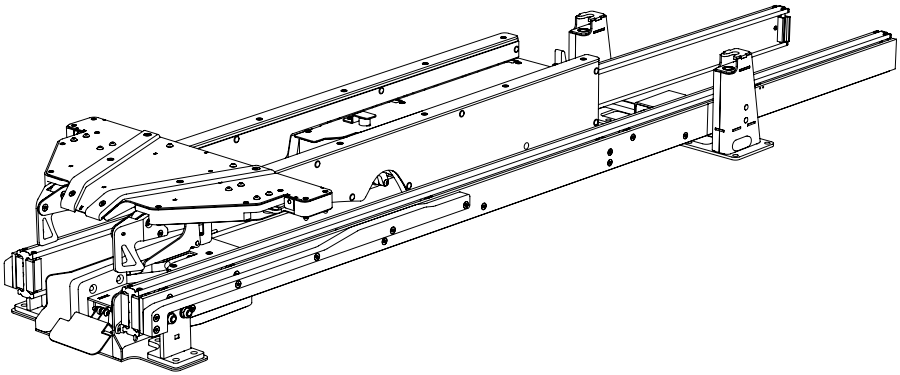
FERNO



VIPER LOADING SYSTEM

Operation and Maintenance Manual

Rev A, 27.6.2022

CE

Contents

Introduction

Thank you for purchasing the VIPER LOADING SYSTEM. In order to make full use of all the product's features, read the entire operation manual carefully and store the manual so that it is available for all potential users.

The manual contains general instructions for the use, operation and maintenance of the product. These instructions cannot cover all the details, so it is entirely the user's responsibility to use this product safely and correctly. Safety information is given as a service to users. All other safety precautions taken by the user should be within the framework of the applicable regulations. Before first using the product, the operator must be trained in the correct use of the product. The product may only be used by persons with the appropriate training.

Any serious incident occurring in connection with the medical device must be reported to the manufacturer and to the competent authority of the Member State in which you are established as a user and/or transported person.

Manufacturer:

MEDIROL s.r.o., Na Strži 126/4, 140 00 Praha 4, Czech Republic,
ID No.: 64506592, www.medirol.eu

Product name (brand name) and type:

VIVERA FASTENER F401

Description and function of product:

Medical device for fastening VIPER monoblocs or transporters in the vehicle.

Classification of product as a medical device:

Risk class I

Meaning of special symbols

⚠ CAUTION

The parts marked in this way indicate cases where the safety of the person transported could be at risk. Underestimating this information could result in injury to the person being transported or the operator.

These instructions further emphasise special procedures and precautions that must be followed to prevent the product from being damaged.

ⓘ NOTE

Gives information to facilitate maintenance and to explain important instructions.

Limited warranty

Viper comes with a two-year warranty to cover defects in material and workmanship.

This warranty does not cover:

- standard wear and tear,
- incorrect assembly,
- incorrect follow-up maintenance,
- the installation of parts or accessories not originally intended for (or not compatible with) the given product,
- damage or failure due to an accident, misuse, abuse or negligence.

This warranty will become completely void if any modifications are made to the frame or parts of the product.

The manufacturer will perform warranty repairs either by repairing or replacing the product.

The manufacturer does not provide reimbursement of the costs of transporting a defective product or part thereof.

A warranty claim must include the production label on the product and this confirmed warranty sheet.

Product name: VIPER LOADER	Code: F401V02
Serial number:	Date of sale:
Seller:	Signature and stamp:

Summary of safety precautions

⚠ PRECAUTION

- The VIPER loader and fastener system is intended only for the fastening of the transporter with a stretcher or the monobloc for which the fastener is certified.
- For transport without the transporter / monobloc, always check that all the loader components are in their secured position. Never leave the linear guide rails or the extension arms unsecured. Otherwise, there is a risk of serious injury.
- When manoeuvring the transporter / monobloc onto the slider and the extension arm, observe the minimum and maximum loading heights. Otherwise, there is a risk of damage to the product.
- While advancing onto the slider, always try to align the transporter / monobloc so that both slider levers can be easily released. Never use extreme force. Otherwise, there is a risk of damage to the product.
- As the transporter / monobloc rests on the extension arm, do not overload the part of the structure at the feet of the transported person. Otherwise, there is a risk of damage to the product.
- Always check that the rear horizontal and front vertical plugs are fully locked. The fastener lever must be fully raised in the horizontal position. If the fastener is not locked correctly, there is a risk of serious injury.
- When the loader is fully extended from the vehicle, an auxiliary spring is activated to partially prevent reverse movement. It should be noted that this is not a sufficient safeguard. Hold the transporter / monobloc firmly until it is completely unloaded from the vehicle.
- Before pressing the right button on the control panel, always ensure that the transporter / monobloc is fully pulled out of the vehicle.
- The limiting charge voltage may be changed only by a trained person or authorised service partner. Otherwise, there is a risk of damage to the product.
- The fastener may only be installed by a trained person or authorised service partner.
- When installing the fastener on the floor, use only the connecting material specified by the manufacturer and do not alter the structure in any way.
- Prolonged use of excessive concentrations of disinfectants with no subsequent neutralization may cause surface discolouration or damage the product. When treating and disinfecting the surface, do not use products containing organic solvents, such as acetone, toluene, or gasoline.
- Lubrication may only be performed by a person with the appropriate training. Improper lubrication can cause damage to the mechanisms.

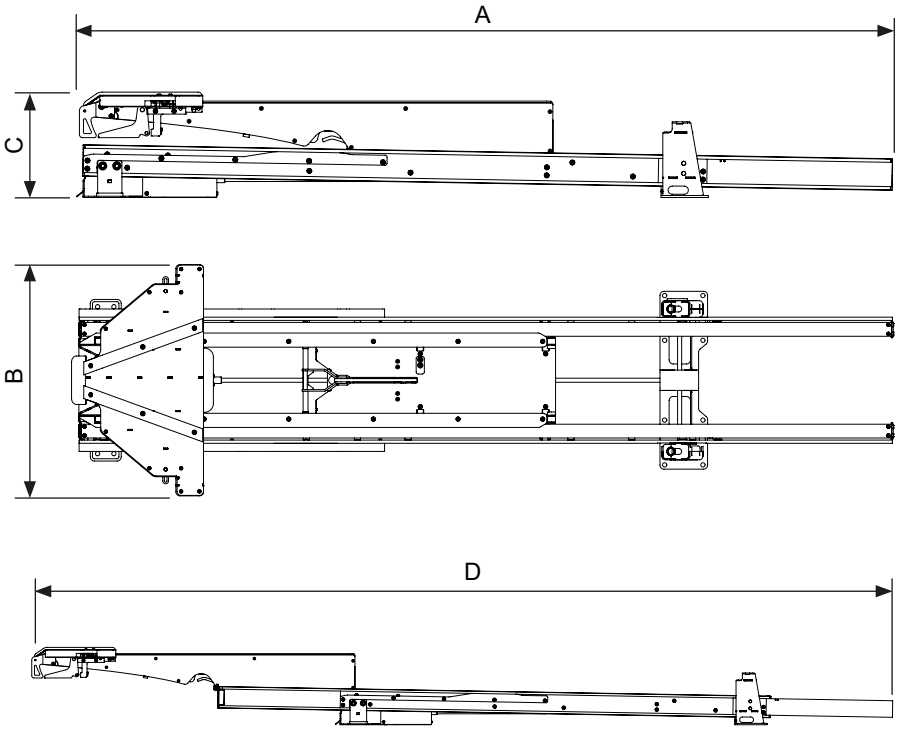
⚠ PRECAUTION

- The product may only be disposed of at the end of its service life by the manufacturer or an authorised service partner.
- If a defect is found in the product, stop using it immediately and contact an authorised service partner or the manufacturer directly.
- Do not modify this device without the manufacturer's authorisation.

Technical specifications

Length (A)	200 cm
Width (B)	57 cm
Height (C)	26 cm
Length with extended arm (D)	311 cm
Weight	66 kg
Maximum load capacity	400 kg

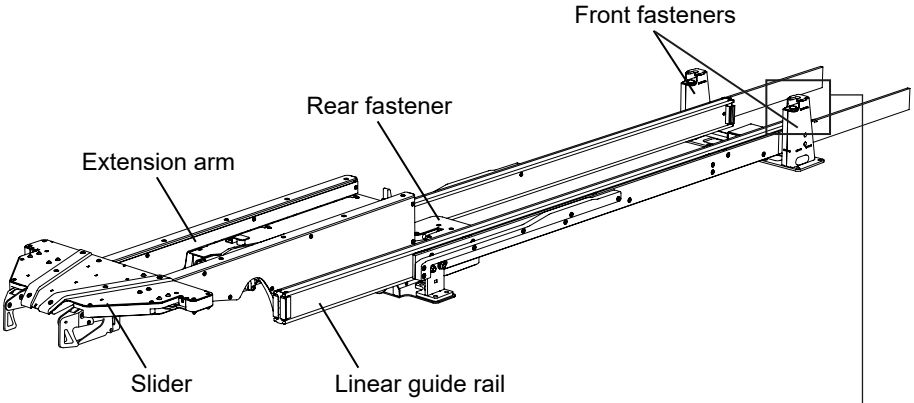
The figures are rounded off to the nearest whole number.



⚠ CAUTION

The VIPER loader and fastener system is intended only for fastening of the transporter with a stretcher or the monobloc for which the fastener is certified.

Identification of components



Equipment consisting of a slider, an extension arm and linear guides enables loading of the transporter / monobloc into the vehicle.

The transporter / monobloc is secured by means of the front and rear fasteners.

General principles of operation

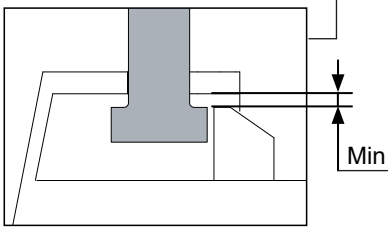
Compatibility

Use the fastener only with VIPER transporters / monoblocks.
To ensure safe handling of the product, follow the instructions for use.

Before first use

Before putting into operation, ensure that the fastener mechanism functions properly.

Check and, if necessary, adjust the height of the front fastening pin which is part of the transporter / monobloc. Adjust the pin so that it is as close as possible to the lower edge of the front fastener.



Position of components in the vehicle

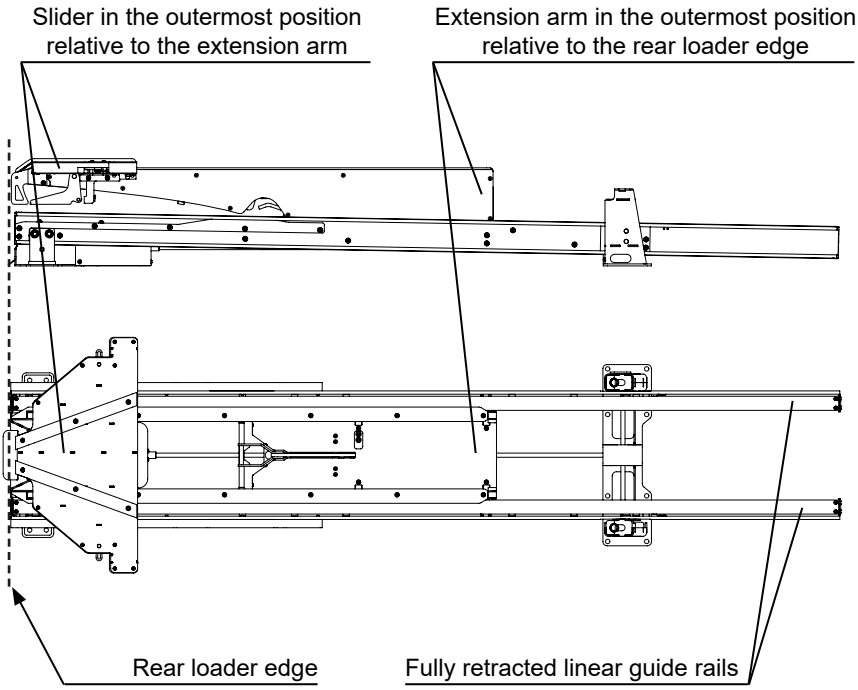
The position of the individual loader components in the vehicle is precisely defined:

- The linear guide rails are fully retracted.

- The extension arm is in the outermost position relative to the rear edge of the loader.

- The slider is in the outermost position relative to the extension arm.

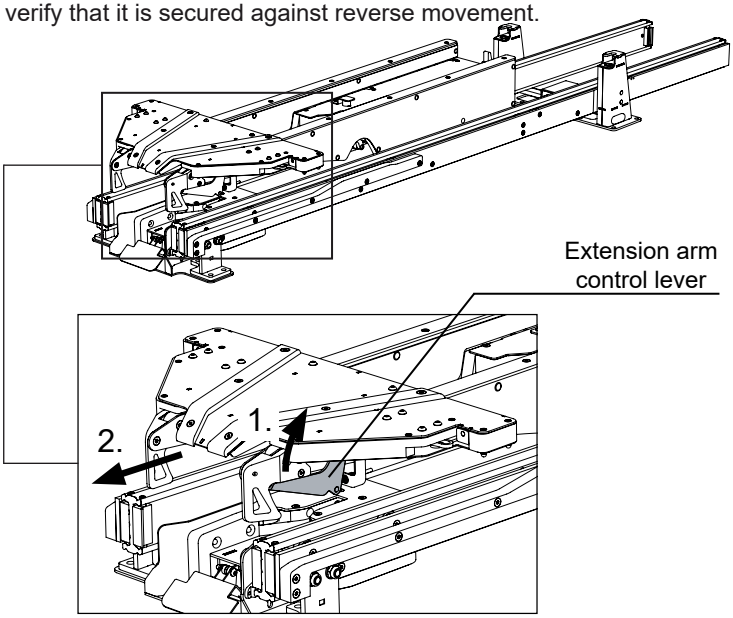
The individual components are mutually locked in their specific positions and are prevented from moving in different directions.



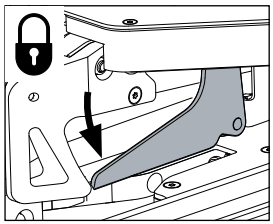
Operation of the loader without the transporter / monobloc

Pulling out of the vehicle

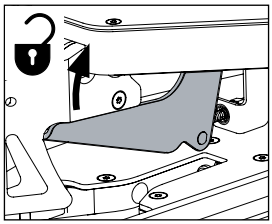
To pull the loader out of the vehicle, lift the extension arm control lever and hold it throughout the outward movement. When the loader reaches the outermost position, release the control lever. Slightly push the extension arm into the vehicle to verify that it is secured against reverse movement.



EXTENSION ARM CONTROL LEVER IN LOCKED POSITION



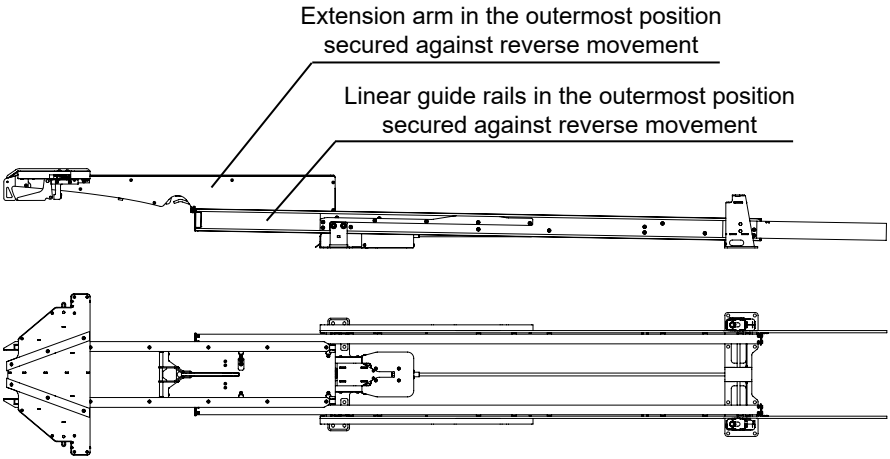
EXTENSION ARM CONTROL LEVER IN UNLOCKED POSITION



ⓘ NOTE

As the loader is pulled out, the extension arm is the first to move in the linear guide grooves. Subsequently, the extension arm magnetically connects to the linear guide rails and the entire assembly moves out of the vehicle.

POSITION OF LOADER COMPONENTS PULLED OUT OF THE VEHICLE

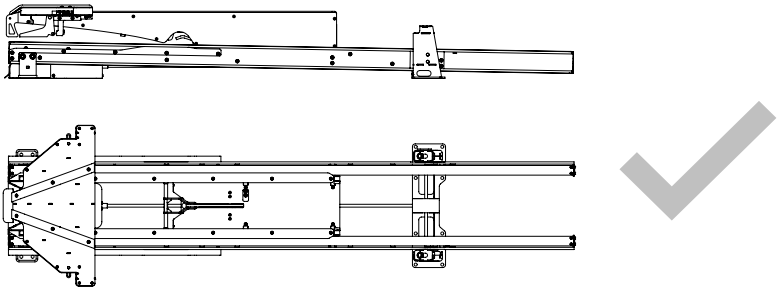


Pushing into the vehicle

To push the loader into the vehicle, lift the extension arm control lever and hold it throughout the inward movement. As soon as the whole length of the extension arm is inside the vehicle, release the control lever. Continue gently pushing the extension arm until the extension arm and the linear guide rails are simultaneously locked. The extension arm control lever concurrently turns to the locked position.

Slightly push to verify that the movement of the extension arm and the linear guide rails is restricted.

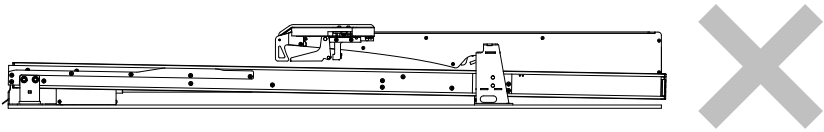
CORRECT POSITION OF THE EXTENSION ARM PUSHED INTO THE VEHICLE



NOTE

As the loader is pushed inside, the extension arm magnetically connected to the linear guide rails is the first to move. When the rails are fully retracted, the magnets disengage and the extension arm continues moving independently in the linear guide grooves. To disengage the magnets more easily, push the extension arm inside with slight force.

INCORRECT POSITION OF THE EXTENSION ARM
PUSHED INTO THE VEHICLE



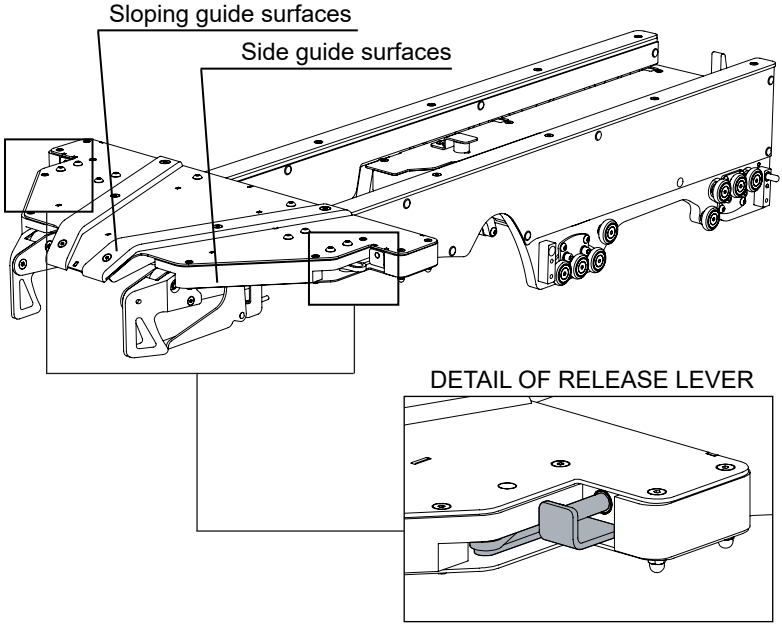
⚠ CAUTION

For transport without the transporter / monobloc, always check that all the loader components are in their secured position. Never leave the linear guide rails or the extension arms unsecured. Otherwise, there is a risk of serious injury.

Slider and extension arm

The slider and the extension arm are designed to correctly guide, fasten and support the transporter / monobloc being loaded into the vehicle.

The slider is fitted with red release levers, as well as side and sloping guide surfaces. The sloping guide surfaces allow loading from lower positions. The side guide surfaces are designed to correctly guide the front section of the transporter / monobloc to the release levers.

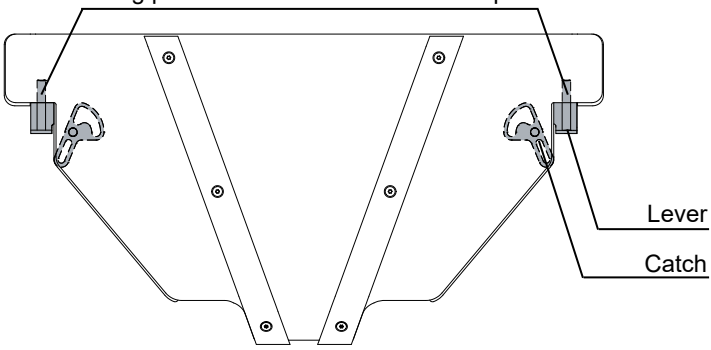


By pressing the release levers, the slider is released and can move along the extension arm. Both release levers must be pressed simultaneously to release the slider. No movement is possible if only one lever is pressed.

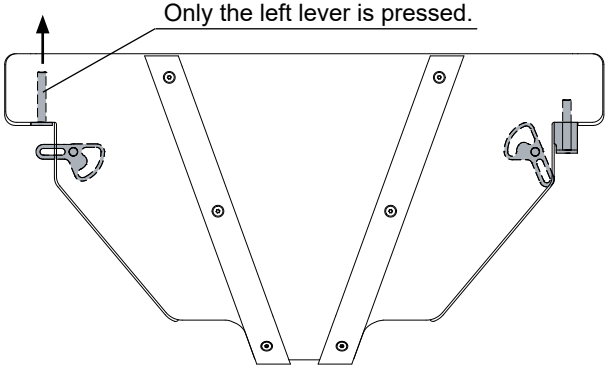
After pressing the lever, a catch is ejected to connect the structure of the transporter / monobloc with the slider.

SLIDER IN SECURED POSITION (BLOCKED MOVEMENT)

Starting position. Neither of the levers is pressed.

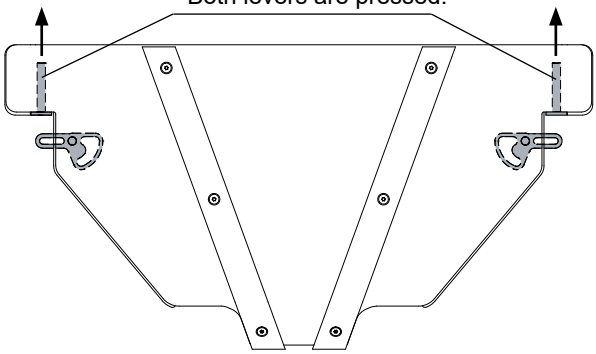


Only the left lever is pressed.



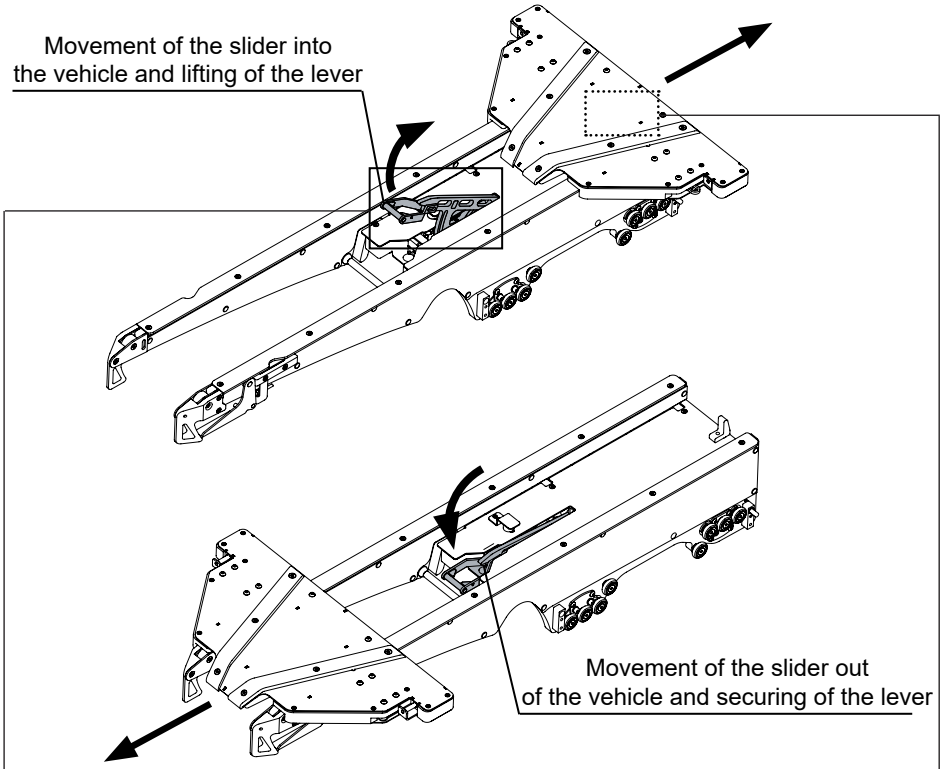
SLIDER IN UNSECURED POSITION (UNBLOCKED MOVEMENT)

Both levers are pressed.

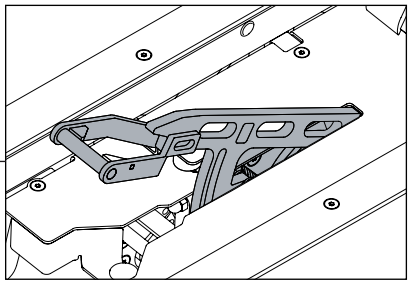


When the slider moves into the vehicle, the lifting lever of the extension arm is released and lifts up. When the slider moves out of the vehicle, the lifting lever is secured in the lower (horizontal) position. The function of the lifting lever is explained in detail in Chapter "Loading into the vehicle" (p. 16).

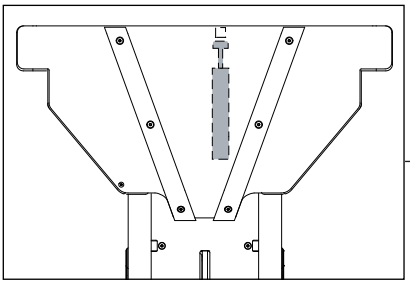
The bottom part of the slider is fitted with a damper which absorbs the energy of the impact if the slider reaches the end position of the extension arm too abruptly (as it moves into the vehicle).



DETAIL OF LIFTING LEVER



DAMPER ON THE BOTTOM
PART OF SLIDER

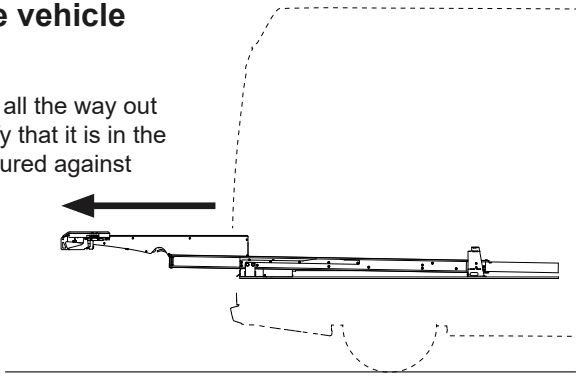


Operation of the loader with the transporter / monobloc

Loading into the vehicle

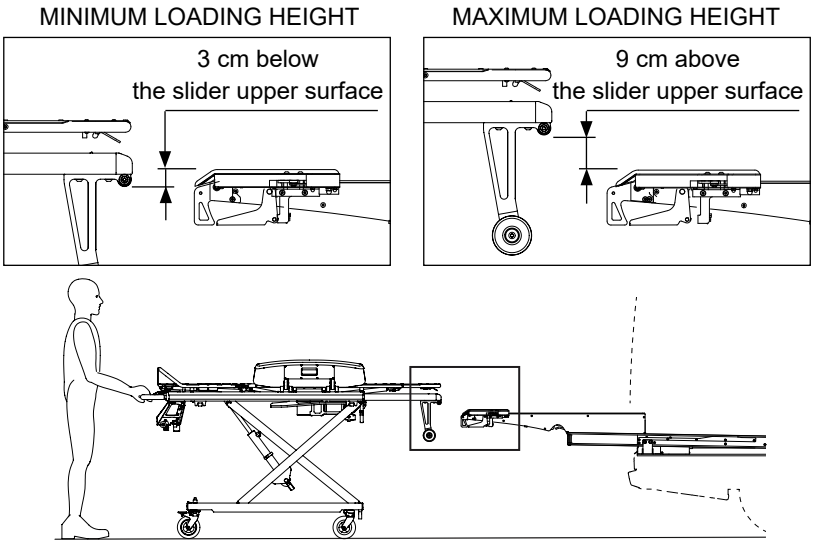
Step 1

Pull the extension arm all the way out of the vehicle and verify that it is in the outermost position secured against reverse movement.



Step 2

Adjust the position of the transporter / monobloc so that its front section is in the permitted height range. For easy loading into the vehicle, set the height of the transporter / monobloc immediately above the upper surface of the slider.

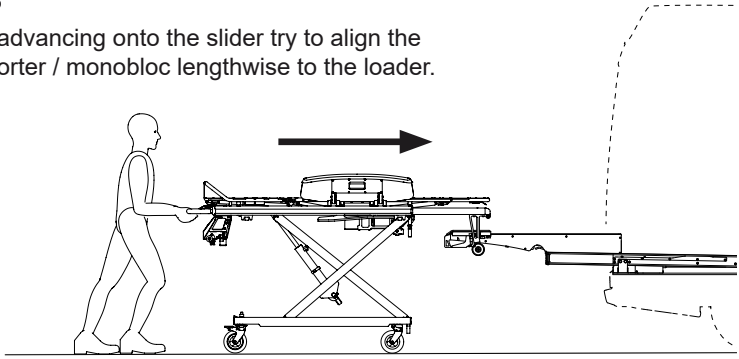


⚠ CAUTION

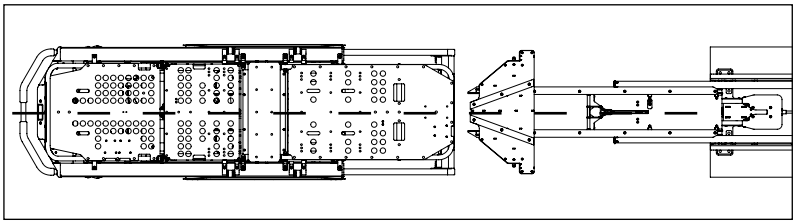
When manoeuvring the transporter / monobloc onto the slider and the extension arm, observe the minimum and maximum loading heights. Otherwise, there is a risk of damage to the product.

Step 3

While advancing onto the slider try to align the transporter / monobloc lengthwise to the loader.



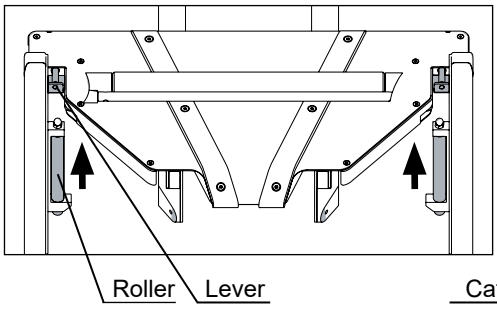
LENGTHWISE ALIGNMENT WITH THE LOADER



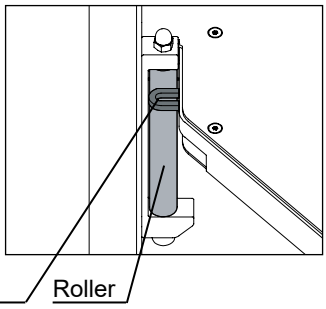
After both slider levers are pressed by the rollers (a part of the transporter / monobloc) the slider is released and the transporter / monobloc can be freely pushed into the vehicle.

The function of the slider levers is explained in detail in Chapter "Slider and extension arm" (p. 13).

GUIDING THE VERTICAL ROLLERS TO THE SLIDER LEVERS



EJECTING CATCH



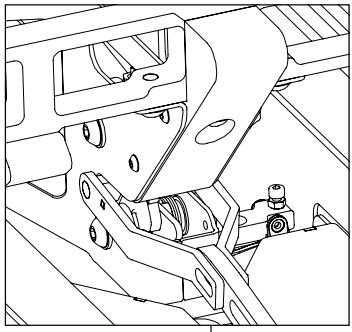
⚠ CAUTION

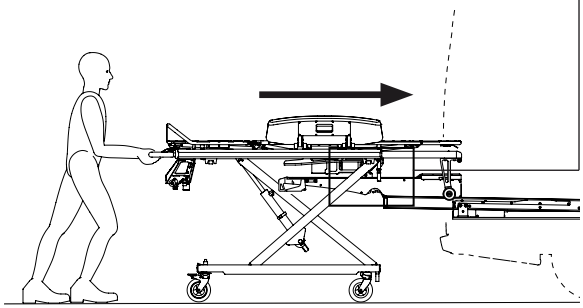
While advancing onto the slider, always try to align the transporter / monobloc so that both slider levers can be easily released. Never use extreme force. Otherwise, there is a risk of damage to the product.

Step 4

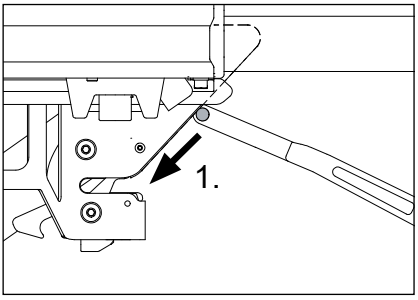
Manoeuvre the transporter / monobloc all the way to the end of the extension arm. As the transporter / monobloc advances, the lifting lever is released and it is smoothly guided along the sloping surface lock, which locks it and secures the transporter / monobloc against reverse movement. Always verify that the transporter / monobloc is secured by slightly pulling it out of the vehicle.

LOCKED LIFTING LEVER

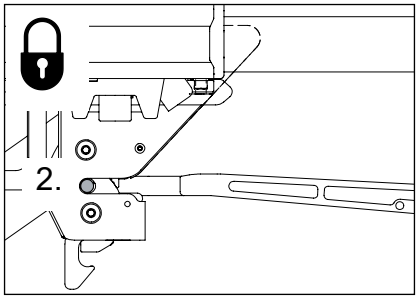




GUIDING THE LIFTING LEVER ALONG THE SLOPING SURFACE



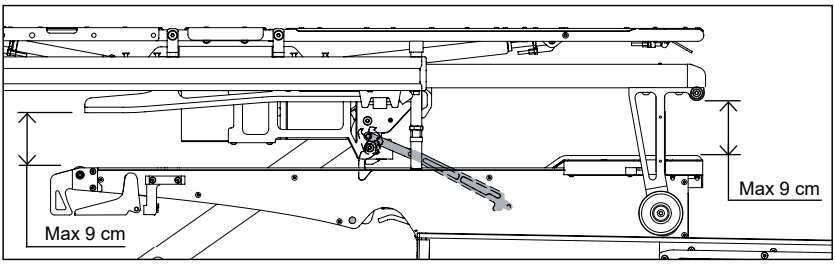
LOCKING OF THE LIFTING LEVER



⚠ CAUTION

When manoeuvring the transporter / monobloc onto the slider and the extension arm, observe the minimum and maximum loading heights. Otherwise, there is a risk of damage to the product.

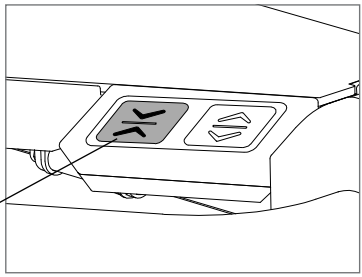
MAXIMUM HEIGHT DISTANCE BETWEEN THE EXTENSION ARM AND THE TRANSPORTER / MONOBLOC

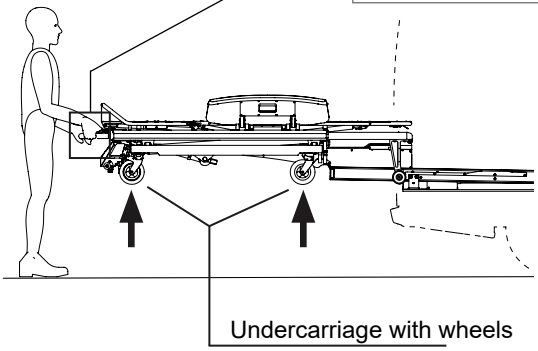


Step 5

Press and hold the left button on the control panel of the transporter / monobloc. The transporter / monobloc will first lower onto the extension arm and the undercarriage with the wheels will then be raised.

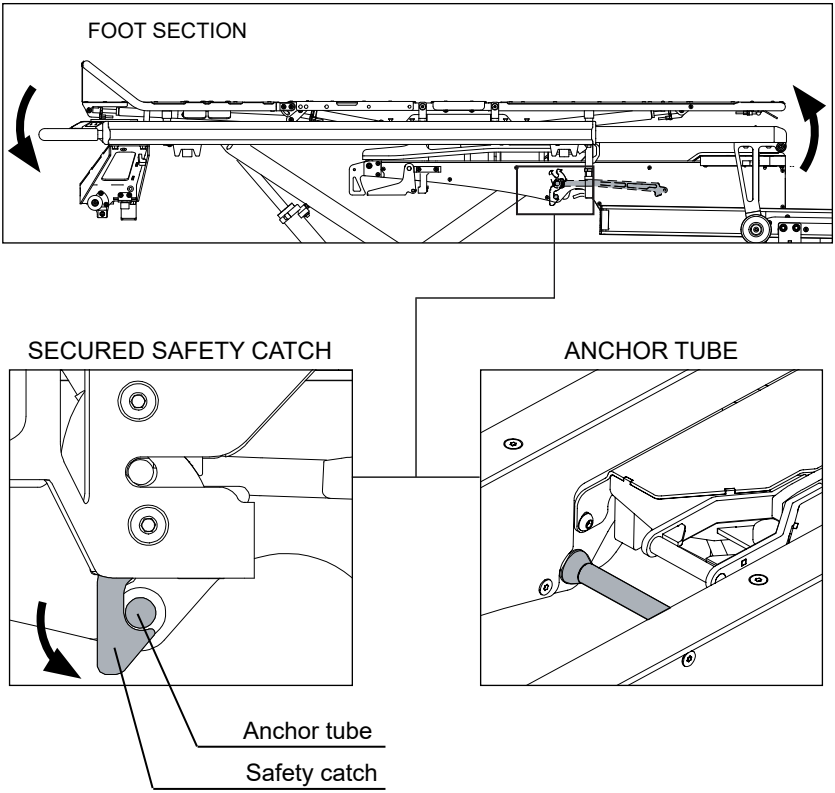
CONTROL PANEL





As the transporter / monobloc rests on the extension arm the safety catch will be secured to the anchor tube. This will prevent the transporter / monobloc from tipping backwards.

CATCH PREVENTING THE TRANSPORTER / MONOBLOC FROM TIPPING BACKWARDS



⚠ CAUTION

As the transporter / monobloc rests on the extension arm, do not overload the part of the structure at the feet of the transported person. Otherwise, there is a risk of damage to the product.

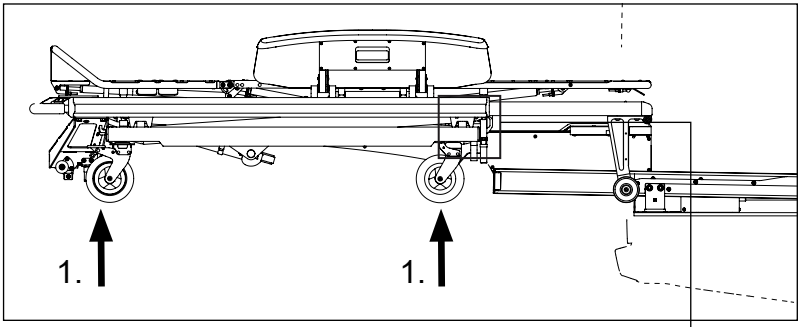
When the undercarriage with the wheels is lifted to its maximum position, the undercarriage structure will depress the lever located at the bottom of the extension arm. This will release the extension arm and allow it to move into the vehicle.

While the undercarriage with the wheels is pulled towards the extension arm, hold the handle of the transporter / monobloc firmly. Once the outermost position has been reached, the movement of the extension arm in the linear guide rails is automatically unblocked and the assembly can spontaneously move into the vehicle.

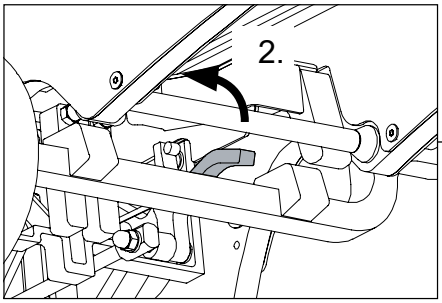
ⓘ NOTE

In the outermost position (when the loader is fully extended from the vehicle), an auxiliary spring is activated to partially prevent spontaneous movement into the vehicle. As you push into the vehicle, use slight pressure to disengage the spring.

LIFTING THE UNDERCARRIAGE WITH THE WHEELS TO THE HIGHEST POSITION

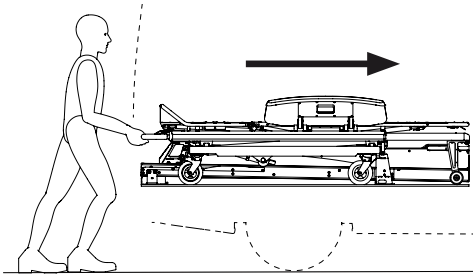


RELEASE LEVER AT THE BOTTOM OF THE EXTENSION ARM



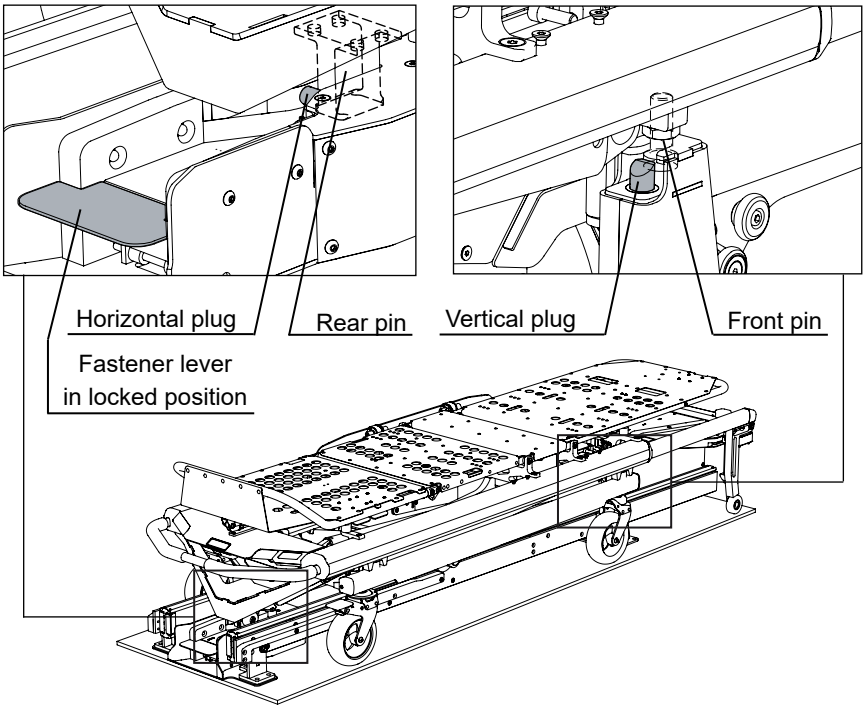
Step 6

Push the transporter / monobloc into the vehicle. When the transporter / monobloc reaches the mechanical stop, the front and rear fasteners are locked simultaneously. The fastener lever will automatically rise to the horizontal position, signalling proper securing of the transporter / monobloc in the fastener. Always check that the lever is in the locked position.

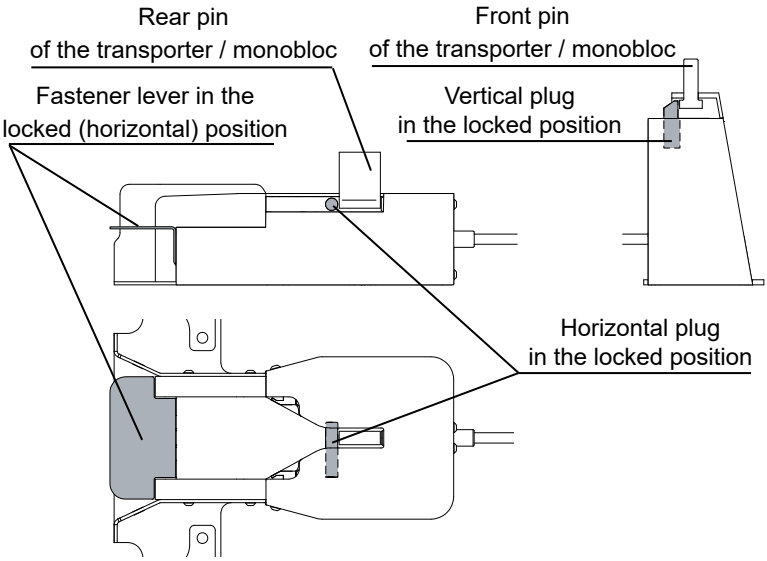


HORIZONTAL PLUG LOCKS THE REAR PIN

VERTICAL PLUGS LOCK THE TWO FRONT PINS



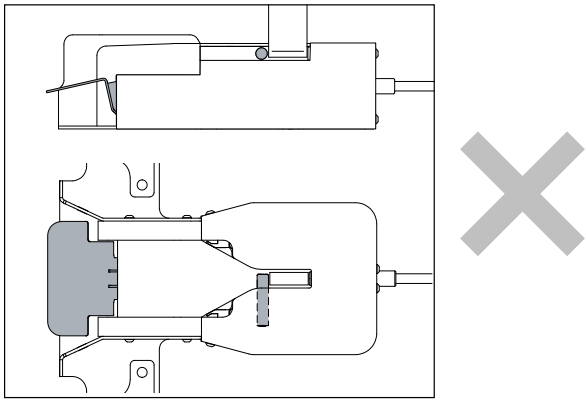
LOCKED AND FRONT AND REAR FASTENERS



⚠ CAUTION

Always check that the rear horizontal and front vertical plugs are fully locked. The fastener lever must be fully raised in the horizontal position. If the fastener is not locked correctly, there is a risk of serious injury.

INCORRECT POSITION OF THE FASTENER LEVER

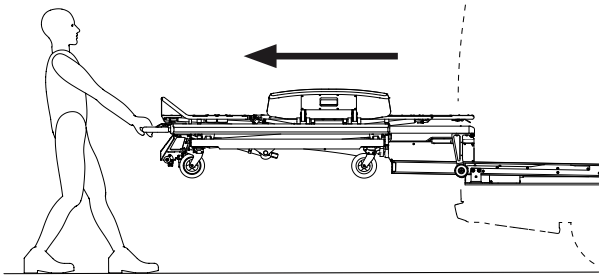


Unloading from the vehicle

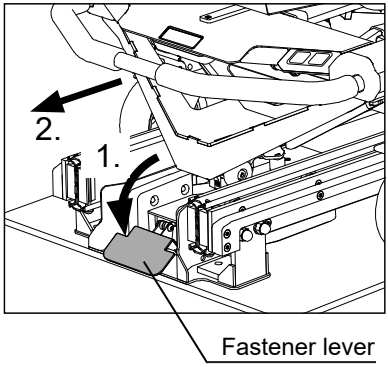
Step 1

After unlocking, press the lever on the rear fastener. The horizontal plug along with the pair of vertical plugs retract and are secured in the unlocked position. Pull the transporter / monobloc out of the vehicle.

As the transporter / monobloc is pulled out to its outermost position, it engages the auxiliary spring limiting spontaneous movement back into the vehicle. When you gently push the transporter / monobloc into the vehicle, you will feel slight resistance from the auxiliary spring, which allows you to verify that the transporter is in its outermost position. It should be noted that this is not a sufficient safeguard against reverse movement. Before proceeding to the next step, always hold the transporter / monobloc firmly.



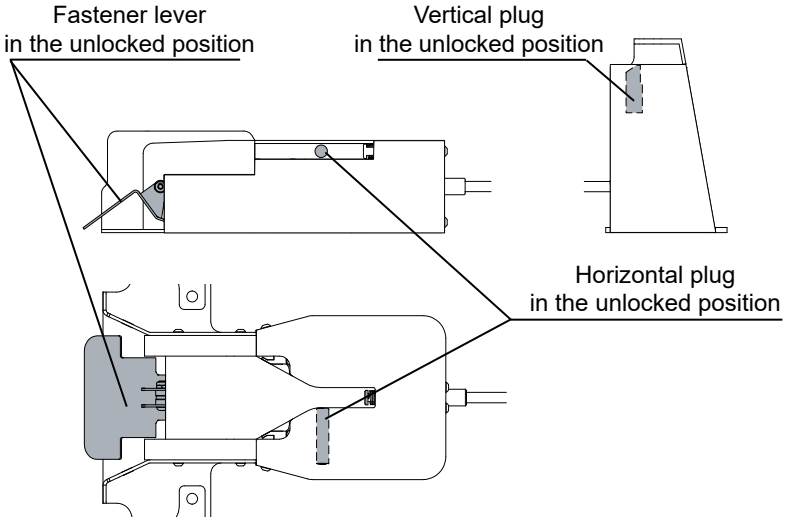
UNLOCKING THE FASTENER



⚠ CAUTION

When the loader is fully extended from the vehicle, an auxiliary spring is activated to partially prevent reverse movement. It should be noted that this is not a sufficient safeguard. Hold the transporter / monobloc firmly until it is completely unloaded from the vehicle.

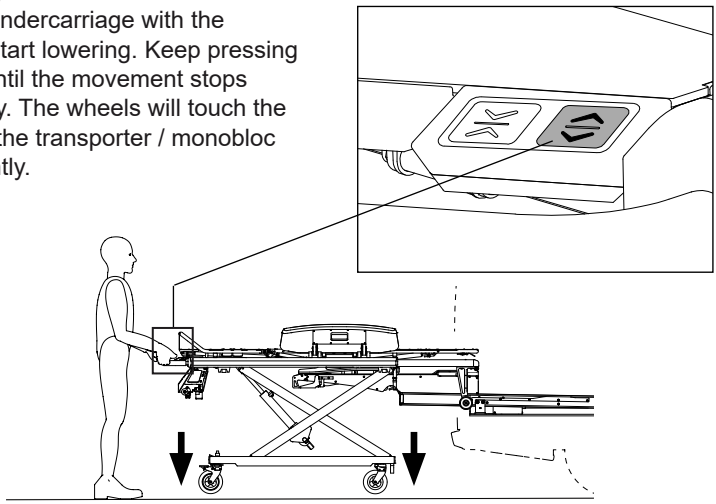
UNLOCKED AND FRONT AND REAR FASTENERS



Step 2

Press the right button on the control panel. The undercarriage with the wheels will start lowering. Keep pressing the button until the movement stops automatically. The wheels will touch the ground and the transporter / monobloc will rise slightly.

CONTROL PANEL



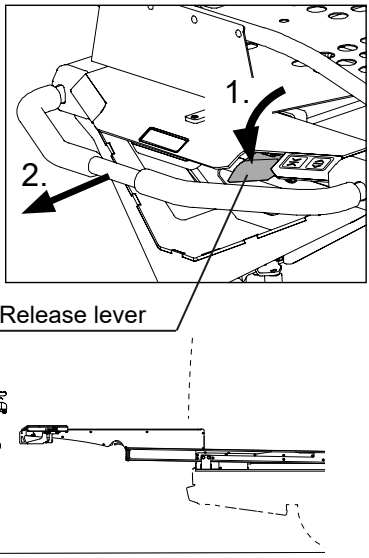
⚠ CAUTION

Before pressing the right button on the control panel, always ensure that the transporter / monobloc is fully pulled out of the vehicle.

Step 3

Press the red release lever on the control panel of the transporter / monobloc. The loader is disconnected and it is possible to unload the transporter / monobloc from the vehicle. While unloading the transporter / monobloc from the loader, do not turn it but try to guide it lengthwise to the loader.

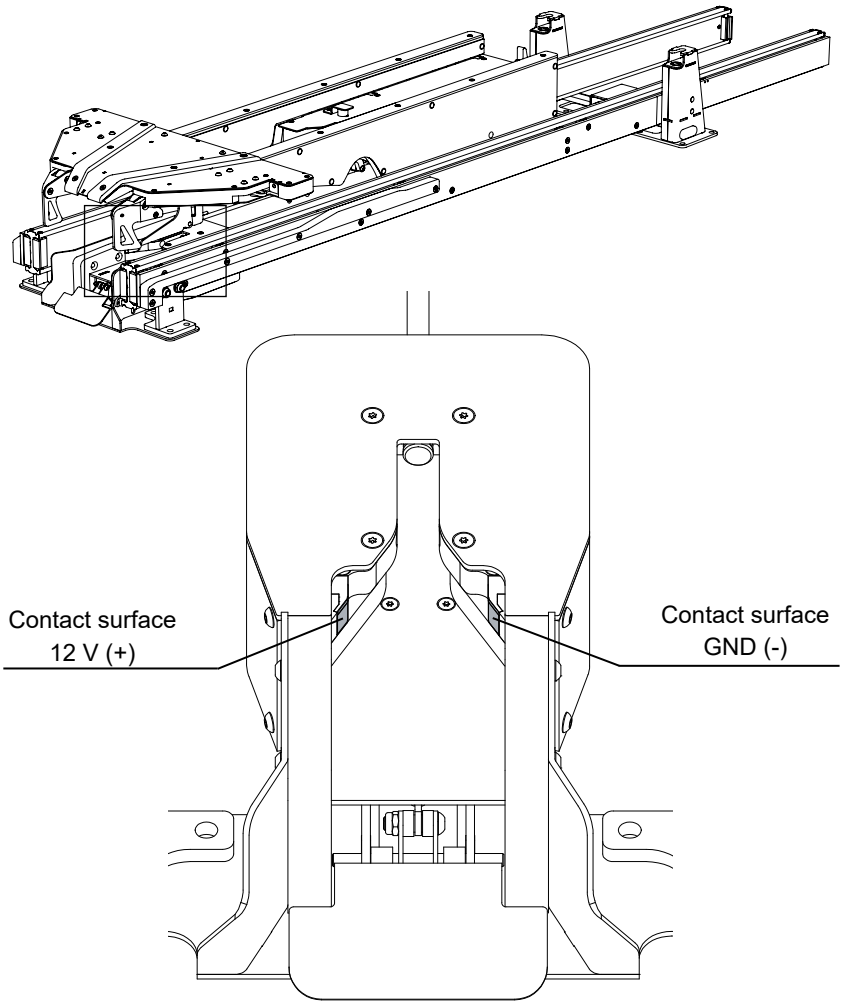
DISCONNECTING THE TRANSPORTER / MONOBLOC FROM THE LOADER



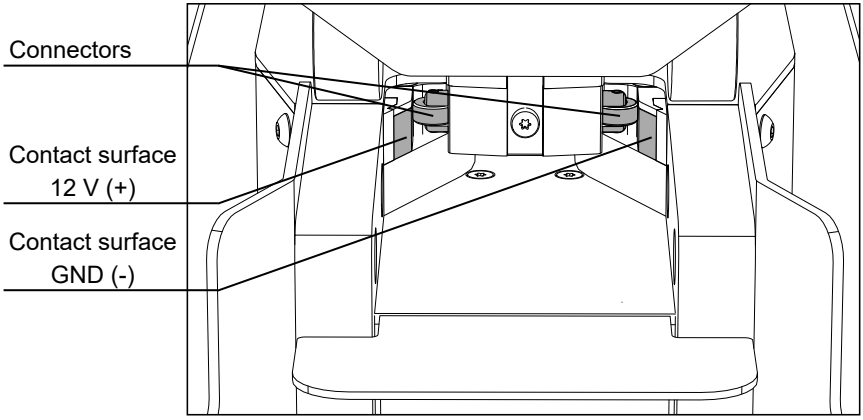
Charging in the vehicle

The rear fastener is fitted with charging contact surfaces. Charging commences automatically when the transporter / monobloc is inserted into the fastener and connected to the charging connectors. Charging starts within a few seconds after connection.

More detailed information about the charging of the battery can be found in the transporter / monobloc instructions for use.



CONNECTION WITH THE TRANSPORTER / MONOBLOC CHARGING CONNECTORS



The following shows the voltage and current values during charging in the vehicle The voltage on the contact surfaces (part of the rear fastener) is decisive for charging and, as a rule, it is lower than on the car battery clamps.

CHARGING PARAMETERS AFTER CONNECTING TO THE VEHICLE CHARGING LINE

Range of permitted charging voltage values	9.0 V - 15.0 V
Voltage for system and charging activation	13.7 V
Maximum charging current	4 A

If connecting to the vehicle charging line and the transporter / monobloc system is not active, the voltage on the contact surfaces must be higher than 13.7 V.

If connecting to the vehicle charging line and the transporter / monobloc system is active, the voltage on the contact surfaces must be higher than 12.5 V. However, the limit value can be adjusted by means of the service application. Such changes may only be performed by a trained person or authorised service partner.

⚠ CAUTION

The limiting charge voltage may be changed only by a trained person or authorised service partner. Otherwise, there is a risk of damage to the product.

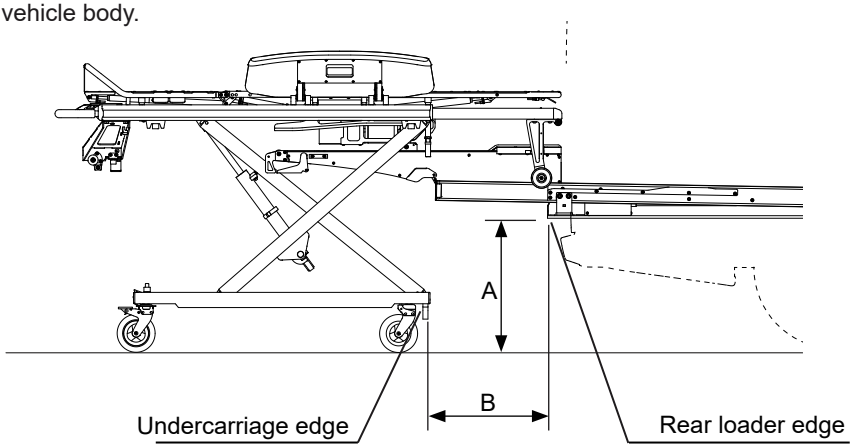
Space requirements at the rear of the vehicle

The vehicle body should always be adapted to provide sufficient space for movement of the undercarriage with the wheels while loading or unloading the transporter / monobloc into or out of the vehicle.

The table below shows the relationship between the floor height (A) and the length of the space from the undercarriage front edge to the loader rear edge (B).

The net length of the space indicates the maximum theoretical value.

The safe length of the space indicates the maximum permitted value for the vehicle body.



LENGTH OF FREE SPACE (B) BEHIND THE VEHICLE RELATIVE TO THE FLOOR HEIGHT (A)

Floor height (A) [mm]	Theoretical length of space behind the vehicle (B) [mm]	Safe length of space behind the vehicle [mm]
600	467	417
700	460	410
800	449	399
900	431	381

NOTE

As the transporter / monobloc rests on the loader arm, the undercarriage with the wheels will be pulled up. During this movement, the front section of the undercarriage slightly advances towards the rear part of the transporter / monobloc.

Installation in vehicle

⚠ CAUTION

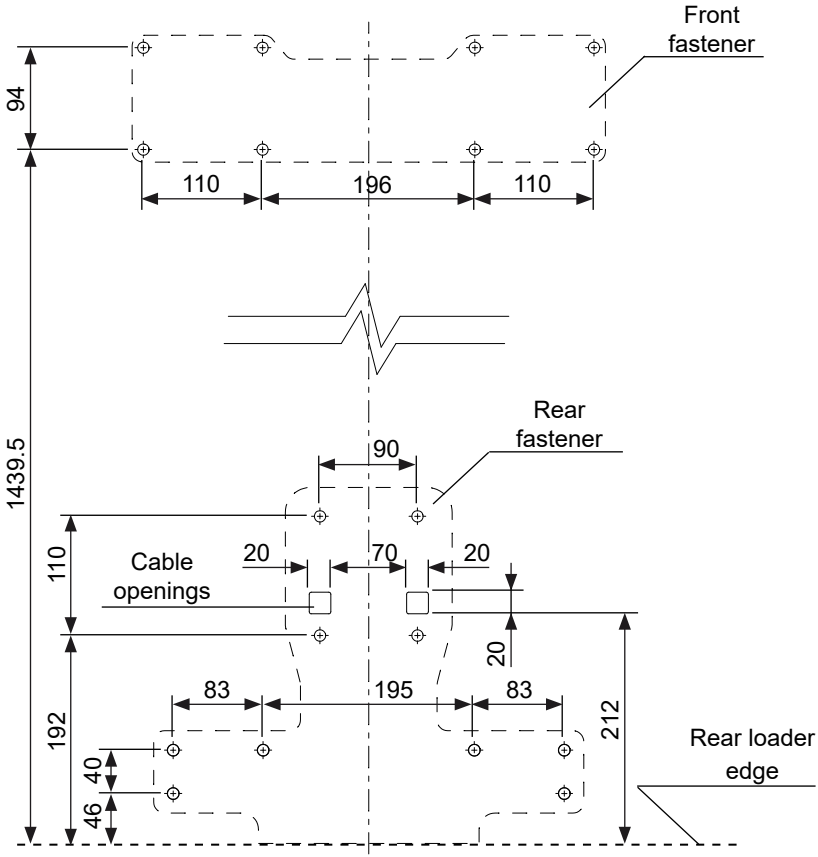
The fastener may only be installed by a trained person or authorised service partner.

Step 1 - Preparing the mounting holes in the floor

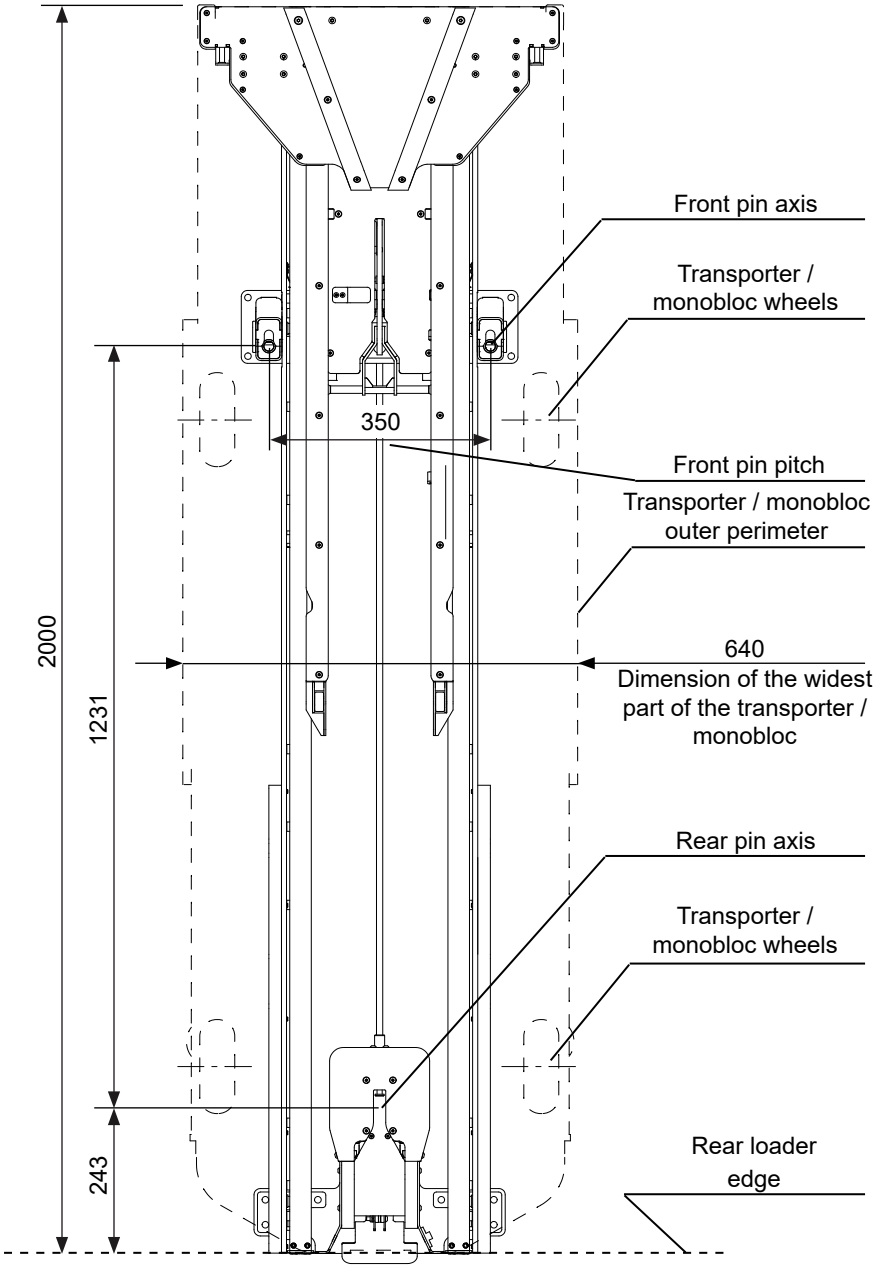
Prepare the holes in the floor of the vehicle following the diagram below. Ensure that the fastener is placed correctly in relation to the edges of the table or floor. Prepare an opening for cables in one of the two rectangular openings in the rear fastener.

Ensure that the fastener is installed on a solid part of the floor. Use a steel brace at least 10 mm thick (see p. 32).

DRILLING PLAN FOR MOUNTING HOLES IN FLOOR



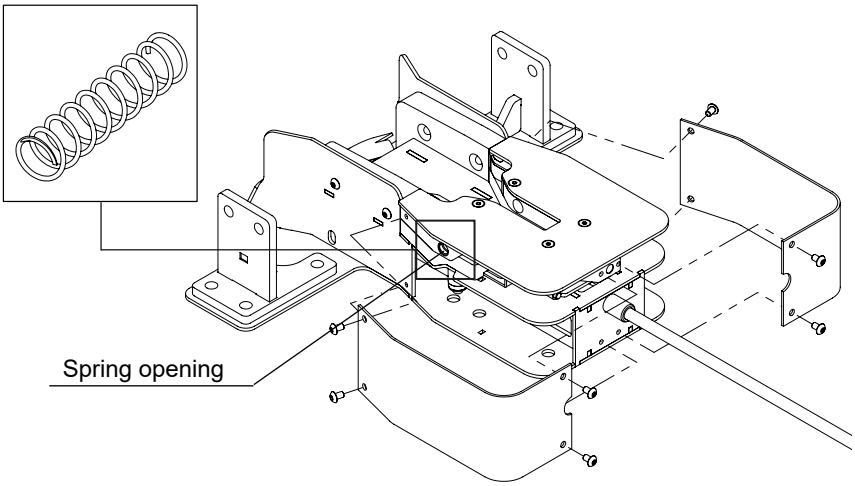
LOCATION OF THE FASTENER RELATIVE TO THE THE EDGES OF THE TABLE OR FLOOR



Step 2 - Removing the rear fastener cover

Loosen the eight bolts from the side covers on the rear fastener and carefully remove both covers. This will disengage the spring located in the opening of the side of the fastener. Store the spring in a safe place.

INSTALLING THE REAR FASTENER SIDE COVERS



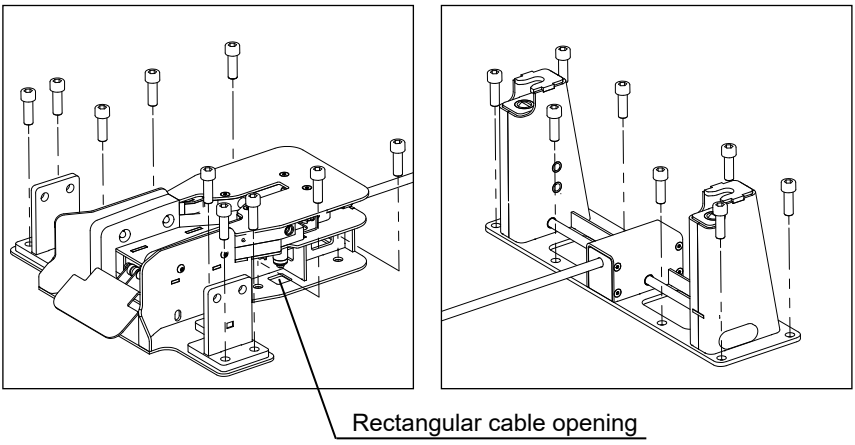
Step 3 - Attaching the fastener to the floor

To install the front and rear fastener, use 18 M10 bolts. Always use bolts with a minimum strength class of 10.9. Secure the bolt connections with thread-locking glue.

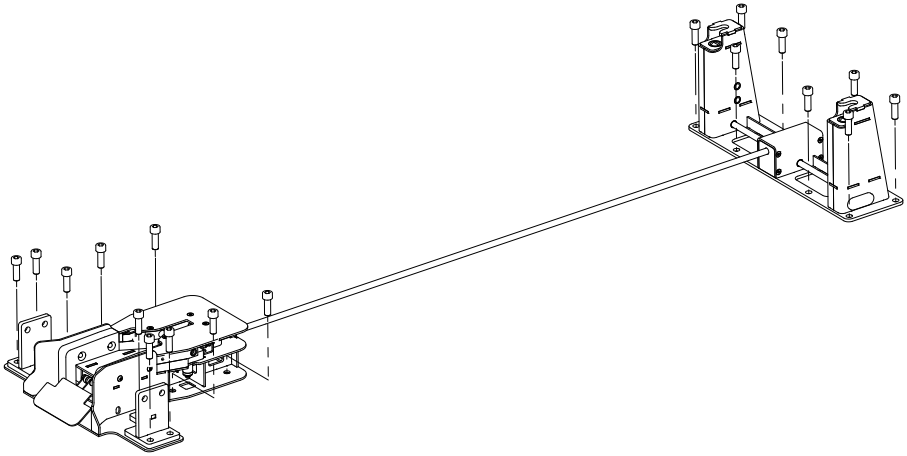
The rectangular openings on the bottom board of the rear fastener are intended for cables.

REAR FASTENER INSTALLATION

FRONT FASTENER INSTALLATION



FRONT AND REAR FASTENER SECTION INSTALLATION



The image is for illustration purposes and contains only some of the loader components.

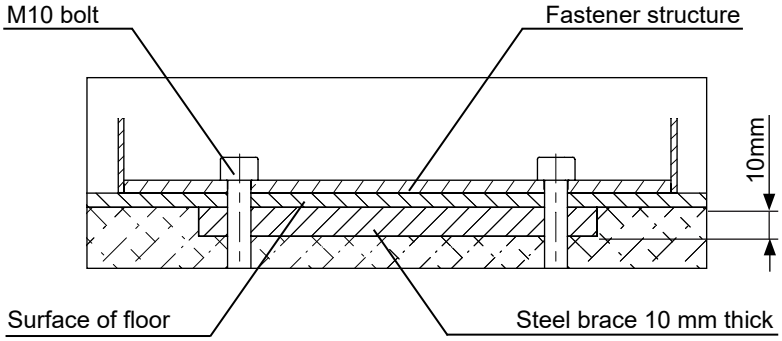
ⓘ NOTE

The connecting material for installing the fastener is not supplied.

⚠ CAUTION

When installing the fastener on the floor, use only the connecting material specified by the manufacturer and do not alter the structure in any way.

DETAIL OF BOLT CONNECTION BETWEEN THE FASTENER AND THE FLOOR



Step 5 - Replacing the fastener cover

Reinstall the spring and both the covers of the rear fastener to their original position. Use all the bolts specified in step 2 (see p. 31).

Preventive maintenance

Maintenance plan

The product requires regular maintenance. Draw up a maintenance plan and proceed accordingly. The table below shows the minimum maintenance intervals.

Activity	Frequency
Cleaning and disinfection	After each use
Lubrication	As needed (lubrication may only be performed by a person with the appropriate training)
Inspection (see checklist on p. 34)	Every month
Regular safety and technical inspection (RSTI)	The first safety and technical inspection must be performed two years after purchasing the product, then every subsequent year. ⚠ The safety and technical inspection may only be performed by trained and authorised personnel.

Cleaning

1. Wash all parts with lukewarm water.
2. Use a brush or solvent to remove blood stains.
3. Blow out excess water using compressed air and wipe dry with a textile cloth.
4. Treat the surface with WD-40 and polish.

Disinfection

Normal disinfectants based on active chlorine and hydrogen peroxide base can be used for disinfection. After disinfection, wash the product with lukewarm water and wipe dry with a cloth.

⚠ CAUTION

Prolonged use of excessive concentrations of disinfectants with no subsequent neutralization may cause surface discolouration or damage the product. When treating and disinfecting the surface, do not use products containing organic solvents, such as acetone, toluene, or gasoline.

Lubrication

Lubricate with Interflon Fin Lube TF.

⚠ CAUTION

Lubrication may only be performed by a person with the appropriate training. Improper lubrication can cause damage to the mechanisms.

Disposal

When the product reaches the end of its service life, contact the manufacturer or an authorised service centre, who will arrange the disposal of the product in an appropriate manner.

⚠ CAUTION

The product may only be disposed of at the end of its service life by the manufacturer or an authorised service partner.

Checklist

The performance of inspections and recording inspections in the maintenance records are required for the recognition of any warranty claims.

☐ All mechanical and bolt connections are tight.

☐ All welds are intact, with no cracks or fractures.

☐ No components are bent or broken.

☐ All the control levers are undamaged and function properly.

☐ The extension arm moves freely in the linear guide rails.

☐ The slider moves freely in the linear guide rails.

☐ The linear guide rails move freely.

☐ The fastener lock mechanisms function properly.

☐ The stretcher and the transporter or monobloc can be easily secured to the fastener.

☐ The charging contact surfaces are clean and intact.

⚠ CAUTION

If a defect is found in the product, stop using it immediately and contact an authorised service partner or the manufacturer directly.

⚠ CAUTION

Do not modify this device without the manufacturer's authorisation.

Maintenance records

Date	Description of maintenance performed	Performed by