Heavy Duty 4-Post Vehicle Lift

ST4120

Service and Parts Manual

A member of the Stertil Group

Original manual no.
41000810-A

WARNING

Please read and understand the contents of this Service Manual carefully.

Failure to read the manual can result in serious damage, injury or death.

Keep this manual. Make sure that all service engineers of the Vehicle Lift have read and understand the contents of this manual.

The following table describes the main changes for each document version of this manual.

Table 1: Version history

Version	Date	Serial number	Changes
0	October 2021	Whole range	Original version
A	December 2022	Whole range	Updated procedure for Height sensors calibration and minor adjustments

Contents

1 Preface

This is the Service and Parts Manual for the ST4120. The manual is intended for service engineers. This manual contains important information and instructions on safety, installation and maintenance. Please read all information and follow the instructions and guidelines in this manual carefully. This ensures that you will obtain long-term optimal performance and that possible accidents and serious injury will be prevented.

In addition to this manual, you also received the Operation Manual. That manual is intended for operators who work with the ST4120.

1.1 Limitations of the document

The English language version is the original version. This language version of the manual is verified by the manufacturer (Original manual). All other language versions are translations of the original English language version. Stertil B.V. reserves the right to modify the construction and/or configuration of its products at any time without any obligation to modify products which have been previously supplied. The data provided in this manual is based on the most recent information. This data may be subject to change at a later date, without prior notification. For information regarding adjustment, maintenance or repair which is not described in this document, please contact the Customer Service department of Stertil B.V.

The information in this document concentrates solely on the use of the product as intended by the manufacturer. In the event that the products, parts of the products or procedures are applied in any way other than that described in this manual, then confirmation must be obtained as to the correctness and suitability of that use.

No rights may be derived from this manual or from the documentation supplied together with the product. The supplier is bound by no agreement other than the order confirmation.

This manual contains useful and important information on the correct operation and/or maintenance of the product. Furthermore, the manual contains instructions for preventing possible accidents and serious harm. We have taken all possible steps to make this manual as correct and as complete as possible. Should you discover any errors or omissions, please bring this to the attention

of your local Stertil service department or distributor, so that we can make amendments. This will enable us to improve our documentation.

1.2 Version history

Every effort has been made to make this manual as accurate and complete as possible. Should you discover any errors or omissions, please bring this to the attention of your local Stertil B.V. service department or distributor, so that we can make amendments. This will enable us to improve our documentation.

The instructions in this manual do not take into account different national regulations and laws. With installation and maintenance of the Vehicle Lift, it is the sole responsibility of the service engineers to make sure that all applicable local laws and regulations are obeyed.

During the lifetime of the Vehicle Lift, engineering improvements may result in the need to revise this manual. It is then at the discretion of Stertil B.V., if a revision/new version of this manual is required.

The information in this document concentrates solely on the use and maintenance of the Vehicle Lift as intended by Stertil B.V. In the event that the products, parts or procedures are applied in any way other than that described in this manual, then confirmation from Stertil B.V. must be obtained as to the correctness and suitability of that use.

1.3 Who is this manual intended for?

This Service Manual is intended for service engineers of the Vehicle Lift. Anyone who is not familiar with the installation and maintenance of the Vehicle Lift is advised to fully read the following chapters and to follow the instructions exactly. Personnel that are familiar with the installation and maintenance of the Vehicle Lift can use this manual for reference. The table of contents and the index can be used to locate specific information.

1.4 Scope of the manual

This manual is a guide for installing and servicing the Vehicle Lift ST4120. Each service and maintenance action is sequentially described in the relevant sections of this manual.

1.5 Signs used in this manual

This manual contains numerous warnings and safety notices.

DANGER

Warns of a situation that will cause serious physical injury and/or heavy material damage if one does not obey the safety instructions.

WARNING

Warns of a situation that may cause physical injury and/or material damage if one does not obey the safety instructions.

CAUTION

Warns of a situation that may cause material damage if one does not obey the safety instructions.

NOTICE

Provides additional information that is helpful to do a task or to avoid problems.

1.6 Manufacturer details

If you need any assistance, please contact your regional service centre. If you still have questions after reading this manual, we would encourage you to contact us. We appreciate all advice, feedback and suggestions from our customers. Please contact:

Manufacturer:	Stertil B.V.
Address:	P.O. Box 23, 9288 ZG, Kootstertille Westkern 3, 9288 CA, Kootstertille The Netherlands
Phone:	+31 (0) 512 334 444
Email:	info@stertil.com
Website:	www.stertil.com

1.7 Guarantee and liability

Please refer to the order confirmation and the delivery terms and conditions for the applicable guarantee and liability.

1.8 Trademarks

All trademarks stated in this manual are registered trademarks of Stertil B.V. or her suppliers.

1.9 Statutory standards and regulations

The instructions in this document take no account of the different national regulations and laws that must be obeyed when operating the equipment. It is the sole responsibility of the purchaser to obey these regulations and laws.

1.10 Supplements to the manual

If you receive any supplements to the manual from Stertil B.V., these must be inserted into the manual immediately.

1.11 Storing the manual

This manual is a part of your machine. Store the manual in the immediate vicinity of the machine. Always present a copy of the manual to service engineers as they work with the machine.

1.12 Recommissioning

In the event of a recommissioning (e.g. relocation of the machine or a transfer of ownership), you MUST contact Stertil B.V. or the representative subcontractor to discuss the procedures, terms and conditions, service contract, etc., so that the proper functioning and safety of the machine after recommissioning can be guaranteed. The manual should always be relocated with the Vehicle Lift.

If Stertil B.V. is not involved in a recommissioning, then Stertil B.V. is not liable for any claims of third parties arising from that recommissioning.

2 Safety

2.1 Introduction to safety

If performing installation and maintenance activities, always carry out these activities with the greatest caution to avoid injuries or damage to the Vehicle Lift. The installation and maintenance activities may only be performed by an authorized and sufficiently instructed person. It is the responsibility of those in charge of preparing and/or supervising the work to take the necessary action(s) to ensure safe working conditions.

Our safety requirements may under no circumstances conflict with the legal ordinances and regulations that apply to the safety of the Vehicle Lift. If any one of the warnings or safety requirements should be in conflict with existing local regulations, then the strictest regulation shall take precedence. The safety instructions in this manual only serve as a guideline.

⚠ WARNING

Always adhere to the local safety regulations. Stertil B.V. is not liable for damage or physical injury due to ignoring the safety instructions.

2.2 Risks

The machine has been carefully designed and expertly built for safe operation. The CE-marking confirms this. There are, however, still dangers and safety risks which cannot be ruled out. These risks are inherent to service engineers who installing and maintaining the machine.

It is therefore of utmost importance that precautions will be taken when working with the machine to exclude potential risks.

2.3 Hazards

2.3.1 Electrical hazards

Precautions to be taken when working with electrical equipment:

- Consider all circuits live until you have personally turned off the main switch. Also lock out and tag the main switch with a safety sign.
- Keep your clothing, hands and feet dry.
- Do not wear rings, watches, metal-rimmed glasses or jewellery when working around electrical circuits.
- Maintenance and repair activities on the electrical system of the machine may only be performed by special trained electricians which are familiar with the common and local electrical regulations in charge.

2.3.2 Mechanical hazards

Precautions to be taken when working with mechanical equipment:

- Do not wear rings, watches, jewellery, ties or loose sleeves when working around moving mechanical parts.
- Keep long hair covered when working around moving mechanical parts.
- Stay away from moving machine parts.
- Always use spare parts of a type and part number recommended by Stertil B.V.

2.3.3 Fall hazards

Precautions to be taken when working on assemblies at higher altitudes:

- Identify potential fall hazards prior to each project and during a daily walk-around.
- Pay attention to hazards associated with routine and non-routine tasks.
- Eliminate the need for fall protection where possible by rescheduling the task, isolating the task, or changing the task.
- Emphasize fall hazards unique to the site, such as open floor holes or shafts, riser penetrations, and skylights.
- Team up with other construction employers and employees to identify best practices and share fall prevention solutions.
- It is not allowed to access the vehicle lift via a ladder
- Identify skylights and make sure they are properly protected.
- Contact your supervisor if you see fall hazards or have any other questions about fall prevention. Do not work until unsafe conditions have been corrected.

2.3.4 Radiated hazards

- This machine complies with part 15 of the FCC rules. Operation is subject to the condition that this device does not cause harmful interference.
- This machine must accept any interference received, including interference that may cause undesired operation.

2.4 General safety instructions

WARNING

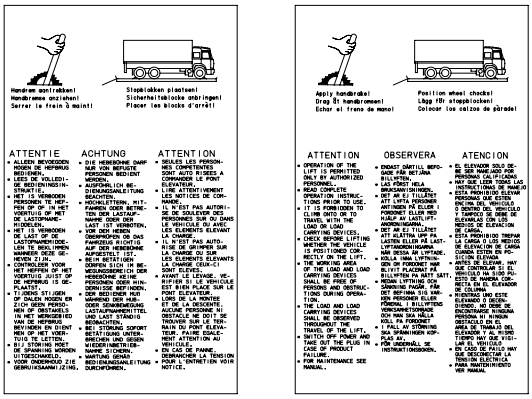
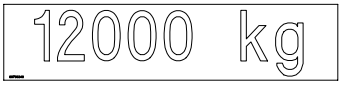
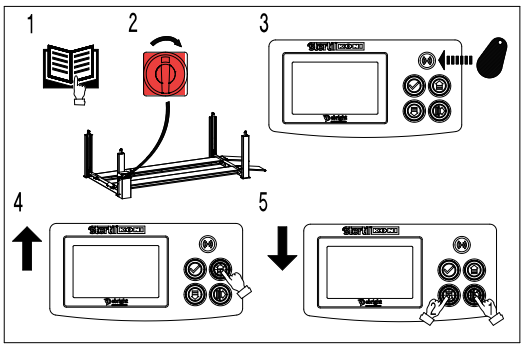
To safely work with the Vehicle Lift, please follow the following safety precautions carefully.

- Persons working with the machine must follow local safety and health procedures, protocols and any additional local rules, laws and regulations in addition to following the manufacturer's safety instructions. Additional rules and guidelines can be, but are not limited to local health and safety regulations and the guidelines provided by professional associations.
- The machine manual must be available at the machine at all times.
- Read the operating instructions before you operate or maintain the machine.
- Make sure you have obtained, read and understood all instructions.
- Make sure you have obtained, read and understood any additional instructions for special accessories for the machine.
- Carry out all work with and on the machine as described in the manual.
- Never start or operate a damaged machine.
- Always make sure that the machine is complete before operation. Operating the machine with missing components can cause severe damage.
- Observe all signs with safety and danger notes. Replace warning and/or safety signs immediately if they are missing or illegible.
- Do not perform any tasks for which you are not authorized. Only explicitly qualified and authorized personnel may operate, maintain or repair the machine.
- Personnel in training must be supervised at all times.
- Wear and use all needed personal protection equipment and safety gear appropriate for the job.
- Keep a safe working environment.
- If necessary, make sure the machine complies with federal and local standards before starting work.
- Do not use the machine for purposes other than those specified.
- All personnel working on or with the machine must be aware of possible hazards.

- Never make any changes or additions to the machine, without obtaining explicit written approval from the manufacturer/supplier. This also applies to the installation and adjustment of safety devices.
- If the machine is not fully visible to the operator, mirrors or cameras must be installed to increase the visibility of hazardous areas.

2.5 Safety signs

The Vehicle Lift is provided with the following safety and protection signs.

Pictogram	Description	Location
	General instructions	Control console
	Capacity sticker	Control console and tracks
	Short operation description	Control console

WARNING

Make sure that the labels are always legible. Replace the labels if they are damaged or illegible. Illegible safety signs may result in dangerous situations.

2.6 Safety features

WARNING

It is not allowed to bypass or switch off the safety systems.

2.6.1 Emergency stop switch

The main switch of the Vehicle Lift functions as an emergency stop switch. Use the emergency stop switch only in case of emergencies. If the emergency stop is used, check:

- If anybody needs to be freed.
- If the vehicle is damaged.

See the Operation Manual for more information on the remote control emergency stop.

2.6.2 Lock-out/tag-out

Lock-out or tag-out procedures are safety measures, designed to prevent application of power (energy) to the machine while it is being serviced.

Lock-out/tag-out procedure

WARNING

Notify all affected employees that service or maintenance is required on the machine and that the machine must be shut down and locked out for service or maintenance.

1. Preparation for shut-down. The machine may only be turned off by an authorised employee. Before turning it off, the employee must know:
   - The type and magnitude of the energy.
   - The hazards of the energy to be controlled.
   - The method or means to control the energy.
2. Shut-down. If the machine is in operation, shut it down by the normal shut-down procedure.
3. Machine isolation. Isolate the machine from the energy source(s). The machine uses AC power. This is de-energised by removing the AC connection to the machine.
4. Lock-out (or tag-out) device application. Lock out the energy isolating device(s) with:
   - An individual lock(s).
   - A warning device on the main switch.
5. Remove residual or stored energy. Stored or residual energy (such as that in capacitors, air pressure, etc.) must be dissipated or restrained by methods such as grounding, bleeding down, etc.
6. Verification of isolation. Make sure that the machine is disconnected from the energy source(s). First make sure that no persons are in or on the machine. Test to verify the isolation of the machine. Make certain that the machine will not operate (power cannot be turned on).

The machine is now locked out.

CAUTION

Return all operating control(s) to the OFF position after verifying the isolation of the machine.

Ending lock-out/tag-out procedure

1. Make sure the service or maintenance is completed and the machine is ready to return to normal operation.
2. Check the machine and the immediate area around to make sure that all non-essential items have been removed.
3. Make sure that all components of the machine are operationally intact.
4. Make sure that all persons are at a safe distance from the machine.
5. Make sure that there is no power on the console and the machine.
6. Remove the lockout devices.
7. Notify all personnel that the service or maintenance is completed and the machine is ready for use.

2.6.3 Safety mechanisms

The Vehicle Lift has a control and monitoring system, which ensures that:

- Both tracks always stay at an equal height within the control limits.
- Lowering is halted in the event that obstacles cause an elevation difference to occur.
- The control circuit is interrupted if the height difference between the two tracks exceeds a pre-defined value. Operation by the push buttons on the console of the Vehicle Lift is then disabled.
- Lifting is halted when the highest position is reached (height safeguard).
- The foot protection stops the lowering action at 30 cm above the floor. If the down and unlock push buttons are pressed again, the Vehicle Lift will be lowered further, but with an accompanying acoustic signal. The foot protection is an setting that can be enabled or disabled. By default it is disabled.
- Lowering is electro-mechanically blocked in the event of loss of control power or leakage from the cylinders.
- Use of the optional remote control is only possible while a second operator holds de confirm push button on the console depressed.

2.6.4 Safety system against overloading

The Vehicle Lift has the following safety features:

- Hydraulic overload protection.

    - Hose burst valves, which shut off the cylinders in the event of hose rupture.
    - A pressure relief valve, which prevents the construction from being overloaded.
- An fall prevention system (safety locks), which mechanically stops the lowering movement in the event of power failure.
- An operating system with "hold to run" type.

These features assure a safe operation without the possibility of overloading the Vehicle Lift.

2.7 Requirements for operators

Normal operation of the machine requires that operators:

- have enough technical knowledge and experience to carry out the assigned tasks,
- can recognize and prevent hazards,
- have read this manual and understand the contents,
- have been adequately trained,
- are able to follow the procedures in this manual.

WARNING

The owner must ensure that employees are qualified and trained to perform all activities involved. The owner also must ensure that all persons working on the Vehicle Lift have free access to the instruction manuals.

2.7.1 Personal protection equipment

The following personal protection equipment is recommended for service engineers:

- Protective clothing (long sleeves and long trousers)
- Gloves
- Ear protection
- Safety shoes
- Helmet
- Safety glasses

2.8 Instructions to the owner and employer

The owner/employer shall:

- Ensure that operators are qualified and that they are trained in the safe use and operation of the Vehicle Lift using the manufacturer's operating instructions.
- Establish procedures to periodically inspect the Vehicle Lift in accordance with the manufacturer's instructions.
- Ensure that Vehicle Lift inspectors are qualified and that they are adequately trained in the inspection of the Vehicle Lift.
- Ensure that the maintenance of the Vehicle Lift is carried out according to the Maintenance schedule.
- Display the manufacturer's operating instructions in a clearly visible location in the machine area convenient to the operators.
- Do not modify the Vehicle Lift in any manner without the prior written consent of the manufacturer.

2.9 Training levels

Stertil B.V. recommends the following training levels:

- Operator:
  Lower vocational education or intermediate vocational education level and trained by the supervisor.
- Supervisor:
  Intermediate vocational education level and trained after the installation of the machine by the installation personnel and service engineers.

NOTICE

Please contact the service department of the manufacturer or dealer for more information about possible training and education.

WARNING

Persons under 16 years of age are prohibited from working on this Vehicle Lift in any way whatsoever. Children under 14 years of age are not allowed in the immediate vicinity of the Vehicle Lift.

2.10 Environmental aspects

2.10.1 Disposal

The owner and/or user of the Vehicle Lift is responsible for the disposal of waste materials (oil etc.) in accordance with the applicable local laws or regulations. When the machine has reached the end of its useful life, the owner and/or user is responsible for the safe disassembly of the machine and for the disposal of the components, in accordance with the local laws or regulations.

For safe disassembly of the Vehicle Lift, it is recommended to follow the installation guidelines in reverse order. If there are any doubts about disassembling the Vehicle Lift, please contact your local Stertil B.V. service department or distributor.

2.10.2 Waste disposal

Remove and dispose in a correct manner lubricating agents, used chemical products and other such matter. On this subject, the local environmental recommendations should be respected.

2.11 REACH declaration

The REACH regulation became effective on 1st June 2007. The aim of the REACH regulation is to ensure a high level of protection of human health and the environment from chemical substances.

Stertil B.V. manufactures articles in compliance with current revision of the REACH regulation, and is downstream-user of chemical substances.

Stertil B.V. has the intention to fully comply to REACH regulation and has checked its suppliers to make sure they comply with REACH requirements for all materials and substances used in our products.

Stertil B.V. will provide relevant information e.g. Material Safety Data Sheet (MSDS) on request.

3 Technical specifications

Specification	ST4120
Lift capacity (unfavorable load distribution)	12,000 kg
Pressure relief valve	260 bar (factory sealed with plastic cap)
Operating stroke	1650 mm
Max. installed motor power	5.5 kW
Mains power supply:	
380/415 V, 50 Hz	3× phase, 1× neutral, 1× protective earth
220/240 V, 50 Hz	3 × phase, 1 × protective earth
Mains fuse:	
380/415 V, 50 Hz	3 × 16 A (slow blow)
220/240 V, 50 Hz	3 × 20 A (slow blow)
Control voltage	24V DC
Hose break valve adjustment	40 l/min
Raising / lowering time:	90 / 90 s
Noise level	max. 74 dB(A)
Dead weight:	
Post	125 kg
Track 4.5 m	450 kg
Track 6.2 m	570 kg
Track 8 m	770 kg
Track 10 m	1200 kg
Operating temperature	-15°C to +50°C
Hydraulic oil capacity	18 litre

WARNING

Never exceed the maximum weight (capacity) that the Vehicle Lift is allowed to carry. This leads to dangerous situations which can result in serious personal injury and/or damage to the machine.

NOTICE

The general specifications are also printed on the type plate on the Vehicle Lift.

3.1 Lift capacity

Refer to Technical specifications on page 20 for the maximum lifting capacity. The overpressure safety in the hydraulic unit has been pre-set so that the Vehicle Lift can never raise more than the specified weight plus 10%.

The lifting capacity of the Vehicle Lift is determined by the following:

- The lifting capacity as stated on the type plate of the Vehicle Lift
- The axle load distribution between the front and rear axles of the vehicle
- Position of the vehicle on the Vehicle Lift
- The wheelbase of the vehicle.
- The track adjustment.

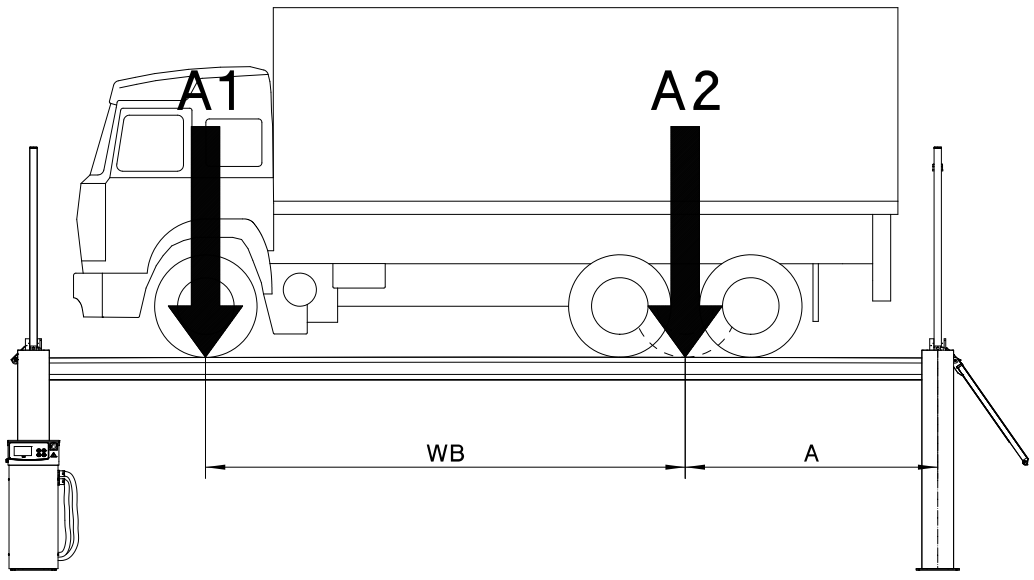


Figure 1: Axle load and wheel base

Rated capacity	Track length	Axle A1	Axle A2	Min. wheelbase (WB)	Min. track width	Vehicle position (A)
12,000 kg	4.5 m	8000 kg	4000 kg	3500 mm	1800 mm	Min. 500 mm
	6.2 m					
	8 m					
	10 m					

3.2 Unequal load distribution

With a maximum axle load of 8160 kg and axle load ratio as shown with rated capacity, the only limitation is the wheel base.

When lifting vehicles with a more unfavourable axle load ratio and/or smaller wheelbase, one side of the vehicle lift (front or rear) may not rise, because of the hydraulic overload protection. Move the vehicle with its centre of gravity towards the longitudinal centre of the tracks to enable the vehicle lift to rise.

3.3 Equal load distribution

When lifting vehicles with equal axle loads and a total vehicle weight beyond 13,600 kg, both the wheel base and track width are limited, and the vehicle must be longitudinally centred on the tracks.

3.4 Maximum axle load

The Vehicle Lift is designed for a maximum axle load of 9400 kg.

3.5 Wheelbase

The minimal wheelbase depends on the length of the tracks. In case of vehicles with a shorter wheelbase, track width and/or a different axle load ratio, contact your local dealer.

3.6 Track adjustment

The tracks of the vehicle lift are adjustable to adapt to the track width of different vehicles. Each track has an adjustment range of 425 mm.

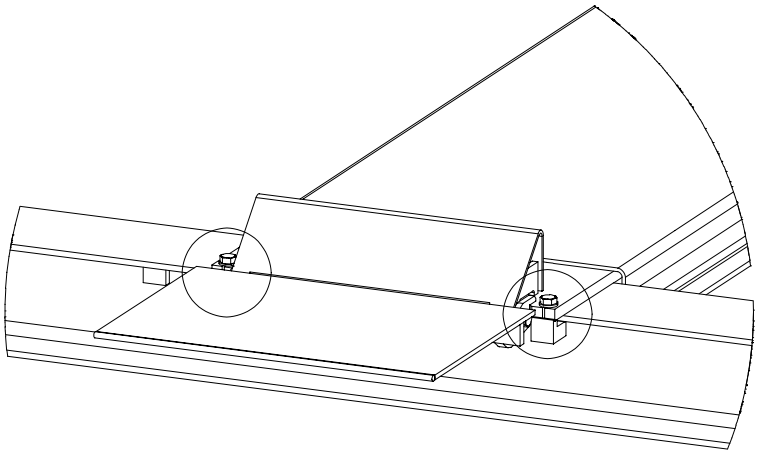


Figure 2: Track adjustment

Loosen the bolts at the track ends. The tracks can now be adjusted to the track width of the vehicle. When the tracks are at the correct position the bolts must be fastened again.

NOTICE

The tracks can only be adjusted without load on the Vehicle Lift.

3.7 Third track (option)

The maximum lift capacity of the third track is 2000 kg.

3.8 Jacking beam (option)

A jacking beam (type JB80) with a lifting capacity of 8,000 kg can be placed between the tracks. The beam can be loaded up to the maximum capacity without any restrictions.

4 Installation

Proceed as described next when unpacking and setting up the Vehicle Lift.

WARNING

Improper set-up of the Vehicle Lift can lead to serious injury and/or damage. Make sure that only qualified technicians set-up the Vehicle Lift.

WARNING

Be careful when removing the fastening material. You can hurt yourself on parts and parts may fall.

NOTICE

Ensure that all packaging materials have been removed before starting the set-up of the Vehicle Lift. Inspect the parts for any damage and/or missing smaller parts. Always report damage or missing parts to Stertil B.V. or your dealer and wait with the set-up until a suitable solution has been obtained.

4.1 General

Before installing a Vehicle Lift, inspect the following:

- **Overhead obstructions**: the area where the Vehicle Lift will be located must be free of obstructions.
- **Defective concrete**: visually inspect the site where the Vehicle Lift will be installed and check for cracked or defective concrete.

WARNING

Do not install the Vehicle Lift:

- *on any asphalt surface or any surface other than concrete;*
- *on expansion seams or on cracked or defective concrete;*
- *on a second / elevated floor without first consulting building architect.*

4.2 Required materials and special tools

Item	Stertil number
Set of chemical anchor bolts, includes shims	43599013

4.3 Preparations before installation

4.3.1 Foundation

The Vehicle Lift can be installed on any suitable concrete floor.

NOTICE

Consult an architect if you install the Vehicle Lift on a supported reinforced concrete floor above an area or above another story. The maximum pressure exerted by each post is 57 kN .

Before you begin:

Make sure that the concrete floor:

- is not cracked (in the securing area of the anchor bolts);
- does not contain expansion seams;
- is level;
- is at least 150 mm thick (without accounting for the coating);
- has a minimum concrete strength of C20/25.

NOTICE

A level floor is suggested for proper installation and level lifting. Small differences in floor slopes may be compensated for by proper shimming. If a floor is of questionable slope, consider a survey of the site and/or the possibility of pouring a new level concrete slab.

Reinforced foundation blocks

Reinforced foundation blocks are only required:

- if there is no suitable concrete floor available (reinforced or not reinforced);
- if the floor is made up of tiles or stones;
- if the Vehicle Lift is installed directly on the ground;
- with strongly inclined floors to make the base plates level.

When the Vehicle Lift has to be installed on foundation blocks, use blocks as shown. Volume = 0,5 m3.

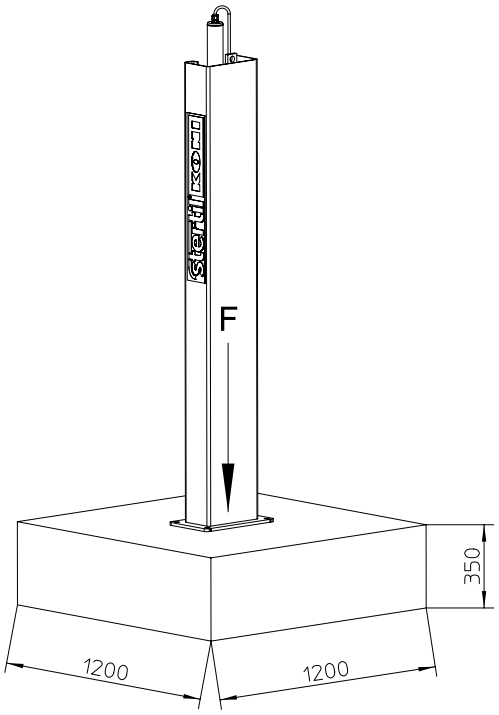


Figure 3: Reinforced foundation blocks

The centre line of the base plate is equal to the centre line of the concrete block.

The maximum ground pressure is 4 N/cm2.

WARNING

Specifications of concrete must be adhered to. Failure to do so could cause lift failure resulting in personal injury or death.

4.3.2 Bay size

NOTICE

- *Make sure that the bay area has sufficient drainage.*

Shop space

Make sure there is enough space around the vehicle.

Place a vehicle in the bay prior to layout and measure the space required for:

- walkways;
- escape paths;
- overhead obstructions;
- the ability to move equipment in the bay area.

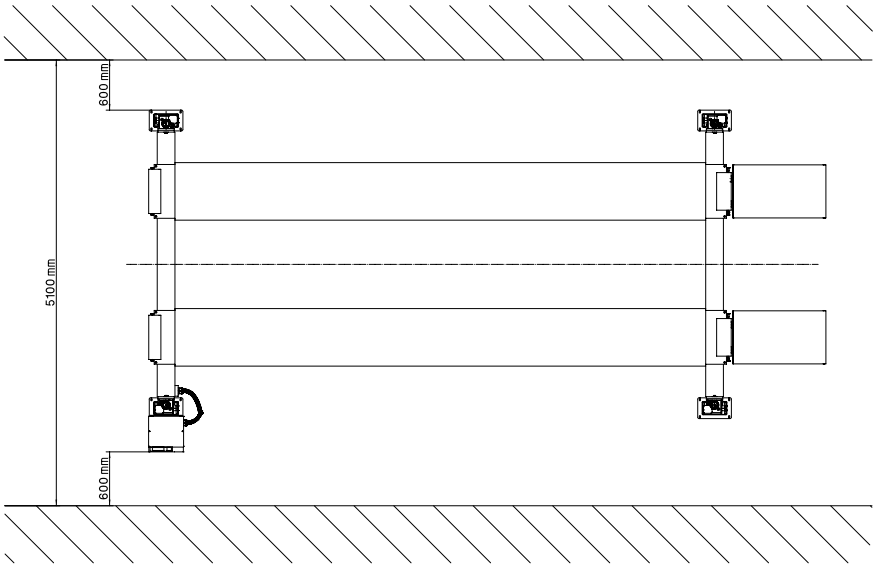


Figure 4: Bay size (surface-mounted)

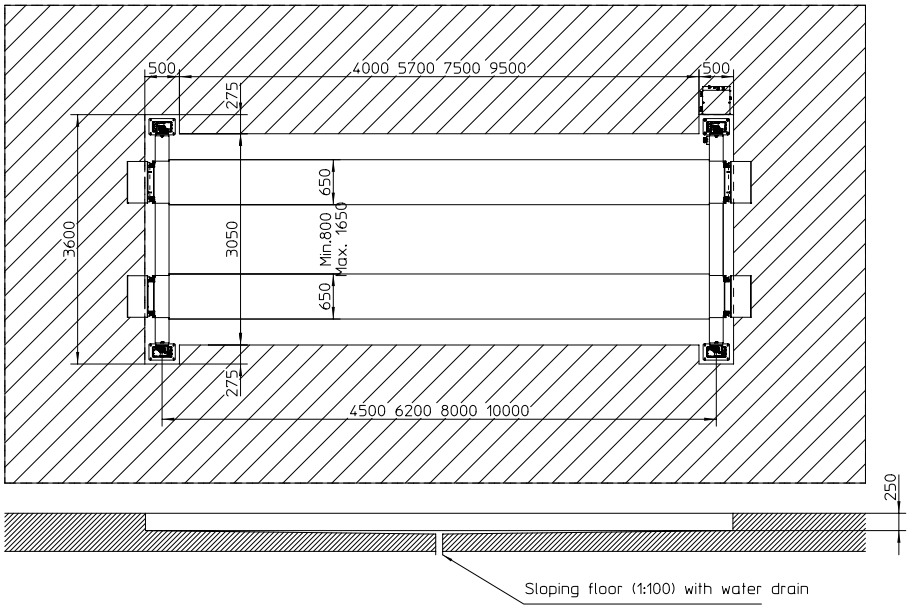


Figure 5: Bay size (flush-mounted)

Control box location

Make sure the power supply to the control box is accessible.

Height differences

Use shims between the base plates and the floor to adjust differences in height relative to the floor. Adjust the foot plates with the supplied adjustment bolts. After the adjustment, place shims underneath the foot plates. Make sure that the foot plates do not rest on the adjustment bolts.

Fill gaps larger than 20 mm with mortar.

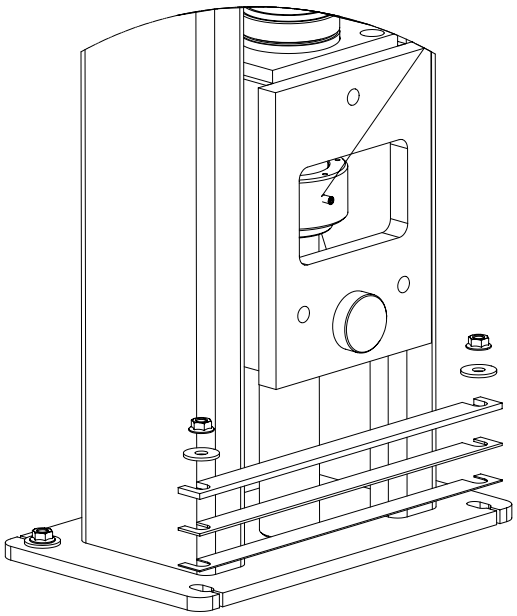


Figure 6: Adjustment of height differences

NOTICE

The shims, anchors and bolts can be ordered as an option.

4.4 Processor board of the control box

The printed circuit board inside the control box is provided with push button switches. The function of the push buttons is described in the next table.

PCB buttons	Description	Function
Main	Switches the main relay on.	Enables power to the motor relay and the control voltage, even if the Vehicle Lift is outside the safe limits.
Reset	Resets the control system.	
Unlock	Activates the unlock valves.	
Enable boot	Enables the PCB boot function.	
Motor 1	Switches the motor relay on.	Enables power to the motor relay.
Motor 2	N/A	
Motor 3	N/A	
Motor 4	N/A	
Lowering 1	Activates the P1 lowering valve.	
Lowering 2	Activates the P2 lowering valve.	
Lowering 3	Activates the P3 lowering valve.	
Lowering 4	Activates the P4 lowering valve.	
Reverse 1	N/A	
Reverse 2	N/A	
Reverse 3	N/A	
Reverse 4	N/A	

4.5 Installation procedure

4.5.1 Posts and cross bars

1. Determine the location of the control console (A). The console can be located at any of the four posts, depending on the wishes of the user or local circumstances. The post at which the console is located is defined as Post 1 (P1). The opposite post on the same crossbar is Post 2.

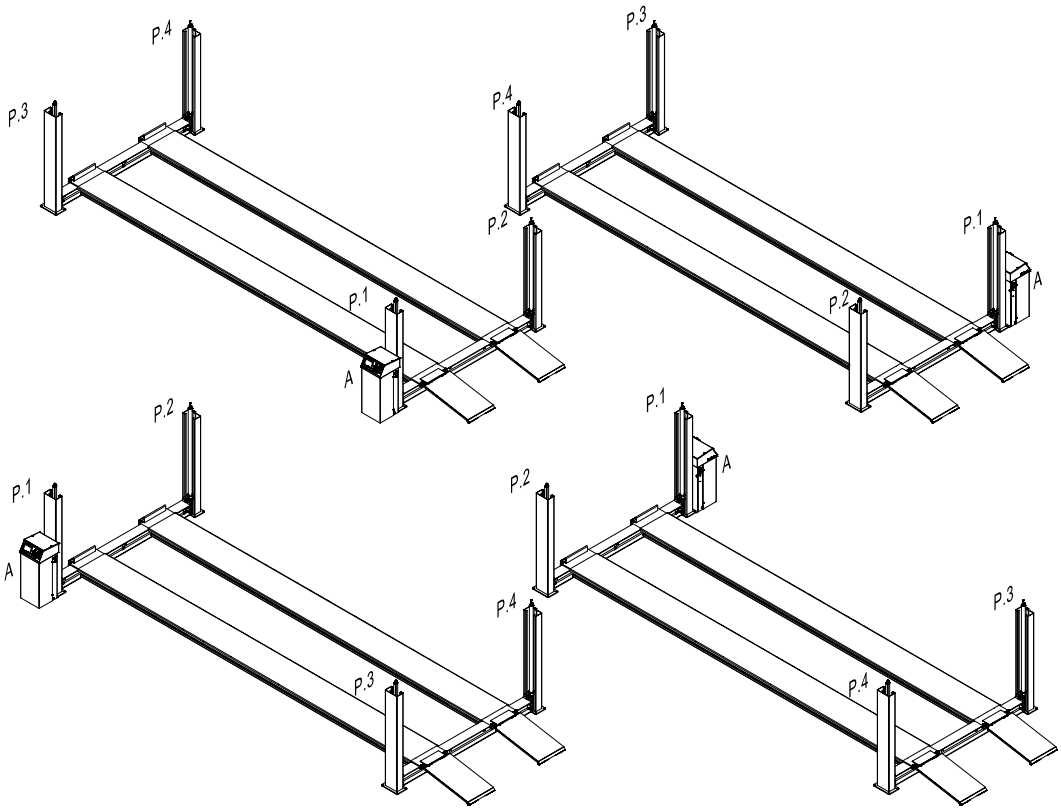


Figure 7: Lift configurations

2. Position the two posts opposite to each other. Note that there are two types of posts, that can be recognised by the position of the hydraulic line coming from the cylinder. The hydraulic line must be at the inside of the crossbar when the posts are positioned opposite to each other.

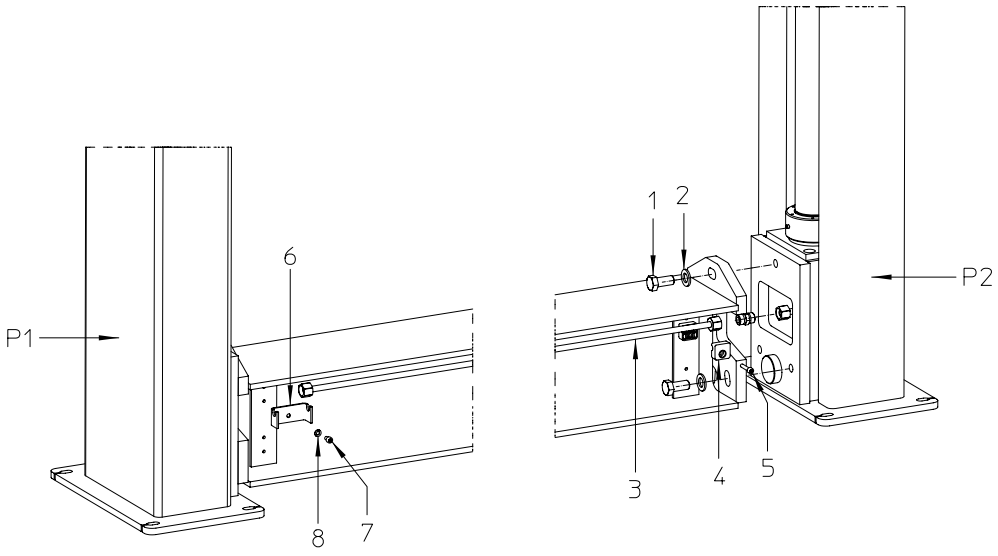


Figure 8: Opposite posts

3. Place the crossbar between the posts and fix it to the connecting pieces using bolts M16x40 (1) and washers (2). Tightening torque = 220 Nm.
4. Position the assembly of the posts on the location where the vehicle lift has to be installed.
5. Follow the same procedure for the next posts and crossbar.
6. Position the assembly opposite to the first pair of posts, approximately at a distance that corresponds with the length of the tracks.
7. Fasten the hydraulic pipe (3) to the crossbar using clamps (4) and bolts (5).
8. Connect the hydraulic pipes from the posts to the hydraulic pipe in the cross bar.
9. Mount the bracket (6) using bolt (7) and washer (8) to the crossbar at the P1 side.

4.5.2 Tracks

1. Place the tracks on the crossbars. Keep a distance of approximately 1400 mm between the tracks.

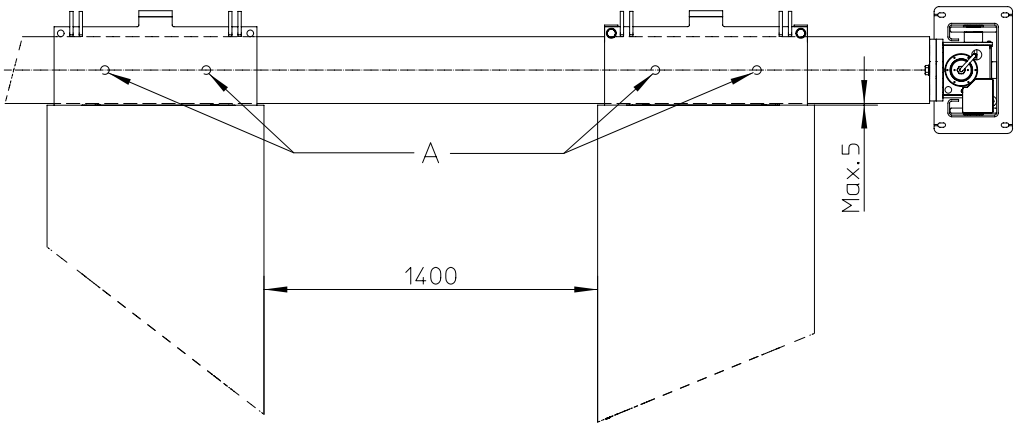


Figure 9: Placing the tracks

NOTICE

Slide plates (A) must be at the correct positions when placing the tracks.

2. Before fixing the posts to the floor, make sure that the crossbars are parallel and the distance between crossbars is approx. 5 mm more than the length of the beams of the tracks. This play is necessary to allow the tracks being adjusted.

NOTICE

Always keep at least 600 mm of space on all sides of the vehicle lift for escape paths.

4.5.3 Mounting to the floor

The lift is best mounted to the floor by means of chemical anchors. Drill the holes straight through the holes in the footplate. The depth of the holes and the mounting of the anchors should be made according to the manufacturer's instructions.

Use the following type of chemical anchors or key bolts to secure the Vehicle Lift:

- Anchor rod ASTA M10 × 130, capsule UKA 3 EAP M10 - Torque 16,5 Nm.
- Key bolts M10 × 100 - Torque 27 Nm.

If a covering layer of mortar and/or tiles have been applied to the concrete floor, make sure that the chemical anchors are of sufficient length. They must include the thickness of the covering layer.

CAUTION

The minimum distance from the anchor to the edge of the concrete slab is 90 mm.

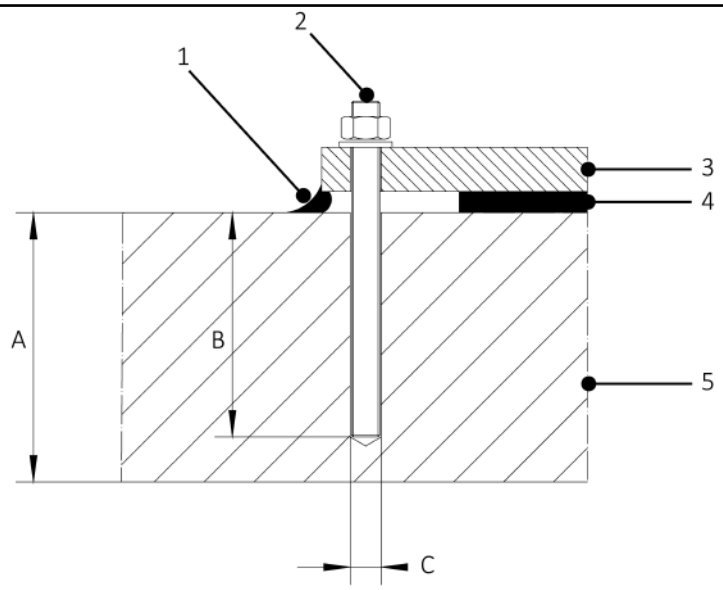


Figure 10: Concrete floor requirements

1. PU-kit
2. Achor rod
3. Base plate
4. Shims
5. Concrete

A. min. 150 mm
B. 90 mm
C. 12 mm mounting holes

NOTICE

Drilling must be carried out precisely. It is recommended that diamond drill bits are used. In case of holes drilled through the layer, the chemical anchors may not be used.

1. Set up the drilling machine so that it cannot drill any deeper than 130 mm (excluding the finishing layer). Drill diameter 12 mm.
2. Check if the holes are not drilled through the concrete of the floor.
3. Position the anchors in accordance with the supplier's instructions.

NOTICE

Do not yet secure the chemical anchors, this can only be done after the manufacturer's prescribed hardening time has elapsed.

4. Check the holding power of the anchor bolts after the prescribed hardening time has elapsed by applying a torque of 16.5 Nm on the anchor bolt. There must be no creep of the anchor bolt.
5. Remove anchor bolts that show signs of creep and re-drill the hole precisely (diameter 12 mm). Position a new anchor and new chemical capsule.
6. Recheck the security of the new anchor bolt by applying a torque of 16.5 Nm.
7. Then loosen the nuts and re-tighten them by applying a torque of 16.5 Nm.

NOTICE

Checking the security of the anchor bolt is necessary because, cracks may have formed in the lower layer of the concrete during drilling. This may allow resin or hardener to drain off without adequate mixing. The holding power of a second anchor will be sufficient. The cracks will be filled with the resin and hardener of the first used chemical anchor.

4.5.4 Track components

The assembly of the vehicle lift can be continued while the hardening of the anchors takes place.

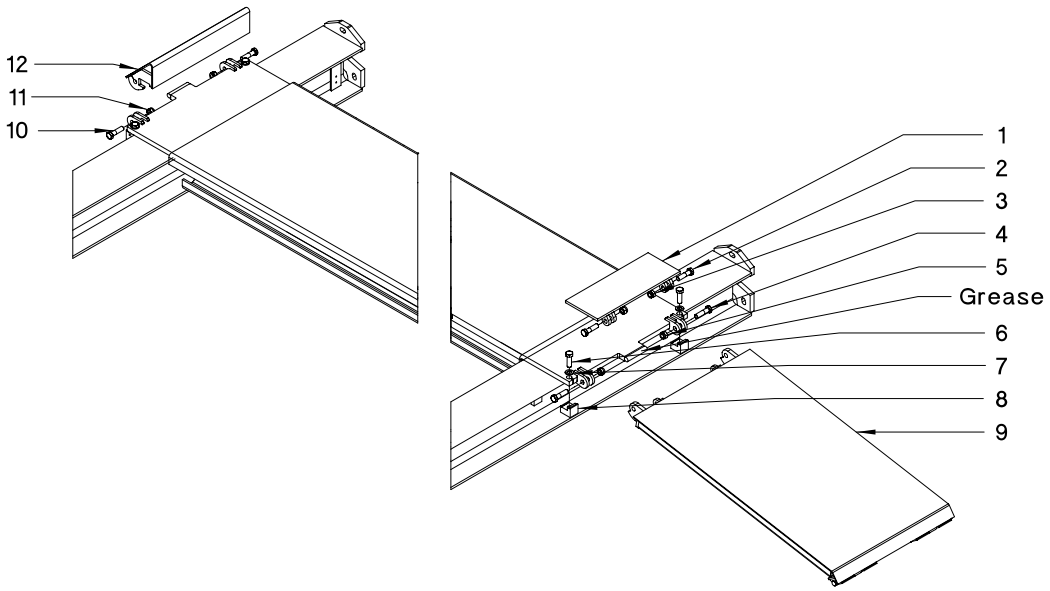


Figure 11: Track components

1. Mount the tracks to the crossbars on both sides by means of the clamps (8) with bolts M16×50 (6) and washers (7).
2. Fasten ramp plates (9) to the tracks with bolts M16×60 (4) and nuts (5).
3. Grease notch with general purpose grease.
4. Fasten the roll-off safety device (1) with bolts M16×60 (2) and nuts (3).
5. Fasten the roll-off safety device (12) with bolts M16×60 (10) and nuts (11).

4.5.5 Hydraulic components

NOTICE

When fitting hydraulic components, make sure that no dirt gets into the hydraulic system.

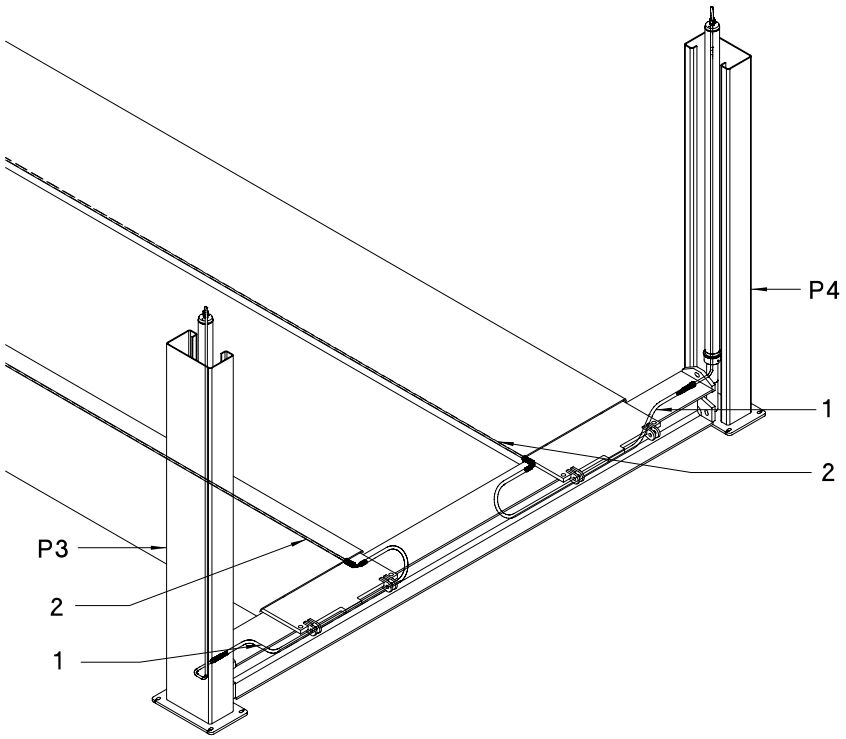


Figure 12: Hydraulic components

1. Connect the hoses (1) to the hydraulic lines (2) in the tracks.
2. Connect the hoses to the hydraulic lines on post P3 and P4.

NOTICE

When tightening the connecting nuts, make sure that the hose stays within the H profile of the crossbar and that the hose is not twisted.

4.5.6 Installing the control box

1. Place the console near P1. Refer to Posts and cross bars on page 30 Fit the holes at the back of the console on the protruding ends of the anchorbolts.

NOTICE

Do not tighten the nuts on the anchors before the resin and hardener are cured completely (see manufacturer's instructions).

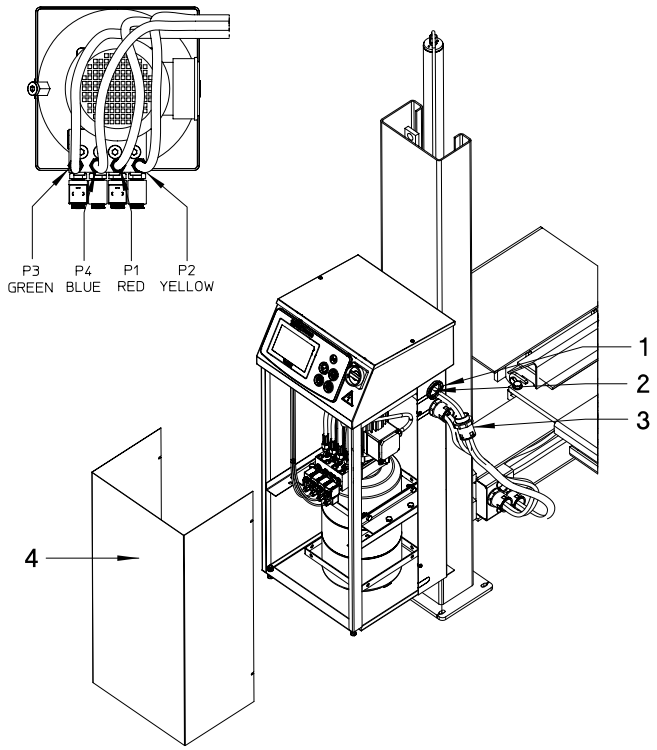


Figure 13: Control console installation

2. Remove the cover (4) and roll out the hoses and cables that are stored inside of the console.
3. Open the holes (2) at the track side of the console by pushing out the pre-cut parts.
4. Loosen nut (1) from the gland (3). Feed the hydraulic hoses and electrical cables through the slot (one by one). Make sure that the nut is inside the console and the gland is outside the console.
5. When all hoses and cables are running through the hole, mount the gland (3) in the hole and fix it with nut (1).
6. Repeat this for the other set of hoses and cables.
7. Connect the hydraulic hoses marked P1 to P4 to the hydraulic lines on the posts corresponding with P1 to P4.

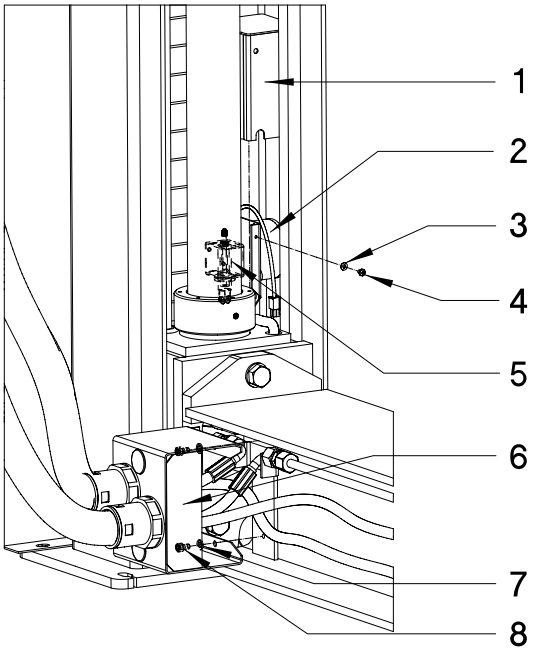


Figure 14: Connections to the posts

8. Install the cables marked Post 1 to Post 4. Guide them along the hydraulic lines. Fix the cables with clamps to the hydraulic lines in the crossbars and connecting pieces. Connect the cables to potentiometer unit (2) and the unlock solenoid (5) of the corresponding posts P1 to P4.
9. Mount bracket (6) to the crossbar using bolts and washers (7 + 8).
10. Mount cover (1) with bolt and washer (3 + 4) to the bracket on the guide piece.
11. If required, the lift can be raised by temporarily connecting the control box to the main power according to the sticker on the inside of the control box. The vehicle lift can now be operated with the push buttons on the print.

⚠ WARNING

Before connecting mains power to the control box, check the 3-phase voltage and if necessary, connect the wiring on the transformer accordingly.

4.5.7 Power supply connection

⚠ CAUTION

Connect the control box to a fused power supply. For fuse ratings, refer to Technical specifications *on page 20.*

The electrician must define the diameter of the power supply cable for each specific situation according to the fuse ratings and the technical specifications.

4.5.8 Height differences

1. Use shims between the foot plates and the floor to adjust the posts. The posts must be perpendicular.

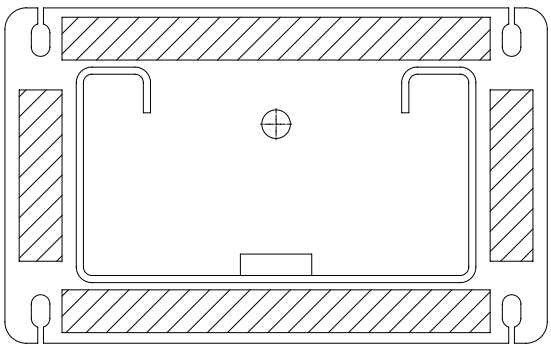


Figure 15: Position of the shims

2. After hardening time of the chemical anchor material has elapsed (see manufacturer's instructions), secure the posts to the floor - Torque is 16.5 Nm.
3. Grind off protruding anchor rods to avoid trip hazard.

NOTICE

This does not apply for the two outer anchor bolts of P1 that are used for fastening of the control console.

4. Secure the control console with the nuts to the post.

4.5.9 Alignment of the cylinders

The cylinders must be aligned after setting up the Vehicle Lift for the first time. Different set-ups of the cylinder apply for different track lengths.

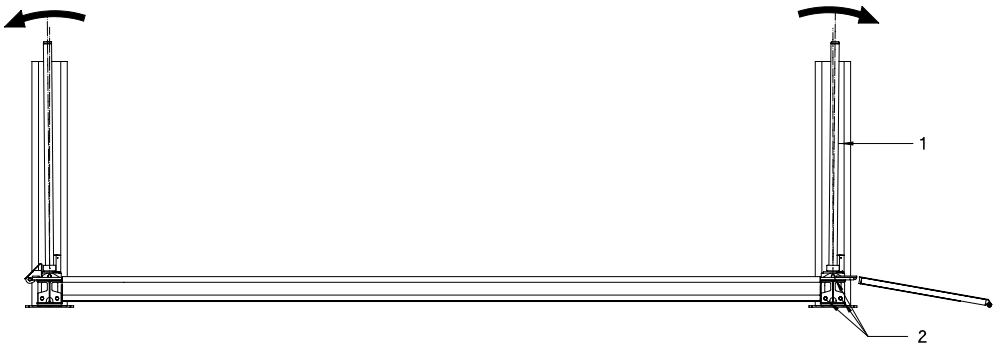


Figure 16: Alignment of the cylinders

When the lift is unloaded, the cylinders must be parallel to the posts. If this is not the case, proceed as follows:

1. Put the lift in the lowest position.
2. Loosen the bolts (2) that connect the crossbar to the guide pieces in the posts.
3. Adjust the position of the cylinder (1) according to the information below:
   a) Track length 4.5 meters: parallel to the post.
   b) Track length 6.2 and 8 meters: 12 mm outward.
   c) Track length 10 meters: 15 mm outward.
4. Fasten the bolts (2) that connect the crossbar to the guide pieces again - Torque 220 Nm.
   Repeat this procedure for each post.

4.6 Adjustment procedure

Starting point of the procedure:

- Hydraulic units and cylinders completely filled (pre-filled at factory).
- Potentiometer units electrically and mechanically connected.
- Tracks are at same height.

The Vehicle Lift is still in the lowest position. It is always possible to use the PCB buttons Main and Motor 1 for lifting and PCB buttons Lowering 1, 2, 3 and 4 for lowering each of the lifting devices. Note that the Vehicle Lift is operated without being stopped by the safety settings of the system.

When using the PCB buttons Lowering 1, 2, 3 and 4, be sure that all safety locks are released; it is better first to lift for approx. 30 mm with Main and Motor 1.

4.6.1 Bleeding air from the cylinders

1. Raise the Vehicle Lift to the highest position.
2. Loosen the coupling nut on top of the cylinder to let the air bleed.
3. Tighten the coupling nut as soon as a constant flow of oil emerges.

4.6.2 Adjustment of maximum height limit

The maximum height limit is adjustable, see Configuration screen 7 on page 52. A value in mm can be entered in the maximum height box when the button is pressed. When this is confirmed the setting is done.

NOTICE

The system is also provided with a programmable maximum height adjustment. This can be activated by the operator to prevent high trucks hitting the ceiling of the workshop. It can also be adjusted to the length of the mechanic. See the operation manual for the procedure.

4.6.3 Check potentiometer wire connection to column

Raise the vehicle lift so that the potentionmeter wire connection to the column can be checked. For smooth movement of the vehicle lift, there has to be a slight difference in the mounting distance of the potentiometer adjustment rod. This needs to be approximately 5 mm to each other on each column. This will prevent the control system to do a short-circuit check every time the lift is raised or lowered.

NOTICE

Always calibrate the vehicle lift after an adjustment of the potentiometer rod.

4.6.4 Foot guard limit height setting

WARNING

The vehicle lift can cause serious injuries, when the foot guard height limit is not set correctly.

For surface mounted and flush mounted vehicle lifts, different foot guard limit heights are needed. The setting can be changed in the maintenance setting on configuration screen 8.

For surface mounted vehicle lifts, the height must be set to 250 mm (default setting).

For flush mounted vehicle lifts, the height must be set to 400 mm.

4.7 Software settings

4.7.1 Maintenance configuration

By pressing the **Maintenance** button in the start screen, you will enter the maintenance configuration settings.

To enter the maintenance configuration a PIN code is required:

SERVICE PIN CODE = 8365.

4.7.1.1 Configuration screen 1

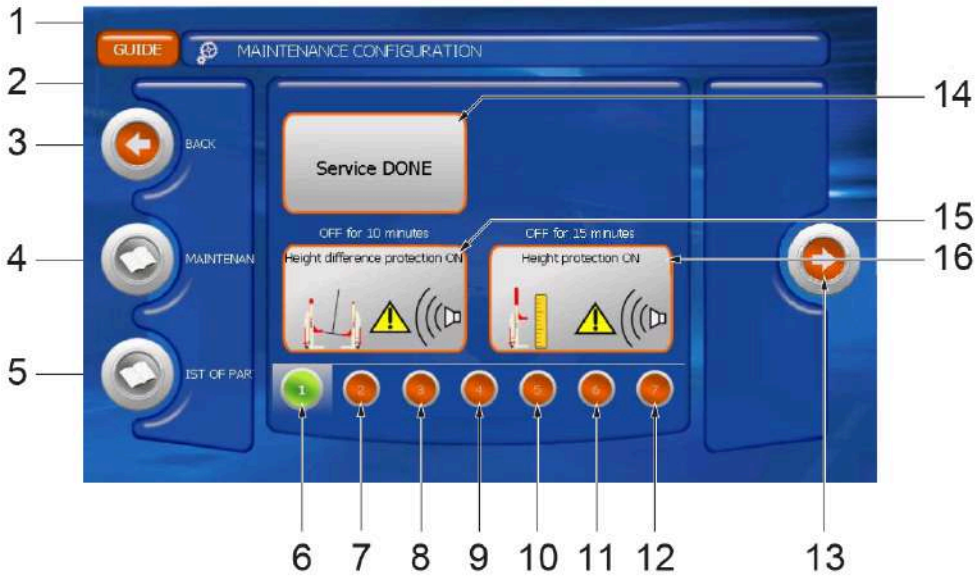


Figure 17: Maintenance configuration - screen 1 (example)

Pos.	Description	Function
1.	Screen name	Displays the name of the screen currently displayed.
2.	Guide	button Accesses the system's help functions.
3.	Back button	Displays the previous screen again.
4.	Manual	Gives you access to the manual.
5.	Parts list	Gives you access to the parts list.

Pos.	Description	Function
6. - 12.	Maintenance screens	Gives you access to the maintenance screens 1 to 7.
13.	Next screen	Displays a second set of buttons to access maintenance screens 8 to 14.
14.	Service Done	This button resets run timers.
15.	Height difference protection	This option ensures that the lift can operate outside the cut-off limits. This could be used for levelling the lift outside the usual safe limits. Height difference monitoring must then be disabled. The screen shows the message **<Height difference monitoring disabled>**. There is also an acoustic signal when raising or lowering to alert the operator to the fact that this service operation is enabled. This setting stays active for 10 minutes and height difference monitoring is then automatically switched back on again. Height difference monitoring can also be switched back on from this screen. This setting is not stored in memory, so height difference monitoring is always switched on after the system has been switched off and on again.

Pos.	Description	Function
16.	Height protection	This option ensures that the input value is replaced by a constant value. The lift will function normally without the height differences being corrected. This can be used to check whether the inclinometers or potentiometers (for height measurement, depending on the type of lift) are working properly. Height monitoring must then be disabled. Note that all height errors are disabled! As the height differences between lifting units become larger during raising and lowering, there may be problems in the hydraulic circuit or other mechanical faults. The screen shows the message **<Height monitoring off>**. There is also an acoustic signal when raising or lowering to alert the operator to the fact that this service operation is active. This setting stays active for 15 minutes and height difference monitoring is then automatically switched back on again. This setting is not stored in memory, so height monitoring is always switched on after the system has been switched off and on again.

4.7.1.2 Configuration screen 2

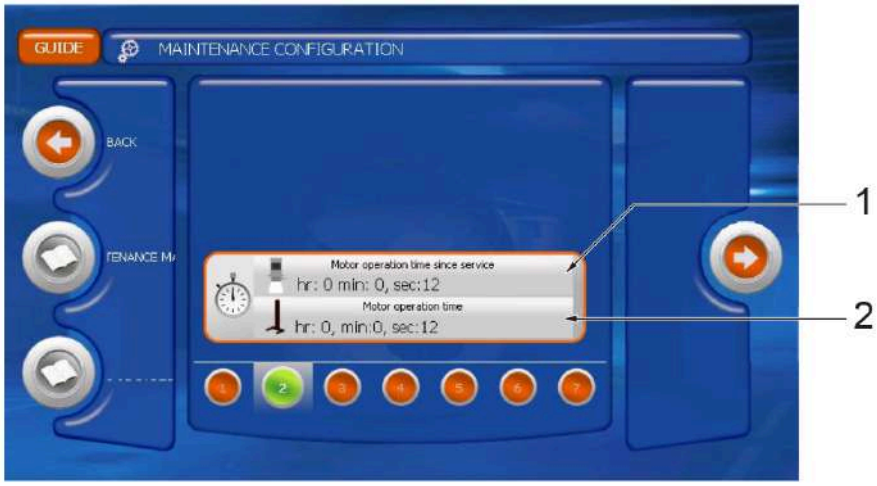


Figure 18: Maintenance configuration - screen 2 (example)

Pos.	Description	Function
1.	Motor operation time since service	This shows the motor runtime (in hours, minutes and seconds) after the last service reset. The time is stored in the controller and can be reset with the “Service DONE” button, see screen 1. If a new PCB is installed, the measurement will start at zero again.
2.	Motor operation time	This shows the motor runtime (in hours, minutes and seconds). The time is stored in the controller. If a new PCB is fitted, though, the measurement will start at zero again

For description of other buttons, refer to Configuration screen 1 on page 43.

4.7.1.3 Configuration screen 3

Figure 19: Maintenance configuration - screen 3 (example)

Pos.	Description	Function
1.	User manual	Select the preferred file which need to be used for the user manual. After tapping the file location dialogue screen, in case you want to change the file for the specific manuals, the screen below will appear.
2.	Maintenance manual	Select the preferred file which need to be used for the maintenance manual. After tapping the file location dialogue screen, in case you want to change the file for the specific manuals, the screen below will appear.

For description of other buttons, refer to Configuration screen 1 on page 43.

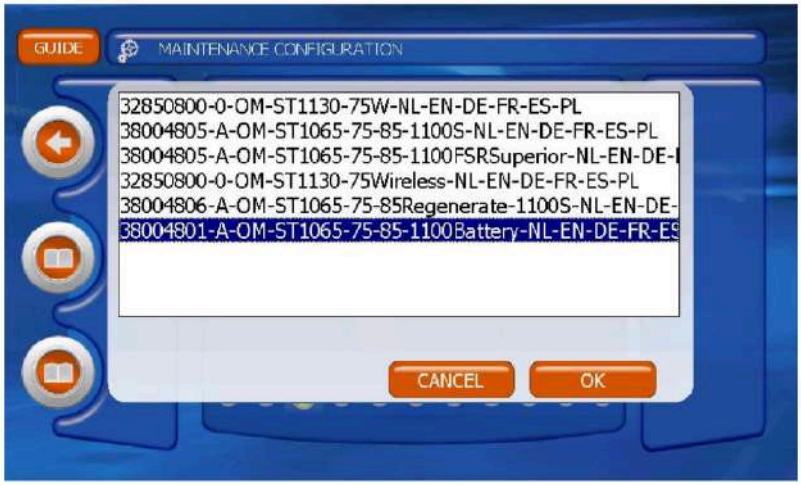


Figure 20: Service settings - file dialogue

In this screen you can select the preferred manual by pressing the [manual file name] and then [OK]. In Configuration screen 6 on page 51 you can find an explanation about how to organize all the different manual types and how to make them available in this screen.

4.7.1.4 Configuration screen 4

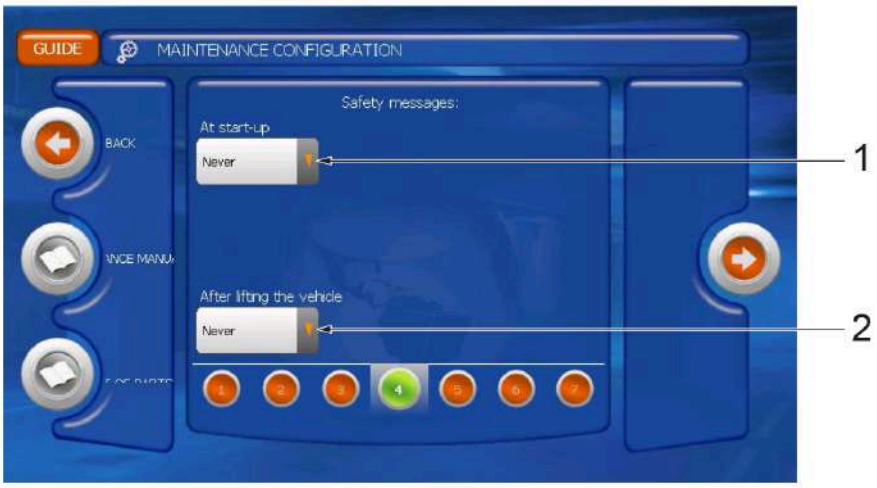


Figure 21: Maintenance configuration - screen 4 (example)

Pos.	Description	Function
1.	Safety messages at start-up	This is where you can define whether safety message have to be shown at start-up. The file location can be set to the right of the button.
2.	Safety messages after lifting the vehicle	This is where you can define whether safety message have to be shown after lifting the vehicle. The file location can be set to the right of the button.

For description of other buttons, refer to Configuration screen 1 on page 43.

4.7.1.5 Configuration screen 5

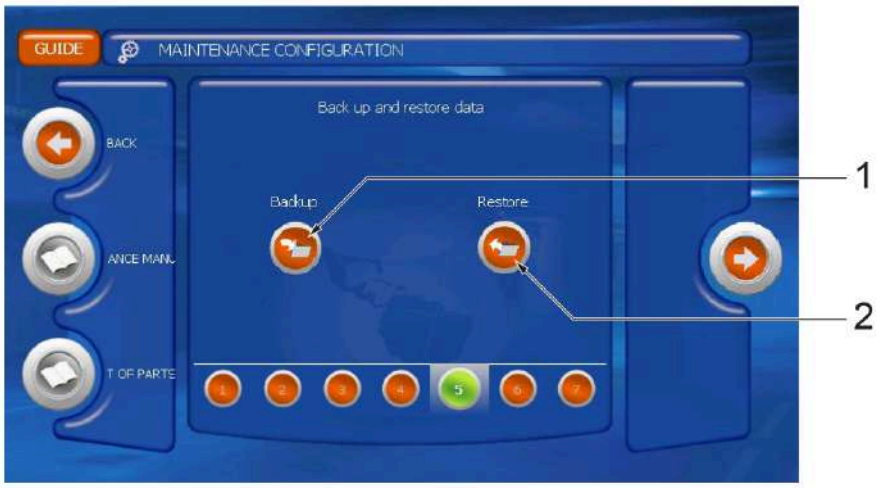


Figure 22: Maintenance configuration - screen 5 (example)

Pos.	Description	Function
1.	Data backup	This function allows a copy of the data (HMI settings, users, logos, contact details) to be put on a USB memory stick. To do this, a USB memory stick must be inserted in either slot on the HMI. After pressing the [Backup] button, a dialogue screen appears asking for confirmation of the backup.
2.	Data restore	The data from a USB memory stick can be transferred to the lifting system. To do this, the USB memory stick containing the data must be inserted in either slot on the HMI. After the [Restore] button is pressed, a dialogue screen appears that lets you load a backup file from a USB memory stick. The backup files use the following file structure: "Backup [date] [time]_[A/B]>.xml".

For description of other buttons, refer to Configuration screen 1 on page 43.

4.7.1.6 Configuration screen 6

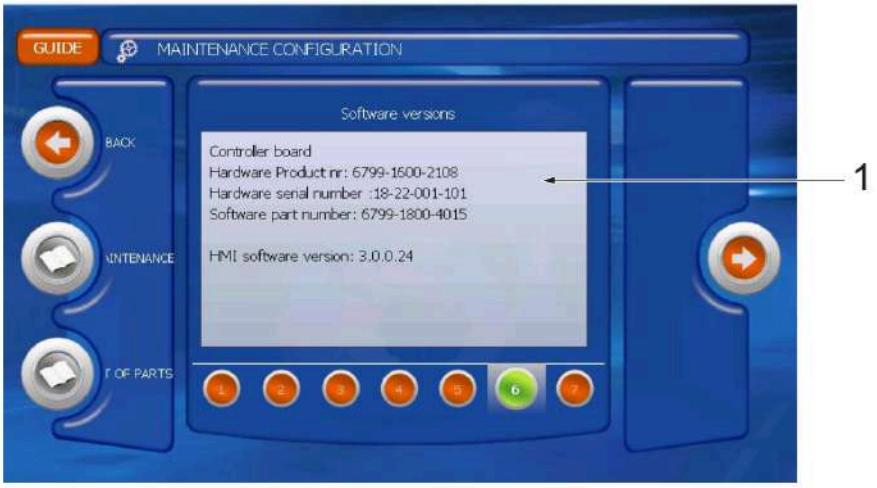


Figure 23: Maintenance configuration - screen 6 (example)

Pos.	Description	Function
1.	Software versions	This screen will give you information about the used specific hardware and software.

For description of other buttons, refer to Configuration screen 1 on page 43.

4.7.1.7 Configuration screen 7

Figure 24: Maintenance configuration - screen 7 (example)

Pos.	Description	Function
1.	Lift type	Select the appropriate lift type.
2.	Time between movements	A delay for activating the motor after being switched off. This prevents blowing fuses or motor relay damage.
3.	Maximum height	Maximum height setting of the lift
4.	Maximum height deviation	Setting for the maximum height deviation between lifting posts. This is a safety setting.

For description of other buttons, refer to .Configuration screen 1 on page 43

4.7.1.8 Configuration screen 8

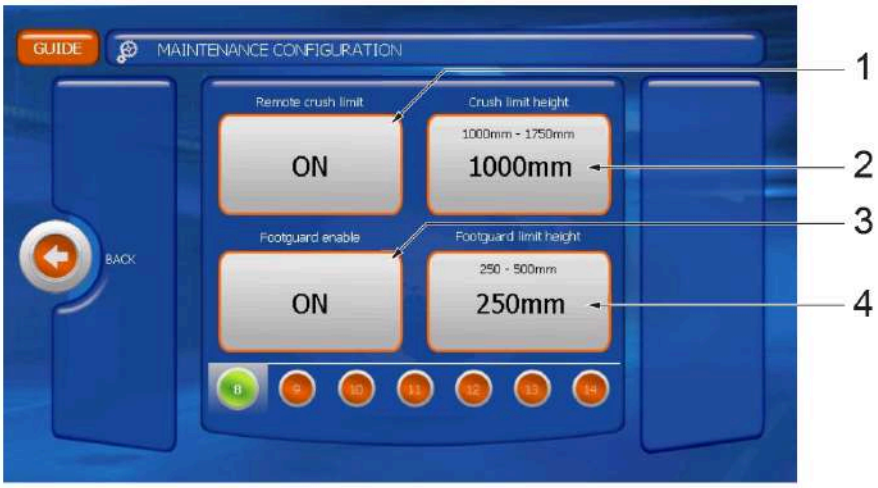


Figure 25: Maintenance configuration - screen 8 (example)

Pos.	Description	Function
1.	Remote crush limit	When set to ON, the lift will not lower below the crush limit height setpoint when using the remote control.
2.	Crush limit height	This setting defines the height of the crush limit.
3.	Foot guard enable	When set to ON, the lift will not lower below the Foot guard limit height setpoint when using the remote control.
4.	Foot guard limit height	This setting defines the height of the foot guard limit.

4.7.1.9 Configuration screen 9

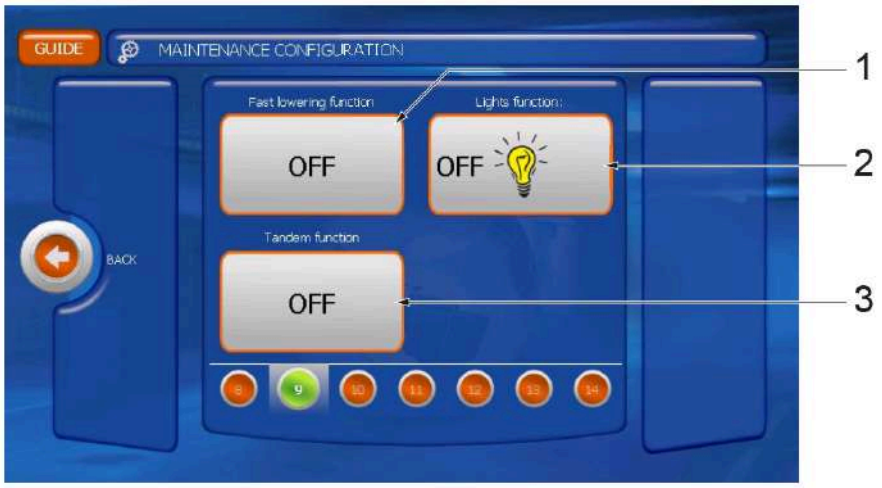


Figure 26: Maintenance configuration - screen 9 (example)

Pos.	Description	Function
1.	Fast lowering function (Option)	When set to ON, you will activate the fast lowering option (Only if the lift is equipped with this hardware option).
2.	Lights function (Option)	When set to ON, you will activate the lights option (Only if the lift is equipped with this hardware option).
3.	Tandem function (Option)	When set to ON, you will activate the tandem function option (Only if the lift is equipped with this hardware option).

For description of other buttons, refer to Configuration screen 1 on page 43.

4.7.1.10 Configuration screen 10

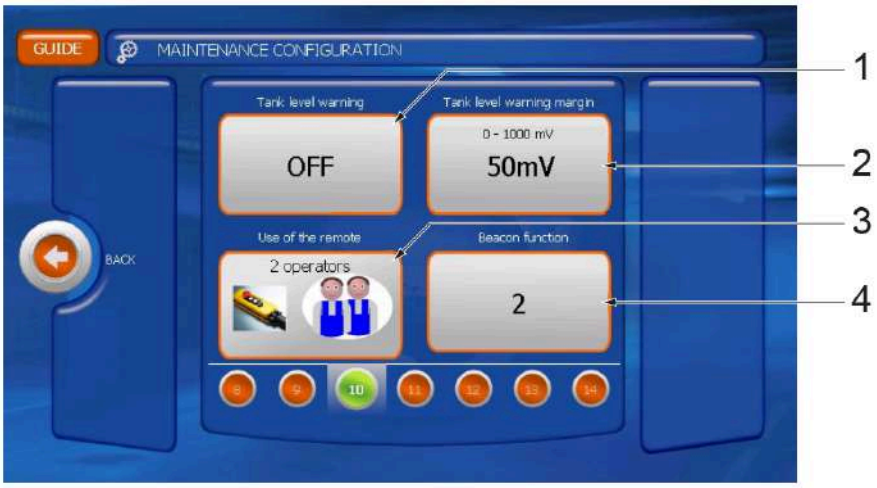


Figure 27: Maintenance configuration - screen 10 (example)

Pos.	Description	Function
1.	Tank level warning (Option)	This will enable a tank level warning if the oil level is higher or lower than normal during operation. The oil level is continuously monitored by an ultrasonic sensor.
2.	Tank level warning margin (Option)	Here you can set the margin of the tank level warning.
3.	Use of the remote (Option)	This button toggles between 2-operator control and 1-operator control. 2-operator control is mandatory to comply with CE requirements.
4.	Beacon function (Option)	2 is default for ST4120. • If lift is idle in the lowest position: Green • Else if all pressures within limits: Yellow • Else: Red During tandem operation, this beacon function remains the same, but applies to all pressures in the combined systems.

For description of other buttons, refer to Configuration screen 1 on page 43.

4.7.1.11 Configuration screen 11

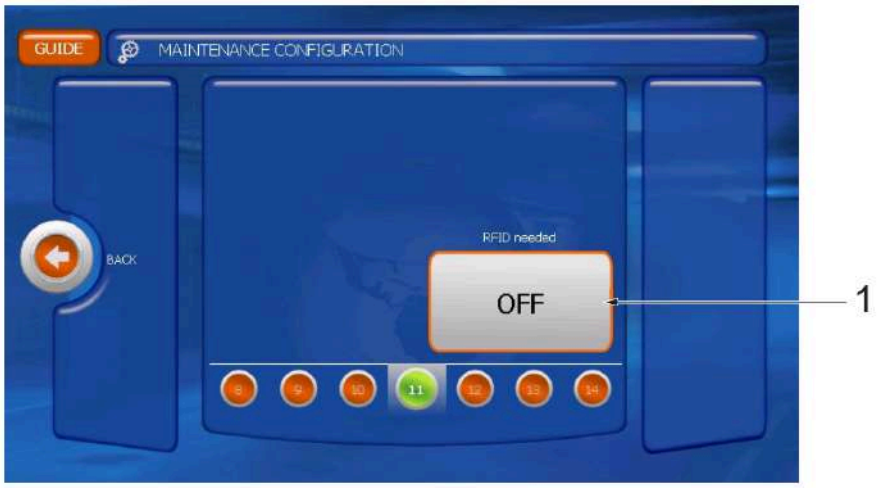


Figure 28: Maintenance configuration - screen 11 (example)

Pos.	Description	Function
1.	RFID needed	When set to ON, an RFID tag is needed during start-up of the system. Without an RFID, operation will not be possible.

4.7.1.12 Configuration screen 12

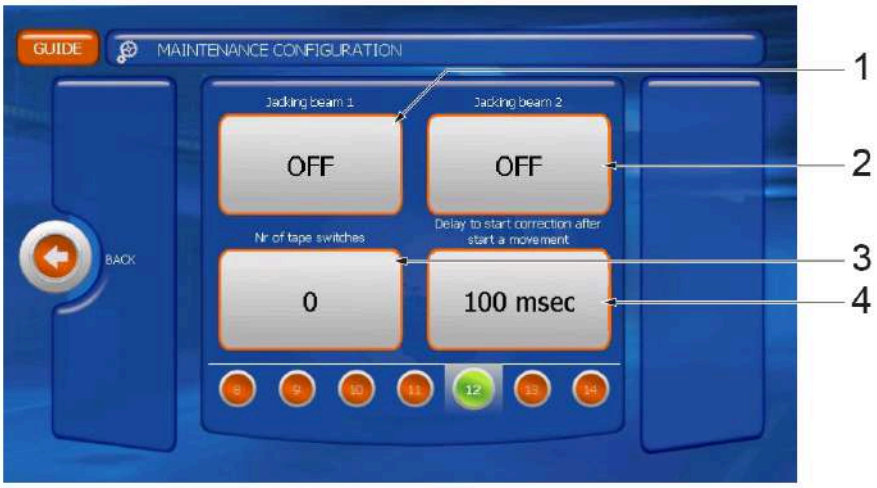


Figure 29: Maintenance configuration - screen 12 (example)

Pos.	Description	Function
1.	Jacking beam 1 (Option)	Will enable horizontal Potmeter1 input (with barrier) to be used as home switch for Jacking beam 1. If the home switch is not operated the Flush Mounted Vehicle Lift will not lower below floor level.
2.	Jacking beam 2 (Option)	Will enable horizontal Potmeter2 input (with barrier) to be used as home switch for Jacking beam 2. If the home switch is not operated the Flush Mounted Vehicle Lift will not lower below floor level.
3.	Number of tape switches (Option)	This setting specifies how many tape switches are present (0-2). The horizontal potentiometer 3 and 4 inputs were used as tape switch inputs. If a tape switch is actuated, the lift stops lowering.
4.	Delay to start correction after start a movement.	Delay time when height correction will start after start of a movement.

For description of other buttons, refer to Configuration screen 1 on page 43.

4.7.1.13 Configuration screen 13

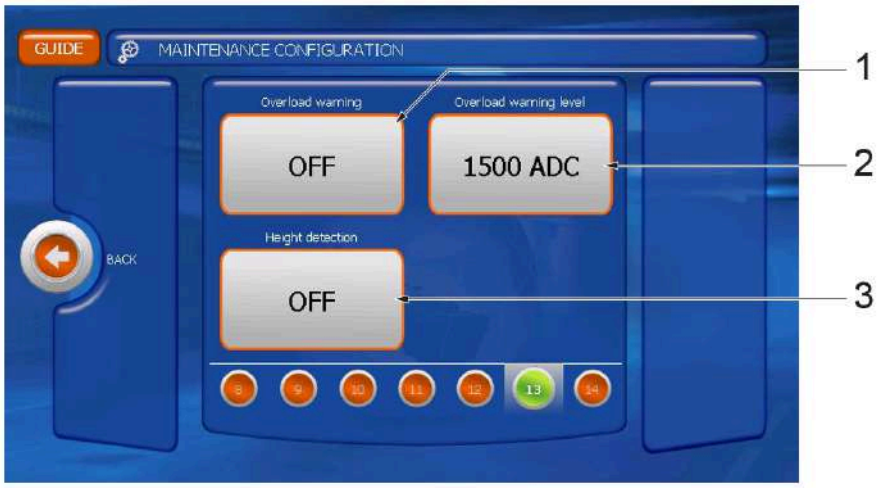


Figure 30: Maintenance configuration - screen 13 (example)

Pos.	Description	Function
1.	Overload warning (option)	When enabled, the lift cannot raise when one of the weight sensors reports a value larger than the overload limit.
2.	Overload warning level (option)	The limit used for the overload warning, in ADC units. The current value of the pressure sensors in ADC units can be read over the HMI interface.
3.	Height detection (option)	When detecting a vehicle, switch will open and lift will stop lifting. Lowering is still possible.

For description of other buttons, refer to Configuration screen 1 on page 43.

4.7.1.14 Configuration screen 14

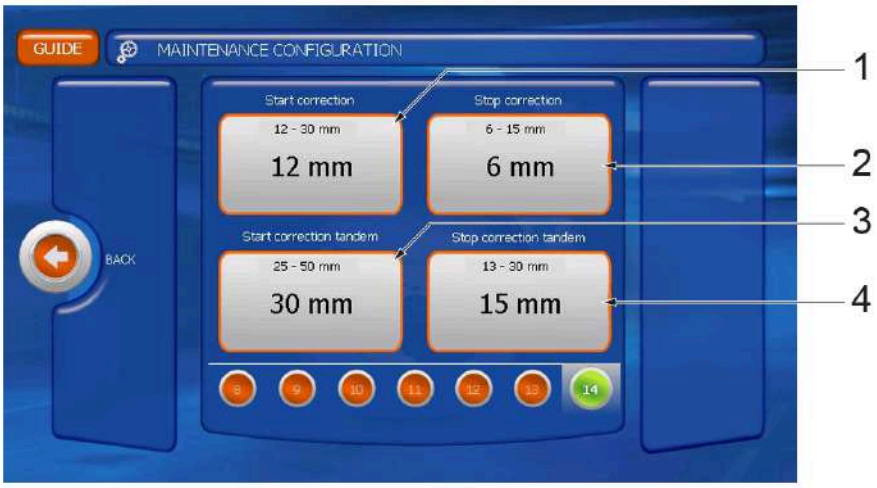


Figure 31: Maintenance configuration - screen 14 (example)

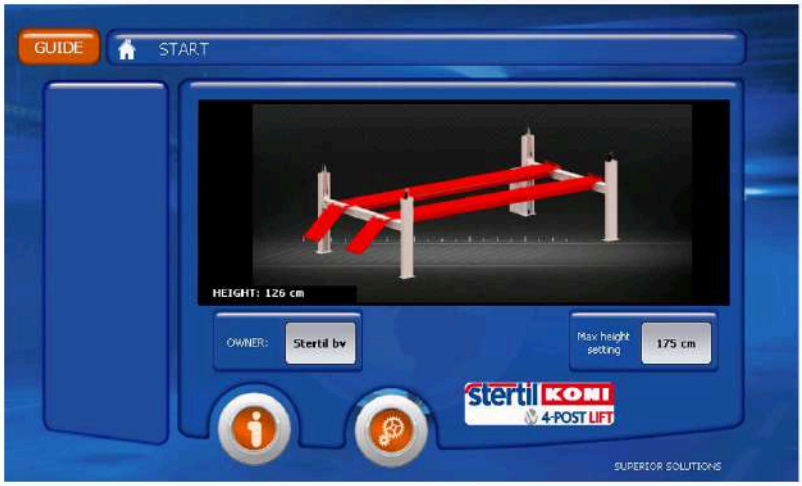
Pos.	Description	Function
1.	Start correction	Add the value to start the correction.
2.	Stop correction	Add the value to stop the correction.
3.	Start correction tandem	Add the value to start the correction in tandem operation.
4.	Stop correction tandem	Add the value to stop the correction in tandem operation.

For description of other buttons, refer to Configuration screen 1 on page 43.

4.8 Height sensors calibration

Follow the steps below to calibrate the height sensors.

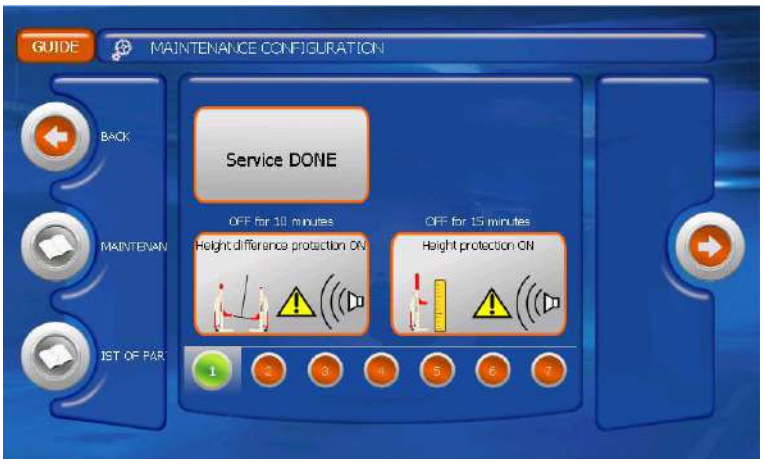
1. From the **Start** page, go to the **Settings** page by pressing the settings button (2 gears).



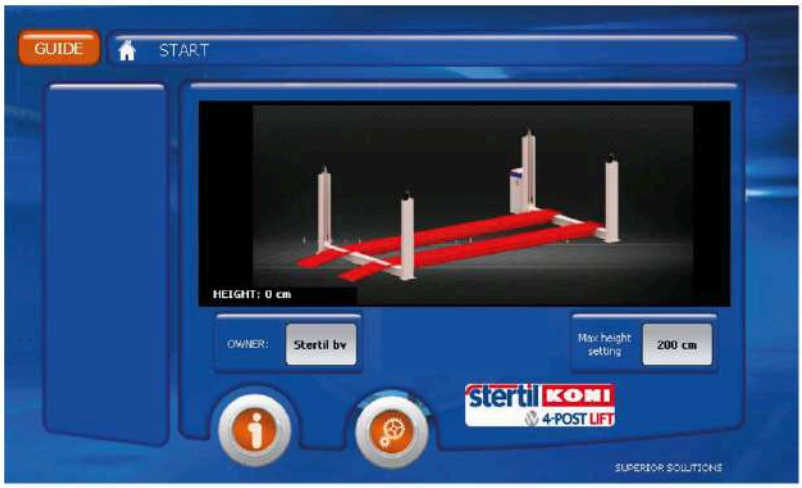
2. From the **Settings** page, go to the **Maintenance** page by pressing the assistance button (2 tools).

3. To enter the **Maintenance** configuration a PIN code is required. SERVICE PIN CODE = 8365.

4. On page 1, set the height protection to the off position. When this is confirmed, go back to the **Start** page.



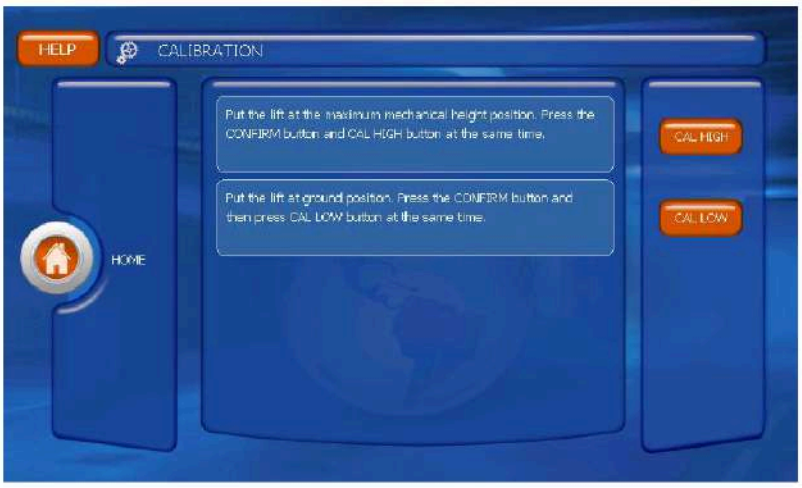
5. From the **Start** page, go to the **Settings** page by pressing the settings button (2 gears). Make sure that **Max height setting** shows the value of 2000 mm.



6. From the **Settings** page, go to the **Maintenance** page by pressing the assistance button (2 tools).

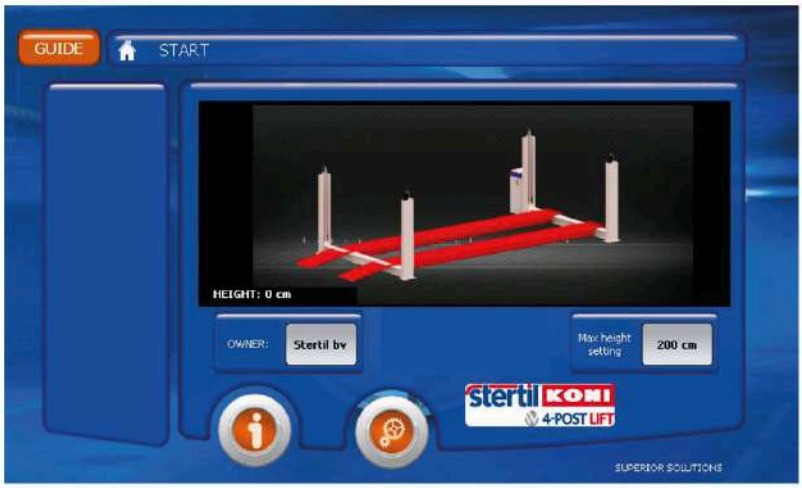
7. To enter the **Calibration** menu a PIN code is required. CALIBRATION PIN CODE = 68250.

8. Now you are in the **Calibration** menu.
   a) Bring the lift to its highest mechanical position. All 4 posts must be in the highest position and not in the safety locks. Press the **CONFIRM** button and **CAL HIGH** button at the same time. Hold the confirm button pressed until a popup with the measurements is shown on the HMI.
   b) Bring the lift to its lowest mechanical position. All 4 posts must be in the lowest position and not in the safety locks. Press the **CONFIRM** button and **CAL LOW** button at the same time. Hold the confirm button pressed until a popup with the measurements is shown on the HMI.



   Now the lift is calibrated.
9. Go back to the **Start** page

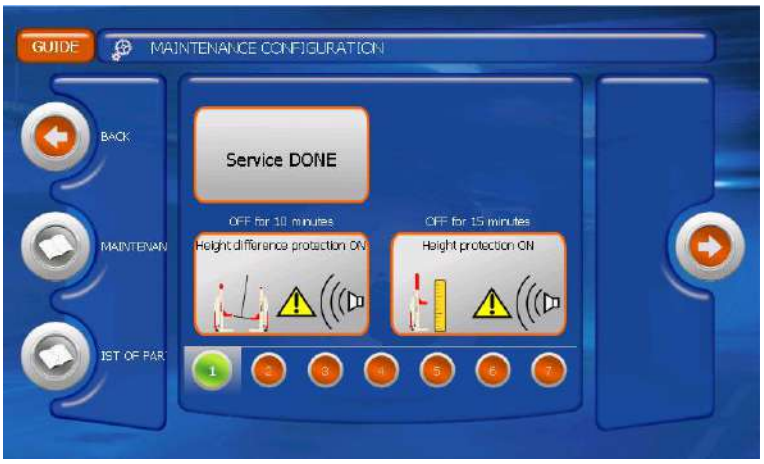
10. From the **Start** page, go to the **Settings** page by pressing the settings button (2 gears).



11. From the **Settings** page, go to the **Maintenance** page by pressing the assistance button (2 tools).

12. To enter the **Maintenance** configuration a PIN code is required. SERVICE PIN CODE = 8365.

13. On page 1, set the height protection to the ON position. When this is confirmed, go back to the **Start** page.



4.9 Installation of the options

Refer to Options for installation procedures of optional components.

5 Commissioning

CAUTION

- *The checks and adjustments described in this chapter must be carried out by a service department engineer before the vehicle lift is put into service.*
- *There must be no vehicle on the vehicle lift during the checks and adjustments.*
- *It is not allowed to put the machine into operation if any of these checks fail. In this case, contact your local Stertil B.V. service department or distributor.*

5.1 Locking mechanism

Make sure that the locking catches (2) are free to engage all the teeth of the locking strip (1).

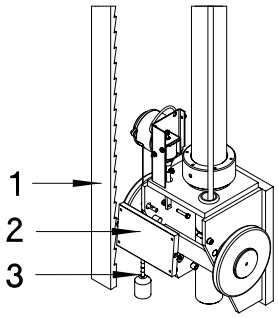


Figure 32: Locking mechanism

5.2 Maximum height position

1. If necessary, de-activate the programmable height limit (refer to the operation manual for user settings).
2. Raise the Vehicle Lift to the highest position.
   The Vehicle Lift must stop before it reaches the mechanical stop position.
   The Vehicle Lift will stop at a fixed position.

3. If required, adjust the potentiometer rods (3) and recalibrate the potentiometers. Move up for stopping higher or move down for stopping lower. Use the same distance for all rods on all the posts.

5.3 Lowering protection

1. Place an object (strong enough to block a track) underneath one track and lower the Vehicle Lift.
   Lowering of the other track stops, when the height difference between the tracks becomes more than the set maximum height difference.
2. Check whether you can raise the tracks.
3. Press the **UP** button to raise the Vehicle Lift.

NOTICE

- *Due to height differences, the Vehicle Lift may not raise. A message will pop up on the HMI screen.*
- *Use the lowering 1, 2, 3 and 4 PCB buttons to manually level the tracks. Normal lifting and lowering is possible again when the tracks are within the correct level.*

5.4 Safety system

1. Make sure that the Vehicle Lift is unlocked.
2. Push PCB button lowering 1 to lower the lifting device P1 until the lowering stops.
   A message will pop up on the HMI screen "The maximum height deviation is reached". The normal controls are now disabled.
3. Lower the other tracks within the limits using PCB buttons lowering 2, 3 and 4.
4. Repeat steps 2 and 3 for the lifting devices P2, P3 and P4.

5.5 Emergency stop

To test the emergency stop function:

1. Turn the main switch to "off".
2. Make sure that all functions are disabled.
3. Switch the main switch to "on" again.
4. Test the automatic foot guard (if program code is activated), continue with the next step.
5. Raise the Vehicle Lift to approx. 400 mm.

6. Lower the Vehicle Lift with the unlock and lowering button. The Vehicle Lift automatically stops at a level of 300 mm.
7. Release and press the unlock and lowering button again. The lowering now is accompanied by an acoustic alarm.

5.6 Testing

After all adjustments and installation work has been finished, test the Vehicle Lift under full load with a standard vehicle.

5.7 Load test

Insofar as the ground characteristics and the anchors are in line with the requirements stated in the manual, we Stertil B.V. recommend:

In order to carry out the static and dynamic tests on the Vehicle Lift as per DRT circular 2005 -04, dated 24 march 2005 by Directive 2006/42/CE date 17 may 2006 article 4:

- A static test of 60 minutes.
- A dynamic test of 15 minutes.
- This is to be done with a coefficient of 1.10.

⚠ CAUTION

Failure to follow these instructions could damage the lifting system and thereby risk invalidating the warranty.

⚠ WARNING

After load testing the vehicle lift, apply a torque of 16,5 Nm to the anchor bolts. The anchor bolts must not turn in the concrete.

6 Inspection and maintenance

6.1 Aim of maintenance

Maintenance can be divided into two categories:

- Preventive maintenance.
- Corrective maintenance.

Preventive maintenance is necessary to keep the machine in a good condition or restore it to that condition. Corrective maintenance is done after malfunctions have occurred.

WARNING

Only authorised personnel are allowed to carry out maintenance.

Always follow maintenance instructions.

NOTICE

All maintenance actions described must be done on schedule. Due to load differences and environmental influences certain parts may require more or less maintenance than specified.

The maintenance procedures will refer to special instructions when necessary.

6.2 When you carry out maintenance

- If you are in any doubt whether you should perform an action, please contact your local Stertil B.V. service department or distributor.
- If you are allowed to perform an action but are unsure whether you have the ability to do so, please contact your local Stertil B.V. service department or distributor.
- Always observe the safety procedures when carrying out maintenance; see Safety.
- After carrying out the maintenance, always perform the final checks.

6.2.1 Pay attention to safety

WARNING

When carrying out inspection and maintenance under the Vehicle Lift, make sure all lifting devices are blocked by the fall prevention system (safety locks) and switch off the mains power supply switch (position 0). Secure the switch using a padlock.

For all other types of inspection and maintenance, always set the Vehicle Lift to the lowest position and switch off the mains power supply switch (position 0). Secure the switch using a padlock.

WARNING

Always pay attention to safety. Work on installations and devices can only be safe if the corresponding instructions are carried out to the letter and all protection devices are left in place.

WARNING

Never use a ladder for work or maintenance activities at height.

WARNING

It is the responsibility of those in charge of preparing or surveying work, to take the necessary steps to guarantee safe working conditions.

Most accidents with lifting systems happen during maintenance and repair work. Before starting maintenance on the equipment:

1. Stop the Vehicle Lift and allow any pressure to disperse.
2. Turn the main switch to the OFF position and lock it with a padlock.
3. Place a tag "Do not start" at the control box.

The power may only be switched on temporarily for bringing the lifting system in another position when required for performing certain checks and adjustments.

WARNING

When the vehicle lift is in a raised position, always lower it into the safety lock.

Please refer to chapter Safety for an overview of all safety instructions.

6.2.2 Recommendations for maintenance

When performing maintenance on your machine, keep in mind the following recommendations:

- Keep the machine clean at all times.
- Repair damaged or worn parts promptly.
- Ensure that all fasteners are secured after maintenance.
- Do not attempt to operate defective equipment.
- Follow the safety instructions in this manual.
- Follow the safety regulations that apply to your site.
- For repairs and maintenance, always use original Stertil B.V. parts.

6.2.3 Waste disposal

Remove and dispose in a correct manner lubricating agents, used chemical products and other such matter. On this subject, the local environmental recommendations should be respected. See also Environmental aspects on page 19.

6.2.4 Forms and administration

It is recommended to keep a record for each periodic maintenance procedure performed on your equipment. The operator/engineer responsible for the maintenance should enter:

- His or her name.
- The date when the maintenance was carried out.
- The work carried out.

Daily periodic maintenance procedures do not require a signature or date – these procedures must be completed at the start of each work day.

6.3 Maintenance schedule

The table below gives an overview of all required inspection and maintenance actions for the Vehicle Lift.

The annual maintenance involves a thorough inspection. In order to ensure continuing safe operation of the Vehicle Lift, the electronic control board has to be replaced each 20 years. It is recommended to have both done through a maintenance contract.

Frequency	Actions	Reference
Daily	• Check for visible damage • Check for oil leakage • Confirm correct functioning • Confirm functioning of the safety locks	Visual inspection on page 76
Monthly	Clean any dirty parts	Cleaning on page 76

6.3.1 Daily inspections

At the start of each working day:

- Make sure there is no visible damage. Pay also attention to wiring and cables.
- Make sure there are no signs of oil leakage from the hydraulic system (hydraulic units, hoses, couplings and cylinders).
- Check the correct functioning of the safety locks.

WARNING

Do not go underneath the vehicle lift for inspections. Only qualified personnel are allowed to do this.

6.3.2 Monthly maintenance

Cleaning

1. Clean the control box, hydraulic units, posts, tracks, LED lighting fixtures, safety locks and hydraulic cylinders.

NOTICE

Clean the lighting fixtures with a non-aggressive detergent.

Tracks

2. Make sure the tracks do not slope:
   a) Raise the lift about 500 mm from the floor.
   b) Measure the height from the footplate to a fixed point on the moving section of all posts.

The height difference should not exceed 25 mm. If it does, lower the vehicle lift and recalibrate the vehicle lift. Consult the service department if the problem keeps reappearing.

Hydraulic system

3. Make sure the hydraulic system does not show signs of oil leakage, damage or wear.

WARNING

Replace any hydraulic hose that shows signs of damage, wear or ageing. The hoses are under high pressure, and failure or malfunction could cause injury or hydraulic system failures. Consult your local Stertil B.V. service department for the appropriate hoses and fittings or for repair.

4. Make sure the hydraulic oil level is correct.
   a) Place the Vehicle Lift in its lowest position.
   b) View the oil level at the gauge glass in front of the tank.
   The hydraulic oil level should be above the line indicating the minimum level. Replenish if necessary, refer to Maintenance every two years on page 74.

CAUTION

Any dirt or contamination which is found in the hydraulic reservoir must be removed at once. This dirt could get into the cylinders and damage or destroy the seals, resulting in a potentially serious safety hazard. Clean the hydraulic reservoir thoroughly and replace only with approved oil. Contact your Authorized Service Representative if further assistance is required.

5. Lubricate the piston of each hydraulic cylinder.

Safety lock

6. Make sure that each safety lock functions properly:
   Do this check with two persons:
   a) Press and hold the unlock button on the control box.
   b) Release the unlock button.
   During this process, check if the locks are free to engage all the teeth of the locking strip.

6.3.3 Maintenance every year

Use the Inspection checklist for annual maintenance to record your findings during the following activities:

1. Perform all monthly checks as described in Monthly maintenance on page 72.

Hydraulic system

2. Check the hydraulic system for leakage.
   a) Place a vehicle on the vehicle lift and raise the vehicle lift.
   b) Monitor the lifting height.
   If it descends more than 6 mm per hour, then do the next sub-step.
   c) Make sure the hydraulic system does not show signs of external leakage (hoses, couplings, cylinders) and consult your local Stertil B.V. service department about internal leakages (valves) and/or repair.

Safety protections

3. Check all protections of the vehicle lift as follows:
   a) Carry out the safety tests in Testing on page 68.
   b) Clean each safety pawl and check its adjustment as specified in Locking mechanism on page 66. Adjust if necessary.

Anchors

4. Make sure that the nuts on the anchors are still tightened with the correct torque according to the values specified in Mounting to the floor on page 33.
5. Carry out a general check for damage. Replace or repair construction parts that show signs of damage. Do this immediately in case a dangerous situation may occur.

Lubrication

6. Lubricate the piston rod of each cylinder.

6.3.4 Maintenance every two years

Replace the hydraulic oil every two years as follows, also if the vehicle lift is not in constant use:

1. Put the vehicle lift in its lowest position.
2. Drain the oil from the hydraulic unit.
3. Fill the oil tank with hydraulic oil Unil HVC SX15.

   Alternative oils:

   - Mobil DTE 10 Excel 15
   - Biological degradable oil Panolin SYNTH 15 (upon request)

WARNING

Only use the oil as specified above. Using incompatible oil can damage or destroy oil seals, causing malfunction of the hydraulic system.

NOTICE

Do not mix different types of oils. The warranty will expire when other than the prescribed oil is used and/or when different types of oils are mixed.

6.3.5 Cylinder replacement

NOTICE

Make sure that no dirt etc. gets into the hydraulic system when the hydraulic components are dismantled and assembled.

6.3.5.1 Removing the cylinder

1. Release the locking screw on the side of the swivel nut that connects the cylinder to the guide piece. If the locking screw is not accessible from the front, put the lift in the highest position where it can be reached from the top of the post.

NOTICE

Make sure the screw does not protrude out of the nut. It can damage the potentiometer cover while unscrewing the swivel nut.

2. Put the lift in the lowest position. Make sure there is no hydraulic pressure in the system.
3. Unscrew the coupling nut at the top of the cylinder. Plug the line and close the coupling at the top of the cylinder e.g. by means of a nut and a ball.
4. Unscrew the swivel nut that connects the cylinder to the guide piece.
5. Lift out the cylinder.

6.3.5.2 Installing the cylinder

1. Put the cylinder in its place in the guide piece. Take care not to damage the potentiometer housing which is next to the hole in the guide piece.
2. Tighten the swivel nut (slide it over the top of the cylinder if not already mounted).

NOTICE

If not already filled, it is recommended to fill the cylinder with new hydraulic oil. This way, bleeding the air will take less time.

3. Connect the hydraulic line to the top of the cylinder. Take care to remove all plugs and stops before mounting
4. Tighten the locking screw in the swivel nut. If the locking screw is not accessible from the front, put the lift in the highest position where it can be reached from the top of the post.

6.4 Cleaning

NOTICE

Clean the lighting fixtures with a non-aggressive detergent.

Monthly clean:

- Console surface
- Surface of the tracks
- Surface of the lifting legs
- Surface of the LED light fixtures
- Stickers and labels

6.5 Visual inspection

During a visual inspection:

- Check all visible wires and cables for damage.
- Check the visible part of the hydraulic system for leakage.
- Check the functioning of all moving parts.
- Check the correct functioning of the safety locks.

WARNING

Operators are not allowed underneath the Vehicle Lift for inspections, this may only be done by qualified personnel.

6.6 Testing the emergency stop button

CAUTION

Test the correct functioning of the remote emergency stop button after each power-on.

Test the emergency stop function as follows:

1. Turn the main switch to the OFF (O) position.
2. Check if all functions are disabled.
3. Turn the main switch to the ON (I) position. The emergency stop action is reset and normal operation continues.

Test the emergency stop button on the remote control (option) as follows:

1. Push the emergency stop button on the remote control. A pop-up will be displayed on the HMI display that the emergency stop is activated.
2. Check if all functions are disabled.
3. Turn the emergency stop button clockwise. The button resets.
4. Push and hold the unlock and confirm buttons on the console simultaneously for two seconds

The emergency stop action is reset and normal operation continues.

7 Troubleshooting

Faults in the Vehicle Lift can have simple causes. This chapter contains the fault diagnosis tables to localize causes of the malfunctions.

Most errors can be corrected without having to remove the vehicle from the vehicle lift. However, it is strongly recommended to remove any vehicle if the vehicle lift is completely lowered. When troubleshooting or repairing the vehicle lift, set it to the lowest position. If the malfunction makes this impossible, then ensure that all pawls are engaged in the safety locks (lower without unlocking).

Turn off the main switch at the control box.

WARNING

Only authorized personnel are allowed to carry out maintenance.

WARNING

Incorrect adjustments, repairs and maintenance can cause damage to goods or personal injury. Consult your dealer/supplier.

NOTICE

Always notify the service department if malfunctions other than those described in the chapter below occur.

When the control system detects a fault, the HMI will show a fault message. The faults on the HMI can be divided into the following types of messages:

- Information messages
- Fault messages
- Error messages

The presence of certain messages can lock out various functions.

For the most common faults, check the HMI for warnings and follow the instructions. If the fault won't reset, turn off the main power by switching the main switch to the OFF (O) position and back to the ON (I) position.

If the fault keeps returning, contact the service department.

7.1 Technical support

If the tips provided in this chapter do not answer your question or solve your problem, please contact your local Stertil B.V. service department or distributor. For a complete list of Stertil B.V. distributors and local service departments, please refer to the website: stertil.com.

7.2 General

Faults in the Vehicle Lift can be caused by a single fault. Check the installation for the causes indicated.

NOTICE

Any repairs to the Vehicle Lift and possible consequences are completely at the user's own risk where such repairs have not been carried out by trained lift service personnel.

To resolve most malfunctions it is not necessary to remove the vehicle from the Vehicle Lift. It is only recommended to remove the vehicle when the Vehicle Lift is in its lowest position.

Set the Vehicle Lift to its lowest position in the event of malfunctions or repairs. If this is not possible due to the nature of the malfunction, ensure that all safety locks are properly engaged in the locking position (lowering without unlocking).

Switch off the main switch from the control box. To do this, turn the main switch to the 0 position and secure it with a padlock.

Do not loosen any parts of the hydraulic system or remove any parts before the Vehicle Lift is in the lowest position or before it is locked in the safety locks.

7.3 Out of limit height differences

When the height difference exceeds the maximum set height limit, one of two possible pop-up messages appears on the screen:

- "The maximum height deviation is reached, only raising is possible". This can be solved by using the up button to level the tracks.
- "The maximum height deviation is reached". This can only be solved by using the lowering 1, 2, 3 and 4 PCB buttons inside the control box to manually lower the highest positioned post.

Normal operations can be resumed after the height differences are minimized.

7.4 Emergency lowering

In an emergency, in which it is not possible to lower the Vehicle Lift with the controls, the Vehicle Lift can be lowered manually. Contact the technical service department to carry out this operation.

WARNING

The emergency lowering procedure may only be carried out by competent personnel who have received training in this procedure.

7.4.1 Emergency lowering with 24 V connection

The control box is equipped with a 24 VDC power connection. In case of a mains power failure:

1. Connect a 24 VDC power supply to the power connection marked with JP-VDC.
   It is now possible to lower the tracks.
2. At the same time press the buttons Lowering 1, 2, 3 and 4 on the PCB in the control box to lower the tracks.

NOTICE

The lowering only works if the safety locks can move freely. In case they do not move:

1. *Use a hydraulic jack to lift the corresponding cross beam.*
2. *Press the unlock button on the PCB to activate the unlocking solenoids, and meanwhile lower the jack about 25 mm.*
3. *Release the other safety pawls in the same way.*
4. *Lower the vehicle lift as described above.*

7.4.2 Manual emergency lowering

Unlock the safety locks as follows:

1. Lift the safety lock with a screwdriver.
   In case it is not possible to release the safety lock, use a hydraulic jack to lift the lock from its locking position
2. Place a spacer with a thickness of 1 mm or 2 mm between the teeth.
   Repeat this for the other posts. All safety locks are now released and the locking mechanism is no longer operational.
3. Turn the knob on the lowering valves to lower the lift manually.

4. Close the lowering valve on the lowest cylinder if the tracks run out of level.

7.5 Fault codes

Errors are shown on the HMI of the lift. Refer to the following table for a detailed description of the fault codes.

Fault codes and solutions

Code	Possible fault	Solution
2	Maximum height reached. Only lowering is possible.	The lift is at the maximum mechanical height. Only lowering is possible.
3	Maximum programmed height reached.	The lift is at the maximum allowed height, set by parameter. Only lowering is possible.
10	The foot protection limit has been reached.	Release the buttons and then press again to continue lowering.
23	Remote crush limit exceeded.	It is not possible to lower the lift below the crush limit with the remote control, use the control panel to lower the lift further.
30	Lift is out of the pocket.	Release buttons and press the up button to continue.
31	Supply voltage is too high.	Check the primary and secondary voltage on the transformer, if this is too low/high check also mains power supply.
32	Supply voltage is too low.	
39	Time-out during lowering.	Ground position not reached.
40	Tank level warning.	Check oil level in tank.
41	Jacking beam warning.	Set the Jacking beams in the correct position.
42	Height detection warning.	Ceiling sensor activated, please lower the lift.
43	Overload warning.	Place the vehicle in the correct position on the lift or the vehicle is too heavy.
110	The maximum height deviation is reached, only raising is possible.	Press the up button in the control box to get the lifting systems back to level again.

Code	Possible fault	Solution
111	The maximum height deviation is reached.	Use the PCB buttons lowering 1, 2, 3 and 4 to level the tracks. If the fault returns, check the hydraulic system for damage.
114	Invalid vertical movement.	The potentiometer sensor detects movement in the opposite direction or detects a speed that is greater than expected. Check if the sensor is loose or that the hydraulics are not working properly. (leak hose or seal)
115	Vertical sensor out of range.	Check/calibrate potentiometer sensor.
116	Invalid actuator state.	An output is switched on or off and the hardware measurement results in an erroneous signal. No voltage on the output when expected or voltage on output when not expected. No current flowing when expected. Check actuator connections and cabling.
118	Height measurement is invalid.	Potentiometer sensor is outside the calibration range. Check sensor and wiring. If no errors, recalibrate.
120	Height sensor: short circuit detected.	Short circuit detected in potentiometer sensor, check cabling and sensor. Disconnect potentiometer sensor and check if this fault (120) is gone. If so, sensor is broken.
122	Main relay error.	Check main relay and/or (control) wiring main relay.
123	Motor relay error.	Check motor relay and/or (control) wiring motor relay.
124	Lowering valve error.	Check lowering valve. If a lowering or correction valve is found to be defective, have it replaced by the technical service department.
126	Unlock solenoid error.	Check solenoid. If a solenoid is found to be defective, have it replaced by the technical service department.

Code	Possible fault	Solution
137	Emergency switch is pressed.	Release button and restart.
141	User control panel error.	Turn main switch off and on. One of the front panel switches is pressed or has a short circuit to ground.
144	Emergency stop broken.	Check emergency stop.
147	One of the service buttons has been pressed.	Press OK. When fault code appears without use of the PCB buttons, turn the main switch off and on. One of the PCB switches is pressed or has a short circuit to ground.
148	Production mode has ended.	Turn mains switch off and on. Alert the technical service department if it persists.
149	CRC error for the safety settings.	Turn mains switch off and on. Alert the technical service department if it persists.
153	CRC error for the settings.	Turn mains switch off and on. Alert the technical service department if it persists.
156	Update failure.	Turn mains switch off and on. Alert the technical service department if it persists.
158	Height difference guard off mode has ended.	Turn mains switch off and on. Alert the technical service department if it persists.
159	Remote emergency button is pressed.	Release button and recover by pressing the select and confirm button.
160	Overcurrent detection.	Check outputs and control board.
161	Short circuit detection.	Check outputs and control board.
162	Emergency button is pressed during start-up.	Unlock the emergency stop button.
163	Emergency button of the remote is pressed during start-up. Release button and restart	Unlock the emergency stop button or unlock the emergency stop on the remote control.

Code	Possible fault	Solution
164	Active output time-out	A control button has been pressed too long. Release the buttons and see if the message disappears. If not, turn mains switch off and on and check again. Alert the technical service department if fault persists.
165	Calibration Failed	Please restart and calibrate again.
166	Control board revision is not supported	Control board software version is not supported. Call the technical service department.
167	Control board voltage reference error	This is a hardware error on the control board. When this message returns after a reboot, replace the control board.
168	Remote malfunction	Restart and see if fault is gone. If not, disconnect remote and restart and check again. If the fault comes back, disconnect the remote cable in the control box from the PCB. Replace cable / remote.
169	RFID antenna failure	This is a hardware fault, please check button board and internal flat cable between control board and button board.
170	Firmware size is invalid. Upgrading not succeeded	Turn mains switch off and on. Alert the technical service department if it persists.
171	Hardware error. Clock frequency not correct	Turn mains switch off and on. Alert the technical service department if it persists.
172	Software error. Invalid stackpointer	Turn mains switch off and on. Alert the technical service department if it persists.
173	CRC error for safety check	Turn mains switch off and on. Alert the technical service department if it persists.
174	CRC error for application check	Turn mains switch off and on. Alert the technical service department if it persists.

Code	Possible fault	Solution
175	Software error. Watchdog is triggered	Turn mains switch off and on. Alert the technical service department if it persists.
176	No contact to HMI	Turn mains switch off and on. Alert the technical service department if it persists.
177	User control panel error. Cross short circuit detected	When 2 buttons are pressed within 100msec this failure can occur. Release the buttons and restart. If this malfunction occurs when pressing 1 single button, there is a short circuit between 2 or more buttons. Replace button board.
178	Communication failure to tandem unit	Restart both lifts and try again
179	Initiation failure for tandem operation	Restart both lifts and try again
181	Invalid lift types for tandem operation	Software versions on tandem lifts different.
282	Hardware error: external watchdog	Turn mains switch off and on. Alert the technical service department if it persists.
284	External RAM hardware error	Turn mains switch off and on. Alert the technical service department if it persists.
286	Software error: status not allowed	Turn mains switch off and on. Alert the technical service department if it persists.
301	Processor error	Turn mains switch off and on. Alert the technical service department if it persists.

7.6 Common faults and solutions

WARNING

Only authorized personnel are allowed to carry out maintenance, because incorrect adjustments, repairs and maintenance can cause damage to goods or personal injury. Consult your dealer/supplier.

7.6.1 Vehicle Lift cannot be raised

Cause	Solution
No mains power.	Have the fault corrected by an authorized electrician.
Oil level too low.	Check for leaks and fill the hydraulic tank with the correct oil type.
Air in pump (only possible after the tank has been empty).	Operate the push buttons on the circuit board inside the control box. Press the PCB buttons main-relay and motor 1 at the same time for 1 minute continuously.
Pressure relief valve opens due to overloading. Indicates that the vehicle lift is overloaded.	Have the safety valve properly adjusted by the service department.
Pump has insufficient output.	Have the pump changed by the service department.
The maximum height difference was exceeded.	Check the Vehicle Lift for damage. Use the PCB buttons lowering 1, 2, 3 and 4 to level the tracks. If the fault returns, check the functioning of the potentiometers.
Tracks out of level.	Check the Vehicle Lift for damage. Use the PCB buttons lowering 1, 2, 3 and 4 to level the tracks. If the fault returns, check the functioning of the potentiometers.

7.6.2 Vehicle Lift cannot be lowered

Cause	Solution
No mains power.	Have the fault corrected by an authorized electrician.

Cause	Solution
Safety lock not pulled out of locking profile.	First raise the Vehicle Lift about 50 mm, see Operation sticker on the console.
The highest position is too close to the highest locking position.	Have the maximum height setting reset to another position by the service department.
The electrically operated lowering valve on the hydraulic unit does not open.	Lowering valve is faulty. Notify the service department.
Safety valve for protection against hose rupture does not function properly.	Check for any hose rupture. • If there is no rupture, slightly raise the Vehicle Lift and lower it again. Notify the service department, if the fault recurs. • If there is a rupture, have the hose replaced by the service department and check the locking mechanism for any damage incurred.
Pawl does not move	Clean the unlocking mechanism or replace the solenoid.
Clogged lowering valve.	Have the lowering valve cleaned or replaced by the service department.
The maximum height deviation is reached. A warning is shown on the HMI display.	Only raising is possible. Use the up push button until the height difference has been levelled out. If this occurs regularly, notify the service department.
The maximum height difference was exceeded.	Check the Vehicle Lift for damage. Use the PCB buttons lowering 1, 2, 3 and 4 to level the tracks. If the fault returns, check the functioning of the potentiometers.
Tracks out of level.	Check the Vehicle Lift for damage. Use the PCB buttons lowering 1, 2, 3 and 4 to level the tracks. If the fault returns, check the functioning of the potentiometers.

7.6.3 Vehicle Lift lowers by itself

Possible cause	Solution
The cylinder seal is damaged. Oil is leaking continuously.	Replace the cylinder seals on the cylinder.
Oil line couplings are leaking.	Tighten the couplings and the coupling nuts.
Dirty or damaged non-return valve.	Clean or replace the oil filter and the ball behind the oil filter.
Clogged or damaged lowering valve(s).	Clean or replace the valve.

7.6.4 Vehicle Lift does not raise properly

Possible cause	Solution
Oil level in tank too low.	Top-up oil according to the service manual; refer to the chapter Inspection and maintenance. Also see the sticker with lubricating instructions on the Vehicle Lift.
Pump draws in air.	Tighten or crimp the suction filter fastening.
Bleed valve blocked (breather cap).	Clean the breather cap.

7.6.5 Tracks out of level

Possible cause	Solution
Control system does not work correctly.	Check the Vehicle Lift for damage. Use the PCB buttons lowering 1, 2, 3 and 4 to level the tracks. If the fault returns, check the functioning of the potentiometers. Make sure that all the safety locks are released by pressing PCB buttons main and motor 1 and press and hold unlock while lowering.

Possible cause	Solution
The control system does not work in tandem operation.	1. Lower both Vehicle Lifts independently in single mode (switch off the tandem mode). 2. Activate the tandem mode. 3. Try to raise the Vehicle Lifts in tandem mode. Consult the service department if fault is repeated.

8 Options

The Vehicle Lift can be ordered with the following options:

- Remote control
- Track lights
- Tandem operation
- Third track
- Jacking beam (JB40 & JB80)
- Flush mounted tracks
- Special drive-on ramps

8.1 Remote control

Follow this procedure to assemble the remote control connector.

1. Remove the control box cover.
2. Unscrew the connector cover and seal from the control box left side.

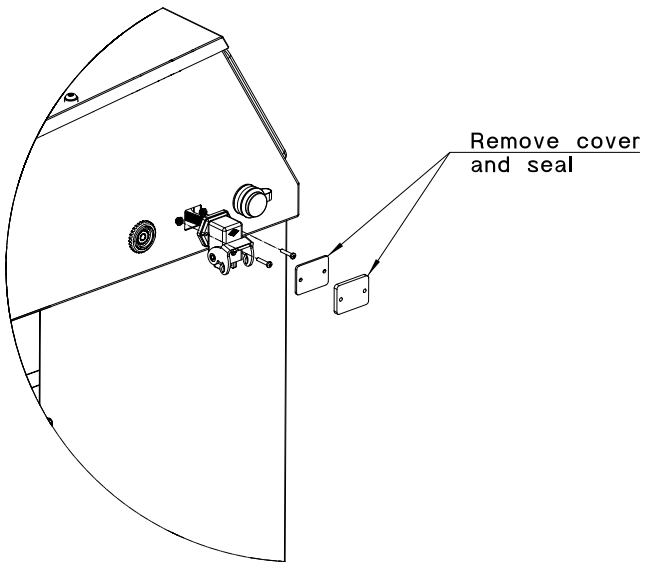


Figure 33: Remote control connector

3. Insert the connector cable into the control box.

4. Mount the connector to the housing using the nuts and bolts from the cover and seal.
5. Run the connector cable through the cable clip.

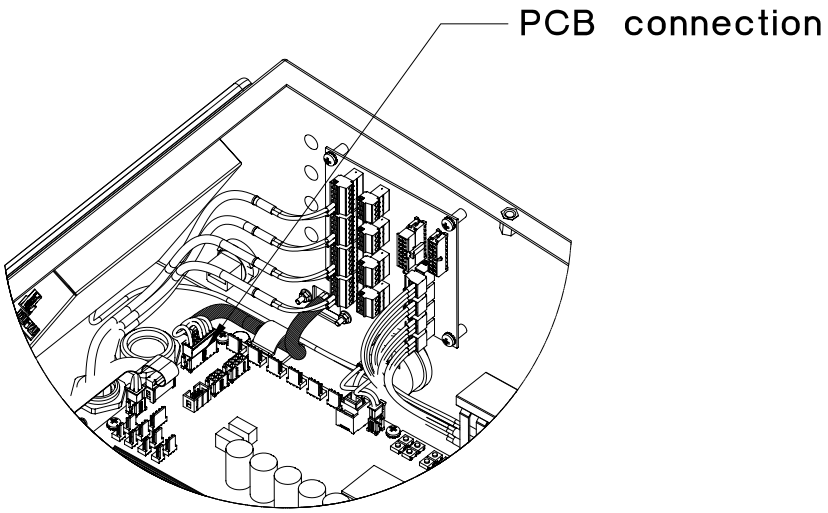


Figure 34: Remote control PCB connection

6. Place the connector on the Remote control PCB connection.

Software setings

7. Check if the remote control function is set to the 2-operator position.

   This is mandatory for use in the EU to comply with CE requirements. See Configuration screen 10 on page 55.

The remote control can be connected to the outside connector.

8.1.1 Parts list

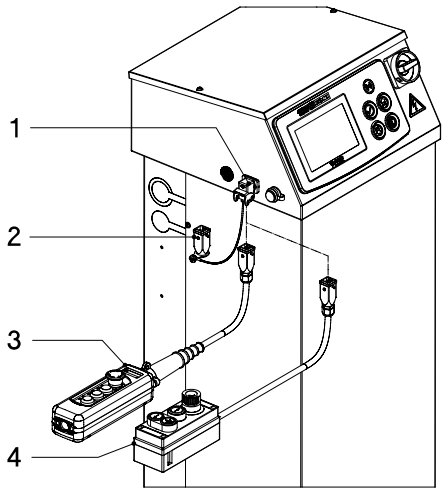


Figure 35: Remote control

Table 2: Remote control (parts list)

Pos.	Total qty.	Number	Description	Remarks
		41407151	Remote control set	EU version
		41407150		US version
1	1	41407050	Cable set remote internal	
2	1	38007748	Dummy plug	
3	1	38007755	Remote control unit	EU version
4	1	38007754		US version

8.2 Track lights

The lighting can be switched on using the **LIGHTS** button on the HMI.

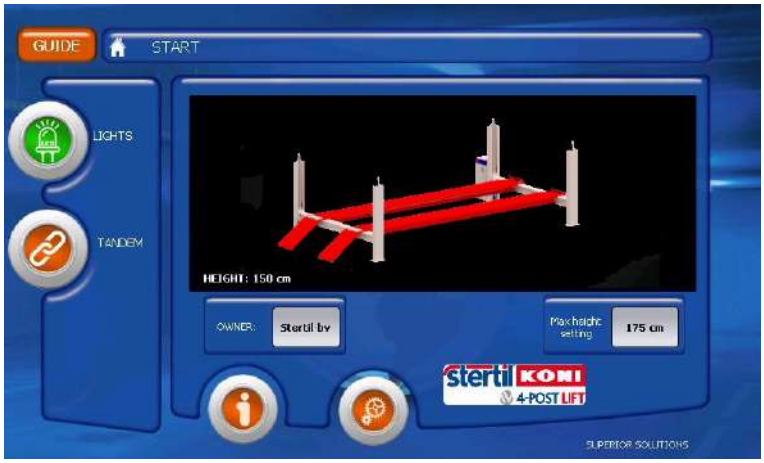


Figure 36: Lights button

The lighting option consists of:

- A number of LED fixtures (1);
- Connection cables (2) between LED fixtures;
- End caps (3) for the not-connected side of the LED fixtures;
- Switching power supply (4);
- A Y-splitter including cables (6) from the control box to the LED fixtures of the vehicle lift;
- Relay with relay base (7);
- Connection terminals (8);
- Fuse terminals with fuse (9);
- Transformer (11) for power supplies of 400, 460, 575VAC without N;
- Wiring and a cables (12) for the connections inside the control box;

- Mounting brackets (13 and 15) for the LED fixtures;
- Bolts M6 (14 and 16) for mounting of the mounting brackets.

The lighting can be connected to 115/120, 200/208, 230, 400, 460 and 575VAC 50/60Hz.

WARNING

Disconnect the power supply before installation.

A maximum of 12 LED fixtures can be connected to 1 switching power supply.

A maximum of 6 LED-fixtures can be interconnected. When interconnecting more than 6 LED fixtures, a Y-splitter cable needs to be installed to ensure not more than 6 LED fixtures are interconnected on a vehicle lift track.

NOTICE

By default, the lighting switches off automatically when the track height is below 500mm. This can be changed in the HMI settings. See Software settings *on page 43.*

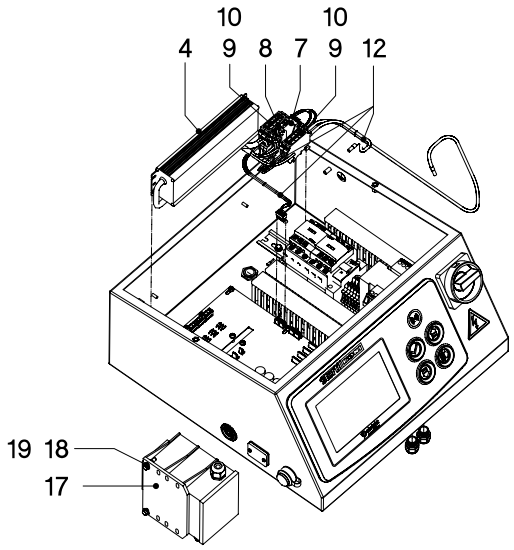


Figure 37: Control box with lighting components

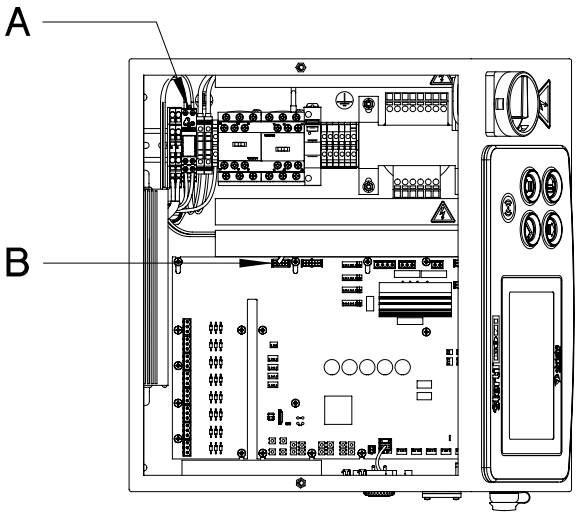


Figure 38: Overview control box

- **A:** Relay connection A1 and A2
- **B:** Lighting print connector

8.2.1 Mounting the lights

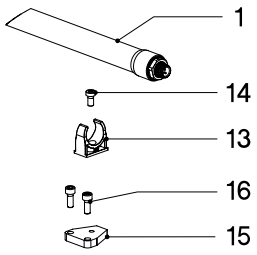


Figure 39: Mounting the lights

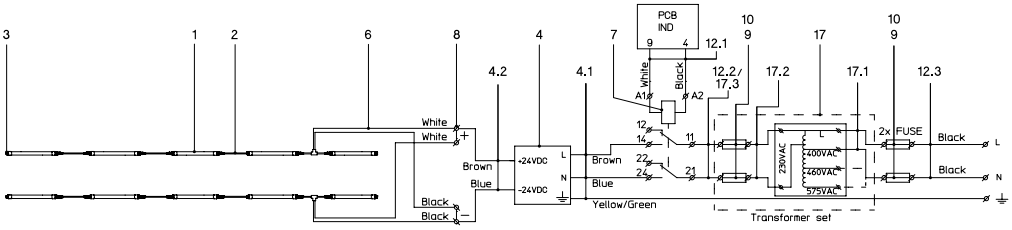


Figure 40: Connection diagram with transformer

1. Place the power supply (4) on the rear wall of the control box.
2. Place the fuse terminals (9) on the DIN rail next to the motor relay.

3. Place the relay (7) on the DIN rail next to the fuse terminals.
4. Place the short DIN rail on the bottom of the cabinet.
5. Place the 2 connection terminals (8) on the short DIN rail.
6. Mount the 2 M16 glands instead of the blind plugs in the bottom of the cabinet.
7. Mount the cable (12.1) on the print's 10-pole print connector (**B**) and on A1 and A2 (**A**) of the relay (7).
8. Connect the wiring (12.3) between the main switch and to the fuse terminals (9) L and N.
   - For 400 V power supply with neutral: Connect one wire on the main switch N connection and the other wire on the main relay L3 connection.
   - For 230 V or 400 V power supply without neutral: Connect both wires to the main relay L2 and L3 connections
9. Connect the wiring (12.2) between the fuse terminals and to connection No. 11 and 21 of the relay.
10. Connect cable (4.1) of the switching power supply to connection No. 14 and 24 of the relay and the earth wire on the earth terminal.
11. Connect cable (4.2) of the power supply to the connection terminals (8) + and -.
12. Position the Y-splitter cables between the first 2 LED fixtures from the track end. Feed the power supply cables (6) through cross beam and the hoses. Keep enough slack in the cables for the adjustment of the tracks.
13. Run the power supply cables (6) through the M16 cable glands in the bottom of the control box and connect the power supply cables to the 24VDC connection terminals (8) + and -.
14. Place the correct fuse in the fuse terminals (10) in the control box. See the table below to select the correct fuse.

Voltage (V)	**Fuse type (A)**
115/120	2
200/208	1.25
230 (400 + N)	1
266 (460 + N)	1

15. Determine where the LED fixtures (1) should be placed on the tracks and mount the mounting plates (15) using the Allen screw M6 (16) in the correct position. Keep approximately 990mm of space between the LED fixtures.
16. Mount the pipe clamps (13) using the Allen screw (14) on the mounting plates.
17. Mount the LED fixtures in the pipe clamps and connect the splitter cable ends to the LED fixtures.
18. Place the cables (2) in the aluminium profile and push the connectors through the oval holes and connect them to the LED fixtures.

19. Mount the end caps (3) on the connectors of the LED fixtures where no cables are connected.
20. Turn on the main voltage.

Software settings

21. Set the lighting function to the on position.
    See Configuration screen 9 on page 54.
22. Check the operation of the LED lighting with the button on the HMI.
    See Track lights on page 92.

NOTICE

By rotating the LED fixtures, the light beam can be directed.

When there is no Neutral connection from the 400 V power supply a transformer set is needed to connect the lighting set.

8.2.2 Mounting the transformer set

1. Mount the transformer (18) on the left inside of the console underneath the control box with bolts (19) and nuts (20).
2. Place the fuses (9) on the DIN rail next to the connection terminals of the lighting set.
3. Place the fuses (10 2x1.25A) in the fuse terminals.
4. Remove the stopping plug in the rear part of the control box and mount the cable gland delivered with the set.
5. Connect cable (11.1) to the correct voltage on the primary side of the transformer.
6. Connect cable (11.2) to the secondary side of the transformer.
7. Feed the cables through the cable gland.
8. Remove the wiring (12.2) and connect wires (17.3) between the fuses of the transformer set and the No. 11 and 21 connections of the relay.
9. Connect cable (11.1) to the fuses of the lighting set.
10. Connect cable (11.2) on the other side of the fuses of the transformer set.

⚠ CAUTION

Connecting the input cable of the transformer to the wrong voltage will permanently damage the transformer and power supply.

8.2.3 Parts list

Table 3: Track lights (parts list)

Pos.	Total qty.	Number	Description	Remarks
1	1	69700150	LED light fixture	
2	1	69700160	Interconnection cable	
3	1	69700151	End cap	
4	1	69500204	Power supply	
6	1	41309147	Cable control box splitter P1/P2	Including cables
7	1	69156025	Relay	
8	1	69900069	Connection terminal	
9	1	69900051	Fuse terminal	
10	1	69206016	Glass body fuse 5x20mm 1AT	
		69206030	Glass body fuse 5x20mm 1.25AT	
		69206031	Glass body fuse 5x20mm 2AT	
13	1	66201169	Pipe clamp 25	
14	1	65025148	Pan head screw./bzk M6x12	
15	1	41209351	Mounting plate light fixtures	
16	1	65012285	Cyl.head screw M6x16	
17	1	69500024	Transformer	
17.1	1	41009356	Cable Fuse-Transformer	
17.2	1	41009357	Cable Transformer-Fuse	
17.3	1	41409153	Wire Fuse-Relay	
18	1	65025179	Serrated hex. flange bolt M5x20	
19	1	65052920	Hex. flange nut M5	

8.3 Tandem operation

The ST4120 tandem set-up is delivered in these main parts:

- 2 pre-assembled vehicle lifts
- Tandem set

Follow this procedure to assemble the main parts of the Vehicle Lift in tandem set-up.

Positioning and mounting the Vehicle Lifts

1. Position the two Hydraulic Vehicle Lifts according to the tandem set-up drawing.

   The distance between the two vehicle lifts depends on the tandem version. Make sure that the distance corresponds to the spacer in the tandem set;

   For further information about placing the vehicle lift, refer to , refer to Installation procedure on page 30.

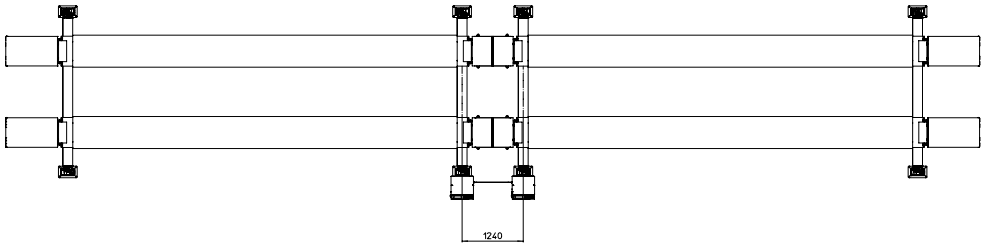


Figure 41: Tandem configuration with bridge part

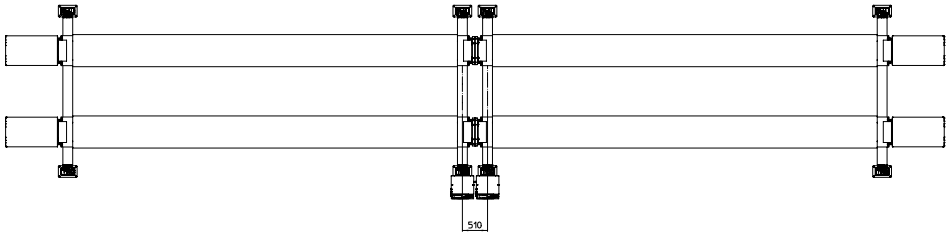


Figure 42: Tandem configuration without bridge part

2. See figure Figure 41: Tandem configuration with bridge part on page 98 for a version with bridge parts and Figure 42: Tandem configuration without bridge part on page 98 for version without bridge parts.

The space between the two vehicle lift posts is:

- 1240 mm for version with bridge parts
- 510 mm for version without bridge parts

3. Mount bridge parts to the floor with the supplied anchor bolts. (Only for version with bridge parts).
4. Cut cable channel to required length between the two control consoles. (Only for version with bridge parts).
5. Mount the channel to the floor with supplied anchors.
6. Break out the material from the console to open the hole for the tandem cable.
7. Remove the stopping plugs from the control boxes.

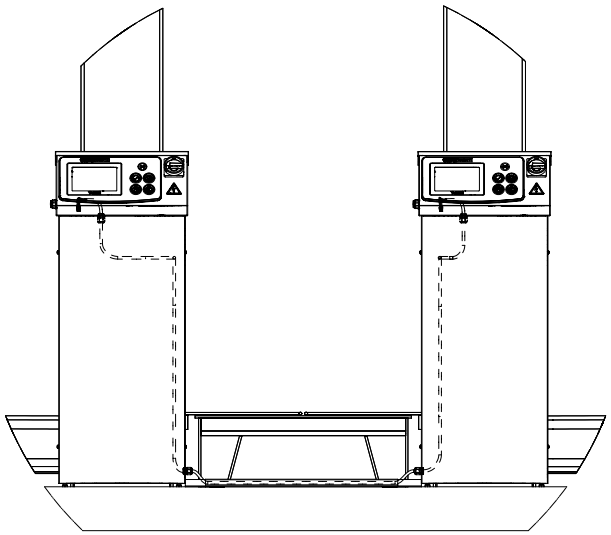


Figure 43: Tandem cable

8. Install the tandem cable between the control boxes. The tandem cable comes with 4 pre-mounted cable glands. The 2 glands on the cable ends will replace the stopping plugs that were removed in step 7. Mount the 2 inner cable glands in the slotted holes that were opened in step 6.
9. Place the connector on the tandem PCB connection. See figure below.

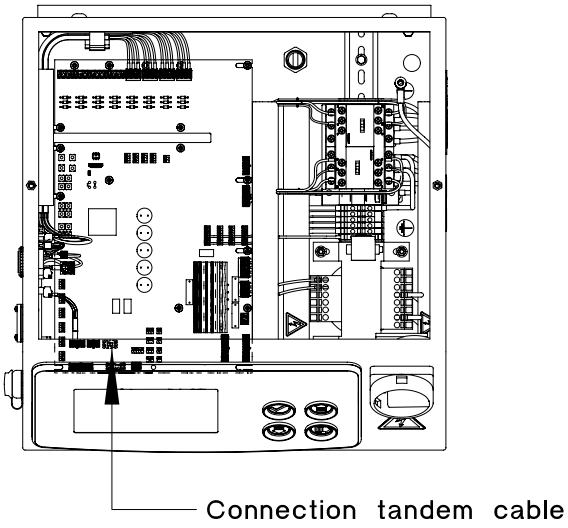


Figure 44: Tandem PCB connection

10. The excessive cable length can be placed inside one of the consoles. Fasten the cable with the cable glands.
11. Cut cover for the cable channel to the required length and place the cover on the channel. Make sure the cover does not touch the cable to prevent damage to the cable.

Software settings:

12. Set the tandem function button to the on position.

See Configuration screen 9 on page 54.

8.3.1 Parts list

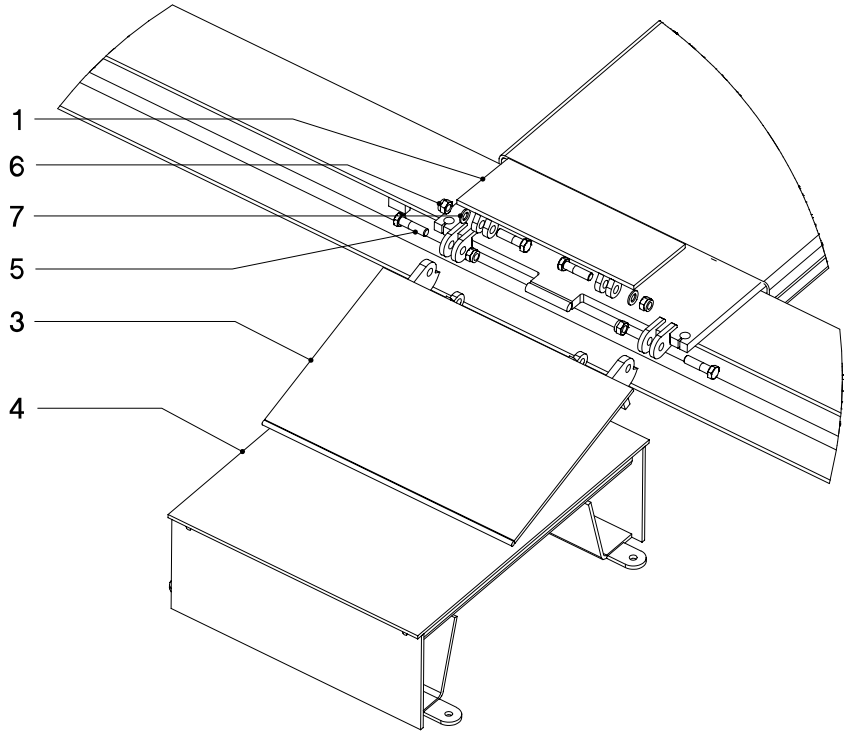


Figure 45: Tandem configuration with bridge part

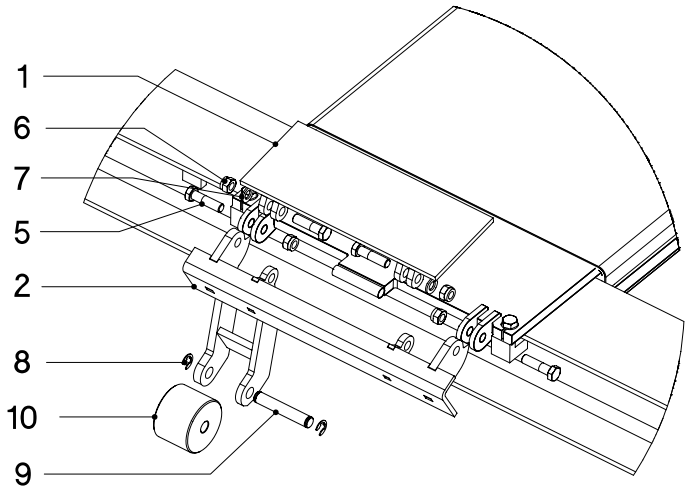


Figure 46: Tandem configuration without bridge part

Table 4: Tandem operation (parts list)

Pos.	Total qty.	Number	Description	Remarks
		41009060	Tandem set with bridge part	
		41009300	Tandem set without bridge part	
1	4	41204100	Roll-off protection	
2	4	41209315	Hinge plate	
3	4	41209150	Drive-on ramp short	
4	2	41209065	Bridge part	
5	16	65002534	Hex. bolt M16x60	
6	16	65051040	Self-locking Nut M16	
7	8	65055024	Washer M16	
8	4	65062030	Retaining ring nr.15	
9	4	41209311	Axle	
10	4	41209312	Roll	
	1	41009062	Cable tandem configuration	

8.4 Third track

8.4.1 Parts list

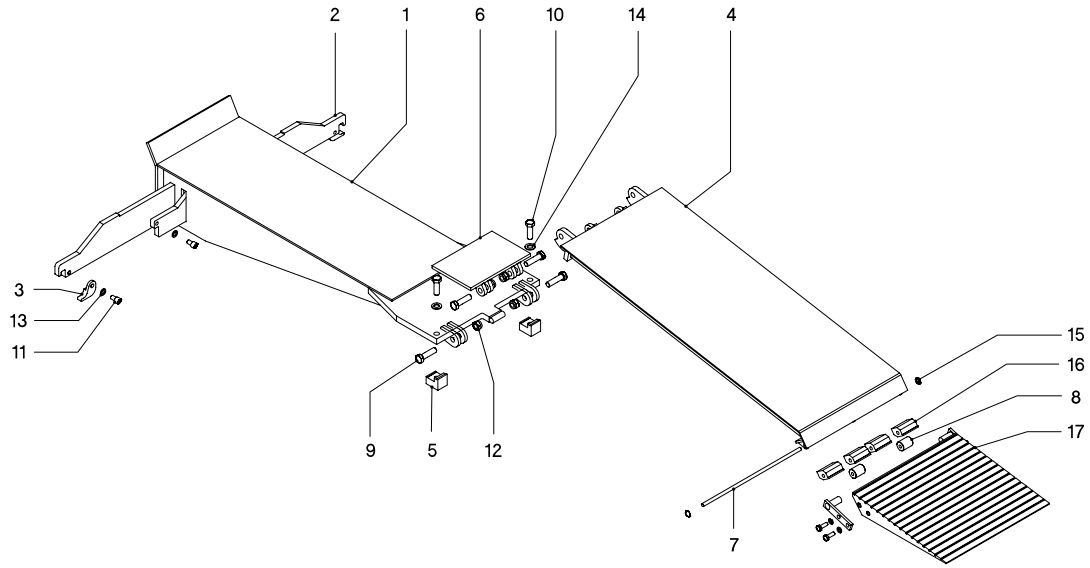


Figure 47: Third track

Table 5: Third track (parts list)

Pos.	Total qty.	Number	Description	Remarks
		41209100	Third track assy	
		41209200	Third track assy	Long ramp (1600)
		41209250	Third track assy	Flush mounted model
1	1	41209105	Track	
2	2	41209101	Girder	
3	2	41209102	Clamp	
4	1	41209115	Drive on ramp	
4	1	41209205	Drive on ramp	Long (1600)
4	1	41209255	Drive on ramp	Flush mounted model
5	2	41203001	Clamp	
6	1	41209120	Wheel shock	
7	1	44509101	Axle	

Pos.	Total qty.	Number	Description	Remarks
8	2	1024.38.00.12	Roller	
9	4	65002534	Bolt M16x60	
10	2	65003532	Bolt M16x50	
11	4	65012443	Bolt M12x20	
12	4	65051040	Self-locking nut M16	
13	4	65058028	Spring ring M10	
14	2	65055024	Washer M16	
15	2	1038.34.01.00	Circlip with cap 10 mm	
16	4	41204001	Slide block	
17	1	41209210	Ramp for small wheels	

8.5 Special drive-on ramps

8.5.1 Parts list

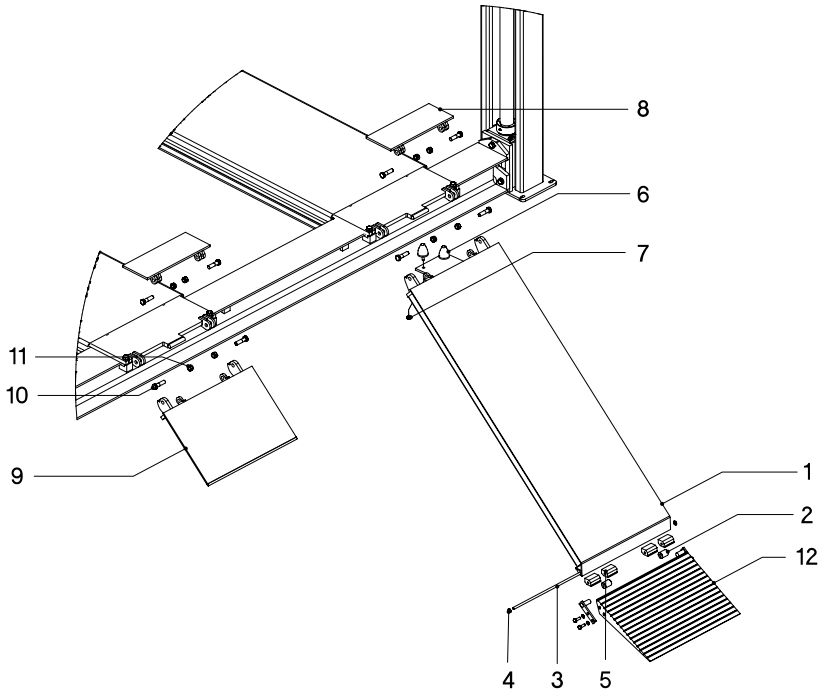


Figure 48: Special drive-on ramps

Table 6: Special drive-on ramps (parts list)

Pos.	Total qty.	Number	Description	Remarks
	1	41209010	Set drive-on-ramps long 1600	P.1,2,3,4,5,6,7,8
	1	41209020	Set drive-on-ramps short 410	P.8 and 9 (For pit model)
1	2	41209135	Drive-on-ramp long 1600	
2	4	1024.38.00.12	Roller	
3	2	3621.14.02.00	Axle	
4	4	1038.34.01.00	Circlip with cap 10 mm	
5	8	41204001	Slide block	
6	4	3010010	Buffer	
7	4	65051034	Self-locking nut M10	
8	2	41204100	Wheel shock	
9	2	41209150	Drive-on-ramp short 410	For pit model
10	8	65002534	Bolt M16x60	
11	8	65055024	Washer M16	
12	2	41209040	Ramp for small wheels	Not standard

9 Parts list

Explanation of the titles of the columns in the parts list:

Pos.	This column contains the numbers that refer to the figure.
Total qty.	Total number of parts in the assembly.
Number	The numbers in this column are Stertil B.V. order numbers. Please specify these numbers when ordering.
Description	This column contains the name of the parts.
Remarks	This column contains extra information.

Replacement parts can be ordered by Stertil B.V., for address details see Manufacturer details on page 8.

When ordering replacement parts, the following information should be provided:

Vehicle lift type:	ST4120.
Serial number:	See type plate on the Vehicle Lift.

9.1 Overview

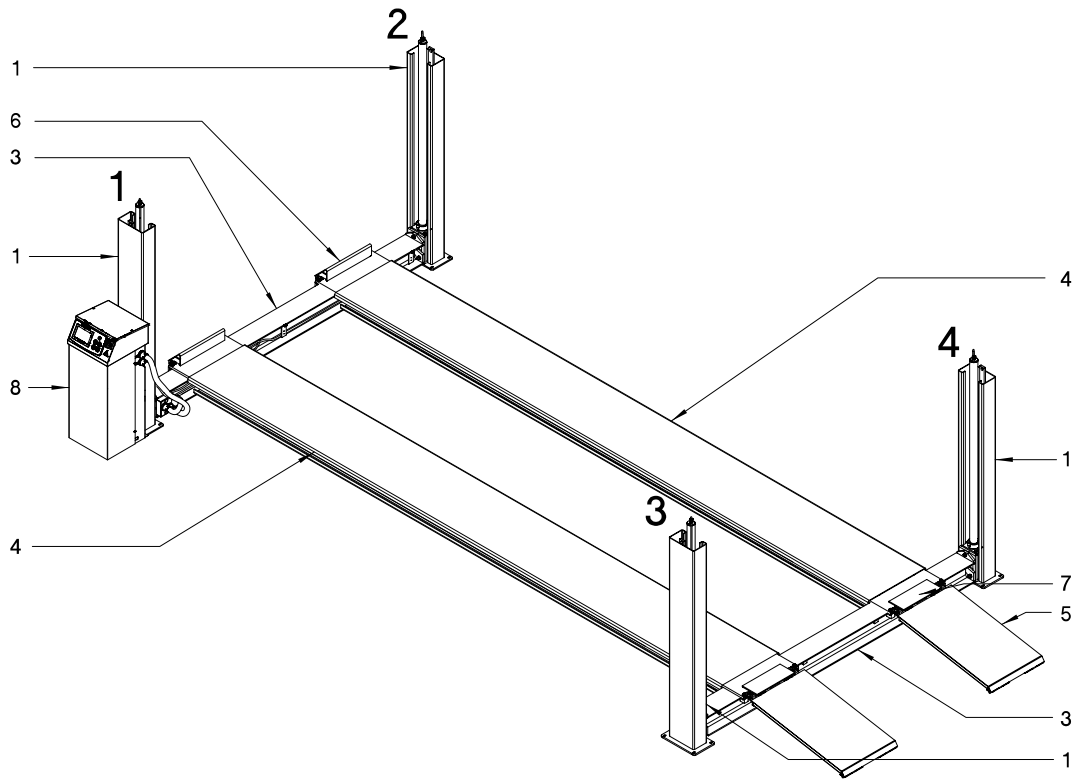


Figure 49: Vehicle Lift Overview (1)

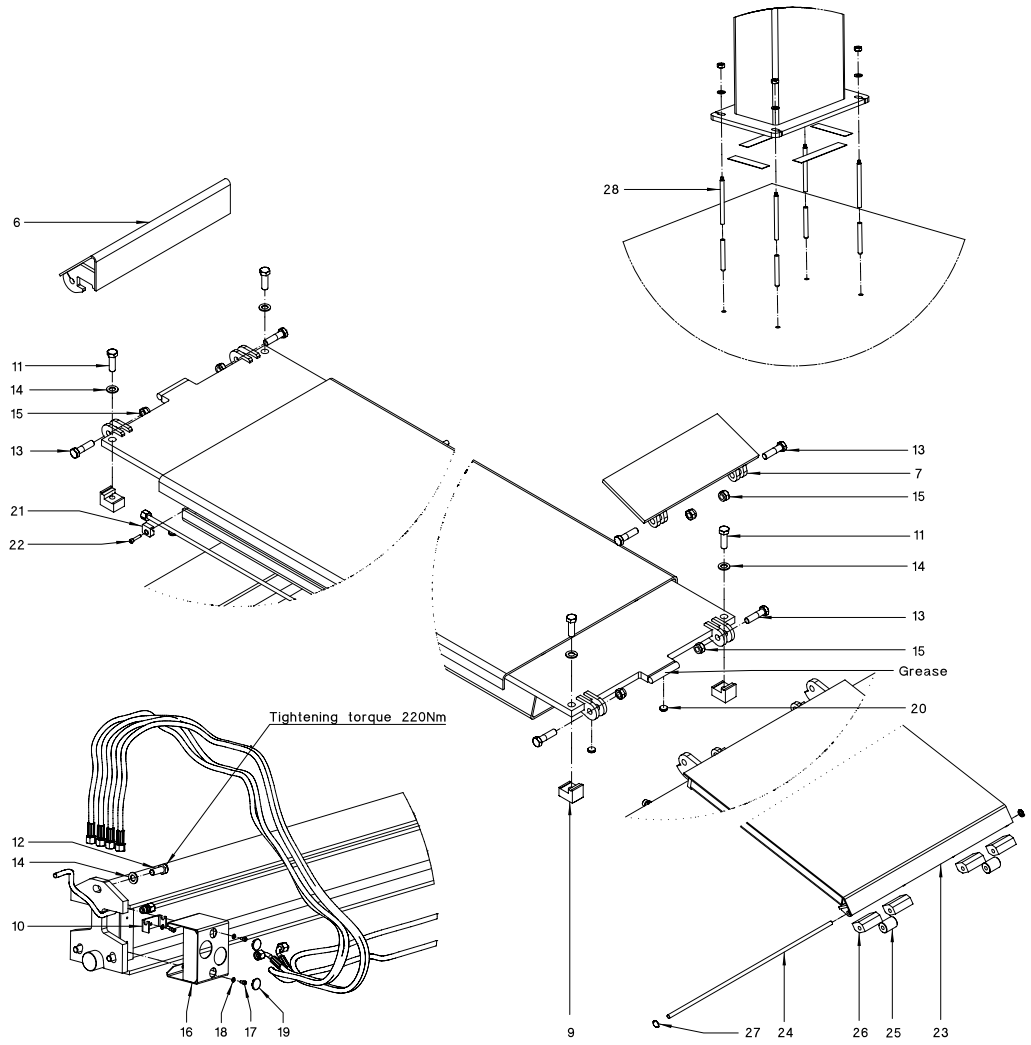


Figure 50: Vehicle Lift Overview (2)

Table 7: Vehicle Lift Overview (parts list)

Pos.	Total qty.	Number	Description	Remarks
1	2	See Posts 1 to 4 on page 110	Post	
3	2	41202050	Crossbeam	
4	2	41203050	Track 8 m	
		41213050	Track 6.2 m	
		41223050	Track 4.5 m	
		41233050	Track 10 m	

Pos.	Total qty.	Number	Description	Remarks
5	2	41204000	Drive-on ramp assy	
6	2	41204150	Wheel stop	
7	2	41204100	Stop plate	
8	1	See Console on page 112	Console	
9	8	41203001	Clamp	
10	1	41202001	Bracket	
11	8	65003532	Bolt M16x50	
12	12	65003530	Bolt M16x40	Tightening torque 220 Nm
13	12	65002534	Bolt M16x60	
14	20	65055024	Washer M16	
15	12	65051040	Self-locking nut M16	
16	1	41202010	Bracket	
17	3	65012282	Bolt. M6x10	
18	3	65055015	Washer M6	
19	2	66201094	Cap	
20	2	37003501	Slide plate	
21	6	68990016	Tube clamp	
22	10	65212291	Bolt M6x30	
23	2	41204050	Drive-on ramp	
24	2	3621.14.02.00	Axle	
25	4	1024.38.00.12	Roller	
26	8	41204001	Slide block	
27	4	1038.34.01.00	Circlip with cap 10 mm	
28	1	43599013	Set chemical anchors with shims	

9.2 Posts 1 to 4

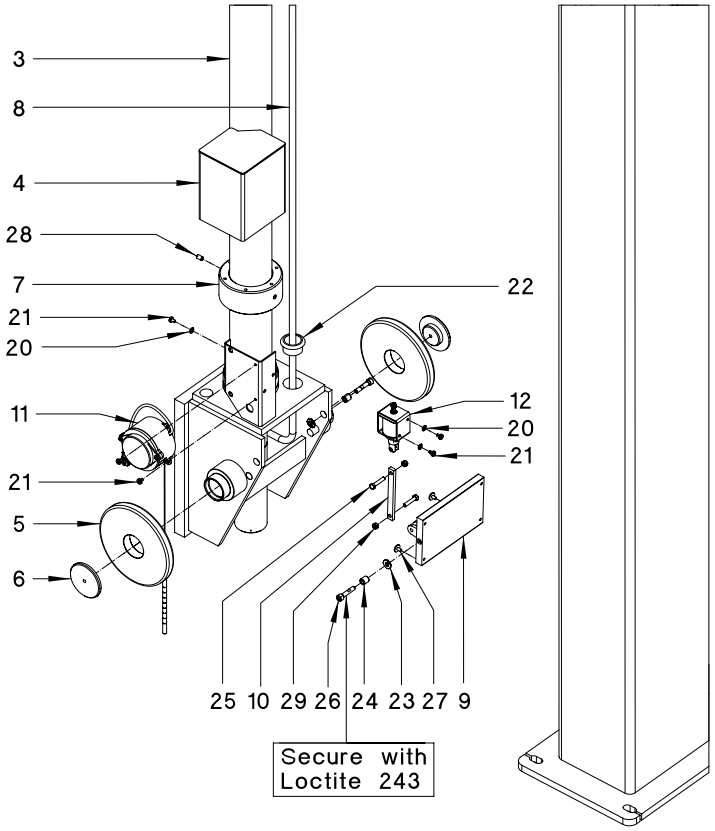


Figure 51: Posts 1 to 4

Table 8: Vehicle Lift Overview (parts list)

Pos.	Total qty.	Number	Description	Remarks
1	4	41201050	Post	
2	4	41202150	Connecting piece	
3	4	See Hydraulic cylinder on page 117	Hydraulic cylinder	
4	4	41201020	Cover potentiometer	
5	8	33501011	Roller	
6	8	1020.50.00.35	Slide plate	
7	4	41201001	Special nut	
8	2	41206150	Oil pipe post 1/4	
8	2	41206160	Oil pipe post 2/3	

Pos.	Total qty.	Number	Description	Remarks
9	4	41201150	Pawl	
10	4	41201004	Pull bar	
11	4	30007400	Potentiometer unit	
12	4	69451420	Solenoid	
20	12	65055013	Washer M4	
21	12	65034215	Screw M4x6	
22	4	41201002	Grommet	
23	8	66201108	Insulating bush plastic	
24	8	66201107	Bush plastic 6,2-10-10	
25	8	1035.38.03.54	Bolt M5x25	
26	8	65212291	Bolt M6x30	Secure with loctite 243. Remove loose grinded loctite before applying new product.
27	8	66201085	Plug plastic	
28	4	65025105	Screw M6x12	
29	8	65051026	Self-locking nut M5	

9.3 Console

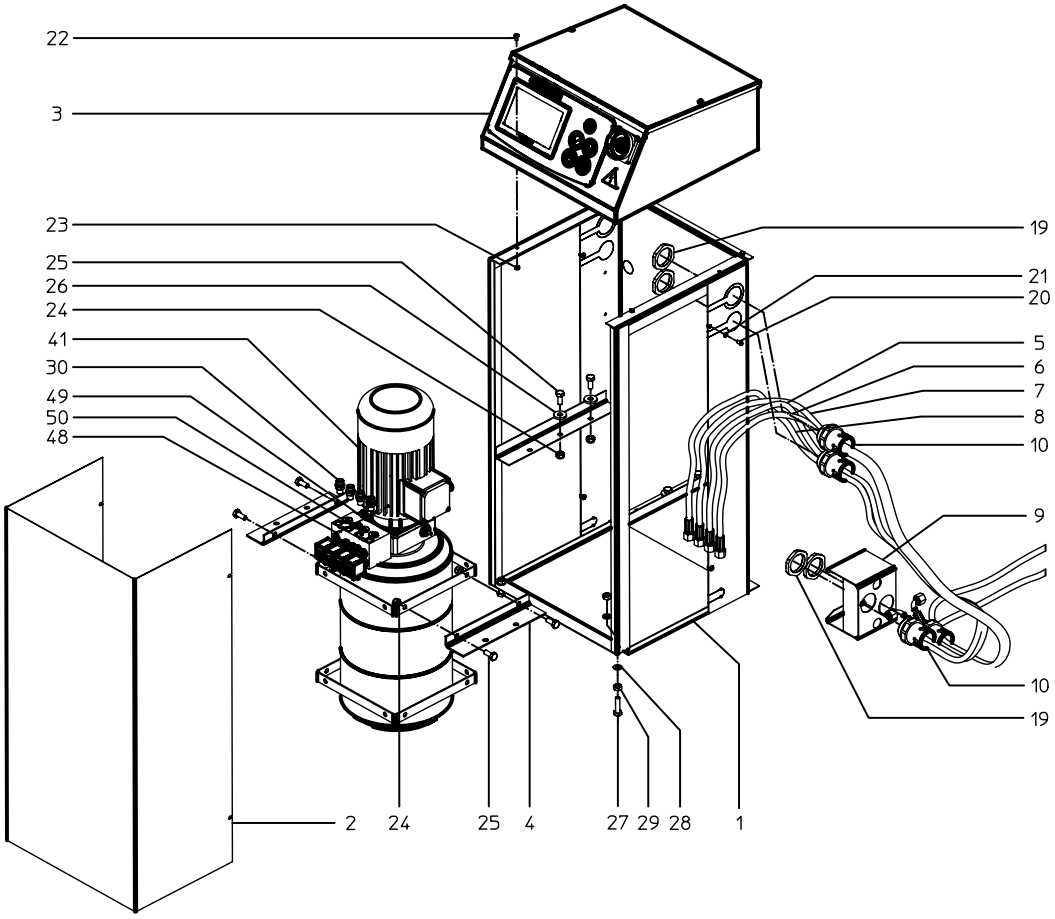


Figure 52: Console (exploded view)

Table 9: Console (parts list)

Pos.	Total qty.	Number	Description	Remarks
		41007000	Control console	3×230V/400V 50Hz
		41007010	Control console	1×230V 50Hz
1	1	41007050	Frame console	
2	1	41007062	Cover panel	
3	1	41007100	Control box	
4	2	41007061	Angle profile hydr unit	
5	1	41206120	Hydr.hose L=2050	
6	1	41206125	Hydr.hose L=2050	

Pos.	Total qty.	Number	Description	Remarks
7	1	41206130	Hydr.hose L=4600	
8	1	41206140	Hydr.hose L=3400	
9	1	41202010	Support hoses	
10	4	69061030	Plastic cable conduit PG36	
19	4	69061047	Connection nut PG36	
20	4	65025005	But.head cap Scr. M6x12	
21	4	65055015	Washer M6	
22	4	1035.38.04.11	Hex.head screw M6x10	
23	4	65051028	Self lock.hex.nut M6	
24	8	65051034	Self lock.hex.nut M10	
25	8	65003405	Hex. head screw M10x25	
26	4	02400008	Ring	
27	2	65003409	Hex. head screw M10x40	
28	4	65055019	Washer M10	
29	4	65050134	Hexagon nut M10	
30	4	68700451	Straight coupling	
41	1		See Hydraulic components on page 114	
48	1	65039017	Thread forming Pan head Scr	
49	1	65055014	Washer M5	
50	1	65258216	Serrated lock washer M5	

9.4 Hydraulic components

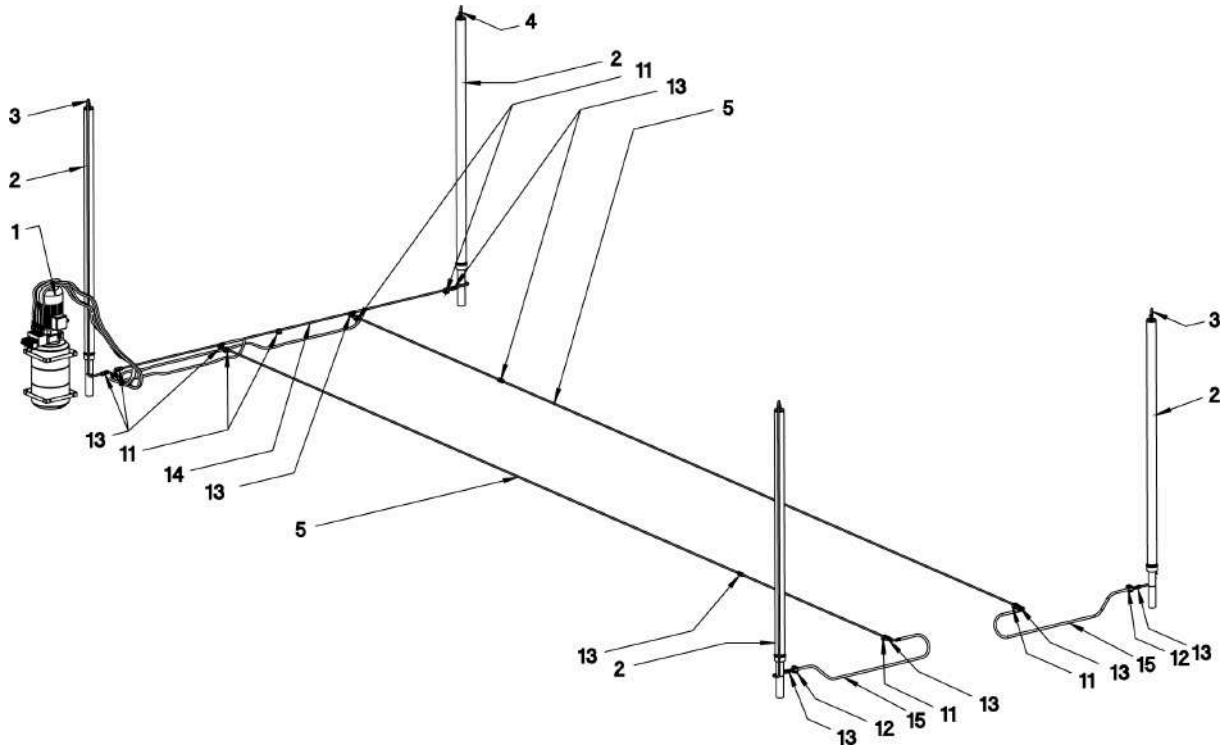


Figure 53: Hydraulic components (1)

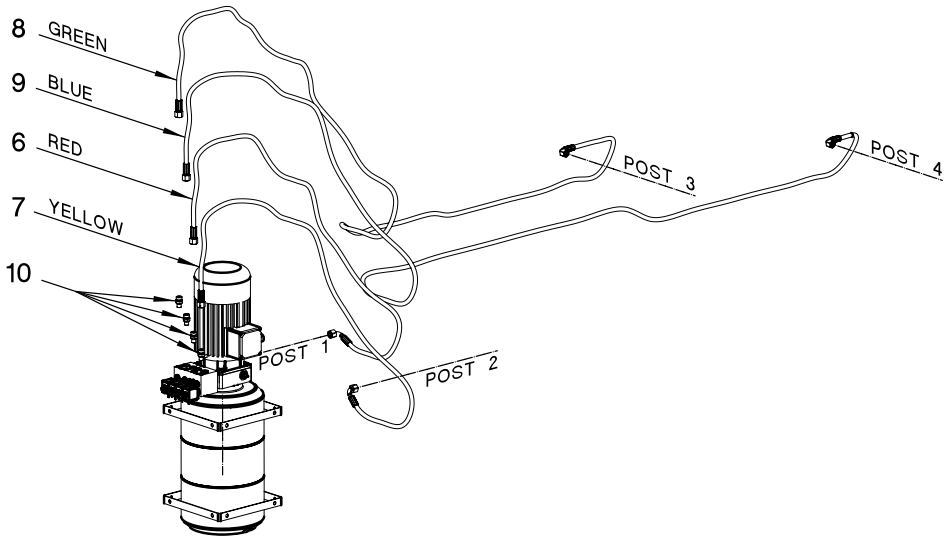


Figure 54: Hydraulic components (2)

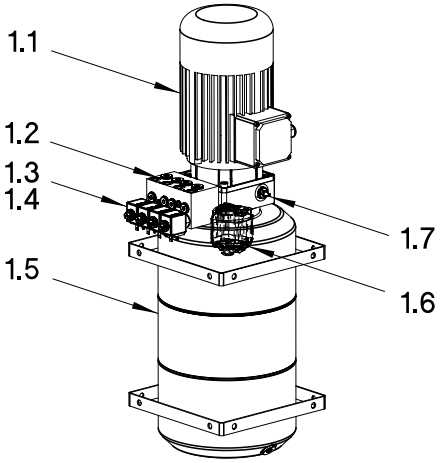


Figure 55: Hydraulic components (3)

Table 10: Hydraulic components (parts list)

Pos.	Total qty.	Number	Description	Remarks
1	1	68021026	Hydraulic unit	3×230/400V 50Hz 260 Bar
1.1	1	68039022	Electric motor	3×230/400V 50 Hz 3kW 2770 rpm
1.2	1	68039060	Hydr. block incl. all parts	
1.3	4	68039037	2/2 valve NC	
1.4	4	69481501	Solenoid 24 VDC	
1.5	1	68029002	Tank 18 l (4.8 gallon)	
1.6	1	68029005	Pump	3.8 cc
1.7	1	68029003	Pressure relief valve	set at 260 bar
2	4	See Hydraulic cylinder on page 117	Hydraulic cylinder	
3	2	41206150	Oil pipe post 1 and 4	
4	2	41206160	Oil pipe post 2 and 3	
5	2	41206171 + 41206172	Oil pipe track 8m	L = 6000+1713
	2	41216171	Oil pipe track 6.2m	L = 5930
	2	41226171	Oil pipe track 4.5m	L = 4230

Pos.	Total qty.	Number	Description	Remarks
	2	41236170	Oil pipe track 10m	L = 6000+3713
6	1	41206120	Hydraulic hose unit to post 1	L = 1800 (marked red)
7	1	41206125	Hydraulic hose unit to post 2	L = 1800 (marked yellow)
8	1	41206140	Hydraulic hose unit to post 3	L = 3400 (marked green)
9	1	41206130	Hydraulic hose unit to post 4	L = 4600 (marked blue)
10	4	68700451	Straight adaptor GE 10-PS/R1/4	
11	6	68990016	Tube clamp	
12	2	68990018	Tube clamp	
13	7	68700018	Straight adaptor G 10-PS	
14	1	41206180	Oil pipe post 1-2	L=2840
15	2	41206110	Hydraulic hose track-pillar 3/4	L=1630

9.5 Hydraulic cylinder

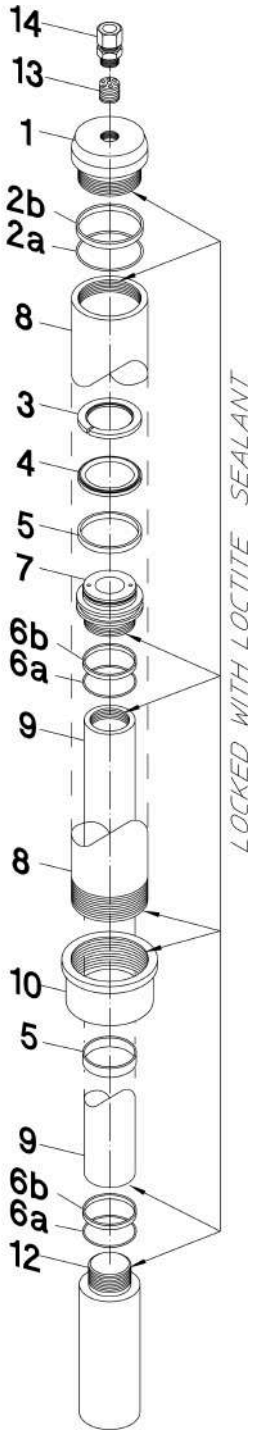


Figure 56: Hydraulic cylinder (exploded view)

NOTICE

In case of leakage, replace the entire cylinder.

Table 11: Hydraulic cylinder (parts list)

Pos.	Total qty.	Number	Description	Remarks
	4	41206250	Cylinder assembly	
1	1		Cylinder bottom	
2a*	1	68510472	O-ring 47,22x3,53	
2b*	1	68591810	Backup ring	
3*	1	34006753	Retaining ring	
4*	1	68554550	Piston seal	
5*	2	68575560	Bearing ring	
6a*	2	68510343	O-ring 34x3	
6b*	2	68591811	Backupring	
7	1		Piston	
8	1		Cylinder	
9	1		Piston rod	
10	1		Guidepost	
12	1		Extension piece	
13	1	68228005	Hose burst check valve	
14	1		Straight adaptor GE 10-PS/R1/4	
*		34099000	Seal set	

9.6 Control box

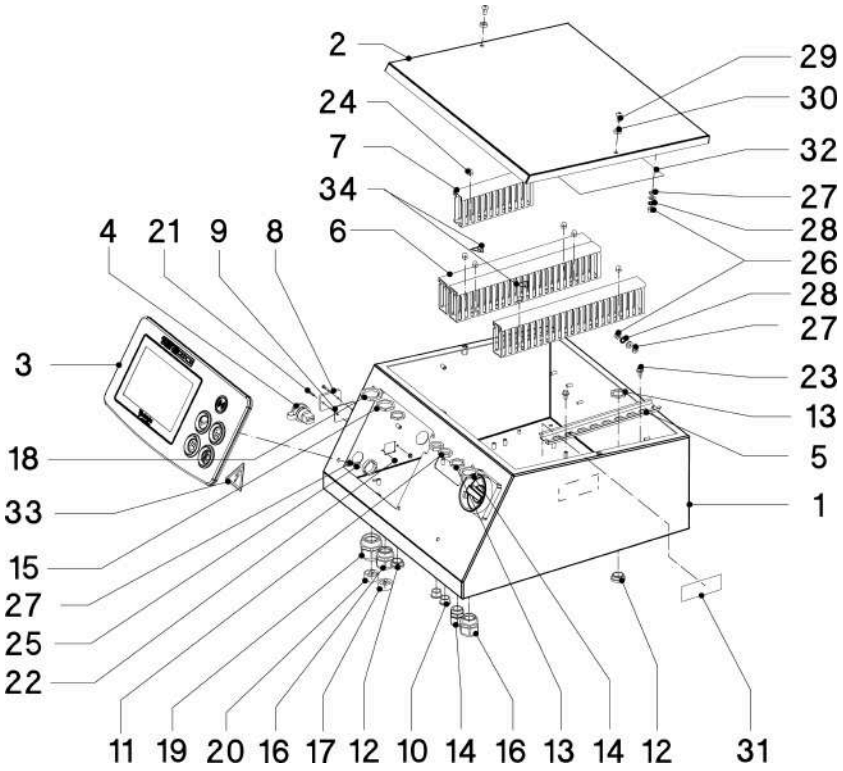


Figure 57: Control box (exploded view)

Table 12: Control box (parts list)

Pos.	Total qty.	Number	Description	Remarks
		41007100	Control box	
1	1	41007125	Case	
2	1	41007126	Cover	
3	1	31050780	HMI ebright heavy duty lifts	
4	1	69090163	USB Connector set	
5	1	41000768	DIN-rail	
6	3	41400769	Cable duct	
7	1	41000770	Cable duct	
8	1	41400781	Cover plate remote connector	
9	1	41400782	Seal cover plate	
10	2	69062040	Blindstop M16x1,5	

Pos.	Total qty.	Number	Description	Remarks
11	2	69063010	Connection nut M16x1,5	
12	2	69062041	Stopping plug M20x1,5	
13	3	69062033	Connection nut M20x1,5	
14	1	69063003	Cable gland M20x1,5	
15	2	69062034	Connection nut M25x1,5	
16	2	69063004	Cable gland M25x1,5	
17	1	69063044	Insert M25 4x6	
18	1	69062035	Connection nut M32x1,5	
19	1	69063005	Cable gland M32x1,5	
20	1	69063045	Insert M32 4X8	
21	2	65034170	Pan head screw M3x16	
22	2	65052921	Hex. flange nut M3	
23	2	65025166	Serrated hex. Flange bolt M5x10	
24	8	66201195	Hex. Domed cap nut M5 PA-66	
25	6	65003280	Hex. head screw M6x8	
26	2	65050128	Hexagon nut M6	
27	10	65055015	Washer M6	
28	2	1038.27.00.64	Serrated lock washer M6	
29	2	1036.30.06.16	But. head cap Scr. M6x16	
30	2	65870011	Double retaining washer M6	
31	1	60700131	Sticker	

Pos.	Total qty.	Number	Description	Remarks
34	1	60700587	Sticker Electrical diagram	
35	1	60700259	Sticker danger voltage	
36	2	60700493	Sticker high voltage	

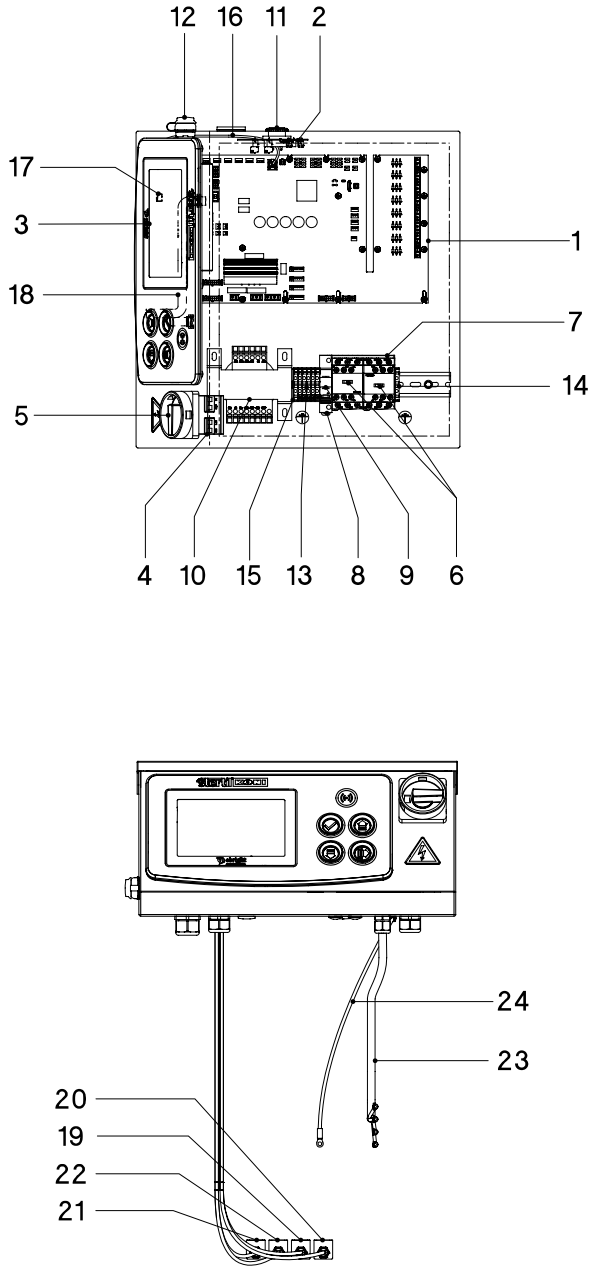


Figure 58: Control box (electric parts)

Table 13: Control box (electric parts list)

Pos.	Total qty.	Number	Description	Remarks
1	1	69900340	Control board for ebright	
2	1	69900339	Connection print	
3	1	31050780	HMI ebright heavy duty lifts	
4	1	69120016	Main switch 32A	
5	1	69120017	Main switch knob	
6	2	69151028	Relay	
7	1	69151023	Parallel bridge connection	
8	1	69206402	Fuse holder	
9	2	69206026	Fuse	
10	1	69500012	Transformer	
11	1	69202009	Panel mount buzzer	
12	1	69090163	USB Connector set	
13	5	69900349	Feed through terminal block	
14	2	69900058	Ground terminal block	
15	1	69900343	End cover	
16	1	69001110	HMI communication cable	
17	1	69620012	Micro SD-card Commercial	
18	1	69620013	Ribbon cable	
19	1	41207105	Cable lowering valve P1	
20	1	41207106	Cable lowering valve P2	
21	1	41207107	Cable lowering valve P3	
22	1	41207108	Cable lowering valve P4	
23	1	41000779	Cable motor	

Pos.	Total qty.	Number	Description	Remarks
24	1	41007117	Wire Earthing Box-Motor	

9.7 Stickers

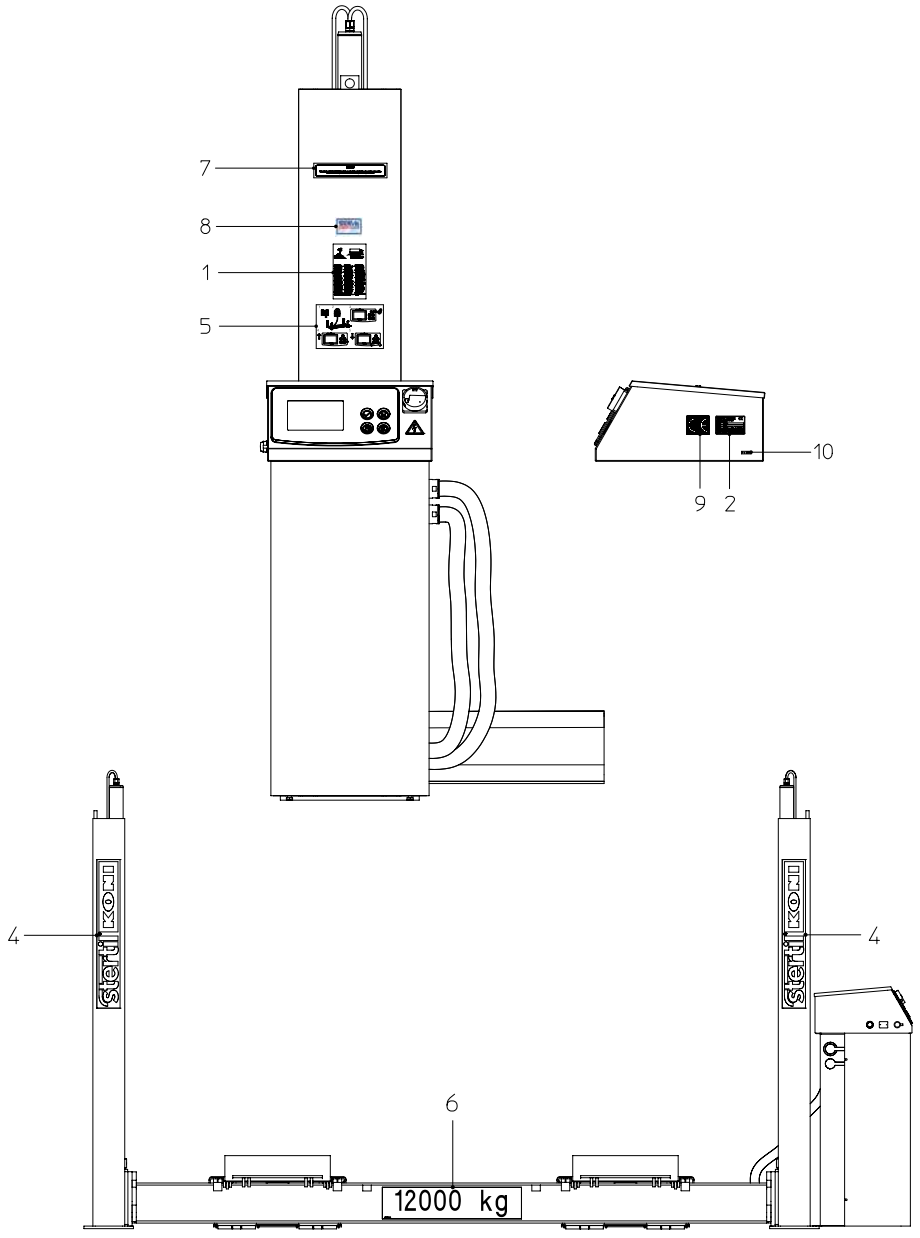


Figure 59: Sticker locations

Table 14: Stickers (parts list)

Pos.	Total qty.	Number	Description	Remarks
1	1	60700549	Operation sticker	Dutch/German/ French
	1	60700500	Operation sticker	English/Swedish/ Spanish
2	1	1005.01.01.92	Type plate	
3	1	41000800	Operator manual	
4	8	60700061	Sticker Stertil Koni	
5	1	60700589	Sticker controls	
6	1	60700246	Capacity sticker	
7	1	60700500	Patent sticker	
8	1	60700303	Service sticker	
9	1	60700006	CE sticker	
10	1	60700084	3×230V sticker	
	1	60700085	3×400V sticker	

10 Appendices

10.1 Dimensional drawings

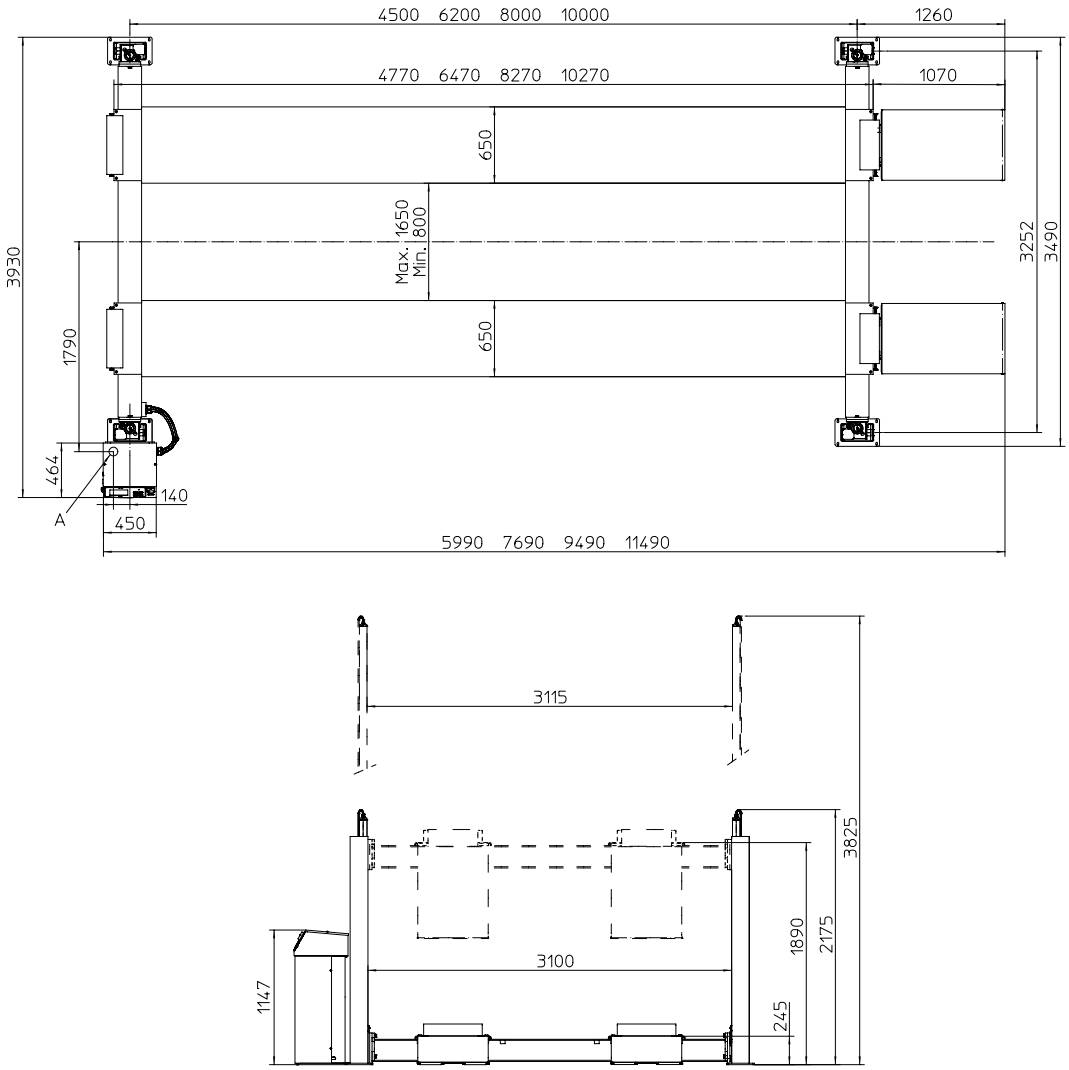
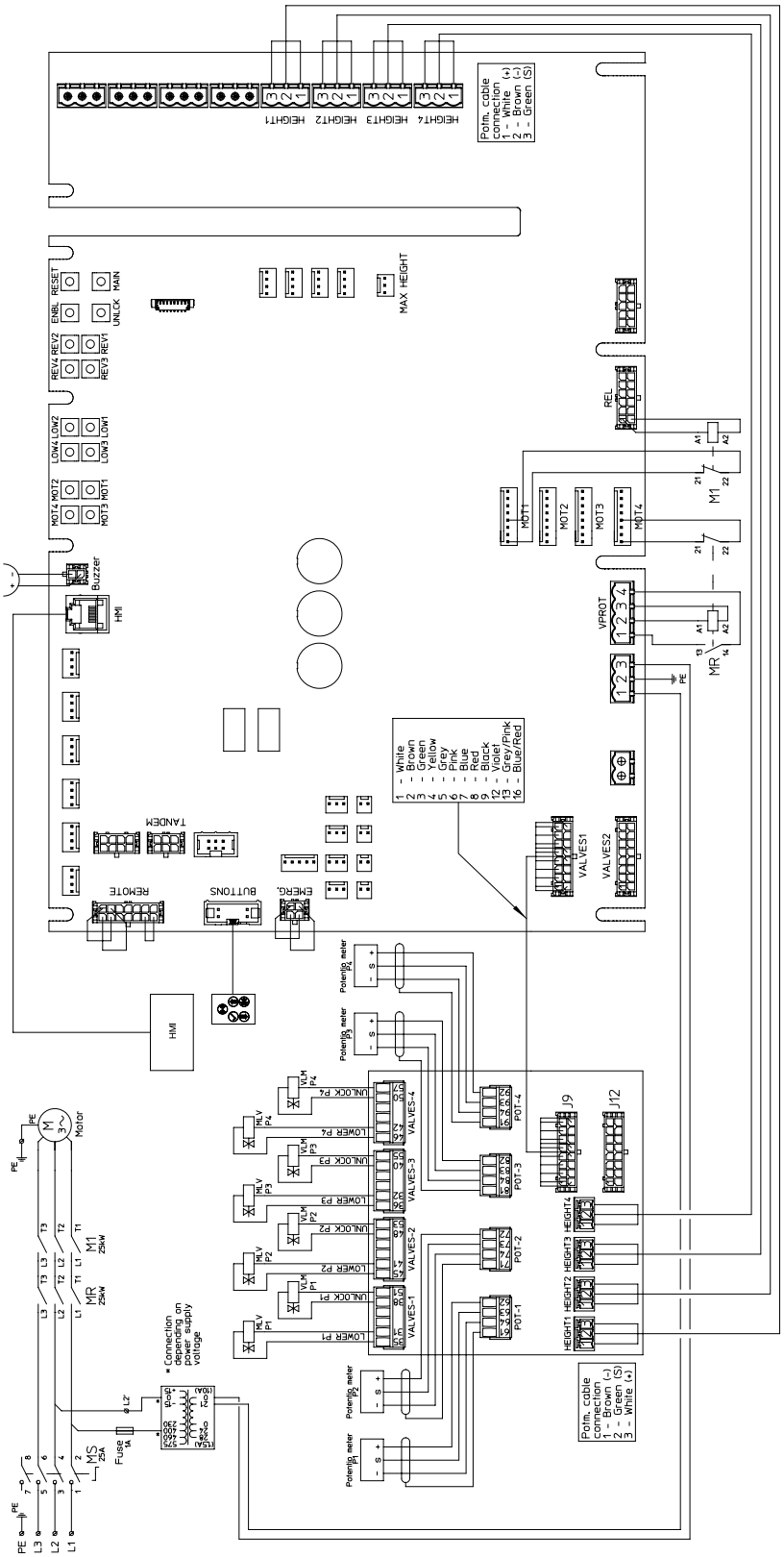
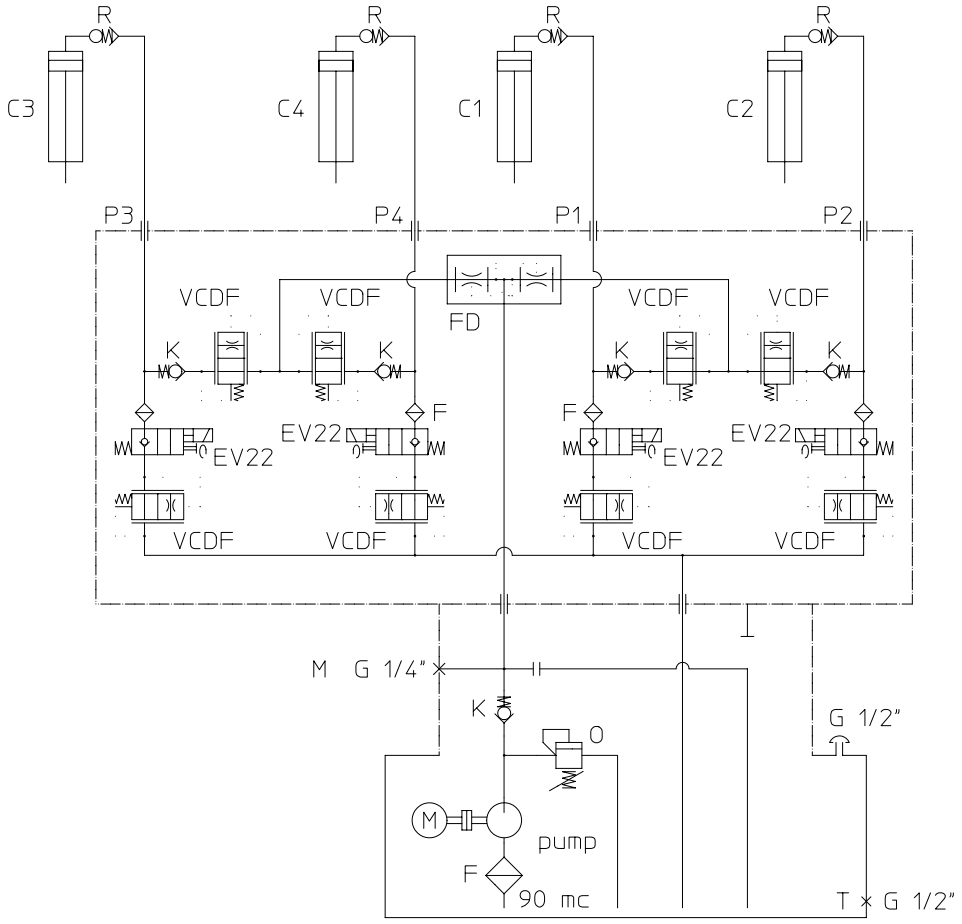


Figure 60: Dimensional drawings

10.2 Electric diagram



10.3 Hydraulic diagram



Index	Description	Remarks
C1-C4	Cylinder	
EV22	2/2 Valve	
VCDF	Flow control valve	2.5 l/min
F	Filter	
K	Non return valve	
P	Pump	3.8cc (2.6 cc single phase)
T	Tank	
O	Safety pressure valve	260 Bar
M	Electric motor	
R	Hose burst check valve	
FD	Flow divider	

10.4 Inspection checklist

Date	Remarks	Name of mechanic	Initials of mechanic pass

INDEX

Q

R

S

T

U

V

W

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