Operating Instructions

CASSETTE LIFT K70 K90 / K90 ACTIVE

www.amf-bruns.de

Foreword

Dear Reader,

these Operating Instructions provide all information necessary to safely operate the Cassette Lifts K70, K90 and K90 ACTIVE.

The Cassette Lifts are designed and constructed in accordance with state-of-the-art technology and recognised safety standards. Persons and material assets can however still be at risk, as not all danger areas can be eliminated if the functional capability is to be maintained. Accidents caused by these risks can however be prevented by strictly observing these Operating Instructions. Over and above this, the operational efficiency of your Cassette Lift can be used to the full and unnecessary faults can be prevented.

These Operating Instructions only apply to vehicles equipped with a K70, K90 or K90 AKTIVE Cassette Lift.

After reading these Operating Instructions for the first time, keep them in a safe place for future reference over the entire lifetime of the Cassette Lift. Chapter 11 of these Operating Instructions contains an Inspection Log that is required by the technical expert for his / her annual inspection of the Cassette Lift.

If you sell the Cassette Lift, hand these Operating Instructions over to the new owner.

Keep these Operating Instructions in the vehicle so that they can be referred to at any time when problems or questions arise.

All details, figures and dimensions given in these Operating Instructions are non-binding. They cannot be used as the basis for any claims whatsoever.

The Cassette Lift must never be converted or modified in any way, without seeking the prior, written permission of the manufacturer. Unauthorised modifications will render the manufacturer's liability and guarantee null and void.

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 Cassette Lift. If other spare parts are used, liability for consequential damage will be rendered null and void.

Contact the AMF-Bruns GmbH & Co. KG customer service department or your local dealer to order spare parts or accessories (see Chapter 14, page 90).

NOTE

The current version of these Operating Instructions as well as the current versions of supplementary documents (e.g. the relevant Operating Instructions or Instructions for optional equipment) can be found under:

https://www.amf-bruns-behindertenfahrzeuge.de/service/download-portal/

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 can cause severe or fatal injuries if not avoided.

WARNING!

...warns of a potentially dangerous situation, which can cause severe or fatal injuries if not avoided.

CAUTION

...warns of a potentially dangerous situation, which can cause slight injuries, 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 contained 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.

Contents

1 Safety

CAUTION

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

Therefore:

- It is imperative, that these Operating Instructions are read thoroughly before operating your Cassette Lift. Always observe the notes and information contained herein, 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 Cassette 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 Cassette Lift and that the instructions and warnings herein are strictly observed. The safety instructions 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 strictly adhered to.

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.
Observe the information given in these Operating Instructions even when there are no disabled persons or wheelchairs being transported.

1.1 Proper Use

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

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

WARNING

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

Therefore:

- Only use the Cassette Lift for the purpose for which it was intended.
- Always adhere to information given in these Operating Instructions.
- Do not use the Cassette Lift for any other use, particularly those given in Section 1.2, page 9. These are deemed to be improper use.

1.2 Improper Use

Any use other than that described in Section 1.1, page 9 is deemed to be improper use.

These include in particular:

- Using to lift and lower goods.
- Using to lift and lower persons who are not seated in a wheelchair,
- If operated by persons who do not fulfil the necessary requirements (see Section 1.3).
- Operation when safety-relevant faults exist or if in a faulty condition.

1.3 User Requirements

The Cassette Lift must only be handled by persons who:

- have been instructed in how to operate the Cassette Lift,
- who have read and understood these Operating Instructions and
- have the technical knowledge to operate the wheelchair's brakes and switch the motors of electrically driven wheelchairs ON and OFF.

Over and above this, the following applies if the Cassette Lift is used commercially or communally:

The Cassette Lift must only be operated by persons who:

- who are of legal age,
- who have been expressly assigned to do so by the owner and
- 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 Cassette Lift must only be carried out by persons with the corresponding technical training and experience.

1.4 Product Monitoring

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

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

NOTE

Guarantee work on the Cassette 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.

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 Cassette Lift.

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

Therefore:

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

1.6 Safety Devices

1.6.1 Roll-off guard

As soon as the platform is raised from the ground, the roll-off guard rises. This prevents the passenger in their wheelchair from rolling backwards off the platform.

1.6.2 Signalling systems

The Cassette Lift gives a warning sound when the platform extends from the cassette. Blinkers are fitted to both sides of the platform. These signalling systems prevent hazards that are caused by the platform being overlooked.

1.6.3 Door contact switch

A door contact switch is fitted to the vehicle door, above the Cassette Lift. It disables all functions of the Cassette Lift when the door is closed. This prevents the Cassette Lift from being operated inadvertently or by unauthorised persons.

1.7 Safety and Accident Prevention Regulations

Adhere to the following notes in order to prevent personal injuries and material damage.

- The Cassette Lift must only be operated if all safety and protective devices are correctly fitted (see Section 1.6). These devices must only be removed 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 risk of injury.
- The Cassette 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 9).
- The owner is responsible for ensuring that proper use is adhered to, in particular that the Cassette Lift is only operated by authorised persons.
- If the access ramp is used commercially or as a public utility, the owner must ensure that operating personnel are familiar with the operation of the access ramp under all operating conditions by giving training and familiarisation courses.
- It is forbidden for persons to ride on the platform if they are not in a wheelchair.

- Proper use of the Cassette Lift also includes adherence to the specified maintenance and repair work, in particular the strict adherence to the maintenance intervals (see Chapter 5.5, page 39). If such work is not carried out, trouble-free operation cannot be guaranteed. There is a risk of personal injury and material damage being caused. We recommend that maintenance records are kept.
- The Cassette Lift must be inspected by a technical expert after it has been installed. During the inspection, faults affecting the safety should be systematically identified and remedial action taken (see "Inspection Log", page 70).
  This inspection must be repeated at intervals of not more than one year if the Cassette Lift is used commercially or communally.
  AMF-Bruns recommends that this annual inspection is also carried out if the Cassette Lift is used privately.
- An inspection must also be carried out by a technical expert before the Cassette Lift is put back into service if modifications are made to the construction or major repairs are carried out on load-bearing parts of the Cassette Lift.
- The Cassette Lift must not be operated in a faulty condition, as severe injuries may be caused by this. If faults occur, do not use the Cassette Lift until repairs have been effected.
- Do not deposit any items on the Cassette Lift. Persons can suffer injuries if such objects fall off the step.
- Switch the Cassette Lift OFF before carrying out maintenance or repair work, this includes cleaning work. Make certain that no other person can switch the Cassette 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 and accessories that have been approved of by the manufacturer. If non-original or non-approved spare parts are used, liability for the consequences will be rendered null and void.

2 Description

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

The main components of the Cassette Lift are:

- the platform,
- mechanics and hydraulics with carrier arms,
- the cassette and
- the operating controls.

The aim of this chapter is to illustrate the construction and function of the Cassette Lift. For this purpose, the individual assemblies and components are described in the Sections that follow.

2.1 Layout and Function

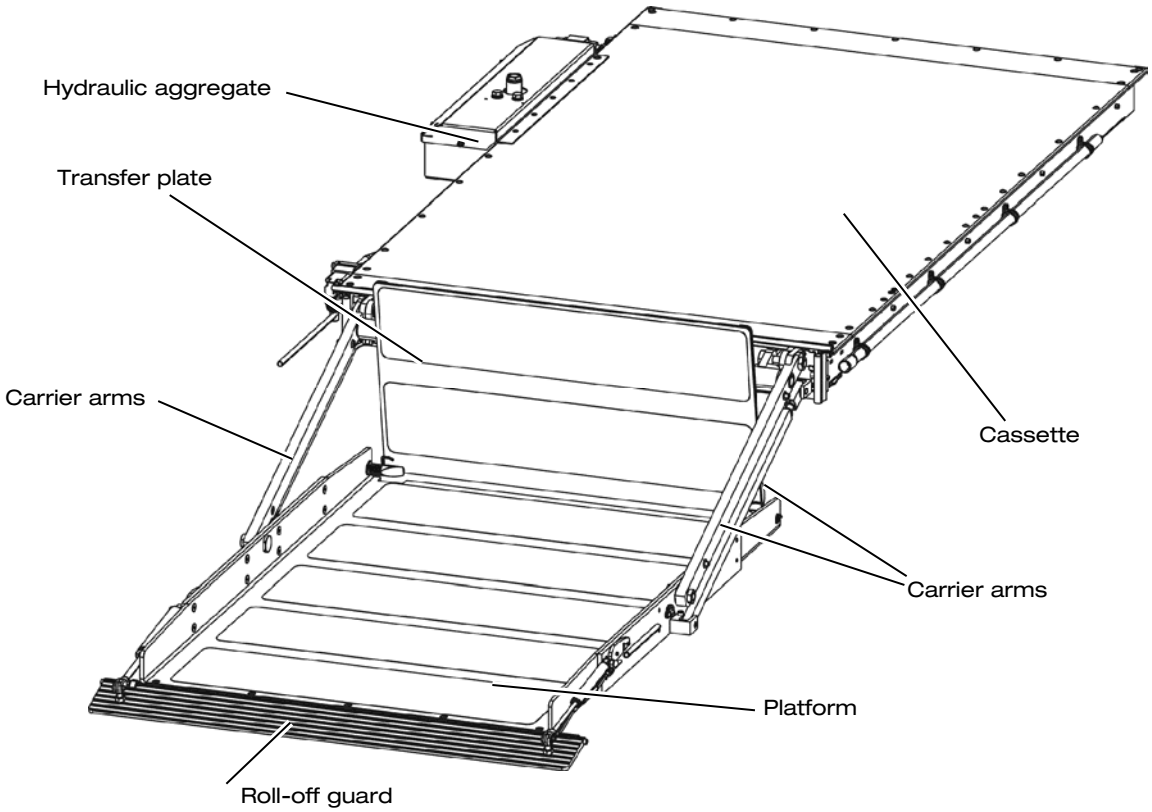

Figure 1: Cassette Lifts K70 and K90

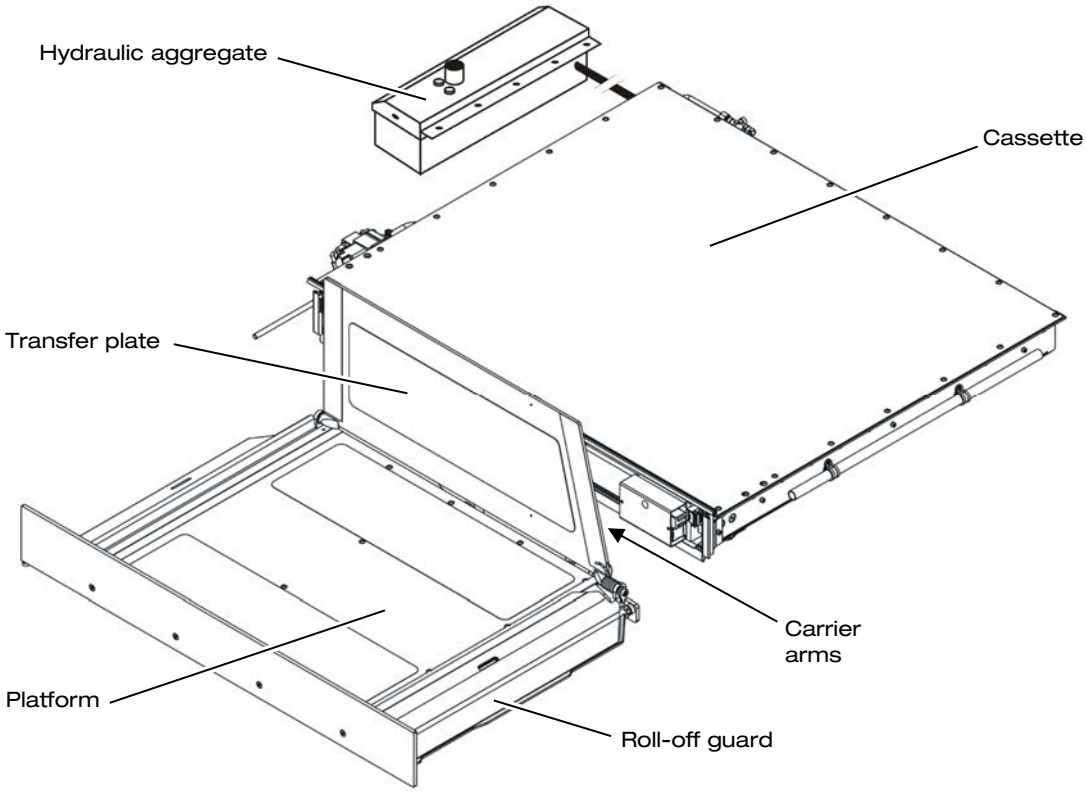

Figure 2: Cassette Lift K90 ACTIVE

2.1.1 Platform

The platforms on the Cassette Lifts K70, K90 and K90 ACTIVE are of differing design:

With the K70 and K90, the wheelchair is pushed onto the platform in the direction of the door of the vehicle, below which the Cassette Lift is installed (see Figure 3).

Figure 3: Cassette Lifts K70 and K90, Platform Access

With the K90 ACTIVE, the wheelchair is pushed onto the platform parallel to the vehicle, in the direction of the rear of the vehicle (see Figure 4).

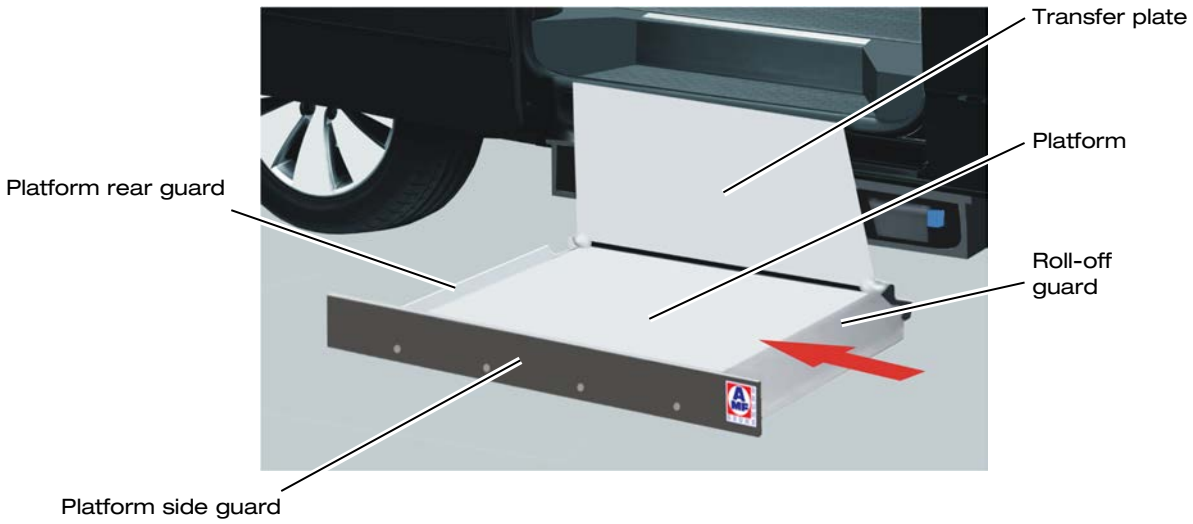

Figure 4: Cassette Lift K90 ACTIVE, Platform Access

All platforms are provided with a roll-off guard that automatically rises when the platform is raised off the ground. This prevents the wheelchair from rolling backwards off the platform.

The side nearest the vehicle is provided with a transfer plate. During the raising and lowering procedure, this transfer plate forms a guard that prevents the passenger's feet from being caught between the platform and the underside of the vehicle (see Figure 3, page 14, and Figure 4). When the platform reaches the same level as the floor inside the vehicle, the transfer plate folds down onto the floor. The passenger then uses the transfer plate as a bridge to cross from the platform into the vehicle (see Figure 5 and Figure 6, page 16).

Figure 5: Cassette Lifts K70 and K90, Interior Floor Level

Figure 6: Cassette Lift K90 ACTIVE, Interior Floor Level

Guards are provided on all other sides of the platform to prevent the wheelchair from rolling off the platform (see Figure 5, page 15, and Figure 6).

On the K70 and K90, one of the platform's two side guards is optionally shortened to extend roughly half way along that side. This provides side access to the platform, making it easier for the passenger to roll on and off the platform when there is limited space available outside the vehicle (see Figure 7).

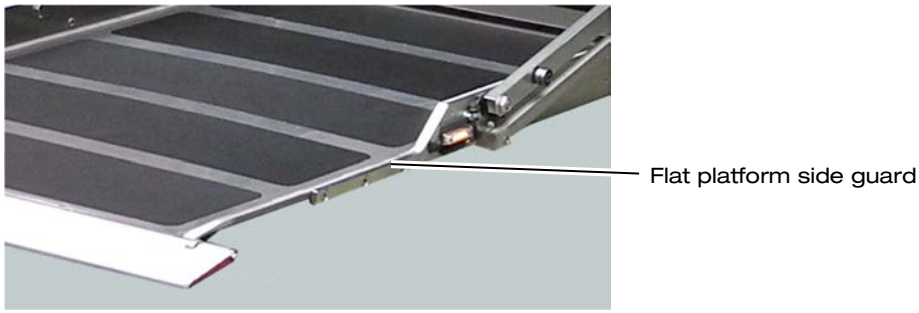

Figure 7: Cassette Lifts K70 and K90 with Side Access

When the platform on the K70 or K90 is retracted into the cassette, the raised roll-off guard acts as a cover for the cassette (see Figure 8, page 17). With the K90 ACTIVE, the platform side guard acts as a cover for the cassette (see Figure 9, page 17). In each case this prevents dirt from entering the mechanics of the Cassette Lift.

Figure 8*:* Cassette Lifts K70 and K90, Retracted

Figure 9*:* Cassette Lift K90 ACTIVE, Retracted

2.1.2 Mechanics and hydraulics with carrier arms

The hydraulically-powered carrier arms of the lift raise and lower the platform and keep it horizontal. In order to do this, the carrier arms are designed as parallelograms.

When the carrier arms have lowered the platform to the height of the cassette, the platform can be retracted into the cassette. In this position, the carrier arms are in the horizontal and parallel to the platform. The transfer plate automatically folds down when the platform is retracted.

On the K70 and K90 there are two carrier arms on both the left- and right-hand sides of the platform (see Figure 10).

Figure 10*:* Cassette Lifts K70 and K90, Retract Position

On the K90 ACTIVE there are two carrier arms between the platform and the cassette (see Figure 11).

Figure 11*:* Cassette Lift K90 ACTIVE, Retract Position

The platform is extended and retracted electrically.

K70:

The cassette is driven by an electric motor in the internal carriage which is connected via a pinion to a rack the centre of the cassette.

K90 / K90 ACTIVE:

An electric motor in the internal carriage powers the drive shaft which has a pinion on each end. These pinions mesh with the racks in the left- and right-hand sides of the cassette.

The hydraulic aggregate with electrically powered hydraulic pump and hydraulic fluid reservoir are contained in their own housing.

The Cassette Lift is optionally equipped with a manually-operated pump. This allows the platform to be raised / lowered when the hydraulic pump fails.

2.1.3 Cassette

The cassette encloses the platform and all mechanical components when the vehicle is being driven and thus protects them from dirt (see Figure 12 and Figure 13). The cassette also contains the carrier frame to which the internal carriage and carrier arms are attached.

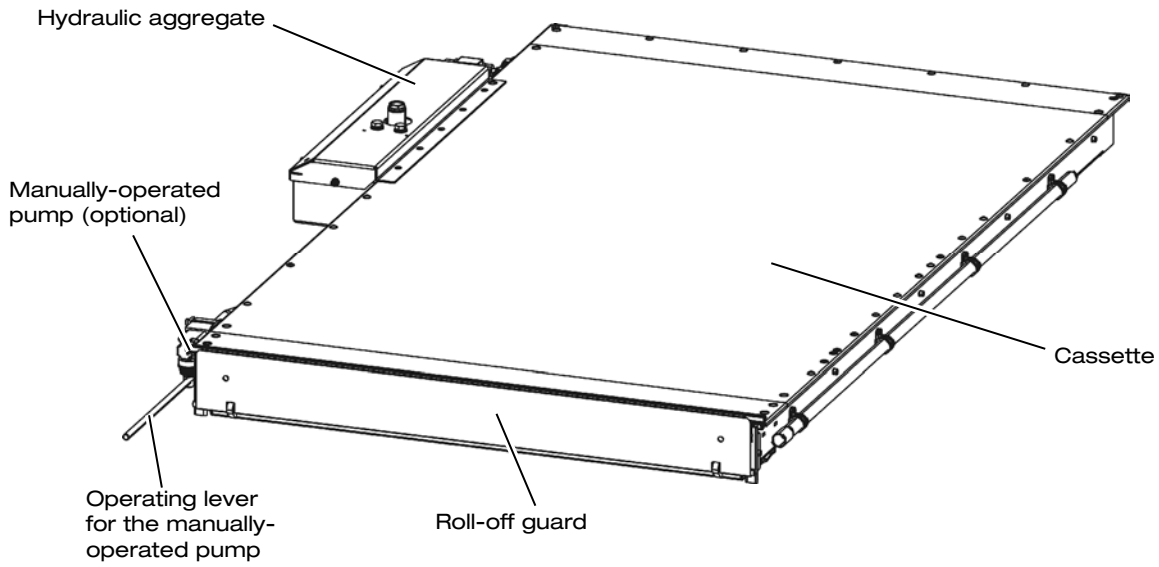

Figure 12: Cassette K70 and K90

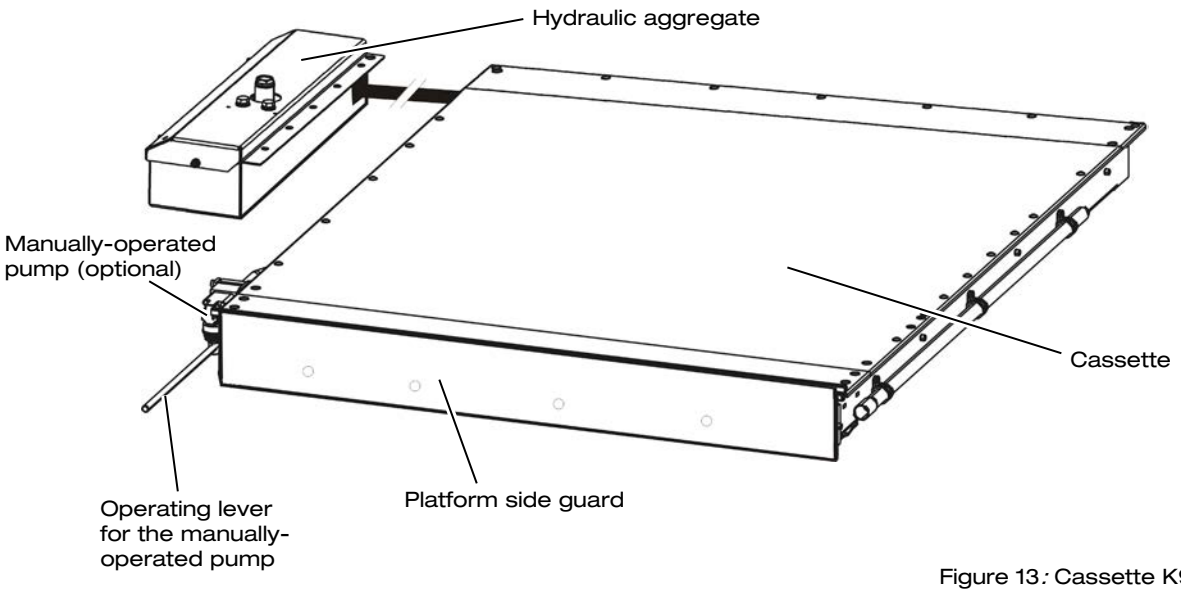

Figure 13: Cassette K90 ACTIVE

2.2 Rating Plate

A rating plate, which contains the fundamental data, is attached to the Cassette Lift (see Figure 14). The rating plate on the K70 and K90 is located on the right-hand side of the platform. The rating plate on the K90 ACTIVE is located on the strut of the internal carriage, behind the transfer plate.

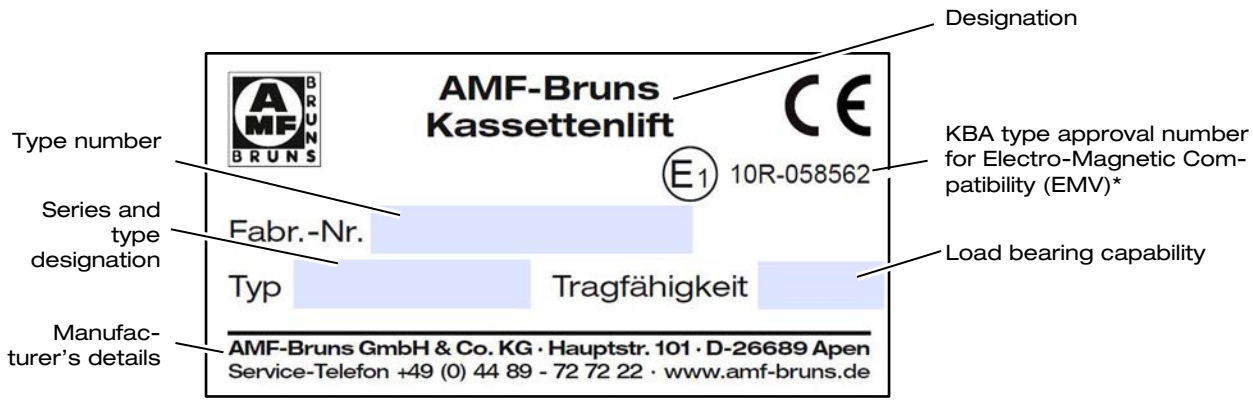

Figure 14: Rating Plate

* Type approval number is not required for every Cassette Lift.

2.3 Operating Controls and Indicators

2.3.1 Cable-connected remote control

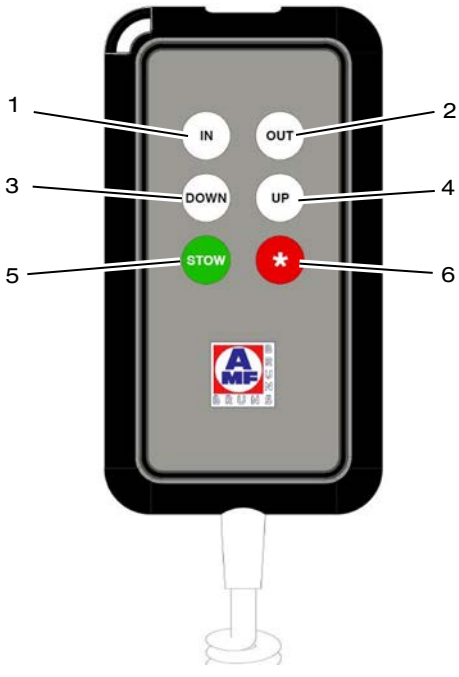

Figure 15: Cable-connected remote control

Item	Designation	Function
1	Push-button “IN”	Retracts the platform into the cassette.
		Switches the remote control ON, if it has switched OFF due to not being used for a period of 15 minutes.
2	Push-button “OUT”	Extends the platform from the cassette.
3	Push-button “DOWN”	Lowers the platform.
4	Push-button “UP”	Raises the platform.
5	Push-button “STOW”	Brings the platform to the retract position from which it can be retracted into the cassette. The platform must be higher than the cassette for this push-button to be effective.
6	Push-button “*”	No function.

2.3.2 Bluetooth remote control (optional extra)

An optional Bluetooth remote control, that can replicate all of the cable-connected remote-control functions, is available for the Cassette Lift (see Figure 16).

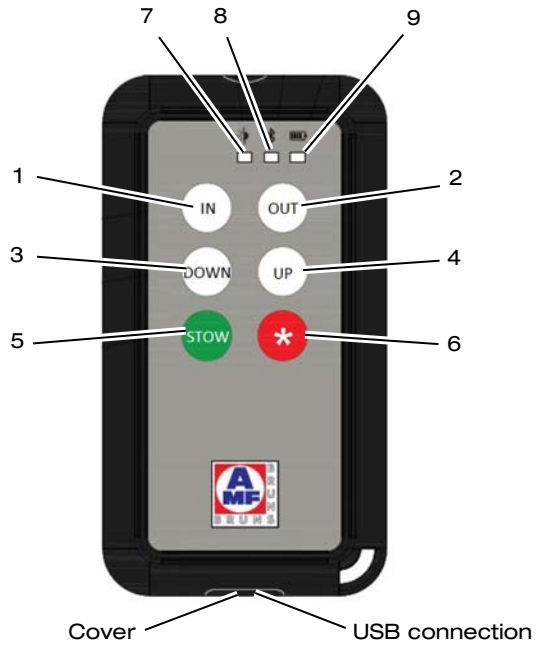

Figure 16: Bluetooth Remote Control, Operating Controls

Item	Designation	Function
1	Push-button “IN”	Retracts the platform into the cassette.
		Switch the Bluetooth remote control ON (hold the push-button pressed for longer than five seconds).
2	Push-button “OUT”	Extends the platform from the cassette.
3	Push-button “DOWN”	Lowers the platform.
4	Push-button “UP”	Raises the platform.
5	Push-button “STOW”	Brings the platform to the position from which it can be retracted into the cassette. The platform must be higher than the cassette for this push-button to be effective.
6	Push-button “✱”	Switches the Bluetooth remote control OFF. To switch the Bluetooth remote control OFF: Press the "STOW" (5) and “✱" (6) push-buttons simultaneously for longer than 3 seconds.
7	Light sensor	Activates the push-button lighting in adverse lighting conditions.
8	"Bluetooth" LED (green)	Blinks once per second when the connection to the receiver has been established.

Item	Designation	Function
9	"State of Charge" LED (red)	Indicates the state of charge of the battery during normal operation: Lights continuously: Remaining charge > 15 % Blinks once per second: Remaining charge < 15 % Blinks twice per second: Remaining charge < 10 % Blinks three times per second: Remaining charge < 5 % Indicates the state of charge of the battery during charging: Lights continuously when the battery is being charged. Goes out when the battery is fully charged.

NOTE

If the Cassette Lift is switched ON, the Bluetooth remote control automatically switches OFF if it is not used for more than 5 minutes.

In order to switch the Bluetooth remote control ON once again, first press the “IN” push-button (Position 1, Figure 15, page 20) on the cable-connected remote control and then press the “START” push-button (Position 1, Figure 16, page 21) on the Bluetooth remote control for a period of more than five seconds.

NOTE

Only one Bluetooth remote control can be connected to the receiver in the vehicle at any one time.

2.3.3 Remote control per Smartphone APP

An optional Smartphone App, that can replicate all of the cable-connected or Bluetooth remote control functions, is available for the Cassette Lift with Bluetooth remote control (see Figure 17, page 24).

NOTE

Remote control per Smartphone APP is only possible if the Cassette Lift is equipped with the optional Bluetooth remote control and corresponding control unit. If not, there is no Bluetooth receiver on the Cassette Lift.

Connection to the receiver is set up via the Bluetooth Low Energy Standard. Observe the system requirements for your Smartphone given in Section 5.6, page 40.

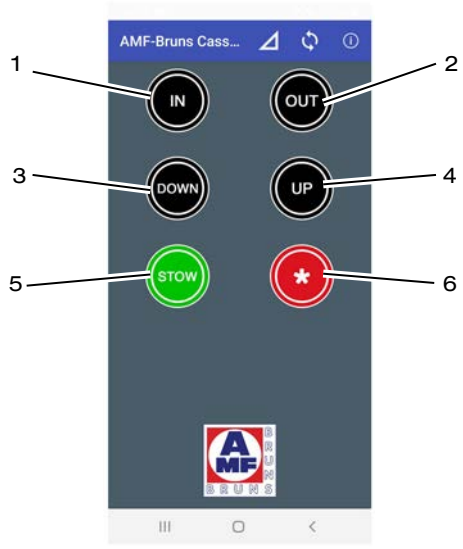

Figure 17: Smartphone App Operating Controls

Item	Designation	Function
1	Push-button “IN”	Retracts the platform into the cassette.
2	Push-button “OUT”	Extends the platform from the cassette.
3	Push-button “DOWN”	Lowers the platform.
4	Push-button “UP”	Raises the platform.
5	Push-button “STOW”	Brings the platform to the position from which it can be retracted into the cassette. The platform must be higher than the cassette for this push-button to be effective.
6	Push-button “*”	No function.

2.4 Technical Data

Designation	K70	K90	K90 ACTIVE
Weight	approx. 200 kg	approx. 200 kg	approx. 145 kg
Platform size, standard size	approx. 758 × 1200 mm	approx. 800 × 1200 mm	approx. 686 × 760 mm
Platform size, short version	-	approx. 800 × 1170 mm	-
		approx. 800 × 1100 mm	
		approx. 800 × 960 mm	
Carrying capacity	300 kg	300 kg	160 kg
Permissible number of persons on the platform	max. 1 person in a wheelchair		
Lifting speed	8 cm/s		
Lowering speed	6 cm/s		
Time to extend	approx. 12 seconds		
Time to retract	approx. 12 seconds		
Raise and lower drive unit	Electro-hydraulic 12 V DC		
Extend and retract drive unit	Rack and pinion 12 V DC		
Sound pressure emission	74 dB		
Equipment suitable for use	outdoors		
Safeguard against the platform lowering inadvertently if leaks occur in the hydraulic system	Burst pipe safety valve (see hydraulic circuit diagram)		
Safeguard against excess hydraulic pressure	Pressure control valve 190 bar		
Rated current	34 A		
Electrical rating	0.5 kW		
Hydraulic aggregate reservoir capacity	approx. 1 l		

3 Shipping

DANGER

Dangers when transporting the Cassette Lift.

The Cassette Lift can fall or start to slip during transportation. There is a risk of personal injury and material damage.

Therefore:

- The Cassette Lift must only be transported by personnel who have been trained or instructed.
- The lifting gear used must be in a technically perfect condition and must be adequately dimensioned.
- The Cassette Lift must be secured in every transportation situation, such that it cannot present a risk.
- Remember that a Cassette Lift weighs up to 200 kg (K90).
- Never stand under suspended loads.

NOTE

The AMF-Bruns GmbH will accept no liability whatsoever for damage or injury caused by incorrect transportation.

4 Installation / Commissioning

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

DANGER

Danger through incorrect installation work.

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

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

Therefore:

- The Cassette 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 Cassette Lift for correct installation and the effectiveness of the safety devices.
- The technical expert must confirm the fact that operational safety of the Cassette Lift has been established by making a corresponding entry in the inspection log (see Chapter 11, page 72).
- The Cassette Lift must not be used until this has been done.

5 Operation

NOTE

In order to operate the Cassette Lift using the Bluetooth remote control or the Smartphone App, the respective device must be connected to the receiver (see Section 5.5 and 5.6 from page 39).

NOTE

When the Cassette Lift is switched ON, the Bluetooth receiver automatically switches OFF if it is not used for more than 15 minutes.

In order to switch the Bluetooth receiver ON once again when the Cassette Lift is switched ON, press the “IN” push-button (Position 1, Figure 15, page 20) on the cable-connected remote control.

NOTE

If the Cassette Lift is switched ON and the cable-connected remote control is not used for a period of more than15 minutes or the Bluetooth receiver is not used for a period of more than 5 minutes, the respective remote control will switch OFF.

With the Cassette Lift is switched ON, press the “IN” push-button (Position 1, Figure 15, page 20) on the cable-connected remote control to switch the cable-connected remote control ON once again.

In order to switch the Bluetooth remote control ON once again when the Cassette Lift is switched ON, press the “IN” push-button (Position 1, Figure 15, page 20) on the cable-connected remote control in order to restore the receiver to a state of readiness. Then press the “IN” push-button (Position 1, Figure 16, page 21) on the Bluetooth remote control for more than five seconds.

NOTE

The control unit on the K70 and K90 and K90 ACTIVE Cassette Lifts has an integrated “play-protect” facility that temporarily inhibits operation under the following conditions:

- If six random push-buttons are pressed within a period of ten seconds

or

- If any one push-button is pressed five times within a period of ten seconds

operation of the Cassette Lift will be inhibited for a period of ten seconds.

5.1 Safety Regulations for Operation

The safety information given in the Safety chapter must have been read prior to operation (see Chapter 1, page 8).

DANGER

Risk of injury and of material damage if the Cassette Lift is operated in a faulty condition.

If the Cassette Lift is operated when in a faulty condition, there is a risk of penal injury and of material damage being caused.

Therefore:

- Always carry out inspections in accordance with the maintenance schedule before use (see Section 7.2, page 55).
- For commercial or communal use: Have the Cassette 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 Cassette Lift is operated by unauthorised persons.

Dangerous operating conditions may be caused if the Cassette Lift is operated by unauthorised persons.

Therefore:

- The Cassette Lift must only be operated by persons who are familiar with operating the Cassette Lift.
- If you no longer use the Cassette Lift or if you want to leave the vehicle, close all doors and lock the vehicle.

WARNING

Danger through road traffic collisions.

A number of risks are involved for the passengers, operator and pedestrians when using the Cassette Lift on public highways.

Therefore:

- When the 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 by other road traffic.
- Switch the vehicle's engine OFF and apply the handbrake.
- Make certain that pedestrians are not put at risk though movements of the Cassette Lift.
- Do not operate the Cassette Lift until this has been done.

WARNING

Risk of injury and of material damage if the Cassette Lift is not operated correctly.

If the Cassette Lift is not operated correctly using the Remote-Control APP, dangerous operating conditions can be caused.

Therefore:

- Read these Operating Instructions thoroughly before operating the Cassette Lift using the Remote Control APP.
- Observe the system requirements for your Smartphone given in Section 5.6, page 40.
- As user of this APP, you are fully responsible for applications and functions and their consequences. You will be reminded of this when using the APP.

WARNING

Risk of injury through movements of the Cassette Lift.

There is a risk injury through being hit or crushed by movements of the platform. The Cassette 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.
- Stop the Cassette 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 (see Section 1.6, page 11).

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 Cassette Lift.

If there is insufficient space to leave or to access the platform, there is a risk of being injured by the Cassette Lift or other objects (e.g. walls, posts or poles).

These risks apply to both the passenger and the accompanying person.

Therefore:

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

ATTENTION

Danger through the platform's drive motor overheating

If the remote control push-button for extending the platform is held pressed for too long, the electric motor can overheat.

Therefore:

- Release the remote control push-button as soon as the platform has fully extended from the cassette.

NOTE

If the weather conditions are particularly cold and wet, the Cassette Lift can ice up such that the platform does not extend.

Therefore:

- If it is suspected that the platform is iced up, carry out a trial run and check that the platform extends and that the roll-off guard folds down when the platform reaches the ground.
- Only use the Cassette Lift for embarkation or disembarkation when this has been done.
- Take an accompanying person along if there is a risk that the Cassette Lift can ice up.

5.2 Embarkation Procedure

⇨ Switch the vehicle's engine OFF.

⇨ Remove the ignition key.

⇨ Apply the vehicle's handbrake.

⇨ Open the door, beneath which the Cassette Lift is installed.

⇨ Take hold of the cable-connected remote control, Bluetooth remote control or Smartphone with remote control App installed.

⇨ Make certain that there are no persons within the range of movement of the platform.

CAUTION

Risk of injury through movements of the Cassette Lift.

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

Therefore:

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

⇨ Extend the platform from the cassette (for the operating controls: see Section 2.3, page 20).

The warning signal sounds as soon as the platform starts to extend. The blinkers on the sides of the platform blink. The transfer plate folds upwards.

Once the platform is fully extended it will stop.

⇨ Release the remote control push-button as soon as the platform has fully extended from the cassette.

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 18, page 33).

Therefore:

- Keep a safe distance from the platform when it is lowering.
- If necessary, inform other persons of the danger.
- Stop the Cassette Lift if necessary.

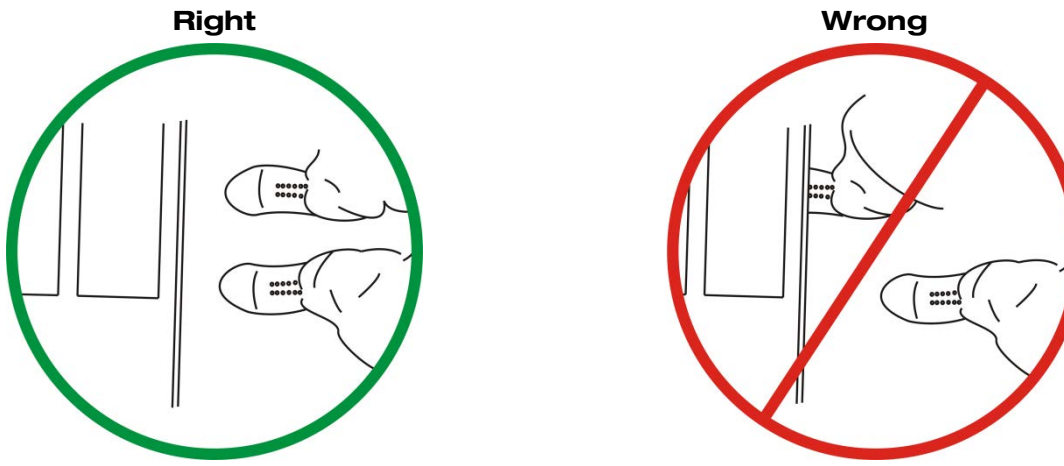

Figure 18*:* Risk of Injury When Lowering the Platform.

⇨ Lower the platform to the ground.

The roll-off guard folds down.

⇨ Stow the cable-connected or Bluetooth remote control away. Place the Smartphone to one side.

⇨ Push the wheelchair onto the centre of the platform.

⇨ Apply the wheelchair's brakes.

⇨ Switch the motor of an electrically-driven wheelchair OFF.

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.

Therefore:

- Make sure that the wheelchair is positioned in the centre of the platform. 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.
- Do not reach into the carrier arms, between the carrier arms and platform or between the carrier arms and cassette.
- Make certain that the roll-off guard rises when the platform leaves the ground (see Figure 19, page 34, and Figure 20, page 34).
- If the roll-off guard does not rise, lower the platform once again.
- For commercial or communal use: Make sure that the passenger remains calm. Talk to the passenger to keep him / her calm.
- Make certain that the passenger does not reach into the carrier arms or between carrier arms and platform.
- Make certain that the passenger’s feet do not inadvertently get caught between the carrier arms or between carrier arms and platform.

Figure 19: Roll-Off Guard K70 / K90

Figure 20: Roll-Off Guard K90 ACTIVE

⇨ Once again take hold of the cable-connected remote control, Bluetooth remote control or your Smartphone.

⇨ Raise the platform to the height of the floor inside the vehicle.

The transfer plate folds down to the horizontal and forms a bridge between the floor inside the vehicle and the platform.

⇨ Stow the cable-connected or Bluetooth remote control away. Place the Smartphone to one side.

⇨ Switch the motor of an electrically driven wheelchair ON.

⇨ Release the wheelchair's brakes.

⇨ Drive or push the wheelchair into the vehicle.

⇨ Take hold of the cable-connected remote control, Bluetooth remote control or Smartphone wit App installed.

⇨ Lower the platform to the retract position.

CAUTION

Risk of injury when retracting the platform into the cassette.

Fingers or hands can be caught up or crushed when the platform is being retracted into the cassette.

Therefore:

- Keep a safe distance from the platform when it is being retracted into the cassette.
- Inform other persons of the danger.
- Stop the Cassette Lift if necessary.

DANGER

Risk of fatal injuries to other road users.

If the platform is not fully retracted into the cassette, there is a risk of fatal injuries to other road users through being cut or crushed by the platform.

Considerable material damage can be caused.

Therefore:

- Make certain that the platform is fully retracted into the cassette.
- Do not start your journey until this has been done.

⇨ Retract the platform fully into the cassette.

⇨ The blinkers go out and the warning signal stops as soon as the platform is fully retracted.

⇨ Stow the cable-connected or Bluetooth remote control away. Place the Smartphone to one side.

⇨ Close the door, beneath which the Cassette Lift is installed.

⇨ Drive or push the wheelchair to the position foreseen for the journey.

⇨ Apply the wheelchair's brakes.

⇨ Switch the motor of an electrically-driven wheelchair OFF.

⇨ Secure the wheelchair in the vehicle using the restraint systems provided.

5.3 Disembarkation Procedure

⇨ Switch the vehicle's engine OFF.

⇨ Remove the ignition key.

⇨ Apply the vehicle's handbrake.

⇨ Open the door, beneath which the Cassette Lift is installed.

⇨ Take hold of the cable-connected remote control, Bluetooth remote control or Smartphone with remote control App installed.

⇨ Make certain that there are no persons within the range of movement of the platform.

CAUTION

Risk of injury through movements of the Cassette Lift.

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

Therefore:

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

⇨ Extend the platform from the cassette (for the operating controls: see Section 2.3, page 20).

The warning signal sounds as soon as the platform starts to extend. The blinkers on the sides of the platform blink. The transfer plate folds upwards.

Once the platform is fully extended it will stop.

⇨ Release the remote control push-button as soon as the platform has fully extended from the cassette.

⇨ Raise the platform until it reaches the height of the floor inside the vehicle.

The transfer plate folds down to the horizontal and forms a bridge between the floor inside the vehicle and the platform.

⇨ Switch the motor of an electrically driven wheelchair ON.

⇨ Release the wheelchair's brakes.

⇨ Drive or push the wheelchair onto the centre of the platform.

⇨ Switch the motor of an electrically-driven wheelchair OFF.

⇨ Apply the wheelchair's brakes.

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.

Therefore:

- Make sure that the wheelchair is positioned in the centre of the platform.
- 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.
- Do not reach into the carrier arms or between the carrier arms and platform.
- For commercial or communal use: Make sure that the passenger remains calm. Talk to the passenger to keep him / her calm.
- Stop the platform if necessary.

CAUTION

Risk of injury when lowering the platform.

When lowering the platform there is a risk of injury through feet and legs becoming trapped beneath the platform (see Figure 21).

Therefore:

- Keep a safe distance from the platform when it is lowering.
- If necessary, inform other persons of the danger.
- Stop the Cassette Lift if necessary.

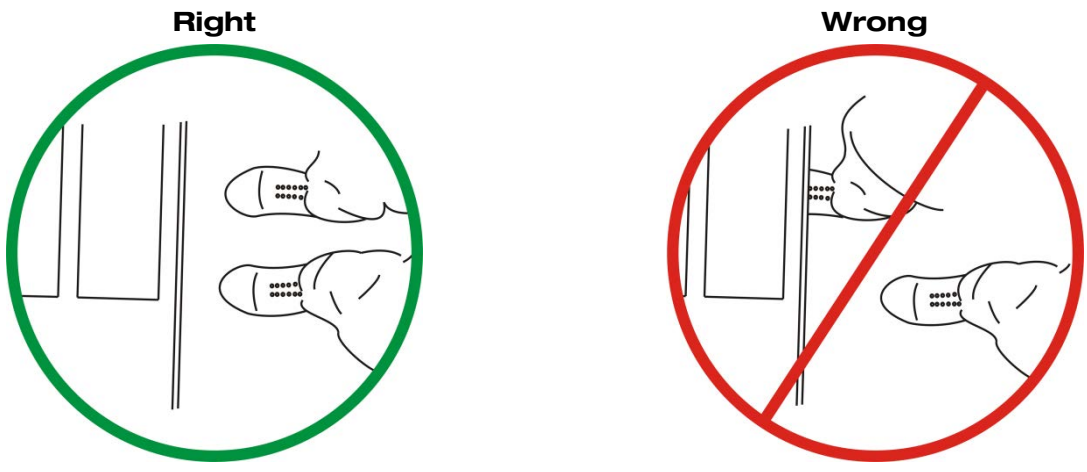

Figure 21*:* Risk of Injury When Lowering the Platform.

⇨ Lower the platform to the ground.

The roll-off guard folds down as soon as the platform makes contact with the ground.

⇨ Stow the cable-connected or Bluetooth remote control away. Place the Smartphone to one side.

⇨ Switch the motor of an electrically-driven wheelchair OFF.

⇨ Release the wheelchair's brakes.

⇨ Drive or push the wheelchair off the platform.

NOTE

The platform must be in a position above the cassette. The platform can now be lowered to the retract position by pressing the “STOW” push-button (5) on the cable-connected remote, Bluetooth remote control or Smartphone App.

⇨ Once again take hold of the cable-connected remote control, Bluetooth remote control or your Smartphone.

⇨ Raise the platform until it reaches its highest position.

⇨ Lower the platform to the retract position.

CAUTION

Risk of injury when retracting the platform into the cassette.

Fingers or hands can be caught up or crushed when the platform is being retracted into the cassette.

Therefore:

- Keep a safe distance from the platform when it is being retracted into the cassette.
- Inform other persons of the danger.
- Stop the Cassette Lift if necessary.

⇨ Retract the platform fully into the cassette.

The blinkers go out and the warning signal stops as soon as the platform is fully retracted.

⇨ Stow the cable-connected or Bluetooth remote control away. Place the Smartphone to one side.

⇨ Close the door, beneath which the Cassette Lift is installed.

DANGER

Risk of fatal injuries to other road users.

If the platform is not fully retracted into the cassette, there is a risk of fatal injuries to other road users through being cut or crushed by the platform.

Considerable material damage can be caused.

Therefore:

- Make certain that the platform is fully retracted into the cassette.
- Do not start your journey until this has been done.

5.4 Vehicle Fuel Gauge (K70 and K90 only)

NOTE

During installation of the Cassette Lift, the original fuel tank may have been replaced by a special fuel tank from AMF-Bruns or the position of the original fuel tank may have been changed.

A precise indication of the fuel level may no longer be possible.

Therefore:

- If this the case, make use of the trip meter in order to estimate the contents of the tank when driving.

ATTENTION

If the fuel tank of a diesel-engined vehicle is fully emptied, the fuel system will suck in air.

This can cause damage involving high repair costs.

Therefore:

- Always refuel before the fuel tank is completely empty.

5.5 Teaching-In the Bluetooth Remote Control

The following position numbers given in brackets are with reference to Figure 16, page 21.

Teaching in (pairing) normally only needs be carried out the first time it is used. Upon successful completion of teaching in, the Bluetooth connection will be automatically established whenever the Cassette Lift is switched ON

NOTE

Up to seven Bluetooth remote controls can be set up for use with the Cassette Lift's receiver.

Only one Cassette Lift can be connected to and operated by one Bluetooth remote control at any one time.

⇨ Make certain that no other Bluetooth receiver is switched ON within a radius of 10 m.

⇨ Open the door above the Cassette Lift.

⇨ Make certain that the Cassette Lift's Bluetooth receiver is switched ON.

NOTE

When the Cassette Lift is switched ON, the Bluetooth receiver automatically switches OFF if it is not used for more than 15 minutes.

In order to switch the Bluetooth receiver ON once again when the Cassette Lift is switched ON, press the “IN” push-button (Position 1, Figure 15, page 20) on the cable-connected remote control.

⇨ Press the "IN" push-button (1) for longer than five seconds.

The Bluetooth remote control is switched ON.

⇨ Press the "IN" (1), "DOWN" (3) and "STOW" (5) push-buttons simultaneously for at least three seconds, until the "State of Charge" LED (9) blinks.

⇨ Press and hold the "IN" push-button (1) for at least one second until the "State of Charge" LED (9) lights continuously and the "Bluetooth" LED (8) blinks.

⇨ Press and hold the "DOWN" push-button (3) for at least one second until the "State of Charge" (9) and "Bluetooth" LEDs (8) blink simultaneously.

⇨ Press and hold the "STOW" push-button (5) for at least one second until the "State of Charge" (9) and "Bluetooth" LEDs (8) blink alternately.

The "State of Charge" LED (9) goes out after approx. five seconds. The "Bluetooth" LED (8) continues to blink. The remote control is connected to the receiver.

If the "Bluetooth" LED (8) does not blink, the connection has failed. If this is the case, repeat the teaching in procedure.

5.6 Installing the Remote Control App and Teaching it In

Teaching in (pairing) need only be carried out the first time it is used. After teaching in has been successfully carried out, the Bluetooth connection is automatically set up when the Bluetooth function on the Smartphone is switched ON.

The language of the APP automatically assumes the language that the Smartphone is set up to use. If no languages are available the APP will select the English language.

WARNING

Risk of injury and of material damage if the Cassette Lift is not operated correctly.

If the Cassette Lift is not operated correctly using the Remote-Control APP, dangerous operating conditions can be caused.

Therefore:

- Read these Operating Instructions thoroughly before operating the Cassette Lift using the Remote Control APP.
- Observe the system requirements for your Smartphone given in this section.
- As user of this APP, you are fully responsible for applications and functions and their consequences. You will be reminded of this when using the APP.

NOTE

Remote control per Smartphone APP is only possible if the Cassette Lift is equipped with the optional Bluetooth remote control. If not, there is no Bluetooth receiver on the Cassette Lift.

Connection to the receiver is set up via the Bluetooth Low Energy Standard. Observe the system requirements for your Smartphone given in this section.

NOTE

Several Bluetooth connections can be set up on a Smartphone simultaneously. Please refer to the operating instructions for your Smartphone for possible restrictions.

Only one Cassette Lift can be connected to the APP and operated at any one time.

System requirements for your Smartphone

Android	Apple	Bluetooth
Android Version “4.3” or higher	iOS Version “10” or higher	Bluetooth Standard “BLE4.0” or higher

⇨ Download the "AMF BB" APP from the Play Store (Android) or APP Store (iOS).

⇨ Install the App on your Smartphone (see Figure 22).

Figure 22: Smartphone App, User Interface

⇨ Open the door above the Cassette Lift.

⇨ Make certain that the Cassette Lift's Bluetooth receiver is switched ON.

NOTE

When the Cassette Lift is switched ON, the Bluetooth receiver automatically switches OFF if it is not used for more than 15 minutes.

In order to switch the Bluetooth receiver ON once again when the Cassette Lift is switched ON, press the "IN" push-button (Position 1, Figure 15, page 20) on the cable-connected remote control.

⇨ Connect your Smartphone to the Bluetooth receiver (see Smartphone operating instructions).

6 Emergency Mode

If the Cassette Lift's electrical drive fails, an emergency situation for the passenger can be avoided by operating the Cassette Lift manually.

NOTE

Two persons are necessary to operate the emergency mode.

In order to raise the platform, the (optional) manually-operated pump must be installed on the Cassette Lift's hydraulic system.

WARNING

Risk of injury and material damage if the Cassette 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 Cassette Lift. This damage can cause danger in the emergency mode.

The person operating the Cassette Lift in the emergency mode can be physically overburdened by the necessity to operate it manually. An emergency situation can arise for the passenger on the platform.

Therefore:

- Only use the emergency operating mode in an emergency situation.
- Initiate subsequent repairs to the Cassette Lift.

6.1 Emergency Operation for K70 / K90

6.1.1 Extending the platform from the cassette

On the opposite side of the vehicle to the platform there is a plug in the cassette housing (see Figure 23).

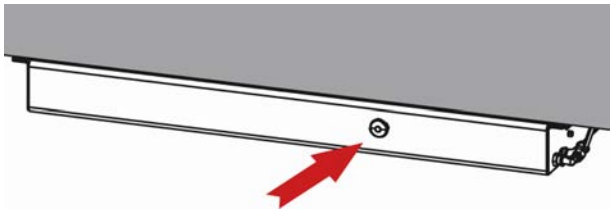

Figure 23: Plug

⇨ Remove the plug. To do this, use the hook provided as an accessory (see Figure 24).

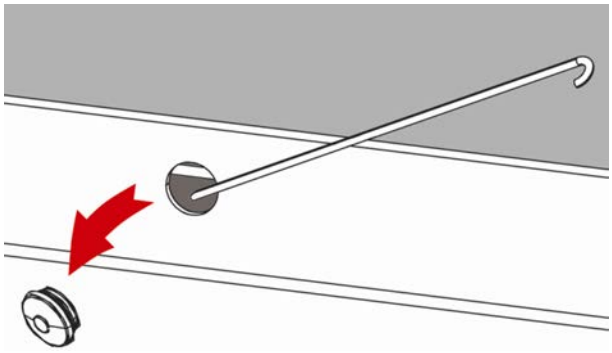

Figure 24: Removing the Plug

⇨ Insert the hook 3 to 5 cm into the opening that the plug was in.

⇨ Use the hook to pull firmly on the cable that can be seen through the opening (see Figure 25).

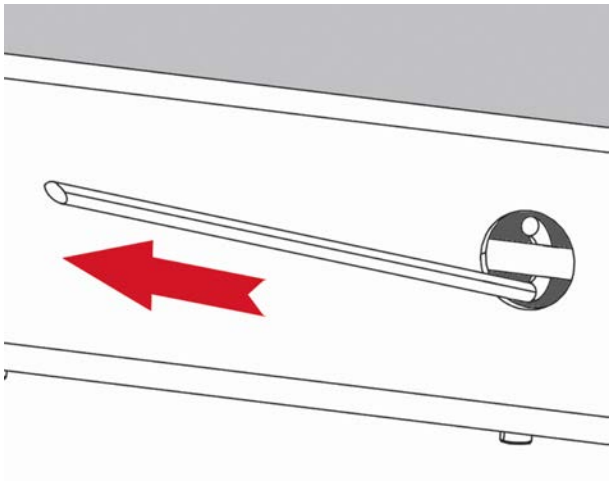

Figure 25: Releasing the Latch

Releasing the latch releases the platform.

⇨ Keep a firm hold on the cable with the hook.

⇨ Extend the platform 10 to 15 cm from the cassette (for the operating controls: see Section 2.3, page 20).

⇨ Remove the hook from the opening.

⇨ Fully extend the platform.

If the platform does not extend:

⇨ Pull the platform approx. 10 to 15 cm out of the cassette manually (2nd person).

⇨ Remove the hook from the opening.

⇨ Pull the platform fully out of the cassette manually.

⇨ Put the plug back into the cassette housing.

6.1.2 Raising the platform

⇨ Insert the operating lever into the manually-operated pump (see Figure 26).

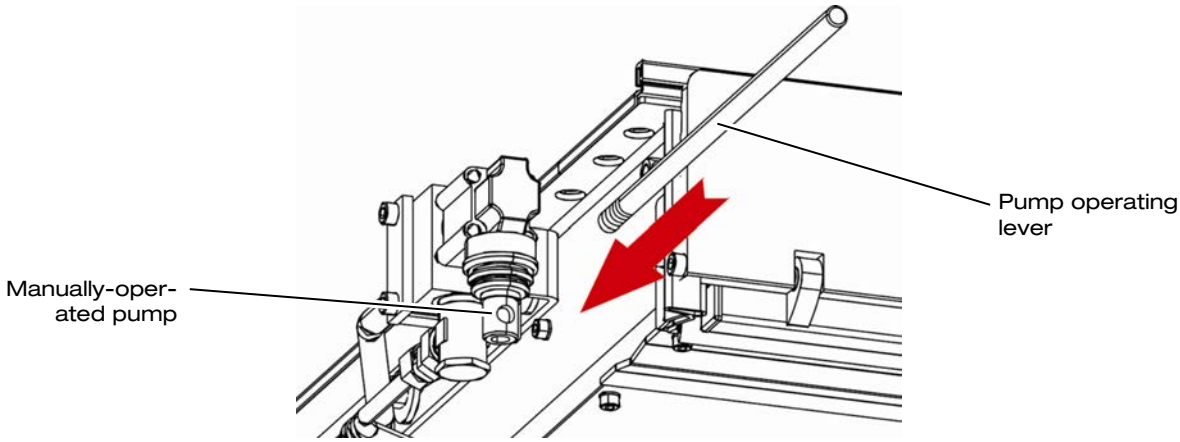

Figure 26*:* Inserting the Pump Operating Lever

⇨ Raise the platform by pumping the pump operating lever (see Figure 27).

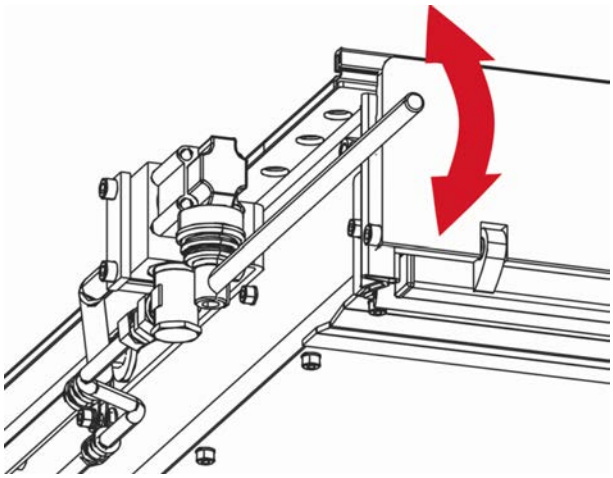

Figure 27*:* Raising the Platform

⇨ Remove the pump lever from the manually-operated pump once the platform has been raised in the emergency mode.

6.1.3 Lowering the platform

DANGER

Risk of crushing when lowering the platform in the emergency mode.

To reach the pressure release valve, the operator must reach underneath the vehicle in the immediate vicinity of the extended platform. It may be necessary to lie on the ground to do this.

There is a risk of persons, particularly the operator, being crushed if they are standing within the range of movement of the platform when it is being lowered. This risk prevails beneath the platform and at the drive and carrier system.

Therefore:

- Always have a second person in attendance, to observe movements of the platform and to supervise the passenger on the platform, when the platform is being lowered.
- Do not enter the Cassette Lift's danger zone when operating the hand-wheel.
- Inform other persons of the danger.
- Interrupt the lowering procedure if necessary.

⇨ Open the pressure release valve by turning the hand-wheel to the left (see Figure 28).

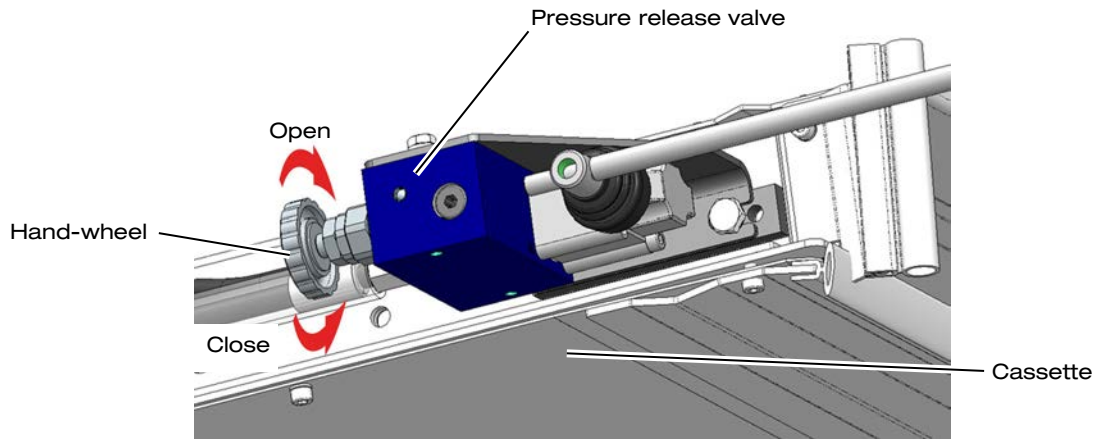

Figure 28*:* Lowering the Platform in the Emergency Mode

The platform lowers.

⇨ Close the pressure release valve, by turning the hand-wheel to the right, as soon as the platform has lowered the desired height.

6.1.4 Retracting the platform into the cassette

⇨ Raise the platform until it is at the same height as the cassette. Use the “UP” push-button on the cable-connected remote control if this is still working (see Section 2.3.1, page 20) or the corresponding emergency procedure (see Section 6.1.2, page 45) if not.

Or:

⇨ Lower the platform until it is at the same height as the cassette. Use the “DOWN” push-button on the cable-connected remote control if this is still working (see Section 2.3.1, page 20) or the corresponding emergency procedure (see Section 6.1.3, page 46) if not.

⇨ Disconnect the cassette motor plug from the control unit. The control unit is normally installed under the passenger seat. The cassette motor plug is a two-pin plug and branches off the cabling to the twelve-pole plug (see Figure 29 and red arrow in Figure 30).

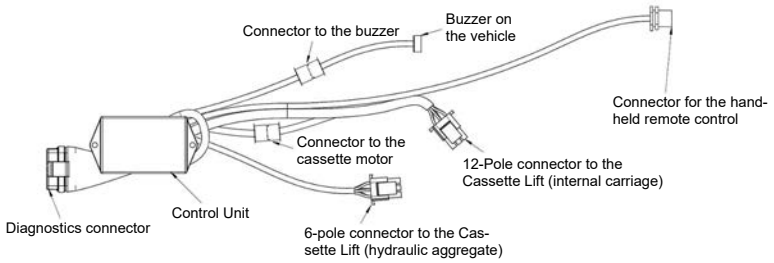

Figure 29*:* Control Unit and Connections for K70/ K70 / K90 ACTIVE (1)

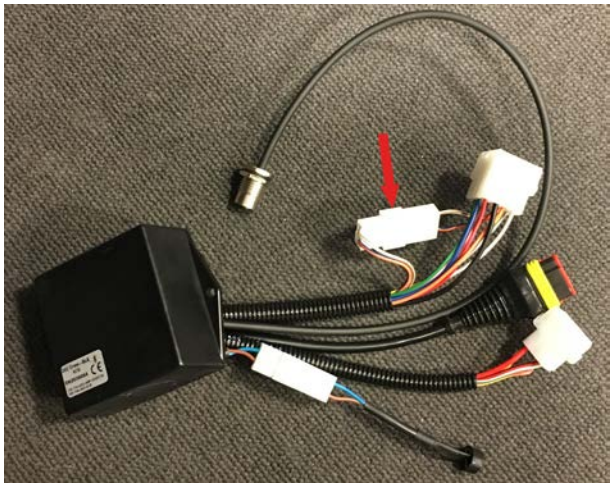

Figure 30*:* Control Unit and Connections for K70/ K70 / K90 ACTIVE (2)

WARNING

Risk of fatal injuries to other road users.

If the platform slides out of the cassette when driving, there is a risk of fatal injuries to other road users through being cut or crushed by the platform.

Considerable material damage can be caused.

Therefore:

- Make certain that the platform is secured to prevent it from sliding out of the cassette.
- Remove the operating lever from the manually-operated pump.
- Do not start your journey until this has been done.

⇨ Manually push the transfer plate down to simplify pushing the platform into the cassette.

⇨ Manually push the platform fully into the cassette.

⇨ Make certain that the latch engages.

⇨ Only K70: Pull the latch once the platform has initially latched (see Figure 25, page 44).

Only push the platform fully into the cassette when this has been done.

⇨ If the platform does not latch in position in the cassette, secure it against sliding out of the cassette using wire or other suitable materials.

⇨ Remove the pump lever from the manually-operated pump, if it is still inserted.

6.2 Emergency Operation K90 ACTIVE

NOTE

Emergency operation is only possible if the platform is extended.

The emergency operating controls are located on the left-hand side of the cassette (see Figure 31).

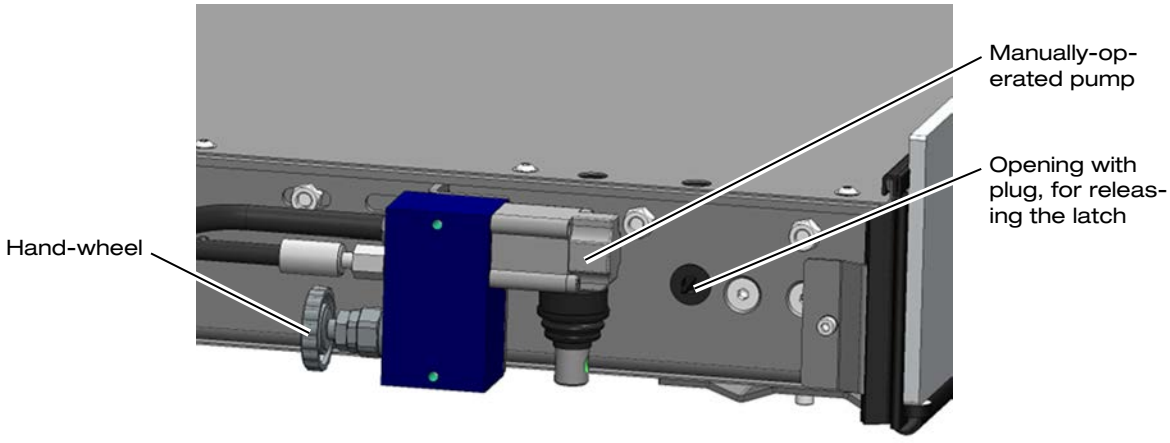

Figure 31: Emergency Operating Controls

6.2.1 Raising the platform

- ⇨ Insert the operating lever into the manually-operated pump (see Figure 32).
- ⇨ Pump the lever up and down until the desired height is reached.
- ⇨ Remove the pump lever from the manually-operated pump once the platform has been raised in the emergency mode.

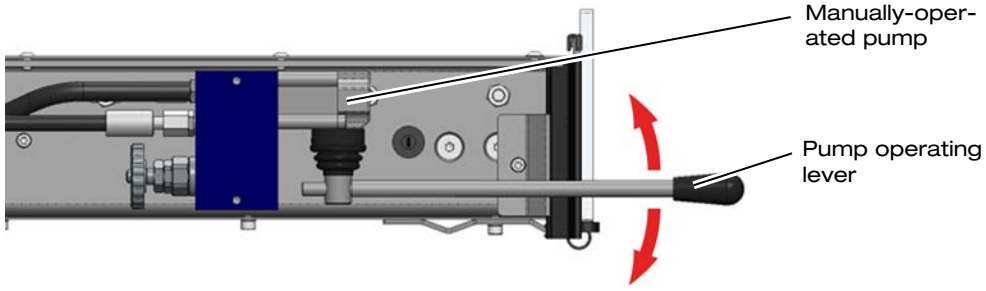

Figure 32: Raising the Platform

6.2.2 Lowering the platform

DANGER

Risk of crushing when lowering the platform in the emergency mode.

To reach the pressure release valve, the operator must reach underneath the vehicle in the immediate vicinity of the extended platform. It may be necessary to lie on the ground to do this.

There is a risk of persons, particularly the operator, being crushed if they are standing within the range of movement of the platform when it is being lowered. This risk prevails beneath the platform and at the drive and carrier system.

Therefore:

- Always have a second person in attendance, to observe movements of the platform and to supervise the passenger on the platform, when the platform is being lowered.
- Do not enter the Cassette Lift's danger zone when operating the hand-wheel.
- Inform other persons of the danger.
- Interrupt the lowering procedure if necessary.

⇨ Open the pressure release valve by turning the hand-wheel to the left (see Figure 33, page 50).

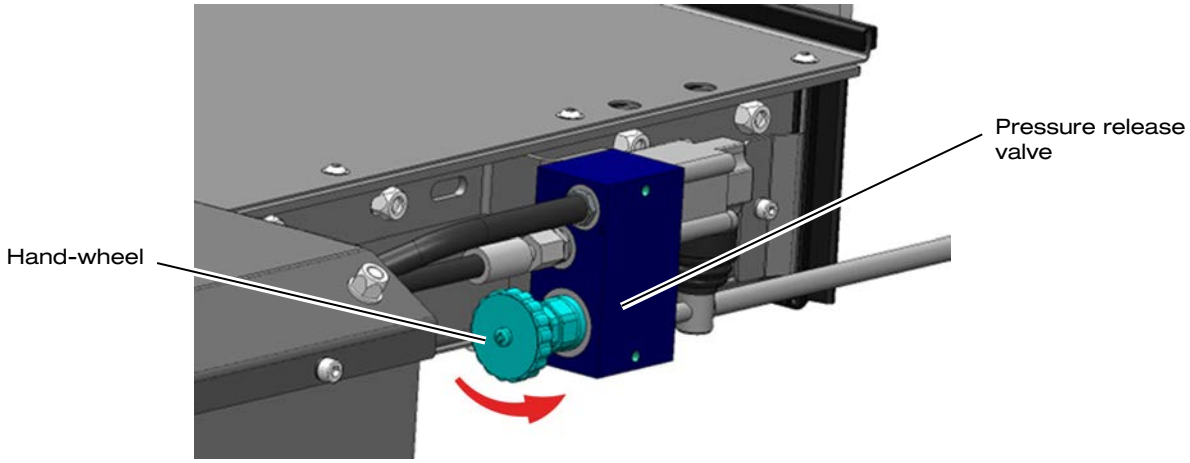

Figure 33: Opening the Pressure Release Valve

The platform lowers.

⇨ Close the pressure release valve, by turning the hand-wheel to the right, as soon as the platform has lowered the desired height (see Figure 34).

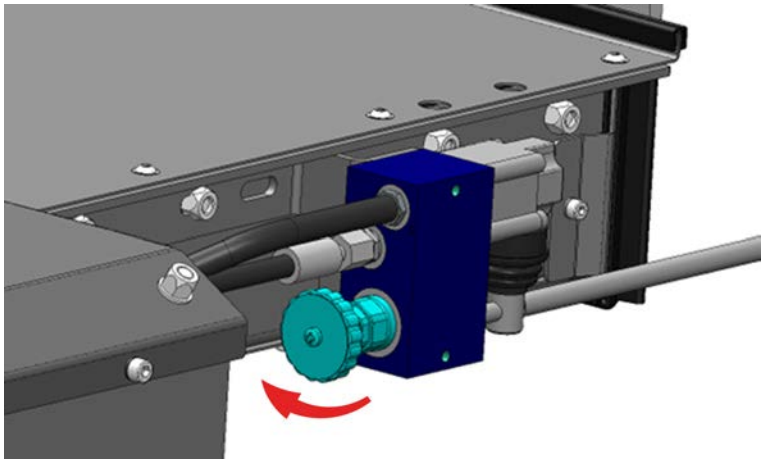

Figure 34: Closing the Pressure Release Valve

6.2.3 Retracting the platform into the cassette

⇨ Raise the platform until it is at the same height as the cassette. Use the “UP” push-button on the cable-connected remote control if this is still working (see Section 2.3.1, page 20) or the corresponding emergency procedure (see Section 6.2.1, page 49) if not.

Or:

⇨ Lower the platform until it is at the same height as the cassette. Use the “DOWN” push-button on the cable-connected remote control if this is still working (see Section 2.3.1, page 20) or the corresponding emergency procedure (see Section 6.2.2, page 50) if not.

⇨ Disconnect the cassette motor plug from the control unit. The control unit is normally installed under the passenger seat. The cassette motor plug is a two-pin plug and branches off the cabling from the twelve-pole plug (see Figure 29, page 47, and red arrow in Figure 30, page 47).

⇨ Remove the plug that covers the opening through which the latch can be released (see Figure 31, page 49, and Figure 35).

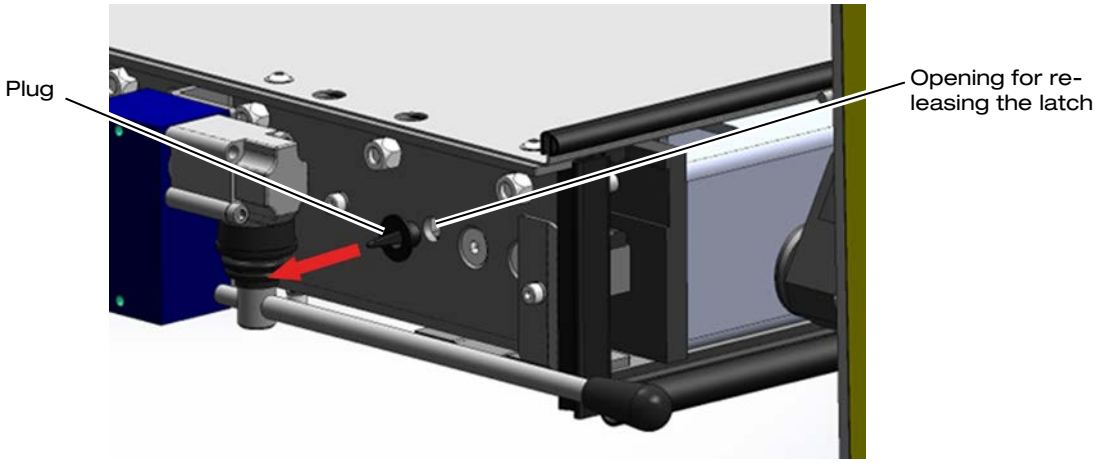

Figure 35: Removing the Plug

⇨ Insert the hand pump lever or other suitable object straight into the hole (see Figure 36).

⇨ Press firmly in order to unlatch the platform.

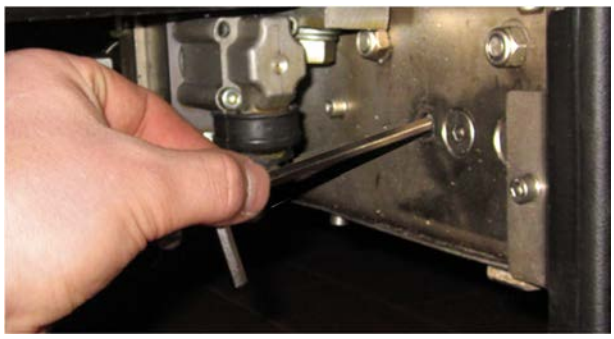

Figure 36: Releasing the Latch

Releasing the latch releases the platform.

⇨ Manually push the transfer plate down to simplify pushing the platform into the cassette.

⇨ Manually push the platform approx. 2 cm into the cassette.

⇨ Remove the object from the hole.

WARNING

Risk of fatal injuries to other road users.

If the platform slides out of the cassette when driving, there is a risk of fatal injuries to other road users through being cut or crushed by the platform.

Considerable material damage can be caused.

Therefore:

- Make certain that the platform is secured to prevent it from sliding out of the cassette.
- Remove the operating lever from the manually-operated pump.
- Do not start your journey until this has been done.

⇨ Push the platform fully into the cassette.

⇨ Make certain that the latch engages.

⇨ If the platform does not latch in position in the cassette, secure it against sliding out of the cassette using wire or other suitable materials.

⇨ Replace the plug.

⇨ Remove the pump lever from the manually-operated pump, if it is still inserted.

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).
- Never modify, bypass or remove protective and safety devices.

WARNING

Danger through carrying out maintenance and repair work incorrectly.

A number of risks of personal injury and material damage can be caused 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

Personal injury and material damage can be caused if spare parts of inferior quality 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 AMF-Bruns GmbH & Co. KG customer service department or your local dealer for maintenance work that must be carried out by a specialist (see Chapter 14, page 90).

7.2.1 Maintenance schedule

Interval	Activity	see
Daily	Functionally test the safety devices.	Section 7.3
	Carry out a visual inspection for damage, faults and leaks. Initiate repairs if necessary.	
	When operating the Cassette Lift, listen for any unusual noises and look for signs of jerking when the platform is being retracted. Initiate repairs if necessary.	
	Inspect the state of wear and stability of the rubbing protector in the vehicle on which the transfer plate rests when raising and lowering the platform.	
Yearly	Inspect the hydraulic hoses.	Section 7.4
	Check that all fastenings are secure.	
	If used commercially or communally: Have the Cassette Lift inspected by a technical expert. Recommended if used privately.	Section 7.5
Every four years	Renew the hydraulic hoses.	
As required	Clean the Cassette Lift.	

7.2.2 Maintenance records

Enter maintenance and repair work that has been carried out into the maintenance record provided for this purpose (see Section 7.6, page 58). 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

7.3.1 Roll-off guard

⇨ Check that the roll-off guard rises (K90 and K90 ACTIVE) and latches in position when the Cassette Lift lifts the platform off the ground.

⇨ If the roll-off guard does not function correctly, do not use the Cassette Lift until repairs have been carried out successfully.

7.3.2 Signalling system

⇨ Check that the warning signal sounds as soon as the platform starts to extend from the cassette.

⇨ Check that the blinkers on the sides of the platform start to blink as soon as the platform starts to extend from the cassette.

NOTE

The warning signal must sound and the blinkers must blink as long as the Cassette Lift is not retracted (stowed). The warning signal and blinkers must only go off when the platform is fully retracted once again.

⇨ Initiate repairs if the warning signal or the blinkers do not function correctly.

7.3.3 Door contact switch

⇨ Close the door above the Cassette Lift.

⇨ Try to operate the platform using the cable-connected remote control, USB remote control or Smartphone App.

⇨ If the platform can be operated even though the vehicle's door is closed, do not use the Cassette Lift until repairs have been carried out successfully.

7.4 Inspection of the Hydraulic Hoses.

The inspection of hydraulic hoses extends to:

- seating of the fastenings,
- damage,
- ageing,
- brittleness and
- 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 Cassette 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 Cassette Lift by a technical expert: see Chapter 11, "Inspection Log", page 72.

7.6 Maintenance and Repair Record

Maintenance work carried out		
Date	Signature	Remarks / work carried out

8 Decommissioning and Conservation

Contact the AMF-Bruns GmbH & Co. KG customer service department or your local dealer if you have any questions regarding decommissioning (see Chapter 14, page 90).

9 Disposal

When the Cassette 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!

Danger through carrying out repair work incorrectly.

A number of risks of personal injury and material damage can be caused if repair work to the Cassette Lift is not carried out correctly.

Therefore:

- Only allow specialist personnel to carry out repair work.

If faults occur when operating the Cassette Lift, proceed as described in the following troubleshooting table. Contact the AMF-Bruns GmbH & Co. KG customer service department or your local dealer if faults are encountered which cannot be remedied using the information and measures given in the table (see Chapter 14, page 90).

Fault	Possible Cause	Remedial Measures
Operation of the Cassette Lift is temporarily impossible.	The “play-protect” facility has been activated by pressing the operating buttons too often.	Wait for a period of ten seconds until the “play-protect” facility is automatically deactivated (see Chapter 5, page 28).
It is not possible to operate the Cassette Lift using the cable-connected remote control.	The cable-connected remote control has automatically switched itself OFF.	Press the “IN” (1) push-button on the cable-connected remote control to switch it ON once again.
	The cable remote control is defective.	Check the remote control and its connections. If necessary, replace the remote control.
It is not possible to operate the Cassette Lift using the Smartphone App.	The Bluetooth receiver is not switched ON.	Open the door above the Cassette Lift. If there is a switch available to switch the Cassette Lift ON and OFF: Select the switch to the “ON” position. If the Bluetooth receiver has switched OFF: Press the “IN” (1) push-button on the cable-connected remote control.
	The Smartphone is not connected to the receiver.	Connect the Smartphone to the lift's receiver or re-install the Smartphone App if necessary (see Section 5.6, page 40).
	The Bluetooth control box is not installed.	Contact the customer service department (see Chapter 14, page 90).

Fault	Possible Cause	Remedial Measures
It is not possible to operate the Cassette Lift using the Bluetooth remote control.	The Bluetooth remote control is not connected to the receiver.	Teach the Bluetooth remote control in once again (see Section 5.5, page 39).
	The Bluetooth remote control has automatically switched itself OFF.	In order to switch the Bluetooth remote control ON once again, first press the “IN” push-button (1) on the cable-connected remote control and then press the “IN” push-button (1) on the Bluetooth remote control for a period of more than five seconds.
	The Bluetooth remote control battery is discharged.	Charge the battery (see Section 10.3, page 71).
	The Bluetooth remote control is defective.	Check the Bluetooth remote control and replace it if necessary.
	The Bluetooth control box is not installed.	Contact the customer service department (see Chapter 14, page 90).
	The set up for the first Bluetooth remote control is lost when teaching in a second Bluetooth remote control.	Teach the first Bluetooth remote control in once again (see Section 5.5, page 39).
The Cassette Lift neither raises nor lowers.	The Cassette Lift’s electrical or hydraulic system is defective.	If necessary, operate the Cassette Lift in the emergency operating mode (see Section 6.1, page 43 (K70 / K90) or Section 6.2, page 49 (K90 ACTIVE)) and do not use it again. Contact a specialist workshop.
The platform does not extend.	The vehicle's battery is discharged or defective.	Check the vehicle's battery and recharge or replace it if necessary.
	The Cassette Lift’s main or secondary fuse has blown.	Check the fuses and replace if necessary.
	The end limit switch and solenoid S10 (see Chapter 12, page 82) are defective.	Manually the platform out of the cassette in the emergency mode (K70 and K90 only) (see Section 6.1.1, page 43). Have the end limit switch and solenoid replaced by a specialist workshop.

Fault	Possible Cause	Remedial Measures
The Cassette Lift extends the platform but does not raise or lower it.	The platform is not fully extended because the vehicle is on an incline or because the platform has hit an obstruction.	Retract the platform fully using the cable-connected remote control, Bluetooth remote control or Smartphone App. Park the vehicle on a level surface with sufficient space for the platform to extend fully.
	The Cassette Lift's electrical or hydraulic system is defective.	Have the Cassette Lift checked in a specialist workshop
The Cassette Lift does not lift the platform off the ground.	K70 and K90: The internal carriage has been pushed back into the cassette unnoticed, e.g. because of the incline of the vehicle on a hill.	K70 and K90: Fully extend the platform using the cable or wireless remote control. Alternatively: Pull the platform out of the cassette manually.
The Cassette Lift does not lift the platform off the ground.	The cable-connected remote control, Bluetooth remote control or Smartphone App is defective or the contactor has tripped.	Raise and retract the platform using the emergency operating mode (see Section 6.1, page 43 (K70 / K90) or Section 6.2, page 49 (K90 ACTIVE)). Have the remote control and contactor checked in a specialist workshop. Check the Smartphone and repair or replace it if necessary.
	The Cassette Lift's electrical or hydraulic system is defective.	Have the Cassette Lift checked in a specialist workshop
The Cassette Lift does not lower the platform.	The cable-connected remote control, Bluetooth remote control or Smartphone App is defective.	Check the remote control or Smartphone and repair or replace it if necessary.
	The lowering valve on the hydraulic aggregate is defective.	Lower the platform using the emergency operating mode (see Section 6.1.3, page 46 (K70 / K90) or Section 6.2.2, page 50 (K90 ACTIVE)). Have the lowering valve replaced in a specialist workshop.

Fault	Possible Cause	Remedial Measures
The platform is in a position above the retract position. The Cassette Lift does not lower the platform when the “STOW” push-button (5) on the cable-connected remote control, Bluetooth remote control or Smartphone is pressed.	K70 / K90: The retracted / extended position switch S8 (see Section 12.2, page 83) behind the transfer plate on the internal carriage of the Cassette Lift is defective. The roller plunger is pressed in and does not spring back. K90 ACTIVE: The limit switch on the carrier arm, behind the transfer plate does not function. The roller plunger is pressed in and does not spring back.	Operate the roller plunger on the extended / retracted position switch S8 several times using a suitable tool. If necessary, adjust the fastening position of the roller plunger such that the roller plunger moves more easily and is reliably operated by the switching cam. Run to the retract position using the "DOWN" (3) and "UP" (4) push-buttons on the cable-connected remote control, the Bluetooth remote control or the Smartphone.
The Cassette Lift raises the platform slightly but abruptly after it has extended.	The 2/2-way valve is defective.	Have the 2/2-way valve replaced in a specialist workshop.
The platform jerks when retracting into the cassette.	The Cassette Lift is not adjusted correctly.	K70 / K90: Adjust the switching point for the retract position or adjust the rollers (see Section 10.1, page 64).
		K90 ACTIVE: Adjust the switching point for the retract position (see Section 10.2, page 69).
The Cassette Lift lowers the platform slowly of its own accord.	The lowering valve is defective.	Have the lowering valve replaced in a specialist workshop.
	The pressure release valve is open.	Close the pressure release valve (see Section 6.1.3, page 46 (K70 / K90), or Section 6.2.2, page 50 (K90 ACTIVE)).

10.1 Adjustments if the Platform Jerks When Being Retracted Into the Cassette (K70 / K90)

One of the two carrier arms on each side is fitted with two rollers (see Figure 37 and Figure 38).

Figure 37: Roller (K70)

Figure 38: Rollers (K90)

A guide rail is fitted to each side of the inside the cassette (see Figure 39, page 65, and Figure 40, page 65).

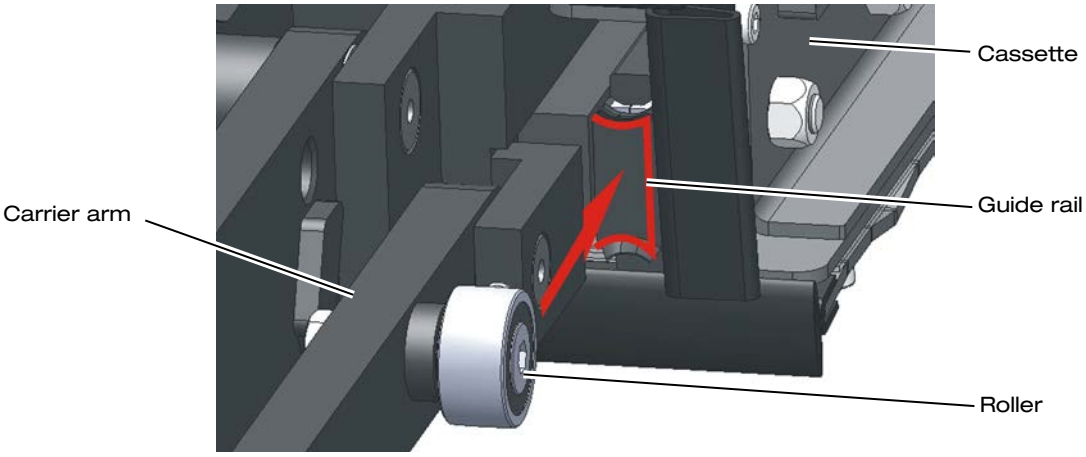

Figure 39*:* Roller and Guide Rail (K70)

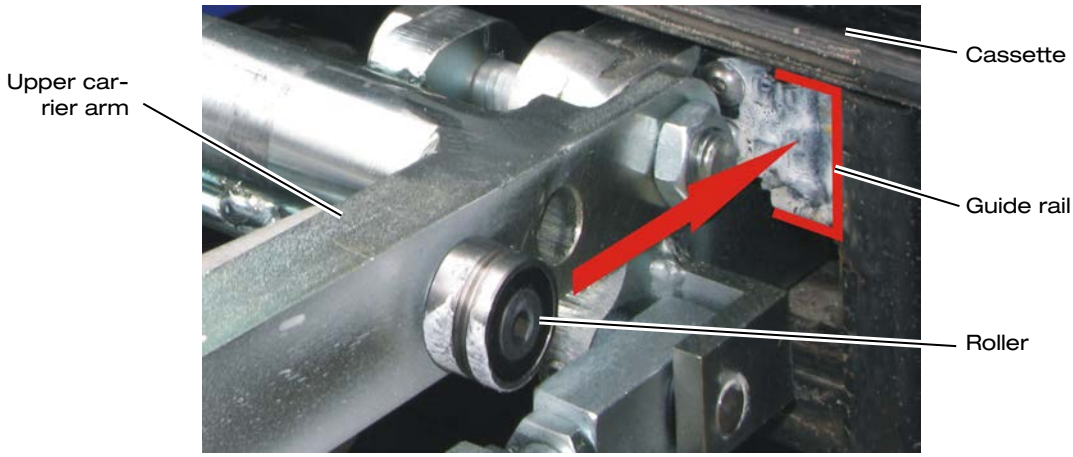

Figure 40*:* Roller and Guide Rail (K90)

Rollers and guide rails ensure that the platform is guided precisely when being retracted into the cassette.

When the platform is lowered to the retract position, the rollers must align precisely with the guide rails. If the position of the platform is too high, the rollers hit the top of the leading edge of the guide rail when the platform is retracted. If the position of the platform is too low, the rollers hit the bottom of the leading edge of the guide rail when the platform is retracted. In both cases, the platform will jerk when being retracted and the switching point for the retract position must be adjusted (see Section 10.1.1, page 66).

Poorly adjusted rollers can also cause the platform to jerk when being retracted. If in doubt, a specialist workshop must decide whether the retract position or the rollers need to be re-adjusted (adjusting the rollers: see Section 10.1.2, page 68).

10.1.1 Adjusting the switching point for the retract position (K70 / K90)

The switching point for the retract position is set by a switching cam (position: see Figure 41 and Figure 42, page 67). The switching cam operates a position switch on the internal carriage of the Cassette Lift as soon as the retract position is reached.

- ⇨ Fully extend the platform from the cassette (for the operating controls: see Section 2.3, page 20).
- ⇨ Fully raise the platform.
- ⇨ Lower the platform to the retract position.
- ⇨ Retract the platform into the cassette.
- ⇨ Observe whether the platform is too high or too low when it retracts into the cassette, such that the rollers hit the leading edge of the guide rails.

If the platform is too high when it retracts into the cassette:

- ⇨ Extend the platform fully out of the cassette.
- ⇨ Lower the platform onto the ground.
- ⇨ Push the transfer plate down.
- ⇨ Adjust the switching cam by hitting it lightly with a hammer from above (see Figure 41 and Figure 42, page 67). In order to prevent damage to the switching cam, place a protective block (e.g. of wood or aluminium) between the hammer and switching cam.

NOTE

Do not loosen the switching cam's securing screw. If the cam's securing screw is loosened, the switching cam must be completely readjusted and the Cassette Lift is no longer operational.

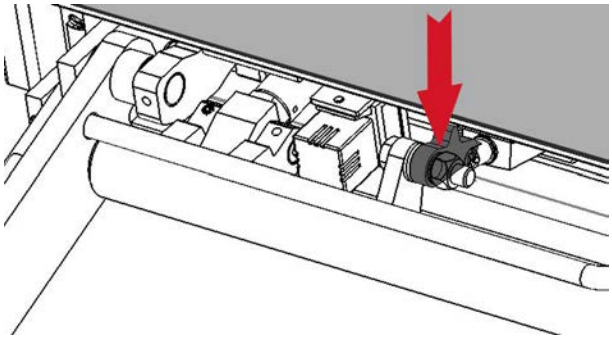

Figure 41*:* Adjusting the Switching Cam, View from Above (K70)

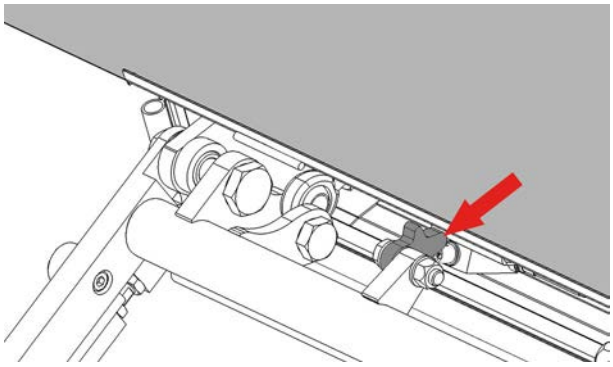

Figure 42*:* Adjusting the Switching Cam, View from Above (K90)

⇨ Carry out a trial run.

⇨ Repeat the procedure if the platform still jerks when being retracted.

If the platform is too low when it retracts into the cassette:

⇨ Fully extend the platform from the cassette (for the operating controls: see Section 2.3, page 20).

⇨ Raise the platform until it reaches the height of the floor inside the vehicle.

⇨ Adjust the switching cam by hitting it lightly with a hammer from below (see Figure 43 and Figure 44, page 68). In order to prevent damage to the switching cam, place a protective block (e.g. of wood or aluminium) between the hammer and switching cam.

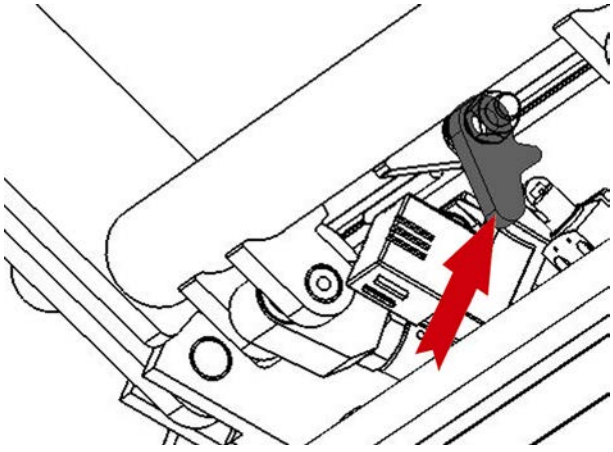

Figure 43*:* Adjusting the Switching Cam, View from Below (K70)

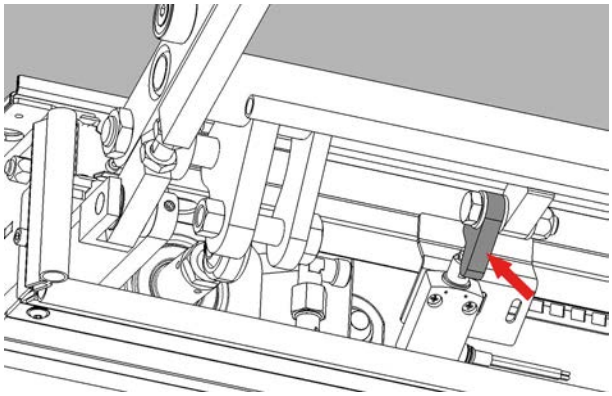

Figure 44: Adjusting the Switching Cam, View from Below (K90)

⇨ Carry out a trial run.

⇨ Repeat the procedure if the platform still jerks when being retracted.

10.1.2 Adjusting the rollers (K70 / K90)

⇨ Observe whether the rollers hit the top or bottom of the leading edge of the guide rail when the platform retracts into the cassette.

⇨ Insert the Allen key provided into the eccentric in the roller (see Figure 45).

⇨ Loosen the roller securing screw on the platform side (see Figure 45).

Figure 45: Adjusting the Rollers

⇨ Adjust the height of the roller using the Allen key.

⇨ Tighten the fastening screw once again.

⇨ Carry out a trial run.

⇨ Repeat the procedure if the roller still hits the leading edge of the guide rail when the platform is being retracted into the cassette.

10.2 Adjusting the Switching Point for the Retract Position (K90 ACTIVE)

The switching point for the retract position is adjusted by means of the switching cam on the left-hand carrier arm (see Figure 46).

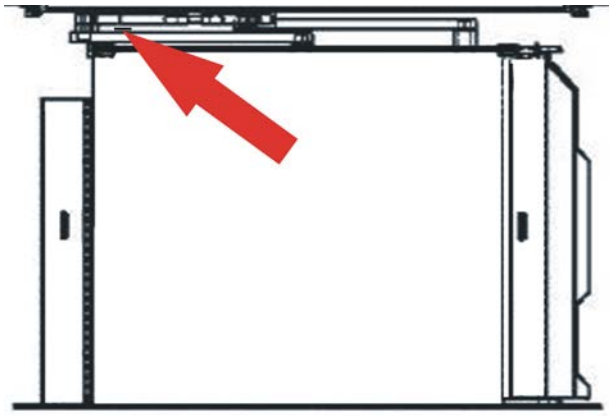

Figure 46*:* Position of the Switching Cam

- ⇨ Fully extend the platform from the cassette (for the operating controls: see Section 2.3, page 20).
- ⇨ Fully raise the platform.
- ⇨ Lower the platform to the retract position.
- ⇨ Retract the platform into the cassette.
- ⇨ Observe whether the platform is too high or too low when it retracts into the cassette.

If the platform is too high when it retracts into the cassette:

- ⇨ Fully extend the platform from the cassette (for the operating controls: see Section 2.3, page 20).
- ⇨ Lower the platform onto the ground.
- ⇨ Adjust the switching cam by hitting it lightly with a hammer from below (see Figure 47, page 70). In order to prevent damage to the switching cam, place a protective block (e.g. of wood or aluminium) between the hammer and switching cam.

NOTE

Do not loosen the switching cam's securing screw. If the cam's securing screw is loosened, the switching cam must be completely readjusted and the Cassette Lift is no longer operational.

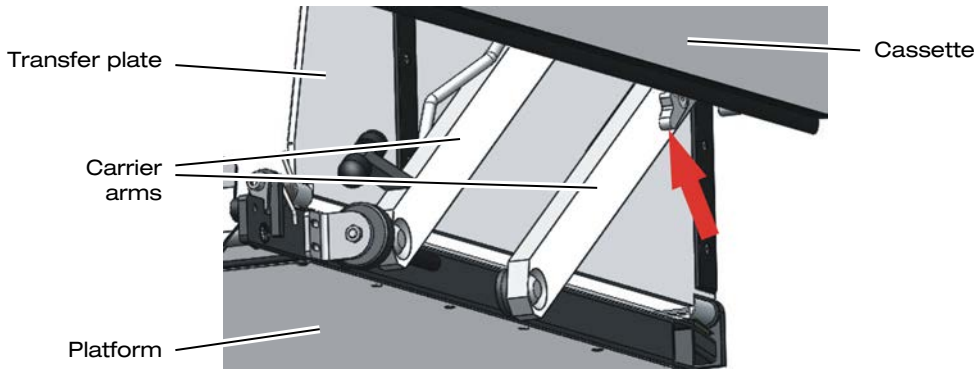

Figure 47*:* Adjusting the Switching Cam for the Retract Position (1)

⇨ Carry out a trial run.

⇨ Repeat the procedure if the platform is still too high when being retracted.

If the platform is too low when it retracts into the cassette:

⇨ Extend the platform fully out of the cassette.

⇨ Raise the platform until it reaches the height of the floor inside the vehicle.

⇨ Push the transfer plate down.

⇨ Adjust the switching cam by hitting it lightly from above with a hammer (see Figure 48). In order to prevent damage to the switching cam, place a protective block (e.g. of wood or aluminium) between the hammer and switching cam.

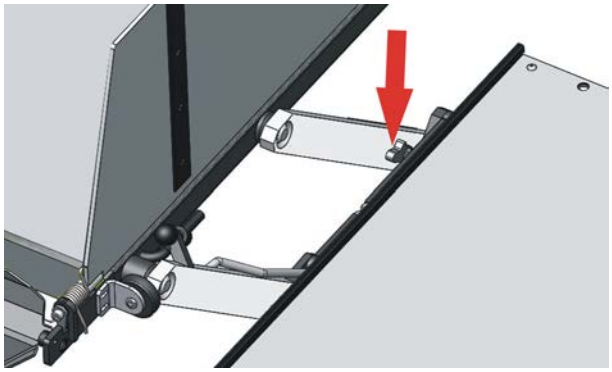

Figure 48*:* Adjusting the Switching Cam for the Retract Position (2)

⇨ Carry out a trial run.

⇨ Repeat the procedure if the platform is still too high when being retracted.

10.3 Charging the Bluetooth Remote Control Battery

CAUTION

Risk of personal injury and material damage if the Bluetooth remote control battery is not charged correctly.

If the Bluetooth remote control battery is not charged correctly, there is a risk of personal injury and material damage through the battery overheating or exploding.

Therefore:

- Only use the battery charger and charging cable provided to charge the battery.
- Disconnect the battery from the charger when it is fully charged.

NOTE

The capacity of the Bluetooth remote control is sufficient to provide 24 hours of continuous and lighting or approx. 2 months in the standby mode.

Use this capacity to the full and only recharge the battery when the “State of charge” LED (9) indicates a low residual capacity (see Section 2.3.2, page 21).

The following position numbers given in brackets are with reference to Figure 16, page 21.

⇨ Remove the cover from the USB connection on the remote control.

⇨ Connect the charging cable provided to the USB connection on the remote control.

⇨ Connect the charging cable to one of the chargers provided.

⇨ Connect the charger to a corresponding outlet socket.

The charging procedure begins. The "State of Charge" LED (9) lights up.

The "State of Charge" LED (9) goes out as soon as the battery is fully charged. The charging procedure can take up to 8 hours.

⇨ Disconnect the charging cable from the USB connection on the remote control.

⇨ Fit the cover to the USB connection.

⇨ Stow the charging cable and charger away.

11 Inspection Log

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

This inspection must be also be carried out if modifications are made to the construction or after major repairs have been carried out.

If used commercially or communally, this inspection must be repeated at intervals of not more than one year

We recommend that this annual inspection is also carried out if the Cassette Lift is used privately.

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 11.2, page 74).

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).

11.1 Inspection Log Master Data Sheet

Cassette Lift Master Data Sheet

Serial No./Type* .....

Number plate .....

Owner .....

.....

.....

Year built .....

Commissioned on .....

* see rating plate

11.2 Inspection List

For a routine, yearly inspection by a technical expert (see information on page 72).

Mechanical parts	
Fixtures on the vehicle	All fastening points 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 Cassette 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 cylinder	Check for leaks and functionality

Electrical system	
Cable-connected remote control	Functional check
Bluetooth remote control (optional extra)	Functional check
Battery isolation switch	Functional check
Electrical drive for the roll-off guard (K70)	Functional check
Electrical cables	Inspection of the connections in accordance with the electrical circuit diagram Inspection of the cables for damage to the insulation

11.3 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 Cassette 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. / a re-inspection is necessary.

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 Cassette 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. / a re-inspection is necessary.

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 Cassette 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. / a re-inspection is necessary.

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 Cassette 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. / a re-inspection is necessary.

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 Cassette 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. / a re-inspection is necessary.

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 Cassette 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. / a re-inspection is necessary.

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

12 Electrical Circuit Diagrams

12.1 Electrical Connection Diagram K70 / K90 / K90 ACTIVE (with/without optional Bluetooth remote control)

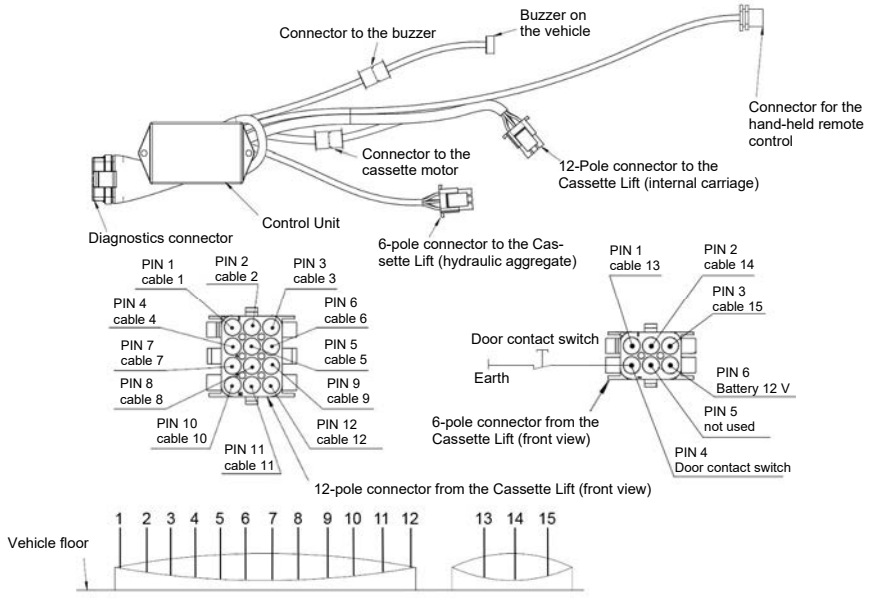

Figure 49: Electrical Connection Diagram K70 / K70 / K90 ACTIVE

12.2 Electrical Circuit Diagram K70 / K90

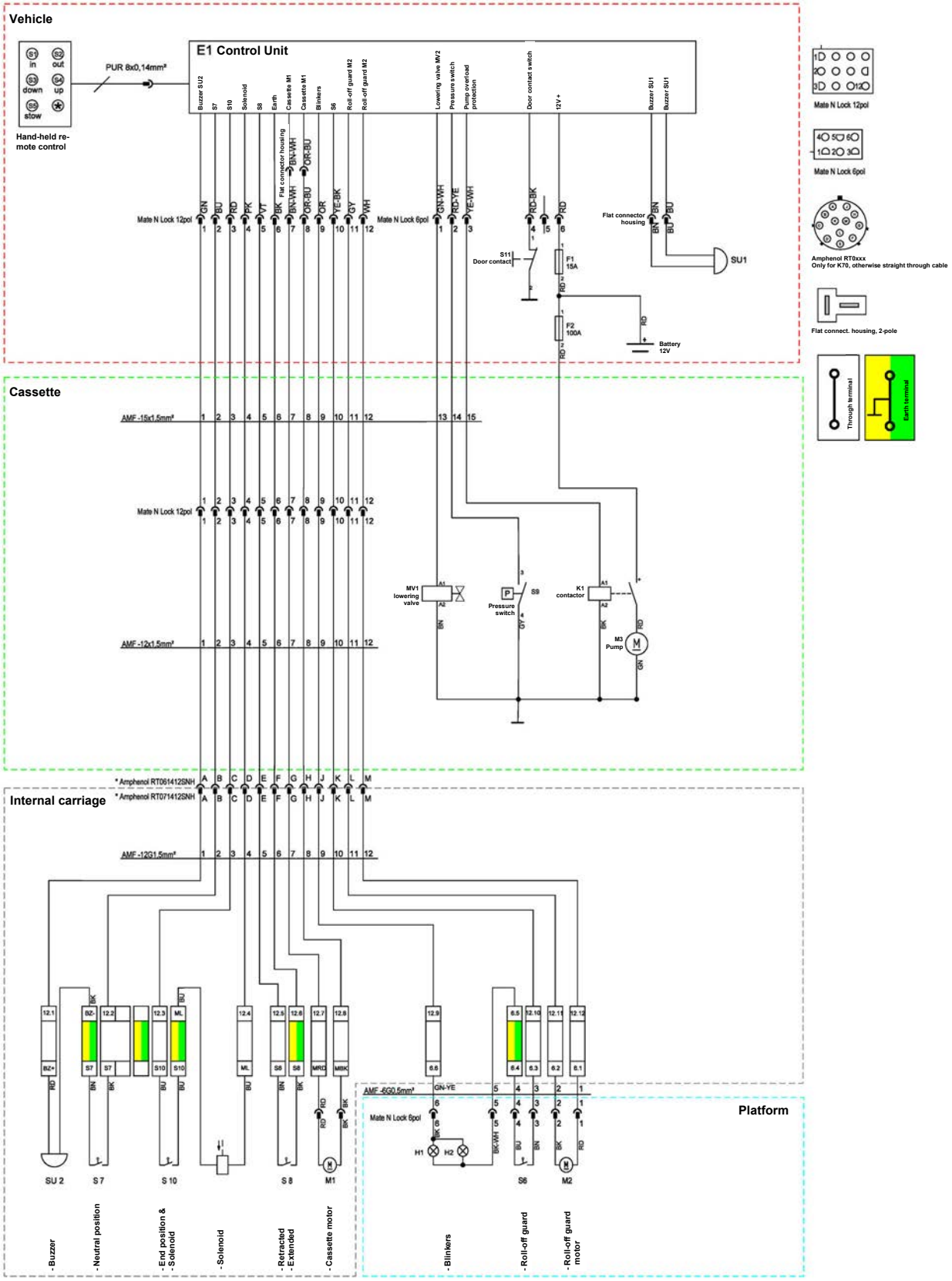

Figure 50: Electrical Circuit Diagram K70 / K90

Abbreviation (acc. to IEC 60757)	**Colour**
BK	Black
BK-WH	Black-White
BN	Brown
BN-WH	Brown-White
BU	Blue
GN	Green
GN-WH	Green-White
GN-YE	Green-Yellow
GY	Grey
OR	Orange
OR-BU	Orange-Blue
PK	Pink
RD	Red
RD-BK	Red-Black
RD-YE	Red-Yellow
VT	Violet
WH	White
YE-BK	Yellow-Black
YE-WH	Yellow-White

Abbreviation	**Meaning**
E1	Control Unit
F1	Fuse 15 A
F2	Fuse 100 A
H1	LED blinker, platform
H2	LED blinker, platform
K1	Hydraulic aggregate contactor
M1	Cassette motor, retract and extend
M2	Linear motor, roll-off guard
M3	Hydraulic pump motor
MV1	Lowering valve
S6 (normally open)	Switch for the roll-off guard
S7 (normally open)	Switch for neutral position (to retract the platform)
S8 (normally open)	Switch for retracted / extended position
S9 (normally open)	Pressure switch for the roll-off guard
S10 (normally open)	Switch for end position and solenoid
S11 (normally closed)	Door contact switch
SU1	Buzzer in the vehicle
SU2	Buzzer on the internal carriage

12.3 Electrical Circuit Diagram K90 ACTIVE

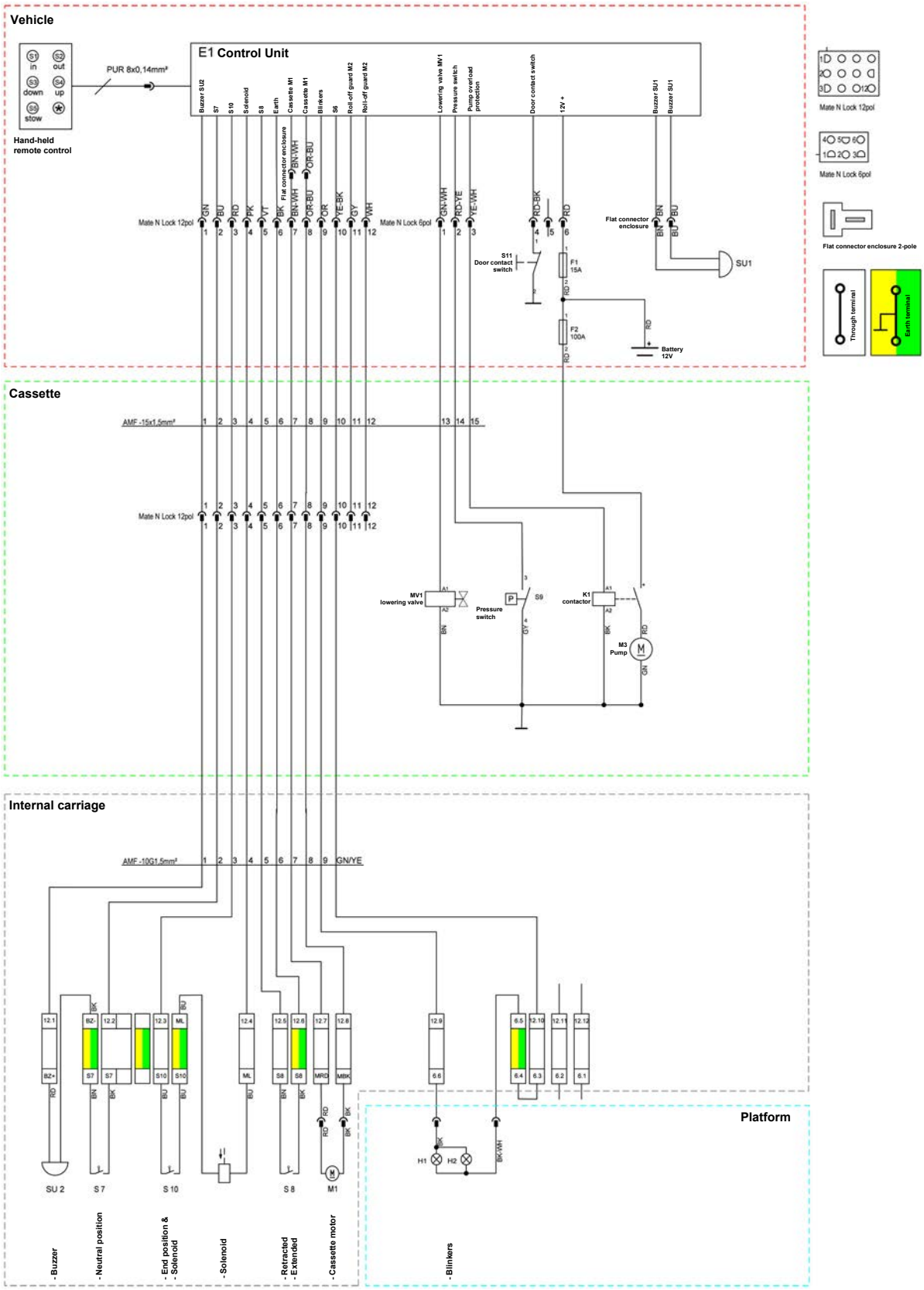

Figure 51: Electrical Circuit Diagram K90 ACTIVE

Abbreviation (acc. to IEC 60757)	**Colour**
BK	Black
BK-WH	Black-White
BN	Brown
BN-WH	Brown-White
BU	Blue
GN	Green
GN-WH	Green-White
GN-YE	Green-Yellow
GY	Grey
OR	Orange
OR-BU	Orange-Blue
PK	Pink
RD	Red
RD-BK	Red-Black
RD-YE	Red-Yellow
VT	Violet
WH	White
YE-BK	Yellow-Black
YE-WH	Yellow-White

Abbreviation	**Meaning**
E1	Control Unit
F1	Fuse 15 A
F2	Fuse 100 A
H1	LED blinker, platform
H2	LED blinker, platform
K1	Hydraulic aggregate contactor
M1	Cassette motor, retract and extend
M3	Hydraulic pump motor
MV1	Lowering valve
S7 (normally open)	Switch for neutral position (to retract the platform)
S8 (normally open)	Switch for retracted / extended position
S9 (normally open)	Pressure switch for the roll-off guard
S10 (normally open)	Switch for end position and solenoid
S11 (normally closed)	Door contact switch
SU1	Buzzer in the vehicle
SU2	Buzzer on the internal carriage

13 Hydraulic Line Diagrams

13.1 Hydraulic Circuit Diagram K70

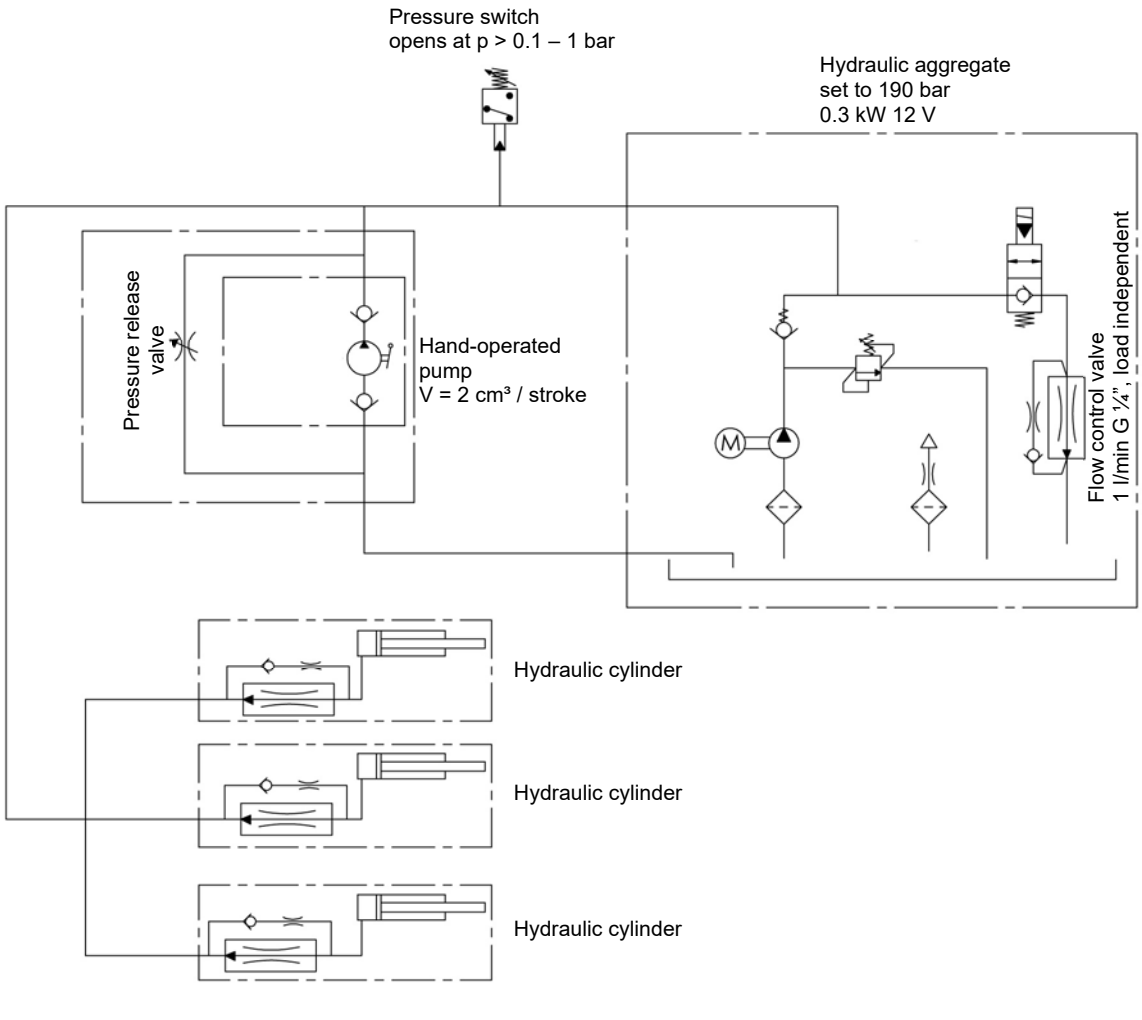

Figure 52: Hydraulic Circuit Diagram K70

13.2 Hydraulic Circuit Diagram K90

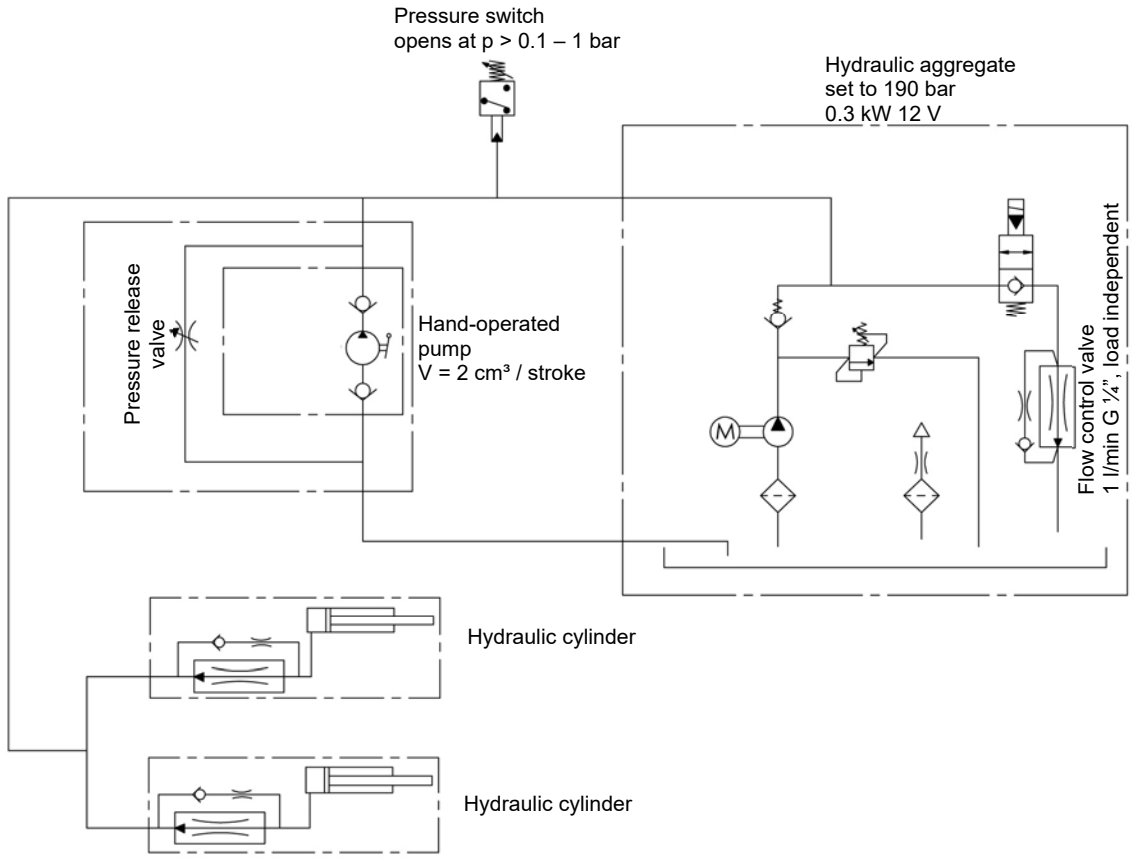

Figure 53: Hydraulic Circuit Diagram K90

13.3 Hydraulic Circuit Diagram K90 ACTIVE

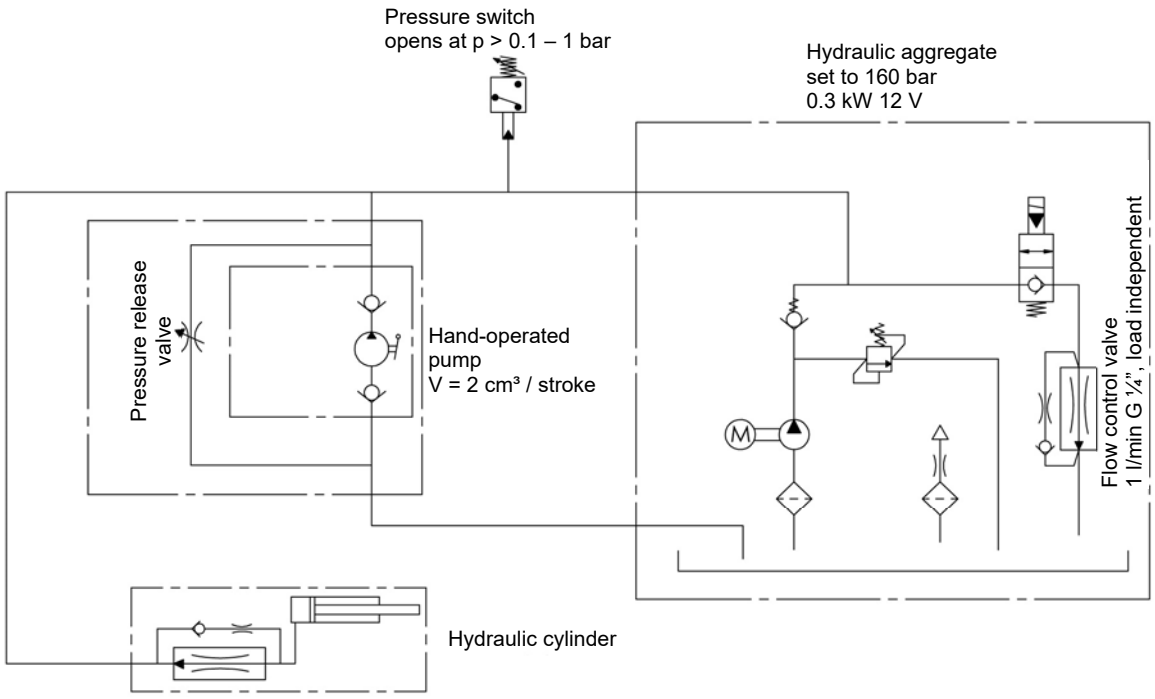

Figure 54: Hydraulic Circuit Diagram K90 ACTIVE

14 Customer Service

Contact your local dealer to order spare parts, for maintenance and repair work or if you have any problems or queries.

In addition to this, the AMF-Bruns GmbH & Co. KG customer service is also available to you. Enquiries can be made in either the German or English language.

The address of the customer service 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

NOTE

Guarantee work on the Cassette 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.

15 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	**Cassette Lift**
Type:	**K70, K90, K90 ACTIVE**

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		Gerit Bruns, managing director
Place, date	Signature	Details of the signatory

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