



Plus-point product diversity

Installation Manual for Sörensen tail lift:
X1A 600E, X1A 600F



Installation Manual

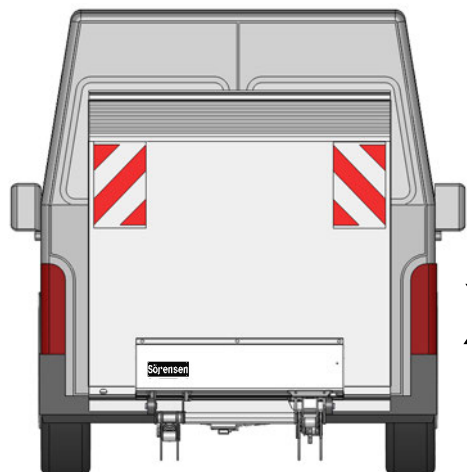
X1 TECHNOLOGY

for Sörensen tail lift :

- + X1A 600E
- + X1A 600F



X1A 600F



X1A 600E

Installation brackets for the different vehicle types:

Mercedes Sprinter
VW Crafter

Nissan Interstar
Renault Master
Opel Movano

Citroen Jumper
Peugeot Boxer
Fiat Ducato

Ford Transit

Iveco Daily



...lifts for life



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Installation Manual for Sörensen tail lift:
X1A 600E, X1A 600F



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Introduction

This tail lift is developed especially for transporter / van. The installation manual contains all the instructions for installation and adaptation of the tail lift on vehicles which designed for. Is there doubts, whether the device can be installed on a specific vehicle, please contact us. We will provide you with the required information.

In the rule only existing mounting points (holes in the vehicle frame) are used for the installation. For every vehicle type [And here is difference's for vehicle producer and vehicle heights, as well as type (front- or rear drive)]. As also the different wheel bases, we make different brackets. Changes main frame of the X1A 600 E and X1A 600 F and on the necessary installation brackets are not allowed, and can lead to termination of any warranty.

Unapproved modifications and amendments from these installation directions may lead to failure and to operating interruptions, as well as to hazards to the operator. The warranty of the device will be voided by “unproved modifications” and “deviations from the installation directions”.

In order to protect the vehicle, all guidelines of the vehicle manufacturer are to be complied with. Please read the last guideline update hereunto what is to be observed for the vehicle on which you wish to install the tail lift.

The installation guidelines of the chassis manufacturer need to be complied with.

Transporting the tail lift and transport damages

We are especially careful to pack our tail lifts in a environmental-friendly way. The shipping/forwarding company will be responsible for damages on the lift gate which occur during transportation. The lift needs to be checked for damages upon arrival. If any damages occurred during the transportation, they must be recorded on the waybill, so that claims can be raised. Insurance claims can be settled only by Sørensen Hydraulik GmbH and the shipping/forwarding company or its insurance.

Installation-safety precautions

Before installing, the battery of the vehicle needs to be disconnected. The vehicle must be secured against all unintentional shifting.

Any special safety regulation (if applicable) must be complied with.

Safety gear, like protective goggles, work gloves and protecting shoes, need to be available before installing, and are to be used.

Safety devices on cranes, forklifts, and other lifting gear – necessary for installing the lift, must be checked to see if they are in proper working condition, before use.

Installation manuals for the Sörensen tail lifts

Type X1A 600 E and X1A 600 F

Vehicle preparation



Attention! Must necessarily be considered before installation:

The exhaust may not be at the rear of the vehicle. If so it has to be rerouted.

For other of floor as wooden floor the installation possibilities must be checked.

Die rear doors must have a opening ability of 270°.

Eventual rear parking sensor will not be functional after mounting the platform

If a spare tire is located between the rear ache and the rear bumper, it must be removed to be able to install the lift gate.

If a step is located behind the rear bumper like on a Iveco daily, it has to be removed. By Mercedes Sprinter the installation is not possible if the vehicle has a rear bumper with integrated step. In these cases the rear bumper has to be changed to a standard bumper without step.

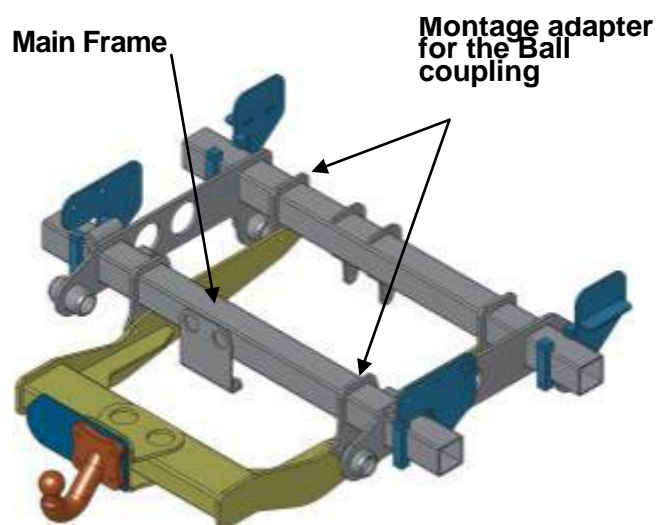
There is no need for extra stoppers whether for the main frame nor for the platform. The tail lift is as a standard equipped with adjustable stoppers for both the main frame and the platform.

Installation of the bridge plate between vehicle floor and the platform, should be done in a space saving way.

The main frame are painted with a cathodic dip-painting, and no further painting is required.

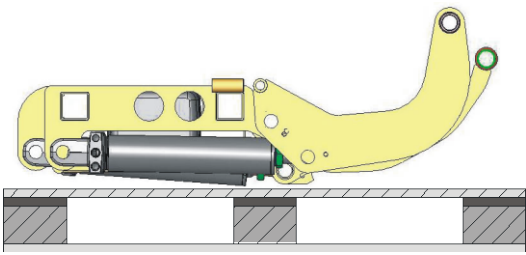
Ball coupling for trailer use

On the main frame brackets are located for attachments of brackets for a ball coupling (see photo). This makes it possible to fit or to retrofit a ball coupling for trailer operations.



Installation of the main frame of X1A 600 E and X1A 600 F

The tail lift X1A 600 E and X1A 600 F is delivered pre-assembled on a pallet.

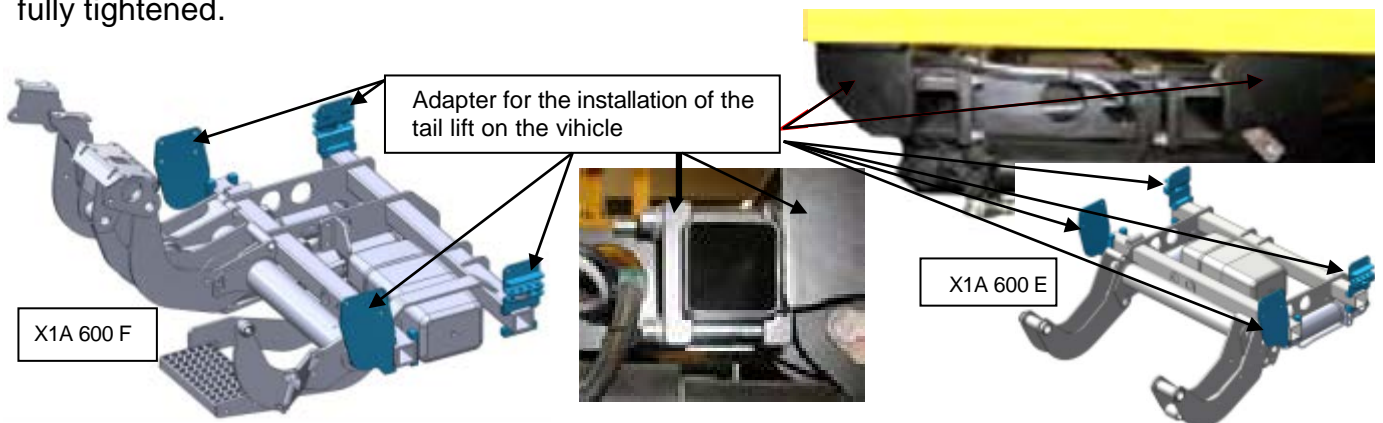


Lift the vehicle up to working height through appropriate means. Installation over a pit is also possible, but the vehicle must be additionally lifted above the pit (winches or wedges) in order to be able to drive pallet with the lifting gear under the vehicle.

Check the presence of insulation material in the area of the assembly adapters and remove it if there is any. If there blank body parts show, these must be treated against corrosion, according to the directives of the vehicle manufacturer.

Muffler systems which are located in the assembly area must be shortened or modified according to the vehicle manufacturer. This is very important to ensure enough distance to parts which get very hot.

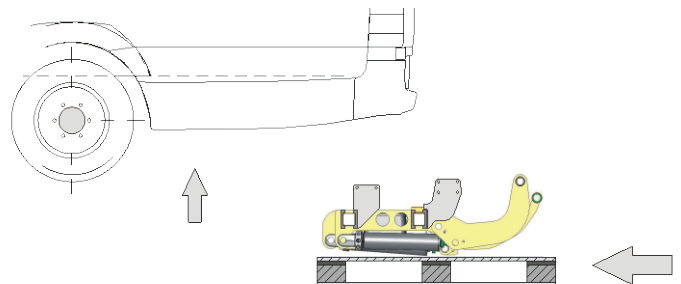
The assembly adapters can be of different designs, depending on vehicle manufacturer/type and their wheelbase. The adapters are pre-mounted on the lifting gears main frame, but not fully tightened.



The mounting adapters on the lifting gears main frame can be adjusted sideward to assure the correct positioning of the tail lift.

After that the hole lifting gear on its pallet is driven under the vehicle with appropriate means. The assembly adapters are tightly fastened to the vehicle frame, using the existing fastening points. Please use the provided bolts and screws. You will find the torque values for the different bolts on page 21.

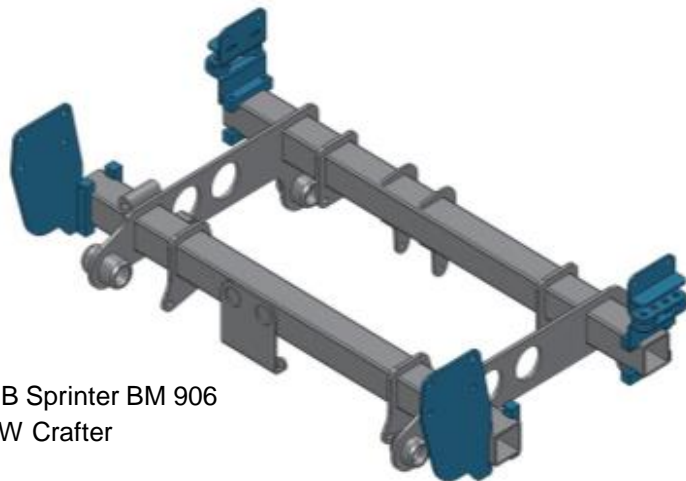
Now the mounting brackets can be tightened to The mainframe assuring that the lift is correct Side wards positioned.



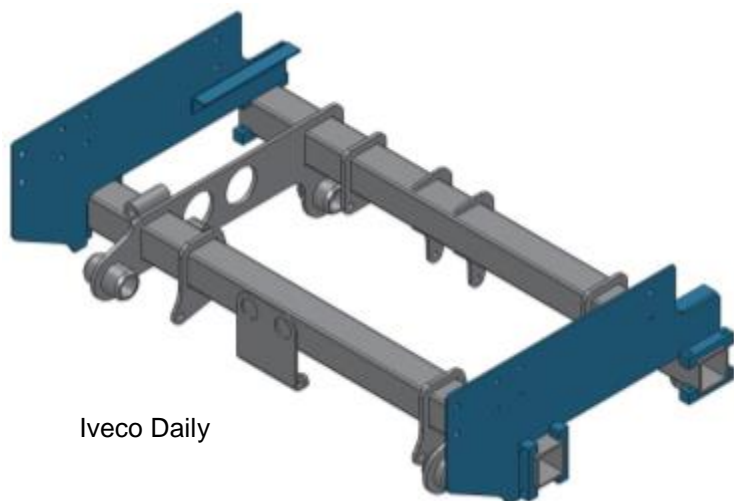
Installation brackets for the different vehicle types:

Installation brackets are available for the following types of vehicles, without having to make any modifications on the vehicle frame:

MB Sprinter BM906 and VW Crafter:
for all Variants with leaf springs, except wheel base 3250 mm as well as all types with four wheel drive. The rear bumper must be without step. The vehicle should be equipped with an extra battery from the factory.



MB Sprinter BM 906
VW Crafter

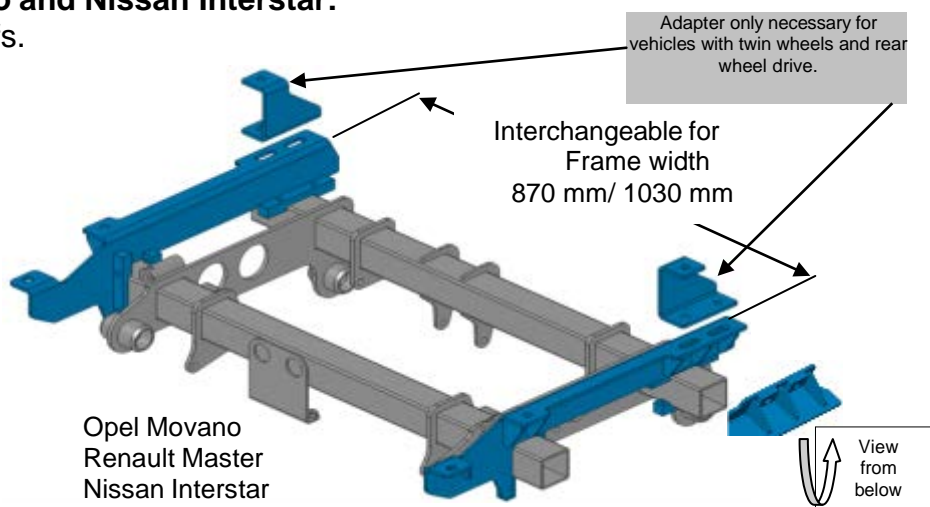


Iveco Daily

IVECO Daily: Type 29L and 35S:
By all vehicle types with spring leaves, by all vehicles with four wheel drive the installation is not possible. To install the step behind the rear bumper must be removed.

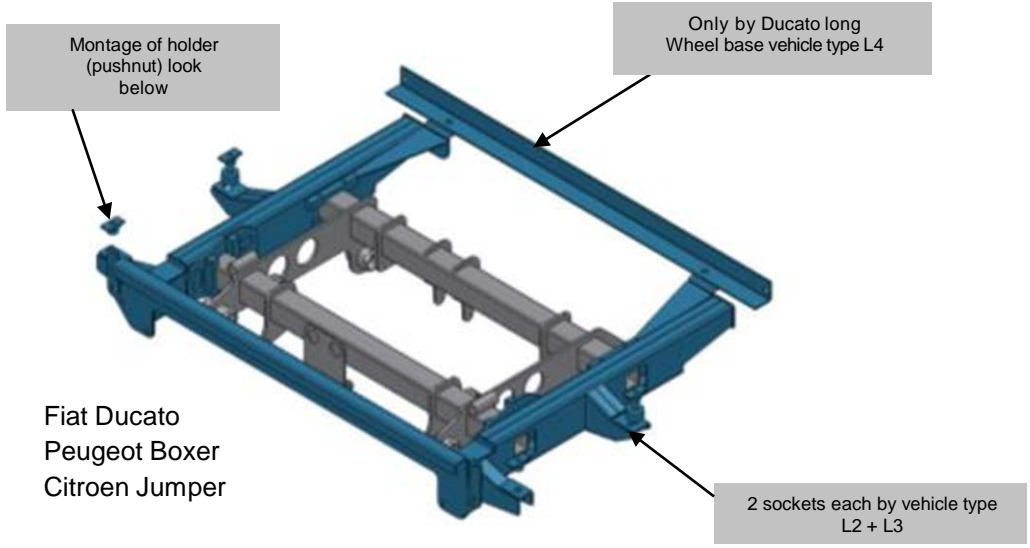
Renault Master, Opel Movano and Nissan Interstar:

For all vehicles with spring leaves.



Opel Movano
Renault Master
Nissan Interstar

Fiat Ducato, Peugeot Boxer, Citroen Jumper:
For all vehicle types with spring leaves.



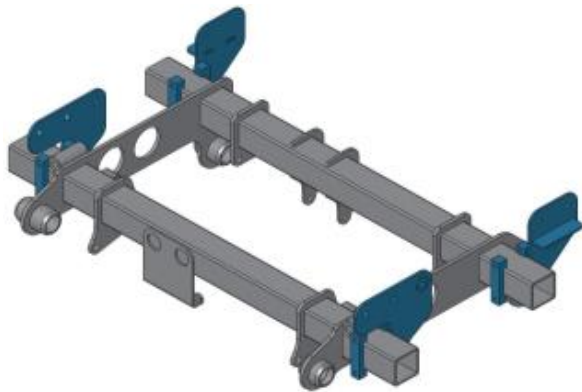
Montage of the push nuts by Fiat, Peugeot, Citroen

Put in the push nuts in the existing holes and secure with the Hexagon nuts. After that the lifting gear with the installation brackets can be driven under the vehicle and be mounted.

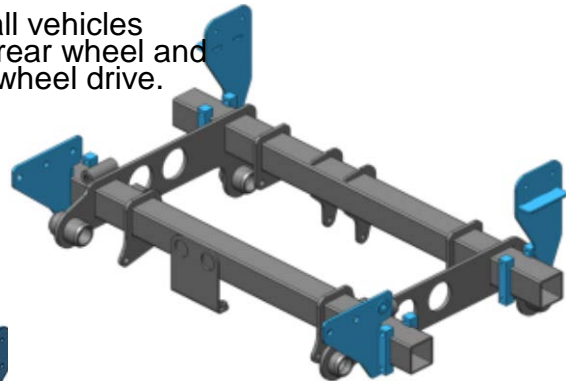


Ford Transit:

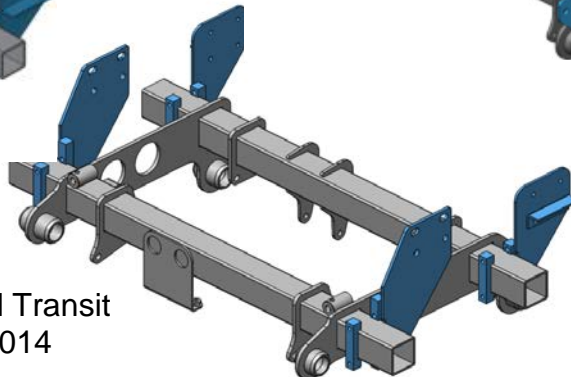
For all vehicle types with front wheel drive and spring leaves.



For all vehicles with rear wheel and four wheel drive.



For all Ford Transit model up 2014



Montage the electrics

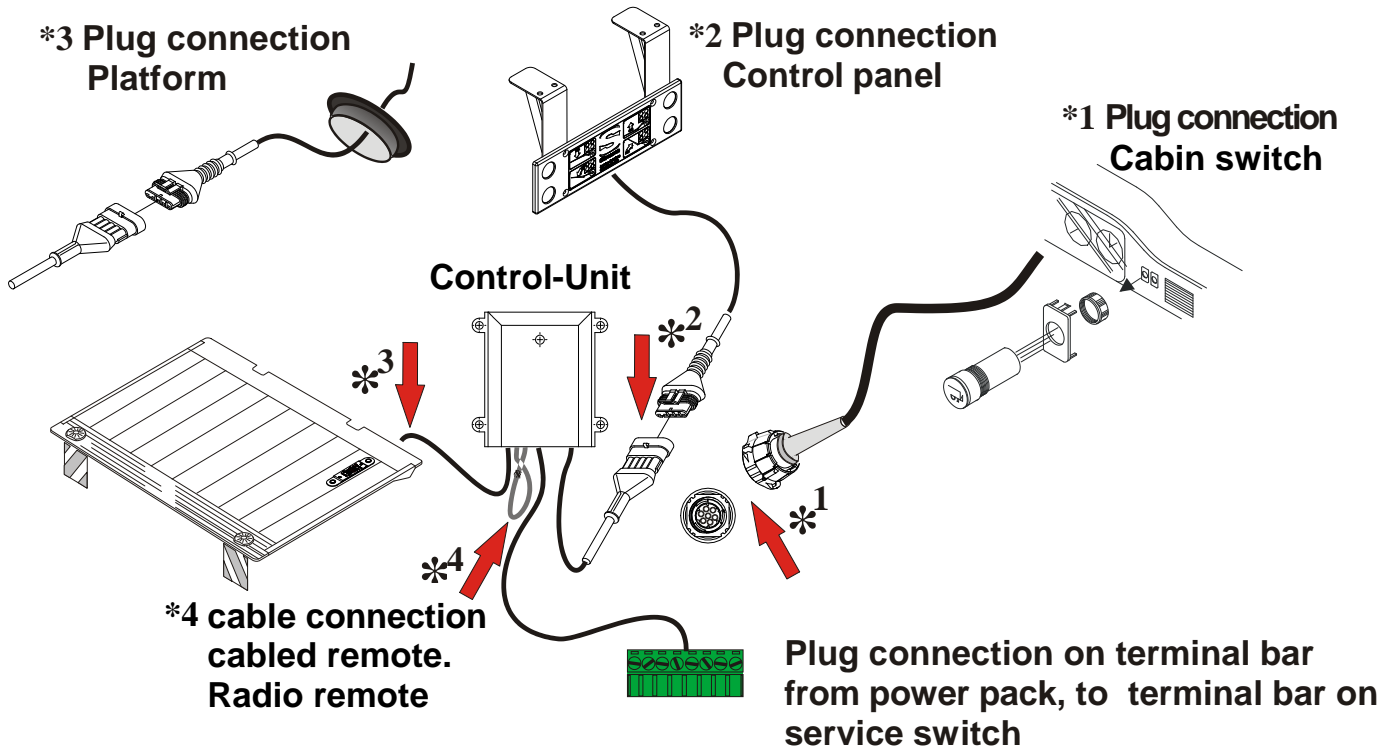
Attention!

The tail lift is only to be operated, when the battery cable are connected as prescribed, and if there is sufficient voltage available. Don't ever use a charging device or start booster – it can lead to damages of the electric motor and the motor relay.

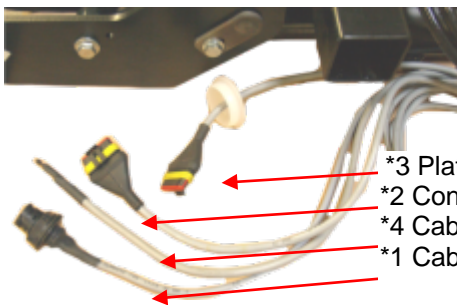
Central electric

The Control-Unit (central controlling unit, central electric) is pre mounted from the factory. The connection (see sketch) to the cabin switch on the dashboard *1, to the control panel *2, to the platform *3, to the handheld cabled remote *4 or radio remote *4 (option for export) must be done during the installation. The attachment of the cables to the device, must be done with the supplied cable ties, after the installation.

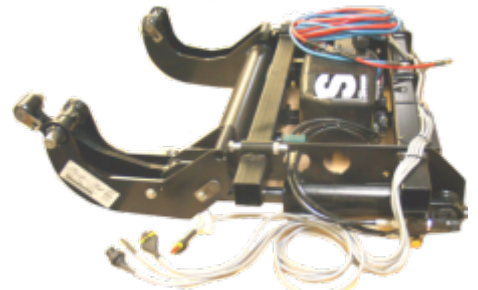
Attention! The cables may not chafe or squashing.



X1-LDF with ball coupling



- *3 Platform
- *2 Control panel
- *4 Cabled remote or radio remote
- *1 Cabin switch



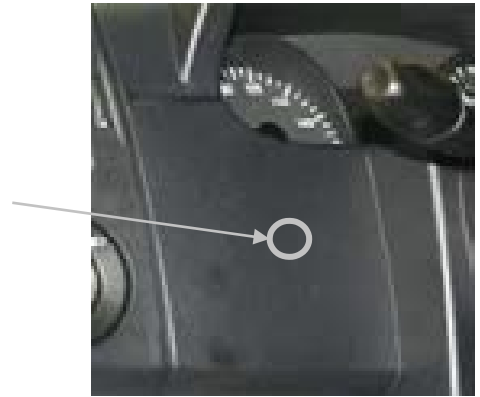
X1A 600 E

Cabin switch

For the installation of the cabin switch a 16 mm hole is necessary in the dash board, if possible in a free original – vehicle visor is used. Mount the cabin switch and connect it according to the supplied wiring diagram. Route the cable from the cabin switch to the Control-Unit, of the tail lift and connect with the round canon plug.

See sketch of the central electric

*1 Plug connection cabin switch



Positioning the option number plate lights and number plate on the tail lift



The number plate and the number plate lights on the vehicle is in some vehicles placed over the platform of the tail lift.

Though there is a possibility to have an option, where the number plate and the number plate lights can be mounted on the platform.



Cable for the number plate light

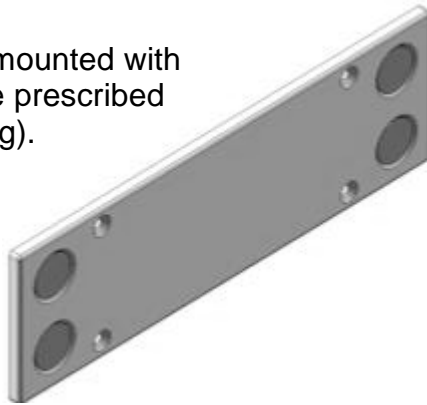


Control panel montage X1A 600 E

The control panel is mounted on the right side of the vehicle, so that the platform can be overviewed from the operating area.



The control panel is mounted with four M5 screws in the prescribed Distance (see drawing).



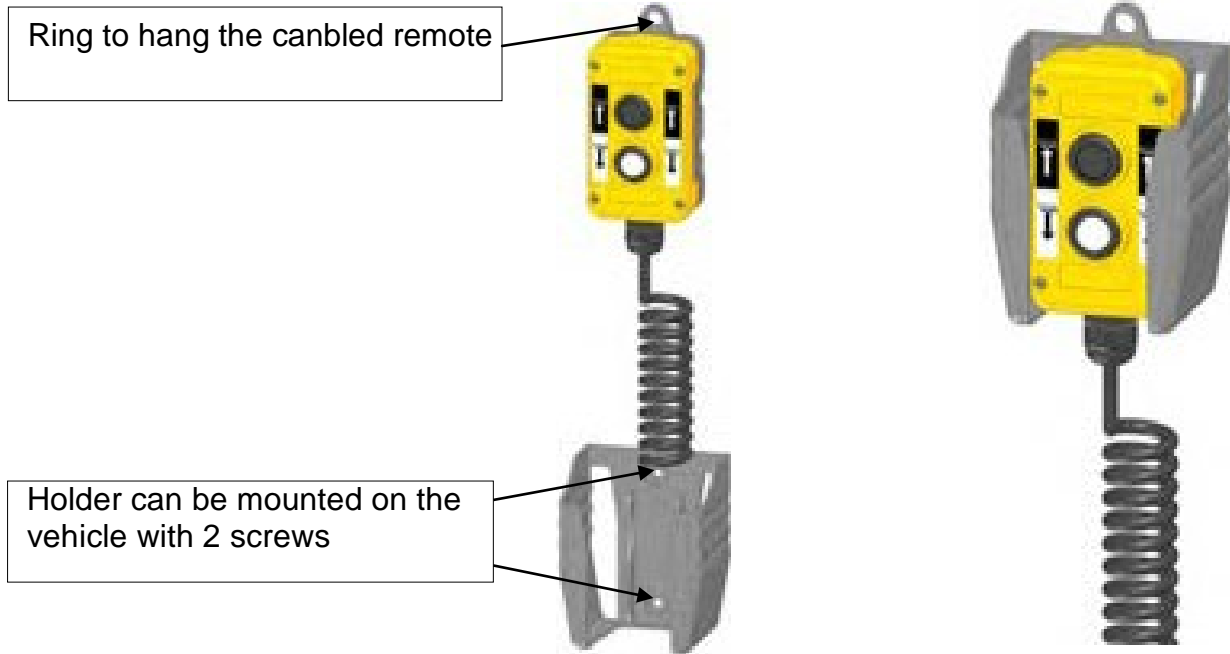
Control panel installation X1A 600 F



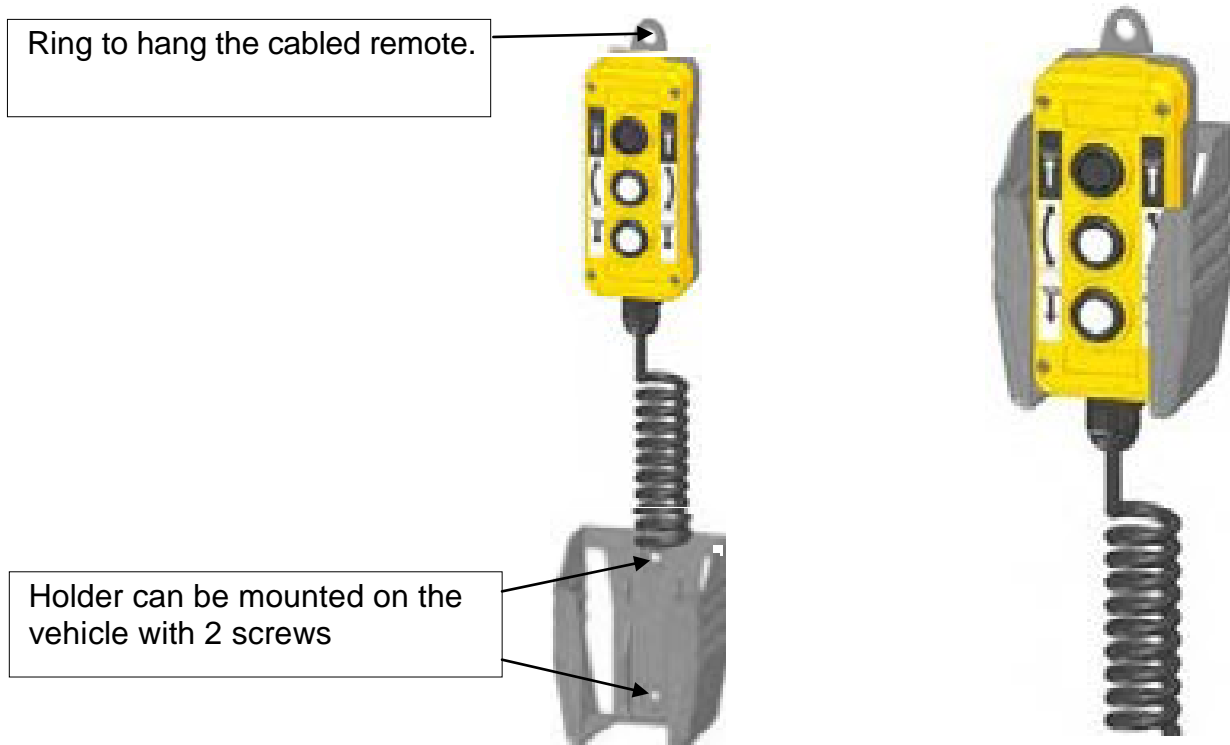
The control panel can be mounted on the inside of the right door.

Handheld remote with spiral cable

With the 2 button cabled remote the functions lift and lowering can be operated, after the platform has been opened by the control panel.



With the 3 button cabled remote the functions lift and lowering can be operated, and in addition the tilt functions at open platform.

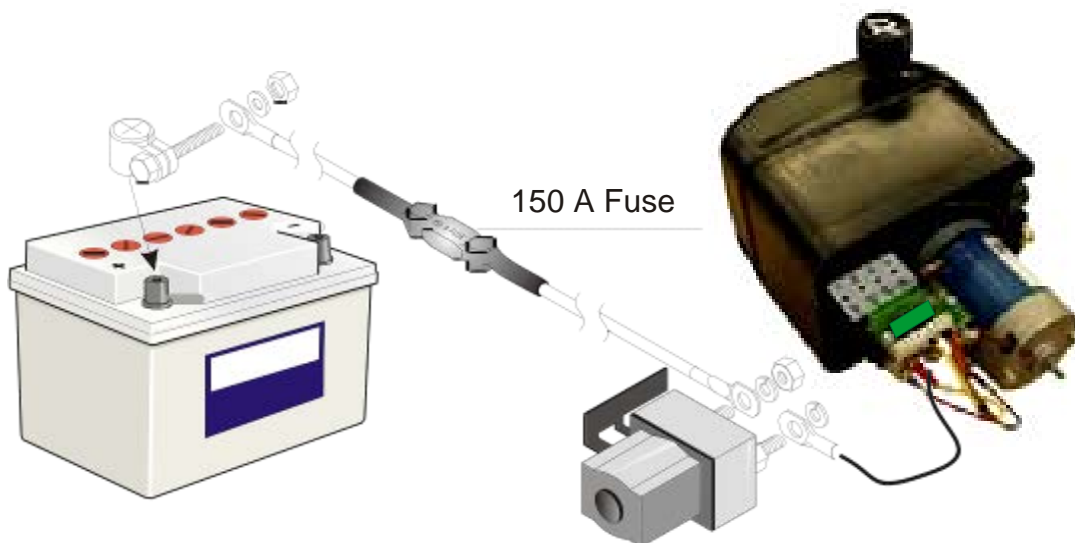


Option radio remote

Sender and receiver are coded and calibrated to each other, and can be taken in use after completion of the installation. The functions of the radio remote is explained in a special user manual.



Battery cable / Ground cable / Fuse Main power fuse version for 12 Volt devices

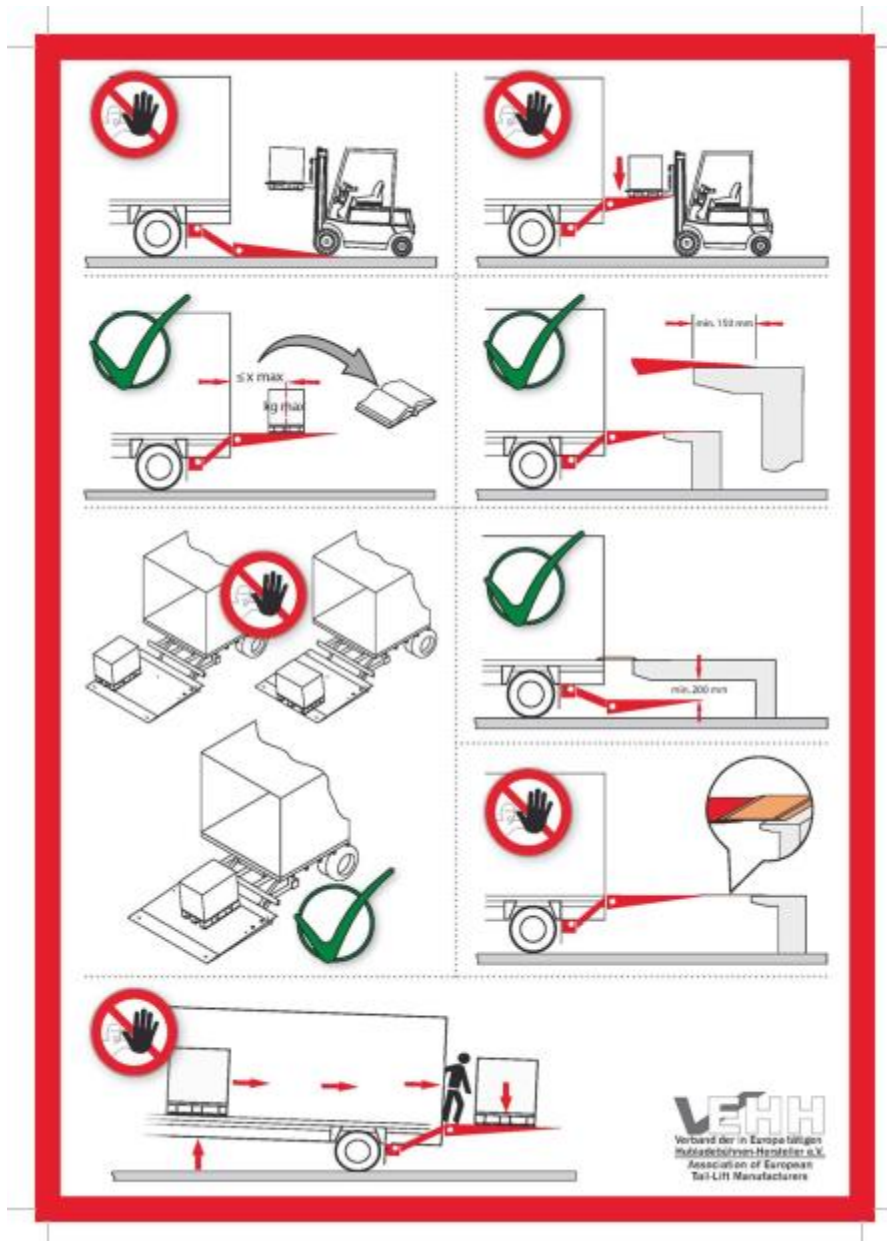


The plus cable and the ground cable are mounted on to the power pack from the factory. They shall be routed to the right poles on the battery, hereby comply to the construction guidelines of the vehicle manufacturer. The ground cable is blue and the Plus cable is red. Take care that no chafe marks are made, and that the cables are not close to heat carrying objects.

Danger clue - Sticker “Safe handling of the tail lift“

This sticker is delivered with all new tail lifts, and must be placed on a visible place on the inside of rear part of the vehicle. The danger clue – sticker shows possible falls actions and right actions in the single Pictograms.

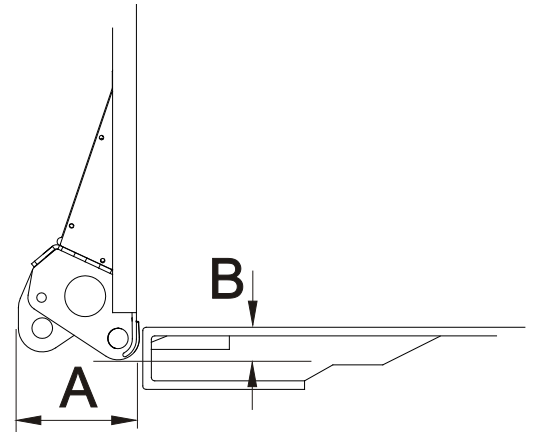
On this place we want to thank the installation companies for their support in the objective, to make it clear for the operators how the tail lift is operated in a proper way.



This sticker can be ordered under the part number 20 909 238.

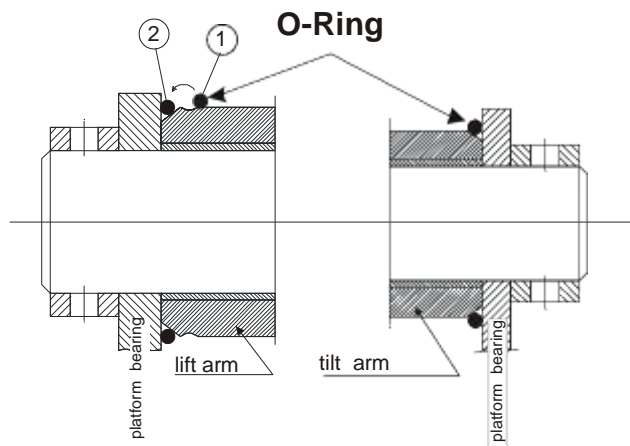
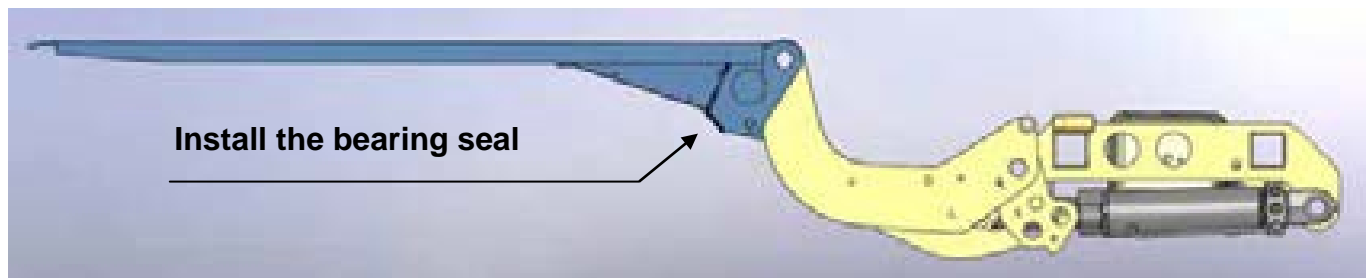
Mounting and adjusting the platform

Type	A mm	B mm
X1A 600E	180	58
X1A 600F	180	58



Mounting the platform

The lifting gear are lowered so much, that the installation of the platform is easily possible. The bushings in the lifting arms tilt cylinder shall be greased with the special grease. Mount the O-Rings, hang in the lifting arms and the tilt cylinder, mount pins and secure them.



All bushing connections are sealed with an O-Ring sealing. For mounting the platform locate the O-Rings on both sides of the lift and tilt arm in Pos. 1.

After completion of the installation the O-Rings are carefully located in Pos. 2.

Adjustment of the lifting height to the vehicle floor

With the 2 pre mounted adjustment screws in the main frame (X1A 600 E), it is possible to adjust the lift- and tilt arm to the wanted height to the vehicle floor.

With the 2 pre mounted adjustment screws in the main frame X1A 600 F, it is possible to adjust the lift- and tilt arm to the wanted height to the vehicle

Slotted adjustment screw (stopper) for adjustment of the lifting height to the vehicle floor with a screw driver.



Adjustment of the parallelism X1A 600 E und X1A 600 F

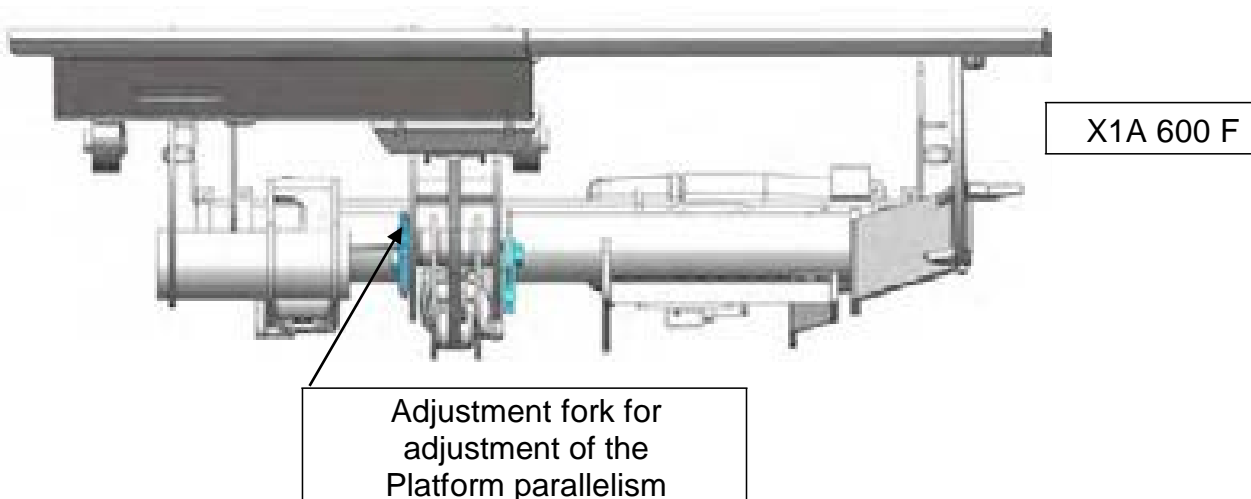
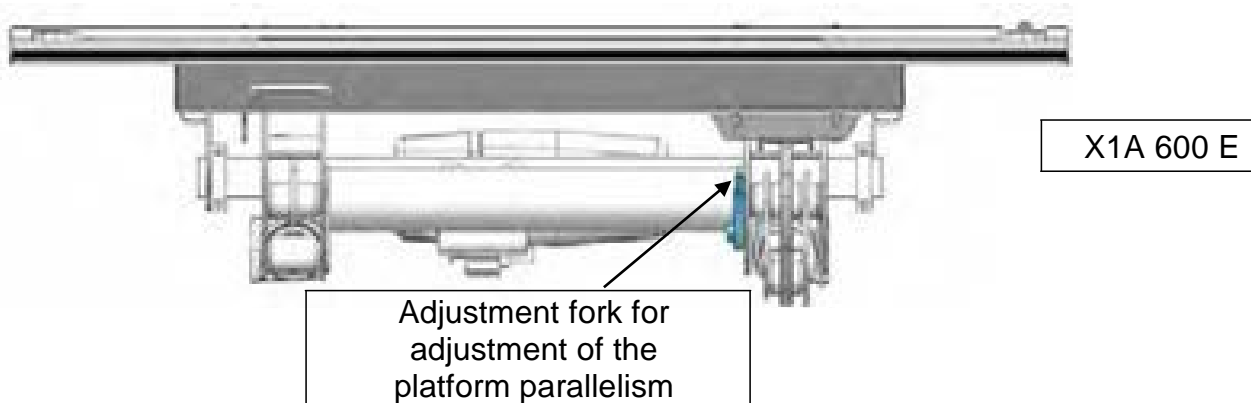
To obtain that the lift arm and the tilt arm are reaching the adjustable stoppers on the main frame at the same time, there is a possibility to adjust the parallelism with an adjustment fork.

Drive the open platform close to the height of the vehicle floor – not against the stoppers. With the adjustment screw the platform is adjusted to be parallel to the vehicle floor. After the adjustment the screws of the torsion bar are tightened according to the table with the torque values .

Mode of action of the Adjustment fork for adjusting the parallelism between the platform and the vehicle floor.

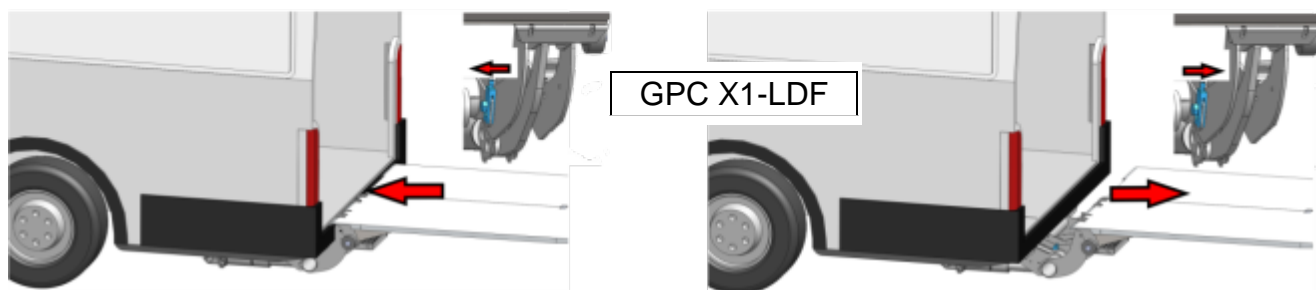
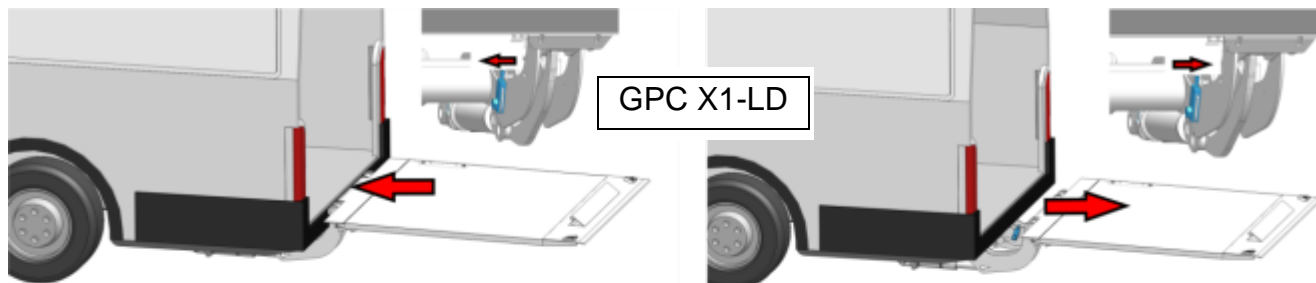
Both arms shall be driven against the stoppers of the mainframe, and may not give in when the platform are loaded.

This adjustment must, if necessary, be made on the adjustment fork on the tilt arm. By turning the screw to the right the lift and tilt arm are going harder on the stoppers.



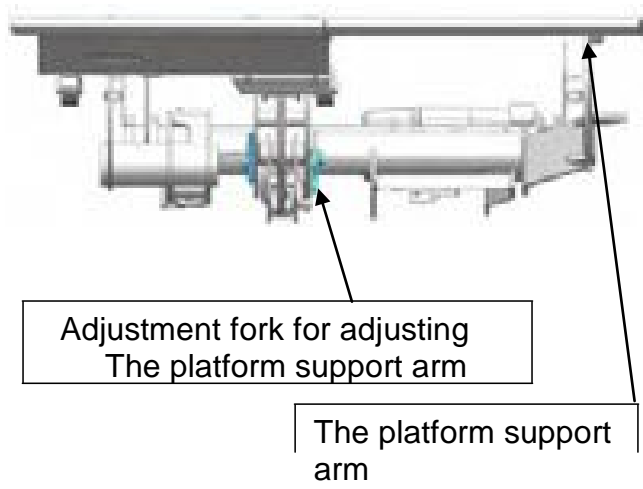
By turning the screw in the adjustment fork to the right the lift- and tilt arms goes up and the platform are getting closer to the vehicle.

By turning the screw to the left the lift- and tilt arm are lowering, and the platform gets further away from the vehicle.



Adjustment of the support arm for the foldable right platform side of the tail lift X1A 600 F

The X1A 600 F tail lift has a further adjustment fork. With this the support arm for the foldable right side of the platform can be adjusted. The support arm shall be so adjusted that the platform are resting on and supported of the support arm.



By turning the screw to the right, the support arm are lifted turning it left the support arm is lowered. See Sketch

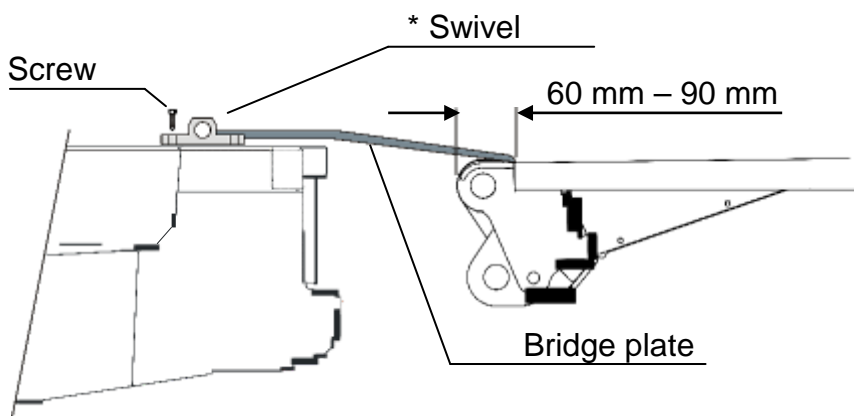
Installation of the stopper for the platform

The stopper for the platform in vertical position is pre mounted from the factory. The platform does not need any additional stopper on the vehicle.

After installation of the platform the stopper must be mounted to the platform bracket like showed in the graphics. Drive the platform not quit to vertical, let it be 3° to 4° open. Then tighten tightening plate of the stopper. By repeated closing of the platform it should get vertical.



Montage bridge plate



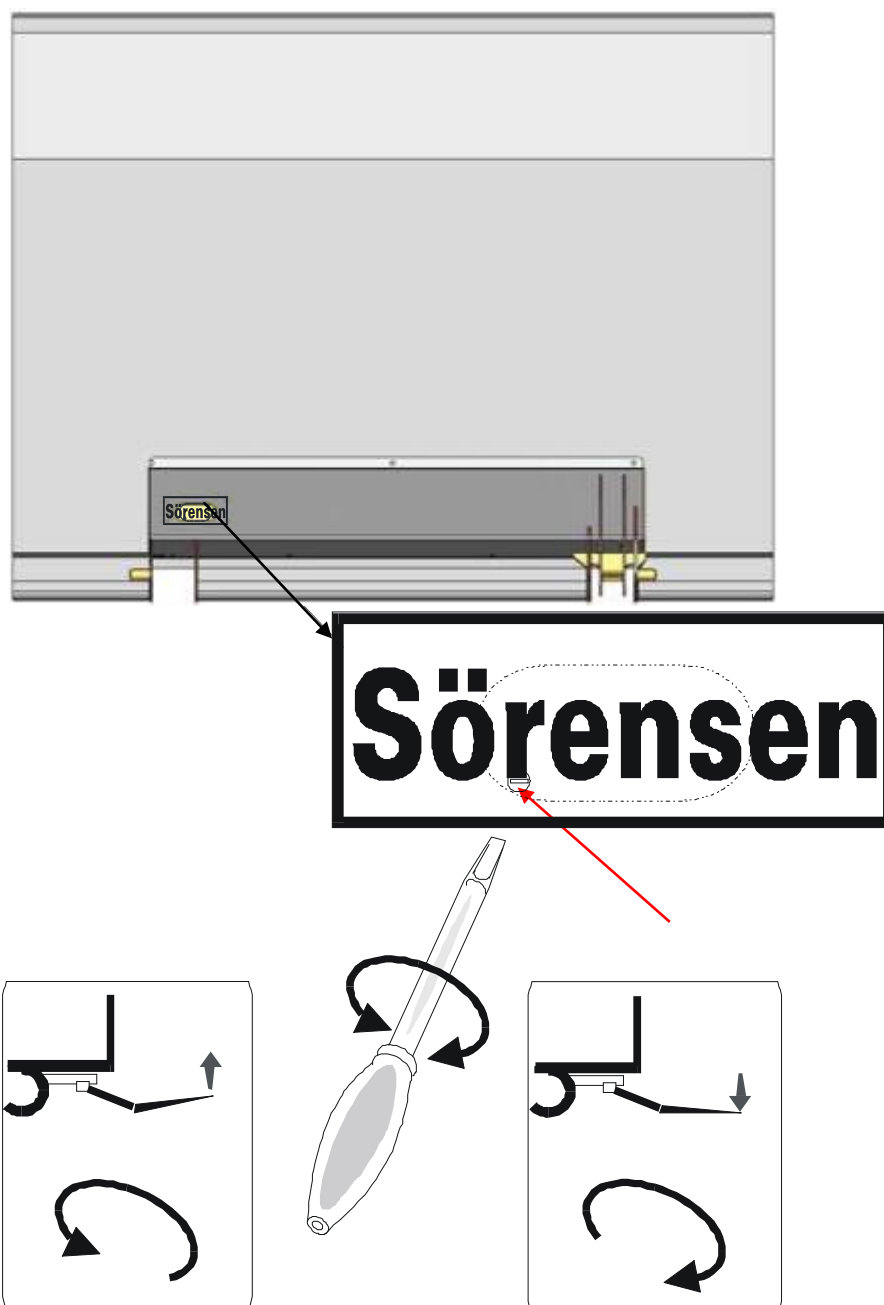
* Swivel

Instead of the swivel, the bridge plate in some models can be done with a hinge band. By some model the bridge plate can be in two parts.

Adjustment of the platform inclination series 8

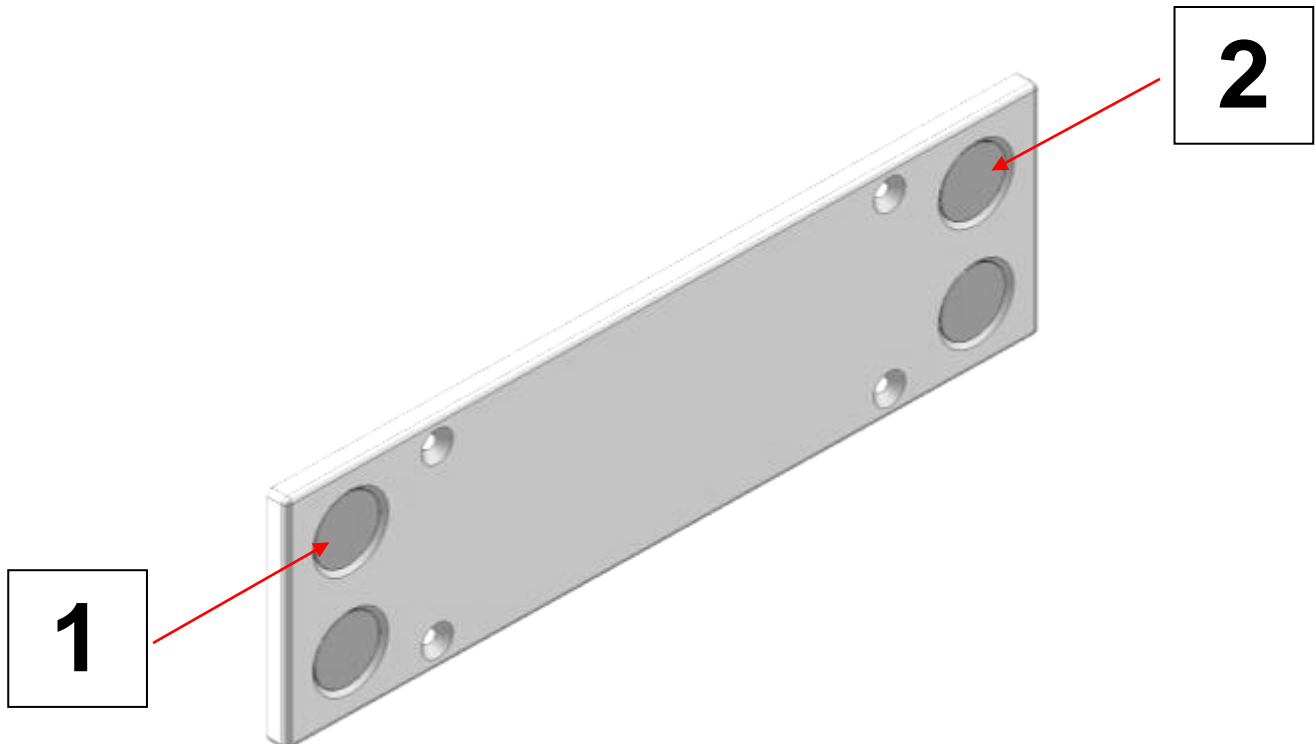
Turn the adjustment screw to the right – the platform tilt-up from the ground stops earlier. The platform tip is pointing downwards.

Turn the adjustment screw to the left – the platform tilt-up from the ground stops later. The platform tip is pointing more upwards.



Adjusting the platform inclination series 10 (Tilt sensor programming)

Attention! This version of platform harness are not compatible with former versions.
The programming is done with a key combination.



After installation or repair of the tail lift:

- drive the platform in the horizontal position
- press button 1 (upper left) three times, then
- press button 2 (upper right) three times

The flashing-light switches off for 5 seconds and indicates the success of the programming.

The programmed adjustment will be active until another programming are made.

First operation of the tail lift

Verify the tail lift readiness for operation. Check that all moving parts can move freely (no pinching or rubbing of cables or lines etc...) Check the hydraulic system for leakage.

Suggestions for hydraulic oil

HLPD 22 (ISO-VG 22) "detergent", to emulsify free water (to avoid ice formation in winter operation) and to improve the oil film cohesion.

Sörensen Hydraulic oil part no. 60 700 283

Sörensen Biological oil part no. 20 858 811

Aral	Vitam DE 22	Shell	Hydrol DO 2
BP	Energol H LPD 22	Panolin	HLP SYNTH (Bio-oil)
BP	Biohyd 32 (Bio-oil)	DEA	Actis HLPD22
DEA	Econa E 22 (Bio-oil)	Mobil Oil	H-LPD 22
Esso	Hydraulic Oil H-LPD 22	Fuchs	Rhenolin MR 5

Painting the lifting unit

The lifting unit is delivered powder-coated from the factory. If another painting should be wished for, it has to be performed by the bodybuilder (please remember to sand the lifting unit before any paint job). It is also essential to very carefully protect the black piston rods, ideally with tape. Remove all tape and paint rests from the rod prior to tail lift operation as these can damage the seals and will cancel the warranty.

Operation instructions

The sticker showing the instructions for operating the tail lift is tagged on the control box by the factory.

Type label

The type label, containing the loading diagram is tagged on the right lifting arm (in driving direction), a second label is tagged by the factory into the power unit hood.

Entry into the test book

After completion of the assembly, the paragraph of the test book „Test before first operation“ has to be filled out and signed by qualified personnel

Checking the operation speeds

Vertical speed

The vertical speed (lifting and lowering) must not exceed 15cm/sec. If lifting and lowering are too fast, please check the voltage on the vehicle and on the power unit. The two values must be identical. Should lowering and opening be too fast, please verify if the throttles work properly or if they are dirty.

In both cases, please call the Sörensen Hydraulik GmbH service department!

Opening and closing speed

If the platform is not closed and/or opened by hand, the angle speed must not exceed 10°/sec.

Tilting speed

The angle speed for tilting shall not exceed 4°/sec. The platform tilting must be limited to a max. of 10°

Load test

Static test

Place the platform half way between the ground and the vehicle floor. Place a weight up to 125% of the nominal capacity in the middle of the platform within the loading distance. The permitted loading distance and the nominal capacity are engraved on the type label of the tail lift. The load diagram shows the capacity modifications according to the distance from the vehicle. Within a test time of 15 min, the lift must not lower more than 15 mm nor tilt down more than 2°.

The bodybuilder is bound to check the tail lift for deformations after the static test.

Dynamic test

The functions lifting, lowering and tilting are to be checked with a load complying with the loading diagram. If necessary, adjust the hydraulic pressure valve so that the given load can be lifted securely.

Caution! The pressure valve is factory set, normally a correction is not necessary. If that correction should be necessary anyway, please comply with following instructions:

Perform a setting of the pressure valve only by connecting a pressure gauge with which the pressure can be verified. The maximum allowed pressure is engraved on the type label.

After the static and dynamic tests, a visual leakage inspection of the hydraulic system must be performed.

Test against lifting an overload

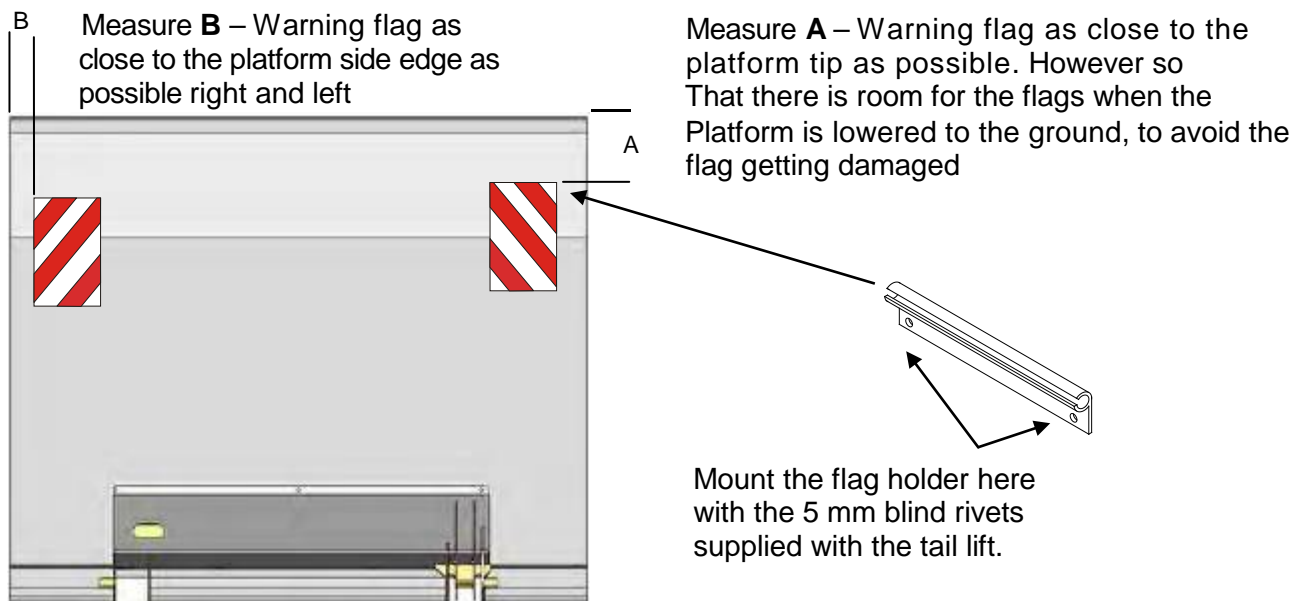
With a test it must be ensured that the device will not lift a load greater than 125% of the nominal capacity from the ground.

Verification of security features

All functions of the tail lift have to be operated until the security features are activated.

Warning flags

Mount the warning flags with the two 5 mm rivets provided.



Valid torque table for all supplied and mounted bolts and screws on a Sörensen tail lift

Screw Size	Tightening Torque in Nm	Screw Connections DIN 3852	Tightening Torque in Nm
8.8			
M4	2.7	G1/4"	40
M6	9.5	G3/8"	95
M8	23	G1/2"	130
M10	53		
M12	80	Connection Nuts	
M14	130	M16 x 1.5	60
M16	195	M18 x 1.5	60
M20	385	Plugs	
		G1/8"	15
10.9		G1/4"	33
M12	115	G3/8"	70
M14	180		
M16	275		
M20	542		
Platform bearing 10.9			
M12	60		
M16	150		
flangescrew			
M14	215		
M16	310		

Diagnose diode in series 8 and series 10

Explanation of the diagnosis diode on the control unit

diode controlling function	Cabin switch or key switch	diode off	diode on	diode flashes
platform closed (90°)	off	X		
platform closed	on		X	
platform open (90° bis 60°)	on		X	
platform open (60° - 0°)	on	X		
platform tilted down (0° bis -10°)	on		X	
pushed button or switch *	on			X

description:

90° = platform is closed

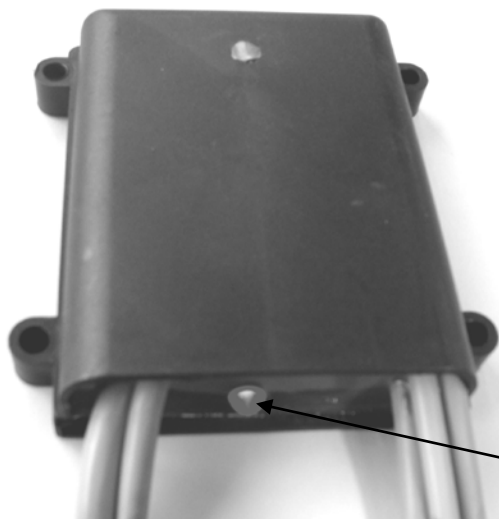
0° = platform is open in a horizontal position

-10° = platform is tilted down

* when a control of the manual pushbutton, switches, push button of the remote control, or a foot switch is pressed, the control/diagnose diode/led will flash

Position of the diagnose diode

Control-Unit



control/diagnose diode/led



Control panel

Test of the sensor switch S2 in the Platform:

Platform closed and lift on:

LED lights.

Power supply Ok.

Platform position 0 ° till ca. 60 °

LED out

Sensor-Switch S1 in Ok.

Platform lights are activated

Platform position 0° till -10° (tilted down)

LED lights.

Sensor-switch S2 in Ok.

the switch over occurs by horizontal Position.

Making it possible to set the automatic tilt-function.

Test of the pressure switch S4:

With the foot control keys for lowering – >> begin lowering.

LED flashes.

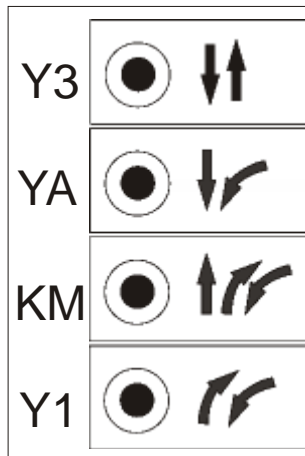
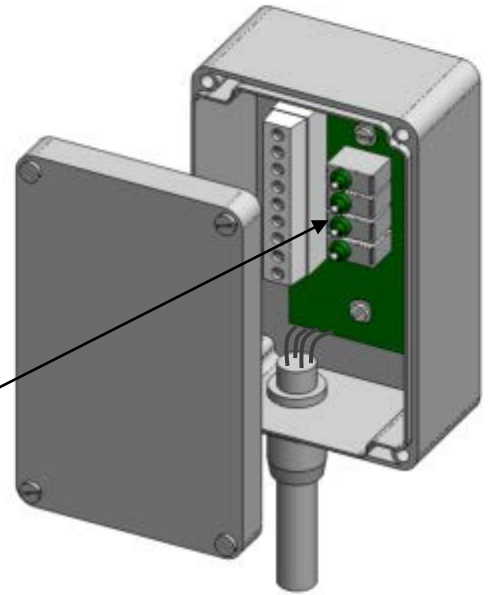
As soon as the platform has reached the ground and the pressure switch switches, flashing changes into constant light - **LED lights** and die platform tilts down.

This indicates that the pressure switch has switched. If not the pressure switch is defect.

Service switch

With the service circuit mounted in a housing (**Service Switch**) Are instructed service personal allowed for testing, to drive the functions of the tail lift directly.

Should the hand controls or the foot controls be out of function, it is possible for instructed personal with the Service Switch (**emergency function**) to drive the lift into any wished position.

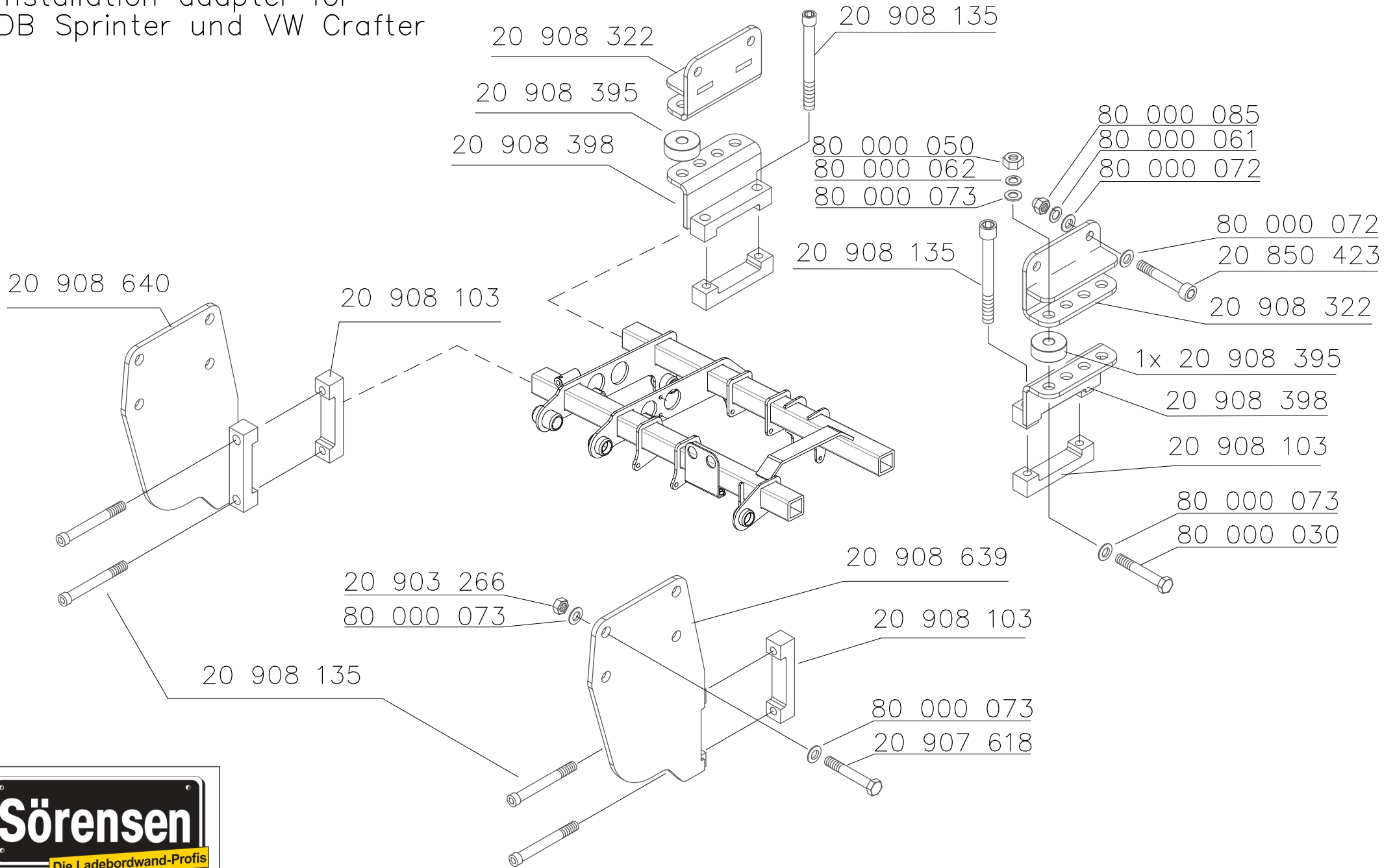


Function	YA	Y1	Y3	KM
Power lights green		•		
Lifting			•	•
Lowering	•		•	
Open / tilt-down	•	•		•
Closing / tilt-up		•		•

Please adhere to the sequence, always operate KM at last. →

Montageadapter für DB Sprinter und VW Crafter (Hub 450mm), Zubehörcode 851

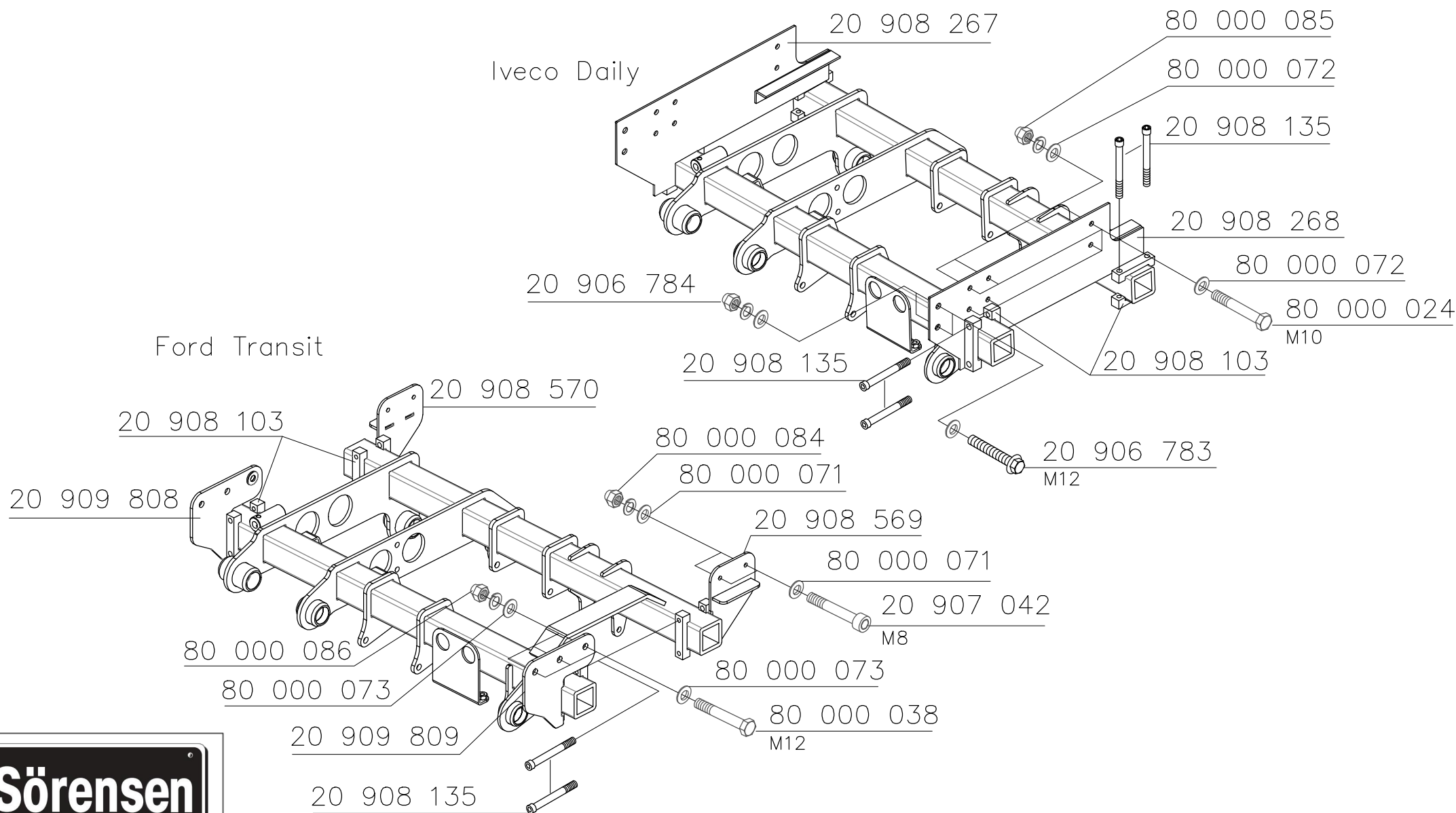
Installation adapter for
DB Sprinter und VW Crafter



Montageadapter Iveco Daily, (Hub 450mm), Zubehörcode 830

Montageadapter Ford Transit mit Frontantrieb, (Hub 430mm), Zubehörcode 840

Installation adapter Iveco Daily / Ford Transit



Montageadapter Renault Master / Opel Movano / Nissan Interstar (ab Baujahr 2010)

Zubehörcode: 810 (Hub 450mm) und 811 (Hub 515mm) (Zusatz-Art. 20 909 823, 20 909 904)

Installation adapter Renault Master / Opel Movano / Nissan Interstar (from year 2010)

* Adapter für Fahrzeuge mit Doppel-
bereifung und Hinterradantrieb

** bei Bedarf

20 908 135

Je nach Rahmenbreite können die Montageadapter
links und rechts verwendet werden.

Austauschbar für Rahmenbreiten 870mm/1030mm

20 909 823*

20 908 103

20 909 517

Rev.1 20 910 775**

80 000 050
80 000 062
80 000 073

20 909 904*

20 903 465

20 909 516

20 908 103

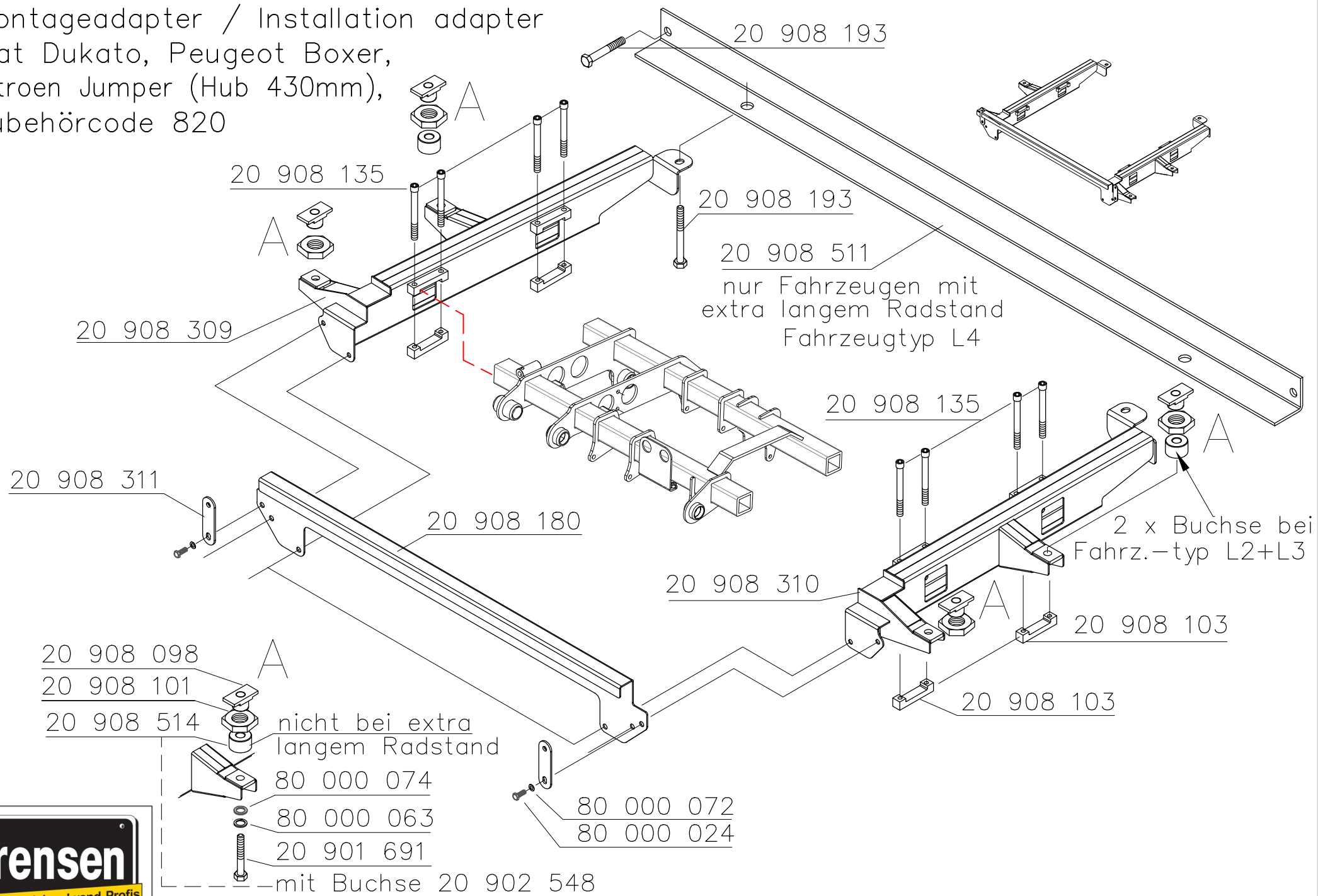
20 909 824

20 903 465

20 908 135



Montageadapter / Installation adapter
 Fiat Dukato, Peugeot Boxer,
 Citroen Jumper (Hub 430mm),
 Zubehörcode 820



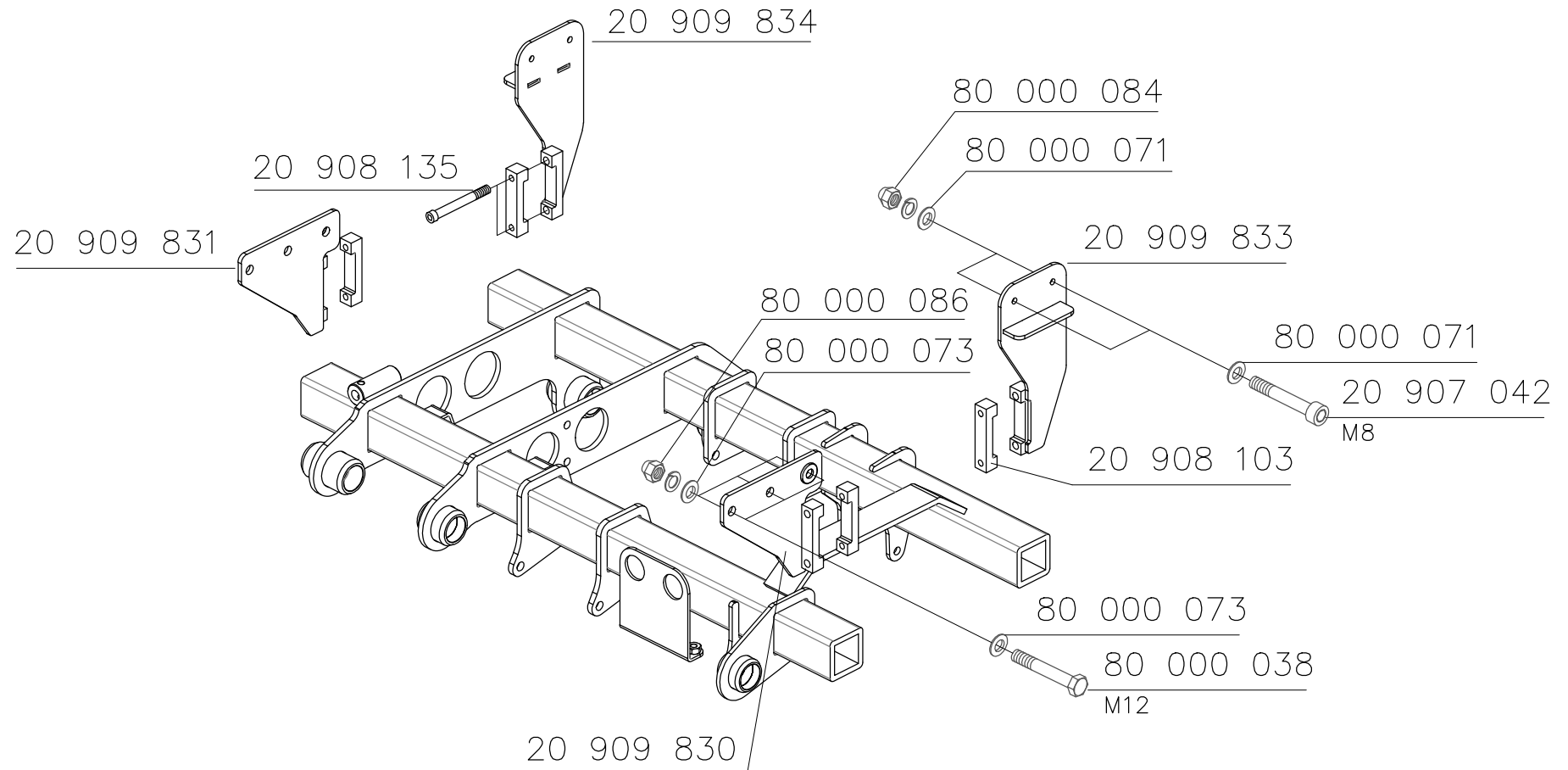
X1A 600F, X1A 600E

Auszug aus Sachnummer 20 910 738
 Stand 08.11.2013

Montageadapter Ford Transit Hinterradantrieb, Vierradantrieb, Doppel-Bereifung

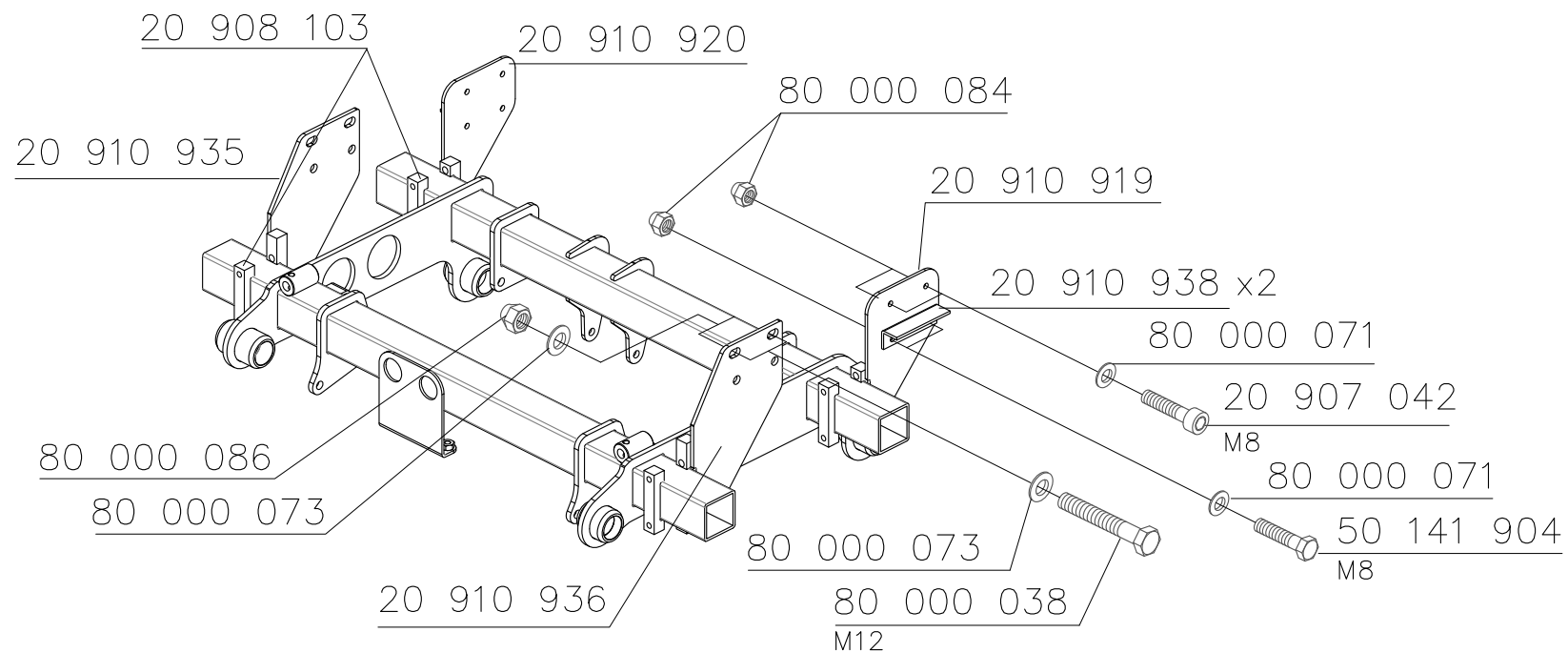
Zubehörcode: 841 (Hub 515mm)

Installation adapter Ford Transit with four-, rear-wheel drive, double tyre



Montageadapter Ford Transit 2014 (Hub 450mm), Zubehörcode 843

Installation adapter Ford Transit 2014



Ford Transit
Baujahr 2014

Sörensen
Die Ladebordwand-Profis

X1A 600F, X1A 600E

Auszug aus Sachnummer 20 910 738
Stand 11.2014