open and acid can be expelled. Sulfuric acid causes chemical burn if it is not immediately washed out with water. Intensely rinse with plenty of water (at least 15 minutes under running water). In any case that acid gets into eyes, rinsing with water and contact a medic immediately!

Further sources of danger from LiFePo4 batteries

- While working on a li-ion battery wear protective eyeglasses and clothing.
- Any uncovered battery material such as electrolyte or powder on the skin or in the eyes must immediately be flushed with plenty of clean water. Then seek medical assistance. Spillages on clothing should be rinsed out with water.
- Explosion and fire hazard. The terminals of a li-ion battery are always live, therefore do not place metallic items or tools on top of a li-ion battery. Avoid short circuits, too deep discharges and too high charge currents. Use insulated tools. Do not wear any metallic items such as watches, bracelets, et cetera. In case of fire, you must use a type D foam or CO2 fire extinguisher.
- Do not open or dismantle the battery. Electrolyte is very corrosive. In normal working conditions contact with the electrolyte is impossible. If the battery casing is damaged do not touch the exposed electrolyte or powder because it is corrosive.
- Li-ion batteries are heavy. If involved in an accident they can become a projectile! Ensure adequate and secure mounting and always use suitable handling equipment for transportation.
- Handle with care because a li-ion battery is sensitive to mechanical shock.
- Do not use a damaged battery.
- Do not wet the battery.

Charging and discharging

- Too deep discharges will seriously damage a li-ion battery and can even be dangerous. Therefore, use of an external safety relay is obligatory.
- Use only with a manufacturer approved BMS.
- If charged after the Lithium Battery was discharged below the "Discharge cut-off voltage", or when the Lithium Battery is damaged or overcharged, the Lithium Battery can release a harmful mixture of gasses such as phosphate.
- The temperature range over which the battery can be charged is 5°C to 50°C. Charging the battery at temperatures outside this range may cause severe damage to the battery or reduce battery life expectancy.
- The temperature range over which the battery can be discharged is -20°C to 50°C. Discharging the battery at temperatures outside this range may cause severe damage to the battery or reduce battery life expectancy.

10.2 Electric diagrams

Not installed

11 Systems and equipment

11.1 Propulsion / Main drive

Engine room and engine arrangement

The outboard engine is located at the transom. The fuel tank is situated inside of the box.

Engine operation

Your *HYDRA 450* is **optionally** equipped with a driving throttle on the helmstand on starboard. It can be operated with the associated handle.

Start the engine in power level position 0 / upright position only (safety switching).

All relevant engine and travel information can be viewed from the multifunction display at the helmstand.

CAUTION



Avoid sudden maneuvers at high speed;
For comfort and safety: reduce speed at swells;
Do not use the bow cockpit at high speed;
Always use the automatic vigilance device if available;
Avoid touching the engines moving parts, the propeller shaft or the steering during operation!

INFORMATION



Please take notice of the manufacturer's operation manual of each system component. Service and repair should be carried out according the manufacturer's specifications by a certified system mechanic.

Please also take notice of the information about regular service of the engine given in the manufacturer's operation/service manual.

Seawater filter

The Seawater filter of the outboard engine is located on the engine. It should be cleaned at regular intervals.



INFORMATION

Please take notice of the manufacturer's operation manual of each system component. Service and repair should be carried out according the manufacturer's specifications by a certified system mechanic.

Fuel filter

The outboard engine is equipped with a fuel filter.

A trouble free operation of the engine and generator is only possible with clean fuel. Regular inspection and cleaning of the filter and water separator is required. Once a year, the diesel tank should be completely emptied and cleaned.



WARNING

Never smoke or handle an open flame during working on the fuel system.



INFORMATION

Please take notice of the manufacturer’s operation manual of each system component. Service and repair should be carried out according the manufacturer’s specifications by a certified system mechanic.

Engine data

See Chapter 6.4 for main drive information.

11.2 Rudder and steering

Your *HYDRA 450* is **optionally** equipped with a mechanical steering system (optional hydraulic steering system).



WARNING

If the steering system fails, you may lose control about your vessel.
Check the system periodically for tightness and loose connections!
Read the service manual of the manufacturer and the instructions given in it.



INFORMATION

Please take notice of the manufacturer’s operation manual of each system component. Service and repair should be carried out according the manufacturer’s specifications by a certified system mechanic.

11.3 Fuel system

Your *HYDRA 450* is **optionally** equipped with a fuel tank (Vol. see section 6.5). The tank is located in the tank compartment below the cockpit aft bench. The feed pipe is a fire-retardant fuel pipe (complying with ISO 7840). The tank breather is located directly on the tank.

The type of fuel depends on the installed engine (see service manual of the engine manufacturer).

Remember:

A trouble free operation of the engine and generator is only possible with clean fuel. Regular inspection and cleaning of the filter and water separator is required. Once a year, the diesel tank should be completely emptied and cleaned.

The fuel filling nozzle is situated directly on the tank and is labeled „FUEL“.



WARNING

Switch off engines before filling.
Never smoke or handle an open flame during filling.



CAUTION

Please take notice of the engine manufacturer's operation/service manual. It provides information about the required type of fuel, safety issues and measures to prepare for winter.
Never fill the fuel tanks over 90% of their total volume to guarantee enough space inside the tank as a result of thermal expansion.
Before filling, make sure to use the right fuel filler.



INFORMATION

According to trim and load the full capacity of the tank may not be usable.
A reserve of 20% of the tank capacity should be kept during normal operation.

12 Anchor- towing- and mooring equipment

Anchor

Your *HYDRA 450* is **optionally** equipped with a manual anchor system.

Windlass and anchor data

Manufacturer	_____	
Type	_____	
Anchor type	_____	(galvanized)
Anchor weight	—	kg
Anchor chain	—	m
Chain diameter	—	mm



DANGER

Risk of injury to toes or fingers and hands from crushing when operating the windlass.



CAUTION

Be aware that the retention power of the anchor may not be sufficient because of certain grounds, adverse weather conditions and heavy swell and strong winds. In view of all above it may happen that you have to take special seamanship measures to enhance the retention power of the anchor or that you may have to leave the anchor ground.



INFORMATION

Please take notice of the manufacturer’s operation manual of each system component. Service and repair should be carried out according the manufacturer’s specifications by a certified system mechanic.

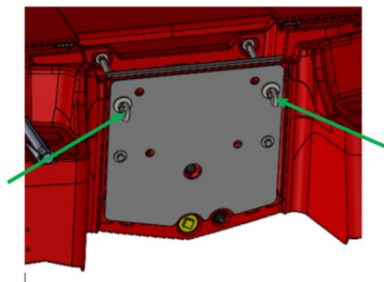
Towing

When your *HYDRA 450* is being towed, the strong towing eye under the bow should be used. When your *HYDRA 450* tows another vessel or object, the stern pullers are to be used. By using a “cock foot”, you will distribute the load on both fasteners aft and achieve better stability and manoeuvrability, as well as a more even load on the hull. When using davit, approved fastening equipment must be used and the boat must be secured for good stability. 20 mm rope must be used for towing and the maximum load on the towing point/attachment is 1000 kg. 3-strand nylon rope with a breaking strength of 7000 kg is recommended.



Towing for Watersports:

In case of towing sport utilities like waterskiers, wakeboarders or different swimming devices please make sure that ropes are fixed on both marked strong points:



CAUTION



It is **NOT** allowed to fix the Ropes on TARGA.

CAUTION



The tow speed has to be below the maximum displacement hull speed of around 5kn (=9,5km/h), otherwise the towing forces and loads may lead to damages on the boat. A tow line shall always be made fast in such a way that it can be released when under load.

Mooring

For mooring, six mooring points (2x bow, 4x stern) are provided on the working deck. Those are designed to be of sufficient strength to take the normal expected loads in sheltered ports.

The owner decides about the way of fixing the lines on board at his own discretion and responsibility.

CAUTION



It is the owner’s/operators responsibility to ensure that mooring lines, towing lines, anchor chain(s), anchor lines and anchor(s) are on board and that the gear is adequately for the vessel’s intended use, i.e. the lines or chains do not exceed 80% of the breaking strength of the respective strong point.

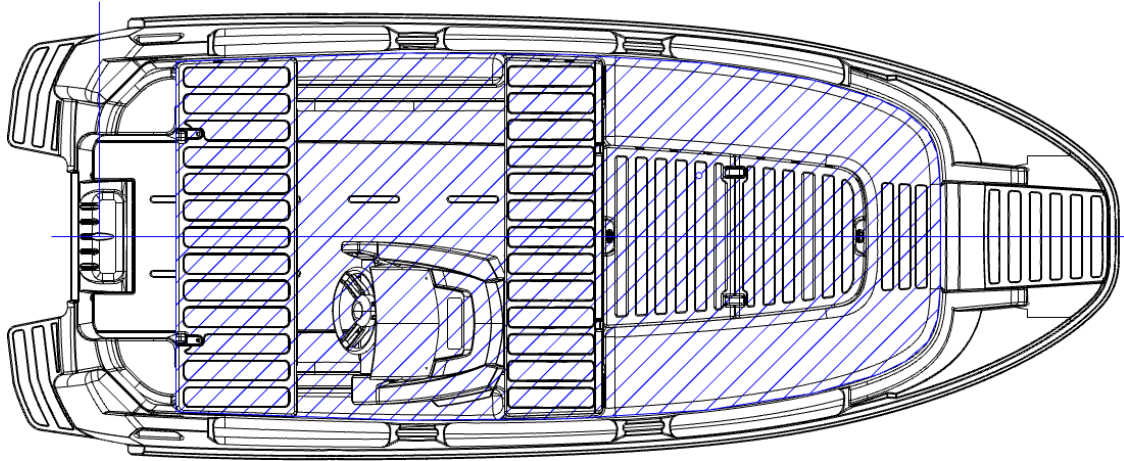
Working deck

For the purpose of the directive, a so-called working deck is defined by the manufacturer, on which the skipper and the crew can safely move during the operation of the boat.

The area of the *HYDRA 450* bounded by the cockpit is defined as the working deck. The mooring points and mooring lines can be safely operated from here.

Please note that the use of the mooring points and mooring lines is only to be done from a safe position in the cockpit.

Fig.: Working deck



13 Rescue

13.1 Re- embarking

A bathing ladder required is optionally installed on the aft platform on Stb. or Ps.

13.2 Life raft

The *HYDRA 450* can be equipped with a life raft which can be stored in the cockpit.
For installation, usage and maintenance read the corresponding manufacturer's service manual.



INFORMATION

Please take notice of the manufacturer's operation manual of each system component. Service and repair should be carried out according to the manufacturer's specifications by a certified system mechanic.

13.3 Escape routes

Your *HYDRA 450* can be left on all sides.

14 Firefighting

Fire protection is the most security-relevant field to pay as much as possible attention to. The shipyard designed the craft according to the legal regulations. Familiarize yourself with all fire protection equipment aboard and the following information.

The boat must be provided with one portable fire extinguisher which shall be located as shown in the figure below! Further details are given in the corresponding instructions for use. The fire extinguishers must have an extinguishing capacity of at least 5 A for fire classification A or 34 B for fire classification B (5A/34B).

Active fire fighting

If there is a fire breakout regardless of all the preventive measures taken, you should act as follows:

- All persons, who can't help fire fighting should go on deck or into the cockpit.
- Try to extinguish the fire as soon as possible as you recognize it.
- Should the on board fire fighting system not be sufficient, call for help if possible.

Fire in other areas and compartments

If no flammable liquids are burning, the fire can be extinguished by using the fire blanket or even water. Otherwise you should use the fire extinguisher for that purpose.

CAUTION



- Keep the bilges clean and check for fuel vapors or fuel leaks frequently.
- Replacing parts of the fire-fighting installation, only matching components shall be used, bearing the same designation or having equivalent technical and fire-resistant capabilities.
- Do not fit free-hanging curtains or other fabrics in the vicinity of, or above, cookers, or other open-flame devices.
- Do not stow combustible material in the engine space. If noncombustible materials are stowed in the engine space, they shall be secured against falling into machinery and shall cause no obstruction to access into or from the space.
- Exits other than the main companionway doors or hatches with permanently fixed ladders are identified by a symbol.

Firefighting equipment

This boat, when in service, shall be equipped with at least the following portable firefighting equipment of the following extinguishing capacities/ ratings and in the following locations: (complete after re-fitting).

The location of a fire extinguisher is indicated by this symbol



Keep in mind that a hidden stowed fire extinguisher that no one is aware of is not helpful in case of a fire!

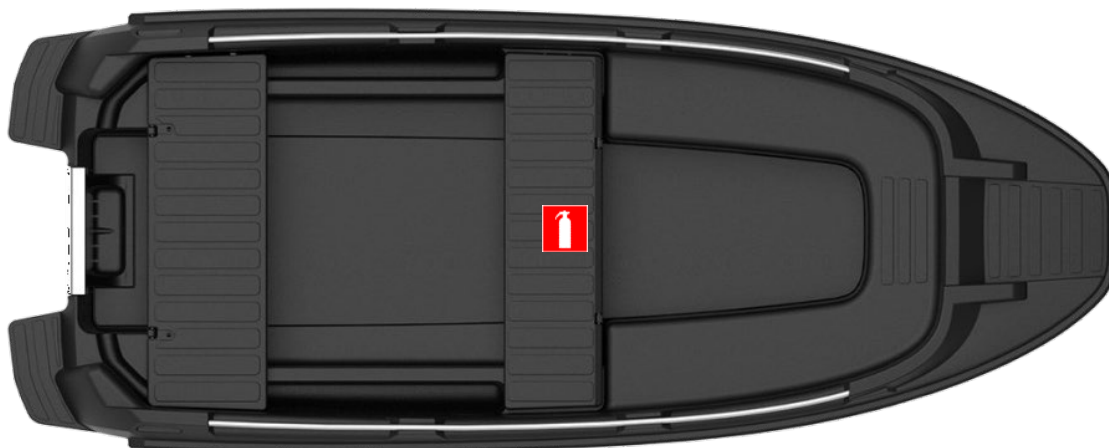



Fig.: Position of firefighting equipment

Symbol	Description	Type	Position	Rating
	Fire extinguisher	Foam	Locker inside front cockpit bench	2 kg - 5A34B

14.1 Regular maintenance and Responsibility of boat owner/operator

The boat owner/operator shall:

- have fire-fighting equipment checked at the intervals indicated on the equipment,
- replace portable fire extinguishers, if expired or discharged, by devices of identical firefighting capacity, and,
- have fixed systems refilled or replaced when expired or discharged.

Never decrease the existing fire rating capacity!

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

- the fire-fighting equipment is readily accessible when the boat is occupied.
- the members of the crew are informed about the location of the fire-fighting equipment and the ventilation openings of the engine room.

14.2 Specific warnings

NEVER

- obstruct passageways to exits and hatches,
- obstruct safety controls, e.g. fuel valves, gas valves, switches of the electrical system,
- obstruct portable fire extinguishers stowed in lockers,
- leave the craft unattended when cooking and/or heating appliances are in use,
- use gas lights in the craft,
- modify any of the craft's systems (especially electrical, fuel and gas) or allow unqualified personnel to modify any of the craft's systems,
- fill any fuel tank or replace gas bottles when machinery is running, or when cooking or heating appliances are in use,
- smoke while handling fuel or gas.

ALWAYS

- Store bulk loads in designated storage compartments or fix it on deck with appropriate straps or ropes.

15 Environmental protection

Behavior during anchoring and mooring

Avoid noise pollution from motors, generators, or excessively loud music.

Waste

It should be obvious that garbage and waste do not belong in the water – this is also true for biologically biodegradable waste. There should be a designated, secure area for garbage provided for on board.

Noise

The sound being generated by the engine is an environmental pollution as well, therefore always try to keep the sound level as low as possible. When developing your boat, measurements for preventing sound pollution have been taken. The boat is constructed to the noise and sound regulations of the recreational craft directives. Please make sure that the insulation of the engine room won't be damaged.

Avoid too fast accelerations of the engine, reduce the revolution of the engine in consolidated and areas of high volume traffics. Choose revolutions, which don't cause needless noise and uproar.

Exhaust

The fitted engine of your new boat is chosen to pollute the environment as little as possible and to get the most favourable exhaust values.

Check escaping exhausts regularly, they should neither be black smoke nor blue clouds. Very often these coloured fumes are an indication of blocked air filters, which you can check personally or ask a specialist of your confidence when the engine needs new adjustments.

Colors and cleaning agents

Most solvents content aggressive media and should be avoided whenever possible. Aboard you should use just bio degradable detergents and those just in small amounts. Use as much seawater as possible when cleaning your boat in the marina. Every marina has specific washing areas ashore where you can clean the underwater body for winterization & storage. In those areas the dirty water is collected in special containers, being cleaned and filtered, which helps protecting the environment against dirty and hazardous water.

Fuel/Oil

Extreme caution should be exercised during the fueling of crafts. Make optimal safety arrangements so that neither oil nor fuel can get into the water. Use regular gas for gas motors, but ensure that the motor manufacturer does not call for the use of premium gasoline.

For two-stroke motors, ensure that the proper mixture between gas and oil is in place. Use the modern and environmentally safe two-stroke motor oils, preferably those created with plant oils. These ensure an improved ignition, reduce odor pollution, and are the most biologically degradable.

However, it is not recommended that diesel motors be run with fuels produced with plant oils (for example rapeseed oil or RME). These fuels are more environmentally friendly than diesel, but the motor's efficiency can be negatively affected.

Nature conservation

Follow the written and unwritten rules of environmental protection.

Follow all regulations in nature reserves, if boating is allowed in those waters.

"Help to keep water clean. Garbage and waste, specifically the contents of chemical toilets, do not belong in water. This waste, as well as used oil, must be disposed of in proper containers at the harbor. You should also use the sanitary facilities on land in the harbor. Do not run your motor unnecessarily, so that the environment is not polluted with excessive noise and exhaust."

10 Golden Rules of Water sports (no.9)

16 Maintenance and care

Boat care and cleaning

If possible clean the boat immediately and as soon as it is taken out of the water. The dirt and fouling on the underwater body can be removed using a pressure washer. You should do this in the specific washing areas of your marina.

Contaminations should be removed using water where possible. In some cases it may also be necessary to use special agents for cleaning varnish those should be proofed as being suitable and recommended by the manufacturer.

Cleaning:

Clean your boat only with cleaning products that are specially created for PE surfaces. Specialized stores can provide advice about the selection of appropriate cleaning products. At all costs avoid using cleaning products that contain sanding or polishing ingredients.

There may be particular regulations or requirements at your mooring area due to ecological reasons. You should definitely ask the appropriate authorities or harbor management which cleaning products are allowed. For environmental reasons, potable water should not be used to clean the boat, if at all possible.

Textiles

The textiles on the boat are to be cared for in the same way that you care for textiles in your residence. To clean upholstery it is best to use appropriate upholstery cleaner that can be found in specialized stores. When using upholstery cleaner for the first time, you should always test it in a concealed area in case it affects the color.

Attention: damp textiles should be dried as soon as possible. Damp textiles should be stored in such a manner that all surfaces are exposed to air. Place damp textiles facing upward and ensure good air circulation. Mold stains in textiles can always be traced back to poor care and are not acceptable as a reason for warranty return.

Lines and ropes are indispensable components of every boat's equipment. Ensure that you always have a sufficient number of tear-resistant ropes at various lengths on board. Keep in mind that not every line or rope can be used for every task. It is not possible to provide universal recommendations concerning the necessary amount of lines and ropes in a boat's equipment, as the requirements always depend on individual conditions on board, the specific sailing range, and the specific realities of your moorage location. Ensure that you always have a few meters excess of lines and ropes on board, rather than too few. You should always get advice from experienced staff at specialized stores, as this is the only way you can be sure that you have the correct equipment.

Do not expose lines and ropes unnecessarily to the sun, as they may quickly become hard and brittle. Immediately replace any hard lines or rope for new ones. Lines and ropes made out of synthetic fibers often break without "warning." Use mooring lines or ropes for your long-term moorage that are made out of materials that are resistant to ultraviolet rays (sun light). Immediately replace any damaged lines or ropes or ensure that they are repaired by experts.

Only use proven knots (sailor's knots) and splicing when using lines or ropes. Secure all ends of lines with a whipping to avoid fraying. With lines made out of synthetic material, the ends may be sealed with heat. Dirty lines or ropes may be easily cleaned with lukewarm water and environmentally safe soap or with sensitive cleaning materials. Always dry damp or wet lines and ropes before storing them. Always keep your lines ready for use, that means always clean, coiled, and at the ready. One knows a sailor from the condition of his lines and ropes.

Metal parts can be cleaned using common metal cleaning agents, but be aware some of them cannot be used for chrome parts. Grating agents and special abrasives destroy the thin chrome layer.

All metal parts aboard should be regularly checked for rust and, where necessary, protected with appropriate protection. This also applies to "salt-water proof" aluminum or stainless steel fittings. To preserve the sparkly shine of stainless steel, you should polish these fittings several times a year with a special polish or frequently coat them with a thin protective layer of grease. We recommend using acid-free Vaseline or similar products found in specialized stores.

Note: Stainless steel may show small traces of rust after insufficient care and maintenance. This is neither a reason for return nor an indication of poor manufacture. This is almost always caused by inadequate care and maintenance. Even stainless steel requires periodic care, although not as much as other metals.

Erosion and spare parts

Sometimes it cannot be avoided that damages may occur; highly loaded parts suffer under fatigue and need to be replaced from time to time. If possible choose original and genuine parts, or at least parts of equivalent quality and specification. Highly loaded parts have to comply to specific strength and stiffness criteria you shouldn't go into compromises on those parts as they will have a direct impact on the vessels and your personal safety.

If you need further assistance or have questions regarding spare parts and their specification ask the *SHIPYARD*.

Service and repair

If minor repairs or even structural failures and damages on the boats hull or engine have to be fixed, ask a specialist. They have the required knowledge and experience on the technology and have the ability to bring the boat back to its original condition.

Winter storage

The winter storage should be used to do an extensive inspection on the hull and all its structural parts and components.

Because the boat will be unattended for a long period, you should protect the boat against climatic influences and cover the boat properly. It is very important that air can circulate under the cover, no matter whether the boat is stored outside or in the inside of a shed. All the ventilation openings in the boat should remain open.

Moreover the cover should be fixed properly, so that it will stay in place even in bad weather conditions. Often chafe of ropes and lines on the hull side become a problem, therefore you should protect the hull against those damages.

When storing the boat also consider chapter 1.1.8, attachment points for crane, slip and transport".

Remove the water and drain the seawater circuits of the engine systems, including the exhaust

system.

Take the batteries away and store them, in a loaded condition, on a dry and frost free place. Check the contacts on corrosion.

Propeller

A Propeller has to be checked for damages and wear at least once-a-year. Thereby it should get lubricated with a seawater resistant friction grease. Check all rubber parts and induce a replacement by a professional if wear is identifiable.

Notice: Negligence of regular service and maintenance can quickly result into a damaged propeller or propulsion system. In this context the possibility of a damaged hull cannot be ruled out.

The zink anode will degrade. It needs to be replaced when necessary. Also it is always advisable to remove the shore connection after use because potential grounding faults may have negative effects to the decay of the anodes.



INFORMATION

Please take notice of the manufacturer's operation manual of each system component. Service and repair should be carried out according the manufacturer's specifications by a certified system mechanic.

Survey of systems and equipment

If the boat has been out of service for a while, all the systems should be checked carefully on functionality. At least the following systems should be checked by the boat owner:

- Fuel pipes and fuel connections and nozzles, monthly
- Seacocks, every 12 months

Inspection surveys and maintenance intervals of the engine can be taken out of the engine manual.

Modifications to the watercraft

For your safety, as well as to preserve the warranty, contact your dealer for information what kind of modifications you can do on your own and especially for recommendations what should under no circumstances be done.

17 The 10 golden rules of water sports

1. Avoid sailing into reeds, shoreline plants, and all other dense growth along the shoreline. In addition, avoid gravel, sand, and silt banks (which are used as resting places by birds) as well as trees along the shore. Also avoid shallow water (spawning zones), particularly those with water plants.
2. Keep a sufficient minimum distance away from reeds, shoreline plants, and other dense growth along the shoreline – in wide rivers, for example, 30 to 50 meters. Keep a sufficient distance to groups of birds in or on the water – if possible, more than 100 meters
3. Without fail follow the prevailing regulations in nature reserves. Often water sports are not allowed at all in nature reserves, or at least temporarily disallowed or allowed under certain circumstances.
4. Be considerate of the “importance of international wetlands” when participating in water sports. These wetlands serve as the living environment for rare plants and animals and are therefore in need of protection.
5. When landing use the designated areas or such areas in which no damage may be inflicted.
6. Do not approach reeds, shoreline plants, or other dense growth along the shoreline from land either as this may endanger birds, fish, small animals, and plants living in this environment.
7. Do not walk along tidal flats where seals are located, so they are not scared away or disturbed. Keep a distance of at least 300 to 500 meters in areas where seals are resting or flocks of birds are gathering. Slowdown in areas specially marked and sail with a slower tempo.
8. Observe and photograph animals preferably from a distance.
9. Help to keep water clean. Garbage and waste, specifically the contents of chemical toilets, do not belong in water. This waste, as well as used oil, must be disposed of in proper containers at the harbor. You should also use the sanitary facilities on land in the harbor. Do not run your motor unnecessarily, so that the environment is not polluted with excessive noise and exhaust.
10. Use these rules as appropriate. Gather information before your trip about the area in which you will sail so that you are aware of any regulations or concerns. Ensure that this knowledge and your own behavior regarding the environment serve as an example to youth and to other unorganized water sportsmen.

18 Closing remarks

This handbook follows the specifications of the harmonized European Standard EN 10240. Many of the guidelines will strike you as obvious. Nevertheless, we hope that after reading the individual chapters, you have attained a deeper understanding of the technical systems and topics. The purpose of this handbook is, mentioned in the introduction, to provide clear and above all safe information regarding the use of the boat.

This handbook does not provide information from the domain of seamanship – the piloting of the ship and working with the crew – nor does it cover the area of safety equipment. These both fall under the responsibility of the Skipper. It is obvious that personal safety devices must be available for each person on board – regardless of the regional or national regulations. But safety equipment may also involve the procurement and maintenance of the safety equipment – for example, emergency signals, first aid equipment, repair equipment, and life rafts, etc.

Since the guidelines regarding fire deserve a special mention, it is important to mention that the fire extinguishers must be maintained periodically and that it is the responsibility of the Skipper to instruct the crew on how to use them.

Those who are prepared for an emergency often are not faced with an emergency. In the case of an emergency, the boat is already prepared and equipped with the proper tools.¹⁴

We are constantly trying to improve our power boats and services. Please understand that we reserve us the right to make changes in the exterior design, equipment and technology. Therefore no claims can be made regarding the published data, sketches, figures or descriptions.

The distribution of the boats is in general with the *SHIPYARD*. Outstanding debts regarding warranty claims thus have to be made directly to the boatyard.

When purchasing boats over the specialized trade no direct contract relationship exists between the client and the boatyard. Contract details are not known by *SHIPYARD* and it is not compulsory necessary that the specialized trade is giving the same warranties as we do. In such a case any warranty claims have to be made to your contracting party.

Ordinary maintenance:

Your *ROTO 450* is delivered ready for use from the factory/dealer. During the season, small demands are made on maintenance beyond normal cleaning. Almost all means can be used for cleaning. The plastic can withstand everything from ordinary household products to heavier solvents. It is still recommended to test on a small visible field to see if discoloration or changes in the surface form. Contact your dealer or manufacturer for a detailed description.

19 Additional instruction/service manuals

- Manuals of the engine manufacturer
- _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____

20 Warranty terms

Warranty conditions of SHIPYARD

The customer is bound to check the product immediately and to reprove shortcomings and defects instantly.

The vendor will guaranty possible faults of the purchased item according the actual version of:

Terms and Conditions for warranty of ROTO Nautica Boats

This warranty conditions apply for the boat with the hull number:

SI - ROT0A _ _ _ _ _

21 Proof of identity

(To be completed by the boatyard)

ROTO d.o.o.
 Gorička ulica 150, Černelavci
 SI-9000 Murska Sobota
 Slovenia

Type of boat	HYDRA 450
Craft identification number	SI - ROT0A _ _ _ _ _

Engine manufacturer	_____
Type of engine	_____
Serial number of the engine	_____

Type of propeller	_____
Propeller dimensions	_____

First launch of the boat	_____
First delivery (to first owner)	_____

.....

(Signature first owner)

.....

(Signature boatyard)

22 Acknowledgement receipt

Please return signed to:

ROTO d.o.o.
Gorička ulica 150, Černelavci,
SI-9000 Murska Sobota,
Slovenia

Name: _____

Address: _____

Owner of the ROTO 450 with the craft identification:

SI - ROT0A _ _ _ _ _

This craft has been built according the recreational craft directive for private pleasure crafts and the guaranteed quality level by law.

The warranty begins: _____
(Date)

Signature of the owner: _____

Seal / Signature of the manufacturer: _____