EDEN04-XP

Hydropneumatic stretcher-support

INSTRUCTIONS FOR USE AND WARNINGS

TRANSLATION OF THE ORIGINAL INSTRUCTIONS

EDEN04-XP Rev.02 - 02/2026

FOREWORD

The Manufacturer is by no means liable for the consequences of incorrect operations performed by the user.

EDITOR'S NOTE

This documentation is expressly addressed to technicians. Therefore, information that can be easily retrieved by reading these texts and analysing the drawings may not be explained further.
The Editor is by no means liable for any information and data provided in this manual: all information included herein has been supplied, controlled and approved by the Manufacturer during review.
The Editor shall by no means be held responsible for the consequences resulting from the user's misuse of the system.

GENERAL REMARKS

All operating, maintenance instructions and recommendations described in this manual must be respected. To achieve the best results the Manufacturing Company recommends performing regular cleaning and maintenance operations so as to maintain the system in the best conditions.
The training of the personnel in charge of operating the device is of the utmost importance, both as regards its use and maintenance and the monitoring of all operating procedures and of all safety standards in this manual.

INDEX OF THE REVISIONS

REV.	NOTES AT PUBLICATION	No. OF LAST PAGE	EDITION
00	First version	64	02/2025
01	Second version	64	11/2025
02	Third version	64	02/2026

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1. IDENTIFICATION

1.1 Manufacturer identification

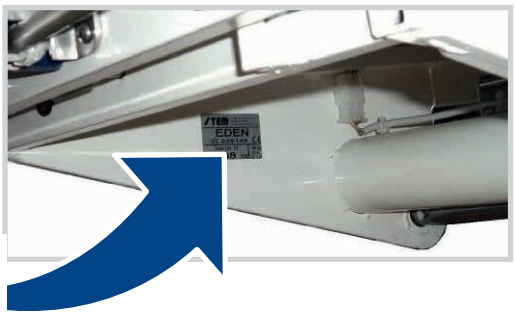
Manufacturer	STEM S.r.l.
Address	Strada Ghiaie, 12/D 43014 Medesano (PR) - Italy Tel. +39 0525 430102 - Fax +39 0525 421341 stem@stem.it - www.stem.it

1.2 Identification of the device

Device	EDEN04-XP

1.3 Identification plate

The device is fitted with an **identification plate** inside the damped frame, on the foot side.
The plate shows the identification details of the device to be specified if necessary to **STEM S.r.l.**



STEM	Strada Ghiaie, 12/D I-43014 MEDESANO (PR) ITALY
TYPE	EDEN04-XP
MODEL	**EDEN04-XP**
E24 10 R – 06 6848	CE
Serial N° **XXXXXXXXXX**	116 kg DC 12 V 55 A max

CAUTION!
It is strictly prohibited to remove the CE identification plate and/or replace it with other plates. Should the plate be damaged, detached or removed for accidental reasons, the customer must inform the Manufacturer.

1.4 CE Declaration of Conformity

STEM srl
Strada Ghiaie, 12D
43014 MEDESANO (PR)
ITALY

DECLARATION OF CONFORMITY

CE

OBJECT	Hydropneumatic stretcher-support
TYPE	EDEN04-XP
MODELS	**EDEN04-XP** **EDEN04-XP 060** **EDEN04-XP-400** **EDEN04-XP-400 061** **EDEN04-XP-H** **EDEN04-XP-H 068**
TYPE APPROVAL	E24 10 R – 06 6848

We hereby declare that the machine in question is manufactured in compliance with:

- Directive 2006/42/EC of the European Parliament and of the Council of 17 May 2006 on machinery, and amending Directive 95/16/EC
- Regulation No. 10 Rev. 6 of the Economic Commission for Europe of the United Nations (UN/ECE) - Uniform provisions concerning the approval of vehicles with regard to their electromagnetic compatibility

The support type EDEN04-XP is also manufactured in accordance with **EN 1865-5:2012** "Patient handling equipment used in road ambulances - Part 5: Stretcher-support".

The technical file is kept at the STEM offices and the person authorised to compile this file is: Ezio Menna

Medesano,

The Legal Representative

Ezio Menna

1.5 Reference directives

The device supplied by **STEM S.r.l.** does not fall within one of the machine categories stated in the list referred to in annex IV of the Directive; therefore, in order to certify device conformity with this directive, **STEM S.r.l.** applies the conformity assessment procedure with internal checks referred to annex VIII on the manufacture of the device.
To certify the conformity of the device with the provisions of the Directive, **STEM S.r.l.** before placing it on the market, has assessed the risks in order to verify compliance with the essential health and safety requirements provided by the Directive as well as the tests and checks provided for by the applied standards of reference.
The technical construction file was compiled in compliance with the contents of annex VII of **Directive 2006/42/EC** and is available for inspection by the supervisory boards with reasoned request, as set forth by the legislative provisions in force.

STEM S.r.l. therefore, it launches the device on the market equipping it and accompanying it with:

- EC Marking
- EC Declaration of Conformity
- Instructions and warnings manual (Documentation drafted according to point 1.7.4 of **Machinery Directive 2006/42/EC**)

Also note that the device was designed in accordance with the following Directives:

2006/42/EC	Machinery Directive
UN/ECE Reg. 10 - Rev.06	Uniform provisions relating to the approval of vehicles with regard to their electromagnetic compatibility.
2014/30/EU	Electromagnetic Compatibility Directive
2014/53/EU	Radio Equipment Directive
2012/19/EU	WEEE Directive on Waste Electrical and Electronic Equipment.

And the following harmonised standards have been applied:

EN 1865-5:2012	Patient handling equipment used in road ambulances - Part 5: Stretcher-support.

2. PRELIMINARY INFORMATION

2.1 Addressees

This manual is intended for operators in charge of dealing with the device in all the phases of its technical life.
It also contains topics on properly using the device, in order to maintain its functional and qualitative features over time. All information and warnings for proper safe use are also reported.
The manual, like the EC conformity certificate, is an integral part of the device and must always accompany it in every displacement or property transfer. The user must keep this documentation intact and make it available for consultation during the entire lifespan of the device.

2.2 Supply and preservation

The manual is provided in printed **format.**
All additional documentation (pneumatic and electrical diagrams, sub-supplier manuals) is supplied annexed to this manual.
Keep this manual with the device so that it can be easily consulted by the operator.
The manual is an integral part for the purpose of safety, therefore:

- **it must be kept intact** (in all its parts). Should this manual get damaged or spoilt, request a copy immediately.
- **it must accompany the device until its demolition** (even if moved, sold, leased, rented, etc.);
- **the attached manuals are a part of this documentation** and the same recommendations/prescriptions contained in this manual apply to them.

The **Manufacturing Company** denies any responsibility for damage caused by an improper use of the device and/or following operations not provided for in the technical documentation.

2.3 Updates

Should the device require functional modifications or replacements, the Manufacturer is responsible for revising or updating the manual. The Manufacturer is responsible for delivering the manual update.
The user is also responsible for ensuring that, should this document be modified by the Manufacturer, only the updated manual versions are effectively present in the points of use.

2.4 Language

The original manual was edited in **Italian**.
Any translations into other languages must be done from the original instructions.
The Manufacturer shall be responsible for the information contained in the original instructions; translations into different languages cannot be fully verified, hence should an inconsistency be detected, the text in the original language must be referred to or contact our Technical Documentation Department.

2.5 Operators

Refer to the following table to establish with certainty what skills and qualifications are required of the operators in charge of the various duties (starting up, cleaning, ordinary maintenance):

Qualification	Definition
Operator	This is the user's trained staff authorised to use and run the device for production purposes, for the activities it was built and supplied for. He/she must be capable of performing all the procedures required for good device operation and his/her personal safety and that of other workers. Have proven experience in the correct use of this type of machines and be trained, informed and instructed thereof. Must report any anomaly to his/her superior in case of doubt. **Note:** they can carry out routine maintenance operations.
Maintenance engineer	Qualified maintenance technician able to carry out preventive/corrective maintenance activities on all the electrical parts of the device subject to maintenance or repairs. Qualified maintenance technician able to access all the parts of the device for a visual analysis, checking the status of the equipment, adjustments and calibrations. Qualified technician able to: • run the device like the operator; • intervene on the mechanical elements for adjustments, maintenance and repairs; • work on the adjustments and on the electrical systems for maintenance purposes, repairs and replacing worn parts; • read pneumatic and hydraulic diagrams, technical drawings and spare parts lists; • read wiring diagrams and check the proper functional cycle. If necessary, he/she can instruct the operator on how to use the device correctly for production purposes. In exceptional cases, he/she is trained to run the device under reduced safety conditions. The assembly technician can work while the electrical circuits in the electrical panel, junction boxes, control appliances, etc. are live only if the technician is suitably qualified (PEI). (See legislation EN50110-1). He/she may not perform software programming of systems such as PLC (logic or safety) and modify the system passwords. He/she may perform software updates.
Technician of the Manufacturer	Technician qualified by the Manufacturer and/or by its distributor for complex operations, as aware of the constructive production cycle of the device. This person intervenes in agreement with the user requests.

The qualifications stated in the table on this page compulsorily fall within a category of people defined **"trained person"**.

Type	Definition
Trained Person	Person informed, educated and trained on the work and on any dangers deriving from improper use. Also knows the importance of the safety devices, the accident-prevention standards and the safe work conditions.

2.6 Symbols used in the manual

Symbol	Definition
	Symbol used to identify important warnings for the safety of the operator and/or device.
	Symbol used to identify particularly important information inside the manual. The information also regards the safety of personnel involved in use of the device.

2.7 Personal protective equipment

When operating near the device for assembly and maintenance and/or adjustment operations, strictly respect the main accident-prevention rules. For this purpose, it will be important to use the personal protective equipment (P.P.E.) required for each individual operation.
Below is the full list of **personal protective equipment (P.P.E.)** that may be required for the different procedures:

Symbol	Description
	**Obligation to use protective or insulating gloves.** Indicates a requirement for personnel to use protective or insulating gloves.
	**Obligation to use protective goggles.** This indicates the requirement for staff to use protective goggles.
	**Obligation to use safety shoes.** This indicates the requirement for staff to use work-safety footwear to protect their feet.
	**Obligation to use noise protection devices.** Indicates a requirement for personnel to use aermuffs or earplugs to protect hearing.
	**Obligation to use protective clothing.** Indicates a requirement for personnel to wear the specific protective clothing.

The clothing of anybody operating or maintaining the line must comply with the essential safety requirements defined by **Reg. EU 2016/425** and the laws in force in the country where it is installed.

2.8 Warranty

All warranty clauses are reported on the sales agreement.

The conditions of the commercial contract (if different) have priority over that stated in this section.

The device has been designed and manufactured for use over multiple years without any particular problems; however, should any anomalies occur during the warranty period, **STEM S.r.l.** undertakes to replace, free of charge, any broken or prematurely worn parts due to: defective materials, processing defects or incorrect assembly.

The warranty **is not acknowledged** for those parts whose early wear or failure is due to:

- non-compliance with the instructions contained in this operating and maintenance manual
- tampering with or modifications without approval by **STEM S.r.l.**
- non-original spare parts are used
- missing or incorrect maintenance
- use of tools that are not suitable for routine and extraordinary maintenance
- maintenance or service performed by unskilled personnel

Regarding the fitted electrical material and the commercial material purchased from external suppliers, **STEM S.r.l.** gives the purchaser the same warranty as that granted **STEM S.r.l.**by its suppliers.

The warranty lasts 60 months from the date of delivery. The term is defined and is not subject to extensions following replacements or repairs performed during the warranty period.
To establish the causes of the anomalies and apply the warranty, the defective components must be returned to **STEM S.r.l.**.
Repairs or replacement of parts under warranty will be carried out upon decision of **STEM S.r.l.**, within its facility, by third parties or on site. Regarding on-site interventions, the customer will be charged for the costs of power supply, extraordinary equipment, auxiliary personnel, **STEM S.r.l.** personnel, as well as accommodation and travel expenses.

Before sending the parts to be replaced or repaired under warranty, written approval by the technical service of **STEM S.r.l.** is required
Defective parts must be properly packaged to avoid any damage during transport, together with:

- an identification plate specifying number and model
- code number and position of the component as specified in the list of spare parts
- accurate description of the defect and how it came about

The parts acknowledged as under warranty are delivered free of charge; replaced parts remain the property of **STEM S.r.l.**

The warranty does not cover any parts and materials subject to ordinary wear and those with a duration that cannot be determined in advance.

The absence of the identification plate on the product implies the immediate expiry of the warranty.

IMPORTANT!
Further details may be found in the commercial contract.
The conditions of the commercial contract (if different) have priority over that stated in this section.

3. SAFETIES

3.1 Noise

Noise levels have been measured in accordance with the requirements of **UNI EN 11200** and **UNI EN ISO 3746** standards. During the operating cycles, the levels of **exposure to noise for appointed personnel do not exceed 75 db.**

The actual noise levels of the installed device during operation on site in a manufacturing process differ from those detected, as the noise is influenced by factors such as:

- type and features of the vehicle;
- other adjacent machines in operation.

It is the user's responsibility to apply the consequent preventive and protective measures, in compliance with the law of the country of installation and use of the device.

3.2 Vibrations

The vibrations produced by the device, depending on its operating mode, **do not pose a risk** to the health of the operators.

CAUTION!
Excessive vibration can only be caused by a mechanical fault that must be immediately reported and eliminated to avoid jeopardising the safety of the device and of the operators.

3.3 Residual risks

The device was designed to guarantee the essential safety requirements for the operator.

Safety has been incorporated, as much as possible, into the design and construction of the device; however, there are risks from which the operators must be protected, especially during:

- installation;
- operation;
- adjustments and fine tuning,
- maintenance and cleaning;
- disassembly and dismantling.

For each residual risk, there is a description of the risk and of the area or part of the device subject to that residual risk (unless the risk is valid for the entire device).

Procedural information as to how to avoid the risk and on the correct use of the personal protective equipment intended and prescribed by the Manufacturer is also supplied.

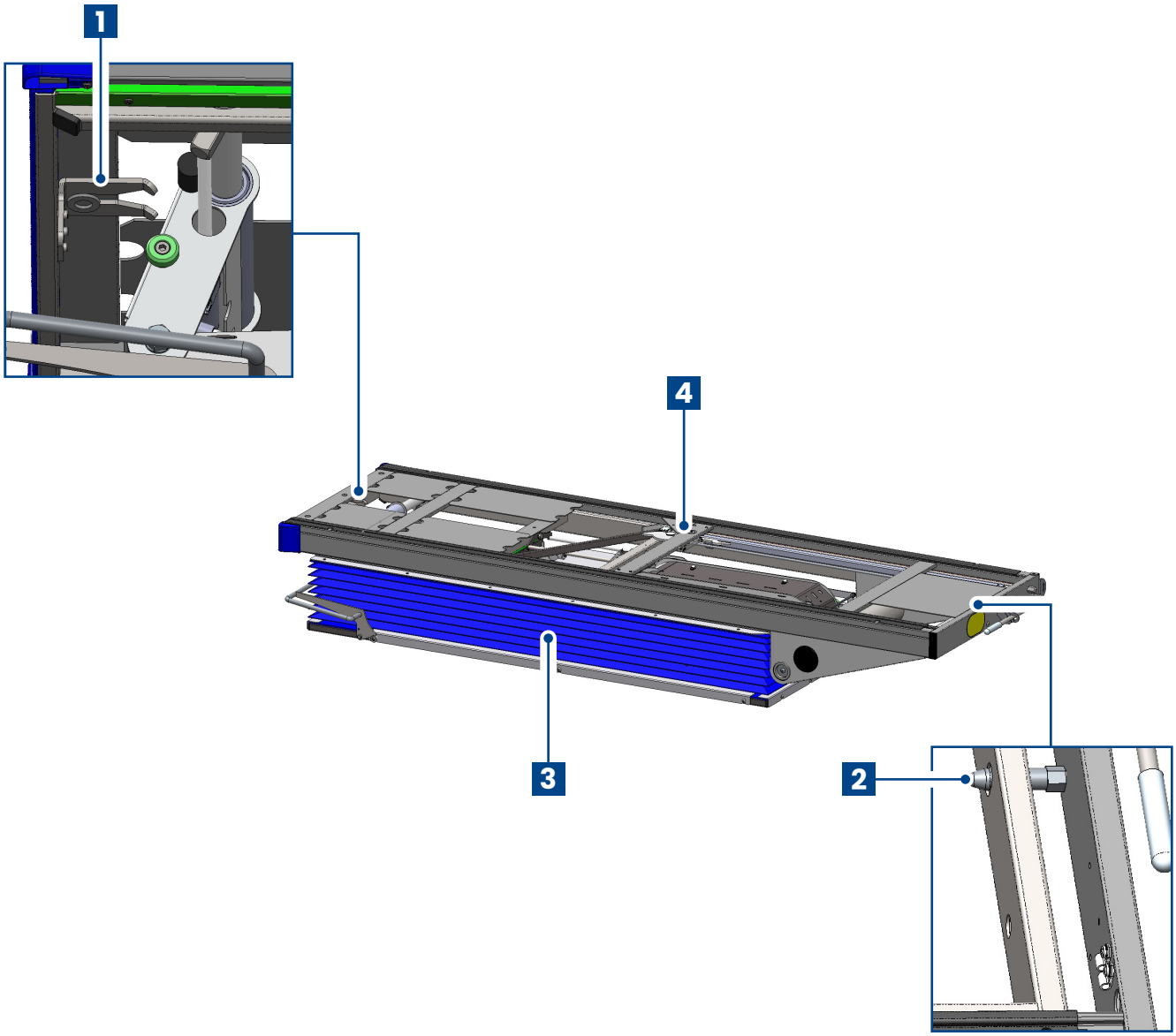
Risk	Description and procedural information
Risk due to contact with hot surfaces	The electro-valves temperature can reach 70°C. Use appropriate Personal Protective Equipment when performing maintenance (e.g. gloves).
Risk of unhealthy positions during loading/unloading	During STRETCHER LOADING/UNLOADING, the weight of the patient containment device rests on the operator. Close attention should be paid to this phase to prevent the operator from excessive effort or harmful loading, and to ensure that the operation takes place under absolutely safe conditions for the patient. **Note**: In case of heavy weights, the operations must be carried out by AT LEAST 2 OPERATORS.
Risk of impact during tray side translation	During tray side translation, the risk of impact against the very tray remains. Pay special attention and make sure that unauthorized persons do not approach hazardous areas.

CAUTION!
Do not attempt to perform maintenance without having first de-energised the system.

3.4 Safety devices

The machine is equipped with the following **safety devices**:

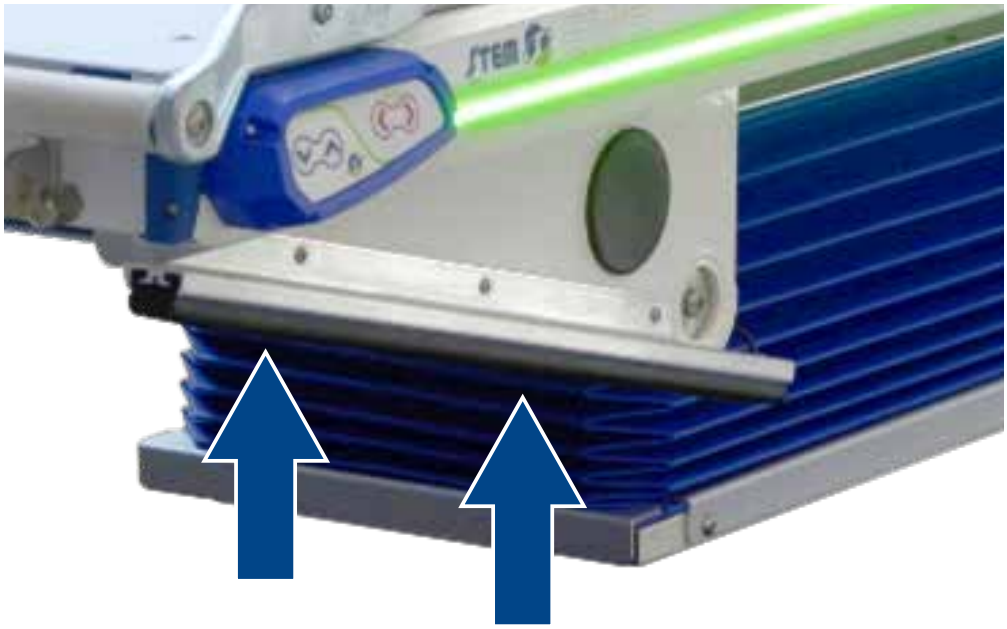
Pos.	Description
1	LOCKING DEVICE IN THE EVENT OF IMPACT
2	SAFETY DEVICE AGAINST ACCIDENTAL OPENING OF THE STRETCHER TRAY
3	BELLOW PROTECTION
4	EXTRACTABLE TRAY SAFETY HOOK



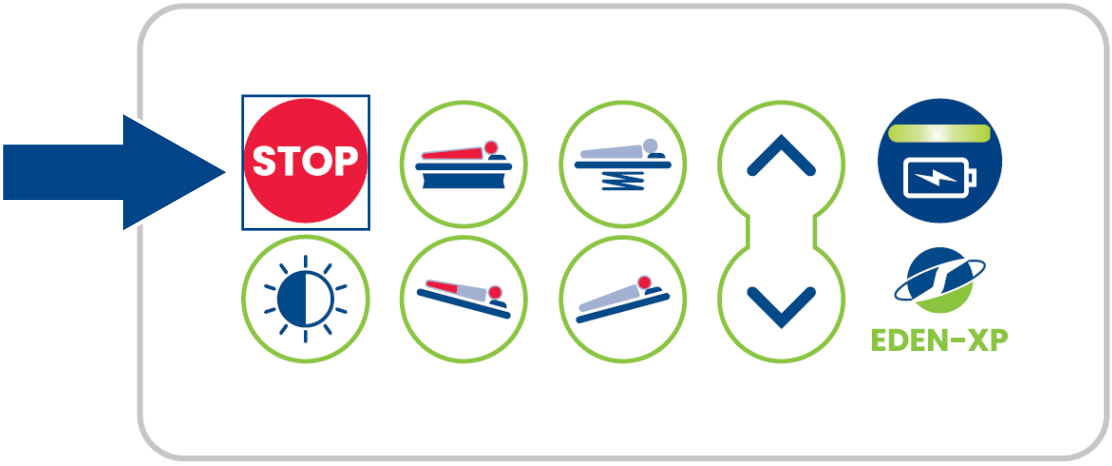
CAUTION!
Tampering with, removing or disabling safety devices is strictly not allowed during normal use of the support.

3.4.1 Anti-crushing device

In the lower part of the mobile frame there is a sensor which, when pressed, blocks any movement of the support. Support movements are controlled by dead man buttons. However, in the event of operator inattention, if objects or people (e.g. an operator's foot) are present between the moving part of the support and the floor of the vehicle when the support is lowered, the support automatically stops its movement thanks to the presence of this anti-crushing device that detects the obstacle.



CAUTION!
When the anti-crushing device is triggered, the support goes into lockout and the side lights flash red. To reset the support, press the STOP button on the push-button panel.



4. DEVICE DESCRIPTION

4.1 Intended use (correct)

The device in question is intended for the following purpose:

Operation	Allowed	Not allowed	Work environment
Loading, unloading, side translation, tilt and height adjustment and suspension of:	Containment devices (stretchers) whose fastening clamp is properly attached to the stretcher support.	Any device other than that listed in the allowed list.	Rescue vehicle

The device was created to:
- satisfy the specific demands mentioned on the sales agreement;
- be used according to instructions and limitations for use set out in this manual.

The device is designed and built to work safely if:
- it is used within the limits stated in the sales contract and in this manual;
- the usage manual procedures are followed;
- ordinary maintenance operations are performed as indicated;
- special maintenance is performed promptly, in case of need;
- safety devices are not removed and/or bypassed.

4.2 Reasonably foreseeable improper use

The **reasonably foreseeable incorrect use** is listed below:
- loading of equipment other than that allowed;
- entrusting unqualified and/or unauthorised personnel to operate and service the device;
- applying devices that may interfere with the operation of the device and/or obstruct its movement;
- changing the load after the suspension function has been activated;
- using the device differently than in the **"Intended Use (correct)"** paragraph.

Any use of the device other than that intended shall be previously authorized in writing by the Manufacturer. Without this written authorisation, the use must be considered **"improper use"**; therefore, the Manufacturer declines any liability for any damage to persons or property and deems any kind of warranty on the device void.

IMPORTANT!
Incorrect use of the device excludes any liability by the Manufacturer.

4.3 Obligations and prohibitions

4.3.1 User obligations

The **user** (in charge of medical materials) **must**:

- consider the abilities and conditions of the operators in relation to their health and safety;
- provide personal protective equipment appropriate to the individual procedures;
- train personnel on procedures in case of accident;
- train personnel on the safety devices provided for the operators;
- train personnel on the noise emission risks in the work environment;
- train personnel on the general accident-prevention rules provided by the European Directives and laws in the country of destination of the device.

Only let personnel who have read this manual and is appropriately trained work on the device.

4.3.2 Operator obligations

The operator **must**:

- perform routine maintenance in compliance with recommended intervals;
- with the device running, do not wear chains, bracelets, ties or any other clothing that can get entangled in the mechanisms;
- tie long hair up to avoid it getting caught;
- appropriately use the protective devices provided by the employer;
- immediately inform the employer, the manager or the person in charge, of deficiencies of the safety systems.

4.3.3 Prohibitions for the operators

In particular the operators **must not**:

- use the device improperly, that is for different uses to those indicated in paragraph **"Intended use (correct)"**;
- remove or modify the safety or signalling systems without authorisation;
- carry out, upon their own initiative, operations or manoeuvres they are not in charge of or that can jeopardise their own safety and that of other workers;
- replace or modify the speed of the device components without being authorised by a manager;
- modify the connections;
- use the device if it has not been installed according to the regulations in force;
- use the device as point of support even if not operational (risk of falls and/or risk of damaging the machines themselves);
- use the device outside the admitted environmental conditions (consult **"chapter 5"**).

CAUTION!
STEM S.r.l. is not liable for damage to property or people if it has been ascertained that the device was used in one of the unauthorised environments.

4.4 Technical data

General data	
Maximum height of stretcher tray	585 mm
Minimum height of the stretcher tray from the ground	327 mm
Maximum height of stretcher tray from the floor	554 mm
Extractable tray stroke	855 mm
Max lateral movement stroke (can be blocked in any position)	200 mm
Maximum load with suspension	300 kg
Max inclination of Trendelemburg position	15°
Max inclination of Anti-Trendelenburg position	15°
Max tilt: stretcher loading/unloading position	15°
Time to reach the "UP RIGID" position from the "SUSPENSION" position (load 300 kg)	2 s
Time to reach "SUSPENSION" (load 300 kg)	12 s
Time to reach the "UP RIGID" position from the "DOWN RIGID" position (load 300 kg)	12 s
Oil tank capacity	1.5 l

Electrical power supply data	
Voltage	11.5 - 13.8 V
Minimum battery power 12 V	100 Ah
Absorption when achieving suspension mode (max time= 25 sec) (load of 300 kg)	55 A
Absorption during transport	4 A

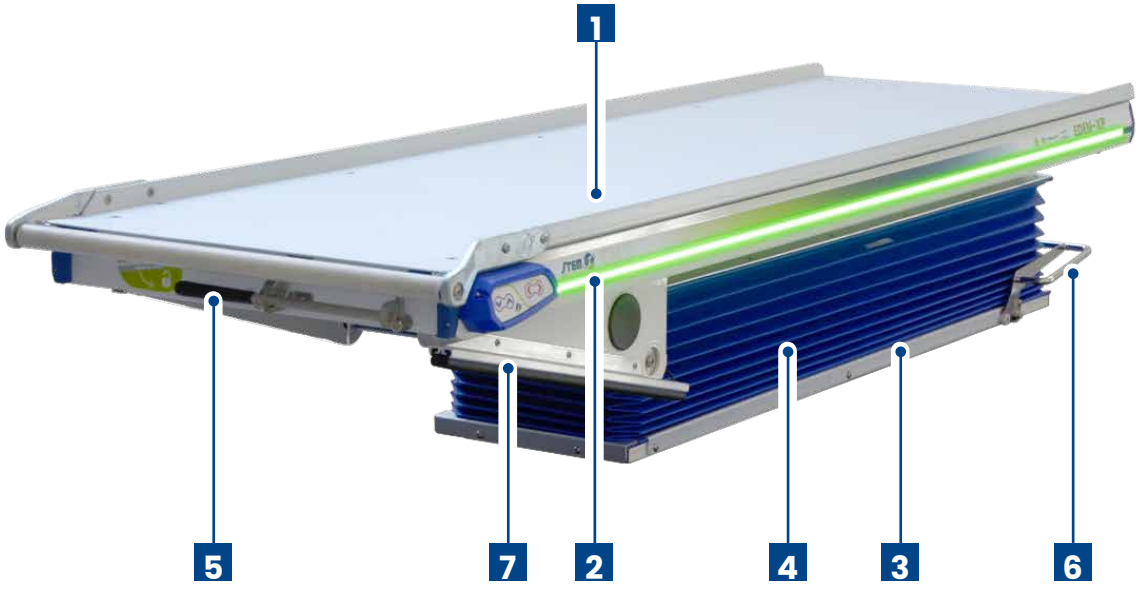
4.5 General description

The device is used in the health field, to assist operators while loading/unloading stretchers onto and off the rescue vehicle which it is installed in.
It is equipped with a lifting system to tilt the stretcher fixing tray, so as to simplify stretcher loading and unloading as well as some health procedures (Trendelenburg and Anti-Trendelenburg positioning).
It is also fitted with a hydropneumatic damping system that can reduce the vibrations during the transfer of the patient to the rescue vehicle.
The device stretcher tray can be moved laterally up to 200 mm and stopped in any intermediate position.

4.6 Main components

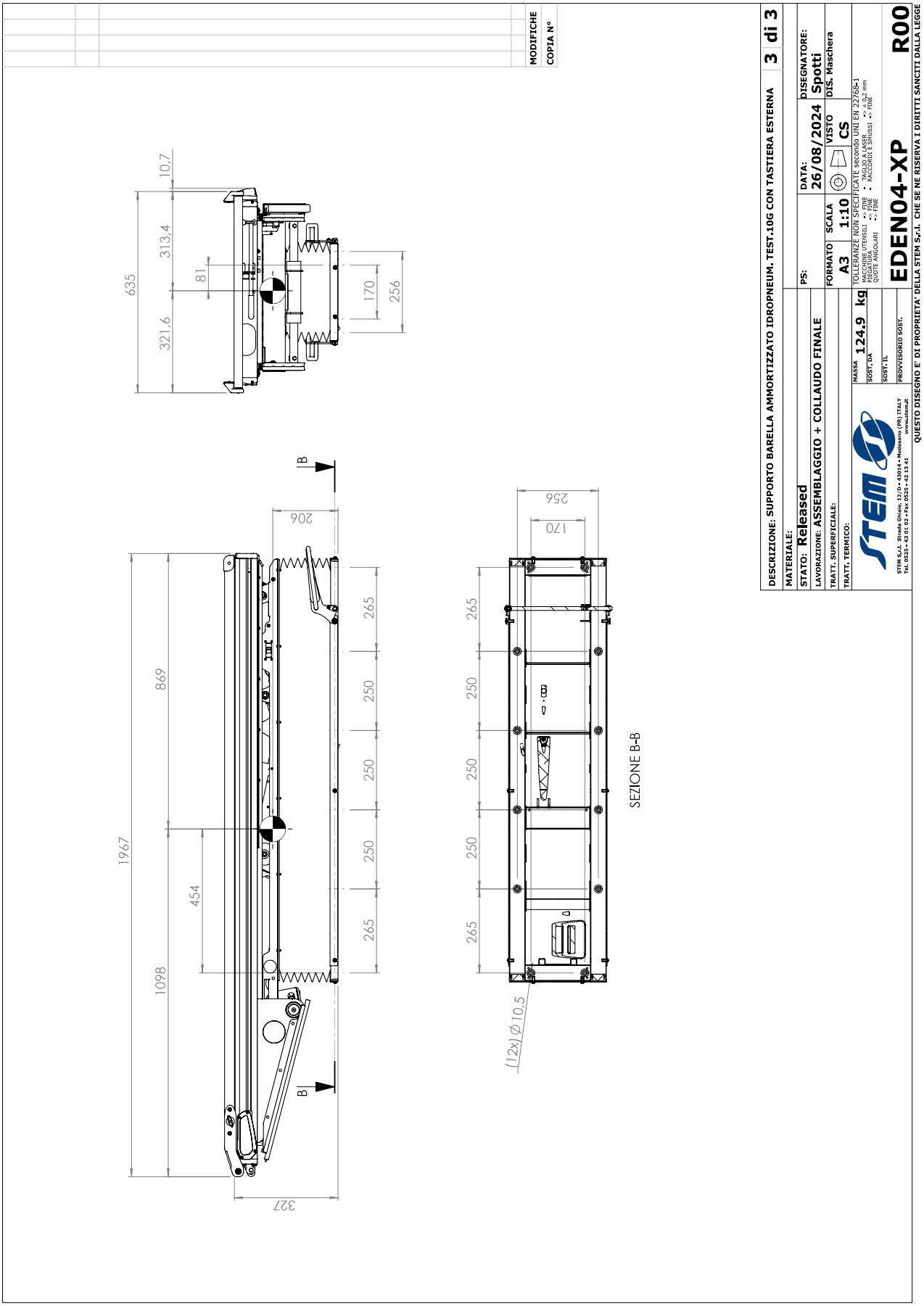
The device is made up of the following **basic parts**:

Pos.	Description
1	STRETCHER TRAY
2	SLIDE-OUT TRAY WITH SIDE LIGHTS
3	BASE FRAME
4	BELLOW PROTECTION
5	EXTRACTABLE TRAY RELEASE LEVER
6	SIDE MOVEMENT LEVER
7	SAFETY BAND (ANTI-CRUSHING DEVICE)



IMPORTANT!
The device is also equipped with a control panel to be installed directly on the rescue vehicle in which the device is used.

4.7 Technical data sheet



5. TRANSPORT AND INSTALLATION

IMPORTANT!
Lifting and handling must only be done by specialised and trained personnel, who are qualified to perform these activities.

5.1 Packaging

The device is shipped by **STEM S.r.l.** from the production plant to that of the Customer.
Depending on the transport distance, any Customer's specific requests and how long the load will remain in the packaging, the device is shipped as follows:

- normal protective packaging for short and medium distances;
- special protective packaging for long distances.

Upon receipt of the device, the customer must verify that no damage was caused during transport or by the personnel in charge of the specific operations.

IMPORTANT!
If damage is ascertained, leave the packaging in question as found and immediately request assessment of the damage by the competent shipping company, and then with a surveyor's report, inform the competent transport insurance company and the seller.

5.1.1 Packaging removal

To **remove the packaging** proceed as follows:

Step	Action
1	Position the device in the place intended for it.
2	Unpack the device delivered **in a crate**, as follows: • remove the cardboard box and, if any, the heat-shrink cellophane; • remove the straps; • remove the crate; • remove any fastening systems to the wooden platform.
3	Unpack the device delivered **on a pallet**, as follows: • remove the straps; • remove the heat-shrink cellophane; • remove any fastening systems to the wooden platform.

For handling the device and/or its parts, refer to the **"Transport and handling"** paragraph.

5.1.2 Disposal of packaging

The packaging is an integral part of the supply and is not collected, **so it must be properly disposed of by the purchaser.** Disposal or destruction must comply with the regulations in force in the user's country.

5.2 Transport and handling

The handling procedures described in this paragraph shall be carried out by staff trained for such operations: suitably trained personnel to safely perform loading, unloading and handling operations by means of lifting equipment, and aware of accident-prevention rules.

CAUTION!
STEM S.r.l. shall not be held liable for any damage, to things or people, caused by accidents due to a failure to comply with the instructions provided in this manual and in the following chapters.

5.2.1 Transportation operations

CAUTION!
STEM S.r.l. shall not be held liable for any damage to the device arising from failure to comply with the instructions provided.

IMPORTANT!
Transport and handling personnel must be authorised and trained to use the lifting equipment and devices and must comply with the applicable regulations for personal protection.

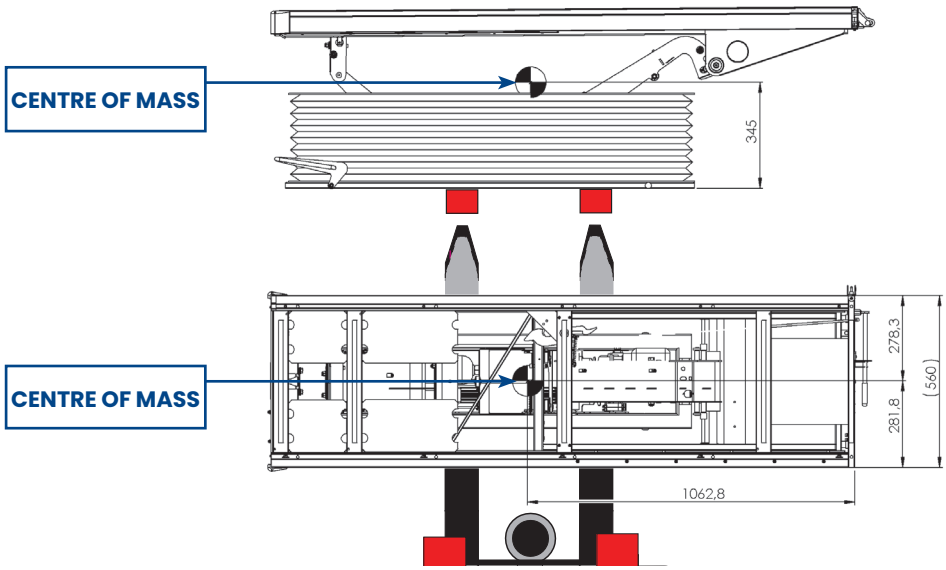
Transport and handling procedure with a forklift truck	
Operator qualification	Lifting equipment operator
Necessary PPE	
Lifting equipment	Forklift truck
Weight	116 Kg (without packaging, stretcher tray and accessories)
Tools to be used	Ropes or chains for securing the load

CAUTION!
Use suitable and approved lifting equipment, suitable for the size and weight of the device.

CAUTION!
Make sure nobody stops within the range of the lifting equipment.

To correctly perform transport **with the forklift truck**, follow the procedure below:

Step	Action
1	Position the forks of the forklift truck under the base of the stretcher-support.
2	Make sure that the forks come out from the front of the load sufficiently to eliminate any risks of overturning of the transported part.
3	Slowly lift making sure the centre of gravity of the section is in the centre of the lifting forks.
4	Tilt the upright backwards (towards the driver's seat) to facilitate the tilting moment and guarantee greater stability of the load during transport.
5	Adapt the transport speed according to the flooring and type of load, avoiding sudden manoeuvres.
6	Place the device in the chosen area.



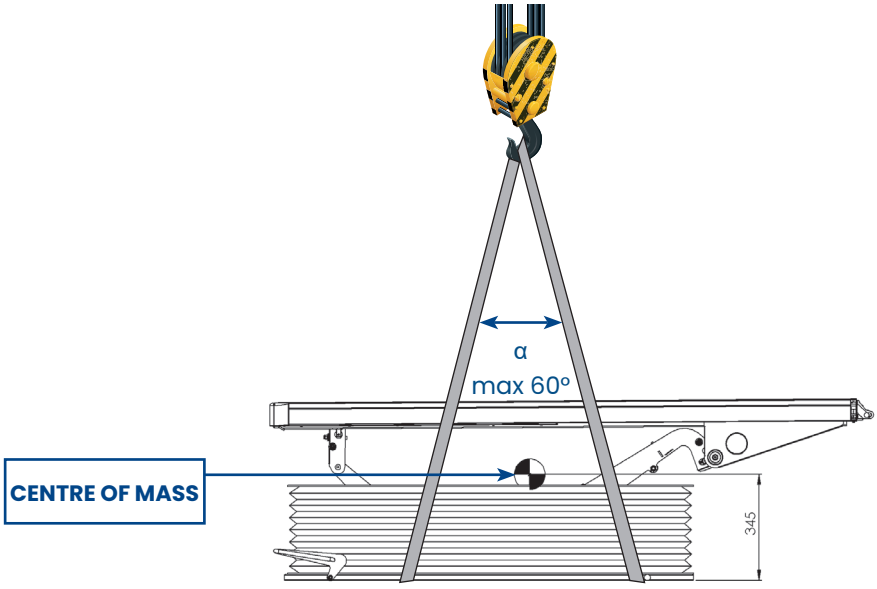
Transport and handling procedure with a hoist	
Operator qualification	Lifting equipment operator
Necessary PPE	
Lifting equipment	Hoist
Weight	116 Kg (without packaging, stretcher tray and accessories)
Tools to be used	Ropes, straps

CAUTION!
Use suitable and approved lifting equipment, suitable for the size and weight of the device.

CAUTION!
Make sure nobody stops within the range of the lifting equipment.

To correctly perform **lifting with a hoist**, follow the procedure below:

Step	Action
1	Pass the ropes/lifting straps under the base of the stretcher-support.
2	Hook the ropes/straps to the lifting hook of the hoist.
3	Lift the load making sure that the angle formed by the 2 chains/ropes for lifting the machine is not greater than 60°.
4	Check that the load is properly balanced by slightly lifting it off the ground and making sure it is horizontal.
5	Proceed with lifting, paying attention that the device is always properly balanced and in a horizontal position.
6	Place the device in the chosen area.



5.3 Installation

5.3.1 Permitted environmental conditions

The device is designed and built to work safely under the following environmental conditions:

Permitted environmental conditions	
Ambient temperature	+0 / +50 °C
Maximum relative humidity	80 %
Work environment	Rescue vehicle
Ambient lighting	Lighting inside the vehicle
Support tray	Vehicle floor

CAUTION!
Environmental conditions different from those specified may cause severe damage to the device. Placing the device in facilities that do not fulfil these requirements will cause the warranty to lapse for parts to be replaced.

IMPORTANT!
The work environment must be sufficiently lit. If there are dark areas or differences in level on the workplace, the user must set adequate lighting devices.

The Manufacturer shall not be held liable for non-observance of the provisions specified.

5.3.2 Positioning

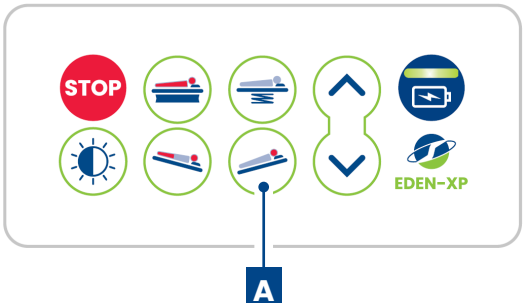
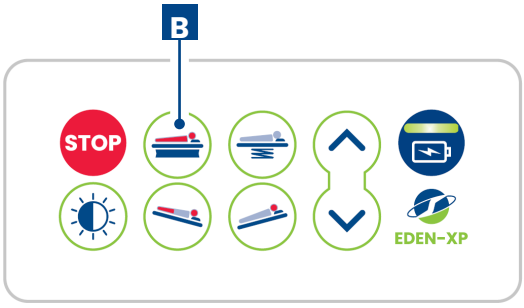
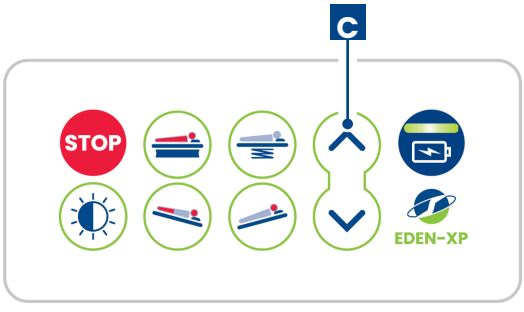
The correct position of the support inside the emergency vehicle must be determined in such a way as to enable all the support movements without interfering with other devices on the ambulance.

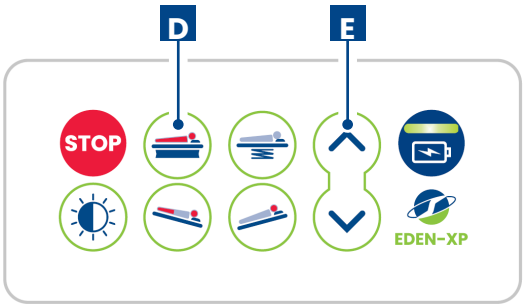
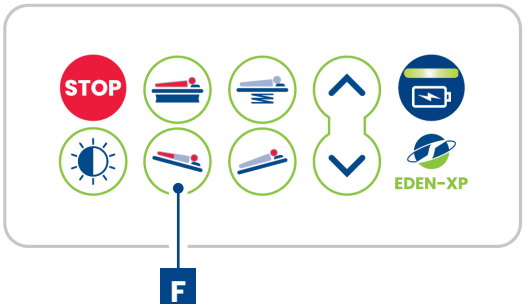
Use the technical data sheets in the manual to carry out a first check of the dimensions and define the position of the base frame and the relative fixing holes.

The pushbutton panel, if any, must be fixed onto the wall in a position that can be easily reached by staff operating on the emergency vehicle and usually close to the patient's head.

5.3.2.1 Checking the minimum distances needed

Proceed as follows to check that the installation site chosen for the device is correct and to check the minimum distances necessary for its movement:

Step	Action	Picture
1	Insert the device into the rescue vehicle and place it provisionally on the tray.	
2	Temporarily connect the supplied power cables with a sufficiently charged battery (see the "Connections" paragraph). **Note**: if you use a battery that is not charged sufficiently, the device may work incorrectly or not work at all in the presence of voltage dips.	
3	Close the rear door of the vehicle.	
CHECKING THE MINIMUM DISTANCE FROM THE REAR VEHICLE DOOR (FOOT SIDE)		
4	Move the device to the maximum Anti-Trendelenburg position, while keeping the button **(A)** fully pressed.	
5	Move the device to the maximum rigid lifting position by pressing the button **(B)**.	
6	Lift the stretcher tray by keeping button **(C)** pressed till end of stroke.	

Step	Action	Picture
7	Check that there is no interference between the device and the rear door of the rescue vehicle which it is installed on.	
CHECKING THE MINIMUM DISTANCE FROM THE DOCTOR'S SEAT (HEAD SIDE)		
8	Move the device to the maximum horizontal position by first pressing the button **(D)** and then keeping the button **(E)** fully pressed.	
9	Move the device to the maximum Trendelenburg position, while keeping the button **(F)** fully pressed.	
10	Check that there is no interference between the device, the vehicle and the doctor's seat installed on it	
CHECKING THE MINIMUM DISTANCE FOR LATERAL TRANSLATION OF THE STRETCHER TRAY		
11	Move the device stretcher tray sideways in both possible extreme positions (see the "Tray side translation" paragraph).	
12	Check that there is no interference between the moving tray, the vehicle and the equipment inside it.	
13	At the end of all the checks, trace the optimal and definitive position of the base frame of the device with a marker on the floor of the vehicle.	

5.3.3 Installation procedure

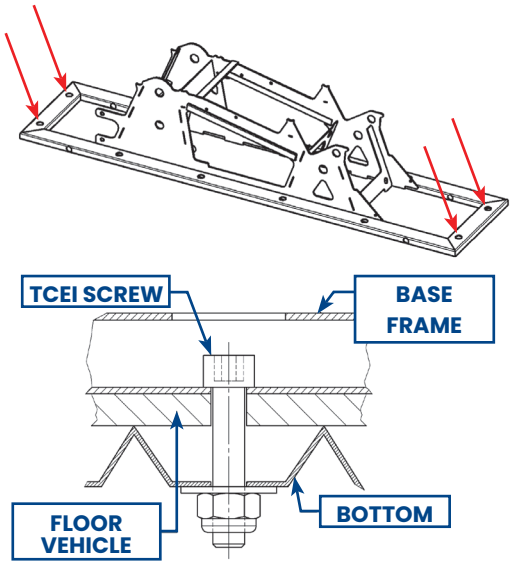
Installation procedure	
Operator qualification	2 Mechanical maintenance engineers
Necessary PPE	
Tools to be used	Hand tools

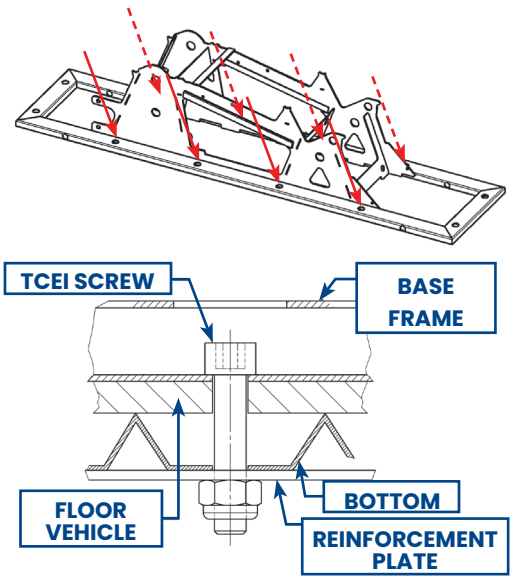
The device must be installed in a vehicle.

CAUTION!
Installation must be carried out by specialised personnel authorised by STEM S.r.l., who must check for proper fastening, based on the exact position on the vehicle floor and the floor structure.

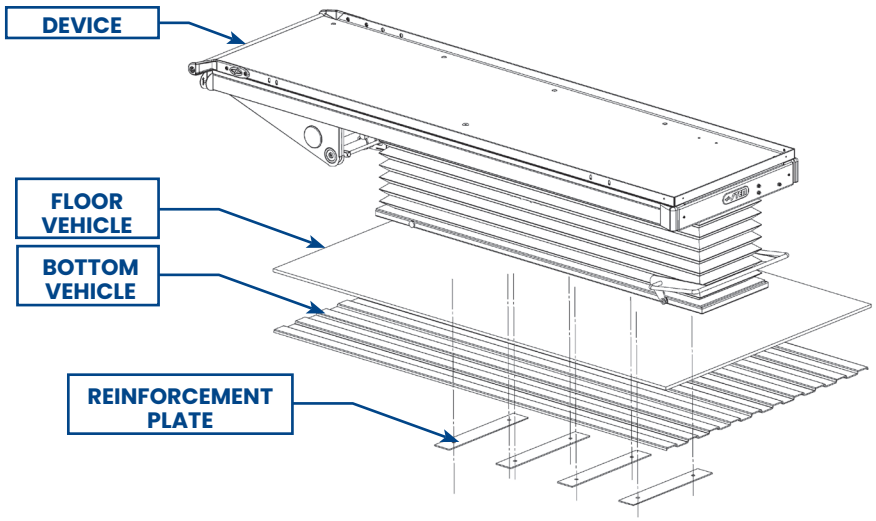
CAUTION!
For safety reasons and to ensure proper device operation, STEM S.r.l. recommends reinforcing the vehicle floor on which the device will be secured using reinforcement plates.

To **install the device**, proceed as follows:

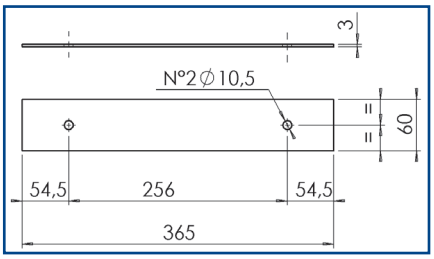
Step	Action	Picture
1	Load the device onto the vehicle with an adequate lifting system (e.g. forklift truck), in the presence of at least 2 mechanical maintenance engineers.	
2	Check the correct positioning of the device inside the vehicle (see the "Checking the minimum necessary distances" paragraph).	
3	Carefully check the lower configuration of the rescue vehicle floor in the relevant area, while also considering the passage of the cables.	
4	Secure the base frame to the vehicle floor at the ends (head and foot side) using the appropriate screws. **Note**: fasten with an 8.8 grade M10 hexagon countersunk cylinder head screws with a self-locking nut and M10 washer.	

Step	Action	Picture
5	Secure the base frame to the side of the vehicle floor using the appropriate screws. **Note**: secure it from the side with four reinforcement plates made of Fe37 steel and thickness 3 and tighten the nut without a washer. **Note**: fasten with an 8.8 grade M10 hexagon countersunk cylinder head screws with a self-locking nut and M10 washer.	
6	Apply silicone between the frame of the support itself and the vehicle floor, to prevent blood, dirt and cleaning liquids from infiltrating inside.	

CAUTION!
The vehicle floor must be adequately reinforced for safety reasons and for correct operation. Pursuant to EN 1789, the installation company must check the fastening based on the exact position on the vehicle floor and the floor structure.

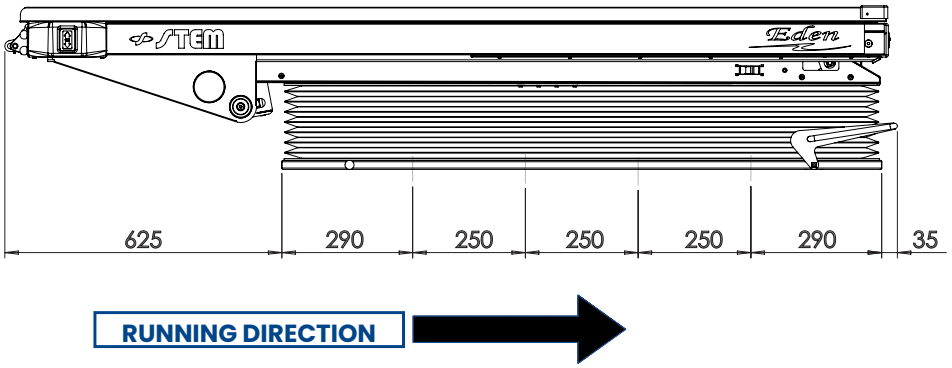


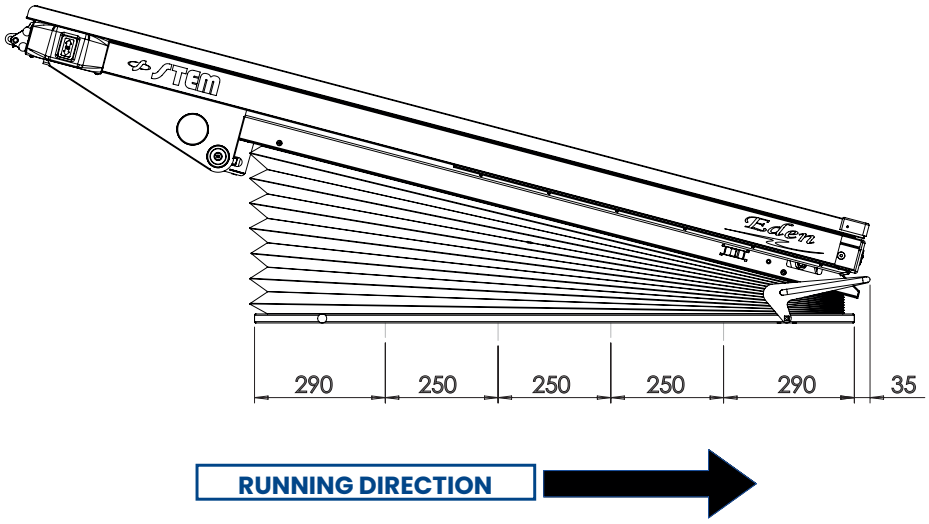
REINFORCEMENT PLATE

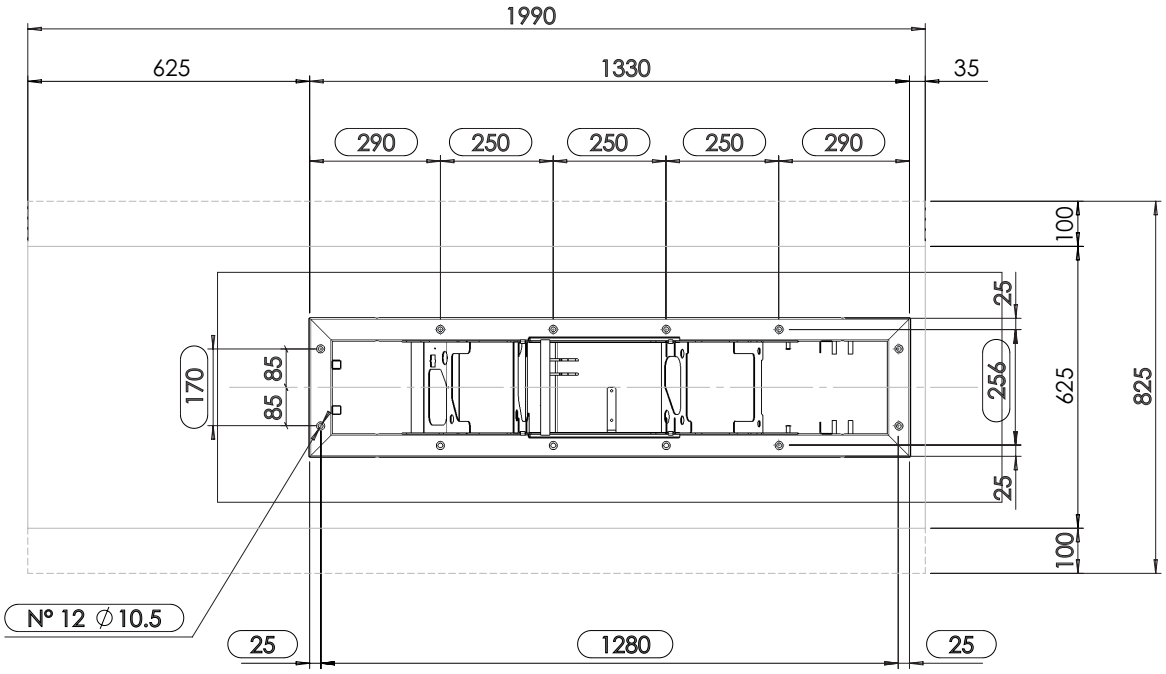


CAUTION!
Maximum tightening torque of M10 8.8 screws = 40 Nm

5.3.4 Fastening values



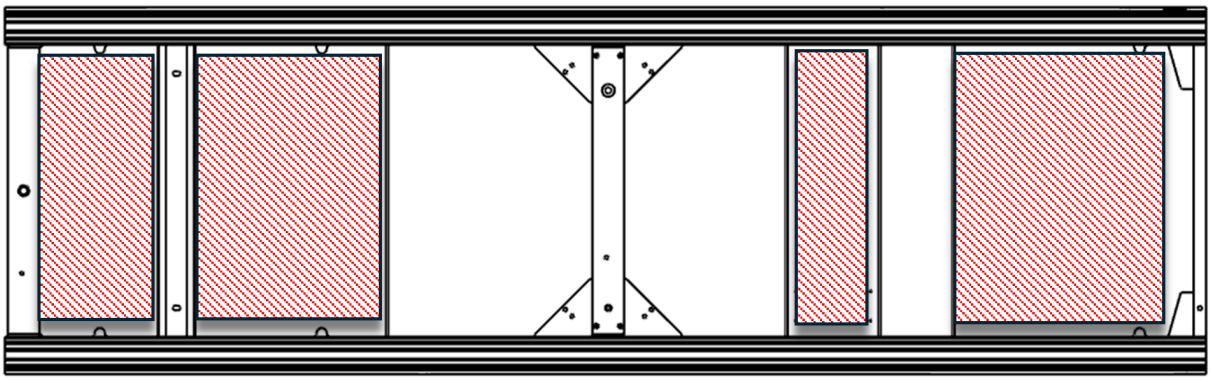




5.3.5 Fixing stretcher fasteners

For the device to be used, after securing it to the vehicle floor, fix the appropriate fasteners onto the stretcher tray to safely lock the stretcher once it has been loaded onto the support.

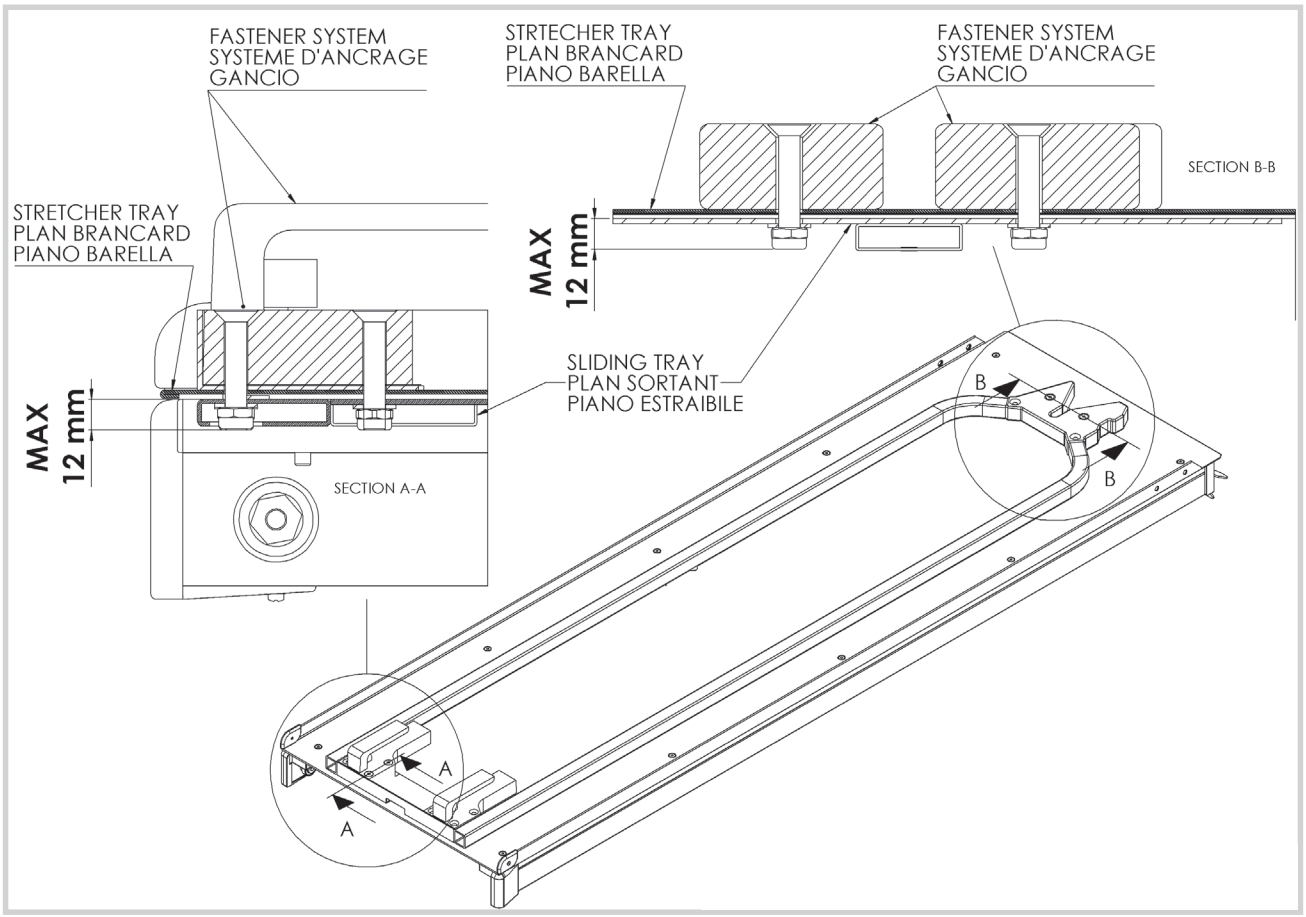
To flawlessly fix the stretcher fasteners, be sure to bolt them inside the areas highlighted in the figure below:



CAUTION!

Never fix the fasteners to the stretcher tray alone.

The overall size of the bolts underneath the stretcher tray must not exceed 12mm.



5.4 Connections

To start the device, secure the necessary connections:

- **electrical connection to the vehicle battery**.

CAUTION!
Qualified and authorised staff must set up the required connections.

5.4.1 Electrical connection to the vehicle battery

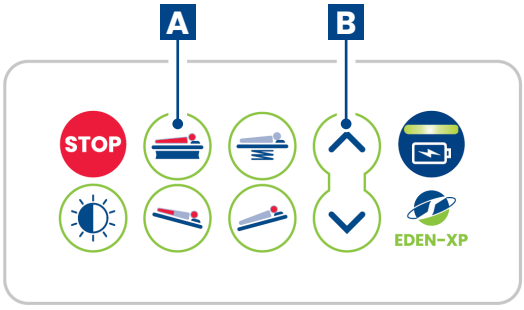
CAUTION!
This operation must only be performed by specialised, authorised staff (electrical maintenance engineer).

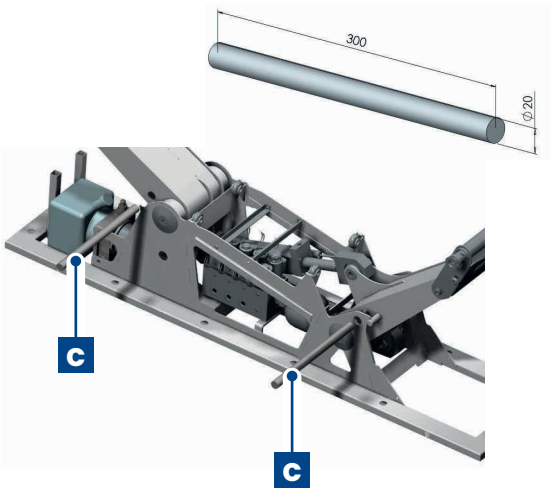
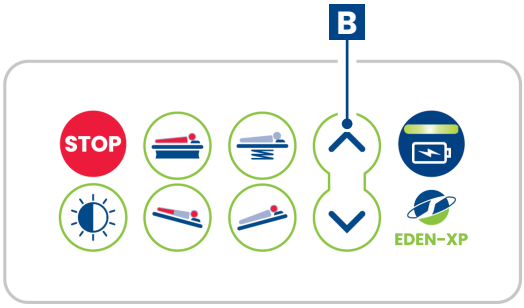
Electrical connection	
Operator qualification	Electrical maintenance engineer
Necessary PPE	
Tools to be used	Manual torque wrenches

CAUTION!
The connection to the battery must be made with 16 mm² section cables.
The red (+) cable must be connected to an 80 A fuse near the battery.
While making the connection, be careful not to reverse the battery polarity.
The battery must have 100 Ah minimum power and 12 V DC voltage.

IMPORTANT!
When electrically connecting the support, an appropriate power switch for the support to be disconnected from the service battery should be set up so as to be able to safely perform maintenance operations and emergency movements.

Proceed as described below for the **electrical connection**:

Step	Action	Picture
1	Connect the red (+) and black (-) power cables to a charged temporary battery.	
2	Move the device to the maximum top rigid position by pressing the button **(A)** and then keeping the button **(B)** pressed. **Note**: at the end of this step, the hole for the cable passage will be accessible.	
3	Lift the bellows guard from the base frame (lower part of the bellows).	

Step	Action	Picture
4	Insert the two steel pins **(C)**, of the indicated dimensions, between the base frame and the two arms. **Note**: if this step is not carried out, there will be a risk of crushing during the next phase in which the power will be interrupted.	
5	Press the "STOP" button **(D)** to lower the mobile frame onto the pins.	
6	Remove the power cables from the temporary battery and disconnect the cable from the control panel.	
7	Pass the cables through the holes on the floor of the ambulance and connect them to the vehicle battery and to the wall panel.	
8	Press the **(B)** button.	
9	Remove the pins and restore the bellows protection.	
10	Press the "STOP" **(D)** button.	

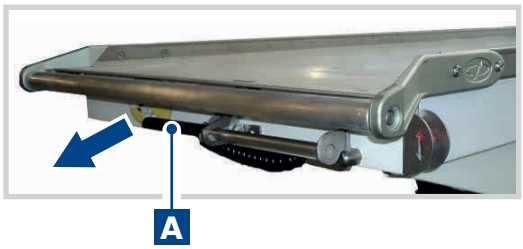
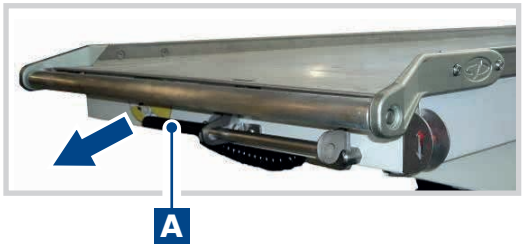
CAUTION!
The layout of all the cables inside the structure must never be changed.
If a second push-button panel is connected, the new cable must follow the same route as the original one in order to prevent damage or breakage when the support is moved.

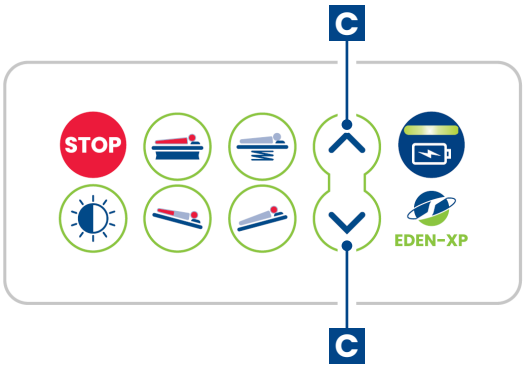
IMPORTANT!
For the device to be used, the control panel must be connected, which must be installed in a position that is easily accessible by the personnel working in the rescue vehicle and it is usually near the patient's head.

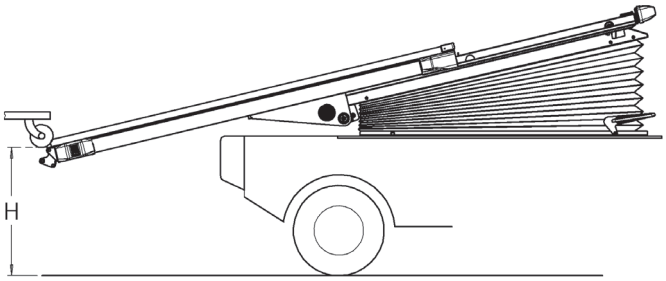
5.5 Adjustments

5.5.1 Adjusting loading height

To **adjust the stretcher loading height** for the support, proceed as described below:

Step	Action	Picture
1	Pull the release lever **(A)** of the extractable tray. **Note**: this way, the device is positioned at the bottom to allow the extractable tray to come out.	
2	Pull the lever **(A)** again and accompany the exit of the tray until it engages in the "fully extended" position.	
3	Adjust the loading height using the foot side buttons **(B)**. **Note**: move the stretcher close and optimise its tilting angle to facilitate loading.	

Step	Action	Picture
4	To memorise the desired position, simultaneously press the two arrows **(C)** on the control panel.	



6. USE AND CONTROLS

6.1 Controls

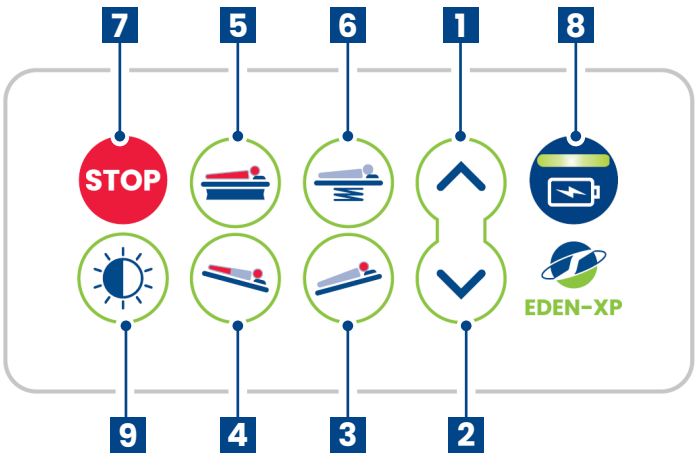
The controls for using the device are listed below:

Pos.	Control
1	Control panel. **Note**: the control panel must be installed directly in the vehicle where the device is installed.
2	Extractable tray release lever.
3	Up/down control.
4	Side movement lever.

6.1.1 Push-button control panel

The controls on the device main control panel are listed below:

Pos.	Control	Description
1	UP RIGID	Pressing this button will raise the stretcher tray up to the maximum position allowed by the device configuration.
2	DOWN RIGID	Pressing this button will lower the stretcher tray down to the maximum position allowed by the device configuration.
3	ANTI-TRENDELENBURG POSITION	Pressing this button will tilt the stretcher-support, head up, with a maximum inclination of 15°.
4	TRENDELENBURG POSITION	Pressing this button will tilt the stretcher-support, feet up, with a maximum inclination of 15°.
5	HORIZONTAL POSITION	Pressing this button once will achieve the following actions simultaneously: • switching off suspension mode, if on; • alignment of the stretcher tray with the horizontal plane.
6	SUSPENDED POSITION	Pressing this button will activate the self-adjusting hydropneumatic suspension. The device will automatically reach its suspension height and the suspension will automatically adjust in accordance with the weight of the patient in approximately 16 sec.
7	STOP	• **Pressing this button once**: switches off any automatic function and blocks the device without changing its position. • **Long press (3sec)**: the device goes into the stand-by position, and tilts downwards (head up, feet down); the degree of inclination will depend on the position of the centre of gravity of the stretcher.
8	BATTERY LED	• **GREEN LED**: the support is ON. • **RED LED flashing plus an acoustic signal**: indicates that the power supply voltage is insufficient (low battery) and the device is hindered from being operated. • **Flashing RED LED (5 flashes) plus an acoustic signal**: indicates that the device is active and no button has been pressed for 2 hours, therefore it is going into "stand-by" mode.
9	LED LIGHT INTENSITY	Pressing this button adjusts the brightness of the side LED lights (4 intensity variations).



6.1.2 Extractable tray release lever

The extractable tray release lever, at the end of the foot side of the device, releases the extractable tray from its safety lock, to allow the tray to be extracted.
The lever acts as follows depending on where the device is located:

Device position	Lever function
THE DEVICE IS IN THE HORIZONTAL LOW POSITION WITH THE EXTRACTABLE TRAY INSERTED	By pulling the lever, the extractable tray can be released from its safety lock. By releasing the lever, you can start extracting the tray.
THE DEVICE IS NOT IN THE HORIZONTAL LOW POSITION AND THE TRAY IS INSERTED	By pulling and keeping the lever pulled, the device moves to a horizontal low position. Once the horizontal low position is reached, by pulling the lever, the extractable tray can be released from its safety lock. By releasing the lever, you can start extracting the tray.
THE TRAY IS EXTRACTED AND TILTED	By pulling and keeping the lever pulled, the device moves to a horizontal low position, thereby allowing the tray to retract. Once the horizontal low position is reached, the tray can start being entered again, by releasing the lever.

IMPORTANT!
The operations to reach the horizontal low position only take place with the lever pulled. Releasing the lever will stop the operation.

IMPORTANT!
The release lever must not be pulled during the tray extraction and introduction.

IMPORTANT!
To perform the extraction and introduction of the tray when the stretcher is installed, it is advisable to act on it.

6.1.3 Up/down control

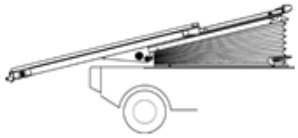
This control varies the inclination of the device.

The control can be used in two positions:

Position	Control	Picture
UP	With the UP command, the foot side of the device will be raised, and the head side will be lowered.	
DOWN	With the DOWN command, the foot side of the device will be lowered, and the head side will be raised.	

CAUTION!
Risk of crushing during the descent of the extracted tray.

The control acts as follows depending on the position of the device:

Device position	Command function
THE TRAY IS EXTRACTED 	Use the control to reach the desired loading height. By keeping the button pressed DOWN, the device will tilt on the foot side until it reaches the preset loading height. Once reached, you can press the DOWN command again to lower it to the maximum possible inclination. With the foot side down, holding the button UP, allows it to return to the horizontal low position which allows the tray to enter again.
THE EXTRACTABLE TRAY IS INSERTED	By actuating the command, you can vary the head - foot inclination of the support, within its maximum inclination range.

6.2 Utilization procedures

During operation, the device requires the continuous presence of an operator.

CAUTION!
Using the device for purposes other than those indicated by the Manufacturer can cause serious damage to persons, property and/or animals.
STEM S.r.l. will not be held responsible for damage caused due to improper use of the device.

CAUTION!
When you use the rescue vehicle, please activate ALWAYS the support, by moving it to the SUSPENSION position.
Driving with the stretcher-support turned off, even if empty, can cause damage to the support itself.

IMPORTANT!
We advise you inform patients, if conscious, that they are lying on a stretcher fitted with a shock-absorbing system to reassure them about the relative motion occurring between the stretcher and the vehicle as this could generate concern and/or fear in alert patients if they do not understand the reason for it.

6.2.1 Checks before commissioning

The following checks must be performed before commissioning the device.

- Check that the device is installed correctly (paragraph "**Installation**").
- Check that the area around the device is free from obstructions and/or tripping hazards.
- Make sure the device is properly electrically connected to the vehicle.
- Check that the device is not in **Maintenance** status.

6.2.2 Recommended patient containment systems

To make the most of support features, we recommend using suitable systems to be used on emergency vehicles and that have the following characteristics:

System	Description
STRETCHERS WITH TROLLEY	Use ambulance models that have a reduced height in the lowered position and, when in the raised loading position, a height that is equal to or greater than that of the rescue vehicle floor, to facilitate loading the stretcher and to have an ergonomically optimal height inside the rescue vehicle.
STRETCHERS WITHOUT TROLLEY	No specific requirements provided they are traditional low-type models for ambulances.
INCUBATORS	Use models designed to ensure stability during transport and avoid sideways movements. It is preferable to adopt equipment with a barycentre that is as low as possible.

CAUTION!
The stretcher must be fixed onto the suspension support in accordance with the specifications provided by the manufacturers, and always in a manner that is compatible with the structure of the support.
We suggest you contact the technical service of the Manufacturer for information on the fixing systems that are available for some types of stretchers or on the use of the systems provided by the stretcher manufacturer.
STEM S.r.l. shall not be liable if unauthorized fixing system have been adopted.

6.2.3 Activation/deactivation of the device

IMPORTANT!
When the device is turned on and each time the extractable tray is entered, the device automatically goes to the horizontal low position, raised by about 2 cm.
This allows you to preserve the condition of the stretcher-support.
In any case, always actuate the suspension function when transporting on the rescue vehicle.

IMPORTANT!
The suspension function (automatic) can be activated in any position of the stretcher tray.

IMPORTANT!
If the suspension is used, the device ALWAYS remains active.
Otherwise, the stretcher-support goes into STAND-BY after two hours of inactivity.
Pressing a key any, the demanded function is active.

At this point, the support can be activated by pressing the relative button accordingly:

Button	Control	Description	Device position
	ANTI-TRENDELENBURG POSITION	Holding this button down will tilt the device head side (anti-Trendelenburg position) up to the maximum inclination that allows suspension. Holding the button down again will allow the device to reach its maximum head side inclination.	
	TRENDELENBURG POSITION	Holding this button down will tilt the device foot side (Trendelenburg position) up to the maximum inclination that allows suspension. Holding the button down again will allow the device to reach its maximum foot side inclination.	
	UP/DOWN RIGID	Holding this button down will allow the device to raise (arrow up) or lower (arrow down) until the mechanical limit switch is reached. Both functions will work up to or down to the mechanical limit. Rigid ascent and descent functions can be activated from every stretcher tray position (feet up, horizontal, head up) excluding maximum tilt in both feet up and head up position (mechanical limit already reached).	
	HORIZONTAL POSITION	Pressing this button once will achieve the following actions simultaneously: • switching off suspension mode, if on; • alignment of the stretcher tray with the horizontal plane.	

Button	Control	Description	Device position
	SUSPENDED POSITION	Pressing the button once, the stretcher-support will reach suspension height, meaning that: • **If the stretcher tray is LOWER than suspension height:** 1. Completely lowered and horizontal, the support will rise to the suspension height. 2. Stretcher tray inclined within the tilt range for the suspension function; the support will move to the suspension height. 3. Stretcher tray tilted out of the tilt range for the suspension function; the support will return within the tilt range and then move to the suspension height. • **Stretcher tray is HIGHER than suspension height:** 1. Completely raised and horizontal, the support will lower beyond the suspended height and then rise to it. 2. Stretcher tray tilted within the tilt range for the suspension function; the support will lower and then move to the suspension height. 3. Stretcher tray tilted out of the tilt range for the suspension function; the support will return within the tilt range and then move to the suspension height.	

IMPORTANT!
If the rescue vehicle stops for a long time, the support must be deactivated by pressing the "STOP" button for at least 3 seconds.

CAUTION!
Regardless of the function activated, if power supply is removed even for just an instant, the device will go into STAND-BY and the stretcher tray will move to the low position and tilt slightly to enable unloading of the stretcher in any condition.

CAUTION!
Do not raise the support in the horizontal rigid position whilst the vehicle is moving to avoid excessive vibrations being transmitted to the patient.

CAUTION!
Do not vary the load after the suspension has been activated (e.g. when descending from the stretcher-support during training courses or changing the patient) to avoid sudden raising of the stretcher tray.
In this case, activate the "STOP" to bring the tray back down or to any rigid position.

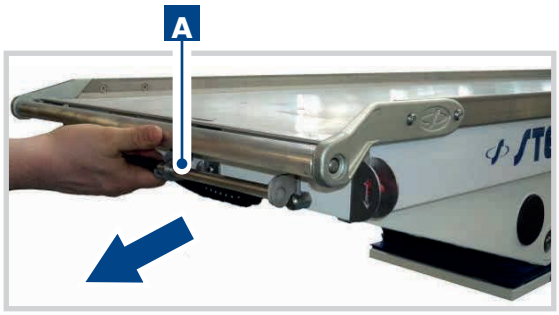
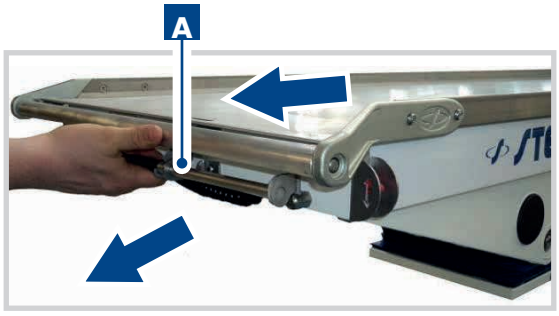
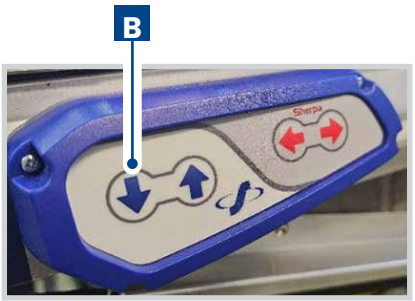
6.2.4 Stretcher loading/unloading

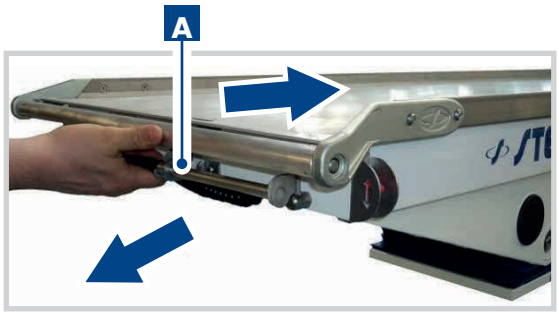
CAUTION!
Risk of unhealthy positions during loading/unloading.
Risk of crushing upper limbs.
Risk of crushing lower limbs.

CAUTION!
In case of heavy weights, the loading/unloading operations must be carried out by AT LEAST 2 OPERATORS.

IMPORTANT!
Loading and unloading can only be carried out when the stretcher tray is in the "HORIZONTAL LOW" position.

To load/unload the stretcher, proceed as described below:

Step	Action	Picture
1	Pull lever "**A**".	
2	Wait for the support to automatically move into the "LOW HORIZONTAL" position.	
3	Pull lever **(A)** again and release the extractable tray. **Note**: for the tray to engage in the pulled out position, lever **(A)** must be immediately released after releasing the tray.	
4	Remove the stretcher tray, accompanying it until it engages in a fully extracted position.	
5	Keep the "foot side" downstroke control **(B)** pressed to reach the set loading height and it then stops. **Note**: once the set loading height has been reached, it is possible to reach the maximum tilt position by continuing to actuate the command.	

Step	Action	Picture
6	Loading/unloading the stretcher on the extractable tray.	
7	Press and hold the "foot side" upstroke button **(C)** to bring the tray back to the horizontal position.	
8	When the stretcher tray is in the horizontal position, push it into the vehicle. **Note**: for the tray to engage when it is fully retracted, the lever **(A)** must be released shortly after the tray has begun the return stroke.	

IMPORTANT!
After loading the stretcher and attaching the tray, if no function is activated and two hours have passed, the support goes into stand-by.

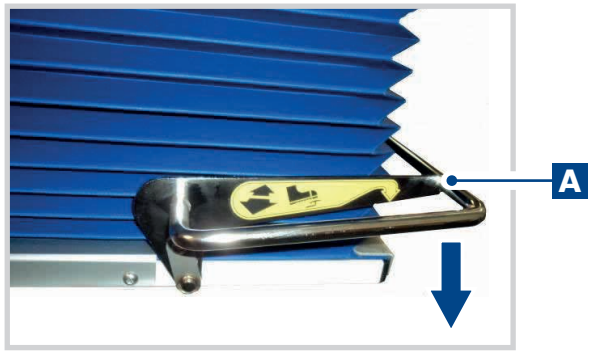
IMPORTANT!
When the device is turned on and each time the extractable tray is entered, the device automatically goes to the horizontal low position, raised by about 2 cm.
This allows you to preserve the condition of the stretcher-support.
In any case, always actuate the suspension function when transporting on the rescue vehicle.

6.2.5 Tray side translation

CAUTION!
Risk of impact.

IMPORTANT!
This operation can be carried out regardless of the stretcher tray position.

To **laterally translate the tray**, proceed as described below:

Step	Action	Picture
1	Press the release pedal **(A)** downwards and keep it pressed.	
2	Move the tray to the desired position, keeping the release pedal always pressed.	
3	When the tray is in the correct position, release the disengaging pedal **(A)** to lock it.	

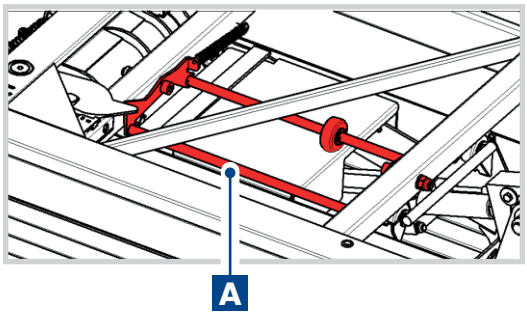
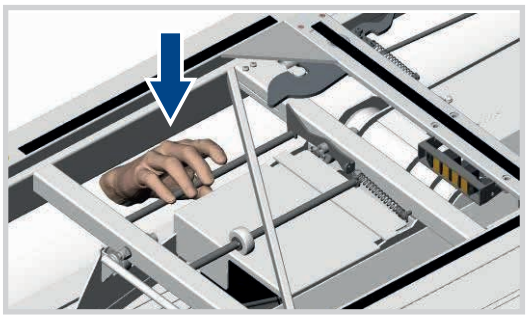
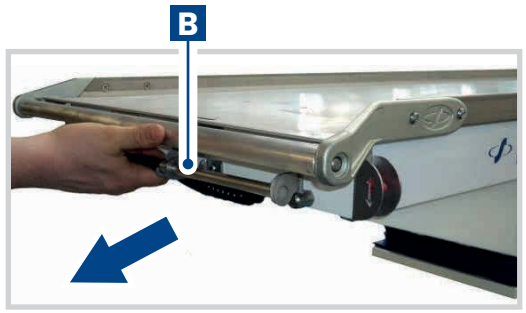
CAUTION!
When the device is in a translated position, before tilting, lifting or lowering, check that the path is free of obstacles.

6.2.6 Emergency procedures

In the case of a fault, if the support is NOT in the "LOW HORIZONTAL" position, the stretcher tray will remain blocked.

CAUTION!
In case of breakdown the emergency operations must be carried out by AT LEAST 2 OPERATORS.

Release it as follows:

Step	Action	Picture
1	Move the stretcher tray to a central position or to the right.	
2	Put your hand under the tray and push the release lever **(A)** down.	
3	While one operator keeps the release lever pressed, the second operator must release the tray by pulling the lever **(B)**. **Note**: once the tray is released, keep it in position to allow the first operator to remove his/her hand from under the tray.	

CAUTION!
Before unloading the patient in case of breakdown it is important to carefully estimate the system conditions; in particular, evaluate:

- **Position of the stretcher tray;**
- **Weight of the stretcher system + patient;**
- **Loading/unloading area condition (height differences, slopes, road surface condition, etc.).**

6.2.7 Light signalling

On both sides of the slide-out tray of the support there are LED lights which, depending on their colour, provide information on the status of the support.

- **Fixed green light**: active support..
- **Flashing yellow light**: support in motion.
- **Flashing red light**: support failure.

7. MAINTENANCE

7.1 Introduction

CAUTION!
Perform maintenance with the device off and de-energised.

CAUTION!
The maintenance operations must be carried out by qualified and authorised personnel.

Maintenance of the device includes interventions (inspection, verification, check, adjustment and replacement) that become necessary following normal use.

For proper maintenance operations:

- use only genuine spare parts, and tools which are suitable and in good conditions.
- respect the frequency of intervention set out in the manual for scheduled maintenance (preventive and regular maintenance). The distance (indicated in time or in working cycles) between operations must be understood as the maximum acceptable, so it must not be exceeded; however, it can be shortened.
- good preventive maintenance requires constant attention and continuous monitoring of the device. Immediately check the cause of any abnormalities such as excessive noise, overheating, fluid leakage, etc. and solve it.
- the prompt removal of any cause of malfunction or failure prevents further damage to equipment and guarantees operators' safety.

Device maintenance personnel must be well trained and have an in-depth knowledge of safety standards; unauthorised personnel must stay outside of the work area during operations.
Cleaning and adjustment activities must also be carried out only during the maintenance stage and with the device stopped and de-energised and the electric panel disconnected as instructed in the use and maintenance manual.

IMPORTANT!
In case of doubt, it is forbidden to operate. Contact the Manufacturer for the necessary clarification.

CAUTION!
Repair and maintenance interventions not covered by this manual can only be carried out after prior authorisation from STEM S.r.l..
No liability for damage to persons or property can be attributed to STEM S.r.l. for interventions other than those described or performed in any manner other than those indicated.

From an operational point of view, device maintenance operations are divided into two main categories:

Maintenance routine	All those operations that the operator must preemptively perform to guarantee proper operation of the device over time; routine maintenance includes inspection, checks, adjustment, cleaning and lubrication.
Maintenance extraordinary	All the operations the operator must perform the moment the device requires it. Extraordinary maintenance includes service, repair, restoration of nominal operating conditions or replacement of a faulty, defective or worn assembly.

7.2 Safety warnings

CAUTION!
Before starting any maintenance operation on the device, isolate and padlock all energy sources and safely lock the mobile units composing it.

- Maintenance engineers are required to wear all the personal protective equipment (gloves, goggles, overalls) necessary to perform the operation.
- During maintenance operations, unauthorised staff must stay out of the relative operating area.

The need to place the device under operating conditions and/or with the protections disabled, requires adequate competence and knowledge and extreme caution by the maintenance engineer, who must be adequately trained on possible and existing risks.

The safety precautions contained in this paragraph must always be strictly observed, during maintenance of the device, to avoid injuries to personnel and damage to the equipment.

Before proceeding with any maintenance activities, check that the energy sources are disconnected (electric current, compressed air, hydraulic energy, etc.).

- Conduct work only with the device switched off and de-energised.
- Carry out operations within one's competence (Mechanical, Electrical) for which one is authorised to act.
- Use the most suitable instruments to identify faults and familiarise yourself with the most suitable equipment to conduct maintenance work.

7.3 Routine maintenance

When the device is delivered to the user, it is already adjusted for correct operation; nonetheless, to ensure good operation over time, it is necessary to carry out checks as well as periodic and preventive maintenance.

Routine maintenance includes inspections, checks and interventions that, in order to prevent faults, monitor:

- the mechanical conditions of the device,
- the lubrication of the device,
- the cleanliness of the device.

The following tables list a series of controls and activities that need to be carried out according to the recommended frequency. The frequency of the routine maintenance activities listed here refers to normal operating conditions, i.e. that fulfil the required operating conditions.

The following table lists a number of routine maintenance operations for all the devices manufactured by **STEM S.r.l.**
The operator must consider only the procedures related to the device covered by this manual.

7.3.1 Inspecting after delivery

Operation	Frequency				
	Daily	Weekly	Every 15 days	Quarterly	Every 50,000 km
Verify the proper operation of the device.	◈				
Check the safety and warning devices for intactness and effectiveness.			◈		
Check the device for proper anchoring to the vehicle floor.					◈
Check the tightness of all bolts and screws.					◈
Check cables for proper connection.				◈	
Check for oil leaks.				◈	
Check the integrity of the lateral translation cables.					◈

7.3.1.1 Checking nuts and bolts

Proceed as described below to **check the nuts and bolts**:

Step	Action
1	Check the device for proper anchoring to the rescue vehicle floor, and all bolts and screws for tightening. **Note**: if necessary, contact the reference Assistance Centre.

7.3.1.2 Oil leak check

Proceed as described below to **check for any oil leaks**:

Step	Action
1	Visually check the vehicle floor for oil from the device.
2	In case of leaks, replace the seals and top up with CASTROL HYSPIN AWS22 oil.

7.3.1.3 Checking the side translation cables

Proceed as described below to **check the release cables for side translation**:

Step	Action
1	Raise the bellows guard.
2	Visually check the condition of the cables and, if necessary, replace them.

7.3.2 Lubrication

Operation	Frequency				
	Daily	Weekly	Monthly	Six-monthly	Yearly
Guide lubrication				◈	
Sliding bar lubrication				◈	
Lubrication of side translation rods				◈	

CAUTION!
Lubrication intervals depend on washing.
Chlorine-based disinfection affects lubrication, therefore, after each wash, carefully dry and lubricate the guides and metal parts.

POINTS TO BE LUBRICATED

Lubricate the brake rod and the block (**A**) and the side translation rod (**B**), every time they are washed and then dried, using Wurth HHS5000 or an alternative product.

7.3.3 Cleaning

CAUTION!
The cleaning operations must be carried out only by qualified and authorised personnel.

IMPORTANT!
The frequency of the cleaning operations will depend on the pathology of the patients, the environment and the frequency of use.

CAUTION!
Strictly follow the regulations on washing water treatment that are in force in the country of installation.

CAUTION!
If we operate in an aggressive saline environment (prevalently in winter), it is suggested EVERY DAY a cycle of "washing - rinsing - drying - lubrication" in order to protect longer the exposed parts.

7.3.3.1 General cleaning procedure

Proceed as described below to **clean the device overall**:

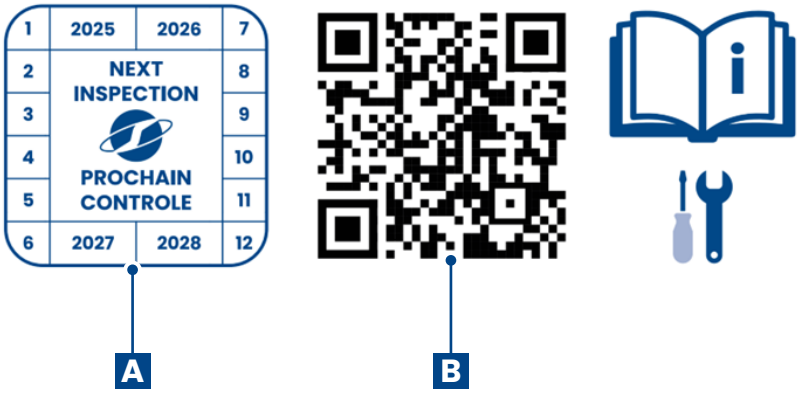
Step	Action
1	Proceed with cleaning, using a damp sponge or cloth using detergent/disinfectant products or just water, accordingly. **IMPORTANT**: for the dosage of detergent/disinfectant, carefully comply with the doses recommended by the manufacturer.
2	Rinse with water in limited quantities.
3	Dry all the components of the device as thoroughly as possible.

CAUTION!
Do not use any type of solvent, petrol or thinner to clean painted surfaces.
Do not use water jets.

7.4 Yearly maintenance

STEM S.r.l. recommends that yearly maintenance be performed by an authorised service centre.

The date by which this maintenance work is to be performed is specified on a special sticker on the support, in the appropriate section (**A**), whereas, by framing the "**QRcode**" (**B**) on the same sticker, the manual can be downloaded in electronic format.



7.5 Extraordinary maintenance

CAUTION!
Extraordinary maintenance and device repair operations must be dealt with exclusively by qualified, skilled and authorised technicians, hired by the manufacturer or by the authorised after-sales support centre.
These procedures require a deep and specialist knowledge of the devices, necessary operations, related risks and correct procedures to work safely.

Should any exceptional circumstance occur, for which extraordinary maintenance is necessary, maintenance engineers shall follow this procedure:

- check status of damaged or out-of-phase components;
- perform the operations described in this paragraph;
- if the operations to be executed are not provided for in this manual, send the Manufacturer a report of the event occurred, along with the outcome of the inspection and any comments.

The manufacturer or the authorised service centre will consider, case by case, the situation. They will then agree with the ordinary maintenance engineers the type of procedure to be performed, choosing the most suitable solution among those listed below:

- the Manufacturer sends its skilled technician who is trained and authorised to perform the necessary operations;
- or the Manufacturer authorises the user's ordinary maintenance engineers to perform the procedures, sending any supplementary instructions.

CAUTION!
The spare parts to be replaced are to be ordered from STEM S.r.l.. Should the customer not use genuine spare parts or parts authorised in writing by the Manufacturer, the latter shall be relieved of any liability as regards device operation and operators' safety. Authorisation and/or instructions must always be given in writing. It is forbidden to operate the device without written permission and the Manufacturer disclaims all responsibility.

CAUTION!
The maintenance operations must be carried out only by qualified and authorised personnel.

CAUTION!
In the event that extraordinary maintenance is required, contact STEM S.r.l.

8. TROUBLESHOOTING

8.1 Anomalies and the relative solutions

CAUTION!
Works on the electrical and hydraulic parts must only be carried out by authorised and adequately trained personnel.

CAUTION!
Use the safety pins for interventions within the perimeter of the support where the extractable tray needs to be raised.

CAUTION!
If a failure/problem persists or is not described in this chapter, do not attempt to solve the problem but contact the Technical Assistance Department of STEM S.r.l.

The following table shows the most common problems that can occur while using the device, followed by the relative solutions to these problems:

Fault	Probable cause	Solution
The extractable tray is not released.	It is not in a horizontal low position.	Pull the release lever. If automatic positioning is not performed correctly, act on the manual release of the hook according to the procedure in the "**Emergency procedures**" paragraph.
The support emits a continuous whistling sound and none of the functions work.	-	Turn off the support's power supply to reset the circuit and then re-connect power supply.
The motor does not work.	The magnetothermal switch has tripped (example: due to an excessive load on the stretcher tray).	1. Remove the cause of the block (example: remove the excessive load on the stretcher tray). 2. Reset the magnetothermal switch: • Locate the magnetothermal switch on the bellows frame. • Reactivate the magnetothermal switch. 
	The motor is burnt.	Contact Technical Support of STEM S.r.l. to replace the motor.
The down rigid function is very slow or it does not work.	The grub screws drilled inside the solenoid valve unit must be clean.	Contact Technical Support of STEM S.r.l. to receive detailed instructions.

8.2 Alarms

IMPORTANT!
Warning and Alarm alerts can be viewed on the STEM "Global Service" App on the page relating to the EDEN04-XP device (inside the ALARMS box, "Current errors and warnings")

IMPORTANT!
In case of anomalies, warnings or alarms, contact STEM Technical Assistance by communicating the warning displayed on the Global Service App.

The following are the alarms that can be viewed on the Global Service App relating to the EDEN04-XP device:

No.	Alarm	Description
1	pump overcurrent	Too high current draw on pump motor
2	pump open circuit	Open circuit on pump motor
3	overcurrent EV 1	Too high current draw t on solenoid valve 1
4	open circuit EV 1	Open circuit on solenoid valve 1
5	overcurrent EV 2	Too high current draw t on solenoid valve 2
6	open circuit EV 2	Open circuit on solenoid valve 2
7	overcurrent EV 3	Too high current draw t on solenoid valve 3
8	open circuit EV 3	Open circuit on solenoid valve 3
9	overcurrent EV 4	Too high current draw t on solenoid valve 4
10	open circuit EV 4	Open circuit on solenoid valve 4
11	overcurrent EV 5	Too high current draw t on solenoid valve 5
12	open circuit EV 5	Open circuit on solenoid valve 5
13	overcurrent EV 6	Too high current draw t on solenoid valve 6
14	open circuit EV 6	Open circuit on solenoid valve 6
15	overcurrent EV 7	Too high current draw t on solenoid valve 7
16	open circuit EV 7	Open circuit on solenoid valve 7
17	overcurrent EV 8	Too high current draw t on solenoid valve 8
18	open circuit EV 8	Open circuit on solenoid valve 8
19	low battery	Supply voltage level too low to guarantee operation
20	safety band	Safety band activated. Safety band malfunction.
21	internal error routine software	
22	hardware error external EEPROM	

9. DECOMMISSIONING AND DISPOSAL

9.1 Storage (if not used)

If the device **must not be used for a long period of time**, securing it and warehousing it is required. Proceed as described:

Step	Action
1	Make sure the environment is clean, dry and protected from atmospheric agents.
2	Make sure that: • the device is far from direct light sources; • the humidity of the storage area is less than 80%; • the storage area temperature is between -10° and +50°C.
3	Place the device at a minimum height of 100-150 mm from the ground.

CAUTION!
A maximum of two devices can be stacked, one on top of the other, ONLY if still in their original packaging/crate. Stacking all kinds of devices is not allowed under any other circumstances.

9.2 Decommissioning and disposal

Pursuant to Article 26 of Italian Legislative Decree No. 49 of 14 March 2014 "Implementation of Directive 2012/19/EU on waste electrical and electronic equipment (WEEE)"
The crossed-out wheelie bin symbol on the equipment or its packaging indicates that the product at the end of its useful life must be collected separately from other waste in order to allow for proper treatment and recycling.

CAUTION!
Do not dispose of WEEE together with mixed municipal waste
In particular, the separate collection, transport, appropriate treatment, recovery and environmentally compatible disposal of this professional equipment that has reached the end of its life is the responsibility of the manufacturer of the equipment if it was placed on the market after 31 December 2010. However, the professional user is free to take care of the end-of-life management of the discarded equipment, complying with all legal obligations and in this case releasing the manufacturer from any liability.
Appropriate separate collection for subsequent recycling, treatment and environmentally sound disposal of the disused equipment contributes to avoiding possible negative effects on the environment and human health and promotes the reuse and/or recycling of the materials of which the equipment is made.
In case of unauthorised disposal of the product, the user shall be imposed sanctions in accordance with current legislation.

CAUTION!

Decommissioning and dismantling must be entrusted to personnel specialised in such activities. In particular, only those in charge of the dismantling and final waste disposal phase can perform the following activities:

- **mechanical and electric disconnection of parts according to disassembly instructions and design diagrams.**
- **transporting parts from the plant to the waste disposal facility for separation of parts.**

CAUTION!

The device does not contain components or hazardous substances which require special removal procedures. We remind you to comply with the laws in force in the country of installation regarding device disposal.

At the end of the life cycle of the device (approx. 25000 working hours), it must be decommissioned.

When you wish to **dispose of the device**, secure it. Proceed as described:

Step	Action
1	Make sure the device has been disconnected from any type of electrical connection.
2	Proceed with the separation of the various components, separating the frames from their connected parts.
3	Destroy the CE plate.

10. TECHNICAL SUPPORT

10.1 Technical Support contacts

If necessary, during the warranty period, for maintenance services, product repairs or for information, contact STEM Technical Support Department as follows:

STEM S.r.l. - Strada Ghiaie, 12/D
43014 Medesano - (Parma) - Italy

	TELEPHONE	TELEFAX	E-MAIL ADDRESS
STEM ITALIA (EUROPE - ASIA - AFRICA)	0525 - 430102 +39-0525 - 430102	0525 - 421341 + 39-0525 - 421341	stem@stem.it

Some technical problems can be solved with simple operations, therefore we advise you to carefully read the manual before contacting the Support Department.

If technical support is required, you must specify:
- Product model and number;
- Type and features of the problem.

11. SPARE PARTS

11.1 Ordering spare parts

The following data must be provided to order spare parts:

- Model;
- Identification number;
- The component name with relative position and code.

Transportation will be provided by **STEM S.r.l.**

STEM S.r.l. guarantees the delivery of spare parts as soon as possible, according to stock availability and the complexity of the spare part itself.

CAUTION!
Only use original spare parts.
By replacing the original parts with poor quality components or auto-products, the consumer is exposed to the risk of accidents and to a possible breakage of certain product functions.

STEM S.r.l. can also provide, upon request, accessories related to the product use as well as medical equipment for emergency aid.

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