

Installation manual

X1A 750BS –

Master XDD

Art.-Nr 20 913 543
Series 13



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1 Introduction

This assembly manual contains all the instructions for fitting and adapting the tail lift to vehicles intended for this purpose. If there is any doubt as to whether the device can be fitted to a specific vehicle, please contact us (see page 1). We will then provide you with the required information.

These fitting instructions are intended for the vehicle manufacturer who will fit the tail lift to the vehicle. They contain information on transport, assembly, and commissioning.

- Please read these instructions before working on the tail lift.
- Do not deviate from these instructions. Doing so may result in personal injury, damage to the equipment and loss of warranty rights.
- Please ensure that these instructions are supplied with the tail lift.

NOTE

Instructions for use, mounting, cleaning, maintenance, shutdown, and dismantling are contained in the operating instructions supplied.

NOTE

The diagrams serve as an explanation and are valid for all the above-mentioned types, regardless of the tail lift drawn. All lift mechanism diagrams are shown without electrical cables or hydraulic connections.

The vehicle manufacturer's installation instructions must be followed under all circumstances!

If the tail lift is to be modified or must deviate from these installation instructions, the consent of Sörensen Hydraulik GmbH must first be obtained in writing. Unauthorised modifications and deviations from these assembly instructions can lead to premature failure and malfunctions during operation as well as endanger the operator.

The warranty for this device is voided by "unauthorised modifications" and "deviations from the installation instructions".

Documents supplied

▪ Inspection logbook	Art.-No. 60 700 495
▪ Installation manual	Art.-No. 20 913 543
▪ User manual	Art.-No. 20 913 649
▪ Declaration of conformity	Art.-No. 20 910 159
▪ Electrical circuit diagram	Art.-No. 20 913 538 (see section 11/page 48)
▪ Hydraulic circuit diagram	Art.-No. 20 907 672 (see section 12/page 49)

2 Safety

2.1 Representation of warnings

The following types of warnings are used in this manual to indicate hazards and complications:

DANGER

- Failure to observe such a warning will result in death or serious injury.

WARNING

- Failure to observe this warning may result in death or serious injury.

CAUTION

- Failure to observe this warning may result in moderate or minor injury.

ATTENTION

- Failure to observe this warning may result in damage to property or the environment.

As well as:

NOTE

- Important information or useful tip for proper use

2.2 Intended use

The tail lift serves as an aid for loading and unloading the vehicle. Any other use is not permitted.

- The maximum authorised load must not be exceeded (see type label). The loading distance on the platform must be observed.
- The tail lift must not be used when the vehicle is in motion.
- The tail lift must not be used by persons other than the operator.

2.3 Requirements for the personnel

- The work described in this manual should only be carried out by suitably qualified and trained personnel.
- Safety equipment such as safety goggles, work gloves and safety shoes must be provided for the installation and used as required.
- The work must be carried out in a normal working position. Dangerous or uncomfortable positions must be avoided.
- The applicable legal and operational guidelines must be observed, e.g. health, safety, and environmental regulations.

2.4 Installation and commissioning requirements

- The vehicle manufacturer's instructions must be followed, in compliance with safety, accident prevention and environmental regulations. Observe the safety instructions. It is also essential to comply with local and national road traffic regulations.

- No modifications to the axle beams, mounting adapters, arms or platform are permitted, otherwise the product certification will be lost. If modifications are required for assembly, these must be agreed in writing and instructed by our sales department. If the lifting mechanism is not definitively in place, with all screws tightened to the correct torque, hydraulic movement of the arms against the vehicle cross member and loading of the platform is prohibited. Certification by the German authorities will then no longer be valid.
- It is strictly forbidden to modify or dismantle safety systems such as pressure relief valves, locking valves or electronic systems. There is a risk of serious injury!
- Markings on the product (warning labels, instructions, nameplates) must not be altered, covered, or removed.

2.5 Safety and prevention labels

The vehicle manufacturer is responsible for the correct fitting and thorough checking of the hazard and prevention labels. It is forbidden to remove, modify or cover the markings (warning labels, instructions, nameplates etc.) on the tail lift.

2.6 Precautionary measures before installation

- Check that the kit is complete and that all parts required for the assembly process have been supplied.
- Safety devices on the crane, lift trolley and other lifting equipment required to support assembly must be checked for proper function before assembly begins.
- Fuel lines, brake system air lines or cables laid in the assembly area must be protected against damage.
- **The vehicle battery must be disconnected before starting installation. Compare the electrical voltage of the vehicle battery with the voltage of the hydraulic unit.**
- It is advisable to lubricate all pivot bearings and the associated bolts.

2.7 Static security / Load capacity

The maximum load capacity of a Sörensen tail lift is noted on our commercial documentation. Information on the centre of gravity of the unloaded tail lift can be requested from our sales department. The position of the nominal load is marked on the platform and must be observed. It can also be read on the load diagram and type label.

2.8 Electrical system

The power supply for the tail lift is provided by the vehicle installation (max. 48 V DC). This installation must be carried out in accordance with good technical practice.

DANGER

- Do not damage or modify electrical components or cables: danger of fire or explosion.
- Surges can damage the battery or wiring harness: to be avoided by visual inspection (maintenance plan).

2.9 Operating pressure

The hydraulic system built into the tail lift operates at high pressure (see type label section 7.12/page 39) and is manufactured in accordance with good technical practice. The operating pressure is set by the manufacturer and must not be altered.

WARNING

- Do not damage or modify hydraulic components and hoses. Danger from pressurised liquids or gases. Bursting hydraulic components can injure people.
- Check hydraulic components and hoses regularly (maintenance plan).
- Only replace hydraulic components and hoses with approved components.

2.10 Moving parts with crushing points

Fingers can be crushed on all parts that move close together. Beware of unintentional movement of moving parts and when opening and closing the platform.

WARNING

Beware of unwanted movements of these components and when opening and closing the platform. During movement, it is possible that parts of the body, long hair or clothing could get caught. This could result in serious injury or death.

WARNING

- Do not wear long hair loose.
- Do not wear loose clothing.

2.11 Behaviour in an emergency

If you or another person get into a dangerous situation while working on/with the tail lift, stop the operation immediately and seek professional help.

2.12 Description of the mechanical, electrical, and hydraulic systems

A description of the tail lift's mechanical systems can be found in the user manual. The electrical and hydraulic systems are described in the electrical diagram (see section 11/page 48) and hydraulic diagram (see section 12/page 49).

2.13 Center of gravity marking

Check that the required centre of gravity marking on the platform is correct and replace if necessary. Information in this regard can be found on the rating plate.

2.14 Assembly information for struts

Check whether struts are required. The vehicle manufacturer's assembly guidelines must be observed. If supports are included in the scope of delivery, they are supplied with separate installation instructions. We accept no liability for damage caused by the installation of struts by third-party suppliers.

NOTE

On certain body configurations, the vehicle may lift at the front when the platform is loaded.

WARNING

Alteration of the vehicle's centre of gravity and lifting:

Uncontrolled movements of the vehicle can cause serious injury or death.

Follow the manufacturer's instructions; if necessary, use struts

2.15 Risk analysis

A risk analysis must be carried out before the tail lift is fitted.

2.16 Manual forces

The manual forces required must not exceed 250 N and 350 N for initiating movements. This requirement does not apply to the movement of loads.

2.17 Reinforcements

Depending on the vehicle type, additional equipment features are required in accordance with DIN EN 1756-1:2021 Annex J.

2.18 Trailer coupling console

If the vehicle is equipped to tow a trailer, the bodybuilder is responsible for the position of the drawbar and the correct length of the hitch.

2.19 Operation lights

It is the vehicle manufacturer who installs the necessary lighting and is responsible for ensuring that the work area is properly illuminated. We suggest connecting the lighting to terminal block position K (see electrical diagram in section 11/page 48).

ATTENTION

Do not experiment with loading the positive cable. This is only intended for controlling the tail lift and should not be loaded with additional devices.

2.20 Assembly check and validation

After fitting, securing the tail lift to the vehicle and adjusting it, the tests in accordance with section 8.3/page 43 of these instructions must be carried out and documented. Once the tests have been successfully completed, a qualified and authorised person must complete the relevant section and sign the test logbook. The declaration of conformity of the assembly must also be signed off.

3 Scope of delivery

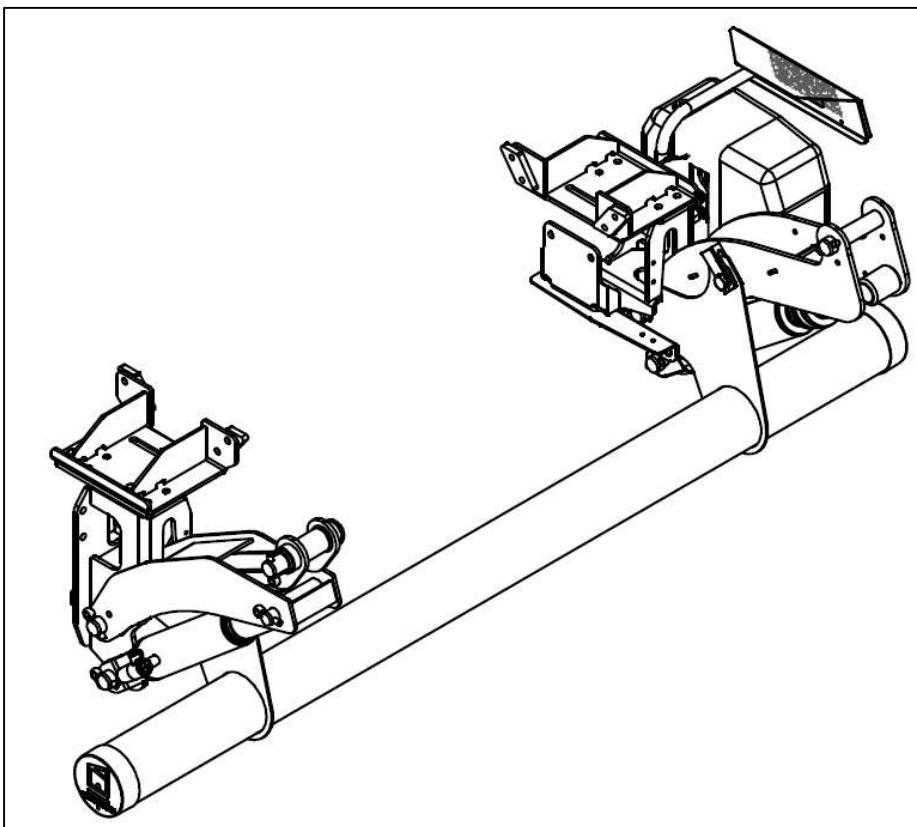
NOTE

All illustrations of the lifting gear are shown without the factory-fitted cables and hydraulic hoses.

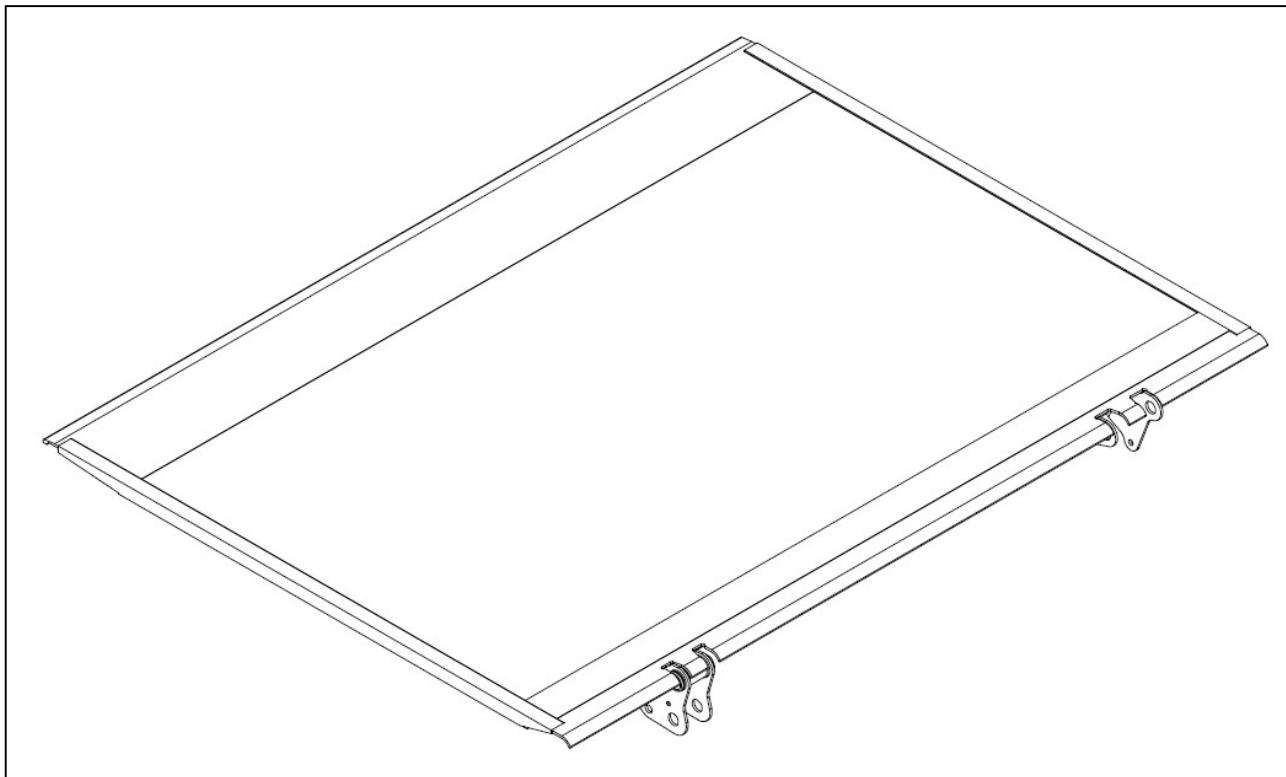
3.1 Transport damage

The freight carrier is liable for damage to the tail lift caused during transport. The goods must be checked for damage after unloading. If damage is found, it must be recorded in writing on the carrier's consignment note so that claims can be made. The costs incurred can only be settled between Sörensen Hydraulik GmbH and the carrier or its insurance company.

3.2 Lifting gear



3.3 Platform



3.4 Accessory pack

Parts list:

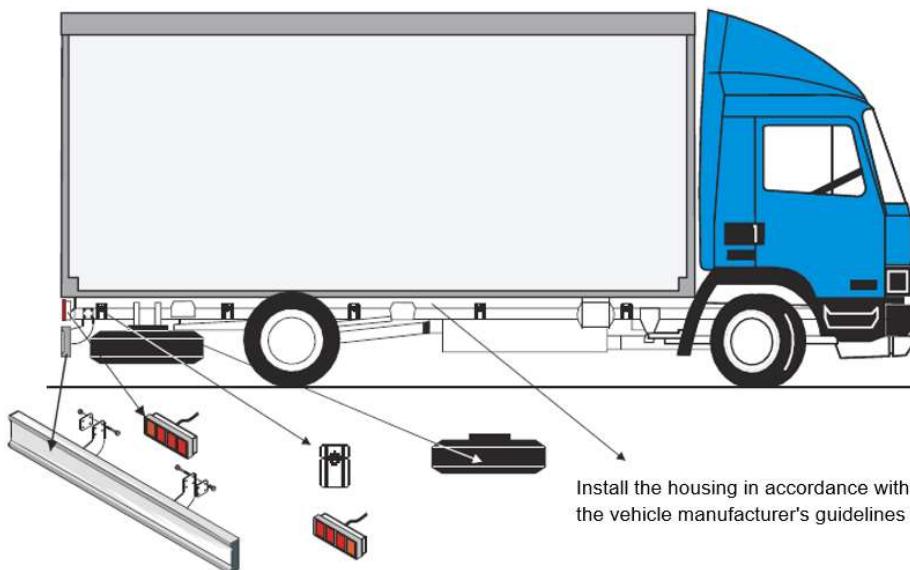
Pos.	Article-No.	Description	Standard	Qty.
1	20907616	Ground roller	Ø78/20,5x28	2
2	20910681	Bolt	Ø25x93	1
3	20907615	Drill bushings	Ø20/16x32	1
4	20913258	Threaded plate	For BSR950 Labbé	4
5	20840405	Lubricating grease	30 grams	1
6	20903350	Adjustment bracket		3
7	20840117	O-Ring/Sealing Ring	VOR 40.65 X 5.33	6
8	20904601	Ribbed nut	W 0263 - M16 - 10 - GEO	2
9	20904600	Hexagon head serrated screw with flange	W 0263 - M16x40 - 10.9 - GEO	3
10	80000050	Hexagonal nut	DIN 934 - M12 - 8 - A2K	2
11	80000032	Hexagonal head screw	DIN 933 - M12x40 - 8.8 - A2K	2
12	20911904	Hexagonal bolt with flange	MBN 10105 - M12x1,5x30 - 10.9 - DBL	12
13	20910704	Circlip	DIN 6799 - RA15x1,25 - A2	1
14	20850526	Hexagon socket head cap screw	ISO 4762 - M10x40 - 8.8 - ZFSHL	3
15	20840668	Plank		2
16	20860921	Cable ties		1
17	20907723	Edge log		3
18	22906324	Box paper		1
19	20907602	Transport palette		1
20	80000177	Cable tape		15
21	20913180	Mounting bracket X1A 750BSR1030 right		1
22	20913181	Mounting bracket X1A 750BSR1030 left		1
23	20913171	Control panel holder		1

4 Vehicle preparation

NOTE

Installation above a pit is possible, but the vehicle must also be raised above the pit (using winches or drive-on wedges) so that the tail lift including the pallet can be placed under the vehicle.

- Raise the vehicle using a lifting ramp.
- Lay out the vehicle floor with wood panels. For other types of floors, check the possibility of installation.
- Disconnect the battery. Follow the manufacturer's instructions for handling the battery.
- Dismantle interfering components (bumper, corner lights, trailer coupling, licence plates, rear spare wheel etc.)
- The exhaust pipe must not be routed towards the rear.
- The rear doors must open at an angle of at least 180°.
- Check that the dimensions of the vehicle match the assembly drawing or that the information in the assembly table matches with the vehicle and the arm length (section 5.3.2/page 17).
- The actual lifting height of the tail lift should not exceed the theoretical maximum lifting height, which depends on its arm length.
- It is important to not cause damage to the vehicle. Use the appropriate sheeting or covers.
- Check that a battery and an additional terminal block are fitted.
- The function of the rear parking sensors will be impaired by the tail lift.
- The frame and body of the vehicle must be strong enough to support the dead weight of the platform with its rated load and the bending movement caused by the platform. Check the stability of the vehicle and the weight on the vehicle axles in relation to the actual dead weight of the tail lift and the load to be transported. The weights specified in the technical documentation are theoretical and may vary depending on the design of the tail lift.
- As a rule, only existing attachment points (holes in the vehicle frame) are used for mounting.
- Observe the assembly and body construction instructions of the vehicle, in particular:
 - the maximum permissible tail lift capacity
 - the regulations for mounting and bolting to the vehicle chassis
 - the manufacturer's guidelines for the electrical interfaces



The cabin must be protected from dirt.

⚠️ WARNING

Secure the vehicle against unintended rolling away and against unintended changes of position.

ATTENTION

Oil leaks

If the lifting mechanism is not positioned correctly, there is a risk of oil leakage and therefore a danger to the environment. Only transport it vertically with the oil plug pointing upwards. To do this, use the appropriate lifting points.

⚠️ WARNING

Heavy items not secured

When the transport locks are removed, some parts may fall or tip over and the platform may tip over. There is a risk of injury!

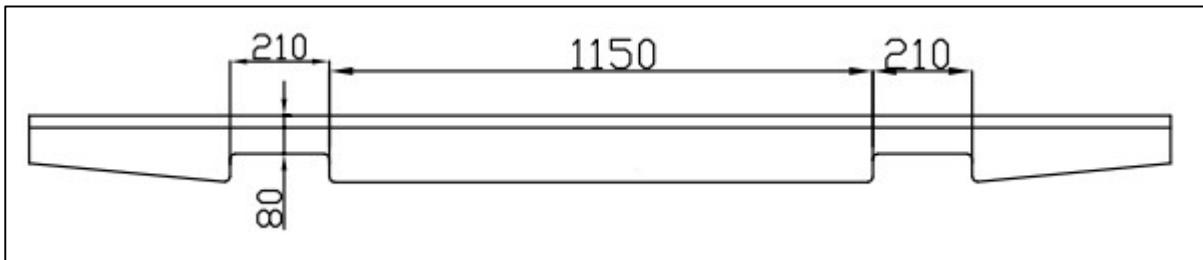
- Secure loose parts.
- Carefully remove the transport locks.
- After unpacking, store the parts securely.

NOTE

Dispose of or recycle packaging material in accordance with current regulations.

4.1 Cut-outs on the vehicle rear crossmember

Suggested cut-outs for mounting the lifting mechanism:



If the cut-outs are different from those shown in the table, cut-outs must be made according to our suggestions. Further dimensions can be found in the relevant data sheet (No. 119839).

4.2 Preparing for installation on the vehicle

- Check that the delivery is complete.
- The necessary screws and bolts can be found in the accessory box supplied.
- If you find that there is not enough space to fit the tail lift, please contact Sörensen's sales department for verification. If we find that the fitting is feasible, you will receive a separate diagram describing the fitting options.
- Remove any insulation or anti-corrosion material around the tail lift fixing points. If any untreated metal remains, apply anti-corrosion paint before fitting the tail lift.

- In general, the tail lift is fixed only by the fixing points provided (holes in the vehicle chassis). There are mounting brackets for each type of vehicle, as described on the following pages.
- If it is necessary to drill holes in the vehicle chassis, follow the manufacturer's instructions.

⚠ CAUTION**Inadequate lifting and transport devices**

To lift and transport heavy parts, use transport equipment (forklifts, cranes, etc.) with a capacity of at least 300 kg. Check that the means of transport are working properly.

5 Installation

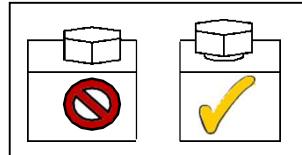
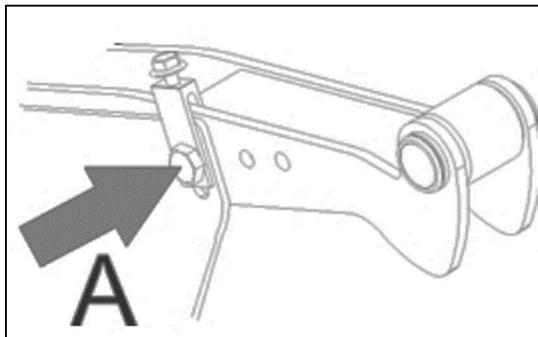
5.1 Assembly precautions

- Disconnect the battery before fitting.
- The vehicle must be secured against unintentional movement.
- ABS and ESP sockets must be disconnected before any welding work.
- Fuel, air and brake connections and all cables in the assembly area must be protected.
- It is imperative to comply with the safety regulations of the industrial accident insurance scheme.
- Safety equipment such as goggles, gloves and safety shoes must be provided and used.

5.2 Preparing for installation

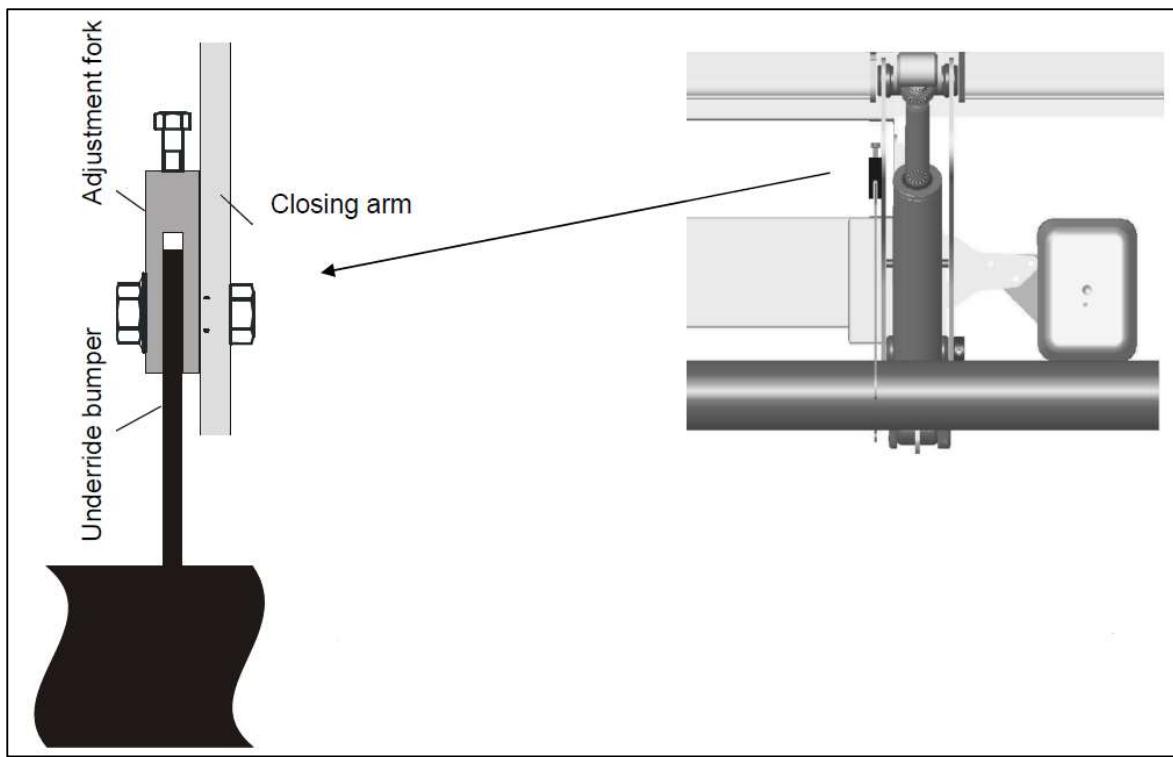
ATTENTION

Before fitting, it is essential to check that the vehicle and its technical characteristics correspond to these fitting instructions. To facilitate assembly, we offer several lengths of lifting arms, brackets, and adapters for different types of vehicles. Please contact the Sörensen sales department for proposals.



ATTENTION

Before fitting the lifting mechanism, it is essential to check that screw A (link between lifting arm and underride bar) is loose. It will only be retightened after the tail lift has been adjusted (see section 5.5/page 19).

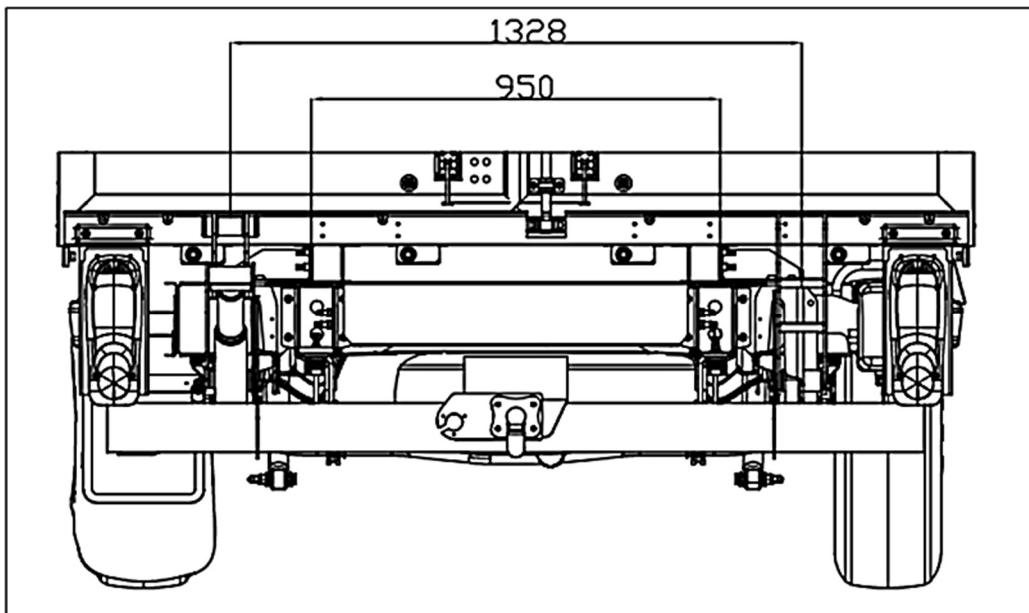


NOTE

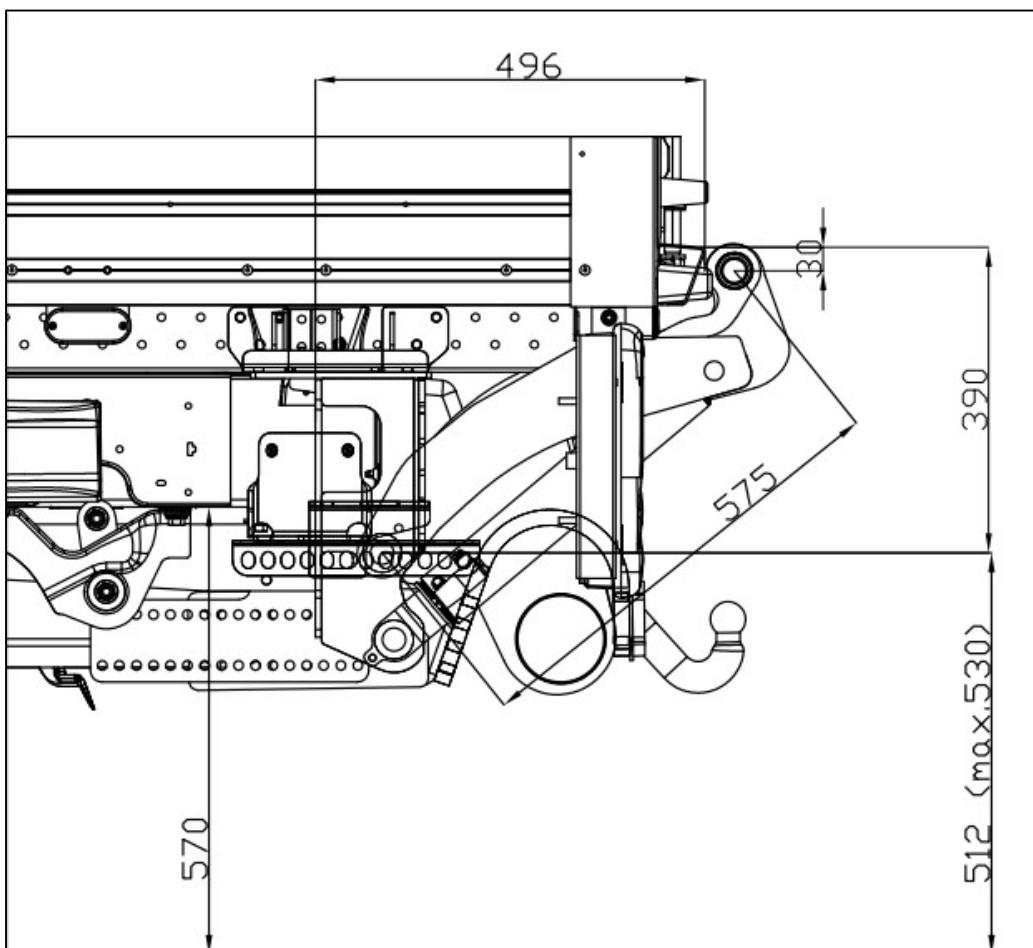
Please check if Sörensen Hydraulik GmbH issued a specific drawing for this tail-lift installation. If so, the assembly must be performed accordingly. Please check with the relevant departments of your company (such as purchasing or order processing).

5.3 *Lifting mechanism assembly dimensions*

5.3.1 Rear view



5.3.2 Side view



5.4 Arrangement of the lifting mechanism connecting parts

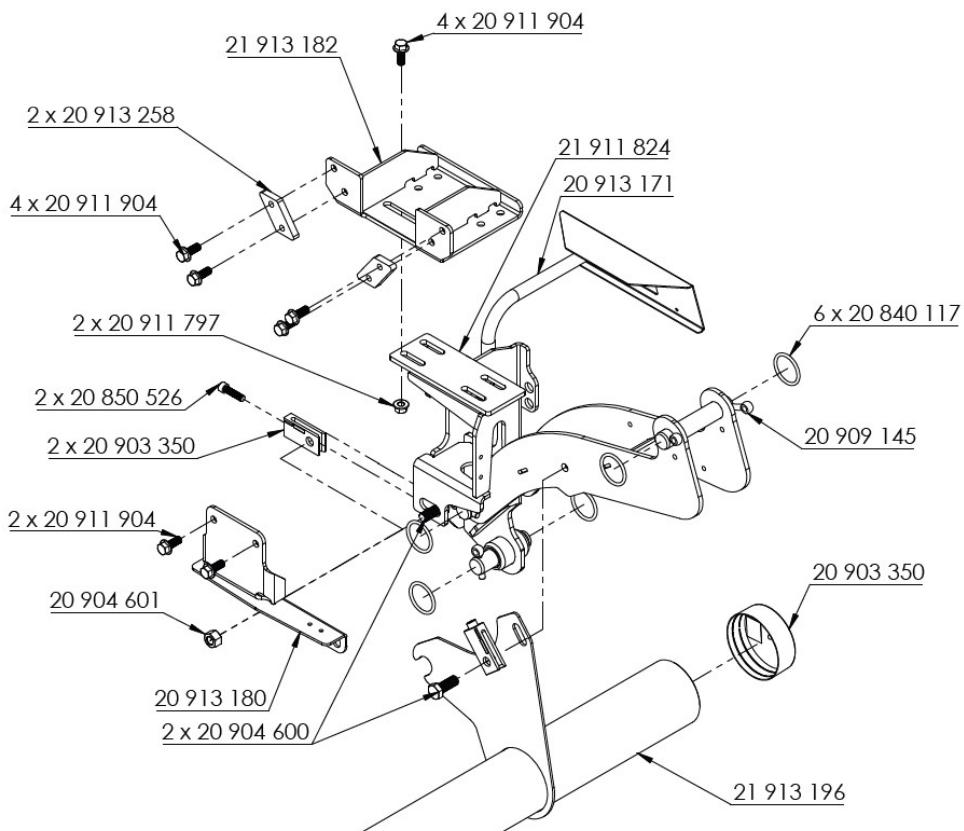
The lifting mechanism is delivered almost completely pre-assembled, except for the mounting brackets.

ATTENTION

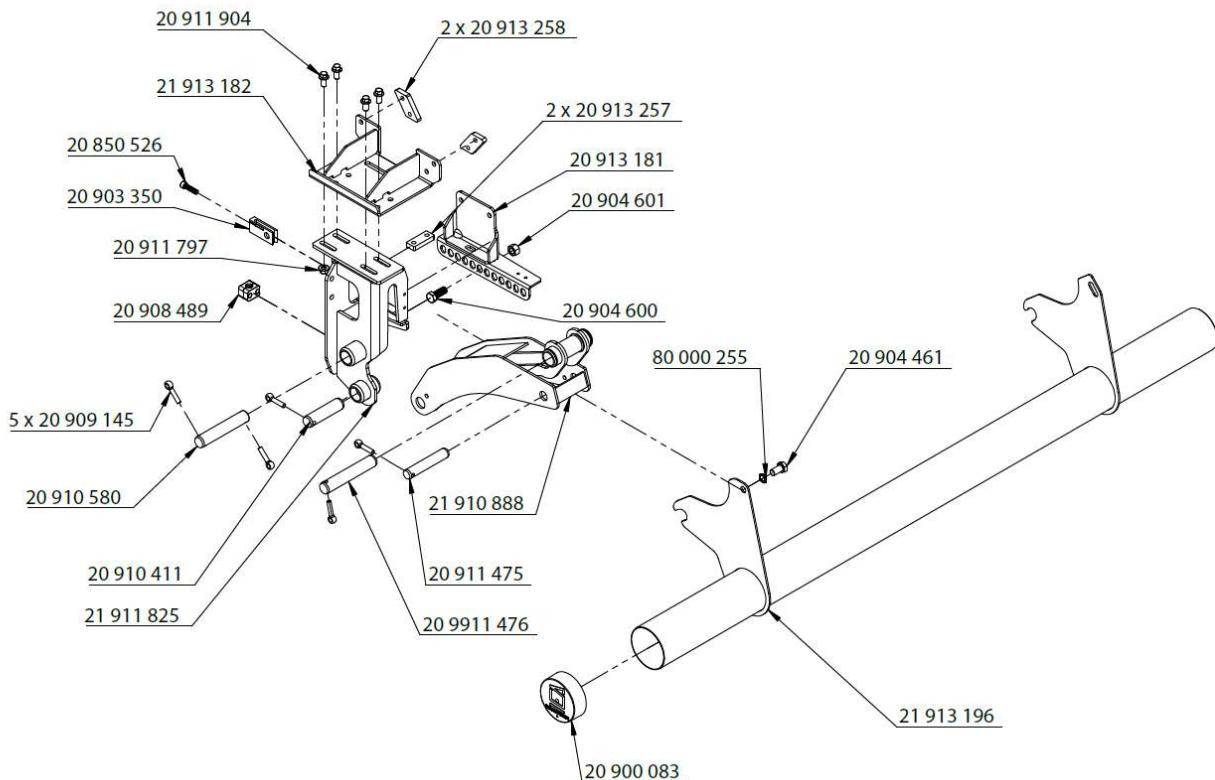
- When drilling all the holes in the vehicle chassis, it is essential to follow the vehicle manufacturer's instructions.
- If there is insufficient space, Sörensen Hydraulik GmbH (purchasing department or customer orders) must check the installation conditions. If it is established that installation is possible under the above conditions, we will send you a separate drawing describing this installation.
- When fixing the tail lift to the vehicle chassis, please use only the bolts and nuts supplied with the tail lift.

The positions and details of each connection – for each side - are shown below:

Right side fitting



Left side fitting



5.5 Mounting the lifting mechanism on the vehicle

Using the drawings in section 5.4/page 18 as reference, please follow the instructions below:

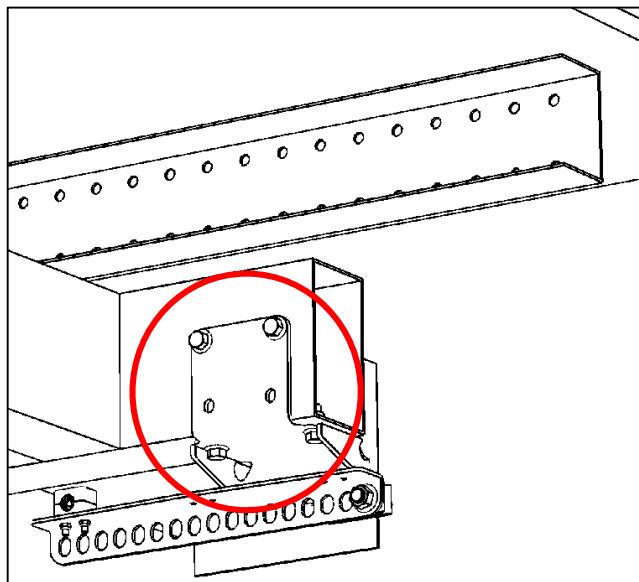
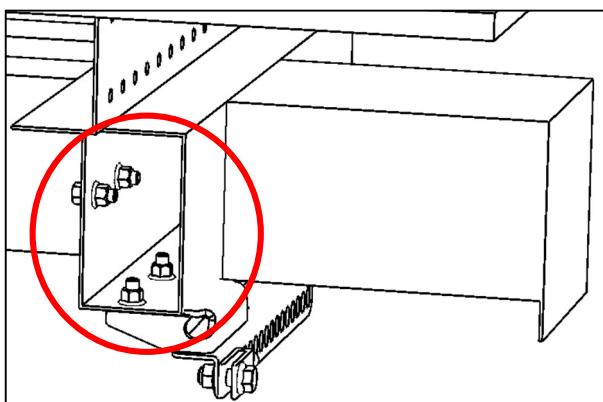
1. Secure the left and right auxiliary brackets to the vehicle chassis using the fixing screws, observing the tightening torque instructions (section 13/page 50).

NOTE

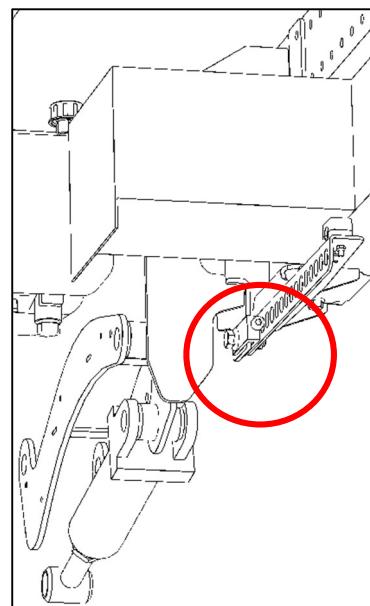
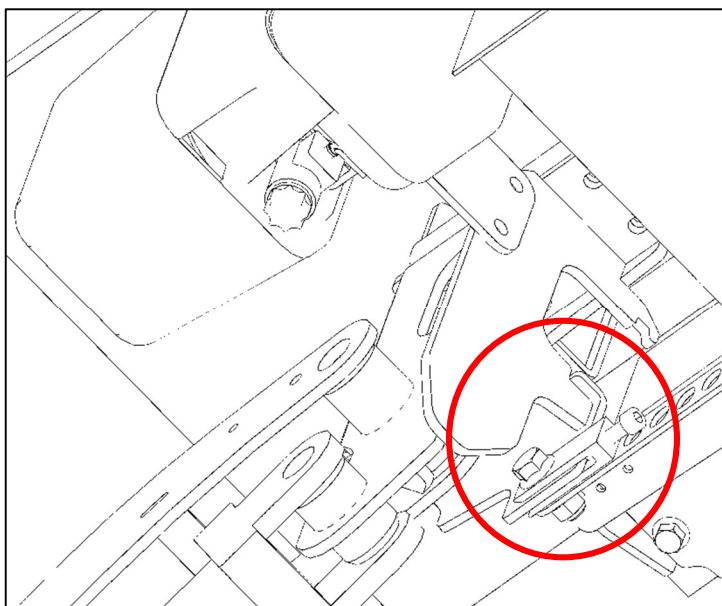
Use the vehicle manufacturer's original screws and nuts.

NOTE

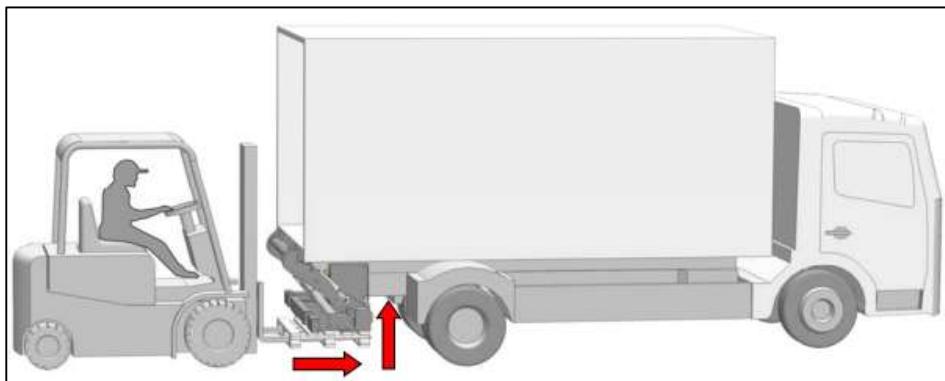
Tighten the screws - M12 10.9 - to a torque of 115Nm. Refer to section 13/page 50 for torque values.



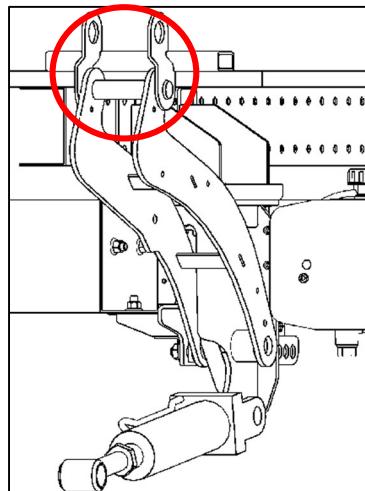
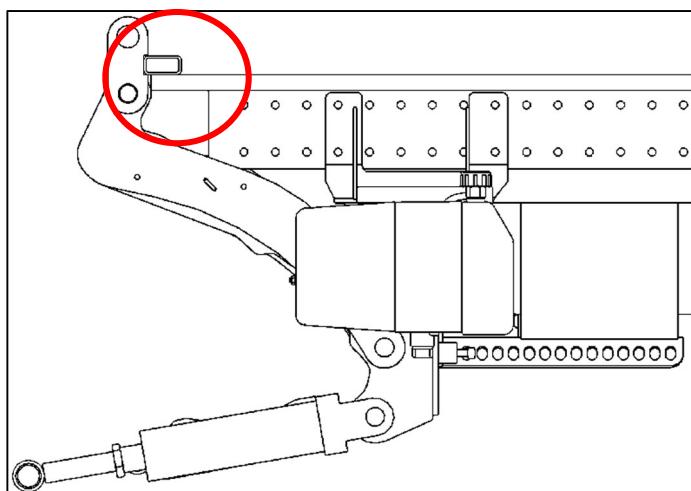
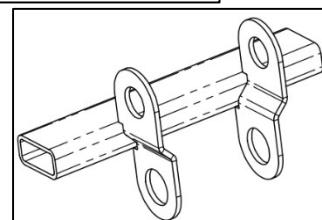
2. Using the fixing screw and washer, insert the adjusting bracket into the mounting bracket. Press the mounting bracket including arm and cylinder (right and left) against the vehicle frame, pass the screw of the adjusting bracket through the hole in the bracket and strut (refer to section 5.4/page 17 and section 5.5/page 19) and tighten by hand.



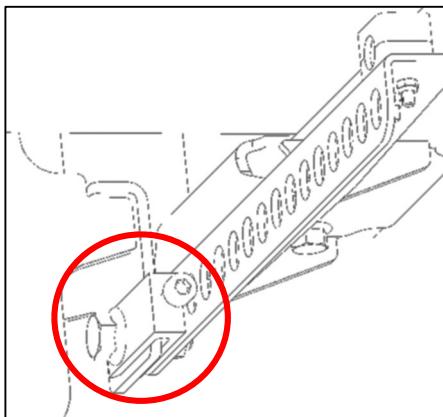
3. Position the lifting gear underneath the chassis.



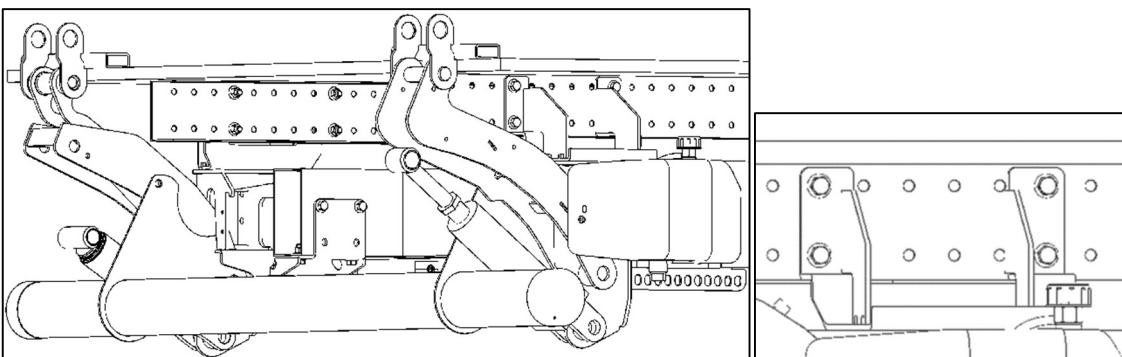
4. Using the hinge pins (optional item no. 20 908 520), suspend the mounting guide in the right and left lifting arms, place it on the vehicle floor and secure with a clamp.



5. Using the adjusting bracket, align the left and right brackets and secure them to the subframe. Tighten the bracket bolts.

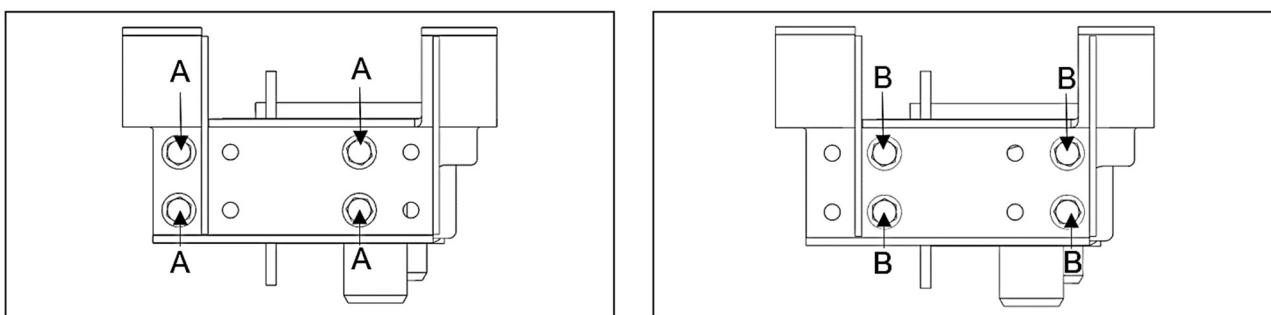


Align the flange bracket with the mounting adapters (right and left) on the support frame and secure it with the bolts and nuts.



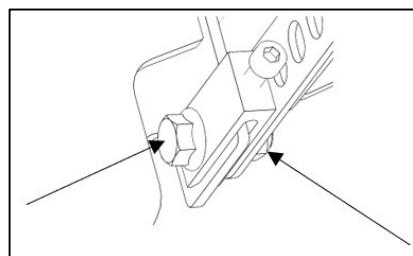
NOTE

Depending on the structure of the vehicle, there may be different screwing options between the flange bracket and the mounting adaptor:



When fitting, it is essential to observe one of the two possible screwing positions.

6. Tighten the screws and nuts on the adjustment bracket (right and left).



⚠️ WARNING

Beware of unwanted movements of these components and when deploying and closing the platform. During movement, it is possible that parts of the body, long hair or clothing could get caught. This could result in serious injury or death.

ATTENTION

The mounting parts or the vehicle chassis must not be permanently altered until the final mounting position of the tail lift has been determined.

7. When attaching the mounting adapters to the wheel profiles, ensure correct orientation in all directions:
 - a. Perpendicularity of the mounting bracket ↔ chassis
 - b. Parallelism between the two brackets
8. Check that the left and right flange brackets are equidistant from the rear of the vehicle.
9. **If it is necessary to drill holes in the brackets:**
 - a. Mark the position of the holes in all the mounting adapters on the chassis. The lifting mechanism can be lowered to allow easy access for drilling.
 - b. Seal exposed areas of the body or flange brackets (apply corrosion protection).
 - c. Drill fixing holes in the brackets, using the fixing holes present on the vehicle chassis.
 - d. Drill the corresponding holes in the chassis:
 \varnothing of hole = M-value of screw + 0.5mm.
10. Screw the brackets onto the vehicle chassis using the fastening screws, following the torque instructions in section 13/page 50.
11. Mount the brackets to the size of the vehicle frame.

ATTENTION

To drill the chassis, it is imperative to follow the vehicle manufacturer's assembly instructions.

NOTE

If a trunk seal (optional) is provided, consider the corresponding free space for it.

NOTE

Only use the delivered screws, in the size, quantity, and specification provided.

5.6 Bleeding the Cylinders

The lifting cylinders must be bled by lowering the platform completely to the ground several times. It may be necessary to lift the cart so that the platform can be fully lowered.

The closing cylinders are emptied by tilting the platform completely up, then completely down.

6 Electrical equipment

⚠ WARNING

Damage to the electric motor and relay

The tail lift should only be used if the battery cables are properly connected and the available voltage is sufficient. Never use a charging or starting device, as this could damage the electric motor and the power relay.

6.1 Minimum cross-section of electrical cables

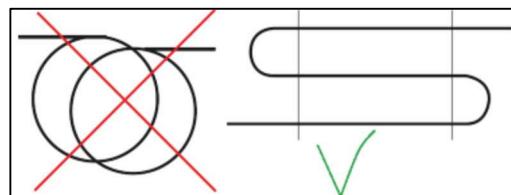
The minimum cross-sections of battery cables are as follows:

- 25 mm² for 24V
- 35 mm² for 12V

For more details, see the electrical diagram (section 11/page 48).

6.2 Routing Cables / Preparation / Connection

Excessive cable lengths should not be coiled in circles, but in loops.



ATTENTION

- When routing cables, ensure they are not pinched.
- Do not route cables near heat-conducting parts.

After mounting the platform, the cable of the central electrical system (central control unit) should be laid along the closing arm and secured using the cable ties provided in the kit to avoid any risk of friction or crushing of the cables.

Place and connect the 150 A flat fuse on the terminal block of the fuse box under the driver's seat.

NOTE

See and follow the vehicle manufacturer's instructions regarding fuses.

⚠ WARNING

• Short circuit of the vehicle battery

An improper connection can cause a short circuit or even an explosion of the battery. Risk of material damage and injury. Follow the vehicle manufacturer's instructions regarding battery handling.

• Risk of explosion, injury to persons, and damage to electrical components

Before connecting electrical components, disconnect the battery!

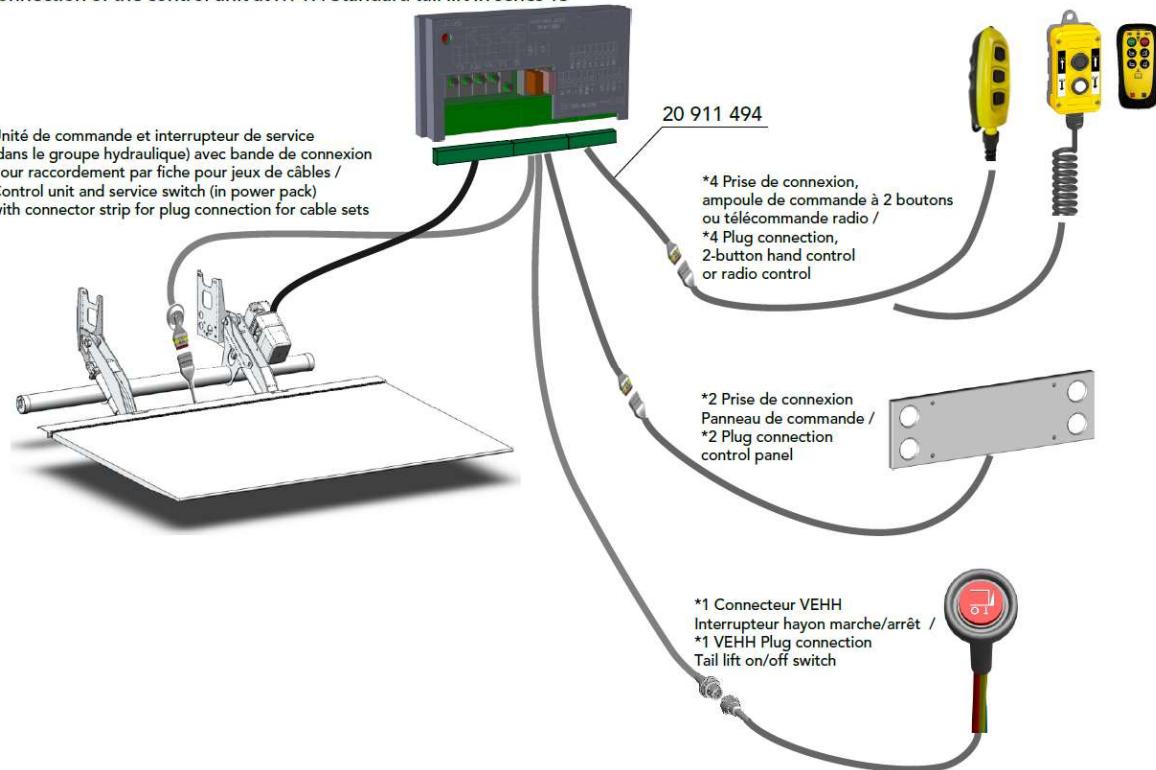
6.3 Main electrical system

The control unit (central command unit), which also contains the service switch, is in the hydraulic unit and is pre-assembled at the factory. The connections on the terminal block of the control unit (see electrical diagram section 11/page 48) to the cab switch on the dashboard *1, to the control panel and key switch *2, to the platform *3, optionally to the manual control *4 / radio remote control *5 must be made during assembly. The cables on the device must be secured after assembly using the cable ties provided.

As shown in the electrical diagram (see section 11/page 48), the following options are available for remote connection:

- 3-button manual control
- 2-button manual control
- Radio remote control (see section 6.5/page 25)

Raccordement de commande sur X1-X4 Hayon élévateur standard en série 13 /
Connection of the control unit at X1-X4 Standard tail lift in series 13



6.4 Foot control

The foot control is connected to the wiring harness inside the platform. After mounting the platform, secure the cable from the main electrical system along the lifting arm using cable ties to prevent any friction or pinching.

6.5 Radio remote control

6.5.1 Installation instructions



1. Receiver
2. Radio remote control
3. Safety-Point

1. Install the receiver in the immediate vicinity of the compact power unit and connect it to the tail lift control unit.



2. After connecting the two plugs, the green light on the receiver flashes. The receiver establishes a connection with the control unit, and is successful when the green light is on constantly and no longer flashes.

6.5.2 Activating the radio remote control



Press the green START button to activate the remote-control. The green light on the top right of the remote-control flashes, indicating that it is active. The tail lift can then be operated.

6.5.3 Safety Point



The Safety point plate should be installed in an area where you have a good overview of the motion of the platform.

To activate the Open and Close functions, the radio remote control should be held at approximately 1cm - 2cm from the Safety Point. To activate the functions, please follow the operating instructions in the next section.

6.5.4 Operating instructions



- **START:** Activate radio control
- **STOP:** Deactivate remote control
- **Button 1:** Lift
- **Button 2:** Lower
- **Button 3:** Close
- **Button 4:** Open
- Left LED light indicates the battery status
- Right LED light indicates the connection to the receiver
- Middle LED light signals an operation outside of Safety Point

- **Lifting:** Press button Nr.1 two times and hold. The lifting function is activated, and the tail-lift moves up. This function is available outside the safety-point area.
- **Lowering:** Press button Nr 2 two times and hold. The lowering function is activated, and the tail-lift moves down. This function is available outside the safety-point area.
- **Closing:** Press buttons 1 and 3 at the same time and hold. Closing function activates and the platform starts to close. This function is only available within the safety-point area.
- **Opening:** Press buttons 2 and 4 at the same time and hold. Opening function activates and the platform starts to open. This function is only available within the safety-point area.
- **Tilt-up:** Press buttons 1 and 3 and hold. Tilt up will start but stops at +10°. This function is available outside the safety-point area. The tilt-up function starts automatically when the lifting function is used.
- **Tilt-down:** Press and hold buttons 2 and 4 at the same time. The tilt-down function is activated and will stop at -10°. This function is available outside the safety-point area. The tail-lift automatically tilts down when the lowering function is activated and the platform has reached the ground.

6.5.5 Programming of the Safety Point using a smartphone

If the Safety Point needs to be reprogrammed due to damage or loss, the following steps are necessary:

- Download SmartApp - Sistematica from the Google Play or Apple Store.
- No account needs to be created to access the Safety Point.
- First click on the "TAG" function and select the device. It is important that the radio control be activated and connected.
- Select "Pairing SafetyPoint". Both safety points can then be paired again. This is done via NFC scan or by scanning the QR code.



SmartApp - Sistematica

Produktivität

Öffnen

ALTER
4+

Jahre

KATEGORIE
Produktivität

ENTWICKLER
Sistematica

SPRA

EI
+ 1 we

Neue Funktionen

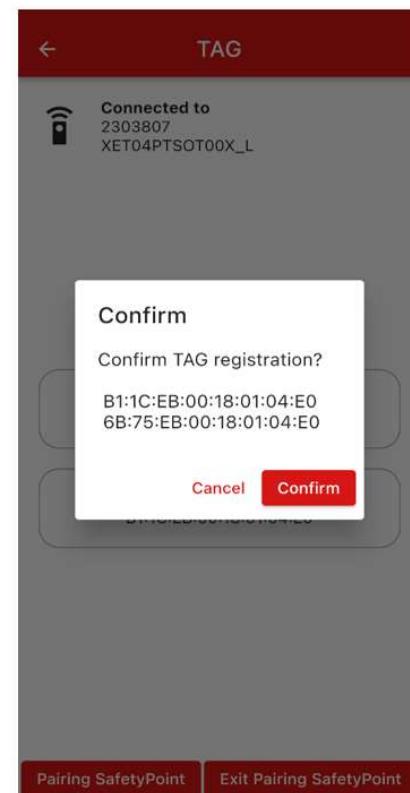
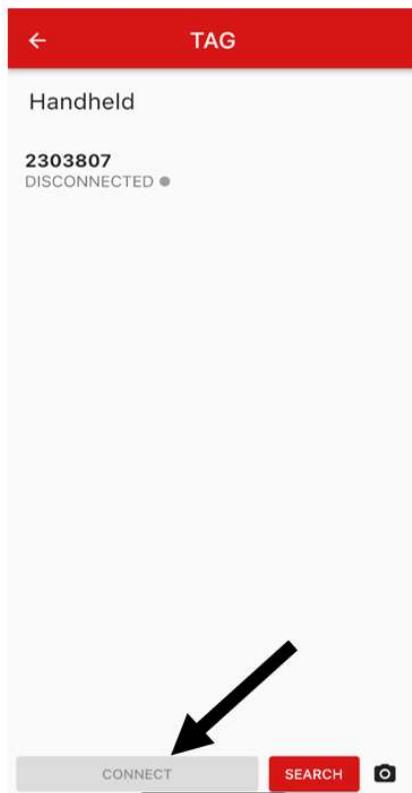
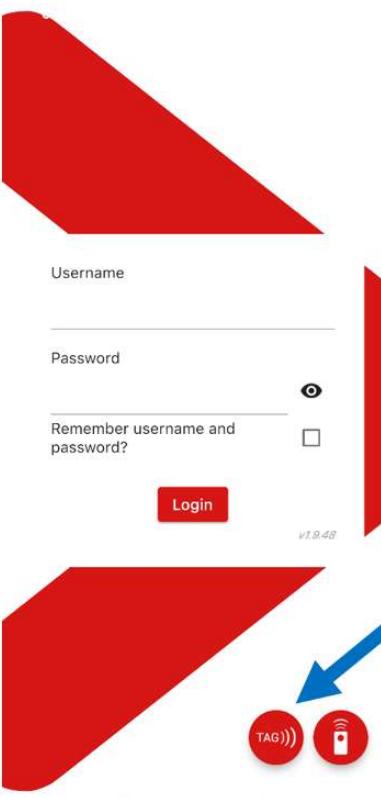
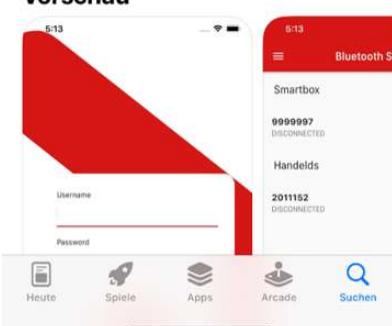
Version 1.9.48

Versionsverlauf

vor 9 M.

Bug fixing

Vorschau



6.5.6 Pairing receiver and radio transmitter

System coding (PAIRING) is required if you want to replace a receiver or use it with a handheld device other than the one it was paired with at the time of purchase.

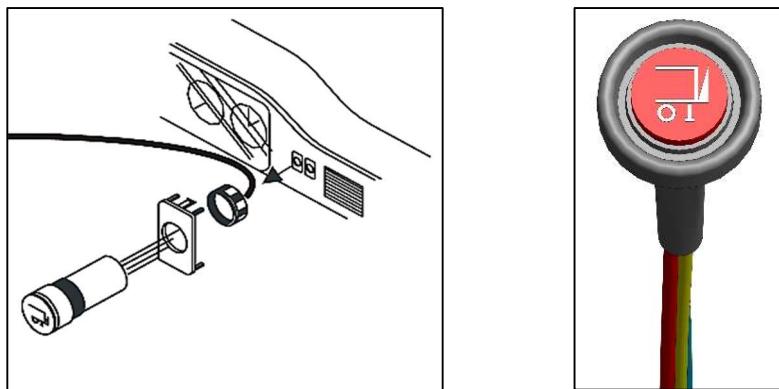
Follow the steps below:

1. Once the receiver is turned on, press any 3 buttons on the handheld device simultaneously (except STOP) within 5 seconds until the YELLOW LED flashes 3 times.
2. After the triple flash, the handheld/receiver system is paired and this pairing remains valid until a new one is made. To check the connection, test the system commands.

6.6 Cab switch

6.6.1 Installation

For vehicles without ETMA pre-installation, it is necessary to drill a 16 mm hole in the dashboard, but use a free spot on it if possible. Install the cab switch and connect it according to the attached wiring diagram (see section 11/page 48). Route the cab switch cable to the control unit (main control system, main electrical system) of the tail lift and connect it to the round socket of the control unit. See diagram *1 cab switch connection socket in section 6.3/page 24.



6.6.2 Storage Position

The cab start-up kit lights up when the button is pressed, indicating that the tail lift is electrically activated. The tail lift can be turned off before starting by pressing the button, which then turns off. If the button remains lit after turning off the tail lift, it indicates that the tail lift is not in the storage position.

6.7 Control panel

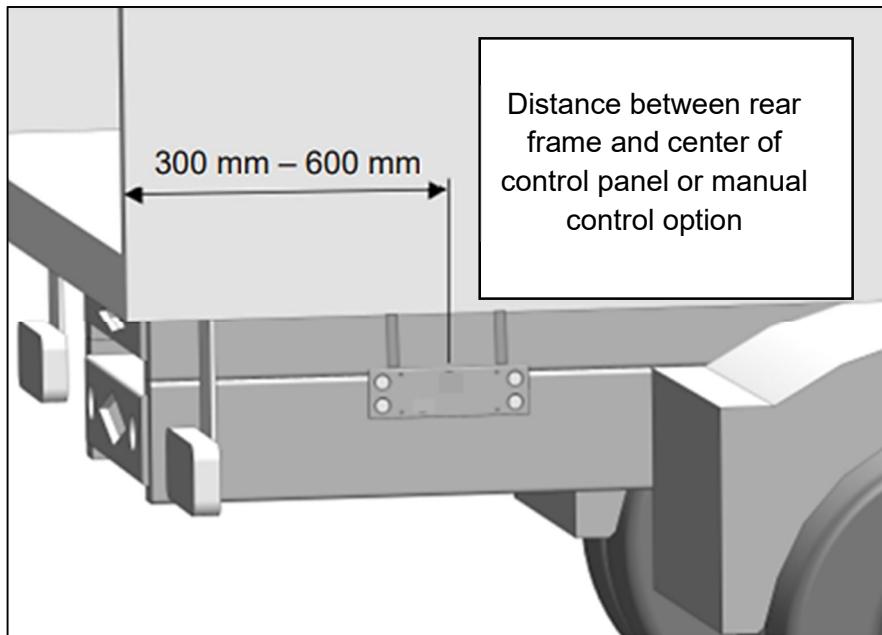
There are two versions of the control panel: One with a key switch installed on the side and one without. To install the panel, please follow the instructions below:

- Plan the position of the control panel before installing the lifting device, as the position can influence the installation process.
- Mount the control panel on the right at the end of the vehicle so that the platform is visible from the control station. The distance should be between **300mm and 600mm** for all configurations, with or without support (standard EN1756-1).
- Run the connecting cables through the hydraulic unit and connect them in accordance with the wiring diagram (see section 11/page 48).

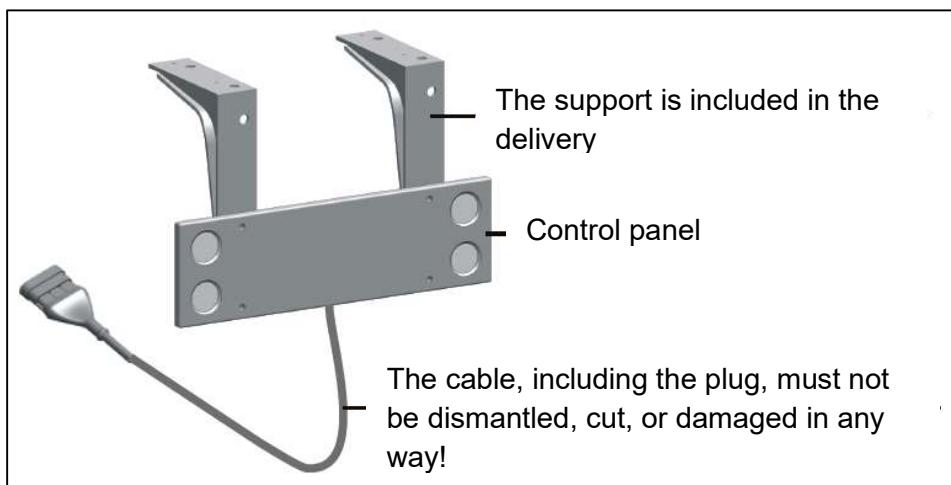
- Fit the cab switch in the cabin and connect it according to the enclosed wiring diagram.

ATTENTION

Follow the vehicle manufacturer's instructions for assembly and installation. Failure to do so may cause serious damage to the electrical system of the tail lift and/or the vehicle's electrical and electronic wiring.



Option one (without key switch):



Option two (with key switch): The same instructions as in the illustration above are to be applied here:



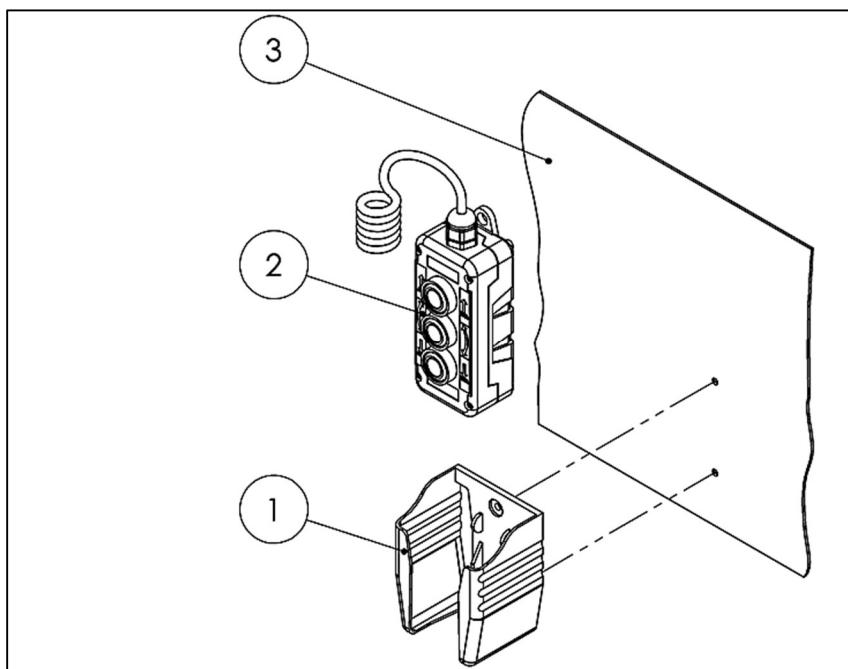
⚠️ WARNING

Water ingress

An incorrectly routed cable can cause water to seep into the control panel and prevent it from operating properly. Danger of serious injury during subsequent use. Only route the cable under the control panel.

6.8 Fitting the bracket for the 2 or 3 button cordless remote control (optional)

Mount the bracket (Pos. 1) for the wired remote control (Pos. 2) on the inside panel of the vehicle body (Pos. 3) two screws or adhesive tape.



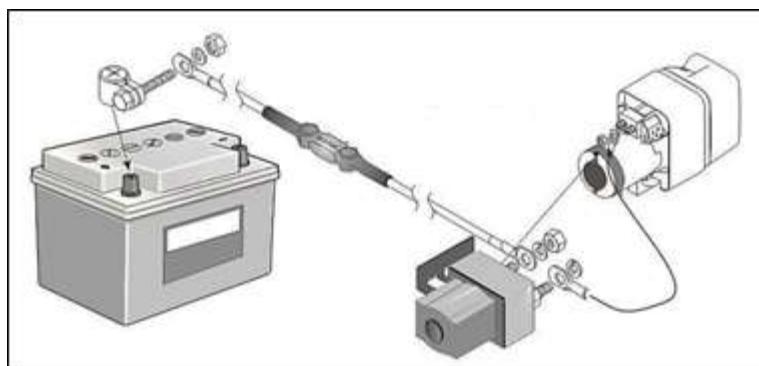
6.9 Main fuse

The plus and earth cables are pre-assembled on the unit at the factory. Connect the two cables to the connections provided on the vehicle. The earth cable is blue, the plus cable is red. The cables must not be pinched or chafed and must not be routed near heat sources.

- Run the main power cable (the plus cable from the main fuse) to the tail lift motor relay and connect it to the relay.
- Connect the liftgate electric motor ground cable directly to the chassis location specified by the vehicle manufacturer.

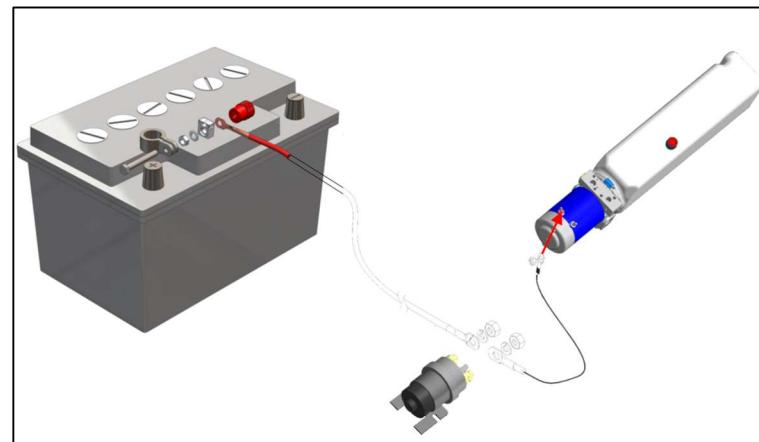
6.9.1 12 Volt system

12 Volt Battery	
Battery capacity	1 x 180 Ah
Fuse	150A



6.9.2 24 Volt system

24 Volt system	
Battery capacity	2 x 180 Ah



⚠️ WARNING

Short-circuiting the vehicle battery

Improper connection can lead to a short-circuit or even an explosion of the battery. Danger of material damage and injury. Follow the vehicle manufacturer's instructions for handling batteries.

6.10 PVC pipe

The tail lift is fitted with a PVC protective pipe from the hydraulic unit to the control unit, including the electrical wiring.

ATTENTION

For all functions of the tail lift, ensure that the cable is correctly laid and cannot be stretched, trapped, cut, or damaged by any interference on the platform.

7 Assembling the platform

7.1 Lifting the platform

Lift the platform using suitable lifting equipment such as a crane, assembly table or pallet truck.

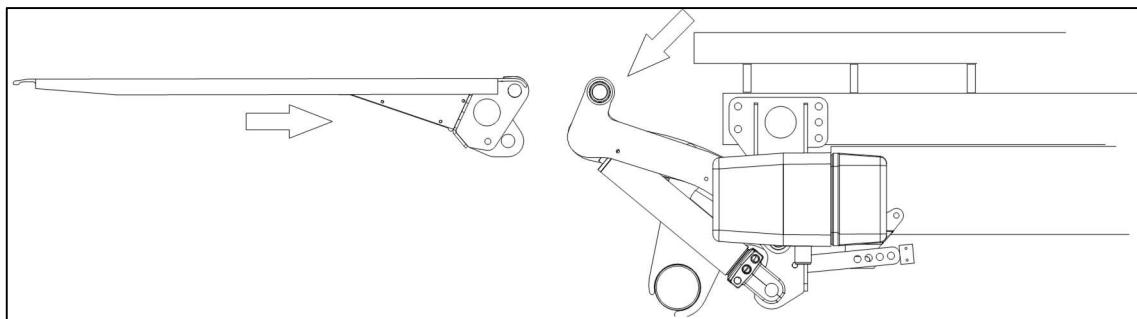
7.2 Mounting the platform

WARNING

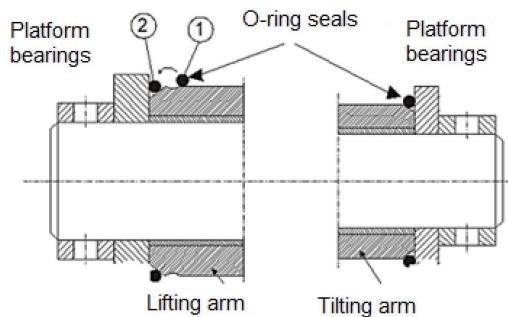
Assembly around pinching or crushing points

When assembling the platform, there is a risk of trapping or pinching fingers. Take care in the areas between the platform and the lifting mechanism.

1. Remove the cable ties.
2. Lower the lifting mechanism to make it as easy as possible to assemble the platform.
3. Grease the tilt cylinder bearings with the special grease supplied.
4. Fit the O-ring seals, attach the lifting arms and the tilt cylinder, fit the studs, and lock them.
5. If necessary, extend or retract the tilt cylinder.



6. All pins are fitted with an O-ring. During assembly, these must be placed in **position 1** on each side of the lift and tilt arms.
7. When assembly is complete, roll the O-rings carefully into **position 2**.

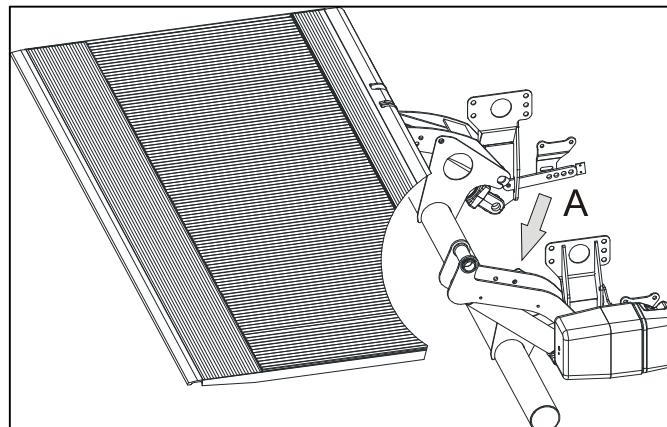
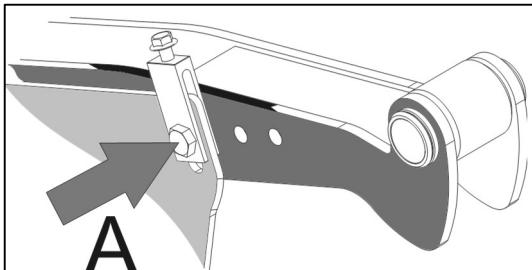


ATTENTION

- Only climb on the lift with suitable footwear (safety shoes with non-slip soles).
- Observe accident prevention regulations.

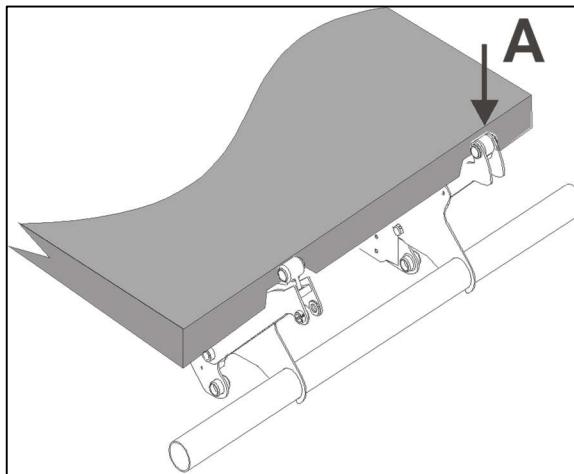
7.3 Adjusting the platform in relation to the vehicle floor

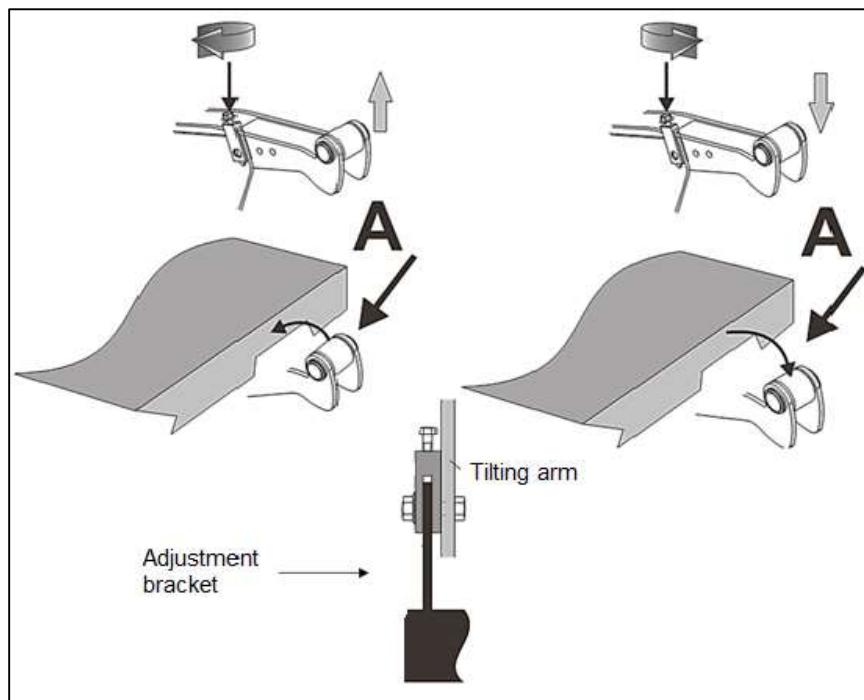
Holding the platform open and using the power pack, move the lifting mechanism to the rear crossbar. The lifting arms must not touch the rear crossbar during adjustment. Leave approximately 10 mm of clearance between the lifting arms and the crossbar. Use the adjustment screw to position the platform parallel to the crossbar. After adjustment, tighten the two screws (A) securing the underride bar.



7.4 Operating mode of the adjustment bracket

After assembly, both lifting arms must touch the rear crossbar at the same time, and must not drop when the platform is loaded. If necessary, this adjustment can be made using the adjustment fork on the right-hand lifting arm. Turning the screw to the right brings the lifting arms closer to the crossbar.



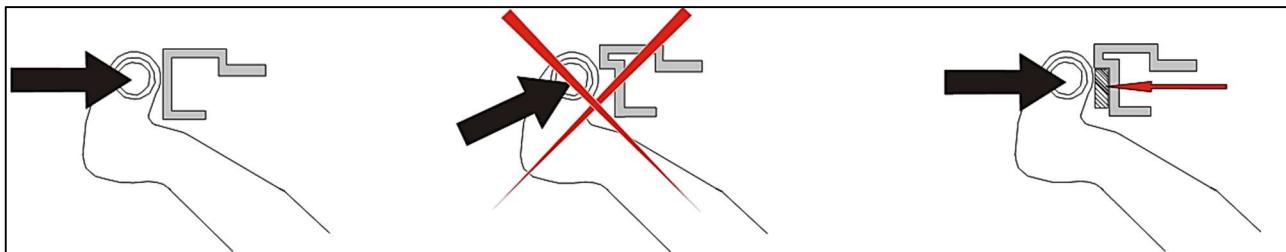


7.5 Lifting arms resting against the rear crossbar

If the assembly has been carried out correctly, both lifting arms should rest against the rear crossbar at the same time.

If the shape of the rear crossbar does not allow this, it is imperative that the lifting arm rests only with the **head of the spring part** against the crossbar and that the side plates can rest freely against the head of the lifting arm.

If necessary, reinforce the support area to prevent deformation of the crossbar when the tail lift is in use.



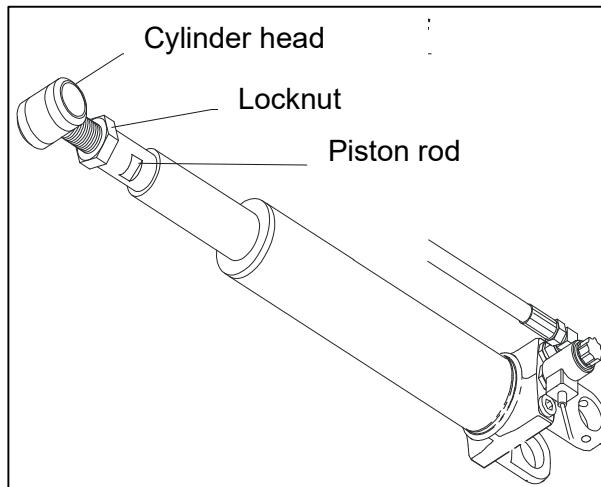
The lifting arm head must always rest on a flat surface. If there is an edge, fill it in to create a flat surface. Otherwise, the body may lift and the spring part of the lifting arm may not work properly.

7.6 Adjusting the platform to the closed position

Use the hydraulic unit to close the platform. The cylinder must be fully extended (mechanical stop in the cylinder) when the platform is lightly pressed against the body or in a 90° position in relation to

the vehicle floor. If the platform presses very hard against the body without the jack being fully extended, the length of the jack must be adjusted.

Open the platform by 10° to 15° to ease the pressure on the cylinder. Loosen the locknut on the piston rod and retract or extend the cylinder head. Carry out a test to ensure that light pressure is applied and then retighten the locknut.



7.7 Roll-stop

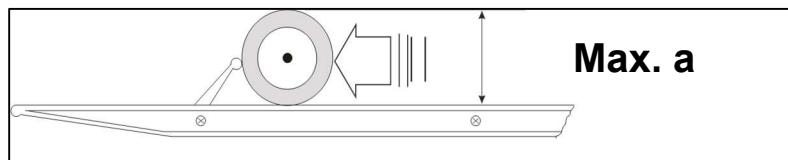
If rolling loads are to be used, the platform must be fitted with roll-stops. The roll-stops on Sörensen platforms secure rolling loads up to a wheel diameter of 110 mm.

NOTE

The slots for the roll-stops must be as clean as possible and free of any obstacles (dirt, stones, snow, etc.).

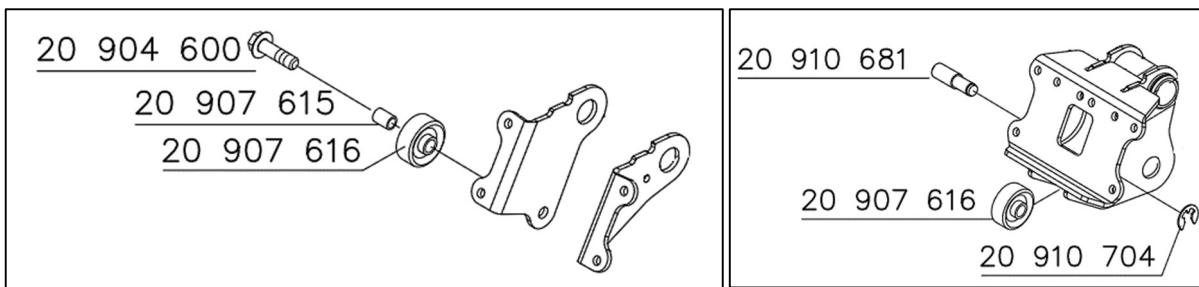
The maximum authorised wheel diameters are as follows:

Roll-stop opening angles	a (mm)
30°, 60°	110
90°	200



7.8 Floor rollers

As shown below, the floor rollers must be fixed to the plates of each platform bearing using bolts 20 907 616 and the corresponding screws and lock washers. The parts are included in the kit, see section 3.4/page 10.



7.9 Adjusting the platform tilt (Programming the tilt sensor)

The tilt of the platform is calibrated by a combination of keys on the control panel.

NOTE

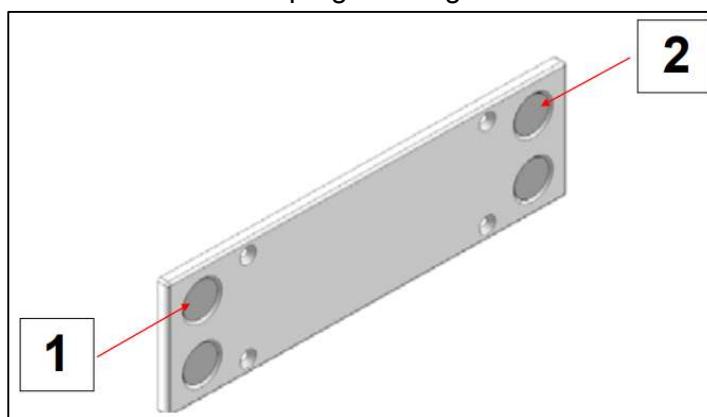
After fitting the tail lift or carrying out repairs: use the manual control to return the platform to the horizontal position.

Using the control panel:

- Move the platform to the horizontal position
- Press button 1 (top left) 3 times then,
- Press button 2 (top right) 3 times

NOTE

- Carry out programming for button 1 and button 2 for a period of 2 seconds.
- The set position is maintained until new programming is carried out.

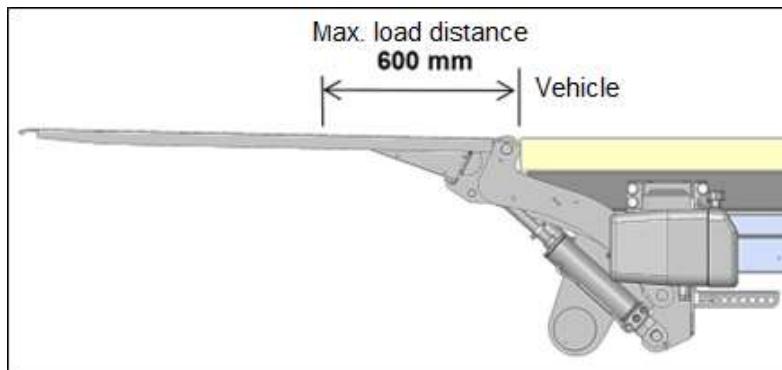


7.10 Load distance

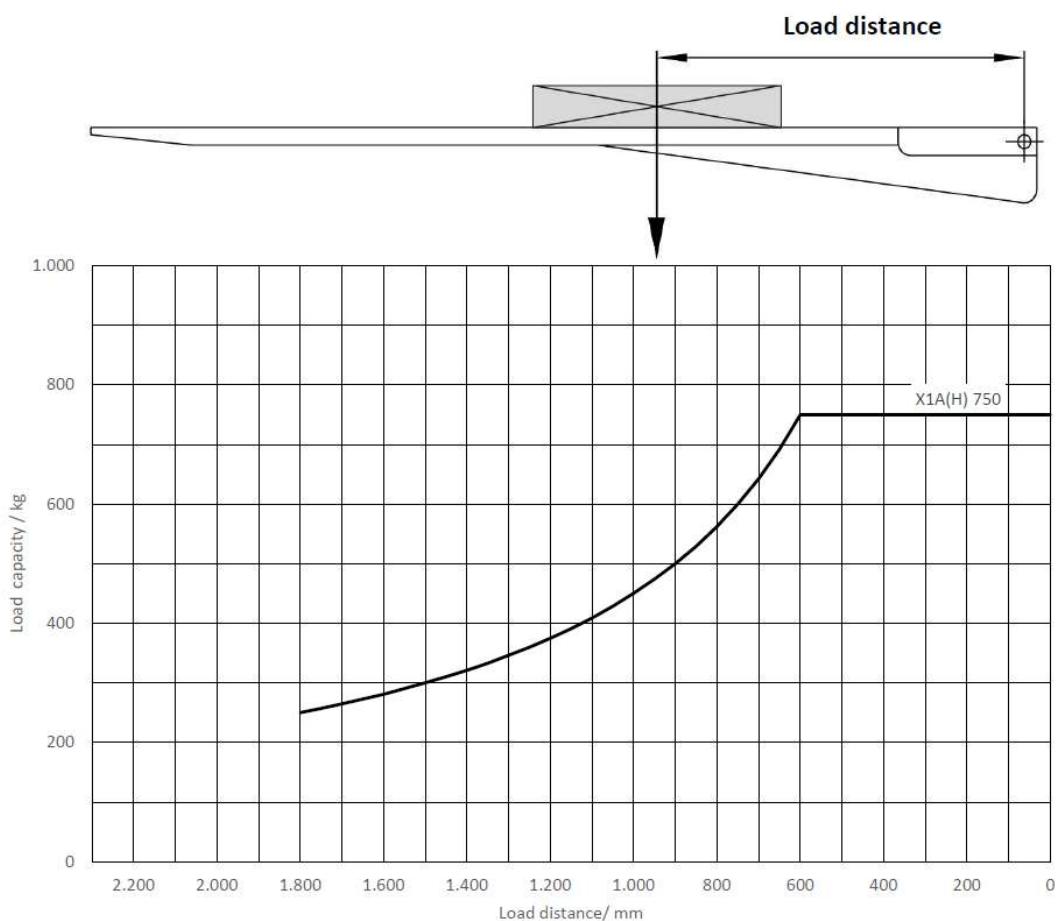
ATTENTION

The maximum load of 750 kg must not be exceeded to avoid serious damage to the vehicle.

The maximum load must be positioned **in the middle of the platform** and must not exceed the load distance of 600 mm. See also the type label (Section 7.12/page 39) on the lifting arm and in the unit lid.



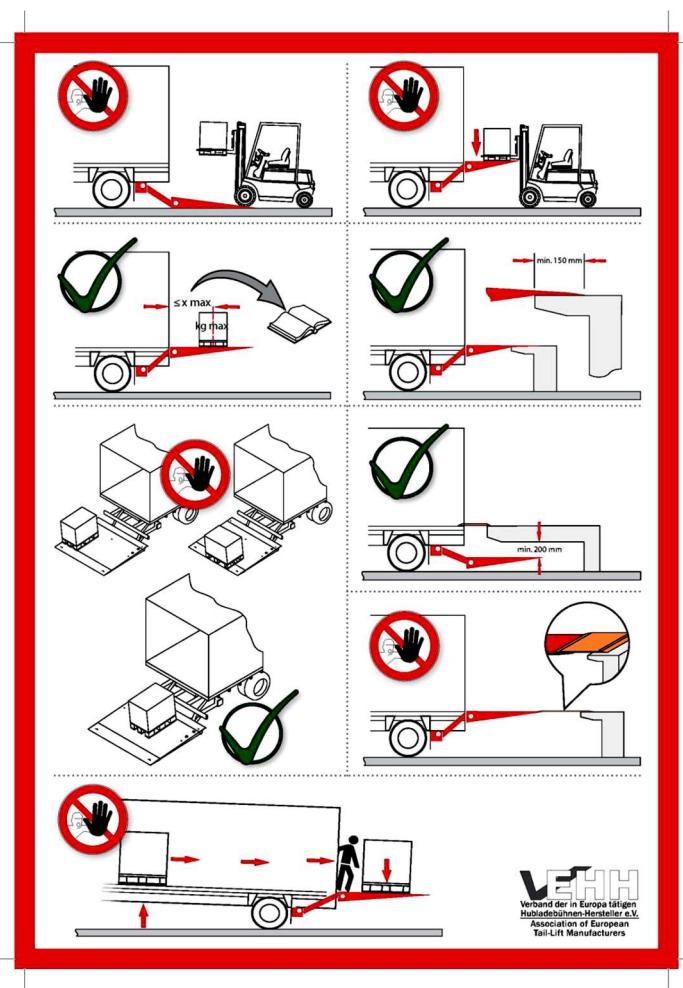
7.11 Load diagram



7.12 Type label

This self-adhesive label is supplied with each new tail lift and must be affixed visibly to the rear and inside of the body by the company carrying out the assembly. The safety sticker uses pictograms to describe possible misuse and correct use of the tail lift.

We would like to take this opportunity to thank the assembly companies for their help in achieving the objective of clearly informing operators about the correct use of Sörensen tail lifts.



NOTE

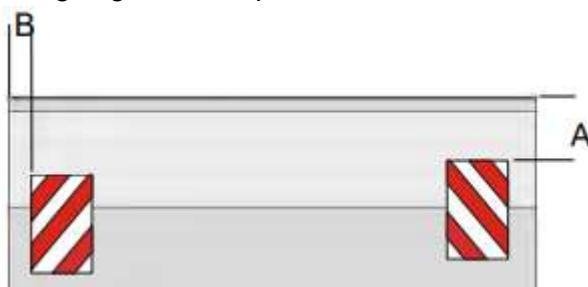
If the sticker is no longer available or readable, please reorder it under item number 20 909 238.

7.13 Flags

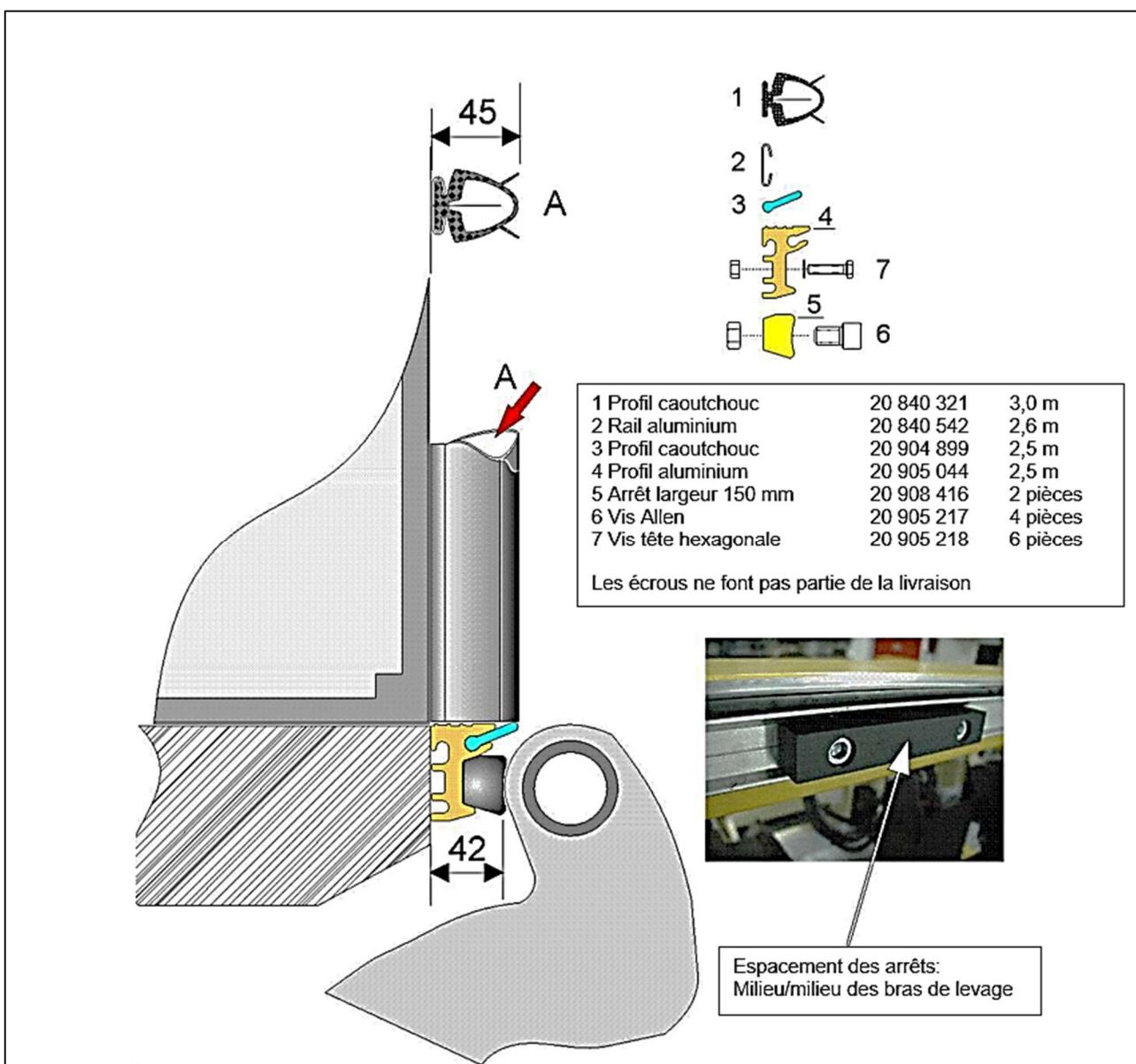
Fit the supplied flags according to the following instructions:

The following must be complied with:

- Dimension A – Move the bracket away from the platform tip until there is 20 mm clearance between the bracket and the road when the platform is lowered. The bracket must not touch the ground when the platform is lowered.
- Dimension B – Warning flag as far as possible towards the outer edge of the platform.



7.14 Body seal assembly



8 Operating the tail lift

8.1 Starting up the tail lift

1. Check that all electrical connections have been made correctly and that all fixing screws have been tightened to the required torque.
2. Check the hydraulic system for leaks. Perform the Open, Lift, Lower, Close and Tilt functions at least twice, so that the hydraulic cylinders can be bled completely. When performing these operations, make sure that all the functions of the tail lift are working correctly.

CAUTION

Platform at ground level

In the lowered position, it is easy to see the platform and people can trip over it.
If this position is maintained for longer, secure the area.

3. Check that all moving parts operate freely (no points of friction on pipes, cables, etc.).
4. Lubricate all grease nipples on all joints with an acid-free lubricant. See the lubrication schedule in the technical summary or user manual.
5. Apply all warning markings for service personnel and public traffic.
6. For remote controls: Mark the safety zone on the vehicle floor and platform.
7. Check that the warning lights are working properly.
8. The operating instructions with load diagram and warning plate must be attached to the vehicle in such a way as to be legible from each control station.

8.2 Checking the operating speed

8.2.1 Vertical speed

The vertical speed (lifting and lowering) must not exceed 15 cm/s.

WARNING

Excessive angular speed when opening or closing may cause injury. Please contact Sörensen Hydraulik GmbH customer service.

8.2.2 Opening and closing speeds

The speed of tilting during opening and closing must not exceed 10°/sec.

WARNING

Excessive angular speed during opening and closing may cause injury. Please contact Sörensen Hydraulik GmbH after-sales service.

8.2.3 Tilt speed (10° to -10°)

The angular velocity must not exceed 4°/sec.

WARNING

Excessive angular speed during opening and closing may cause injury. Please contact Sörensen Hydraulik GmbH after-sales service.

8.3 Load tests

WARNING

High load on components

Incorrect assembly or defective components can cause liftgate components to fail or break. Risk of injury when using the tail lift.

8.3.1 Static test

1. Bring the platform to a horizontal position, halfway between the road and the vehicle floor.
2. Place a weight up to 125% of the rated capacity of the tail lift on the platform at the intended load distance and then remove it.
3. Repeat the procedure to check for any remaining deformation.
4. In 15 minutes of testing, the platform must not drop more than 15 mm and must not tilt down more than 2°.

NOTE

The rated capacity and permissible load distance of the tail lift are engraved on the liftgate's type label. The load diagram (section 7.11/page 39) shows the possible loads when the load distance is changed.

NOTE

After the static test, the company carrying out the assembly must check the tail lift for deformation.

8.3.2 Dynamic test

The lifting, lowering and tilting functions must be tested with the loads shown in the load diagram (section 7.11/page 39).

NOTE

The pressure limiter is set at the factory; correction is generally not necessary. If necessary, consult our technical services.

- The maximum authorised pressure is engraved in bar on the tail lift type label.
- After the static and dynamic tests, visually check the hydraulic system for leaks.

8.3.3 Overload test

A test must check that a load of more than 125% of the rated capacity of the tail lift cannot be lifted.

8.3.4 Safety equipment test

Use all the functions of the tail lift until the safety devices are triggered.

9 Recommendations and notes on the tail lift

NOTE

To ensure safe operation of the tail lift, it is essential that you read the safety instructions and the warnings provided in the operating instructions.

9.1 Recommendations for hydraulic oil

HLPD 22 (ISO-VG 22) "detergent", so that free water remains emulsified (e.g. due to ice formation in winter operation) and to improve oil film adhesion. In colder regions, we recommend hydraulic oil of class HLPD 10.

Sörensen Hydraulic oil HLPD 10	Art. No. 20 841 181
Sörensen Hydraulic oil HLPD 22	Art. No. 60 700 283
Sörensen Bio-oil	Art. No. 20 858 811

ATTENTION

Oil leakage

If the tail lift is stored incorrectly, oil can leak out and damage the environment. Only transport the tail lift in an upright position with the oil nozzle upwards: Use suitable lifting points for this purpose.

9.2 Painting the tail lift

The lift gear is supplied painted black. If additional painting is required, this must be carried out by the vehicle manufacturer. Please ensure that the piston rods are masked for painting, and carefully remove paint residue and adhesive film after painting, otherwise the seals will be damaged.

NOTE

- Roughen the surface before painting.
- Protect the black piston rods from any paint residue.
- Please also note that the black piston rods must be protected with adhesive, and cleaned thoroughly of paint and adhesive residues, to avoid damaging the seals, which would invalidate the warranty.

9.3 Recording in the inspection logbook

Once the assembly, installation on the vehicle, adjustment and function test have been carried out, an authorised expert must complete and sign the 'Test report before first use by expert' section of the logbook.

10 Explanation of the diagnostic LED in Series 13

10.1 Control unit with service

Central control unit with service/standby control

Description:

- Platform CLOSED (vertical) → 90°
Platform open (horizontal) → 0°
Platform tip tilted → -10°



Diagnostic LED:

1. The LED is permanently lit when:
 - a. The driver's cab switch is on.
 - b. Platform position 60° to approx. 90
 - c. Platform position 0° to -10°.
2. The LED flashes when:
 - a. The manual button is pressed or the foot control is operated.
 - b. The hand control button is pressed.
3. The LED is off when:
 - a. The main switch is off.
 - b. Platform position 0° to 60°.

10.2 Checking the platform tilt sensor

Platform closed and tail lift on: **LED on**

Power supply is OK.

Platform position 0° to 60°: **LED off**

S1 tilt sensor activated and OK.

Flashing lights come on.

Platform position 0° to -10° tilted down: **LED on**

Tilt sensor S2 activated and OK.

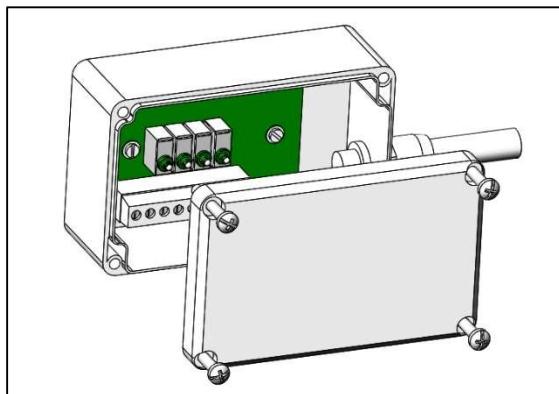
Switching takes place when the platform is in the horizontal position. This enables the automatic upward tilt to be set.

10.3 Control of pressure switch S4

Start lowering the tail lift using the two buttons on the foot control: **LED flashes**

As soon as the platform reaches the ground and the switch has been activated, the LED switches to **rapid flashing for about 4 seconds, then goes out** and the platform tilts downwards. This proves that the pressure switch has been switched on. If not, the pressure switch is faulty.

10.4 Activating functions on the emergency control unit

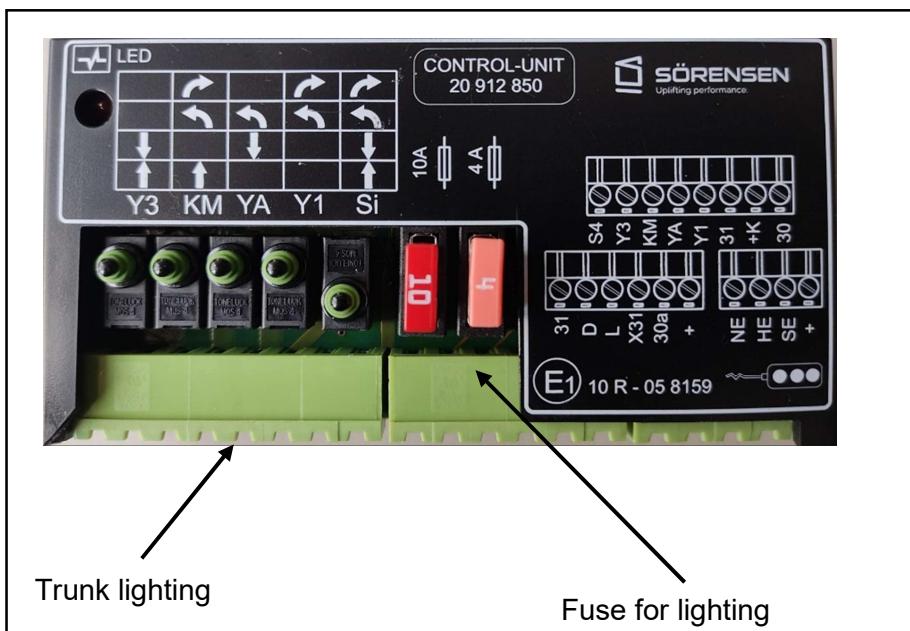


Function	Si	Y3	YA	Y1	KM
Lift	•	•			•
Lower	•	•	•		
Open/Tilt down	•		•	•	•
Close/Tilt up	•			•	•

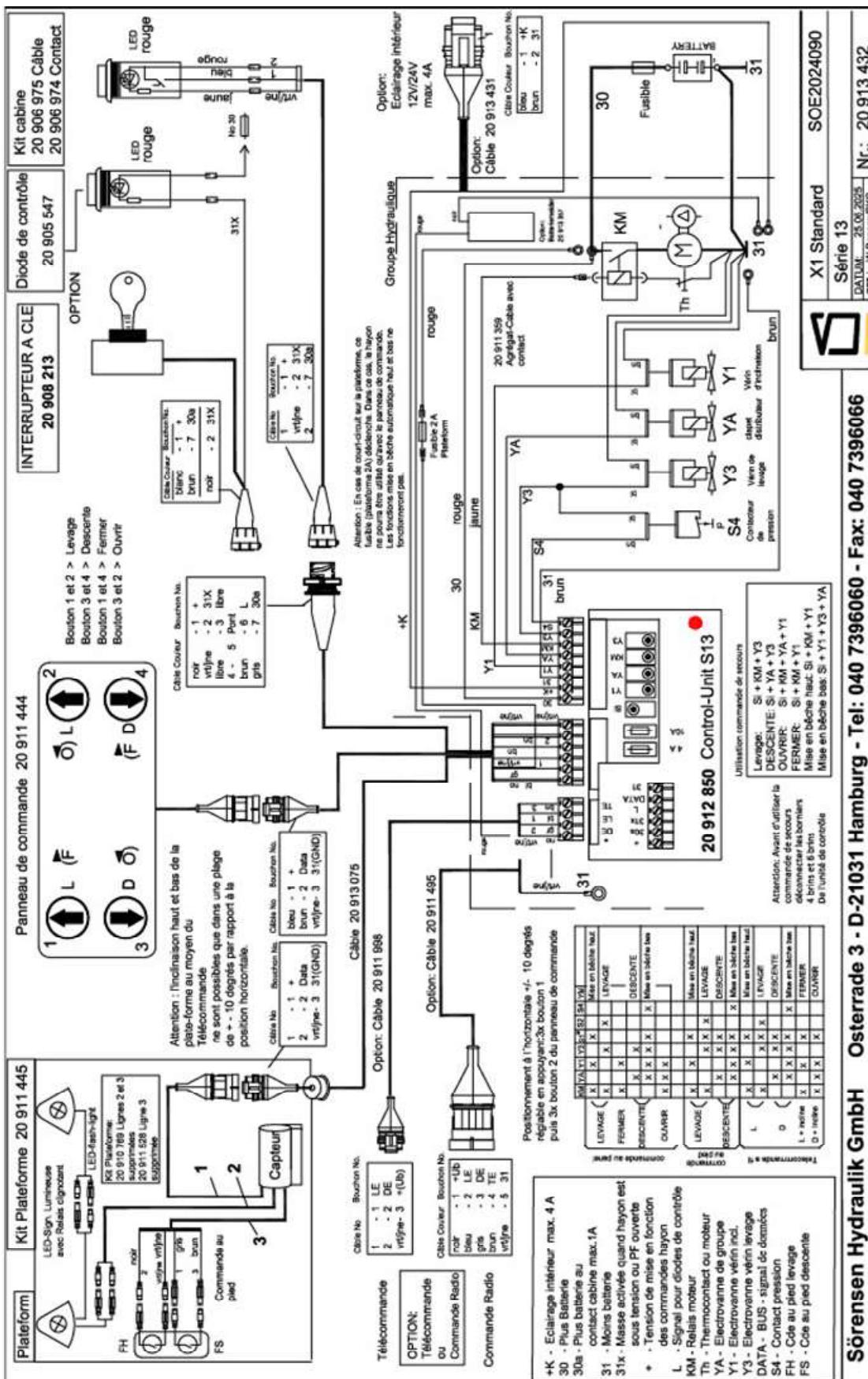
If the control unit is not receptive due to the battery capacity, activate KM last.

10.5 Trunk lighting option

The Service Switch terminal block offers the option of connecting the boot lighting to terminals 'K+' and '31' or to earth. The lighting is switched on or off at the same time as the tail lift via the switch in the driver's cab and is protected by a 4A fuse.

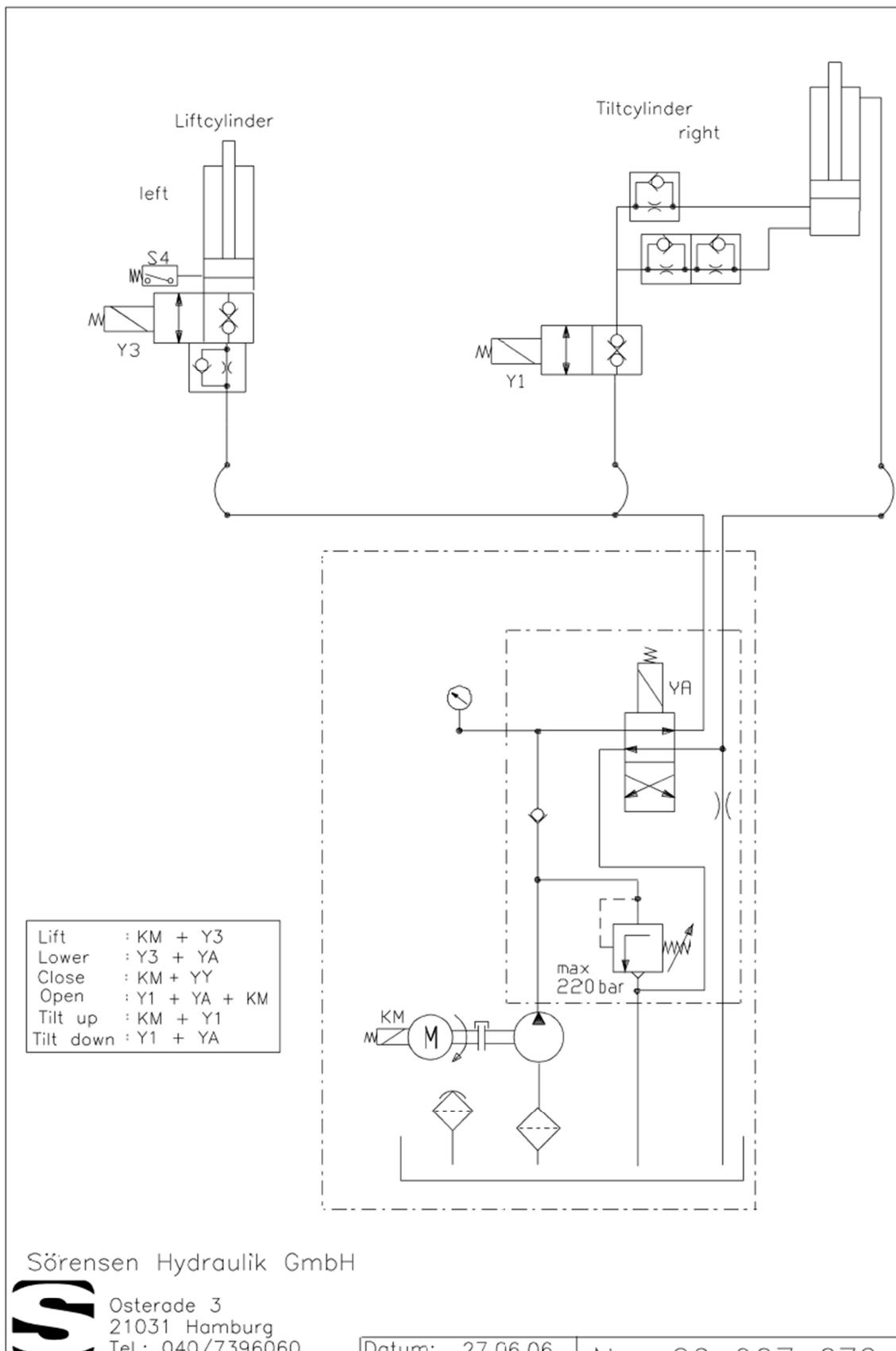


11 Electric circuit diagram



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12 Hydraulic circuit diagram



13 Torque table

Torque table valid for all screws supplied and fitted to our tail lifts:

Screw dimension	Tightening torque in Nm	Screw connections	Tightening torque in Nm
8.8		DIN 3852	
M4	2,7 ± 0,1	G1/4"	40 ± 1,2
M6	9,5 ± 0,3	G3/8"	95 ± 2,9
M8	23 ± 0,7	G1/2"	130 ± 3,9
M10	53 ± 1,6	Coupling nuts	
M12	80 ± 2,4	M16 x 1,5	60 ± 1,8
M14	130 ± 3,9	M18 x 1,5	60 ± 1,8
M16	195 ± 5,9	Cap plugs	
M20	385 ± 11,6	G1/8"	15 ± 0,5
10.9		G1/4"	33 ± 1
M10	70 ± 2,1	G3/8"	70 ± 2,1
M12	115 ± 3,5		
M14	180 ± 5,4		
M16	275 ± 8,3		
M20	542 ± 16,3		
Platform bearings			
10.9			
M12	60 ± 1,8		
M16	150 ± 4,5		
Flange screw with serration			
M14	215 ± 6,5		
M16	310 ± 9,3		