

# Installation Instruction

**Tail Lift**  
**Z 10-135**

ZEPRO

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# 1 Introduction

## 1.1 Important

The following “warning markings” appear in the installation instructions and are intended to draw your attention to circumstances potentially causing unwanted situations, near misses, personal injury or damage to the product, etc.

**NOTE.**

Take care. Risk of damage to the product.

**WARNING!**

Take extra care. Risk of personal injury or damage to the product and the surroundings.

## 1.2 CE marking

ZEPRO tail lifts for sale on the European market are CE marked (Conformité Européenne). The manufacturer guarantees that the product complies with the EU Machinery Directive.

Follow the installation instructions carefully. Modifications not approved in writing by the manufacturer are not permitted. Welding is not permitted.



## 1.3 Product approval

Properly assembled, this product meets relevant requirements according to EN 1756-1:2001 + A1:2008.

## 1.4 Hydraulic oil

If the hydraulic oil needs to be replenished, only the oil recommended by ZEPRO is permitted to be used.

Hydraulic systems with hydraulic oil tanks without labelling are only permitted to be filled with highly refined mineral oil (art. no. 21963, 1 litre).

Hydraulic systems with hydraulic oil tanks marked with a specification for the hydraulic oil are only permitted to be filled with the oil specified on the label.

## 1.5 Guarantee

After installation, testing and verification, the tail lift's delivery card must be registered for the guarantee to be valid.

## 1.6 Identification list

**E.g    Z   - 10   - 135   S CE**

**Z = Std. model**

**Max. lifting capacity 1000 kg**

**Max. lifting height = 1300 mm**

**Cylinder model, S = Single operation Single speed Tilt  
Single operation Single speed Lift**

**Variant, \_\_ = Export variant**

**CE = European variant**

**NN = Nordic variant**

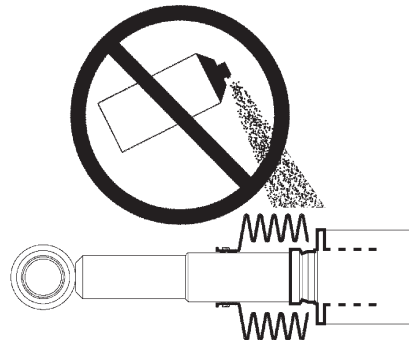
## 2 Safety rules

### 2.1 Repainting

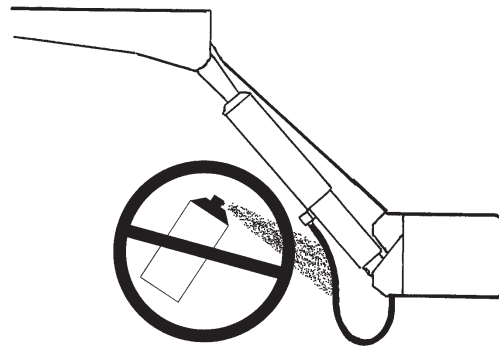
**NOTE.**

Piston rods and cylinder covers must not be painted. Painting could damage the cylinder gaskets.

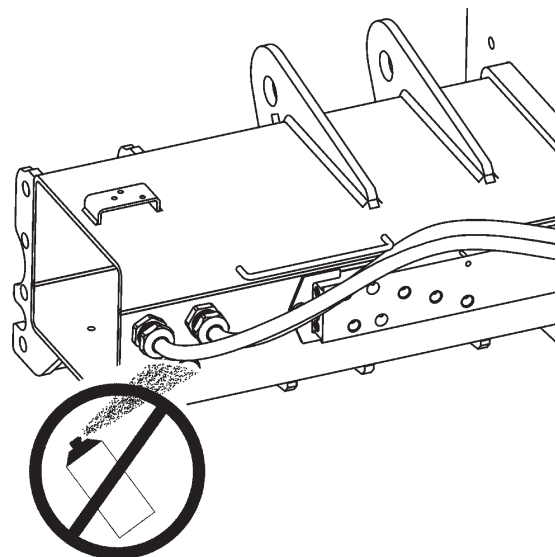
Boots, hydraulic hoses and cables must not be painted as the solvent in the paint could damage hoses/cables and significantly impair durability.



*Image 1. Piston rods, cylinder covers and boots must not be painted*



*Image 2. Hydraulic hoses must not be painted*



*Image 3. Cables must not be painted*



## 2.2 Transport plug

### NOTE.

When the lift is installed, the transport plug in the hydraulic unit must be removed and replaced with the normal tank cap supplied with the hydraulic unit.

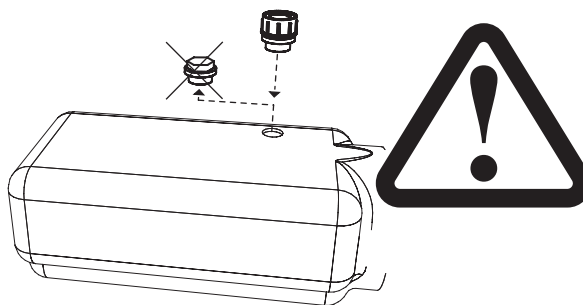


Image 4. Replace the transport plug with the normal tank cap

## 2.3 Moving parts - free movement

### WARNING!

When the final inspection\* takes place, the space occupied by the moving cylinders must be cleared and made safe. There is a risk of collision between the cylinder and the following items: sub-frame, truck chassis, beam for rear light (number plate) and the chassis bracket of the lift (with a short overhang).

\*The final inspection must be carried out with the platform at the vehicle floor and tilted down 10°. The clearance from the closest part of the cylinder must be at least 40 mm.

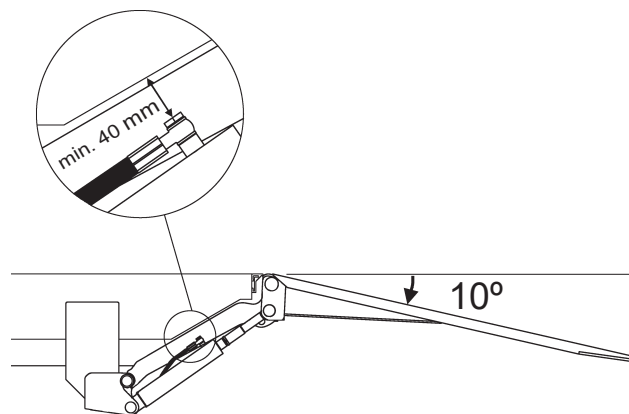


Image 5. Clearance to the closest part of the cylinder must be at least 40 mm

### WARNING!

The platform must not be tilted down more than max. 10° from horizontal when people are on the platform.

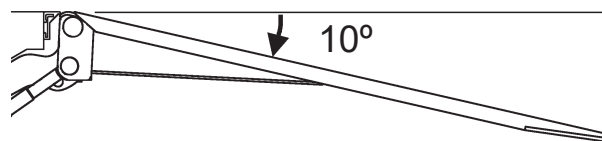


Image 6. The platform must not be tilted down more than 10° from the horizontal

## 2.4 Third-party equipment must not be attached

### **WARNING!**

You must not attach equipment (electric or hydraulic) to Zepro tail lifts that has not been approved. Attaching unapproved equipment may interfere with the lift system and its safety functions. Risk of injury and damage. If it is necessary to install other equipment, check the vehicle manufacturer's body instructions and use the attachment features on the vehicle.

## 2.5 Installation

### **WARNING!**

The platform must not be installed so it cannot reach ground level.

### **WARNING!**

Zepro tail lifts are only approved for installation with Zepro assembly kits.

## **3 Installation workflow**

### **3.1 Installing the support frame**

- Calculating the installed dimensions
- Attaching the mounting jig to the rear beam
- Aligning the support frame
- Mounting chassis brackets
- Detaching the mounting jig

### **3.2 Electrical connections**

- Installing the controller
- Installing the controller cables
- Installing the main power cable

### **3.3 Installing the platform**

- Installing the platform
- Installing seals and end stops
- Installing the armstops

### **3.4 Installing the cylinders**

- Adjusting the tilting cylinder
- Testing

### **3.5 Attaching stickers**

## 4 Calculating the installed dimensions

For easier installation, it is useful to calculate and specify the necessary dimensions in advance. Determine the C dimension first, then obtain the other dimensions from the relevant table. You should try to place the lift as high as possible within the specified C dimension in the table.

### 4.1 C dimension

The C dimension is the distance between the top of the support frame and the vehicle floor level. This dimension governs how far the lift needs to be installed under the vehicle body (D dimension) and the space there will be between the 1st booms in the upper position and the vehicle floor level (A dimension).

### 4.2 D dimension

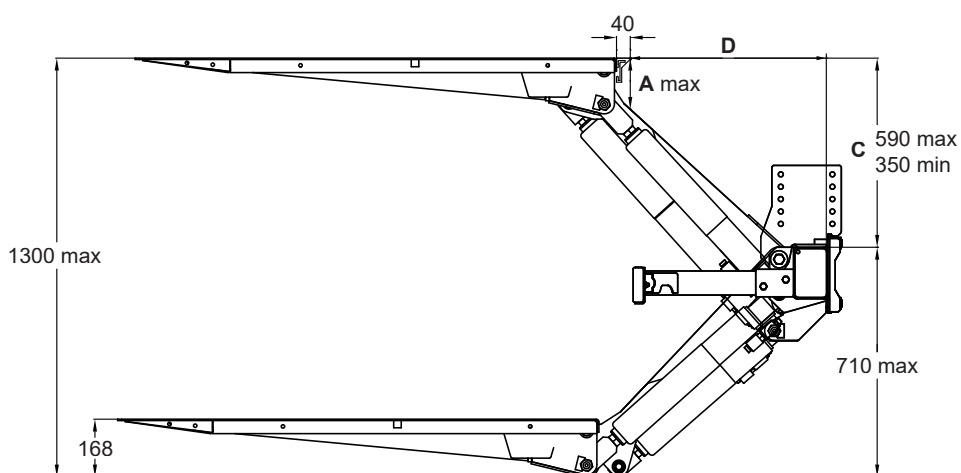
The D dimension is the space the lift needs, measured from the rear edge of the body to the front edge of the support frame (in the direction of the vehicle). Once the C dimension is determined, the D dimension can be obtained from the table.

### 4.3 A dimension

The A dimension is the space provided for the rear beam, i.e. the space between the 1st boom and the vehicle floor with the lift in the raised position. The A dimension depends on the C dimension.

### 4.4 H dimension

The H dimension is the height from the ground (unloaded) to the vehicle floor level. The H dimension must not be greater than the maximum lifting height of the lift. The platform must always be able to reach ground level..

**Vehicles with a total weight < 8 tons**

C	A	D	R58:3
590	153	539	Approved
550	138	586	
500	133	625	
450	121	667	
400	109	701	
350	99	730	

**Vehicles with a total weight ≥ 8 tons**

C	A	D	R58:3
590	153	539	Approved
550	138	586	
500	133	625	
462	124	657	

450	121	667	
400	109	701	
350	99	730	

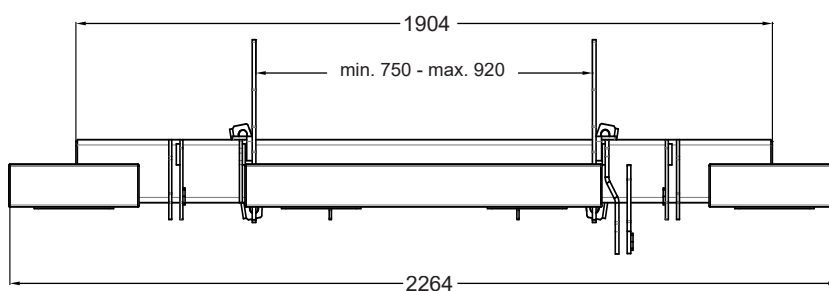
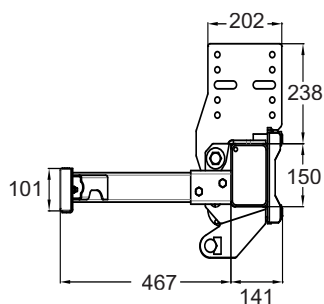
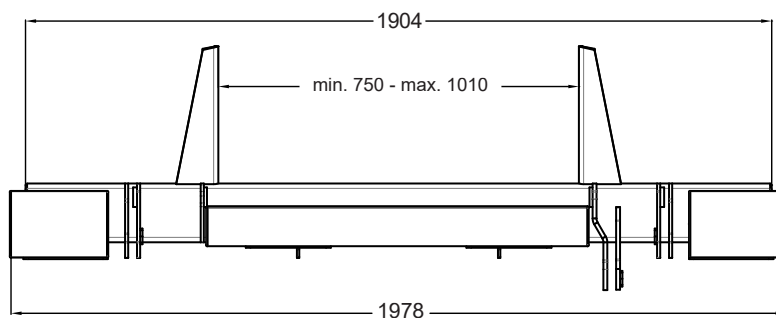
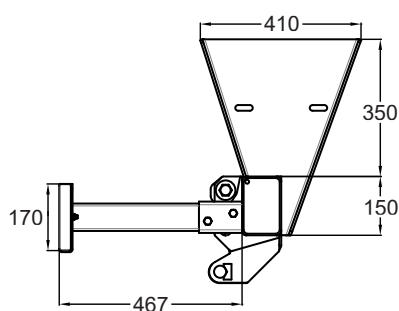
**Mounting for screwed joint****Mounting for welding (only applies to markets outside the EU)**

Image 7. Installed dimensions

## 5 Rear beam cut-outs

It is often necessary to create cut outs in the rear beam to provide space for the platform arms when the platform is in the uppermost position. The size of the cut outs depends on the calculated installed dimension "A", see illustration below.

1. Measure and mark the location and depth of the cut outs on the rear beam. The two cut outs must be centred on the rear beam, i.e. both cut outs must be an equal distance from the mid-point of the beam.
2. Cut along the markings.
3. Grind away any burrs or sharp edges.

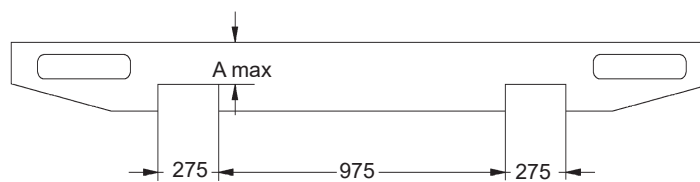


Image 8. Z 10-135

## 6 Installation

### NOTE!

Also consult the vehicle manufacturer's body instructions and Zepro's Operator's manual before installation.

### WARNING!

Zepro tail lifts are only approved for installation with Zepro assembly kits.

### 6.1 Support frame

1. Measure and mark the midpoint of the rear beam of the vehicle. See Image 9.
2. Bolt or spot-weld the mounting jig to the rear beam, so that both midpoints are aligned, see Image 10.
3. Position the support frame under the vehicle frame.
4. Raise the 1st booms to their highest position.
5. Attach the 1st booms to the eye of the jig, see Image 11. Use the steel platform's normal pivots.
6. The support frame should be positioned as high as possible within the specified C dimension. Adjust the frame to the ideal height under the chassis. A car jack is useful. The frame must be positioned parallel with the floor of the vehicle body and must not be in contact with the vehicle frame; there must be a few millimetres of play. If necessary, adjust the angle of the arms by carefully operating the lift.
7. Install the brackets on the support frame so that its opening is facing towards the front of the vehicle, and adjust the position of the frame so they are in contact with the vehicle frame.
8. Install the U-profile with associated washers and nuts, but do not tighten them. Screw the nuts alternately until the U-profile is aligned in contact with the frame, see Image 12

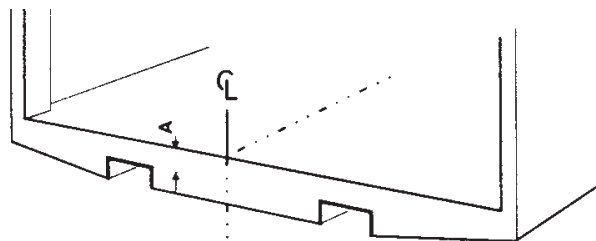


Image 9. Measure and mark the midpoint of the rear beam of the vehicle

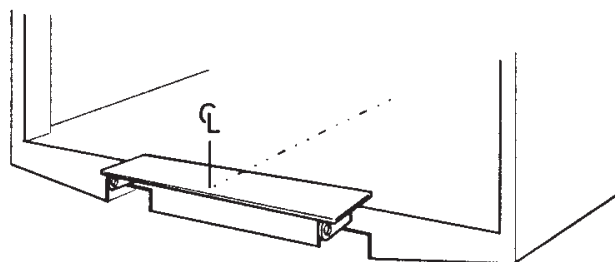


Image 10. Bolt or spot-weld the mounting jig to the rear beam part. no. 60536 for Z 10-135

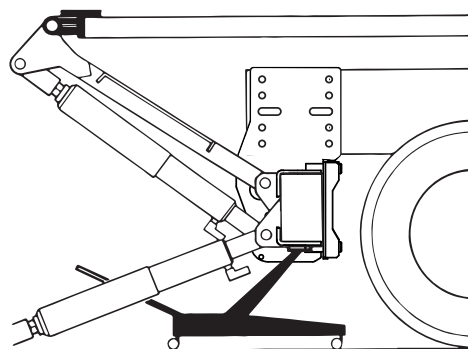


Image 11. Mounting jig 60536

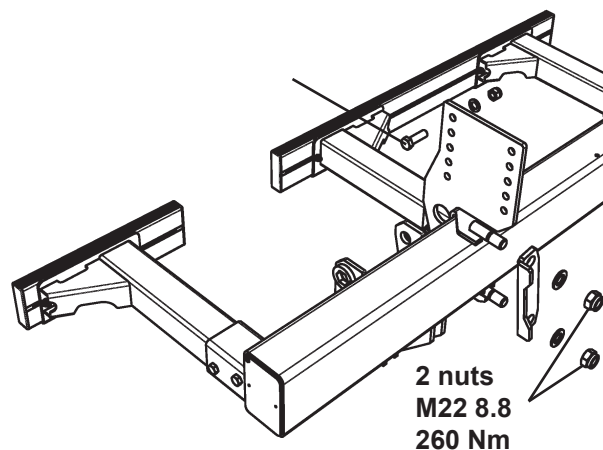
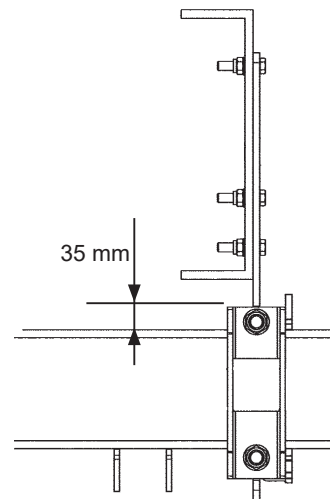


Image 12. Install the U-profile with associated washers and nuts

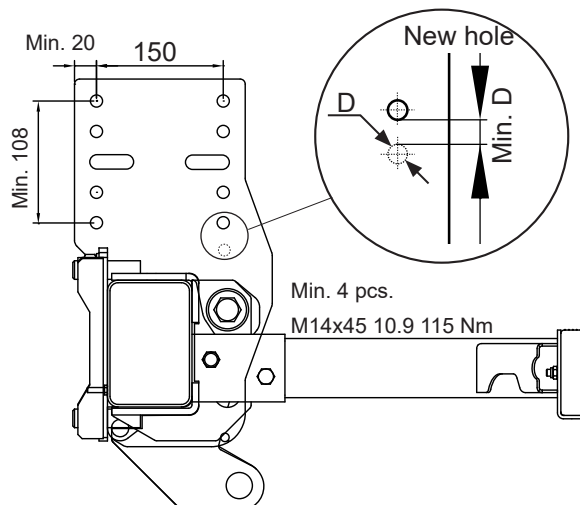
9. Install first with a bolt in the mountings' slotted holes. Mark the middle of the mountings' slot-shaped holes on the vehicle frame and then drill  $\varnothing 14$  mm holes in the frame, see Image 14.
10. Bolt the mountings securely on the exterior of the vehicle frame. Use M14x45 bolts and install the associated washer and nut on the interior of the vehicle frame. Install the bolts but do not tighten.
11. Check and finely adjust the position of the lift. Then tighten the bolts with a torque wrench.  
**Tightening torque: 120 Nm.**
12. Using a torque wrench, tighten the bolts holding the U-profiles. **Tightening torque: 280 Nm.**
13. Drill holes in the vehicle chassis for mounting bolts,  $\varnothing 14$  mm. Drill in the outer holes of each mounting. Use M14x45 bolts and install the associated washer and nut on the inside of the vehicle chassis. Installation must be performed with at least 4 x bolts in the outer holes. Do not include the bolt first installed in the groove shaped hole. If necessary, it can be moved to one of the outer holes, see Image 14. Then tighten the bolts with a torque wrench.  
**Tightening torque: 120 Nm.**
14. Remove the mounting jig.

**NOTE!**

Note that the chassis bracket needs a free space of at least 35 mm between the vehicle frame and the support frame, see Image 13.



*Image 13. Note that the chassis bracket needs a free space of at least 35 mm between the vehicle frame and the support frame*



*Image 14. Install the chassis bracket with at least 4x M14x45 10.9 bolts*



## 6.2 Control power cable

### NOTE.

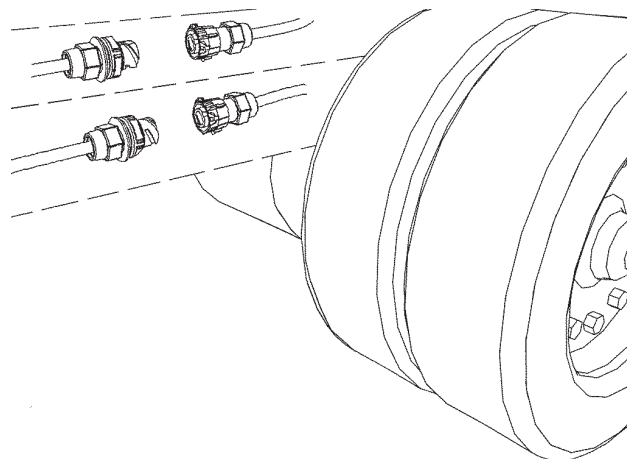
See also the relevant vehicle manufacturer's electrical instructions

1. If the control power cable is not pre-routed, e.g. VDHH, route the control power cable from the driver's cab to the lift.

### NOTE!

The cable must be protected with rubber grommets when it passes through beams or walls. Position any quick connectors so they are well protected from moisture and dirt.

2. Connect the control power cable to the cab switch (CS) on the vehicle instrument panel. Connect to the on-board electrical system via a 10 A (24 V), 15 A (12 V) fuse according the customer's wishes.



*Image 15. Quick connectors must be well protected*

### 6.3 Controllers

If the vehicle is equipped with two-handed grip, it means that the operator must use both hands to be able to operate the loading platform, while it protects the operator from pinch and crush injuries.

1. Fit the controllers in the desired locations. They must be positioned so that the operator is in the safest possible location with a clear view of the load, tail lift and surrounding area.
2. The distance between the vehicle's rear edge and the centre of the controllers must be between 300-600 mm. The distance between the controllers must be at least 260 mm. See Image 16

#### NOTE!

All cable inlets must be pointing downwards.

3. The controller cable connects to the control card. See section "8.5 Connecting controller" on page 38.

#### WARNING!

A controller must always be fitted on the side that is facing away from traffic in motion. Therefore, if there is a need for a controller on the opposite side, a further controller must be fitted. Fitting any other way involves increased risk of injury.

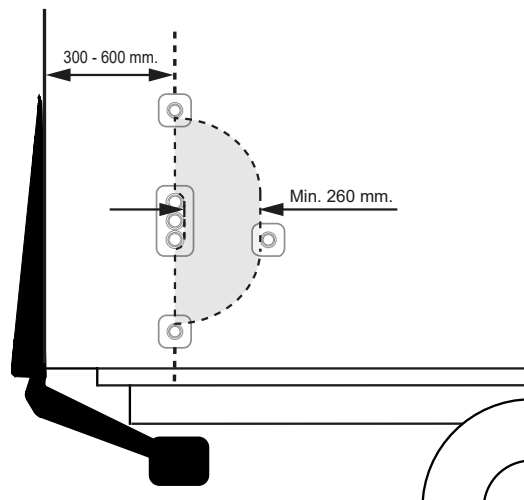


Image 16. Installing controllers

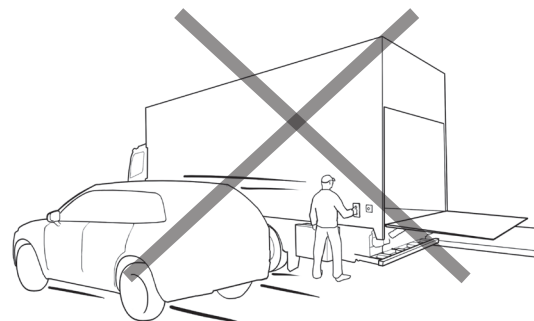
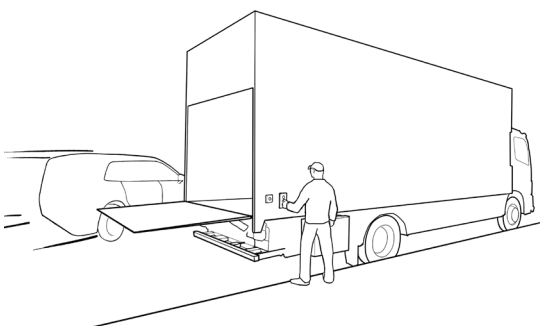


Image 17. Installing controllers

## 6.4 Warning lighting/ and foot controls

### NOTE!

This description applies only to aluminium platforms. If the vehicle is equipped with steel platform, see installation instructions; 76505TL SE Varningsbelysning Fotmanöverdon.76509TL FR Feux d'avertissement et commande au pied.760508TL Luces de aviso y dispositivos de mando con el pie.76723TL EN Warning lightning and Foot controls.760507TL DE Warnleuchten und Fußschalter.

If the tail lift is equipped with warning lighting/foot controls, their cabling must be routed and connected according to the following description.

1. On platforms with only foot controls, connect the provided cabling to the foot control/cable,

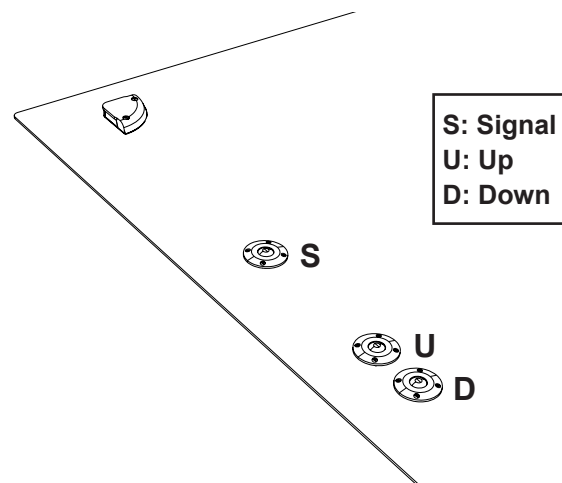


Image 18. Warning lighting and foot controls

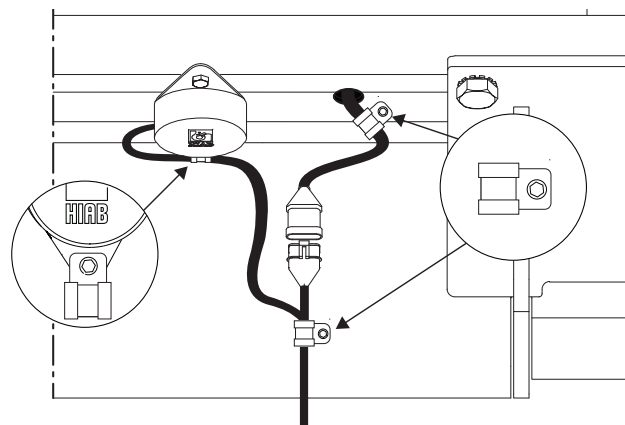


Image 19. Connection of cabling on platform with warning lighting or warning lighting and foot controls

see Image 20. On platforms with warning lighting, alternatively warning lighting/foot controls, connect the provided cabling to the angle sensor and connect the sensor to the foot control/warning lighting cabling, see Image 19.

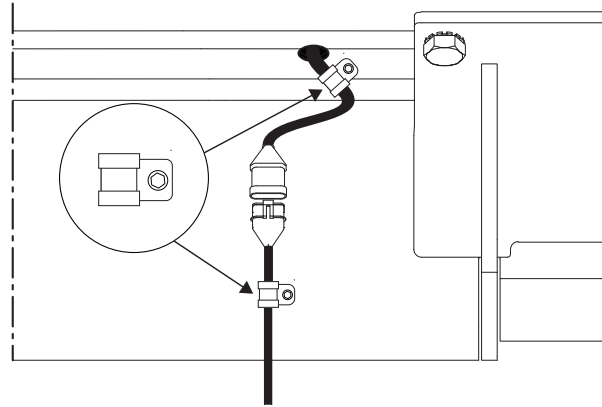
2. Route the cable along the 1st boom and fix with cable ties according to Image 21. Then route the cable to the hydraulic unit along the front of the support frame and fix it together with the existing cabling with cable ties.

### NOTE!

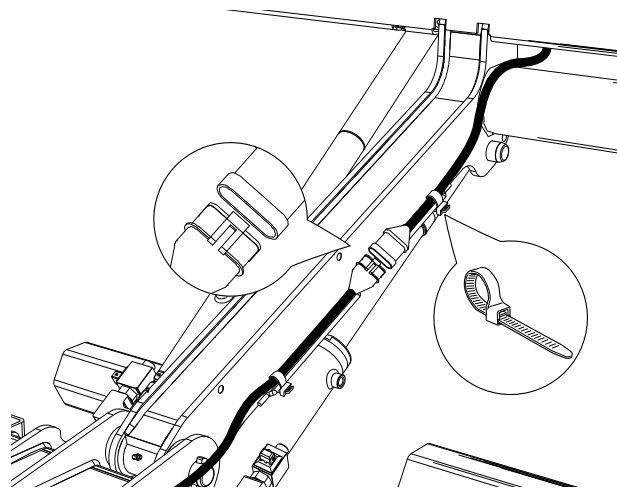
Route the cable between the platform and the lift arm's pipe so that it is well protected when the platform hits the ground.

Leave enough "slack" to the first cable tie so that the cable is not at risk of being damaged when the lift is operated.

3. Connect the cables to the control card, see wiring diagram in section "8.4 Connecting warning lighting and foot controls" on page 37 and section "8.5 Connecting controller" on page 38.



*Image 20. Connection of cabling on platform with only foot controls*



*Image 21. Installing cabling. The switch is present only on cables for installation with warning lighting.*

## 6.5 Main power cable

### 6.5.1 Cable routing

1. Route the main power cable from the lift to the battery. Route the cable through a plastic casing and ensure it is not clamped to the brake line or the vehicle's existing electrical system.

#### **NOTE!**

The cable must not be clamped to brake lines or the normal on-board electrical system.

The cable must be protected by rubber grommets when it passes through beams or walls, see Image 22.

The cable must be installed sufficiently far from, or be protected against, sharp edges so that it cannot chafe or otherwise sustain damage that can lead to a short circuit and cable fires.

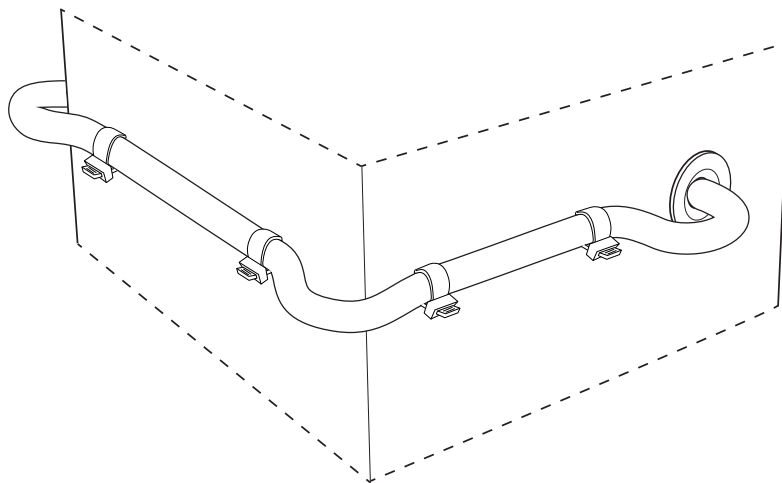
Do not bend the cable with too small a radius as this can cause damage to the cable.

In general, care must be taken when routing all the cables in order to obtain a longer cable service life and to reduce the risk of unnecessary stoppages.

#### **NOTE.**

The fuse box must be located in a well protected position as close to the battery as possible.

2. Check that the hydraulic unit is effectively earthed. Certain commercial vehicle manufacturers provide special earth connection points.
3. Connect the main power cable to the hydraulic unit, see "9 Electrical and hydraulic diagrams" on page 43.



*Image 22. Protect the cable against sharp edges and use cable grommets*

## 6.6 Installation of main fuse on vehicles without connection point

On vehicles without connection point, the following fuse box with fuse, 150A (24V) or 250A (12V) must be installed. The fuse box must be positioned well-protected as close to the battery as possible.

1. Screw the fuse box into position with the following bolts (2 x M4x25) + washers and nuts, see 8.3.
2. Connect the main power cable to the connection point and place the fuse on top, see Image 24:1 and Image 24:2.
3. Connect a cable from the battery's positive terminal, see Image 24:3.
4. Screw the cable connections and fuse into place with the knob. Install the cables at 90° or 180° from each other. Install the fuse at right angles to the cables, see Image 24.

### WARNING!

The knob must lie against and centre the cable clip so that it does not come into contact with the bolt. Incorrect installation can cause the fuse to malfunction. Risk of fire in the event of a short circuit, see Image 25 and Image 26.

5. Install the fuse box cover, see Image 27.

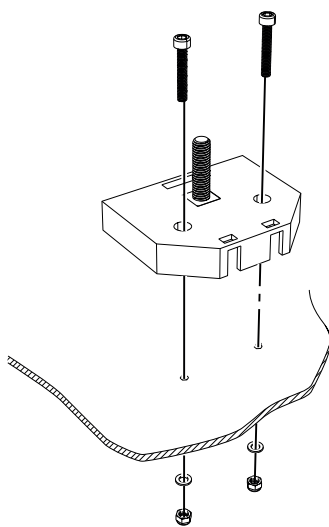


Image 23. Screw the fuse holder into place

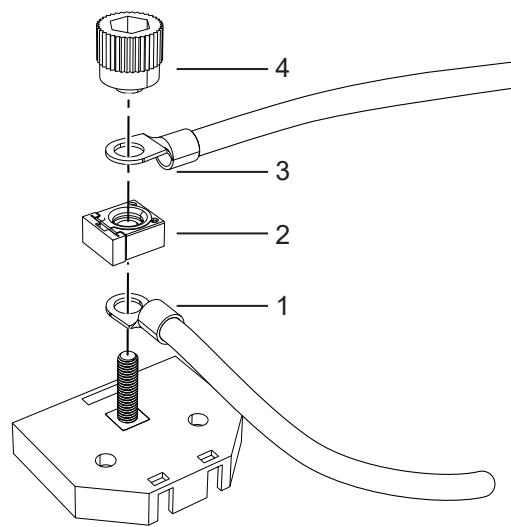


Image 24. Place fuse and connect wiring

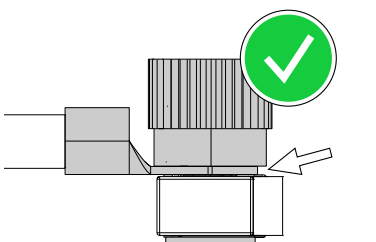


Image 25. Correct installation

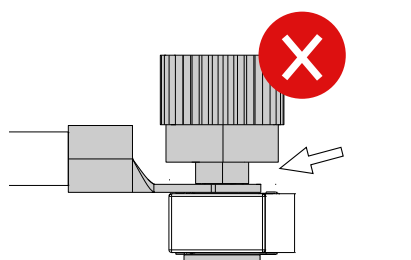


Image 26. Incorrect installation

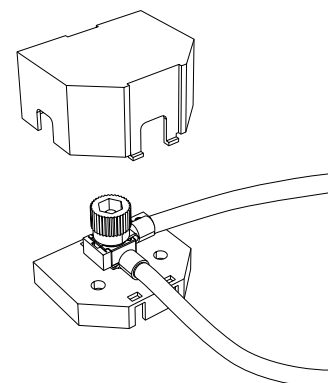


Image 27. Cover fuse box

## 6.7 Underrun protection

### 6.7.1 Vehicle chassis requirements

In order to comply with the applicable underrun protection standards, there are requirements for the vehicle chassis on which the rear tail lift is mounted.

The moment of inertia in a cross-section on the current frame beam (excluding any support frame) shall not be less than 555 cm<sup>4</sup>. The cross-section of the frame beam shall therefore have at least dimensions of 185x60x4 mm, corresponding to a surface moment of inertia of 555 cm<sup>4</sup> around the x-axis. See "Image 28. The cross-section of the frame beam" on page 23. If in doubt, contact ZEPRO for support.

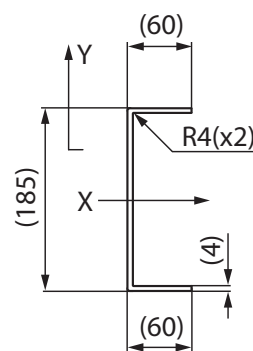


Image 28. The cross-section of the frame beam

#### **⚠ WARNING!**

The above dimensions are the minimum permitted for the installation of underrun protection. The strength requirements for mounting the tail lift usually require larger dimensions.

### 6.7.2 Statutory dimensions for vehicles with total weight < 8 tons

Distance between the beam and the ground when the vehicle is unloaded: Max. 550 mm.

Horizontal distance from the outermost part of the platform to the underrun protection: Max. 370 mm. See Image 29.

#### **NOTE!**

The underrun protection may be placed further back and lower.

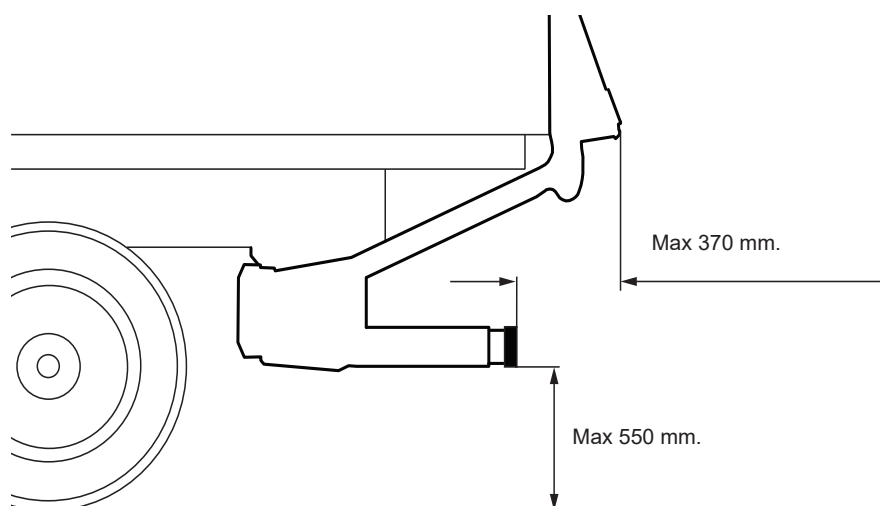


Image 29. Statutory dimensions

### 6.7.3 Statutory dimensions for vehicles with total weight $\geq 8$ tons

Distance between the beam and the ground when the vehicle is unloaded:

- Max. 450 mm for vehicles with air suspension.
- Max. 500 mm for vehicles with conventional suspension.

If the exit angle with the above setting is less than  $8^\circ$ , the distance between beam and ground in an unladen vehicle may be increased until the angle is  $8^\circ$ , but to Max. 550 mm.

Horizontal distance from the outermost part of the platform to the underrun protection: Max. 300 mm. See "Image 30. Statutory dimensions" on page 24

#### NOTE!

The underrun protection may be placed further back and lower.

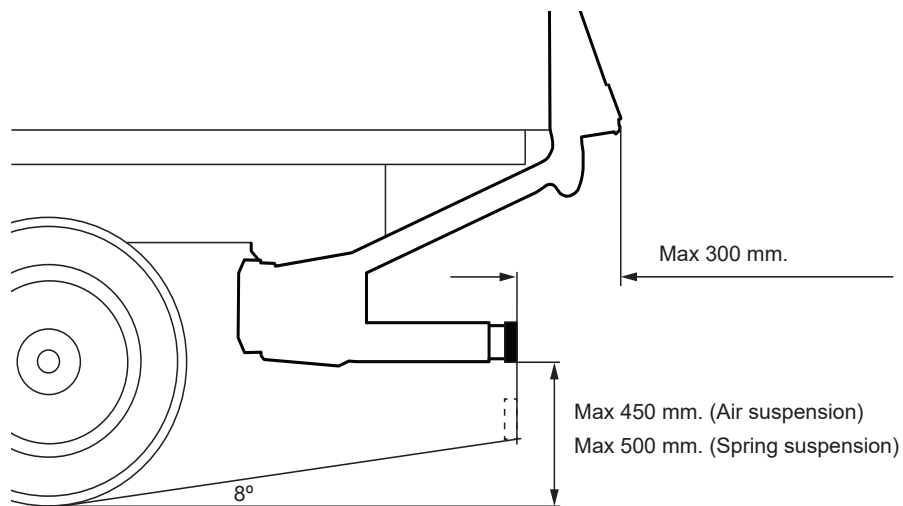
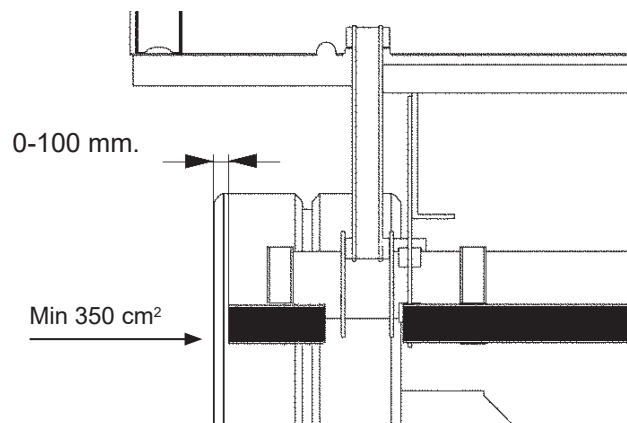


Image 30. Statutory dimensions



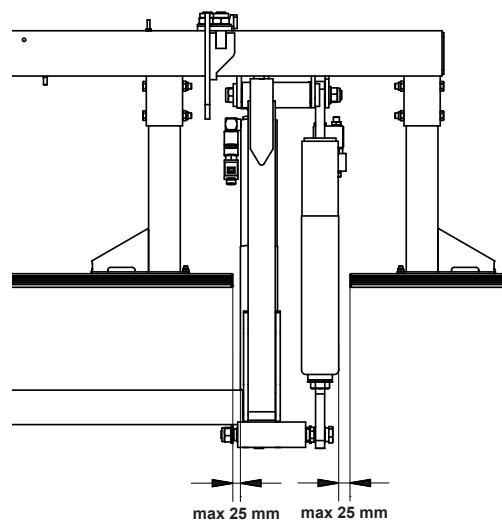
Horizontal distance from the outer edge of the beam to the outside of the wheel: Max 100 mm. See Image 31.



*Image 31. Statutory dimensions*

The lateral distance between the underrun protection and the moving parts of the tail lift must not exceed 25 mm. See Image 32.

Each of the individual parts of the underrun protection must have a surface area of at least 350 cm<sup>2</sup>. See Image 31.

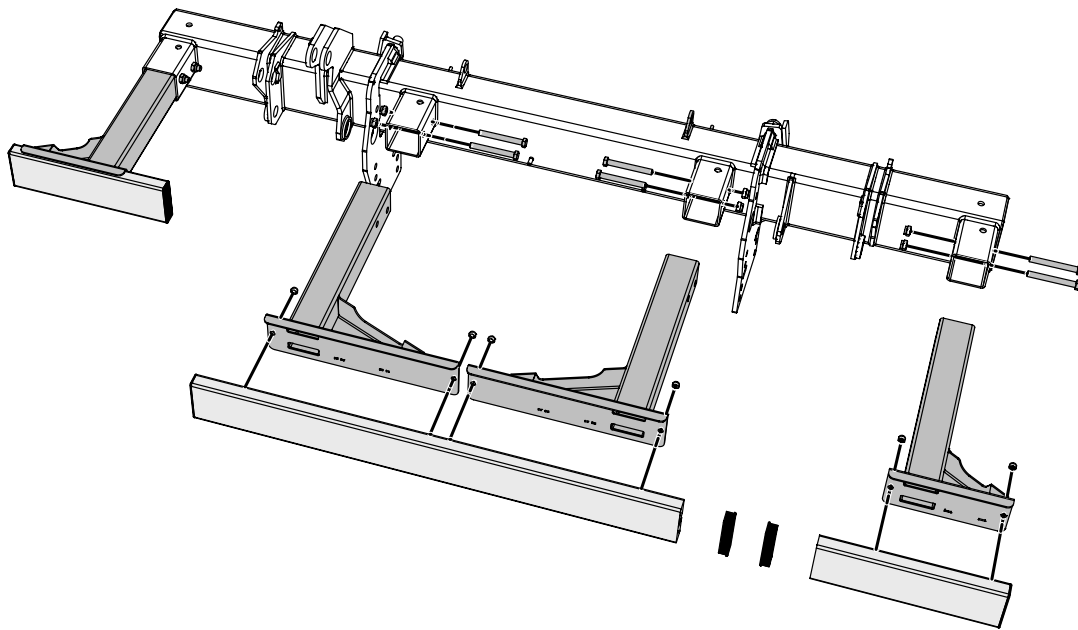


*Image 32. The lateral distance between the underrun protection and the tail lift's moving parts*

### 6.7.4 Installation

The underrun protection consists of four brackets and three aluminium profiles.

1. Install the four underrun protection brackets on the lift's frame with 2 bolts M12x100 (8.8) each.  
**Tightening torque: 80 Nm.**
2. Install the aluminium profiles with 2 bolts M8x20 (8.8) each. The head of the bolt is threaded in the aluminium rail and the rail is fitted and screwed into the bracket. **Tightening torque: 25 Nm.**



*Image 33. The inner part of the brackets can be fitted at one of four heights*

## 6.8 Arm stops

Fit end stops between the 1st booms and the rear beam of the vehicle floor. The left and right end stops must be reached at the same time, as high up the 1st boom as possible. Installation must take place against the vehicle body.

### WARNING!

It is not permitted to perform welding on the lift arm. Installation must take place against the vehicle body.

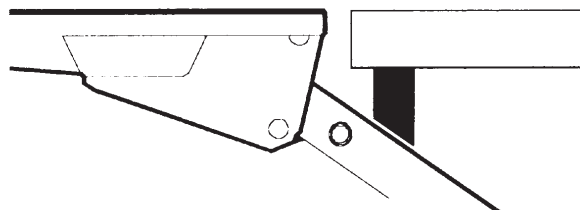


Image 34. Fit end stops between the 1st booms and the rear beam of the vehicle floor

## 6.9 Sealing strip (horizontal)

The track is fitted using the self-tapping screws provided.

1. Mark where to drill holes for the self-tapping screw.
2. Drill holes (Ø 7.2 mm) for the screws.
3. Fit the horizontal stop strip (steel or aluminium).
4. Fit the rubber strip in the track.

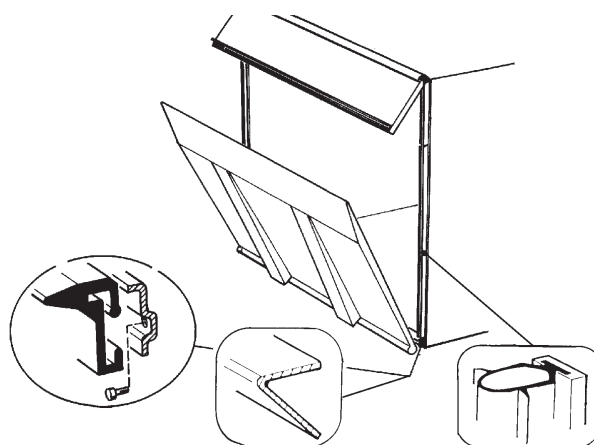


Image 35. Installing a sealing strip

## 6.10 Sealing strip (vertical)

1. Fit the tracks with countersunk screws, rivets or by spot welding.
2. Fit the rubber strip in the track.
3. Secure the rubber strips by swaging the tracks together at the bottom.

### NOTE!

To fit an upper edge seal, create a 45° mitre against the vertical strips.

6.11 Platform

6.11.1 Installing steel platform

- 1. Install the steel platform on the arms and tilting cylinders by the platform. **Use shafts 31283 + 31284.** See Image 36.

6.11.2 Installing aluminium platform

- 1. Screw the steel platform mountings in the platform, insert the shafts and secure them with locking screws. The 1st boom and tilting cylinders can then be screwed into the platform. See

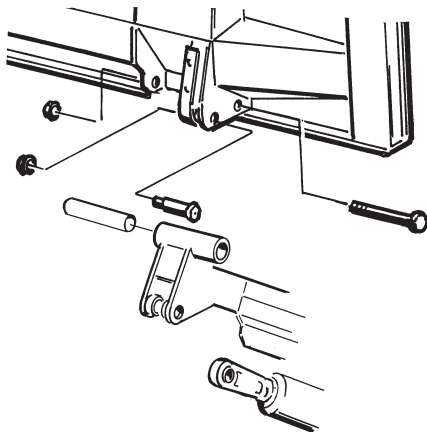


Image 36. Installing steel platform

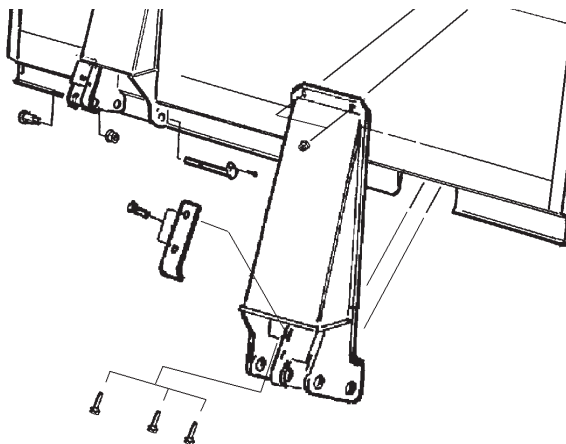


Image 37. Installing aluminium platform

Image 37.

The platform underhang (A) varies according to platform type, and this should be taken into account when fitting the upper seal. See Image 38.

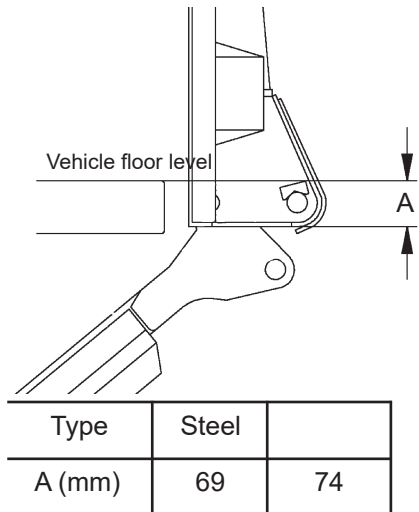


Image 38. The platform underhang (A) varies depending on platform type

Once the platform has been attached, test the lift by carefully raising it to body floor level and tilting it to the vertical position. Check the position in relation to the rear beam and side posts of the vehicle. See Image 39.

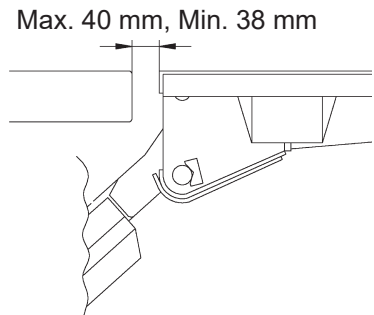


Image 39. Check the position in relation to the rear beam of the vehicle

### 6.11.3 Adjusting the tilt angle

**NOTE.**

Do not adjust the cylinders before they are fitted to the platform. The tilting cylinders are preset from the factory.

1. Close the platform to the body, see Image 40.
2. Unscrew the locking screws (pos. 1, 2, 3, see Image 41).
3. Turn the nut (pos. 4, see Image 41) to adjust cylinder length and position on the platform. Use ZEPRO tool part no. 59693 (60 mm). Always adjust both cylinders.
4. Unscrew the lock screws (pos. 5, 6, 7, see Image 42). Zepro recommends securing the screws with Loctite 243 or equivalent.

**NOTE.**

Must always be adjusted with full hydraulic pressure in the tilting cylinders.

Check the dimension, see. Maximum length must not exceed 33 mm, see Image 43.

**WARNING!**

The max. length of both cylinders must be adjusted equally to avoid unwanted bending forces.

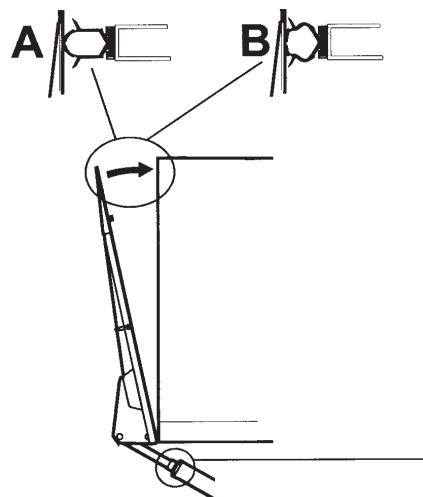


Image 40. Adjusting the fit to the vehicle body

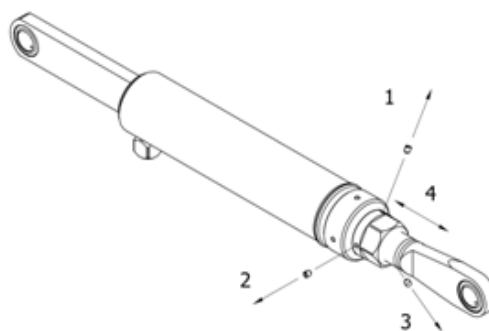


Image 41. Adjusting cylinder length

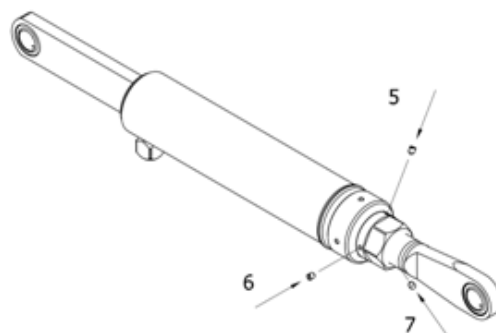


Image 42. Screw tight the lock screws

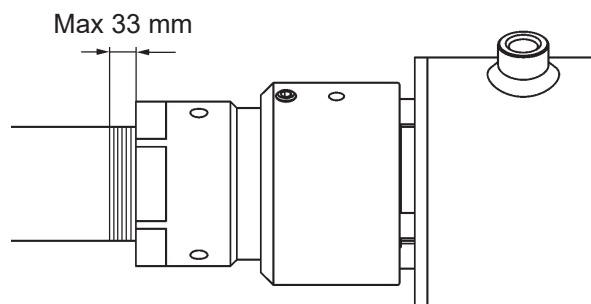


Image 43. Maximum length

### 6.11.4 Adjusting the downward tilt angle

#### NOTE.

The tilt angle must be set at 90° to the vehicle body before the downward tilt angle is adjusted (see previous page).

#### WARNING!

To ensure that the lift is safe and CE compliant, the downward tilt angle must be adjusted to max. 10° if persons are going to stand on the platform.

#### NOTE!

Do not adjust the tilting cylinders before undoing the lock screws.

1. Lift the platform to floor level and adjust to horizontal position.
2. Tilt down the platform and measure the angle (pos. 5, Image 45). Adjust to max 10°.
3. Loosen the end stop lock screw (1, 2). Screw the end stop all the way back towards the platform (3). Image 44.
4. Tilt the platform down to max. 10 degrees below the horizontal, see Image 46.
5. Tighten the lock screw in the end stop (5). See Image 45.  
Zepro recommends securing the screws with Loctite 243 or equivalent.

**Test all functions.**

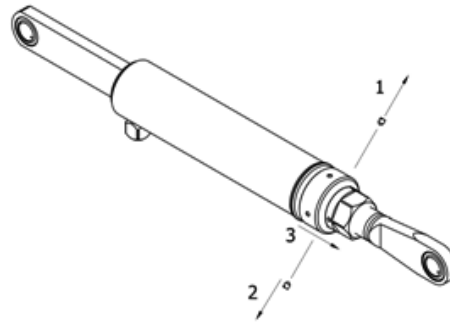


Image 44. End stop with lock screw

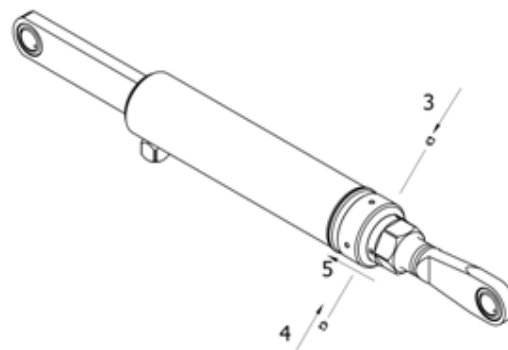


Image 45. End stop with lock screw

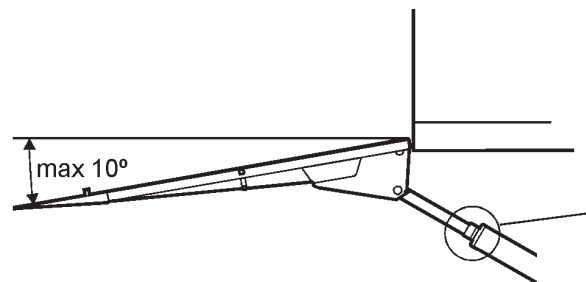


Image 46. The downward tilt angle must be adjusted to max. 10°

## **6.12 Purging the cylinders**

Purge the lift cylinders by fully lowering the platform a few times. You may have to lift the truck to fully lower the platform.

The tilting cylinders can be purged by raising the platform fully against the vehicle body and then tilting all the way down.

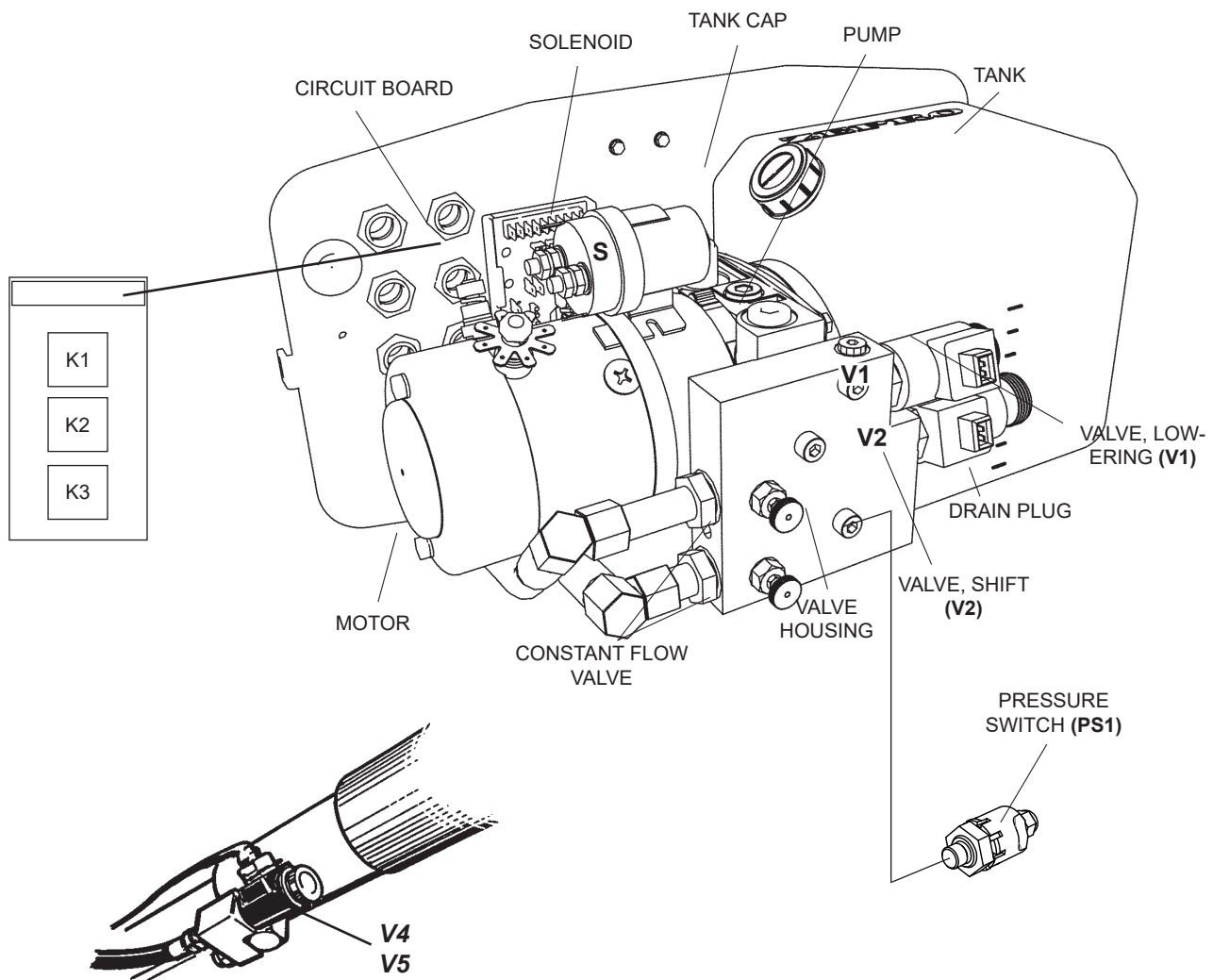
## **6.13 Transport lock**

Electric hose rupture valves serve as locks for the platform. The lock opens automatically if the down function is actuated from the controller. The valves are check valves that let fluid into the cylinders but not out before they are actuated by the flow from the lowering valve. The platform is thus hydraulically locked during transport.

## 7 Hydraulic unit

### 7.1 Hydraulic unit Z 10-135, single operation

<u>Function</u>	<u>Input signal</u>	<u>Output signal</u>	<u>Comment</u>
Tilt down <sup>1</sup>	C+E	V1+V2+V4+V5+K1+K3	
Tilt down <sup>2</sup>	E+PS1	V1+V4+V5+K1	Automatic tilt down
Lower	E	V1+V4+V5+K1	
Raise	B	S+K2	
Tilt up	B+C	S+V2+K2+K3	



V4, hose rupture valve, lift cylinder  
V5, hose rupture valve, tilting cylinder



## 7.2 Installation

Select suitable location (on the right side of the vehicle) for the hydraulic unit. It is advantageous to install the mounting for the hydraulic unit on the vehicle frame separately to then install/hook on the hydraulic unit, see image 8. The hydraulic hoses are connected according to Image 49. Also see dimension images 43, 44 and 45.

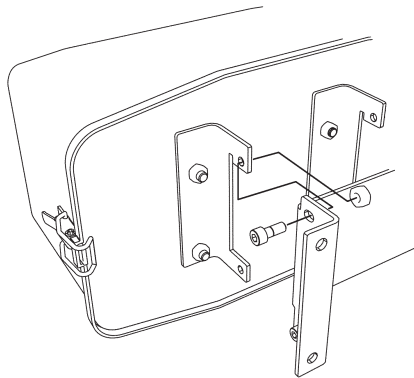


Image 47. Hydraulic unit's mounting

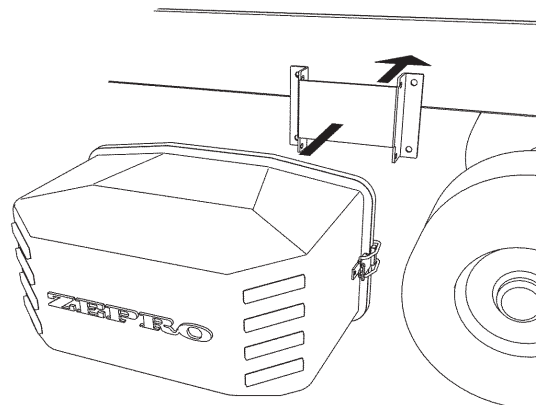


Image 48. Hook on the hydraulic unit

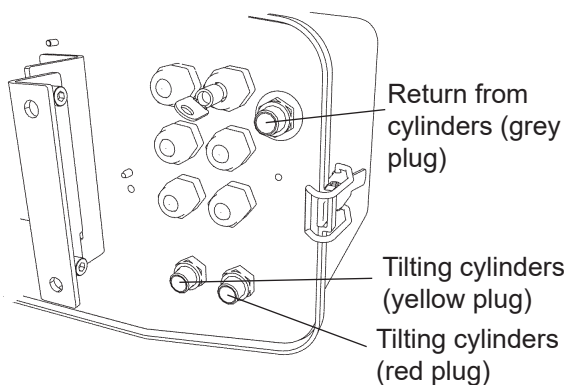


Image 49. Coupling hydraulic hoses

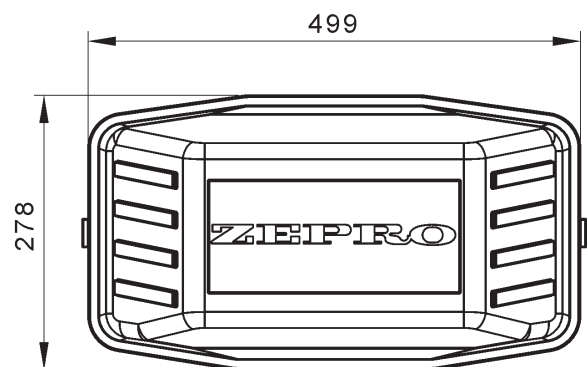


Image 50. Hydraulic unit - Dimensions

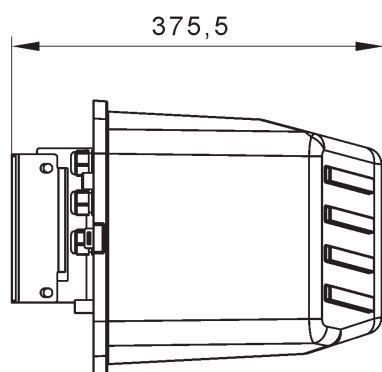


Image 51. Hydraulic unit - Dimensions

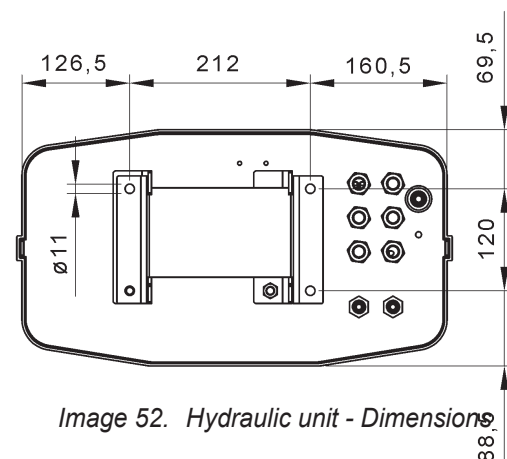
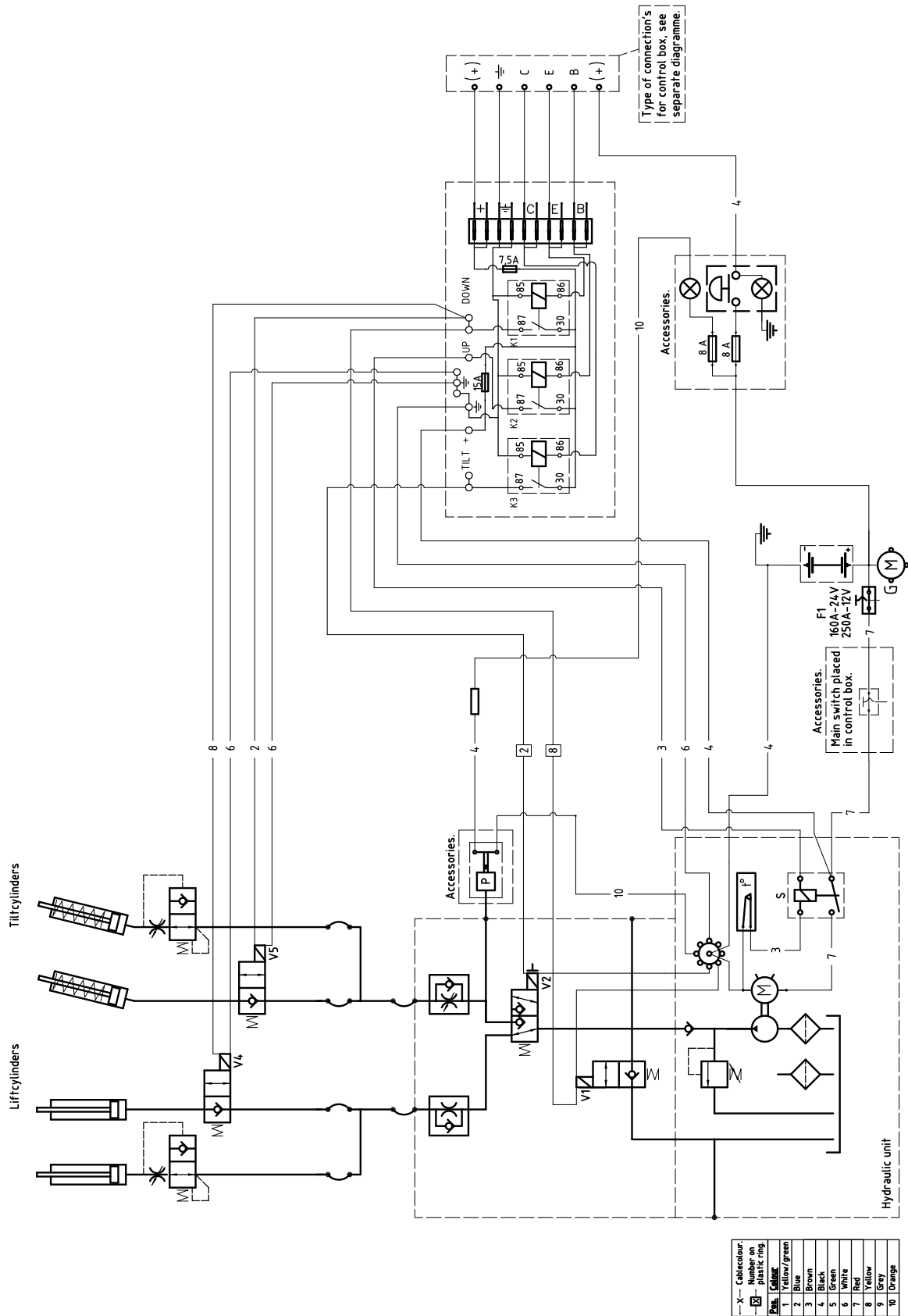


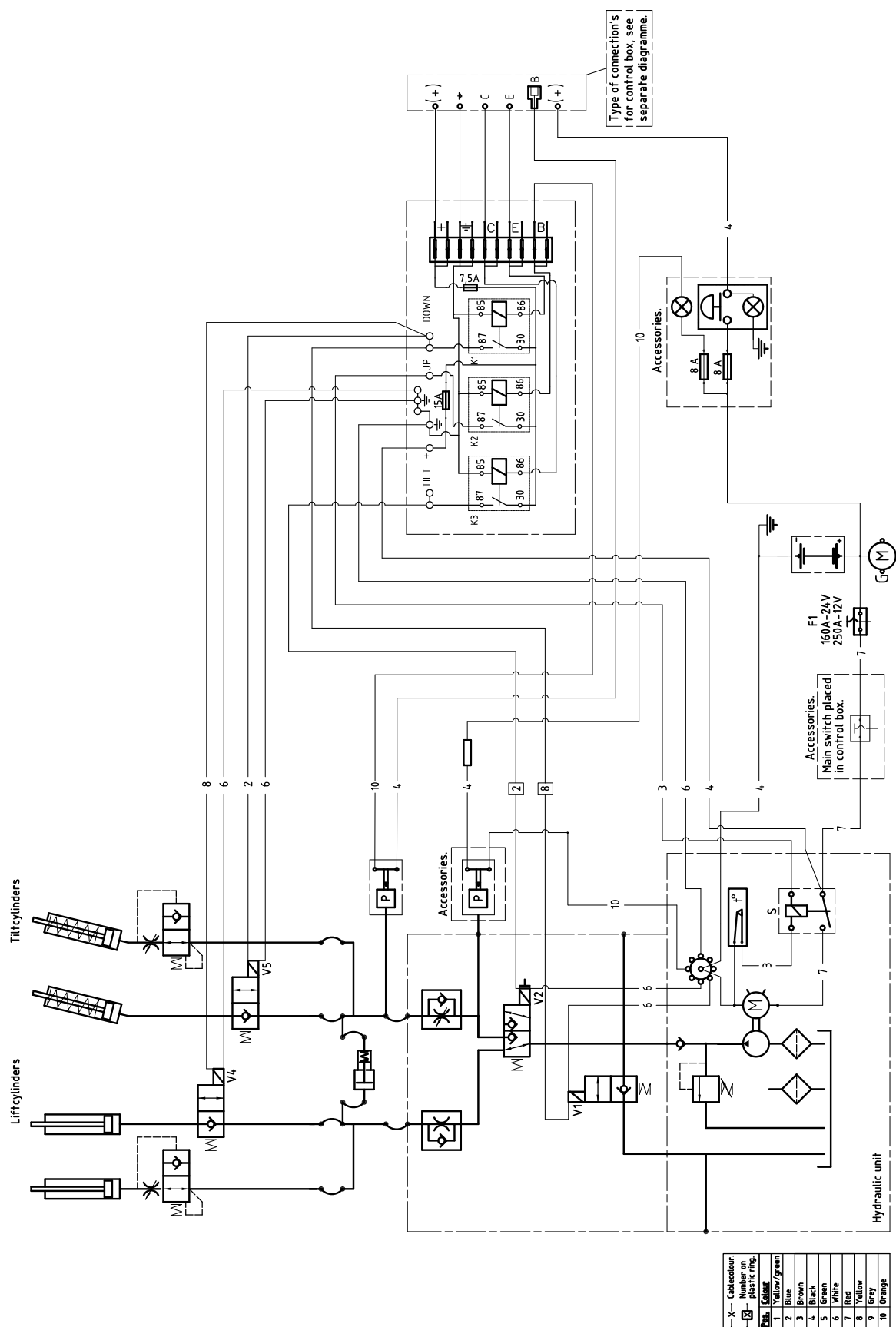
Image 52. Hydraulic unit - Dimensions

8 Electrical and hydraulic diagrams

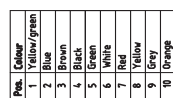
8.1 Z 10-135



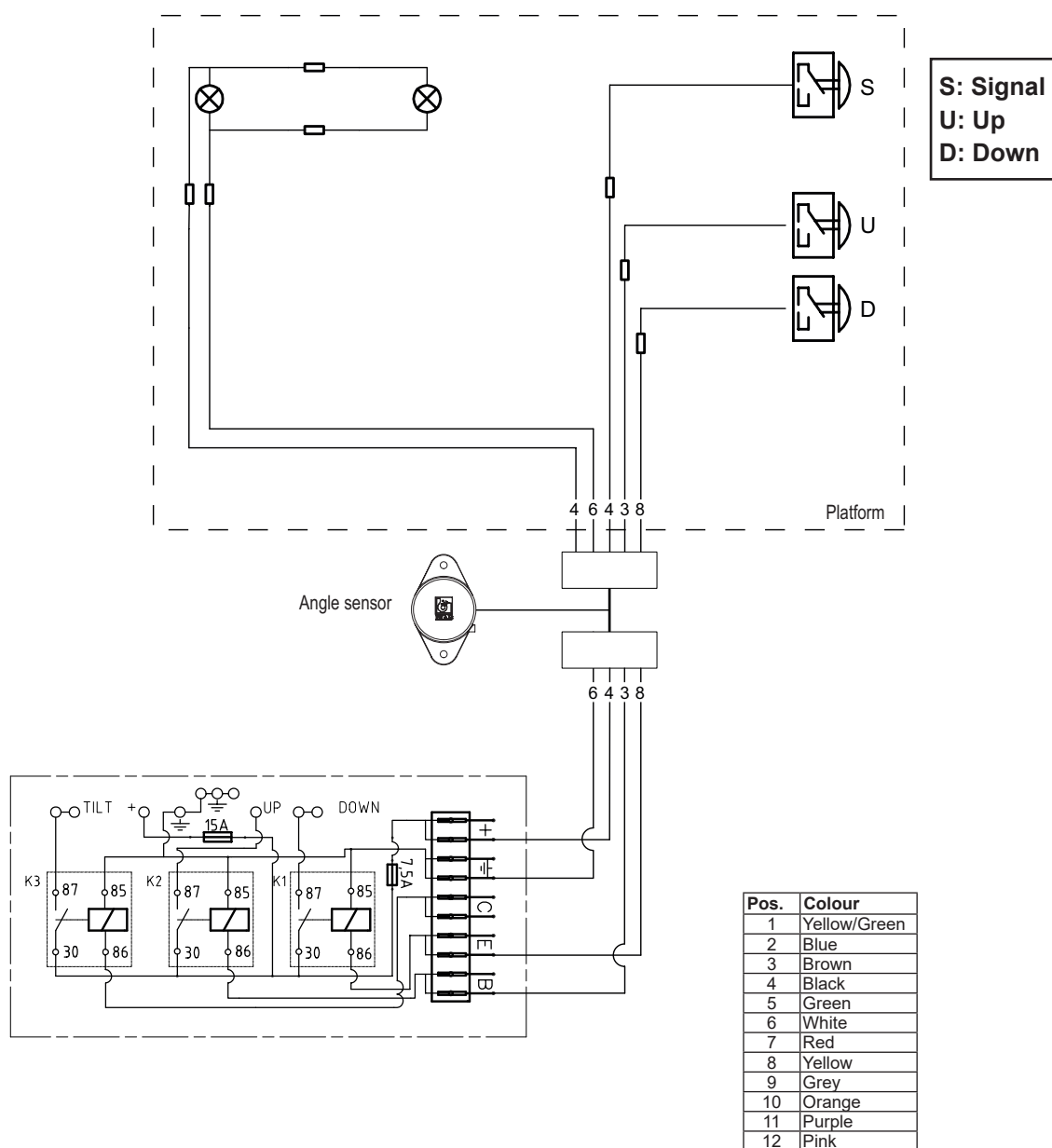
## 8.2 Z 10-135 hydraulic autotilt



## 36



## 8.4 Connecting warning lighting and foot controls



The most commonly occurring controller (CD Control Device) models are shown below. Possible controller models vary depending on lift model, configuration and relevant market.

When installing a controller with locking function or when installing several controllers, a connection card is used, see wiring diagram in "8.3 Connection to circuit board, 4 – button operation" on page 36.



## 9 Marking

Below, an overview of the location of the different markings is shown. Image of marking and further information can be found under the each subchapter for subsequent pages.

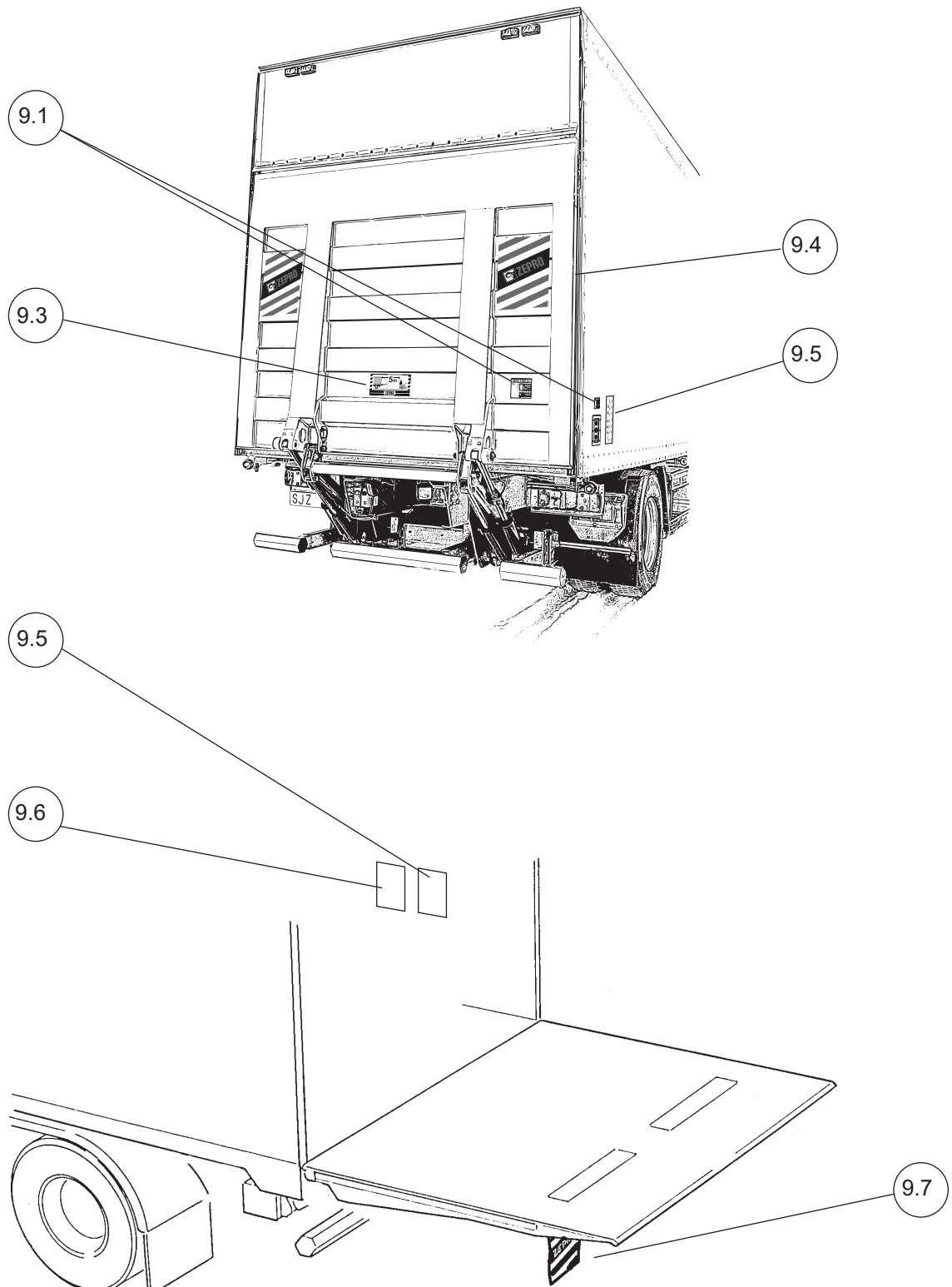


Image 53. Overview of labelling

## 9.1 Loading diagram

Affix the load diagrams for the appropriate lift model close to the primary controller and in a suitable clearly visible position on the vehicle body.

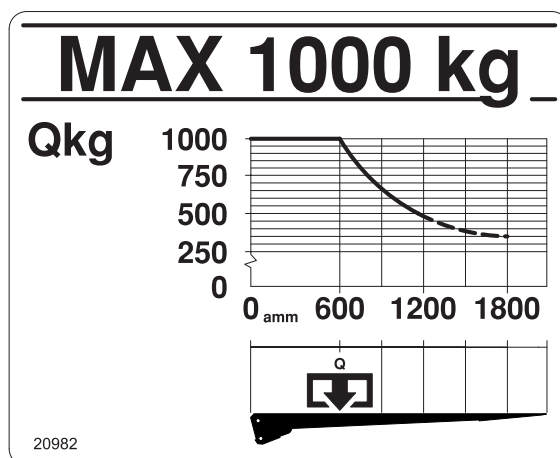


Image 54. Load diagram for load capacity 1000 kg, centre of gravity distance 600 mm.



## 9.2 Identification plate

The identification plate is fixed on to the tail lift's frame. Affix the corresponding sticker version of the identification plate, preferably by the cab door post to facilitate identification.

The identification plate contains the following information:

- Type of lift
- Max. permitted load in kg
- Production number
- Year of manufacture
- Address and tel. no. of manufacturer
- Country of manufacture
- Type number for approved underrun protection (RUPD)
- Type number for electromagnetic compatibility (EMC)

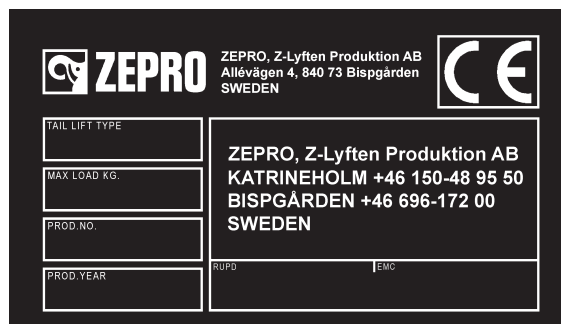


Image 55. Identification plate

## 9.3 Work area

Affix the sticker clearly visible on the rear of the vehicle.

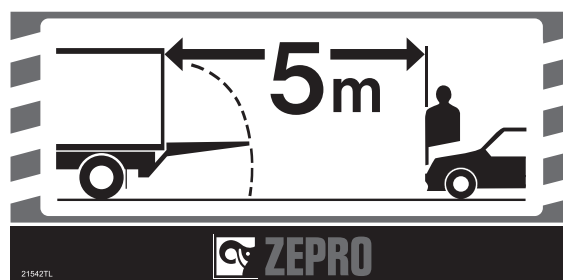


Image 56. Work area

## 9.4 Warning tape

Affixed along the platform edge strips to mark the platform edges in its lowered position. The location of the warning tape often coincides with the contour marking, in which case the warning tape can be omitted.

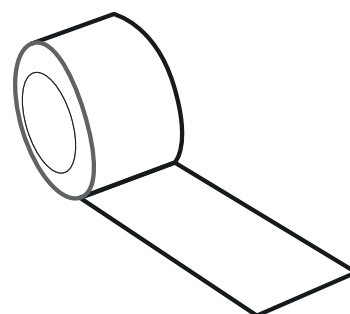


Image 57. Warning tape

9.5 Controller sticker

Affix the controller sticker next to the relevant controller. The stickers are available in standard versions and in reversed version (Option) for affixing on the opposite side of the vehicle. Make sure the stickers are affixed so the image of the vehicle/tail lift on the sticker is in the same direction as the vehicle on which it is affixed.

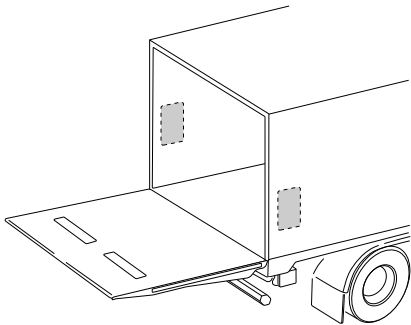


Image 60. Standard mounting

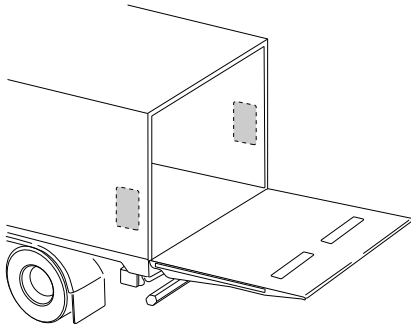


Image 61. Reversed mounting

Controller	Sticker (Standard)	Sticker (Reversed)
CD 1,2,9	55053TL*	55054TL*
CD 4	55055TL	55056TL
CD 10	77661TL	77662TL

\* The sticker section for 2-hand operation is delivered on the same backing paper and has to be affixed if the application has 2-hand operation. For applications without 2-hand operation, this part of the sticker is discarded.

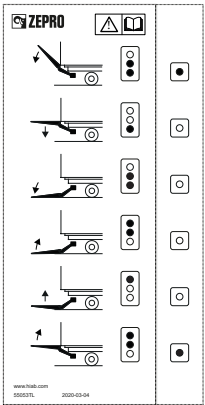


Image 58. Controller sticker for CD 1, 2, 9

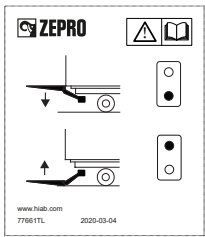


Image 59. Controller sticker for CD 10

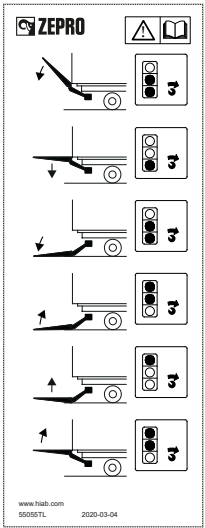


Image 62. Controller sticker for CD 4

## 9.6 Danger area

If one is fitted, affix the sticker on the inside of the vehicle body next to the hand control unit.

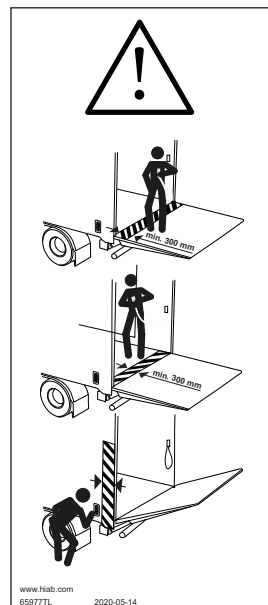


Image 63. Danger area

## 9.7 Warning flags

Attach warning flags as close as possible to the top and edge of the platform, where there is no risk of them coming loose when the platform is lowered to the ground. Swage the tracks together to secure the warning flags.



Image 64. Warning flags

## 10 Lubrication and fluid level check

The following lubrication points must be greased on installation. They must then be lubricated at least 4 times a year.

### 10.1 Lubrication

#### NOTE.

Use LE lubricant 4622 or the equivalent.

1. Right tilting cylinder, at lower bearing.
2. Right lift cylinder, at lower bearing.
3. 1st boom right side, at lower bearing.
4. Left lift cylinder, at lower bearing.
5. Left tilting cylinder, at lower bearing.
6. 1st boom left side, at lower bearing.
7. Left tilting cylinder, at upper bearing.
8. Right tilting cylinder, at upper bearing.
9. 1st boom right side, at upper bearing.
10. Right lift cylinder, at upper bearing.
11. Left lift cylinder, at upper bearing.
12. 1st boom left side, at upper bearing.

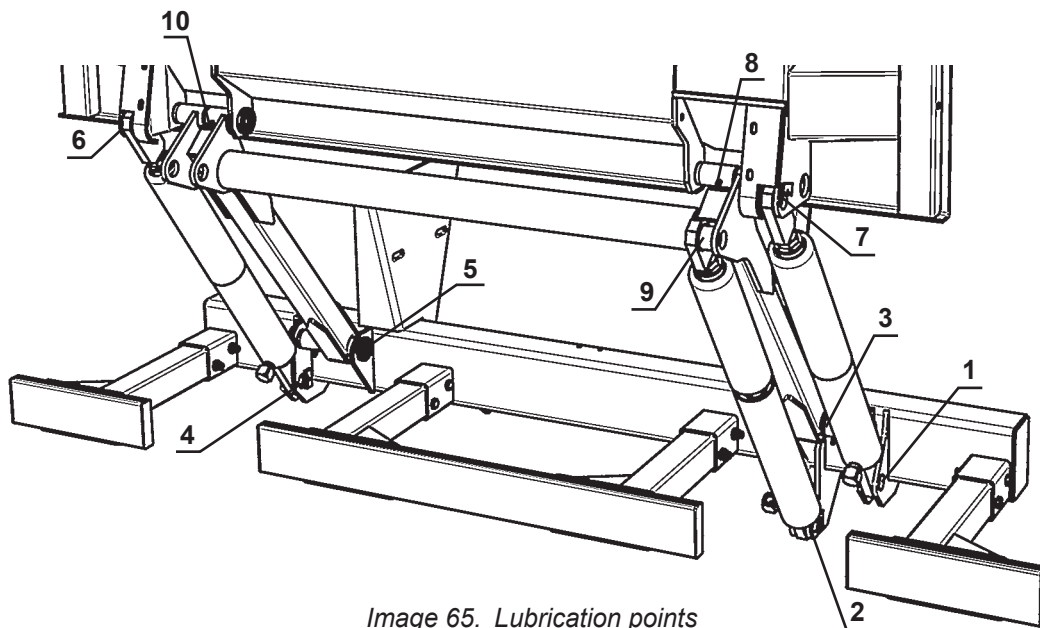


Image 65. Lubrication points

### 10.2 Oil level check

Check the fluid level in the tank during maintenance, top up if necessary. The marking on the hydraulic tank indicates the type of hydraulic fluid used. Mineral hydraulic fluid, product no. 21963 (1 litre), or biodegradable synthetic fluid, product no. 22235 (1 litre).

## 11 Testing and verification

Testing and verification of the tail lift takes place in accordance with the installation/delivery inspection. Verify that the tail lift is suitable for the vehicle in question and for the intended use.

### 11.1 Static load test

#### 11.1.1 Deformation

- Position the tail lift half way up to the vehicle floor level and with the platform in the horizontal position. Measure dimensions A-B-C-D for comparison as illustrated in Image 66.
- Place a test load on the platform according to the table (for the respective tail lift model/lifting capacity).
- Remove the test load from the platform.
- Repeat the measurement of A-B-C-D and verify that there has been no deformation of the lift or its fixing.

#### 11.1.2 Drift

- Place a test load on the platform according to the table. The tail lift must be at the same level and angle as the vehicle floor.  
Leave the test load for 15 minutes.
- Verify that the platform does not drift more than 15 mm on the vertical (points A and D) and no more than 2° in terms of the angle (points B and C) in relation to the floor.

**11.1.3 Static load (Test load 1.25 x tail lift loading capacity).  
For tail lifts with load centre of 1000 mm.**

Capacity	Load 500 kg	Load 1000 kg
	Distance on platform (L)	
450 kg	(450 kg) 675 mm	-
500 kg	750 mm	-
700 kg	1050 mm	-
750 kg	1125 mm	-
1000 kg	1450 mm	750 mm
1500 kg	2250 mm	1125 mm
2000 kg		1550 mm
2500 kg		1875 mm

**11.1.4 Static load (Test load 1.25 x tail lift loading capacity).  
For tail lifts with load centre of 750 mm.**

Capacity	Load 1000 kg	Load 1500 kg
	Distance on platform (L)	
1000 kg	940 mm	-
1500 kg	1410 mm	940 mm-
2000 kg	1875 mm	1250 mm
2500 kg	2340 mm	1560 mm

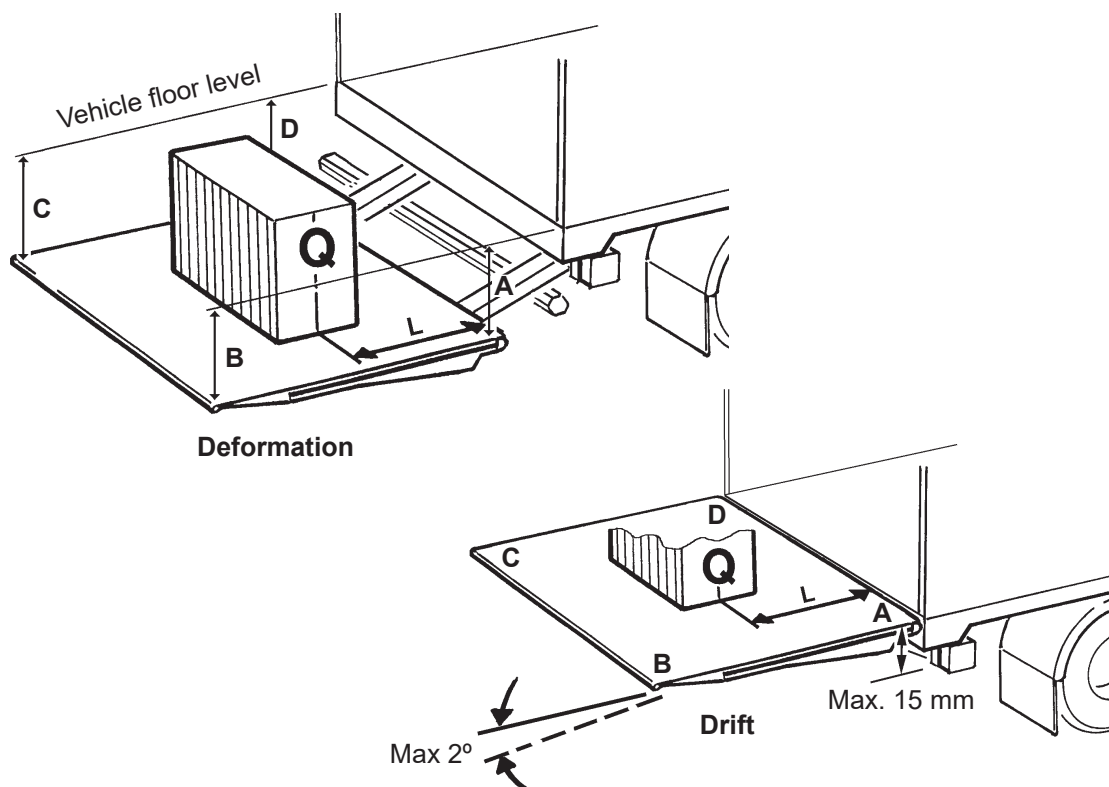


Image 66. Testing and verification

## 11.2 Dynamic load test.

### 11.2.1 Test with max. load

- Place a test load on the platform according to the table (for the respective tail lift model/lifting capacity).
- Check that the lift operates correctly in the normal range of movement, i.e. up, down, tilting at ground level and tilting at vehicle floor level.

### 11.2.2 Test with overload

- Place a test load on the platform according to the table (for the respective tail lift model/lifting capacity).
- The test load should be 1.25 x max. load for each lift model. Verify that the tail lift cannot lift the load when the up function is switched on (it may however be possible to tilt up the load).

### 11.2.3 Dynamic load (Test load 1.0 x tail lift loading capacity). For tail lifts with load centre of 600 mm.

Capacity	Load 500 kg	Load 1000 kg
	Distance on platform (L)	
450 kg	600 mm	-
500 kg	600 mm	-
700 kg	800 mm	-
750 kg	900 mm	-
1000 kg	1200 mm	600 mm
1500 kg	1800 mm	900 mm
2000 kg		1200 mm
2500 kg		1500 mm

### 11.2.4 Dynamic load (Test load 1.0 x tail lift loading capacity). For tail lifts with load centre of 750 mm.

Capacity	Load 1500 kg	Load 2000 kg
	Distance on platform (L)	
1000 kg	750 mm	-
1500 kg	1125 mm	750 mm
2000 kg	1500 mm	1000 mm
2500 kg	1875 mm	1250 mm

### 11.3 Test of safety functions

The tail lift safety functions must be tested.

Check:

- That the red light in the driver's cab turns off when the platform is completely closed against the body and that it turns on when the platform is opened.
- That the tail lift cannot be activated if the cab switch is in the off position.
- That the tail lift cannot be activated when the main switch fuse is removed.
- That the overflow valve is activated when the lift is operated up to the vehicle floor level or end stops.
- That the tail lift cannot be lowered or tilted down if the electrical connector from the electric hose rupture valves is disconnected from the lift and tilting cylinders respectively.
- That there is a "max. load" marking on the platform and it is correctly positioned according to the loading diagram for the tail lift model concerned.
- That warning flags and reflectors are fitted and fulfil their function correctly.
- That all safety and operating stickers are affixed in their respective positions.
- That the platform's mechanical lock is functioning correctly (where applicable).
- That the instructions for using the tail lift have been left in the driver's cab.
- That the CE declaration of conformity has been completed.



## 12 Disassembly

If the tail lift has to be removed from the vehicle, for example to transfer it to another vehicle, for storage or for modification, please follow these instructions.

1. Support the platform with a crane or similar equipment that can safely carry the platform's weight (see weight info).
2. Dismantle the upper pivot of the tilting cylinders from the platform and rest the cylinders on the ground.
3. Run the tilting cylinders to their minimum stroke limit to remove pressure from the circuit.
4. Dismantle the side profiles from the platform. Loosen the grease nipples and lock screws in the platform pivots.  
Use the Zepro special tool for the platform pivots. Hammer outside with the sliding weight.
5. Follow the same procedures for the other side.
6. Lift off the platform.
7. Raise the 1st booms to their highest position.
8. Disconnect +12-24 V from the control card.
9. Disconnect all controllers from the control card.
10. Support the support frame from underneath, for example with a car jack.
11. Remove the support frame from the vehicle frame by loosening the bolts and carefully lowering the support frame to the ground with a car jack.

## 13 Specifications

### 13.1 Weights

Many of the lift components are heavy, requiring the use of lifting equipment to get them in place. Make sure the weight of the components does not exceed the maximum permitted load of the lifting equipment. The following is a list of selected components with their weight.

<b>Complete Lift chassis (without platform)</b>		<b>Lift components (included in complete lift chassis)</b>	
Z 10-135	177,5 kg	Support frame Z 10-135 (incl. underrun protection)	53 kg
		Lift arm Z 10-135	40 kg
		3-piece underrun protection complete Z 10	20 kg
<b>Steel platforms</b>		Chassis bracket std complete.	14 kg
Steel platform 1400x1900 mm	175 kg	Hydraulic unit	20 kg
Steel platform 1500x2540 mm	235 kg	Lift cylinder Z 10-135	12.5 kg
		Tilting cylinder Z 10-135	14 kg each
<b>Aluminium platforms</b>			
Alu. platform 1350x2580 mm	111 kg		
Alu. platform 1600x2450 mm	124 kg		

## 13.2 Maximum power consumption - Minimum recommended conductor cross sectional area

### Z 10-135 (170 bar)

6500 (170 bar)	12 volt	24 Volt
Pump - Motor unit	220 A	120 A
Lowering valve	1.4 A	0.7 A
Shift valve	3.8 A	2.0 A
Magnet (electric hose rupture valve)	1.5 A	0.75 A
Solenoid	1.8 A	0.9 A
<b>Cable area:</b>		
Control cable	1.5 mm <sup>2</sup>	1.5 mm <sup>2</sup>
Supply cable 0-8 m	35 mm <sup>2</sup>	35 mm <sup>2</sup>
Supply cable 8-15 m	35 mm <sup>2</sup>	35 mm <sup>2</sup>
Supply cable > 15 m	-	35 mm <sup>2</sup>
<b>Power source:</b>		
Min. capacity	180 Ah	170 Ah
Min. voltage	9 volt	18 Volt

#### NOTE!

Ensure that the lift has access to the minimum recommended power capacity ( $I_{min}$ ). Some vehicle models have restrictions regarding the amount of power the lift can access from the existing battery.

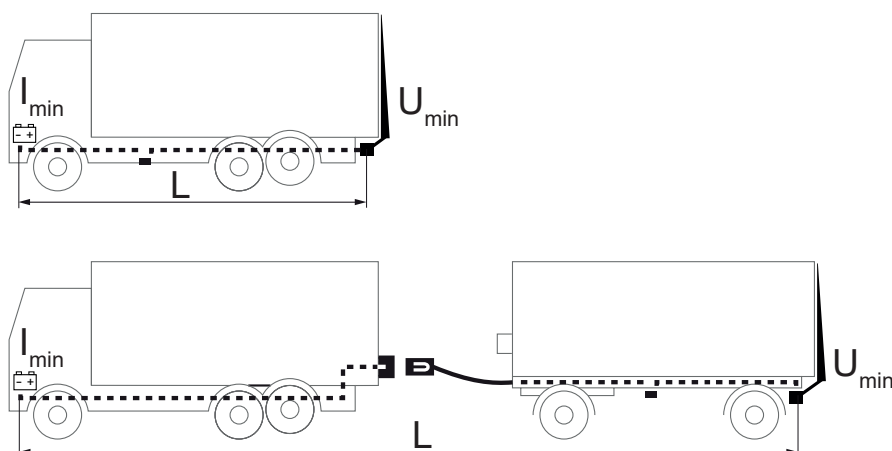


Image 67. Maximum power consumption - Minimum recommended conductor cross sectional area

## 13.3 Battery maintenance

When storing for longer than 1 week, it is recommended to disconnect the lift from the battery via the main switch or by releasing the lift's main fuse, in order to reduce the risk of the battery discharging. The length of time the vehicle can be stored without the battery charge level becoming too low depends on the condition of the battery, the charge level prior to storage and how much power other components in the vehicle take from the battery. After a period of storage, the battery must always be charged fully before operating the lift.

When installing the lift and when carrying out maintenance and repair work, when the lift is operated repeatedly without the vehicle being started and used, the battery charger must be used between operations to maintain the battery charge level.

#### NOTE!

The battery charger must not be connected when operating the lift. Risk of material damage.

13.4 Loading diagram

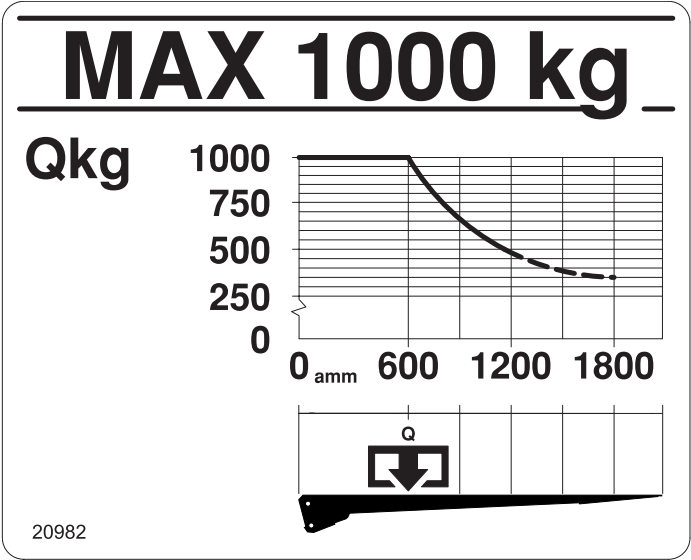
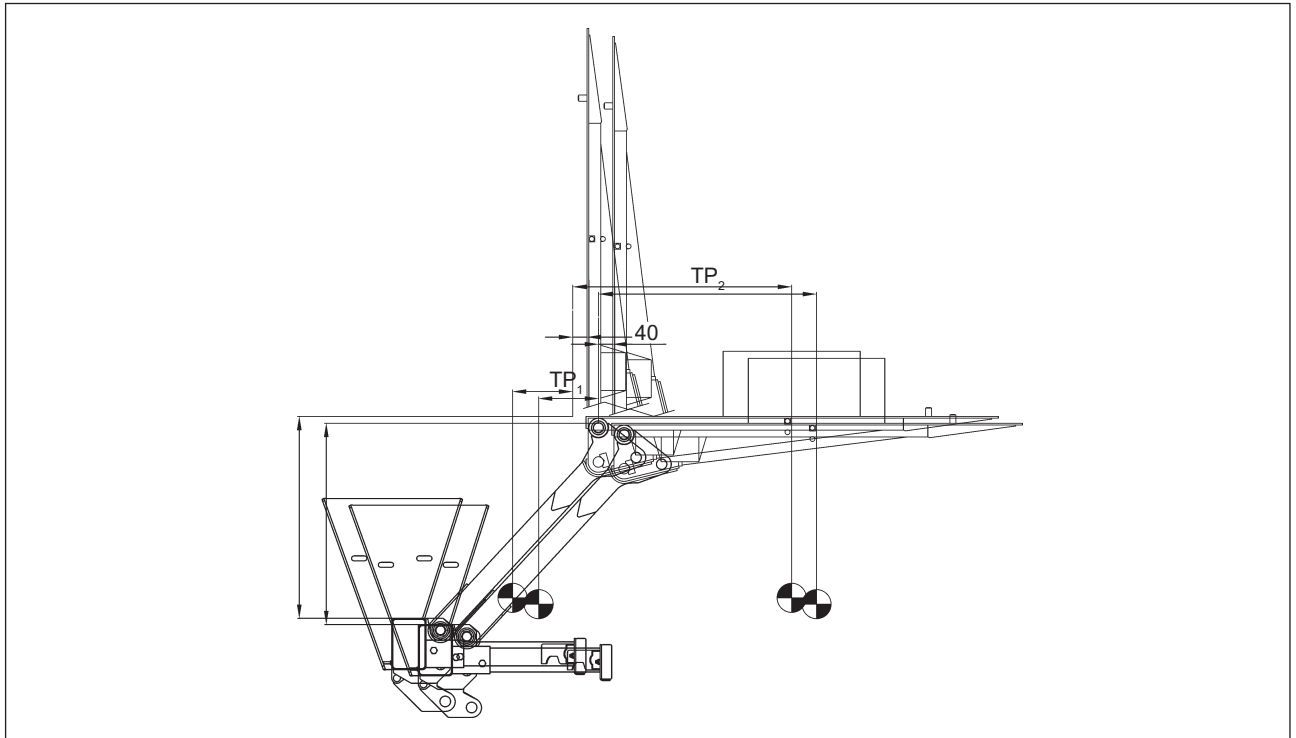


Image 68. Loading diagram

### 13.5 Centre of gravity



**Z-10-135, steel platform 1400x1900 mm**

	<b>C = 300</b>	<b>C = 500</b>	<b>C = 590</b>
<b>TP<sub>1</sub>(mm)</b>	<b>155</b>	<b>117.5</b>	<b>83</b>
<b>TP<sub>2</sub>(mm) 1000 kg</b>	<b>512</b>	<b>522</b>	<b>531</b>

13.6 Tightening torque

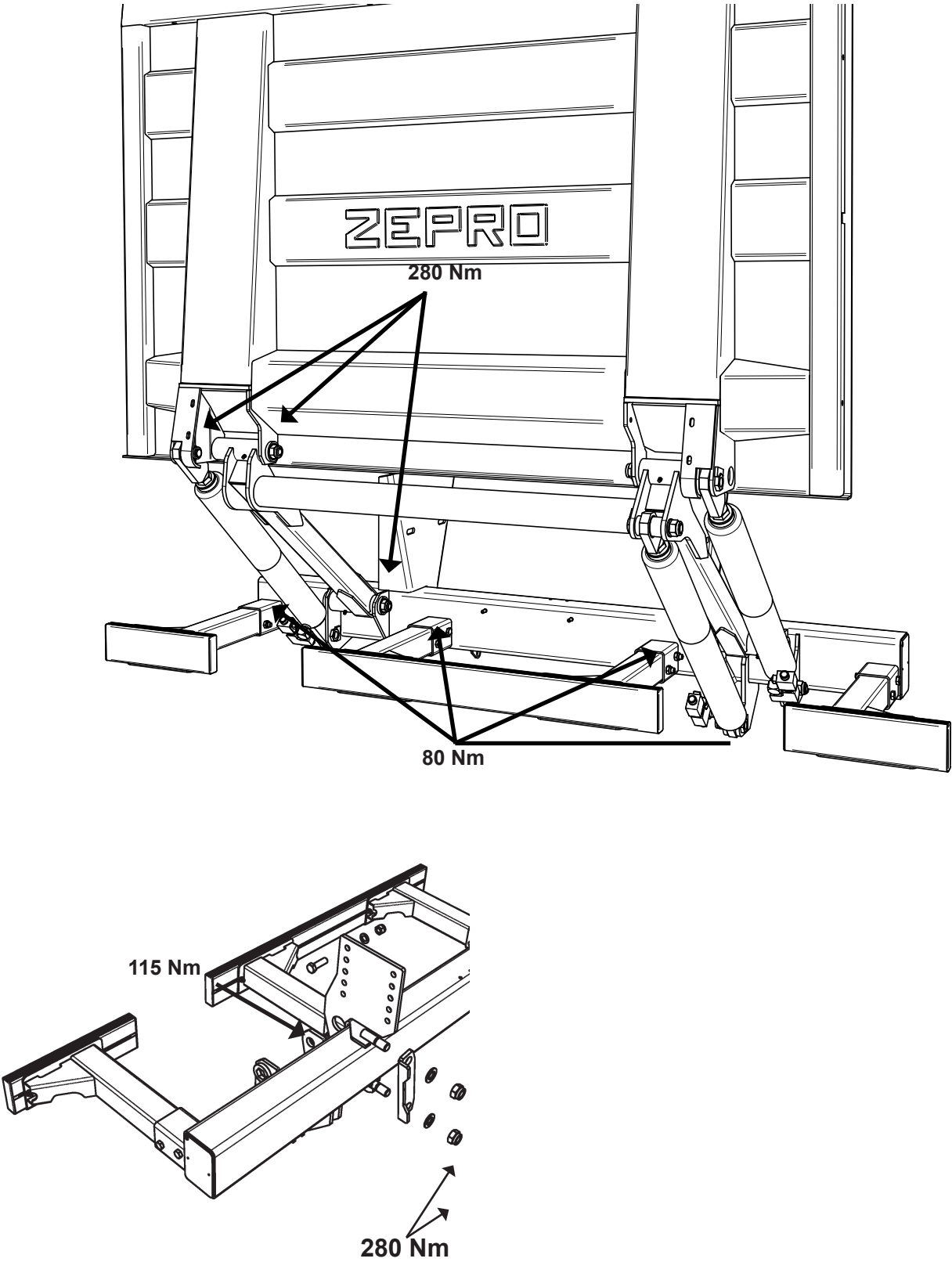


Image 69. Tightening torque



# HIAB

## **BUILT TO PERFORM**

Zepro, Del and Waltco are Hiab brands for tail lifts. Hiab is a world-leading supplier of equipment, intelligent services and digital solutions for on-road load handling. As an industry pioneer our company commitment is to increase the efficiency of our customers' operations and to shape the future of intelligent load handling.