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1. DOCUMENT INTRODUCTION

1.1. About

This manual contains installation instructions for the following motorization system:

- BlueSpin 8 kW Outboard

For practical reasons, it is not possible to include detailed information covering all possible alternatives for installation, operation or maintenance. The drawings and images in this document are shown for explanatory purposes only.

In the event of differences of interpretation between the multilingual versions of the document, the French version shall prevail. BlueNav is the sole right owner of the final interpretation of this manual.

The contents of this document relate strictly to the mechanical installation of the BlueSpin system. As of date, the wiring procedures are still being written. The integration of the energy system (batteries, Battery Management System, chargers) is independent and described in the manuals supplied by their manufacturers.

In the event of any discrepancy between the products supplied and this document, or in case of doubt, please visit www.bluenav.com or contact us at support@bluenav.com.

1.2. Intellectual Property

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2. SECURITY

2.1. General safety instructions

This document explains how to install the BlueSpin system in a simple and safe way. However, some specialized knowledge is required for working on or modifying the boat's hull. Call an expert if necessary.

Read the entire document carefully before installing and operating the system. Failure to follow the instructions may result in serious property damage or personal injury. The BlueSpin system must be installed in accordance with the installation recommendations described in the documents supplied.

BlueNav accepts no responsibility for any damage caused by actions other than those described in this manual. Modifications to the hull of the boat should only be carried out by professional builders and architects. Compliance with local standards and regulations is mandatory.

Please observe the following general safety instructions:

The boat on which the BlueSpin system is installed must be stable.
The boat must be compatible with the installation and the use of the BlueSpin system, as verified beforehand during project commissioning.
To prevent corrosion and ensure lasting waterproofness, consider the hull material and provide the appropriate sealants and fastening materials.
Bores and holes in the hull can affect its structure and stability. Provide suitable fastening materials.
Use the appropriate lifting equipment to move heavy elements.

2.2. Levels of safety instructions

Safety instructions are scaled at 3 levels. They are categorized according to risk severity if the instructions are not followed.

⚠ DANGER!

Immediate danger of death or of serious injury.

⚠ WARNING!

Danger of personal injury or of material damage.

BlueNav accepts no liability for any damage caused by actions not complying with these instructions.

Apart from the safety instructions, additional information is indicated by the following:

NOTE

Useful additional information: assembly advice, description of a component, specific recommendation, etc.

3. NON-DELIVERED MATERIAL REQUIRED

Due to the many different characteristics of each boat, some of the components required for the installation of the BlueSpin system are not supplied by BlueNav on delivery but must be present on board.

If you have any doubts about the compatibility of the material listed below, please contact BlueNav.

3.1. CCU Power supply

A power supply of 12V DC - 1A is required on board to power the CCU. This power supply can be the service battery on board.

3.2. Multifunctional Display (MFD)

A Multifunctional Display (MFD) is required on board to display the BlueNav application. The BlueNav application is part of the HMI (Human-Machine Interface) that allows the user to steer the BlueSpin system.

3.3. NMEA 2000® Network

The boat's NMEA 2000® CAN bus network is used to transmit data between devices of different types and from different manufacturers, such as GPS, compass, wind, depth, AIS, speed or motor data. It is pre-existent to the BlueSpin system installation.

The CCU of the BlueSpin system must be wired to the backbone of the NMEA 2000® Network on board to guarantee good data communication.

3.4. Batteries

The BlueSpin system is an electrical propulsion system. Thus, it is powered by batteries. The batteries must meet the requirements discussed during the project initialization phase.

3.5. Unsupplied screws for mechanical installation

Equipment	Quantity	Corresponding Procedure
M10 type screw (INOX 14/A4 316L)	4	p.13 (step 4)
M5 type screw	4	p.16 (step 2)
M5 type screw	2 to 6*	p.18 (step 1)
M5 type screw	4 to 6*	p.18 (step 5)

*Depends on the drilling environment.

⚠ WARNING!

All screws not supplied must be compatible with the mounting environment. In case of doubt, contact BlueNav.

3.6. Required tools for mechanical installation

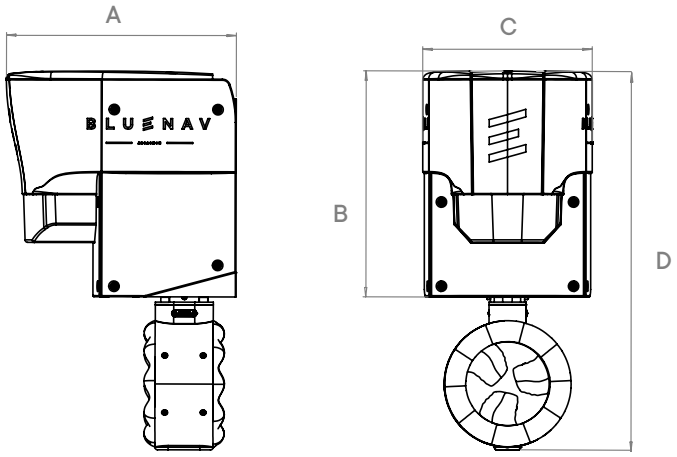
This list is indicative and non-exhaustive. Additional tools may be required depending on the components not supplied (see p.4) and the specific characteristics of the boat on which the BlueSpin system is installed.

Tool	Used for
Lifting table	Moving the Propulsion Unit
8mm Allen wrench	Manually lowering the propeller
Torque wrench	Screwing with the correct torque
Sealing product*	Sealing the holes in the hull
70mm hole saw	Drilling the cable entry in the hull
17mm clamping bush	Tightening the Propulsion Unit screws
17mm torque wrench	Tightening the Propulsion Unit screws
Phillips screwdriver	Tightening the screws of the Power Unit and of the Command Panel (p.18)
Flat head screwdriver	Unscrewing the Junction Box caps.

*Depends on the drilling environment.

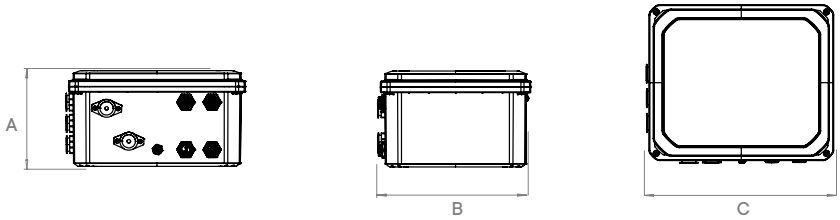
4.PRODUCT DIMENSIONS

Propulsion Unit dimensions



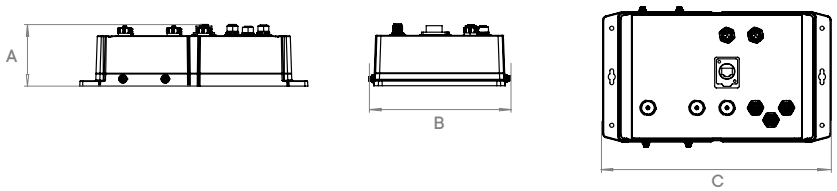
A	436 mm
B	431 mm
C	328 mm
D	723 mm

Power Unit dimensions



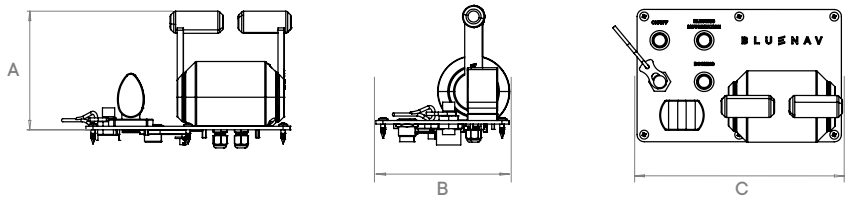
A	183 mm
B	291 mm
C	341 mm

CCU dimensions



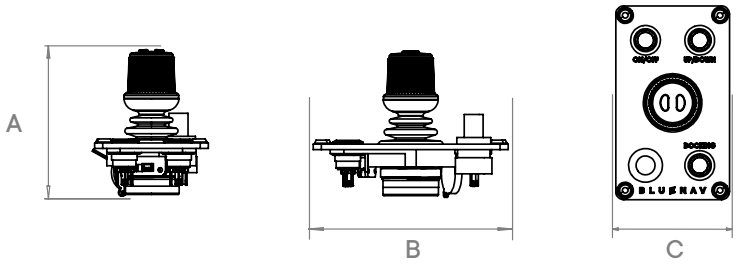
A	80 mm
B	161 mm
C	280 mm

Command Panel with throttles dimensions



A 135 mm
B 150 mm
C 230 mm

Command Panel with joystick dimensions



A 108 mm
B 144 mm
C 84 mm

5. PRODUCT DESCRIPTION

The BlueSpin system is an electrical propulsion system designed to be used as a secondary motor to hybridize a boat's pre-existing thermic propulsion, or as a main motor for full electric propulsion.

It is equipped with a retractable RIM Drive propeller. When in use, the RIM Drive propeller is lowered through the underside of the Propulsion Unit. After use, the RIM Drive propeller retracts within the Propulsion Unit.

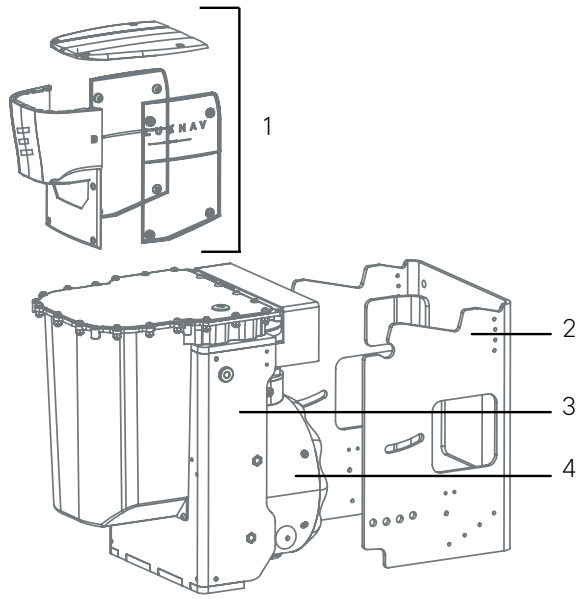
NOTE

The diagrams in this installation document can depict the RIM Drive propeller as lowered ("in use") for illustration or explanation purposes only. When the system is delivered, the RIM Drive propeller of the Propulsion Unit is retracted by default.

The BlueSpin system consists of the following components:

Elements	Quantity	
	single-motor	twin-motor
Propulsion Unit	1	2
Power Unit	1	2
CCU (Communication and Control Unit)	1	1
Command Panel	1	1

5.1. Outboard Propulsion Unit



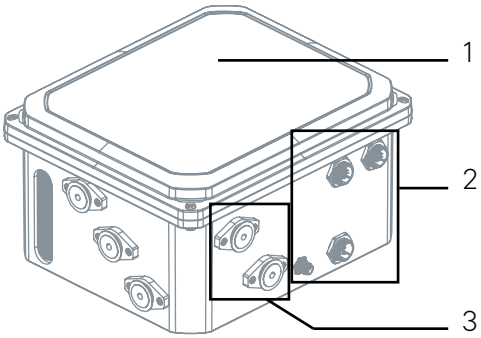
1 Covers
2 Mobile chassis
3 RIM Drive Propeller
4 Fixed chassis

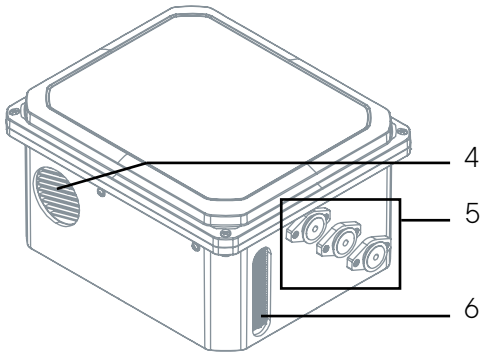
The Outboard Propulsion Unit of the BlueSpin system is designed for an outboard installation, against the hull.

It consists of a fixed chassis, a mobile chassis and external covers. It also includes a cable harness for connection to the Power Unit (not shown in the diagram opposite).

See p.11 for detailed installation procedure.

5.2. Power Unit



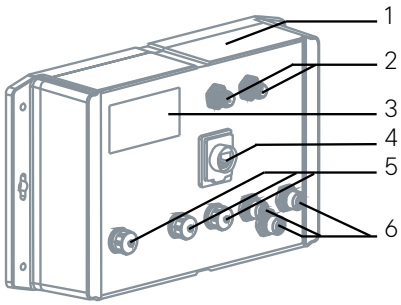


1 Box
2 Command connectors
3 48V DC bulkhead connectors
4 Fan opening (air intake)
5 Motor phase bulkhead connectors
6 Air outlet

The Power Unit enables the control of the motors within the Propulsion Unit.

See p.15 for detailed installation procedure.

5.3. CCU (Communication and Control Unit)



1 Box
2 M12 male connectors
3 Number plate
4 RJ45 female connectors
5 M12 female connectors
6 WEIPU male connectors

The Communication and Control Unit (CCU) is a control system and a communicative gateway. It transmits data through the NMEA 2000® network (see p.4).

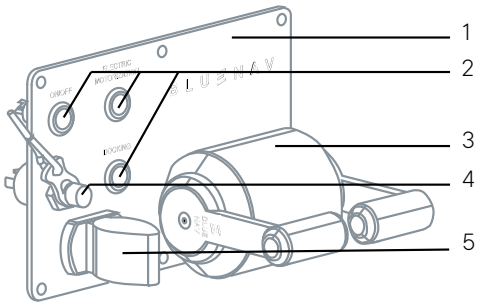
See p.17 for detailed installation procedure.

5.4. Command Panel

The Command Panel is used to switch on and activate controls. It is available in throttles-version or in a joystick-version, depending on the product ordered.

See p.17 for detailed installation procedure.

5.4.1. With throttles

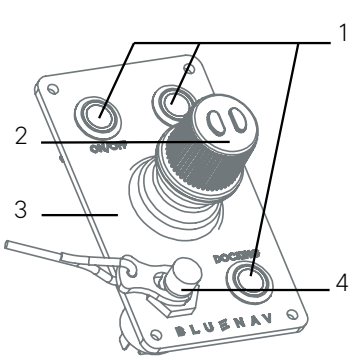


1 Panel of the Command Panel
2 Push buttons
3 Throttles
4 Cut-off switch
5 Direction stick

The Command Panel is supplied with two cables welded on the rear connectors THR_L (identified in white) and THR_R (identified in green). Cable extensions are connected to the welded cables to facilitate the wiring with the CCU.

In case of a single-motor BlueSpin system, the Command Panel is equipped with a simple throttle.

5.4.2. With joystick



1 Push buttons
2 Joystick
3 Panel of the Command Panel
4 Cut-off switch

The joystick control panel lets you control the propulsion and the gyration of the BlueSpin system with a single command: the 3-axis joystick.

6. INSTALLATION OF THE OUTBOARD PROPULSION UNIT

The Outboard Propulsion Unit is installed outboard, against the hull of the boat.

6.1. General requirements

The precise dimensions of the different elements supplied by BlueNav are available at p.6. Make sure that these dimensions are compatible with the installation environment.

NOTE

4 M10 type screws (INOX 14/A4 316L) are needed for step 5 of the mounting procedure.

DANGER!

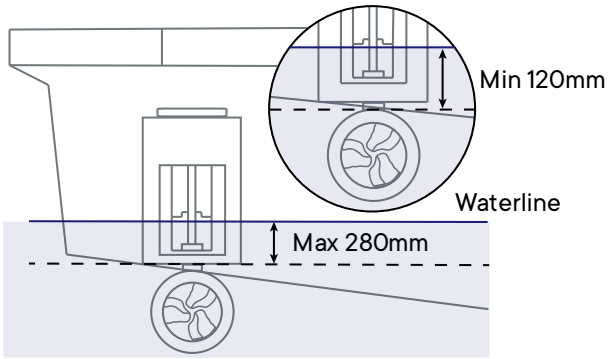
The boat and all its components must be isolated from electrical sources.
The mechanical installation work must be carried out on land only. The boat must be out of water.

WARNING!

The BlueSpin system requires an on-board power supply. Plan the position of the elements of the BlueSpin system so as not to affect sensitive electrical equipment (e.g. radios) or measuring instruments (e.g. compasses). Relocate those devices if necessary.

6.2. Position of the Propulsion Unit

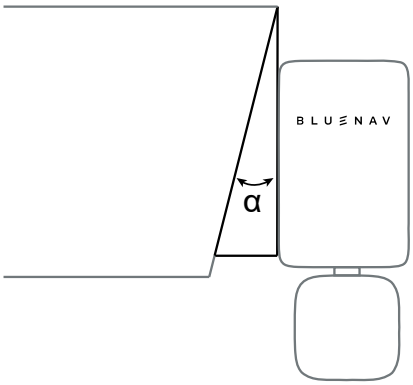
The Propulsion Unit of the BlueSpin system is positioned against or within the hull, according to the following requirements:



- The chassis of the Propulsion Unit does not protrude from the hull of the boat;
- The chassis of the Propulsion Unit is immersed underwater at a maximum of 280mm from its lowest point;
- In lowered position, the RIM Drive propeller is completely under the hull and underwater.

The installation template (part no. 05-10-0011) must be placed against the hull to identify the drilling position.

6.3. Verticality rework



α : vertical recovery angle

The Outboard Propulsion Unit must be mounted on a flat and vertical surface of the hull. The mounting surface should be as vertical as possible.

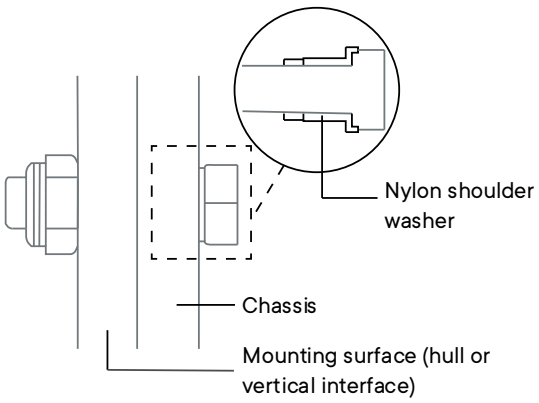
The hull's surface in contact with the fixed chassis of the propulsion unit must be flat with a 2mm/m tolerance.

If the mounting surface is not perpendicular to the waterline, build a wedge so that the fixed chassis can be vertical. The material of the wedge depends on the mounting environment. If the wedge is made of stainless steel, use M12 nylon shoulder washers between the Propulsion Unit and the wedge to prevent metal-on-metal contact.

NOTE

The Outboard propulsion unit consists of a mobile chassis already mounted on a fixed chassis. This fixed chassis is secured against a vertical, flat surface of the hull.
Once the fixed chassis has been installed, respecting the verticality requirements above, mount the mobile chassis. The mobile chassis must be vertical compared to the boat. See installation procedure p.13.

6.4. Galvanic protection



Galvanic corrosion is a common phenomenon in metallic structures that causes significant damage. This electrochemical reaction occurs when two dissimilar metals come into contact in a conductive environment such as a liquid, a soil or within atmospheric humidity.

The fixed chassis of the Propulsion Unit is made of anodized aluminum. To avoid corrosion, BlueNav supplies nylon shoulder washers for mounting the motors as shown.

The screws used to secure the fixed chassis are of the following types: M10 INOX 14/A4 316L.

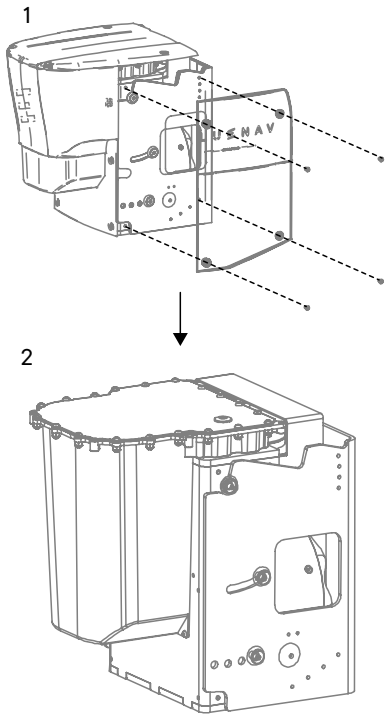
WARNING!

If the hull is in a metal other than aluminum, plan a galvanic protection between:

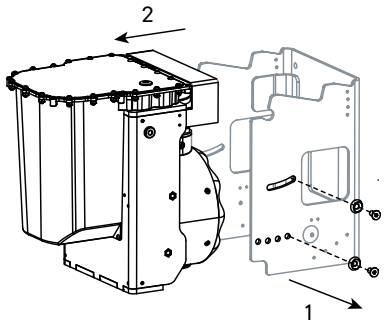
- The hull and the fixed chassis;
- The hull and the screws.

6.5. Mounting procedure of the Outboard Propulsion Unit

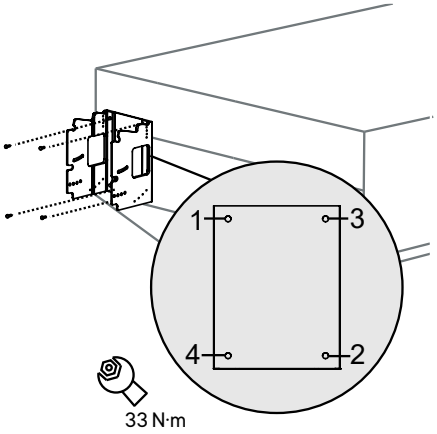
1. Remove the covers from the propulsion unit as shown. Keep screws and bolts aside.



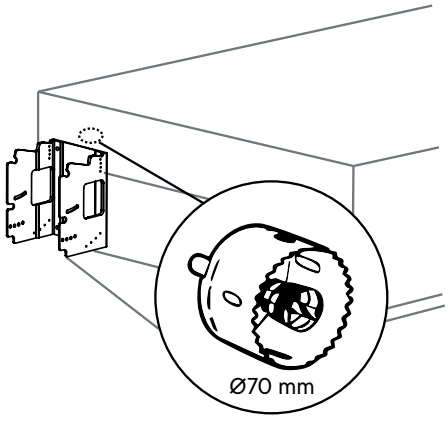
2. Remove the fixed chassis from the mobile chassis by unscrewing the parts shown in the diagram (4 M10 screws, 2 on each side). Keep screws and bolts aside.



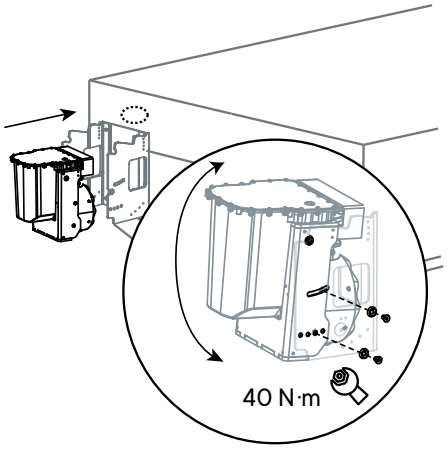
3. Using the installation template supplied (part no. 05-10-0011), drill 4 holes for M10 screws on the hull surface against which the fixed chassis is mounted. Screw in the fixed chassis in the order shown, using M10 screws. The recommended tightening torque is 33 N·m, to be adapted according to the hull type.



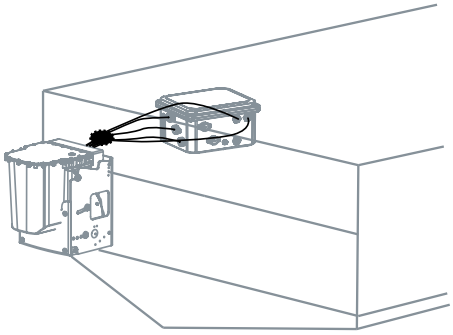
4. Mark the desired cable entry point in the hull. Using a Ø70mm hole saw, drill the hull according to this parameter.



5. Using the screws previously removed (step 2), screw the mobile chassis onto the fixed chassis. Adjust the angle of the mobile chassis during this step: the mobile chassis of the propulsion unit must be vertical in comparison with the boat. Tightening torque is 40 N·m.



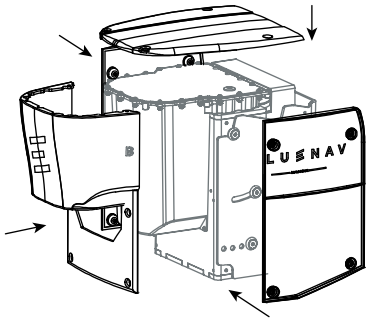
6. Guide the cable harness through the hole drilled at step 4. The cables must be straight and not twisted.



⚠ WARNING!

Always seal the cable entry after wiring the Propulsion Unit/Power Unit.

7. Using the screws previously removed (step 1), screw the covers back onto the Propulsion Unit (tightening torque is 4 N·m).



7. INSTALLATION OF THE POWER UNIT

The Power Unit is designed to be installed within the hull of the boat.

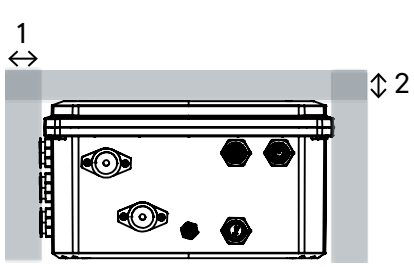
The Power Unit should be installed in a space:

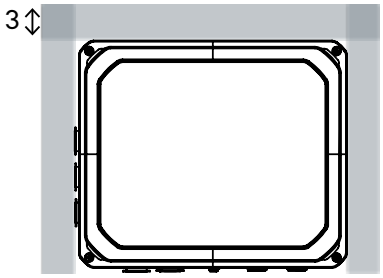
- As close as possible to the corresponding Propulsion Unit to allow wiring.
- Dry and sufficiently ventilated to avoid humidity.
- Protected from water splashes.
- Accessible for future maintenance.

The Power Unit can be installed horizontally or vertically, provided the above requirements are met. However, vertical installation is recommended. The mounting procedure remains identical. See p.16.

7.1. Space taken by the Power Unit

During the installation of the Power Unit, comply with the following dimensions:





1 150 mm minimum
2 150 mm minimum
3 150 mm minimum

⚠ WARNING!

The fan opening (face with round hole) draws in air. The outlet emits hot air.

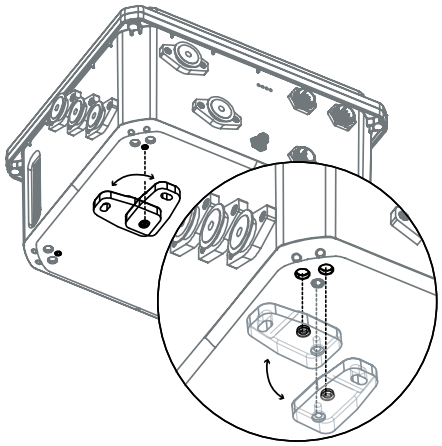
⚠ WARNING!

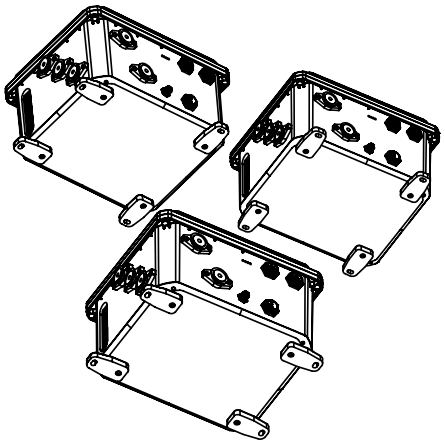
If the BlueSpin system is a twin-motor system, each Power Unit is identified “port side” and “starboard”. **Each Power Unit must be installed on board according to their position identification.** Each Power Unit is wired to its corresponding Propulsion Unit.

7.2. Mounting procedure of the Power Unit

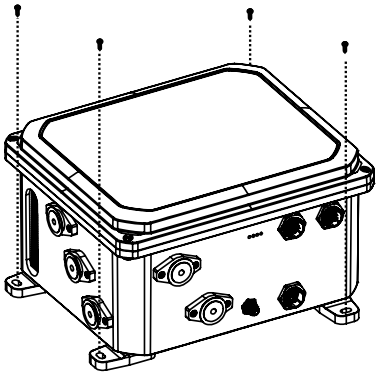
The Power Unit is supplied with 4 mounting brackets to be fitted by the installer. 4 M5 screws are supplied to screw the mounting brackets onto the Power Unit.

1. Using the 4 M5 screws supplied and the centering mark, screw each Power Unit mounting bracket into the chosen position.





2. Screw the Power Unit into the chosen mounting surface. Use Ø<8mm diameter screws suitable for the mounting surface.



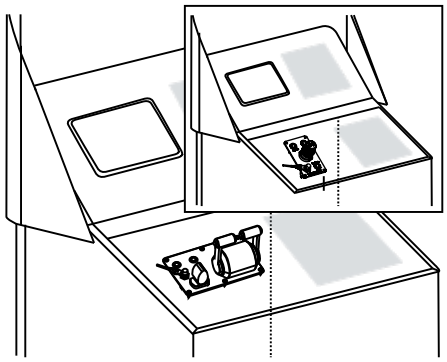
8. INSTALLATION OF THE COMMAND PANEL AND THE CCU

8.1. Position of the CCU

The CCU is designed to be wired to a power supply of 12V DC on board. It acts as a gateway between the BlueSpin system, the NMEA 2000® Network on board. Its position is determined depending on the length of the supplied cables and the unsupplied cables.

To reduce the risks of electromagnetic interference, install the CCU as far away as possible from motors, generators, propellers or power cables. Do not place the CCU in contact with a metal plate or compartment.

8.2. Position of the Command Panel

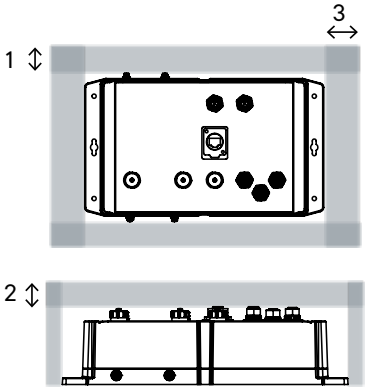


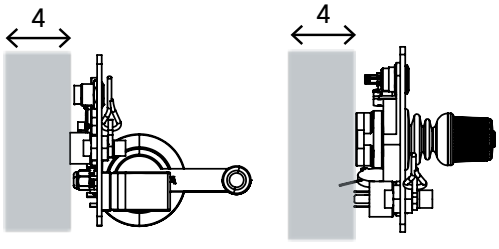
The Command Panel must be installed on the steering station, close to the multifunctional display, as shown.

The installation of the Command Panel depends on the length of the cables supplied. Install the Command Panel as close as possible to the CCU.

8.3. Space taken by the Command Panel and the CCU

Respect the dimensions below for the installation of the Command Panel and of the CCU.

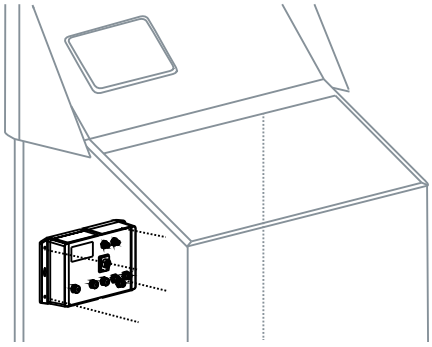




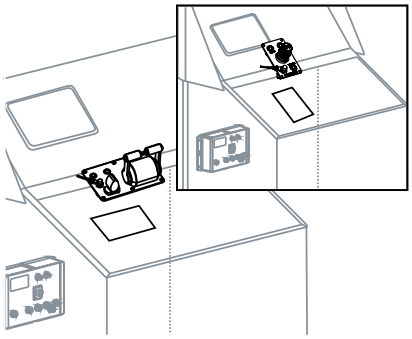
A	150 mm minimum	C	150 mm minimum
B	50 mm minimum	D	80 mm minimum

8.4. Mounting procedure of the Command Panel and of the CCU

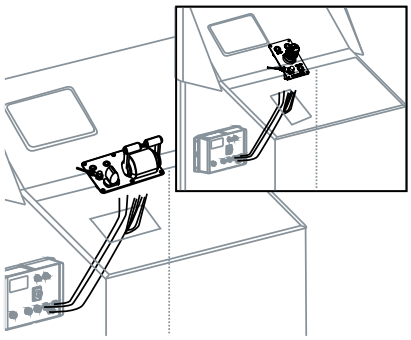
1. Screw the CCU close to the multifunctional display and to the Command Panel. Use M5 screws adapted for the mounting surface. See p.5.



2. On the steering station, drill a suitable cable entry space for the wiring of the Command Panel.



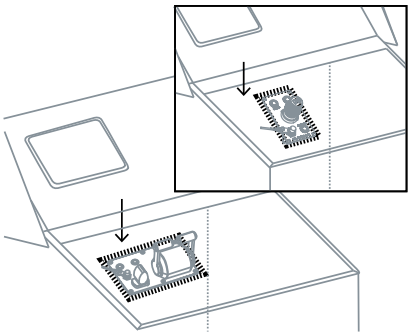
3. Wire the Command Panel and the CCU.



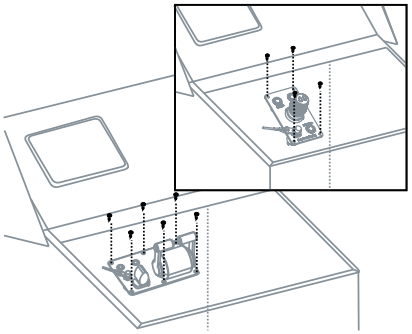
⚠ WARNING!

Ensure the wiring is correct before step 4.

4. Once the wiring is done, seal around the panel and screw holes. The product to be used depends on the mounting environment.



5. Screw the panel of the Command Panel. Use M5 screws adapted for the mounting surface. See p.5..



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