# Installation Instruction

## Tail Lift

## Z 10-135

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55896TL
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ZEPRO

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# 1 Important information

## 1.1 Attention!

The following warning signs appear in the installation instructions and are intended to draw your attention to circumstances that can potentially cause problems, near misses, personal injury and/or damage to the product, etc.

**⚠ WARNING!**
WARNING indicates a potential hazard, which if ignored may lead to serious, life-threatening injury.

**⚠ CAUTION!**
CAUTION indicates a potential hazard, which if ignored, may lead to minor injuries.

**IMPORTANT!**
IMPORTANT indicates a risk of equipment damage.

***NOTE!***
*NOTE refers to additional information that may help the reader understand, or perform, a given operation.*

## 1.2 Technical support

If technical support is needed, please contact ZEPRO. Tel: +46 (0)10-459 05 04, E-mail: zeprotech@hiab.com.

Always be ready to state the tail lift's production number to guarantee you receive the correct information. The production number is given on the identification plate located on the tail lift frame.


*Image 1. Identification plate*

## 1.3 Identification

**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**

## 1.4 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.

CE

## 1.5 Product approval

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

## 1.6 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.

## 1.7 Guarantee

The ZEPRO warranty applies only if assembly has been carried out according to ZEPRO's assembly instructions by a ZEPRO approved bodybuilder.

After installation, testing and verification, register the tail lift’s delivery card to validate the warranty.

## 1.8 Repainting

**IMPORTANT!**
Piston rods and cylinder covers must not be painted. Among other things, this can damage the cylinder gaskets.
Boots, hydraulic hoses and cables may not be coated/painted as the solvent in the paint can damage the hoses and cables and impair durability.

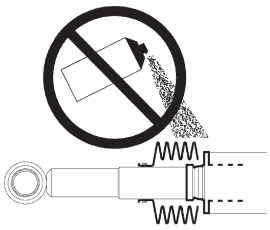


*Image 2. Piston rods, cylinder covers and boots*

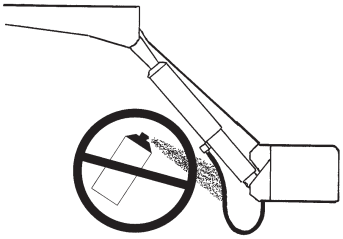


*Image 3. Hydraulic hoses*

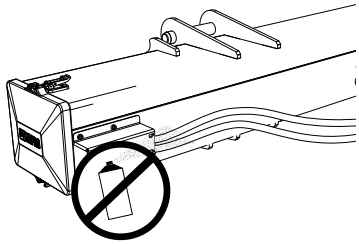


*Image 4. Cables*

## 1.9 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 the lift is operated repeatedly without starting or using the vehicle during lift installation or carrying out service and repairs, use the battery charger between operations to maintain battery charge.

**IMPORTANT!**
The battery charger must be disconnected when operating the lift. Risk of material damage.

# 2 Safety rules

## 2.1 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.

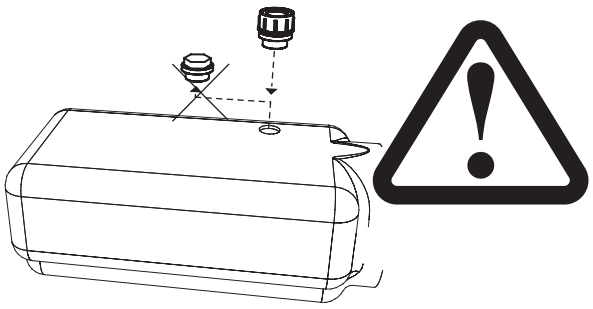


*Image 5. Replace the transport plug with the normal tank cap*

## 2.2 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: subframe, 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.

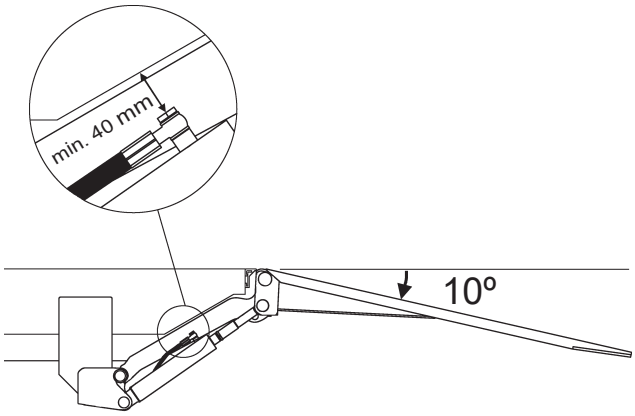



*Image 6. Clearance to the closest part of the cylinder must be at least 40 mm*

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

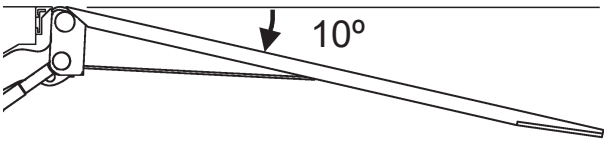



*Image 7. The platform must not be tilted down more than 10° from the horizontal*

## 2.3 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.

## 2.4 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

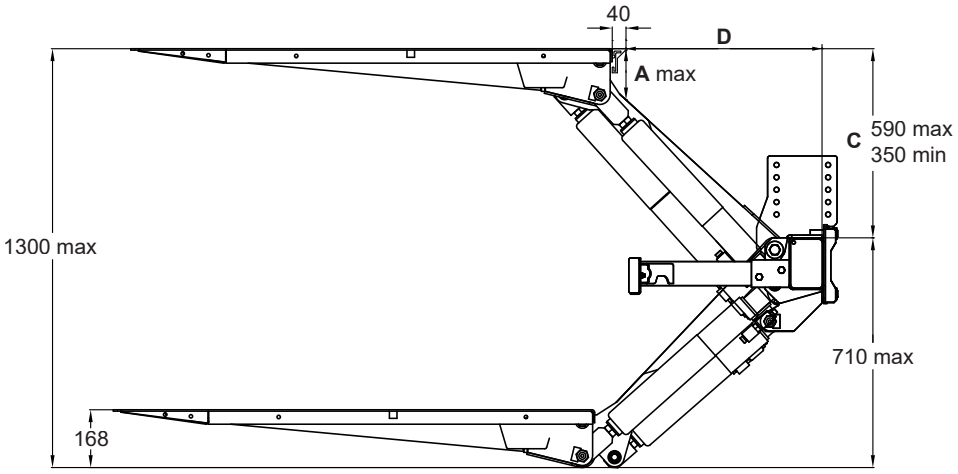
The D dimension is the space the lift needs, measured from the rear edge of the body to the front edge of the support frame (in the direction of the vehicle). Once the C dimension is determined, the D dimension can be obtained from the table.

## 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**.**

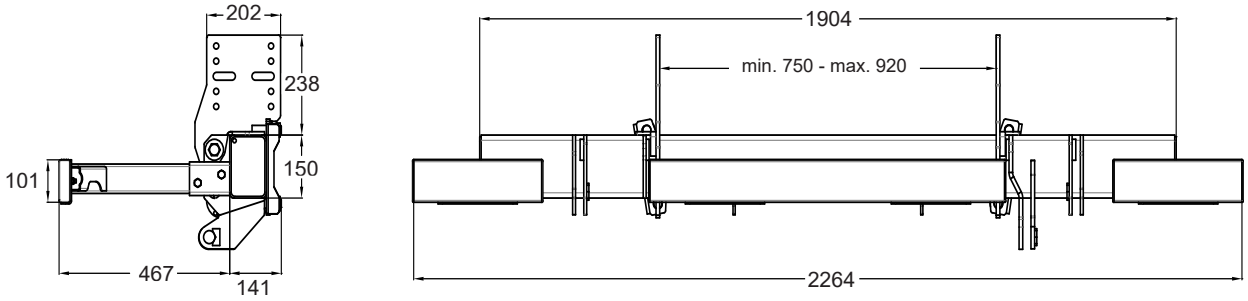
## 4.4 H dimension

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**..**




| C | A | D |
|---|---|---|
| 590 | 153 | 539 |
| 550 | 138 | 586 |
| 500 | 133 | 625 |
| 450 | 121 | 667 |
| 400 | 109 | 701 |
| 350 | 99 | 730 |

**Mounting for screwed joint**




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

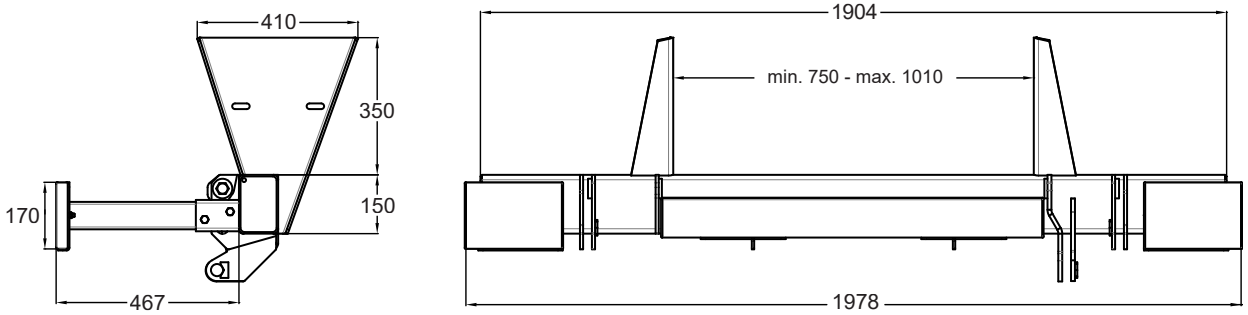



*Image 8. Installed dimensions*

***NOTE!***
*The underrun protection is included in the total length of the vehicle!*

# 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.

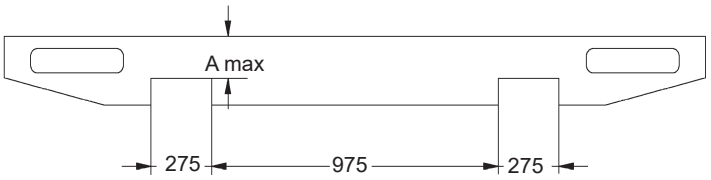



*Image 9. Z 10-135*

# 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 10.
2. Bolt or spot-weld the mounting jig to the rear beam, so that both midpoints are aligned, see Image 11.
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. 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. Use the lift's packaging and a forklift, See Image 12. 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 13

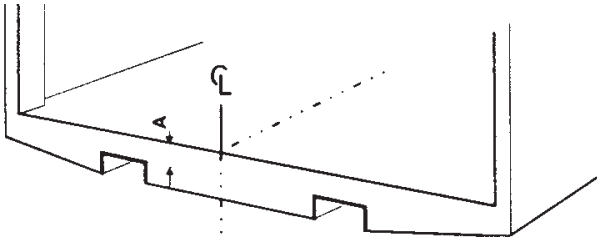


*Image 10. Measure and mark the midpoint of the rear beam of the vehicle*

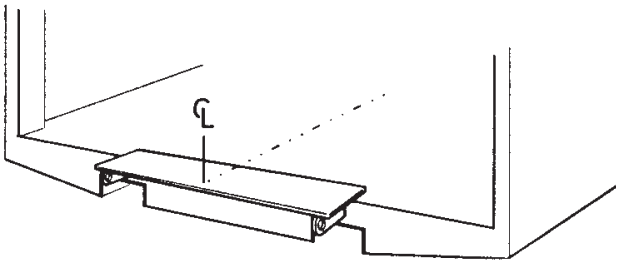


*Image 11. Bolt or spot-weld the mounting jig to the rear beam part. no. 60536 for Z 10-135*

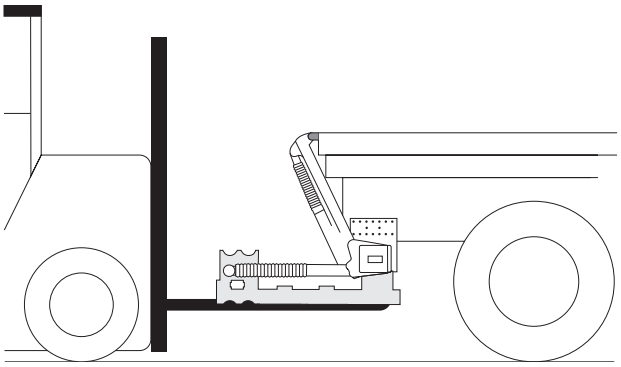


*Image 12. Use the lift's packaging and a forklift.*

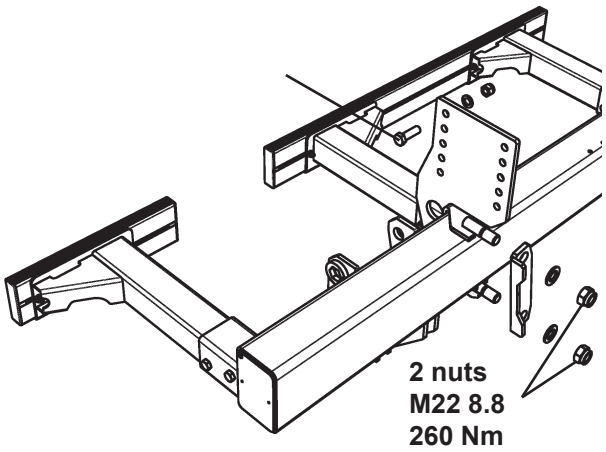



*Image 13. Install the U-profile with associated washers and nuts*

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 Ø14 mm holes in the frame, see Image 15.

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, Ø14 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 15. 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 14.

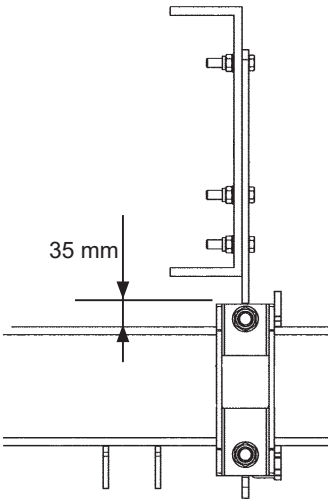



*Image 14. Note that the chassis bracket needs a free space of at least 35 mm between the vehicle frame and the support frame*

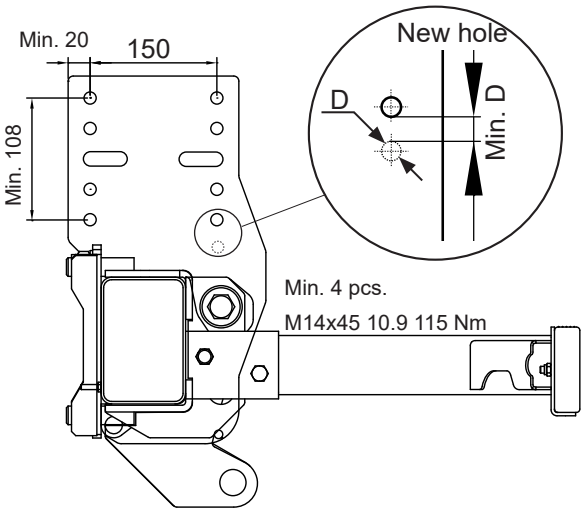



*Image 15. Install the chassis bracket with at least 4x M14x45 10.9 bolts*

## 6.2 Underrun protection

### 6.2.1 Installation

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

1. Install the four underrun protection brackets on the lift's frame, see Image 16.

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**.

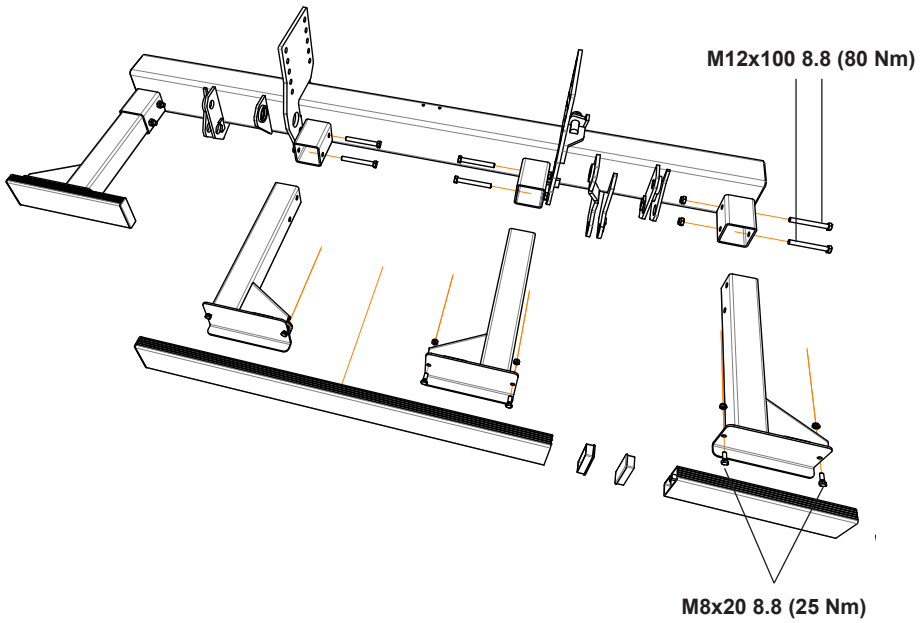



*Image 16. The inner part of the brackets can be fitted at one of four heights*

### 6.2.2 Statutory dimensions

Distance between the beam and the ground when the vehicle is unloaded: Max. 550 mm. See Image 17.

Horizontal distance from the outermost part of the platform to the underrun protection: Max 232 mm. See Image 18.

***NOTE!***
The underrun protection may be placed further back and lower.

***NOTE!***
*The underrun protection is included in the total length of the vehicle!*

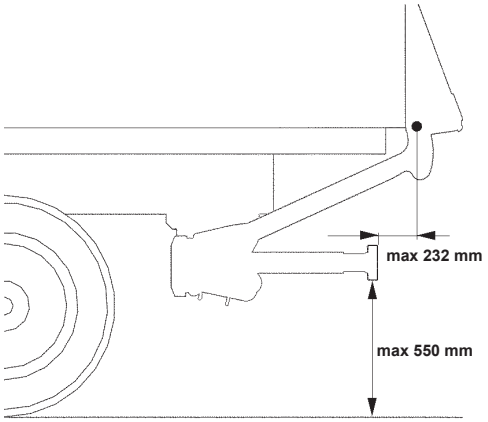



*Image 17. Statutory dimensions*

Horizontal distance from the outer edge of the beam to the outside of the wheel: Max 100 mm. See Image 18.

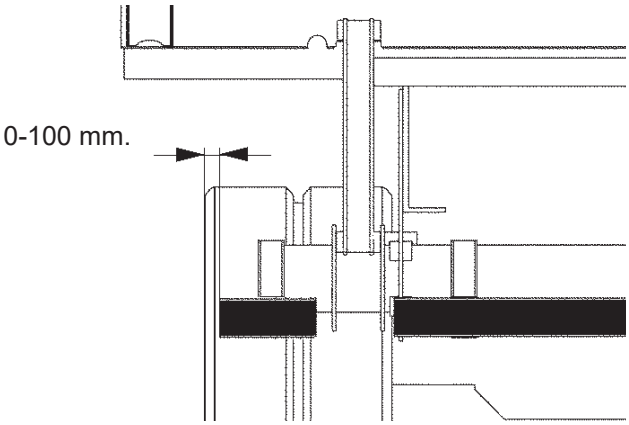



*Image 18. Statutory dimensions*

The lateral distance between the underrun protection and the moving parts of the tail lift must not exceed 25 mm. See Image 19.

Each of the individual parts of the underrun protection must have a surface area of at least 350 $cm^2$. See Image 19.

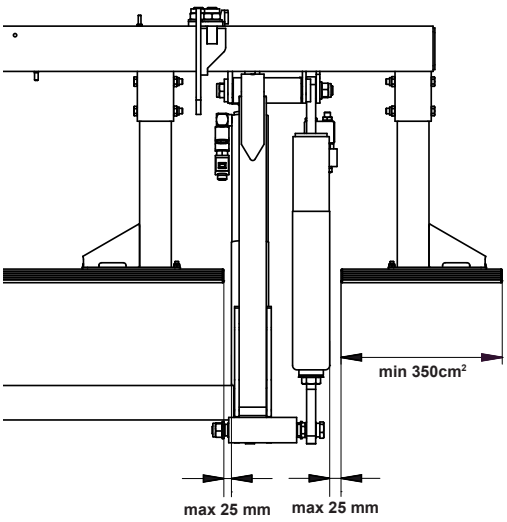



*Image 19. The lateral distance between the underrun protection and the tail lift's moving parts*

## 6.3 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.

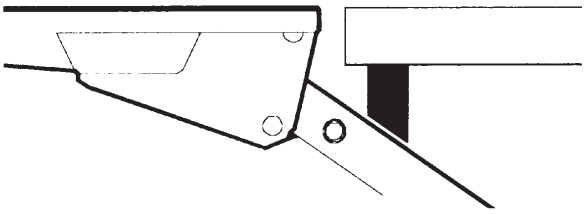


*Image 20. Fit end stops between the 1st booms and the rear beam of the vehicle floor*

> ⚠ **WARNING!**
> It is not permitted to perform welding on the lift arm. Installation must take place against the vehicle body.

## 6.4 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.

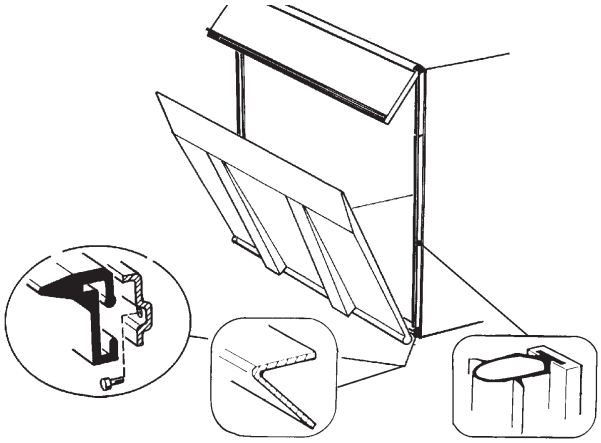


*Image 21. Installing a sealing strip*

## 6.5 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.

## 6.6 Platform

### 6.6.1 Installing steel platform

1. Install the steel platform on the arms and tilting cylinders by the platform. **Use shafts 31283 + 31284**. See Image 22.

### 6.6.2 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 23.

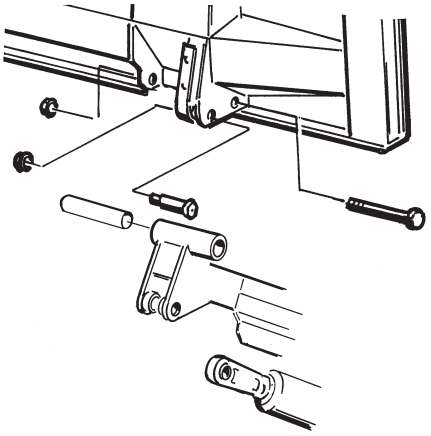


*Image 22. Installing steel platform*

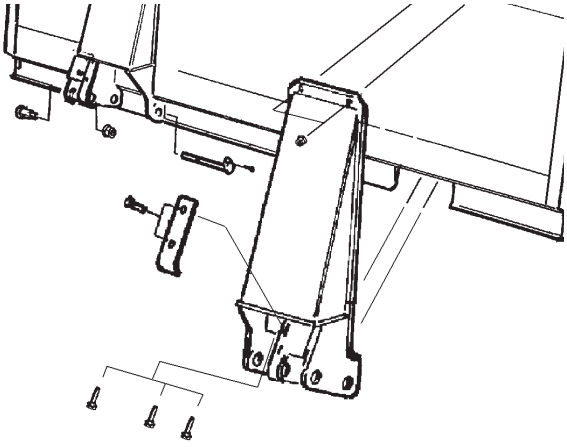
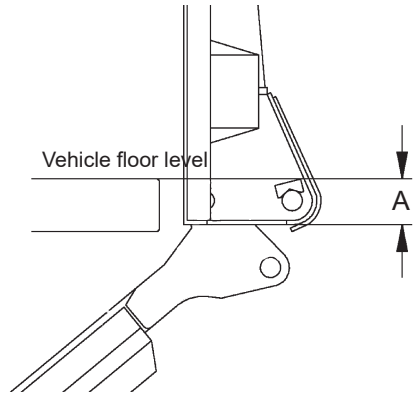


*Image 23. Installing aluminium platform*

The platform underhang (A) varies according to platform type, and this should be taken into account when fitting the upper seal. See Image 24.




| Type | Steel | |
|---|---|---|
| A (mm) | 69 | 74 |

*Image 24. 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 25.

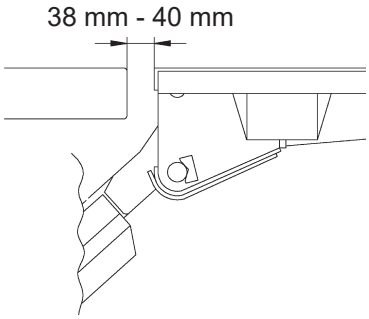



*Image 25. Check the position in relation to the rear beam of the vehicle*

### 6.6.3 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 26.
2. Unscrew the locking screws (pos. 1, 2, 3, see Image 27).
3. Turn the nut (pos. 4, see Image 27) 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 28). 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 29.

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

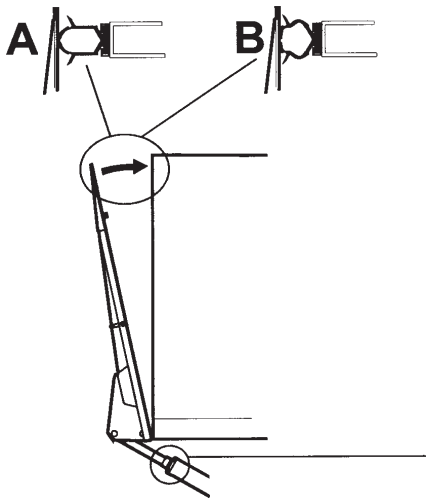



*Image 26. Adjusting the fit to the vehicle body*

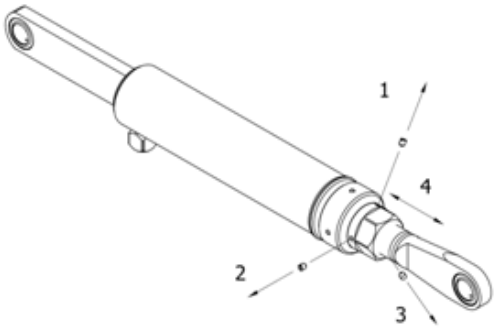



*Image 27. Adjusting cylinder length*

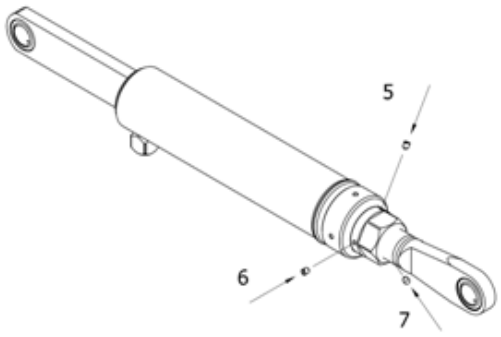



*Image 28. Screw tight the lock screws*

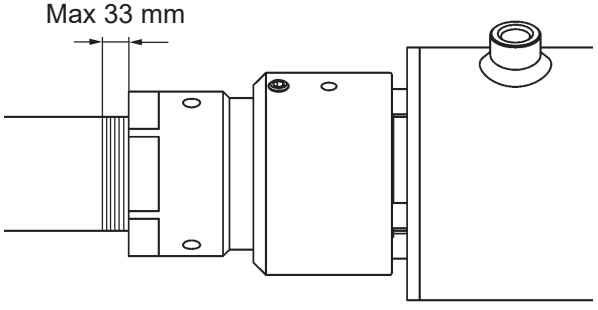



*Image 29. Maximum length*

### 6.6.4 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 31). Adjust to max 10º.
3. Loosen the end stop lock screw (1, 2). Screw the end stop all the way back towards the platform (3). Image 30.
4. Tilt the platform down to max. 10 degrees below the horizontal, see Image 32.
5. Tighten the lock screw in the end stop (5). See Image 31. Zepro recommends securing the screws with Loctite 243 or equivalent.

**Test all functions.**

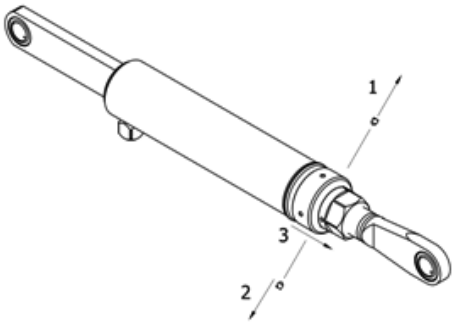



*Image 30. End stop with lock screw*

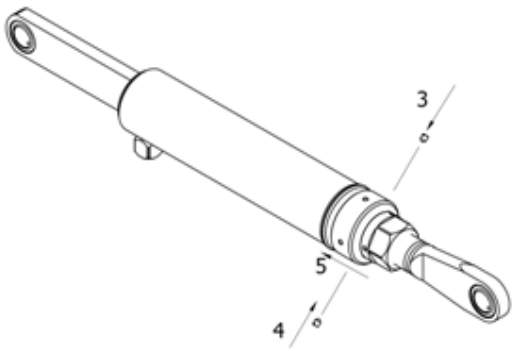



*Image 31. End stop with lock screw*

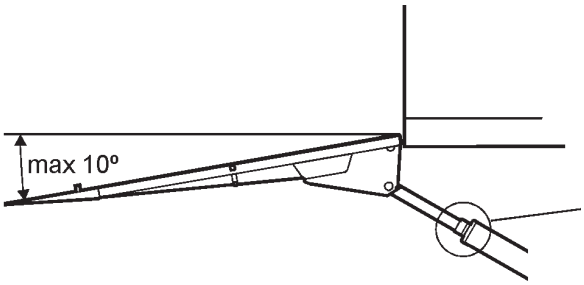



*Image 32. The downward tilt angle must be adjusted to max. 10°*

## 6.7 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.

## 6.8 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 Cable routing

## 7.1 General

**IMPORTANT!**

In order to ensure a high degree of reliability for many years to come, it is important that components such as batteries, chargers, main current and earth cables, fuses and main switches are dimensioned correctly and assembled with great accuracy. Insufficient battery power can permanently damage the electrical components in the tail lift (solenoid, electric motor, solenoid valves, relay board/ control board and more.)

Insufficient main power and/or earth cable area may result in overheating, poor performance of the electrical system and shortened life expectancy of the main electrical components.

Earth connection must be made primarily to the negative terminal of the battery. Alternatively, another well-protected earthing point, which will not increase the voltage drop, can be used. The earthing point must be so well protected that increased voltage drop due to oxidation over time can be eliminated. Risk of material damage. Warranty rights do not apply to material damage caused by insufficient earthing.

Always install a shrink hose over the cable connection when installing cable terminals.

Pay attention and be careful during all cable routing to ensure longer cable life and reduce the risk of unnecessary downtime:

- Cables must not be clamped to brake lines or the vehicle’s normal electrical system.
- The cable must be protected by rubber grommets when it passes through beams or walls.
- Cables must be installed sufficiently far from, or be protected against, sharp edges so they cannot chafe or otherwise sustain damage that could lead to a short-circuit and cable fires.
- Take care not to bend cables to too tight a radius as this can cause damage.

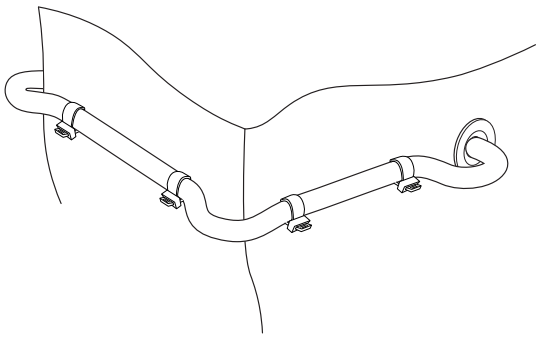


*Image 33. Protect the cable against sharp edges and use cable grommets*

*Image 34. Always use shrink hose over the cable connection when fitting cable terminals*

## 7.2 Sizing electrical systems

Ensure that the battery and charger capacity is sufficient for the product in question and that cable with sufficient cross-sectional area is used.

| Hydraulic unit 6500 (170 bar) | 12 volt |
|---|---|
| Pump - Motor unit | 220 A |
| Lowering valve | 1,40 A |
| Shift valve | 3,80 A |
| Magnet (electric hose rupture valve) | 1,50 A |
| Solenoid | 1,80 A |
| **Minimum recommended conductor cross-sectional area** (copper cables, plus and minus cables) | |
| Control power cable | 1.5 $mm^2$ |
| Main power cable, L < 7m | 35 $mm^2$ |
| Main power cable, L = 7 - 10m | 50 $mm^2$ |
| Main power cable, L > 10m | 50 mm2 * |
| **Battery** | |
| Min. capacity, $I_{min}$ (available for lift) | 180 Ah |
| Min. voltage during operation, $U_{min}$ (at lift) | 9 Volt |

| Hydraulic unit 6500 (170 bar) | 24 Volt |
|---|---|
| Pump - Motor unit | 120 A |
| Lowering valve | 0,70 A |
| Shift valve | 2,0 A |
| Magnet (electric hose rupture valve) | 0,75 A |
| Solenoid | 0,90 A |
| **Minimum recommended conductor cross-sectional area** (copper cables, plus and minus cables) | |
| Control power cable | 1.5 $mm^2$ |
| Main power cable, L < 17m | 25 $mm^2$ |
| Main power cable, L = 17 - 25m | 35 $mm^2$ |
| **Battery** | |
| Min. capacity, $I_{min}$ (available for lift) | 170 Ah |
| Min. voltage during operation, $U_{min}$ (at lift) | 18 Volt |

**** Additional batteries required***

***NOTE!***

*Make sure the tail lift has access to the minimum recommended current capacity ($I_{min}$).*

*Some vehicle models have restrictions regarding the amount of current the lift can access from the existing battery. Some vehicle models do not fully charge the battery. It may therefore be necessary to switch to a battery and sometimes also to a charger with a larger capacity.*

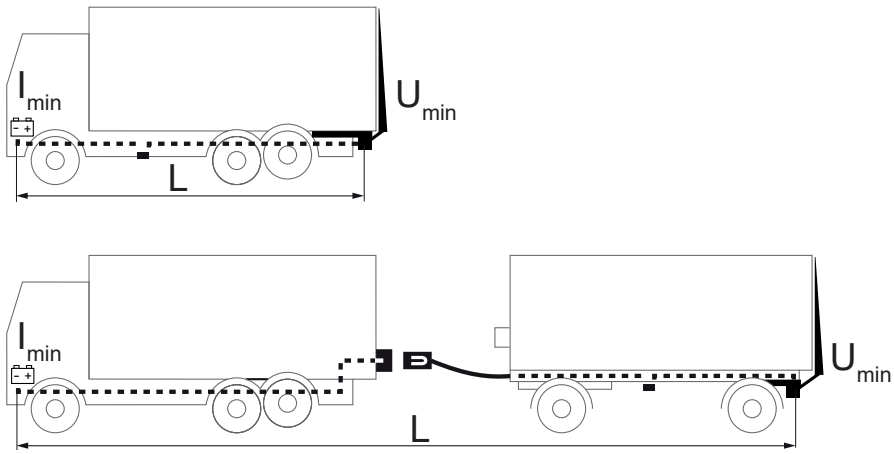



*Image 35. Battery capacity and definition of the length of the earth and main power cables*

## 7.3 Main power cable, earth cable, main fuse and main switch

Main switch should always be mounted when cab switches (CS) are not used, for example when installing on trailers. Main switches can also be installed in combination with cab switches (CS) if desired.

1. If the positive battery terminal is suitable for the main fuse of the lift, it can be used for mounting the fuse. Otherwise, secure the fuse box in a suitable, well-protected position as close to the battery as possible.
2. When using the fuse box, route the main power cable from the battery to the fuse box. Prepare the cable with cable terminals and shrink hose over the connections without connecting it. Connection is described later in section 9.
3. On tail lifts with cable-mounted quick connector for its earth connection, connect the earth cable to the quick connector.
4. Route/connect the tail lift earth cable to the negative terminal of the battery or to a well-protected earthing point.

**IMPORTANT!**
Earth connection must be made primarily to the negative terminal of the battery. Alternatively, another well-protected earthing point, which will not increase the voltage drop, can be used. The earthing point must be so well protected that increased voltage drop due to oxidation over time can be eliminated. Risk of material damage. Warranty rights do not apply to material damage caused by insufficient earthing.

**When installing without main switch**

5. On tail lifts with cable-mounted quick connector for its main power, connect the main power cable to the quick connector.
6. Route the main power cable from the tail lift to the fuse box/battery plus terminal. Prepare the cable with a cable terminal and shrink hose without connecting. Connection is described later in section 9.

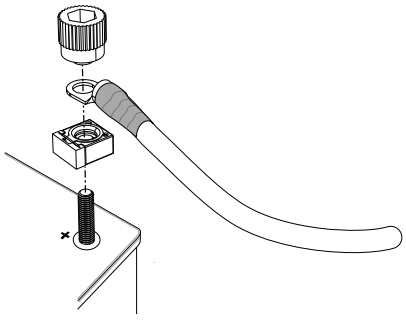


*Image 36. Connection to the battery's positive terminal*

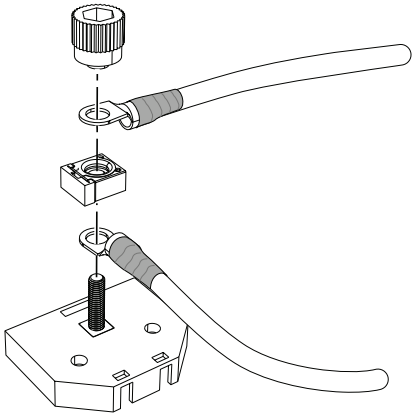


*Image 37. Connection to the fuse box*

### 7.3.1 Main power switch

1. The main power switch is installed on the bracket at the factory. Bolt the bracket to the underside of the body. Use the self-adhesive drilling template supplied.
2. Connect the main power switch cable to the quick connector on the tail lift power supply cable.
3. Connect the power supply cable to the other quick connector on the main power switch cabling.
4. Run the power supply cable from the main power switch to the fuse box / battery positive terminal. Prepare the cable with a cable terminal and shrink hose without connecting. Connection is described later in section 9.

> **IMPORTANT!**
> The positive cable to the battery and main fuse is connected later in Section 10, after the cable has been routed/installed.

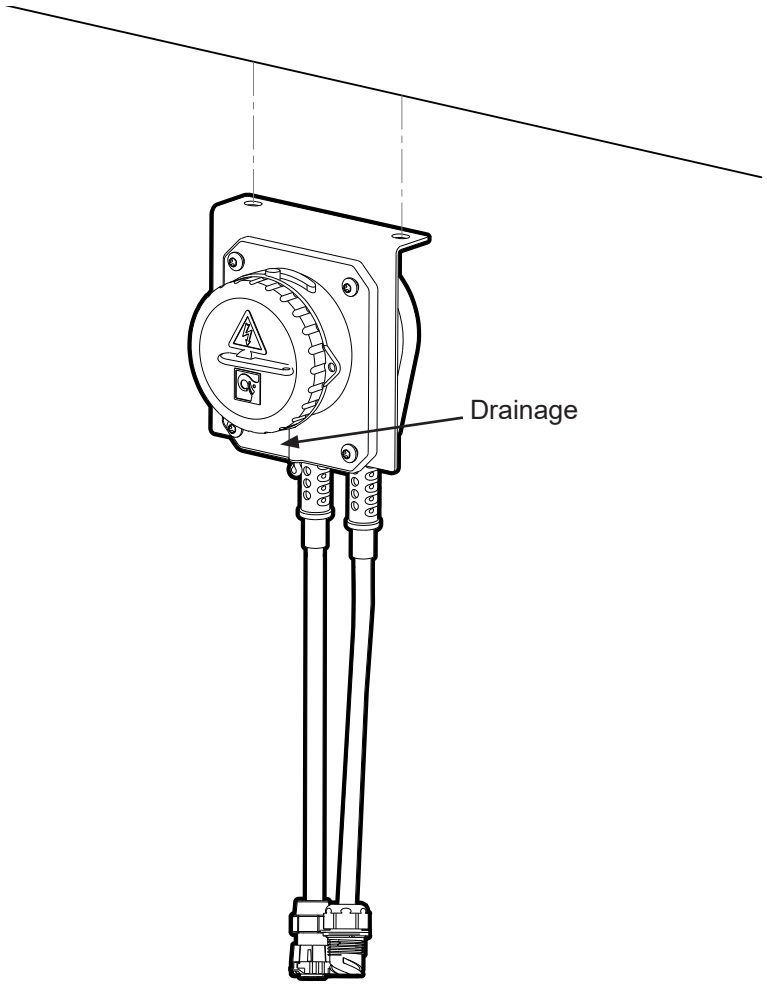



*Image 38. Installing the main power switch*

## 7.4 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.

## 7.5 Open platform alarm

An open platform alarm must be installed in the form of a warning lamp in the cabin. Route the lamp cables to the tail lift cable grommet. Connection is described later in section 9.

## 7.6 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 39

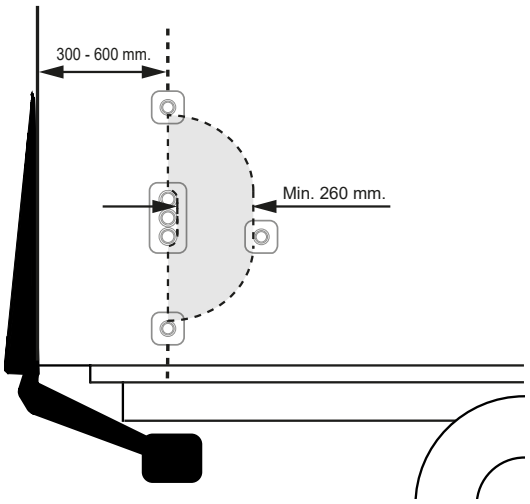



*Image 39. Installing controllers*

***NOTE!***
All cable inlets must be pointing downwards.

3. The controller cable connects to the control card. See section "9.5 Connecting controller" on page 37.

**⚠ 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.

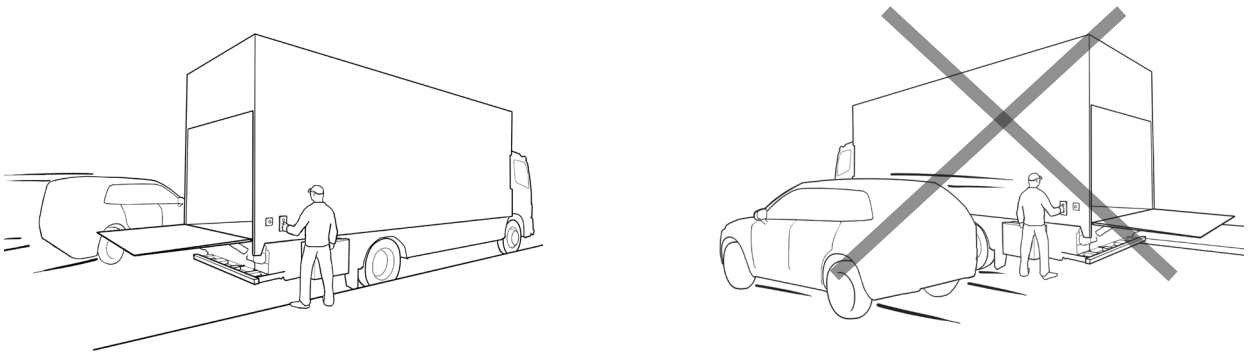


*Image 40. Installing controllers*

## 7.7 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 dávertissement et commande au pied.760508TL ES Luces de aviso y dispositivos de mando con el pied.76723TL EN Warning lightning and Foot controls.760507TL DE Warnleuchten und FuBschalter.

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, see Image 43. 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 42.

2. Route the cable along the 1st boom and fix with cable ties according to Image 44. 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.

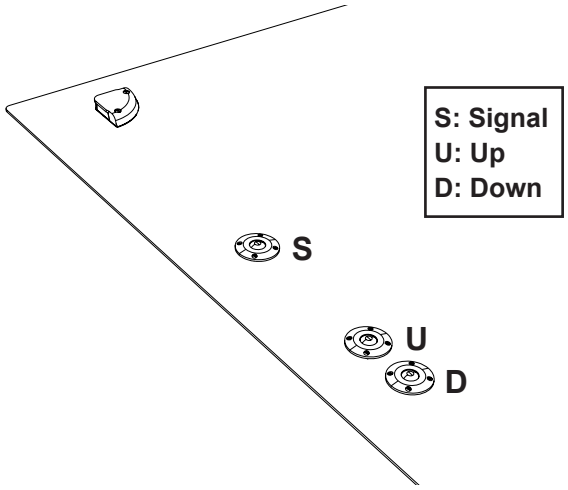



*Image 41. Warning lighting and foot controls*

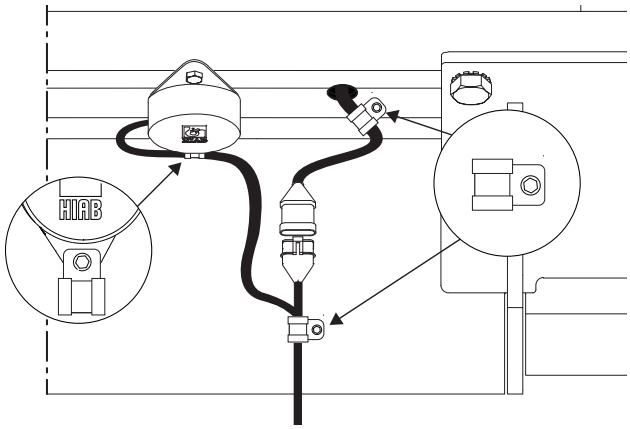



*Image 42. Connection of cabling on platform with warning lighting or warning lighting and foot controls*

## 7.8 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 dávertissement et commande au pied.760508TL ES Luces de aviso y dispositivos de mando con el pied.76723TL EN Warning lightning and Foot controls.760507TL DE Warnleuchten und FuBschalter.

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2. Route the cable along the 1st boom and fix with cable ties according to Image 44. 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 "9.4 Connecting warning lighting and foot controls" on page 36and section "9.5 Connecting controller" on page 37.

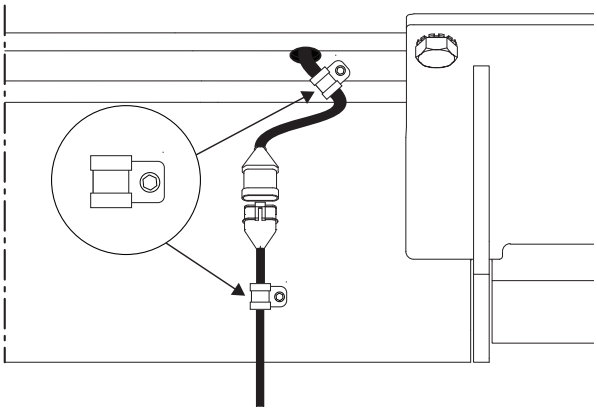


*Image 43. Connection of cabling on platform with only foot controls*

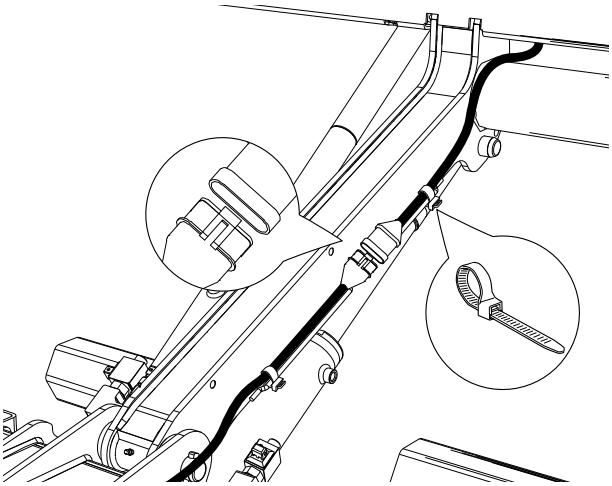
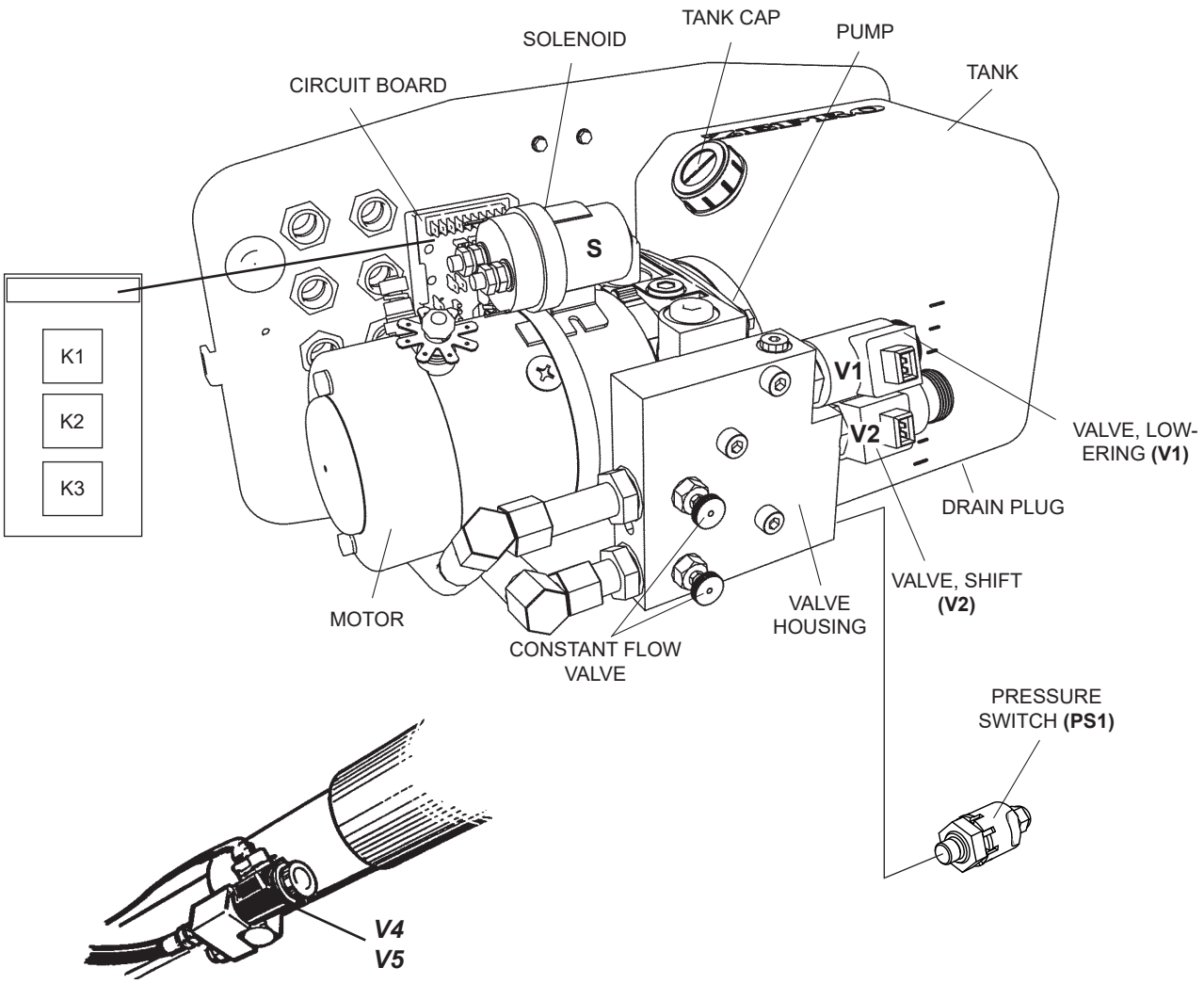


*Image 44. Installing cabling. The switch is present only on cables for installation with warning lighting.*

# 8 Hydraulic unit

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

| Function | Input signal | Output signal | Comment |
|---|---|---|---|
| Tilt down[1] | C+E | V1+V2+V4+V5+K1+K3 | |
| Tilt down[2] | 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

## 8.2 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 46. The hydraulic hoses are connected according to Image 47. Also see dimension Image 48, Image 49 and Image 50.

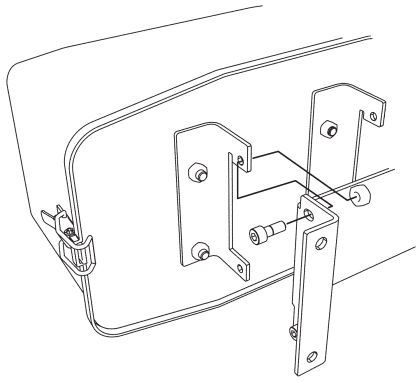


*Image 45. Hydraulic unit's mounting*

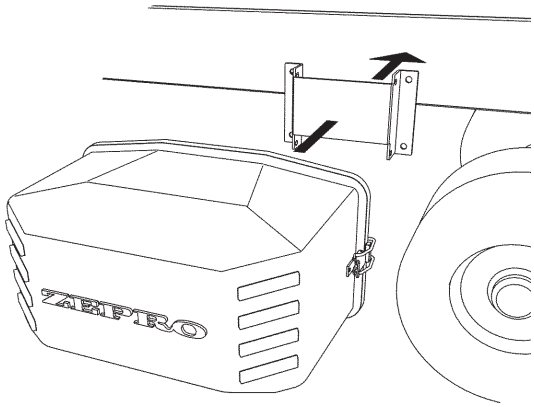



*Image 46. Hook on the hydraulic unit*

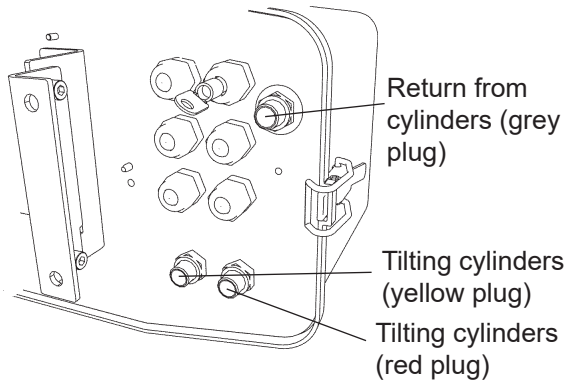



*Image 47. Coupling hydraulic hoses*

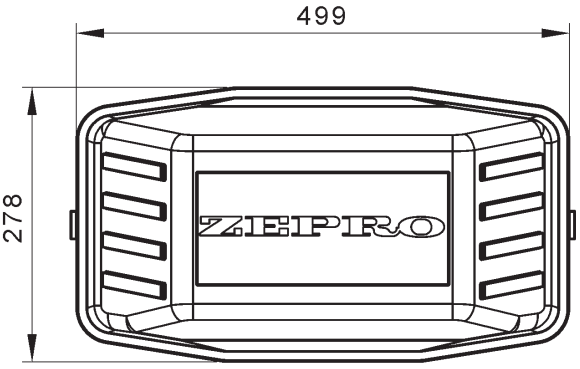



*Image 48. Hydraulic unit - Dimensions*

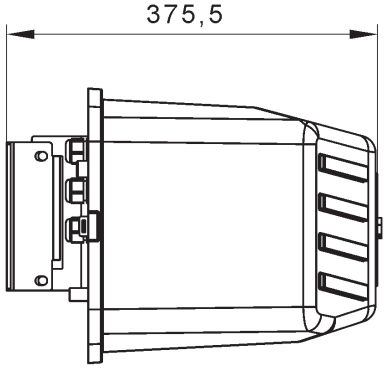



*Image 49. Hydraulic unit - Dimensions*

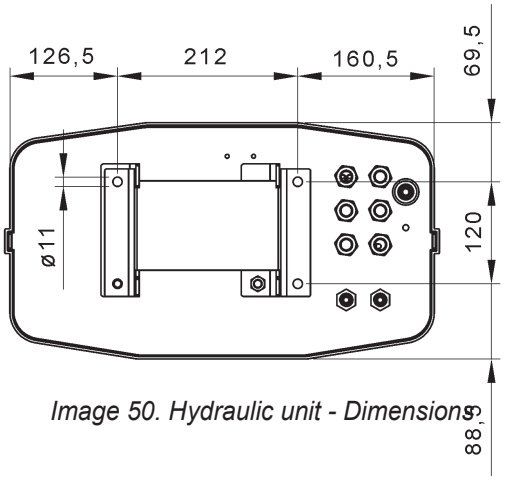
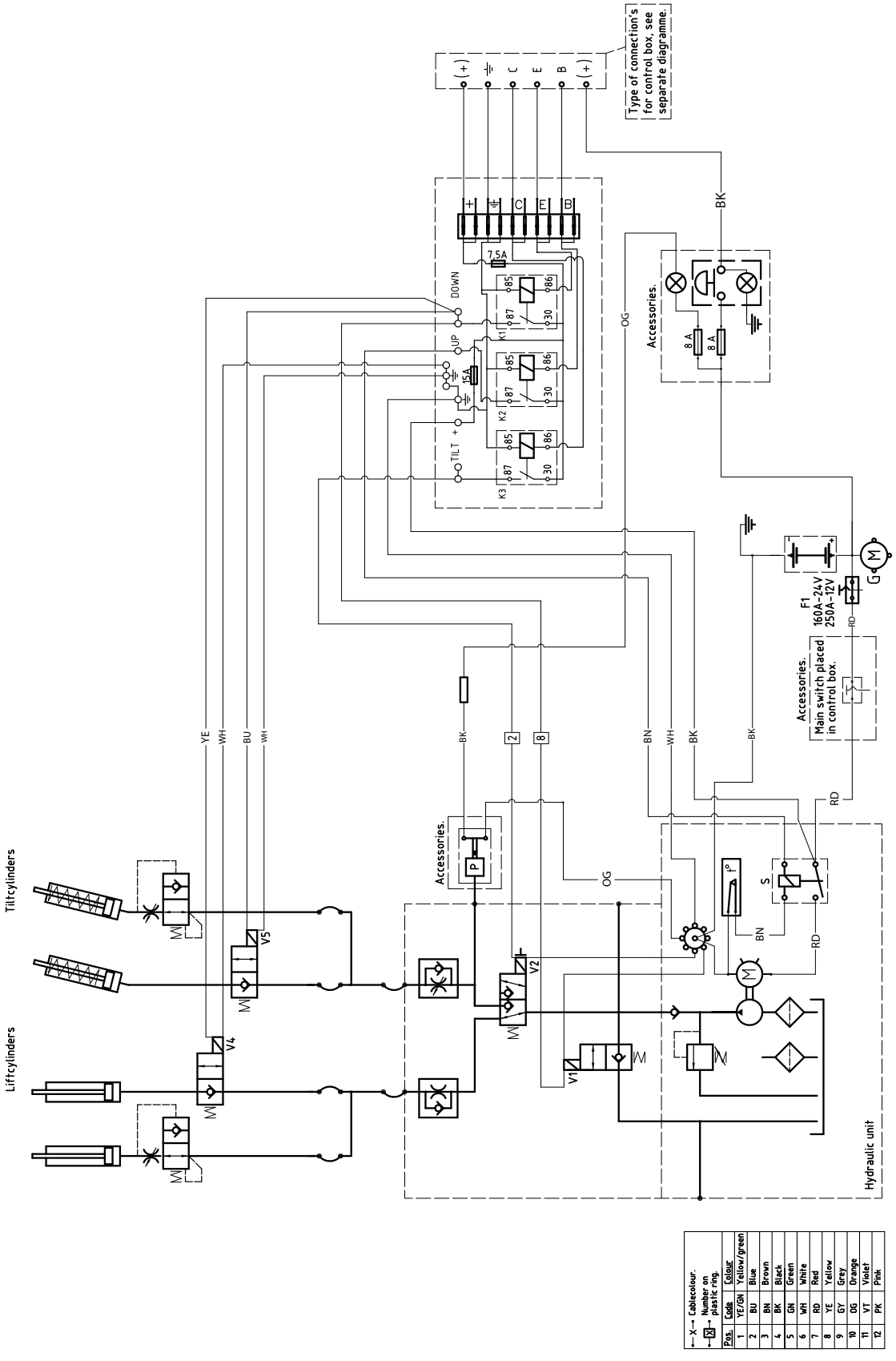


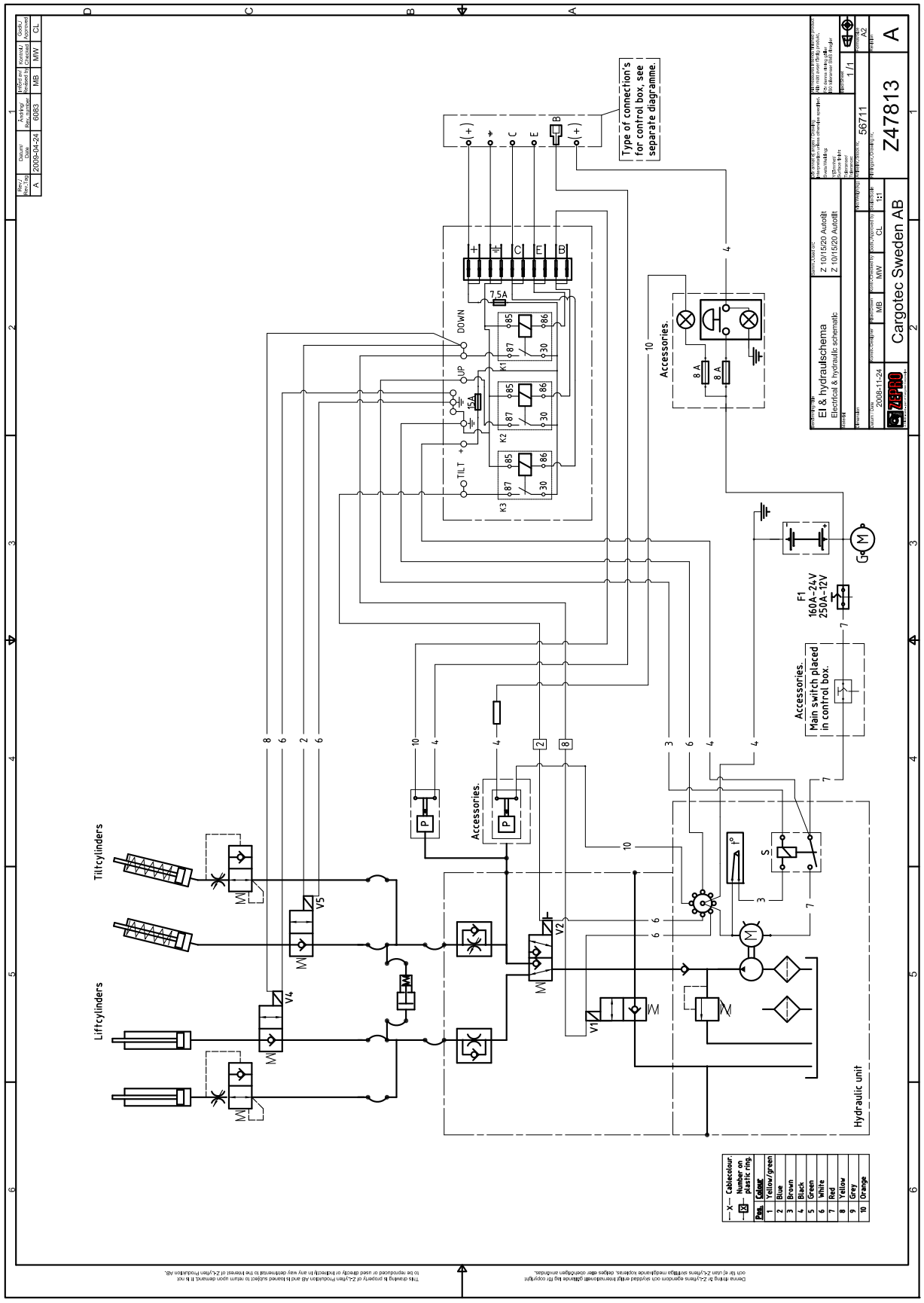

*Image 50. Hydraulic unit - Dimensions*

# 9 Electrical and hydraulic diagrams

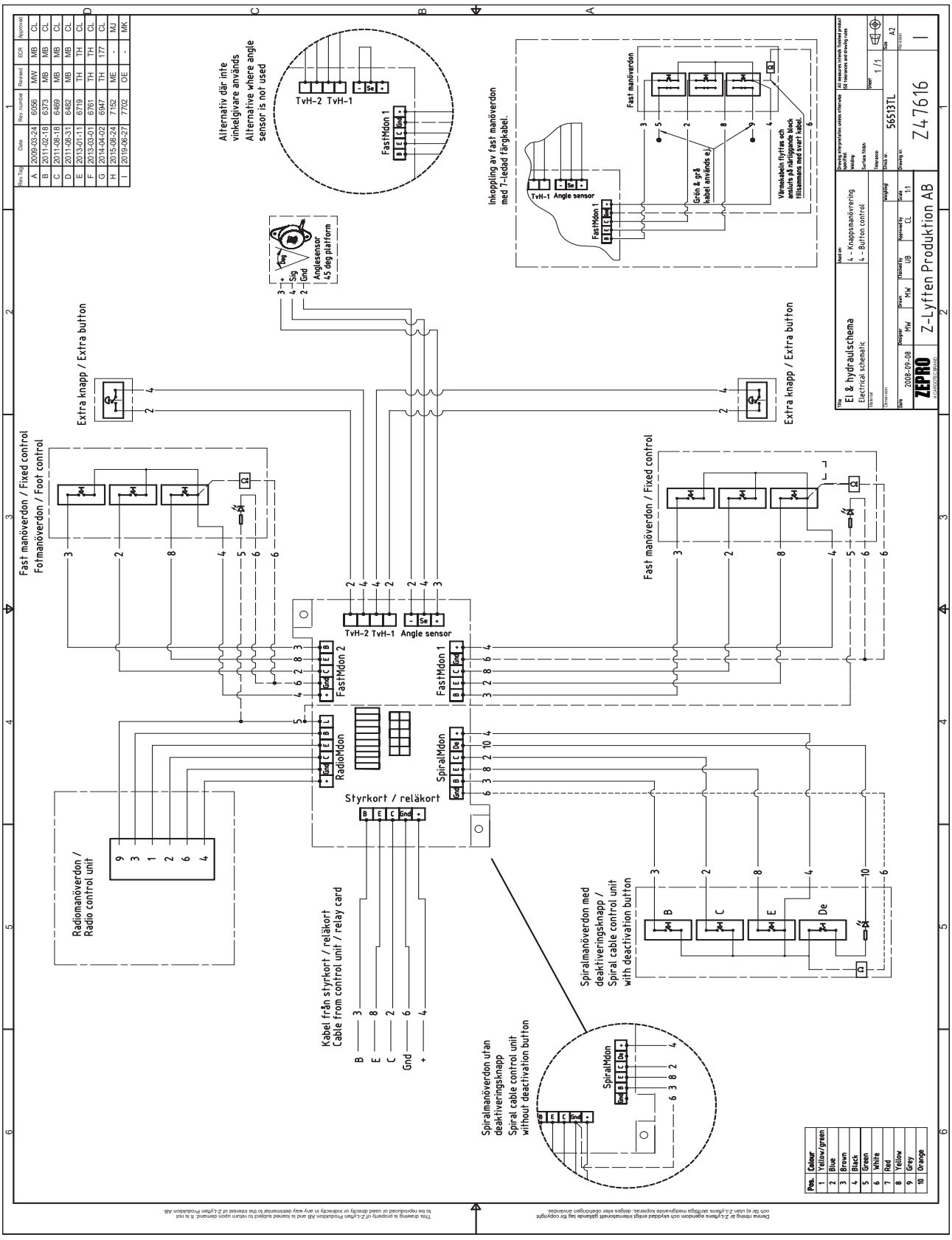
## 9.1 Z 10-135



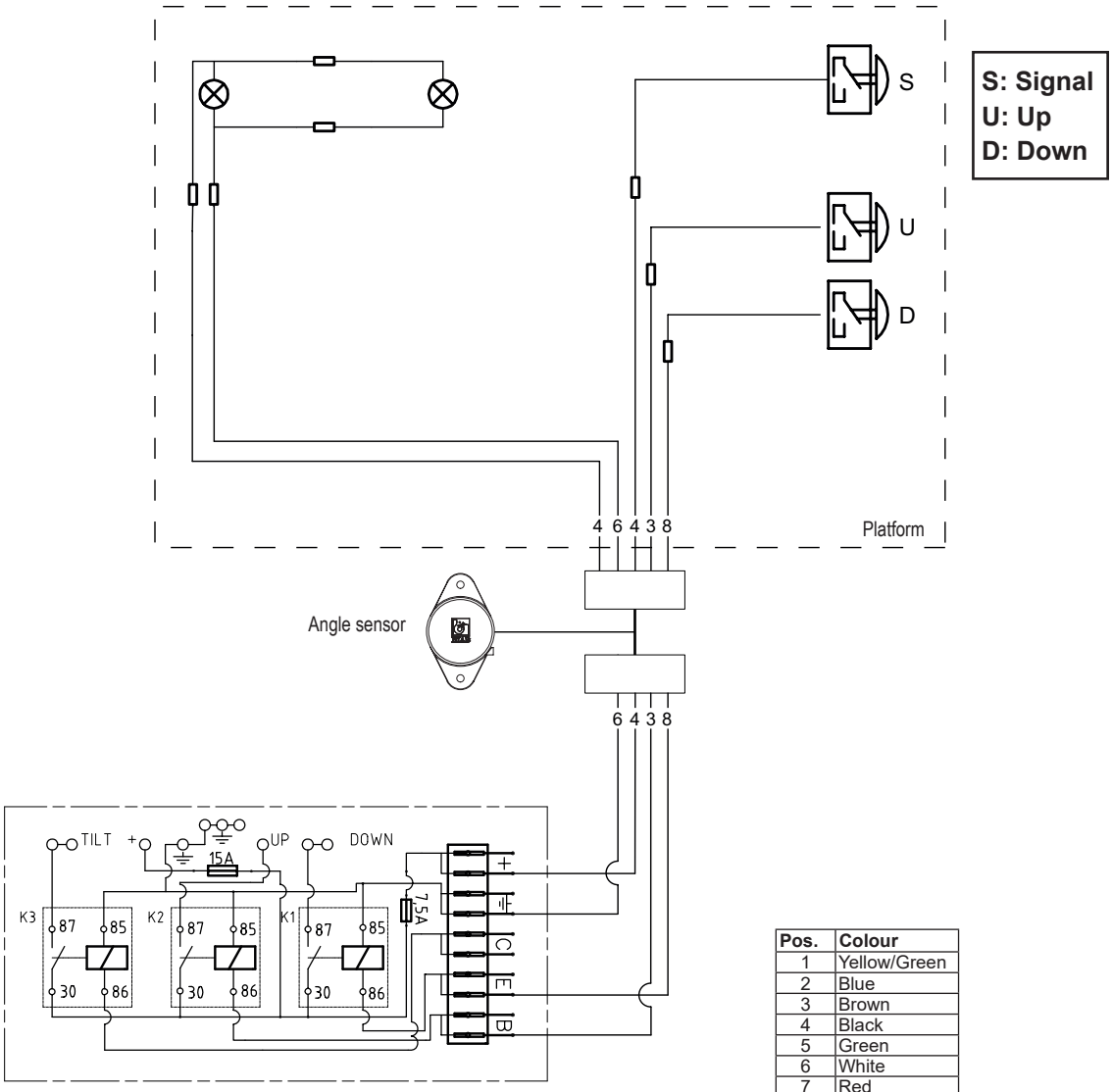
## 9.2 Z 10-135 hydraulic autotilt



## 9.3 Connection to circuit board, 4 – button operation



## 9.4 Connecting warning lighting and foot controls



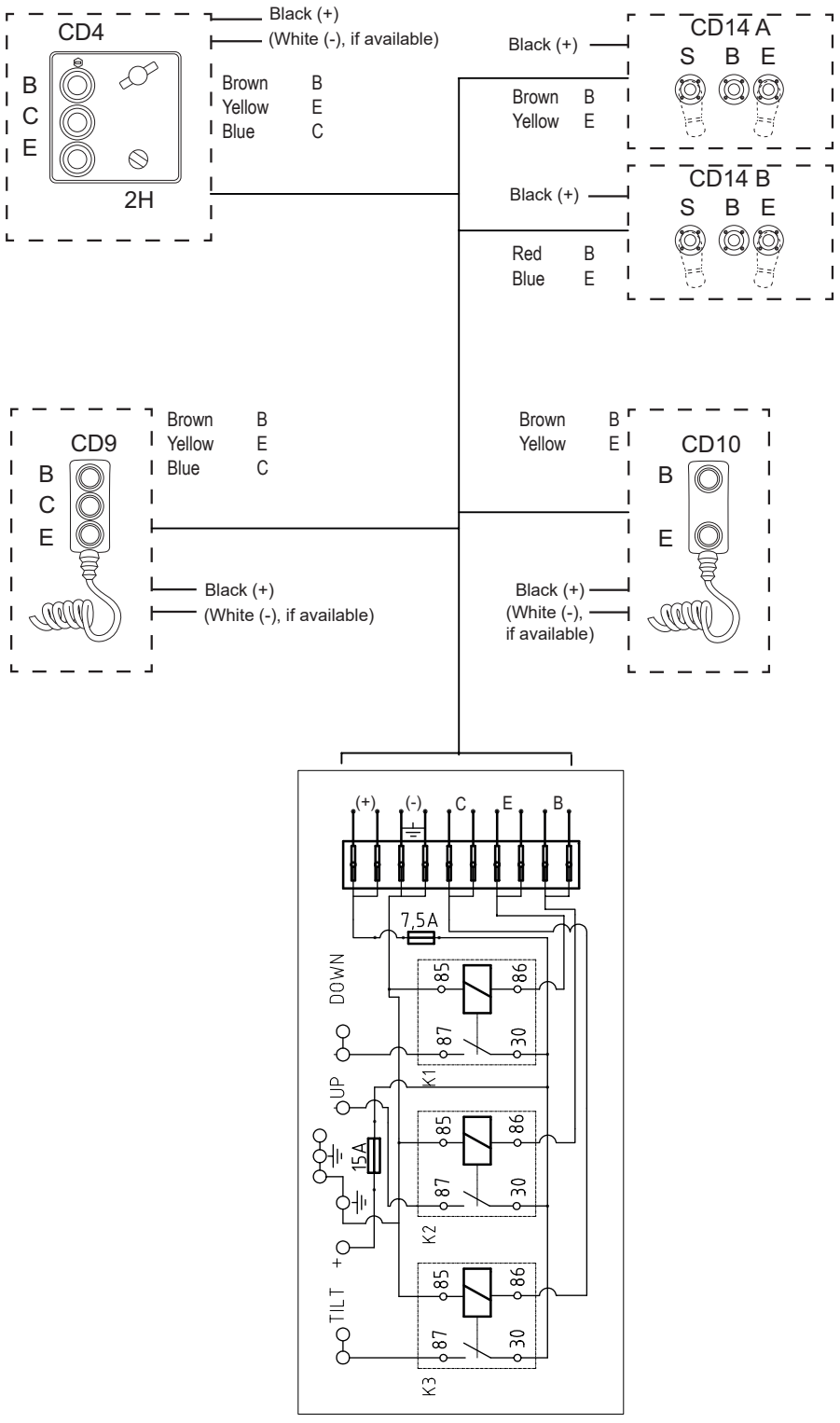

| Pos. | Colour |
|---|---|
| 1 | Yellow/Green |
| 2 | Blue |
| 3 | Brown |
| 4 | Black |
| 5 | Green |
| 6 | White |
| 7 | Red |
| 8 | Yellow |
| 9 | Grey |
| 10 | Orange |
| 11 | Purple |
| 12 | Pink |

## 9.5 Connecting controller

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 without locking function, it connects directly to the relay board, see wiring diagram in "9.1 Z 10-135" on page 33.

When installing a controller with locking function or when installing several controllers, a connection card is used, see wiring diagram in "9.3 Connection to circuit board, 4 – button operation" on page 35.



# 10 Powering up the tail lift

1. If applicable, ensure that the main switch is in the "Off" position.
2. If applicable, ensure that the cab switch (CS) is in the "Off" position.
3. When using a fuse box, connect the cable (1) to the battery's positive terminal and to the fuse box and place the fuse (2) above, see Image 51.
4. When connecting directly to the positive battery terminal, place the fuse (2) on the positive terminal, see Image 51.
5. Connect the main power cable (3) to the fuse box / positive terminal, see Image 51 - Image 52.
6. Screw tight the cable connections and fuse with the knob (4). Install the cables at 90° or 180° from each other. Install the fuse at right angles to the cables; see Image 51 - Image 52.

**IMPORTANT!**
The knob must bear against and centre the cable lug so that it does not come into contact with the screw. Incorrect installation can cause the fuse to be ineffective. Risk of fire in the event of a short circuit.

7. Install the fuse box cover.
8. Where fitted, set the main switch to the ON position.
9. Where fitted, set the cab switch to the ON position.

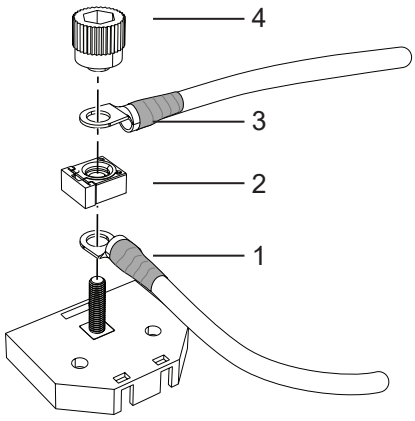



*Image 51. Connection to the fuse box*

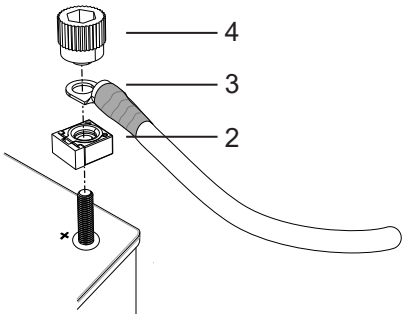



*Image 52. Connection to the battery's positive terminal*

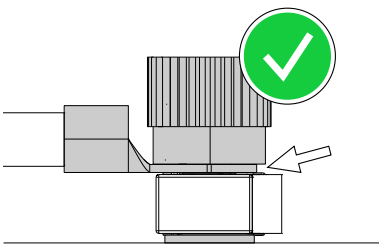


*Image 53. Correct installation*

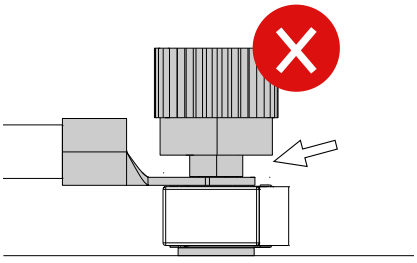


*Image 54. Incorrect installation*

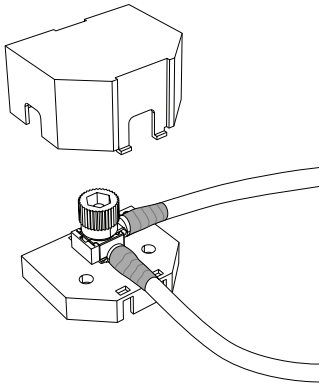


*Image 55. Cover, fuse box*

# 11 Marking

Below, an overview of the location of the different markings is shown. Images of markings and additional information can be found under the relevant subchapter for subsequent pages.

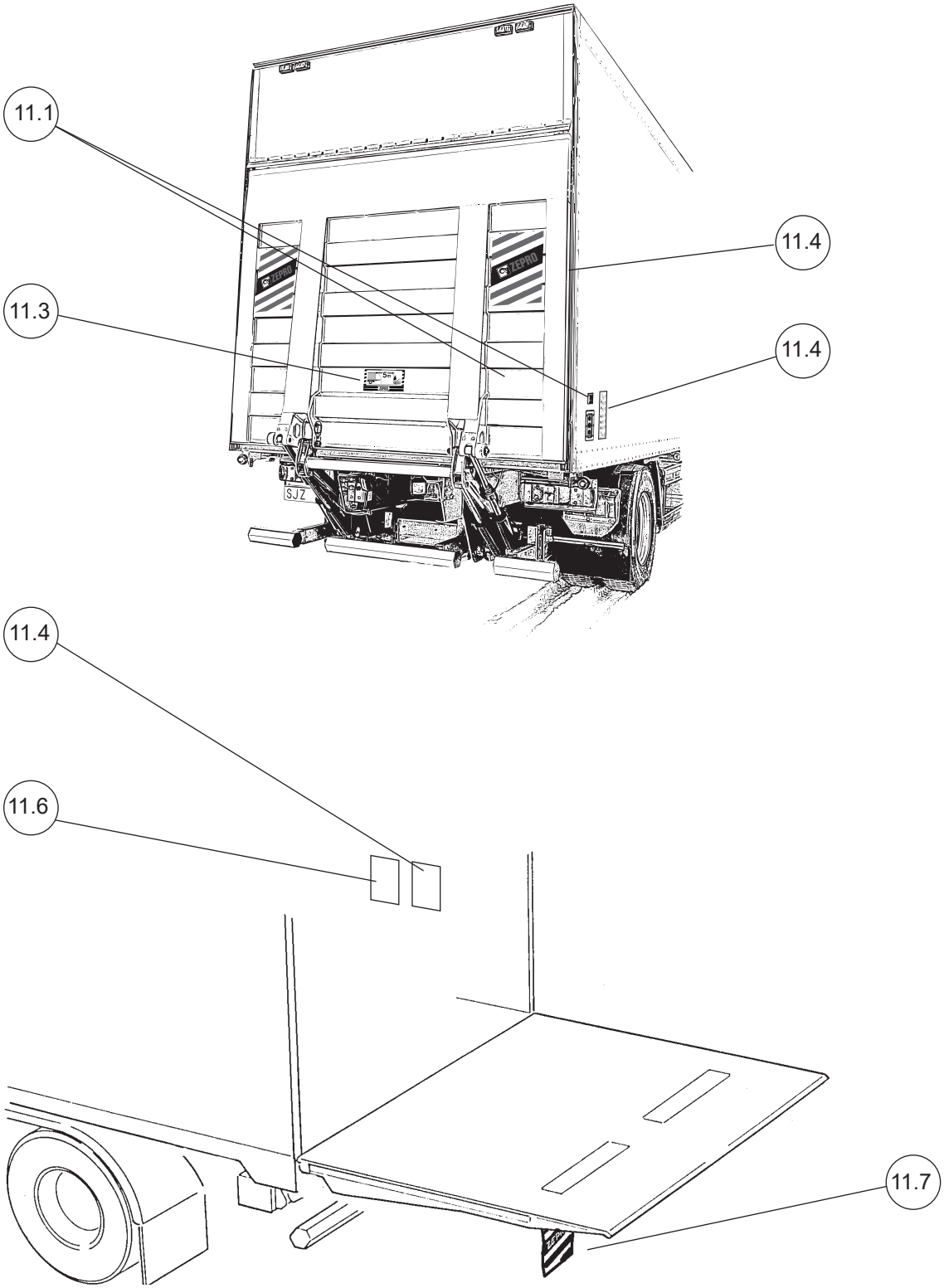



*Image 56. Overview of labelling*

## 11.1 Load diagram

Load diagram stickers are positioned close to controllers in a clearly visible and suitable location on the platform. The sticker clearly shows the nominal load and a load diagram describing the maximum permitted load at various places on the platform.

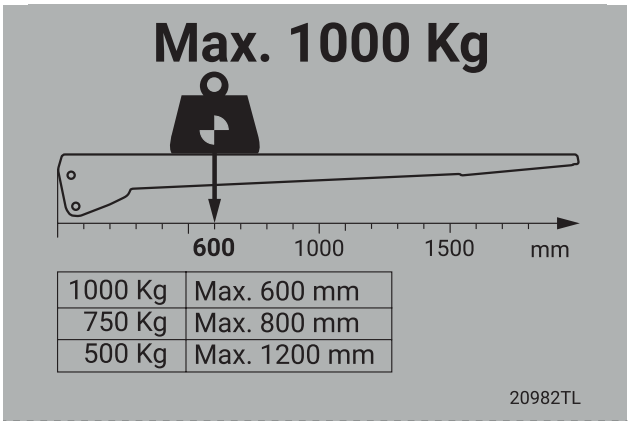



*Image 57. Load diagram*

## 11.2 Type plate

The type plate is fitted to the frame of the tail lift and 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)

Corresponding type plate in sticker design for affixing, preferably placed on the cab door upright for reliable identification.


*Image 58. Type plate*

## 11.3 Work area

A “work area sticker” must be attached to the platform so that any drivers parking behind the vehicle know that 5 m clearance is needed for the platform to open and that sufficient space should be left for loading and unloading.

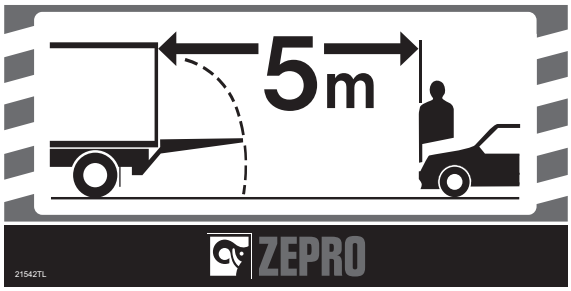



*Image 59. Work area*

## 11.4 Warning tape

Warning tape can be attached along the platform edge strips to mark the platform edges in its lowered position.

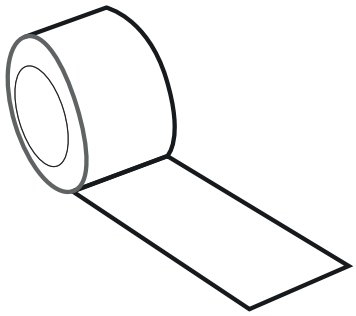


*Image 60. Warning tape*

## 11.5 Controller sticker

Affix the controller sticker next to the relevant controller. The stickers are available in standard versions and in reversed version 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.

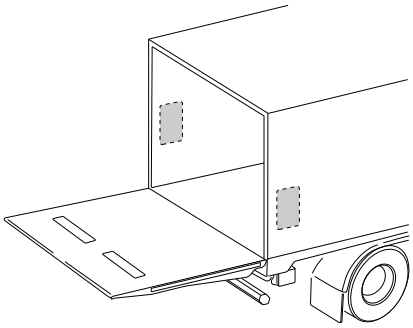


*Image 61. Standard mounting*

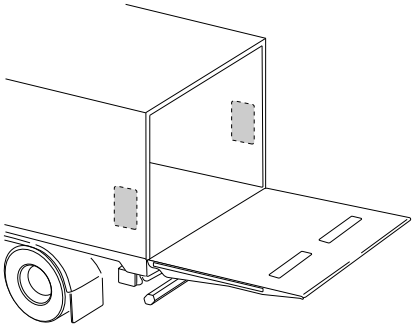


*Image 62. Reversed mounting*

| Control device | Sticker |
|---|---|
| CD 9 | 55053TL* |
| CD 9 Horizontal | 79854TL** |
| CD 4 | 55055TL |
| CD 10 | 77661TL |

* 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.

****** Ordered separately*

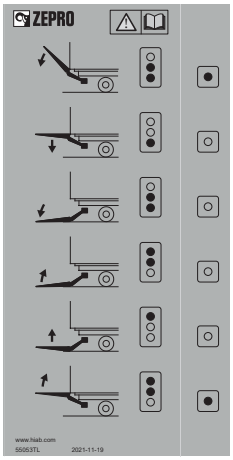



*Image 63. Control device sticker for CD 9*

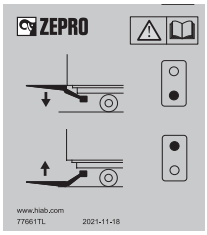



*Image 64. Control device sticker for CD 10*

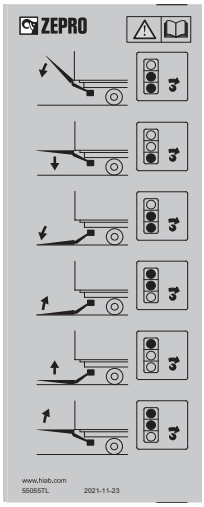



*Image 65. Control device sticker for CD 4*

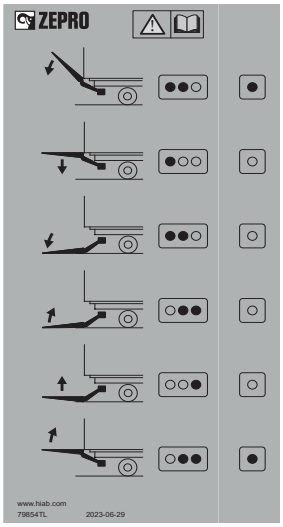


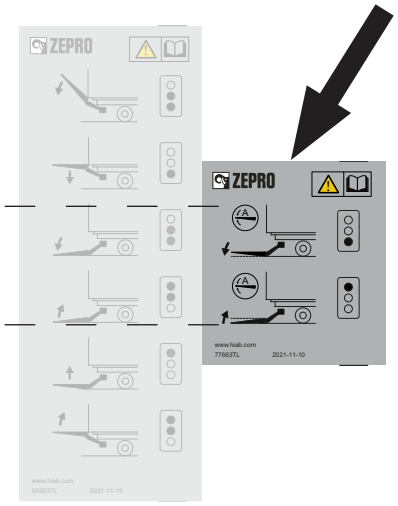

*Image 66. Control device decals for CD 9 for horizontal control device is ordered separately. 79854TL*

### 11.5.1 Autotilt additional sticker

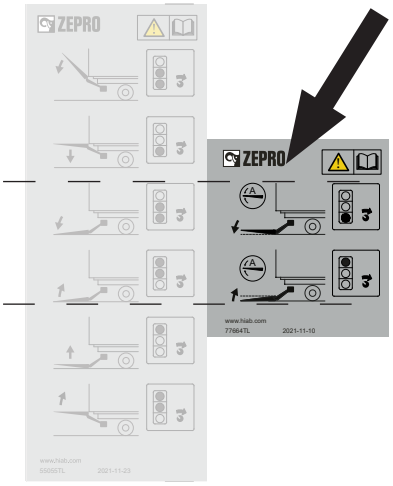
There is an additional sticker affixed next to the control device sticker on tail lifts fitted with autotilt.

The stickers are available in standard versions and in a latterally reversed version for affixing on the opposite side of the vehicle.

Affix additional autotilt stickers for CD4 and CD9 next to their respective controller stickers and align them and with the two middle symbols for the tilt down and tilt up functions.




*Additional autotilt sticker for CD 9*




*Additional autotilt sticker for CD 4*

| Control device | Stickers |
|---|---|
| CD 9 | 77663TL |
| CD 4 | 77664TL |

## 11.6 Danger area

A “danger area” sticker warning about the danger zone between the platform and the rear edge of the vehicle. The sticker must be attached to the interior of the vehicle body where the hand controller is installed.

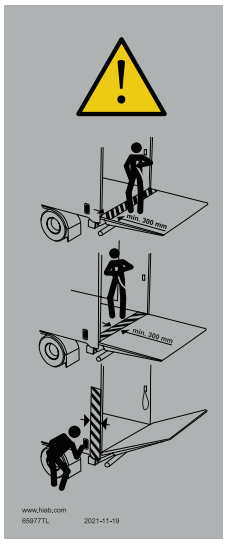



*Image 67. Danger area*

## 11.7 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. The flags must be provided with reflective tape.


*Image 68. Warning flags*

# 12 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.

## 12.1 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.

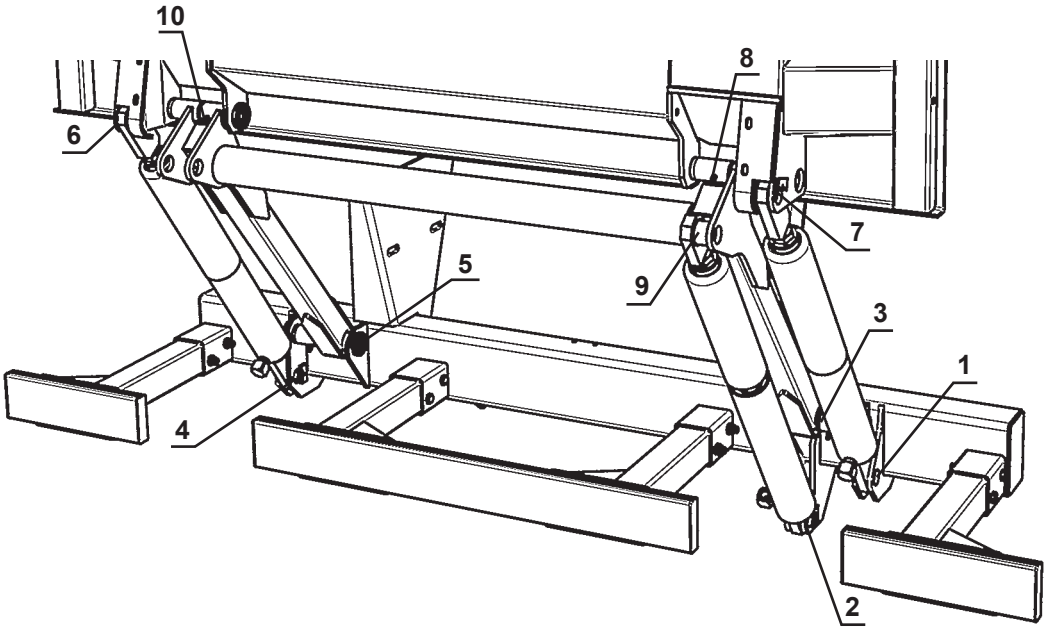



*Image 69. Lubrication points*

## 12.2 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).

# 13 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.

## 13.1 Static load test

### 13.1.1 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 70.
- 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.

### 13.1.2 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 2º in terms of the angle (points B and C) in relation to the floor.

### 13.1.3 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 |

### 13.1.4 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 |

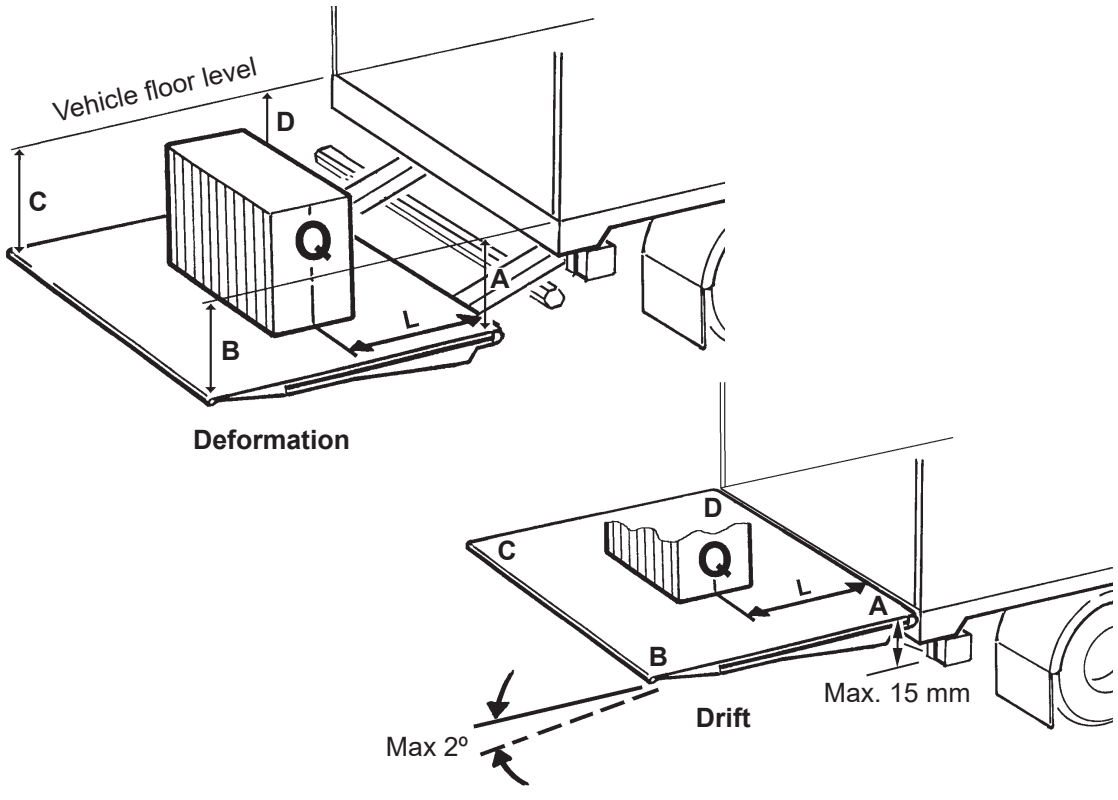



*Image 70. Testing and verification*

## 13.2 Dynamic load test.

### 13.2.1 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.

### 13.2.2 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).

### 13.2.3 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 |

### 13.2.4 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 |

## 13.3 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 platform cannot be opened or closed without the use of two-hand operation.
- that the platform cannot be tilted more than -10 degrees when using spiral cable controller or radio controller when the platform is flush with the vehicle floor.
- 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.

# 14 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.

# 15 Specifications

## 15.1 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.

| **Complete Lift chassis (without platform)** | |
|---|---|
| Z 10-135 | 176,5 kg |
| | |
| **Steel platforms** | |
| Steel platform 1400x1900 mm | 175 kg |
| Steel platform 1500x2540 mm | 235 kg |
| | |
| **Aluminium platforms** | |
| Alu. platform 1350x2580 mm | 111 kg |
| Alu. platform 1600x2450 mm | 124 kg |

| **Lift components (included in complete lift chassis)** | |
|---|---|
| Support frame Z 10-135 (incl. underrun protection) | 53 kg |
| Lift arm Z 10-135 | 40 kg |
| 3-piece underrun protection complete Z 10 | 19 kg |
| Chassis bracket std complete. | 14 kg |
| Hydraulic unit | 20 kg |
| Lift cylinder Z 10-135 | 12.5 kg |
| Tilting cylinder Z 10-135 | 14 kg each |

## 15.2 Loading diagram

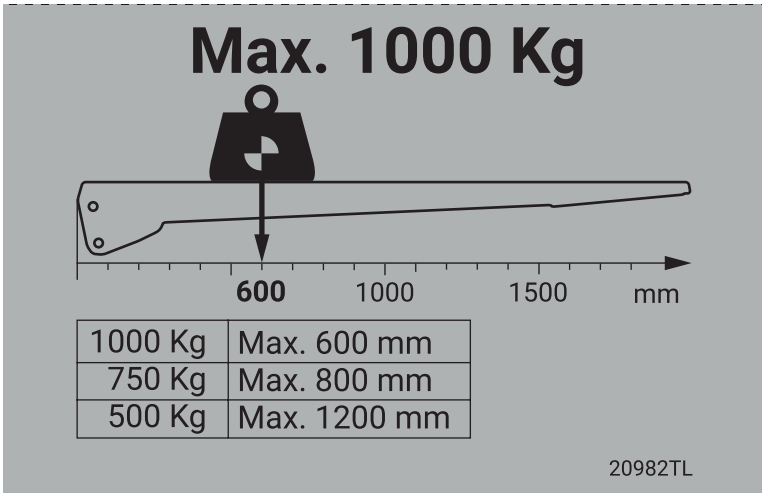
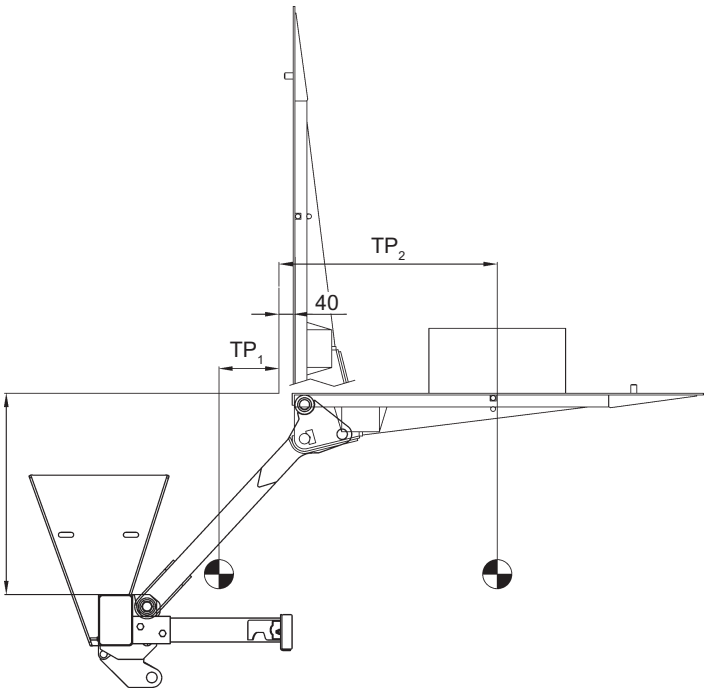



*Image 71. Load diagram for load capacity 1000 kg, load centre distance 600 mm.*

## 15.3 Centre of gravity




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

| | C = 300 | C = 500 | C = 590 |
|---|---|---|---|
| $TP_1$(mm) | 155 | 117.5 | 83 |
| $TP_2$(mm) 1000 kg | 512 | 522 | 531 |

## 15.4 Tightening torque

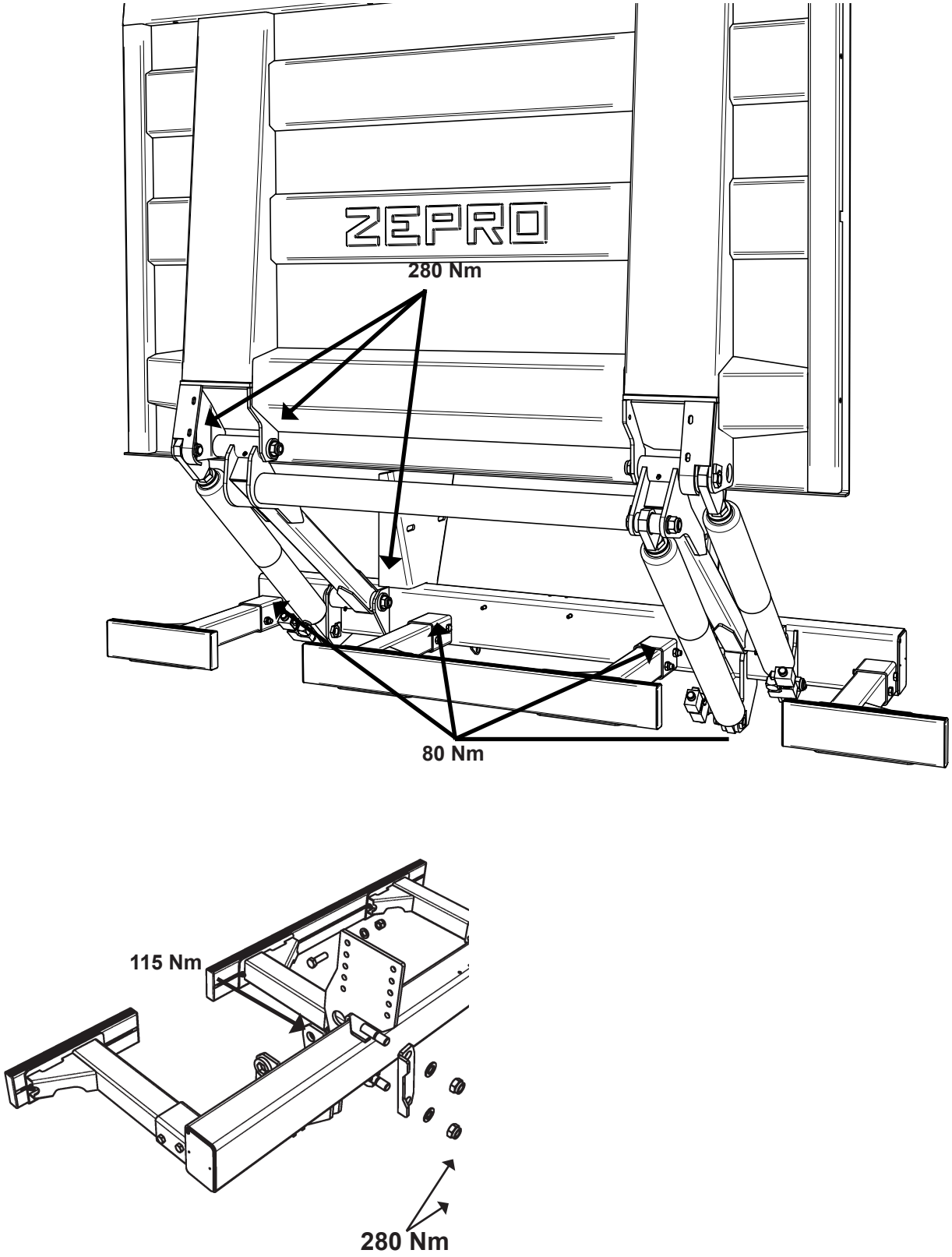



*Image 72. Tightening torque*

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.