

NORTHSTAR[★]
ORION
CRUISING RIBS

OWNER'S MANUAL



ORION 6



ORION 7



ORION 8

This manual is preliminary.
All information presented is subject to change.
Please contact
info@ribtech.com
to receive the original document.

INDEX

| | | | |
|---|-----------|---|-----------|
| 1. GENERAL INFORMATION, DESIGN, AND PRODUCTION | 2 | 8.2. CONTROLLING ELECTRICAL SYSTEMS | 31 |
| 2. INTRODUCTION | 2 | 8.3. AT THE PORT | 31 |
| 2.1. DEGREES OF HAZARD | 3 | 8.4. VIBRATIONS | 31 |
| 2.2. EXPLANATION OF MANUFACTURER'S PLATE | 3 | 8.5. SHIFTING | 31 |
| 3. CLASSIFICATION, CERTIFICATION, AND SPECIFICATIONS | 4 | 8.6. TRIM | 32 |
| 3.1. ORION 6 DECLARATION OF CONFORMITY | 5 | 8.7. FIRST OPERATING HOURS | 32 |
| 3.1.A. ORION 6 TECHNICAL SPECIFICATIONS | 6 | 9. SAFETY | 32 |
| 3.2. ORION 7 DECLARATION OF CONFORMITY | 7 | 9.1. OPERATOR'S RESPONSIBILITIES | 33 |
| 3.2.A. ORION 7 TECHNICAL SPECIFICATIONS | 8 | 9.2. OVERLOADING | 34 |
| 3.3. ORION 8 DECLARATION OF CONFORMITY | 9 | 9.3. WEATHER CONDITIONS | 35 |
| 3.3.A. ORION 8 TECHNICAL SPECIFICATIONS | 10 | 9.3.A. WHAT IF IN SEVERE WEATHER CONDITIONS | 35 |
| 4. BOAT IDENTIFICATION, EQUIPMENT AND FEATURES | 11 | 9.4. FIRE | 35 |
| 4.1. FRP SECTION | 11 | 9.5. CARBON MONOXIDE HAZARD | 36 |
| 4.1.A. CONSTRUCTION | 11 | 10. MAINTENANCE AND STORAGE | 36 |
| 4.1.B. DECK FITTINGS AND CONSOLE FEATURES | 11 | 10.1. MARINE ENVIRONMENT | 36 |
| 4.2. DECK CONFIGURATION | 12 | 10.2. CLEANING | 36 |
| 4.2.A. ORION 6 DECK CONFIGURATION | 12 | 10.3. BELOW THE WATERLINE | 37 |
| 4.2.B. ORION 7 DECK CONFIGURATION | 13 | 10.4. COVER (OPTIONAL) | 37 |
| 4.2.C. ORION 8 DECK CONFIGURATION | 14 | 10.5. STAINLESS STEEL | 37 |
| 4.2.D. CONSOLE AND DECK EQUIPMENT | 15 | 10.6. CORRECT MATERIALS AND COMPONENTS | 37 |
| 4.3. INFLATABLE TUBES | 19 | 10.7. WINTER STORAGE | 38 |
| 4.3.A. TUBES | 19 | 11. REPAIRING | 38 |
| 4.3.B. INFLATION / DEFLATION | 20 | 11.1. REPAIRING THE FABRIC | 38 |
| 5. SYSTEMS AND CIRCUITS | 21 | 11.2. USING THE REPAIR KIT | 39 |
| 5.1. PROPULSION SYSTEM | 21 | 11.3. LEAKAGE AND BREAKAGE IN VALVES | 41 |
| 5.2. ELECTRICAL SYSTEM | 21 | 11.3.A. LEAKAGE | 41 |
| 5.2.A. ELECTRICAL INSTALLATION | 21 | 11.3.B. BREAKAGE | 42 |
| 5.2.B. SWITCH PANEL | 24 | 12. TRAILERING AND TOWING | 43 |
| 5.2.C. MAIN SWITCH | 26 | 12.1. TOWING | 43 |
| 5.3. FUEL SYSTEM | 26 | 12.2. TRAILERING | 43 |
| 5.3.A. FUEL AND OIL | 26 | 13. WARRANTY TERMS | 46 |
| 5.3.B. SAFETY ADVICE ON FILLING FUEL TANKS | 27 | 13.1. GENERAL WARRANTY | 46 |
| 5.4. BILGE SYSTEM | 28 | 13.2. STRUCTURAL HULL WARRANTY | 46 |
| 5.5. HYDRAULIC STEERING SYSTEM | 28 | 13.3. TUBE WARRANTY | 47 |
| 5.6. RELATED TO THE CONTROL SYSTEM | 28 | 13.4. EXTERIOR FINISH WARRANTY | 47 |
| 6. OWNER'S MANUALS | 28 | 13.5. CUSTOMER OBLIGATIONS | 47 |
| 7. ENVIRONMENTAL CONSIDERATIONS | 29 | 13.6. WARRANTY EXCEPTIONS | 48 |
| 8. OPERATING YOUR BOAT | 29 | 13.7. TRANSFER OF WARRANTY | 49 |
| 8.1. PRE-OPERATION CHECKS | 29 | 13.8. GENERAL PROVISIONS | 50 |
| 8.1.A. WHAT AND HOW TO CONTROL | 29 | | |

1. GENERAL INFORMATION, DESIGN, AND PRODUCTION

HIN TR-

Please write your boat's Hull Identification Number (HIN), which can be found as molded in gelcoat on the starboard side of the transom.

NORTHSTAR is a trademark of RIBTECH A.S.



RIBTECH DENİZ ARAÇLARI ÜRETİMİ A.Ş.

Address: Yazıbaşı Mah. 306 Sok. No:3/1

Torbali / Izmir 35875 Turkey

Phone: 0 232 853 90 44

Fax: 0 232 853 90 14 E-Mail: info@ribtech.com

NORTHSTAR ORION RIBs have been tested regarding stability, freeboard, buoyancy, and flotation to determine the requirements for the number of persons allowed and the additional loading. (ORION 6 and ORION 7 according to EN ISO 6185-3, ORION 8 according to EN ISO 6185-4)

2. INTRODUCTION

This manual is intended to assist in the safe use of your Northstar ORION RIB. It includes details of your RIB, mobile or stationary equipment, systems, and their use and maintenance information. Please read carefully.

This owner's manual is not a course on safe navigation and maritime. If this is a boat type you are not familiar with, make sure you have the necessary knowledge and experience before using your Northstar ORION RIB for your own safety.

Please make sure that your Northstar ORION RIB is suitable for weather and sea conditions in your area of use and ensure that your crew can operate the boat in these conditions.

This owner's manual is not a detailed maintenance or troubleshooting guide. In the event of a problem, contact Northstar or your dealer.

Trained and authorized persons should always be preferred for maintenance, repairs, or modifications. Any changes that may affect the safety aspect of the boat should be assessed, performed, and documented by authorized persons. The boat manufacturer cannot be held responsible for any unauthorized changes.

Maintain your Northstar ORION RIB correctly at all times and understand the wear and tear that may result from faulty or excessive use of the boat over time.

No matter how strong, each Northstar ORION RIB can be severely damaged if not handled correctly. To ensure safe navigation, always adjust the speed and direction of the RIB according to the sea conditions.

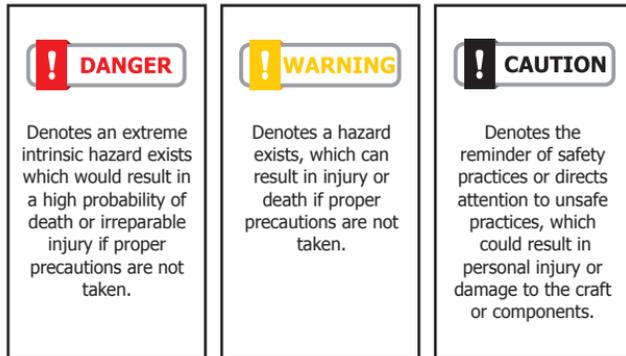
While onboard, everyone should wear a suitable life jacket.

PLEASE STORE THIS MANUAL IN A SAFE PLACE AND PASS IT ON TO THE NEXT OWNER.

2.1. DEGREES OF HAZARD

Throughout this manual, specific precautions and symbols identify safety-related information.

Following Safety Warnings are found:



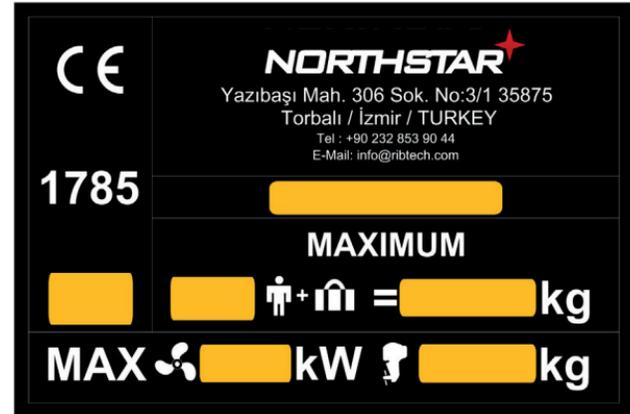
When you see one of the above marks in this manual, pay special attention to the points mentioned.

In addition, many parts of your Northstar ORION RIB contain safety-related decals warning the operator and passengers.

EU legislation requires the CE mark to be applied to the Manufacturer's Plate.

2.2. EXPLANATION OF MANUFACTURER'S PLATE

The manufacturer's plate, which is fixed at the console, looks like the following:





The maximum recommended load includes the weight of all persons onboard, all provisions and personal effects, any equipment not included in the light craft mass, cargo (if any), and all consumable liquids (water, fuel, etc.).



Do not exceed the maximum 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. Always use the seats/seating spaces provided.



When loading your NORTHSTAR ORION, never exceed the maximum recommended load. Always load the craft carefully and distribute loads appropriately to maintain the design trim (approximate level). Avoid placing heavy weights high up.

3. CLASSIFICATION, CERTIFICATION, AND SPECIFICATIONS

All NORTHSTAR ORION's are manufactured in compliance with ISO 6185-3 and ISO 6185-4 which specifies the minimum safety characteristics required for the design, materials to use, manufacture and testing of inflatable boats and rigid inflatable boats.

The following Declaration of Conformity (DoC) Certificates specify the design, construction, and noise emission requirements for each NORTHSTAR ORION in compliance with EU legislation.

After each Declaration of Conformity Certificate, technical specifications in detail, including dimensions with the technical drawings of each NORTHSTAR ORION is provided.

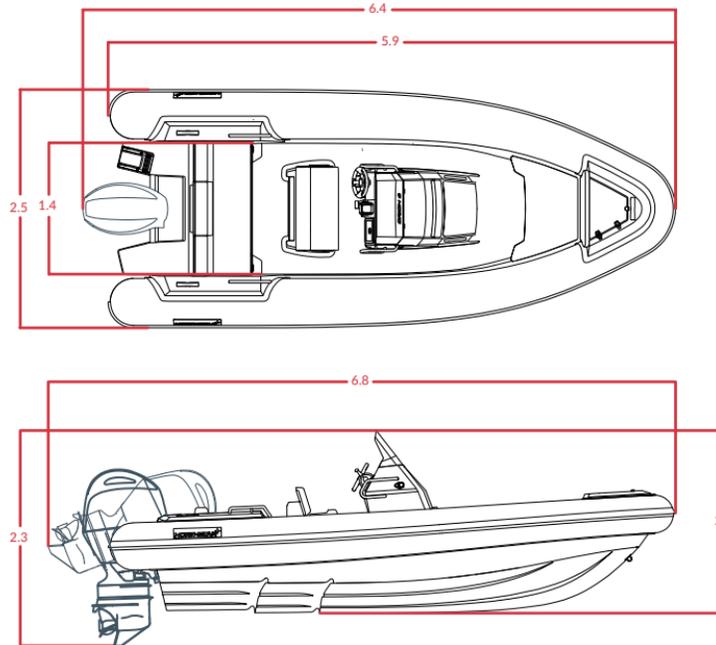
We advise you to use your NORTHSTAR ORION as recommended in this manual.

3.1.A. ORION 6 TECHNICAL SPECIFICATIONS



Specifications

| | |
|-------------------------|---------------------|
| Length | 5.9 m. / 19'35" |
| Beam | 2.5 m. / 8'2" |
| Weight | 850 kg. / 1874 lbs |
| Maximum Payload | 1110 kg. / 2447 lbs |
| Maximum Persons | 10 pax |
| Tube Fabric | Hypalon |
| Tube Diameter | 0.50 m. / 1' 7" |
| Suggested Tube Pressure | 0.18 bar / 2.65 psi |
| No. of Chambers | 5 |
| Maximum Power | 150 hp |
| Shaft Length | XL |
| Fuel Tank Capacity | 160 lt. / 42 US gal |
| Design Category | CE - Cat B |



measurements in m

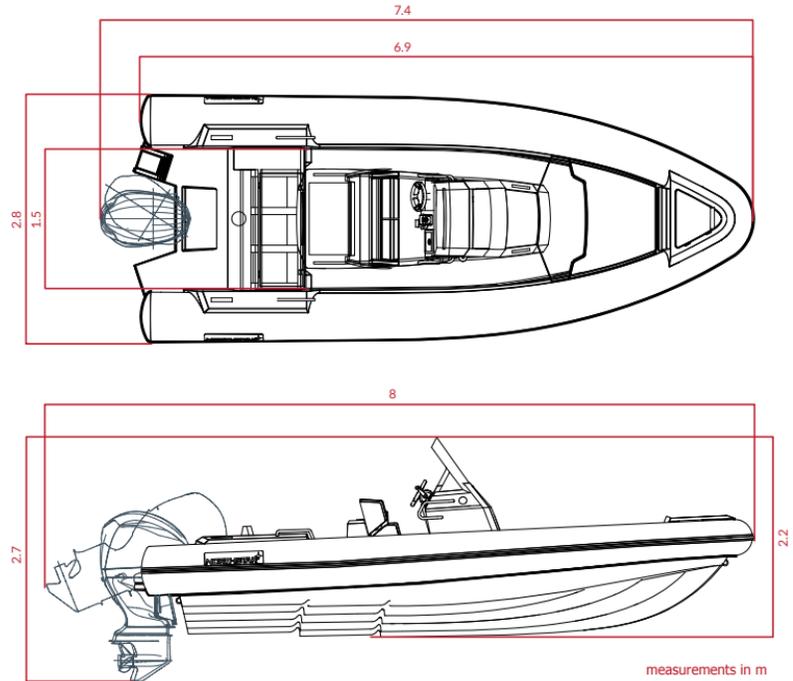
Non contractual document. All information presented subject to change without notice.

3.2.A. ORION 7 TECHNICAL SPECIFICATIONS

NORTHSTAR
ORION 7

Specification

| | |
|-------------------------|---------------------|
| Length | 6.9 m. / 22'6" |
| Beam | 2.8 m. / 9'1" |
| Weight | 1200 kg. / 2646 lbs |
| Maximum Payload | 1330 kg. / 2930 lbs |
| Maximum Persons | 12 pax |
| Tube Fabric | Hypalon |
| Tube Diameter | 0.56 m. / 1'10" |
| Suggested Tube Pressure | 0.18 bar / 2.65 psi |
| No. of Chambers | 5 |
| Maximum Power | 250 hp |
| Shaft Length | XL |
| Fuel Tank Capacity | 250 lt. / 66 US gal |
| Design Category | B |



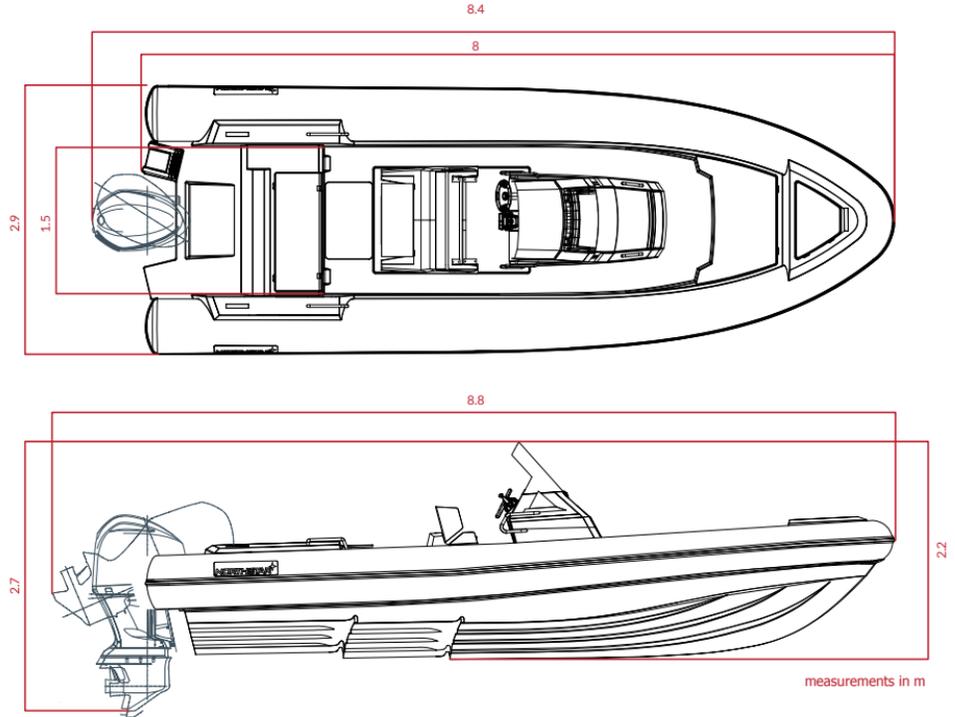
Non contractual document. All information presented subject to change without notice.

3.3.A. ORION 8 TECHNICAL SPECIFICATIONS



Specification

| | |
|-------------------------|---------------------|
| Length | 8 m. / 26'2" |
| Beam | 2.9 m. / 9'5" |
| Weight | 1550 kg. / 3417 lbs |
| Maximum Payload | 1500 kg. / 3300 lbs |
| Maximum Persons | 14 pax |
| Tube Fabric | Hypalon |
| Tube Diameter | 0.56 m. / 1'10" |
| Suggested Tube Pressure | 0.18 bar / 2.65 psi |
| No. of Chambers | 7 |
| Maximum Power | 350 hp |
| Shaft Length | XL |
| Fuel Tank Capacity | 360 lt. / 95 US gal |
| Design Category | B |



Non contractual document. All information presented subject to change without notice.

4. BOAT IDENTIFICATION, BASIC EQUIPMENT AND FEATURES

4.1. FRP SECTION

4.1.A. CONSTRUCTION

Northstar Orion RIBs' fiberglass sections are made of vinyl ester fiberglass layers by vacuum infusion method (for O7 and O8) and polyester fiberglass layers by hand laying for O6. The boat is manufactured using a combination of bi-directional glass fabric and bi-axial fabric type glass fiber. The hull is reinforced with longitudinal and transverse reinforcement elements. The areas between the body reinforcements are filled with closed-cell polyurethane.

The deck is solid laminate using a combination of bi-directional cloth glass, core-mat, honeycomb, and some chopped strand mat. Non-slip deck pads built into the molding.

4.1.B. DECK FITTINGS AND CONSOLE FEATURES

Self Bailing Deck

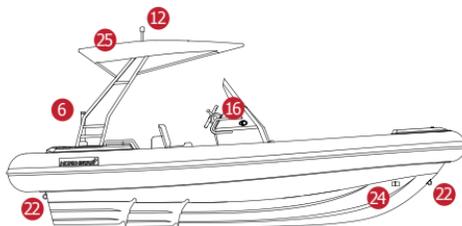
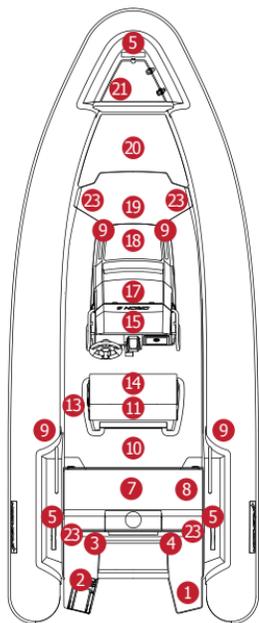
All NORTHSTAR ORION decks have self-bailing system. There are two (2) water discharge drains on Orion 6 and Orion 7 decks one at each side of port and starboard. On Orion 8 deck, there are two (2) at each side, in total four (4) discharge drains. The water on the deck flows through the provided drain holes. While using your NORTHSTAR ORION, unplug the drain holes, so the water flows through. When the deck is dry you may plug the hole and lock it.



A small amount of water may remain in front of the drain holes which may flow forward during deceleration.

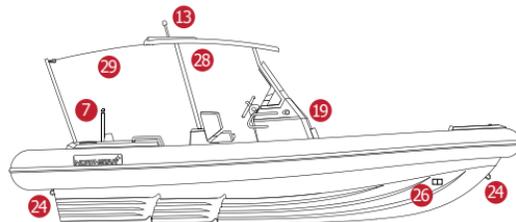
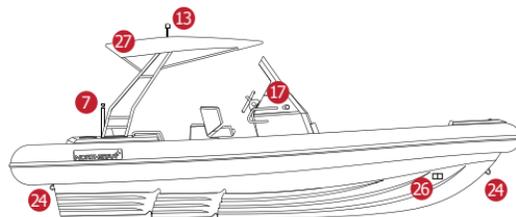
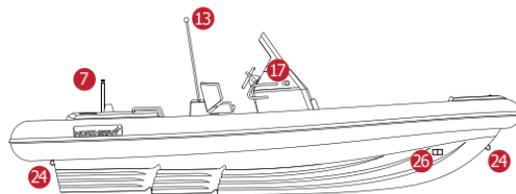
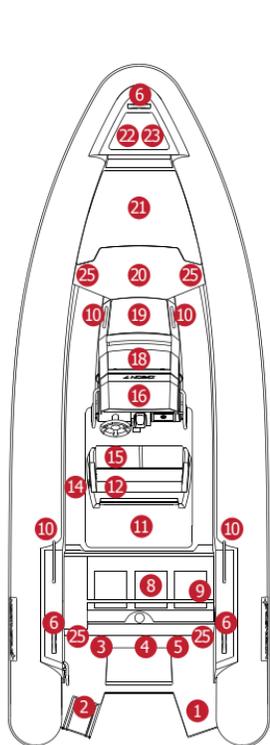
4.2. DECK CONFIGURATION

4.2.A. ORION 6 DECK CONFIGURATION



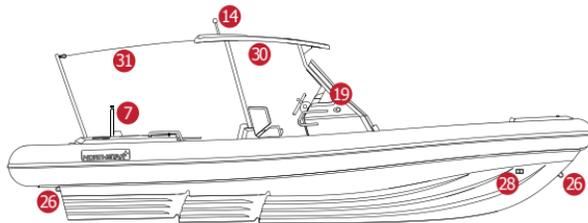
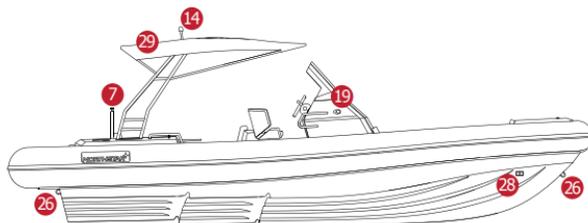
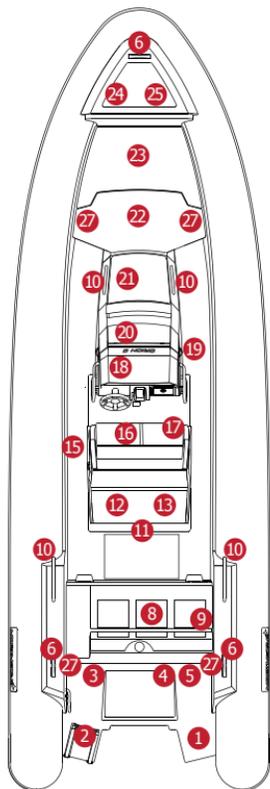
- 1 Swimming platform
- 2 Telescopic ladder
- 3 Shower head (optional)
- 4 Fresh water deck plate (optional)
- 5 Telescopic cleats
- 6 Telescopic ski tow pylon (optional)
- 7 Aft seat (storage under)
- 8 Main switch
- 9 Grab handles
- 10 Table
- 11 Marine cooler
- 12 All around light
- 13 Fuel deck plate
- 14 Helmseat
- 15 Acrylic windshield
- 16 Navigation lights
- 17 Console compartment
- 18 Console front seat
- 19 Sundeck (optional)
- 20 Bow seat (storage under)
- 21 Anchor locker
- 22 U-bolts (3 pcs)
- 23 Lifting rings (4 pcs, optional)
- 24 Recessed tow eye (2 pcs, optional)
- 25 A-frame with bimini top (optional)

4.2.B. ORION 7 DECK CONFIGURATION



- 1 Swimming platform
- 2 Telescopic ladder
- 3 Shower head (optional)
- 4 Waste water tank vent (optional)
- 5 Fresh water deck plate (optional)
- 6 Telescopic cleats
- 7 Telescopic ski tow pylon (optional)
- 8 Tft seat (storage under)
- 9 Main switch
- 10 Grab handles
- 11 Folding table
- 12 Marine cooler
- 13 All around light
- 14 Fuel deck plate
- 15 Helmseat
- 16 Acrylic windshield
- 17 Navigation lights
- 18 Console with head compartment
- 19 Console front seat
- 20 Sundeck (optional)
- 21 Bow seat (storage under)
- 22 Anchor locker
- 23 Electric windlass (optional)
- 24 U-bolts (3 pcs)
- 25 Lifting rings (4 pcs, optional)
- 26 Recessed tow eye (2 pcs, optional)
- 27 A-frame with bimini top (optional)
- 28 Hardtop (optional)
- 29 Hardtop awning (optional)

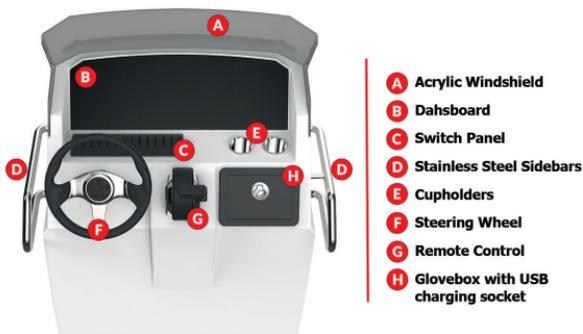
4.2.C. ORION 8 DECK CONFIGURATION



- 1 Swimming platform
- 2 Telescopic ladder
- 3 Shower head
- 4 Wastewater tank vent (optional)
- 5 Freshwater deck plate
- 6 Telescopic cleats
- 7 Telescopic ski tow pylon (optional)
- 8 Aft seat (storage under)
- 9 Main switch
- 10 Grab handles
- 11 Folding table
- 12 Marine cooler
- 13 Back facing seat
- 14 All around light
- 15 Fuel deck plate
- 16 Helm seat
- 17 Refrigerator
- 18 Acrylic windshield
- 19 Navigation lights
- 20 Console w/head compartment (O7 & O8)
- 21 Console front seat
- 22 Sundeck (optional)
- 23 Bow seat (storage under)
- 24 Anchor locker
- 25 Electric windlass (optional)
- 26 U-bolts (3 pcs)
- 27 Lifting rings (4 pcs, optional)
- 28 Recessed tow eye (2 pcs, optional)
- 29 A-frame with bimini top (optional)
- 30 Hardtop (optional)
- 31 Hardtop awning (optional)

4.2.D. CONSOLE AND DECK EQUIPMENT

Console



Some accessories on the console may vary depending on the model and hardware.

Windlass (Optional)

If your boat is equipped with an electric windlass a handheld remote control is placed inside the anchor locker. Another windlass control switch is located on the console.

Windlass fuses are 80A for O7 and 100A for O8. For more information about the windlass, please go to the manufacturer's owner's manual.



Anchor Locker

There is a hatch on the bow of the boat. By opening the hatch, the anchor and the windlass system (optional) are accessed.

Bow Storage Area

Bow seat with storage under provides dry storage inside.

Sundeck (Optional)

Foldable panel and cushions are stored inside the bow storage. To use the sundeck place the panels in the recess on console seat and place the cushions as shown.



Check the sundeck for proper fit before use.

Console Compartment

All Northstar ORION Series have console compartments with lighting. Control hatches for the dash electrical system is also found inside the compartment. The Orion 8 console compartment also includes a sink.

Head inside Console Compartment

The portable toilet is available as an option on ORION 6 and is standard on ORION 7 and 8 models. ORION 7 and 8 models can optionally be equipped with an electric toilet and a macerator pump system.



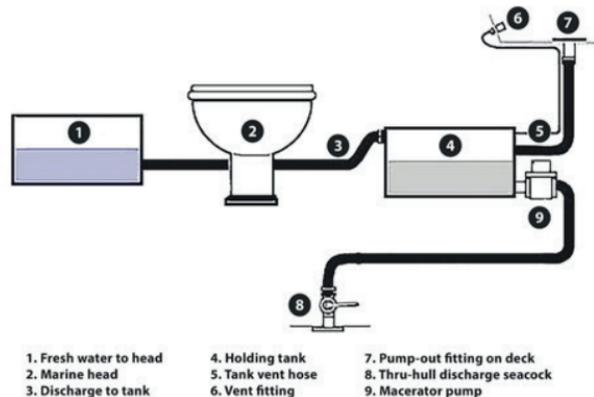
Electric Toilet system and seacock

Please locate the toilet system discharge seacock (item "8" on "Drawing 1") and make sure it is closed for cruising and also for extended unattended periods of your boat, while in water.

Refer to the manual provided in your document bag.

Waste handling

If your boat is equipped with a holding tank, this tank is connected to a pump-out fitting on the deck (item "7" on "Drawing 1"). You may have the waste pumped out at a marina pump station when necessary. Alternatively, the wastewater may be discharged by the use of the macerator pump located on the holding tank.



Drawing 1

To pump out using the macerator pump:

1. Open the discharge seacock (Item "8" on "Drawing 1")



DO NOT run the macerator pump dry. Running your macerator pump dry will damage it.

2. Activate the macerator pump by turning on its switch on the switch panel.
3. When finished pumping out, turn off the pump and close the seacock.

! CAUTION

Waste water discharge is governed by regulations which differ from country to country. Make sure you learn the regulations in your area before attempting to discharge waste. Mishandling the waste may damage the environment and also may cause you to incur heavy fines.

Make sure the system is empty during storage at freezing temperatures.

! CAUTION

DO NOT attempt to flush the toilet into a full waste tank.

Igloo® Marine Cooler

All ORION RIBs come standard with Igloo® marine coolers. (23 lt on ORION 6, 34 lt on ORION 7 and 8) To reach the cooler lift the back facing seat on ORION 8. On ORION 6 and 7, open the folding table to reach the cooler.

**Refrigerator**

Orion 8 also offers an optional refrigerator located under the helm seat on the starboard side.

Helm Seat

Helm seats on ORION RIBs can be used both for sitting and stand up cruising. Seat bottoms can easily be flipped up for stand up operation. Fuel deck plate is located on port side of the seat. (See 5.3.B)

Folding Table

Orion 6 and Orion 7 offer a folding table cover behind the helm seat. To open the table, lift up until the hinge locks. To close it, press the release on both the hinges and lower the table. The table on the Orion 8 is stored inside bow storage. To use, open the straps and remove the table and legs, mount the table on the deck plates between the aft seat and the aft facing seat.

! CAUTION

The rear seat covers of all NORTHSTAR ORION boats open into the aft storage area. Bilge pump, battery, main switch, fuel-water separator and, if any, fresh water and waste water tanks are located in this section.

Maintenance and use of pop up ski pylon (Optional)

Pop up ski pylon should be kept free of salt and kept lubricated at all times to prevent corrosion. Use of a lithium based spray grease is advised. Please apply a light coat to the bottom spring and also on the moving parts every 3 months and at the beginning of wintering.

To open the tow pylon;

- 1- While pressing the round section with one hand, pull the latch with your other hand. Tow pylon will release.
- 2- Lift the tow pylon until it locks itself.
- 3- To close, release the mechanism by pulling the latch. The tow pylon will drop down.
- 4- Finally, while pulling the latch, push down the tow pylon fully, release the latch, and ensure it is locked in place.
- 5- All moving parts and body of tow pylon must be lubricated with a lithium spray grease every 3 months.



Be careful not to get your finger caught in the latch mechanism when opening and closing the ski tow pylon.



Operators need to be fully aware of their RIB's limitations and possess the skill and knowledge for skiing and other towed activities.



Do not use for parasailing, kiteflying or towing other watercraft.



Do not use the tow pylon to pull a ski tube or any inflatables exceeding the capacity of your RIB.



Misuse of the ski tow pylon can cause death or serious injury.



The use of a ski tow pylon extension, or any other device attached to the pylon, is not recommended. The use of a pylon extension will alter the load-handling characteristics of the pylon, possibly resulting in a dangerous situation that could cause loss of control, death or serious injury.

A-frame with Bimini Top (Optional)

To use your bimini top, first remove cover by unzipping it. Open front and aft sections of bimini. Secure aft tent tightly with the use of the straps on the stainless steel eyes on aft deck. Secure front tent on the windshield railing with the use of the straps.

Lifting Rings and Towing Eyes (Optional)

Your boat can be equipped with recessed tow eyes on bow and/or lifting eyes on the deck. Locations are shown on the deck plan. (page 12,13,14)

Swimming Platform and Telescopic Ladder

There is a telescopic stainless ladder on the port side of the swimming platform fixed to the stern of your ORION boat.



Be careful not to get your hand caught when closing the ladder.



4.3. INFLATABLE TUBES

4.3.A. TUBES

The tubes of Northstar ORION RIBs are manufactured using CSM (hypalon) fabric. The boat has inflation chambers around the hull. Under normal circumstances, slight overpressure can be used, however, the boat should never be used while the tubes are underinflated.

Although the inflatable tubes of Northstar ORION RIBs are tested by over-pressurization and will withstand up to 30 % pressure rises due to temperature differences, it is important to check the pressure of the compartments at regular intervals and adjust them to a maximum of 180 mbar (2.6 psi) to prevent premature wear of the tubes.



Especially in summer when the air temperature is high, tubes should be brought to working pressures during the hottest hours of the day. In this way, overpressurization of tubes due to sun's heat can be prevented.

4.3.B. INFLATION / DEFLATION

INFLATION

The number of air chambers of the tubes in the NORTHSTAR ORION 6 and ORION 7 models is five (5).

Inflate the tubes to 60-70 % of the recommended maximum pressure in the following order— pre-inflation:

1. Port aft chamber
2. Starboard aft chamber
3. Port front chamber
4. Starboard front chamber
5. Bow chamber

The number of air chambers of the tube in the NORTHSTAR ORION 8 model is seven (7).

On this model the pre-inflation order should be as follows:

1. Port aft chamber
2. Starboard aft chamber
3. Port mid chamber
4. Starboard mid chamber
5. Port front chamber
6. Starboard front chamber
7. Bow chamber



Do not inflate a single section fully before pre-inflating other chambers first.

Then, fill the chambers to the recommended pressure in the same order.

DEFLATION

Deflate the tubes to 25 - 35 % of the recommended pressure in the reverse of the inflation order (starting from bow chamber) - predeflation.

Then you can deflate all of the remaining air.



The tube is slippery, especially when wet. Stepping on the tube can be dangerous in these situations. Handles are available on the tube for safety.



Do not deflate a single section fully before pre-deflating other chambers first.

5. SYSTEMS AND CIRCUITS

5.1. PROPULSION SYSTEM

Never forget the danger that boat propellers can inflict to people in the water. Remember to shut off your engines when approaching swimmers, or you or somebody else is trying to remove debris from your propeller.



When your Northstar ORION RIB's engine is running, alert swimmers to stay clear off the stern.

Therefore, the best and safest course of action to take is to stop your engine when people are in the water near your Northstar ORION RIB.



Explanatory information about outboard engine is contained in the manufacturer's manual. Please refer to this booklet to learn the necessary information for your outboard engine.

5.2. ELECTRICAL SYSTEM

There can be one (1) or two (2) batteries depending on standard and optional equipment. In any case, the battery is located under the aft storage.

It is recommended to use a fully closed battery (maintenance-free type) in your Northstar ORION RIB.

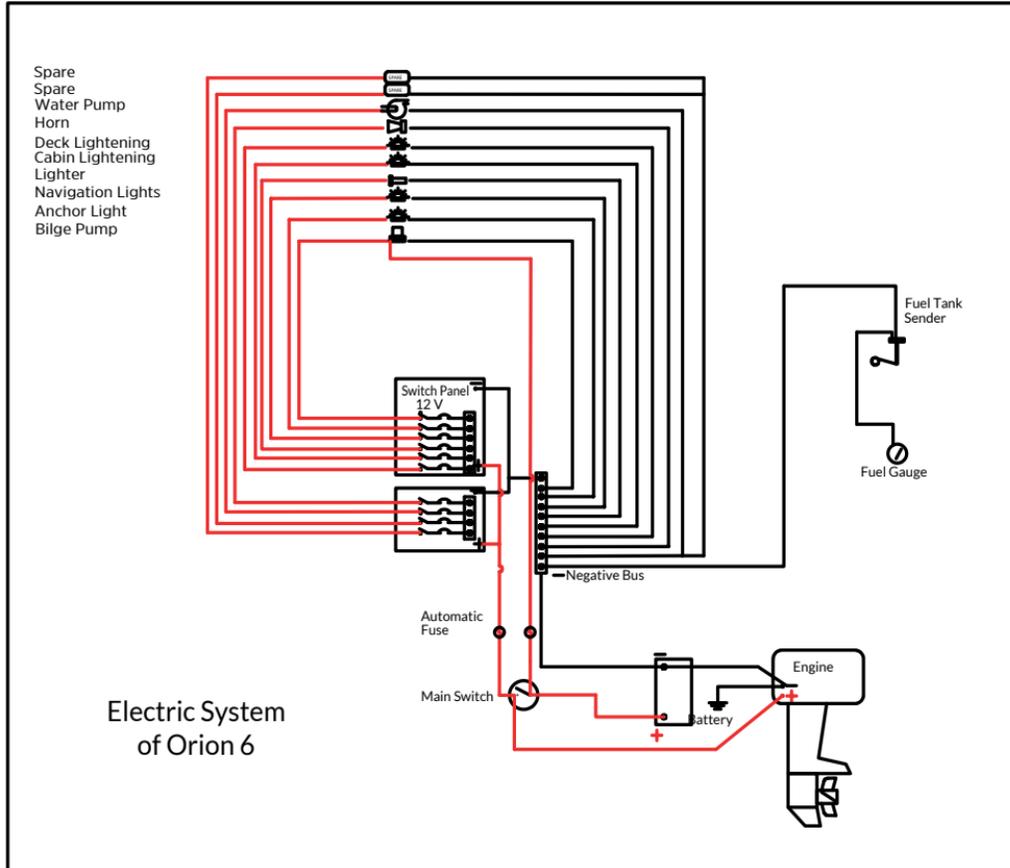


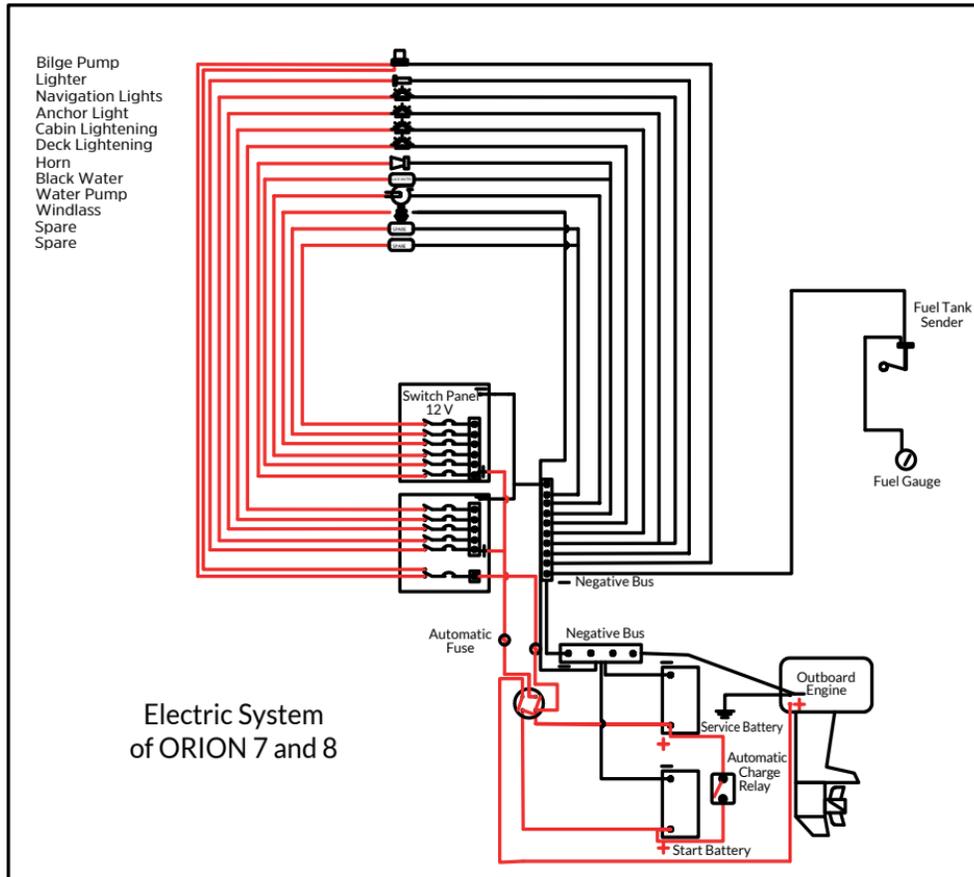
If you want to avoid expensive repairs, never disconnect the battery connections or turn the battery switch off while the engine is running!

5.2.A. ELECTRICAL INSTALLATION

The following drawings indicate electrical installation of your Northstar ORION RIB.

If there is a problem in electrical system, using the main switch you can cut off the connection.





5.2.B. SWITCH PANEL

The following is the electric switch panel. Your Northstar ORION RIB's switch panel is equipped with circuit breakers instead of fuses. In case of a problem in the electrical circuitry the breaker will cut the electrical current. To check your circuit breakers, you need to remove the cover of your switch panel. There are two small holes on the side of the panel which you can use to remove the cover. Once the cover is removed you will see the circuit breakers with their amperage shown on them. If the button of the circuit breaker is out you can push it in to restore circuitry.

- Bilge pump breaker is 15 amps

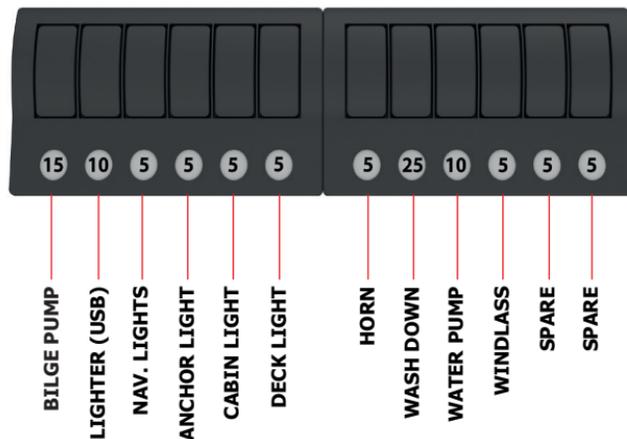
Bilge pump is fully automatic and when it is in automatic mode, it operates independently from the main electrical switch. It can also be operated manually with the first button on the panel.

- The USB charging socket breaker is 10 amps.

There is a USB charging socket inside the storage compartment on the console. It can be used with the button on the panel.

- Port / starboard navigation lights breaker is 5 amps.

Port/starboard navigation lights should be used in the dark or in other situations where you need to be visible. It is located on the sides of the console as port – red, starboard – green.



- The allround (anchor) light breaker is 5 amps.

Your ORION boat is equipped with a socket-type allround light. This light is located inside the aft storage. Before use, it must be inserted into the socket behind the helm seat. This light can be turned on and off by the button on the panel. If your boat is equipped with an optional hardtop or an A-frame, then your boat is equipped with fixed anchor lights. The fixed light is placed on top of the hardtop or the A-frame.

- The breaker of the deck lighting is 5 amps.

As an optional deck lighting system, there are 5 leds in total, with a led strip under the console and two (2) at the bow and two (2) at the aft.

- The breaker of the compartment lighting is 5 amps.

There is also an on/off button inside the cabin.

- The breaker of the waste water system is 25 amps.

If your boat has an optional electric toilet system, the waste water tank can be emptied with the button indicated in the image. The waste water outlet valve is located on the port side of the aft storage area. This valve should only be opened offshore and when the waste water tank is to be discharged.

- The breaker of water pump is 10 amps.

If your boat has a shower system, pressing this button will make the shower head in the aft and the sink tap inside the Orion 8 console usable.

- Radio breaker is 10 amps.

It can be equipped with an optional audio system. Consult the manufacturer's owner's manual.

- The GPS display breaker is 5 amps.
- There are two (2) 5 amps breakers as spare.



CAUTION

If a breaker consistently cuts the electrical current, please have your electrical circuitry checked by a professional.



WARNING

All ORION RIBs are equipped with navigational lights that comply with the COLREGs (International Regulations for Preventing Collisions at Sea).



CAUTION

When not in use, keeping the allround light at its location under the lid is highly recommended to prevent the accidental damage.



DANGER

Battery acid is corrosive, so you have to protect your eyes and skin if you have to work on it. You must rinse splashes of acid with freshwater and consult a doctor immediately. You can neutralize splashes of acid on the skin or clothes with acid transformer or soapsuds.



WARNING

Check from time to time if the battery terminals have a tight fit and if there are any corrosion patches.



WARNING

Batteries may produce explosive hydrogen gas. Keep all sparks, flames, and smoke-generating materials away from the batteries.



DANGER

Always wear eye protection near the battery and ensure adequate ventilation during installation.

5.2.C. MAIN SWITCH

The battery switch of your ORION boat is located inside the aft storage area, which you can see when you open the aft seat cover. This main switch is used to cut off the electrical current of all the system.



5.3. FUEL SYSTEM

5.3.A. FUEL AND OIL

Fuel Tanks

On all ORION models, the stainless fuel tank is located under the floor hatch on the deck. You can access the tank control hatch by opening the aft seat. If fuel tank service becomes necessary, tank control hatch can be removed. It is highly recommended to perform this operation only at Northstar Authorized Services.



Make sure the battery is disconnected before performing any operation on the fuel tank.



Working on a fuel tank, especially on a partially full one, is extremely dangerous, requiring immense care and must not be tackled without proper training and is best left to the professionals.



For starting and other information, please consult your outboard engine's owner's manual.

5.3.B. SAFETY ADVICE ON FILLING FUEL TANKS

Fuel deck plate mounted on the port side of the helm seat.



Follow safety recommendations of your fuel supplier during fuel delivery. Report fuel spills according to environmental and health and safety regulations.



Do not allow smoking, flames, sparks or other sources of ignition near the fuel storage and handling areas.



First, you should care that your Northstar ORION RIB is moored safely at the jetty. In any case, the engine must be switched off while filling the fuel tank. While filling and at the filling station, smoking is absolutely forbidden. After having filled up the tanks, the fuel tank area must be aired for at least 5 minutes.

Fueling Precautions

- Close all hatches and other openings before fueling.
- Extinguish all smoking materials.
- Turn off engine, all electrical equipment, radios, stoves, and other appliances.
- Remove all passengers.
- Keep the fill nozzle in contact with the filler and wipe up any spilled fuel.
- Check the bilges for fuel vapors before starting the engine.
- Do the "sniff test". Sniff around to make sure there is no odor of gasoline anywhere in the boat.

Fuel Management

Practice the "One-Third Rule" by using:

- One-third of the fuel going out
- One-third to get back and
- One-third in reserve

5.4. BILGE SYSTEM

Bilge Pump

Your Northstar ORION RIB has one (1) 500 GPH automatic bilge pump in the aft compartment.

The water in the entire bilge compartment is discharged by this automatic pump.

Bilge pumps should be checked periodically for proper operation. The control of the automatic bilge pump is on the switch panel.

Bilge pump is fed directly from the battery and it is on automatically even if you turn off the main battery switch

Water which can enter the bilge for various reasons will be automatically discharged when you are not in the boat.



Running the electric bilge pumps dry will damage the pump.

5.5. HYDRAULIC STEERING SYSTEM

The hydraulic steering system should be checked periodically for leaks, corrosion and wear. Check the hydraulic oil level periodically.



Do not use any oil other than the manufacturer's original oil.

Do not allow salt to accumulate on the stern hydraulic steering cylinder shaft.

5.6. RELATED TO THE CONTROL SYSTEM

Cable and cable connections should be checked regularly for wear and corrosion.



6. OWNER'S MANUALS

Along with the ORION Owner's Manual, you will also have manuals for the equipment installed on your boat. Please read these manuals and learn about the equipment. If you hesitate for any information on the equipment, contact NORTHSTAR or your dealer.

7. ENVIRONMENTAL CONSIDERATIONS

Boating is an activity, which interacts with the environment. It is your responsibility to be wary of the environmental risks and take precautions to prevent any damage to it.

When refueling, take all precautions to prevent spillage. Fuel and oil spillage into water contaminates the environment. Never discharge, fuel, oil, or other inorganic substance.

Remember that overfilling a fuel tank will cause spills from the air vent of the tank. Also, contaminated bilge water will pollute the waters- do not discharge contaminated bilge water unless you are required to do so due to safety reasons.

Any waste, such as garbage, plastics, food, wood, chemicals, and sewage, collected during the trip must be disposed of properly after returning ashore.

Please have your engine maintained to the necessary standards to prevent excessive exhaust emissions, which pollute water and air. When cleaning your NORTHSTAR ORION, always try to use "biodegradable" marine products to safeguard the environment. Cleaners that contain aggressive chemicals such as phosphates, chlorine, solvents, and petroleum derivatives must not be used.

If you keep your NORTHSTAR ORION in the water, sooner or later, you will face marine growth on the bottom. Antifouling paint can be used to prevent this. Look for a suitable one to use on your NORTHSTAR ORION.



Please check the antifouling bottom paint regulations in your area and use a suitable one if necessary.



Be aware of International Convention for the Prevention of Pollution from Ships (Marpol) and respect it.



Check the weather report to see if it is suitable for your intended trip.

8. OPERATING YOUR BOAT

8.1. PRE-OPERATION CHECKS

It is very important to check your boat and equipment regularly.

8.1.A. WHAT AND HOW TO CONTROL

The following list shows what to check and how to examine them:

- Check all hoses and clamps for fit and that all drain hoses are in place and are not worn out.
- Check all the equipment, including your bilge pump.
- Look for damages at the fuel hose. Does it smell like gasoline?

- Check all rubber parts periodically and change them if they are worn out and / or damaged.
- Look for damages in the cooling system and be sure that the engine is lowered into the water.
- Tightly close drain plugs before launching your NORTHSTAR ORION.
- Check the remote control and the steering system. Are the cables for the remote control and steering fixed and operating freely?
- Check the amount of fuel. Do you have enough fuel for the intended trip?
- Check your safety equipment— more on this later.
- Is the battery connected correctly? Is it charged?
- Turn ON your main electrical switch.



After you have carried out the above checks, you can start the engine as described in your engine's owner's manual.

Batteries and Electrical Connections

Ensure they are in safe condition. Check the cables (clean, not worn, etc.) All connections must be tight and clean; there should be no damage anywhere in the cable insulation.

Switch Panel

If any of the circuit breakers goes off reset it and investigate the cause. Check switches for their functions.

Fuel System

Fill the tank and check the fuel hoses for leakage and freedom of movement.

Inflatable Tube

The tube must be tight and fully inflated, check your pump and valves for any leak. The connection of the tubes to the hull should be checked every week.

Propulsion System

Check the engine owner's manuals for its recommendations.

Hydraulic Steering System

Turn the steering fully in both directions to check its operation.

8.2. CONTROLLING ELECTRICAL SYSTEMS

Check the battery and electrical system before your trip. If you have to change something in the electrical system, you have to separate the battery from the system at first.



If your battery does not have enough charge for starting the engine, you should charge it on land. It is allowed to charge the batteries on board, only if the boat is equipped with a suitable appliance - a battery charger. Grease/lubricate poles of your battery to prevent corrosion and spark.

For further and detailed information, please read the operating instructions of the respective equipment manufacturer.

8.3. AT THE PORT

After starting, you should maneuver your NORTHSTAR ORION only with low speed in the port, remembering that a motorboat has no brakes. It is enough if you put the engine in gear without increasing speed (idle speed) for maneuvering. While casting off, you should always go away from the shore at right angles, and you should be keen on the speed restrictions in the area. While maneuvering, pay attention to the characteristics of the boat. Boats with a right-turning engine (RH-expression) are easier to berth on the port side, such with a left-handed propeller at the starboard side. Most outboards have right turning propellers.



Making a sternway should be done at a very low speed so that there is always enough time and space for correction.

8.4. VIBRATIONS



If you feel vibrations in the hull while cruising, you should check the propeller and the shaft. Even a little piece of wood can damage the propeller, or debris may cause vibration, which needs to be removed from the propeller. A damaged propeller can lead to severe damages at the hull or the engine. Nylon bags are known to cause propeller cavitation if they come in contact while underway. Stop the engine, tilt, and remove the nylon or other debris. Please check the steering gear from time to time and lubricate as necessary with marine grease.

8.5. SHIFTING

Shifting should only be done if the engine is idling. Shifting must be done quickly for proper seating of the gears in the transmission. Slow shifting may damage your transmission. If you try to shift with engine revolutions higher than the recommended idle speed, you can cause damage to the boat, the engine, or the gears.



If you want to switch off the engine, please shift into neutral and do not accelerate anymore. You may switch off the engine by turning the ignition key into its off position.



Shifting must be performed in a sudden and single movement. The process of slowly shifting into gear will lead to premature wear of the gears.

8.6. TRIM

It is important to set your NORTHSTAR ORION for proper trim angle for the most efficient and safe operation. Balance the weight distribution in the boat and set your outboard's trim angle, which will produce the best outcome.

If the trim angle of your engine is kept too low, the boat may have a bow down attitude. Do not operate this craft at negative propulsion trim settings (bow down) at high speed. Craft may lean over side. Instability in turns may result. If your engine is equipped with power trim, use negative trim to accelerate to planning speed from displacement speed and at lower planning speeds in choppy water.

Proper trim angle for NORTHSTAR ORION:

PROPER TRIM ANGLE



TRIM UP



BOW UP

TRIM DOWN



BOW DOWN

If the trim angle is too high, the boat will have a bow up attitude and will plane much harder.



Typically, negative trim is useful in getting the boat up on plane. After the boat starts planing, the trim must be adjusted to the most efficient and comfortable setting.

8.7. FIRST OPERATING HOURS

Please refer to the running in tips and the period in the owner's manual of your outboard motor to get used to your NORTHSTAR ORION.

Do not operate at high speed while in congested high traffic waterways or weather and sea conditions of reduced visibility, high winds, or large waves.

Observe Right of Way as defined by Rules of the Road and required by COLREGS. Always be sure to have sufficient distance to stop or maneuver if required to avoid collisions.

9. SAFETY

NORTHSTAR ORION's can reach very high speeds. Therefore, they should be handled by trained and/or experienced persons only. Do not leave untrained persons or children without supervision on board. Do not leave the ignition key on the boat.



Maneuverability at high speeds is limited. Sudden turns may cause loss of control. Reduce speed before making sharp turns in either direction.



Important safety warnings are found throughout this manual. Please read them carefully.

9.1. OPERATOR'S RESPONSIBILITIES

- Make sure your NORTHSTAR ORION's is in top operating condition and that there are no tripping hazards. Your RIB should be free of fire hazards and have clean bilges.
- Safety equipment, required by law, is on board, maintained in good condition, and you know how to use these devices properly.
- Have complete knowledge of the operation and handling characteristics of your NORTHSTAR ORION.
- Know your position and know where you are going.
- Maintain a safe speed at all times to avoid a collision.
- Avoid sudden maneuvers at speed.

- Always use the safety lanyard by attaching it to the killswitch and attach the other end to your wrist or your life jacket. Watch for changing weather conditions and act accordingly.
- Know and apply the Collision Prevention Regulations at Sea. (COLREGS)
- Maintain a clear, unobstructed view forward at all times. "Scan" the water back and forth; avoid "tunnel" vision.



You are the safety key of your NORTHSTAR ORION!

9.2. OVERLOADING

Never overload your NORTHSTAR ORION with passengers and cargo beyond its safe carrying capacity. Too many people and/or gear will cause your NORTHSTAR ORION to become unstable. Always balance the load so that the boat maintains proper trim. Here are some things to remember when loading your NORTHSTAR ORION:

- Distribute the load evenly fore and aft and from side to side.
- Keep the load low.
- Keep passengers seated (Do not stand up in a small boat!).
- Fasten gear to prevent shifting.
- Do not exceed the capacities on the manufacturer's plate.

Remember that the distribution of load will change your NORTHSTAR ORION's center of gravity (CG).
Following figures show the effect:

too much weight aft



right distribution of weight



too much weight bow



Small inclination towards aft is an indication of a proper distribution of weight.



Breaking waves may cause serious stability hazard.

9.3. WEATHER CONDITIONS

You should never leave the dock without first checking the local weather forecast. You can get the weather information from the TV, radio, local, newspaper, on-line, or from one of the available applications for your smartphone.



At certain times of the year, weather can change rapidly, and you should continually keep a "weather-eye" out. While you are out on your NORTHSTAR ORION, here a few signs you can look for that indicate an approaching weather change:

- Weather changes generally come from the west. Scan the sky with your weather eye, especially to the west.
- Watch the clouds, especially the rapid vertically rising ones.
- A sudden drop in temperature.
- Sudden change in wind direction and/or speed.
- If you have a barometer on your NORTHSTAR ORION, check it every 2 to 3 hours. A rising barometer indicates fair weather and a rise in wind velocity; a falling barometer indicates stormy or rainy weather.

9.3.A. WHAT IF IN SEVERE WEATHER CONDITIONS

- Reduce speed, but keep just enough power to maintain headway.
- Turn on running (navigation) lights.
- Head for the nearest shore that is safe to approach, if possible.
- Head bow of the boat into the waves at about a 45-degree angle.
- Keep bilges free of water.
- Seat passengers on the bottom of the boat near the centerline.
- If your engine fails, trail a sea anchor on a line from the bow to keep the boat headed into the waves. A bucket will work as a sea anchor in an emergency.

9.4. FIRE

Most fires are the result of gasoline and oil accumulating in the bilge from careless fueling practices. Use the fire extinguisher at the base of the flames using a sweeping motion. Prudent and accurate use of the available chemicals should contain all but the worst fires. Verify the fire has been extinguished. If so, check the damage and get assistance immediately. If not, get out by the nearest exit and swim as far as possible upwind from the boat and use the visual distress signals to get assistance.

**WARNING**

Gasoline will float on top of the water and can burn. If the boat is abandoned, swim up wind, far enough to avoid fuel that may spread over the surface of the water to avoid serious injury.

9.5. CARBON MONOXIDE HAZARD**DANGER**

Do not forget that your engine produces exhaust fumes which contain the dangerous carbon monoxide (CO). Refrain from exposure to engine exhaust at all times. Passengers of boats operating.

**DANGER**

Be aware of the dangers of Carbon Monoxide and avoid any direct or prolonged exposure.

10. MAINTENANCE AND STORAGE**10.1. MARINE ENVIRONMENT**

It must be remembered that the marine environment is a very harsh and corrosive one. Especially salt water, sun, spray, dust, chemicals in the air, and other elements take their toll on your NORTHSTAR ORION in a short time unless it is protected and maintained properly.

**CAUTION**

If your NORTHSTAR ORION is used in saltwater, it is necessary to rinse it with fresh water after each use. Also, it is highly recommended to wax your NORTHSTAR ORION regularly. All metal hardware must be cleaned and treated with chrome cleaner and / or wax.

10.2. CLEANING

Regular cleaning will keep the surface of your ORION in good condition for many years.

You are advised to use completely biodegradable boat cleaning agents. Do not use scouring powder, solvents, ammonia, and chlorine because they scratch and bleach the gelcoat surface. If the surface is very dirty, rub it with boat polish, which is free of abrasives and silicone after washing. We recommend you to take special marine products, which you can buy in boat shops and chandleries. You can use wine vinegar for removing lime patches (dried drops of hard water). You can use customary cushion cleaner or marine vinyl cleaner for cleaning cushions.

The cushions must be let dried after use and cleaning to prevent the formation of mildew. In case mildew forms on cushions, mildew removers can be used.

It is regular cleaning that will ensure the long life of inflatable boat fabric. Under normal conditions, tube fabric should be cleaned only with freshwater and without the use of abrasives, solvents, ammonia, chlorinated cleaners. You can use special inflatable boat cleaners for stubborn stains.



Faulty cleaning will open the pores of the Hypalon (CSM) layer on the surface of the tube fabric, causing it to penetrate the dirt. Removal of dirt penetrating Hypalon (CSM) fabric is extremely difficult and also shortens fabric life.

10.3. BELOW THE WATERLINE

Do not clean the bottom of the NORTHSTAR ORION mechanically (with a hard brush or sandpaper) to avoid triggering the formation of bubbles on the gelcoat (osmosis).



Always apply these chemicals according to their manufacturer's instructions for use. Be careful not to harm the environment during the use of these chemicals.

10.4. COVER (OPTIONAL)

We recommend you to cover your NORTHSTAR ORION with a boat cover if you want to keep the high quality of the surfaces and the fittings. Start to uncover your NORTHSTAR ORION from the stern to the bow and do it the other way around if you want to cover it. The cover is fixed with a tightening rope around.

10.5. STAINLESS STEEL

Stainless steel is not entirely resistant to corrosion and must be looked after properly and regularly. To do this, always wash stainless steel equipment with freshwater and if necessary with soap after each use. Do not use scouring powders, abrasives, bleach, or acids when cleaning.

Whenever you see a sign of rust on your stainless steel, use chrome polish to remove them. If this is not done, these rust spots may develop into pitting, which will ruin the stainless steel. When waxing your NORTHSTAR ORION, wax your stainless hardware too.

10.6. CORRECT MATERIALS AND COMPONENTS

NORTHSTAR ORION are designed for the harsh marine environment and are certified for applicable safety standards.

To keep these qualities, please let your dealer handle work and repairs on your boat. You could endanger your safety and lose your warranty because of improperly installed equipment or the wrong choice of equipment.

If you order spare parts, always order quoting your boat's/engine's serial number. Hull serial number (HIN), on NORTHSTAR ORION, is found on the starboard side of the transom and is molded in gelcoat.

10.7. WINTER STORAGE

It is advisable to winter your NORTHSTAR ORION in a protected area. If you are going to winter your NORTHSTAR ORION outside, it is highly recommended to thoroughly clean and polish it before covering.

This will prevent the dirt to settle on the finish of the boat. Take precautions so that your NORTHSTAR ORION remains ventilated during storage to prevent the formation of mildew and corrosion. Also, remember to take precautions for freezing water inside the boat, hoses, and pipes.



CAUTION

Disconnect and remove the battery when the boat is in long-term storage. Store your battery in a dry, ventilated place and charge it according to manufacturer's recommendations.

If the boat remains on the trailer for a long time, take special care that the weight of the boat is equally distributed on the touching points of the trailer rollers or bunks.

If there is leftover petrol in the tank, you should empty it and let some air in. You should cover open tanks, conduits, and hoses with cloth or gauze at their ends. This will enable ventilation but prevent dust from settling in.



CAUTION

Water set in the tanks and hoses may freeze during storage, causing damage. Empty your water tank and water system before storing your NORTHSTAR ORION.

It must be remembered that your NORTHSTAR ORION will not be covered for warranty due to problems associated with improper storage. It is advised that your dealer handles the storage preparation for your NORTHSTAR ORION.

11. REPAIRING

Please consult your dealer who can give you good advice and can order the suitable spare parts if you want to repair your NORTHSTAR ORION by yourself. You should leave extensive repairs at the hull or the engine to experts. Do not attempt to repairs, which you are not trained to handle. Your dealer will take over such repairs and will give the job to an expert.

11.1. REPAIRING THE FABRIC

Your NORTHSTAR ORION is provided with a tube repair kit. In case of small punctures, this kit can be used to patch these.

Repairing the Tube

First, if there is no damage, check to see if the tube holds air. This test will help locate the leaking chamber. The order of operations:

- Inflate the chamber and apply a water/soap solution to the fabric with a brush.
- The location of the leak is determined either by a growing chain of bubbles or by a whispering sound if large enough.
- Leakage shall be in one of the following categories:
 - valve leakage
 - cover patch leakage,
 - seam leakage,
 - widespread leakage,
 - hole or tear.

Some holes can be repaired by yourself, but others should be repaired in an authorized service point. The following may only be repaired at an authorized service point or factory:

- Holes or tears larger than 2,5 cm. (1 inch) of any type at any point;
- Any hole or tear up to 5 cm. (2 inches) in proximity to a seam
- All kinds of seam leakage.

All these leaks usually require both internal and external patches. The internal patch can only be done by professionals. In this case, it is recommended that this service be organized by your dealer.

A temporary patch can be applied by the procedure below. But such a patch should be properly repaired at the first opportunity.

! CAUTION

Small holes in inflatable boats can be easily patched. However, there are some essential rules that must be followed to maximize patch life.

All patches should be applied in a controlled environment (relative humidity should be below 60%, and the temperature should be in the range of 18° to 25°C (64° to 77°F). If the tube cannot be protected from the sun, avoid using the adhesive. Temperature affects the strength of chemical bonds. Dampness during the bonding process is also a critical factor affecting the result. Avoid breathing directly on areas covered by the adhesive. Some chemicals (adhesive or solvent) used in the repair process can be highly toxic.

! CAUTION

The following safety guidelines must be strictly followed:

- Do not smoke in places close to adhesive or solvent, do not approach with fire. Both are flammable.
- Repairs should be made in a well-ventilated area, glue and solvents (MEK or toluene) may be very toxic.

! WARNING

11.2. USING THE REPAIR KIT

IMPORTANT

The Northstar repair kit should be used only for patching small holes.

Extensive damages should be repaired only by professional technicians at NorthStar Authorized Service Points or NorthStar factory.



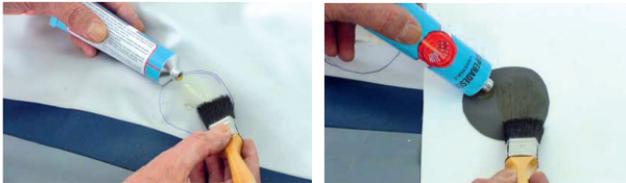
1 - Define the area around the cut or hole with margins as shown on Picture 1.



2 - Cut a piece of fabric from the repair kit, shape it to the corresponding area as determined in Picture 1. Make sure that both surfaces are not damp.



3 - Using the sandpaper, carefully sand the defined area and the bottom part of the patch fabric.



4 - Apply the adhesive to both surfaces using a brush and wait for the glue to become tacky.



5 - Carefully place the spare fabric on the surface you defined and apply pressure until it adheres completely.



- Wait for at least half an hour before inflating the tube after minor repairs.
- Wait for at least 1 hour after repairing small cuts and holes. (2-3 cm. cut or 0.5 cm. hole)
- Wait for at least 3 hours after repairing larger cuts and holes. (6-8 cm. cut or 1-2 cm. hole)
- Inflate the tube at around 60% of the recommended pressure and go for a test at low speed.
- Recheck the air tightness of the repaired area before applying the recommended pressure value.

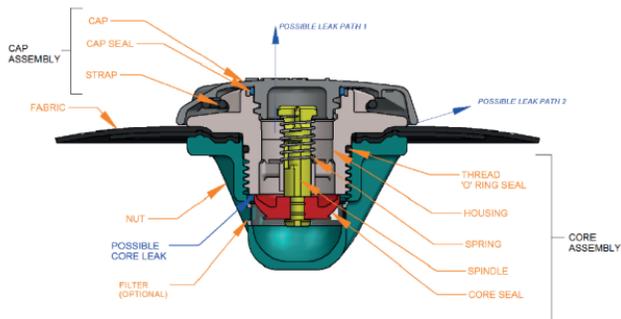
11.3 LEAKAGE AND BREAKAGE IN VALVES

The D7 valve is manufactured from quality materials and has been engineered to ensure a long life in arduous marine environments. In the unlikely event that you experience problems with this product you may find the following notes helpful.

If the problem is Leakage read section 1, if it is Breakage read section 2.

11.3.A. LEAKAGE

First identify where the leak is coming from- see diagram below.



Leakage Path 1 (from the core assembly)

This problem can be temporarily overcome by fitting the cap, as this is a secondary seal. To permanently fix the problem, carry out the following operations:

With the buoyancy tube deflated and the valve in the closed position, remove the Cap, then fill the valve with some warm soapy water. Open the valve by pushing the Spindle down and turning anticlockwise. Allow the water to drain through. Rinse through with plain water. Re-check the valve for air tightness.

If the leakage persists, use service tool C16605 with the buoyancy deflated and unscrew the core of the valve by turning it anticlockwise. Check the rubber seal on the valve core for dirt or damage. Check that the sealing face on the plastic core is clean and undamaged.

Refit the valve and tighten as tightly as you can using hand pressure on the tool. Inflate the buoyancy tube and check for air tightness. We recommend that after around 24 hours the valve should be retightened to ensure it has fully seated. If the leakage persists contact your local repair shop.

Leakage Path 2 (from the edge of the valve)

Using tool C16605, ensure that the valve is as tight as possible with hand pressure only.

If the leak persists, unscrew the valve core and remove. Remove the core and inspect the thread 'O' ring seal and the condition surface of fabric around the hole where the flange of the valve contacts the fabric.

If the thread 'O' ring seal or core seal are damaged they must be replaced using the appropriate seal kit.

11.3.B. BREAKAGE

If the cap has been broken or the strap damaged, a new Cap/strap assembly can be obtained from your spares supplier. The loop securing the cap to the valve can be cut using a knife- being careful not to damage you or the raft fabric. The new loop can then be pushed over the retaining features (start with the thickest part of the strap) and will clip into place securing the cap firmly. Make sure the strap is the right way up before fitting, so there are no twists in the strap when you screw the cap on.

If the core of the valve is broken it can be replaced. See the previous section for information on how to remove and refit it.



12. TRAILERING AND TOWING

12.1. TOWING



You can tow your boat on the sea by attaching a tow line to the U bolt at the bow. Towing line rating must be at least 5 times of your Northstar RIB's total weight. Cleats or handles which are not designed for towing must not be used. When towing, a towed boat must be monitored at all times to make sure that the tow line length is appropriate for the conditions and the towed boat is not diving into the waves created. It is the skipper's responsibility to make sure that safe towing is possible at all times.

- No passengers should be allowed on the towed boat.
- Towed boat must be as light as possible with no loose items placed in it.
- The outboard motor must be tilted completely before towing.
- The boat should be towed at displacement speeds and it is the responsibility of the skipper to ensure that the boat is being towed at safe speeds.

12.2. TRAILERING

Choose the proper trailer for your Northstar ORION. More damage can be done to the RIB by the stresses of road travel than by regular operation. The hull is designed to be supported evenly by water. When transported on a trailer, your Northstar ORION should be supported structurally as evenly across the hull as possible. This will allow for even distribution of the weight of the hull, engine, and equipment. It should be long enough to support the whole length of the hull but short enough to allow the lower unit of the boat engine to extend freely.

Check your vehicle owner's manual for specific information.

Use a suitable trailer for Northstar ORION and its mass.

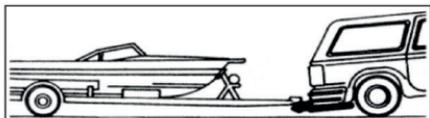
- Rollers and bolsters must be kept in good condition to prevent scratching and gouging of the hull.
- Tie-downs and lower unit supports must be appropriately adjusted to prevent the boat from bouncing on the trailer. The bow eye on the boat should be secured with rope, chain, or turnbuckle in addition to the winch cable. Additional straps may be required across the beam of the boat.

The capacity of the trailer should be higher than the combined weight of the boat, motor, and equipment. The tow vehicle must be capable of handling the weight of the trailer, boat, equipment, as well as the weight of the passengers and equipment, which will be carried inside. This may require that the tow vehicle may need to be specially equipped with a(n);

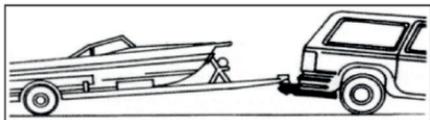
- The engine of adequate power.
- Transmission designed for towing.
- Larger cooling systems for the engine and transmission.
- Heavy-duty brakes.
- Load bearing hitch attached to the frame, not the

Check your trailer before going out on the highway.

- The tow ball and coupler are the same sizes, and bolts with washers are tightly secured. (The vibration of road travel can loosen them.)
- The coupler is entirely over the ball, and the latching mechanism is locked.
- The trailer is loaded evenly from front to rear as well as side to side.



Too much weight on the hitch will cause the rear wheels of the tow vehicle to drag and may make steering more difficult.



Too much weight on the rear of the trailer will cause the trailer to "fishtail" and may reduce traction or even lift the rear wheels of the tow vehicle off the ground.

- The safety chains are attached crisscrossing under the coupler to the frame of the tow vehicle. If the ball were to break, the trailer would follow in a straight line and prevent the coupler from dragging on the road.
- The lights on the trailer function properly.
- Check the brakes. On a level parking area, roll forward and apply the brakes several times at increasing speeds to determine a safe stopping distance.
- The side-view mirrors are large enough to provide an unobstructed rear view on both sides of the vehicle.
- Check tires (including the spare) and wheel bearings. Improper inflation may cause difficulty in steering. When trailer wheels are immersed in water (especially saltwater), the bearings should be inspected and greased after each use.
- Make certain water from rain or cleaning has been removed from the boat. Water can add significant weight that will shift with the movement of the trailer.

Towing Precautions

- Allow more time to brake, accelerate, pass, and stop.
- Remember, the turning radius is also much greater.
- Curbs and roadside barriers must be given a wide berth when negotiating corners.
- Before operating on the open road, practice turning, backing up, etc. on a level parking area.

Pre-Launching Preparations

For the courtesy of others and prevent rushing, prepare your boat for launching away from the ramp before you approach the ramp.

- Check the boat to ensure no damage was caused by the trip.
- Raise the lower unit (remove supports) to the proper height for launching so it will not hit bottom.
- Remove tie-downs and make sure the winch is properly attached to the bow eye and locked in position.
- Put the drain plug in securely, if equipped.
- Disconnect the trailer lights to prevent shorting of the electrical system or burning out a bulb.
- Attach a line to the bow and the stern of the boat so the boat cannot drift away after launching, and it can be easily maneuvered to the docking area.
- Visually inspect the launch ramp for hazards such as a steep drop off, slippery area, and sharp objects.

When everything has been double-checked, proceed slowly to the ramp remembering that your boat is just resting on the trailer and attached only at the bow. The ideal situation is to have one person in the boat and one observer at the water's edge to help guide the driver of the tow vehicle.

Launching

- Keep the rear wheels of the tow vehicle out of the water. This will generally keep the exhaust pipes out of the water. If the exhaust pipes become immersed in the water, the engine may stall.
- Set the parking brake and place tire chocks behind rear wheels.
- Make sure someone else on shore is holding the lines attached to the boat.
- Lower the motor and prepare to start the engine (after running blowers - if equipped - and checking for fuel leaks).
- Start the boat motor and make sure water is passing through the engine cooling system.
- Release the winch and disconnect the winch line from the bow when the boat operator is ready.

At this point, the boat should be able to be launched with a light shove or by backing off the trailer under power.

Retrieval

The steps for removing your Northstar ORION from the water are the reverse of those taken to launch it. However, keep in mind certain conditions may exist during retrieval that did not exist during launching. As you approach the takeout ramp, take special care to note such factors as:

- Change in wind direction and/or velocity.
- Change in current and/or tide.
- Increase in boating traffic.
- Visibility, etc.

First, unload the boat at dock or mooring, if possible. Next, maneuver the boat carefully to the submerged trailer and raise the lower unit of the engine.

Then, winch the boat onto the trailer and secure it. Finally, drive the trailer with boat aboard carefully out of the ramp to a designated parking area for cleanup, reloading, and an equipment safety check. Practice will make launch and retrieval a simple procedure. The best advice is to retrieve your Northstar ORION cautiously with safety as your primary concern.

Storage of the Trailer

Since your Northstar ORION may be sitting on its trailer for quite some time before it is used again, it is important to store the trailer properly. To remove weight from the wheels, put cinderblocks or wood beams under the tongue and all four corners of the trailer frame.

13. WARRANTY TERMS

NORTHSTAR warrants to the original retail purchaser of this boat that it will, at its sole option, offer warranty as described hereunder;

13.1 GENERAL WARRANTY

NORTHSTAR boats are warranted to the original purchaser to be free of defects in materials or workmanship for a period of two (2) years from the date of delivery, subject to all limitations and conditions contained herein.



Limitations apply for commercial use/rental operations. Severe duty craft are not warranted by NORTHSTAR. Light duty commercial users may be entitled to a limited 1 year warranty. (Please contact Northstar or your dealer if in doubt)

13.2 STRUCTURAL HULL WARRANTY

Repair or replace the fiberglass hull if it is found to be structurally defective in material or workmanship for a period of five (5) years from the date of purchase. For this warranty, the hull is defined as the single fiberglass casting, which rests on the water and the upper deck molding connected to it. This warranty is subject to all limitations and conditions explained below.



13.3 TUBE WARRANTY

NORTHSTAR warrants to the original retail purchaser of this boat that it will at its sole option, repair or replace the Neoprene / CSM (hypalon) tube if it is found to be defective in material or workmanship for a period of two (2) years from the date of purchase.



Northstar further warrants its tube fabric and tube seams to hold air (per ISO 6185) to perform for a period of 5 years. This warranty is subject to all limitations and conditions explained below. The "air tightness" guarantee period according to ISO 6185, accepts the pressure change of max 20% in 24 hours.

13.4 EXTERIOR FINISH WARRANTY

NORTHSTAR warrants its exterior gelcoat finish to be free from cosmetic defects, including blisters, cracks, or crazing for a period of one (1) year from the date of delivery to the original retail purchaser, subject to all limitations and conditions contained herein. Powdercoatings are warranted for 2 years provided they be washed with fresh water after each salt water use. Even the smallest of damages on the powdercoating must be repaired at once.

13.5 CUSTOMER OBLIGATIONS

The following procedures and customer obligations are conditions precedent to the availability of any benefits under warranty terms:

- Warranty coverage is available only to customers who purchased from an Authorized NORTHSTAR Dealer.
- Routine and timely maintenance and proper upkeep as outlined in the Owners Manual is the responsibility of the owner and is necessary to obtain warranty coverage.
- All warranty work is to be carried out at NORTHSTAR factory, authorized services or authorized distributors of NORTHSTAR. After it has been established that there is a valid claim under this warranty, NORTHSTAR will authorize, in writing, repairs to be made. Transportation or any other haul out or handling expenses to and from the repair facility will not be covered by this warranty and is the responsibility of the boat owner.
- The purchaser must give the dealer from whom the boat was purchased written notice of any claim under this warranty period and within a reasonable period of time (not to exceed thirty (30) days) after the defect is or should have been discovered. NORTHSTAR will not repair any condition or replace any part if a claim is not made on time.

- NORTHSTAR will not repair any condition or replace any part if the use of the boat is continued after the defect is or should have been discovered; such continued use causes other or additional damage to the boat or parts of the boat.
- Only the dealer should write or call the "warrantor", NORTHSTAR.
- NORTHSTAR will then determine whether the claim is covered by this warranty and will advise the dealer.
- The dealer will contact the NORTHSTAR Boat owner regarding instructions for delivery of boat or part for warranty repair if it is covered under warranty.

13.6 WARRANTY EXCEPTIONS

NORTHSTAR warranty does not cover the following:

- If the Hull Identification Number (HIN) molded to the transom is changed, defaced, or tampered with in any way.
- Engines, metal plating or finishes, windshield breakage, leakage, fading and deterioration of paints, canvas, upholstery, and fabrics;
- Gelcoat surfaces including, but not limited to, cracking, crazing, discoloration or blistering beyond the one (1) year warranty period;
- Routine maintenance items, adjustments, normal wear and tear, puncture, discoloration, oxidation, abrasion, mildew. Wear and tear items include but not limited to rubbing strakes, keel guards, and ropes.
- Accessories and items which were not part of the boat when shipped from the NORTHSTAR factory, and/or any damage caused thereby;
- Damage caused by misuse, accident, galvanic corrosion, negligence, lack of proper maintenance, theft, environmental corrosion, acid rain, chemical fallout, bird lime, tree sap, hail, extreme weather, mechanical shocks or improper tampering;
- Esthetical defects (stains, scratches, mold, pressure marks, dirt, deformation) on the tube surface

- Any boat used for racing, competitions, rental and commercial operations – (see 3. GENERAL WARRANTY).
- Use of the boat with improper tube inflation;
- If powdercoated surfaces are not maintained well and not rinsed after each salt water use
- Any boat operated contrary to any instructions furnished by NORTHSTAR or operated in violation of any laws, rules or regulations;
- If alterations have been made to the boat;
- If tube covers or tube sleeves are used;
- Transportation costs of the boat or parts, or any other haul out or handling expenses to and from the repair facility,
- Any published or announced catalog performance characteristics of speed, fuel, and oil consumption, and static or dynamic performance in the water;
- Any boat that has been powered beyond NORTHSTAR's power or engine weight recommendations;
- Boats damaged by accident and boats damaged while being loaded onto, transportation upon or unloaded from trailers, cradles, or other devices used to place boats in the water, remove boats from water or store or transport boats on or over land;
- Costs or charges derived from inconveniences or loss of use, commercial or monetary loss due to time loss and any other special, incidental or consequential damage of any kind or nature;
- Improper use, in particular negligent use, or rash use, misuse, or abnormal use;
- Use of damaging chemicals in cleaning, use of abrasives
- Accident or catastrophe such as but not limited to explosion, fire, flood, storm, lightning, transport, riot, theft, earthquake and collision;
- Unsuitable storage or transportation conditions including but not limited to storing in an environment suitable for mildew growth, storing wet, fouled, unprotected, overinflated, under freezing temperatures, under extremely hot conditions, unventilated conditions, transporting or storing hull unevenly supported.
- Any repair or replacement of parts covered by this warranty will not extend the life of this warranty or any downtime period for repairs will not be added to the warranty period.

13.7 TRANSFER OF WARRANTY

This warranty automatically transfers to subsequent owners within the warranty period offered to the original purchaser. Warranty will not be transferred on any commercially operated craft.

13.8 GENERAL PROVISIONS

ALL GENERAL, SPECIAL, INDIRECT, INCIDENTAL, AND/OR CONSEQUENTIAL DAMAGES ARE EXCLUDED FROM THIS WARRANTY. The owner's sole remedy is the repair or replacement of the vessel or it's allegedly defective parts and that no other legal or equitable remedies shall be available to the owner. Some countries do not allow the exclusion of incidental or consequential damages, so the foregoing may not apply to you. NORTHSTAR MAKES NO WARRANTY, OTHER THAN CONTAINED HEREIN; ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARISING IN COUNTRY LAWS IS LIMITED TO THE PERIOD OF THIS WARRANTY. ALL OBLIGATIONS OF NORTHSTAR SPECIFICALLY SET FORTH HEREIN. NORTHSTAR DOES NOT AUTHORIZE ANY PERSON OR DEALER TO ASSUME ANY LIABILITY IN CONNECTION WITH NORTHSTAR BOATS. NORTHSTAR's obligation concerning this warranty is limited to making repairs to or replacing the defective parts, and no claim for breach of warranty shall be cause for cancellation or rescission of the contract of sale or any boat manufactured by NORTHSTAR.

NORTHSTAR will discharge its obligations under this warranty as rapidly as possible, but cannot guarantee any specific completion date due to the different nature of claims that may be made and services that may be required. NORTHSTAR reserves the right to change or improve the design of its boats without obligation to modify any boat previously manufactured. This warranty gives you specific legal rights, and you may also have other rights which may vary from country to country.

NORTHSTAR shall in no way be responsible for any repairs, not PRE-AUTHORIZED by NORTHSTAR, in writing, or repairs performed by a repair facility, not PRE-AUTHORIZED.

Thank you for choosing a NORTHSTAR RIB.



NORTHSTAR[★]

RIBTECH DENİZ ARAÇLARI ÜRETİMİ A.Ş.

Adres: Yazıbaşı Mh. 306 Sk. No:3/1

Torbalı / İzmir 35875 Türkiye

Telefon: 0 232 853 90 44 Faks: 0 232 853 90 14

E-Mail: info@ribtech.com

www.northstarboats.com

ISO 9001
ISO 14001
ISO 10002
OHSAS 18001
BUREAU VERITAS
Certification

