



Operating Instructions

LINEAR LIFT AL1



reddot design award
winner 2013



www.amf-bruns.de

Foreword

Dear Reader,

these Operating Instructions serve to provide all information required for the safe use of the linear lift.

The linear lift is designed and constructed in accordance with state of the art technology and recognised safety standards. Persons and materials can however be endangered, as not all danger areas can be eliminated if the functional capability is to be maintained. Accidents caused by these dangers can however be prevented by strictly observing these Operating Instructions. Over and above this, the operational efficiency of your linear lift can be used to the full and unnecessary faults can be prevented.

After reading these Operating Instructions for the first time, keep them in a safe place for future reference over the entire lifetime of the linear lift. Chapter 12 of these Operating Instructions contains an Inspection Log that is required by the technical expert for his / her annual inspection of the linear lift.

If you sell the linear lift, hand these Operating Instructions over to the new owner.

All details, figures and dimensions contained in these Operating Instructions are non-binding. No claims in any form can be derived from these.

This document must not be reproduced or duplicated, in full or in part, without the prior, written permission of the manufacturer.

The linear lift must never be converted or modified in any way, without seeking the prior, written permission of the manufacturer. The manufacturer will not be held responsible in any way whatsoever if conversions or modifications are carried out without authorisation.

Use only original spare parts or spare parts which have been approved of by the manufacturer. If spare parts other than these are used, this can have a negative effect on the specified characteristics, the functionality and safety of the linear lift. Using non-original or unauthorised spare parts will render the guarantee null and void.

Contact our customer service department to order spare parts or accessories. The spare parts catalogue can be found in the service section of our Internet site (see Chapter 15, page 70).

Explanation of symbols and signs

To improve understanding, the following conventions should be met for these Operating Instructions:

1.

The following conventions are used to highlight important information:



DANGER!

- warns of a situation of immediate danger, which will lead to severe or fatal injuries if not avoided.



WARNING!

- warns of a potentially dangerous situation, which will lead to severe or fatal injuries if not avoided.



CAUTION!

- warns of a potentially dangerous situation, which will lead to slight or minor injuries or material damage if not avoided.



ATTENTION!

...warns of a potentially dangerous situation, which can cause material damage, if not avoided.



...contains general notes and useful information.



...gives a reference to important information in other sections and documents.

2.

Some text passages serve a special purpose. These are identified as follows:

- Lists.
- ⇒ Instructional text, e.g. a sequence of activities.

3.

Meaning of directions:

If directions are given in the text (in front of, front, behind, rear, right, left), these directions relate to the normal direction of travel of the vehicle.

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1 Safety

CAUTION!

There are a number of risks of suffering personal injury and material damage involved in the operation and maintenance of the linear lift.

Therefore:



- It is imperative, that these Operating Instructions are read thoroughly before operating your linear lift. Always observe the notes and information contained therein, in particular the safety instructions.
 - If these Operating Instructions or parts thereof are lost or become illegible, please request a new copy from the manufacturer.
-

Prerequisite to the safe handling and trouble-free operation of the linear lift is a thorough knowledge of the applicable safety information and the safety regulations.

It is therefore imperative that this Chapter is read thoroughly before operating the linear lift and that the instructions and warnings herein are strictly observed. The safety information and warnings, given at the appropriate places in the following Chapters, must also be strictly observed. The manufacturer will not be held responsible if safety information and warnings are not observed.

In addition to the information given in these Operating Instructions, local legislative regulations must be taken into consideration, in particular those regarding safety and accident prevention.

1.1 Proper Use

The linear lift must only be used for lifting and lowering disabled persons seated in wheelchairs or empty wheelchairs. By using the linear lift, persons can be embarked into or disembarked from the vehicle to which it is fitted.

When doing so, the linear lift is operated by an accompanying person who does not ride on the platform. Unless of course the person in the wheelchair is also the driver of the vehicle.

Proper use also includes strictly adhering to the information given in these Operating Instructions.



WARNING!

If the linear lift is used for any other purpose than that described above, this may result in dangerous situations for persons or material damage being caused.

Therefore:

- Only use the linear lift for the purpose for which it was intended.
 - Always adhere to information given in these Operating Instructions.
 - Do not use the linear lift for any other purposes, particularly those given in Section 1.2. These are deemed to be improper use.
-

1.2 Improper Use

Any type of use, other than that mentioned in section 1.1 is deemed to be improper use.

The linear lift is deemed to be improperly used if for example:

- for lifting and lowering goods (exception: empty wheelchairs),
- for lifting and lowering persons who are not seated in a wheelchair,
- it is used as a link bridge or
- it is used by incompetent persons.

1.3 Personnel Requirements

The linear lift must only be handled by persons who:

- who are of legal age,
- have been instructed in how to operate the linear lift,
- have read and understood these Operating Instructions,
- have proven their ability to operate the linear lift to the vehicle's owner,
- have been expressly assigned by the vehicle's owner to operate the linear lift,
- have the technical knowledge to operate the wheelchair's brakes and switch the motors of electrically driven wheelchairs ON and OFF and
- who are in a position to adapt themselves to the particular behaviour and needs of disabled persons.

Transportation, installation, commissioning, maintenance, repair, fault finding and disposal of the linear lift must only be carried out by persons with the corresponding technical training and experience.

1.4 Product Monitoring

Please contact AMF-Brunns GmbH & Co. KG immediately if faults or problems are encountered when operating your linear lift or if accidents or "near-misses" occur.

AMF-Brunns will effect a solution to the problem with your help and the knowledge gained will flow into future projects.



NOTE

Guarantee work on the linear lift must only be carried out with the prior agreement of AMF-Brunns GmbH & Co. KG.

The costs of such work will not be accepted by AMF-Brunns without prior agreement.

If damage occurs, AMF-Brunns GmbH & Co. KG will require the serial number, the year built as well as a description of the damage and if possible, a photograph of the damage.

1.5 Danger Zone

The danger zone is any area on, below or within the range of movement of the platform, as well as around the drive and carrier system, in which persons are exposed to the risk of injury or damage to health.



CAUTION!

Risk of injury through movements of the linear lift.

There are a number of risks of personal injury if standing within the danger zone.

Therefore:

- Only operate the linear lift if there are no persons standing within the danger zone.
 - Keep the danger zone under observation and stop the linear lift if any persons enter the danger zone.
-

1.6 Safety Devices

1.6.1 Guardrails

The guardrails fold down to the horizontal position, together with the platform, when the linear lift's platform is lowered from the stowed position to the deployed position. They provide support for the passenger and increase the sense of security when the platform is being raised or lowered.

1.6.2 Roll-off guard

A roll-off guard is fitted to the side of the platform furthest from the vehicle. When the platform is raised, the roll-off guard rises automatically and latches in position. This prevents the passenger in their wheelchair from rolling off the platform.

1.7 Safety and Accident Prevention Regulations

Adhere to the following notes in order to prevent personal injuries and material damage. Also adhere also to the relevant safety and accident prevention regulations laid down by the trade associations.

- The linear lift must only be operated if all safety and protective devices are correctly fitted (see Section 1.6, page 11). Such devices must only be removed in order to enable maintenance and repair work to be carried out. All safety and protective devices must be replaced immediately after such work has been completed. If they are not replaced correctly, there is a high risk of injury.
- The linear lift must only be used for the purpose for which it is intended, otherwise dangerous situations, with resultant injuries, may occur (Proper use: see Section 1.1, page 8).
- The owner is responsible for ensuring that proper use is adhered to, in particular that the linear lift is only operated by authorised persons.
- If the linear lift is used commercially or as a public utility, the owner must ensure that operating personnel are familiar with the operation of the linear lift under all operating conditions by giving training and familiarisation courses.
- In order to be able to transport wheelchair-bound persons, the vehicle must be fitted with the necessary special equipment in accordance with DIN EN 75078. To prevent dangers in road traffic, the linear lift must be equipped with warning lights or warning markings.

- A number of dangers may arise during operation due to adverse lighting conditions. The owner is obliged to equip the vehicle or the linear lift with the corresponding lighting fixtures.
- It is forbidden for persons to ride on the platform if they are not in a wheelchair.
- Proper use of the linear lift also includes adherence to the specified maintenance and repair work, in particular strict adherence to the maintenance intervals. If such work is not carried out, trouble-free operation can not be guaranteed. Risks of personal injury and material damage can occur. We recommend that maintenance records be kept.
- If the linear lift is used commercially or as a public utility, it must be inspected by a technical expert at intervals of not more than 1 year after commissioning. During inspection, faults affecting the safety should be systematically identified and remedial action taken (see "Inspection Log", page 56).
- Do not deposit any items on the linear lift. Persons can suffer injuries if such items fall off the platform.
- The linear lift must not be operated in a faulty condition, as serious injuries may be caused by this. If faults occur, do not use the linear lift until repairs have been effected.
- Switch the linear lift OFF before carrying out maintenance or repair work, this includes cleaning work. Make certain that no other person can switch the linear lift ON (e.g. by disconnecting the starter battery). If this is not done, there is a risk of injury.
- Use only original spare parts or spare parts which have been approved of by the manufacturer. If non-original or unauthorised replacement parts are used, this will render the guarantee null and void.

2 Description

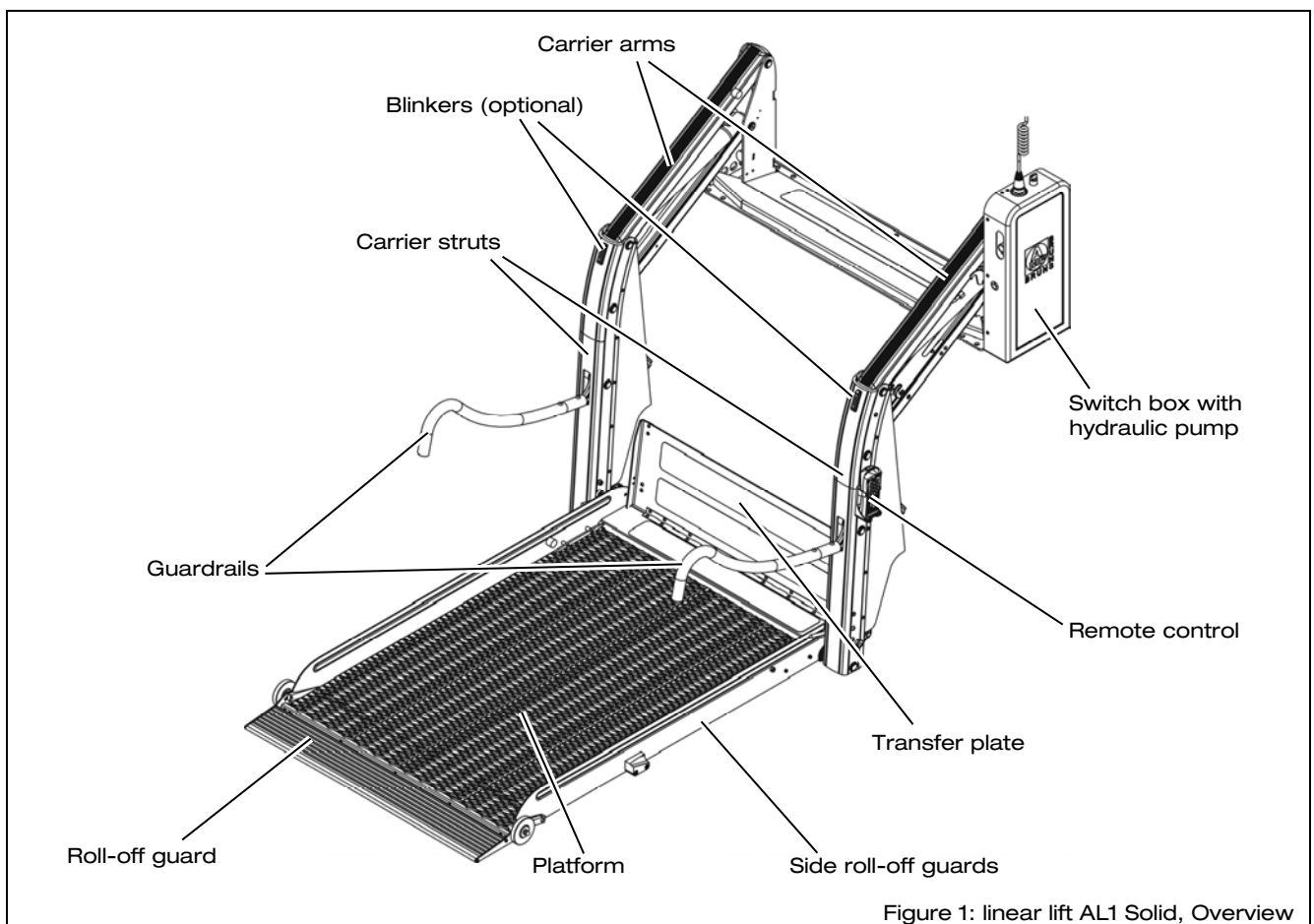
Persons who are wheelchair-bound can be embarked into or disembarked from a vehicle using the linear lift.

The main components of the linear lift are:

- the platform,
- the lifting unit with carrier arms, guardrails and floor anchorages,
- the hydraulic system and
- the operating controls.

The aim of this chapter is to illustrate the construction and function of the linear lift. To this end, the individual assemblies and components are described in the following sections.

2.1 Layout and Function



2.1.1 Platform

The platform has an anti-slip grating surface and is equipped with side roll-off guards. These prevent the passenger's wheelchair from rolling off the side of the platform.

A roll-off guard is fitted to the side of the platform furthest from the vehicle (see Figure 1, page 13). When the platform is lowered fully to the ground, the roll-off guard folds down. This provides the passenger in the wheelchair with easy access the platform. As soon as the platform is raised from the ground, the roll-off guard rises and latches in position. This prevents the passenger's wheelchair from rolling backwards off the platform.

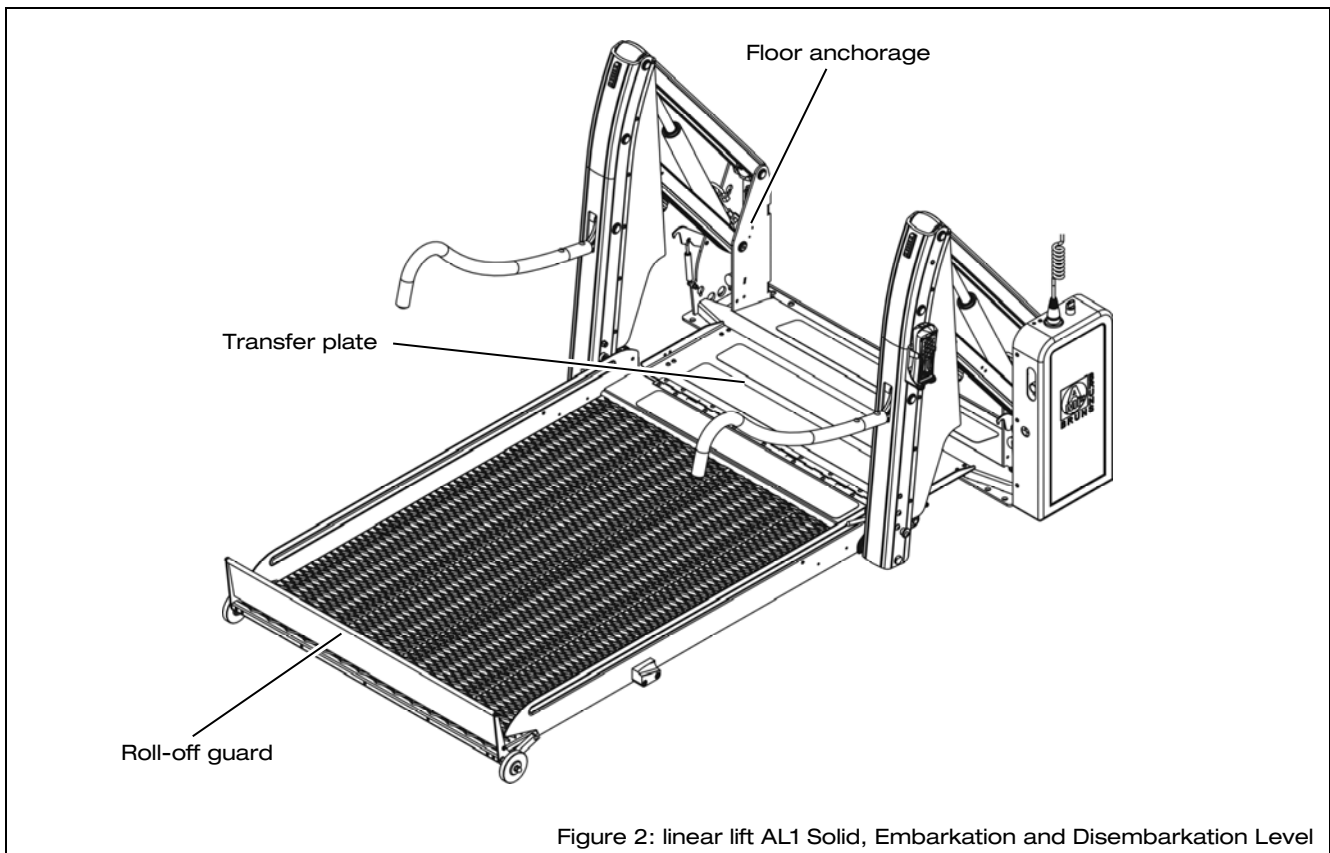


Figure 2: linear lift AL1 Solid, Embarkation and Disembarkation Level

The linear lift AL1 Solid has a one-piece platform. The platform of the linear lift AL1 Panorama is made up of two sections such that it is shortened when folded up to the stowed position.

This enables a linear lift with a long platform to be installed in vehicles with restricted interior height. In addition to this, the driver has a clear view through the rear window when driving. Over and above this, the fact that a linear lift is installed in the vehicle can not be seen from the outside (see Figure 3 and Figure 4).

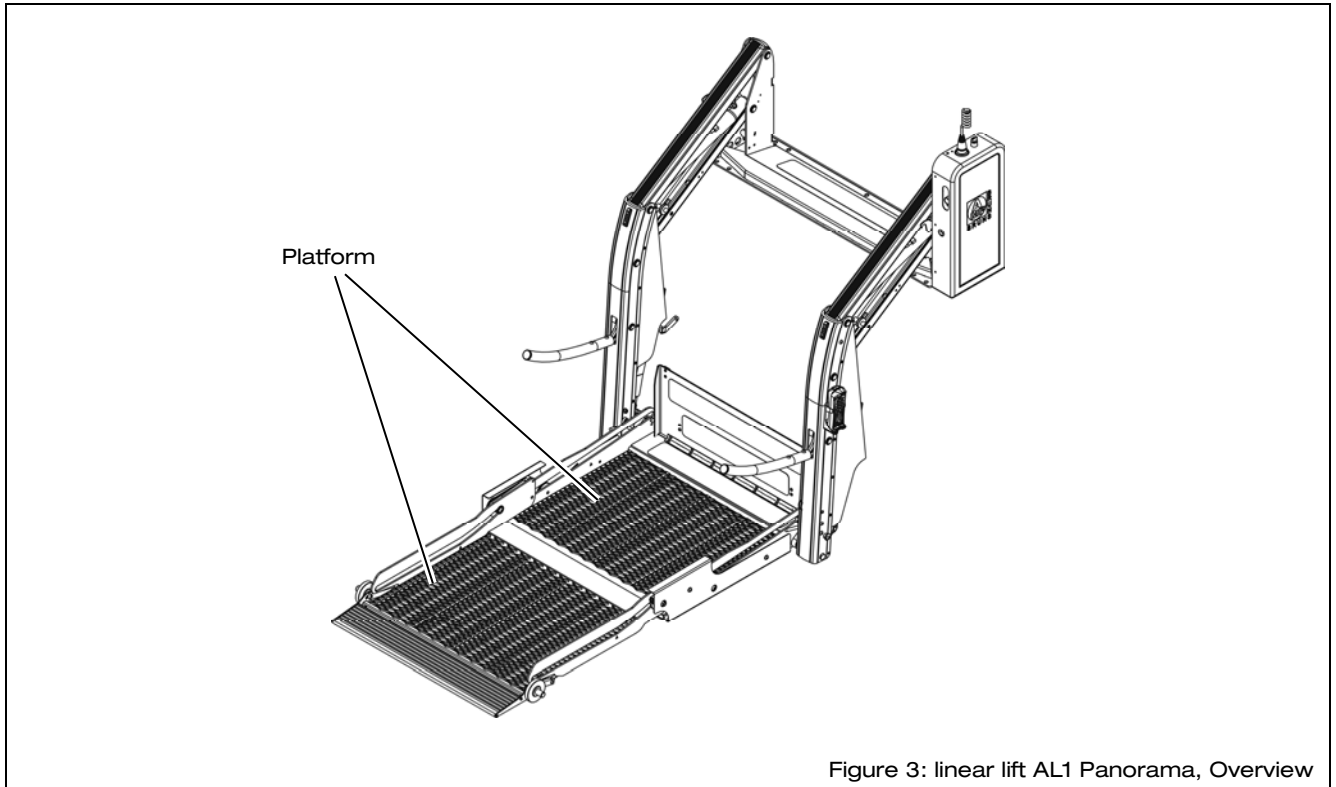


Figure 3: linear lift AL1 Panorama, Overview

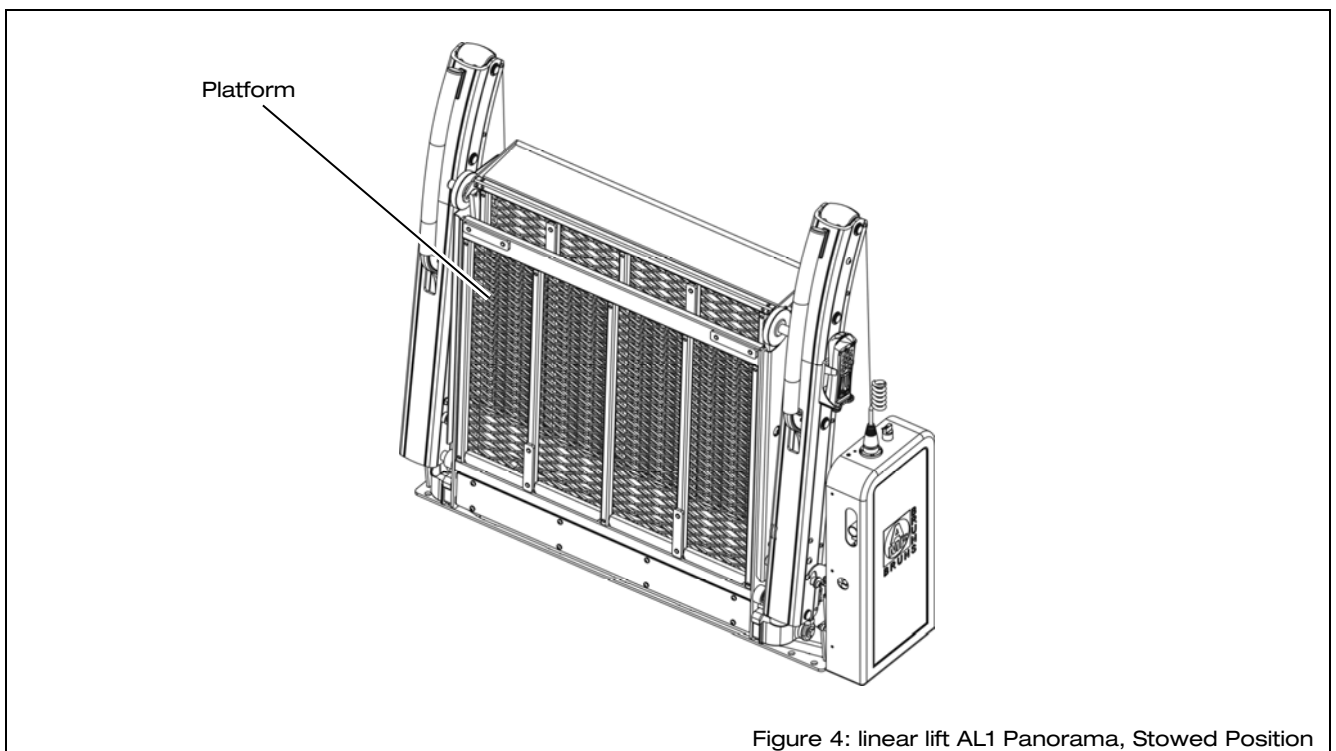


Figure 4: linear lift AL1 Panorama, Stowed Position

The platform of the linear lift AL1 Split is split lengthwise. When it is stowed in the driving position, the two halves of the platform separate (see Figure 5). Because of this, it is possible to enter and leave the vehicle by way of the door in which the linear lift is installed, even though the linear lift is in the vertical, stowed position.

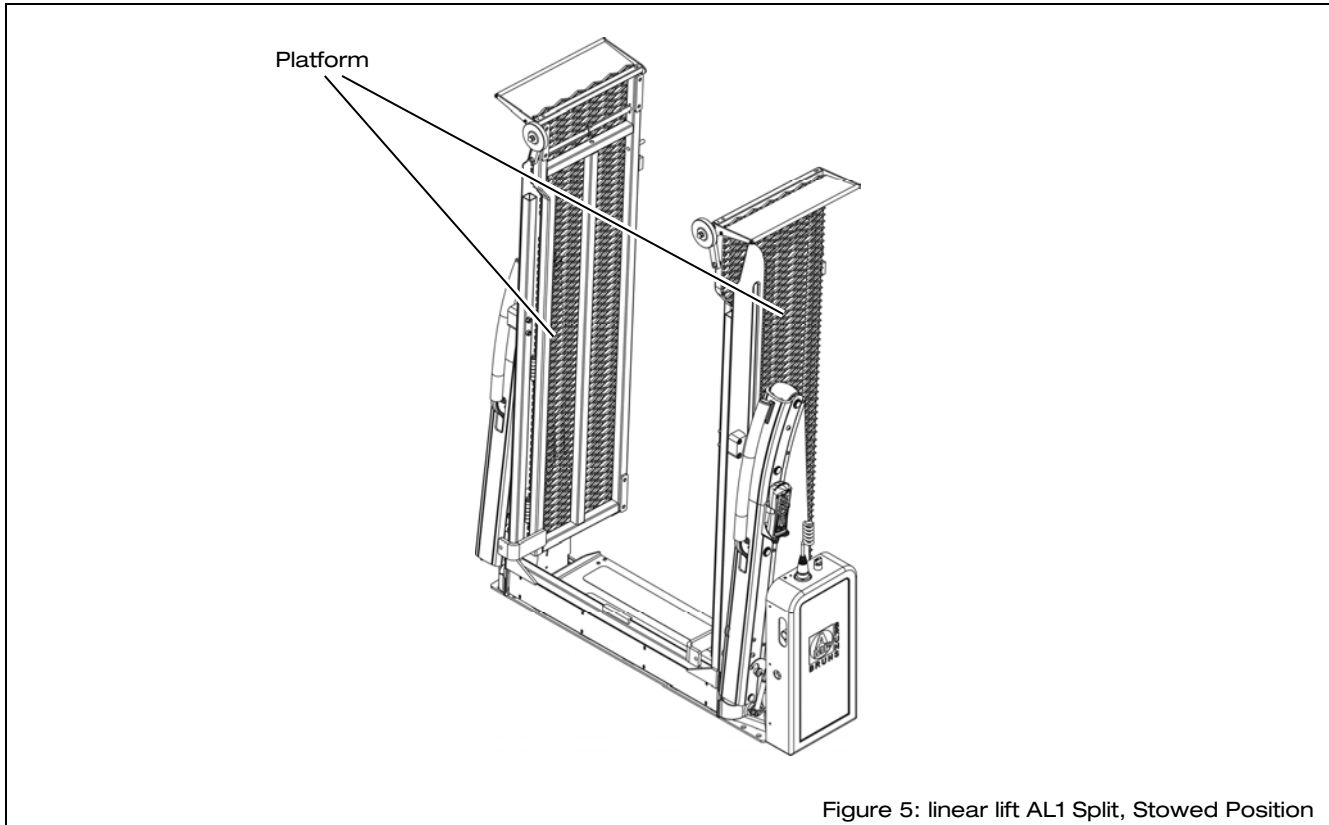


Figure 5: linear lift AL1 Split, Stowed Position

2.1.2 Transfer plate

A transfer plate is fitted to the linear lift. When the platform reaches the same level as the vehicle's floor when being raised (embark / disembark level), the transfer plate closes the gap between platform and vehicle. This ensures convenient, safe embarkation / disembarkation (see Figure 1, page 13 and Figure 2, page 14).

2.1.3 Lifting unit

The lifting unit represents the connection between platform and vehicle. The lifting and lowering movements are carried out by four carrier arms that are powered by hydraulic cylinders (see Figure 1, page 13). The carrier arms act on carrier struts, to which the platform and guardrails are attached. The platform and guardrails automatically fold down on elbow joints actuated by the carrier arms when the linear lift is lowered from its vertical position.

When the linear lift is raised to a level above the floor of the vehicle, to the stowed position, the guardrails and platform are folded up to

the vertical, stowed position. Because of this, the linear lift takes up a minimum of space in the vehicle (see Figure 5, page 16).

The carrier arms are connected to the vehicle by the floor anchorages (see Figure 2, page 14).

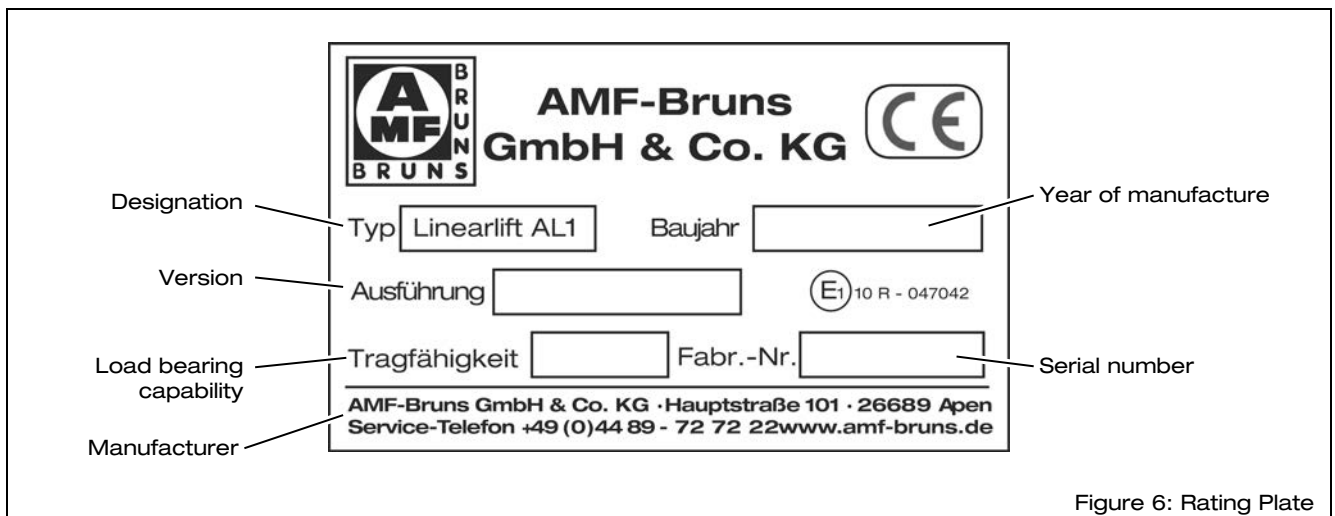
2.1.4 Hydraulic system

The hydraulic system's motor, pump and oil reservoir are located in the switch box on the side of the linear lift (see Figure 1, page 13). The operating voltage for the motor is supplied by the starter battery. The hydraulic cylinders that are powered by the pump are located between the carrier arms.

The hydraulic system can be manually operated in an emergency.

2.2 Rating Plate

A rating plate, which contains the fundamental data, is attached to the linear lift (see Figure 6). The rating plate is located on the floor anchorage.



2.3 Technical Data

Designation	Linear Lift AL1
Type / Lifting platform	Solid 1065 Solid 1130 Solid 1200 Solid 1380 Panorama 1200 Panorama 1400 Split 1085 Split 1085 S Split 1300
Weight	133 kg ± 10
Permissible operating pressure	92 bar
Permissible number of persons on the platform	max. 1 person in a wheelchair
Carrying capacity	400 kg
Lifting height	900 mm
Lifting speed	0.058 m*
Max. lowering speed	0.068 m*
Deploy speed	0.3 m*
Stow speed	0.3 m*
Operating / control voltage	12 V
Current consumption	max. 60 A
Sound pressure emission	< 78 dB(A)
Equipment suitable for use	in the vehicle
Safeguard against the platform lowering inadvertently if leaks occur in the hydraulic pipelines	Burst pipe protection valve (see Hydraulic Circuit Diagram)
Safeguard against excess hydraulic pressure	Operating pressure 92 bar; Response pressure 75/92 bar
Hydraulic oil	Recommendation: ATF Dexron II, 1.4 litre
Appendix to the Inspection Log	Electrical Circuit Diagram, Hydraulic Circuit Diagram

2.4 Operating Controls

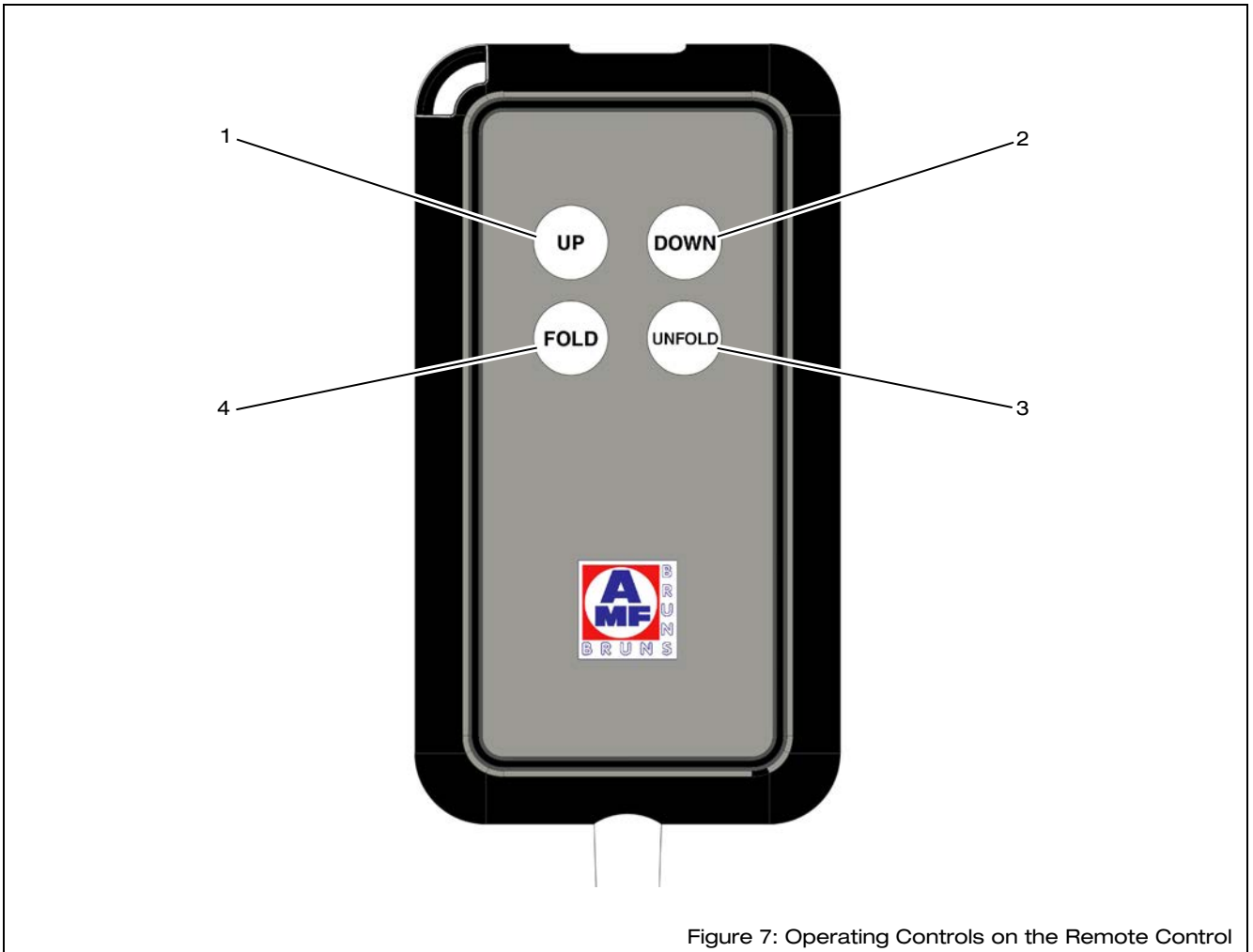


Figure 7: Operating Controls on the Remote Control

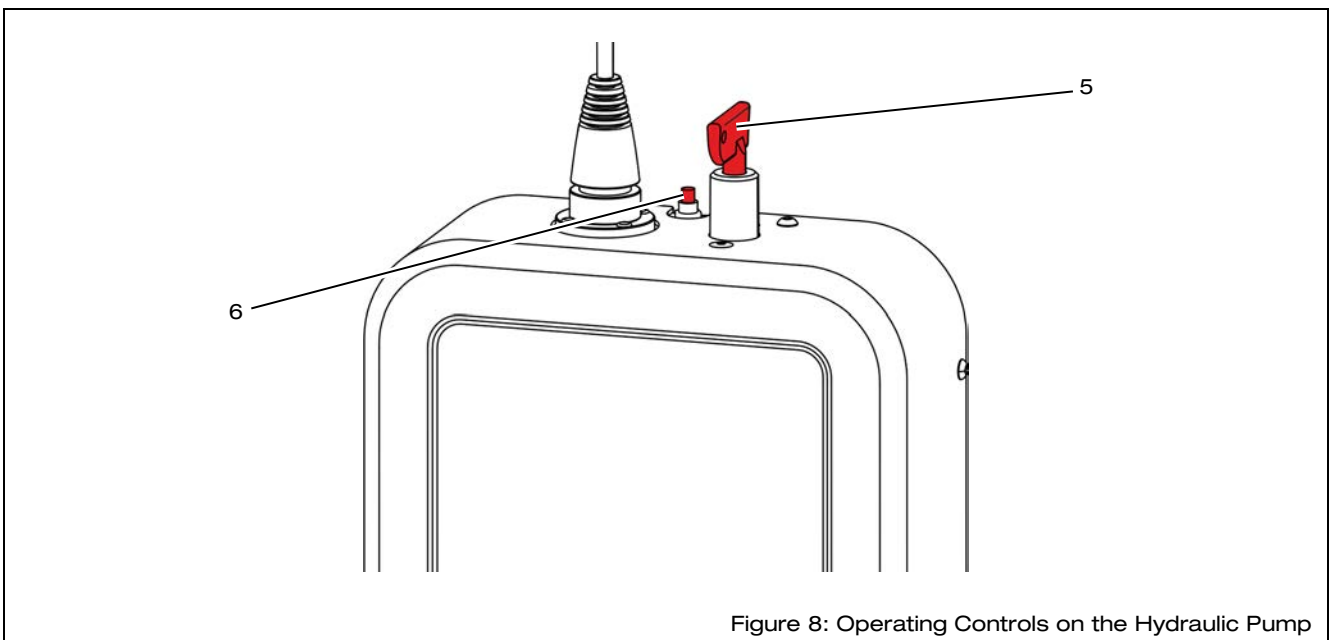


Figure 8: Operating Controls on the Hydraulic Pump

Item	Designation	Function
1	Push-button "UP"	Raises the platform from the ground to the embarkation / disembarkation level. Switches the remote control ON, if it has switched OFF due to not being used for a longer period of time.
2	Push-button "DOWN"	Lowers the platform from the embarkation / disembarkation level to the ground.
3	Push-button "UNFOLD"	Lowers the linear lift from the vertical, stowed position.
4	Push-button "FOLD"	Raises the linear lift to the vertical, stowed position.
5	Battery isolation switch	Interrupts the power supply to the hydraulic pump motor.
6	Circuit breaker	Trips when a fault occurs and renders the remote control inoperative.

3 Transportation

DANGER!



Dangers when transporting the linear lift.

The linear lift can fall over during transportation. There is a risk of personal injury and material damage.

Therefore:

- Transportation of the linear lift is carried out by the manufacturer or by trained, experienced personnel.

4 Installation / Commissioning



The linear lift must be installed in accordance with the AMF-Bruns Installation Instructions applicable to the vehicle in question.

DANGER!

Risk of injury through incorrect installation.

A number of risks of personal injury and material damage can be caused if the linear lift is incorrectly installed in the vehicle.

Such risks can not only occur during installation but also as a result of installation not being carried out correctly.

Therefore:



- The linear lift must only be installed in the vehicle by trained, specialist personnel. This also applies to the electrical connections.
- The vehicle manufacturer's body fitting guidelines must be adhered to.
- A technical expert must be called in to inspect the linear lift for correct installation and the effectiveness of the safety devices.
- The technical expert must confirm the fact that operational safety of the linear lift has been established by making a corresponding entry in the inspection log (see Chapter 12, page 56).
- The linear lift must not be used until this has been done.

5 Operation



NOTE

If the lift is switched ON, the remote control automatically switches OFF if it is not used for more than 15 minutes.

Press the “UP” push-button (1) to switch the remote control ON once again.



5.1 Safety Regulations for Operation

Before operating the linear lift, the safety information must have been read (see Chapter 1, page 8).



DANGER!

Risk of injury and material damage if the linear lift is operated in a faulty condition.

Therefore:

- Always carry out inspections in accordance with the maintenance schedule before use (see Chapter 7, page 34).
 - Have the linear lift inspected at intervals of not more than one year by a technical expert.
-



WARNING!

Risk of injury through falling from the platform.

Persons who are not seated in a wheelchair can fall off the platform. There is a risk of injury.

Therefore:

- It is forbidden for persons to ride on the platform if they are not in a wheelchair.
-



WARNING!

Risk of injury and material damage if the linear lift is operated by unauthorised persons.

Dangerous operating conditions may be caused if the linear lift is operated by unauthorised persons.

Therefore:

- The linear lift must only be operated by persons who are familiar with operating the linear lift.
 - The linear lift must never be operated by the passenger. Unless of course the passenger is also the driver of the vehicle.
 - Before driving off: Switch the linear lift OFF at the master switch.
 - Before leaving the vehicle: Remove the ignition key, bring the linear lift to the stowed position, switch the linear lift OFF and lock the vehicle's doors.
-

WARNING!

Danger through road traffic collisions.

A number of risks are involved for passengers and operator when using the linear lift on public highways.

Therefore:

- When parking the vehicle ensure that other road traffic is affected as little as possible.
 - Park the vehicle such that as little danger as possible is presented to passenger and operator by other road traffic.
 - Switch the vehicle's engine OFF and apply the handbrake before operating the linear lift.
-
-

**WARNING!**

Risk of injury through movements of the linear lift.

There is a risk of persons being injured through being hit or crushed by movements of the platform. The linear lift can move unexpectedly.

Therefore:

- Take advantage of the flexibility provided by the remote control cable to gain an adequate overview of the entire range of movement of the platform.
 - Always stand at an adequately safe distance from the platform during operation.
 - Inform other persons of the danger.
 - Keep the danger zone under observation and stop the linear lift if any persons enter the danger zone.
-
-

**WARNING!**

Risk of injury if protective and safety devices are removed or are defective.

If protective and safety devices are modified, bypassed or removed, they will no longer fulfil their function.

Therefore:

- never modify, bypass or remove protective and safety devices.
 - Always refit protective and safety devices if they have been removed (e. g. for maintenance or repair purposes).
-
-

**CAUTION!**

Risk of injury if there is insufficient space to operate the linear lift.

If there is insufficient space to leave or to get onto the platform, there is a risk of being injured by the linear lift or other objects (e.g. walls, posts or poles).

These risks apply to both passenger and accompanying person.

Therefore:

- When parking the vehicle, make certain that there is sufficient space to operate the linear lift.
-
-



5.2 Switching OFF in an Emergency (Emergency Stop)

⇒ Switch the linear lift OFF at the battery isolation switch (5) (see Figure 9).

The linear lift comes to an immediate standstill.

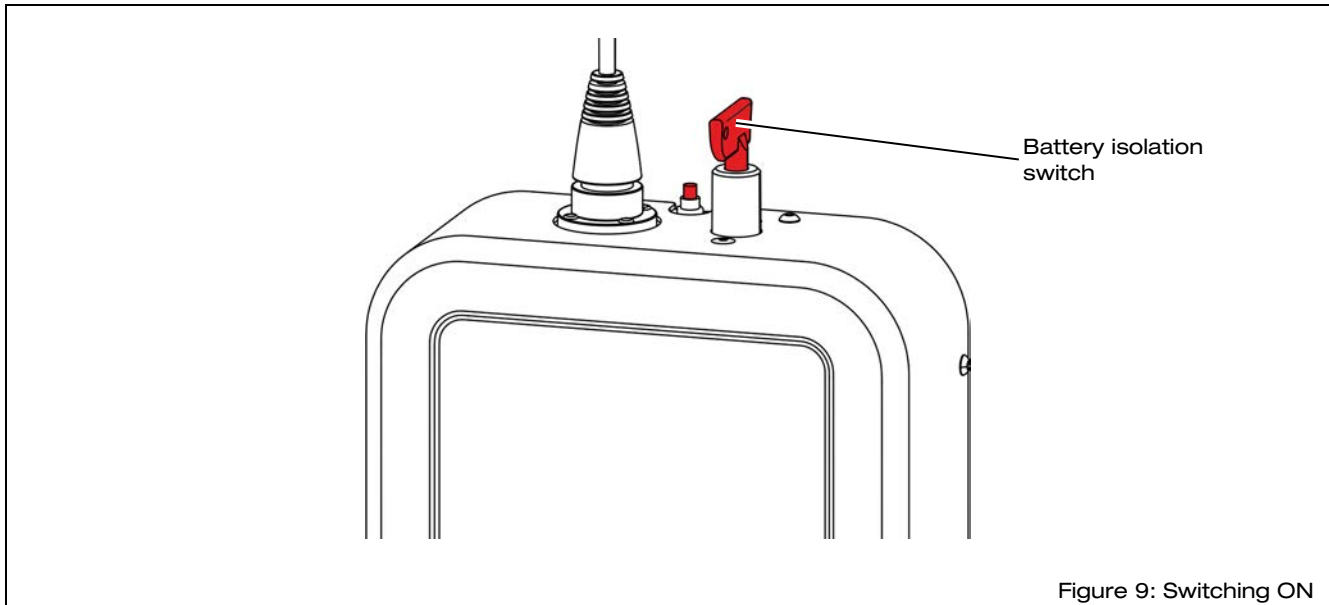


Figure 9: Switching ON

5.3 Switching the linear lift ON

- ⇒ Apply the vehicle's handbrake.
- ⇒ Switch the vehicle's engine OFF and remove the ignition key.
- ⇒ Open the door, behind which the linear lift is installed.
- ⇒ When operating the linear lift, make certain that the door can not swing closed due to wind or other influences.
- ⇒ Insert the key into the battery isolation switch (5) (see Figure 9).
- ⇒ Switch the linear lift ON at the battery isolation switch (5).

The linear lift is ready for operation.

5.4 Switching the linear lift OFF

- ⇒ Accompany the passenger, who is still on the platform, off the platform.
- ⇒ Run the platform to the stowed position (see Section 5.6, page 27).
- ⇒ Switch the linear lift OFF at the battery isolation switch (see Figure 9).

The linear lift is switched OFF.

- ⇒ Remove the key from the battery isolation switch.

⇒ Lock the door, behind which the linear lift is installed.

5.5 Lowering the Platform

⇒ Switch the linear lift ON (see Section 5.3, page 24).

⇒ Remove the remote control from its holder on the side of the lifting unit.

⇒ Press and hold the “UNFOLD” push-button (3) on the remote control.

The linear lift folds down from the vertical, stowed position. The platform and the guardrails fold down to the horizontal position and are lowered, until the platform has reached the embarkation / disembarkation position.

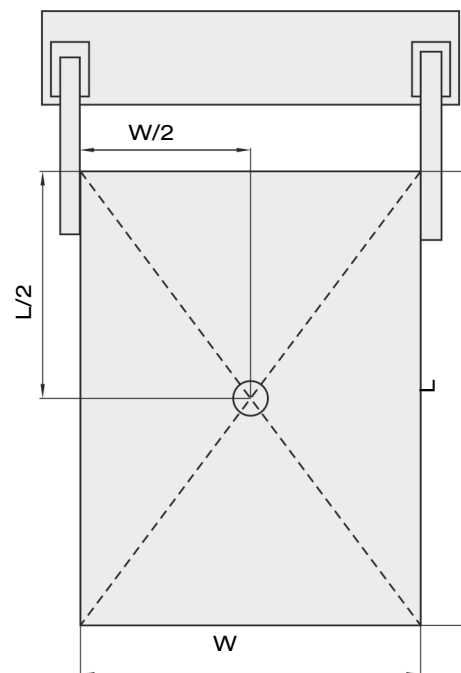
The linear lift stops automatically in this position.

⇒ Release the “UNFOLD” push-button (3) on the remote control.

⇒ Replace the remote control to its holder.

⇒ Accompany a passenger out of the vehicle and onto the platform for a disembarkation procedure.

⇒ Make sure that the centre of gravity of the wheelchair is in the centre of the platform (see Figure 10). This will prevent the linear lift from excessive wear.



L = Platform length
W = Platform width

Figure 10: Centre of the Platform

- ⇒ Apply the wheelchair's brakes.
 - ⇒ If applicable, switch the motor of an electrically driven wheelchair OFF.
-

CAUTION!

There is a risk of injury to the passenger when lowering the platform.

The passenger can fall from the platform. There is a risk of crushing on the carrier arms of the lifting unit.

Therefore:



- Make sure that the wheelchair is positioned in the centre of the platform, directly above the centre of gravity label.
 - Make certain that the wheelchair's brakes are applied and that the motor of an electrically driven wheelchair is switched OFF.
 - Do not lower the platform until this has been done.
 - Make sure that the passenger remains calm. Talk to the passenger to keep him / her calm.
 - Stop the platform if necessary.
 - Make sure that the passenger does not reach into the carrier arms.
-

- ⇒ Remove the remote control from its holder on the side of the lifting unit.
- ⇒ Press and hold the "DOWN" push-button (2) on the remote control.

The linear lift lowers the platform to the ground. The roll-off guard folds down

CAUTION!

Risk of injury when lowering the platform.

When the platform is lowered, there is a risk of feet and legs becoming trapped beneath the platform (see Figure 11, page 27).



Therefore:

- Keep a safe distance from the lowering platform when operating the linear lift.
 - Inform other persons of the danger.
 - If necessary, stop the linear lift.
-

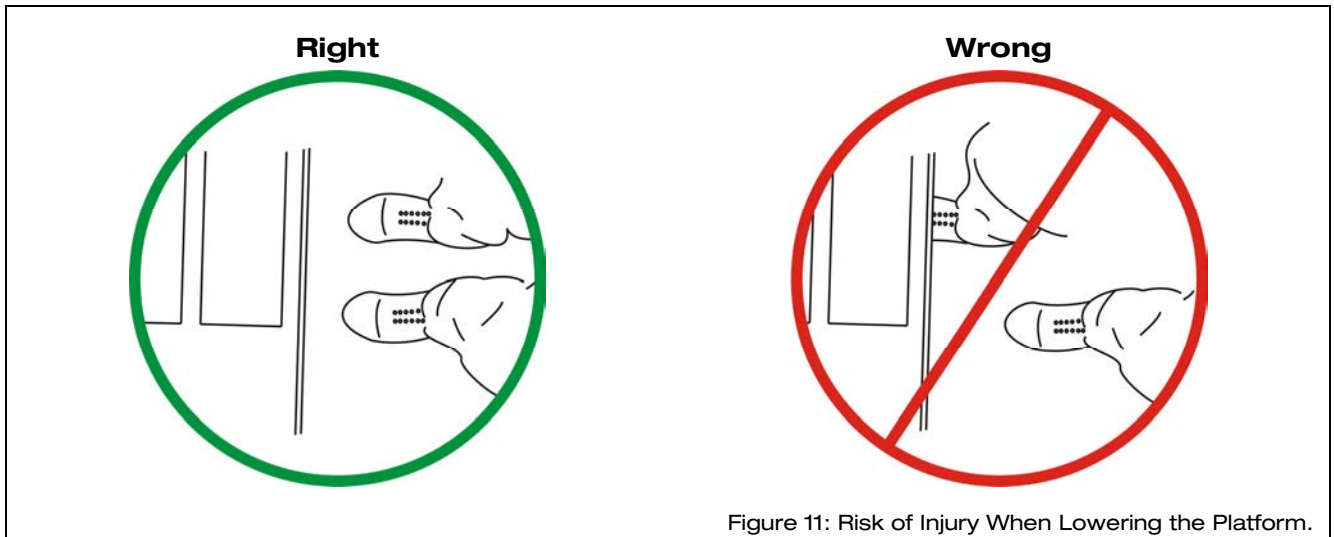


Figure 11: Risk of Injury When Lowering the Platform.

- ⇒ Release the “DOWN” push-button (2) on the remote control.
- ⇒ Replace the remote control to its holder.

5.6 Raising the Platform

- ⇒ Accompany a passenger onto the platform for an embarkation procedure.
- ⇒ Make sure that the centre of gravity of the wheelchair is in the centre of the platform (see Figure 10, page 25). This will prevent the linear lift from excessive wear.
- ⇒ Apply the wheelchair's brakes.
- ⇒ If applicable, switch the motor of an electrically driven wheelchair OFF.
- ⇒ Switch the linear lift ON (see Figure 9, page 24).
- ⇒ Remove the remote control from its holder on the side of the lifting unit.
- ⇒ Press and hold the “UP” push-button (1) on the remote control.

The linear lift raises the platform, until it has reached the embarkation / disembarkation level. The linear lift stops automatically in this position.

CAUTION!

There is a risk of injury to the passenger when raising the platform.

The passenger can fall from the platform. There is a risk of crushing on the carrier arms of the lifting unit.

Therefore:

- Make sure that the wheelchair is positioned in the centre of the platform, directly above the centre of gravity label. The roll-off guard must not be blocked.
- Make certain that the wheelchair's brakes are applied and that the motor of an electrically driven wheelchair is switched OFF.
- Do not raise the platform until this has been done.
- Make sure that the roll-off guard has risen and is latched in position when the platform lifts off the ground (see Figure 12).
- If the roll-off guard does not rise, lower the platform once again.
- Make sure that the passenger remains calm. Talk to the passenger to keep him / her calm.
- Make sure that the passenger does not reach into the carrier arms.

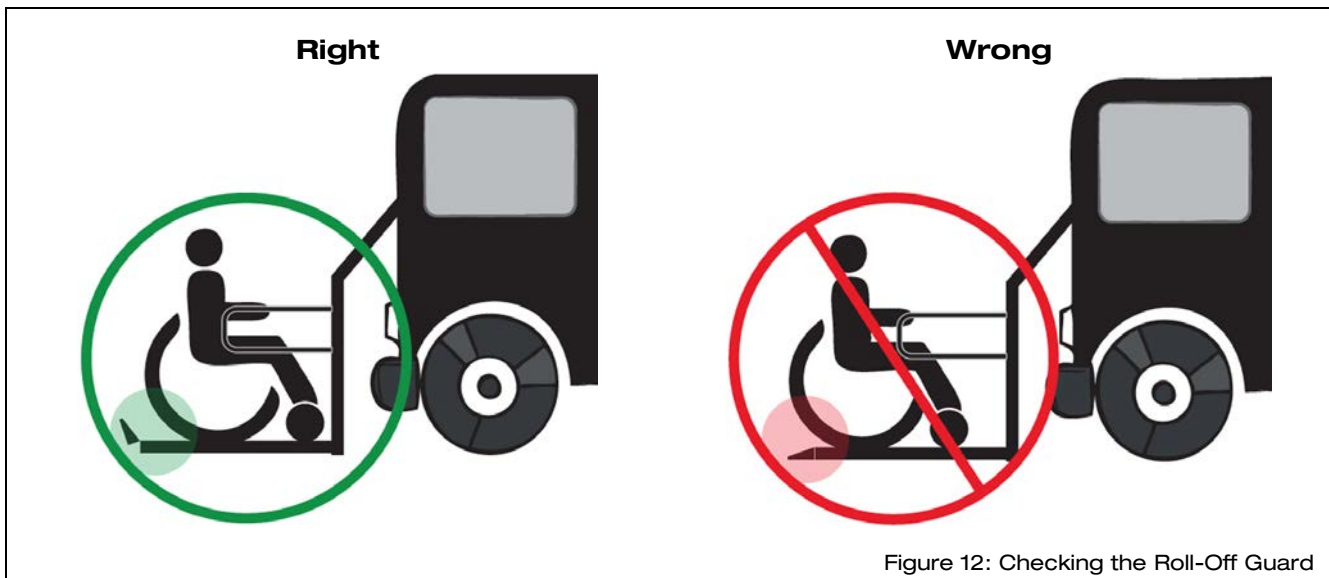


Figure 12: Checking the Roll-Off Guard

- ⇒ Release the "UP" push-button (1) on the remote control when the platform has reached the embarkation / disembarkation level.
- ⇒ Replace the remote control to its holder.
- ⇒ Release the passenger's wheelchair brakes.
- ⇒ Accompany the passenger to the position foreseen for the journey.
- ⇒ Apply the wheelchair's brakes.
- ⇒ If applicable, switch the motor of an electrically driven wheelchair OFF.
- ⇒ Secure the wheelchair in the vehicle using the restraint systems provided.

⇒ Press and hold the “FOLD” push-button (4) on the remote control.

The linear lift raises the platform further. The platform and the guardrails fold up to the vertical, stowed position.

The vertical, driving position has been reached as soon as the linear lift stops moving. In this position the Lift is not engaged in the arrester hooks.

⇒ Release the "FOLD" push-button (4).



NOTE

The Lift is not in the vertical position when it is engaged in the arrester hooks.

The arrester hooks serve only as an emergency measure, to prevent the Lift from falling against the door of the vehicle if there is a loss of pressure in the hydraulic system (see Section 11.6, page 50).



CAUTION!

There is a risk of crushing when folding the linear lift to the vertical, stowed position.

Fingers and hands can be crushed between the carrier struts and the guardrails and between the carrier struts and the platform.

Therefore:

- Never reach into the area between carrier struts and guardrails when folding the linear lift up to the vertical, stowed position.
 - Never reach into the area behind the platform when folding the linear lift up.
-

⇒ Replace the remote control to its holder.

⇒ Switch the linear lift OFF at the battery isolation switch (5) (see Figure 9, page 24).

⇒ Close the rear vehicle door.

6 Emergency Mode

Should the hydraulic system's electrical drive fail, an emergency situation for the passenger can be avoided by operating the hydraulic system manually.

WARNING!

Risk of injury and material damage if the linear lift is permanently operated in the emergency mode.

The failure of the hydraulic system's electrical drive can be caused by other, undetected damage to the linear lift. This damage can cause danger in the emergency mode.

The operating personnel can be physically overburdened by the necessity to operate the linear lift manually in the emergency mode. An emergency situation can arise for the passenger on the platform.

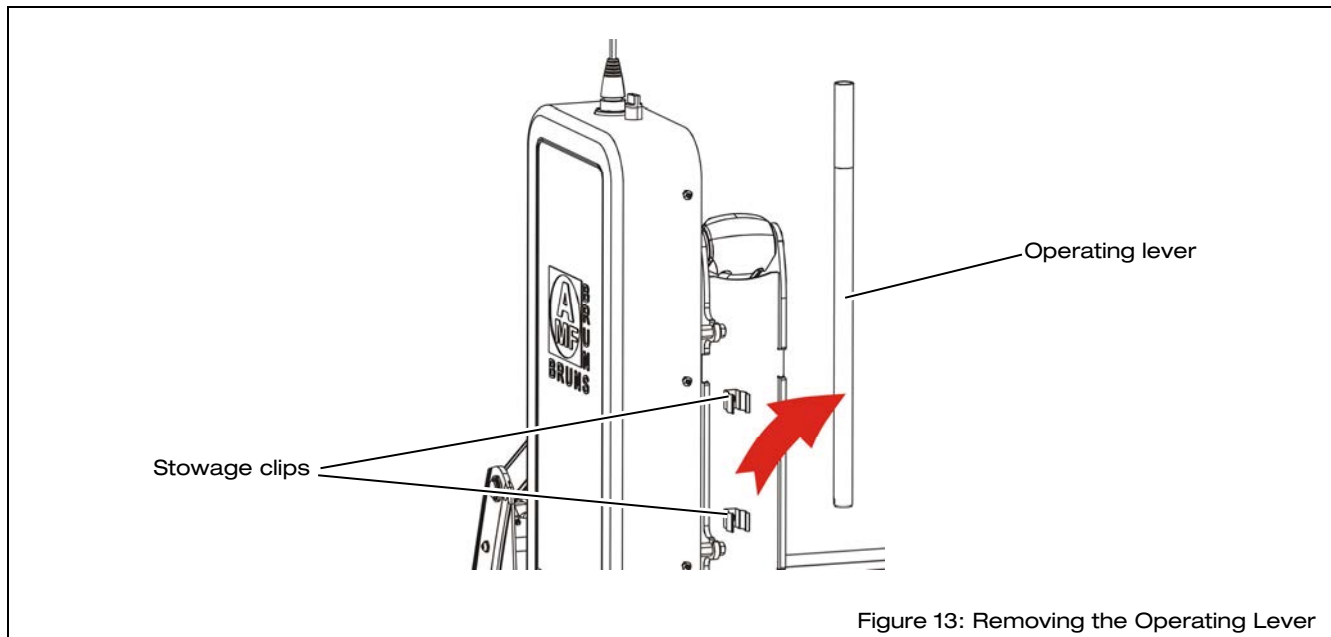
Therefore:

- Switch the linear lift OFF at the battery isolation switch (5) before using the emergency mode.
- Initiate repairs to the linear lift as soon as possible.



6.1 Raising in the Emergency Mode

- ⇒ Switch the linear lift OFF at the battery isolation switch (5) (see Figure 9, page 24).
- ⇒ Pull the operating lever out of its stowage clips on the floor anchorage (see Figure 13).



- ⇒ Insert the operating lever into the pump actuator on the hydraulic system (see Figure 14, page 31).

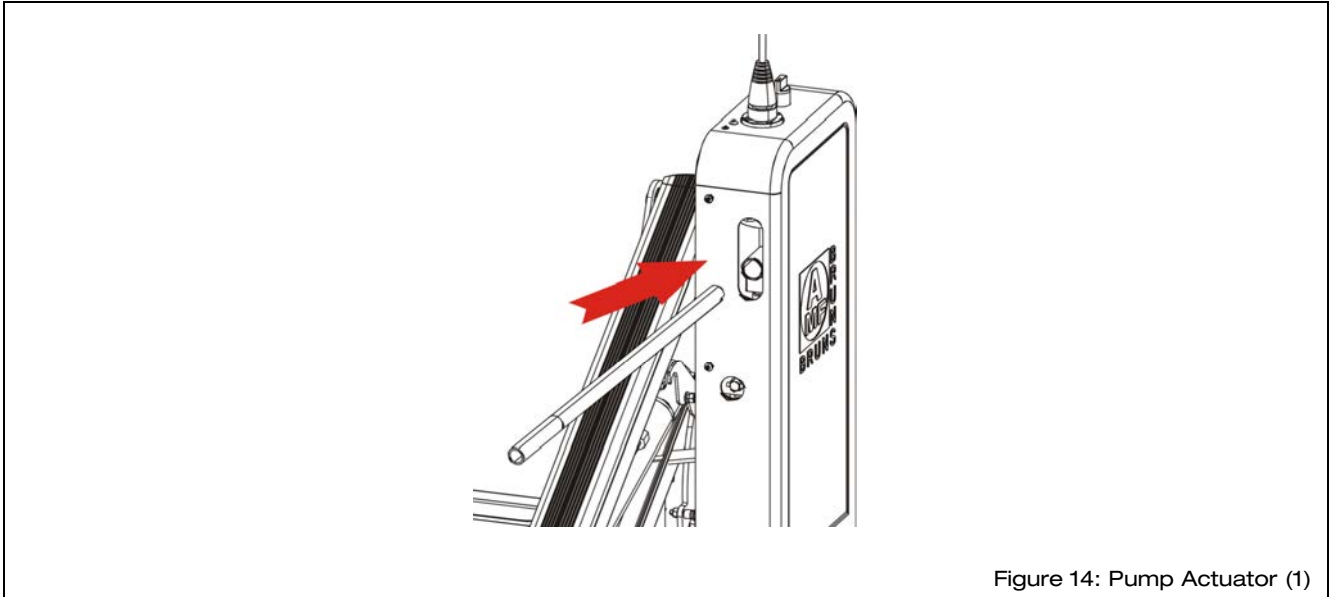


Figure 14: Pump Actuator (1)

⇒ Operate the pump by moving the operating lever up and down until the platform has been raised the desired position (see Figure 15).



NOTE

It takes approx. 15-20 strokes before the platform starts moving.

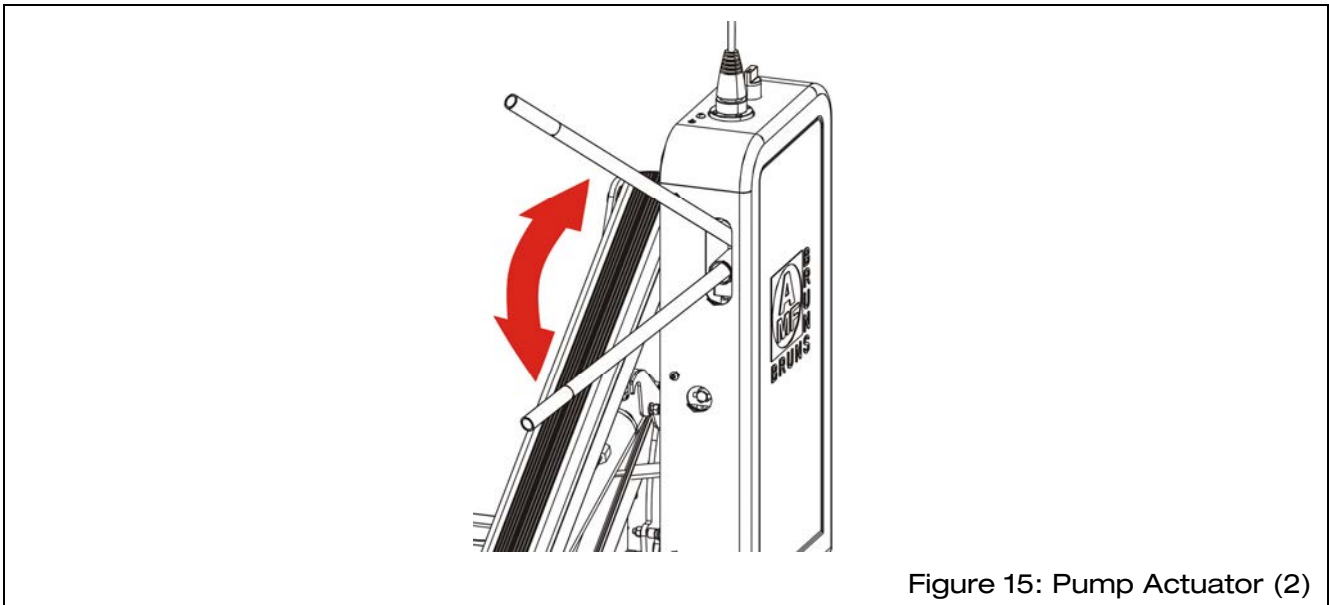


Figure 15: Pump Actuator (2)

- ⇒ Remove the operating lever from the pump actuator.
- ⇒ Replace the operating lever to its stowage clips.

6.2 Lowering in the Emergency Mode

- ⇒ Pull the operating lever out of its stowage clips on the floor anchorage (see Figure 13, page 30).
- ⇒ Insert the operating lever into the aperture in front of the emergency lowering valve (see Figure 16).
- ⇒ Turn the lever a little, until it engages in the emergency lowering valve.

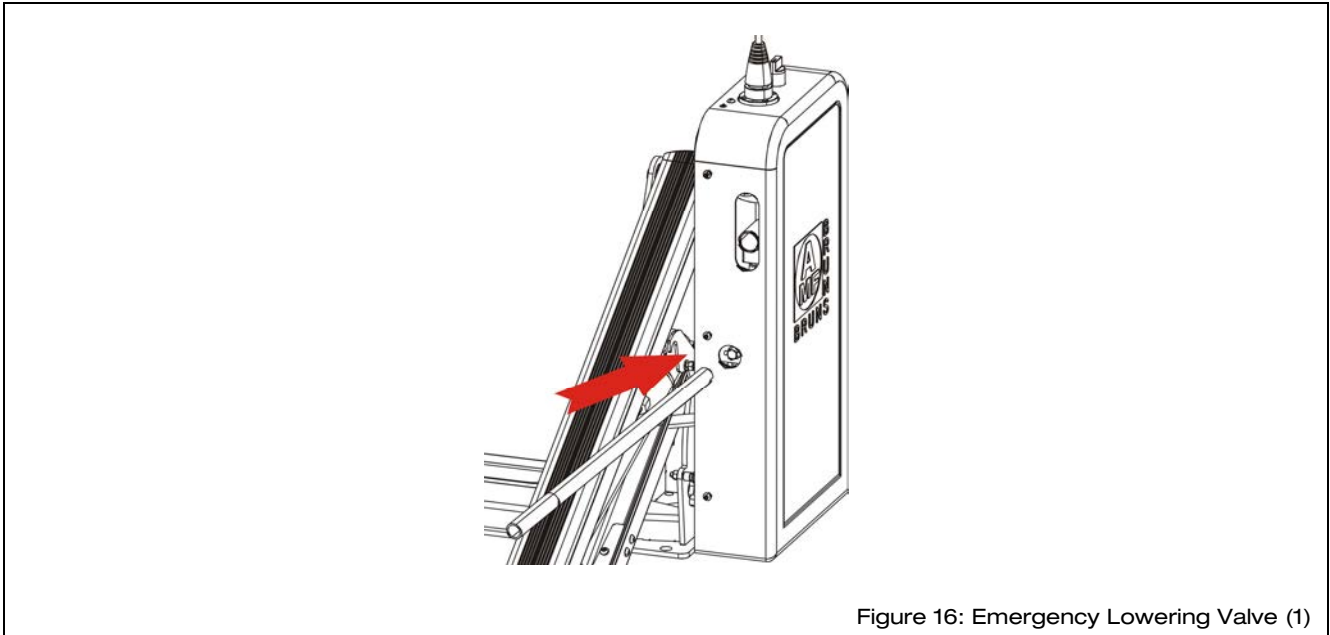


Figure 16: Emergency Lowering Valve (1)

- ⇒ Open the emergency lowering valve by turning the lever slowly in an anti-clockwise direction (see Figure 17).

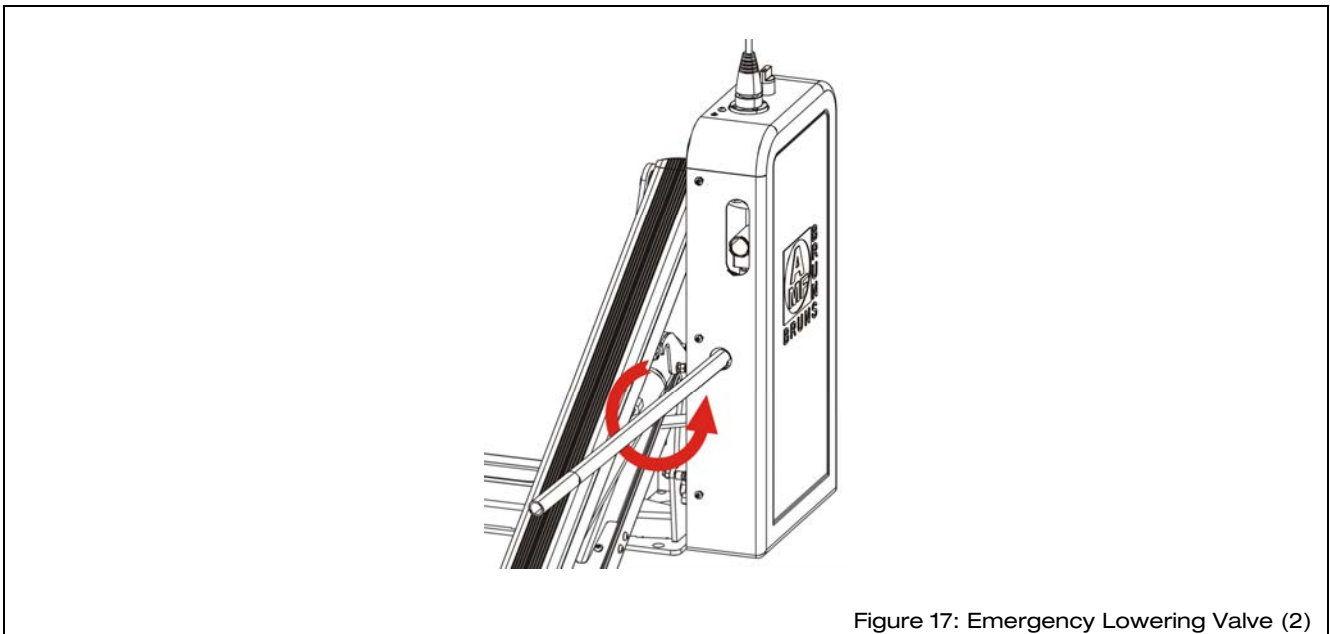


Figure 17: Emergency Lowering Valve (2)

The platform lowers.

-
- ⇒ When the platform has reached the desired position, close the emergency lowering valve by turning the operating lever in a clockwise direction.
 - ⇒ Remove the lever from the emergency lowering valve.
 - ⇒ Replace the operating lever to its stowage clips.

7 Maintenance and Repair

7.1 Safety Regulations for Maintenance and Repair



Read the safety information before carrying out maintenance and repair work (see Chapter 1, page 8).



WARNING!

Risk of injury if protective and safety devices are removed or are defective.

If protective and safety devices are removed, they will no longer fulfil their function.

Therefore:

- Always refit protective and safety devices if they have been removed (e. g. for maintenance or repair purposes).
-



WARNING!

Risk of injury and material damage if maintenance and repair work is not carried out correctly.

Therefore:

- Only allow specialist personnel to carry out maintenance and repair work.
 - If repair work has been carried out on load bearing parts, this must be inspected by a technical expert.
-



WARNING!

Risk of personal injury and material damage through the springs.

If springs under tension are removed or if gas pressure springs are taken apart, the sudden, uncontrolled release of spring tension can cause severe injuries or material damage.

Therefore:

- Do not remove springs if they are under tension.
 - Do not take gas pressure springs apart. They are under high pressure.
-



WARNING!

Risk of personal injury or material damage if inferior quality spare parts are used.

The manufacturer will accept no liability whatsoever for damage or injury caused by the use of non-original spare parts or spare parts that have not been approved of by the manufacturer.

Therefore:

- Use only original spare parts or spare parts that have been approved of by the manufacturer.
-

7.2 Routine Maintenance Work

The maintenance schedule below lists the maintenance work that must be carried out at regular intervals.

Contact the customer service department for maintenance work that must be carried out by a specialist (see Chapter 15, page 70).

7.2.1 Service life of components

The service life of the hydraulic hoses is four years.

Maintenance-free components are designed to have the same service life as the entire service life of the linear lift.

7.2.2 Maintenance schedule

Interval	Activity	see
Daily	Functional test of the safety devices.	Section 7.3, page 36
	Carry out a visual inspection for damage or faults. Initiate repairs if necessary.	
	Inspect the wearing plates on the underside of the platform for wear. Replace the wearing plates if necessary.	
	Listen for any unusual noises and look for signs of juddering when operating the linear lift. Initiate repairs if necessary.	
weekly	Inspect the contact points of the torsion springs 100° on the shaft of the platform for wear and sufficient lubrication (grease). Apply grease if necessary.	
yearly	Inspect the hydraulic hoses.	Section 7.4, page 36
	Check that all fastenings are secure.	
	Have the linear lift inspected by a technical expert.	Section 7.5, page 36
Every four years	Renew the hydraulic hoses.	
as required	Clean the linear lift.	

7.2.3 Maintenance record

Enter maintenance and repair work that has been carried out into the maintenance record provided for this purpose (see Section 7.6, page 37). This provides a traceable record of maintenance work.

For records of maintenance work over and above this, it is recommended that you keep your own lists.

7.3 Functional Test of the Safety Devices

- ⇒ Check that the guardrails fold down to a vertical position when the platform folds down from the vertical, stowed position.
- ⇒ Check that the guardrails are not loose.
- ⇒ Check that the roll-off guard rises and latches in position when the platform is raised from the ground.
- ⇒ If any of the protective devices do not function correctly, do not use the linear lift until repairs have been effectively carried out.

7.4 Inspection of the Hydraulic Hoses.

The inspection of hydraulic hoses extends to:

- Seating of the fastenings
 - Damage
 - Ageing
 - Brittleness
 - Porosity
- ⇒ If damage is found, have the hydraulic hoses replaced.

7.5 Yearly Inspection

The yearly inspection by a technical expert is basically a visual inspection and functional test. It extends to:

- The condition of all components and devices,
- An inspection for modifications that have been made to the linear lift,
- The completeness and effectiveness of protective and safety devices and
- The completeness of the inspection log.



For detailed information regarding the yearly inspection of the linear lift by a technical expert: see Chapter 12, "Inspection Log", page 56.

8 De-Commissioning and Conservation

For queries regarding de-commissioning and conservation, contact our customer services department (see Chapter 15, page 70).

9 Disposal

When the linear lift's useful life has expired, it must only be disposed of by qualified specialists. The manufacturer will accept no liability for damage caused by incorrect disposal.

10 Faults and Troubleshooting



WARNING!

Risk of injury and material damage if repair work is carried out incorrectly.

Therefore:

- Only allow specialist personnel to carry out repair work.

If faults occur when operating the linear lift, proceed as described in the following troubleshooting table. Contact the customer service department if faults are encountered which cannot be remedied using the information and measures given in the table.

Fault	(possible) Cause	Remedial Measures
The linear lift neither raises nor lowers.	The linear lift is switched OFF.	Switch the linear lift ON at the battery isolation switch.
	The remote control has automatically switched OFF with the lift switched ON.	With the lift switched ON, press the “UP” push-button (1) to switch the remote control ON once again.
	The remote control is defective.	Check the remote control and it’s connections. Replace the remote control if necessary.
	The lowering valve is defective.	Replace the lowering valve.
	The starter switch is defective.	Check the starter switch and replace if necessary.
	The main fuse has blown.	Check the main fuse. Replace the main fuse if necessary.
	The circuit breaker has tripped.	Reset the circuit breaker (see Figure 8, page 19).
The linear lift neither raises nor lowers.	The power supply voltage is defective.	Check the starter battery.
The linear lift folds out and lowers but does not raise.	The remote control is defective.	Check the remote control and it’s connections. Replace the remote control if necessary.
The linear lift folds out and lowers but does not raise.	The starter switch is defective.	Check the starter switch and replace if necessary.
	The emergency lowering valve is open.	Shut the emergency lowering valve.

Fault	(possible) Cause	Remedial Measures
The linear lift folds out but does not lower.	The remote control is defective.	Check the remote control and its connections. Replace the remote control if necessary.
	The lowering valve is defective.	Replace the lowering valve.
	The springs are defective.	Check the springs and replace if necessary.
	The arrester hooks are retaining the platform.	Press the "FOLD" (4) push-button on the remote control. The platform runs to the stowed position releasing the arrester hooks. If the arrester hooks engage every time the linear lift is used: Finely adjust the arrester hook settings (see Section 11.6, page 50).
The linear lift lowers the platform slowly of its own accord.	The lowering valve is defective.	Replace the lowering valve.
	The emergency lowering valve is open.	Shut the emergency lowering valve.
The roll-off guard does not rest cleanly on the ground when the platform has been lowered.	The tilt of the platform is not adjusted correctly.	Finely adjust the roll-off guard (see Section 11.1, page 42).
The transfer plate does not fold down to the floor anchorage.	The transfer plate cable linkage is not adjusted correctly.	Finely adjust the cable linkage (see Section 11.2, page 43).
The transfer plate makes premature contact with the floor anchorage when the platform is raised.		
The segments of a split platform do not rest completely on the ground when the lift is lowered to the ground.	The platform segments are not adjusted correctly.	Finely adjust the platform segments to one another (see Section 11.3, page 44).
The platform is not exactly horizontal when it stops at the embarkation / disembarkation level.	The micro-switches on the same side as the hydraulic aggregate require adjustment.	Finely adjust the micro-switches (see Section 11.7, page 51).
The linear lift rattles when driving.	The stoppers on the platform do not rest snugly against the lifting unit in the stowed position.	Finely adjust the elbow joints (see Section 11.4, page 45).



Fault	(possible) Cause	Remedial Measures
The linear lift rattles when driving.	The micro-switch on the opposite side to the hydraulic aggregate requires adjustment.	Finely adjust the micro-switch (see Section 11.7, page 51).

11 Fine Adjustments



CAUTION!

Risk of injury and material damage if the linear lift is not adjusted correctly.

Injuries and material damage can be caused if the linear lift is not adjusted correctly.

Therefore:

- Fine adjustments to the linear lift must only be carried out with the appropriate technical training and experience.

11.1 Roll-Off Guard



NOTE

On a linear lift with split platform, the platform segments must be re-adjusted after the roll-off guard has been adjusted (see Section 11.3, page 44).

- ⇒ Park the vehicle on a level surface.
- ⇒ Fully lower the platform.

When the platform has been fully lowered, the roll-off guard must fold down to the ground. The edge of the roll-off guard must be in contact with the ground (see Figure 18).

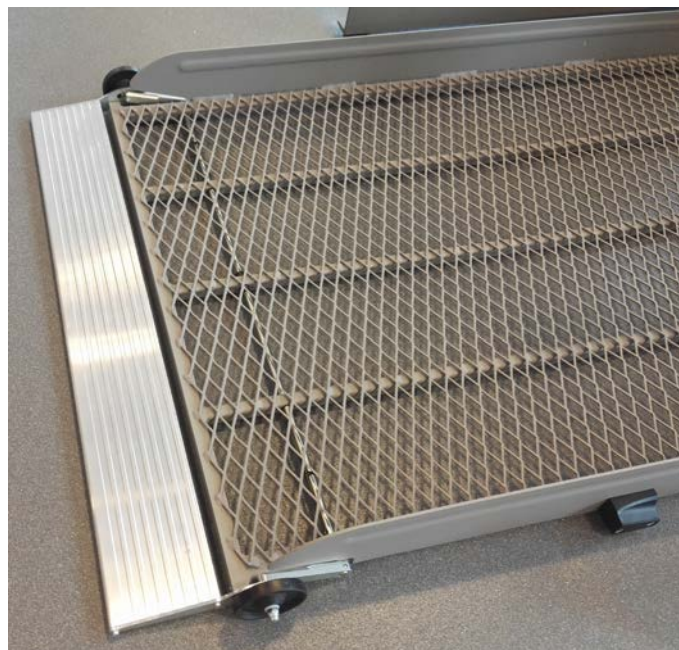


Figure 18: Roll-Off Guard Folded Down

If the edge is not in contact with the ground:

- ⇒ Raise the platform slightly.

- ⇒ Place a wooden beam, a pallet or similar item under the platform, in the area of the roll-off guard.
- ⇒ Lower the platform once again, until it rests on the pallet.
- ⇒ The stopper bolts on the platform are now relieved of pressure.
- ⇒ Loosen the locking nuts on both stopper bolts (see Figure 19).

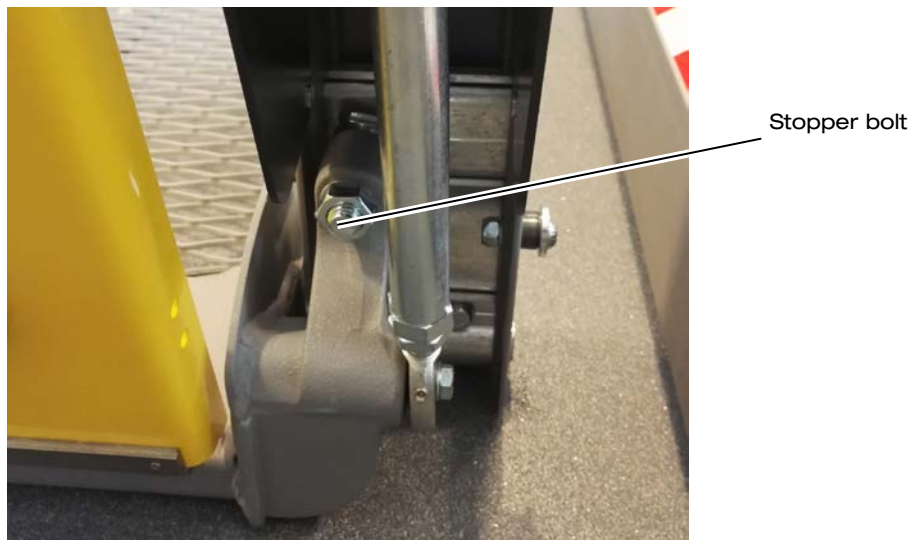


Figure 19: Stopper Bolt

- ⇒ Turn the stopper bolts, to alter the angle of tilt of the platform.
- ⇒ Adjust the stopper bolts evenly on both sides.
- ⇒ Tighten the locking nuts once again.
- ⇒ Raise the platform slightly and remove the pallet.
- ⇒ Fully lower the platform once again.
- ⇒ Check the gap between the edge of the roll-off guard and the ground.
- ⇒ Repeat the adjustment procedure, until the platform has the correct angle of tilt and the roll-off guard rests cleanly on the ground.

11.2 Transfer Plate

Movement of the transfer plate is controlled by a cable linkage. If the cable linkage is too loosely adjusted, the transfer plate makes premature contact with the floor anchorage when the platform is raised. If the cable linkage is too tightly adjusted, the transfer plate does not rest on the floor anchorage when the platform is at the embarkation / disembarkation level.

Transfer plates that are attached to the floor anchorage rather than to the platform do not possess a cable linkage.

In order to adjust the cable linkage:

- ⇒ Raise the platform to the embarkation / disembarkation position (see Figure 2, page 14).
- ⇒ Raise the transfer plate to take the weight off the cable linkage.
- ⇒ Loosen the locking nut on the cable linkage (see Figure 20).



- ⇒ Turn the turn-buckle on the end of the cable linkage to shorten or lengthen the cable linkage.
- ⇒ Tighten the locking nut once again.
- ⇒ Lower the platform slightly, and then raise it to the embarkation / disembarkation level again (see Figure 2, page 14).
- ⇒ Repeat the adjustment procedure if necessary.

11.3 Split Platform: Adjusting the Platform Segments

The segments of a split platform must be adjusted such that they interlock. The swivel joints must not be loaded when the platform is in the fully lowered position (the platform segments must be completely in contact with the ground).

- ⇒ Raise the platform to the embarkation / disembarkation position (see Section Figure 2, page 14).
- ⇒ Loosen the locking nuts on the swivel joints at both sides. Hold the hexagonal section of the bolt firmly when doing so (see Figure 21).

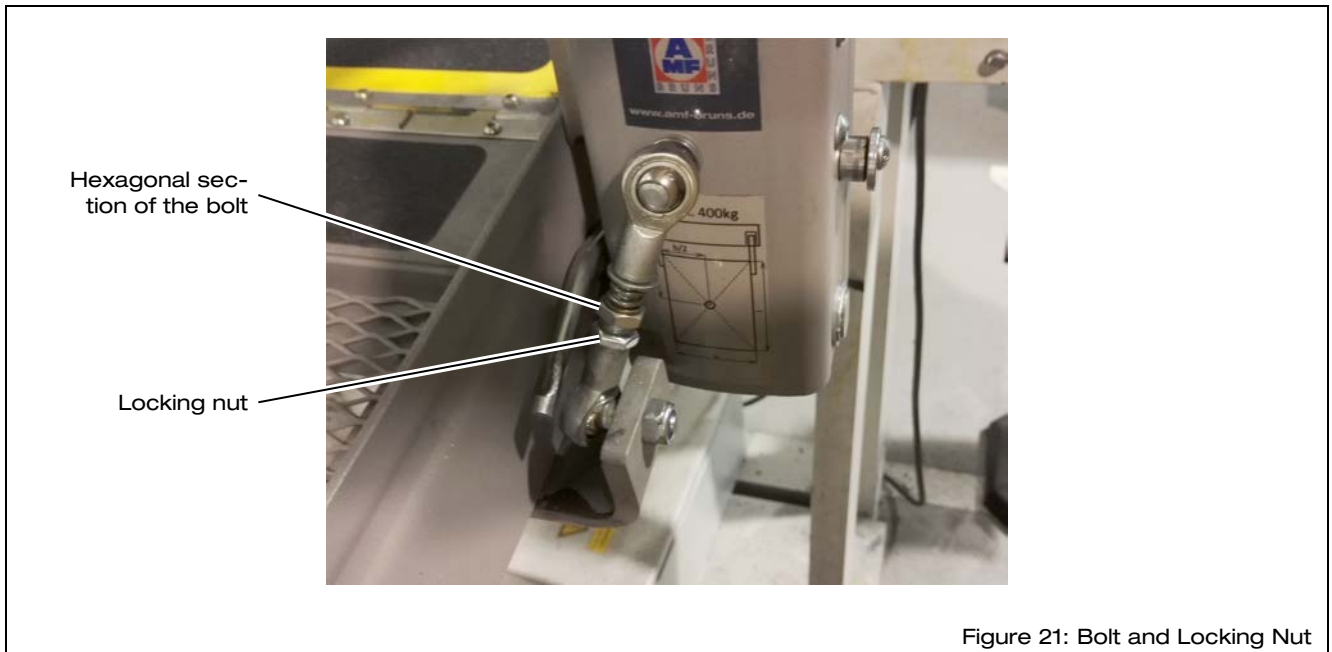


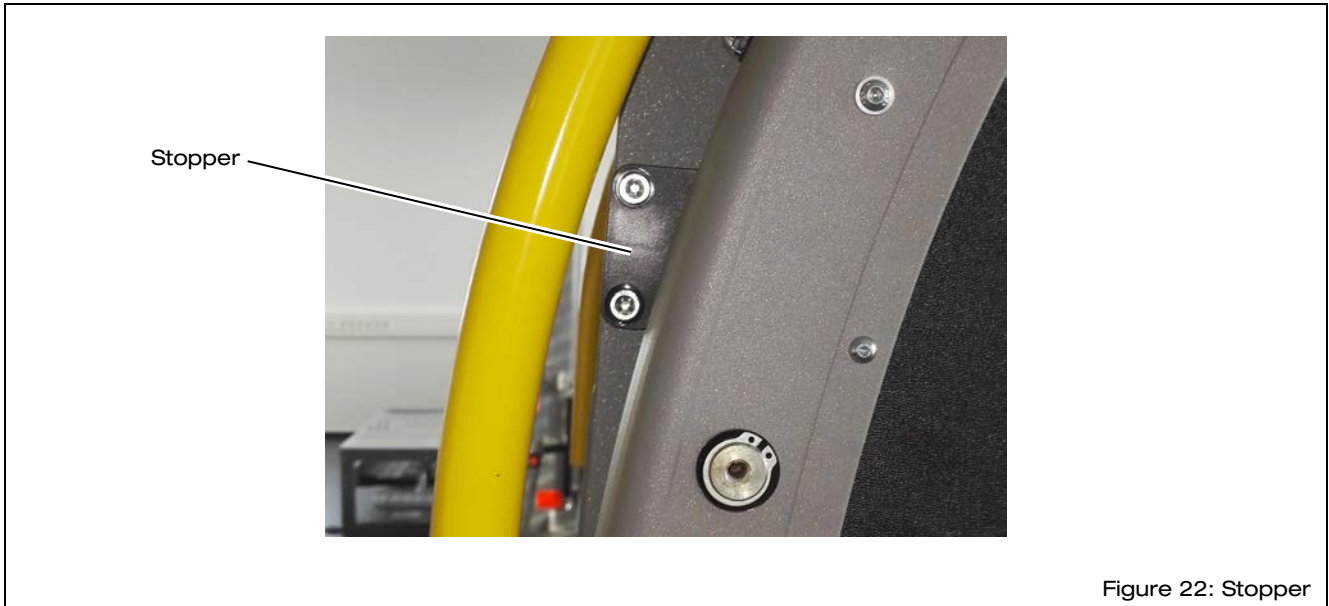
Figure 21: Bolt and Locking Nut

- ⇒ Adjust the platform segments by turning the hexagonal section of the bolts:
 - ⇒ Turn the bolts in a clockwise direction to lower the platform segments.
 - ⇒ Turn the bolts in an anti-clockwise direction to raise the platform segments.
- ⇒ Tighten the locking nuts once again. Hold the hexagonal section of the bolt firmly when doing so.

11.4 Elbow Joints

When the platform has been fully run to the vertical, stowed position, the side stoppers must rest snugly against the lifting unit (see Figure 22, page 46).

If this is not the case, the platform will rattle when driving.



⇒ Lower the platform from the vertical, stowed position, until the platform is horizontal and the elbow joints are fully relieved (see Section 5.5, page 25).

⇒ Switch the linear lift OFF at the battery isolation switch (5).

The exact position of the platform in the vertical, stowed position is regulated by the length of the connecting tubes (see Figure 23, page 47).

⇒ Loosen the locking nuts on the top and bottom connection eyes of the connecting tubes (see Figure 23, page 47, and Figure 24, page 47).



NOTE

The bottom connection eye locking nuts have left-hand threads and the top connecting eye locking nuts have tight-hand threads.

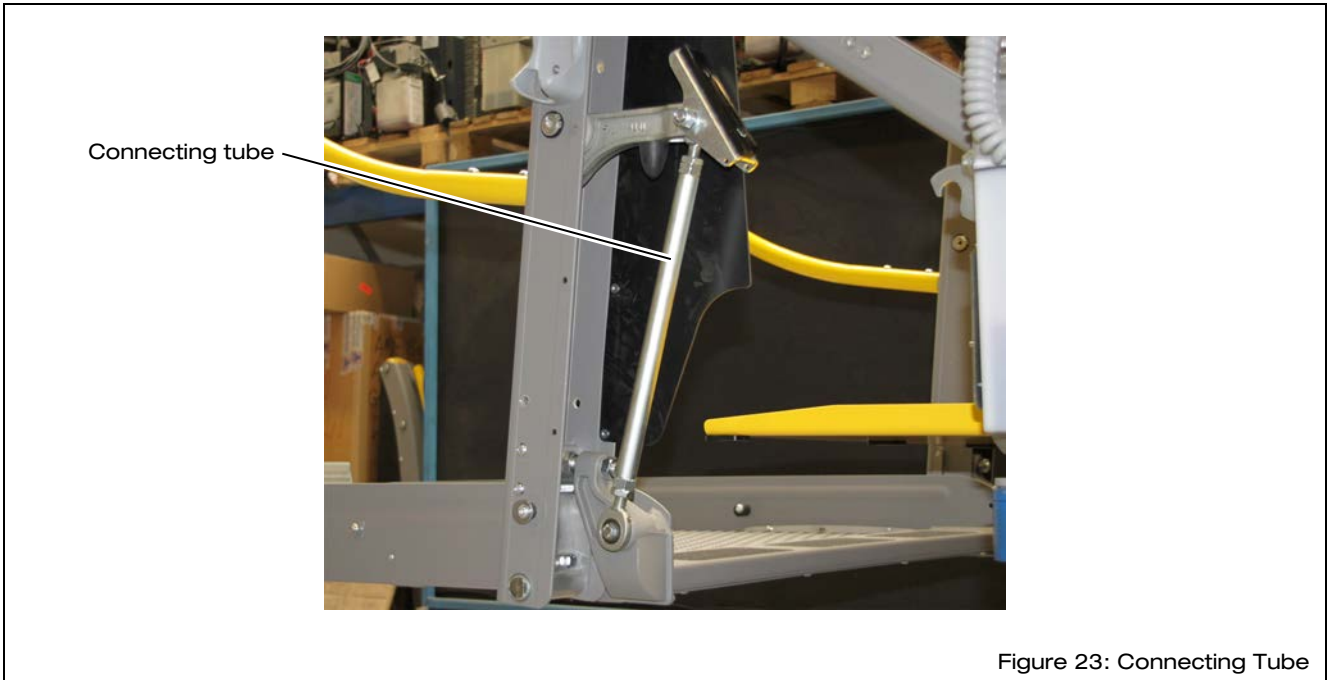


Figure 23: Connecting Tube

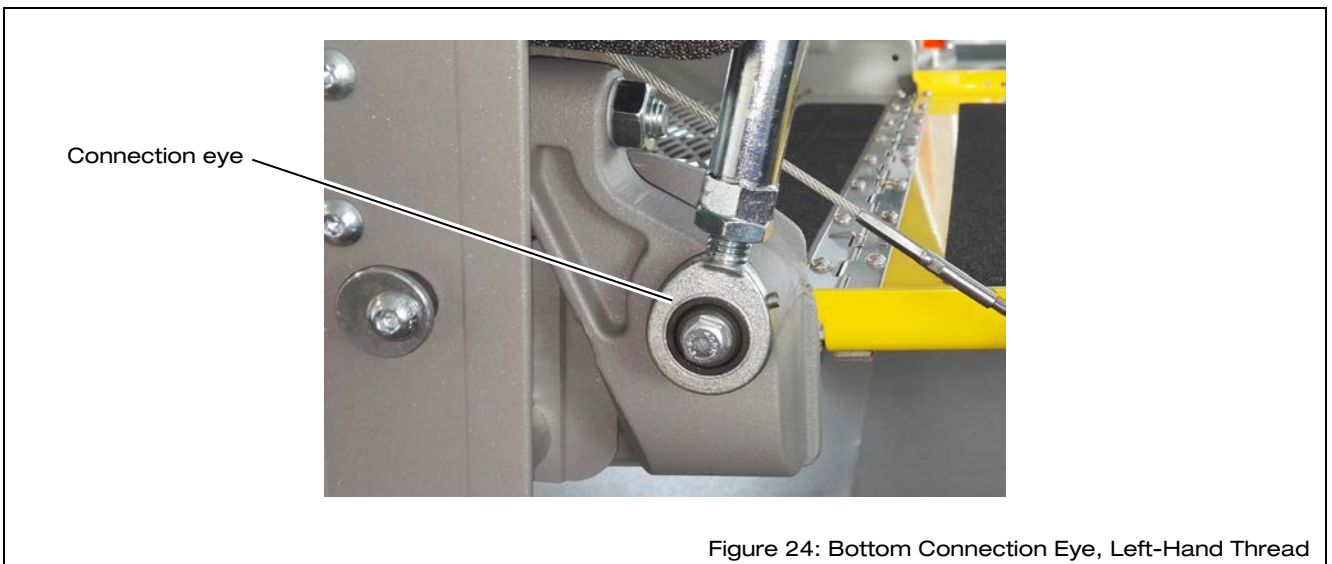
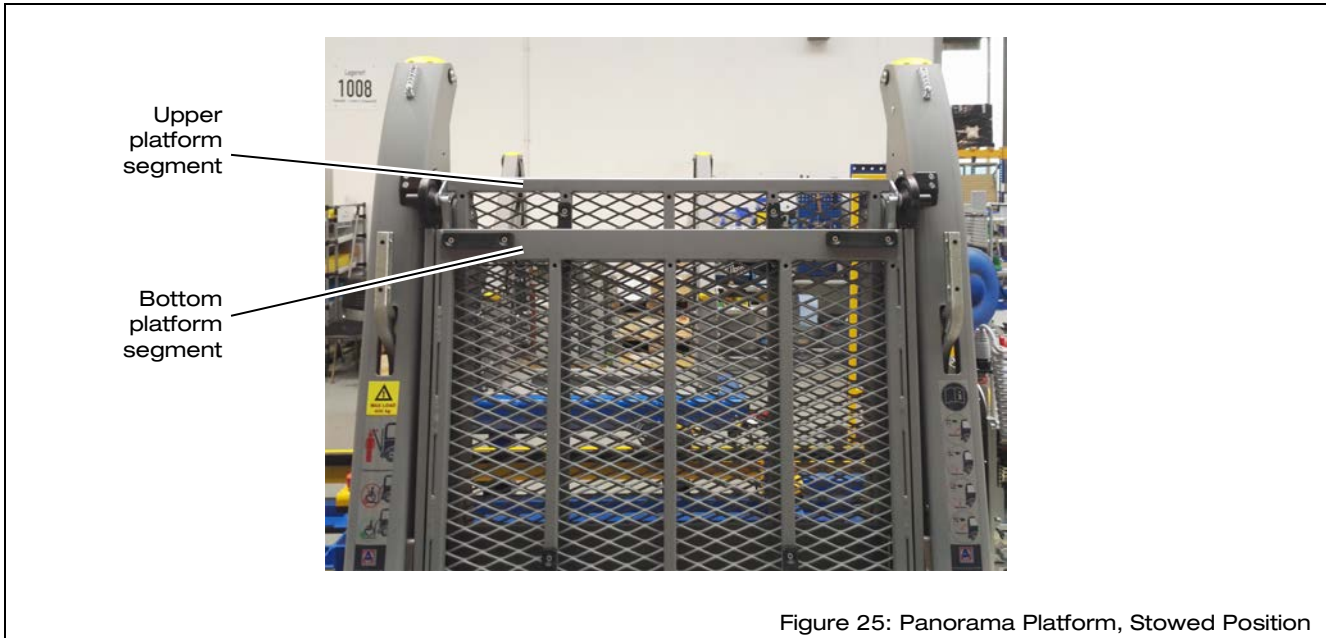


Figure 24: Bottom Connection Eye, Left-Hand Thread

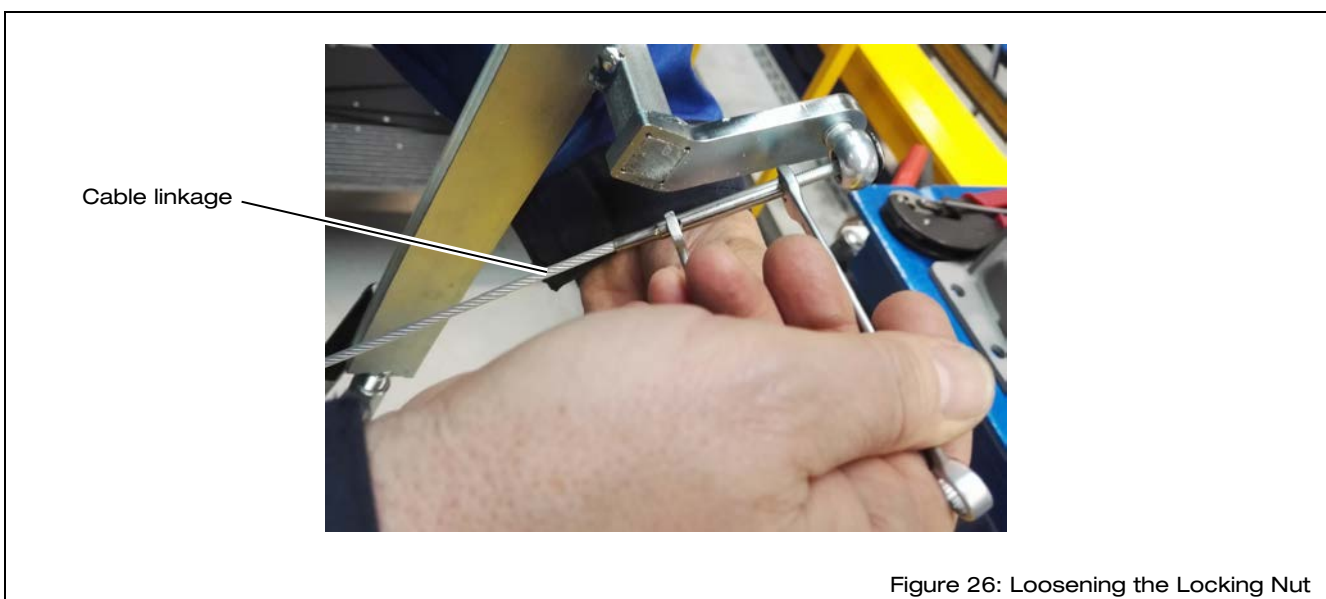
- ⇒ Turn the connecting tube in a clockwise direction in order to give the platform a tighter fit when in the vertical, stowed position. Turn both connecting tubes an equal number of times.
- ⇒ Tighten the locking nuts once again.
- ⇒ Run the platform to the vertical, stowed position.
- ⇒ Check that the stoppers rest snugly against the lifting unit (see Figure 22, page 46).
- ⇒ Repeat the adjustment procedure if necessary.

11.5 Adjusting the Panorama Platform

If the upper segment of a panorama platform does not run evenly into the stowed position when being raised, the panorama platform must be adjusted. If the platform rattles when driving, it must also be adjusted (see Figure 25).



- ⇒ Run the linear lift out completely, until the platform rests on the ground and the platform segments are completely extended.
- ⇒ Loosen the locking nuts on the cable linkages on both sides (see Figure 26).



The length of the cable linkages determines the length of the platform in the stowed position.

- ⇒ Adjust the length of the cable linkages by turning the adjuster screws (see Figure 27):
 - ⇒ Turn the screws in a clockwise direction to shorten the cable linkages.
 - ⇒ Turn the screws in an anti-clockwise direction to lengthen the cable linkages.

When the platform is in the stowed position, the chocks between the two segments of the platform must interlock (see Figure 28). The platform segments must be exactly parallel to one another (see Figure 29, page 50).

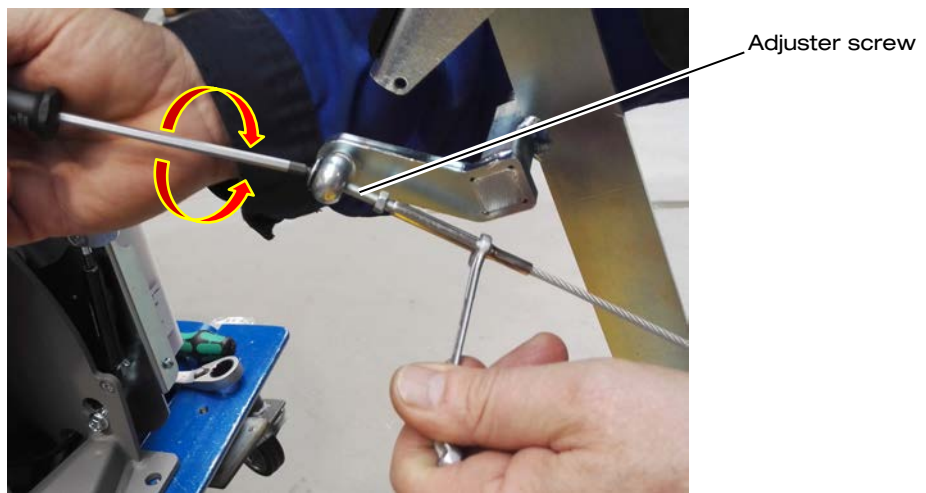


Figure 27: Adjusting the Cable Linkages

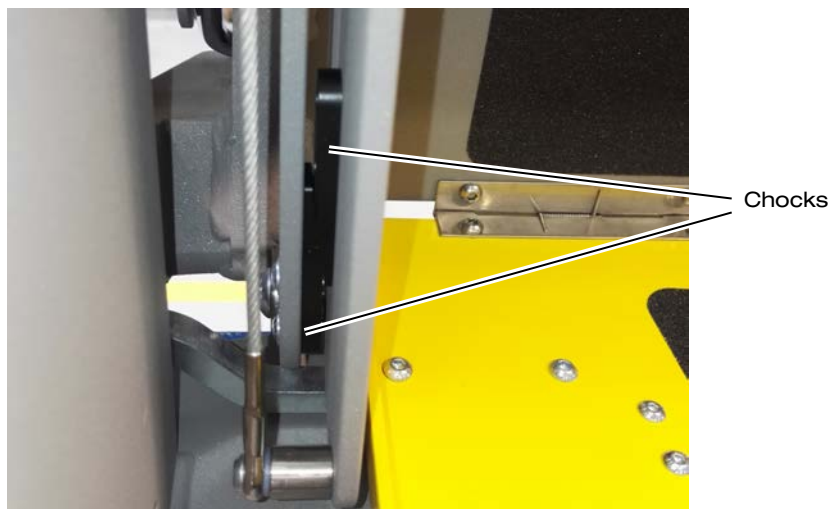


Figure 28: Chocks

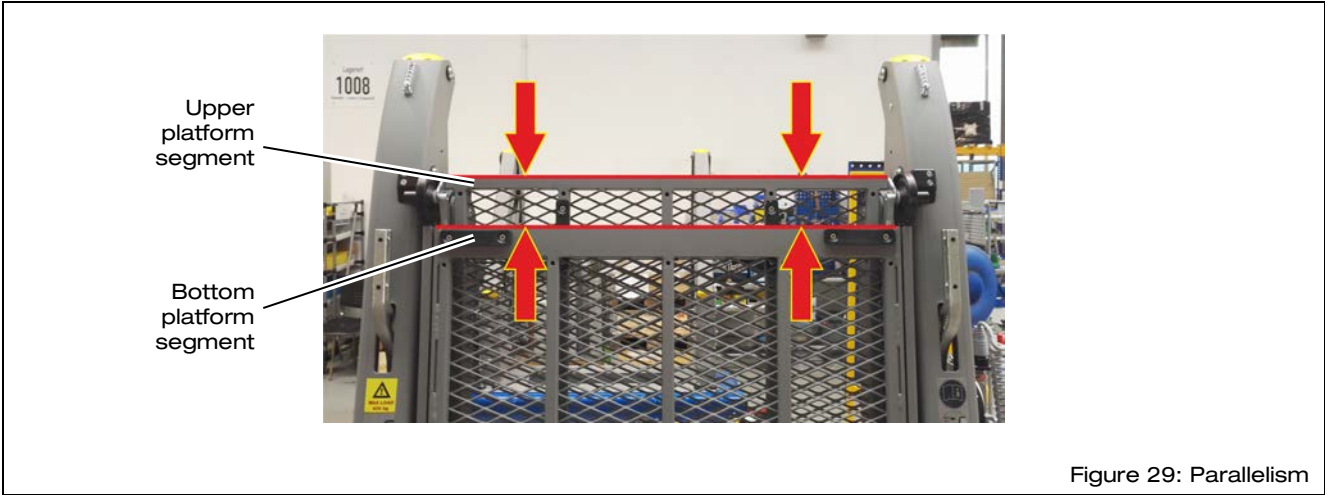


Figure 29: Parallelim

11.6 Arrester Hooks

If the linear lift is not used for a longer period of time, the pressure in the hydraulic cylinders will drop. The platform can then fall back, against the rear door. When the rear door is opened, the platform can drop down. In order to prevent this from happening, arrester hooks are fitted to both sides of the linear lift. These engage when the platform tilts in the direction of the rear door.

- ⇒ Deploy the platform.
- ⇒ Check the arrester hook connection points for freedom of movement (see Figure 30).



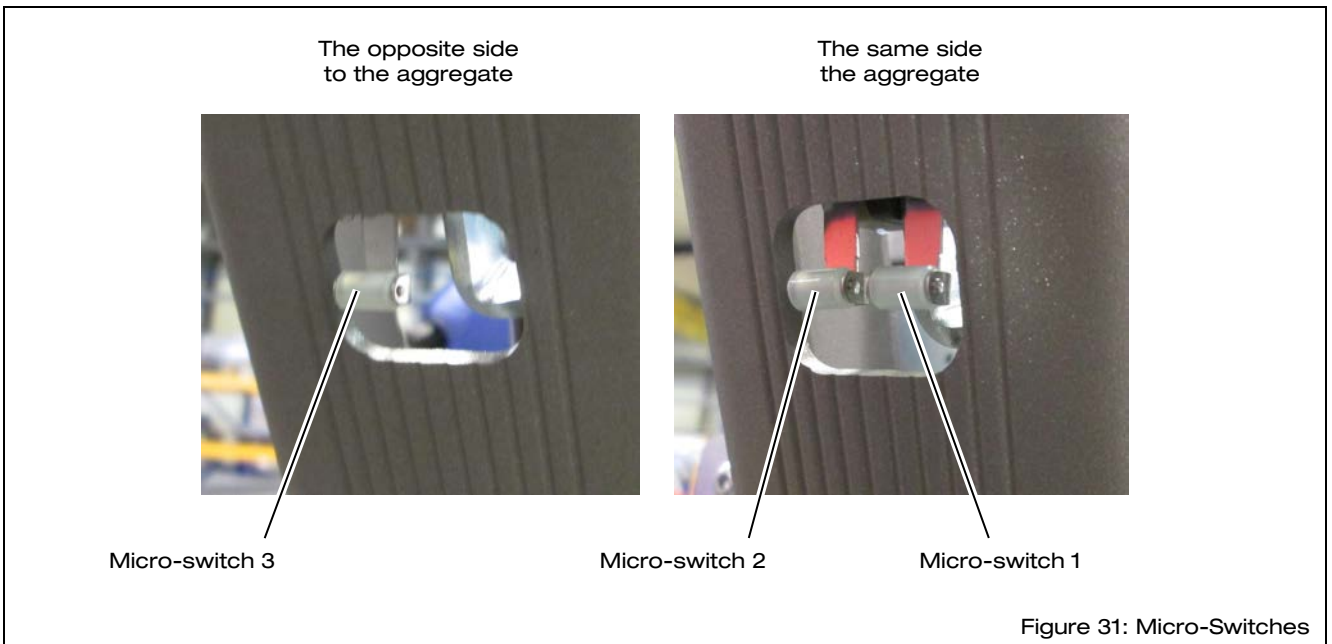
Figure 30: Arrester Hooks

- ⇒ If there is no freedom of movement, slacken the connection points a little.
- ⇒ Clean the connection points if they are dirty.

- ⇒ Run the platform to the stowed position.
- ⇒ Adjust the eccentrics as shown in Figure 30. By doing this, the linear lift has the least possible range of movement before the arrester hooks engage.

11.7 Micro-Switches

A total of three micro-switches are installed in the carrier arms of the linear lift. They are actuated by the abrasion protectors on the elbow joints (see Figure 31 and Figure 32).



The two micro-switches on the aggregate side stop the platform at the embarkation / disembarkation level when it is being raised or lowered.

The micro-switch on the opposite side serves to reduce the closing speed. It opens a hydraulic drive that reduces the force with which the platform is folded from the horizontal to the vertical position.

The micro-switch must be actuated at an angle of tilt of the platform of 5 to 10°.

Immediately before the vertical position is reached, the micro-switch closes the hydraulic valve again. The platform is thereby pushed onto its stowed position with the full force of the hydraulic system. It could otherwise rattle when driving.

Adjusting the micro-switches on the aggregate side

- ⇒ Run the platform to the vertical, stowed position with the “UP” (1) and “FOLD” (4) push-buttons (see Section 5.6, page 27).
- ⇒ Press and hold the “UNFOLD” push-button (3) on the remote control.

The platform lowers to the vertical position at the embarkation / disembarkation level.

Whilst the platform is being lowered, the abrasion protectors on the elbow joints slide along the carrier arms.

The micro-switches are actuated by the abrasion protector. When the abrasion protector has slid so far along the carrier arm that the inner of the two micro-switches is no longer actuated by the abrasion protector, the platform stops automatically.

- ⇒ Release the “UNFOLD” push-button (3) when the platform has stopped.
- ⇒ Check the position of the platform.

The platform must now be exactly horizontal at the embarkation / disembarkation level.

If the platform stops above the embarkation / disembarkation level:

- ⇒ Lower the platform again by pressing the “DOWN” push-button (2), until the abrasion protector on the elbow joint is no longer in contact with the carrier arm.
- ⇒ Loosen the three micro-switch fastening screws (see Figure 33, page 53).



- ⇒ Move the micro-switches in the direction of the platform.
When doing so, make sure that the micro-switches protrude sufficiently from the carrier arm. If not, the abrasion protector will not actuate them.

- ⇒ Tighten the micro-switch fastening screws once again.

If the platform stops below the embarkation / disembarkation level:

- ⇒ Lower the platform again by pressing the “DOWN” push-button (2), until the abrasion protector on the elbow joint is no longer in contact with the carrier arm.
- ⇒ Move the micro-switches in the direction of the hydraulic aggregate.
When doing so, make sure that the micro-switches protrude sufficiently from the carrier arm. If not, the abrasion protector will not actuate them.
- ⇒ Tighten the micro-switch fastening screws once again.
- ⇒ Run the platform to the vertical, stowed position again.
- ⇒ Lower the platform again by pressing the “UNFOLD” push-button (3), until the platform stops automatically.
- ⇒ Check the position of the platform once again.
- ⇒ Repeat the adjustment if the platform is not exactly horizontal.
- ⇒ Fully lower the platform by pressing the “UNFOLD” (3) and “DOWN” (2) push-buttons.
- ⇒ Press and hold the “UP” push-button (1).
- ⇒ Release the “UP” push-button (1) as soon as the platform stops at the embarkation / disembarkation level.

⇒ Check that the abrasion protectors on both elbow joints are firmly in contact with the carrier arms, such that the platform can not rattle.

If the abrasion protectors on the elbow joints are not firmly in contact with the carrier arms, the micro-switches on the aggregate side are either too close to the aggregate or they protrude too far from the carrier arm.

⇒ If this is the case, correct the position of the micro-switches as described above.

⇒ Fully lower the platform by pressing the “UNFOLD” (3) and “DOWN” (2) push-buttons.

⇒ Press and hold the “UP” push-button (1).

⇒ Release the “UP” push-button (1) as soon as the platform stops at the embarkation / disembarkation level.

⇒ Check once again that the abrasion protectors on both elbow joints are firmly in contact with the carrier arms.

⇒ If this is not the case, repeat the adjustment procedure.

Adjusting the micro-switch on the side opposite the aggregate

⇒ Run the platform to the embarkation / disembarkation level by pressing the “UNFOLD” (3) or “UP” (1) push-button.

⇒ Press and hold the “FOLD” push-button (4).

⇒ Release the “FOLD” push-button (4) as soon as the platform has stopped.

If the platform does not reach the vertical, stowed position but stops shortly after the “FOLD” push-button (4) was pressed, the micro-switch is actuated prematurely and must be moved towards the aggregate.

If the platform does not rest firmly against the stops when in the vertical position, the micro-switch is actuated too late and must be moved towards the platform.

⇒ Lower the platform by pressing the “UNFOLD” (3) and “DOWN” (2) push-buttons, until the abrasion protector on the elbow joint is no longer in contact with the carrier arm.

⇒ Loosen the three micro-switch fastening screws (see Figure 33, page 53).

⇒ Make the necessary adjustments.

When doing so, make sure that the micro-switch protrudes sufficiently from the carrier arm. If not, the abrasion protector will not actuate it.

-
- ⇒ Carry out the above checks once again.
 - ⇒ If necessary, re-adjust the micro-switch.

12 Inspection Log

Before using the linear lift for the first time, it must be inspected by a technical expert.

If the linear lift is used commercially or as a public utility, this inspection must be repeated at intervals of not more than one year.

During inspection, faults affecting the safety should be systematically identified and remedial action taken.

The items to be inspected are listed in the inspection list (see Section 12.2, page 58).



A technical expert is someone who, by virtue of their technical training and experience, has sufficient knowledge in the field of lifting platforms and is sufficiently familiar with the relevant national occupational health and safety regulations, accident prevention regulations and recognised rules of sound engineering practice (e.g. BG rules, DIN standards, VDE provisions, technical rules and regulations of other member states of the European Union or Turkey or other signatory states of the Agreement of the European Economic Area) that they are able to assess the safe working condition of such lifting platforms (from: BGR 500).



12.1 Inspection Log Master Data Sheet

linear lift Master Data Sheet

Serial No. /Type*

Number plate

Owner

.....

.....

Year built:

Commissioned on

* see rating plate

12.2 Inspection List

For a routine, yearly inspection by a technical expert (see information, page 56).

Mechanical parts	
Fixtures on the vehicle	All securing points in / on the vehicle are in a perfect, tight condition
Connecting elements	All bolts and screwed connections are in a perfect, tight condition
General	Functional test and visual inspection of the condition of the entire linear lift

Hydraulic system	
Power aggregate	Functional check of the valves
Hydraulic hoses	Inspect all hydraulic hoses and the burst pipe protection for leaks Connections in accordance with the wiring diagram
Hydraulic cylinders	Check for leaks and functionality

Electrical System	
Push-buttons on the remote control	Functional check
Battery isolation switch	Functional check
Electrical cables	Inspection of the connections in accordance with the electrical circuit diagram Inspection of the cables for damage to the insulation



12.3 Inspection Results

Results of the inspection prior to commissioning.

To be observed if installed by a third-party company

Installation inspection for

Serial No. /Type*

Number plate

Installation has been carried out correctly!

Place, date

.....
Installation company / Company stamp

.....
Technical expert / Signature

* see rating plate



Inspection result of a yearly inspection / a re-inspection

Serial No. /Type*

Number plate

Sheet No.

On the linear lift was subject to a yearly inspection in accordance with the inspection list / a re-inspection.

No / the following defects were found:

.....
.....
.....
.....

There are no issues to preclude continued operation / Re-inspection is required.

Place, date

.....
Company / Company stamp

.....
Signature (technical expert)

Note has been taken of the result of the inspection.

All deficiencies have been rectified.

Confirmation by the owner or his representative with date and signature

.....
Place / date

.....
Signature (owner)

* see rating plate



Inspection result of a yearly inspection / a re-inspection

Serial No. /Type*

Number plate

Sheet No.

On the linear lift was subject to a yearly inspection in accordance with the inspection list / a re-inspection.

No / the following defects were found:

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.....
.....

There are no issues to preclude continued operation / Re-inspection is required.

Place, date

.....
Company / Company stamp

.....
Signature (technical expert)

Note has been taken of the result of the inspection.

All deficiencies have been rectified.

Confirmation by the owner or his representative with date and signature

.....
Place / date

.....
Signature (owner)

* see rating plate



Inspection Log

Inspection result of a yearly inspection / a re-inspection

Serial No. /Type*

Number plate

Sheet No.

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No / the following defects were found:

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.....
.....
.....

There are no issues to preclude continued operation / Re-inspection is required.

Place, date

.....
Company / Company stamp

.....
Signature (technical expert)

Note has been taken of the result of the inspection.

All deficiencies have been rectified.

Confirmation by the owner or his representative with date and signature

.....
Place / date

.....
Signature (owner)

* see rating plate



Inspection result of a yearly inspection / a re-inspection

Serial No. /Type*

Number plate

Sheet No.

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There are no issues to preclude continued operation / Re-inspection is required.

Place, date

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Company / Company stamp

.....
Signature (technical expert)

Note has been taken of the result of the inspection.

All deficiencies have been rectified.

Confirmation by the owner or his representative with date and signature

.....
Place / date

.....
Signature (owner)

* see rating plate



Inspection Log

Inspection result of a yearly inspection / a re-inspection

Serial No. /Type*

Number plate

Sheet No.

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No / the following defects were found:

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.....
.....

There are no issues to preclude continued operation / Re-inspection is required.

Place, date

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Company / Company stamp

.....
Signature (technical expert)

Note has been taken of the result of the inspection.

All deficiencies have been rectified.

Confirmation by the owner or his representative with date and signature

.....
Place / date

.....
Signature (owner)

* see rating plate



Inspection result of a yearly inspection / a re-inspection

Serial No. /Type*

Number plate

Sheet No.

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No / the following defects were found:

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.....
.....
.....

There are no issues to preclude continued operation / Re-inspection is required.

Place, date

.....
Company / Company stamp

.....
Signature (technical expert)

Note has been taken of the result of the inspection.

All deficiencies have been rectified.

Confirmation by the owner or his representative with date and signature

.....
Place / date

.....
Signature (owner)

* see rating plate



Inspection result of a yearly inspection / a re-inspection

Serial No. /Type*

Number plate

Sheet No.

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No / the following defects were found:

.....
.....
.....
.....

There are no issues to preclude continued operation / Re-inspection is required.

Place, date

.....
Company / Company stamp

.....
Signature (technical expert)

Note has been taken of the result of the inspection.

All deficiencies have been rectified.

Confirmation by the owner or his representative with date and signature

.....
Place / date

.....
Signature (owner)

* see rating plate

13 Electrical Circuit Diagrams

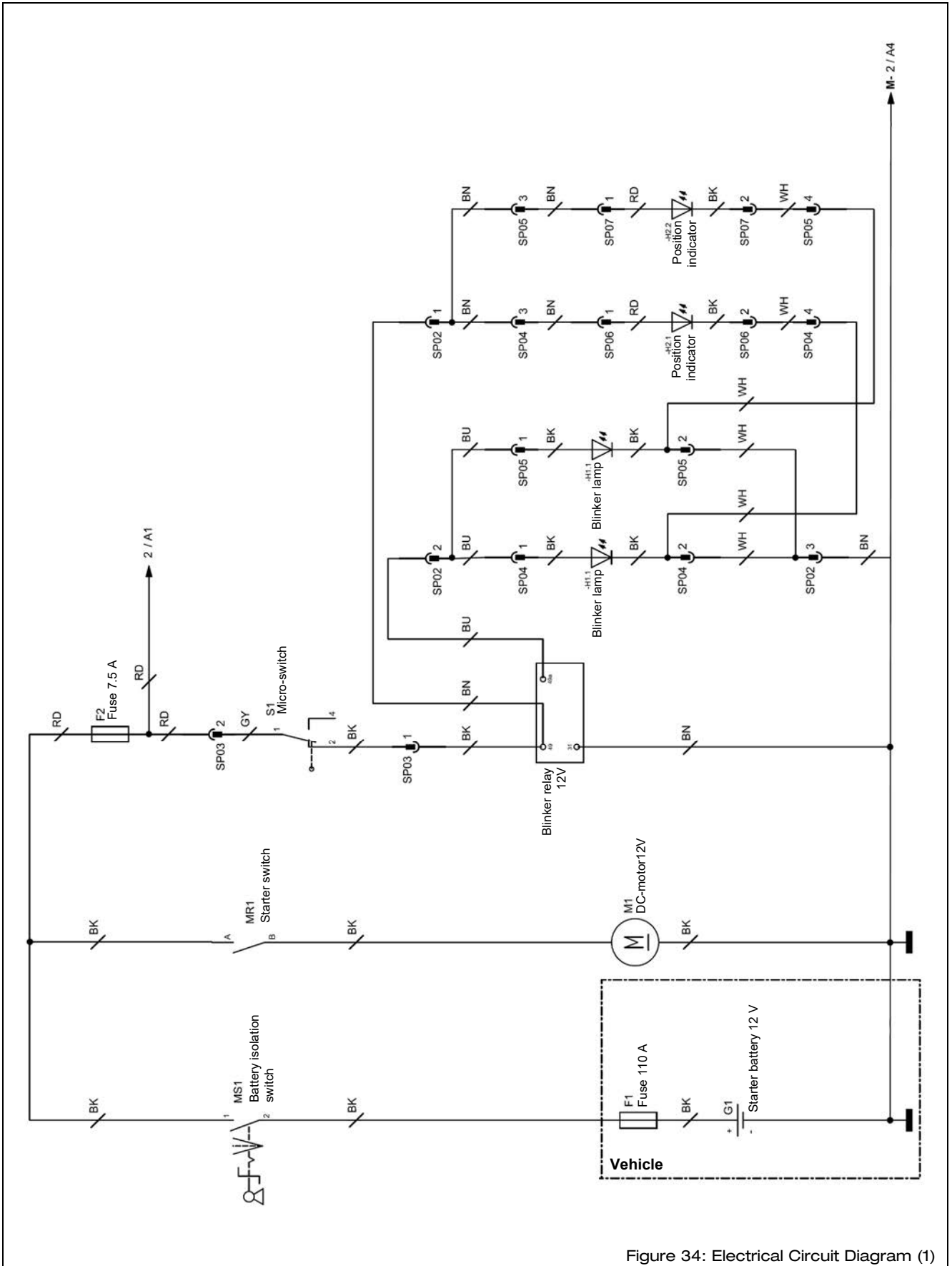


Figure 34: Electrical Circuit Diagram (1)

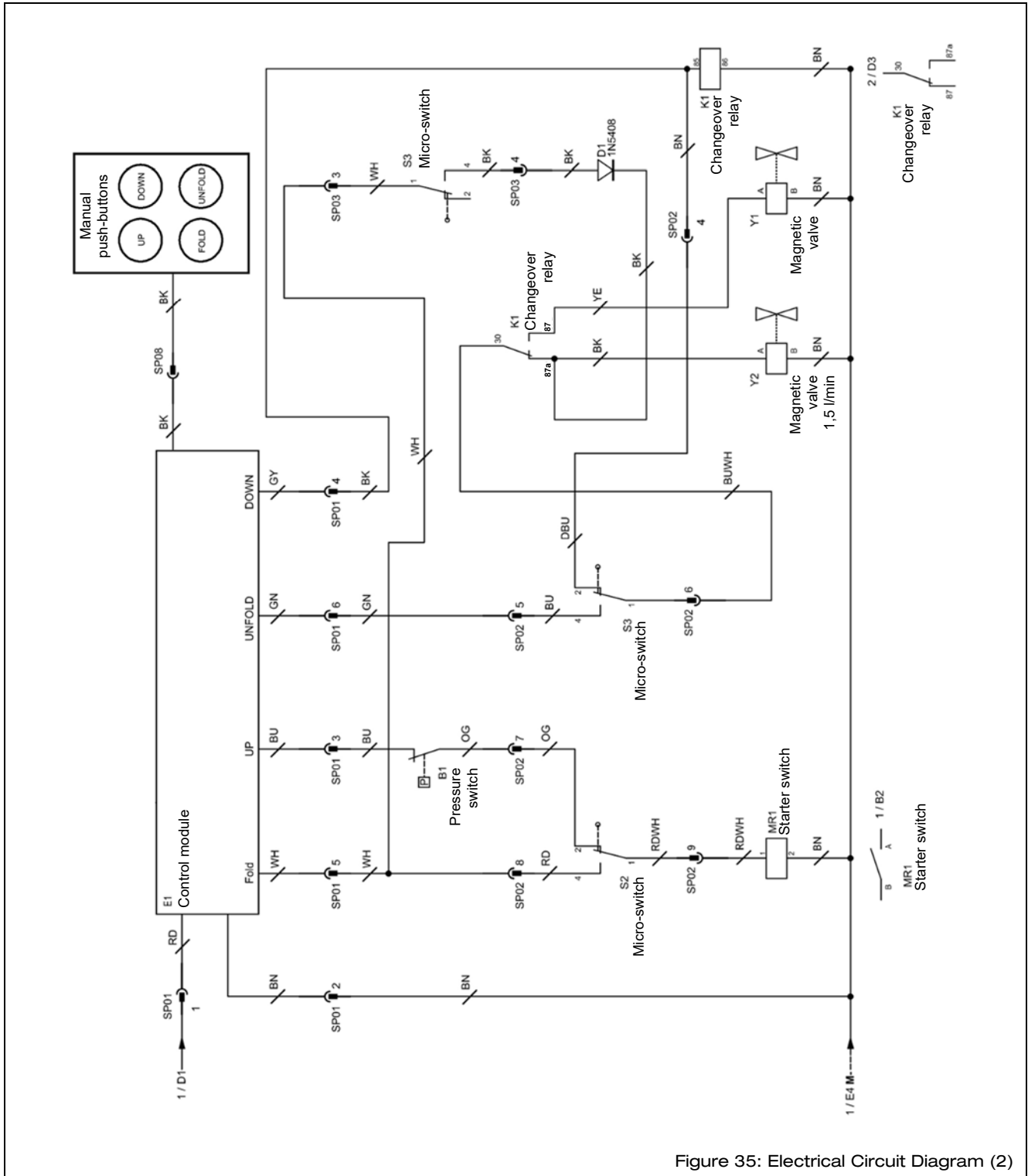


Figure 35: Electrical Circuit Diagram (2)

Colour	Abbreviation (acc. to IEC 60757)
Black	BK
Brown	BN
Red	RD
Orange	OG
Yellow	YE
Green	GN

Colour	Abbreviation (acc. to IEC 60757)
Blue	BU
Grey	GY
White	WH
Dark Blue	DBU
Red-White	RDWH
Blue-White	BUWH

14 Hydraulic Circuit Diagram

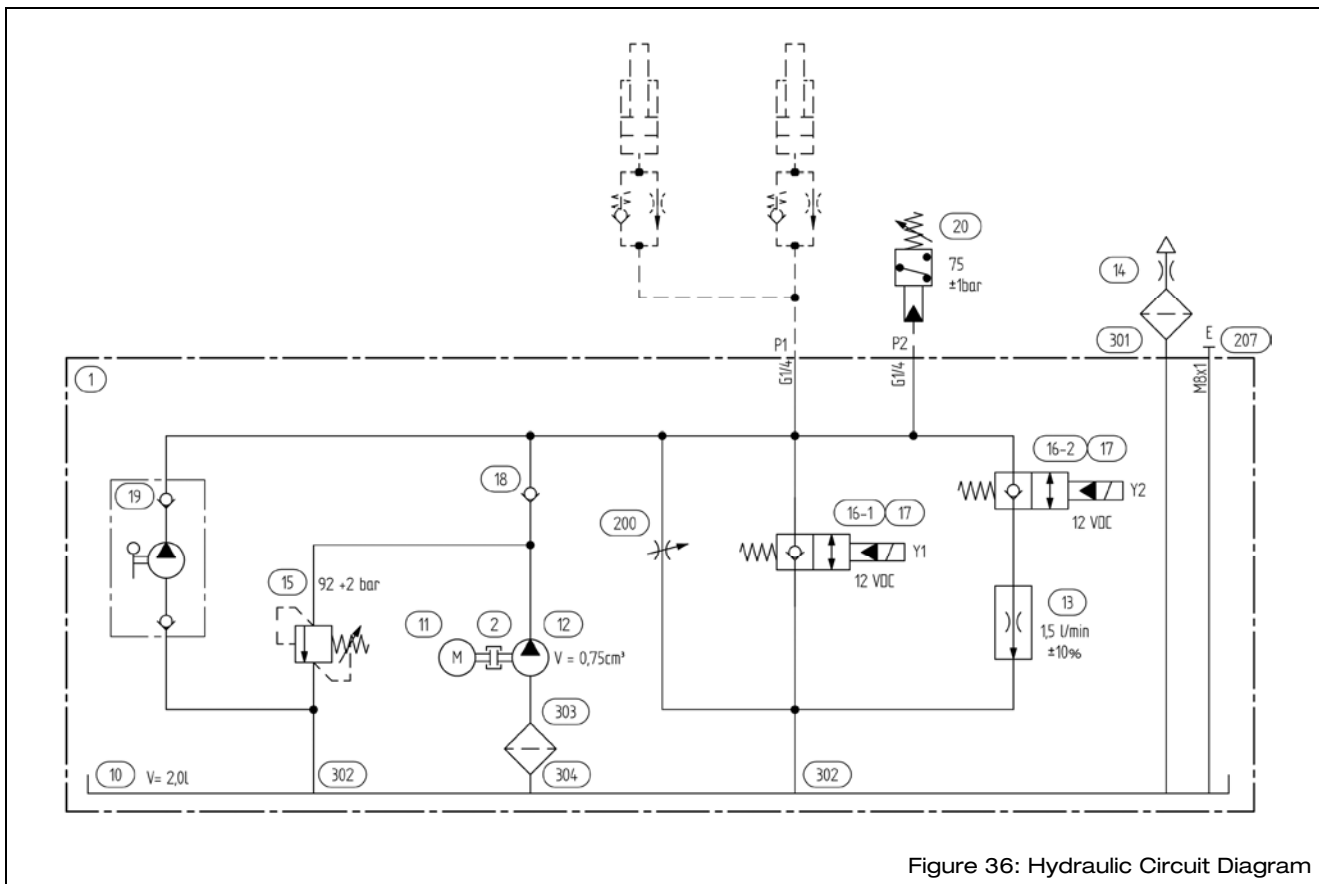


Figure 36: Hydraulic Circuit Diagram

Block material	Aluminium, bright
p (DBV)	92 bar + 2 bar
p (max)	210 bar
Valve voltage	U = 12 V DC
Installation position	vertical

15 Customer Service

The AMF-Bruns customer service department will be more than pleased to assist in ordering spare parts, maintenance and repair work and help with general problems or queries.

The address is:

AMF-Bruns GmbH & Co. KG

Hauptstraße 101

D - 26689 Apen

Tel.: +49 (0) 44 89 / 72 72-22

Fax: +49 (0) 44 89 / 62 45

service.hubmatik@amf-bruns.de

www.amf-bruns.de



Further service information and a spare parts catalogue can be found in the service section of our Internet site.



NOTE

Guarantee work on the linear lift must only be carried out with the prior agreement of AMF-Bruns GmbH & Co. KG.

The costs of such work will not be accepted by AMF-Bruns without prior agreement.

In case of a claim, AMF-Bruns GmbH & Co. KG will require the serial number, the year built as well as a description of the damage and if possible a photograph of the damage.

16 Declaration of Conformity



EC Declaration of Conformity

according to EC Machine Directive 2006/42/EC, Annex II A

We, the manufacturer, hereby declare, that the design and construction of the machine designated below complies with the fundamental health and safety requirements of the EC Machinery Directive 2006/42/EC. This declaration is rendered null and void if unauthorised modifications are made to the machine.

Designation **linear lift**
Type: **AL1 Solid, AL1 Panorama, AL1 Split**

Manufacturer:
Company: **AMF-Bruns GmbH & Co. KG**
Address: **Hauptstraße 101**
 26689 Apen

Harmonised standards applied:
DIN EN 1756-2, DIN EN ISO 12100

Other technical standards and specifications applied:
DIN 32983, DIN 75078-1, BGR 500

Authorised representative for the technical documentation:
Thomas Lakewand (address: see manufacturer's address)

Apen, 01.02.2013

Place, date

A handwritten signature in black ink, appearing to read 'Gerit Bruns', is written over a horizontal line.

Signature

Gerit Bruns, managing director

Details of the signee



AMF-Bruns GmbH & Co. KG | Hauptstraße 101 | D-26689 Apen
Telephone +49 (0) 44 89 / 72 72 22 | Fax +49 (0) 44 89 / 62 45
service.hubmatik@amf-bruns.de

www.amf-bruns.de



DIN EN ISO 9001
REG.-NR. QI 0105027