

Installation instructions

Tail Lift Z 100-110/130

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55609TL

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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.

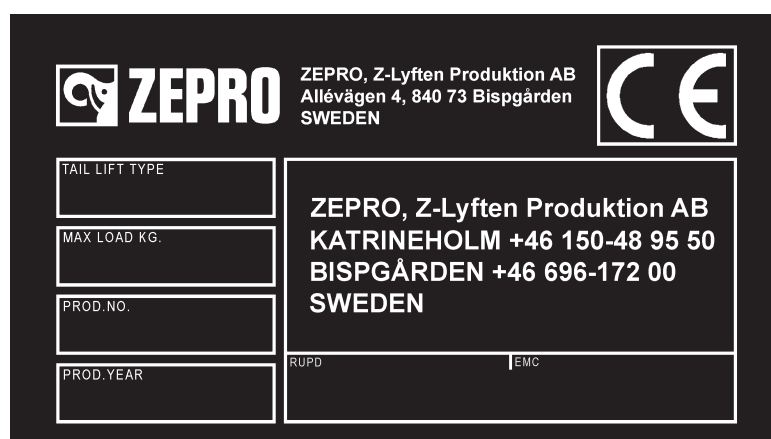


Figure 1. Identification plate

1.3 Identification

Lift naming

E.g **Z - 100 - 110 SA**

Z = Standard model

Max lift capacity x 10 (kg)

Max lift height x 10 (mm)

Cylinder model, **SA = Single Acting One Speed Adjustable Tilt**
 Single Acting One Speed Lift

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.



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.

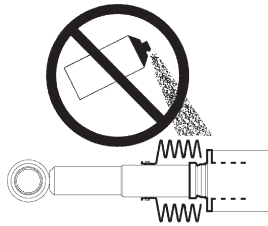


Figure 2. Piston rods, cylinder covers and boots

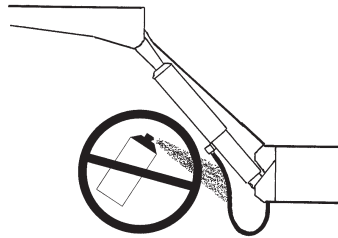


Figure 3. Hydraulic hoses

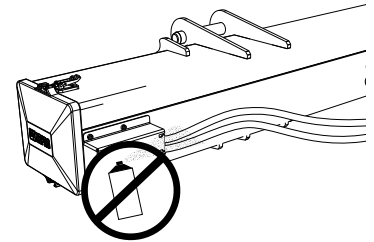


Figure 4. Cables

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 Moving parts - free movement

⚠ WARNING!

During final inspection*, 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).

**Final inspection to 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.

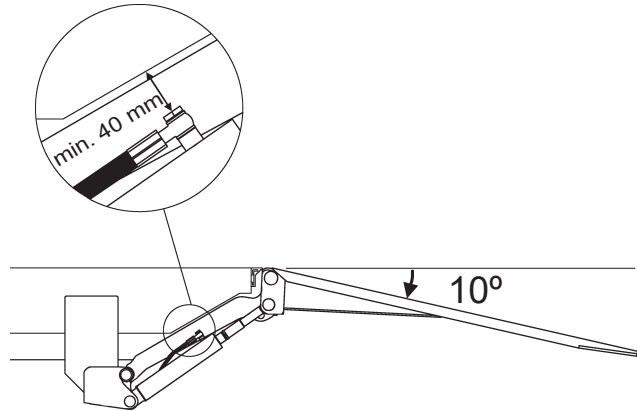


Figure 5. Clearance to the closest part of the cylinder must be at least 40 mm

⚠ WARNING!

The platform may not be tilted down more than 10° from the horizontal.

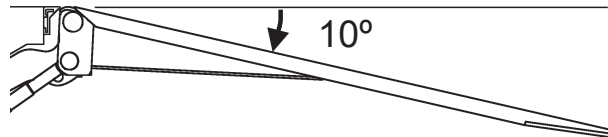


Figure 6. The platform may not be tilted down more than 10° from the horizontal

2.2 Connection of third-party equipment is forbidden

⚠ WARNING!

Connecting third-party equipment (electric or hydraulic) to Zepro tail lifts is forbidden. Connecting third-party equipment could interfere with the lift's 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.

2.3 Installation

⚠ WARNING!

Installation where the platform cannot reach ground level is prohibited.

⚠ WARNING!

ZEPRO tail lifts are only approved for installation using ZEPRO assembly kits.

IMPORTANT!

All specified tightening torques apply when using torque wrench or screw/nut runner with torque control. Torque spread max $\pm 5\%$.

3 Before installation

3.1 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 554,8 cm⁴. The cross-section of the frame beam shall therefore have at least dimensions of 185x60x4 mm, corresponding to a surface moment of inertia of 554,8 cm⁴ around the x-axis. See illustration. If in doubt, contact ZEPRO for support.

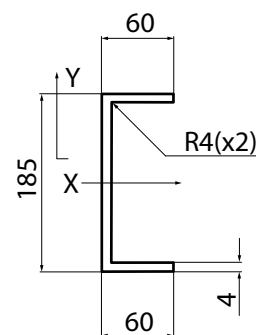


Figure 7. Cross section of vehicle chassis frame beam

⚠ 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.

3.2 Statutory dimensions

Vehicles with Gross Vehicle Weight ≤8000 kg:

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°, the distance between beam and ground in an unladen vehicle may be increased until the angle is 8°, but to Max. 550 mm.

Horizontal distance from the outermost part of the platform to the underrun protection: Max. 328 mm.

Vehicles with Gross Vehicle Weight >8000 Kg:

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. 300 mm.

See Figure 8.

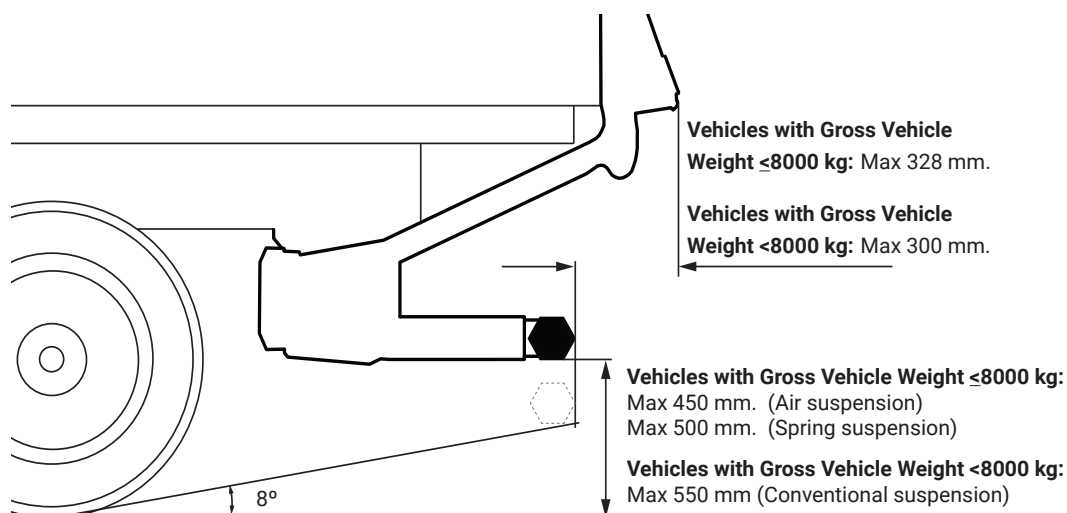


Figure 8. Statutory dimensions

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

Each of the individual parts of the underrun protection must have a surface area of at least 350 cm². See Figure 9.

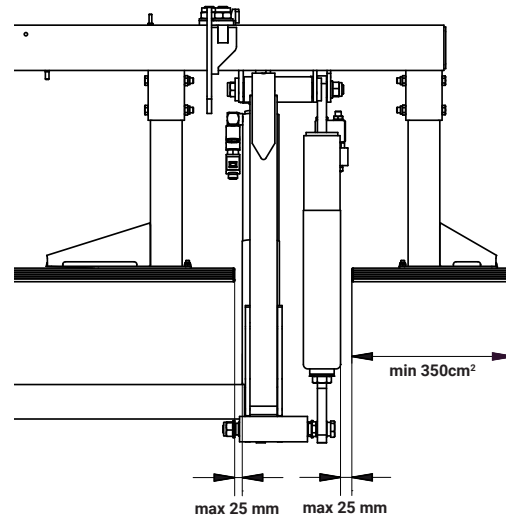


Figure 9. Statutory dimensions

Horizontal distance from the outer edge of the member to the outside of the wheel: Max. 100 mm. See Figure 10.

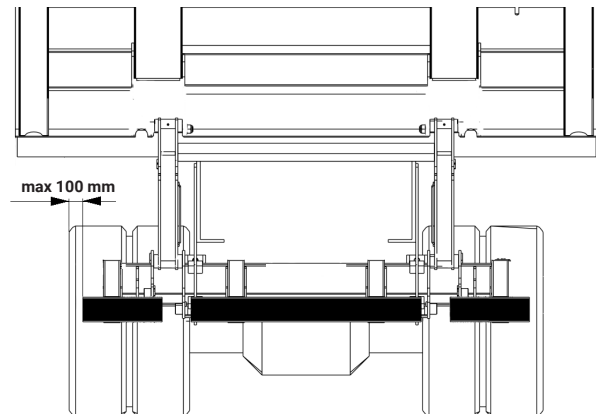


Figure 10. Statutory dimensions

3.3 Calculating the installed dimensions

For ease of installation it is best to calculate and specify the necessary dimensions in advance. Determine the C dimension first, then obtain the other dimensions from the relevant table. Try to place the lift as high as possible within the C dimension specified in the table.

3.3.1 C dimension

The C dimension is the distance between the top of the support frame and the vehicle floor level. This dimension determines the space the lift needs beneath the body (dimension D) and the distance from the lift arms in their upper position to vehicle floor level (dimension A).

3.3.2 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.

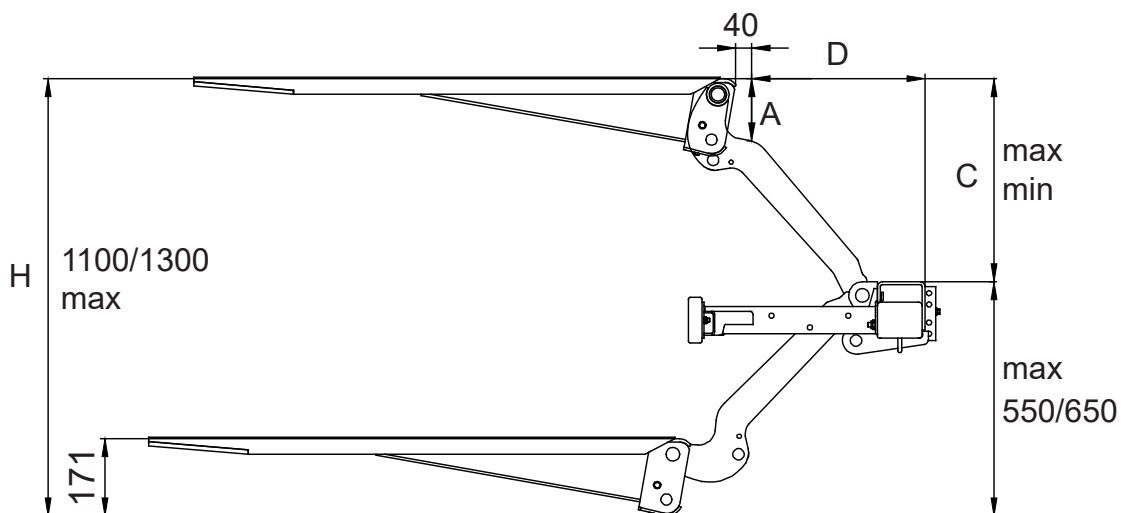
3.3.3 A dimension

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

3.3.4 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 lift platform must always be able to reach ground level.

3.4 Dimensions for installation



Lifting height 1100 mm

C	A	D
550	147	449
500	133	510
450	123	559
400	115	598
350	109	631
300	103	657

Lifting height 1300 mm

C	A	D
650	148	519
600	136	581
550	127	633
500	120	676
450	114	712
400	110	743
350	106	767

Figure 11. Z-100-110, Z-100-130

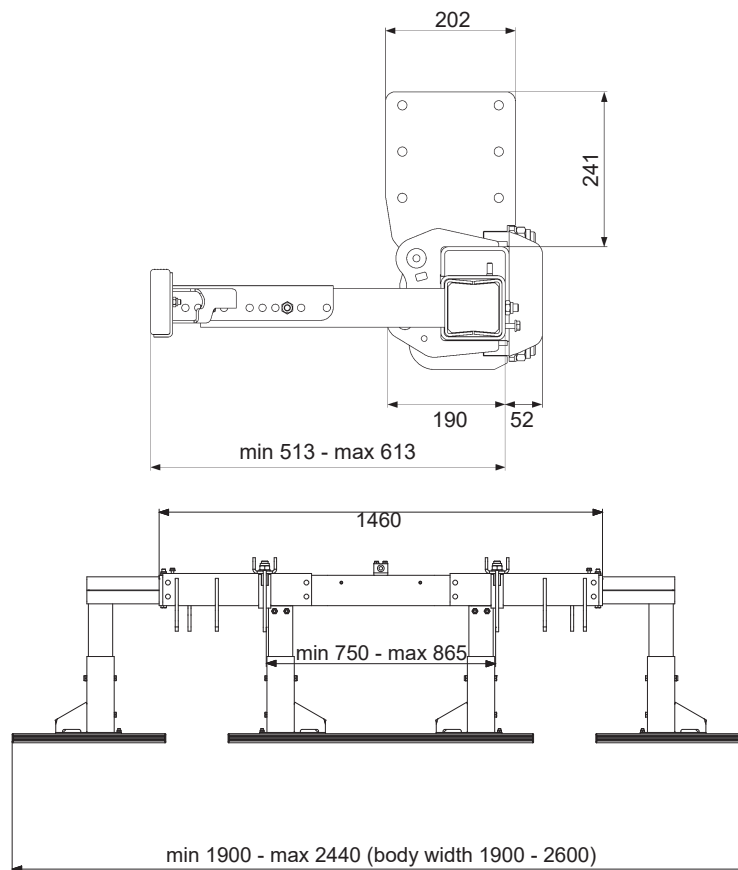


Figure 12. Z-100-110

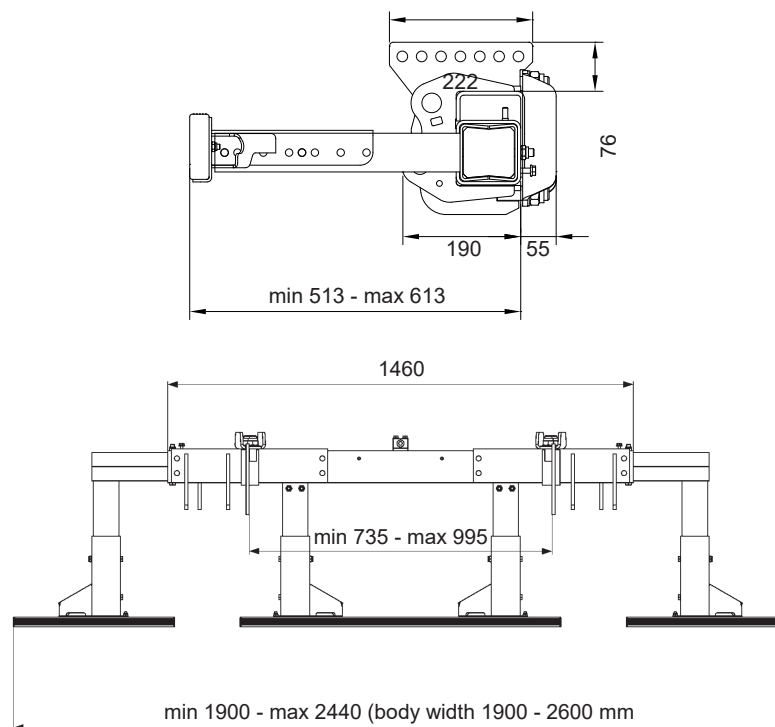


Figure 13. Z-100-130

NOTE!

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

3.5 Rear beam cut-outs

It is often necessary to make cut-outs in the rear beam to make room for the platform arms when the platform is in the top position. Cut-out size is determined by the calculated integration dimension 'A'; see figure below.

1. Measure and mark the location and depth of the cut-outs on the rear beam. Centre the two rear beam cut-outs, i.e. the cut-outs must be equidistant from the beam's centre point.
2. Cut along the markings.
3. Grind away any burrs or sharp edges.

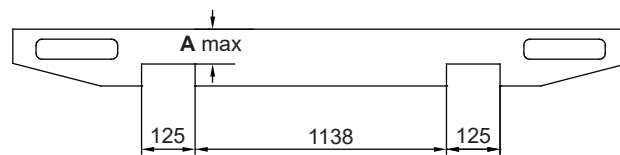


Figure 14. Z 100-110/130

3.6 Cable grommet

3.6.1 Before cable connection

To be able to install/remove/adjust the cables in the cable grommet, the five screws must be loosened.

1. Loosen the five screws on the cable grommet, see Figure 15. Cables can now be installed/removed/adjusted in the grommet. The cable should be installed together with existing cabling using cable ties.

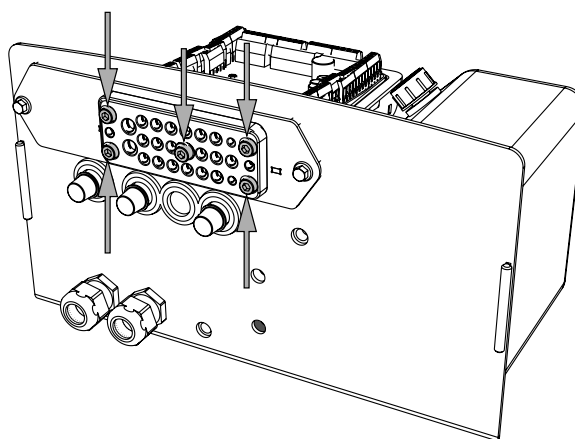


Figure 15. The cable grommet's five screws

3.7 Temporary connection

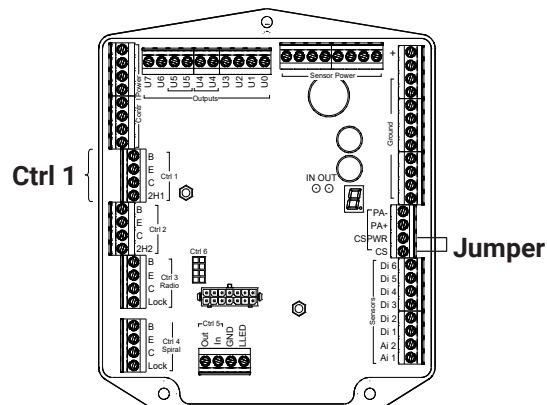
When the tail lift is installed, it is sometimes necessary to operate its functions in order to change the position of the cylinders and the lift arms. Temporarily connect the lift to enable the lift functions.

1. Connect a suitable control device to Ctrl 1, see section 3.7.2.
2. Connect the tail lift's main power cable to battery +12/24V.
3. Connect the negative battery terminal to the tail lift's earth cable (GND).
4. When operating, connect the cable (jumper) between the CSPWR and CS on the control card to simulate that the CS switch is turned on. Remove the jumper immediately after completed operation.



WARNING!

Take great care while running the lift functions and make sure nothing gets pinched: risk of personal injury and material damage.



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Figure 16. Temporary connection

3.7.1 Battery maintenance

When installing the lift, when the lift is operated repeatedly, the battery charger must be used between operations to maintain the battery charge level.

IMPORTANT!

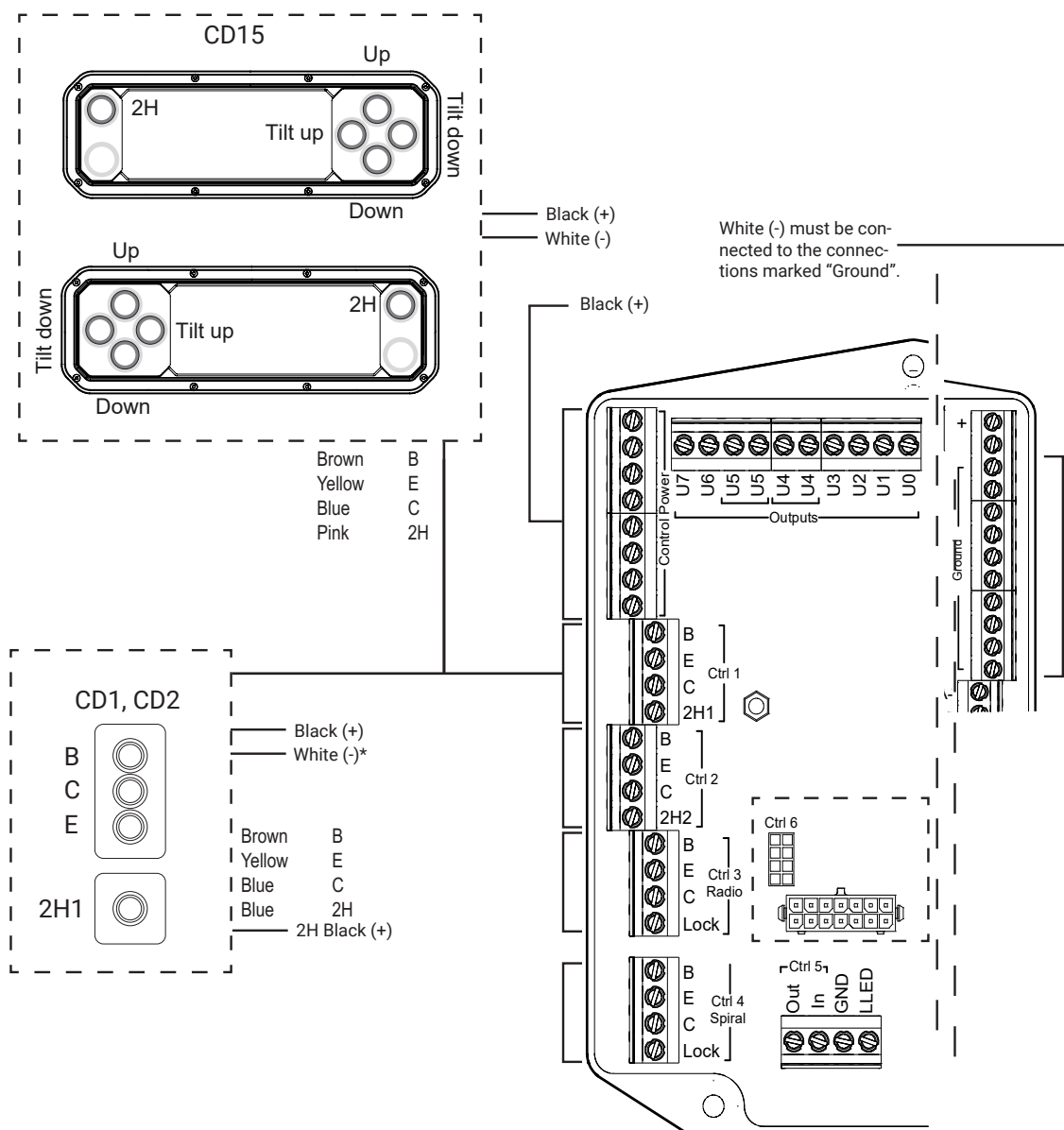
The battery charger must not be connected when operating the lift. Risk of material damage.

3.7.2 Connecting the control device to the ZePRO1 control card

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

⚠ WARNING!

Make sure that the control card is disconnected from the power before connecting. Connecting more than one controller to each connection is not permitted. Risk of material damage.



* applies to controllers with heating only

4 Installation

4.1 Fasten the jig to the rear frame

1. Measure out and mark the centre point of the truck's rear frame.
2. Check the A-measure, to determine if cut-outs are needed in the rear frame. (See marked area in the picture).
3. Make the cut-outs as required in the rear beam in accordance with the measures for the relevant lift model.
4. Fasten the jig with bolts or spot weld it to the rear frame so that the centre points line up.

Mounting jig

Art. no. 75162 for Z100 with sealing (AVI)
Art. no. 56338 for Z100 with sealing (PML)
Art. no. 56428 for Z100 without sealling

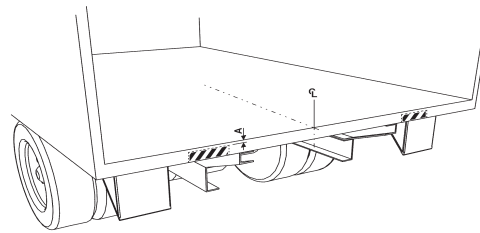


Figure 17. Measure out and mark the centre point of the truck's rear frame

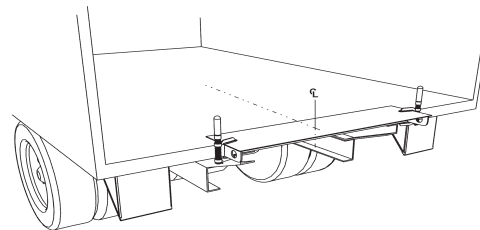


Figure 18. Fasten the jig to the rear frame

4.2 Position the support frame

1. Place the support frame of the lift under the truck frame and fit the lift arms to the installation jig. Use the specified platform pivot bolt.
2. The support frame must be parallel with the chassis frame.

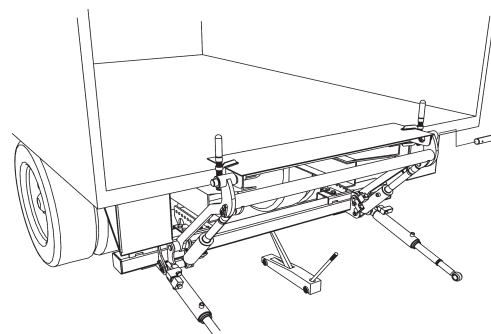


Figure 19. Position the support frame as required under the truck's chassis frame. eg

4.3 Mounting brackets, standard

1. The mounting brackets are made up of two parts. One bigger bracket, that should be tightly fastened to the truck body frame. The smaller bracket should be mounted on the lift support frame, and can be adjusted along its width. The two brackets are to be fastened to each other, with as small displacement (forward-backward) as possible.

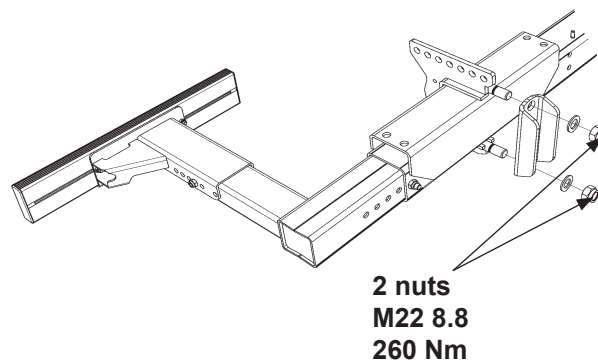


Figure 20. Mounting brackets

2. Preliminarily position the smaller bracket according to picture and fasten the two brackets to each other with screws. Use the washer between bracket and nuts. Check that there is a minimum of 6 holes overlap of the smaller bracket's row of holes.

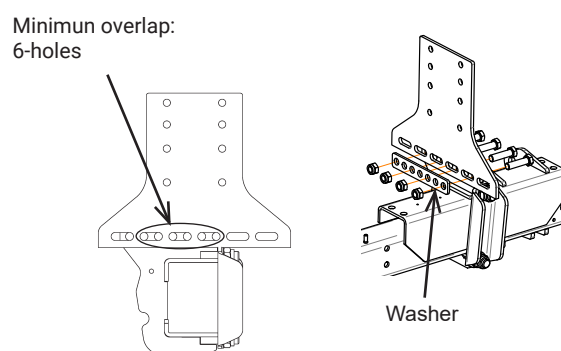


Figure 21. Mounting brackets

3. The smaller bracket can be assembled in different ways depending on the width of the truck frame. The place along the truck frame where the bracket shall be assembled is the trucks frame width.

If the width of the truck frame being below 770 mm, the brackets shall be installed according to Figure 22 with the U-profiles end plate installed in the journey direction of the truck and the end plate leaning from the middle of the truck.

If the truck frames width exceeds 960 mm shall the smaller brackets be installed according to Figure 23 with the U-profiles end plate installed in the journey direction of the truck and the end plate leaning to the middle of the truck.

If the truck frames width lies between 770-960 mm, the brackets can be installed at an optional way.

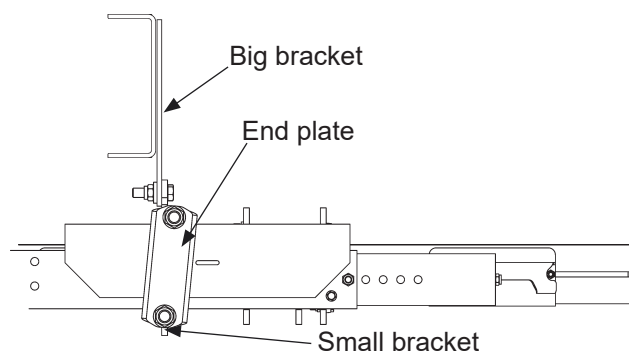


Figure 22. Mounting of bracket when the width of the truck frame is below 770 mm

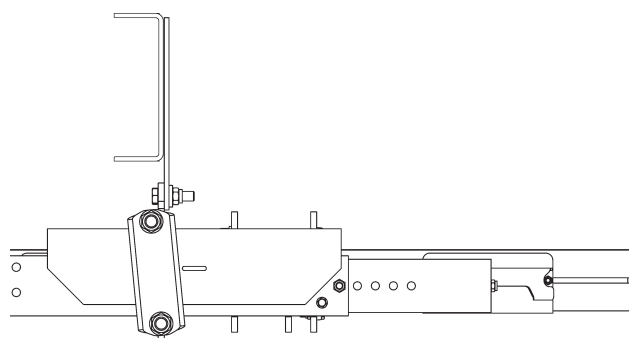


Figure 23. Mounting of bracket when the width of the truck frame is over 960 mm

4.4 Installation of support frame

1. Check the C- and D- measures.
2. Position the bigger bracket at the outside of the truck chassis.
3. Drill 14 mm holes in the truck frame in the same position as the holes in the bigger bracket.
4. Fasten the brackets securely to the frame with the M14x45 screws supplied. Fasten with a minimum of 4 bolts in each mounting bracket. See Figure 25 below for recommended placing of bolts:

1 and 2 = recommended

3 = avoided if possible, only if 1 and 2 don't fit.

Tightening torque: 120 Nm

5. Install the U-profile end plate with the U pointing to the front of the vehicle using the washers and nuts provided, one plate for each mounting bracket, two nuts and two washers for each plate

Tightening torque: 260 Nm

6. Now permanently attach the two brackets to each other. Use the M16x60 screws supplied. Minimum 4 pcs for each pair of bracket.

Tightening torque: 195 Nm.

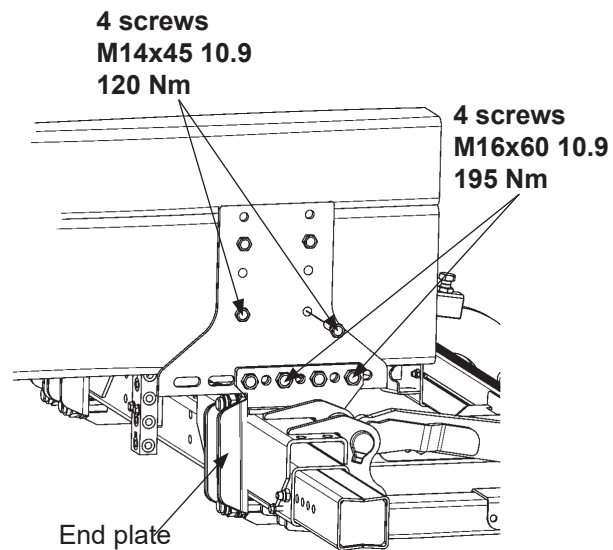


Figure 24. Installation of support frame

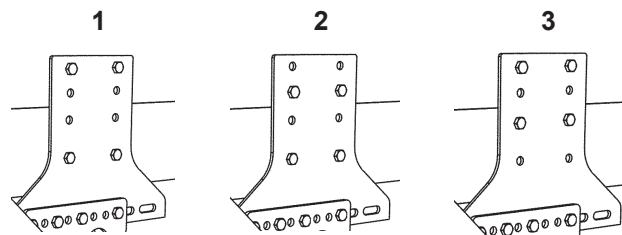


Figure 25. Installation of screws

4.5 Loosen the jig

Loosen the installation jig.

4.6 Attaching the Platform

Install the platform on the lift arms and the tilt cylinders according to pictures. Use the pivot bolts and locking screws supplied.

IMPORTANT!

IMPORTANT To get the full opening speed a tilt angle sensor should be installed according to "8 Electrical and hydraulic diagrams" on page 43

Flat 30mm platform:

Place the angle sensor on the inside of platform bracket, Figure 27.

IMPORTANT!

IMPORTANT that the cable is turned in the right direction according to Figure 27

Conical platform:

Place the angle sensor on the outside of platform bracket, Figure 28.

IMPORTANT!

IMPORTANT that the cable is turned in the right direction according to Figure 28.

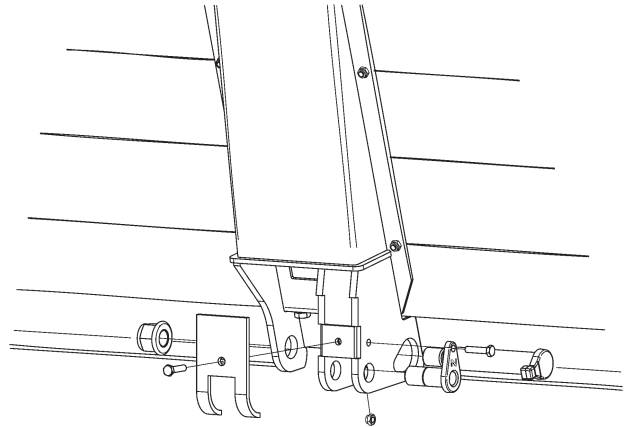


Figure 26. Install the platform on the lift arms

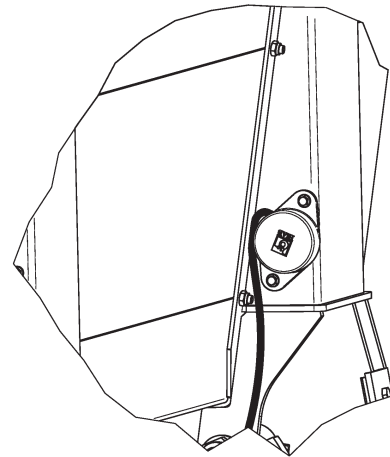


Figure 27. Cable on angle sensor

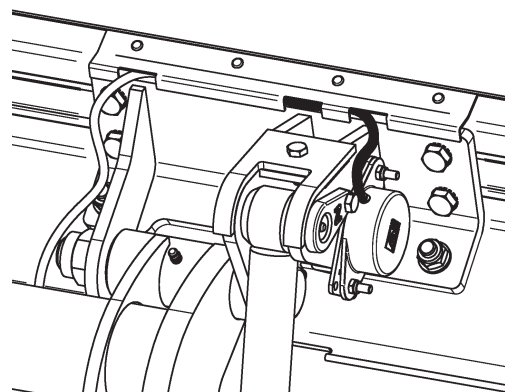


Figure 28. Install the platform on the lift arms

Check the platforms overlap

The platforms overlap (F) is dependent on the type of platform. Please note the values below which are particularly relevant when installing a rubber seal on the body at the top of the platform.

Type	Flat 30 mm	Conical
F (mm)	74	76,5

When the platform is installed you should test to run the lift carefully. Check the platform position at the rear frame.

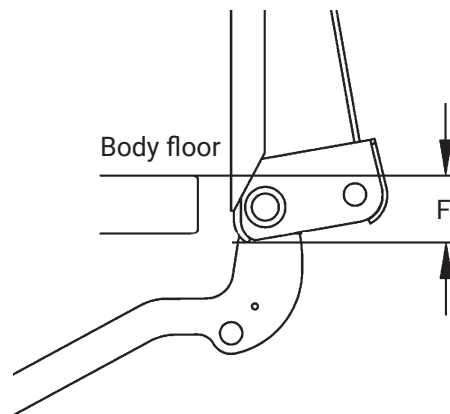


Figure 29. The platforms overlap (F)

4.7 Sealing strip (horizontal), surface-mounted rubber strip

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

1. Check that the distance between the vehicle floor and the platform is 38 - 40 mm.
2. Mark where to drill holes for the self-tapping screw.
3. Drill holes (\varnothing 7.2 mm) for the screws.
4. Fit the horizontal stop strip (steel or aluminium).
5. Fit the rubber strip in the track.

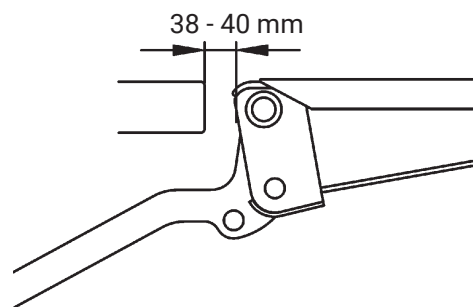


Figure 30. The distance between the vehicle floor and the platform

4.8 Sealing strip (vertical)

1. Check that the distance between the vehicle floor and the platform is 38 - 40 mm.
2. Attach the tracks with countersunk screws, pop rivets or spot welding.
3. Fit the rubber strip in the track.

Secure the rubber strips by swaging the tracks together at the bottom.

NOTE!

If an upper edge seal is being fitted, it must be mitred 45° to the vertical strips.

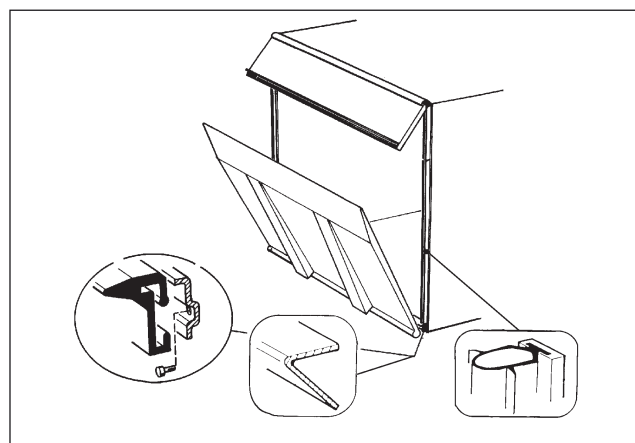


Figure 31. Check the platform

For trucks with mounting brackets, see separate installation instructions.

4.9 Mounting armstops

Mount armstop* as high as possible on the lift arms, in the position that the adjustment-screws get a good surface contact with the truck's rear frame. If necessary install a stop bar to make a better contact point for the armstop.

Adjust the two screws so they meet the rear frame/ stop bar at the same time.

If the truck has a mounting bracket kit, see the separate instructions for this kit regarding the armstop installation.

**The armstop is an optional extra-if required please order art. nr. 53869 for Z 100 models*

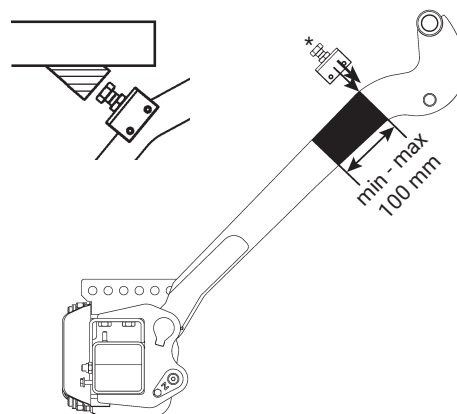


Figure 32. Mounting armstops

IMPORTANT!

IMPORTANT When installing armstops, add Loctite 243, or similar, on the fastening screws. See Figure 33

IMPORTANT!

IMPORTANT No welding is allowed on the lift arm.

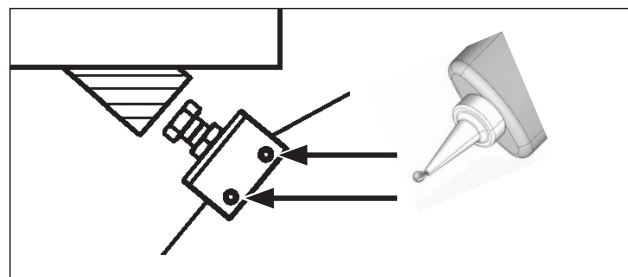


Figure 33. When installing armstops

Transport lock

For CE marked lifts with 1000 kg max lifting capacity and over, ZEPRO provides platforms without transport lock. For other lifts transport locks are installed on the platforms right side.

Electric safety valves can serve as transport locks for platforms. The lock opens automatically when the down function of the control unit is activated. The valves are one-way valves which allow oil to flow into the cylinders but not out from them unless current has been supplied to them via the lowering valves. The platform is hence hydraulically locked under transport.

4.10 Mounting and adjustment of cylinders

IMPORTANT!

Do not adjust the tilt cylinders before they are installed onto the platform. Tilt cylinders are pre-adjusted at the factory.

1. Loosen rubber bellows.
2. Assemble only one tilt cylinder in the platform.
3. Tilt up so that the tilt cylinders are extended as far as the geometry allows.

NOTE!

Adjustment should always be made when the tilt cylinders are fully pressurized.

4. Firstly adjust the cylinder assembled in the platform.
5. Loosen lock nut, see Figure 35 (Zepro tool 52937).
6. Turn the adjustment collar (spanner width 41mm), as per Figure 35 (Zepro tool 52938), so that the platform fits exactly to the body as per Figure 34 A.
7. Assemble the other cylinder in the platform.
8. Loosen lock nut, see Figure 35.
9. Turn the adjustment collar, as per Figure 35, so that the platform fits exactly to the body as per Figure 34 A.
10. Then adjust both cylinders the last bit alternately so that the platform fits exactly to the body as per Figure 34 B.

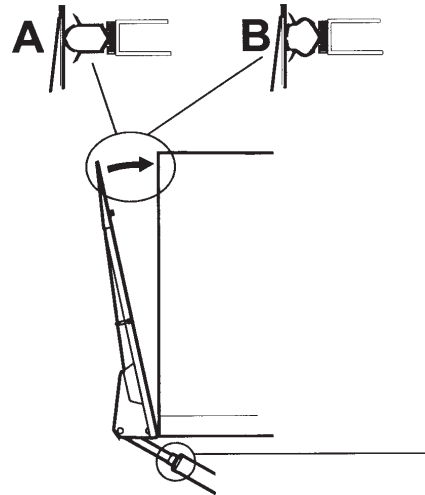


Figure 34. Adjusting the fit to the vehicle body

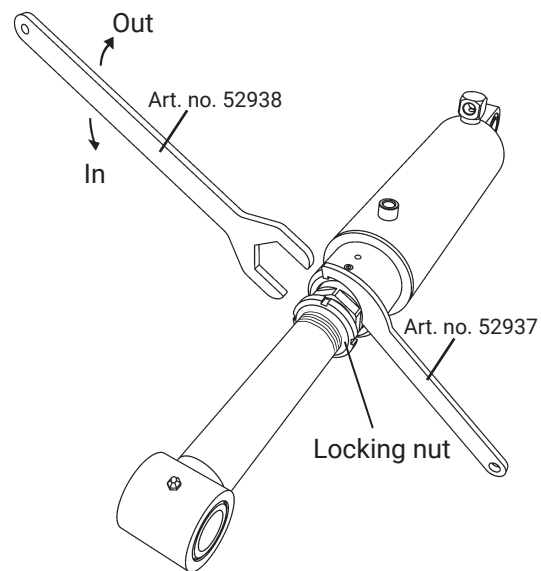


Figure 35. Adjusting the tilt angle

11. Tighten the lock screws. Measure as per in Figure 36.

NOTE!

Max. 50 mm between the end of the thread and the lock nut. See Figure 36.

Lock screws torque is between 3-5 Nm.

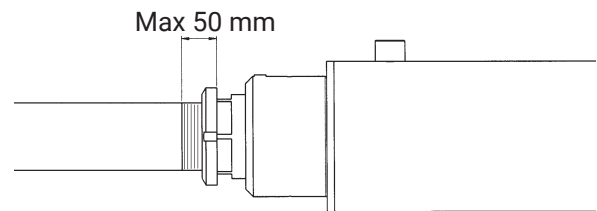
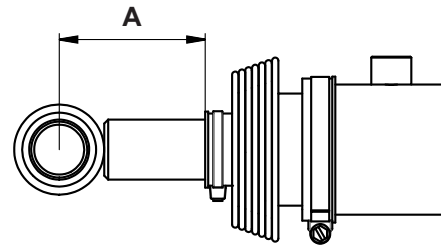


Figure 36. Adjusting the tilt angle



Lift model	A
Z 100-110	149 ±5
Z 100-130	269 ±5

Figure 37. Installing boots

4.11 Adjustment of tilt down angle

NOTE!

To have the taillift to comply with CE requirements and be safe, it is required that tilt down angle is adjusted to a maximum of 10°.

NOTE!

It is necessary to first adjustment the 90° tilt angle up against the body before adjusting tilt down angle.

1. Run the lift up so that the lift is at the floor level, see Figure 38.
2. Loosen the ring's lock screw (2). Screw the ring out in the direction of the platform (3). See Figure 39.
3. Tilt down the platform to maximum 10 degrees under horizontal. As per Figure 38.
4. Adjust the ring to the top of the cylinder (4).
5. Tighten the lock screw in the ring (5). See Figure 40.

Reassemble rubber bellows.

Lock screws torque is between 3-5 Nm.

Test run all functions.

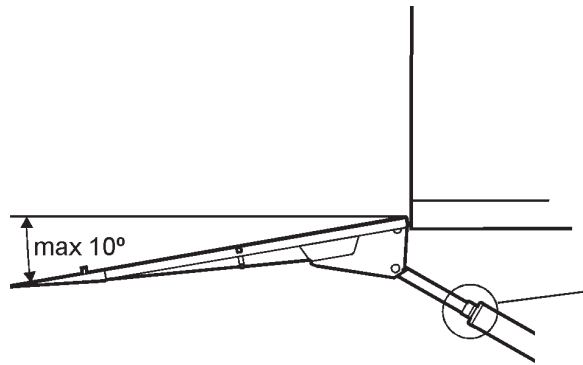


Figure 38. The tilt angle must be adjusted to max.10° down

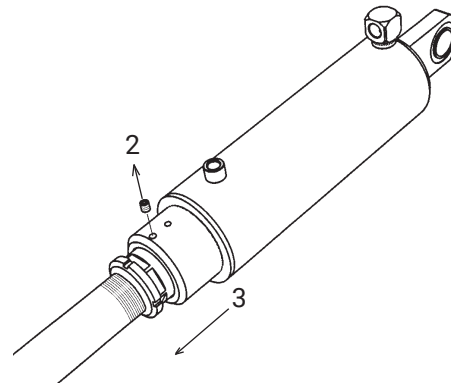


Figure 39. Adjust the ring

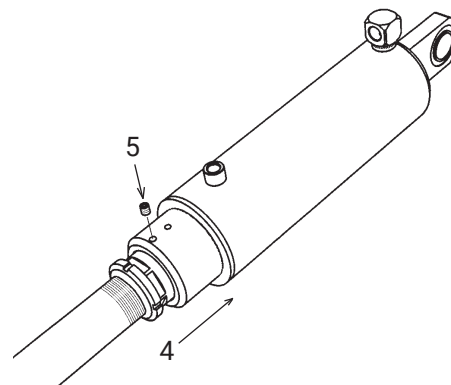
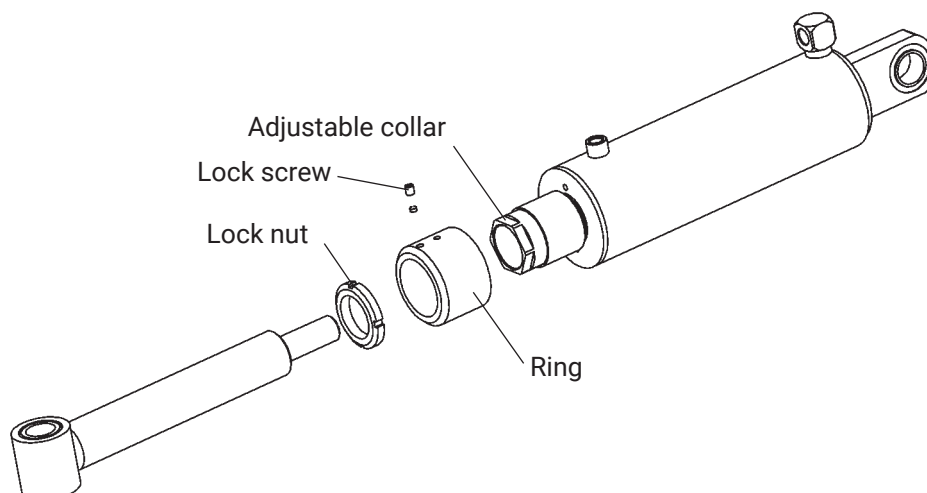


Figure 40. Adjust the ring

IMPORTANT!

IMPORTANT Both cylinders tilt down angle must be adjusted equally, otherwise there is the risk that the cylinders will break.



4.12 Underrun protection

NOTE!

If the vehicle is less than 2200 mm wide, the ordinary outer sections of the bumper bar are replaced by special sections for vehicles with smaller width. Contact Zepro for more information.

The bumper bar contains four length adjustable (1) brackets, two side adjustable (3), two immovable (2) brackets and three aluminium profiles.

Mount each length adjustable bracket with two bolts M10x100 (8.8), each immovable bracket with two bolts M10x70 (8.8) and each side adjustable bracket with two different bolts one M12x120 and one M8 taptite (8.8) see pic. above. The taptite M8 bolt is used in order to freeze the side adjustable brackets. Tighten M10 bolts to 50 Nm, M12 bolts to 70 Nm and taptite M8 20 Nm

Select the height that meets the statutory requirements, see section "3.2 Statutory dimensions" on page 9.

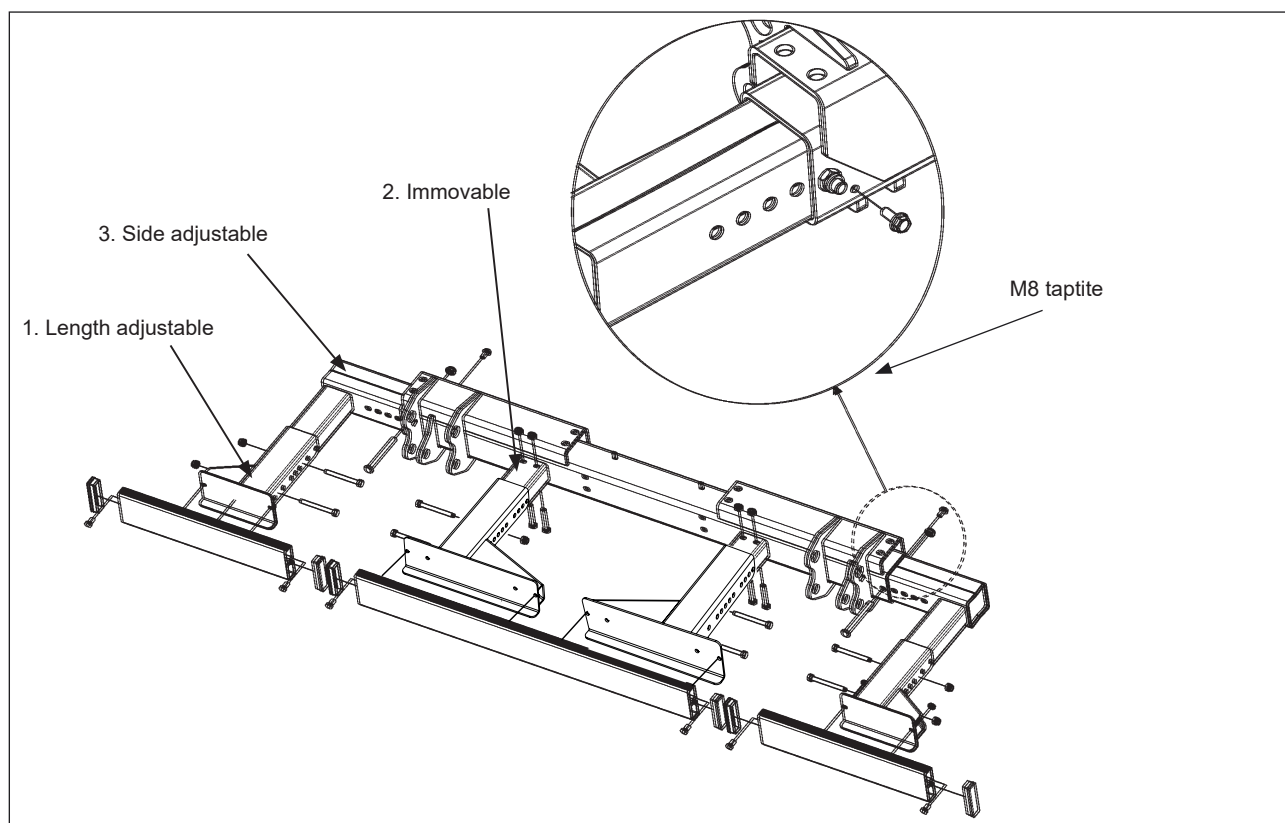


Figure 41. Installing underrun protection

NOTE!

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

Mount the aluminium profiles with 2 bolts M8x20 (8.8) each, tighten to 25 Nm. Put the bolt heads into the aluminium profile, and then position the profiles onto the brackets.

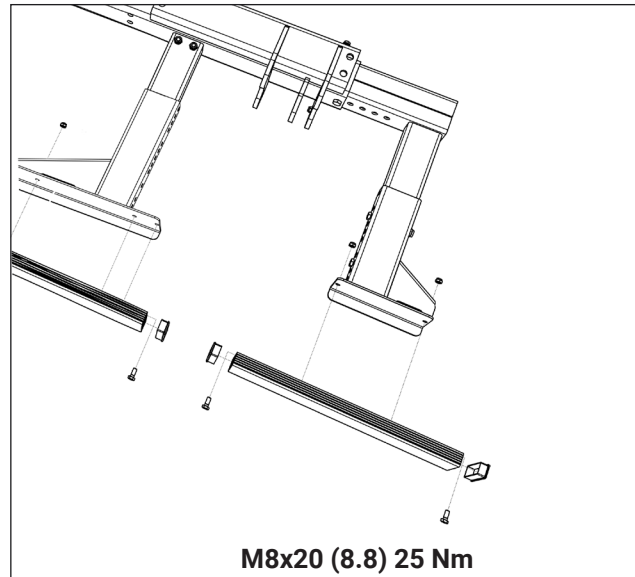


Figure 42. Mount the aluminium profiles with 2 bolts M8x20 (8.8) each, tighten to 25 Nm

If the tail lift is equipped with auto tilt must an angle switch be installed at the lift arm.

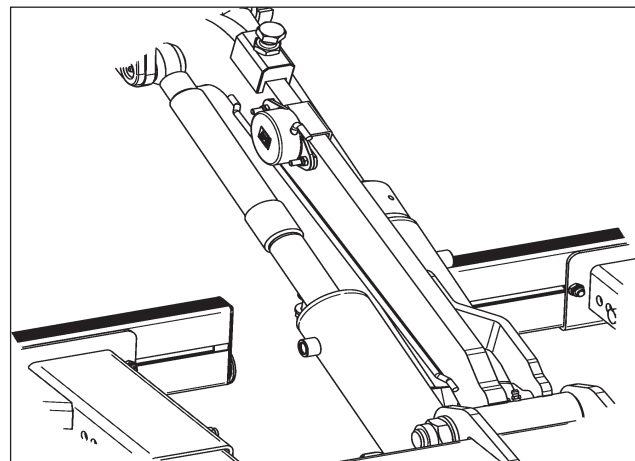


Figure 43. An angle switch must be installed at the lift arm

4.13 Purging the cylinders

Purge the lift cylinders by lowering the platform all the way to the ground a few times. It may be necessary to raise the truck to allow the platform to be lowered completely.

Purge the tilt cylinders by tilting the platform all the way up to the vehicle body and then all the way down.

4.14 Controllers

1. Install the primary controller on the side of the vehicle normally facing away from the traffic. The distance between the vehicle's rear edge and the centre of the controller must be 300-600 mm. Connection is performed later in section 6 if this is not already done from the factory.
2. Any additional controllers can be installed in an optional location. Connection is described later in section 6.

IMPORTANT!

The controller's cable intake must always face downwards.

Pay attention and be careful when running cables to get longer life for the cables and to reduce the risk of unnecessary downtime.

The cable must not be fastened 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 with too tight a radius as this can cause damage.

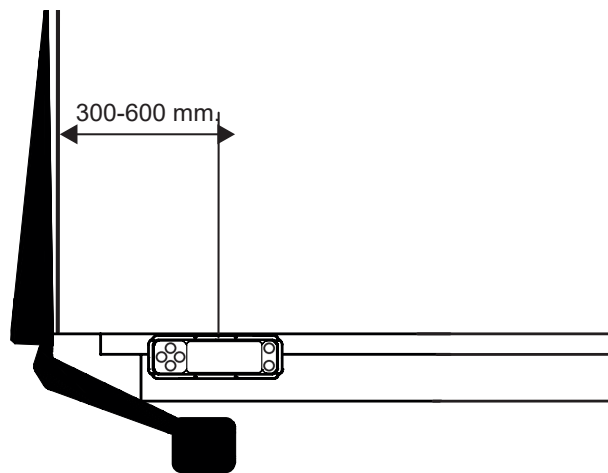


Figure 44. Installing controllers



WARNING!

The primary controller must always be fitted on the side that is facing away from moving traffic. Fitting in any other way involves increased risk of injury.

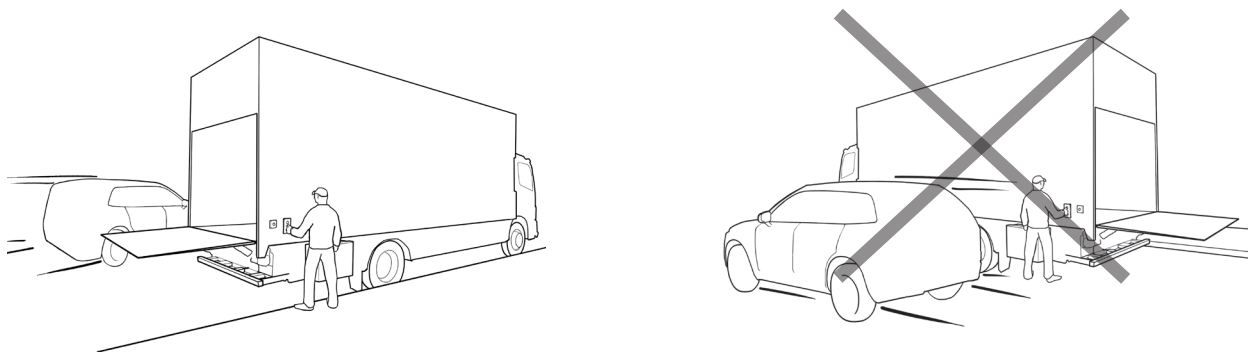


Figure 45. Installing controllers

4.14.1 Controller CD 1

1. Fit the controllers in the desired locations. However, locate them such that the operator's working position is as safe as possible, and with an adequate overview of the load, tail lift and their working area.
2. The distance between the vehicle's rear edge and the centre of the controllers must be 300-600 mm. The distance between the controllers must be at least 260 mm. See Figure 46.
3. Any additional controllers can be installed in an optional location.
4. Run the controller cabling to the tail lift cable grommet. Connection is described later in section 6.

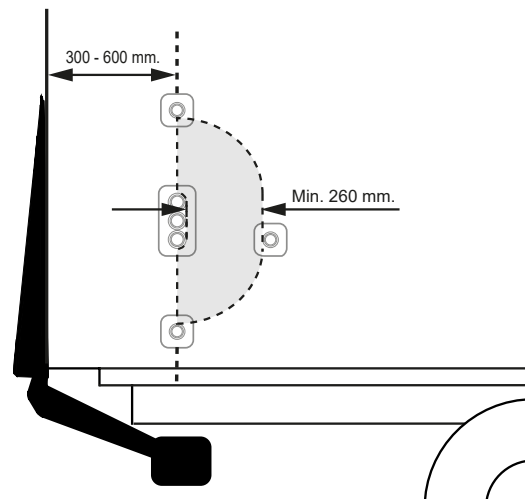


Figure 46. Installing controller CD 1 with two-handed grip

4.14.2 Controller UCU (CD 19)

Installation on the outside of the body

Because the cable is usually connected to the controller, and the latter is always bolted to the bracket, disconnect the cable from the controller to run it through the wall.

1. Raise the connector latch to pull out the connector. See Figure 47.
2. When the cable has been pulled through the wall, reconnect it to the controller and secure it using the latch. Then attach the controller securely to the body with the screws. See Figure 48.

NOTE!

Make sure that the connector is correctly fitted with the rubber seal not be visible

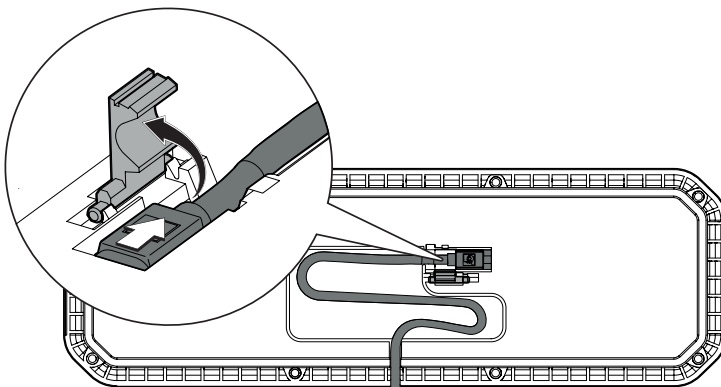


Figure 47. Disconnecting the connector

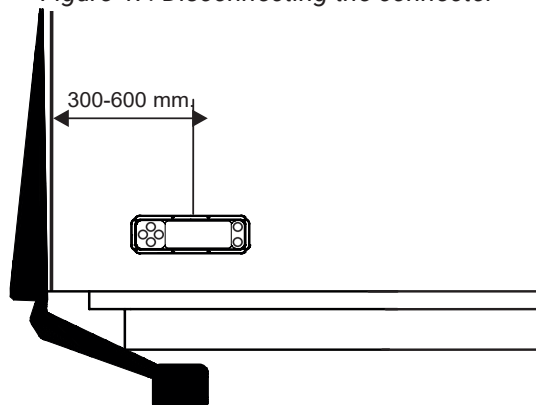
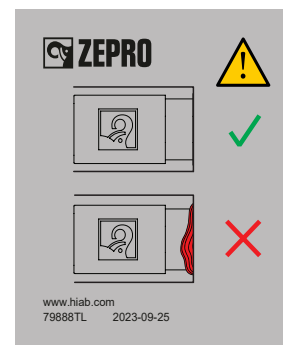


Figure 48. Installing controllers

Installation on the underside of the body

The cable is usually connected to the controller and the controller bolted to the bracket at the factory. Bolt the bracket to the underside of the body. Use the self-adhesive drilling template supplied.

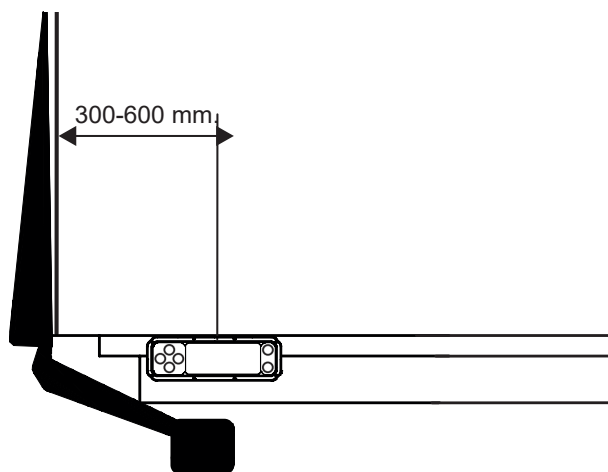


Figure 49. Installing controllers

4.14.3 Connector for a hand-held controller**Installing the controller bracket**

The connector is usually mounted on the bracket and connected to the lift. Bolt the bracket in the controller bracket. Use the nuts and bolts supplied.

Installation on the underside of the body

The connector is usually mounted on the bracket and connected to the lift. Bolt the bracket to the underside of the body. Use the self-adhesive drilling template supplied.

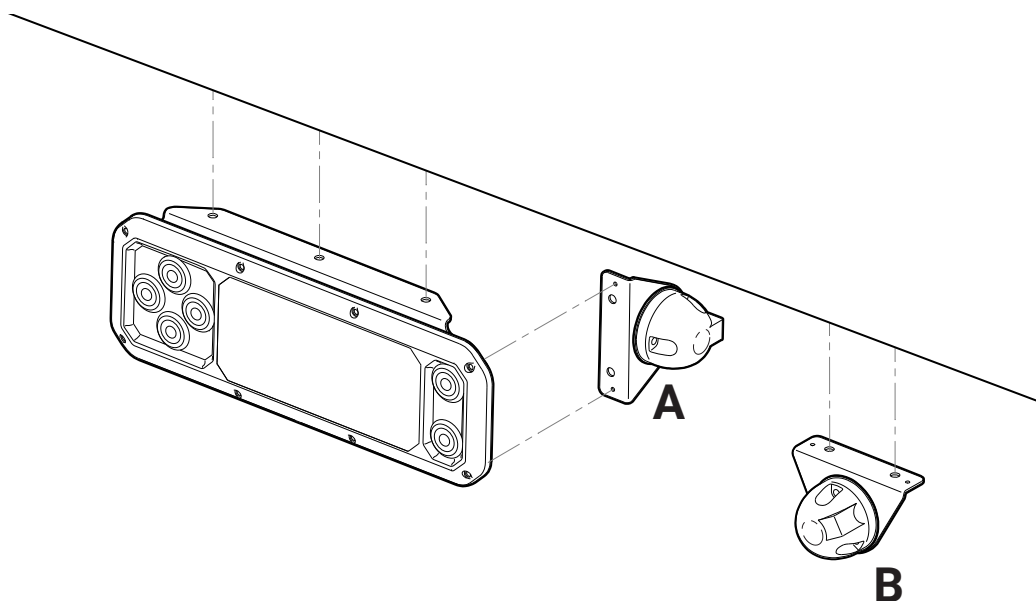


Figure 50. Installing controller CD19 and the connector for a hand-held controller

5 Cable routing

5.1 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.

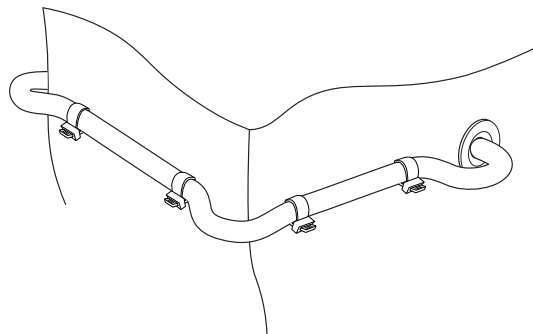


Figure 51. Protect the cable against sharp edges and use cable grommets



Figure 52. Always use shrink hose over the cable connection when fitting cable terminals

5.2 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.

5950	12 volt	24 volt
Pump - Motor Unit	200 A	90 A
Magnet (hydraulic unit)	1,5 A	0,75 A
Magnet (electric safety valve)	1,5 A	0,75 A
Solenoid	1,8 A	0,9 A
Minimum recommended cable area (apply copper cable, plus- and minuscable)		
Control power cable	1,5 mm ²	1,5 mm ²
Main power cable, L < 8m	35 mm ²	25 mm ²
Main power cable, L = 8 - 15m	50 mm ²	35 mm ²
Main power cable, L > 15m	-	35 mm ²
Battery		
Min. capacity, I_{min} (available for lift)	140 Ah	110 Ah
Min. voltage, U_{min} (at lift)	9 Volt	18 Volt

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.

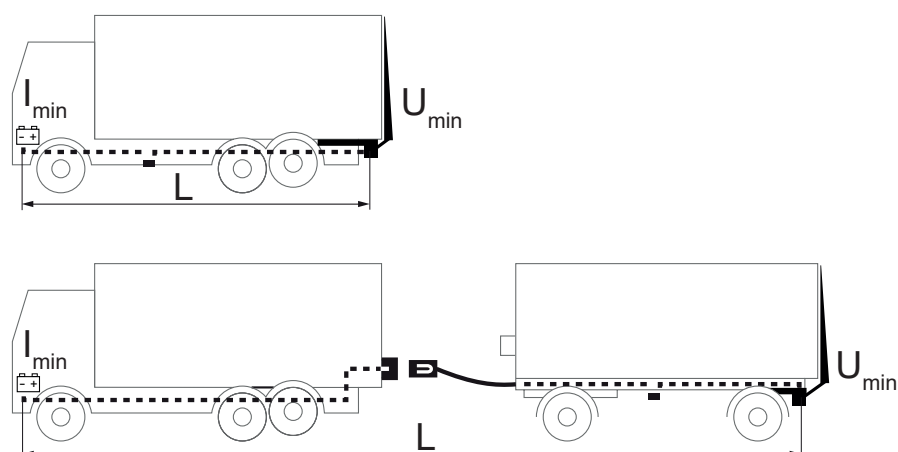


Figure 53. Battery capacity and definition of the length of the earth and main power cables

5.3 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 6.
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 6.

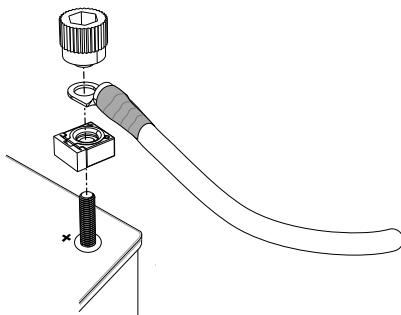


Figure 54. Connection to the battery's positive terminal

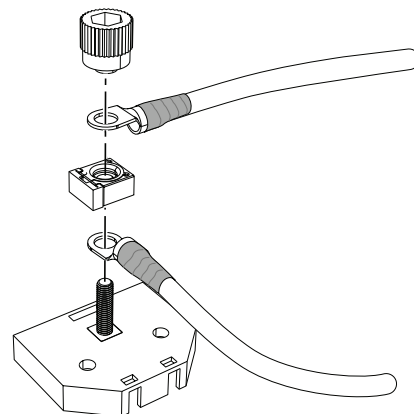


Figure 55. Connection to the fuse box

5.3.1 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 7.

IMPORTANT!

The positive cable to the battery and main fuse is connected later in Section 7, after the cable has been routed/installed.

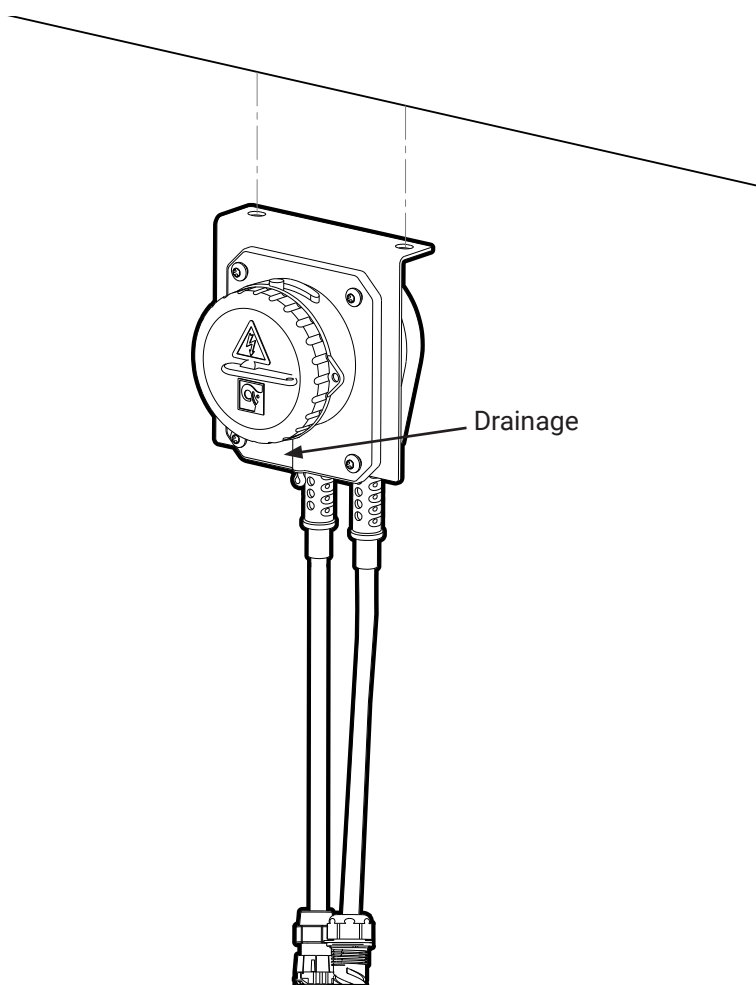


Figure 56. Installing the main power switch

5.4 Control power cable

When using cab switches (CS), route the control current cable from the cab switch CS to the tail lift cable grommet. Connection is described later in section 6.

5.5 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 6.

6 Connection

6.1 Cable grommet

6.1.1 Before connection

To be able to install/remove/adjust the cables in the cable grommet, the five screws must be loosened.

1. Loosen the five screws on the cable grommet, see Figure 57. Cables can now be installed/removed/adjusted in the grommet. The cable should be installed together with existing cabling using cable ties.

Hydraulic unit 5915

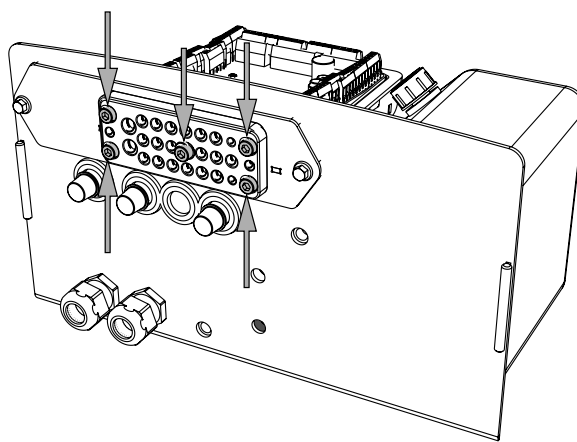


Figure 57. The cable grommet's five screws

6.1.2 Connection

1. Run the cabling through the grommet.
2. Connect the relevant controller. See Section 6.1.4.
3. Where applicable, connect the warning lights. See Section 6.1.5.
4. Where appropriate, plug in cab switch (CS) and open platform alarm. See Section 6.1.6 - 6.1.7.

6.1.3 After connection

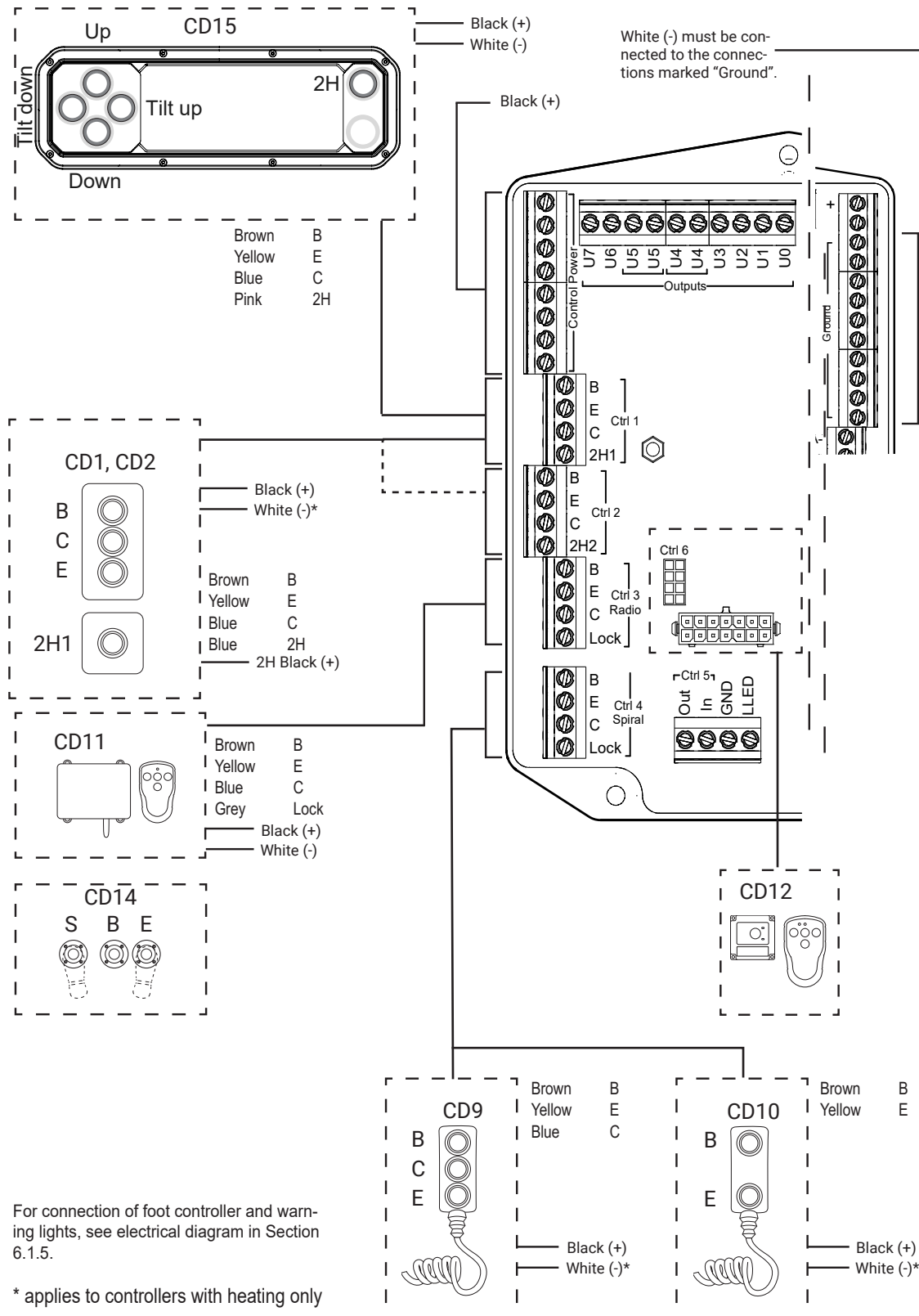
1. When all cables are suitably located in the cable grommet, tighten the five screws; see Figure 57. Tightening torque: 5 Nm.

6.1.4 Controller

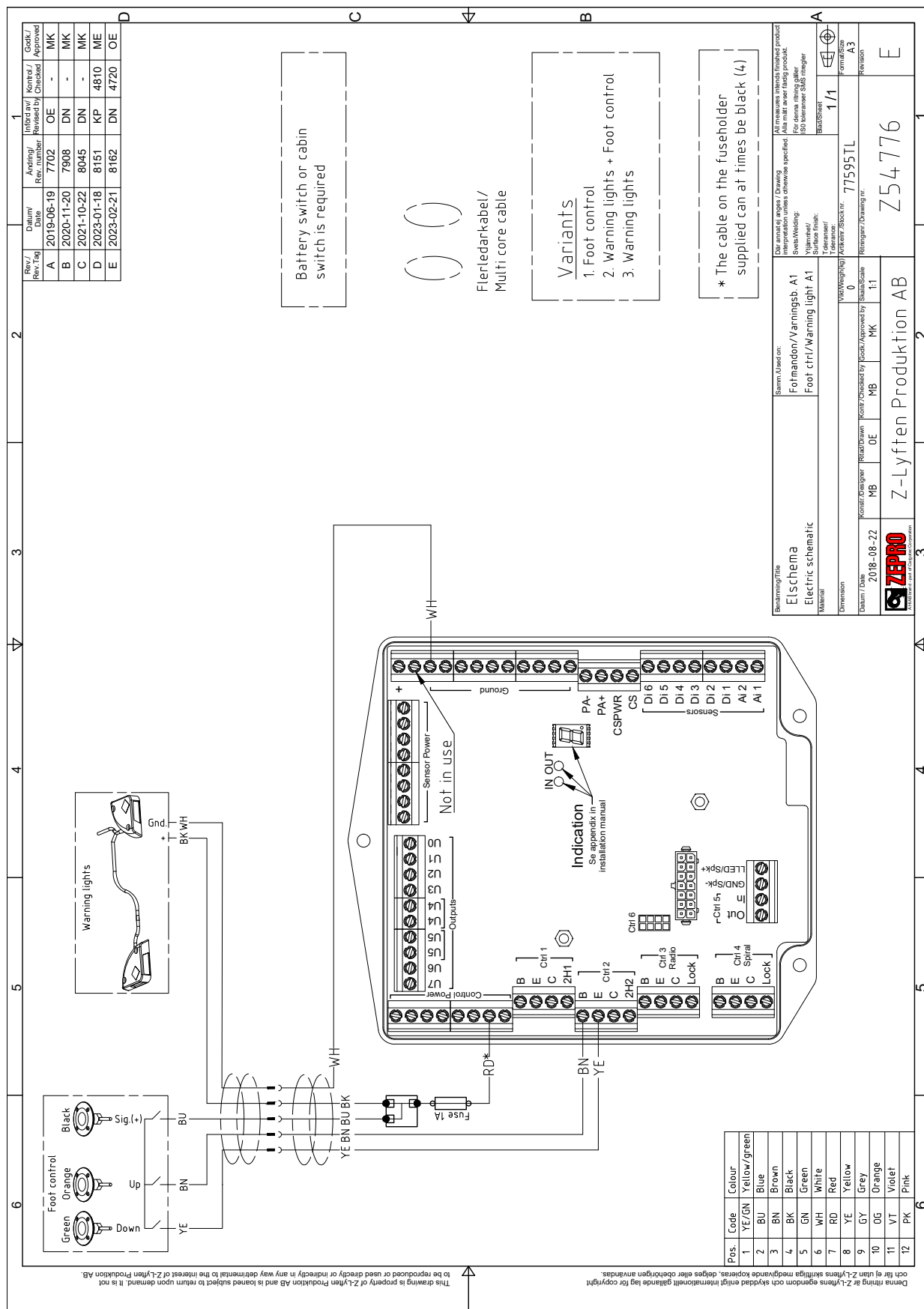
The most commonly occurring controller (CD Control Device) models are shown below. Possible controller models vary depending on lift model, configuration and relevant market.

⚠ WARNING!

Make sure that the control board is not powered up before connecting. Connecting more than one controller to each connection is not permitted. Risk of material damage.

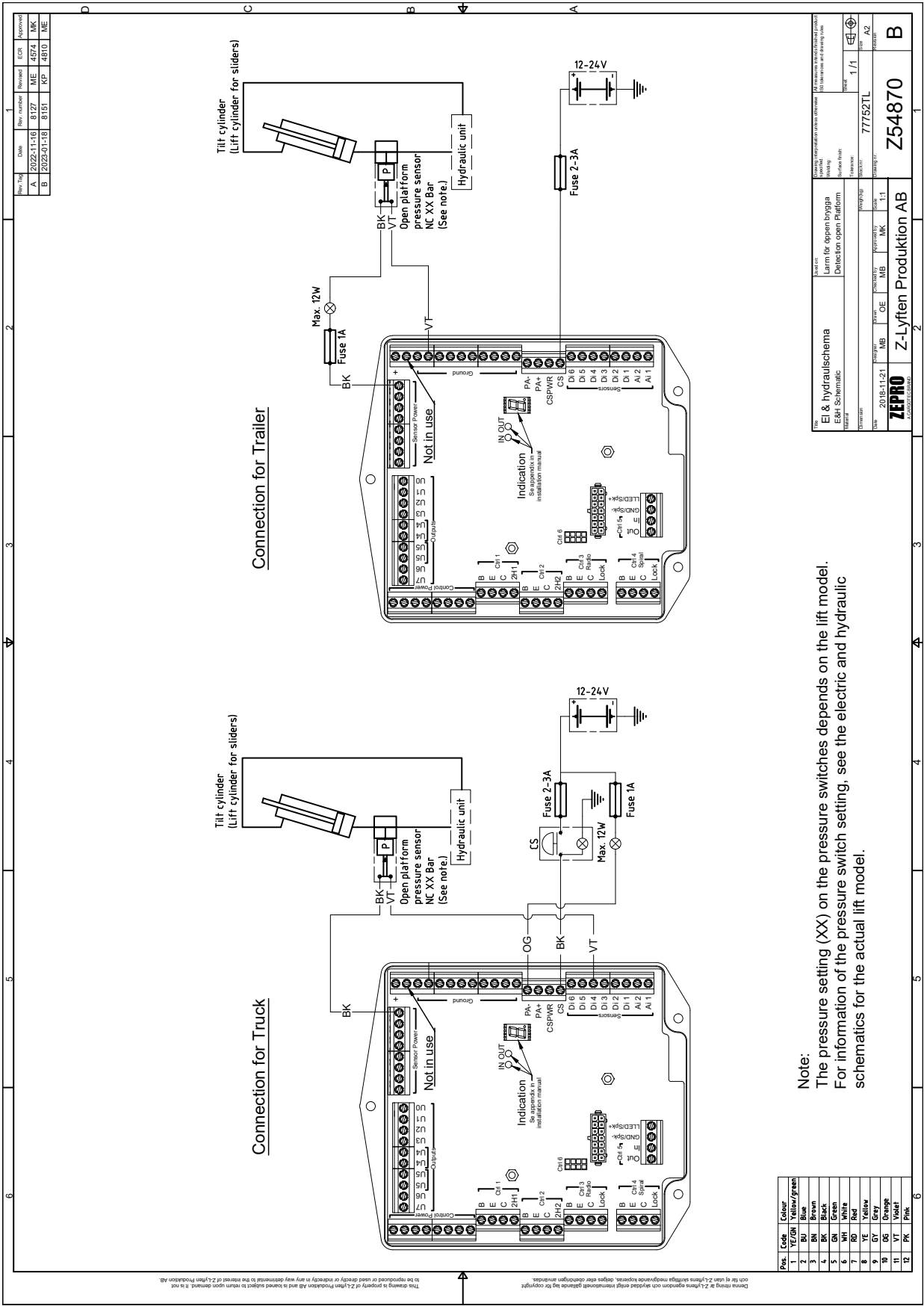


6.1.5 Warning lights and foot controls



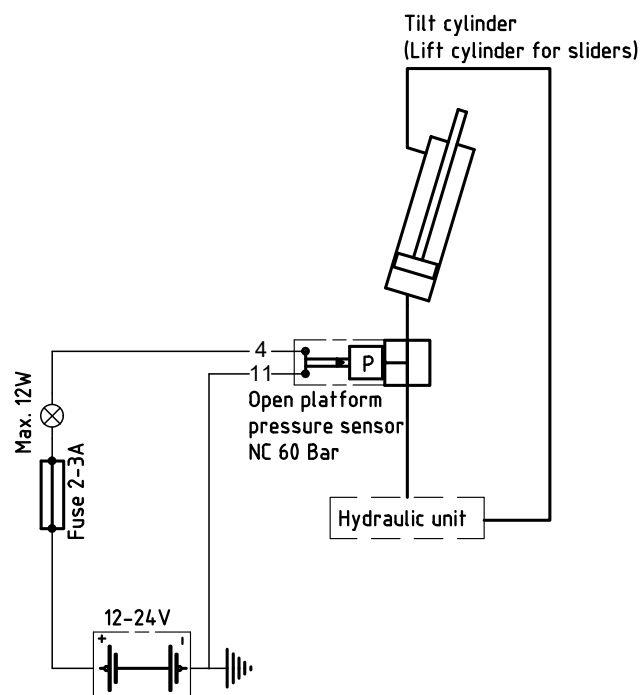
6.1.6 Cab switch and open platform alarm

Applies when installing without main switch



6.1.7 Open platform alarm

Applies when installing with main switch



7 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 Figure 58.
4. When connecting directly to the positive battery terminal, place the fuse (2) on the positive terminal, see Figure 58.
5. Connect the main power cable (3) to the fuse box / positive terminal, see Figure 58 - Figure 59.
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 Figure 58 - Figure 59.

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.

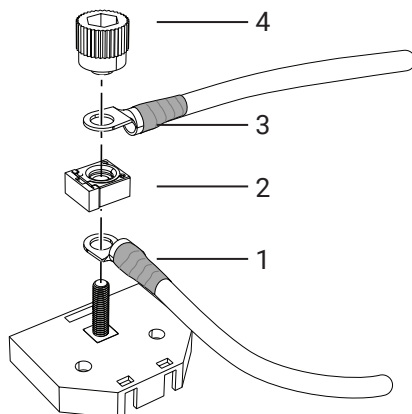


Figure 58. Connection to the fuse box

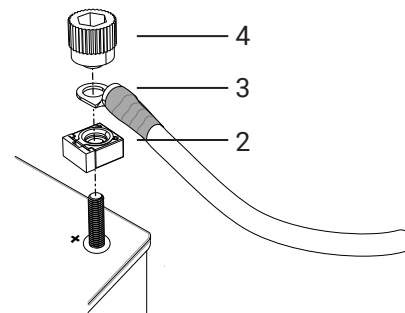


Figure 59. Connection to the battery's positive terminal

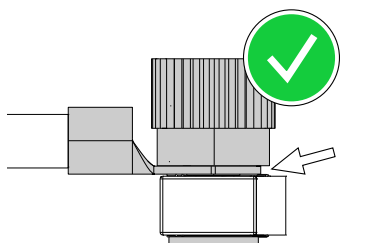


Figure 60. Correct installation

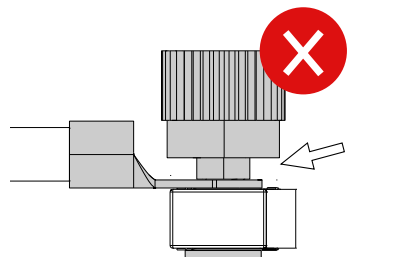


Figure 61. Incorrect installation

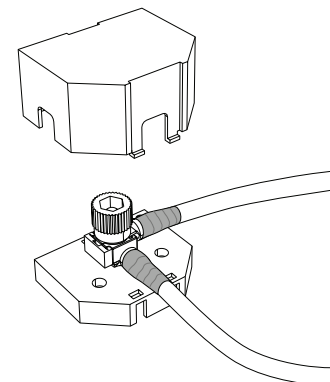
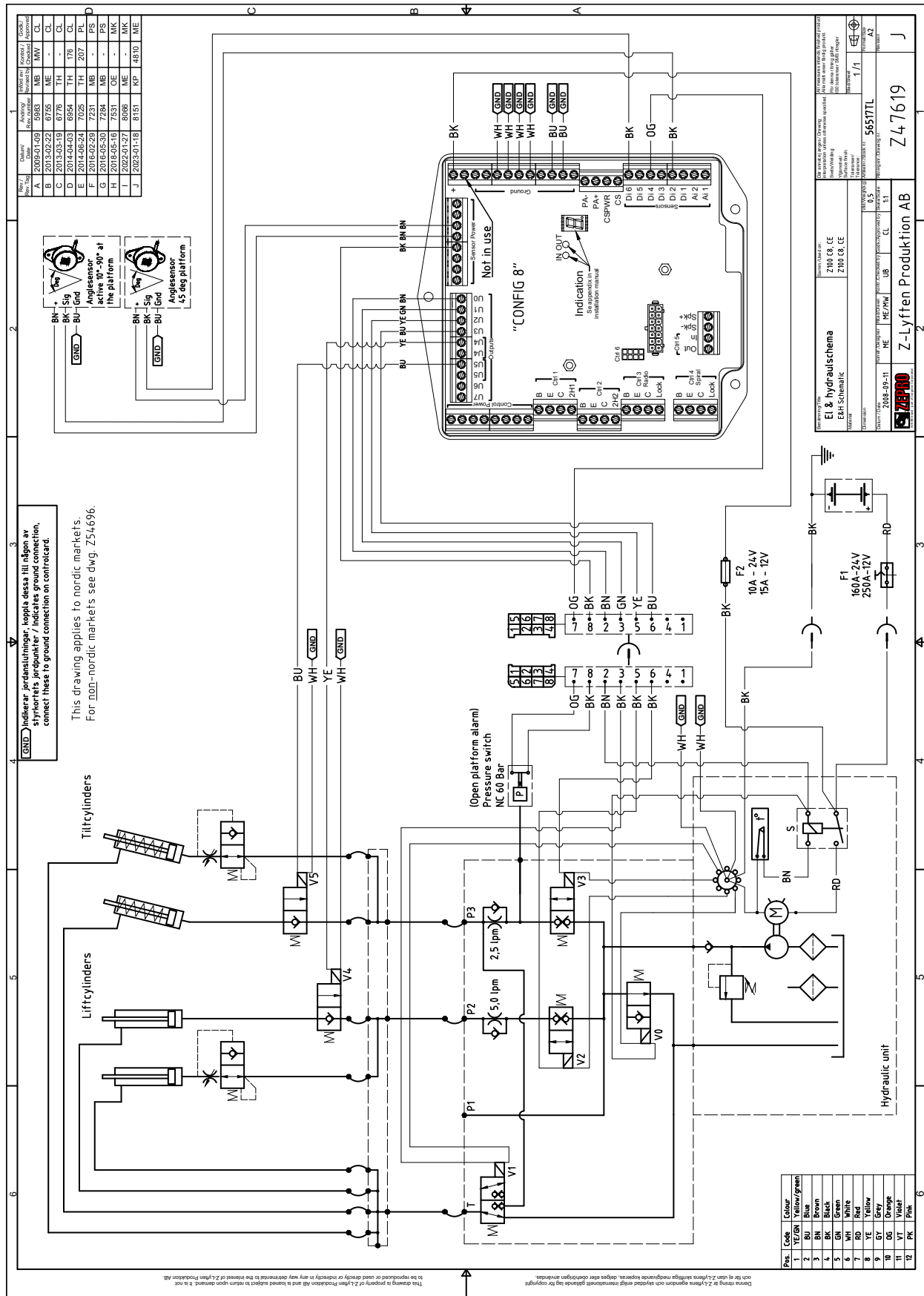


Figure 62. Cover, fuse box

8 Electrical and hydraulic diagrams

8.1 Z 100



9 Lubrication and oil level check

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

9.1 Lubrication

NOTE!

Use LE lubricant 4622 or the equivalent.

1. Right tilt cylinder, lower bearing.
2. Right lift cylinder, lower bearing.
3. Lift arm right side, lower bearing.
4. Left lift cylinder, lower bearing.
5. Left tilt cylinder, lower bearing.
6. Lift arm left side, lower bearing.
7. Left tilt cylinder, upper bearing.
8. Right tilt cylinder, upper bearing.
9. Lift arm right side, upper bearing.
10. Right lift cylinder, upper bearing.
11. Left lift cylinder, upper bearing.

9.2 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).

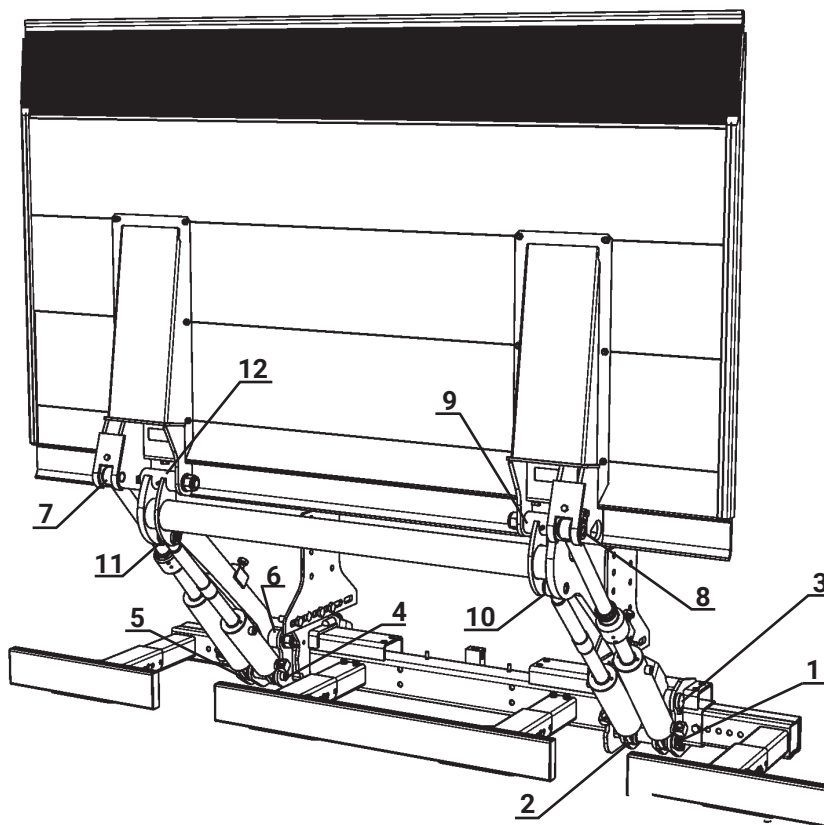


Figure 63. Lubrication points

10 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.

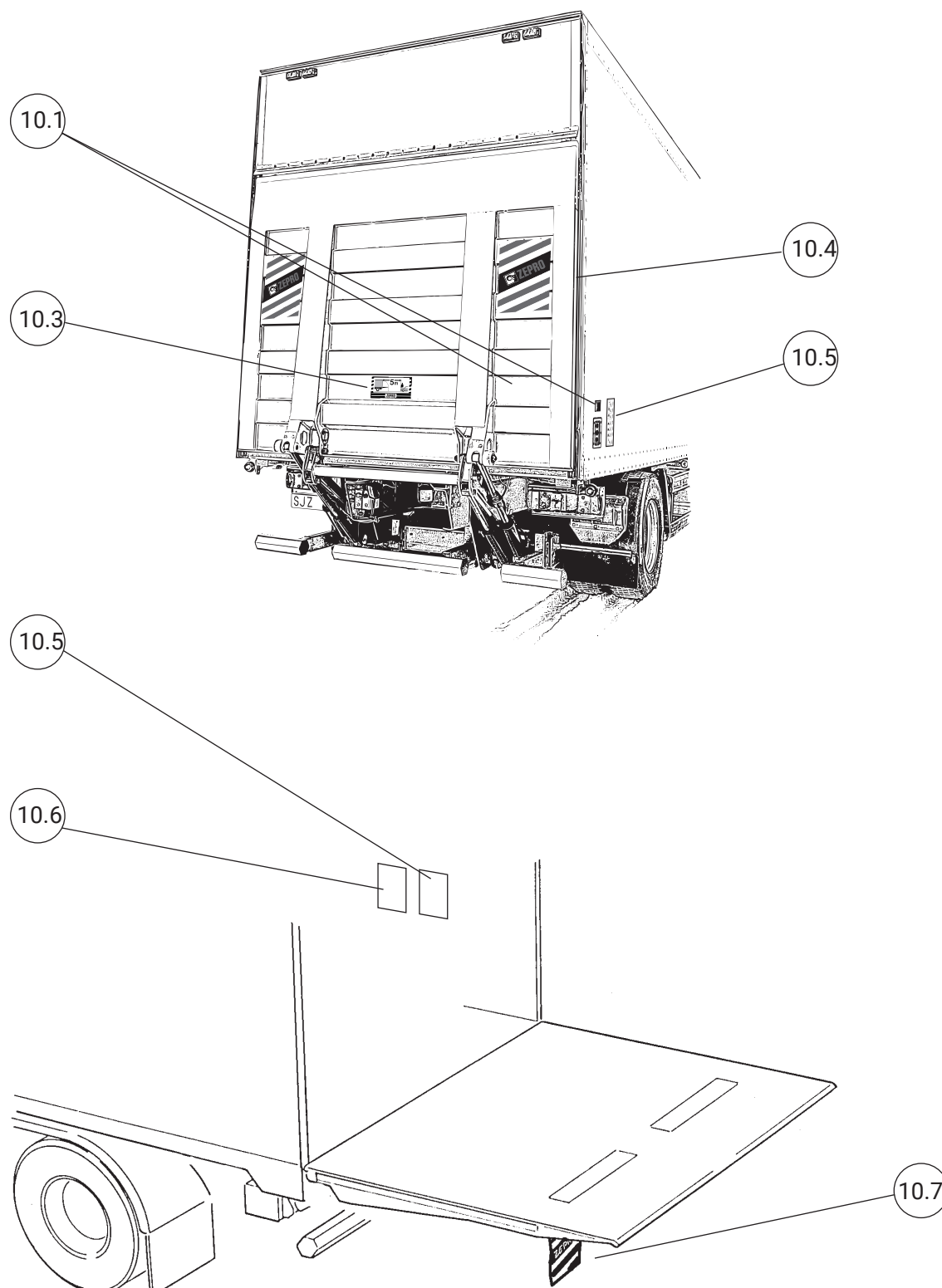


Figure 64. Overview of labelling

10.1 Loading diagram

Affix the load diagram in a suitable, conspicuous place on the platform and in the vicinity of the primary controller or in the designated location on the controller (CD19).

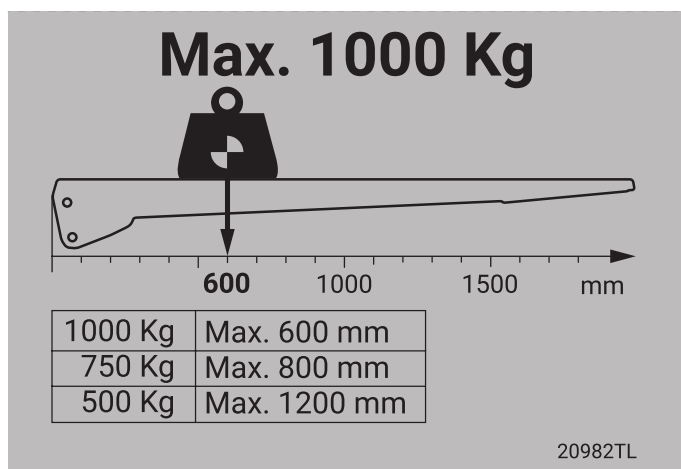


Figure 65. Load diagram for load capacity 1000 kg, load centre distance 600 mm.

10.2 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)



Figure 66. Identification plate

10.3 Work area

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

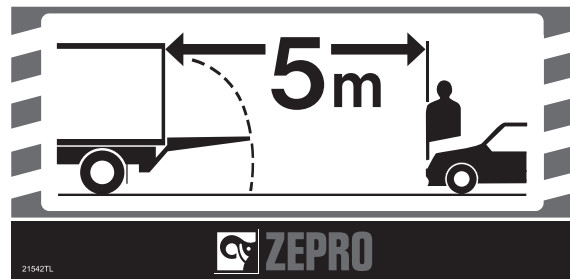


Figure 67. Work area

10.4 Warning tape

The warning tape is affixed along the edges of the platform to make the edges more conspicuous when the platform is deployed.

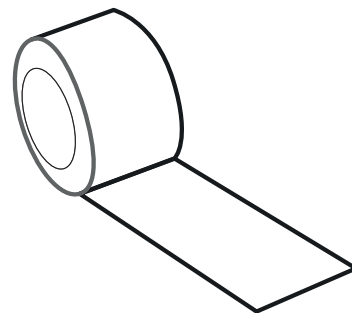


Figure 68. Warning tape

10.5 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.

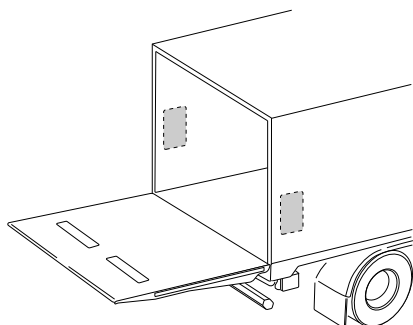


Figure 69. Standard mounting

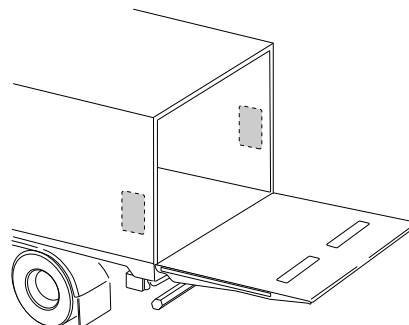


Figure 70. Reversed mounting

Control device	Sticker
CD 1, 2, 9	55053TL*
CD 1,2,9 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

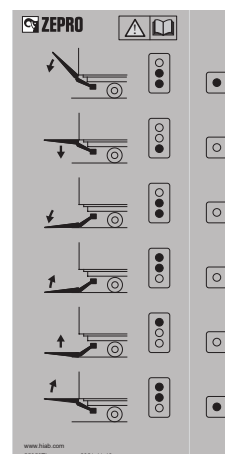


Figure 71. Control device sticker for CD 1, 2, 9

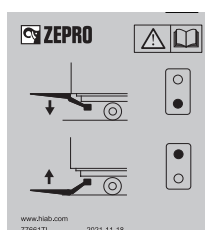


Figure 72. Control device sticker for CD 10

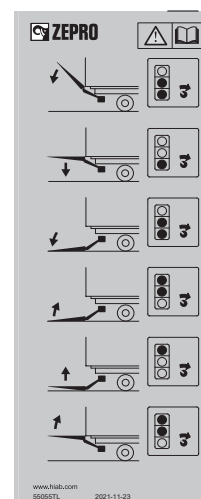


Figure 73. Control device sticker for CD 4

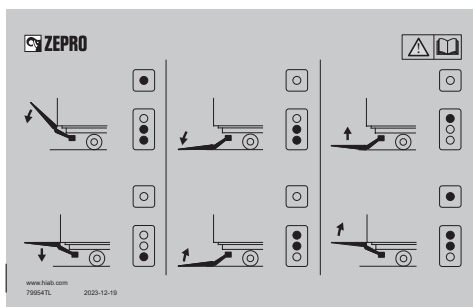


Figure 74. Control device decal for CD 1 with the two-hand button mounted above the control device.

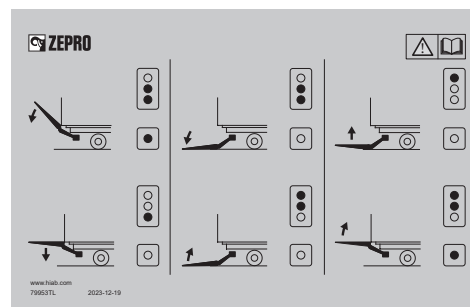


Figure 75. Control device decal for CD1 with two-hand button mounted below the control device.

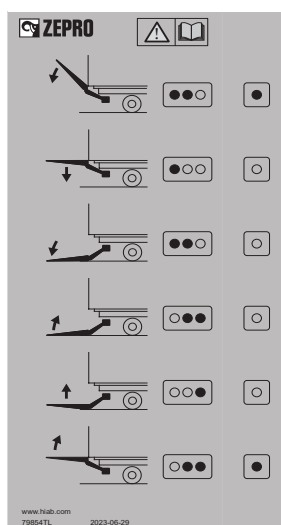


Figure 76. Control device decals for CD 1, 2 and 9 for horizontal control device is ordered separately. 79854TL

10.6 Danger area

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

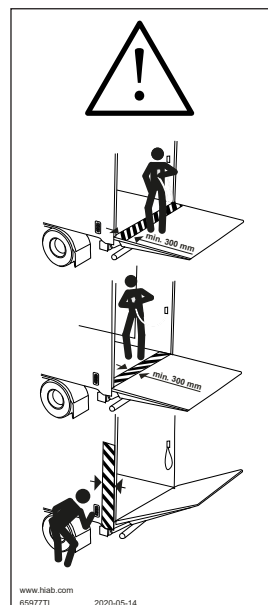


Figure 77. Danger area

10.7 Warning flags

Install warning flags as close to the top and as close to the edge of the platform as possible, but without the risk of the flags coming loose when the platform is placed on the ground. Swage the tracks together to secure the warning flags. The flags must be provided with reflective tape.



Figure 78. Warning flags

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 to vehicle floor level and with the platform horizontal. Measure dimensions A-B-C-D for comparison as illustrated, see Figure 79.
- Place a test load on the platform, as shown in table (for each lift model/lift 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 attachment point.

11.1.2 Operation

- Place a test load on the platform, as shown in 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 platform operation is not more than 15 mm in the vertical direction (points A and D) and not more than 2° in the angular direction (points B and C), in relation to the vehicle floor level.

11.1.3 Static load (Test load 1.25 x tail lift loading capacity). For tail lifts with a load centre of 600 mm.

Capacity	Load 500 kg	Load 1000 kg
	Distance out in 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

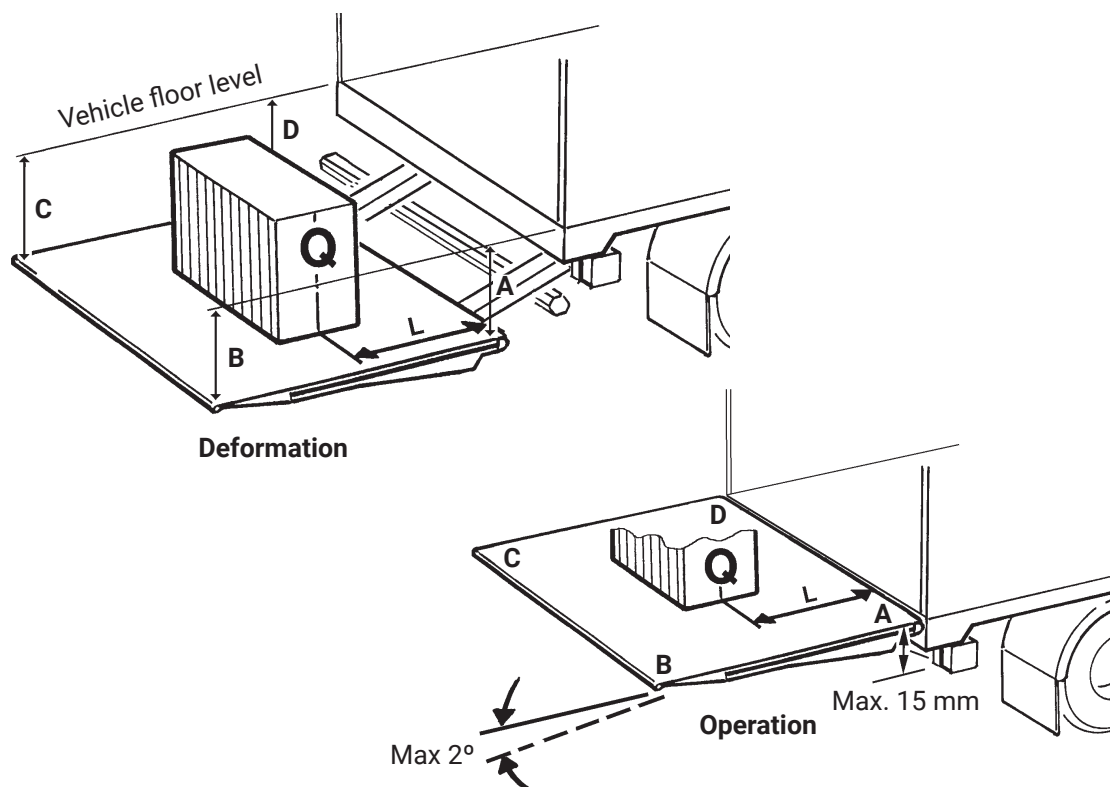


Figure 79. Testing and verification

11.2 Dynamic load test.

11.2.1 Test with max. load

- Place a test load on the platform, as shown in table (for each lift model/lift 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, as shown in table (for each lift model/lift capacity).
- The test load should be 1.25 x the lift model's max. load. 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 a load centre of 600 mm.

Capacity	Load 500 kg	Load 1000 kg
	Distance out in 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

11.3 Test of safety functions

The tail lift functions must be tested.

Check:

- That the red lamp in the vehicle's driver's cab goes out when the platform is fully closed against the body, and conversely, that it comes on when the platform opens.
- 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 cabin 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 the max load sticker is present and suitably positioned in relation to the load diagram for the 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 locking device is working (if accessible).
- 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 Registration

For the tail lift's guarantee to be valid, the delivery card must be registered in C-care (www.c-office.com). The bodybuilder is responsible for registration in C-care and must certify in the intended location in tail lift's manual that registration has been done.

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.

Complete Lift chassis (except platform)		Lift components (included in complete lift chassis)	
Z-100-110	171 kg	Support frame Z-100-110/130	38,6 kg
Z-100-130	174 kg	Lift arm Z-100-110	34,0 kg
		Lift arm Z-100-130	36,5 kg
		Mounting bracket cpl.	4,0 kg
		Hydraulic unit	14,0 kg
Platforms		Lift cylinder - 110	8,0 kg/unit
1450x2520 mm	102 kg	Lift cylinder - 130	8,0 kg/unit
1600x2520 mm	111 kg	Tilt cylinder - 110	12 kg/unit
1700x2520 mm	116 kg	Tilt cylinder SA - 130	12 kg/unit
1800x2520 mm	122 kg	Bumper bar cpl.	36 kg
2000x2520 mm	134 kg		



HIAB

BUILT TO PERFORM

Zepro, Del and Waltco are Hiab trade marks 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.