

# MAXON<sup>®</sup>

## GPC X1-LDF Liftgate

Installation Manual  
for Dodge ProMaster



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**X1**  
TECHNOLOGY

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# 1 Safety

## 1.1 *Intended use*

This liftgate was specially developed for cargo vans. It may be used only on the vehicles for which it was designed.

- To determine whether the liftgate may be installed on a specific vehicle, please contact the manufacturer or customer service.

The liftgate is used for loading and unloading the vehicle and for transferring loads. Any other use is prohibited.

- Do not exceed the maximum load carrying capacity (see rating plate). Be sure to correctly position the load on the platform.
- Do not operate the liftgate with the vehicle in motion.
- Do not use the liftgate to lift any person other than the operator.

This manual is intended for the manufacturer who installs the liftgate on the vehicle. It contains information on transport, installation, and commissioning.

- Read this manual before working on or operating the liftgate.
- Do not deviate from the instructions contained in this manual. By doing so, you risk injury, damage to property, and voiding of the warranty.
- Make sure that this manual always remains with the liftgate or vehicle.

**IMPORTANT:** For information on operation, cleaning, maintenance, decommissioning, disassembly, and disposal, refer to the accompanying user manual.

## 1.2 *Requirements for personnel*

- The tasks described in this manual may be performed only by qualified and trained personnel.
- Use personal safety gear when performing these tasks: protective goggles, work gloves, and protective footwear.
- Perform these tasks at an appropriate working height with the body in an appropriate position. Avoid unusual positions.

Comply with valid legal and operational guidelines, such as occupational safety regulations and environmental regulations.

### **1.3 Requirements for installation and commissioning**

- Follow the vehicle manufacturer's current installation guidelines for the relevant vehicle. Pay particular attention to safety instructions and warnings.
- Changes to the liftgate's axle assemblies and to the necessary installation adapters are prohibited.
- Do not modify or remove safety equipment (pressure limiting valves, non-return valves, electrical fuses, and software control routines). By doing so, you risk serious injury.
- Do not modify, cover, or remove product labels (warning labels, instructions, rating plates).

### **1.4 Fundamental hazards**

Electrical system with on-board voltage:

The liftgate receives electrical power from the vehicle's on-board power supply (max. 48 V DC). The electrical system is designed using state-of-the-art technology.

- Do not damage or modify electrical components or wiring.

High-pressure hydraulic system:

The liftgate's hydraulic system operates at high pressure (max. 220 bar). The hydraulic system is designed using state-of-the-art technology.

- Do not damage or modify hydraulic components or hoses.

Moving parts with crushing points:

All parts that move in close proximity to one another can potentially crush fingers.

- Watch out for the unexpected movement of moving parts.

Hinges with crushing points (on liftgate with platform fold-over section):

Fingers are at risk of being crushed in the hinge area when the platform is folded and unfolded.

- Be careful when folding and unfolding the platform.

### **1.5 Emergency procedure**

If you or another person working on or operating the liftgate experience a dangerous situation:

- Immediately stop what you are doing and seek expert help.

## 1.6 *Presentation of warning notices*

The following types of notices are used in this manual to identify hazards and complications:

### **WARNING**

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- Failure to heed this notice can result in death or serious injury.

### **CAUTION**

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- Failure to heed this notice can result in minor or moderate injury.

### **NOTICE**

---

- Failure to heed this notice can result in damage to property or the environmental.

And:

### **IMPORTANT**

- Important information or useful tip for correct use.

## 2 Introduction

### 2.1 Scope of delivery

**IMPORTANT:** All illustrations of the lifting gear are shown without factory-installed cables and hydraulic hoses.

#### 2.1.1 Lifting frame and adapters

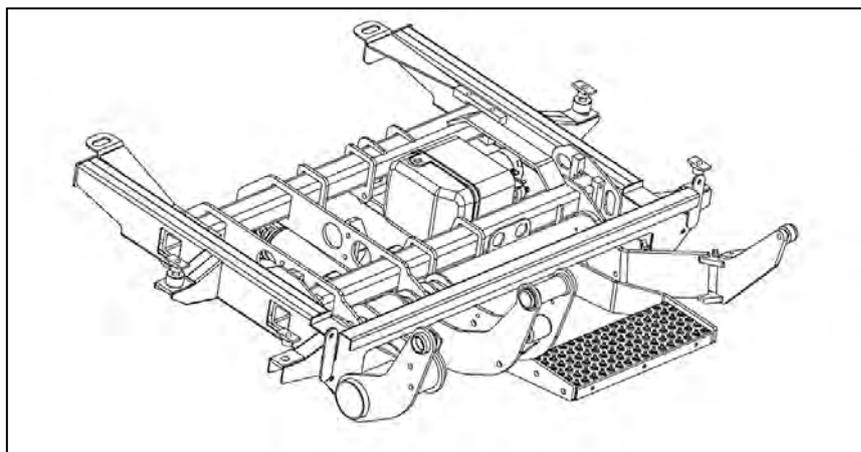


Figure 1

#### 2.1.2 Platform

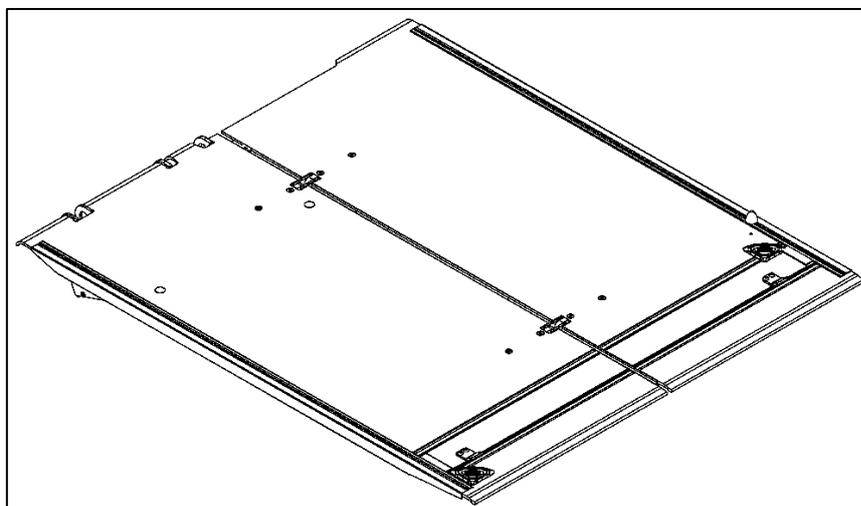


Figure 2

#### 2.1.3 Bridge Plates

Article No.: 20 910 374

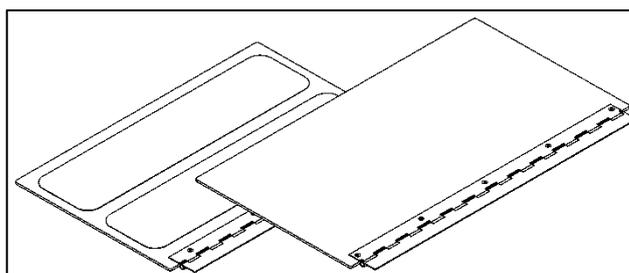


Figure 3

## 2.1.4 Accessories kit

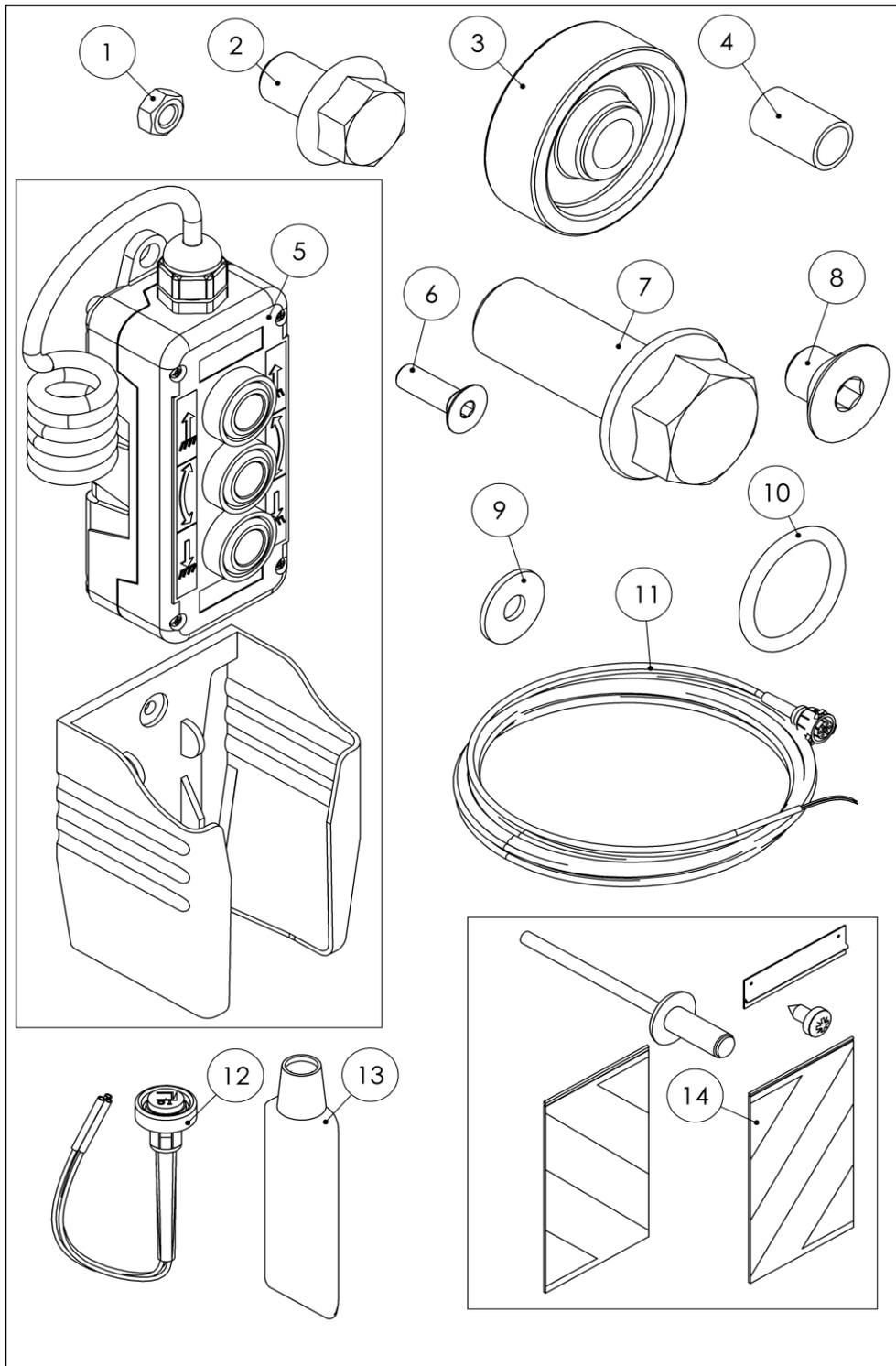


Figure 4

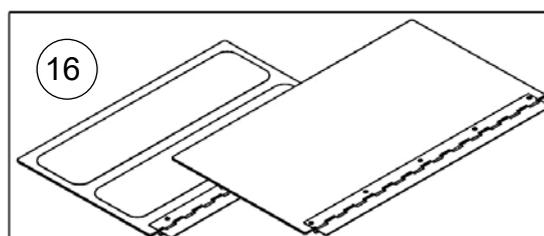


Figure 5

## Parts list – accessories kit

| Item No. | Part No.   | Description                           | Standard                      | Qty. |
|----------|------------|---------------------------------------|-------------------------------|------|
| 1        | 80 000 046 | Hexagon nut                           | DIN 934 - M5 - A2             | 4    |
| 2        | 20 908 251 | Hexagon flange bolt                   | DIN 6921 - M10x15 - 10.9 - ZN | 2    |
| 3        | 20 907 616 | Ground roller                         |                               | 2    |
| 4        | 20 907 615 | Bushing                               | d20/16x32                     | 2    |
| 5        | 20 907 200 | Handheld control                      | 3-button                      | 1    |
| 6        | 20 904 647 | Countersunk screw with hexagon socket | ISO 10642 - M5x16 - A2        | 4    |
| 7        | 20 904 600 | Flange screw                          | W 0263 - M16x40 - 10.9 - GEO  | 2    |
| 8        | 20 901 791 | Countersunk screw with hexagon socket | DIN 7991 - M10x12 - A2        | 1    |
| 9        | 20 850 543 | Washer                                | DIN 9021 - D5.3 - A2          | 4    |
| 10       | 20 840 117 | O-ring                                | 40.65x5.33                    | 6    |
| 11       | 20 906 975 | 12 m cable with VEHH connector        |                               | 1    |
| 12       | 20 906 974 | Cabin switch                          |                               | 1    |
| 13       | 20 840 405 | Lubricating grease                    |                               | 1    |
| 14       | 60 710 330 | Warning flag                          | Kit                           | 1    |
| 15       |            | Accompanying documentation            |                               | 6    |
| 16       | 20 910 374 | Bridge plates                         | Kit                           | 1    |



### Accompanying documents:

- Inspection booklet                      Part No. 60 700 495
- Installation manual                      Part No. 20 913 325
- User manual                                Part No. 20 908 422
- Oil-level sticker                          Part No. 20 911 907
- Electrical circuit diagram              Part No. 20 910 824
- Hydraulic circuit diagram              Part No. 20 908 421

**IMPORTANT:** Generally, only existing mounting points (holes in the vehicle chassis) may be used for installation. Different installation adapters are available for each vehicle type as described below.

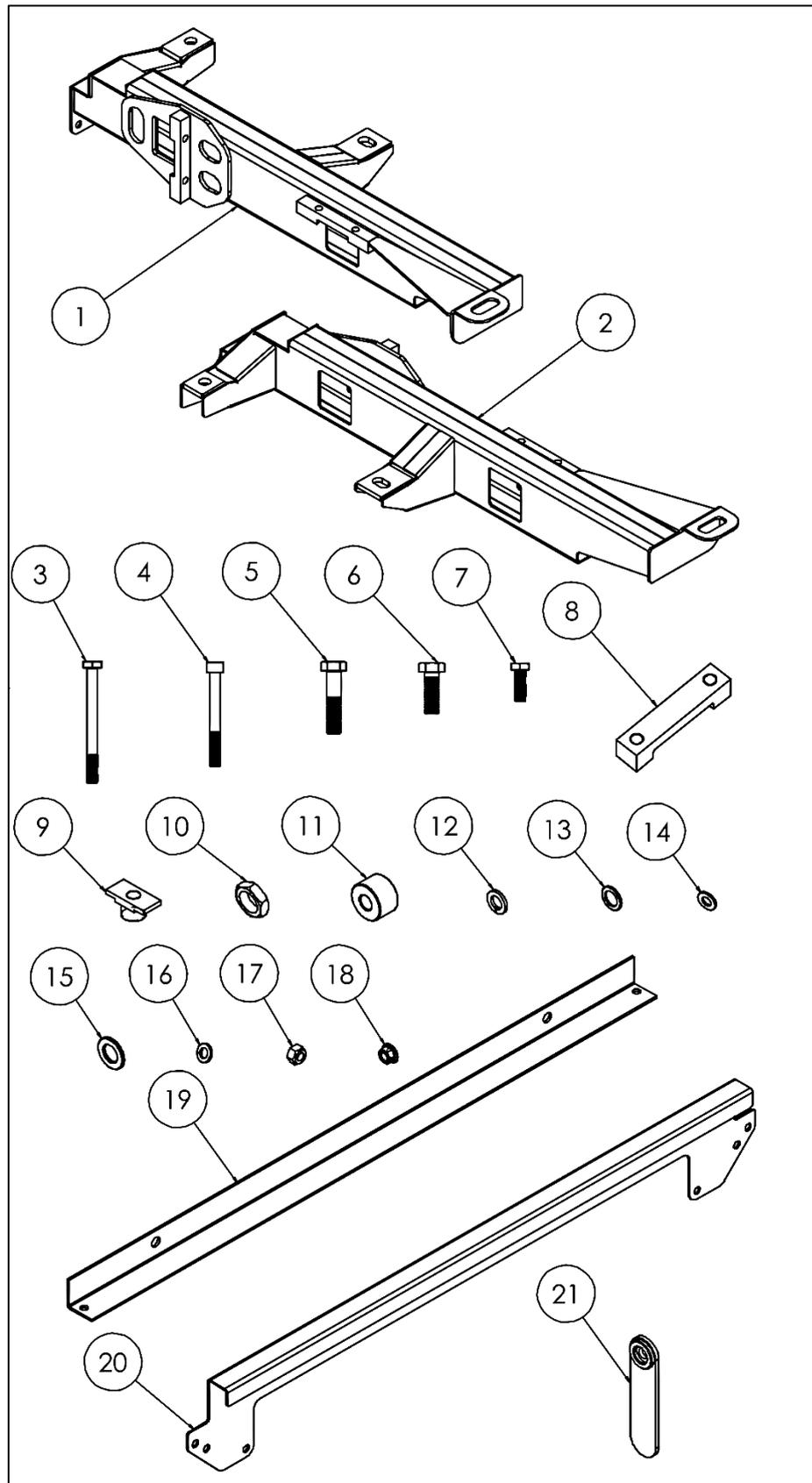
**2.1.5 Installation adapter kit for Dodge ProMaster only**

Figure 6

**Parts list**

| Item No. | Part No.   | Description                             | Standard                             | Qty. |
|----------|------------|---|--------------------------------------|------|
| 1        | 20 908 309 | Left mounting bracket                   | For Dodge ProMaster                  | 1    |
| 2        | 20 908 310 | Right mounting bracket                  | For Dodge ProMaster                  | 1    |
| 3        | 20 908 193 | Hexagon head screw                      | DIN 931 - M10x110 - 8.8 - FZB        | 2    |
| 4        | 20 909 327 | Cylinder head screw with hexagon socket | DIN 912 - M10x90 - 8.8 - ZN - PRE80  | 8    |
| 5        | 20 902 548 | Hexagon head screw                      | DIN 960 - M14x1,5x60 - 10.9 - ZN     | 2    |
| 6        | 20 901 691 | Hexagon head screw                      | DIN 961 - M14x1,5x40 - 10.9 - ZN     | 6    |
| 7        | 80 000 024 | Hexagon head screw                      | DIN 933 - M10x25 - 8.8 - GEO         | 6    |
| 8        | 20 908 103 | Holder                                  | X1 600E                              |      |
| 9        | 20 908 098 | Holder                                  | X1 600E                              | 4    |
| 10       | 20 908 101 | Lock nut                                | M24x1,5 DIN 439                      | 4    |
| 11       | 20 908 514 | Spacer bushing                          | For Dodge ProMaster short            | 2    |
| 12       | 80 000 063 | Split washer                            | DIN 127 - A - 14 - ZN                | 6    |
| 13       | 80 000 074 | Washer                                  | ISO 7089 - A - D14 - 300HV - ZFSH    | 8    |
| 14       | 80 000 072 | Washer                                  | ISO 7089 - A - D10 - 200HV - ZFSH    | 16   |
| 15       | 20 908 459 | Washer                                  | U27 f. M27 DIN 125 ZN                | 4    |
| 16       | 80 000 061 | Split washer                            | DIN 127 - A - 10 - ZN                | 8    |
| 17       | 80 000 085 | Locknut                                 | ISO 7042 - M10 - 8 - ZFSHL           | 6    |
| 18       | 20 901 692 | Locknut                                 | Similar DIN 6923 - M14X1,5 - 10 - ZN | 2    |
| 19       | 20 908 511 | Angle                                   | For Dodge ProMaster extra-long (L4)  | 1    |
| 20       | 20 908 180 | Beam                                    | For Dodge ProMaster                  | 1    |
| 21       | 20 908 311 | Fastener                                | For Dodge ProMaster                  | 2    |

**2.2 Damage during transport**

After unloading, inspect the liftgate for damage. If any damage is found, record it in writing on the shipper's waybill so that claims can be asserted.

## 3 Preparing for installation

### 3.1 Requirements for installation

- The vehicle exhaust must not be located at the rear of the vehicle.
- Line the vehicle floor with wood panels. For other types of flooring, verify whether installation is possible.
- The rear doors must open to a minimum angle of 180°.
- A spare tire must not be located between the rear axle and rear bumper.
- The liftgate cannot be installed if the rear bumper has an integrated step. In this case, the vehicle must be fitted with a standard bumper.
- A step must not be installed behind the bumper.
- A supplementary battery and switching strip must be present.
- For vehicles with rear parking sensors, the sensors will no longer function correctly once the platform is installed, because the lifting gear interferes with the sensors.

#### CAUTION

#### Unsuitable transport equipment

When transporting and lifting heavy parts, use transport equipment (e.g. cranes, pallet trucks, or other lifting gear) with a minimum load carrying capacity of 300 kg.

- Verify the correct and reliable functioning of the transport equipment

### 3.2 Lifting the vehicle

- Lift the vehicle using a lifting platform.

**IMPORTANT:** Installation over a pit is also possible, in which case the vehicle must also be raised (using winches or wedges) so that the liftgate and pallet can be inserted under the vehicle.

### 3.3 Preparing the vehicle

- Secure the vehicle in place to prevent unintentional movement.
- Disconnect the vehicle battery. Follow the vehicle manufacturer's instructions for correctly handling the battery.
- Be careful not to damage the vehicle. We recommend using appropriate coverings.

### 3.3.1 Remove spare tire

- If the vehicle has a spare tire between the rear axle and the rear bumper, remove the tire (see Fig. 7).

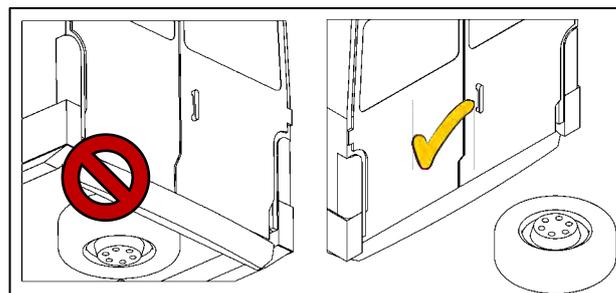


Figure 7

### 3.3.2 Move exhaust pipe

- If the exhaust pipe is at the rear, move it to the side.

**IMPORTANT:** Changes to the exhaust system must be carried out by qualified personnel and according to the vehicle manufacturer's guidelines.

#### NOTICE

- Be sure to maintain a sufficient distance from heat-sensitive parts. The minimum distance from plastics and cables is 300 mm (see Fig. 8).

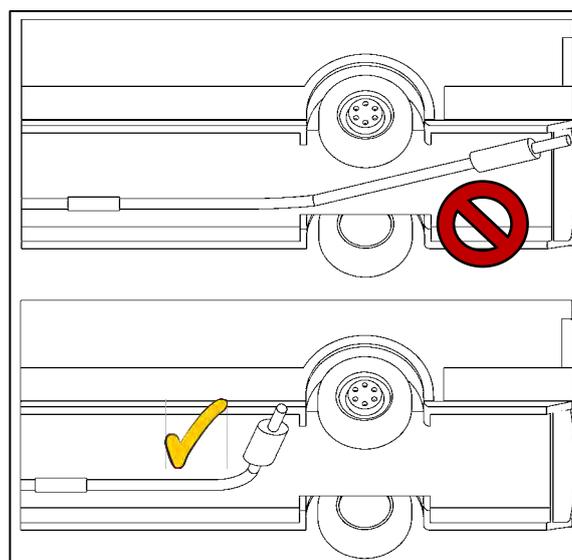


Figure 8

### 3.3.3 Mount supplementary battery

- If applicable, mount a supplementary battery to supply power to the liftgate.

### 3.3.4 Install bumper without step

- If the vehicle has a bumper with an integrated step, replace it with a bumper without a step (see Fig. 9).

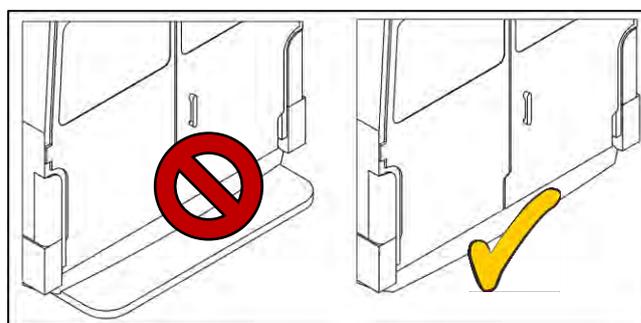


Figure 9

### 3.3.5 Deactivate parking sensors

- For vehicles with rear parking sensors, the sensors will no longer function correctly once the platform is installed, because the lifting gear interferes with the sensors (see Fig. 10).

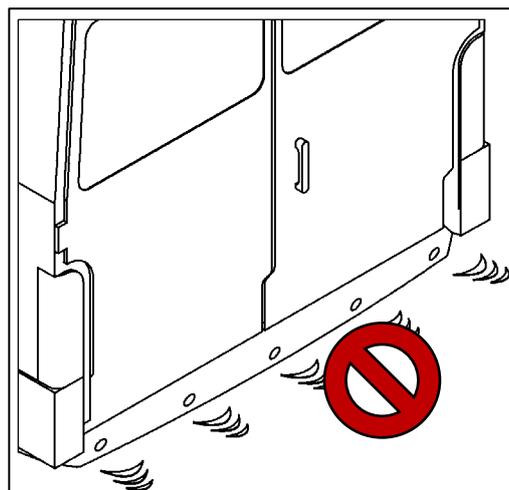


Figure 10

### 3.3.6 Remove trailer hitch or step

- If a trailer hitch or step is mounted on the vehicle, remove it (see Fig. 11)

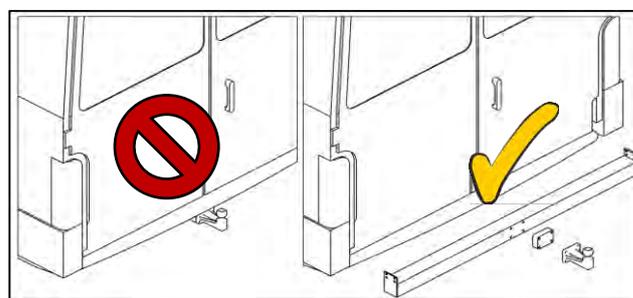


Figure 11

## 3.4 Unpacking the lifting gear, installation adapters, and accessories kit

### ⚠ CAUTION

#### Unsecured, heavy parts

When transport locks are removed, parts may fall or tip over and the platform may tip over. Risk of injury.

- Secure loose parts. Remove transport locks carefully.
- After disposing of packing materials, store all parts in a secured manner.

### NOTICE

#### Oil leakage

Incorrect positioning of the lifting gear can result in oil leakage. Risk of environmental damage.

- Always transport the lifting gear in an upright position with the oil filler neck facing upwards and using suitable lifting points.

- Check the scope of delivery for completeness (see pages 4–8)

**IMPORTANT:** Dispose of all packing materials in accordance with environmental regulations.

### 3.5 Pre-installing the installation adapters

#### Required material for Dodge ProMaster

| Item No. | Part No.   | Description                             | Standard                             | Qty. |
|----------|------------|---|--------------------------------------|------|
| 1        | 20 908 309 | Left mounting bracket                   | For Dodge ProMaster                  | 1    |
| 2        | 20 908 310 | Right mounting bracket                  | For Dodge ProMaster                  | 1    |
| 3        | 20 908 193 | Hexagon head screw                      | DIN 931 - M10x110 - 8.8 - FZB        | 2    |
| 4        | 20 909 327 | Cylinder head screw with hexagon socket | DIN 912 - M10x90 - 8.8 - ZN - PRE80  | 8    |
| 5        | 20 902 548 | Hexagon head screw                      | DIN 960 - M14x1,5x60 - 10.9 - ZN     | 2    |
| 6        | 20 901 691 | Hexagon head screw                      | DIN 961 - M14x1,5x40 - 10.9 - ZN     | 6    |
| 7        | 80 000 024 | Hexagon head screw                      | DIN 933 - M10x25 - 8.8 - GEO         | 6    |
| 8        | 20 908 103 | Holder                                  | X1 600E                              |      |
| 9        | 20 908 098 | Holder                                  | X1 600E                              | 4    |
| 10       | 20 908 101 | Lock nut                                | M24x1,5 DIN 439                      | 4    |
| 11       | 20 908 514 | Spacer bushing                          | For Dodge ProMaster short            | 2    |
| 12       | 80 000 063 | Split washer                            | DIN 127 - A - 14 - ZN                | 6    |
| 13       | 80 000 074 | Washer                                  | ISO 7089 - A - D14 - 300HV - ZFSH    | 8    |
| 14       | 80 000 072 | Washer                                  | ISO 7089 - A - D10 - 200HV - ZFSH    | 16   |
| 15       | 20 908 459 | Washer                                  | U27 f. M27 DIN 125 ZN                | 4    |
| 16       | 80 000 061 | Split washer                            | DIN 127 - A - 10 - ZN                | 8    |
| 17       | 80 000 085 | Locknut                                 | ISO 7042 - M10 - 8 - ZFSL            | 6    |
| 18       | 20 901 692 | Locknut                                 | Similar DIN 6923 - M14X1,5 - 10 - ZN | 2    |
| 19       | 20 908 511 | Angle                                   | For Dodge ProMaster extra-long (L4)  | 1    |
| 20       | 20 908 180 | Beam                                    | For Dodge ProMaster                  | 1    |
| 21       | 20 908 311 | Fastener                                | For Dodge ProMaster                  | 2    |

- Pre-install the installation adapters on the liftgate's lifting gear as shown in Fig. 12, tightening the fittings until hand-tight.

**IMPORTANT:** Figure shows the installation adapters for vehicles with both short and long wheelbases.

- **Angle 20 908 511** (part no. 19) – is to be used only with extra-long wheelbase vehicle L4.
- **Spacer bushings 20 908 514** (part no. 11) – are to be used only for short vehicles and not for extra-long wheelbase.
- Regarding **Fastener 20 908 311** – see section 4.2.2 Page 23.
- Installation is the same for both vehicle types and Fig. 12 applies to both.

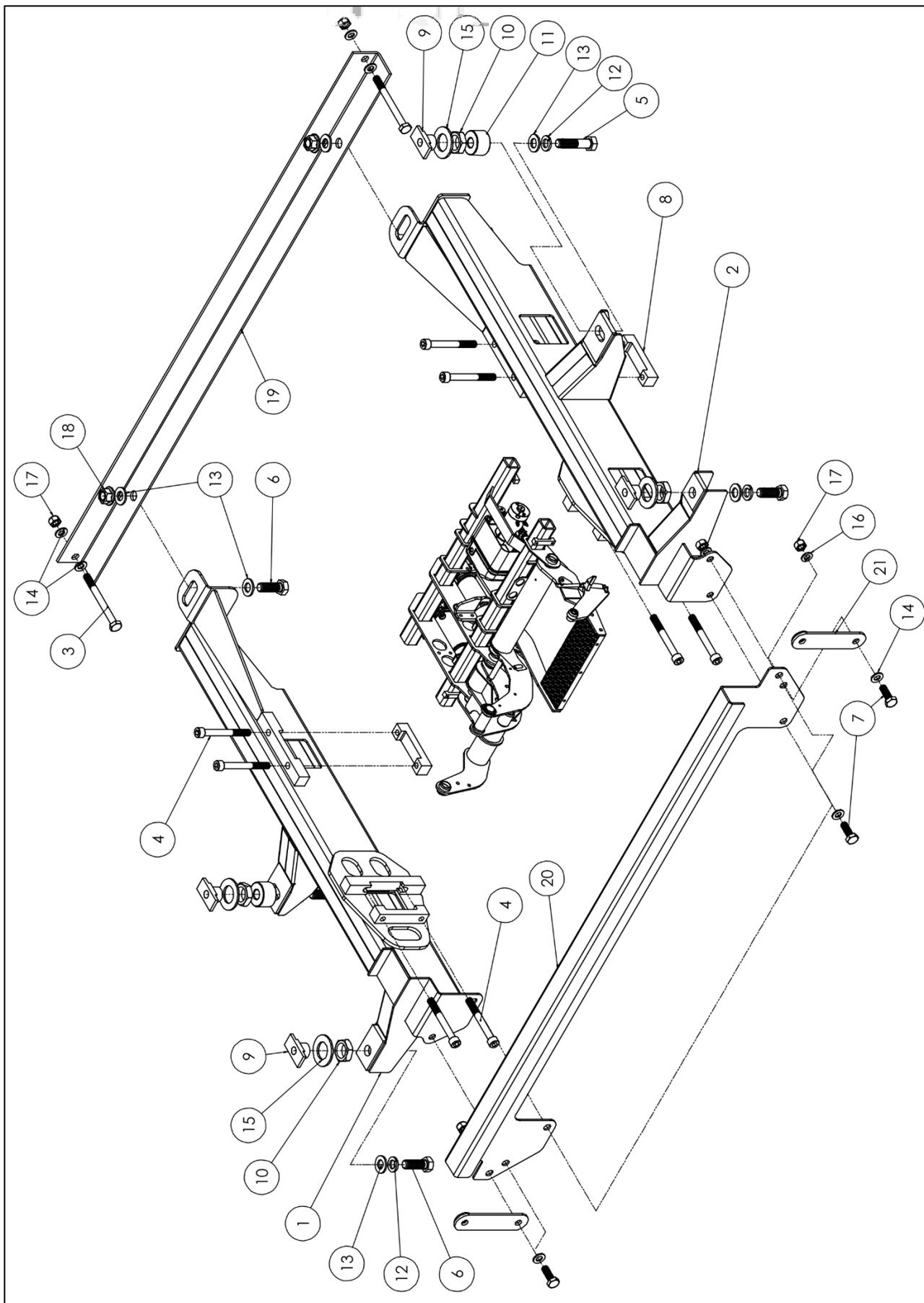


Figure 12

### 3.6 Installing the cables/preparation

**IMPORTANT:** Excess cable must not be wound up in a coil but must be placed in slings (Fig. 13).

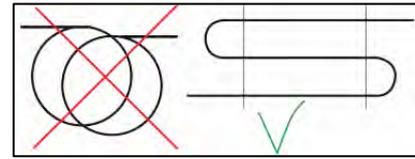
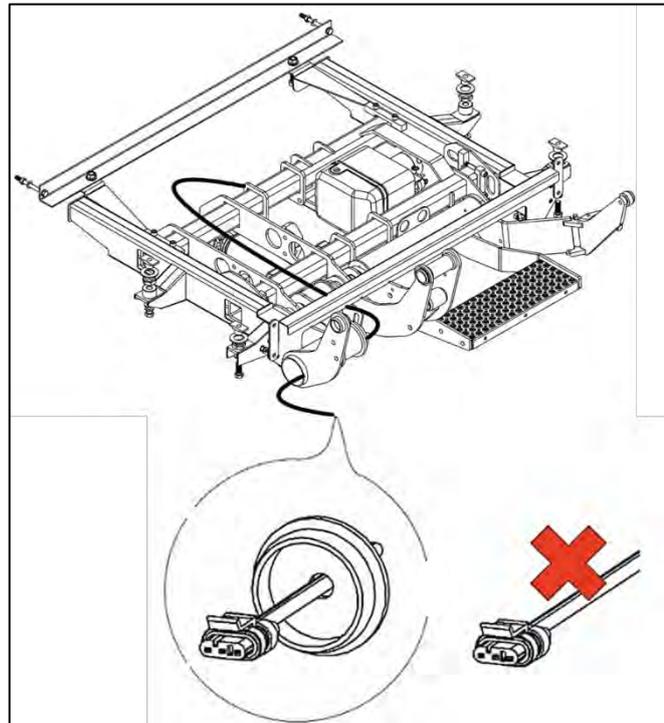


Figure 13

#### 3.6.1 Cable to the platform

Route the control unit cable for platform connection (white plastic cover) to the swing-arm assembly in centre of the vehicle (Fig.14).



the

Figure 14

#### 3.6.2 Cable for the service switch

Route the control unit cable for service switch connection to the vehicle cargo area (Fig. 15).

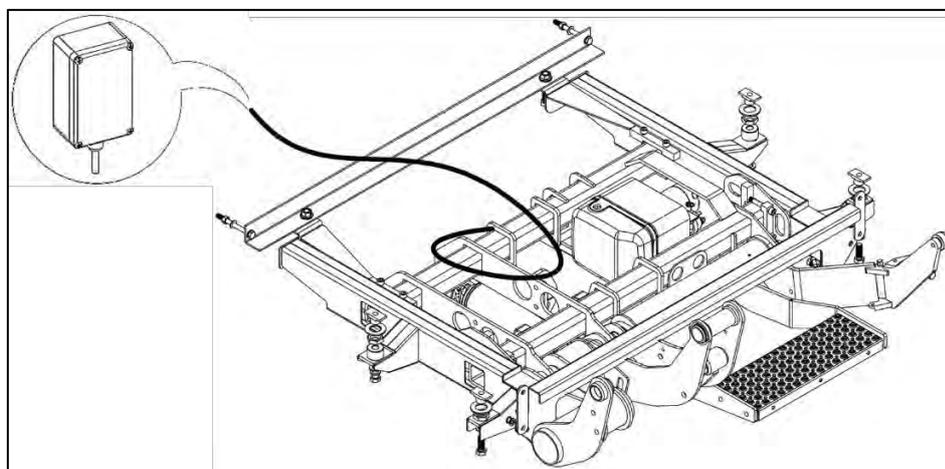


Figure 15

### 3.6.3 Routing the cables to the front of the vehicle

For more information, look online at

<http://www.taillift.org/en/electrical-vehicle-interface>

**IMPORTANT:** Follow the vehicle manufacturer's installation guidelines.

#### NOTICE

- When installing cables, make sure they are safe from chafing.
- Do not install cables near heat-dissipating components.

#### Install power cable

- Insert the positive cable (25 mm<sup>2</sup> red) ("power unit cable") for the power supply into a length of slit corrugated tubing (see Fig. 16).

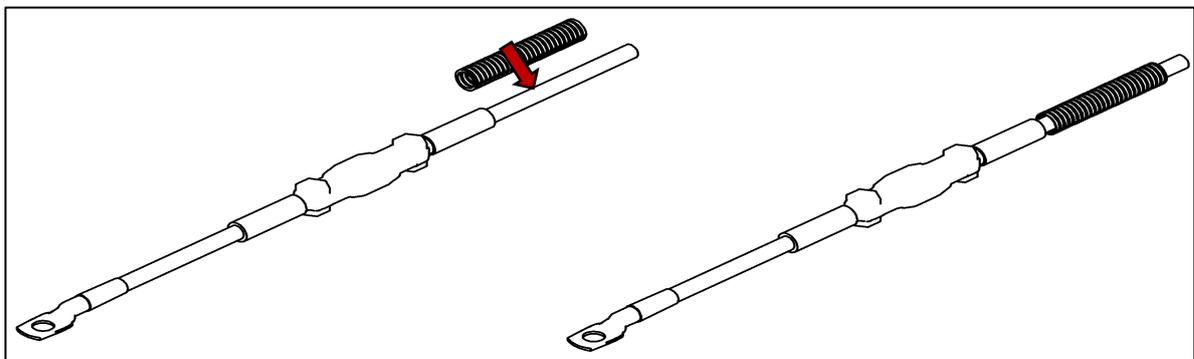


Figure 16

#### NOTICE

- Do not yet connect the cables.

Route the positive cable (red) and negative cable (blue) to the terminals but do not yet connect them (see Fig. 17).

#### Legend

- Item 1 Positive cable (red)  
Part No. 20 907 673
- Item 2 Negative cable  
(blue)  
Part No. 20 907 673
- Item 3 Connector for  
cabin switch unit  
Part No. 20 906 974

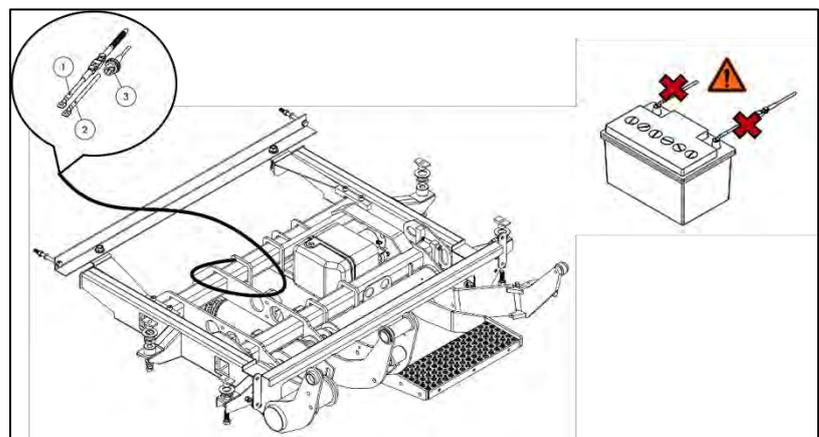


Figure 17

**Cable for cabin switch unit**

- Route the cabin switch cable from the **accessories kit (Item No. 11)** to the driver's cabin (see Fig. 18).
- Connect the cabin switch cable to the 7-pin connector (DIN 72585) from the control unit.

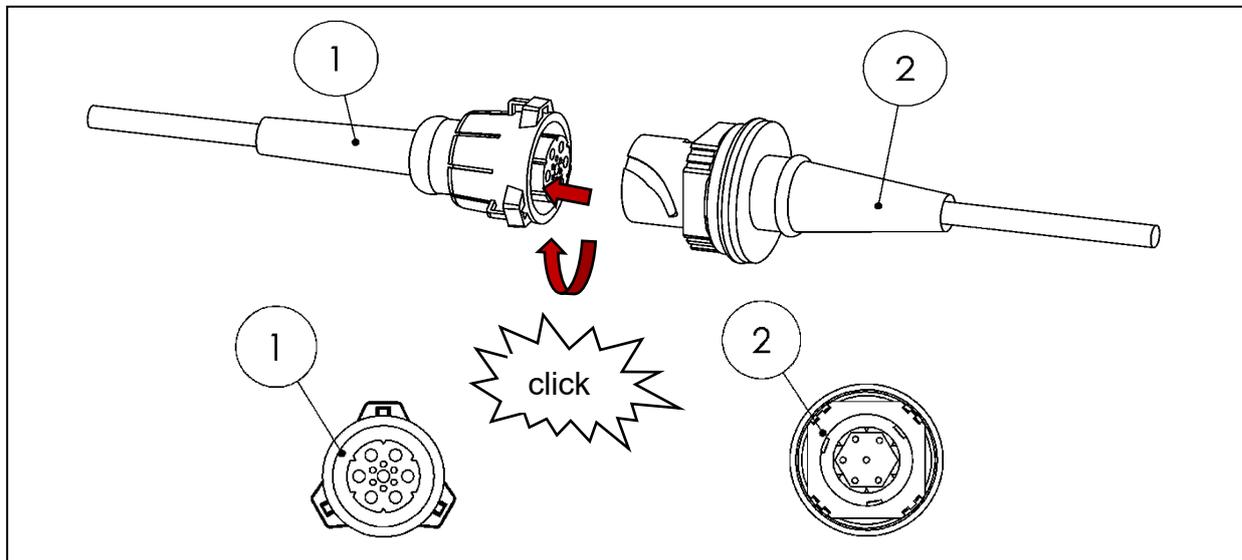


Figure 18

**Legend**

- Item 1 Connector for cabin on-off-Switch unit Part No. 20 906 974  
Item 2 7-pin connector (DIN 72585) from Control Unit

### 3.6.4 Control panel cable on the control unit

- Route the control unit cable for control panel connection to the right as viewed in the forward direction of travel (see Fig. 19).

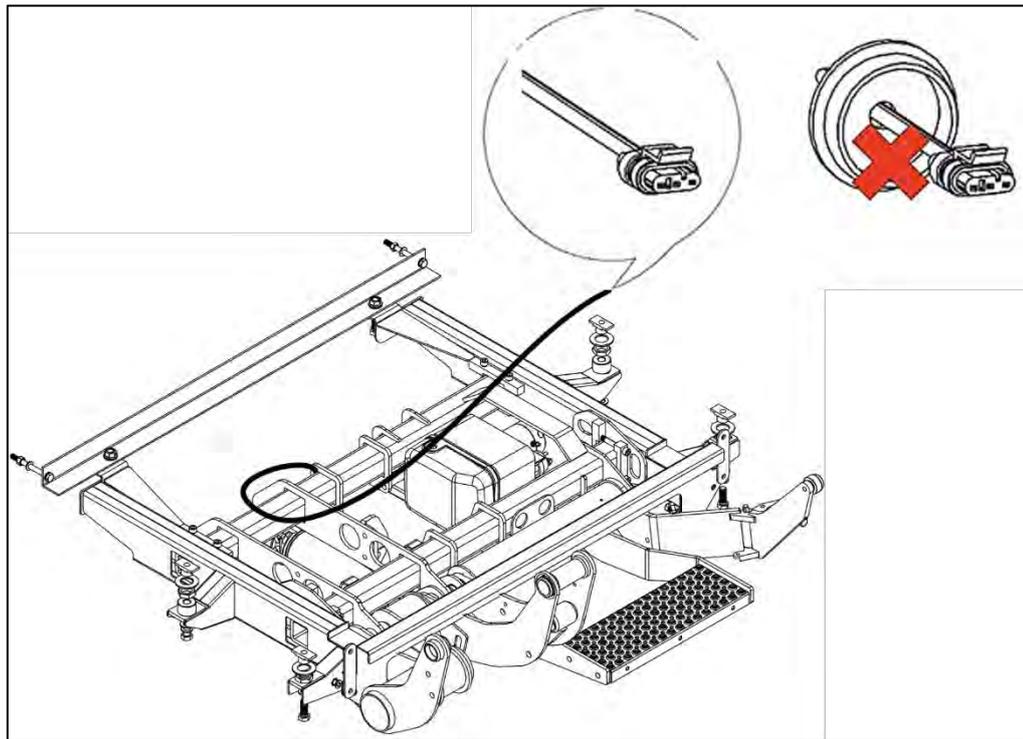


Figure 19

### 3.6.5 Handheld control cable on the Control Unit

- Determine the installation location for the Handheld control and route the cable to the installation location inside the vehicle, into the cargo area.
- Find the bushing into the cargo area.
- Connect the Handheld control plug, with the one coming from the Control Unit (in Power pack), see wiring diagram cable No. 20 911 494 or see Fig. 20.

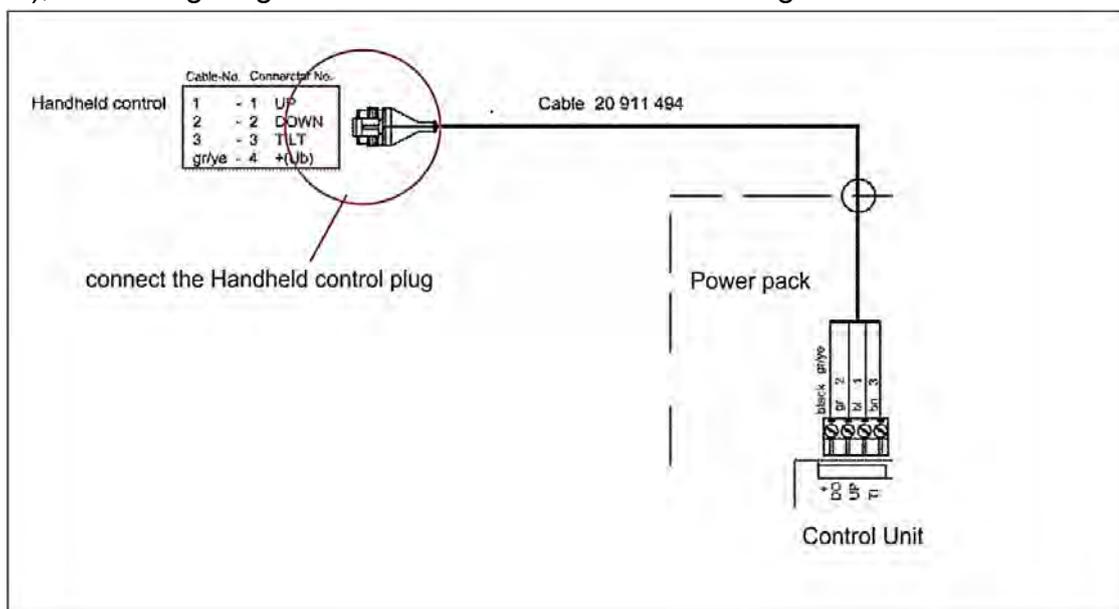


Figure 20

- The control unit is delivered with the wires already connected. Thus, to route the cable, disconnect the wires on the Control Unit (in the Power pack) as seen in Fig. 21.

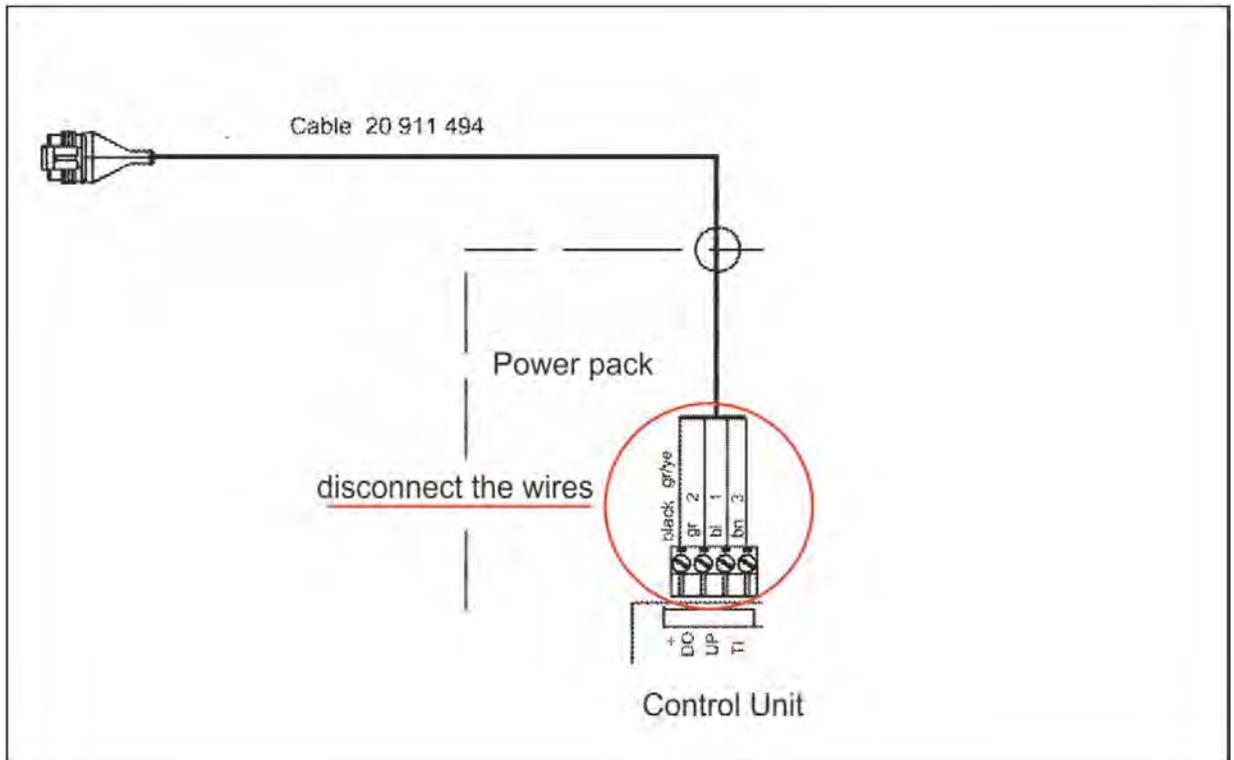


Figure 21

- Route the cable 20 911 494 from the cargo area, to outside of the vehicle, to the Control Unit (in the power pack).
- Then reconnect the wires on the Control Unit (in the power pack) as in Fig. 22.

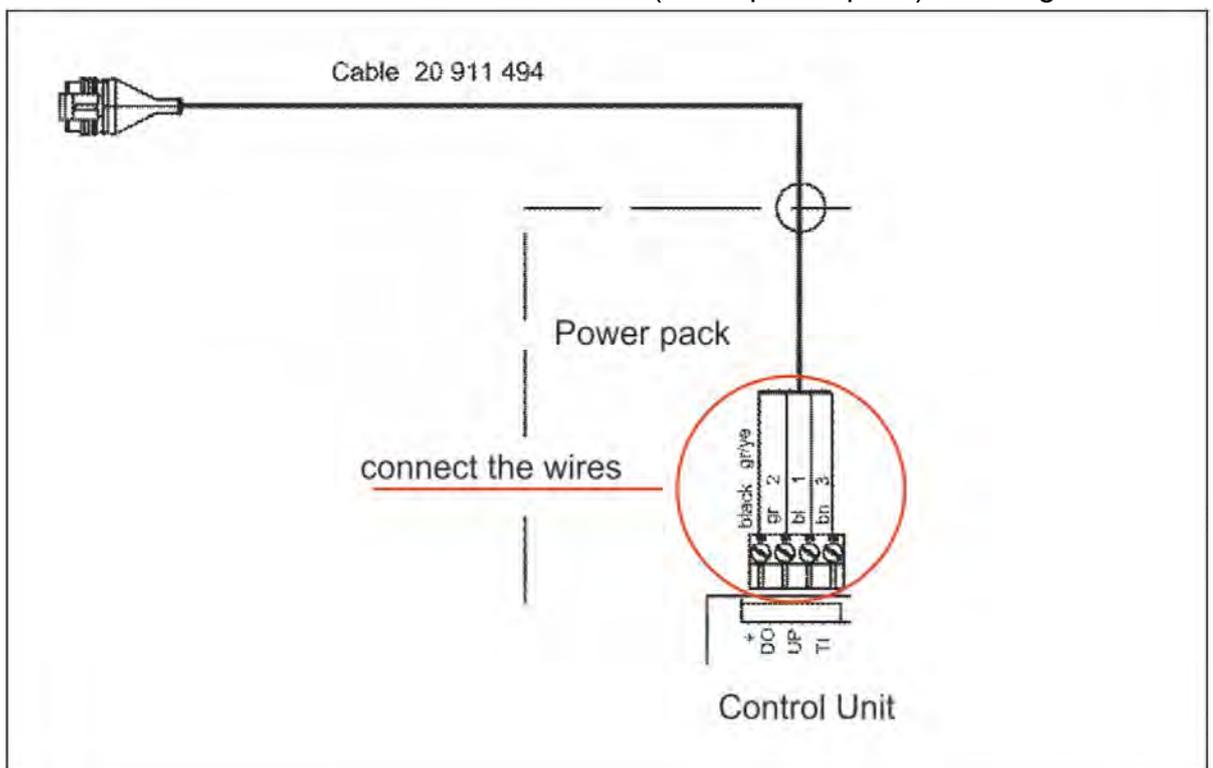


Figure 22

### 3.6.6 Mounting the bracket for the 3-/2-button Handheld control (optional)

- Mount the bracket (1) for the Handheld control (2) on the vehicle wall (3) using, for example, 2 screws or adhesive (see Fig. 23).

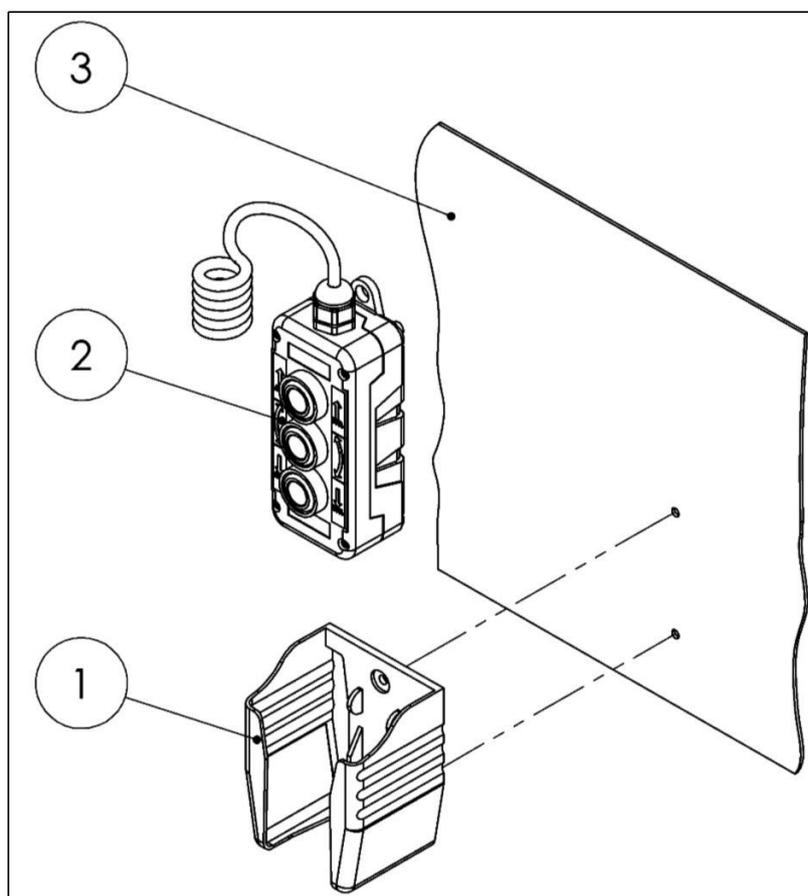


Figure 23

#### Legend

|        |                              |
|--------|------------------------------|
| Item 1 | Bracket for Handheld control |
| Item 2 | Handheld control             |
| Item 3 | Vehicle wall                 |

### 3.7 *Aligning the lifting gear*

- Align the lifting gear under the vehicle on a mounting tool or pallet.
- Line up the installation adapters on the lifting gear with the manufacturer's holes in the vehicle chassis (see Fig. 24).

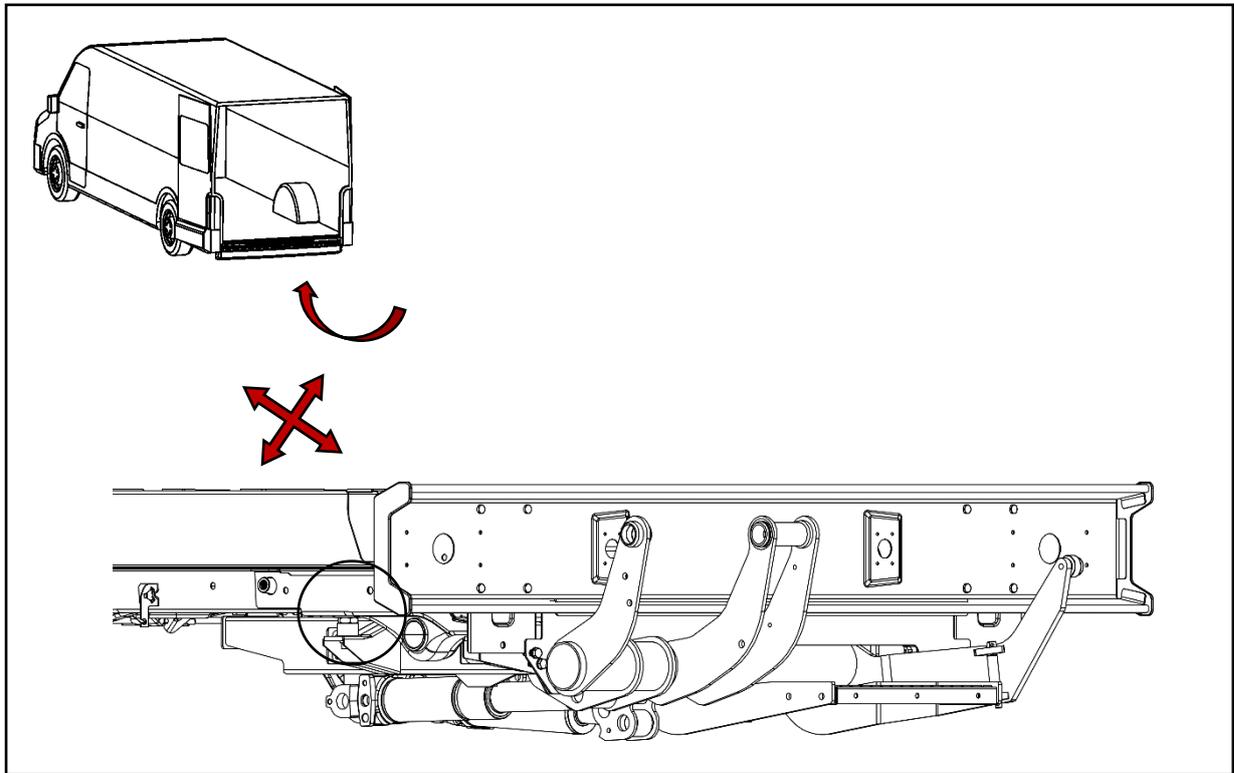


Figure 24

### 3.8 *Mounting holes on the vehicle*

**IMPORTANT:** Follow the vehicle manufacturer's installation guidelines.

- Find the mounting holes on the vehicle.
- Remove underbody coating in the area of the mounting points (contact surfaces between vehicle and installation adapters).
- Seal any areas of the vehicle body that are exposed (with corrosion protection).

## 4 Installation

### 4.1 Positioning the lifting gear

- Place the prepared lifting gear (on a pallet) under the vehicle using a suitable means of transport, e.g. pallet truck, forklift, etc.

### 4.2 Tightening the lifting gear fittings until hand-tight

#### WARNING

##### Installation at crushing and shearing points

Fingers are at risk of being crushed or sheared when the lifting gear is installed on the vehicle.

- Be careful at the connecting points between the lifting gear and vehicle.

#### 4.2.1 Installation adapters

- Raise the lifting gear. Insert the rear and front parts as viewed in the forward direction of travel and tighten until hand-tight as shown in Fig. 25 and Fig. 26, with more details in Fig. 28 on page 23.



#### NOTICE

- Do not damage cables.

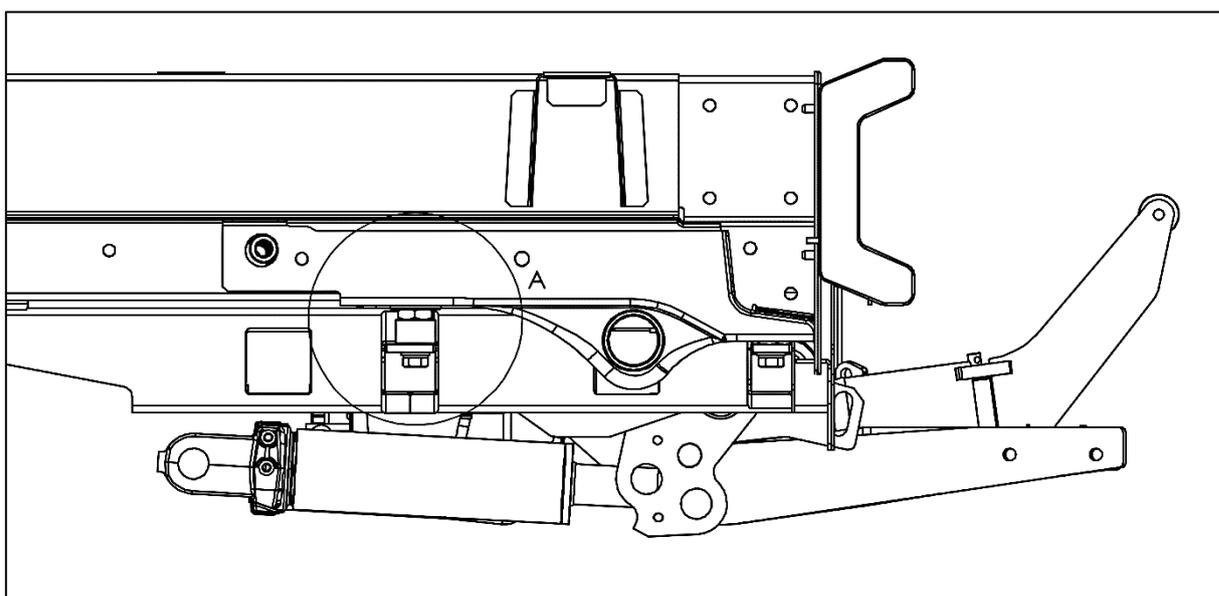


Figure 25

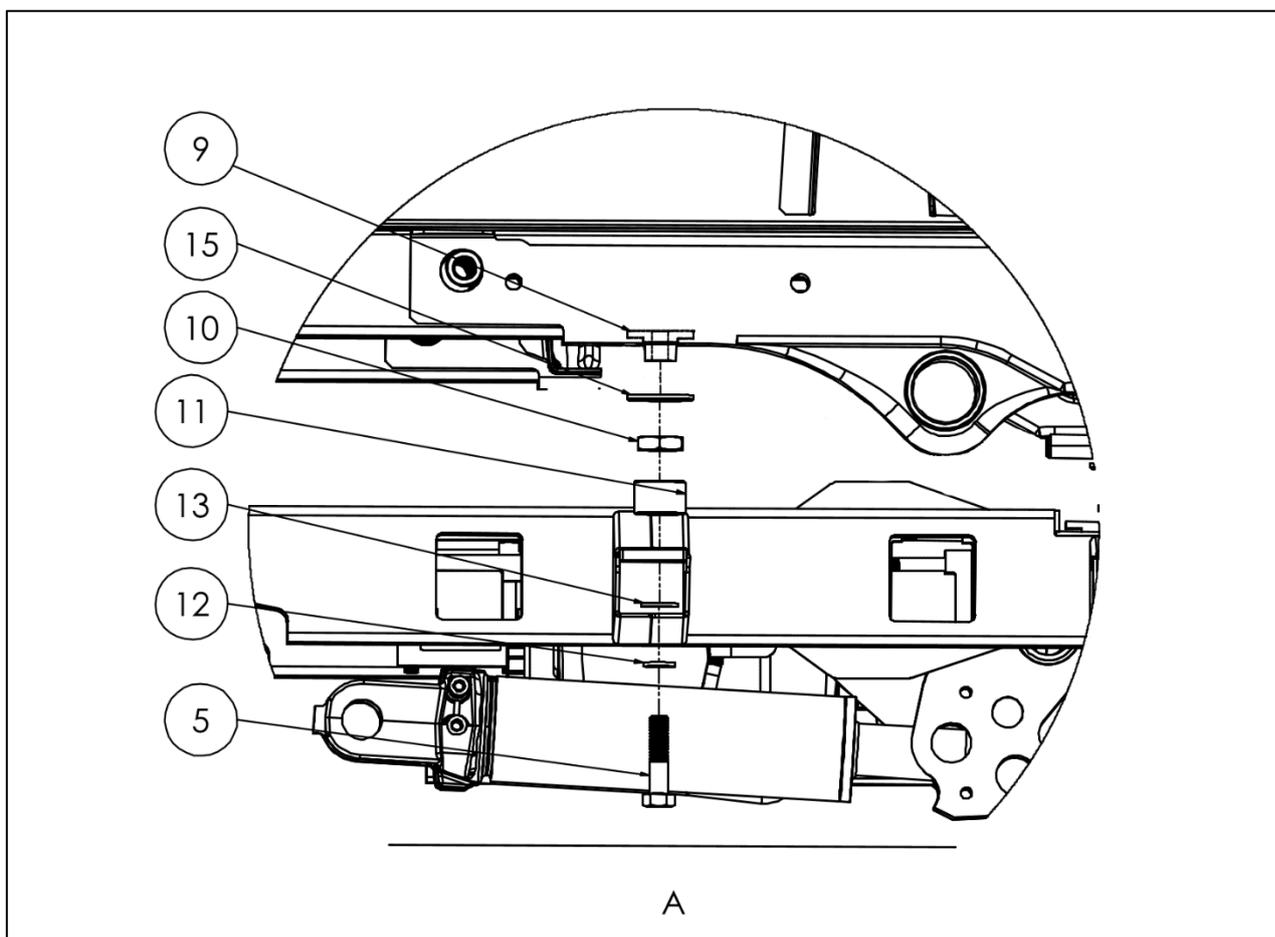


Figure 26

**Excerpt from parts list: Installation adapter kit**

| Item No. | Part No.   | Description        | Standard                          | Qty. |
|----------|------------|--------------------|-----------------------------------|------|
| 5        | 20 902 548 | Hexagon head screw | DIN 960 - M14x1,5x60 - 10.9 - ZN  | 2    |
| 6        | 20 901 691 | Hexagon head screw | DIN 961 - M14x1,5x40 - 10.9 - ZN  | 6    |
| 9        | 20 908 098 | Holder             | X1 600E                           | 4    |
| 10       | 20 908 101 | Lock nut           | M24x1,5 DIN 439                   | 4    |
| 11       | 20 908 514 | Spacer bushing     | For Dodge ProMaster short         | 2    |
| 12       | 80 000 063 | Split washer       | DIN 127 - A - 14 - ZN             | 6    |
| 13       | 80 000 074 | Washer             | ISO 7089 - A - D14 - 300HV - ZFSH | 8    |

### 4.2.2 Holder 20 908 098

Install the holder 20 908 098 in the vehicle by rotating it 90° from the position shown in Fig. 26, then turning it in its correct position for it to hold. See Fig. 27 for reference.

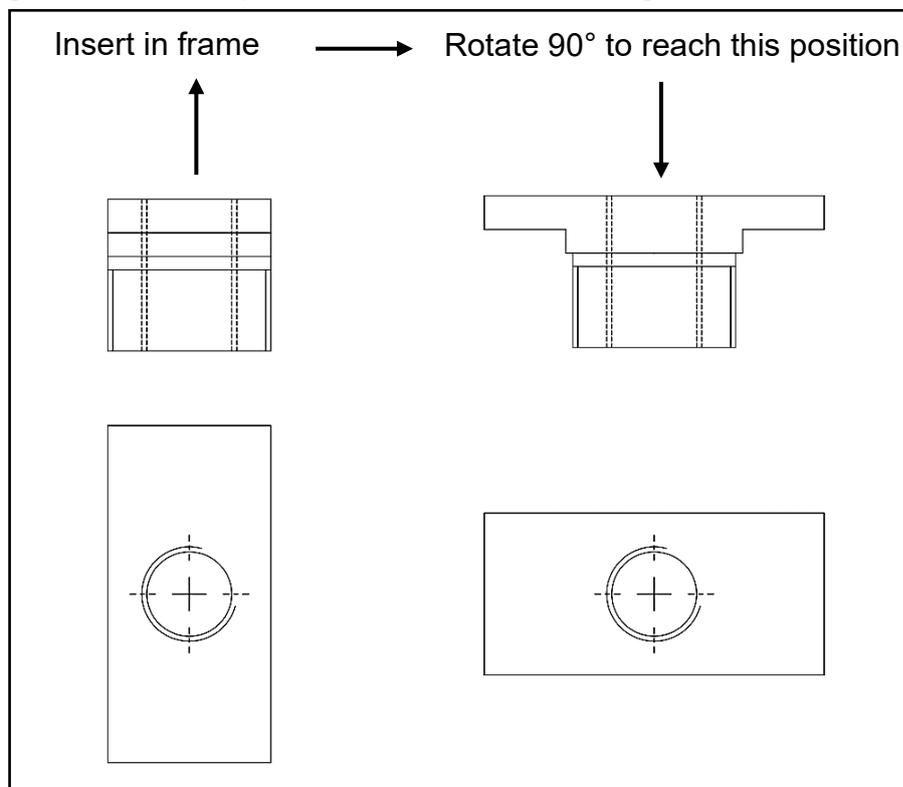


Figure 27

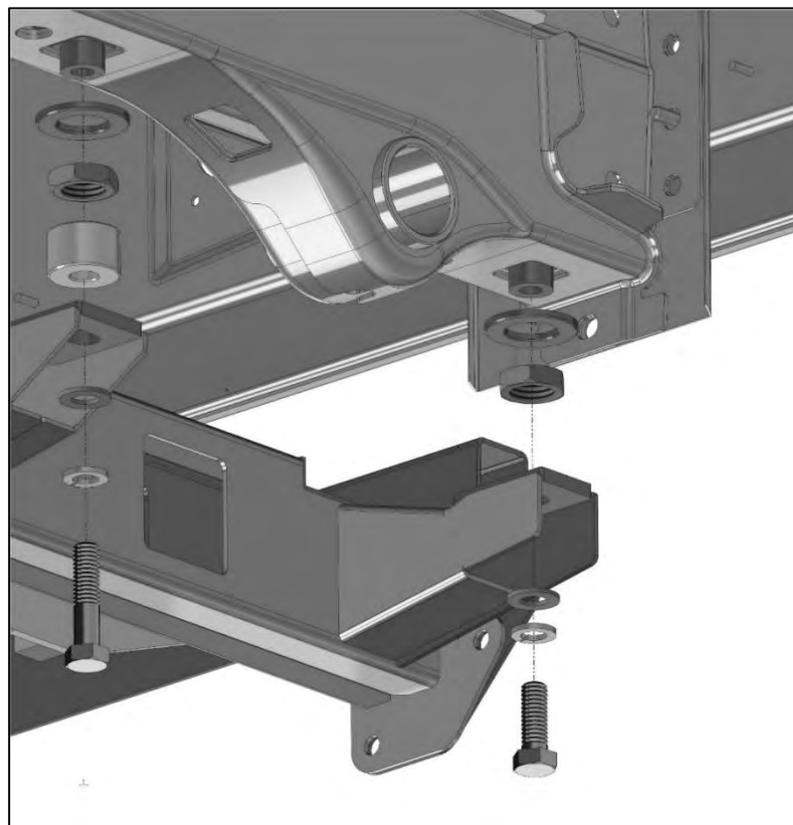


Figure 28

## 4.2.3 Fastener 20 908 311

For additional support, connect the fastener to the liftgate and to the frame of the vehicle - see Fig. 30. The fastener is provided without the bottom hole as per Fig. 29, so that it can be drilled accordingly to fit the vehicle frame.

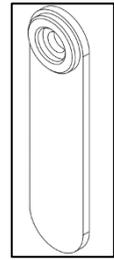


Figure 30

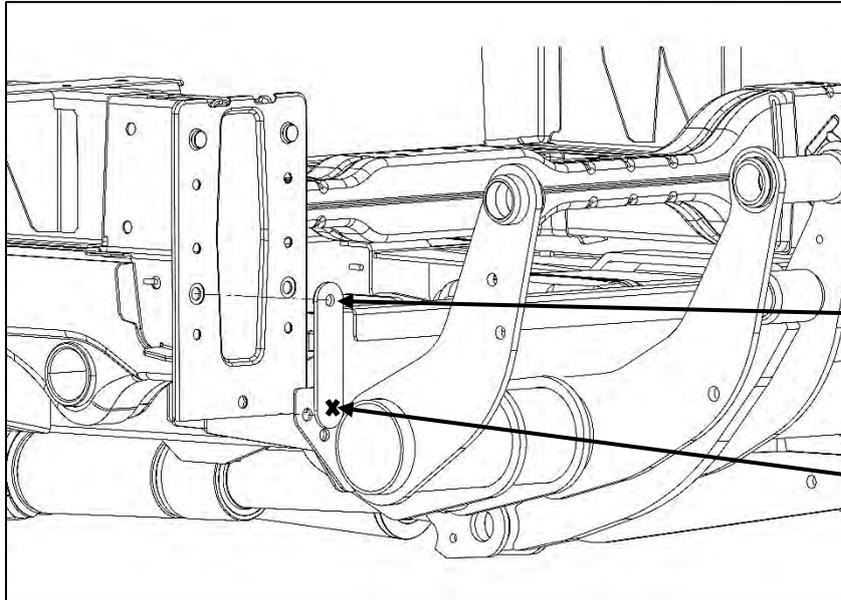


Figure 29

Connect to frame with existing hole

Drill hole corresponding to the suitable height and connect to liftgate.

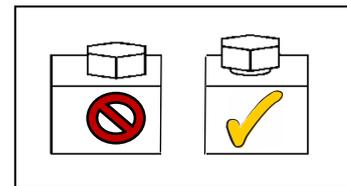


Figure 31

Refer to Fig. 12 on Page 13 for the installation.  
Excerpt from parts list: Installation adapter kit

| Item No. | Part No.   | Description        | Standard                          | Qty. |
|----------|------------|--------------------|-----------------------------------|------|
| 7        | 80 000 024 | Hexagon head screw | DIN 933 - M10x25 - 8.8 - GEO      | 2    |
| 14       | 80 000 072 | Washer             | ISO 7089 - A - D10 - 200HV - ZFSH | 2    |
| 16       | 80 000 061 | Split washer       | DIN 127 - A - 10 - ZN             | 2    |
| 17       | 80 000 085 | Locknut            | ISO 7042 - M10 - 8 - ZFSHL        | 2    |
| 21       | 20 908 311 | Fastener           | For Dodge ProMaster               | 2    |

### NOTICE

- Do not damage cables.

### 4.3 Securing the lifting gear to the vehicle

- Secure the completely premounted lifting gear (with adapters) to the vehicle and tighten to a torque of **180 Nm** for both front and back connections (refer to torque table on page 65 and Fig. 32).

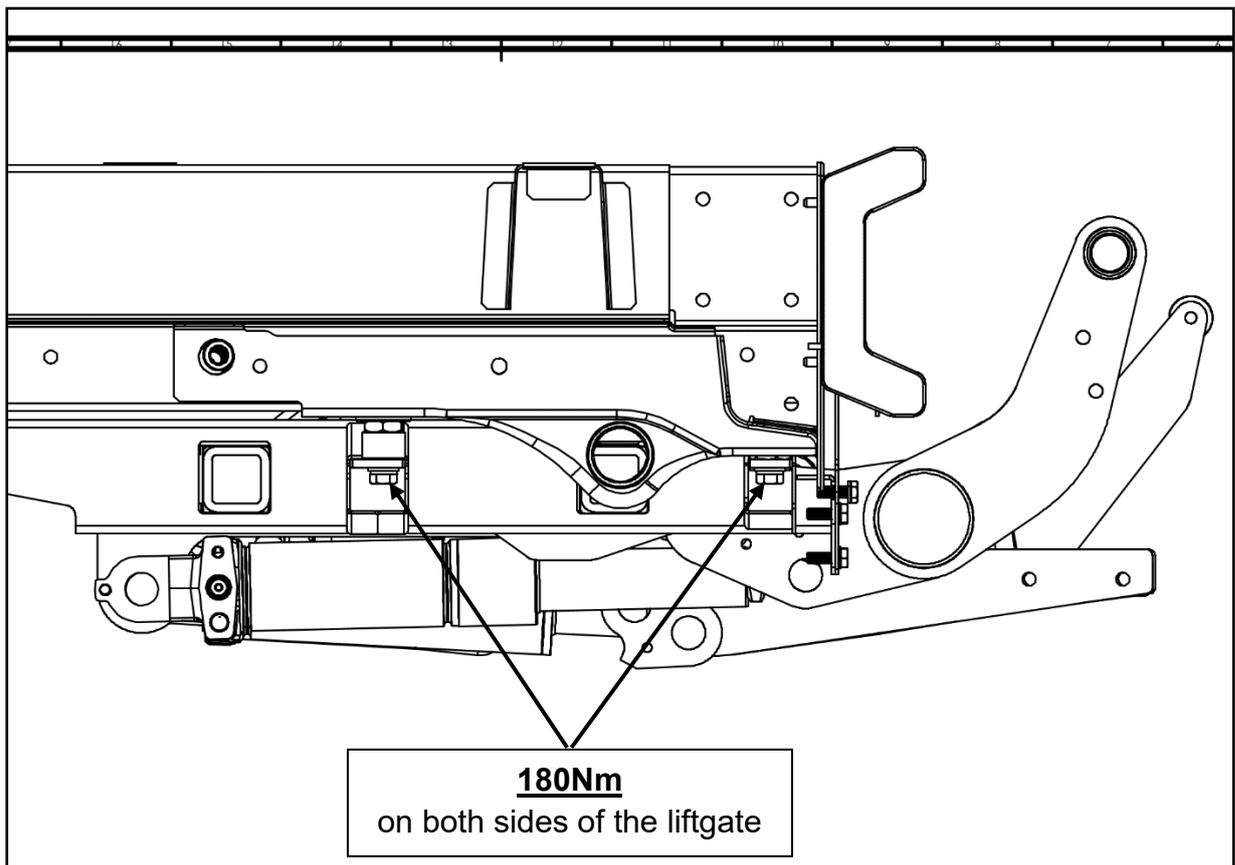


Figure 32

#### 4.4 Securing the frame assembly

- Secure the installation adapters to the lifting gear and tighten to the specified torque of **46 Nm** (refer to torque table on page 65 and Fig. 33). The layout of the axles is symmetric, so please follow the same process on the other side as well.

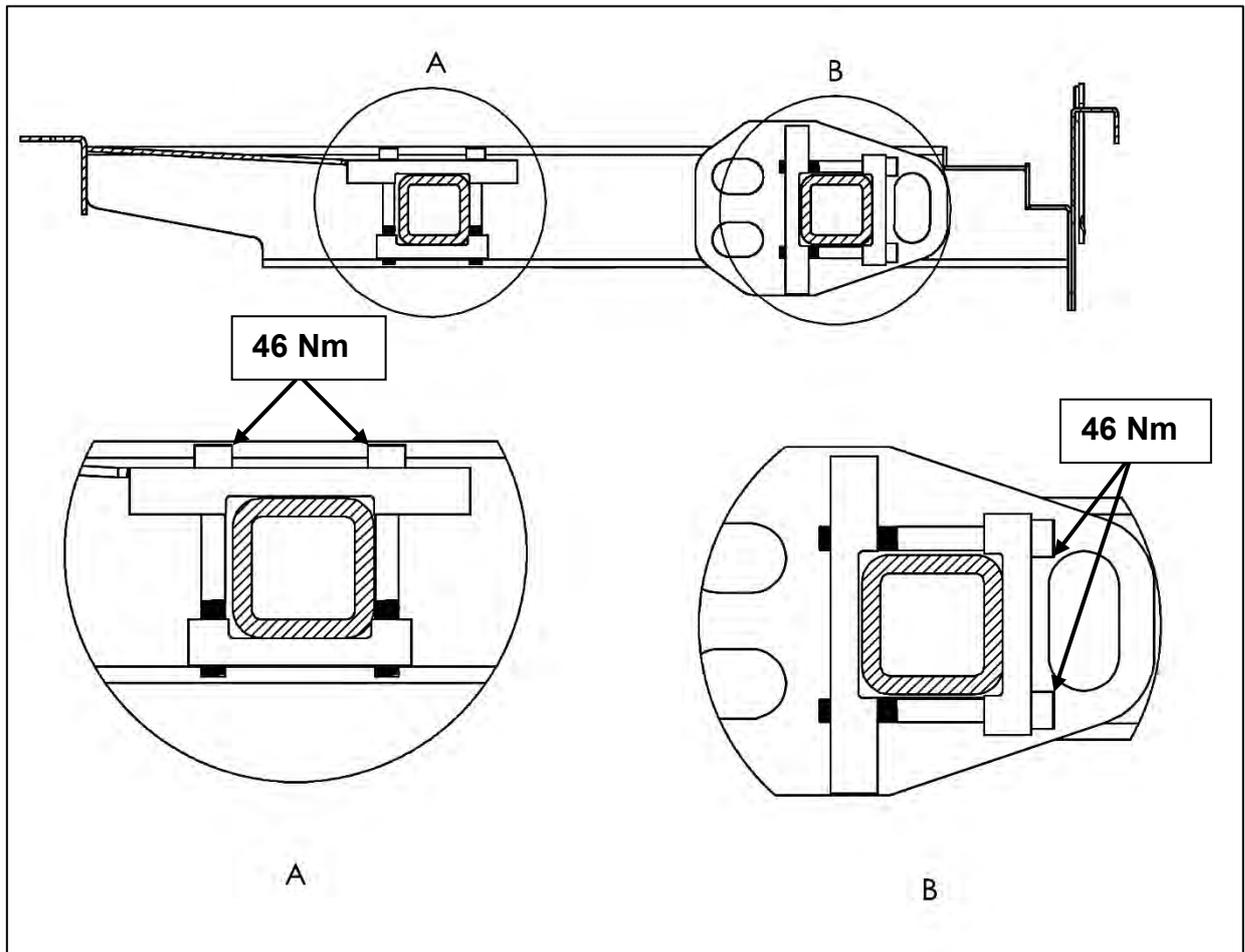


Figure 33

## 4.5 Connecting the cables to the lifting gear

### 4.5.1 Installing and connecting the service switch

- Disconnect the service switch box from the cable by loosening the screw terminals in the housing (see Fig. 34).

#### Legend

|             |                    |
|-------------|--------------------|
| Terminal 30 | Black cable        |
| Terminal Y1 | Blue cable         |
| Terminal KM | Gray cable         |
| Terminal YA | Brown cable        |
| Terminal Y3 | Green/yellow cable |

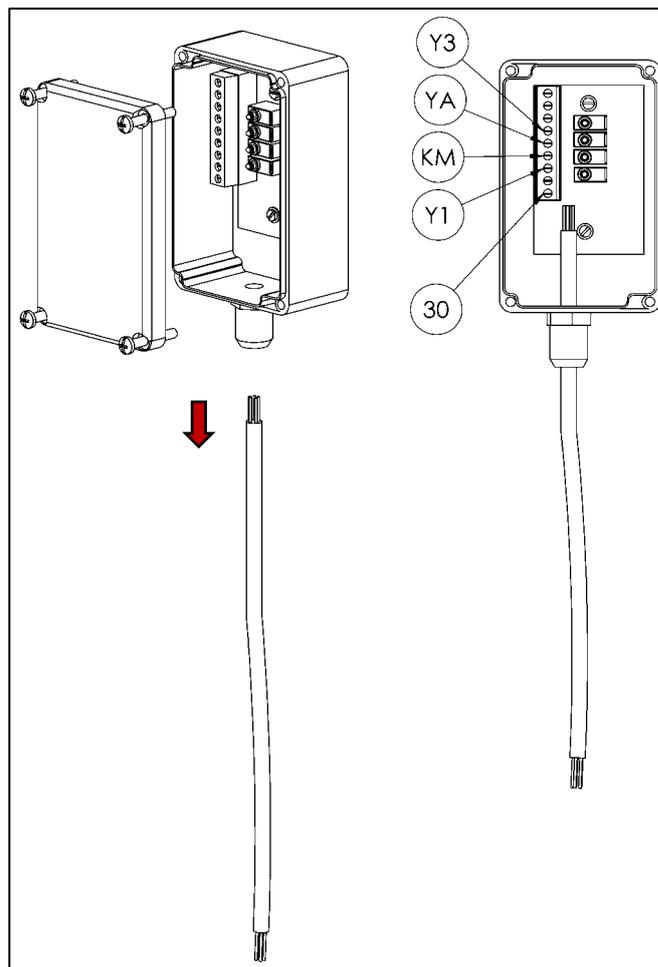


Figure 34

- Route the cable to the cargo area via a bushing opening.
- Reconnect the service switch to the routed cable as shown in Fig. 34.
- Close the service switch box lid and make sure it is tight.

## 4.5.2 Installing and connecting the control panel

### **⚠ WARNING**

#### Penetration of water

Over the long term, the improper installation of cables can result in water penetrating the control panel and causing it to malfunction. Risk of serious injury in subsequent operation.

- Route the cable to the control panel only from below.

#### **Mount the control panel on door**

- Route the control panel cable to the cargo area so that it can be secured to the right-hand door (a). See Fig. 35.
- Protect against entanglements and ensure correct cable length for fully opened door, using corrugated tubing if necessary.
- Secure the control panel (b) to the right-hand vehicle door (a) using the fasteners (1, 6, 9) from the **accessories kit**, maintaining a distance of 400 mm ±100 mm (15¾" ±3<sup>15</sup>/<sub>16</sub>") as per specifications (see Fig. 35 and Fig. 36).

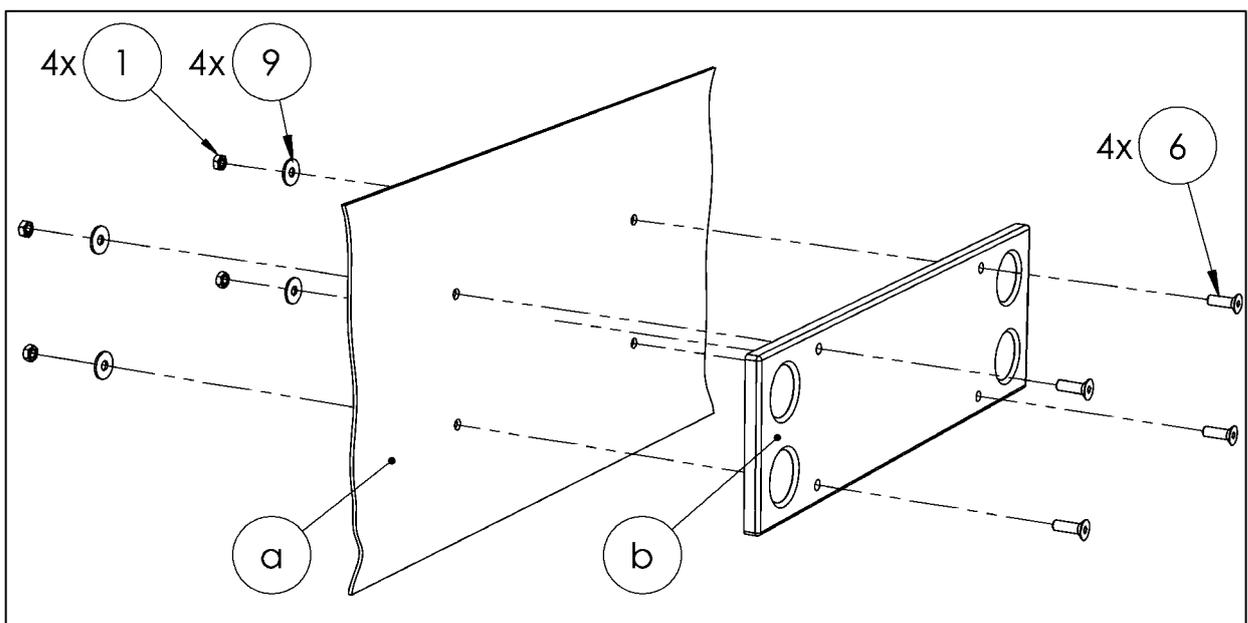


Figure 35

#### Required material from accessories kit

| Item No. | Part No.   | Description                           | Standard               | Qty. |
|----------|------------|---------------------------------------|------------------------|------|
| 1        | 80 000 046 | Hexagon nut                           | DIN 934 – M5 – A2      | 4    |
| 6        | 20 904 647 | Countersunk screw with hexagon socket | ISO 10642 – M5x16 – A2 | 4    |
| 9        | 20 850 543 | Washer                                | DIN 9021 – D5.3 – A2   | 4    |

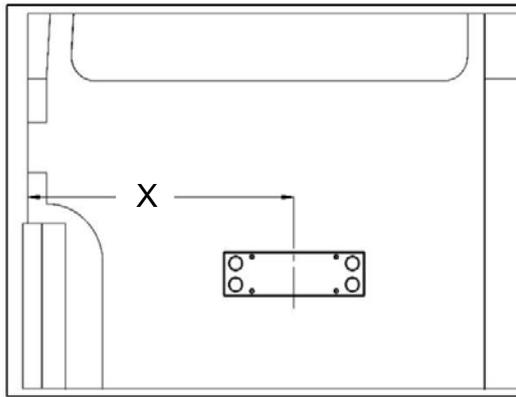


Figure 36

X = distance from border of vehicle  
 400mm ± 100mm  
 (15<sup>3</sup>/<sub>4</sub>" ± 3<sup>15</sup>/<sub>16</sub>" )

- Disassemble the control panel SUPERSEAL connector and, if appropriate, the control unit SUPERSEAL connector so that the control panel cable can be routed to the control unit cable via openings.

**IMPORTANT:** A release tool is required for disassembling the SUPERSEAL connector.

**IMPORTANT:** When reassembling, pay attention to the position of the individual wires! Return the wires to their original positions (see Fig. 37 for Item 1 and Fig. 38 for Item 2).



Figure 37



Figure 38

### Legend

- Item 1 Socket housing (Fig. 37) of the control unit
- Item 2 Pin housing (Fig. 38) of the control panel

| Control unit wires (1) | Pin No. and Wire No. | Control panel wires (2) |
|------------------------|----------------------|-------------------------|
| Black                  | 1                    | Black                   |
| Brown                  | 2                    | Black                   |
| Gray                   | 3                    | Black                   |
| Blue                   | 4                    | Black                   |
| White                  | 5                    | Green/yellow            |
| Green/yellow           | 6                    |                         |

- Using the release tool, release the safety guard from the socket housing and pin housing (see Fig. 39 and Fig. 40).



Figure 39



Figure 40

For the socket housing, release the latches on the contact pins and pull the wires out of the back of the housing (see Fig. 41 and Fig. 42).



Figure 41



Figure 42

- For the pin housing, first use the release tool to pry out the safety guard (see Fig. 43).



Figure 43

- For the pin housing, release the latches on the contact pins and pull the wires out of the back of the housing (Fig. 44 and Fig. 45).

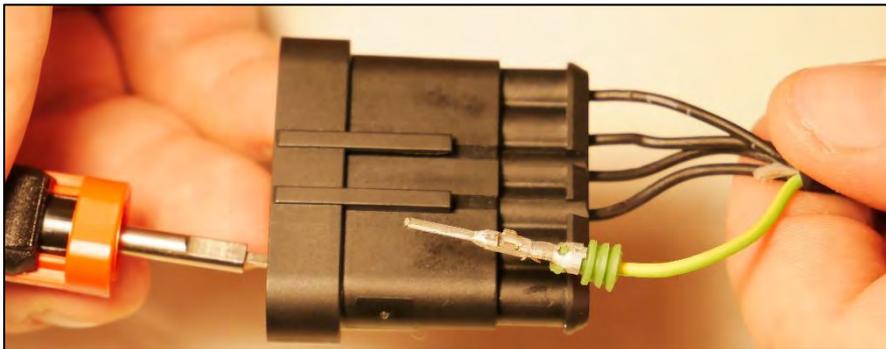


Figure 44



Figure 45

- Reassemble the control panel SUPERSEAL connector and the control unit SUPERSEAL connector.
- Connect the control panel connector (1) to the control unit connector (2) (see Fig. 46).

## Legend

Item 1

Connector from control panel for connection to control unit

Item 2

Connector from control unit for connection to control panel

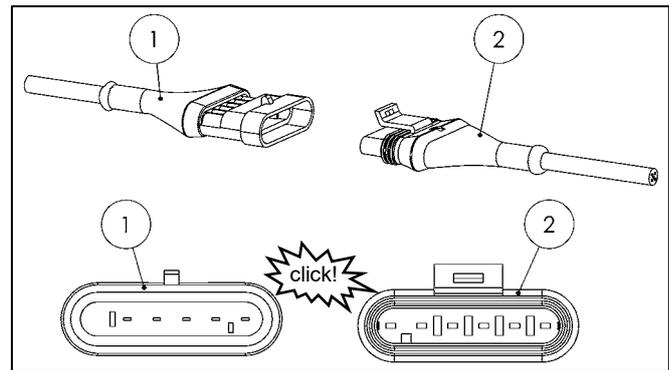


Figure 46

### 4.5.3 Connecting the cables (front of vehicle)

#### **⚠ WARNING**

#### **Vehicle battery short-circuit**

Improper connection of the device to the vehicle battery can cause a short-circuit and explosion of the battery.

Risk of damage to property, fire, and injury.

- Follow the vehicle manufacturer's instructions for correctly handling the battery.

#### **NOTICE**

- Connect cables only to cables of the same color.

#### **Connect power cable**

Route the "power unit cable," positive cable, and negative cable (25 mm<sup>2</sup>) for the power supply to the terminals provided for the battery and connect (see example in Fig. 47).

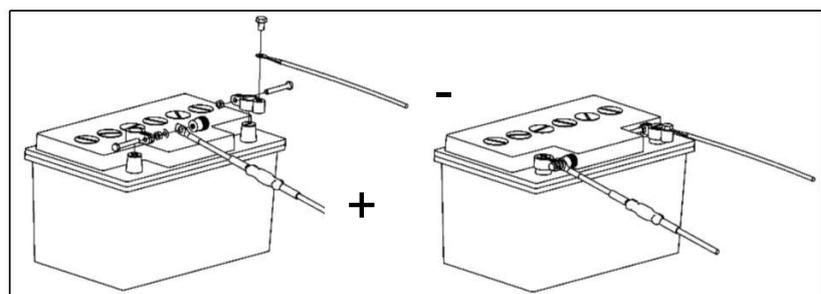


Figure 47

#### **Cabin switch unit**

- Drill a 16 mm dia. hole for the cabin switch (12) in a suitable location on the dashboard.
- Snap the cabin switch (12) into the hole.
- Route the cabin switch unit cable (11) from the lifting gear to the front.
- Connect the cabin switch unit as shown in Fig. 48.

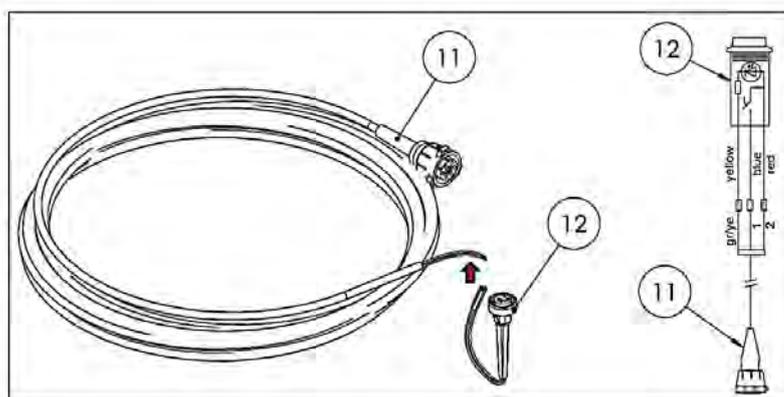


Figure 48

| Item No. | Part No.   | Description                                      | Qty. |
|----------|------------|--|------|
| 11       | 20 906 975 | Cabin switch unit cable 12 m with VEHH connector | 1    |
| 12       | 20 906 974 | Cabin switch                                     | 1    |

#### 4.6 Unpacking the platform

- Check the scope of delivery for completeness (see pages 4–8).

**IMPORTANT:** Dispose of all packing materials in accordance with environmental regulations.

#### 4.7 Raising the platform

- Lift the platform using suitable means, e.g. crane, assembly table, or pallet truck and pallet (see Fig. 49).

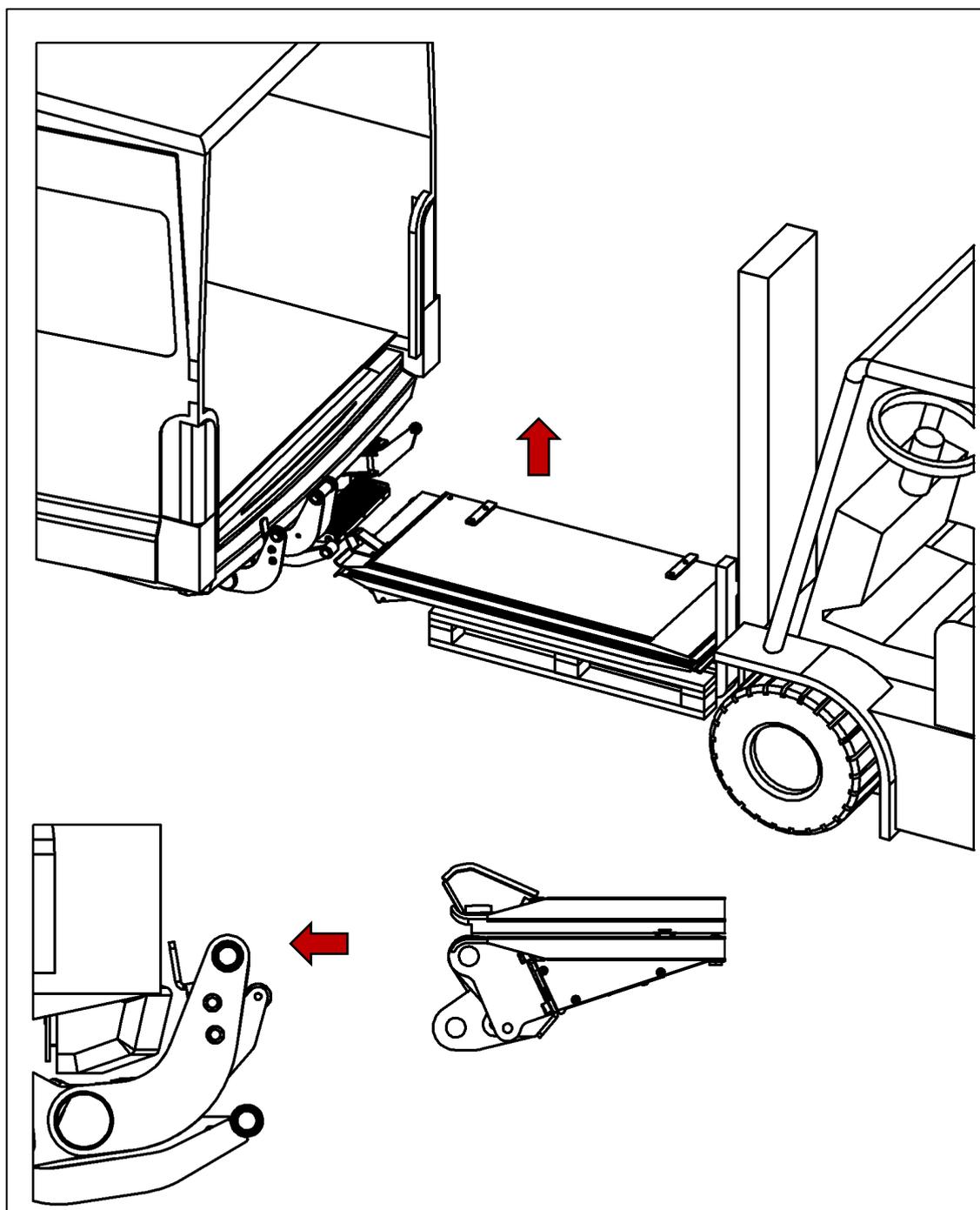


Figure 49

## 4.8 Installing the platform

### **⚠ WARNING**

#### Installation at crushing and shearing points

Fingers are at risk of being crushed or sheared when the platform is installed on the lifting gear.

- Be careful at the connecting points between the platform and lifting gear.

- Remove the transport lock (cable tie).
- Remove the pins a, b, c (see Fig. 50).

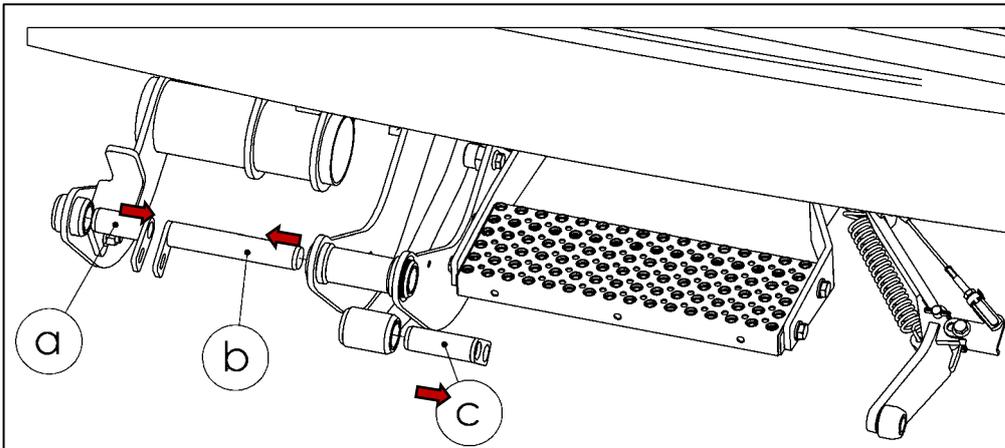


Figure 50

#### Legend

|        |     |                     |
|--------|-----|---------------------|
| Item a | Pin | Part No. 20 905 057 |
| Item b | Pin | Part No. 20 840 722 |
| Item c | Pin | Part No. 20 907 775 |

- Thread 6 O-rings (accessories kit parts list – Item No. 10) onto the steel bushings (see Fig. 51).

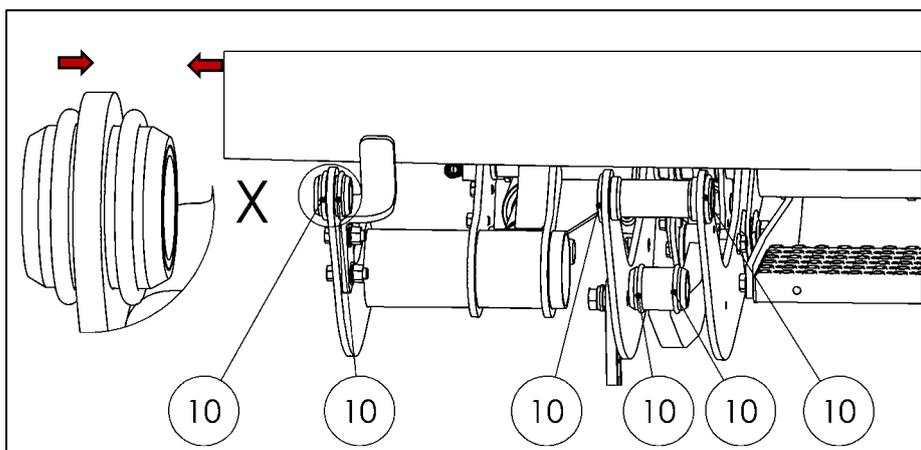


Figure 51

## Excerpt from parts list: accessories kit

| Item No. | Part No.   | Description | Standard     | Qty. |
|----------|------------|-------------|--------------|------|
| 10       | 20 840 117 | O-ring      | 40.65 x 5.33 | 6    |

- Loosen the platform stop (1) and push it toward the vehicle (see Fig. 52).

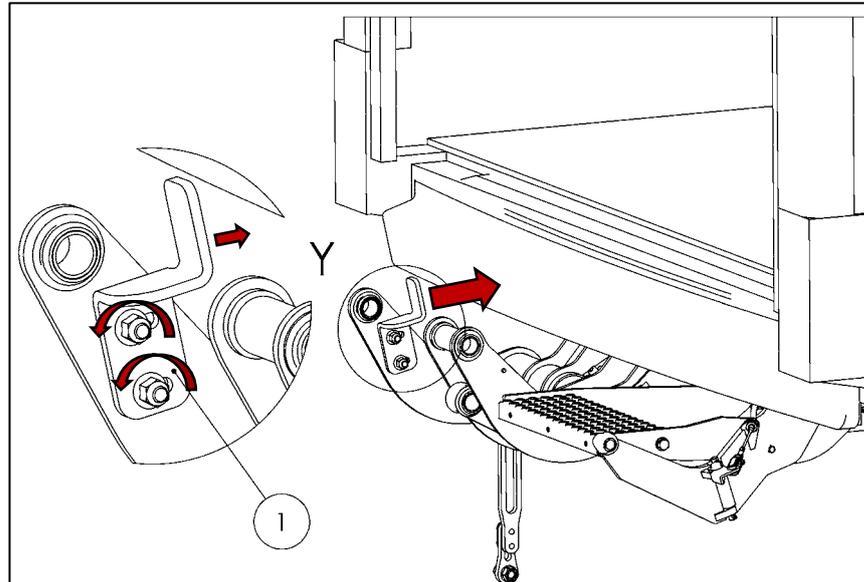


Figure 52

## Legend

Item 1 Platform stop

- Thoroughly grease the bearing bushes with the special assembly grease (accessories kit parts list – Item No. 13) (see Fig. 53).

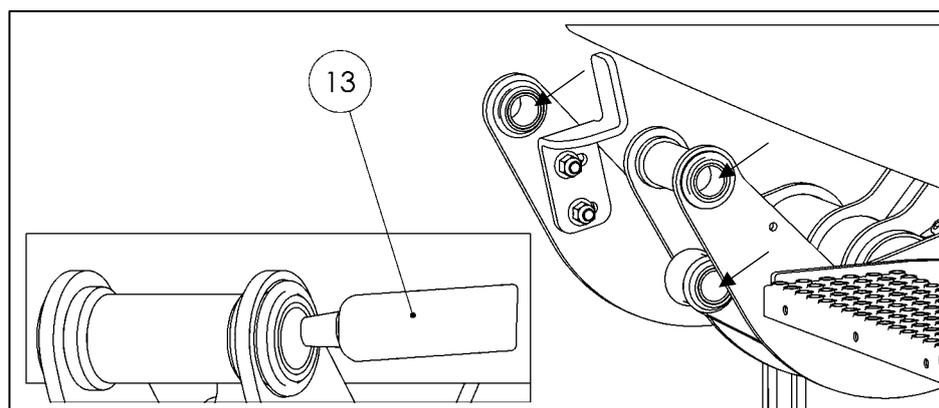


Figure 53

## Excerpt from parts list: accessories kit

| Item No. | Part No.   | Description        | Standard | Qty. |
|----------|------------|--------------------|----------|------|
| 13       | 20 840 405 | Lubricating grease |          | 1    |

- Align the top bearing points of the platform (platform attachment points) with the swing-arm bearing points (top attachment points of the lifting gear) (see Fig. 54).

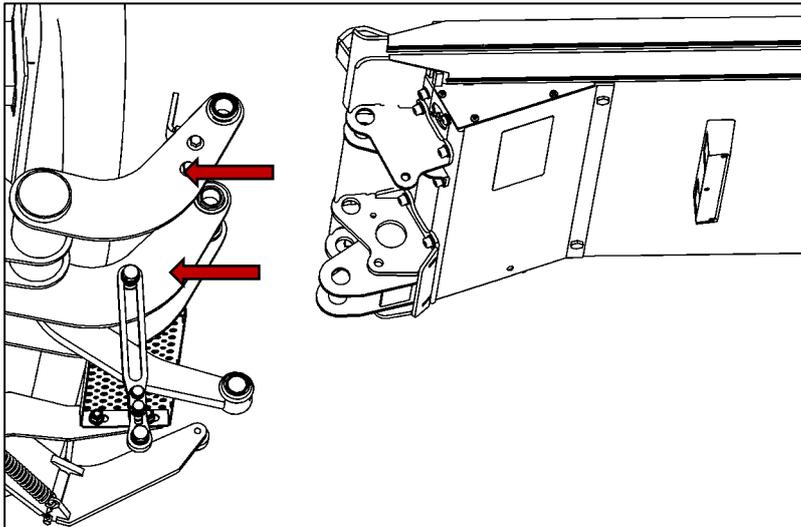


Figure 54

- Insert the two pins (a, b) through the top attachment points of the platform and the attachment points of the swing-arm assembly.

**IMPORTANT:** Note the direction of insertion (see Fig. 55).

- Mount the bolts from the accessories kit (2) to secure the pins and tighten them to 70 Nm.

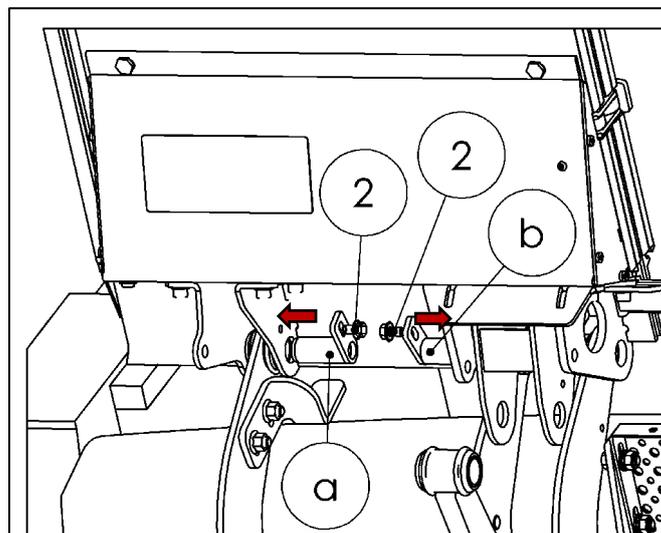


Figure 55

**Excerpt from parts list: accessories kit**

| Item No. | Part No.   | Description         | Standard                      | Qty. |
|----------|------------|---------------------|-------------------------------|------|
| 2        | 20 908 251 | Hexagon flange bolt | DIN 6921 - M10x15 - 10.9 - ZN | 2    |

**Legend**

|        |     |                     |
|--------|-----|---------------------|
| Item a | Pin | Part No. 20 905 057 |
| Item b | Pin | Part No. 20 840 722 |

- Lift the tip of the platform until the closing-rod bearing point (attachment point for the closing rod) is aligned with the swing-arm bearing point (bottom attachment point on the platform) (see Fig. 56).

**IMPORTANT:** If necessary, slightly retract or extend the closing rod.

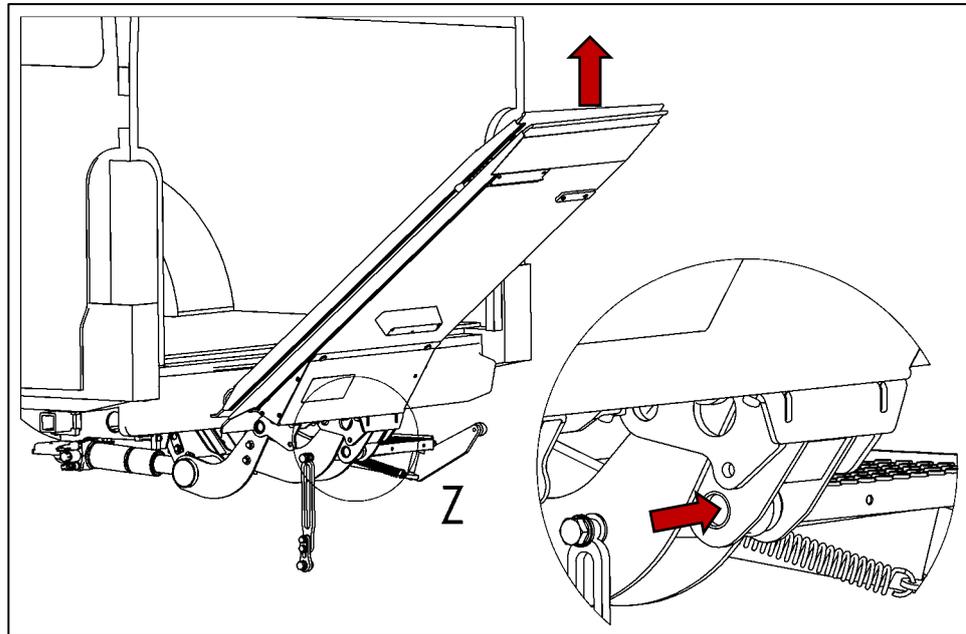


Figure 56

- Insert the pin (c).
- Mount the screw (8) from the accessories kit to secure the pin (Fig. 57).

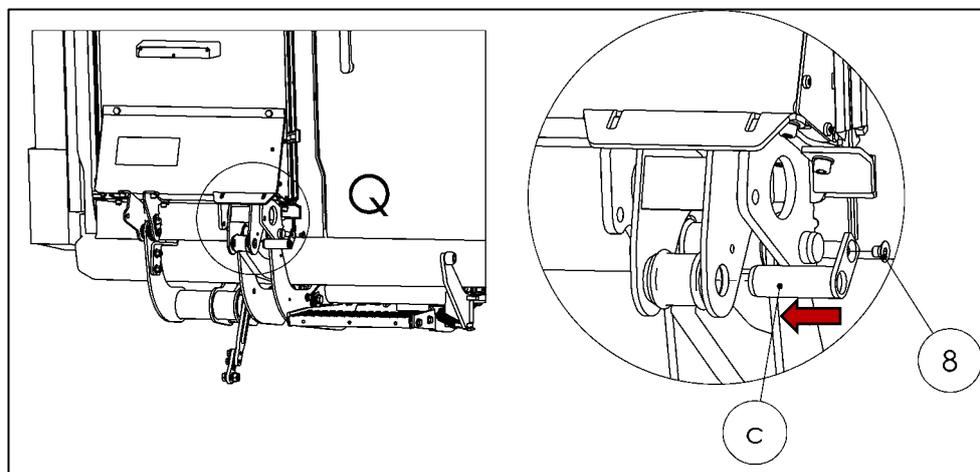


Figure 57

### Excerpt from parts list: accessories kit

| Item No. | Part No.   | Description                           | Standard               | Qty. |
|----------|------------|---------------------------------------|------------------------|------|
| 8        | 20 901 791 | Countersunk screw with hexagon socket | DIN 7991 - M10x12 - A2 | 1    |

### Legend

Item c      Pin      Part No. 20 907 775

- Move the 6 pre-fitted O-rings (accessories kit parts list – Item No. 10) into their correct positions (see Fig. 58).

**IMPORTANT:** All bearing points are sealed with O-rings.

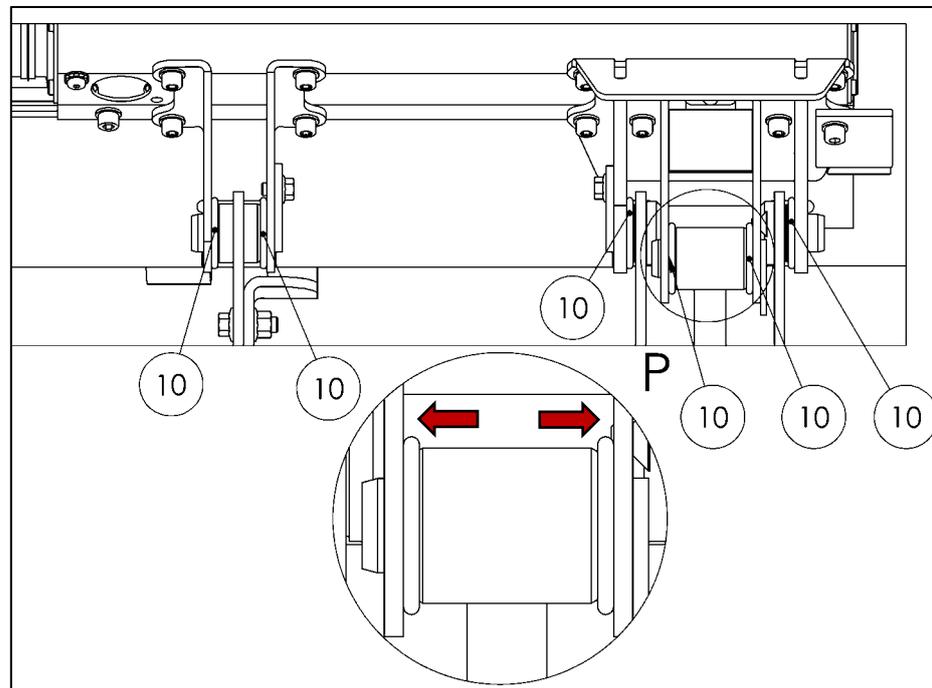


Figure 58

**Excerpt from parts list: accessories kit**

| Item No. | Part No.   | Description | Standard     | Qty. |
|----------|------------|-------------|--------------|------|
| 10       | 20 840 117 | O-ring      | 40.65 x 5.33 | 6    |

### 4.9 Mounting the platform lock on the closing arm

- Remove and properly dispose of the nut on the transport lock (1) (see Fig. 59).

**Legend**

Item 1      Nut      Part No. 80 000 052

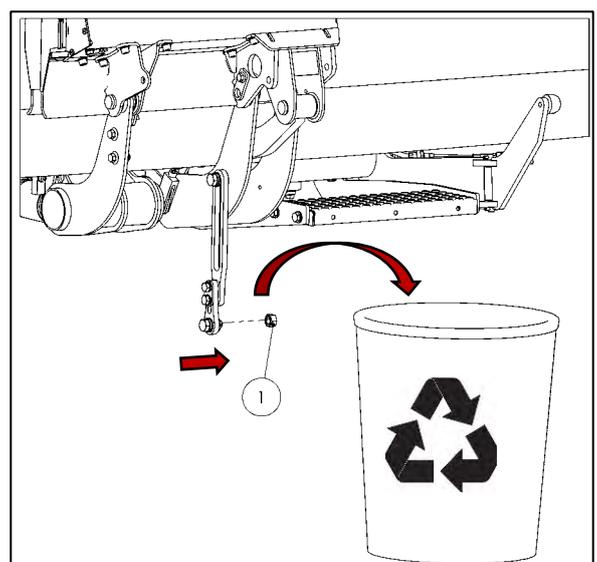


Figure 59

- Mount the screw (1) for the platform lock, including the spring washer (2), washers (3), and sleeve (4), on the platform bearing (see Fig. 60).

### Legend

- Item 1            Hexagon head screw
- Item 2            Spring washer
- Item 3            Washer
- Item 4            Sleeve

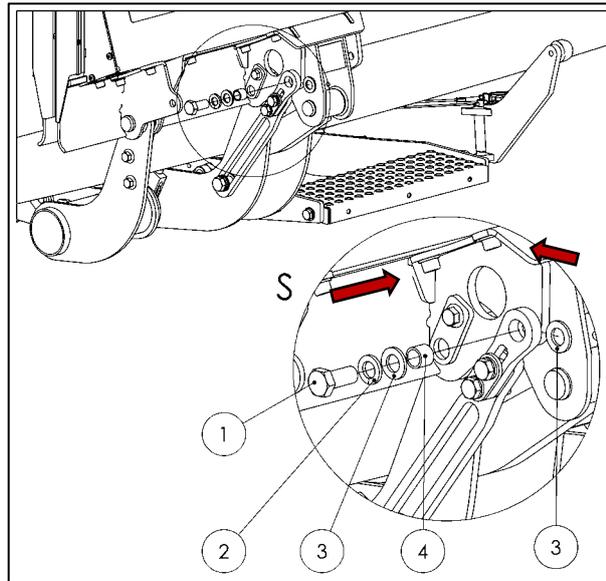


Figure 60

## 4.10 Mounting the ground rollers

### Required material from accessories kit

| Item No. | Part No.   | Description   | Standard                     | Qty. |
|----------|------------|---------------|------------------------------|------|
| 3        | 20 907 616 | Ground roller |                              | 2    |
| 4        | 20 907 615 | Bushing       | d20/16x32                    | 2    |
| 7        | 20 904 600 | Flange screw  | W 0263 - M16x40 - 10.9 - GEO | 2    |

- Remove the flange screws (7), bushings (4), and ground rollers (3) from the accessories kit (see Fig. 61).

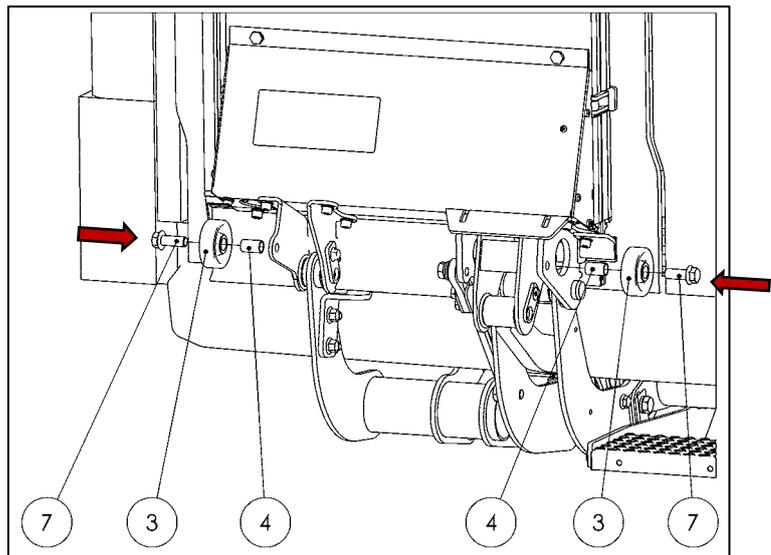


Figure 61

## 4.11 Connecting the platform to the electrical system

### 4.11.1 Connecting the platform cable to the electrical system

- Connect the platform cable connector (1) to the control unit connector (2) (see Fig. 62).

**IMPORTANT:** The control unit connector is identified by the white plastic cover on the cable.

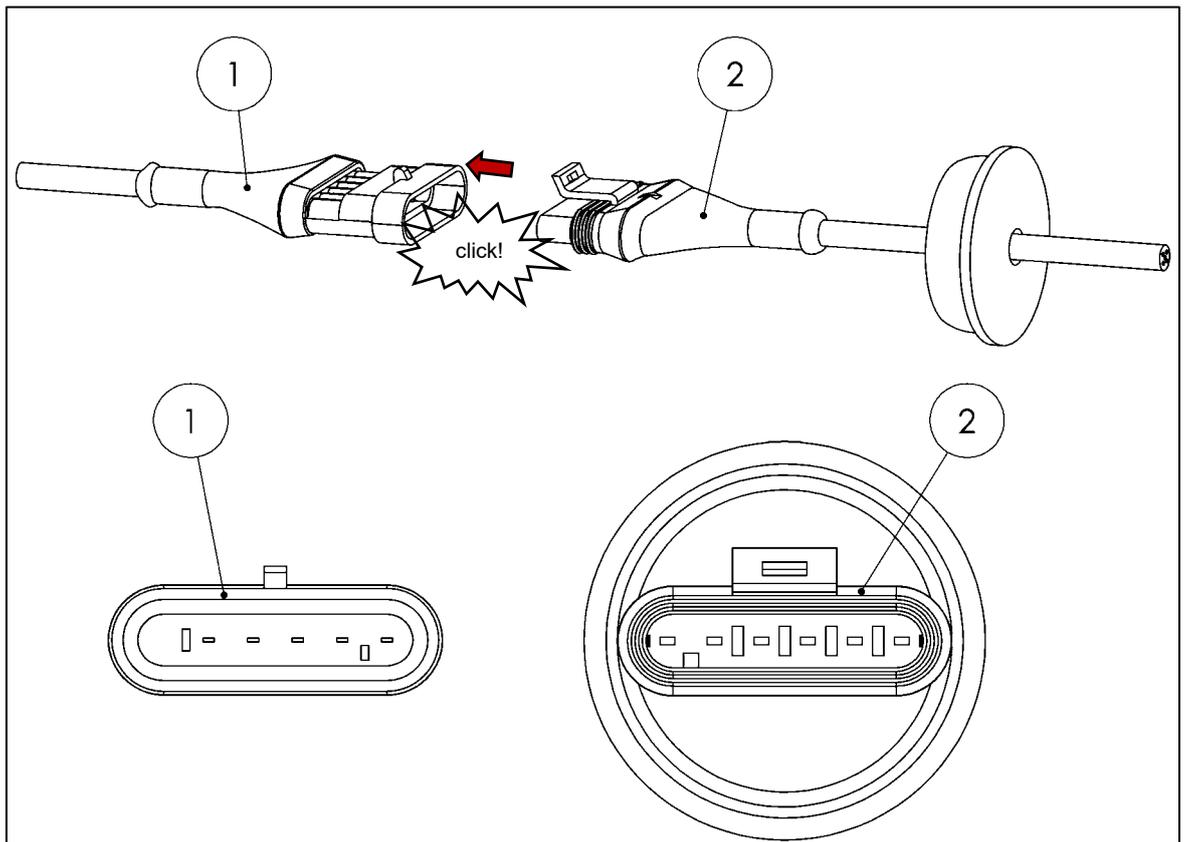


Figure 62

#### Legend

- Item 1 Platform connector for connection to control unit
- Item 2 Control unit connector for connection to platform

## 4.11.2 Connecting the license plate light

- Find the cable connection point for the license plate light in the column (a) on the ProMaster (see Fig. 63).

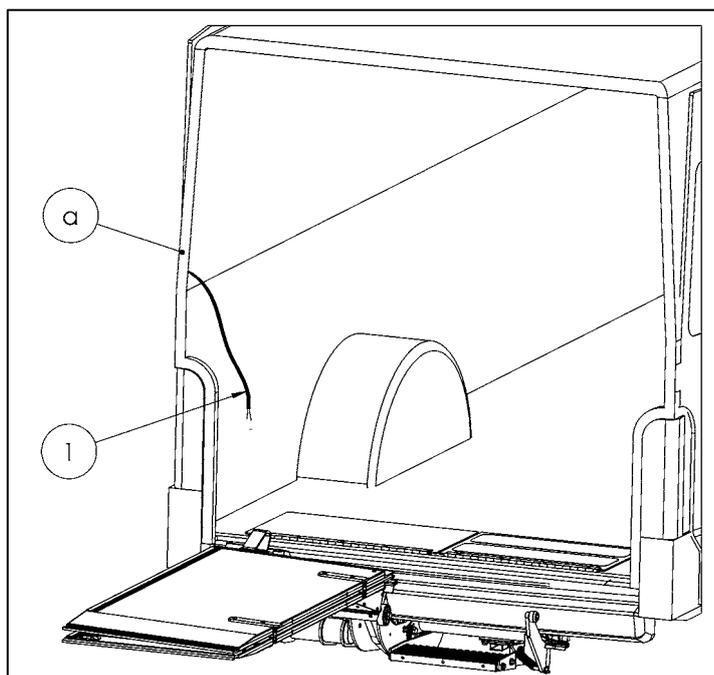


Figure 63

- Route the license plate light cable (2) (cable outlet from platform's aluminum torsion box) along the closing arm (see Fig. 64).

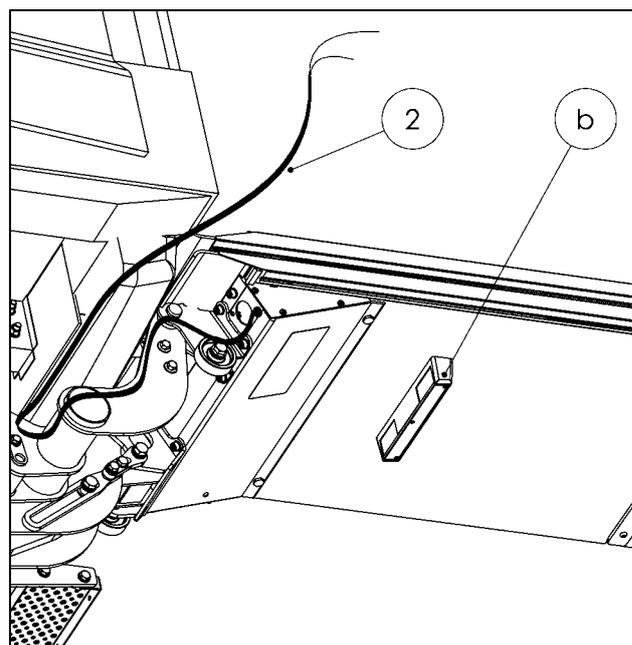


Figure 64

### Legend

Item b License plate light

- Join the two cables (1) and (2) and connect.

**IMPORTANT:** Follow the vehicle manufacturer's installation guidelines.

**4.12 Mounting the license plate holder**

- Mount the license plate holder below the license plate light.

**IMPORTANT:** When positioning the holder, make sure the license plate is sufficiently illuminated.

**4.13 Mounting the bridge plates (20 910 374)**

- Fasten the bridge plate with the non-skid coating (2) on the right side. The non-skid coating must face upward when the bridge plate is folded shut (see Fig. 65).
- Fasten the non-coated bridge plate (1) on the left side (see Fig. 65).

**Legend**

- Item 1      Bridge plate left
- Item 2      Bridge plate with non-skid coating

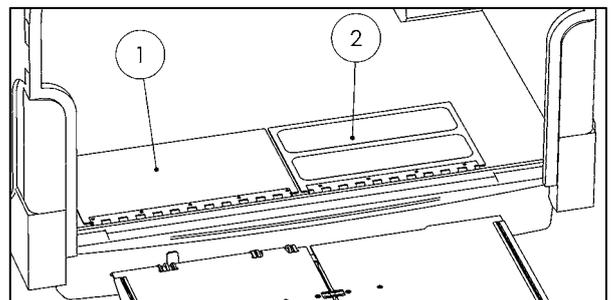


Figure 65

**4.14 Mounting the warning flags**

- Remove the warning flag kit (14, Part No. 60 710 330) from the accessories kit and mount it in accordance with the installation instructions below (Fig. 66, Fig. 67, and Fig. 68).

**Required material from accessories kit**

| Item No. | Part No.   | Description  | Standard | Qty. |
|----------|------------|--------------|----------|------|
| 14       | 60 710 330 | Warning flag | Kit      | 1    |

**IMPORTANT:**

**Mounting specifications:**

**Comply with these mounting specifications** (see Fig. 16):  
 Dimension **A** – Move the holder far enough away from the tip of the platform to leave 20 mm clearance between the holder and the ground when the platform is lowered. The holder must not touch the ground when the platform is lowered.  
 Dimension **B** – Position the warning flag as close as possible to the outside platform edge.

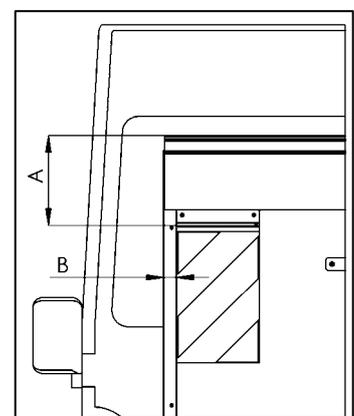


Figure 66

- Close the liftgate (place in driving position).
- Align the warning flag holder (14c).

**IMPORTANT:** Comply with the mounting specifications.

- Transfer the existing holes in the warning flag holder to the platform and pre-drill holes for the 2 blind rivets.
- Rivet the warning flag holder (14c) using 2 blind rivets (14d).
- Slide the left warning flag (14a) into the slot in the warning flag holder (14c).

**IMPORTANT:** Identify the left warning flag (14a) by the angle of the pattern (see Fig. 17)

- Secure the warning flag using the Phillips-head screw (14e).

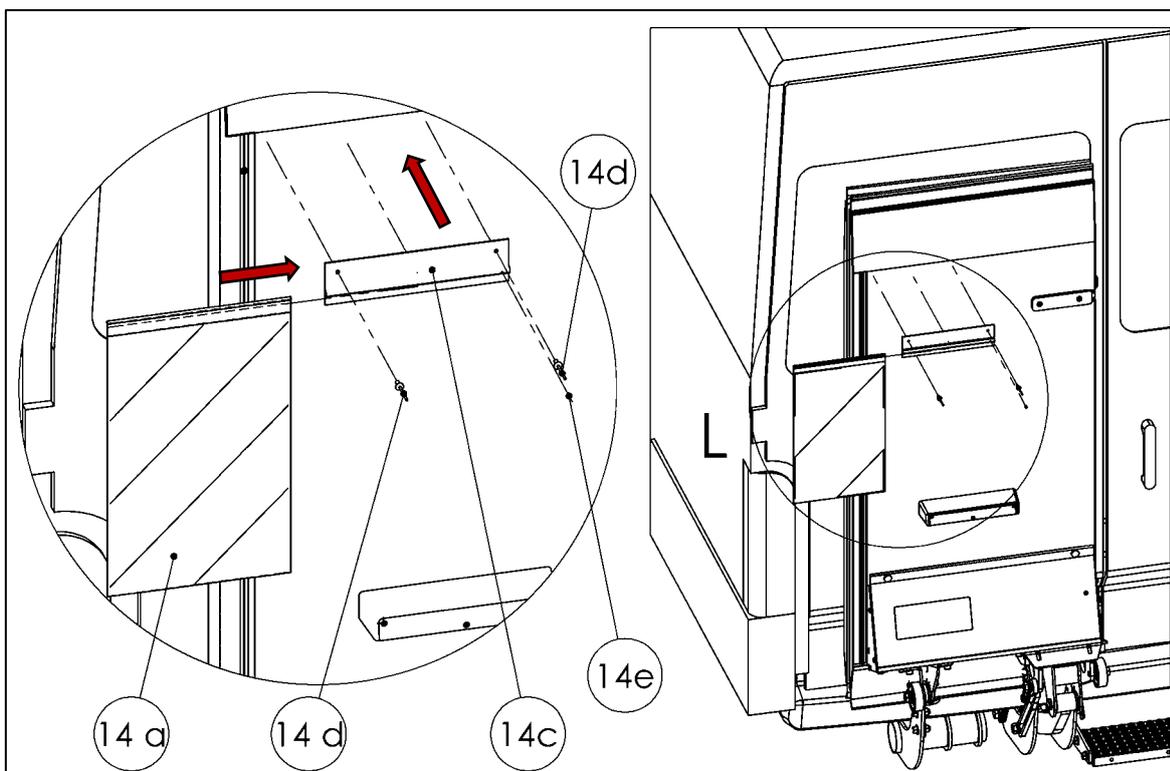


Figure 67

**Legend**

|          |                     |
|----------|---------------------|
| Item 14a | Left warning flag   |
| Item 14b | Right warning flag  |
| Item 14c | Warning flag holder |
| Item 14d | Blind rivet         |
| Item 14e | Phillips-head screw |

- Move the liftgate to the horizontal position.
- Fold out (open) the liftgate.
- Bring the open liftgate as far as necessary into the vertical position to comfortably mount the right warning flag.

**⚠ CAUTION****Not a normal operating position**

Risk of injuring yourself or damaging the vehicle or liftgate.

- Align the warning flag holder (14c).

**IMPORTANT:** Comply with the mounting specifications.

- Transfer the existing holes in the warning flag holder to the platform and pre-drill holes for the 2 blind rivets.
- Rivet the warning flag holder (14c) using 2 blind rivet (14d).
- Slide the right warning flag (14a) into the slot in the warning flag holder (14c).

**IMPORTANT:** Identify right warning flag (14a) by the angle of the pattern (see Fig. 68)

- Secure the warning flag using the Phillips-head screw (14e).

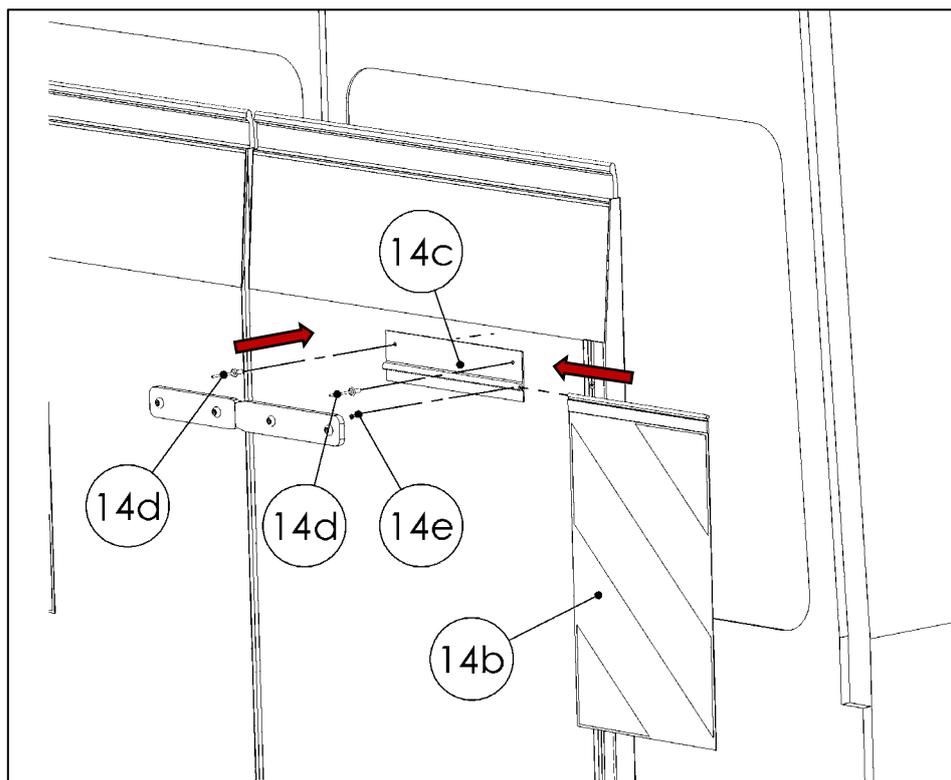


Figure 68

**Legend**

|          |                     |
|----------|---------------------|
| Item 14a | Left warning flag   |
| Item 14b | Right warning flag  |
| Item 14c | Warning flag holder |
| Item 14d | Blind rivet         |
| Item 14e | Phillips-head screw |

**4.15 Affixing the danger notice sticker**

- Affix the danger notice sticker “Safe handling of the liftgate.”

**IMPORTANT:** This sticker is supplied with all new liftgates. The installing company must place it in an easily visible location on the inside of the vehicle cargo area.

The danger notice sticker uses pictograms to indicate potential incorrect and correct use of the liftgate.

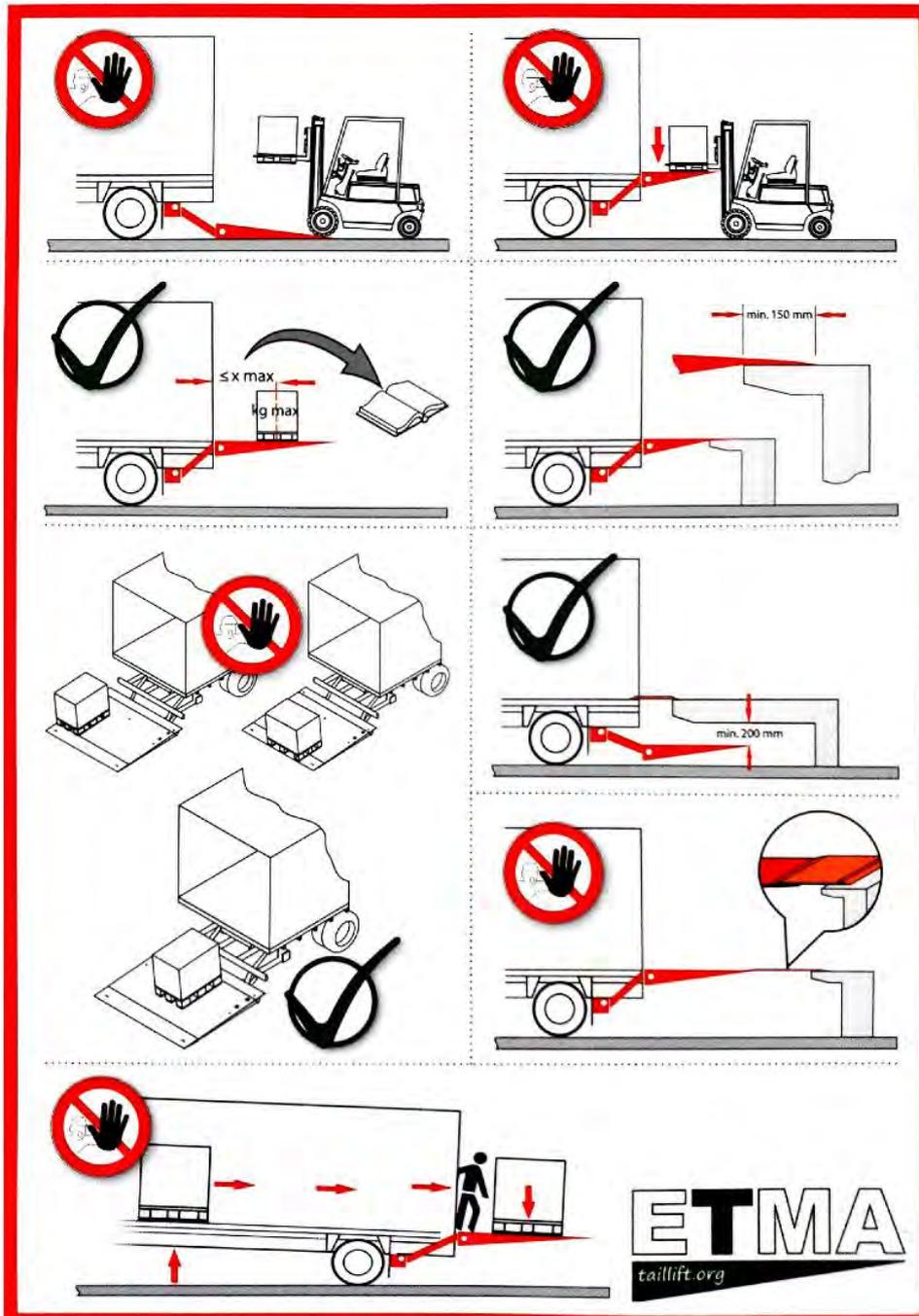


Figure 69

## 5 Adjusting the liftgate

### 5.1 Adjusting the lift height to vehicle floor with lifting cylinder

Adjust the platform to the desired position in relation to the vehicle floor by turning the lifting cylinder piston head (pos. 1) to the left (platform rises), or to the right (platform lowers). See Fig. 70.

**NOTICE**

- In order to perform this adjustment, the lifting cylinder head (pos. 1) must first be disconnected from the frame assembly by removing the safety pin!

**Legend**

Item 1 Piston head on lifting cylinder

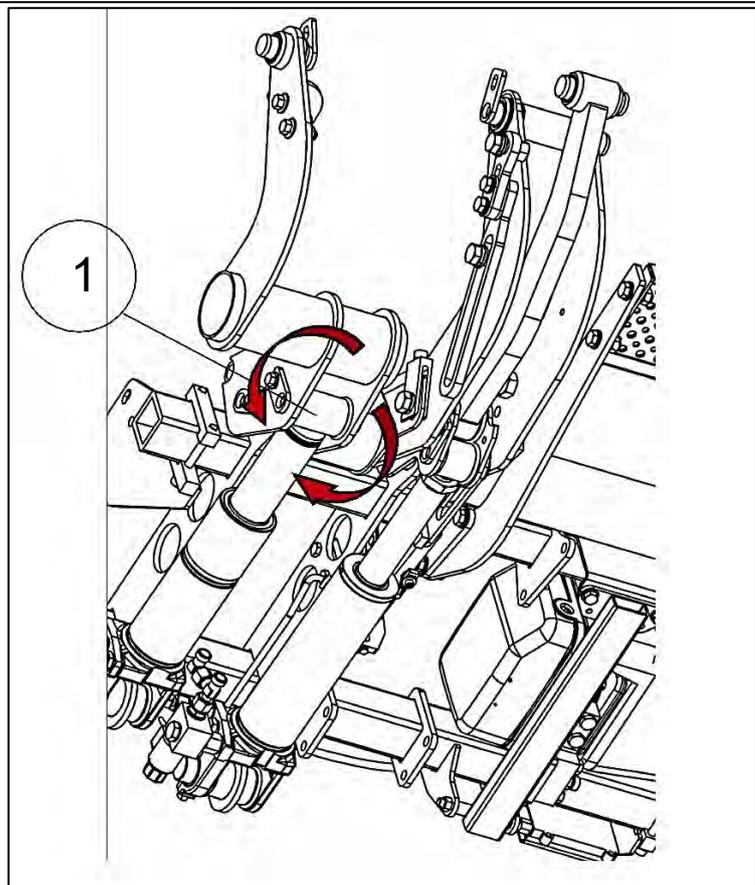


Figure 70

### 5.2 Adjusting the platform vertically to the vehicle body with the tilting cylinder head (Driving position)

Once the platform was adjusted in height, it may be adjusted vertically in closed (driving) position, in relation to the vehicle's body (see Fig. 71). This adjustment is performed by turning the head of the tilting cylinder (Pos. 1).

**NOTICE**

- In order to perform this adjustment, the tilting cylinder head (pos. 1) must first be disconnected from the frame assembly by removing the safety pin!

- If the tilting cylinder head (pos. 1) is turned to the left, the platform tip moves towards the vehicle's body.
- If the tilting cylinder head (pos. 1) is turned to the right, the platform tip moves away from the vehicle's body.

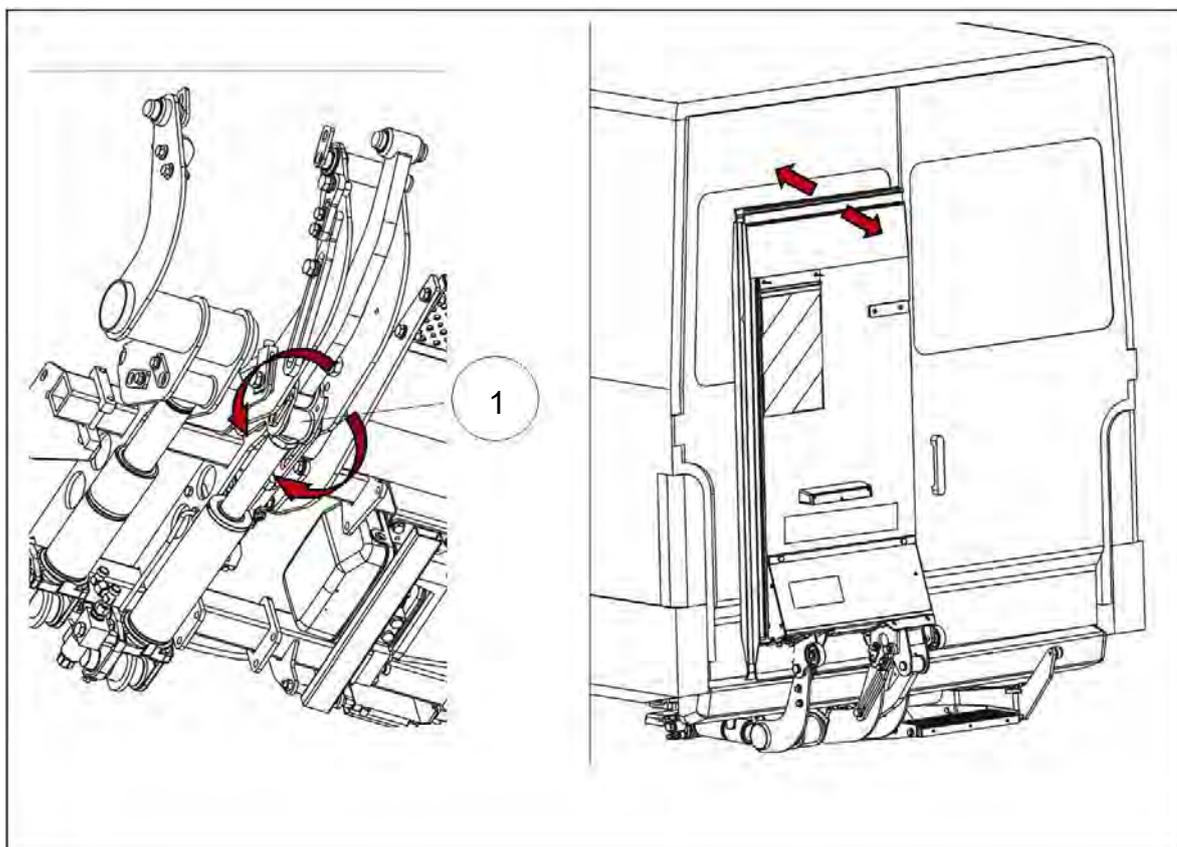


Figure 71

**Legend**

Pos. 1      Piston head on tilting cylinder

## 5.3 Aligning the platform parallel to the vehicle floor (non-foldable section)

### NOTICE

- If no readjustment is necessary, make sure that the screws (1 and 3) are securely tightened.

- To align the platform parallel to the vehicle floor, adjust the lifting gear using the left-hand adjustment fork (adjustment screw accessible from above) (see Fig. 72).
- With the platform open, operate the lifting gear to the height of the vehicle floor (not against the stop).

### Legend

- Item 1      Adjustment screw
- Item 2      Adjustment fork
- Item 3      Hex bolt

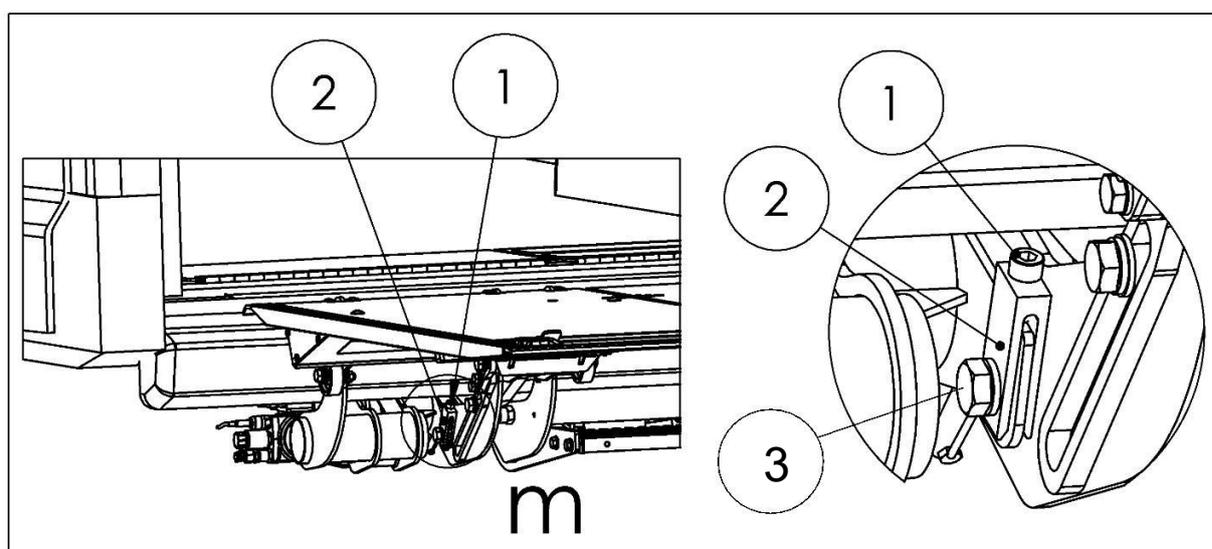


Figure 72

- Loosen the hex bolt (3).
- Rotate the adjustment screw (1) to the left or right.
- Rotating the adjustment screw (1) to the right moves the right side of the platform closer to the vehicle chassis. This slightly lifts the platform on the right side of the vehicle (see Fig. 73).
- Rotating the adjustment screw (1) to the left moves the right side of the platform away from the vehicle chassis. This slightly lowers the platform on the right side of the vehicle (see Fig. 73).

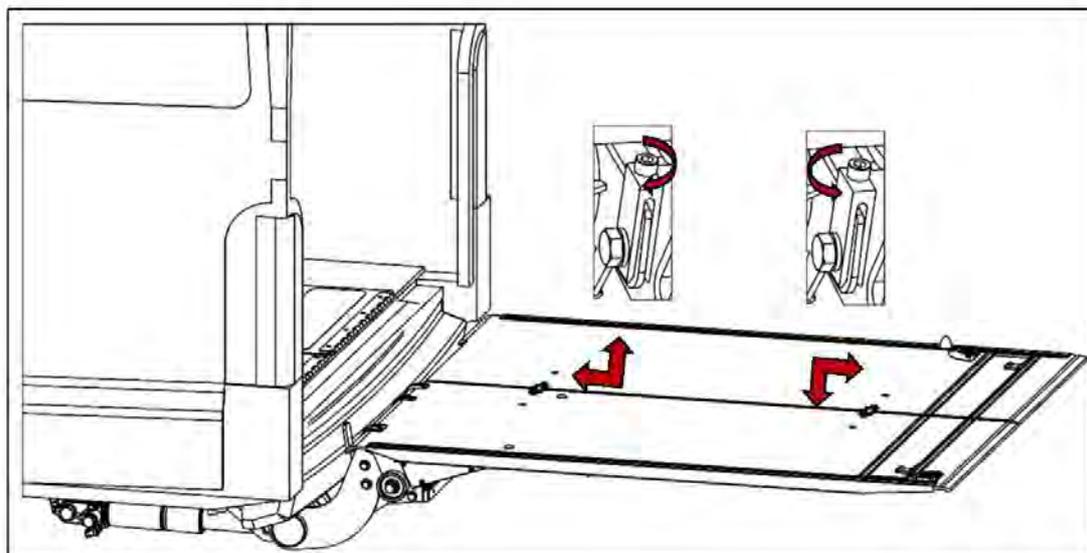


Figure 73

- When finished adjusting, tighten the bolt (3) for securing the torsion bar to 115 Nm (refer to torque table on page 65 and see Fig. 74).

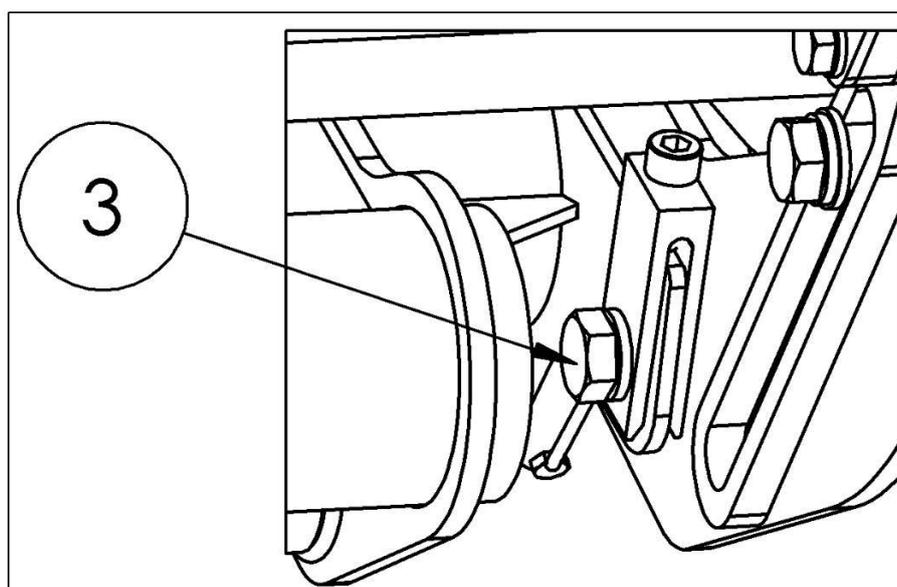


Figure 74

## 5.4 Aligning the platform (fold-over section) parallel to the vehicle floor

- If necessary, adjust the height of the fold-over section on the right side of the platform using the right-hand adjustment fork (2) (adjustment screw accessible from below) (see Fig. 75).
- Use the adjustment screw (1) to set the support arm (4) so that the platform-stop rests on and is supported by the support arm (4).

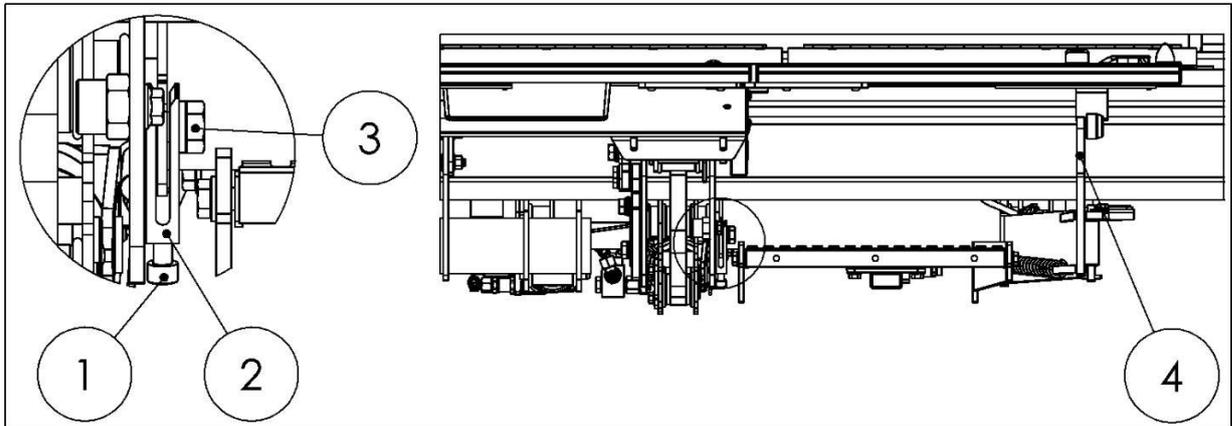


Figure 75

### Legend

|        |                  |
|--------|------------------|
| Item 1 | Adjustment screw |
| Item 2 | Adjustment fork  |
| Item 3 | Hex bolt         |
| Item 4 | Support arm      |

### IMPORTANT:

**At the same time, check the stop (Section 5.5) on the foldover section.**

- Rotating the adjustment screw (1) to the right lifts the support arm (4).
- Rotating the adjustment screw (1) to the left lowers the support arm (4) (see Fig. 76).
- When finished adjusting, tighten the bolt (3) for securing the torsion bar to 115 Nm (refer to torque table on page 65).

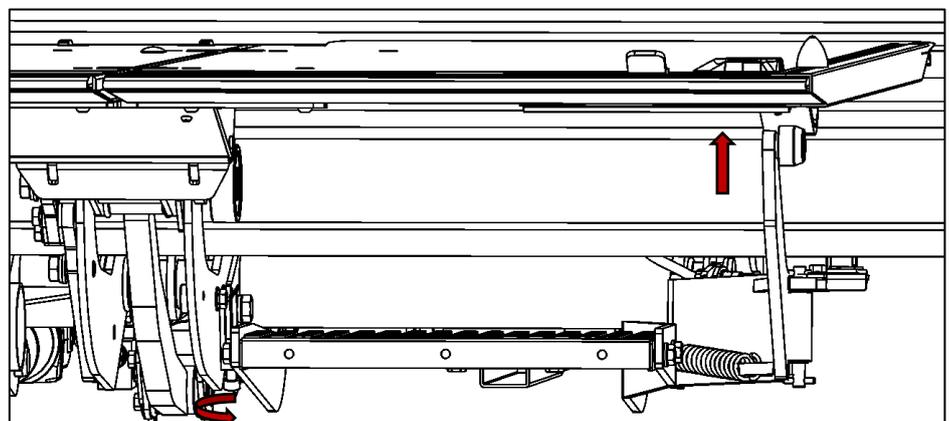


Figure 76

### 5.5 Checking the stop on the fold-over section of the platform

- Check the stop on the fold-over section of the platform.

**IMPORTANT:** The roller (1) on the support arm (2) must remain against the stop (3) throughout the entire lifting process. If necessary, loosen the stop (3) and shift it slightly by loosening 2 cheese-head screws (4). At the same time, the stop (3) must not be shifted too far. When the platform is folded over, the plastic spacer (5) must hold the platform in place (see Fig. 77).

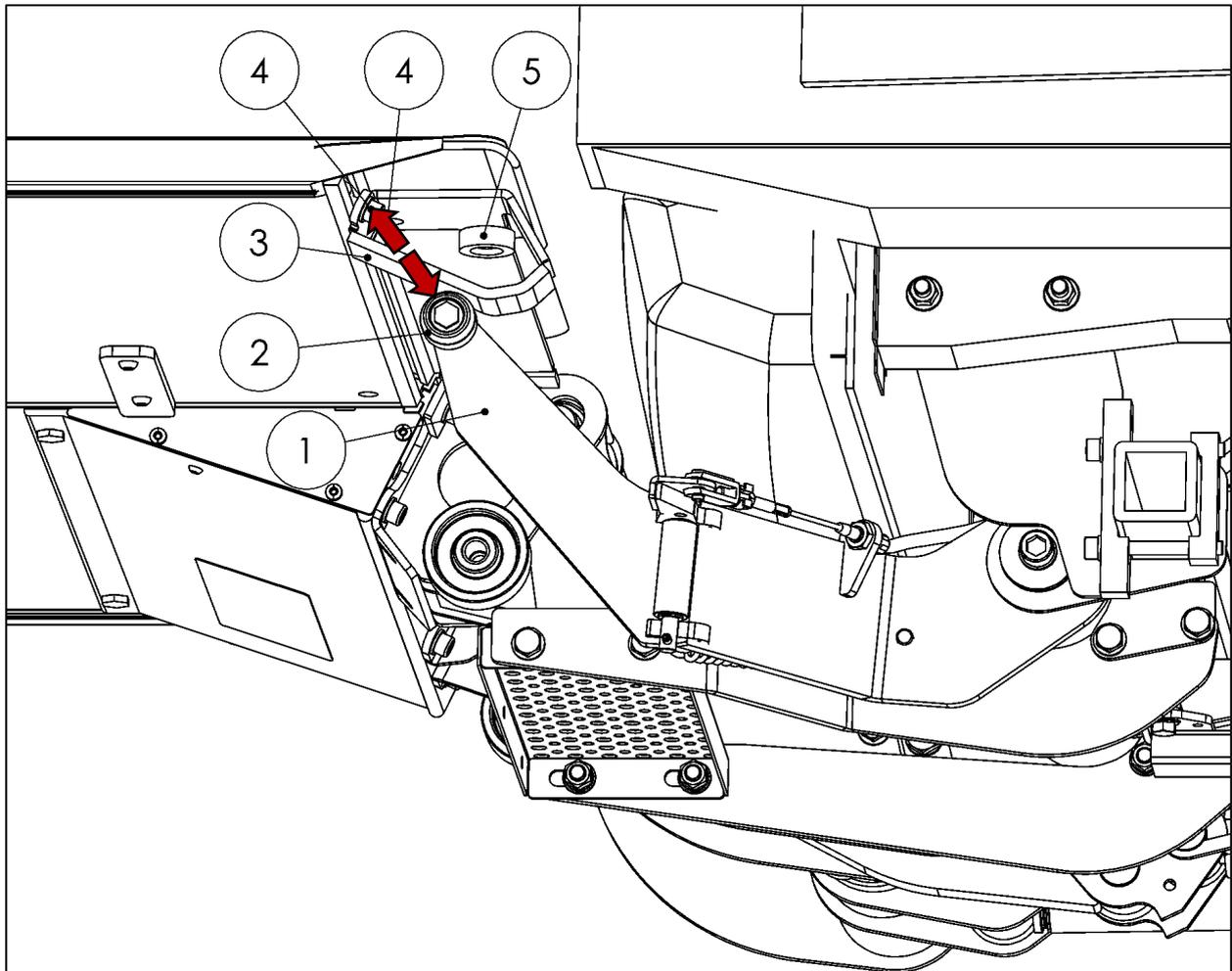


Figure 77

#### Legend

- |        |  |
|--------|--|
| Item 1 | Support arm (supports fold-over section of platform when platform is open) |
| Item 2 | Roller on support arm  |
| Item 3 | Stop (on fold-over section of platform)                                    |
| Item 4 | Cheese-head screw (2 pieces)   |
| Item 5 | Plastic spacer (holds platform in driving position)                        |

## 5.6 Setting the end stop for the closed platform

The end stop for the platform in the closed position is mounted on the closing arm. The platform requires no additional stops on the vehicle.

**IMPORTANT:** Adjust the platform so that it stands vertically behind the vehicle when closed and in the driving position.

- Loosen the 2 screws (1) on the clamping plate (2) (see Fig. 78).

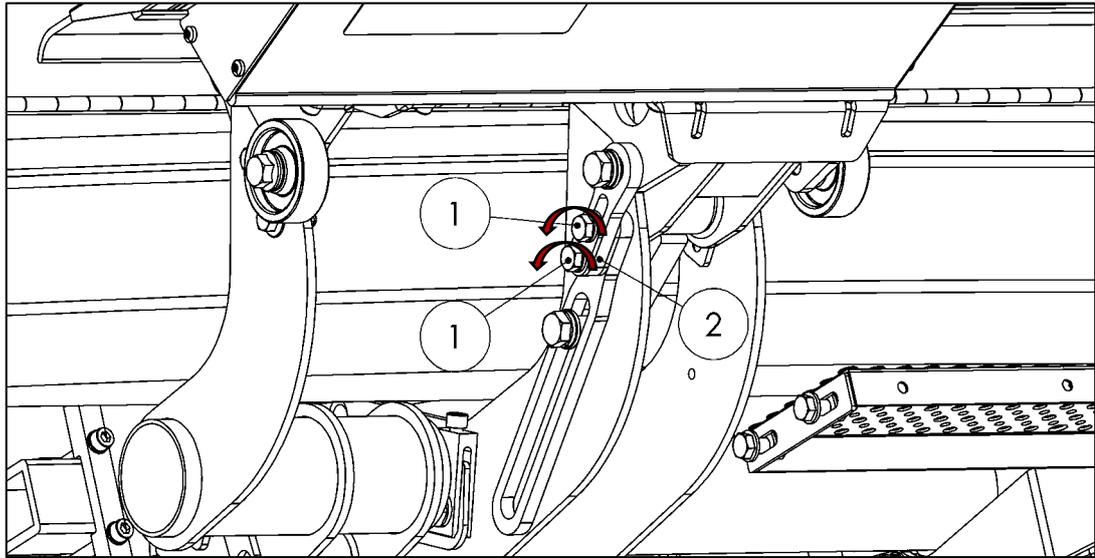


Figure 78

- Hydraulically close the platform until it is close to vertical, leaving it 3° to 4° open (see Fig. 79).

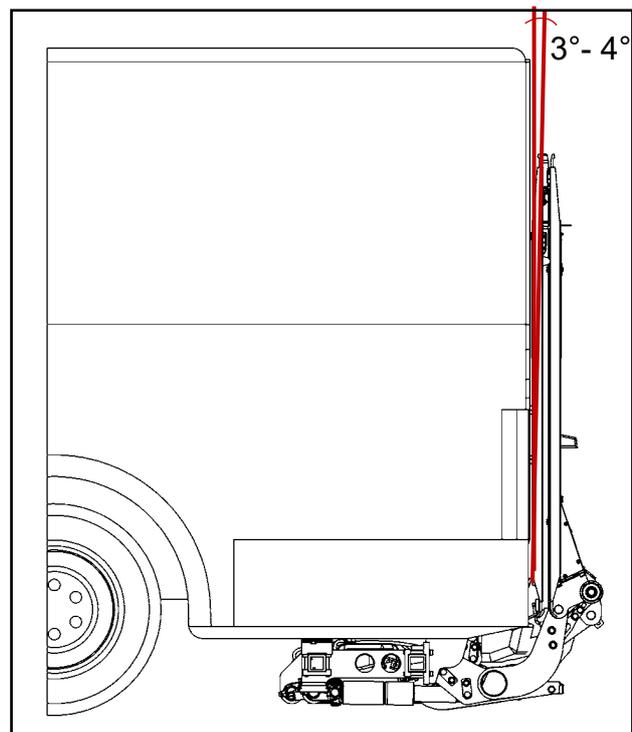


Figure 79

- Retighten the 2 screws (1) on the clamping plate (2) on the platform stop to a torque of 195 Nm (see Fig. 80).

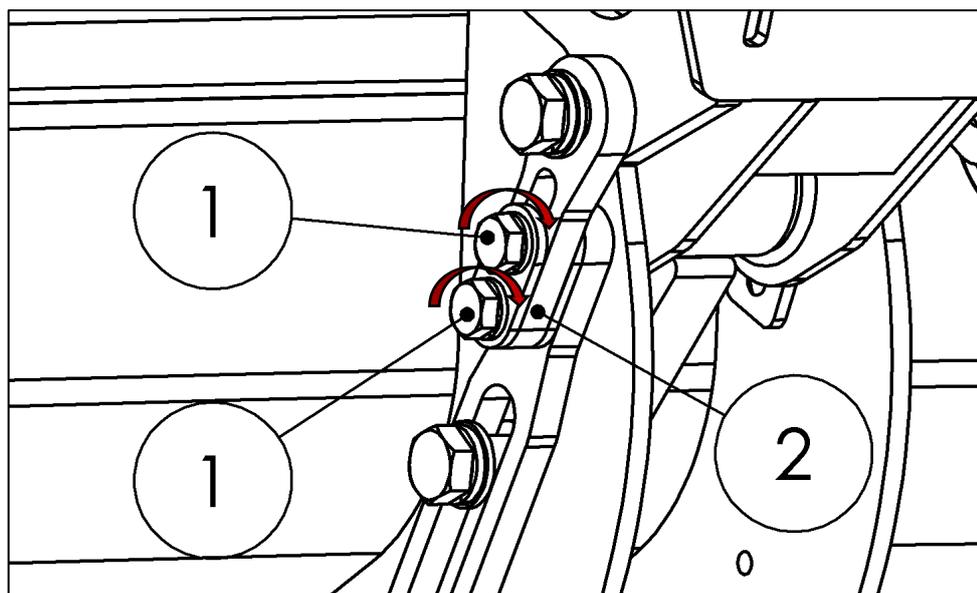


Figure 80

- When you reclose the platform, it will stand vertically behind the vehicle (see Fig. 81).

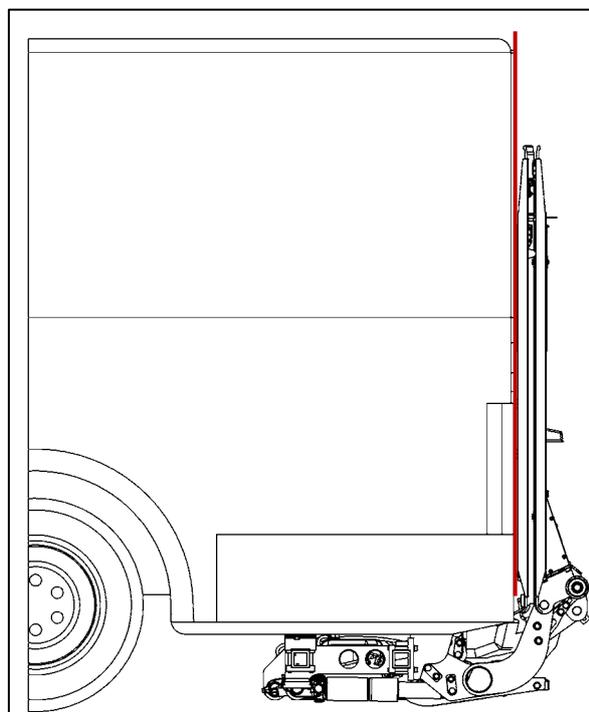


Figure 81

## 5.7 Adjusting the stopper for fastening the platform

The stopper fastens the right-hand fold-over section of the closed platform and keeps the platform from hitting the vehicle while driving.

**IMPORTANT:** Make the adjustment with the platform folded and closed (driving position).

- Loosen the nuts (1) and bolts (2) on the stopper (3).
- Press the stopper (3) firmly against the plastic disk (4) (see Fig. 82).

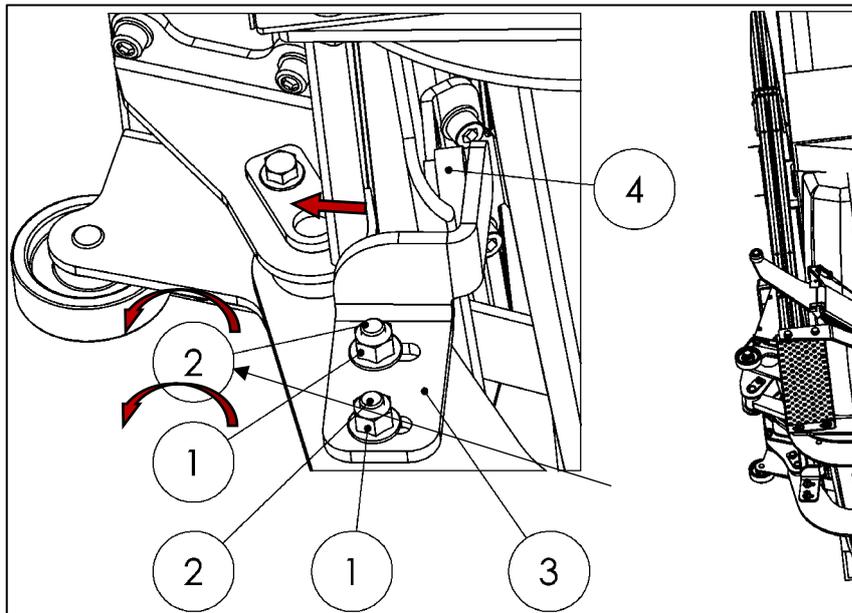


Figure 82

### Legend

|        |              |
|--------|--------------|
| Item 1 | Hexagon nut  |
| Item 2 | Screw        |
| Item 3 | Stopper      |
| Item 4 | Plastic disk |

- Tighten the nuts (1) and bolts (2) on the stopper (3) to a torque of 80 Nm (see Fig. 83).

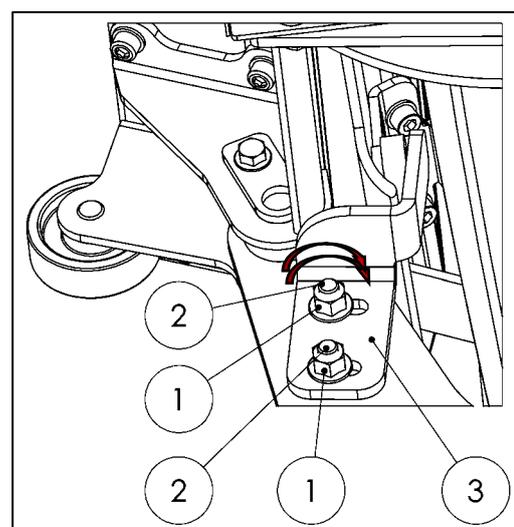


Figure 83

### 5.8 Adjusting the support arm for the driving position using the Bowden cable

Adjust the support arm (1) so that it can be pulled as close to the vehicle as desired when the platform is closed. The adjustment is made outside at the Bowden cable (2) and, if applicable, also at the screw on the lever (3). While making the adjustment, release the Bowden cable (2) and open the platform (see Fig. 84).

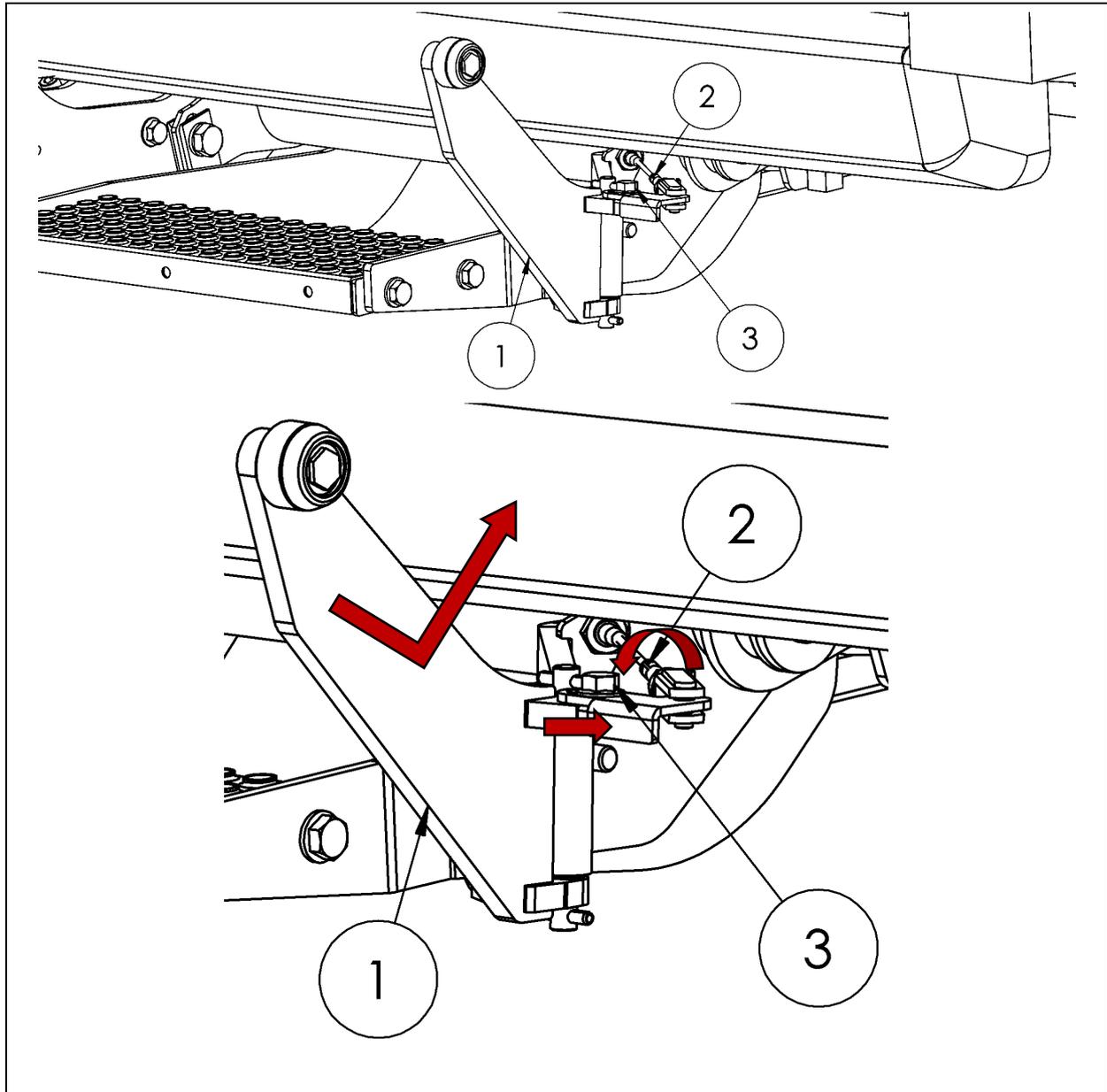


Figure 84

#### Legend

|        |              |
|--------|--------------|
| Item 1 | Support arm  |
| Item 2 | Bowden cable |
| Item 3 | Screw        |

## 5.9 Programming the tilt sensor

Before the first operation of the platform, it is necessary to program the tilt sensor to ensure that the tilting functions are working properly. This is done by pressing a combination of buttons on the control panel (a) (see Fig. 85).

- Using the manual control, move the platform to a horizontal position.

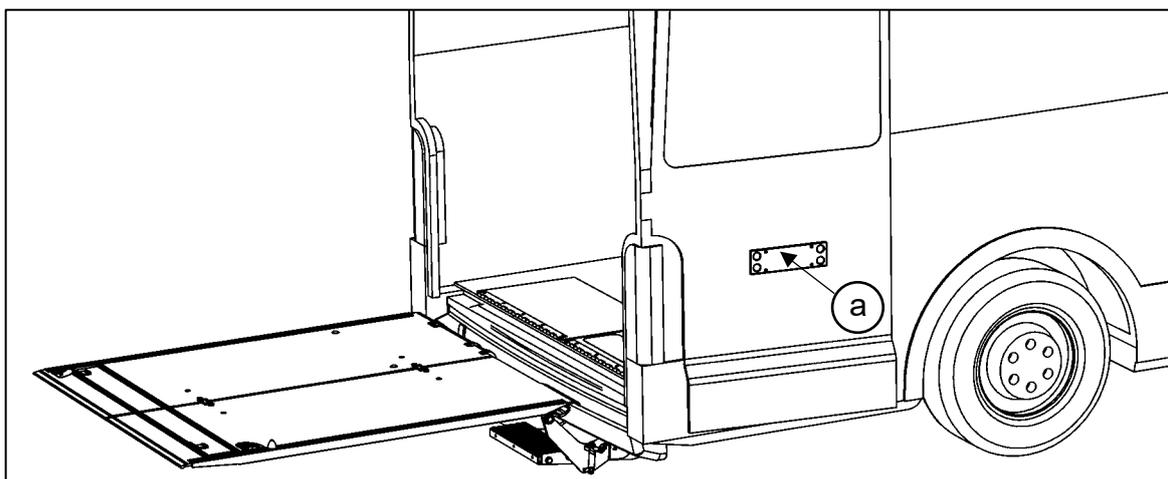


Figure 85

- On the control panel (a), press button 1 (top left) 3 times, then
- On the control panel (a), press button 2 (top right) 3 times (see Fig. 86).

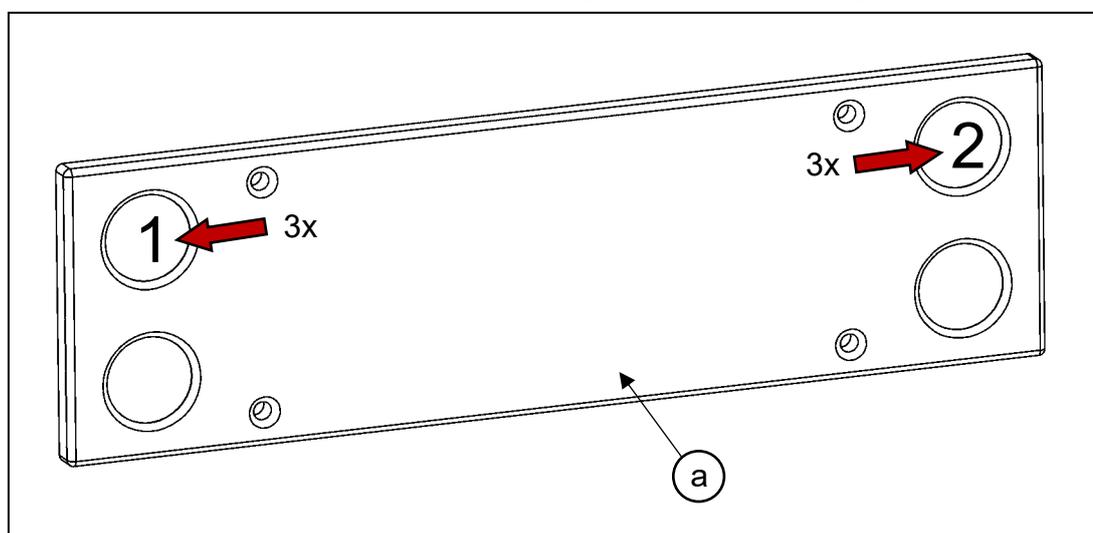


Figure 86

**IMPORTANT:** Each of the programming sequences with button 1 and then button 2 must be completed within a period of 2 seconds.

The selected position will continue to be used each time the liftgate is operated until the sensor is reprogrammed.

## 6 Testing the liftgate

### 6.1 Function test

- Test: opening, lifting, lowering, tilting down, tilting up, closing

#### **⚠ CAUTION**

##### **Platform at ground level**

In the fully lowered position, the platform is easily overlooked and may cause people to trip, resulting in injury.

- If leaving the platform in this position for a longer period of time, secure the area.

### 6.2 Testing the operating speed

#### 6.2.1 Vertical speed

Test: vertical speed (lifting and lowering)

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

#### **⚠ WARNING**

##### **Permissible vertical speed exceeded**

Risk of injury when operating the liftgate.

- Contact customer service.

#### 6.2.2 Closing and opening speed (90° to 10°)

Test: angular velocity when opening and closing (see Fig. 87)

The angular velocity when opening and closing must not exceed **10°/sec.**

#### **⚠ WARNING**

##### **Permissible angular velocity exceeded**

**Risk of injury when operating the liftgate.**

- Contact customer service.

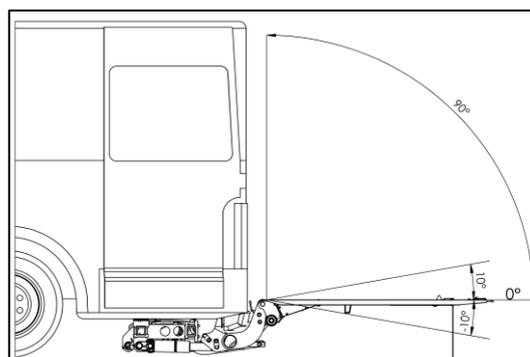


Figure 87

#### 6.2.3 Tilting speed (10° to -10°)

Test: angular velocity when tilting up and down (see Fig. 87)

The angular velocity when tilting up and down must not exceed **4°/sec.**

#### **⚠ WARNING**

##### **Permissible angular velocity exceeded**

Risk of injury when operating the liftgate.

- Contact customer service.

## 6.3 Load tests

### **WARNING**

#### High loading of components

Incorrect installation or defective components may cause components to fail and break.

Risk of injury when operating the liftgate.

- Perform all the load tests specified here.

#### 6.3.1 Static test

- Operate the horizontal platform to the height of the vehicle floor.
- Place a test load weighing 125% of the rated capacity on the platform within the loading distance.
- During a test period of 15 minutes, the platform must not lower more than 15 mm and must not tilt down more than 2°.

**IMPORTANT:** The permissible loading distance and the rated capacity are engraved on the liftgate's rating plate. The loading diagram on the rating plate shows the permissible loads when the loading distance is changed.

**IMPORTANT:** After the static test, the installer must inspect the liftgate for deformation.

#### 6.3.2 Dynamic test

- Test the lifting, lowering, and tilting functions using the maximum permissible load.

**IMPORTANT:** The pressure limiting valve is adjusted ex-works. A correction is generally unnecessary. If adjustment is necessary, contact the factory.

- The maximum permissible pressure is printed on the liftgate's rating plate.
- After performing the static and dynamic tests, visually inspect the hydraulics system for tightness.

#### 6.3.3 Testing against lifting an overload

- Perform a test to guarantee that a load of more than 125% of the maximum rated capacity cannot be lifted off the ground.

#### 6.3.4 Testing the safety devices

- Operate all the functions to their end positions until all the safety devices respond.

## 6.4 Explanation of diagnostic LED on the control unit

| LED monitoring function           | Cabin switch in driver's cabin or key switch | LED off | LED on | LED flashing | LED fast flashing |
|-----------------------------------|--|---------|--------|--------------|-------------------|
| Platform closed (90°)             | Off  | X       |        |              |                   |
| Platform closed                   | On   |         | X      |              |                   |
| Platform open (90° to 60°)        | On   |         | X      |              |                   |
| Platform open (60° to 0°)         | On   | X       |        |              |                   |
| Platform tilted down (0° to -10°) | On   |         | X      |              |                   |
| Switch being actuated *           | On   |         |        | X            |                   |
| Sensor disconnected               | On   |         |        |              | X                 |
| Data-wire disconnected            | On   |         |        |              | X                 |

### Description:

90° = Platform is closed

0° = Platform is open to the horizontal position

-10° = Tip of platform is tilted down

\*If a control element on the handheld control (toggle switch, remote control pushbutton, or foot switch) is actuated, the control LED flashes (see Fig. 88).

For explanation of diagnostic LED for S4 pressure sensor test, see page 60 (section 6.4.2).

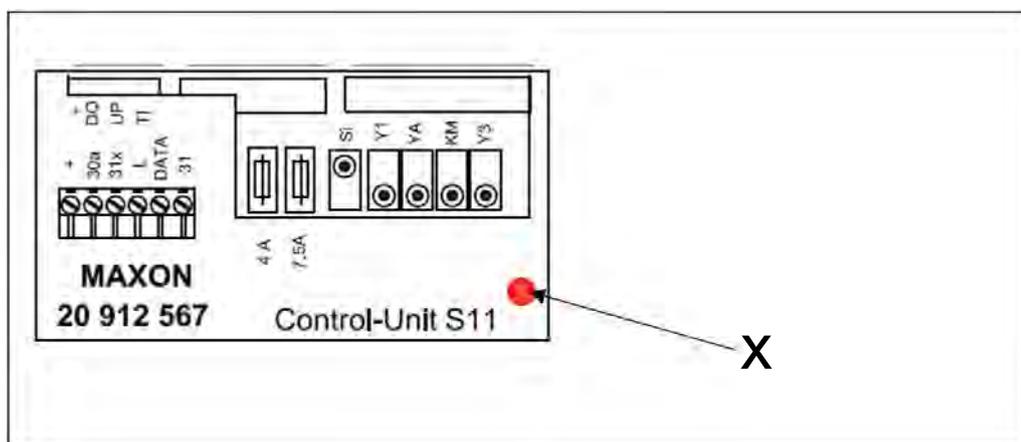


Figure 88

### Legend

X Control unit LED for control function

#### **6.4.1 Checking tilt sensors S1 and S2 in the platform**

- Platform closed and liftgate switched on → LED on
  - Power supply is functioning correctly.
  
- Platform position → 0° to approx. 60°:
  - LED off
  - Tilt sensor S1 in switching position is functioning correctly.
  - Corner lights are activated.
  
- Platform position → 0° to -10° (tilted down)
  - LED on.
  - Tilt sensor S2 in switching position is functioning correctly.
  - The switchover occurs in the horizontal position, making it possible to set the automatic tilt-up function.

#### **6.4.2 Checking pressure switch S4**

Start lowering process with the two lowering foot control buttons → LED blinks

As soon as the platform reaches the ground and the pressure switch S4 is triggered, the blinking changes to a fast blink for four seconds, after which the LED turns off and the platform tilts to the ground.

This shows that the pressure switch S4 was triggered. If not, the pressure switch is defective.

#### **6.5 Entry in inspection record book**

Once the liftgate has been assembled, installed on the vehicle, adjusted, and has passed the function test, a qualified specialist must fill out and sign the section of the inspection record book entitled “Results of test performed by specialist before first operation”.

## 7 Recommendations and instructions regarding the liftgate



### **IMPORTANT:**

To ensure safe operation of the liftgate read the safety instructions and warnings in the accompanying user manual.

### **7.1 Hydraulic oil recommendations**

HLPD 22 (ISO-VG 22) “detergent” so that free water remains emulsified (e.g. to prevent ice formation in winter) and to improve oil film adhesion.

In colder regions, we use HLPD 10 grade hydraulic oil.

Sörensen hydraulic oil HLPD 10 Part No. 20 841 181

Sörensen hydraulic oil HLPD 22 Part No. 60 700 283

Sörensen bio-oil Part No. 20 858 811

### **7.2 Painting the lifting gear**

The lifting gear is powder-coated black ex-works. If another color is desired, painting must be performed by the vehicle manufacturer.

### **IMPORTANT:**

- Roughen the powder-coated surface before painting.
- Mask the black connecting rods before painting.
- Carefully remove extra paint and masking material from the connecting rods after painting to avoid damaging the seals and voiding the warranty.

### **7.3 Rating plate**

The rating plate with the loading diagram and factory number is affixed to the liftgate closing arm on the right side of the vehicle as viewed in the forward direction of travel. A second rating plate is affixed to the power unit cover. The device number and stamped figures are also stamped into the mounting flange on the left as viewed in the forward direction of travel.

## 8 Useful information

### 8.1 About the service switch

The service switch is part of the control unit – mounted in a housing (box) – and enables trained service personnel to control and test the functioning of the liftgate directly (see Fig. 89).

If the liftgate’s Handheld control malfunctions, a trained person can operate the liftgate to any position using one of the service switches (emergency function).

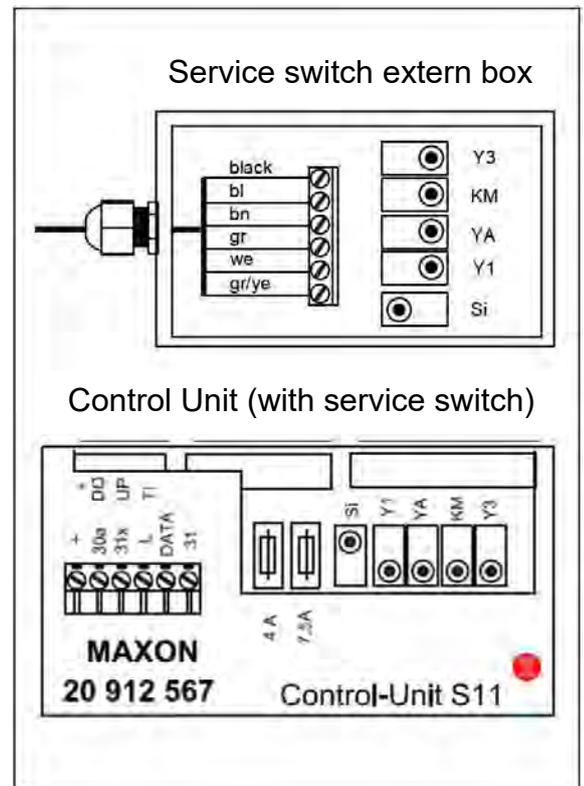


Figure 89

| Function        | SI | Y1 | YA | KM | Y3 |
|-----------------|----|----|----|----|----|
| Up              | •  |    |    | •  | •  |
| Down            | •  |    | •  |    | •  |
| Open            | •  | •  | •  | •  |    |
| Close / Tilt up | •  | •  |    | •  |    |
| Tilt down       | •  | •  | •  |    | •  |

#### IMPORTANT:

- Please follow the sequence shown.
- Always press **SI** for operate the liftgate to any position and operate **KM** last.

## 8.2 Electrical circuit diagram

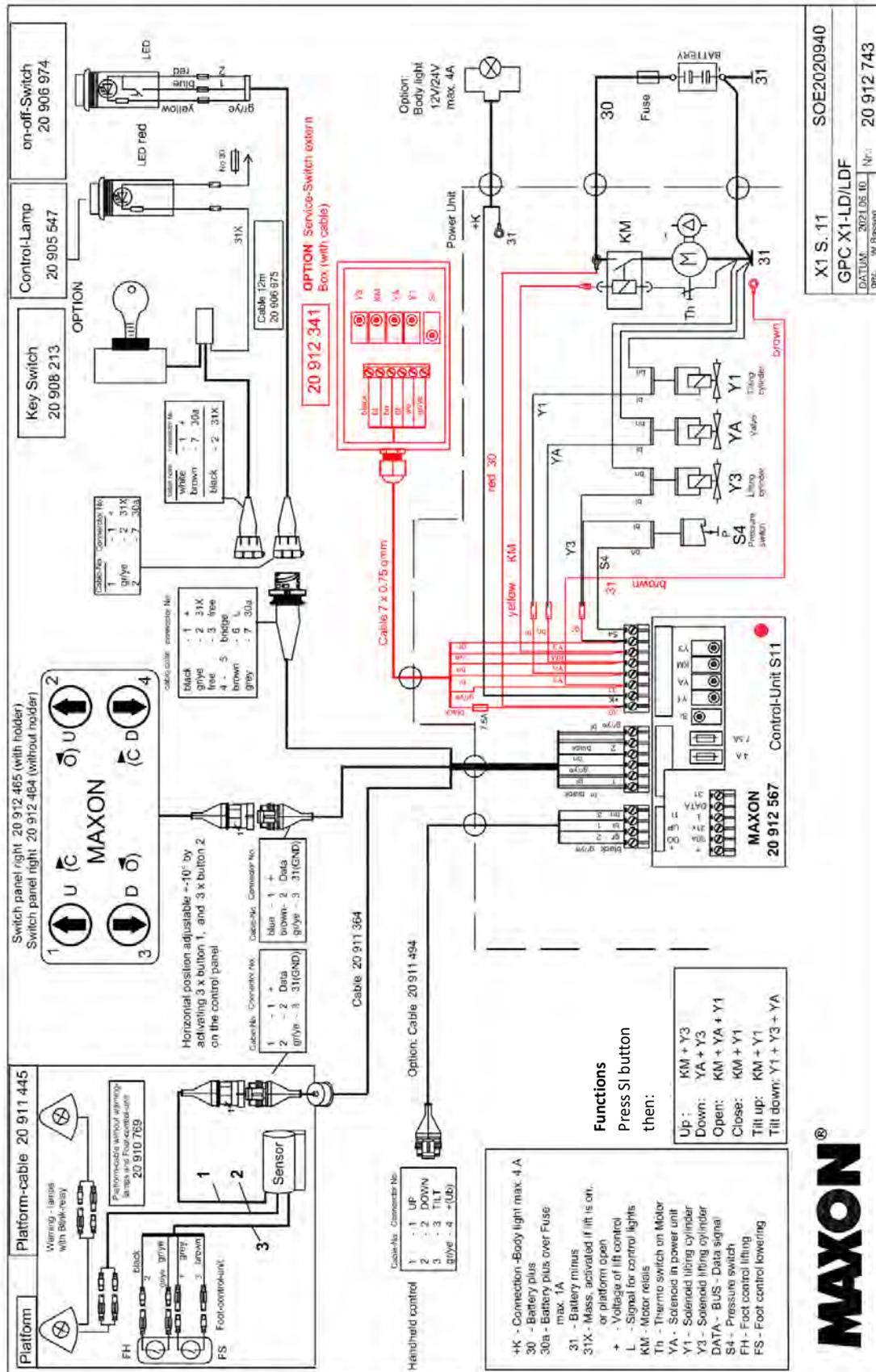


Figure 90



## 8.4 Torque table

Valid torque table for all the bolts and screws supplied and installed on our liftgates

| Screw size                       | Tightening torque<br>in Nm<br>± 10% | Thread sizes<br>DIN 3852 | Tightening torque<br>in Nm<br>± 10% |
|----------------------------------|-------------------------------------|--------------------------|-------------------------------------|
| <b>8.8</b>                       |                                     |                          |                                     |
| M4                               | 2.7                                 | G1/4"                    | 40                                  |
| M6                               | 9.5                                 | G3/8"                    | 95                                  |
| M8                               | 23                                  | G1/2"                    | 130                                 |
| M10                              | 46                                  |                          |                                     |
| M12                              | 80                                  | <b>Union nuts</b>        |                                     |
| M14                              | 130                                 | M16 x 1.5                | 60                                  |
| M16                              | 195                                 | M18 x 1.5                | 60                                  |
| M20                              | 385                                 | <b>Plugs</b>             |                                     |
|                                  |                                     | G1/8"                    | 15                                  |
| <b>10.9</b>                      |                                     | G1/4"                    | 33                                  |
| M8                               | 32                                  | G3/8"                    | 70                                  |
| M10                              | 70                                  |                          |                                     |
| M12                              | 115                                 |                          |                                     |
| M14                              | 180                                 |                          |                                     |
| M16                              | 275                                 |                          |                                     |
| M20                              | 542                                 |                          |                                     |
| <b>Platform bearing<br/>10.9</b> |                                     |                          |                                     |
| M12                              | 60                                  |                          |                                     |
| M16                              | 150                                 |                          |                                     |
| <b>Serrated flange screw</b>     |                                     |                          |                                     |
| M14                              | 215                                 |                          |                                     |
| M16                              | 310                                 |                          |                                     |
| <b>Spacer bushing</b>            |                                     |                          |                                     |
| M8                               | 5                                   |                          |                                     |

## 8.5 Activating the liftgate

Switch on the liftgate control unit using the pushbutton in the driver's cabin. When the red indicator light is illuminated, the liftgate is ready to operate.



Figure 92

## 8.6 Operation using the control panel

From the control panel, all functions are initiated by pressing two different pushbuttons simultaneously. The diagram shows which buttons are responsible for each individual function:

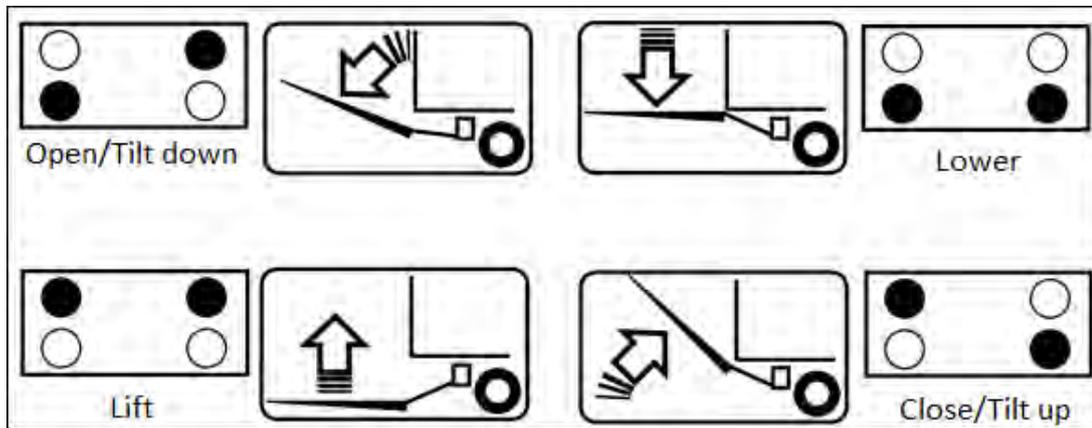


Figure 93

## 8.7 Operation using the optional handheld control

The 3-button handheld control can be used to operate the lifting and lowering functions as well as the tilting up and down functions when the platform is open. The tilt up/tilt down function is limited to an angle of 10°.

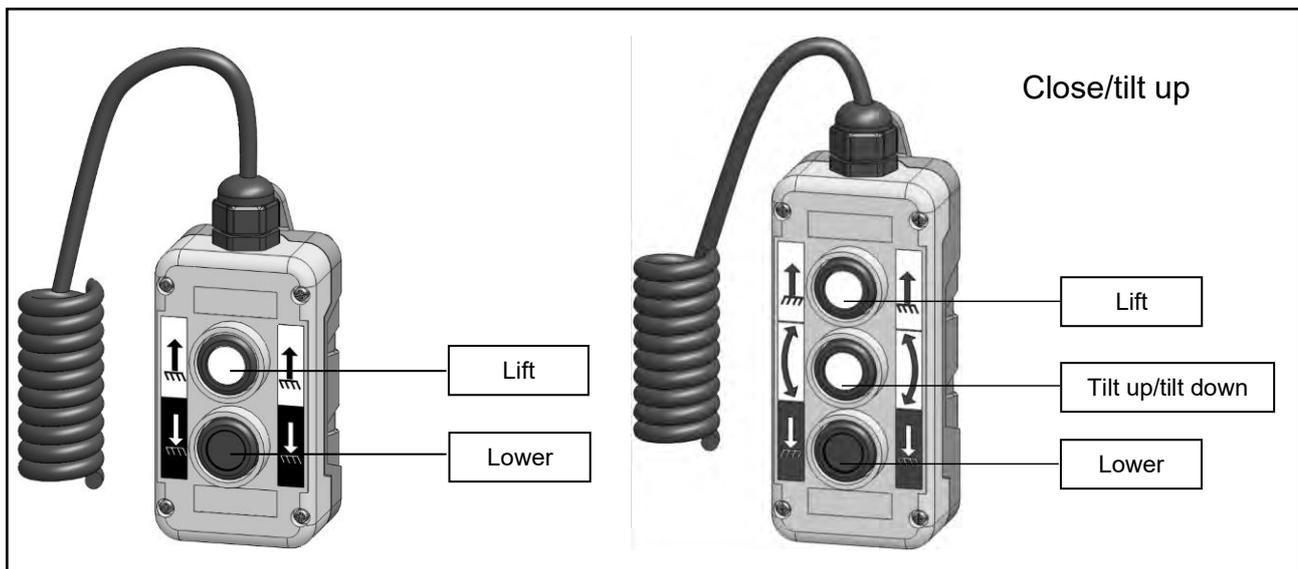


Figure 94