

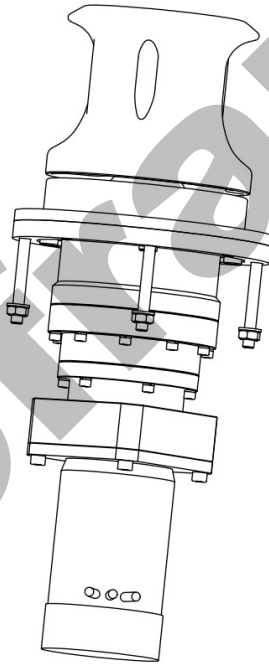
Vericelli da Tonneggio

Warping Capstan

CONSERVARE QUESTO MANUALE A BORDO
STORE THIS MANUAL ON BOARD
CONSERVER CE MANUEL A BORD
DIESES HANDBUCH AN BORD LUFERWAHREN
GUARDAR ESTE MANUAL A BORDO

MANUALE DI INSTALLAZIONE E D'USO - INSTALLATION AND USER'S MANUAL
MANUEL D'INSTALLATION ED D'UTILISATION - MANUAL DE INSTALACIÓN Y USO
INSTALLATION UND BEDIENTUNG

ST2000 PLANETARY CAPSTAN



MADE IN EU



Lofrans[®]
WINDLASSES
THE ORIGINAL WINDLASS

Via Philips, 5 - 20052 Monza (MB) (Italy) - www.lofrans.com - e-mail: contact@lofrans.com

Dear Customer,

Thank you for choosing a Lofrans product. Lofrans is a leader company in the production and worldwide distribution of nautical systems manufactured according to the most modern technologies, in compliance with international regulation requirements and the most important certifying bodies. All our products are manufactured with excellent materials suited for operations in marine environments and are subject to continuous checks to improve the qualitative levels and make them without any manufacturing defects. Together with such requirements, Lofrans capstans and anchor windlasses are a synthesis of reliability and efficiency, by guaranteeing the maximum performances during each phase of mooring, even in the most difficult. With a Lofrans product, years of reliable operations are guaranteed.

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1 INTRODUCTION

1.1 Purpose of the manual

This manual will supply information on safety and correct use of the product. Follow these warnings carefully to avoid possible accidents or damages.

DANGER!

A warning such as this indicates the existence of a serious risk that has high probabilities to cause death or a serious accident if appropriate precautions are not taken.

ATTENTION!

A warning such as this indicates a reference to the application of safety practices, or draws the attention on unsafe behaviors that might cause personal injuries or damages to the boat.

1.2 Assistance

The Lofrans products are backed throughout the world by a network of authorized distributors and assistance. In case of need, please contact your local Lofrans distributor. Details on website www.lofrans.com.

1.3 Receipt and Storage

Upon receipt of the package, verify the integrity of packing. Should it be necessary to store the product for a prolonged period, keep it in a dry and protected place.

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2 SAFETY INFORMATION

Safety standards and certifying bodies require peremptorily that, during when the vessel is at dock, the load must be held by the cleat or a high resistance fixing point. This precaution is more important when the navigation speed is higher and sea conditions are worse. Considering its position and not always frequent use, the capstan windlass is particularly exposed to oxidation and corrosion risk; therefore, it is necessary to arrange a constant inspection of its parts and a due maintenance. Make sure to have read and understood every part of this manual before proceeding with installation and use. Only persons who know how to operate should be authorized to use the capstan. Should there be doubts on its installation or use, refer always to a skilled consultant.

- Capstans used in an inappropriate way can cause damages to persons and/or things.
- Pay the utmost attention during the use of powerful equipment.
- Do not put your hands near the windlass or the capstan when there is power on the unit.
- Even the most careful use can be a source of damages, even serious.
- Lofrans products are supplied exclusively for recreational nautical use. Lofrans declines all responsibility for improper uses.
- Pay the utmost attention so that arms, legs, fingers, hair, and clothes do not get entangled in the chain or gipsy.
- Before operating the capstans, make sure that there are no persons in water in the vicinity.
- The capstan must never be used as mooring point. The load must always be held by a specific cleat or solid point.
- The capstan must not be used for anchoring operation but only for mooring.
- The chain must never be used on the warping drum; the drum is not designed to raise the anchor.
- The system must always be protected by a suitable circuit breaker.
- Disconnect always the circuit through the circuit breaker when the capstan is not in use.

3 INSTALLATION

3.1 Contents of the package

In addition to the present manual, the package contains:

- ☐ Capstan complete with gearbox and motor
- ☐ Control box (for VDC variants)
- ☐ QR code providing access to our online Library for manual and drilling template
- ☐ Fixing deck studs

3.2 Equipment necessary for installation

- ☐ Drill
- ☐ For dimensions consult the corresponding deck template

3.3 Recommended accessories

Use exclusively original Lofrans accessories and spare parts, designed and manufactured to ensure performances, duration and for keeping valid the warranty. For information on available spare parts, contact your local reseller or visit website www.lofrans.com

3.4 Prevention from electrolysis

For hulls that conduct electricity, it is essential that the capstan be insulated from the deck through a non -conductive gasket (not supplied). If the motor has 2 terminals then the installer must ground the capstan by connecting a bonding wire to the cathodic protection onboard, in order to protect the windlass from electrolysis.



Without these precautions, the electrolysis phenomenon will lead to a rapid corrosion of the anchor windlass or the capstan.

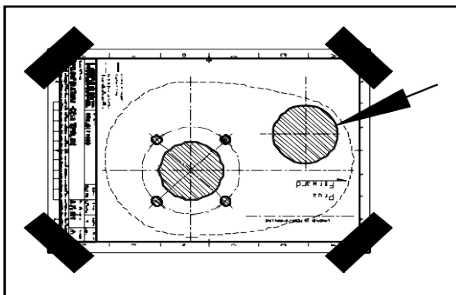
3.5 Deck thickness

The area of the deck where the capstan is mounted must be solid and resistant so to be able to support the stresses during the mooring operations.

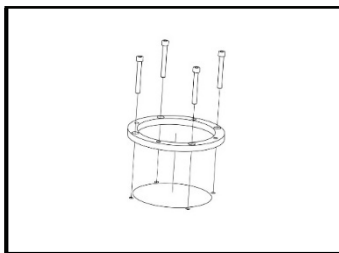
The minimum thickness of the single rolling deck must be of at least 60mm, the deck must be such to be able to withstand the loads. For greater deck thicknesses, longer fixing studs are required.

3.6 Deck installation

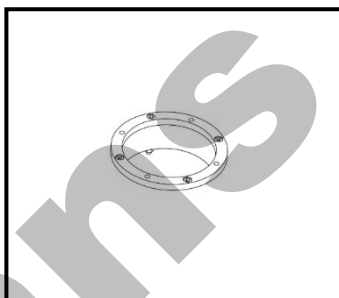
1. Carefully position the drilling template on the deck. Ensure that the template has been printed at a 1:1 scale and verify that the dimensions shown on the template match the actual dimensions of the physical unit.
2. Mark and drill as indicated in the figure.



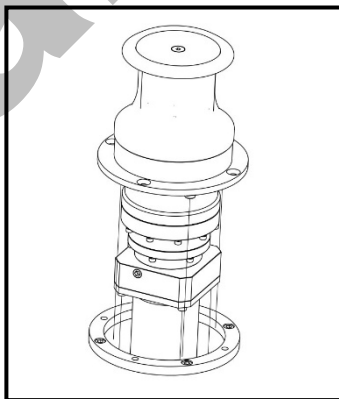
3. Apply a thin layer of silicone sealant between the deck flange and the deck, along the external perimeter, to prevent water ingress. Do not use permanent adhesive.



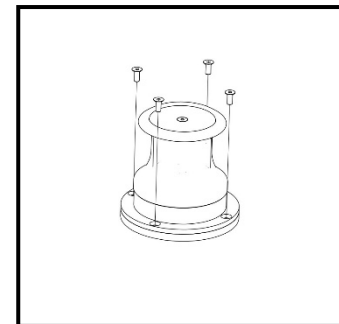
4. Install the washers and four M10 nuts onto the fixing studs and tighten them to the specified torque of 35 - 40 Nm lubricated with anti-seize paste.
5. Apply a thin layer of non-conductive marine grease between the deck flange and the base.



6. Carefully pass the capstan assembly through the opening in the deck. Orient the unit so that the motor terminals are positioned near the cable access opening to facilitate subsequent cable installation. Take care not to damage the motor terminals during installation. Exercise caution to avoid trapping or injuring your fingers when lowering the unit onto the deck.



7. Tighten the four M10 counter sunk screws with torque 35 - 40 Nm lubricated with anti-seize paste.
8. Connect the cables coming from the battery to the electric motor by following the wiring diagram on page 7.
9. The installer is responsible to properly protect the motor and the electrical components (such as the control box) from direct water contact. Water damage to the electrical components due to water ingress will void the warranty.



Motor Power (W)	Voltage (V)	Contactor (A)	Cable sizing according length of cable (positive + negative)	
			15-25 m	50-75 ft
1500	24	70	35 mm ²	2 AWG

4.1 Electrical cable section

In order to obtain the maximum performance from the capstan and safeguard the electrical system, it is essential that the capstan be connected with cables of sufficient section as suggested in the table with conductor insulation rating equal or higher than 105 degrees Celsius. Lofrans' recommends the use of lead-acid, AGM, gel, or similar kind of batteries for the supply of its equipment. Li-ion or LiFePO4 batteries will cause rapid deterioration of the Lofrans' equipment (electric motor, control box, transmission, etc) if they are not specified correctly. Battery capacity recommended is 150 Ah, command circuit fuse is 5A and control wire size 1,5 mm² - 14 AWG.

- A. Battery of lower capacity decrease the windlass performances and are rapidly subjected to wear and tear.
 - B. This size must be increased when the length of the positive plus the negative cables are more than 50 meters. Use marine grade tinned copper wire.
 - C. The Lofrans circuit breaker protects the power line from short circuit and the windlass motor in case of overheating. It must be kept dry and installed in accessible place to be prompt reactivated when it trips. It can be also used to isolate the windlass from the remote controls as we strongly suggest to avoid accidental engagement.
- All the switches must be wired in parallel. We strongly recommend to have a minimum of two switches to operate the windlass in case one of them gets damage.
- All Lofrans equipment is CE approved.

4.2 Solenoid valves (Control Box)

Place it in a dry place near the capstan. The control box or switchboard must be installed in a dry area in which it will not have direct water contact.

4.3 Circuit breakers

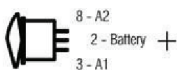
The circuit breakers recommended by Lofrans have an intervention curve and not a simple plate value. The switches selected for each model guarantee the correct operation of the system

4.4 Wiring Diagram

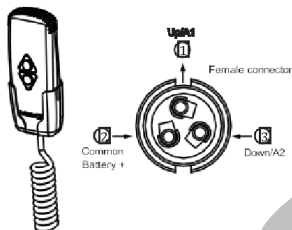


WIRING DIAGRAM CODE : E0015-A

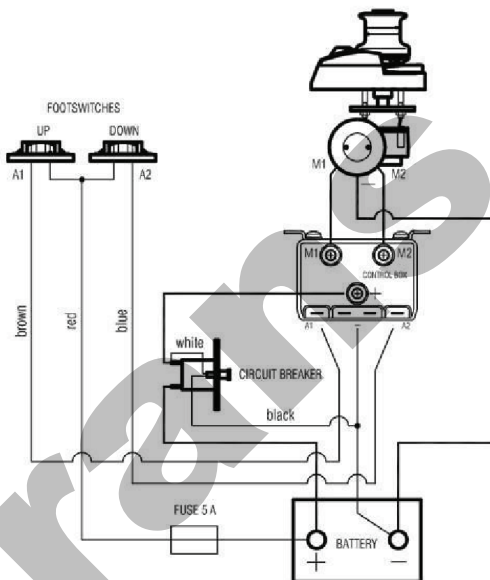
ROCKER SWITCH TYPE C



HAND HELD REMOTE
CONTROL THETIS 1002



WIRING DIAGRAM - 3 TERMINALS ELECTRIC MOTOR
CONTROL BOX CODE: 602588 - 602589

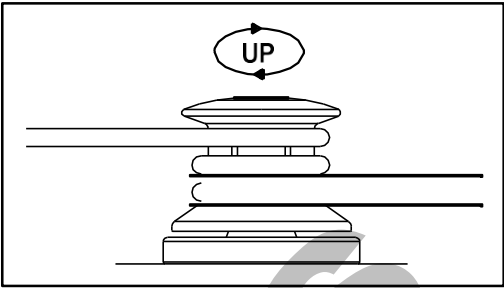


MANUAL CORRECTIONS ARE NOT PERMITTED

5 USE OF THE CAPSTAN

5.1 Use of the warping drum

- The ST2000 planetary has the same pulling capacity both **Clockwise/counter clockwise**, rotate the rope around the drum accordingly, with three laps of rope.
- By keeping the end of the rope, press the UP button and carry out the mooring maneuver.
- Once the maneuver is ended, remove the rope from the drum and fasten it to a bollard.
- Deactivate the safety switch.



6 MAINTENANCE

	USE OF THE YACHT (MONTHS)			
	LESS THAN 2	FROM 2 UP TO 6	MORE THAN 6	CHARTER
EVERY 3 MONTHS	A - A		A - B	A - B
EVERY 6 MONTHS		A - B		
EVERY 12 MONTHS	A - B - C	C	C	C - D
EVERY 24 MONTHS		D	D	
EVERY 36 MONTHS	D			

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Follow strictly the maintenance program. Not meeting the maintenance program will cause forfeiture of the warranty.



Disconnect power to the capstan before any maintenance.

6.1 Maintenance program

For obtaining the best performances and the utmost efficiency of the capstan, it is necessary to follow strictly the maintenance program indicated hereby.

- A.** Clean all external surfaces and hidden points with fresh water and soft cloth or non-abrasive sponge to remove all salt layers. Do not use chlorine, bleach or acid solutions to clean the windlass as this will damage the INOX parts and the seals. Apply metal polish compound and coat all INOX parts to remove oxidation and renew the bright finish of the material.
- B.** Grease the rotating parts with yellow marine grease that is nonconductive. Particularly, the main shaft. Check for evidences of corrosion and mechanical stresses. Apply anti seize grease to the threads of the inox screws.
- C.** Check the terminals of the electric motor. Test the voltage drop at the terminals.
- D.** Remove the capstan from the deck to clean the salt under the base and deck mounting flange, reapply anti seize paste or nonconductive grease between the base and the deck flange.

Note: The planetary gearbox is filled with grease from the factory and does not need to be replenished in its life time.

7 TROUBLESHOOTING

Problem	Possible causes	Solution
1. The capstan does not work when a control is operated.	1.1 Protection switch in OFF position 1.2 Lack of voltage in the system 1.3 Failure of the control box 1.4 Failure of the command circuit 1.5 Failure of the electric motor	1.1 Check the protection switch and set it in the ON position 1.2 Check the charge status of the battery, check connections 1.3 Check and possibly replace the control box 1.4 Check and possibly replace the control 1.5 Measure the electric motor voltage; if it is OK, check the brushes and clean them. If it does not work, replace the electric motor
2. The capstan runs slowly and at times jumps the circuit breaker.	2.1 Section of cables not suitable. 2.2 Poor electrical connections. 2.3 Dirty brushes. 2.4 Water leaks in the electrical engine. 2.5 The gearbox is damaged 2.6 The engine strains in one or both directions. 2.7 The capstan works only in one direction.	2.1 Increase the cable section 2.2 Check out the connections 2.3 Clean the brushes 2.4 Replace the electrical engine 2.5 (SERVICE) Replace gearbox 2.6 (SERVICE) Check out appropriately all connections of the power cables. If they are alright, uninstall the engine (in some cases it is convenient to disassemble also the gearbox). Check out and possibly replace the brushes. 2.7 Check out on the control box that between B2-C and B3-C contacts there are 12/24V when the respective buttons are pressed. If this should happen and one of the relays does not work, replace the control box.
3. The electric engine runs but the shaft does not rotate either Up or Down	3.1 Check keys connecting motor to coupling and gearbox and the main shaft 3.2 Breakage of the engine spindle.	3.1 (SERVICE) Disassembly the capstan and examine the assembly between coupling and gearbox and shaft/gearbox. 3.2 (SERVICE) Replacing of the engine. Care must be taken that the broken part did not remain in the hole of the worm screw.

 8 TECHNICAL DATA

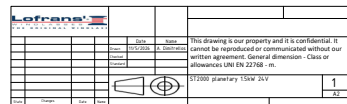
Model	ST2000 Planetary
Motor Power	1500W
Vessel Length Heavy Duty (ft)	75-85
Vessel Length Light Duty (ft)	85-100
Power Supply	24V
Maximum linear Load/Pull (Kg /lb)	1890 / 4167
Maximum lift Load/Pull (Kg /lb)	945 / 2083
Max Lift Working Load (Kg /lb)	545 / 1201
Amps Work Load (A)	98
Max Line Speed (mt./min. / ft/min.)	13 / 42
Line Speed (mt./min. / ft/min.)	11 / 36
Net weight with Drum (Kg /lb)	42,5 / 93,6

9. SPARE PARTS

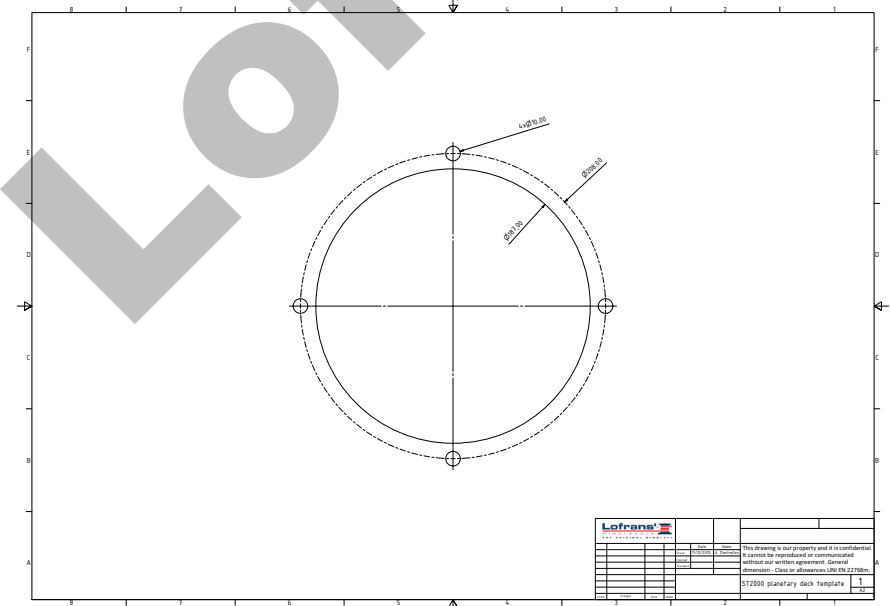
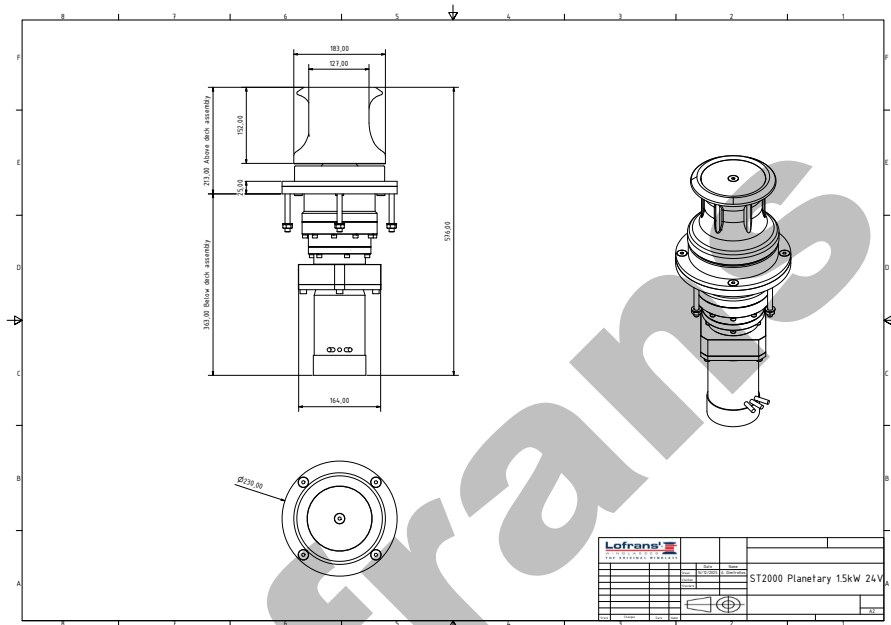
CAPSTAN ST2000 Planetary

Item	Code	Description	Kit	Q.ty
814p	6754	ST2000 planetary base		1
987	631743	Bearing 6006 2RS1		1
325	635231	DIN 472 - 55 x 2	Kit	1
324	630857	ISO 6194/1 - SEAL 30 x 52 x 7	Kit	1
975	631431	Drum		1
1006	634829	Top cover		1
351p	1215	DIN 6912 - M10 x 30	Kit	4
481p	6749	ST2000 planetary deck flange		1
813p	6748	ST2000 planetary main shaft		1
1003	631818	Retaining ring D30mm		1
384p	1213	Key 8x7x36	Kit	1
450	631333	Key 8x7x80	Kit	1
326	635425	DIN 471 - 30x1,5	Kit	2
1007	635774	DIN 7991 - M10x50	Kit	1
259p	1216	DIN 6912 - M6 x 16	Kit	4
2056p	6741	ST2000 planetary gearbox (includes 1067p)		1
1067p	N/A	Motor flange		1
1250b	633526	Electric motor 1500W 24V B14		1
730p	636896	DIN 7991 - M10x25	Kit	4
390	634874	DIN 125 - A 10,5	Kit	4
1214p	635722	ISO 4762 - M8 x 30	Kit	4
984p	1217	DIN 912 - M10 x 1,25 x 80	Kit	4
391	631789	DIN 934 - M10 x 1,25	Kit	4
381	631326	Key 8x7x20	Kit	1
679p	636897	ST2000 planetary motor coupling		1
314	631311	key 5x5x15	Kit	1
381	631329	key 8x7x40	Kit	1

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11. GENERAL DIMENSIONS & DRILLING TEMPLATE



12. WARRANTY CONDITIONS

Lofrans guarantees that in a normal use and by meeting the maintenance program, capstan is covered by a warranty for a period of 3 years from the date of purchase by the ultimate user, subject to the conditions, limitations and exceptions listed hereunder. Any product that proves to be defective in a normal use during this period will be repaired or replaced at the choice of Lofrans.

12.1 Conditions and limits

- Lofrans liability will be limited to the repair or replacement of all parts of the product that show material or processing defects.
- Lofrans is not liable for the wrong choice of the capstan by the purchaser.
- Lofrans will not be liable in any whatsoever manner for failures, or any consequent damage deriving from:
 - use of the capstan in an application for which it was not designed or envisaged;
 - water damage to the electrical components due to water ingress;
 - corrosion, degradation by UV rays and wear;
 - non-observance of the maintenance plan;
 - wrong or unsuitable installation of the product;
 - any modification or alteration of the product;
 - conditions of use beyond the specifications and the performances of the product;
 - Except for different directives given directly by Lofrans, any product subject to a warranty request must be returned to Lofrans, which will analyze the problem.
 - Cases of galvanic corrosion between the capstan and the hull or the installation voids the warranty.
- The warranty does not cover the accessory costs met for interventions, removal, transport, and installation of the product;
- Maintenance carried out by persons not authorized by Lofrans will invalidate this warranty;
- The Lofrans products are intended to be used only in a marine environment. Lofrans is not liable should these products be used differently.

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12.2 Exceptions

The cover under warranty of the following components is limited to a period of one year from the date of purchase by the ultimate user:

- Electric motors and related electric equipment
- Electronic controls
- Hydraulic pumps, valves, and actuators
- Gaskets and seals
- Products used on charter boats.

12.3 Liability

The liability of Lofrans on this warranty is intended dependent on meeting the regulations and laws in force.

Lofrans is not liable for any other kind, such as:

- Any loss of turnover, advances, or direct or indirect profits, or any other financial loss;
- Damages, costs or expenses payable to third parties;
- Damages to yachts or equipment;
- Death or personal injuries (unless caused by negligence of Lofrans).

Certain States and Countries do not allow the exclusion or limitation of incidental or consequential damages, therefore the aforementioned limitations or exclusions might not be applicable.

12.4 Procedure

Every request for intervention under warranty will be made promptly and in writing by the ultimate user to the local Lofrans assistance center.

12.5 Clause of termination

If any whatsoever clause of this warranty will be invalidated by a Judge or other competent authority, the validity of the remaining clauses of this warranty and the rest of the clause in question will not be affected.

12.6 Compliance

This warranty is governed by the laws and in compliance with the Italian Laws or the state or country in which the ultimate user is domiciled at the time of purchase of the product.



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