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Installation Manual

Liftgate HDC

79254TL

2023-08-16

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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 Configuration

This liftgate is available in different configurations. Lift capacity and platform size may vary. However, the installation principles are the same whatever the configuration.

- Lifting capacity: 3300 or 4400 lbs.
- Max lift height: 60 inches.
- Platform: 84.6 x 100 inches.

1.3 Technical support

If technical support is needed, please contact Hiab/Waltco at 800-211-3074 or visit Hiab.com and follow the prompts to Waltco.

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

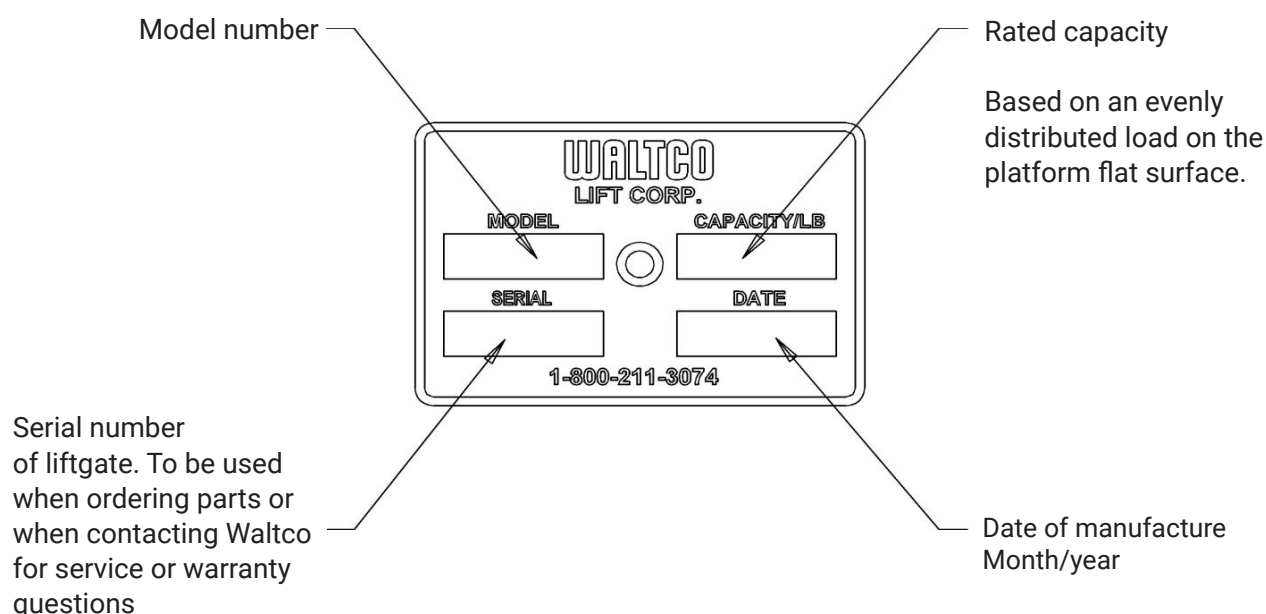


Figure 1. Identification plate

1.4 CE marking

WALTCO lift gates 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.



1.5 Hydraulic oil

If the hydraulic oil needs to be replenished, use Shell Tellus 15 or equivalent.

1.6 Warranty

After installation, testing and verification, the liftgate's delivery card must be registered for the warranty to be valid.

1.7 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.

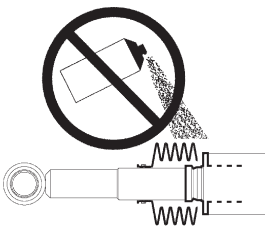


Figure 2. Piston rods, cylinder covers and boots

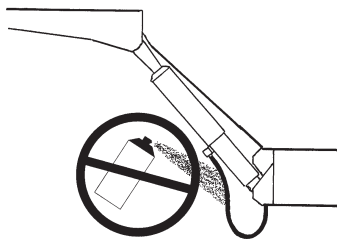


Figure 3. Hydraulic hoses

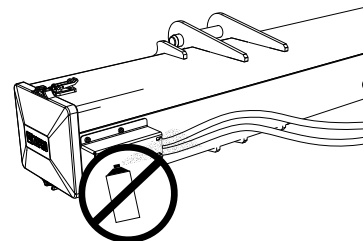


Figure 4. Cables

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 1.6".

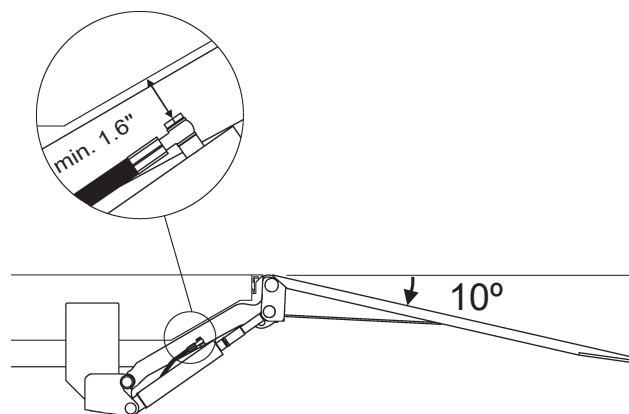


Figure 5. Clearance to the closest part of the cylinder must be at least 1.6"

⚠ WARNING!

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

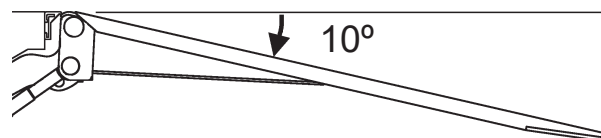


Figure 6. The platform may not be tilted down more than 10° from the horizontal

2.2 Connection of third-party equipment is forbidden

⚠ WARNING!

Connecting third-party equipment (electric or hydraulic) to WALTCO liftgates 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!

WALTCO liftgates are only approved for installation using WALTCO assembly kits.

IMPORTANT!

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

3 Before installation

3.1 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 to give the most ground clearance.

3.1.1 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).

3.1.2 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.

3.1.3 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

3.1.4 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.

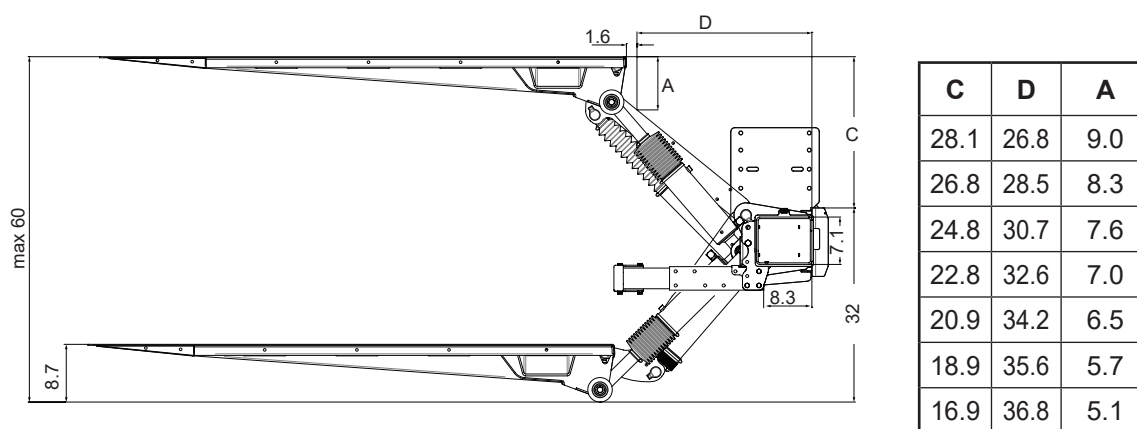


Figure 7. HDC 33/44 -60

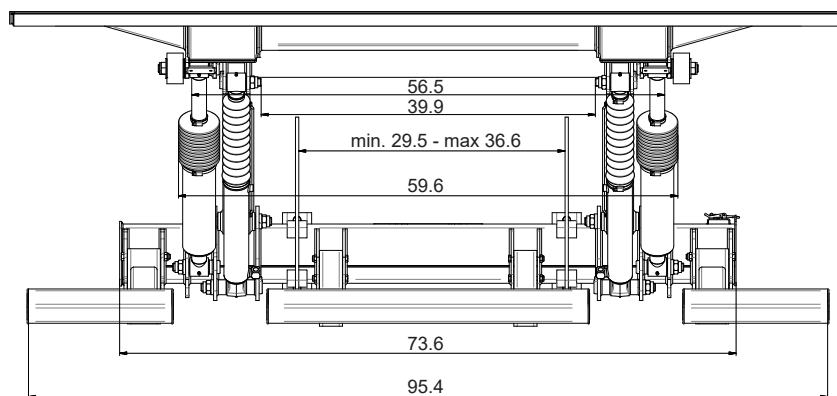


Figure 8. HDC 33/44

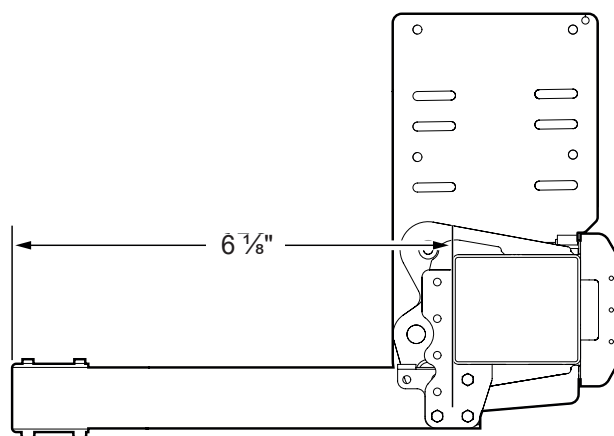


Figure 9. HDC 33/44 -60

3.2 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.

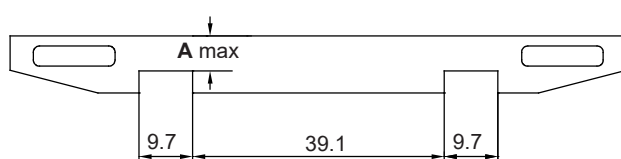


Figure 10. HDC 33/44

3.3 Prepare the lift gate

1. Position the support frame under the vehicle's chassis.
2. Remove the protective cover mounted with a rubber strap; see Figure 11.
3. Fold out the control card / relay card (B) and loosen the cabling at the connector on the hydraulic unit; see Figure 12 and Figure 13.
4. Release the hydraulic unit by unscrewing the wing nut and corresponding screw (C); see Figure 14 and pull out the hydraulic unit until the tank cap is accessible; see Figure 16.

⚠ CAUTION!

Make sure no cables are pinched or in any other way damaged when the control card / relay card is folded out or removed. Do not pull out the hydraulic unit more than necessary; make sure it is not pulled completely out of the frame, as this can entail a risk of injury and damage to the equipment.

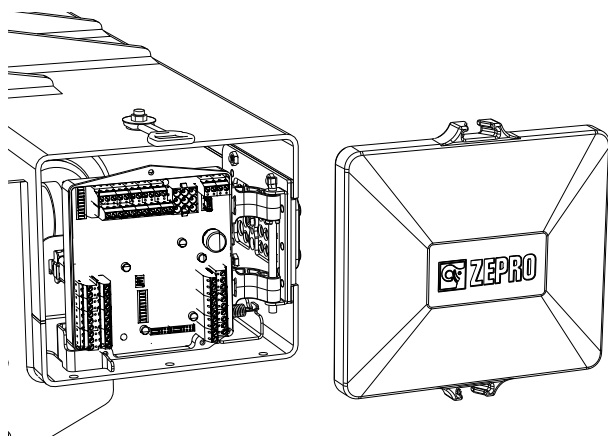


Figure 11. Remove the protective cap

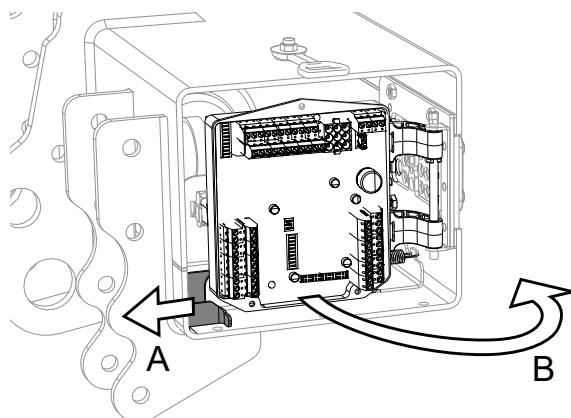


Figure 12. Release mechanism

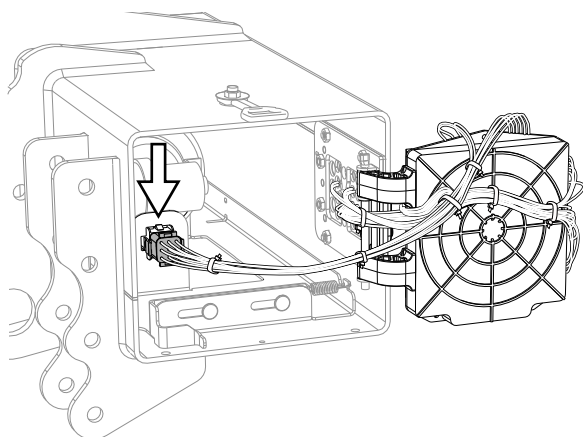


Figure 13. Connection socket

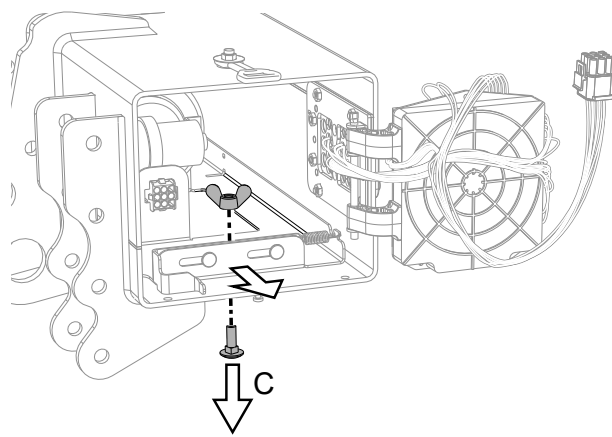


Figure 14. Releasing the hydraulic unit

5. Check whether the hydraulic tank is fitted with a transport plug seal. If so, replace it with the regular tank cap supplied.

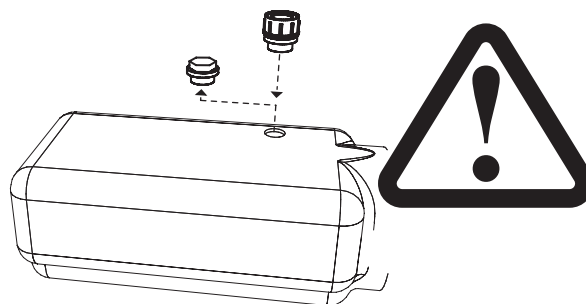


Figure 15. Where necessary, replace the transport plug with a regular tank cap

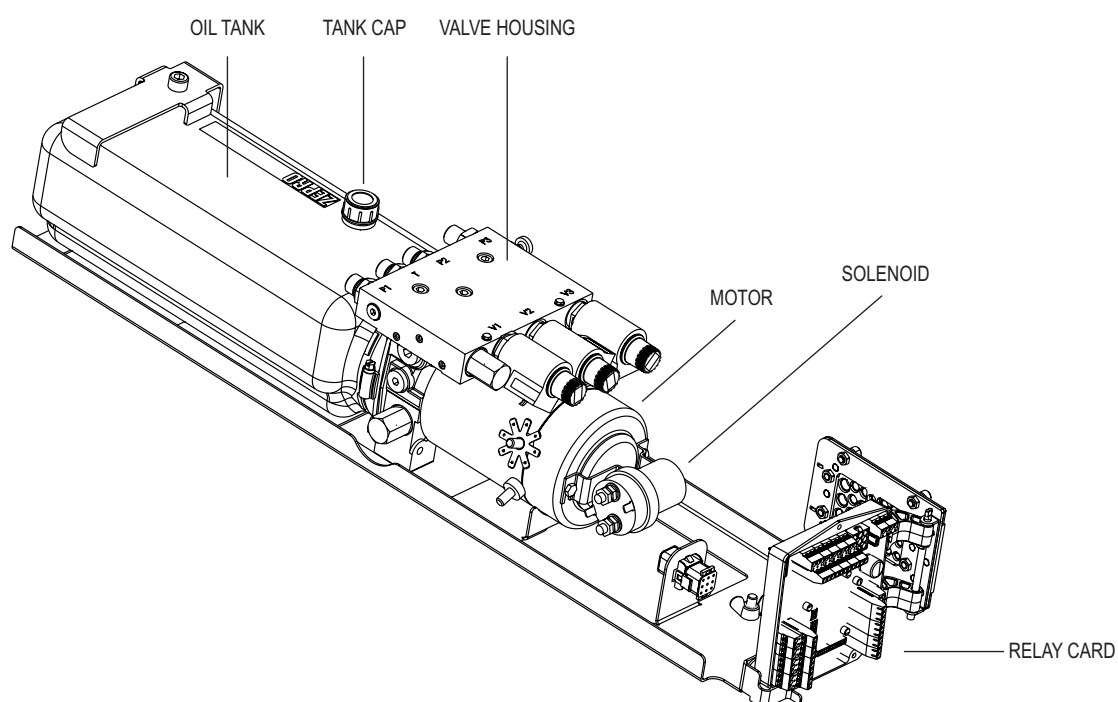


Figure 16. Hydraulic unit and relay card

3.4 Temporary power connections

When the lift is installed, it is sometimes necessary to operate the lift functions in order to make adjustments. Temporarily connect the lift to enable the lift functions.

1. Connect earth connection (GND) and +12V battery source to the quick connectors on the main power cables of the lift.
2. Your liftgate is pre-wired with grey insulated wire which has a black and orange wire inside. This is your cab switch wire. Temporarily connect a +12v power source to the black wire, nothing on the white. That will power the relay card and prewired controller switches.

⚠ WARNING!

Take great care when running the lift functions, ensure nothing gets trapped, risk for personal injury and material damage.

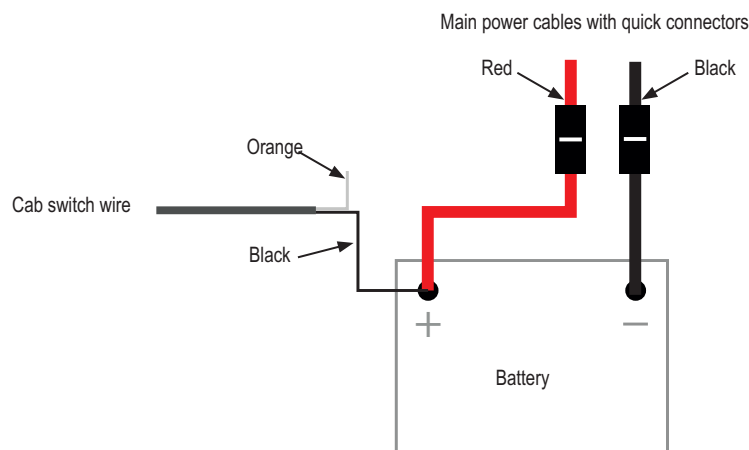


Figure 17. Temporary power connections

3.4.1 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.

4 Installation

NOTE!

Also refer to the relevant vehicle manufacturer's vehicle body instructions and WALTCO's instruction manual before installation.

⚠ WARNING!

WALTCO liftgates are only approved for installation with WALTCO assembly kits.

4.1 Construction of mounting jig

1. Cut a length of 3" angle, or similar material, approx. 70" long.
2. Make two (2) plates with 1-3/16" dia. holes as shown.

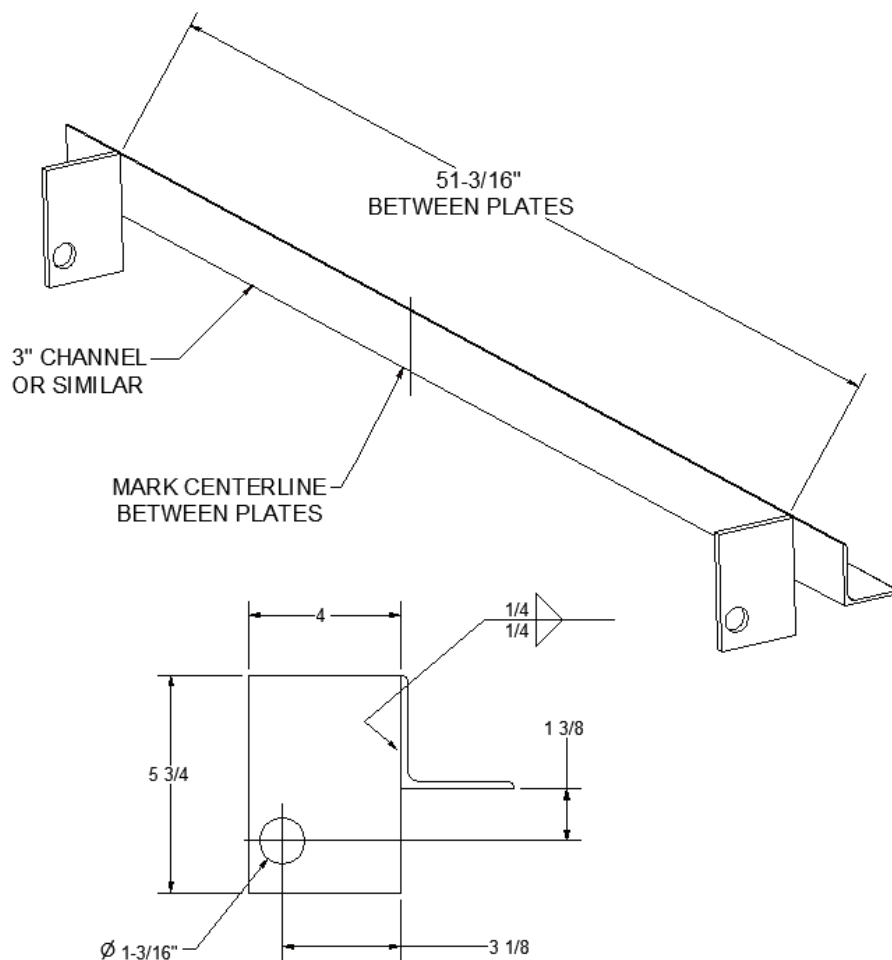


Figure 18. Consstruction of mounting jig

4.2 Mounting of frame

1. Measure and mark the midpoint of the vehicle's rear beam. See "Figure 72. Standard mounting" on page 51.
2. Fasten or spot-weld the assembly jig to the rear beam so that each centre point aligns. Verify the 1-3/8" and 3-1/8" dimensions. See Figure 20.

NOTE!

For vehicles with swing doors, see section "4.3 Swing door application" on page 18.

3. Position the support frame under the vehicle frame.
4. Raise the lift arms to their highest position.
5. Attach the lift arms to the lugs on the jig. Use the steel platform's regular 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 Figure 21. 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 on alternately until the U-profile is flat against the body, see Figure 23.

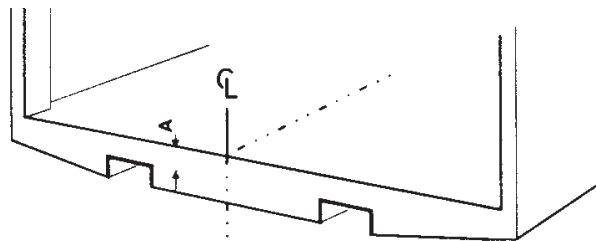


Figure 19. Measure and mark the midpoint of the rear beam of the vehicle

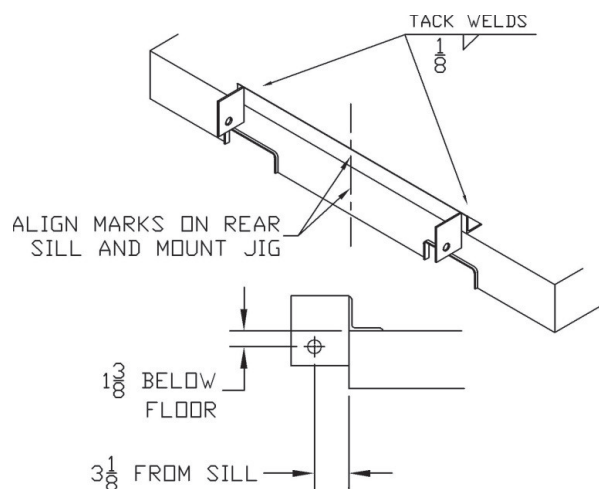


Figure 20. Fasten or spot-weld the assembly jig to the rear beam

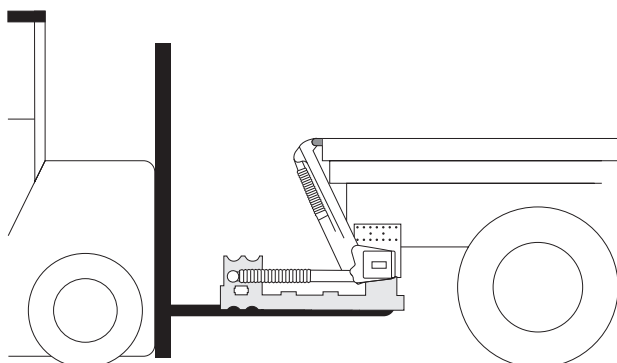


Figure 21. Use the lift's packaging and a forklift

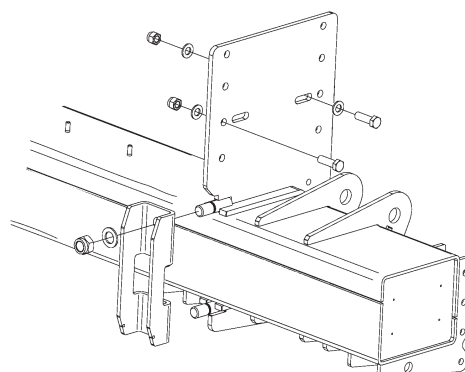


Figure 22. Install the U-profile with associated washers and nuts

4.2.1 Bolting method

9. First install using a screw in the grooved bracket holes. Mark the centre of the vehicle frame in the grooved bracket holes, then drill Ø14 mm holes in the frame; see Figure 24.
10. Bolt the mountings securely on the exterior of the vehicle frame. Use M14x45 bolts and install the associated washer and nut on the inside of the vehicle frame. Install the bolts but do not tighten.
11. Check and fine trim the lift's position. Then tighten the bolts with a torque wrench.
Tightening torque: 88.5 ft-lb.
12. Using a torque wrench, tighten the nuts holding the U-profiles. **Tightening torque: 206.5 ft-lb.**
13. Drill holes in the vehicle frame for Ø14 mm attachment bolts. Drill in the outer holes of each mounting. Use M14x45 bolts and install the associated washer and nut on the inside of the vehicle frame. Installation must be performed with at least 6 bolts in the outer holes. Do not include the first screw installed in the grooved hole. If necessary, it may now be moved to one of the outer holes; see figure. Then tighten the bolts with a torque wrench.
Tightening torque: 88.5 ft-lb.
14. Remove the mounting jig.

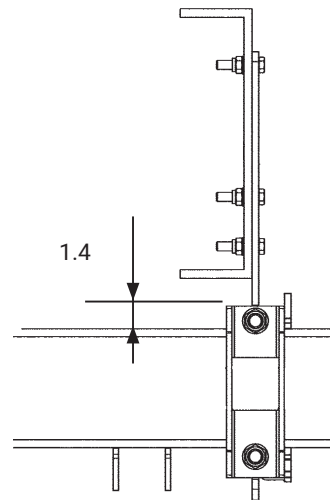


Figure 23. The frame mount requires at least 1.4" of space between the vehicle chassis and the support frame

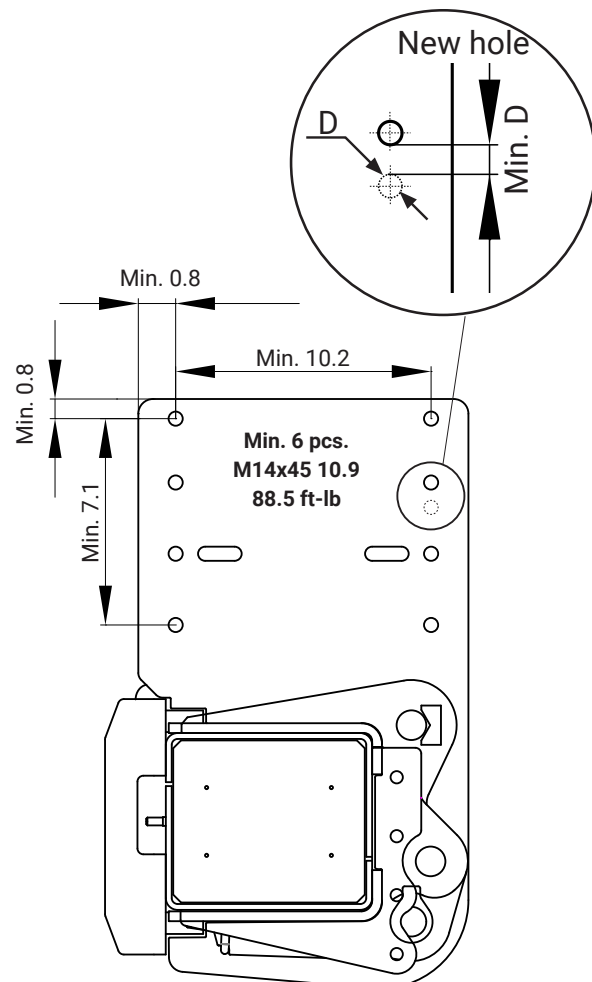


Figure 24. Install the chassis bracket with at least six M14x45 10.9 bolts

4.2.2 Welding method

Before doing any metal work:

Pull pump unit out from main frame and cover with non flammable material. Cover piston rods with non flammable material.

⚠ WARNING!

Welding, torching or grinding can damage cylinders, hoses or electrical system.

Welding machines ground point must connected as close to welding point as possible. Do not allow ground current go through pivot pins, bearings, cables or hydraulic hoses.

⚠ WARNING!

Welding current can melt cables or burst hoses causing personal injury.

IMPORTANT!

Do not paint the cylinder piston rods!

Any paint applied to piston rods will eventually effect the operation of liftgate by contaminating the entire hydraulic system, causing blockages in valves, pump, filter, cylinders, and hoses.

Final install of mount brackets (welding method)

Lower platform to the ground.

NOTE!

NOTE! Top of mount plate may be trimmed off if necessary to weld three (3) sides of the vehicle frame. Verify that 5-1/2" vertical weld can be made on each side of bracket.

Weld mount brackets to chassis frame 100% on three (3) sides as shown.

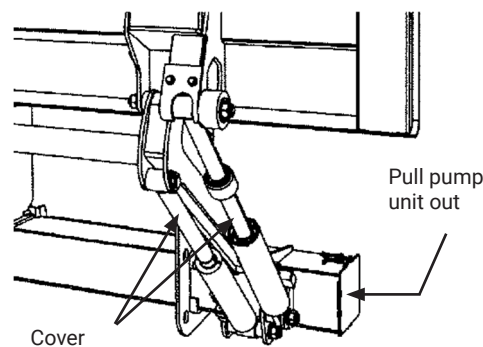


Figure 25. Pull pump unit out

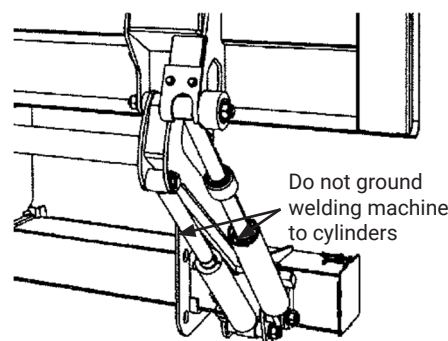


Figure 26. Do not ground welding machine to cylinders

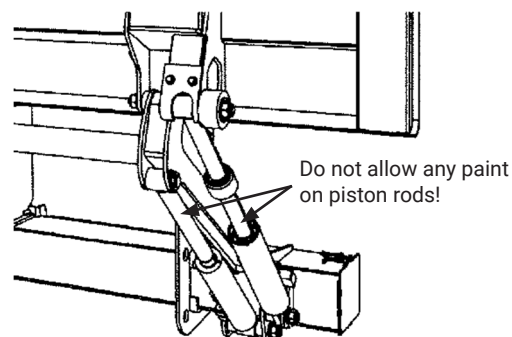


Figure 27. Do not allow any paint on piston rods!

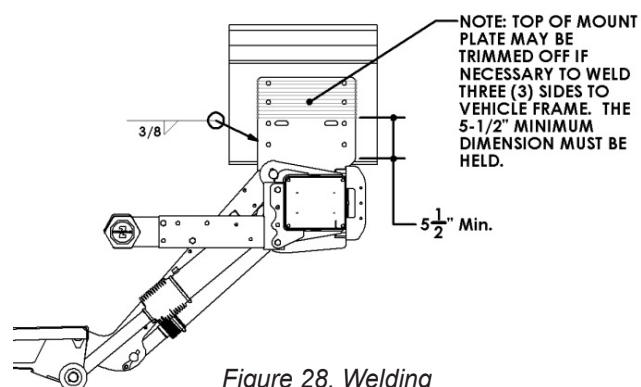


Figure 28. Welding

4.3 Swing door application

Platform must be spaced away from the vehicle such that when the liftgate is in the closed position it does not contact the door hardware.

NOTE!

Sill extension is not used with vehicles with swing doors.

NOTE!

Rubber stops for platform must be spaced out if bridge piece is used.

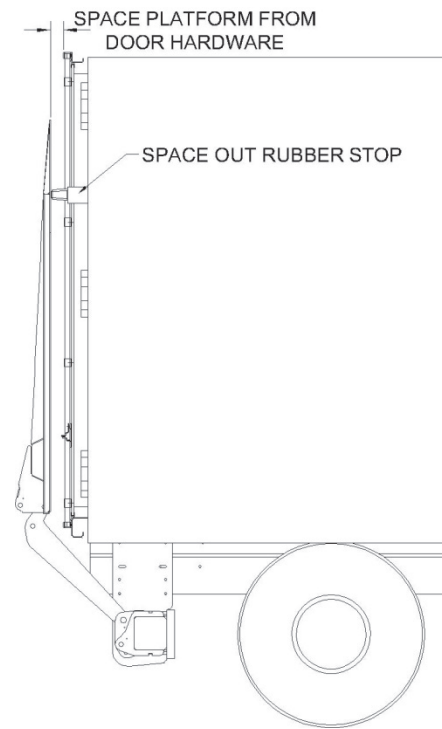


Figure 29. Swing door application

4.4 Rear sill extension

1. Cut extension so it will extend to within $\frac{1}{2}$ " of each side to vehicle body.
2. Position and weld extension, centered on door opening.

NOTE!

NOTE! If the full door seal kit, or flip-up door option are to be used, they will use a different type of sill extension.

NOTE!

For vehicles with swing doors, see section "4.3 Swing door application" on page 18.

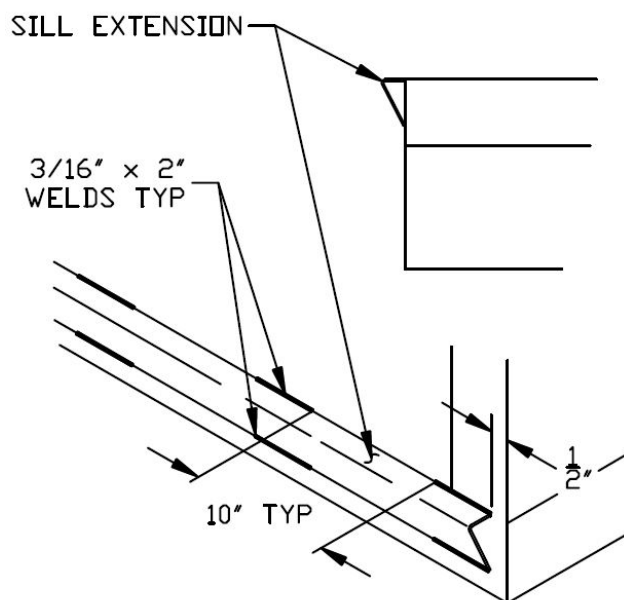


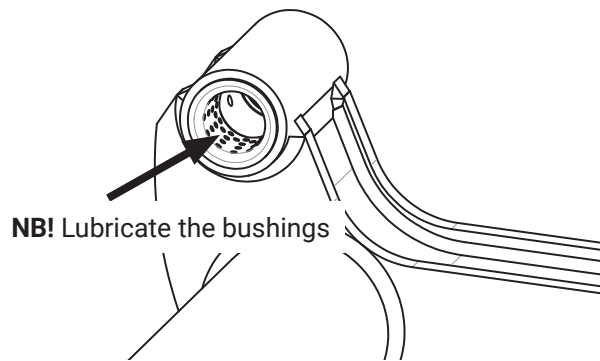
Figure 30. Install rear sill extension

4.5 Platform

1. Check that all included components are clean, clean where necessary.
2. Lubricate the metal bushings on the upper bearing of the arms. Make sure the small holes on the inside of the bushings are filled with grease. See Figure 31.
Use LE lubricant 4622 or the equivalent.

IMPORTANT!

Carefully lubricate the metal bushings on the upper bearing of the arms. Make sure the small holes are filled with grease. After installing the platform, grease all bearings including the two regular grease nipples; see section "7 Lubrication and oil level check" on page 47.



NB! Lubricate the bushings

Figure 31. Take care to provide initial lubrication to the metal bushings

3. Install the platform on the arms, using the shafts and bolts supplied. Tighten the bolts using a torque wrench.
Tightening torque: 59 ft-lb.

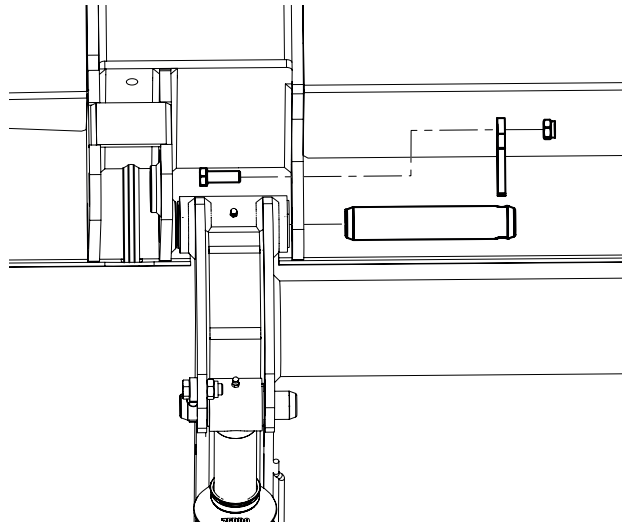


Figure 32. Install the platform on the arms

4. Install one of the tilt cylinders on the platform. Use the shaft and support wheel supplied.

IMPORTANT!

Make sure the cylinder is installed with the grease nipples facing up.

Lubricate the bushings and shaft! Use LE lubricant 4622 or the equivalent.

Tighten the bolts using a torque wrench.

Tightening torque: 59 ft-lb.

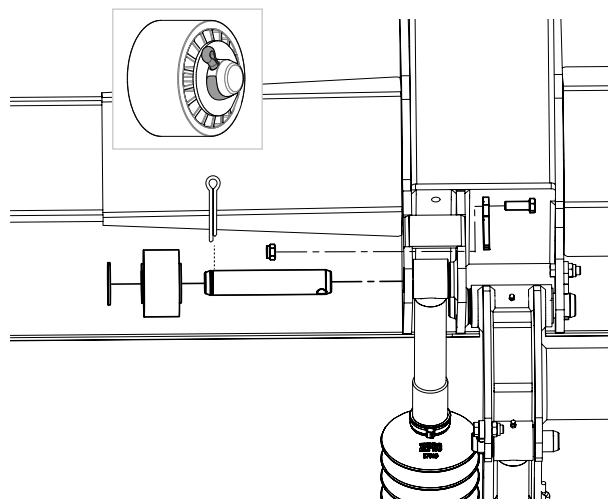


Figure 33. Install the tilt cylinder on the platform

5. Test the lift by carefully raising it to the vehicle 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 Figure 34 and Figure 35.

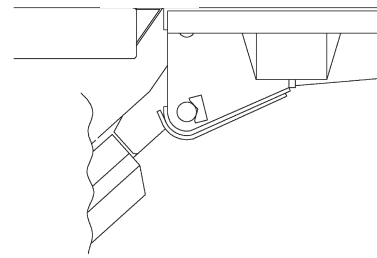
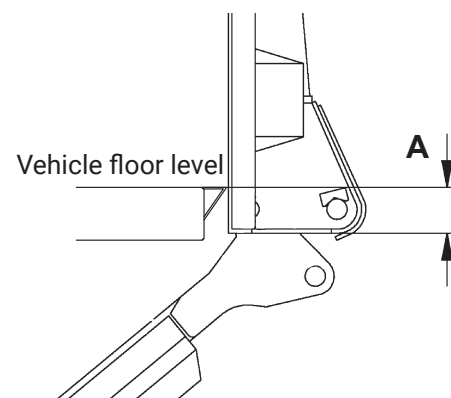


Figure 34. Check the position in relation to the rear beam of the vehicle



Type	Steel	Aluminium
A	0.8"	3.2"

Figure 35. The platform underhang (A), varies according to platform type, and this should be taken into consideration when installing the upper edge seal.

4.6 Adjustable underrun protection

Test the position of the underrun protection without tightening the bolts to check that the statutory dimensions are obtained. Adjust if necessary then tighten the bolts with a torque wrench.

1. Fit the inner part of each bracket at one of four heights. Use the corresponding bolts M12x100. Assemble without tightening the bolts, see Figure 36
2. Fit the outer part of each bracket at one of five positions.



WARNING!

Check carefully that there is no risk of the outer part of each bracket colliding with any part of the cylinders when using the lift's functions. In particular, check in relation to the cylinders' hose connections, especially when the outer part of the brackets are installed a long way in..

Use the associated bolts M12x80. Assemble without tightening the bolts. See Figure 38.

3. Tighten all the bolts using a torque wrench. **Tightening torque: 80 Nm.**

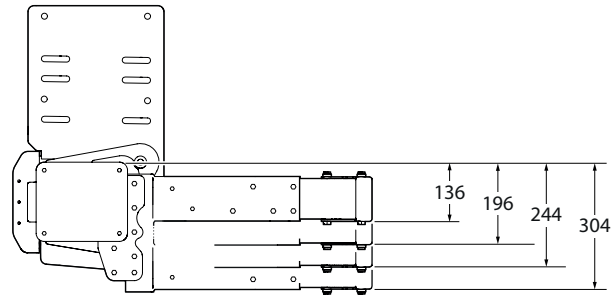


Figure 36. The inner part of the brackets can be fitted at one of four heights

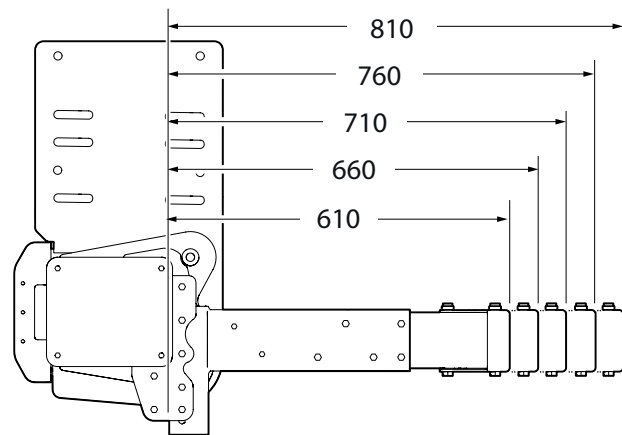


Figure 37. The outer part of the brackets can be fitted in one of five positions

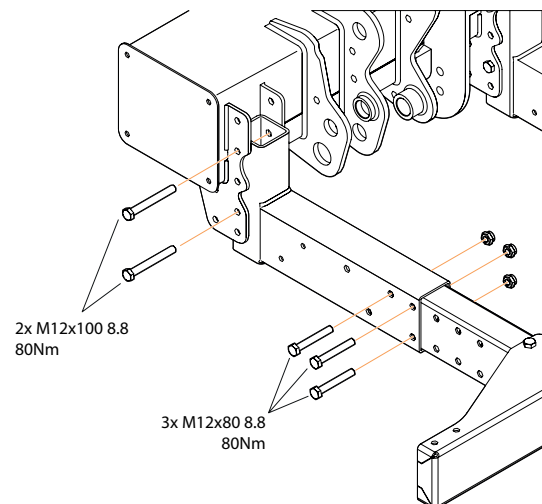


Figure 38. Installing underrun protection

4.7 Full-door seal kit

NOTE!

NOTE! The Side Rubber Seals and Air Foils must be installed on the rear corner posts of vehicle before the Top Seal and Air Foil is installed.

1. With the Platform in the stored position, find the location of the Top Double Rail according to Figure 39. Measure the distance from the vehicle floor to the top of the Top Double Rail and record the measurement as the 'Y' Dimension. Cut the Side Double Rails, Side Rubber Seals, and Side Air Foils to match the 'Y' Dimension.
2. Find the location of the Side Double Rails on the vehicle corner posts. Measure the distance from the outer edge of one Side Double Rail to the outer edge of the other Side Double Rail and record this measurement as the 'X' Dimension. Cut the Top Double Rail, Top Rubber Seal, and Top Air Foil to match the 'X' Dimension. Refer to Step 4 for further instructions on how to position the Side Double Rails.

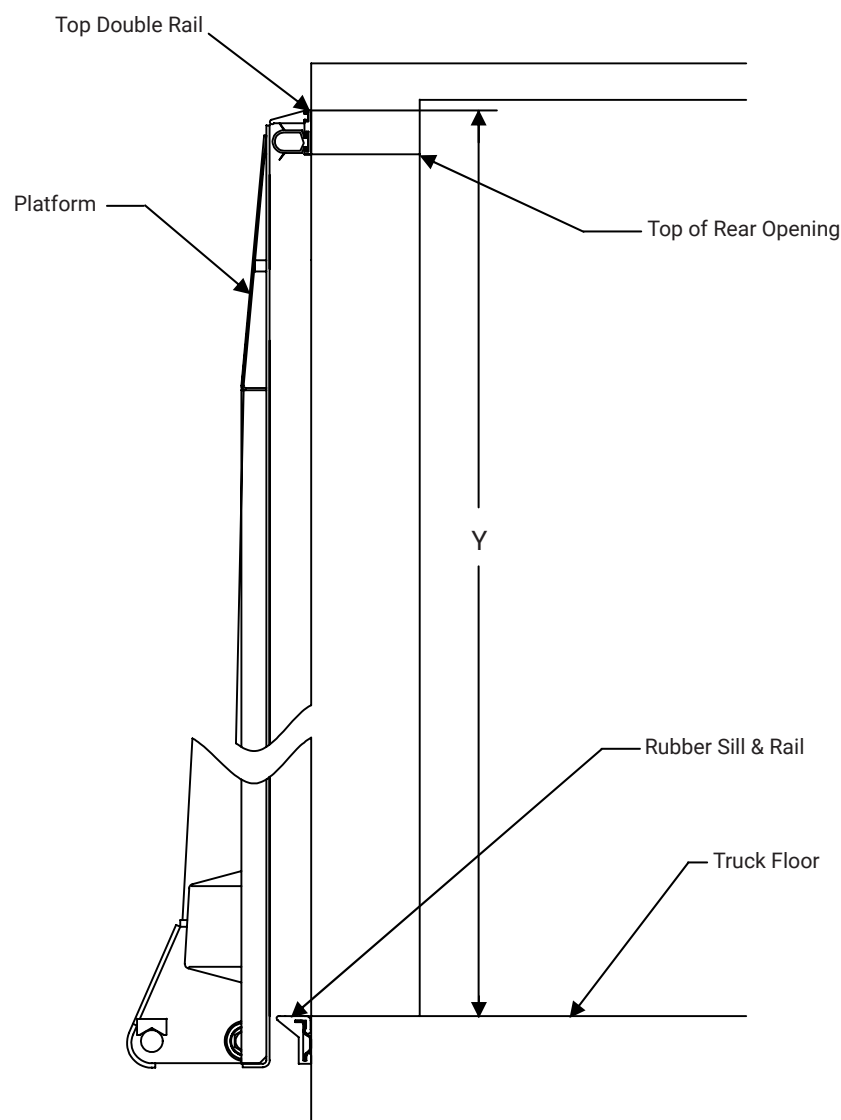


Figure 39. Installation of full-door seal kit

3. Cut the Top & Side Double Rails, Top & Side Rubber Seals, and Top & Side Air Foils at 45° angles as shown.

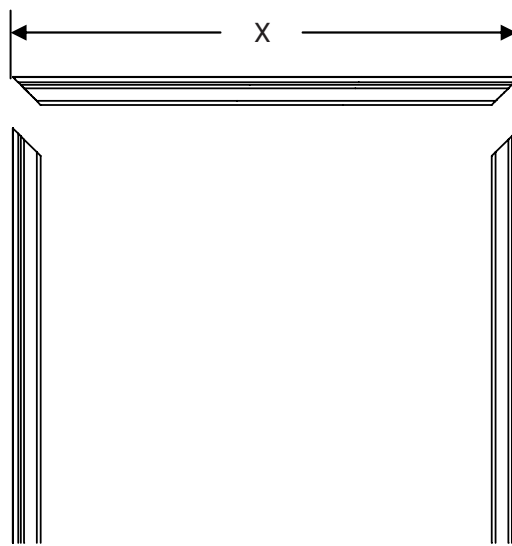


Figure 40. Cut the Top & Side Double Rails, Top & Side Rubber Seals, and Top & Side Air Foils at 45° angles.

4. With the Platform open, position the Side Double Rails against the outer side of the Locking Lug as shown below. Use Pop Rivets or Counter-Sunk Screws to attach the Double Rails to the vehicle corner post.

NOTE!

NOTE! In some cases the width of the body requires that the Double Rails be notched Around the Locking Lugs due to lack of space.

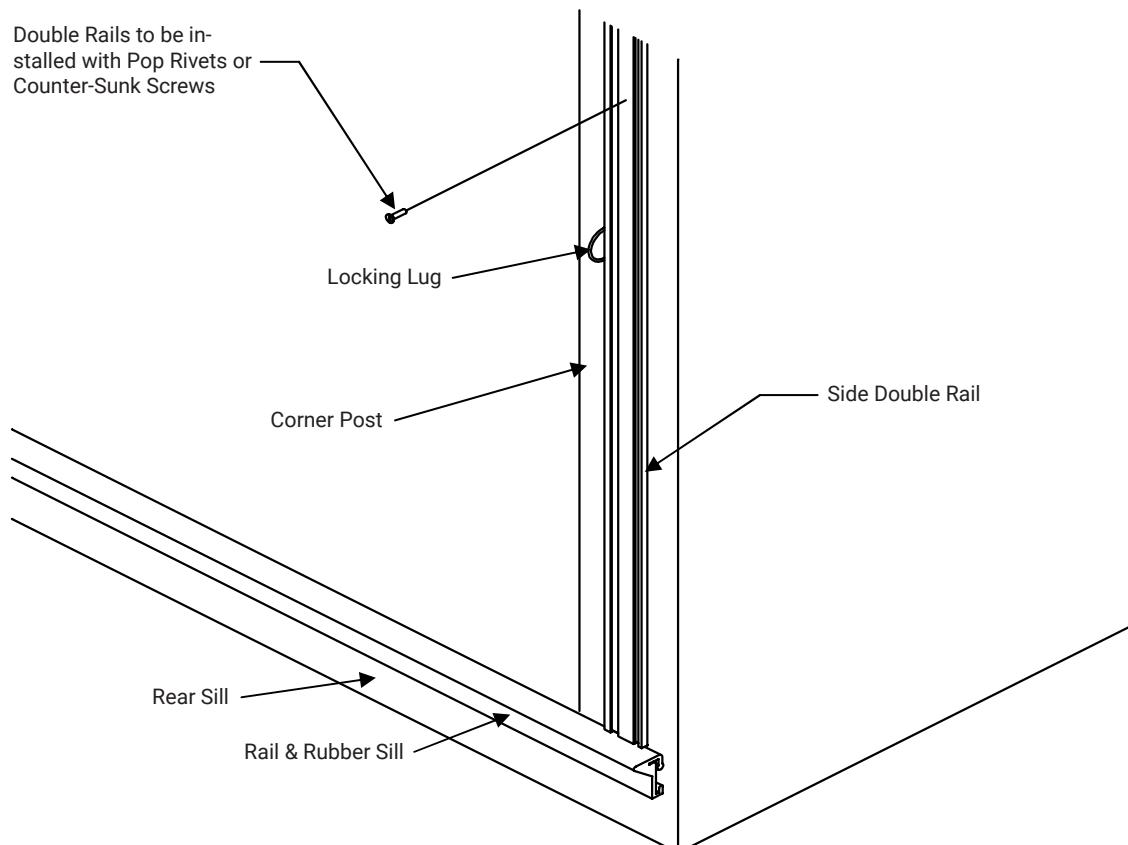


Figure 41. Use Pop Rivets or Counter-Sunk Screws to attach the Double Rails to the vehicle corner post.

NOTE!

NOTE! Curb Side Shown; Driver's Side Opposite

5. Insert the Rubber Seal & Air Foil down into Side Double Rails from the top as shown.

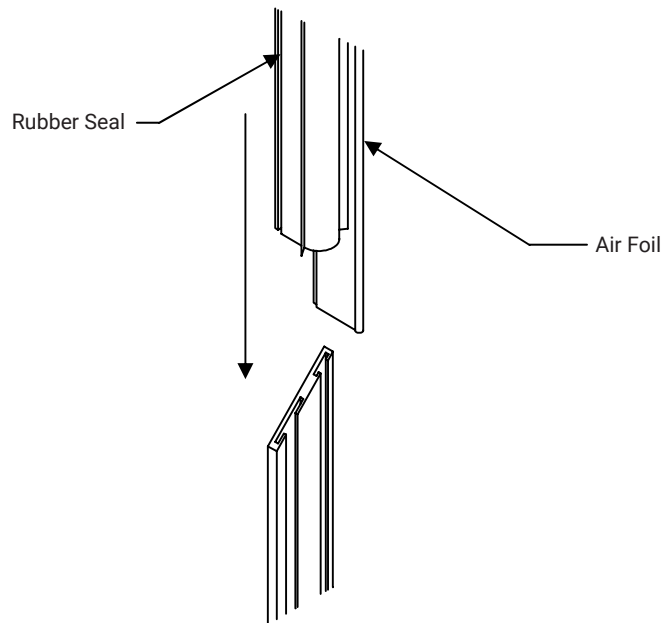


Figure 42. Insert the Rubber Seal & Air Foil down into Side Double Rails from the top.

6. Before inserting the Rubber Seal and Air Foil into the Top Double Rail, drill holes in the Top Double Rail and body header. Angled cuts on Top Double Rail and Side Double Rails should make 90° corners as shown.
7. Insert Rubber Seal and Air Foil into Top Double Rail. Use Counter-Sunk Screws or Pop Rivets to attach Top Double Rail to truck body as shown.



Figure 43. Angled cuts on Top Double Rail and Side Double Rails should make 90° corners.

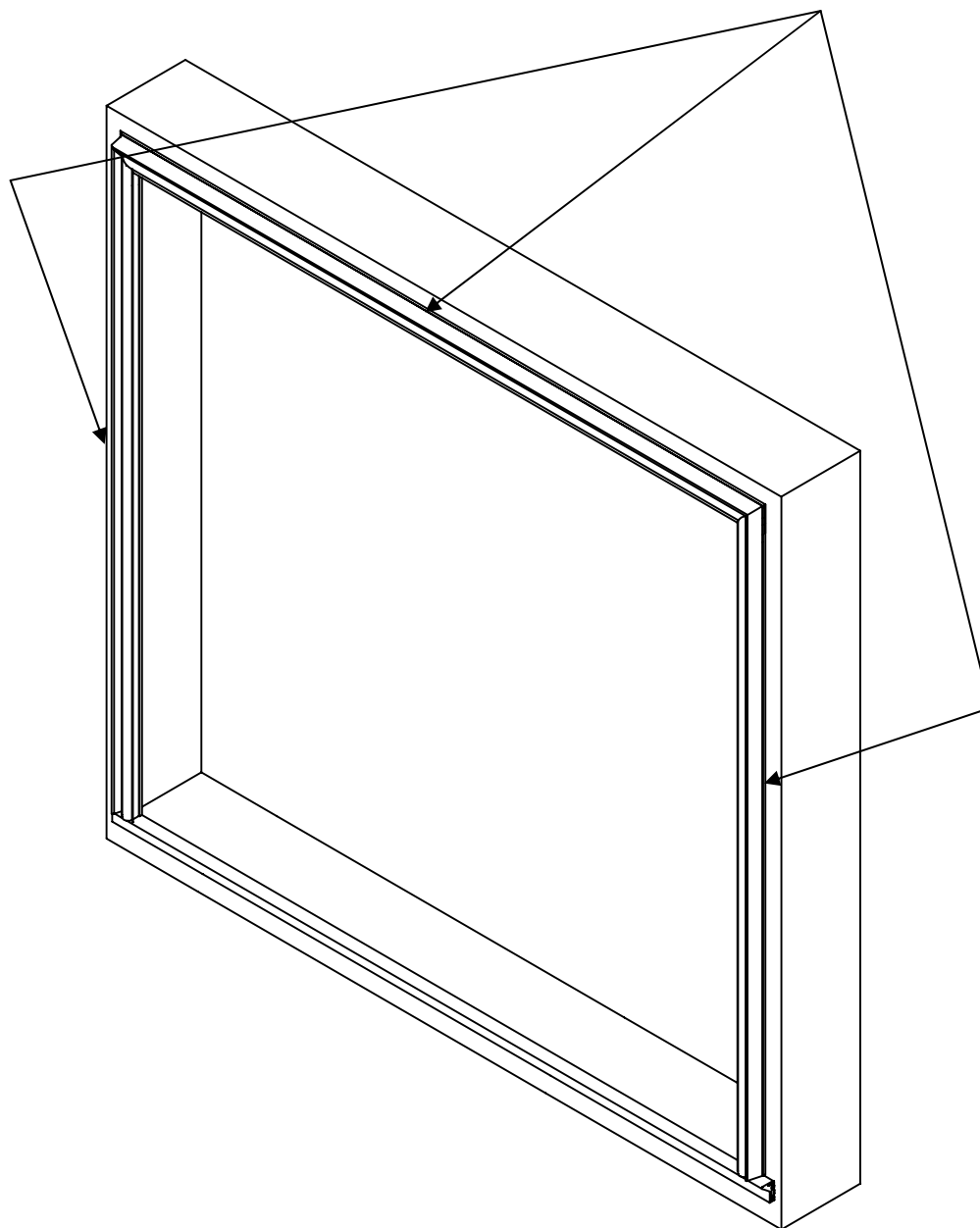


Figure 44. Add silicone caulk to seal gaps between tracks and vehicle body.

4.8 Adjusting the tilt angle

IMPORTANT!

Make no adjustments to the cylinders before installing them on the platform. The tilt cylinders are factory preset.

1. Loosen the rubber bellows at the bottom where they are secured with hose clips.
2. Run tilt-up until both tilt cylinders are fully raised.

NOTE!

Always make adjustments with full hydraulic pressure in the tilt cylinders.

3. Undo the three locking screws on the cylinder mounted on the platform, Figure 45.
4. Turn the adjuster sleeve until the platform fits perfectly against the seal on the body. Figure 46.

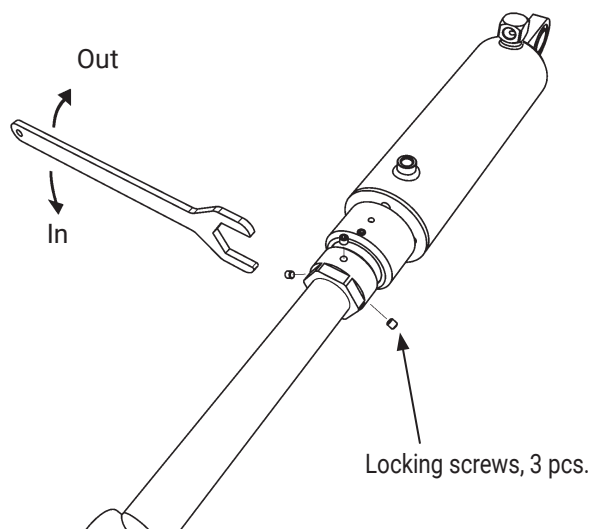


Figure 45. Adjusting the tilt angle

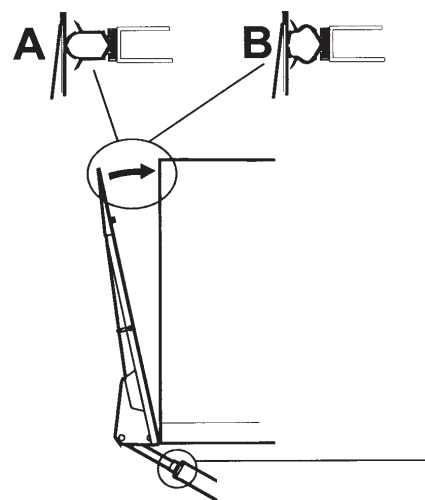


Figure 46. Adjusting the fit to the vehicle body

5. Turn the adjuster sleeve until the platform fits perfectly against the seal on the body. Figure 46.
6. Undo the three locking screws on the other tilt cylinder. Figure 47.
7. Turn the adjuster sleeve until the tilt cylinder aligns with the platform attachment point. See Figure 47.

IMPORTANT!

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

8. Install the other tilt cylinder on the platform attachment point. Use the shaft and support wheel supplied.

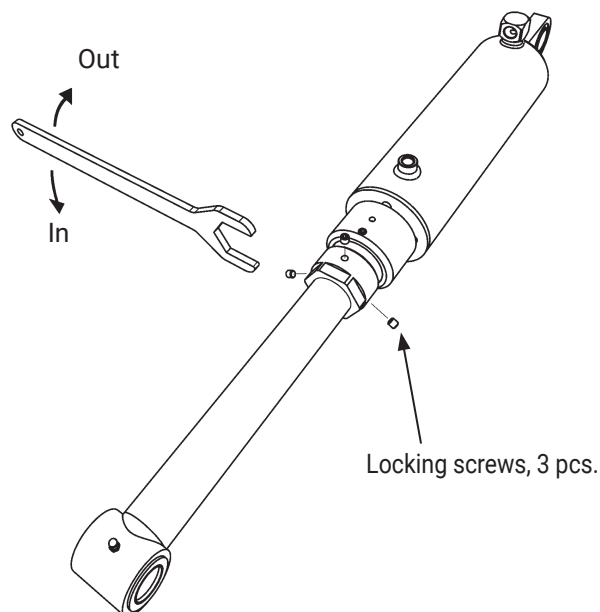


Figure 47. Adjusting the tilt angle

IMPORTANT!

Make sure the cylinder is installed with the grease nipples facing up.

Lubricate the bushings and shaft! Use LE lubricant 4622 or the equivalent.

9. Tighten the bolts using a torque wrench.
Tightening torque: 59 ft-lb.
10. Adjust both cylinders alternately until the platform touches the vehicle body; see Figure 46 (B).
11. Tighten the adjuster sleeve locking screws using a torque wrench **Tightening torque: 2.2-3.7 ft-lb.**
12. Fit the tilt cylinder boots. Figure 50.

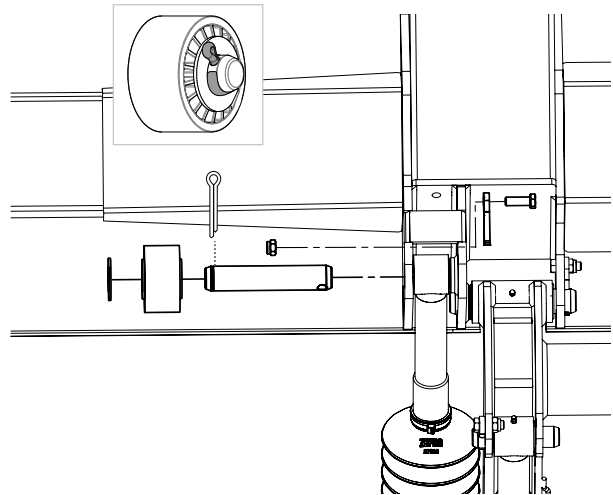


Figure 48. Install the tilt cylinder on the platform

IMPORTANT!

After finishing the adjustment, make sure the distance between the adjusting collar and the end of the thread is no more than 30 mm.

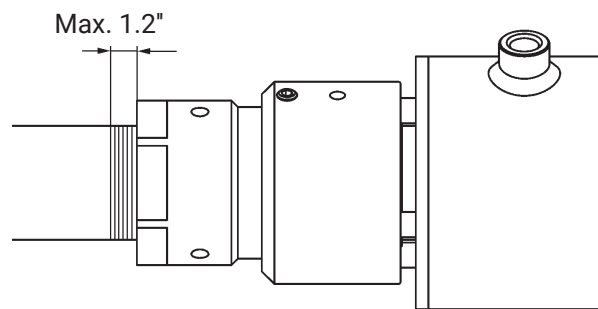


Figure 49. Adjusting the tilt angle

Lift model	A
33/44-53	7.1
33/44-60	11.8
33/44-67	16.5

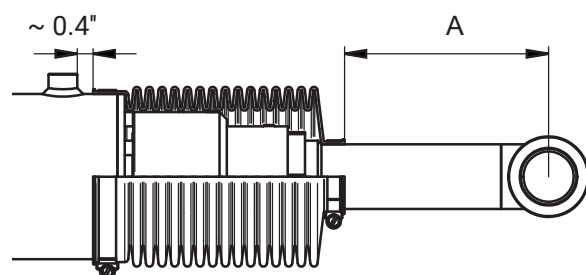


Figure 50. Installing boots

4.8.1 Adjusting tilt-down angle

NOTE!

It is necessary to adjust the tilt angle 90° to the body before adjusting the tilt down angle (see previous page).



WARNING!

To make sure the lift is safe and CE compliant, the downward tilt angle must be adjusted to max 10° if people will be present on the platform.

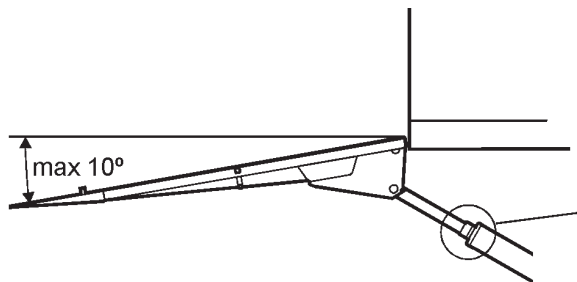


Figure 51. The tilt angle must be adjusted to max.10° down

1. Run the lift up until the platform reaches the vehicle floor.
2. Loosen the lock screw of the end stop (2). Screw the stop all the way back toward the platform (3). Figure 24.
3. Tilt the platform down to max 10 degrees below the horizontal plane. Figure 51.
4. Adjust the end stop all the way to the top of the cylinder (4). Figure 24.
5. Tighten the locking screw in the stop (5). See figure. Figure 24.

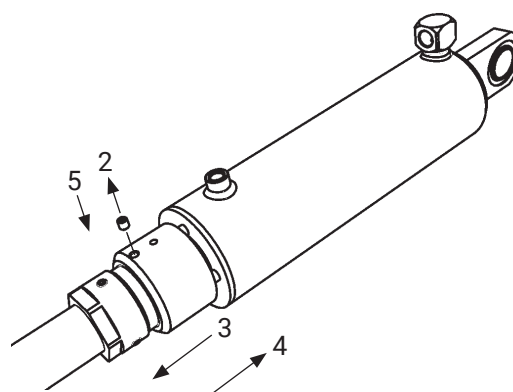


Figure 52. End stop with lock screw

Tightening torque for the locking screws is 2.2-3.7 ft-lb.

Test all functions.

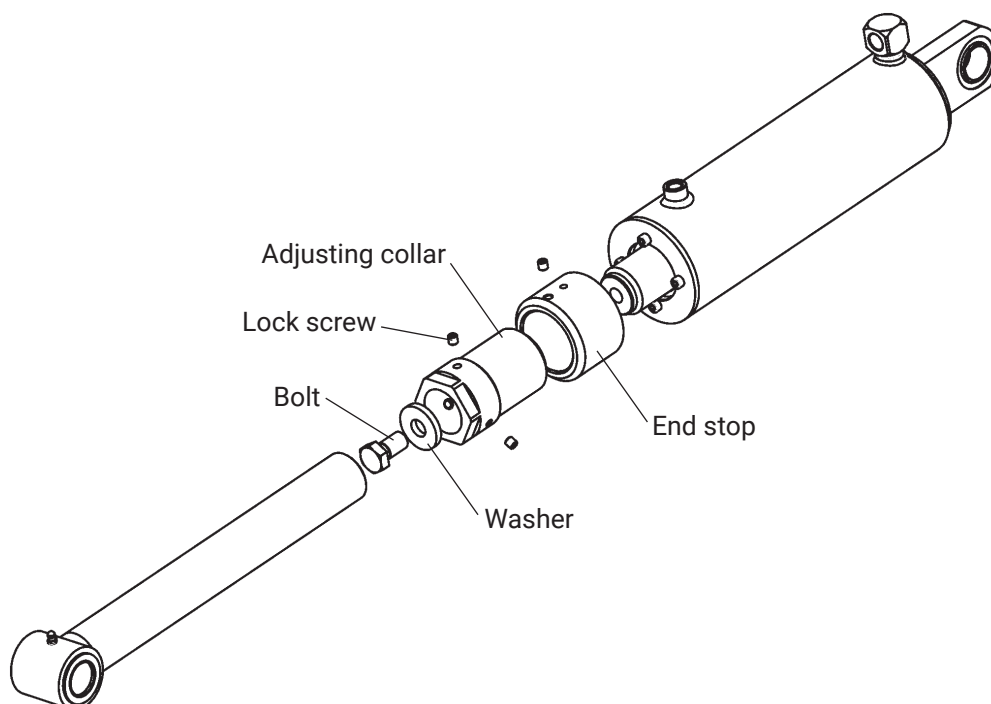


Figure 53. Tilting cylinder

4.9 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.

4.10 Cable grommet

4.10.1 Before connection

1. Disconnect the cable grommet's protective cover, which is secured with three screws; see Figure 54.
2. Loosen the five screws on the cable grommet, see Figure 55. Cables can now be installed/removed/adjusted in the grommet. The cable should be installed together with existing cabling using cable ties. Ensure the length of the cable is sufficient. The outer casing should be stripped back 350 mm. See Figure 56.

4.10.2 After connection

1. Tighten the five screws once all cables are suitably located in the cable grommet, see Figure 55. Tightening torque: 5 Nm.
2. Install the cable grommet's protective cover with the three bolts provided, see Figure 54. Tightening torque: 8 Nm.

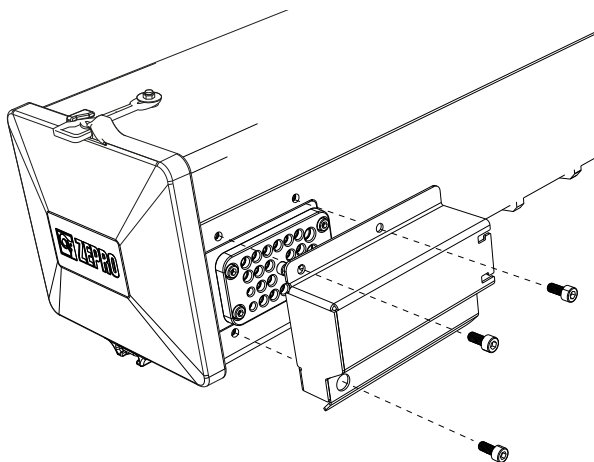


Figure 54. Fasten the cable grommet's protective cover with three screws

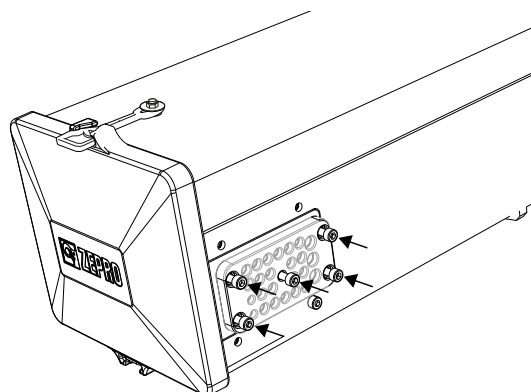


Figure 55. Cable grommet's five screws



Figure 56. The outer casing of cables should be stripped 350 mm.

4.11 Angle sensor for autotilt

1. Install the angle sensor on the platform using the nuts, bolts and washers supplied and attach the cable using cable tie; see Figure 57
2. Route the cables and secure with cable ties.
3. Connect according to electrical diagram in section 5.3.

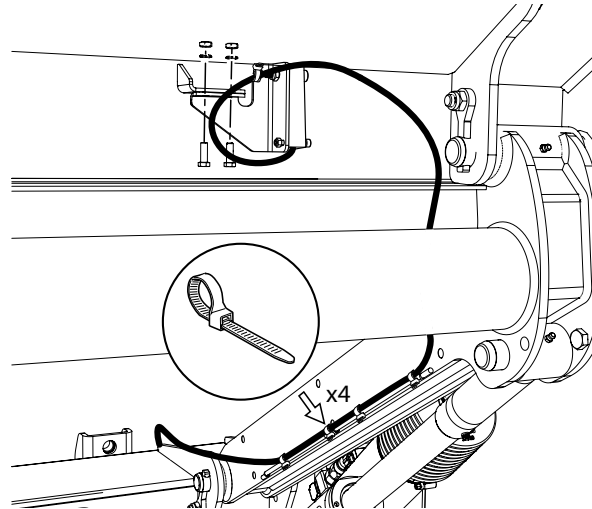


Figure 57. Installing the angle sensor

Autotilt angle setting

By default, the autotilt angle is set to 0°. If necessary, the position of the angle sensor (autotilt angle) can be adjusted.

1. Loosen the two screws without removing them.
2. Adjust the position of the angle sensor to the desired angle.
3. Retighten the screws.

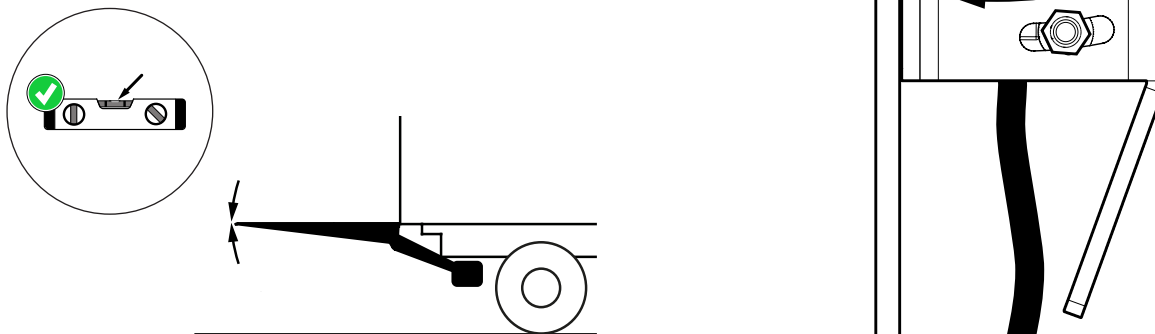


Figure 58. Adjusting the autotilt angle

4.12 Control device

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, lift gate and their working area.

The distance between the vehicle's rear edge and the centre of the primary control device must be 12"–23½".

2. When installing additional controllers, these can be installed in any location.
3. Run the control device cabling thru the gate cable grommet. Connect according to Electrical diagram in section 5.3.

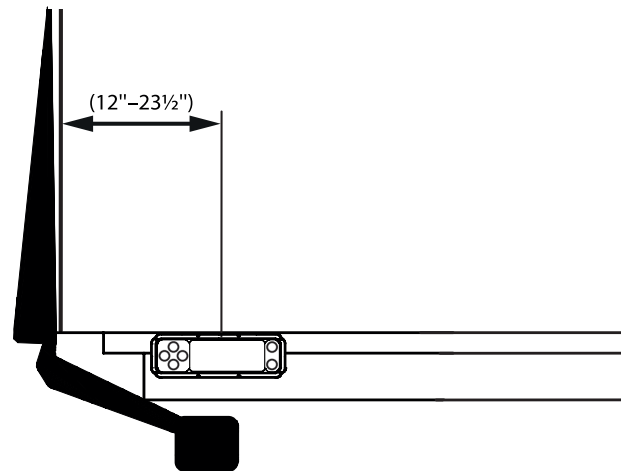


Figure 60. Installing primary control device

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.

Protect the cable with rubber grommets where it passes through beams or bulkheads.

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.

⚠ 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.

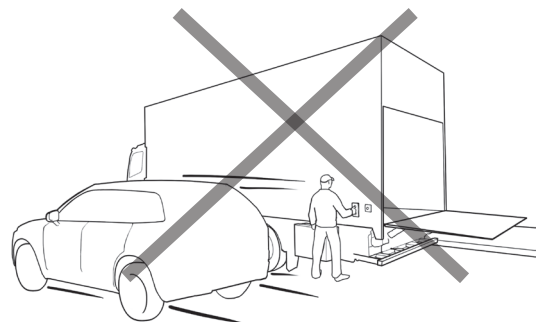
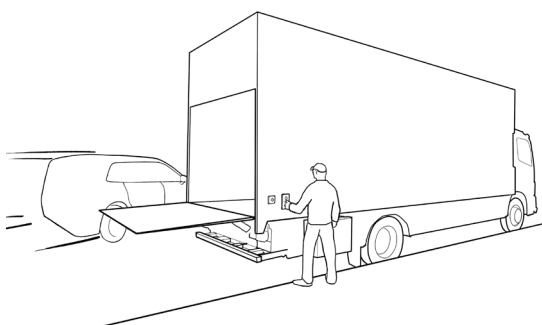


Figure 59. Installing controllers

4.13 In cab switch

As part of the liftgate you will find a Grey insulated cable that has an orange and black wire. This is used for wiring the In Cab Switch.

1. Run the grey insulated wire for the In Cab Switch down the chassis frame.
2. Install the In Cab switch and open platform light to the dash.
3. The black wire runs to the center post of the switch
4. Run a ground from the Bronze post of the switch to any ground point near the dash
5. Connect a wire to the silver post and connect other end to +12VDC fused power aux source in the cab.

If you are not running an in cab switch you will need to follow the instruction for accessing the relay card to install a jumper between CS and CS+ as shown in the diagram.

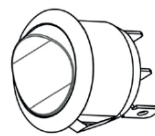
IMPORTANT!

Protect wires from any sharp edges or holes that may abrade insulated covering of wires.

IMPORTANT!

Secure wire so it does not come near, or in contact with, other vehicle wiring, fuel lines, brake lines, air hoses, exhaust system, etc.

NOTE! If not installing In Cab Switch install a Jumper between CS and CS+ on the relayboard



NOTE.

Cab Shut-Off Switch
Bronze tab connects to ground
Center Tab connects to card
Outside "silver" tab connects to power.

Figure 61. Cab Shut-Off Switch

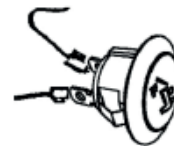


Figure 62. Open Platform Light

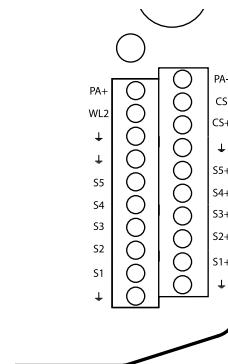
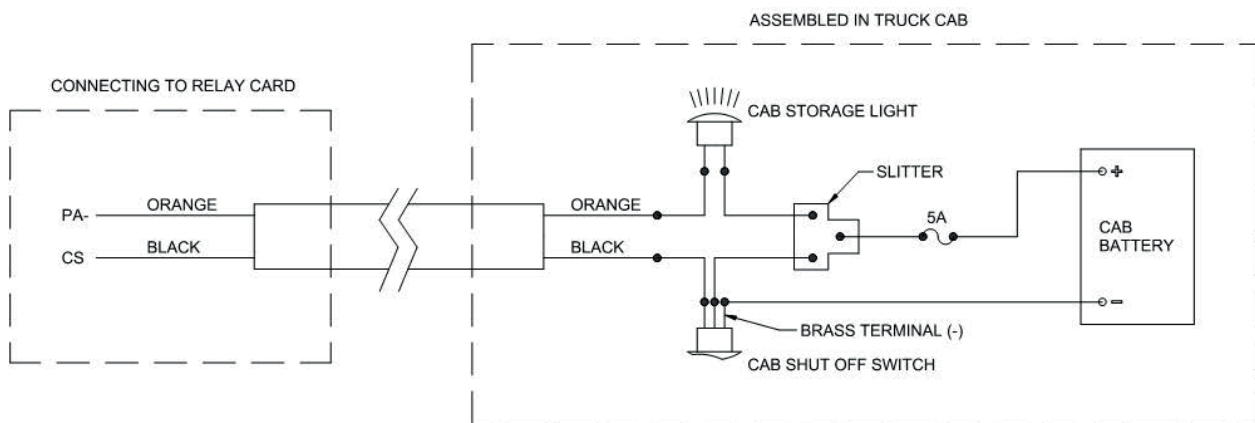


Figure 63. If not installing In Cab Switch install a Jumper between CS and CS+ on the relayboard



4.14 Power cable

Locate and mount 150 Amp circuit breaker directly to batteries using copper terminal link supplied.

Circuit breaker must be mounted to give good protection against any objects coming into contact with circuit breaker terminals and causing a short. Position must also be readily accessible to reset breaker.

NOTE!

NOTE! Circuit Breaker is to rest solidly on battery to prevent vibration during transit.

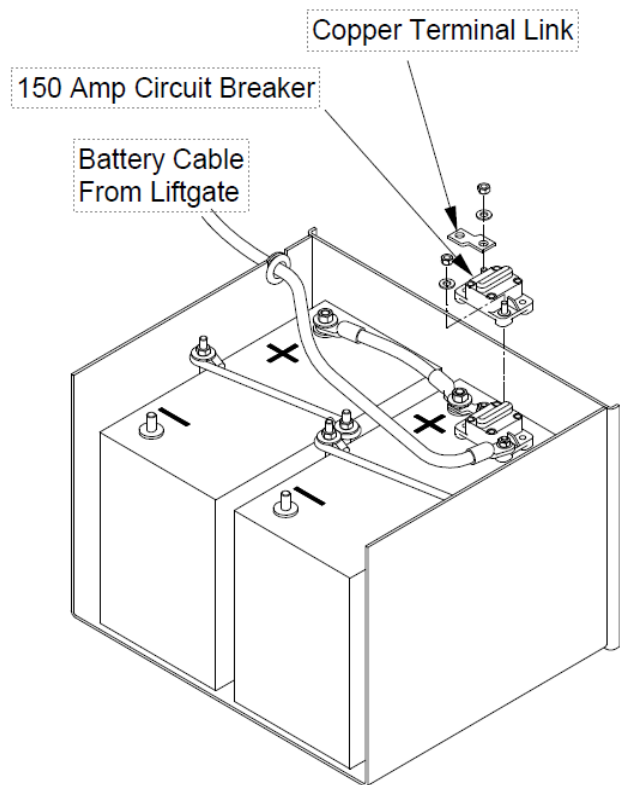
If unable to connect circuit breaker direct to batteries, an optional 24", maximum length, 2 Ga. battery cable may be used.

Connect red positive 2GA cable to red quick connector behind main frame.

Connect black negative 2GA cable to black quick connector behind main frame.

Route power and ground cables along truck chassis, towards truck batteries, securing them every 24" with cable ties provided.

Do not connect any cables to batteries at this time.



WARNING!

Protect wires from any sharp edges or holes that may abrade insulated covering of wires.



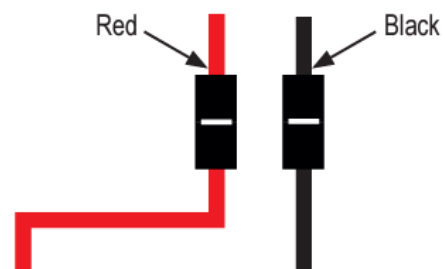
WARNING!

Secure battery cable so it does not come near, or in contact with, other vehicle wiring, fuel lines, brake lines, air hoses, exhaust system, etc.

IMPORTANT!

DO NOT operate liftgate until Mounting Bar has been removed.

Main power cables with quick connectors



4.15 Compression terminals

Cut power cable (red) and ground cable (black) to length and install compression terminals.

Strip 7/8" to 1" of insulation from end of cable.

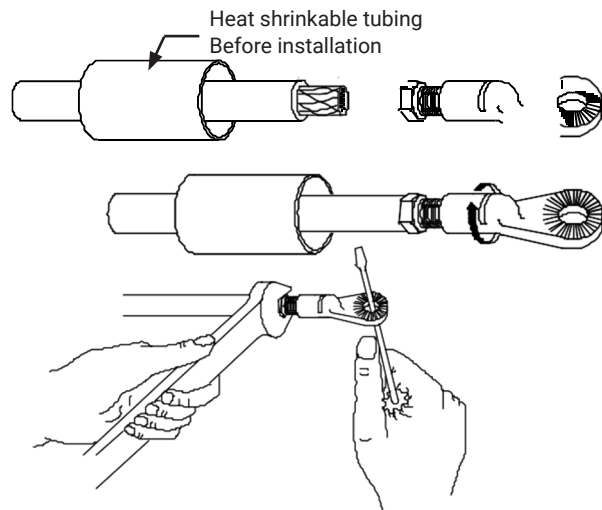
Slide heat shrinkable tubing onto cable.

Insert bare wire into compression nut until it seats.

NOTE!

NOTE! Copper wire should be flush with, or slightly past, the nut.

Grip nut with wrench and turn terminal until nut seats.



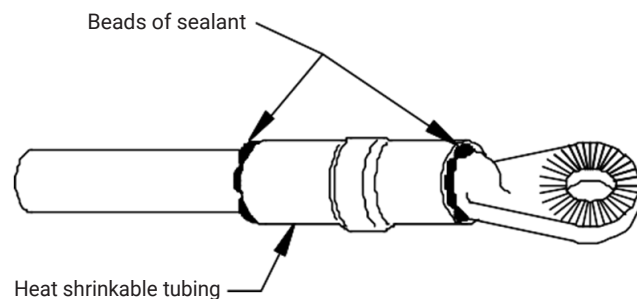
Position heat shrinkable tubing over terminal and end of cable.

Shrink tubing using electric heat gun or torch.

NOTE!

NOTE! To reduce chance of damaging tube and cable, a heat gun is recommended.

Apply sufficient heat to produce thin bead of sealant all around tube edges.



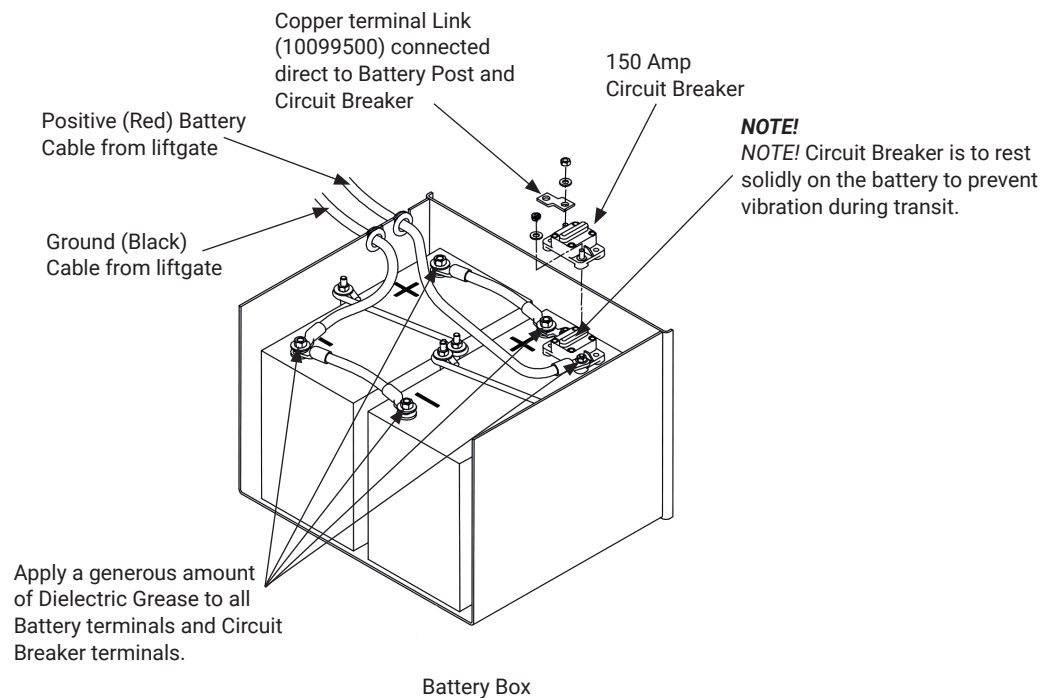
4.16 Install terminals to battery

Connect the end of the Positive battery cable from the liftgate to the circuit breaker as shown.

Connect the end of the negative battery cable from the liftgate to the negative post of the battery as shown.

Apply a generous amount of Dielectric Grease to all Positive (Hot) Battery terminals and Circuit Breaker terminals.

Secure all battery cables to the vehicle frame with the cable ties every 24 inches.

**WARNING!**

Protect wires from any sharp edges or holes that may abrade insulated covering of wires.

**WARNING!**

Secure battery cable so it does not come near, or in contact with, other vehicle wiring, fuel lines, brake lines, air hoses, exhaust system, etc.

5 Cable routing

5.1 General

IMPORTANT!

Pay attention and be careful during all cable routing in order to obtain 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 to too tight a radius as this can cause damage.

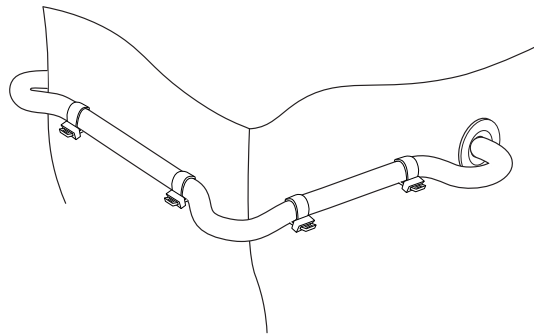
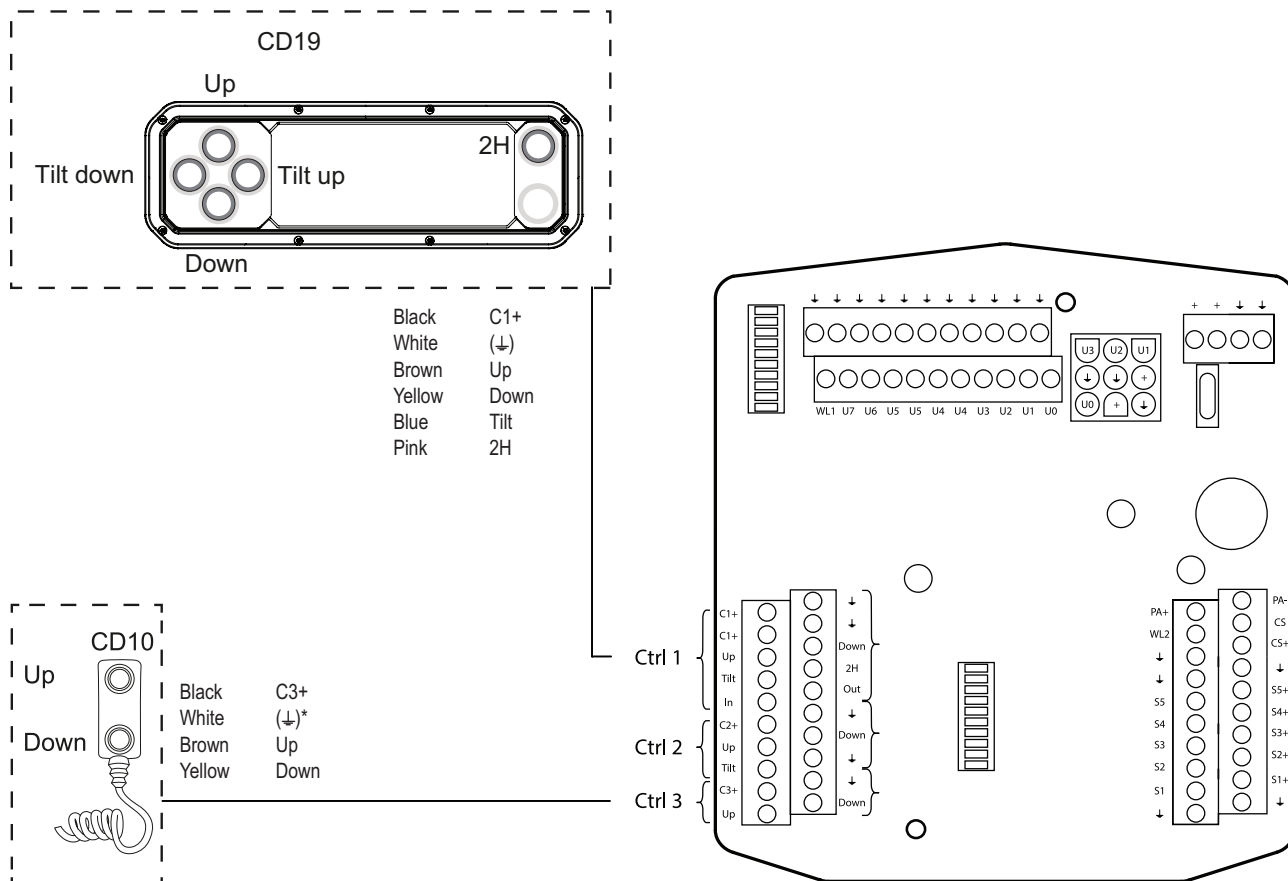


Figure 64. Protect the cable against sharp edges and use cable grommets

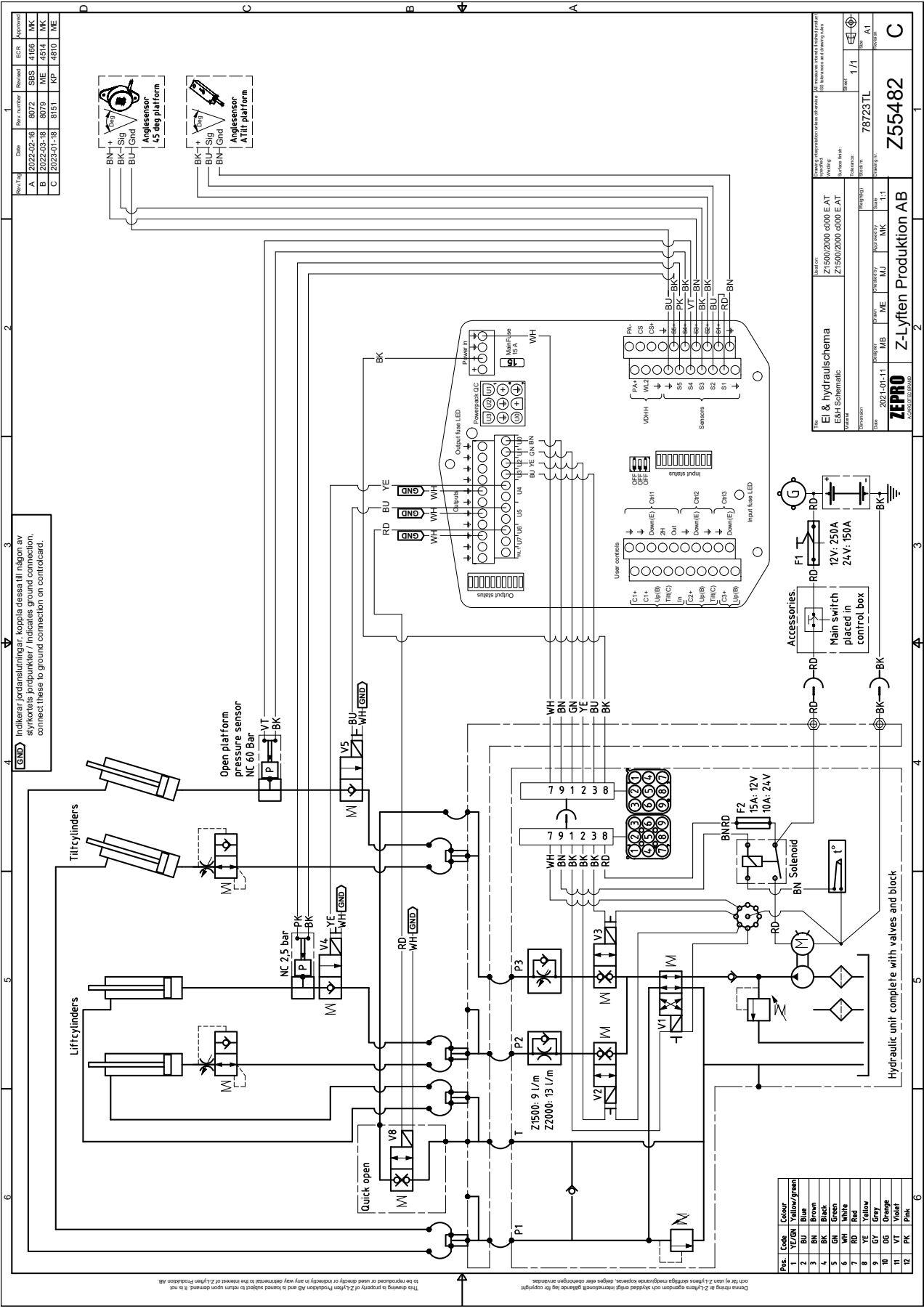
5.2 Controller (TLC-B1)

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



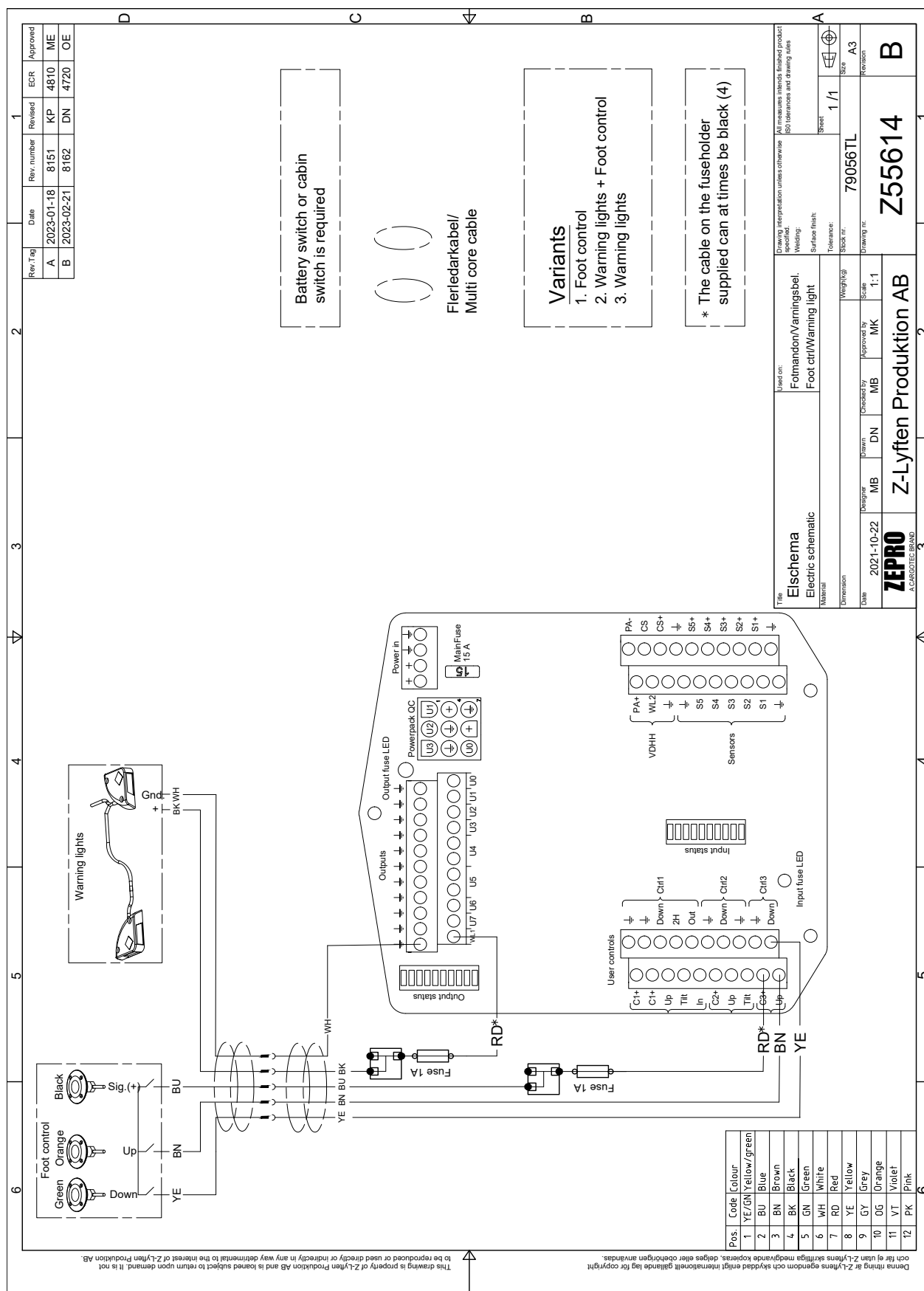
* applies to controllers with heating only

5.3 HDC with electric autotilt



5.3.1 Warning light

Signal is required on relay card input S3 for the warning light to work. Depending on the model, this can be done by connecting angle sensors between S3 and S3+ or with jumper



6 Auxiliary Battery Kit with Dual Cables

NOTE!

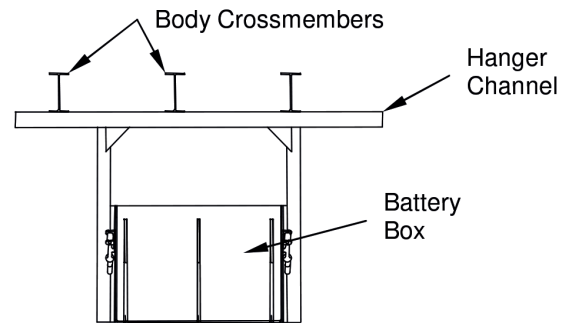
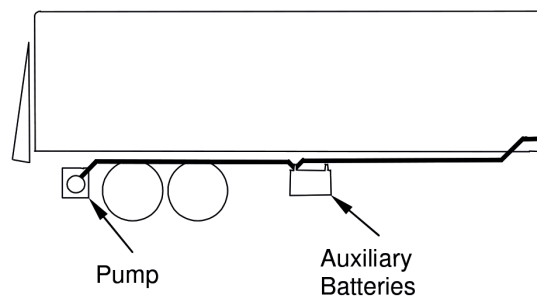
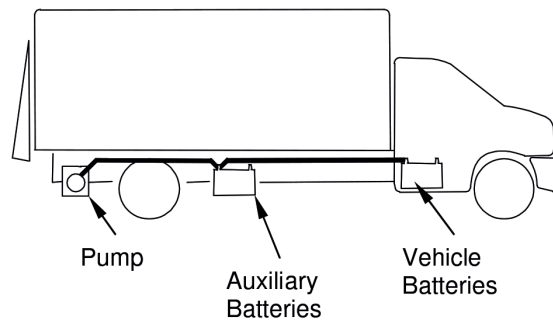
Aux battery box is usually not used on truck. If you are not using an aux box on your truck, skip this step and proceed to "6.2 Connecting to the truck batteries from the liftgate" on page 43.

6.1 Determine battery location and cable

1. Determine where auxiliary battery box will be mounted on the vehicle. For trucks your installation will use cables supplied with liftgate. For trailers additional cables are supplied with the trailer kit.
2. Locate battery box in a suitable location under the vehicle body.
3. Weld hanger channel to body crossmembers.
4. Install batteries into box.

NOTE!

Battery recommendation for liftgate use; Dual Purpose, 650-750 CCA, minimum 180 RC, Group 31.



6.2 Connecting to the truck batteries from the liftgate

1. Connect the positive and negative power cable to the quick connectors located by the passenger side trunion of the liftgate.
2. Route power and ground cables along chassis, towards batteries, securing them every 24" with cable ties. Do not connect batteries at this time.

⚠ CAUTION!

Be certain cables are protected with grommets when passing through metal holes or over-sharp edges.

3. Locate and mount circuit breaker directly to batteries using copper terminal link supplied. Circuit breaker must be mounted to give good protection against any objects coming into contact with circuit breaker terminals and causing a short. Position must also be readily accessible to reset breaker.

NOTE!

Circuit Breaker is to rest solidly on battery to prevent vibration during transit.

If unable to connect circuit breaker direct to batteries, an optional jumper cable can be made from excessive length of power cable, see instructions above for installing terminal lugs. Cut cables to required length.

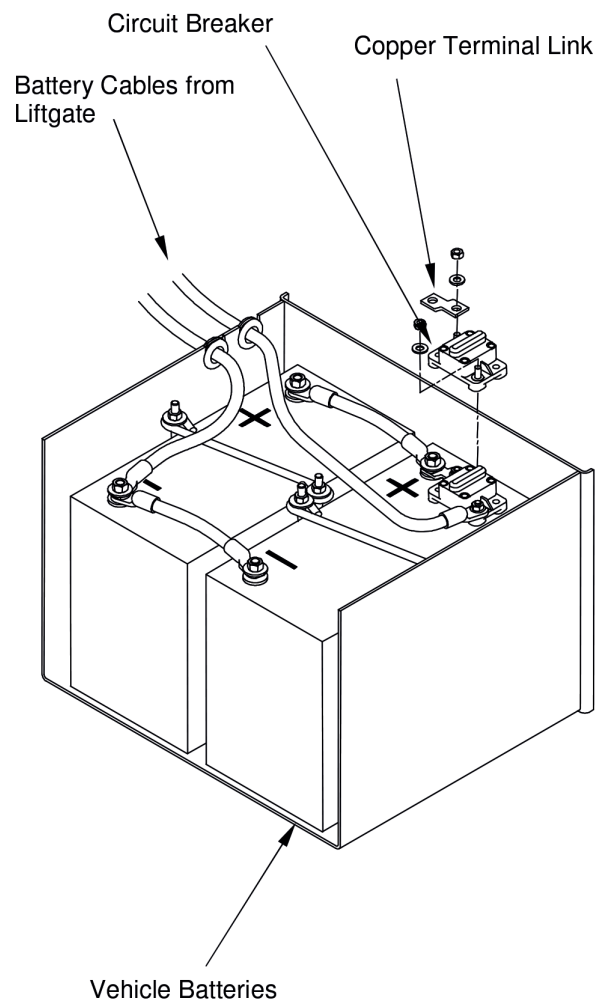
4. Connect power cable (positive) from liftgate to circuit breaker. Then connect ground cable to negative terminal on batteries. Apply a generous amount of Dielectric Grease to all Battery terminals and Circuit Breaker terminals.

⚠ CAUTION!

Protect wires from any sharp edges or holes that may abrade insulated covering of wires.

⚠ CAUTION!

Secure battery cable so it does not come near, or in contact with, other vehicle wiring, fuel lines, brake lines, air hoses, exhaust system, etc.



6.3 Battery Connection when using Aux Battery Box

Batteries will require circuit breakers at both the auxiliary batteries and the vehicle batteries.

1. Install batteries and secure them using battery tie downs. We recommend two batteries to operate liftgates. Battery specifications are; Dual Purpose, 650-750 CCA, Minimum 180 RC, Group 31.
2. Locate and mount circuit breaker directly to batteries using copper terminal link supplied. Circuit breakers must be mounted to give good protection against any objects coming into contact with circuit breaker terminals and causing a short. Positions must also be readily accessible to reset breakers.

NOTE!

Circuit Breaker is to rest solidly on battery to prevent vibration during transit.

If unable to connect circuit breaker direct to batteries, an optional 24", maximum length, 2 Ga. battery cable may be used.

Connect cables as shown.

3. Apply a generous amount of Dielectric Grease to all Battery terminals and Circuit Breaker terminals.
4. For trucks, use remaining length of cables supplied with liftgate, and route from auxiliary batteries to vehicle batteries.
5. Install terminal lugs on cables as required.
6. Install circuit breaker and cables to vehicle batteries per "6.2 Connecting to the truck batteries from the liftgate" on page 43

⚠ CAUTION!

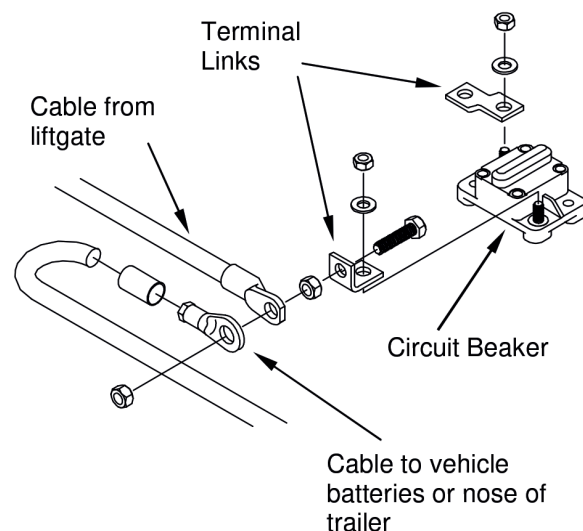
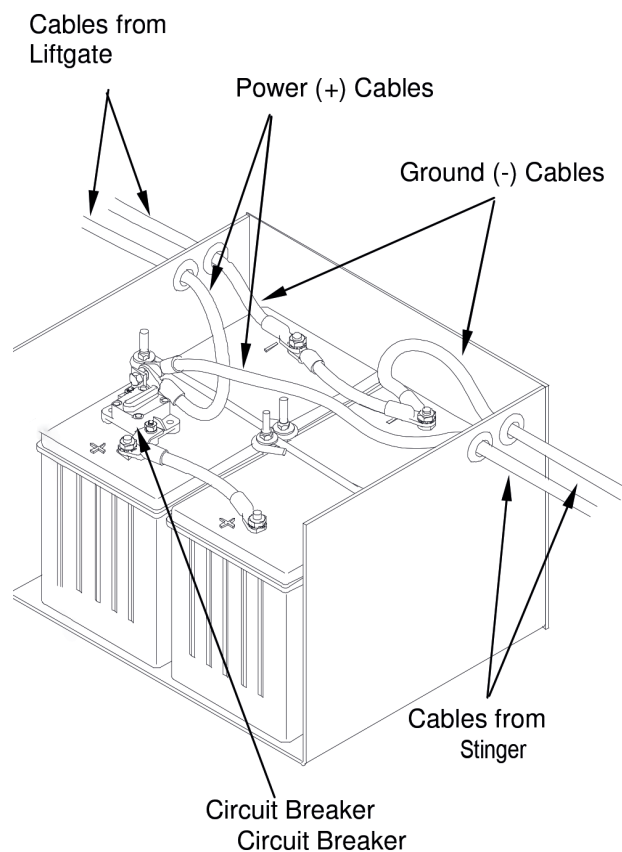
Protect wires from any sharp edges or holes that may abrade insulated covering of wires.

⚠ CAUTION!

Secure battery cable so it does not come near, or in contact with, other vehicle wiring, fuel lines, brake lines, air hoses, exhaust system, etc.

IMPORTANT!

If liftgate has a Mounting Bar, do not operate liftgate before bar has been removed.

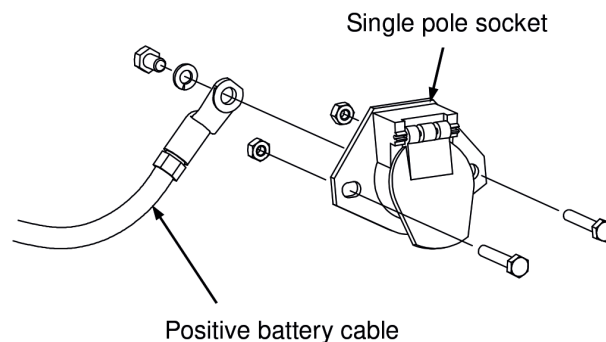


Continue to "4.10 Cable grommet" on page 31 for instructions to install stinger cord or follow supplemental instruction for other charge systems you may be using to charge batteries.

6.4 Charge cable instruction if using a stinger cord

For trailer applications with single pole socket:

1. Drill 1-3/4" hole in nose of trailer for trailer socket.
2. Mount socket to trailer with bolts and nuts provided.
3. Attach cable to back of socket with bolt provided.
4. Apply a generous amount of Dielectric Grease over cable terminal.



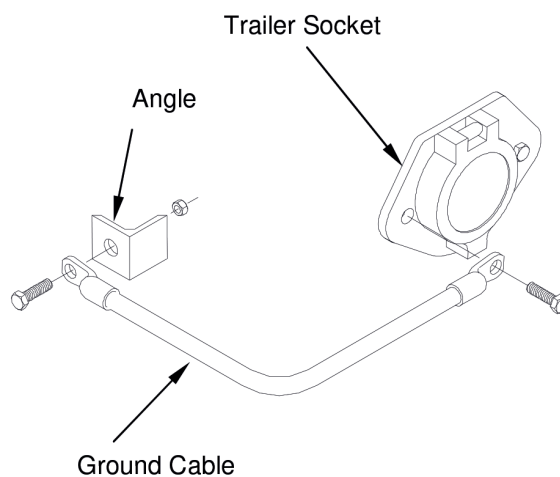
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CAUTION!

Power (charge) cable from tractor batteries to trailer must also be protected with a 150 amp circuit breaker at the tractor batteries.

5. Ground trailer socket to main structure of trailer. Use the 18" ground cable, supplied, and bolt it to the trailer socket and suitable structure on the nose of the trailer. An angle has been provided, it can be used by welding it to the crash plate, or other suitable structure.



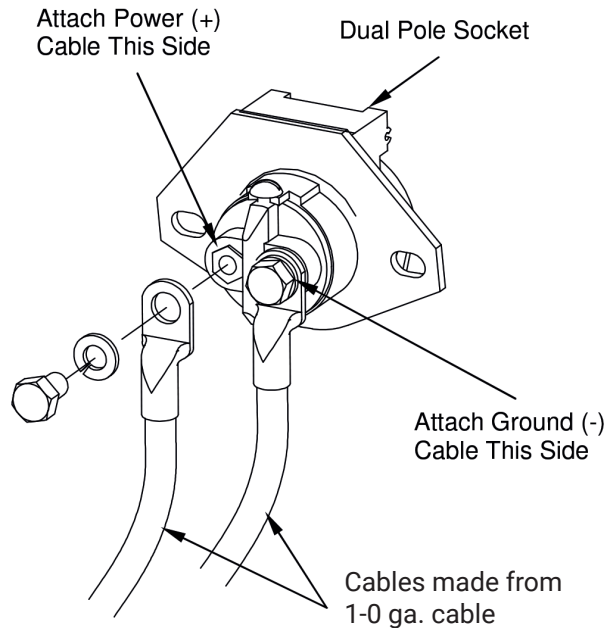
For trailer applications with dual pole socket:

1. Using 1-0 ga. cables, supplied with trailer kit, feed each end through battery-box wall and install a compression terminal on both red and black cables.

NOTE!

Do not connect any cables to batteries at this time.

2. Run cables from battery box to trailer nose, securing them every 24" with cable ties.
3. Install dual pole socket in nose of trailer. Drill 1-3/4" hole in trailer and mount with hardware provided.
4. Route cables from auxiliary batteries to nose of trailer. Install cables to socket as shown.
5. Apply a generous amount of Dielectric Grease over cable terminals.



IMPORTANT!

Be sure to orientate cables as shown, power(+) to the left, ground(-) to the right..

⚠ CAUTION!

Power (charge) cable from tractor batteries to trailer must also be protected with a 150 amp circuit breaker at the tractor batteries.

6.5 Battery cable connection

1. Assure vehicle ignition switch is off and battery ground cables are disconnected at battery.
2. Refer back to 6.2 and 6.3 instructions for connecting to batteries. Two batteries recommended for all Liftgates. Additional batteries connected in parallel may be required for heavy usage.

⚠ CAUTION!

Protect wires from any sharp edges or holes that may abrade insulated covering of wires.

⚠ CAUTION!

Secure battery cable so it does not come near, or in contact with, other vehicle wiring, fuel lines, brake lines, air hoses, exhaust system, etc.

3. Reconnect battery ground cable(s).

7 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.

7.1 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. Lift arm left side, at lower bearing.
7. Left tilting cylinder, at upper bearing.
8. Right tilting cylinder, at upper bearing.
9. Lift arm right side, at upper bearing
10. Right lift cylinder, at upper bearing.
11. Left lift cylinder, at upper bearing.
12. Lift arm left side, at upper bearing.

7.2 Oil level check

Check the fluid level in the tank during maintenance, top up if necessary. Use Shell Tellus 15 for the oil to top up the tank.

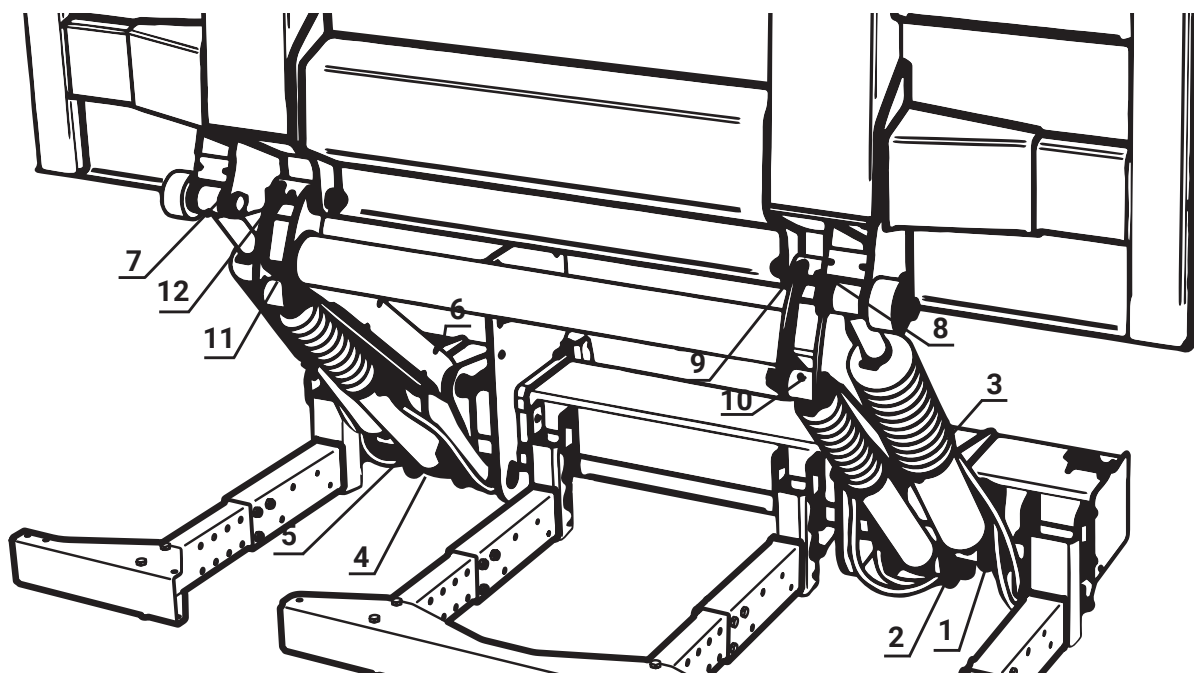


Figure 65. Lubrication points

8 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.

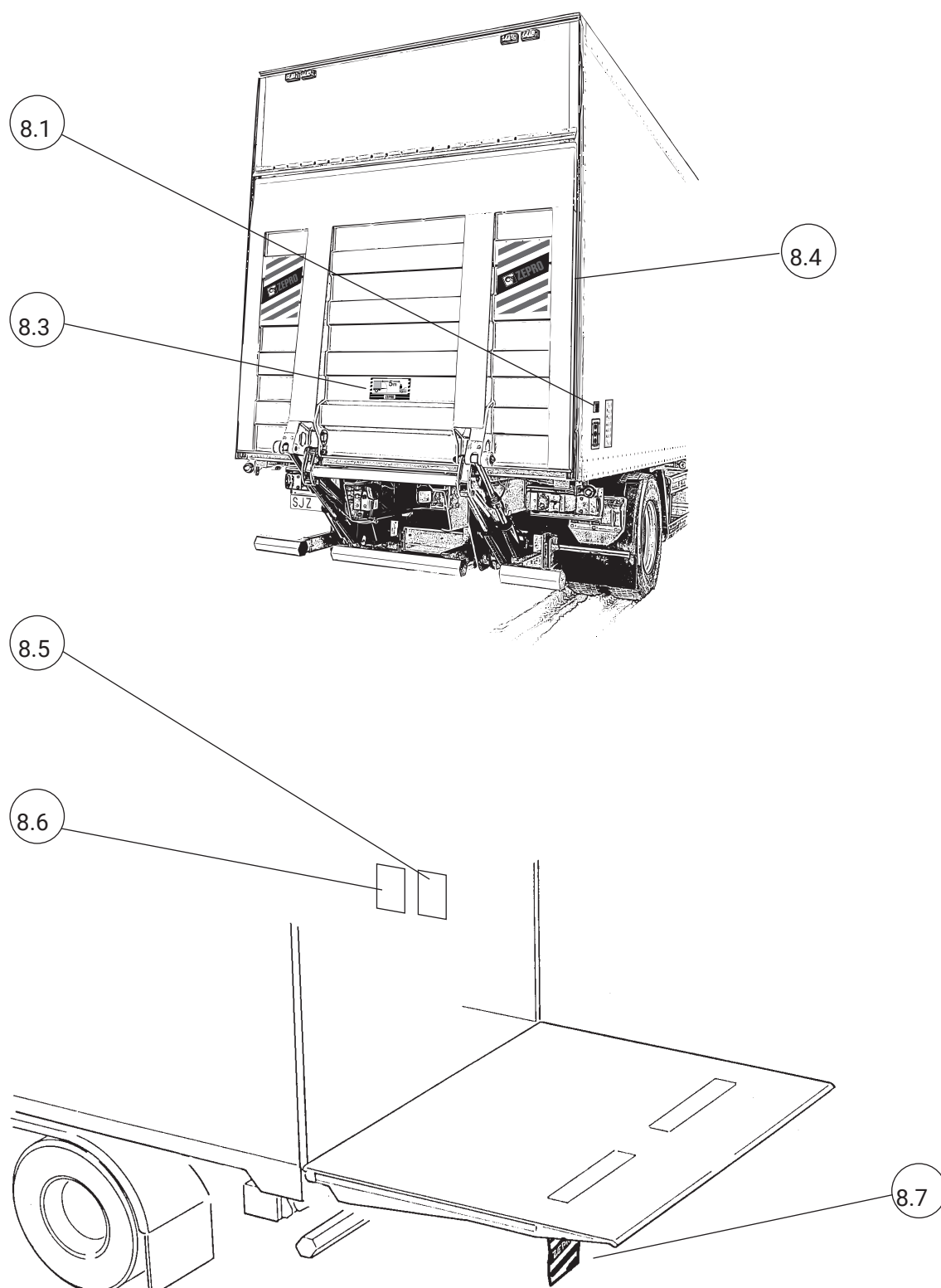


Figure 66. Overview of labelling

8.1 Loading diagram

Affix the load diagrams for the appropriate lift model close to the primary controller or in the designated location on the controller (CD19).

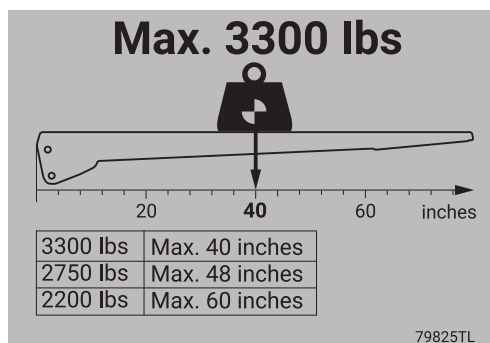


Figure 67. Max. permissible load for load capacity 3300 lbs, load centre distance 40".

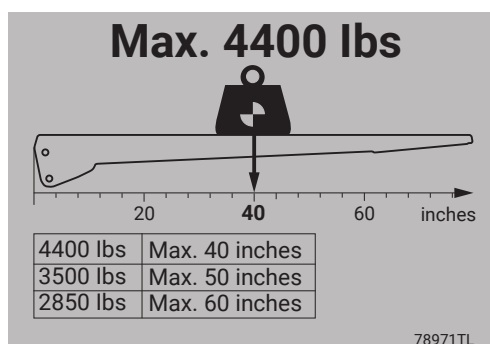


Figure 68. Max. permissible load for load capacity 4400 lbs, load centre distance 40".

8.2 Identification plate

The identification plate is fixed on to the liftgate'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:

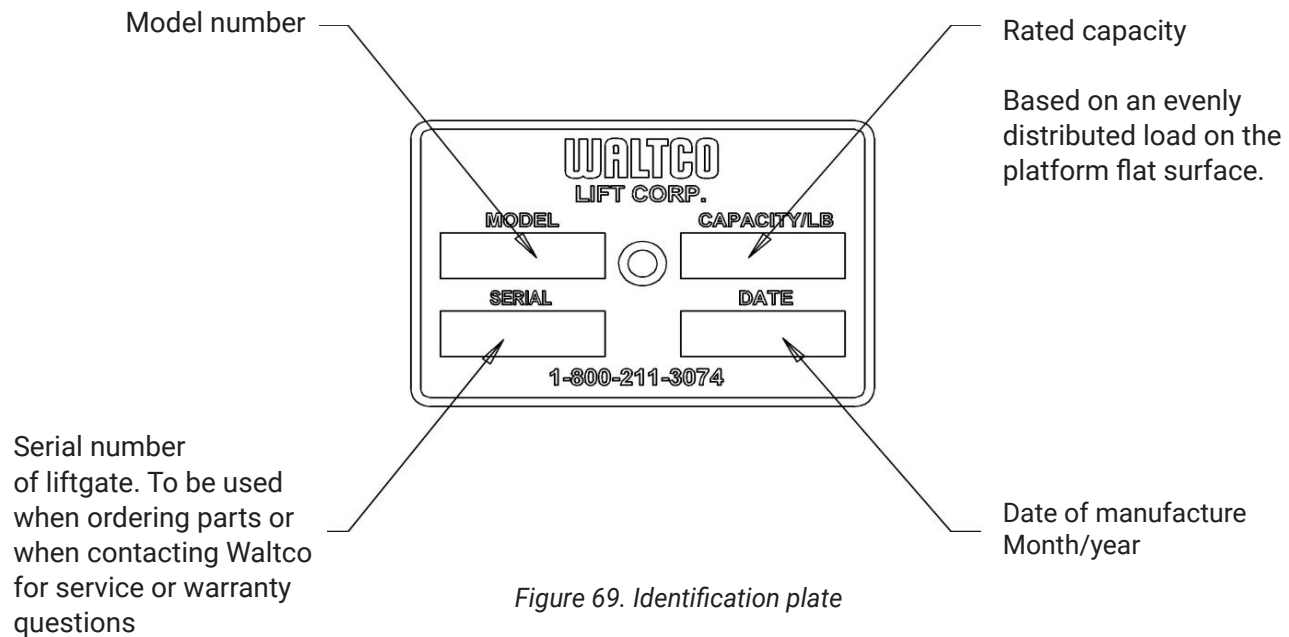


Figure 69. Identification plate

8.3 Work area

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



Figure 70. Work area

8.4 Warning tape

The warning tape is affixed along the edges of the platform to make the edges more conspicuous when the platform is deployed. The location of the warning tape often coincides with the contour marking, in which case the warning tape can be omitted.

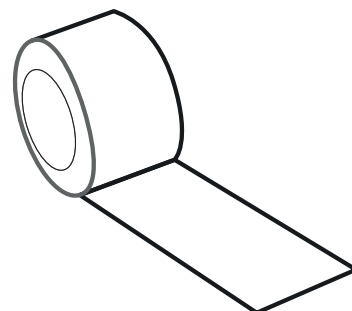


Figure 71. Warning tape

8.5 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/lift gate on the sticker is in the same direction as the vehicle on which it is affixed.

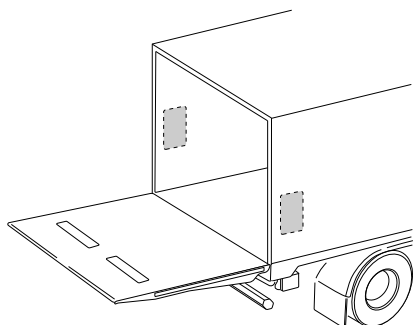


Figure 72. Standard mounting

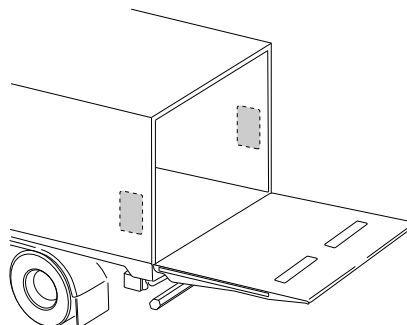


Figure 73. Reversed mounting

Control device	Sticker
CD 10	78997TL

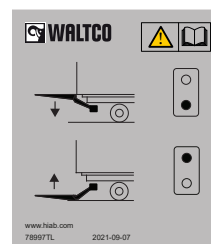


Figure 74. Control device sticker for CD 10

8.6 Danger area

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

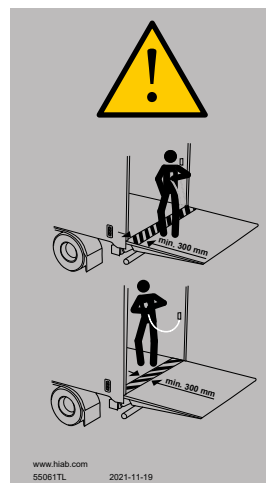


Figure 75. Danger area

8.7 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.



Figure 76. Warning flags

9 Testing and verification

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

9.1 Static load test

9.1.1 Deformation

- Position the lift gate half way to vehicle floor level and with the platform horizontal. Measure dimensions A-B-C-D for comparison as illustrated. Figure 77
- 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.

9.1.2 Operation

- Place a test load on the platform, as shown in the table. The lift gate 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.

9.1.3 Static load (Test load 1.25 x lift gate loading capacity). For lift gates with a load centre of 40".

Capacity	Load 3300 lbs	Load 4400 lbs
	Distance out on platform (L)	
3300 lbs	1250 mm (49.2")	-
4400 lbs	1625 mm (64.0")	1250 mm (49.2")

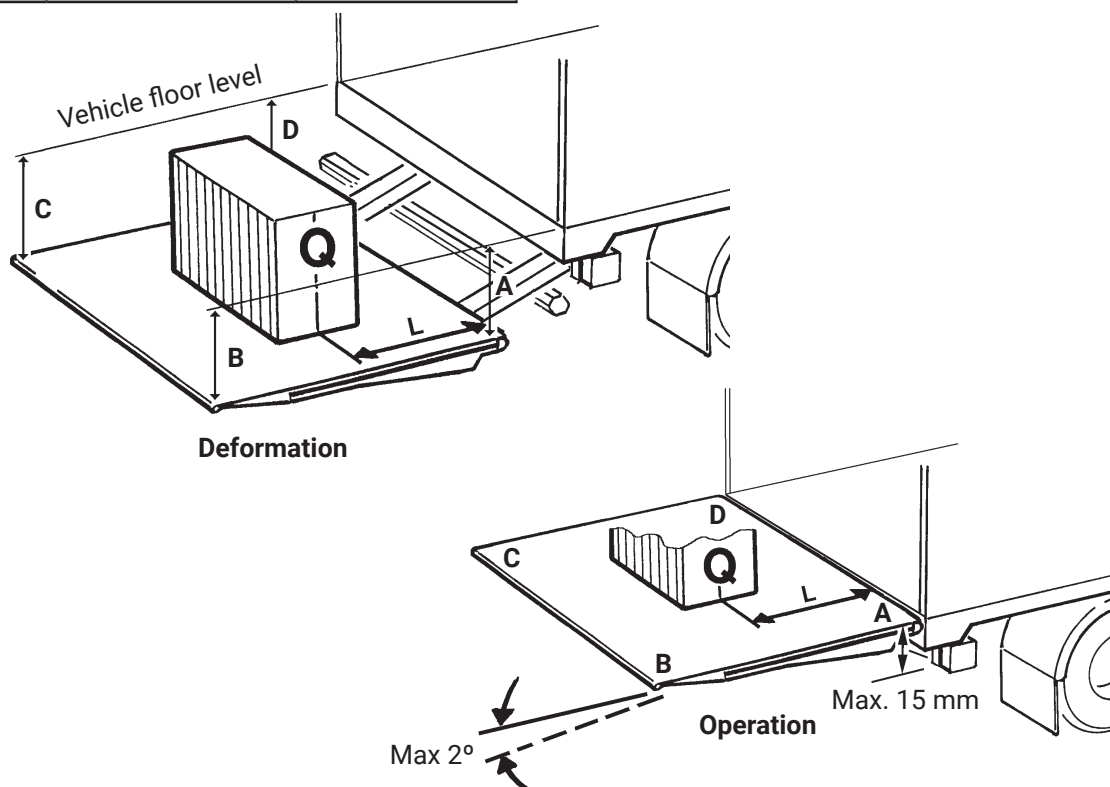


Figure 77. Testing and verification

9.2 Dynamic load test.

9.2.1 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.

9.2.2 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 lift gate cannot lift the load when the up function is switched on (it may however be possible to tilt up the load).

9.2.3 Dynamic load (Test load 1.0 x lift gate loading capacity). For lift gates with a load centre of 40".

Capacity	Load 1500 kg	Load 2000 kg
	Distance out on platform (L)	
3300 lbs	1000 mm (39.4")	-
4400 lbs	1300 mm (51.2")	1000 mm (39.4")

9.3 Test of safety functions

The lift gate 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 lift gate cannot be activated if the cabin switch is in the off position.
- That the lift gate 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 lift gate 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 lift gate have been left in the driver's cab.

