Operating Instructions

for

MBB PALFINGER Tail Lifts
Operating Instructions
for
MBB PALFINGER Tail Lifts

Standard Tail Lifts
Retractable Tail Lifts
Foldable Tail Lifts
Column Lifts
Table of Contents

Table of Contents ............................................................... 4
About these Instructions ...................................................... 6
Further Documentation .......................................................... 6
Important Safety Information ............................................. 7
Proper Use ............................................................................ 7
Qualification of Personnel ...................................................... 7
Safety Instructions in these Instructions ............................. 8
Observe the Following .......................................................... 8
MBB PALFINGER – The Tail Lift ......................................... 10
Delivery Contents ............................................................. 11
How to Identify Your Tail Lift Model ............................... 12
Model Overviews ............................................................... 14
Standard Tail Lifts .............................................................. 14
Standard Tail Lifts .............................................................. 15
Standard Tail Lifts .............................................................. 16
Standard Tail Lifts with Electrical Cylinders ..................... 17
Retractable Tail Lifts .......................................................... 18
Retraction Equipment .......................................................... 19
Foldable Tail Lifts ............................................................... 20
Column Lifts ........................................................................ 21
Presetting the Tail Lift ....................................................... 22
Setting the Ground Adjustment Timing .......................... 22
Presetting the Platform Tilt ................................................. 22
General Operation ............................................................. 23
Switching on the Tail Lift ..................................................... 24
Extending the Stabilizer Feet at Your Vehicle .................... 26
Retracting the Stabilizer Feet at Your Vehicle ................. 27
Moving the Platform ............................................................ 28
Loading or Unloading the Platform ................................... 31
Switching off the Tail Lift .................................................... 34
Operating Elements .......................................................... 37
Lateral Operating Element .................................................. 37
Operation Using two Hand Cable Controls with three ... 82
Pushbuttons, each ............................................................... 82
Optional Operating Method: Foot Control ....................... 88
Optional Operating Method: Hand Cable Control with two .. 90
Pushbuttons ......................................................................... 90
Optional Operating Method: Hand Cable Control with three Pushbuttons ............................................................... 92
Optional Operating Method: Wireless Remote Control Unit (Standard) ............................................................... 96
Optional Operating Method: Wireless Remote Control Unit (Nordic) ............................................................... 98
Special Operating Elements ............................................. 100
Special Operating Elements ............................................. 102
Special Operating Elements ............................................. 104
Programming a Key Code ............................................. 106

Service and Maintenance ............................................. 110
Maintenance Before Starting ........................................... 113
Maintenance Depending on Usage Frequency .................. 114
Monthly Maintenance ..................................................... 120
Quarterly or Semi-annual Maintenance ............................ 123
Annual Maintenance ..................................................... 123
Checks .............................................................................. 128

Eliminating Faults ......................................................... 129

Technical Data ............................................................... 144
Load Diagrams ............................................................... 145
Hydraulic Diagrams ......................................................... 151

Lubricants and Operating Media ..................................... 161
Recommended Hydraulic Oil Grades ............................. 161
Environment-friendly Oils .............................................. 161
Recommended Lubricant Grease .................................... 161

Available Accessories ................................................... 161

Index ................................................................................ 164
About these Instructions

These instructions contain important information to install, operate, and maintain the MBB PALFINGER tail lift in a safe and proper way, and to eliminate simple faults yourself.

- Before starting to work with the tail lift, read these instructions completely, particularly chapter “Important Safety Information”.

Further Documentation

- Assembly instructions
- Assembly drawing
- Spare parts catalog (online)
- Test data booklet
- Assembly inspection report (on request)
- Brief operating instructions (optional)
Important Safety Information

The MBB PALFINGER tail lift is manufactured according to state-of-the-art processes and approved safety standards. However, the risk of personal injuries and material damage exists if the following general safety instructions and the warnings prior to the work instructions given in this manual are not obeyed.

Therefore, read these instructions thoroughly and completely before operating the tail lift.

Store the instructions in such a way that all users have access to the instructions at any time.

Always provide these operating instructions if you sell or rent out the vehicle with the tail lift.

Proper Use

Exclusively use the tail lift for loading and unloading goods. During loading and unloading, only the operator is allowed to travel on the lift.

Observe all capacity limits as stated in the technical data. Proper use also means that you have read and understood these instructions, particularly chapter “Important Safety Information”.

Improper use is considered any use where the tail lift is used
• outside the application areas stated in these instructions,
• under operating conditions that deviate from the description in these instructions.

Qualification of Personnel

The operation of the tail lift is only allowed for:
• personnel who has read and understood these instructions, particularly chapters “Important Safety Information” and “General Operation”,
• and has been familiarized with mode of action and handling the tail lift.
Safety Instructions in these Instructions

Safety instructions have been included before any instruction for actions where the risk of personal injuries or material damage exists.

Safety instructions are structured as follows:

The described actions to eliminate the hazard must be absolutely complied with!

The signal word designates the severity of the hazard:

<table>
<thead>
<tr>
<th>Signal word</th>
<th>Usage</th>
</tr>
</thead>
<tbody>
<tr>
<td>DANGER!</td>
<td>Indicates a direct serious hazard that will result in severe injuries or even death, if the hazard is not avoided.</td>
</tr>
<tr>
<td>WARNING!</td>
<td>Indicates a potential hazard that may result in severe injuries or even death, if the hazard is not avoided.</td>
</tr>
<tr>
<td>CAUTION!</td>
<td>Indicates a potentially hazardous situation that may result in medium or light injuries or damage to property if the hazard is not avoided.</td>
</tr>
</tbody>
</table>

Observe the Following

General Notes

• Always have these instructions readily available in the vehicle.
• Constructional changes may only be performed by the contractor repair shop of MBB PALFINGER. You will find the address of your local contractor repair shop and other contact information in the list of repair shops.
• For maintenance, use only original MBB PALFINGER spare parts.
• Observe all applicable accident prevention regulations.
When Switching On

- Before switching on the tail lift, check whether all safety and warning devices are in place and function properly.
  - Warning flags
  - Warning lights
  - Supporting straps
  - Roll stops

During Operation

- Make sure that the tail lift is unlocked before taking it into operation.
- Provide sufficient illumination of the loading area.
- Never transport persons on the tail lift.
- Always load the tail lift in such a way that the weight is evenly distributed.
- Secure the load so that it cannot fall off the tail lift. Rolling containers without brakes may only be transported on the tail lift if you secure them with roll stops (roll-off protection) against rolling away.
- Keep the maneuvering area around the vehicle free.

Prior to Maintenance

- Switch off the battery main switch or remove the grounding strap.
- Secure or relieve the springs before replacement.
- If hydraulic oil emerges, do not put your hands into the oil stream.
- When executing any maintenance work under the platform, secure the moving part against moving down.

At Disposal

- Dispose of oils and filters according to the regulations in your country.
MBB PALFINGER – The Tail Lift

Congratulations to the purchase of your new tail lift made by MBB PALFINGER!

With more than 50 years of experience in the field of hydraulic tail lifts, MBB PALFINGER GmbH is among the leading manufacturers of these highly helpful load systems.

You will encounter the tail lifts of the MBB PALFINGER brand and also former brands such as Hubfix, Interlift, and Hayons Inter in more than 40 countries throughout the world. More than 100,000 tail lifts manufactured in the factory near Bremen can be found on all five continents.

A unique service network with more than 2,500 service stations in Europe alone guarantees optimum logistics without borders.

Your new MBB PALFINGER tail lift is features innovative and reliable technology. It was manufactured by our employees with great care. These are the best prerequisites for a long and problem-free service-life.

To familiarize yourself with the operation of the new tail lift, we ask you to read the following operating instructions carefully. In these instructions you also find the necessary safety instructions for the operation of the tail lift.

In case you have any questions concerning your tail lift, the MBB PALFINGER service team is readily available for you.
Delivery Contents

- Tail lift
- Adhesive label – VEHH information
- Large identification plate (for the platform)
- Small identification plate (for the lifting device)
- Underrun bumper shield (UBS)
- Load diagram
- Operating instructions
- Test data booklet
- Starter kit, consists of:
  - Underrun bumper certificate
  - Assembly instructions
  - Brief operating instructions
  - Large inspection organization (TÜV) plate
  - Small inspection organization (TÜV) plate
How to Identify Your Tail Lift Model

Each tail lift model has been assigned a letter (A to V) in these instructions.

► Please select your tail lift model in the following list and clearly mark the letter associated with your tail lift model, for example with a ball pen.

You will find the letter at the beginning or each chapter that contains information concerning your tail lift model.

Standard Tail Lifts

A

Lateral Operating Panel K

- 350 K to 3000 K
- 1250 KL to 2000 KL
- 1500 KS to 2000 KS
- 1500 KK to 2500 KK
- 500 KB to 750 KB
- 500 KSP to 750 KSP
- 500 K1TL/R to 1000 K1TL/R
- 500 K2TL/R to 1000 K2TL/R
- 500 KRM
- 500 duo® to 750 duo®
- 750 Athlet® quattro to 1000 Athlet® quattro
- 750 rentfix® / ML Pro to 1500 rentfix® / ML Pro
- 750 M/MA
- 750 MSP
- 500 neo to 750 neo
- 750 M1TL/R
- 2000 PTG

B

One-cylinder model

- 500 GBL

C

minifix

- 350 minifix and 500 minifix
Electrical Cylinders

- 1000 E

Retractable Tail Lifts

Platform single-folded

- 750 KUZ to 3000 KUZ
- 1250 KLUF to 1500 KLUF
- 1000 KUFR to 1500 KUFR
- 1500 KUZK to 2000 KUZK
- 1500 KUZR to 2000 KUZR
- 1500 TrailGate to 2000 TrailGate
- 1500 TruckGate to 2000 TruckGate

Platform double-folded

- 1500 KUZF to 2000 KUZF
- 750 KUZFM to 2000 KUZFM

Foldable Tail Lifts

Four-cylinder model

- 1000 KF to 2000 KF
- 1000 KFN to 1500 KFN

Two-cylinder model

- 1000 HFL to 1500 HFL
- 750 twinfold to 1500 twinfold

One-cylinder model

- unifold
- 350 to 500 Tuck-under

Column Lifts

Standard column lift

- 4000V
Model Overviews

A Standard Tail Lifts

2 Supporting strap on body (not in scope of delivery)
3 Lateral operating panel
4 Hydraulic unit
5 Underrun bumper
6 Lift arms switch b13, tilt sensor b15
7 Lift arms switch b16, tilt sensor b15
10 Foot control
11 Roll stop (roll-off protection, optional)
12 Payload center of gravity
13 Warning lights (optional)
14 Platform
17 Torsion frame
18 Lift cylinder
19 Tilt cylinder
21 Support tube
22 Hand cable control
B  Standard Tail Lifts

2  Supporting strap on body (not in scope of delivery)
4  Hydraulic unit
5  Underrun bumper
9  Railing
12  Payload center of gravity
14  Platform
17  Torsion frame
18  Lift cylinder
22  Hand cable control
**C Standard Tail Lifts**

2. Supporting strap on body (not in scope of delivery)
3. Lateral operating panel
4. Hydraulic unit
6. Lift arms switch b13
10. Foot control
11. Roll stop (roll-off protection, optional)
12. Payload center of gravity
13. Warning lights (optional)
14. Platform
17. Torsion frame
18. Lift cylinder
19. Tilt cylinder (covered by platform)
21. Support tube
E  Standard Tail Lifts with Electrical Cylinders

2 Supporting strap on body (not in scope of delivery)
3 Lateral operating panel
4 Power unit
5 Underrun bumper
6 Tilt sensor b15
7 Tilt sensor b15
10 Foot control
11 Roll stop (roll-off protection, optional)
12 Payload center of gravity
13 Warning lights (optional)
14 Platform
17 Torsion frame
18 Lift cylinder
19 Tilt cylinder
21 Support tube
22 Hand cable control
23 Bellows
F G  Retractable Tail Lifts

1  Guide rails
2  Supporting strap on body (not in scope of delivery)
3  Lateral operating panel
4  Hydraulic unit
6  Lift arms switch b13, tilt sensor b15
7  Lift arms switch b16, tilt sensor b15
8  Guide pulley
10  Foot control (optional)
11  Roll stop (roll-off protection, optional)
12  Payload center of gravity
13  Warning lights (optional)
15  Folding part of platform
16  Stationary part of platform
17  Torsion frame
18  Lift cylinder
19  Tilt cylinder
21  Support tube
22  Hand cable control
24  Guide cylinder
Retraction Equipment

1 Guide rails
15 Folding part of platform
17 Torsion frame
23 Platform package

X Transport position
Y Operating position
K L M Foldable Tail Lifts

2 Supporting strap on body (not in scope of delivery)
3 Lateral operating panel
4 Hydraulic unit
5 Underrun bumper
6 Lift arms switch b13, tilt sensor b15
7 Lift arms switch b16, tilt sensor b15
8 Guide pulley
10 Foot control (optional)
11 Roll stop (roll-off protection, optional)
12 Payload center of gravity
13 Warning lights (optional)
15 Folding part of platform
16 Stationary part of platform
17 Torsion frame
18 Lift cylinder
19 Tilt cylinder
20 Roller at underrun bumper
21 Support tube
22 Hand cable control
Column Lifts

1. Hydraulic unit with oil tank
2. Hand cable control 1
3. Hand cable control 2
4. Vehicle deck 2
5. Vehicle deck 1
6. Hydraulic hoses (connected to hydraulic unit)
7. Guide frame
8. Closing cylinder
9. Roll-stop, towards vehicle rear
10. Tilt sensor b15 (factory-set, do not change position)
11. Warning light
12. Payload center of gravity
13. Link bridge (roll stop, towards external side)
14. Tilt cylinder
15. Safety railing
16. Slide
17. Top flap
Presetting the Tail Lift

This chapter provides the basic settings to enable the comfortable and safe use of the tail lift.

Setting the Ground Adjustment Timing

Only for E-Type equipment with lift arms switch b13 the workshop can determine the time the platform initiates the tilt process (ground adjustment) after making contact with the ground.

To adjust the timing for the ground adjustment:

► Loosen the fastening screw at lift arms switch b13 (6).
► To set an “earlier” ground adjustment, turn lift arms switch b13 (6) a few millimeters clockwise.
► To set a “later” ground adjustment, turn lift arms switch b13 (6) a few millimeters counterclockwise.
► Retighten the fastening screw at lift arms switch b13 (6).
► Check whether the platform initiates the tilt process at the time desired.
► Check whether the spring washer is mounted between lift arms switch and screw and fold back the locking plate.

The time the platform is supposed to tilt has been preset now. The platform tilts earlier or later.

Presetting the Platform Tilt

After the platform was lifted from the ground, it reverts to the preset position. You can adjust the tilt of the platform slightly higher or lower.

► Adjust the desired upper position by using the “Open/Close” pushbutton of the operating panel (see chapter “Operating Elements” from p. 37 of this manual). This is only possible with the tilt sensor b15 on the platform.
General Operation

This chapter provides basic information that you must observe during operation. This information applies to all tail lift models.

- Read the entire chapter carefully and pay special attention to the following safety instructions.

**CAUTION!**

**Hazard of battery discharge!**

When the symbol shown on the left is depicted on the operating element of your tail lift, the tail lift is equipped with a battery monitoring system (BÜW). When the battery capacity falls below the limit value, a buzzer is sounded and the tail lift is automatically switched off, to conserve battery power. The battery power is already at a low level that only one more engine start is possible. If you continue to use the tail lift, you will not be able to start the vehicle!

- Start the vehicle engine immediately after hearing the buzzer, to recharge the battery!

**Note:** For more information on the recommended battery capacity refer to the corresponding table on p. 144.
Switching on the Tail Lift

CAUTION!

Risk of injury or material damage due to insufficient safety measures!

Personnel can be injured and material damage can occur at your vehicle, the tail lift, or other vehicles if you do not observe the following:

- Prior to starting work, make sure that all safety and warning devices are present and operational.
- Only stop in places where the traffic regulations permit a stop.
- Secure the vehicle against rolling away, for example by using the parking brake, engaging a gear, or wheel chocks.
- Secure the traffic area with warning flags and warning lights before loading or unloading the vehicle. Pay special attention to secure the operating elements of the tail lift that stick out into the moving traffic.

Depending on the model there are four ways to switch on the tail lift:

- Switch in driver's cab
- Key control at lateral operating element
- Key code at lateral operating element
- Battery main switch

To switch on the tail lift using the switch in the driver's cab:

- Set the switch in the driver's cab to "ON".

*The switch marking is no longer visible.*

*The operational readiness of the tail lift is shown by an optical signal in the driver's cab.*

*If the vehicle is equipped with a starter interlock, the vehicle cannot be started.*
To switch on the tail lift using the **key control (26)** at the lateral operating element:

- Insert the key into the keyhole of the key control and turn it clockwise.

  *The operational readiness of the tail lift is shown by an optical signal in the driver's cab.*

To switch on the tail lift using the **key code** at the lateral operating element:

- Enter the key code using the Lift and Close pushbuttons (see Chapter “Programming a Key Code” from p. 106).

  *The operational readiness of the tail lift is shown by an optical signal in the driver's cab.*

To switch on the tail lift using the **battery main switch**:

- Turn the battery main switch clockwise until the cam is engaged.

  *The operational readiness of the tail lift is shown by an optical signal in the driver's cab.*
Extending the Stabilizer Feet at Your Vehicle

**CAUTION!**

**Damage to the vehicle!**
The vehicle chassis frame can be damaged by insufficient carrying capacity of the ground or by incorrectly adjusted hydraulic stabilizer feet.

- Make sure that the carrying capacity of the ground is appropriate for the stabilizer feet!
- Never lift up the vehicle by means of the hydraulic stabilizer feet!
- Readjust the stabilizer feet several times while loading the vehicle.

**CAUTION!**

**Risk of injury or material damage for vehicles with air suspension**

When you do not block the air suspension of your vehicle, the load is completely taken off the axles and the weight is transferred to the stabilizer feet. This can result in personal injuries and your tail lift, your vehicle, or the load can be damaged.

- Set the air suspension control lever of your vehicle to position "Block"!

**Vehicles with Mechanical Stabilizer Feet**

Mechanical stabilizer feet prevent chassis damage. When loading the vehicle, the stabilizer feet skid through.

To extend the mechanical stabilizer feet:

- Loosen the clamping device.
- Lower the stabilizer feet until they touch the ground.
- Hand-tighten the clamping device.

**Vehicle with Hydraulic Stabilizer Feet**

- For details on how to extend the hydraulic stabilizer feet refer to chapter "Operation Using Two-hand Control and Hydraulic Stabilizer Feet" from p. 42.
Retracting the Stabilizer Feet at Your Vehicle

Retracting Mechanical Stabilizer Feet

► Loosen the clamping device.
► Push the stabilizer feet back into the transport position.
► Hand-tighten the clamping device.

Retracting Hydraulic Stabilizer Feet

Risk of chassis damage!
In case of vehicles with air suspension, the entire weight can be shifted to the stabilizer feet.
► Before retracting the stabilizer feet, lift the vehicle by means of the air suspension in such a way that the stabilizer feet are relieved.

► For details on how to retract the hydraulic stabilizer feet refer to chapter from page "Operation Using Two-hand Control and Hydraulic Stabilizer Feet" from p. 42 in this manual.
Moving the Platform

**CAUTION!**
Risk of injury and material damage when moving the platform!
Personnel can be injured when moving the platform. Vehicles and other object in the maneuvering area can be damaged. Load items can fall down and be damaged or injure other persons.

- Make sure that sufficient space is available behind the vehicle for the tail lift.
- Keep other persons away from the maneuvering area while you move the platform.
- Watch the payload, the maneuvering area, and the squeeze area to the vehicle while you move the platform.
- Observe that the operating element are only actuated to move the platform.
- Adjust the platform tilt only in no-load condition.

**CAUTION!**
Risk of injury because of insufficient holding or too little space on the platform!
Persons can fall off the platform and suffer from injuries.

- When loading the platform, leave enough free space for the operator (minimum 50 x 60 cm).
- Only one person – the operator – is allowed to travel on the platform at any time.
- Never hold the payload, always hold tight to the supporting strap!
- Watch the payload and the maneuvering area while moving the platform.

How to move the platform depends on the model and the associated lateral operating element. For a detailed description refer to chapter “Operating Elements” from p. 37 of this manual.
Explanation of Terms

Actions for the platform:

• **Open**
  The platform opens and moves from the vertical transport position to the desired operating position. This position is stored and reverted to when lifting the platform after the ground adjustment.

• **Close**
  The platform closes and moves from the horizontal operating position to the vertical transport position.

• **Extend**
  The platform extends from under the vehicle.

• **Retract**
  The platform retract under the vehicle.

• **Fold out**
  The platform folds out from the transport position to the operating position.

• **Fold in**
  The platform folds in from the operating position to the transport position.

• **Lower**
  The platform moves in horizontal position downwards.

• **Lift**
  The platform moves in horizontal position upwards.
• **Ground adjustment**
  After lowering the platform it tilts from the operating position to adjust to the ground level.
  The foldable models **M** tilt gradually during lowering the platform.

• **Setting the Platform to its Horizontal Position**
  Before the platform is raised from the ground it tilts back into the horizontal operating position that was stored during opening.
  The foldable models **M** tilt gradually during lifting to the horizontal operating position.

• **Set the platform tilt**
  The platform can move to the desired operating position with a higher or lower tilt angle.

**Opening/Folding out/Extending the Platform and Setting the Platform Tilt**
- Loosen the platform interlock (if present).
- Open, fold out or extend the tail lift depending on the model by means of the lateral operating element, the foot control, or the hand cable control, as described in chapter “Operating Elements” of this manual.
- Depending on the model, turn the rotary switch to open or close the platform, as described in chapter “Operating Elements” from p. 37 in this manual, until the unladen platform reaches the desired tilt angle.

**Lowering the Platform**
While the platform is lowered it remains in horizontal position.
After the platform has touched the ground it tilts until the platform edge is flush with the ground.
- Lower the platform depending on the model by means of the lateral operating element, the foot control, or the hand cable control, as described in chapter “Operating Elements” from p. 37 in this manual.

*The platform is slowly lowered and automatically adjusts to the ground.*
Lifting the Platform

Before the platform is lifted it tilts to the horizontal position. While the platform is lifted it remains in horizontal position.

- Lift the platform depending on the model by means of the lateral operating element, the foot control, or the hand cable control, as described in chapter “Operating Elements” from p. 37 in this manual.

Closing/Folding In/Retracting the Platform

- Close, fold in or retract the tail lift depending on the model by means of the lateral operating element, the foot control, or the hand cable control, as described in chapter “Operating Elements” from p. 37 of this manual.

- Close the platform interlock (if present).

Loading or Unloading the Platform

**CAUTION!**

Damage to the tail lift by incorrect loading!
The tail lift can be damaged if the platform load is too high or unbalanced.

- Do not exceed the maximum load weight specified in the “Technical Data” chapter of this manual when loading the platform. Take the weight of the operator standing on the platform into account. The load diagram is also shown at the lateral operating element.

- Center the load on the platform. The payload center of gravity should be as close to the vehicle as possible. If you load the platform on one side only, the payload weight may be max. 50% of the permitted payload.

- Rolling containers without brakes may only be loaded if the tail lift is equipped with a roll-off protection (roll stops or grooves). Rolling containers without brakes must always be secured by this roll-off protection.
Loading or Unloading the Platform on the Ground

- Roll or lift the payload onto the platform.
- Secure any rolling containers on the tail lift by installed brake devices or roll-off protections.

Loading or Unloading the Platform at a Ramp

1. You can use a separate link bridge. Make sure that sufficient space for tail lift exists under the ramp (see figure on the left)!

2. You can use the tail lift itself as link bridge at a ramp. Make sure that the platform edge overlaps the ramp by at least 150 mm (see figure on the left).

Note:

- The maximum permissible load must not be exceeded.

The tail lifts are equipped with a float mode. The float mode is a safety feature. When the vehicle lowers itself during loading, the float mode causes the platform to automatically yield and reposition itself. This does not apply to column lifts.
The float mode does not function during unloading. You must manually lower the platform. Thus you prevent a gap between platform and ramp where you could trip.
Switching off the Tail Lift

The tail lift may only be switched off when the platform is closed or folded in.

CAUTION!

Risk of injury or material damage due to unlocked tail lift!
Persons can be injured or vehicles and objects in public road traffic can be damaged if the tail lift folds out accidentally during driving and sticks out into the moving traffic.
▶ Before driving, lock the tail lift after folding in.
▶ Make sure that the warning lights (25) in the driver's cab are not lit.

Depending on the model there are four ways to switch off the tail lift:
• Switch in driver's cab
• Key control at lateral operating element
• Key code at lateral operating element
• Battery main switch

To switch off the tail lift using the switch in the driver's cab:
▶ Set the switch at the control box in the driver's cab to “OFF”.
  *The visual signal indicating the operational readiness of the tail lift extinguishes. The tail lift is switched off.*

To switch off the tail lift using the key control (26) at the lateral operating element:
▶ Insert the key into the keyhole of the key control and turn it counterclockwise.
▶ Remove the key.
  *The visual signal indicating the operational readiness of the tail lift extinguishes. The tail lift is switched off.*
To switch off the tail lift using the **key code** at the lateral operating element:

- Enter the key code using the Lift and Close pushbuttons (see chapter “Programming a Key Code” from p. 106).

  The visual signal indicating the operational readiness of the tail lift extinguishes. The tail lift is switched off.

To switch off the tail lift using the **battery main switch**:

- Turn the battery main switch counterclockwise until the cam is engaged.

  The visual signal indicating the operational readiness of the tail lift extinguishes. The tail lift is switched off.
Operating Elements

This chapter describes the operating elements of the different tail lift models. To identify your model, refer to "How to Identify Your Tail Lift Model", p. 12.

CAUTION!

Risk of accidents and injury!
If the safety and warning devices of the tail lift are damaged or missing, personal injuries or material damage can occur.
► Ensure that all safety and warning devices are present and operational.

You can operate the tail lift in several possible ways:
1. using the lateral operating element (depending on the model, see p. 37 to p. 106),
2. using the two manual cable switches (for column lift, see p. 82),
3. using the foot control (optional, see p. 88) or
4. using the hand cable control (optional, see p. 90) or
5. using the radio remote control unit (optional, see p. 96) or
6. using the special operating elements (optional, see p. 100).

Lateral Operating Element

Depending on your tail lift model you find information about the operation of the lateral operating element on:

- A E
- B
- C
- F
- G
- K
- L
- M

p. 38 to p. 48
p. 76 to p. 80
p. 50
p. 52 to p. 58
p. 60 to p. 68
p. 72 to p. 74
p. 76 to p. 78
p. 76 to p. 80
Operation Using Two-hand Control

26 Optional: key control, rotary switch, emergency-off pushbutton, E30 key
27 Rotary switch: lift/lower
28 Rotary switch: open/close
29 Rotary switch: additional pushbutton
32 Locking lug
39 Operating panel

DANGER! Risk of accidents and injury!
If the instructions in chapter “General Operation” are not observed during operation of the tail lift, personal injuries and material damage can occur.

Before operating the tail lift, read chapter “General Operation” from p. 23.
Opening the Platform

- Loosen the platform interlock (if present).
- Turn the rotary switches (28) and (29) simultaneously downward and hold them down until the platform has reached the horizontal operating position.

*If an optional load safety device is present, the platform is lowered a small amount and then unfolds to the horizontal operating position.*

Lowering the Platform

- Turn the rotary switches (27) and (29) simultaneously downward and hold them in this position until the platform has made contact with the ground.

*After the platform has touched the ground it tilts and adjusts to the ground.*

Lifting the Platform

- Turn the rotary switches (27) and (29) simultaneously upward and hold them in this position until the platform has reached the vehicle loading floor height.

*The platform tilts to the horizontal or preset position before it is lifted.*

Closing the Platform

- Turn the rotary switches (28) and (29) simultaneously upward and hold them in this position until the platform is closed.

*If an optional load safety device is present, the platform closes approximately to 80° and is lowered a small amount. Subsequently it moves to the vertical transport position and is lifted into the load safety device.*

- Close the platform interlock (if present).
A  **Operation Using Two-hand Control without Automatic Ground Adjustment**

26  Optional: key control, rotary switch, emergency-off pushbutton, E30 key
27  Rotary switch: lift/lower
28  Rotary switch: open/close
29  Rotary switch: additional pushbutton
32  Locking lug
39  Operating panel

**DANGER!**

**Risk of accidents and injury!**

If the instructions in chapter “General Operation” are not observed during operation of the tail lift, personal injuries and material damage can occur.

> Before operating the tail lift, read chapter “General Operation” from p. 23.
Opening the Platform

- Loosen the platform interlock (if present).
- Turn the rotary switches (28) and (29) simultaneously downward and hold them down until the platform has reached the horizontal operating position.

Lowering the Platform

- Turn the rotary switches (27) and (29) simultaneously downward and hold them in this position until the platform has reached the ground.

Ground Adjustment

After the platform has touched the ground:
- Turn the rotary switches (28) and (29) simultaneously downward.
  
  *The platform tilts and adjusts flush to the ground.*

Setting the Platform to its Horizontal Position

- Turn the rotary switches (28) and (29) simultaneously upward and hold them in this position until the platform has reached the horizontal position.

Lifting the Platform

- Turn the rotary switches (27) and (29) simultaneously upward and hold them in this position until the platform has reached the vehicle loading floor height.

Closing the Platform

- Turn the rotary switches (28) and (29) simultaneously upward and hold them in this position until the platform is closed.
  
  *The platform moves to the vertical transport position.*
  
- Close the platform interlock (if present).
Operation Using Two-hand Control and Hydraulic Stabilizer Feet

26 Optional: key control, rotary switch, emergency-off pushbutton, E30 key
27 Rotary switch: lift/lower
28 Rotary switch: open/close
29 Rotary switch: additional pushbutton
30 Rotary switch: retract and extend
32 Locking lug
39 Operating panel

DANGER!
Risk of accidents and injury!
If the instructions in chapter “General Operation” are not observed during operation of the tail lift, personal injuries and material damage can occur.

Before operating the tail lift, read chapter “General Operation” from p. 23.

Extending the Hydraulic Stabilizer Feet

Turn the rotary switch (30) downward until the stabilizer feet are extended almost to the ground.
Opening the Platform

- Loosen the platform interlock (if present).
- Turn the rotary switches (27) and (29) simultaneously downward and hold them down until the platform has reached the horizontal operating position.

*If an optional load safety device is present, the platform is lowered and then unfolds to the horizontal operating position.*

Lowering the Platform

- Turn the rotary switches (27) and (29) simultaneously downward and hold them in this position until the platform has made contact with the ground.

*After the platform has touched the ground it tilts and adjusts to the ground.*

Lifting the Platform

- Turn the rotary switches (27) and (29) simultaneously upward and hold them in this position until the platform has reached the vehicle loading floor height.

*The platform tilts to the horizontal or preset position before it is lifted.*

Closing the Platform

- Turn the rotary switches (28) and (29) simultaneously upward and hold them in this position until the platform is closed.

*If an optional load safety device is present, the platform closes approximately to 80° and is lowered a small amount. Finally, it moves to the vertical transport position and is lifted into the load safety device.*

- Close the platform interlock (if present).

Retracting the Hydraulic Stabilizer Feet

- Turn the rotary switch (30) upward until the stabilizer feet are completely retracted.
**Operation Using Two-hand Control with a Hydraulic Underrun Bumper**

- **26** Optional: key control, rotary switch, emergency-off pushbutton, E30 key
- **27** Rotary switch: lift/lower
- **28** Rotary switch: open/close
- **29** Rotary switch: additional pushbutton
- **30** Rotary switch: lift/lower the underrun bumper
- **32** Locking lug
- **39** Operating panel

**DANGER!**

Risk of accidents and injury!

If the instructions in chapter “General Operation” are not observed during operation of the tail lift, personal injuries and material damage can occur.

- Before operating the tail lift, read chapter “General Operation” from p. 23.

**Lifting the Hydraulic Underrun Bumper**

- Turn the rotary switch (30) upwards until the underrun bumper has reached its upper end position.
Opening the Platform

- Loosen the platform interlock (if present).
- Turn the rotary switches (27) and (29) simultaneously downward and hold them down until the platform has reached the horizontal operating position.

*If an optional load safety device is present, the platform is lowered and then unfolds to the horizontal operating position.*

Lowering the Platform

- Turn the rotary switches (27) and (29) simultaneously downward and hold them in this position until the platform has made contact with the ground.

*After the platform has touched the ground it tilts and adjusts to the ground.*

Lifting the Platform

- Turn the rotary switches (27) and (29) simultaneously upward and hold them in this position until the platform has reached the vehicle loading floor height.

*The platform tilts to the horizontal or preset position before it is lifted.*

Closing the Platform

- Turn the rotary switches (28) and (29) simultaneously upward and hold them in this position until the platform is closed.

*If an optional load safety device is present, the platform closes approximately to 80° and is lowered a small amount. Finally, it moves to the vertical transport position and is lifted into the load safety device.*

- Close the platform interlock (if present).

Lowering the Hydraulic Underrun Bumper

- Turn the rotary switch (30) downwards until the underrun bumper has reached its lower end position.
Operation Using One-hand Control

26 Optional: key control, rotary switch, emergency-off pushbutton, E30 key
27 Rotary switch: lift/lower
28 Rotary switch: open/close
32 Locking lug
39 Operating panel

DANGER!
Risk of accidents and injury!
If the instructions in chapter “General Operation” are not observed during operation of the tail lift, personal injuries and material damage can occur.

- Before operating the tail lift, read chapter “General Operation” from p. 23.
Opening the Platform

- Loosen the platform interlock (if present).
- Turn the rotary switch (28) downward and hold it in this position until the platform has reached the horizontal operating position.

*If an optional load safety device is present, the platform is lowered and then unfolds to the horizontal operating position.*

Lowering the Platform

- Turn the rotary switch (27) upward and hold it in this position until the platform is adjusted flush to the ground.

*After the platform has touched the ground it tilts and adjusts to the ground.*

Lifting the Platform

- Turn the rotary switch (27) upward and hold it in this position until the platform has reached the vehicle loading floor height.

*The platform tilts to the horizontal or preset position before it is lifted.*

Closing the Platform

- Turn the rotary switch (28) upward and hold it in this position until the platform is closed.

*If an optional load safety device is present, the platform closes approximately to 80° and is lowered a small amount. Finally, it moves to the vertical transport position and is lifted into the load safety device.*

- Close the platform interlock (if present).
A Operation Using One-hand Control and Hydraulic Stabilizer Feet

26 Optional: key control, rotary switch, emergency-off pushbutton, E30 key
27 Rotary switch: lift/lower
28 Rotary switch: open/close
30 Rotary switch: retract and extend
32 Locking lug
39 Operating panel

DANGER! Risk of accidents and injury!
If the instructions in chapter “General Operation” are not observed during operation of the tail lift, personal injuries and material damage can occur.

▶ Before operating the tail lift, read chapter “General Operation” from p. 23.

Extending the Hydraulic Stabilizer Feet

▶ Turn the rotary switch (30) downward until the stabilizer feet are extended almost to the ground.
Opening the Platform

- Loosen the platform interlock (if present).
- Turn the rotary switch (28) downward and hold it in this position until the platform has reached the horizontal operating position.

*If an optional load safety device is present, the platform is lowered and then unfolds to the horizontal operating position.*

Lowering the Platform

- Turn the rotary switch (27) upward and hold it in this position until the platform is adjusted flush to the ground.

*After the platform has touched the ground it tilts and adjusts to the ground.*

Lifting the Platform

- Turn the rotary switch (27) upward and hold it in this position until the platform has reached the vehicle loading floor height.

*The platform tilts to the horizontal or preset position before it is lifted.*

Closing the Platform

- Turn the rotary switch (28) upward and hold it in this position until the platform is closed.

*If an optional load safety device is present, the platform closes approximately to 80° and is lowered a small amount. Finally, it moves to the vertical transport position and is lifted into the load safety device.*

- Close the platform interlock (if present).

Retracting the Hydraulic Stabilizer Feet

- Turn the rotary switch (30) upward until the stabilizer feet are completely retracted.
Operation Using Two-hand Control and Pushbuttons

DANGER! Risk of accidents and injury!
If the instructions in chapter “General Operation” are not observed during operation of the tail lift, personal injuries and material damage can occur.

- Before operating the tail lift, read chapter “General Operation” from p. 23.

35 Pushbutton: lower/lift
36 Pushbutton: open/close
37 Pushbutton: lift/close
39 Operating panel
Opening the Platform

- Loosen the platform interlock (if present).
- Press and hold pushbutton (36) until the platform has reached the horizontal operating position.

Lowering the Platform

- Press and hold pushbutton (35) until the platform has made contact with the ground.

*After the platform has touched the ground it tilts and adjusts to the ground.*

Lifting the Platform

- Press and hold pushbuttons (35) and (37) simultaneously until the platform has reached the vehicle loading floor height.

*The platform tilts to the horizontal or preset position before it is lifted.*

Closing the Platform

- Press and hold pushbuttons (36) and (37) simultaneously until the platform has reached the vertical transport position.
- Close the platform interlock (if present).
Operation Using Two-hand Control

26 Optional: key control, rotary switch, emergency-off pushbutton, E30 key

27 Rotary switch: lift/lower
28 Rotary switch: open/close
29 Rotary switch: additional pushbutton
30 Rotary switch: retract and extend
32 Locking lug
39 Operating panel

DANGER!
Risk of accidents and injury!
If the instructions in chapter “General Operation” are not observed during operation of the tail lift, personal injuries and material damage can occur.

► Before operating the tail lift, read chapter “General Operation” from p. 23.

Extending and Folding Out the Platform

► Loosen the platform interlock (if present).
► Turn the rotary switches (27) and (29) simultaneously downward and hold them in this position until the platform has been lowered.

The platform is lowered so that it can be extended without obstruction.
Turn the rotary switch (30) downward and hold it in this position until the platform is completely extended.

Turn the rotary switches (27) and (29) simultaneously downward and hold them in this position until the folded platform has made contact with the ground.

Protect your hands with gloves.

Pull the handle with both hands to unfold the folding part of the platform.

### Lowering the Platform

Turn the rotary switches (27) and (29) simultaneously downward and hold them in this position until the platform has made contact with the ground and is adjusted flush to the ground.

*After the platform has touched the ground it tilts and adjusts to the ground.*

### Lifting the Platform

Turn the rotary switches (27) and (29) simultaneously upward and hold them in this position until the platform has reached the vehicle loading floor height.

*The platform tilts to the horizontal or preset position before it is lifted into the loading position.*

### Folding In and Retracting the Platform

Protect your hands with gloves.

Pull the handle with both hands to fold back the folding part of the platform.

Close the platform interlock (if present).

Turn the rotary switches (27) and (29) simultaneously upward and hold them in this position until the platform has reached the retraction height.

Turn the rotary switch (30) upward and hold it in this position until the platform is completely retracted. Observe that the platform can be retracted without obstruction.

Turn the rotary switches (27) and (29) simultaneously upward and hold them in this position until the platform has reached the vibration safeguard.
Operation Using Two-hand Control easy move®

26 Optional: key control, rotary switch, emergency-off pushbutton, E30 key
27 Rotary switch: lift/lower
28 Rotary switch: open/close
29 Rotary switch: additional pushbutton
30 Rotary switch: retract and extend
32 Locking lug
39 Operating panel

DANGER!
Risk of accidents and injury!
If the instructions in chapter “General Operation” are not observed during operation of the tail lift, personal injuries and material damage can occur.
▲ Before operating the tail lift, read chapter “General Operation” from p. 23.

Extending and Folding Out the Platform
▲ Loosen the platform interlock (if present).
▲ Turn the rotary switch (30) downward and hold it in this position until the platform is extended.

The platform is lowered so that it can be extended without obstruction and is extended.
Turn the rotary switches (27) and (29) simultaneously downward and hold them in this position until the folded platform has made contact with the ground.

- Protect your hands with gloves.
- Pull the handle with both hands to unfold the folding part of the platform.

Lowering the Platform

- Turn the rotary switches (27) and (29) simultaneously downward and hold them in this position until the platform has made contact with the ground and is adjusted flush to the ground.

After the platform has touched the ground it tilts and adjusts to the ground.

Lifting the Platform

- Turn the rotary switches (27) and (29) simultaneously upward and hold them in this position until the platform has reached the vehicle loading floor height.

The platform tilts to the horizontal or preset position before it is lifted into the loading position.

Folding In and Retracting the Platform

- Protect your hands with gloves.
- Pull the handle with both hands to fold back the folding part of the platform.
- Turn the rotary switch (30) upward and hold it in this position until the platform is completely retracted. Observe that the platform can be retracted without obstruction.

The folded platform lifts or lowers automatically until the optimum retraction position is reached. The platform then retracts until the end position and lifts into the vibration safeguard.

- Close the platform interlock (if present).
**Operation Using One-hand Control**

- **26** (optional): key control, rotary switch, emergency-off pushbutton, E30 key
- **27** Rotary switch: lift/lower
- **28** Rotary switch: open/close
- **30** Rotary switch: retract and extend
- **32** Locking lug
- **39** Operating panel

---

**DANGER! Risk of accidents and injury!**

If the instructions in chapter “General Operation” are not observed during operation of the tail lift, personal injuries and material damage can occur.

- Before operating the tail lift, read chapter “General Operation” from p. 23.

---

**Extending and Folding Out the Platform**

- Loosen the platform interlock (if present).
- Turn the rotary switch (27) downward and hold it in this position until the platform has been lowered.

*The platform is lowered so that it can be extended without obstruction.*
Turn the rotary switch (30) downward and hold it in this position until the platform is completely extended.

Turn the rotary switch (27) downward and hold it in this position until the folded platform has touched the ground.

Protect your hands with gloves.

Pull the handle with both hands to unfold the folding part of the platform.

**Lowering the Platform**

Turn the rotary switch (27) downward and hold it in this position until the platform has made contact with the ground and is adjusted flush to the ground.

*After the platform has touched the ground it tilts and adjusts to the ground.*

**Lifting the Platform**

Turn the rotary switch (27) upward and hold it in this position until the platform has reached the vehicle loading floor height.

*The platform tilts to the horizontal or preset position before it is lifted into the loading position.*

**Folding In and Retracting the Platform**

Protect your hands with gloves.

Pull the handle with both hands to fold back the folding part of the platform.

Turn the rotary switch (27) upward and hold it in this position until the platform has reached the retraction height.

Turn the rotary switch (30) upward and hold it in this position until the platform is completely retracted. Observe that the platform can be retracted without obstruction.

Turn the rotary switch (27) upward and hold it in this position until the platform has reached the vibration safeguard.

Close the platform interlock (if present).
Operation Using One-hand Control easy move®

26 Optional: key control, rotary switch, emergency-off pushbutton, E30 key

27 Rotary switch: lift/lower

28 Rotary switch: open/close

30 Rotary switch: retract and extend

32 Locking lug

39 Operating panel

DANGER! Risk of accidents and injury!

If the instructions in chapter “General Operation” are not observed during operation of the tail lift, personal injuries and material damage can occur.

► Before operating the tail lift, read chapter “General Operation” from p. 23.

Extending and Folding Out the Platform

► Loosen the platform interlock (if present).

► Turn the rotary switch (30) downward and hold it in this position until the platform is extended.

The platform is lowered so that it can be extended without obstruction and is extended.

► Turn the rotary switch (27) downward and hold it in this position until the folded platform has touched the ground.
Protect your hands with gloves.

Pull the handle with both hands to unfold the folding part of the platform.

**Lowering the Platform**

- Turn the rotary switch (27) downward and hold it in this position until the platform has made contact with the ground and is adjusted flush to the ground.

  *After the platform has touched the ground it tilts and adjusts to the ground.*

**Lifting the Platform**

- Turn the rotary switch (27) upward and hold it in this position until the platform has reached the vehicle loading floor height.

  *The platform tilts to the horizontal or preset position before it is lifted into the loading position.*

**Folding In and Retracting the Platform**

- Protect your hands with gloves.
- Pull the handle with both hands to fold back the folding part of the platform.
- Turn the rotary switch (30) upward and hold it in this position until the platform is completely retracted. Observe that the platform can be retracted without obstruction.

  *The folded platform lifts or lowers automatically until the optimum retraction position is reached. The platform then retracts until the end position and lifts into the vibration safeguard.*

- Close the platform interlock (if present).
G Operation Using Two-hand Control for KUZF (Double-folded Platform with Cross Member)

26 Optional: key control, rotary switch, emergency-off pushbutton, E30 key
27 Rotary switch: lift/lower
28 Rotary switch: open/close
29 Rotary switch: additional pushbutton
30 Rotary switch: retract and extend
32 Locking lug
39 Operating panel

DANGER! Risk of accidents and injury!
If the instructions in chapter “General Operation” are not observed during operation of the tail lift, personal injuries and material damage can occur.

- Before operating the tail lift, read chapter “General Operation” from p. 23.
Extending and Folding Out the Platform

- Loosen the platform interlock (if present).
- Turn the rotary switch (30) downward and hold it in this position until the platform is folded out once.
  
  *The platform is slightly lowered and then extends. Subsequently it is lowered to the ground and unfolds once.*

- Protect your hands with gloves.
- Pull the handle with both hands to unfold the folding part of the platform.

Lifting the Platform

- Turn the rotary switches (27) and (29) simultaneously upward and hold them in this position until the platform has reached the vehicle loading floor height.
  
  *The platform tilts to the horizontal or preset position before it is lifted into the loading position.*

Lowering the Platform

- Turn the rotary switches (27) and (29) simultaneously downward and hold them in this position until the platform has made contact with the ground and is adjusted flush to the ground.
  
  *After the platform has touched the ground it tilts and adjusts to the ground.*

Setting the BDF Position

- Turn the rotary switches (27) and (29) simultaneously upward and hold them in this position until the platform has reached the vehicle loading floor height.
- Turn the rotary switch (30) upward and hold it in this position until the platform has reached the loading position.
- Shift the movable stop on the guide rail until the outer initiator is dampened.
Moving to the BDF Position

- Turn the rotary switches (27) and (29) simultaneously upward and hold them in this position until the torsion frame is located above its horizontal position.
- Turn the rotary switch (30) upwards.  
  *The platform moves to the preset BDF position.*
- Turn the rotary switches (27) and (29) simultaneously upward and hold them in this position until the platform has reached the loading position.

Folding In and Retracting the Platform

- Turn the rotary switches (27) and (29) simultaneously downward and hold them in this position until the platform has reached the ground.
- Protect your hands with gloves.
- Pull the handle with both hands to fold back the folding part of the platform.
- Close the platform interlock (if present).
- Turn the rotary switch (30) upward and hold it in this position until the platform has reached the vibration safeguard.  
  *The platform automatically folds over and then lifts into the retraction position. Subsequently it retracts completely and lifts into the vibration safeguard.*
G  Operation Using Two-hand Control for KUZF M
(Double-folded Platform without Cross Member)

26  Optional: key control, rotary switch, emergency-off pushbutton, E30 key
27  Rotary switch: lift/lower
28  Rotary switch: open/close
29  Rotary switch: additional pushbutton
30  Rotary switch: retract and extend
32  Locking lug
39  Operating panel

**DANGER!** Risk of accidents and injury!
If the instructions in chapter “General Operation” are not observed during operation of the tail lift, personal injuries and material damage can occur.
> Before operating the tail lift, read chapter “General Operation” from p. 23.
Extending and Folding Out the Platform

► Loosen the platform interlock (if present).
► Turn the rotary switch (30) downward and hold it in this position until the platform has reached the vertical position.

The platform is slightly lowered and then extends. Subsequently it lowers to the ground and tilts into an approximate vertical position.

► Protect your hands with gloves.
► Swivel the platform with both hands forward by approximately 20°.
► Turn the rotary switch (30) downward and hold it in this position until the platform touches the ground.

The platform lowers to the ground and then unfolds once.

► Protect your hands with gloves.
► Pull the handle with both hands to unfold the second folding part of the platform.

Lifting the Platform

► Turn the rotary switches (27) and (29) simultaneously upward and hold them in this position until the platform has reached the vehicle loading floor height.

The platform tilts to the horizontal or preset position before it is lifted into the loading position.

Lowering the Platform

► Turn the rotary switches (27) and (29) simultaneously downward and hold them in this position until the platform has made contact with the ground and is adjusted flush to the ground.

After the platform has touched the ground it tilts and adjusts to the ground.
Setting the BDF Position

- Turn the rotary switches (27) and (29) simultaneously upward and hold them in this position until the platform has reached the vehicle loading floor height.
- Turn the rotary switch (30) upward and hold it in this position until the platform has reached the loading position.
- Shift the movable stop on the guide rail until the outer initiator is dampened.

Moving to the BDF Position

- Turn the rotary switches (27) and (29) simultaneously upward and hold them in this position until the torsion frame is located above its horizontal position.
- Turn the rotary switch (30) upwards. *The platform moves to the preset BDF position.*
- Turn the rotary switches (27) and (29) simultaneously upward and hold them in this position until the platform has reached the loading position.

Folding In and Retracting the Platform

- Turn the rotary switches (27) and (29) simultaneously downward and hold them in this position until the platform has reached the ground.
- Protect your hands with gloves.
- Fold in the link bridge (if present).
- Pull the handle with both hands to fold back the folding part of the platform.
- Turn the rotary switch (30) upward and hold it in this position until the platform has reached the vertical position.
- Tilt the platform with both hands forward by approximately 20°.
- Turn the rotary switch (30) upward and hold it in this position until the platform has reached the vibration safeguard. *After the platform folded over automatically, it lifts itself into the vibration safeguard.*
- Close the platform interlock (if present).
Operation Using Two-hand Control for KUZFM
(Double-folded Platform with Cross Member)

26 Optional: key control, rotary switch, emergency-off pushbutton, E30 key
27 Rotary switch: lift/lower
28 Rotary switch: open/close
29 Rotary switch: additional pushbutton
30 Rotary switch: retract and extend
32 Locking lug
39 Operating panel

DANGER!
Risk of accidents and injury!
If the instructions in chapter “General Operation” are not observed during operation of the tail lift, personal injuries and material damage can occur.

▶ Before operating the tail lift, read chapter “General Operation” from p. 23.
Extending and Folding Out the Platform

- Loosen the platform interlock (if present).
- Turn the rotary switches (27) and (29) simultaneously downward and hold them in this position until the platform has been lowered.  
  *The platform is lowered so that it can be extended without obstruction.*
- Turn the rotary switch (30) downward and hold it in this position until the platform is completely extended.
- Turn the rotary switches (27) and (29) simultaneously downward and hold them in this position until the folded platform has made contact with the ground.
- Protect your hands with gloves.
- Pull the platform edge with both hands to unfold the platform to the rear.
- Pull the folding part of the platform with both hands to unfold it to the rear.

Lowering the Platform

- Turn the rotary switches (27) and (29) simultaneously downward and hold them in this position until the platform has made contact with the ground and is adjusted flush to the ground.  
  *After the platform has touched the ground it tilts and adjusts to the ground.*

Lifting the Platform

- Turn the rotary switches (27) and (29) simultaneously upward and hold them in this position until the platform has reached the vehicle loading floor height.  
  *The platform tilts to the horizontal or preset position before it is lifted into the loading position.*
Folding In and Retracting the Platform

- Protect your hands with gloves.
- Grasp the platform edge with both hands to fold back the platform.
- Pull the folding part of the platform with both hands to fold it back.
- Close the platform interlock (if present).
- Swivel the platform up to the roller at the support tube.
- Turn the rotary switches (27) and (29) simultaneously upward and hold them in this position until the platform has reached the retraction height.
- Turn the rotary switch (30) upward and hold it in this position until the platform is completely retracted. Observe that the platform can be retracted without obstruction.

Turn the rotary switches (27) and (29) simultaneously upward and hold them in this position until the platform has reached the vibration safeguard.
Operation Using Two-hand Control

26 Optional: key control, rotary switch, emergency-off pushbutton, E30 key
27 Rotary switch: lift/lower
28 Rotary switch: open/close
29 Rotary switch: additional pushbutton
32 Locking lug
39 Operating panel

DANGER!

Risk of accidents and injury!
If the instructions in chapter “General Operation” are not observed during operation of the tail lift, personal injuries and material damage can occur.

▶ Before operating the tail lift, read chapter “General Operation” from p. 23.

Folding Out the Platform

▶ Loosen the platform interlock (if present).

▶ Turn the rotary switches (27) and (29) simultaneously downward and hold them in this position until the platform has almost reached the vertical position.

The platform is lowered slightly and then tilts via the guide pulley almost to the vertical position.

▶ Protect your hands with gloves.
Pull the handle with both hands to fold out the platform to the rear.

Turn the rotary switches (28) and (29) simultaneously downward and hold them in this position until the platform has reached the horizontal position.

Fold the folding part of the platform with both hands to the operating position.

**Lowering the Platform**

Turn the rotary switches (27) and (29) simultaneously downward and hold them in this position until the platform has made contact with the ground. 

*After the platform has touched the ground it tilts and adjusts to the ground.*

**Lifting the Platform**

Turn the rotary switches (27) and (29) simultaneously upward and hold them in this position until the platform has reached the loading position.

**Folding In the Platform**

Make sure that the platform is in horizontal position touching the ground.

Protect your hands with gloves.

Unfold the folding part of the platform with both hands from the operating position onto the stationary part of the platform.

Turn the rotary switches (28) and (29) simultaneously upward and hold them in this position until the platform has reached the vertical position.

Protect your hands with gloves.

Use both hands to push the platform against the guide pulley.

Turn the rotary switches (27) and (29) simultaneously upward and hold them in this position until the platform has reached the transport position.

Close the platform interlock (if present).
Operation Using One-hand Control

26 Optional: key control, rotary switch, emergency-off pushbutton, E30 key
27 Rotary switch: lift/lower
28 Rotary switch: open/close
32 Locking lug
39 Operating panel

DANGER!

Risk of accidents and injury!
If the instructions in chapter “General Operation” are not observed during operation of the tail lift, personal injuries and material damage can occur.

- Before operating the tail lift, read chapter “General Operation” from p. 23.

Folding Out the Platform

- Loosen the platform interlock (if present).
- Turn the rotary switch (27) downward and hold it in this position until the platform has reached the vertical position.

The platform is lowered slightly and then tilts via the guide pulley almost to the vertical position.

- Protect your hands with gloves.
- Pull the handle with both hands to fold out the platform to the rear.
- Turn the rotary switch (28) downward and hold it in this position until the platform has reached the horizontal position.
- Fold the folding part of the platform with both hands to the operating position.

**Lifting the Platform**
- Turn the rotary switch (27) upward and hold it in this position until the platform has reached the loading position.

**Lowering the Platform**
- Turn the rotary switch (27) upward and hold it in this position until the platform is adjusted flush to the ground.

*After the platform has touched the ground it tilts and adjusts to the ground.*

**Folding In the Platform**
- Make sure that the platform is in horizontal position touching the ground.
- Protect your hands with gloves.
- Unfold the folding part of the platform with both hands from the operating position onto the stationary part of the platform.
- Turn the rotary switch (28) upward and hold it in this position until the platform has reached the vertical position.

*The platform tilts from the horizontal to the vertical position.*
- Protect your hands with gloves.
- Use both hands to push the platform against the guide pulley.
- Turn the rotary switch (27) upward and hold it in this position until the platform has reached the transport position.
- Close the platform interlock (if present).
B L M

Operation Using Two-hand Control

26 Optional: key control, rotary switch, emergency-off pushbutton, E30 key
27 Rotary switch: lift/lower
29 Rotary switch: additional pushbutton
32 Locking lug
39 Operating panel

DANGER!
Risk of accidents and injury!
If the instructions in chapter “General Operation” are not observed during operation of the tail lift, personal injuries and material damage can occur.
► Before operating the tail lift, read chapter “General Operation” from p. 23.
Folding Out the Platform

- Loosen the platform interlock (if present).
- Turn the rotary switches (27) and (29) simultaneously downward and hold them in this position until the platform has made contact with the ground.
- Protect your hands with gloves.
- Pull the handle with both hands to unfold the folding part of the platform.

Lifting the Platform

- Turn the rotary switches (27) and (29) simultaneously upward and hold them in this position until the platform has reached the loading position.

  *The platform tilts to the horizontal or preset position and is then lifted.*

Lowering the Platform

- Turn the rotary switches (27) and (29) simultaneously downward and hold them in this position until the platform has made contact with the ground.

  *After the platform has touched the ground it tilts and adjusts to the ground.*

Folding In the Platform

- Make sure that the platform is in horizontal position touching the ground.
- Protect your hands with gloves.
- Unfold the folding part of the platform with both hands from the operating position onto the stationary part of the platform.
- Close the platform interlock (if present).
- Swivel the platform up to the roller at the support tube.
- Turn the rotary switches (27) and (29) simultaneously upward and hold them in this position until the platform is folded away under the vehicle.

  *The platform lifts and is moved under the vehicle.*
Operation Using One-hand Control

DANGER! Risk of accidents and injury!

If the instructions in chapter "General Operation" are not observed during operation of the tail lift, personal injuries and material damage can occur.

- Before operating the tail lift, read chapter "General Operation" from p. 23.

26 (optional): key control, rotary switch, emergency-off pushbutton, E30 key
27 Rotary switch: lift/lower
32 Locking lug
39 Operating panel
**Folding Out the Platform**

- Loosen the platform interlock (if present).
- Turn the rotary switch (27) upward and hold it in this position until the platform is adjusted flush to the ground.
- Protect your hands with gloves.
- Pull the handle with both hands to unfold the folding part of the platform.

**Lifting the Platform**

- Turn the rotary switch (27) upward and hold it in this position until the platform has reached the loading position.

> The platform tilts to the horizontal or preset position and is then lifted.

**Lowering the Platform**

- Turn the rotary switch (27) upward and hold it in this position until the platform is adjusted flush to the ground.

> After the platform has touched the ground it tilts and adjusts to the ground.

**Folding In the Platform**

- Make sure that the platform is in horizontal position touching the ground.
- Protect your hands with gloves.
- Unfold the folding part of the platform with both hands from the operating position onto the stationary part of the platform.
- Close the platform interlock (if present).
- Swivel the platform up to the roller at the support tube.
- Turn the rotary switch (27) upward and hold it in this position until the platform is folded away under the vehicle.

> The platform lifts and is moved under the vehicle.
**BM** Operation Using One-hand Control

54 Toggle switch

---

**DANGER!** Risk of accidents and injury!

If the instructions in chapter “General Operation” are not observed during operation of the tail lift, personal injuries and material damage can occur.

- Before operating the tail lift, read chapter “General Operation” from p. 23.
**Folding Out the Platform**

- Loosen the platform interlock (if present).
- Press the toggle switch (54) downward and hold it in this position until the torsion frame touches the ground.
- Protect your hands with gloves.
- Pull the handle with both hands to swivel the platform to the horizontal position.
- Pull the handle with both hands to unfold the folding part of the platform.

**Lowering the Platform**

- Press the toggle switch (54) downward and hold it in this position until the platform reaches the ground tilt while lowering.

**Lifting the Platform**

- Press the toggle switch (54) upward and hold it in this position until the platform reaches the loading position while lifting.

**Folding In the Platform**

- Make sure that the platform is in horizontal position touching the ground.
- Protect your hands with gloves.
- Fold the platform tip onto the platform.
- Close the platform interlock (if present).
- Swivel the platform up to the roller at the support tube.
Operation Using two Hand Cable Controls with three Pushbuttons, each

Hand Cable Control 1
42 Pushbutton: lift platform
43+42 Pushbutton: close platform
44 Pushbutton: lower platform
43+44 Pushbutton: open platform

Hand Cable Control 2
45 Pushbutton: lift platform
46+45 Pushbutton: fold in link bridge
47 Pushbutton: lower platform
46+47 Pushbutton: fold out link bridge

DANGER! Risk of accidents and injury!
If the instructions in chapter “General Operation” are not observed during operation of the column lift, personal injuries and material damage can occur.

Before operating the column lift, read chapter “General Operation” from p. 23.
DANGER! Crushing hazard due to wrong operator position!

If the operator does not stand in the correct position when moving the platform via the hand cable control, personal injury and material damage may occur.

- Make sure to stand in the correct position (see the picture below) when operating the platform with the hand cable control. Do not stand in another position.
- When operating the platform with the hand cable control while standing inside the vehicle, always keep a minimum distance of 250 mm from the sill.
- Do not stand in the area near the platform edge where you risk to crush your feet when the platform approaches the vehicle sill.
- Exclusively stand in the platform area marked with the foot symbols in the illustration when moving the platform.
- When standing on the ground for operating the platform, keep a minimum distance of 1 m from all platform rims.
- Make sure that you can see the entire working area and that no other person stays on or near the platform.
DANGER!  
Risk of accidents and injury!
Failure to observe the instructions below when operating the column lift may result in persons or objects falling off the platform, causing serious injuries or damage to property.

- Prior to lifting or lowering the platform always set upright the two safety railings.
- When loading rolling containers without brakes always set the link bridge upright to use it as a roll stop.
- Use the roll stop towards the vehicle rear side to prevent containers of this type from rolling off the platform and into the vehicle in an uncontrollable manner.
- When loading the platform, leave enough free space for the operator (minimum 50 x 60 cm).
- When operating the column lift from a position on the platform, exclusively use the hand cable control 2. As this hand cable control only allows you to “lift” and “lower” the platform or to “fold in” and “fold out” the link bridge, it is not possible to accidentally “open” or “close” the platform and, thus, tilt it.

CAUTION!  
Risk of injuries or damage to the vehicle!
An insufficient load carrying capacity of the ground may result in damage to the vehicle or load.

- Make sure that the ground can carry the weight of both the vehicle tail and the load.
- When working with a loading ramp, make sure that the link bridge has sufficient contact with the ramp.
Opening the Platform

- Press the pushbutton (43) on the hand cable control 1 and hold it in this position. Briefly after this press and hold the pushbutton (44) on the same hand cable control. Hold both pushbuttons in this position until the platform is horizontal.

**Note:** When loading the platform, you can simply compensate for any height differences by using the “open” or “close” functions.

Setting the Safety Railing Upright

- Grasp one of the safety railings lying on the platform and swivel it up.
- Secure the safety railing in its upright position. For this purpose, engage the lug of the fastener to the hook.
- Repeat these steps for the other safety railing.

Lifting the Platform

- If required, open the top flap. This is necessary if you want to use the upper vehicle deck.
- Press either the pushbutton (42) on hand cable control 1 or the pushbutton (45) on hand cable control 2 and hold it in this position until the platform has reached the required height.

Lowering the Platform

- Press either the pushbutton (44) on hand cable control 1 or the pushbutton (47) on hand cable control 2 and hold it in this position until the platform has reached the required height.

Folding Out the Link Bridge

- Press the pushbutton (46) on the hand cable control 2 and hold it in this position. Briefly after this press and hold the pushbutton (47) on the same hand cable control. Hold both pushbuttons in this position until the link bridge has reached the required position.
Folding In the Link Bridge

- Press the pushbutton (46) on the hand cable control 2 and hold it in this position. Briefly after this press and hold the pushbutton (45) on the same hand cable control. Hold both pushbuttons in this position until the link bridge has reached the required position.

Putting Down the Safety Railings

- Open the fastener of the first safety railing and swivel down the railing until it lies on the platform.
- Repeat this procedure for the second safety railing.

Closing the Platform

- Press the pushbutton (43) on the hand cable control 1 and hold it in this position. Briefly after this press and hold the pushbutton (42) on the same hand cable control. Hold both pushbuttons in this position until the platform is completely closed.
**Optional Operating Method: Foot Control**

**Platform with 2 foot controls** (standard control)

- Foot control (at platform rim) 40
- Foot control 41

**Platform with 3 foot controls** (control unit with basic board)

- Additional foot control (at platform rim) 42
- Foot control: lift 43
- Foot control: lower 44

---

**DANGER!**

Risk of accidents and injury!

If the instructions in chapter “General Operation” not observed during operation of the tail lift, personal injuries and material damage can occur.

- Before operating the tail lift, read chapter “General Operation” from p. 23.

---

**Lowering the Platform**

**Platform with 2 Foot Controls**

- Step on the foot control (40) and keep it in this position.
- After one second at the earliest and three seconds at the latest, step on the foot control (41) and keep it in this position.

*The platform is lowered and automatically adjusts to the ground.*

**Note:** If both foot controls are not actuated within three seconds, the foot controls are disabled for a short time. Wait a few seconds before you repeat the procedure.
Platform with 3 Foot Controls

- Step on the foot control (44) and on the additional foot control (42).

The platform is lowered and automatically adjusts to the ground.

Lifting the Platform

Platform with 2 Foot Controls

- Step on the foot control (40) and keep it in this position.
- After one second at the earliest and three seconds at the latest, step on the foot control (41) and keep it in this position.

Before the platform is lifted it tilts to the horizontal position.

Note: If both foot controls are not actuated within three seconds, the foot controls are disabled for a short time. Wait a few seconds before you repeat the procedure.

Platform with 3 Foot Controls

- Step on the foot control (43) and on the additional foot control (42).

Before the platform is lifted it tilts to the horizontal position.
Optional Operating Method: Hand Cable Control with two Pushbuttons

- Pushbutton 42: lift
- Pushbutton 43: lower

DANGER!
Risk of accidents and injury!
If the instructions in chapter “General Operation” are not observed during operation of the tail lift, personal injuries and material damage can occur.

Before operating the tail lift, read chapter “General Operation” from p. 23.
DANGER!

Crushing hazard due to wrong operator position!

If the operator does not stand in the correct position when moving the platform via the hand cable control, personal injury and material damage may occur.

- Make sure to stand in the correct position (see the picture below) when operating the platform with the hand cable control. Do not stand in another position.
- When operating the platform with the hand cable control while standing inside the vehicle, always keep a minimum distance of 250 mm from the sill.
- Do not stand in the squeezing area where the platform approaches the vehicle body.
- Exclusively stand in the platform area marked with the foot symbols in the illustration when moving the platform.
- When standing on the ground for operating the platform, keep a minimum distance of 1 m from all platform rims.
- Make sure that you can see the entire working area and that no other person stays on or near the platform.

Operator positions for hand cable control
Lowering the Platform

Press the pushbutton (43) and keep it pressed until the platform is adjusted flush to the ground.

After the platform has touched the ground it tilts and adjusts to the ground.

Lifting the Platform

Press the pushbutton (42) and keep it pressed until the platform has reached the loading position.

Before the platform is lifted it tilts to the horizontal position.

Optional Operating Method: Hand Cable Control with three Pushbuttons

- Pushbutton 42: lift
- Pushbutton 43: tilt
- Pushbutton 44: lower

DANGER!
Risk of accidents and injury!

If the instructions in chapter “General Operation” are not observed during operation of the tail lift, personal injuries and material damage can occur.

Before operating the tail lift, read chapter “General Operation” from p. 23.
DANGER!

Crushing hazard due to wrong operator position!

If the operator does not stand in the correct position when moving the platform via the hand cable control, personal injury and material damage may occur.

- Make sure to stand in the correct position (see the picture below) when operating the platform with the hand cable control. Do not stand in another position.
- When operating the platform with the hand cable control while standing inside the vehicle, always keep a minimum distance of 250 mm from the sill.
- Do not stand in the area near the platform edge where you risk to crush your feet when the platform approaches the vehicle sill.
- Exclusively stand in the platform area marked with the foot symbols in the illustration when moving the platform.
- When standing on the ground for operating the platform, keep a minimum distance of 1 m from all platform rims.
- Make sure that you can see the entire working area and that no other person stays on or near the platform.

Operator positions for hand cable control
Lowering the Platform

- Press the pushbutton (44) and keep it pressed until the platform is adjusted flush to the ground.

After the platform has touched the ground it tilts and adjusts to the ground.

Lifting the Platform

- Press the pushbutton (42) and keep it pressed until the platform has reached the loading position.

Before the platform is lifted it tilts to the horizontal position.

Setting the Platform to its Horizontal Position

- To adjust a steeper tilt of the platform, press both pushbuttons (42) and (43) simultaneously.
- To adjust a flatter tilt or to adjust the platform flush to the ground, press both pushbuttons (43) and (44) simultaneously.
Optional Operating Method: Wireless Remote Control Unit (Standard)

Switching the Wireless Remote Control Unit On/Off

- Press the Start pushbutton (40) to switch on. The wireless remote control unit remains on for the two minutes following the last actuation of any pushbutton, and is then switched off automatically. If you want to switch off the wireless remote control unit before this time has elapsed, press the Stop pushbutton (41).

Lowering the Platform

- Press the pushbutton (43) and keep it pressed until the platform is adjusted flush to the ground.

Risk of accidents and injury!

If the instructions in chapter “General Operation” are not observed during operation of the tail lift, personal injuries and material damage can occur.

Before operating the tail lift, read chapter “General Operation” from p. 23.
Lifting the Platform

- Press the pushbutton (42) and keep it pressed until the platform has reached the loading position.

Before the platform is lifted it tilts to the horizontal position.

When using the Safety Point option, you have to approach the wireless remote control unit close to the Safety Point label. Only then lifting the platform is enabled.

Opening the Platform

- Loosen the platform interlock (if present).
- Press the pushbutton (45) and keep it pressed until the platform is completely open.

If an optional load safety device is present, the platform is lowered a small amount and then unfolds to the horizontal operating position.

Closing the Platform

- Press the pushbutton (44) and keep it pressed until the platform is completely closed.

If an optional load safety device is present, the platform closes approximately to 80° and is lowered a small amount. Subsequently it moves to the vertical transport position and is lifted into the load safety device.

When using the Safety Point option, you have to approach the wireless remote control unit close to the Safety Point label. Only then closing the platform is enabled.

- Close the platform interlock (if present).

Setting the Platform to its Horizontal Position

- In order to obtain a steeper platform tilt angle, press the pushbutton (44).
- In order to obtain a flatter platform tilt angle or let the platform make contact with the ground, press the pushbutton (45).
Optional Operating Method:
Wireless Remote Control Unit (Nordic)

Switching the Wireless Remote Control Unit On/Off
- Press and hold the pushbutton (40) for five seconds to switch on.
  The wireless remote control unit remains on for the two minutes following the last actuation of any pushbutton, and is then switched off automatically. If you want to switch off the wireless remote control unit before this time has elapsed, press and hold the pushbutton (40) again for five seconds.

Lowering the Platform
- Press the pushbutton (43) and keep it pressed until the platform is adjusted flush to the ground.
  After the platform has touched the ground it tilts and adjusts to the ground.
Lifting the Platform

- Press the pushbutton (42) and keep it pressed until the platform has reached the loading position.

*Before the platform is lifted it tilts to the horizontal position.*

Opening the Platform

- Loosen the platform interlock (if present).
- Press the pushbutton (45) and keep it pressed until the platform is completely open.

Closing the Platform

- Press the pushbutton (44) and keep it pressed until the platform is completely closed.
- Close the platform interlock (if present).

Setting the Platform to its Horizontal Position

- In order to obtain a steeper platform tilt angle, press the pushbutton (44).
- In order to obtain a flatter platform tilt angle or let the platform make contact with the ground, press the pushbutton (45).

Options

- Please note that the wireless remote control unit can only work when a tilting angle of at least 10° has already been reached. As a result, you have to open or close the tail lift by using the lateral control panel.
- The box body light can be switched on or off by pressing the pushbutton (41).
- You can also enable or disable the tail lift's control elements by pressing the pushbutton (41). No control is possible in the switched off state.
Special Operating Elements

- **Opening the Platform**
  - Loosen the platform interlock (if present).
  - Press the pushbuttons (28), (32) and optionally (29) simultaneously and hold them in this position until the platform has reached the horizontal operating position.

- **Lowering the Platform**
  - Press the pushbuttons (28) and optionally (29) simultaneously and hold them in this position until the platform has made contact with the ground.
  - *After the platform has touched the ground it tilts and adjusts to the ground.*

- **Lifting the Platform**
  - Press the pushbuttons (27) and optionally (29) simultaneously and hold them in this position until the platform has reached the vehicle loading floor height.
  - *The platform tilts to the horizontal or preset position before it is lifted.*

**DANGER!**

Risk of accidents and injury!
If the instructions in chapter “General Operation” are not observed during operation of the tail lift, personal injuries and material damage can occur.

- Before operating the tail lift, read chapter “General Operation” from p. 23.

---

**Pushbutton Symbols:**
- **27** Pushbutton: lift/close
- **28** Pushbutton: lower/open
- **29** Pushbutton: additional pushbutton
- **32** Pushbutton: close/open
Closing the Platform

- Press the pushbuttons (27), (32) and optionally (29) simultaneously and hold them in this position until the platform is closed.
F G Special Operating Elements

27 Pushbutton: lift/close
28 Pushbutton: lower/open
32 Pushbutton: close/open
29 Pushbutton: additional pushbutton
30 Pushbutton: extend
31 Pushbutton: retract

DANGER! Risk of accidents and injury!
If the instructions in chapter “General Operation” are not observed during operation of the tail lift, personal injuries and material damage can occur.

Before operating the tail lift, read chapter “General Operation” from p. 23.

Lowering the Platform

Press the pushbuttons (28) and optionally (29) simultaneously and hold them in this position until the platform has made contact with the ground.

After the platform has touched the ground it tilts and adjusts to the ground.

Lifting the Platform

Press the pushbuttons (27) and optionally (29) simultaneously and hold them in this position until the platform has reached the vehicle loading floor height.

The platform tilts to the horizontal or preset position before it is lifted.
Setting the Platform to its Horizontal Position

- To adjust a steeper tilt of the platform, press both pushbuttons (27), (32) and optionally (29) simultaneously and hold them in this position until the platform has reached the required tilt angle.

- To adjust a flatter tilt of the platform, press both pushbuttons (28), (32) and optionally (29) simultaneously and hold them in this position until the platform has reached the required tilt angle.

Extending and Folding Out the Platform

- Loosen the platform interlock (if present).

- Press the pushbuttons (28) and optionally (29) simultaneously and hold them in this position until the platform has completely lowered.

  The platform is lowered so that it can be extended without obstruction.

- Press the pushbutton (30) and hold it in this position until the platform is completely extended.

- Press the pushbuttons (28) and optionally (29) simultaneously and hold them in this position until the folded platform has made contact with the ground.

- Protect your hands with gloves.

- Pull the handle with both hands to unfold the folding part of the platform.

Folding In and Retracting the Platform

- Protect your hands with gloves.

- Pull the handle with both hands to fold back the folding part of the platform.

- Close the platform interlock (if present).

- Press the pushbuttons (27) and optionally (29) simultaneously and hold them in this position until the platform has reached the retraction height.

- Press the pushbutton (31) and hold it in this position until the platform is completely retracted. Make sure that the platform can be retracted without obstruction.

- Press the pushbuttons (27) and optionally (29) simultaneously and hold them in this position until the platform has reached the vibration safeguard.
Special Operating Elements

- **Opening the Platform**
  - Loosen the platform interlock (if present).
  - Press the pushbuttons (28), (32) and (29) simultaneously and hold them in this position until the platform has reached the horizontal operating position.

- **Lowering the Platform**
  - Press the pushbuttons (28) and (29) simultaneously and hold them in this position until the platform has made contact with the ground.
  - After the platform has touched the ground it tilts and adjusts to the ground.

- **Lifting the Platform**
  - Press the pushbuttons (27) and (29) simultaneously and hold them in this position until the platform has reached the vehicle loading floor height.
  - The platform tilts to the horizontal or preset position before it is lifted.

- **Closing the Platform**
  - Press the pushbuttons (27), (32) and (29) simultaneously and hold them in this position until the platform is closed.

---

**DANGER!**

Risk of accidents and injury!

If the instructions in chapter “General Operation” are not observed during operation of the tail lift, personal injuries and material damage can occur.

- Before operating the tail lift, read chapter “General Operation” from p. 23.
Special Operating Elements for Hydraulic Stabilizer Feet

All Models

54 Toggle switch

DANGER!
Risk of accidents and injury!
If the instructions in chapter “General Operation” are not observed during operation of the tail lift, personal injuries and material damage can occur.

▶ Before operating the tail lift, read chapter “General Operation” from p. 23.

Extending the Hydraulic Stabilizer Feet
▶ Push down the toggle switch (54) until the stabilizer feet are extended almost to the ground.

Retracting the Hydraulic Stabilizer Feet
▶ Push up the toggle switch (54) until the stabilizer feet are completely retracted.
Programming a Key Code

You can switch on the tail lift by a key code. The factory setting is:

<table>
<thead>
<tr>
<th>Key (Combination) to be Pressed</th>
<th>Lift</th>
<th>Close</th>
<th>Lift</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-times</td>
<td>3-times</td>
<td>3-times</td>
<td></td>
</tr>
</tbody>
</table>

To change this key code:

- Open the platform.
- Lower the platform until it is adjusted flush to the ground.
- Open the sealing cap of the support tube (on the right, as seen in direction of travel) or open the cover of the hydraulic unit.
- Disconnect plug J 30.
- Switch off the electrical equipment.
- Connect the contacts J 30/5, 6, 14, 3 with contact 4 (service plug).
- Switch on the electrical equipment.
  *The tail lift is now in programming mode.*
- Disconnect the service plug and connect plug J 30 at the lateral operating element.
- Enter the desired code at the lateral operating element as follows:

<table>
<thead>
<tr>
<th>Key (Combination) to be Pressed</th>
<th>Lift</th>
<th>Close</th>
<th>Lift</th>
</tr>
</thead>
<tbody>
<tr>
<td>x-times</td>
<td>x-times</td>
<td>x-times</td>
<td></td>
</tr>
</tbody>
</table>

Each key actuation switches on the warning lights.

*If your entry has been correct, the programming mode is automatically left. You can continue to operate your tail lift as usual.*

*If your entry was faulty, the warning lights briefly flash 5 times. You have to enter the code again.*
Clearing the Service Counter (Maintenance Counter)

After 5000 cycles (lifts) the tail lift should be serviced. The control box will flash for 2 seconds with high frequency after switch-on to indicate that this limit value is reached. Proceed as described below to clear the service counter after this.

1. Close the platform, but leave the control box switched on.
2. Disconnect plug J 11.
4. Connect the service plug.
5. Connect plug J 11.

The service counter is cleared.

6. Disconnect the service plug.
8. Disconnect plug J 11 and connect it again.

This switches the tail lift back into operating mode.

Note: You can also reset the service counter by using the diagnostic software.

Troubleshooting

This function is only available for special program versions. For more information please contact our customer service. Proceed as follows to troubleshoot the tail lift:

1. Switch on the control box.
2. Open the platform so that it is in horizontal position.
3. Disconnect plug J 11.
5. Connect the service plug.
7. Disconnect the service plug.

Every connected input is now indicated by continuous warning lights.

If your tail lift is not equipped with Warnfix, you have to connect a test lamp to PIN 7 of plug J3.

9. Disconnect plug J 11 and connect it again.

This switches the tail lift back into operating mode.

Note: You can also troubleshoot your tail lift by using the diagnostic software.
**Error Recognition by Using the 7-Segment Display**

This function is only available with MBB Control.

### Status indication

<table>
<thead>
<tr>
<th>Status</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status 0 =&gt;</td>
<td>System switched on and all right, control box switched off</td>
</tr>
<tr>
<td>Status 1 =&gt;</td>
<td>System switched on and all right, control box switched on</td>
</tr>
</tbody>
</table>

### Error indication

<table>
<thead>
<tr>
<th>Status</th>
<th>Description</th>
<th>Action for error reset</th>
</tr>
</thead>
<tbody>
<tr>
<td>Error 2 =&gt;</td>
<td>Undervoltage</td>
<td>Switch off/on control box</td>
</tr>
</tbody>
</table>
| Error 3 => | On lift arms switch (B13): On signal although tail lift is closed  
-> Short-circuit on B13 | Automatic error reset as soon as correct values are reached |
| Error 4 => | Lift arms tilt sensor (B15): Faulty sensor signal |                                                |
| Error 5 => | Head tilt sensor (B15): Faulty sensor signal |                                                |
| Error 6 => | Warnfix: short-circuit recognized          | Switch control box off/on or close tail lift    |
| Error 7 => | Box body light/control box LED: short-circuit recognized |                                                |
| Error 8 => | General short-circuit error of external system | Switch control box off/on or de-energize PC board |

### Valve coil monitoring

*(not available for all models)*

<table>
<thead>
<tr>
<th>Status</th>
<th>Description</th>
<th>Action for error reset</th>
</tr>
</thead>
<tbody>
<tr>
<td>Error 9 =&gt;</td>
<td>While lifting the platform, the “motor relay coil resistance” error was detected.</td>
<td></td>
</tr>
<tr>
<td>Error “a” =&gt;</td>
<td>Not used or reserved</td>
<td>Automatic error reset as soon as correct values are reached</td>
</tr>
<tr>
<td>Error “b” =&gt;</td>
<td>While opening the platform, the “valve coil resistance open S3_S4“ or “motor relay resistance“ error was detected.</td>
<td></td>
</tr>
<tr>
<td>Error “c” =&gt;</td>
<td>While closing the platform, the “motor relay resistance” or “S5” error was detected.</td>
<td></td>
</tr>
<tr>
<td>Error “d” =&gt;</td>
<td>While lowering the platform, the “valve coil resistance lower_S1_S2“ error was detected</td>
<td></td>
</tr>
</tbody>
</table>
## Service functions *(not available for all models)*

<table>
<thead>
<tr>
<th>Status</th>
<th>Description</th>
<th>Action for disabling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Error “E” =&gt;</td>
<td>Emergency program, sensor system being bridged. Re-enable by pressing and holding “Open” and “Lower” push-buttons for more than 10 seconds.</td>
<td>Switch off/on control box</td>
</tr>
<tr>
<td>Error “P” =&gt;</td>
<td>Error diagnosis of all inputs is active. Warnfix is activated upon each push-button actuation.</td>
<td>Remove service plug</td>
</tr>
</tbody>
</table>
Service and Maintenance

DANGER!
Risk of accidents and injury!
If the instructions in chapter “General Operation” are not observed during maintenance or service of the tail lift or column lift, personal injuries and material damage can occur.

Before working on the tail lift or column lift, read chapter “General Operation” from p. 23.

Maintenance Intervals

<table>
<thead>
<tr>
<th>Activity</th>
<th>Daily</th>
<th>Depending on Usage</th>
<th>Monthly</th>
<th>Quarterly</th>
<th>Semi-annually</th>
<th>Annually</th>
</tr>
</thead>
<tbody>
<tr>
<td>Checking the function and presence of the safety and warning devices</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cleaning the tail lift</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Checking the battery</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Checking the carbon brushes at the electric motor</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Checking the oil level and refilling oil, if necessary</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Checking the bolts and nuts for tight seat</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Checking the screw fittings and pipes of the hydraulic system</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Lubricating the low-maintenance bearings</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Changing the oil</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Applying wax spray to the PC board</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Checking if the marks on the platform for the payload center of gravity and the operator position (when operating the tail lift or column lift with the hand cable control) are readable and in a good condition. Refreshing the marks using an abrasion-resistant paint, if required.</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Maintenance Intervals

<table>
<thead>
<tr>
<th>Activity</th>
<th>Daily</th>
<th>Depending on Usage</th>
<th>Monthly</th>
<th>Quarterly</th>
<th>Semi-annually</th>
<th>Annually</th>
</tr>
</thead>
<tbody>
<tr>
<td>For retractable tail lifts: Cleaning and lubricating guide rails</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>If unused for more than 3 months: Moving (open, lower, lift, close) tail lift several times</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Checking the function and presence of the safety and warning devices</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cleaning the tail lift</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Checking the battery</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Checking the bolts and nuts for tight seat</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lubricating the low-maintenance bearings</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Checking the bellows</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Applying wax spray to the PC board</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Checking if the marks on the platform for the payload center of gravity and the operator position (when operating the tail lift or column lift with the hand cable control) are readable and in a good condition, refreshing the marks using an abrasion-resistant paint, if required</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>If unused for more than 3 months: Moving (open, lower, lift, close) tail lift several times</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Depending on the frequency of use and external influences, the maintenance intervals can be shorter.
V Maintenance Intervals

DANGER!
Risk of accidents and injury!
When executing any maintenance or service work under the platform of the column lift, there is a risk of personal injury or property damage if the platform is not secured properly.
> Always secure the platform slide or platform against moving downwards.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Daily</th>
<th>Depending on Usage</th>
<th>Monthly</th>
<th>Quarterly</th>
<th>Semi-annually</th>
<th>Annually</th>
</tr>
</thead>
<tbody>
<tr>
<td>Checking the function and presence of the safety and warning devices</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cleaning the column lift</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cleaning an lubricating the sliding surface of the slider in the frame</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Checking the battery</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Checking the carbon brushes at the electric motor</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Checking the oil level and refilling oil, if necessary</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Checking the bolts and nuts for tight seat</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Checking the screw fittings and pipes of the hydraulic system</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Lubricating the low-maintenance bearings</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Changing the oil</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Applying wax spray to the PC board</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Checking the mark for the payload center of gravity for good readability; refreshing mark with abrasion-resistant paint if required</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>If unused for more than 3 months: Moving (open, lower, lift, close) tail lift several times</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>
All Models

**Maintenance Before Starting**

**Checking the Safety and Warning Devices**

The safety devices of the tail lifts comply with the respective current version of the valid regulations.

- Before starting to drive, check whether all safety and warning devices are operational.
- Renew any damaged and non-operational safety and warning devices.

Depending on the model, the safety and warning devices comprise:

- non-slip platform surface
- roll-off protection on the platform (optional)
- holding grip for the accompanying operator (not in scope of delivery of the tail lift)
- warning flashers on the platform
- warning flags behind the platform
- platform interlock at the platform (optional)
- two-feet control for “lift” and “lower” on the platform
- key control at lateral operating element for trailers or semi-trailers
- control box with ON/OFF switch in lockable driver’s cab
- optical signal at control box in driver’s cab for tail lift “ON” and/or platform open
- stop valves on lift and tilt cylinders to prevent line break (except model E)
- flow valves for limiting the lowering and opening speed (except model E)
Maintenance Depending on Usage Frequency

**All Models** Cleaning the Tail Lift

**CAUTION!**

Damage to paint!
If you clean the tail lift using a pressure washer, damage to the paint may occur up to six weeks after painting.

- Cleaning the tail lift with a pressure washer should not be done earlier than six weeks after painting.

The following parts of the tail lift may not be cleaned with a pressure washer:
- piston rods and cylinder seals
- lateral operating element
- solenoid valves (except model E)
- foot control
- warning lights and warning flags
- Bellows

**All Models** Checking the Battery

- Service the battery in the usual way.

**ABC FG KLM V** Checking the Carbon Brushes at the Electric Motor

**CAUTION!**

Risk of burns by overheating electric motor!
Worn out and contaminated carbon brushes can result in increased current consumption. This can cause the electric motor to overheat.

- Occasionally clean the carbon brushes.
- Contact a service engineer or a contractor repair shop to have worn out or contaminated carbon brushes replaced.

- Occasionally check the carbon brushes of the electric motor in the hydraulic unit and clean them to remove the carbon dust.
All Models

Applying Wax Spray to the PC Board
To protect the contacts against corrosion.
► Depending on the weather conditions and especially after exposure to salt water spray, apply wax spray to the PC board and the connector plugs.

Greasing and Lubricating
► Grease the conical lubricating head as required and after each cleaning with a pressure washer.

Checking/Refreshing Platform Marks
The marks on the platform must always be in a good condition and clearly visible. The indicate the payload center of gravity and the operator position on the platform when operating the tail lift by using the hand cable control.
► Check the marks for good visibility and refresh them if required with abrasion-resistant paint.
Standard Models (Upright Platform)

To grease and lubricate:
- Clean the conical lubricating heads.
- Use a grease gun to press grease into the conical lubricating heads (44) until the bearing is filled (see chapter “Lubricants and Operating Media” from p. 161).
- Lubricate the bearings of the roll-off protection (45) (see chapter “Lubricants and Operating Media” from p. 161).
To grease and lubricate:

- Clean the conical lubricating heads.
- Use a grease gun to press grease into the conical lubricating heads (44) until the bearing is filled (see chapter “Lubricants and Operating Media” from p. 161).
- Lubricate the bearings of the roll stop and the joint in the platform (45).
- Lubricate the sliding consoles in the guide rails (46) (see chapter “Lubricants and Operating Media” from p. 161).
Foldable Models

44 Conical lubricating head
45 Roll-off protection bearings and joint of folding platform
46 Bearings at the guide rails

To grease and lubricate:
- Clean the conical lubricating heads (44).
- Use a grease gun to press grease into the conical lubricating heads (44) until the bearing is filled (see chapter “Lubricants and Operating Media” from p. 161).
- Lubricate the bearings of the roll stop and the joint in the platform (45).
- Lubricate the sliding consoles in the guide rails (46) (see chapter “Lubricants and Operating Media” from p. 161).
To grease and lubricate:

- Clean the conical lubricating heads (44).
- Use a grease gun to press grease into the conical lubricating heads (44) until the bearing is filled (see chapter "Lubricants and Operating Media" from p. 161).
- Lubricate the bearings of the roll-off protection (45) (see chapter "Lubricants and Operating Media" from p. 161).
- Clean all sliding surfaces (47) of the slider in the guide frame and lubricate them evenly.
Monthly Maintenance

Checking the Oil Level

Standard Tail Lifts

Retractable Models
**Foldable Models**

Slide-in Unit: To check the oil level:

- Lower the tail lift so that the platform touches the ground.
- If required, retract all stabilizer feet.
- Open the right cover of the support tube.
- Loosen the fastening screw of the hydraulic unit at the support tube (2).
- Pull out the hydraulic unit until the check mark at the oil reservoir is visible.
- Using the indicator at the oil reservoir or the dip stick, check whether the indication is within the prescribed marked range.
- If required, refill oil up to level mark.
- Re-insert the hydraulic unit in to the support tube and fasten it with the screw (2).
- Close the cover of the support tube.

2  Hydraulic unit on support tube
Box-type or reversible unit:

To check the oil level:
- Lower the tail lift so that the platform touches the ground.
- If required, retract all stabilizer feet.
- Remove the cover from the unit.
- Using the indicator at the oil reservoir or the dip stick, check whether the indication is within the prescribed marked range.
- If required, refill oil up to level mark.
- Re-install the cover of the unit.

All Models

Checking the Bolts and Nuts for Tight Seat
- Check whether all bolts and nuts are seated tightly.
- Especially observe all bearing pins and associated bolts and all fastening elements of the auxiliary frame and the tail lift mounting!
- Retighten any loose bolts and nut.

ABCFGKLMV

Checking the Screw Fittings and Pipes of the Hydraulic System
- Check all screw fittings and pipes of the hydraulic system. Make sure that the screws are tight and the hydraulic lines undamaged.
- Retighten any loose screws.
- Replace damaged hydraulic hoses immediately.
- Replace all hydraulic hoses after three years at the latest. The manufacture date is stamped on the fittings.

All Models

Checking the Bellows
- Make sure that the two bellows are in a good condition and undamaged and that they are tightly fit to the piston rod and cylinder.
- Replace damaged bellows immediately.
Quarterly or Semi-annual Maintenance

**All Models**

**Lubrication of the Low-maintenance Bearings**

- Clean the low-maintenance bearings.
- Grease the low-maintenance bearings with lubricant grease.

**Note:** If you use the tail lift quite frequently, the low-maintenance bearings must be greased more frequently than once a year.

**Moving the Tail Lift**

After a standstill of more than 3 months you have to move the tail lift several times.

- Open, lift, lower and close the tail lift using the corresponding operating element.
- Repeat this procedure approximately 5 times.

Annual Maintenance

**Changing the Hydraulic Oil**

**A B C F G K L**

**CAUTION!** Risk of injury or material damage through waste oil!

If you do not change the oil in the hydraulic unit once a year, condensation water could accumulate, especially at temperatures below the freezing point. This disturbs the function of the tail lift. Persons could be injured and material could be damaged.

- Change the hydraulic oil once every year.
- Preferably change the oil shortly before the start of the winter season.
Slide-in Unit:

Box-type Unit:

Reversible Unit

47  Oil drain plug  
48  Hydraulic oil reservoir  
49  Suction filter in the oil reservoir  
50  Breather filter  
51  Valve block
To change the hydraulic oil:

- Lower the tail lift so that the platform touches the ground (see chapter “Operating Elements” from p. 37).

- **For the slide-in unit:**
  Draw out the hydraulic unit so that the valve block (51) is positioned outside the block (see chapter “Checking the Oil Level” from p. 120).

- **For the box-type or reversible unit:**
  Remove the cover from the unit.

- Place a sufficiently large vessel under the oil drain plug (47).
- Loosen the oil drain plug (47) using a 6 mm hex socket wrench and drain the oil into the vessel.

If the hydraulic oil is extremely contaminated you must clean the hydraulic oil reservoir (48):

- Loosen the clamp between the hydraulic oil reservoir (48) and the valve block (51).
- Drain the oil.
- Pull off the hydraulic oil reservoir (48) from the unit and clean it outside the hydraulic unit.
- Also renew the suction filter in the oil reservoir (49) and the breather filter (50).
- Install the cleaned hydraulic oil reservoir into the unit and reinstall the oil drain plug (47).
- Fill oil according to the marking at the oil reservoir or dip stick.

**Note:** Exclusively use oils listed in the chapter “Lubricants and Operating Media” from p. 161.

- After filling the oil reservoir, run the equipment through two full working cycles.
- Check the oil level (see chapter “Checking the Oil Level” from p. 120) and refill or drain oil as required.

- **For the slide-in unit:**
  Push the hydraulic unit back into the support tube and fasten it.

- **For the box-type or reversible unit:**
  Re-install the cover of the unit.

- Dispose of the waste oil according to the regulations.
Changing the Hydraulic Oil

**CAUTION!**
Risk of injury or material damage through waste oil!
If you do not change the oil in the hydraulic unit once a year, condensation water could accumulate, especially at temperatures below the freezing point. This disturbs the function of the column lift. Persons could be injured and material could be damaged.

- Change the hydraulic oil once every year.
- Preferably change the oil shortly before the start of the winter season.

47 Oil drain plug
48 Hydraulic oil reservoir
49 Suction filter in the oil reservoir
50 Breather filter
51 Valve block
52 Clamp
To change the hydraulic oil:

- Close the platform with the link bridge folded in; as a result the entire hydraulic oil will flow into the hydraulic oil reservoir (see chapter “Operating Elements” from p. 37).
- Remove the breather filter (50).
- Suck out the hydraulic oil via the oil fill hole.

If the hydraulic oil is extremely contaminated you must clean the hydraulic oil reservoir (48):

- Remove the stop at the rear side of the oil reservoir.
- Loosen the clamp (52).
- Disconnect the hydraulic oil reservoir (48) from the valve block (51). Take care of the intake and outlet lines and the suction filter (49) in the hydraulic oil reservoir (48).
- Remove the hydraulic oil reservoir (48) from its guide and lift it off to clean it outside the vehicle.
- Re-insert and re-connect the hydraulic oil reservoir (48). Proceed as described above, but in reverse order.
- Fill oil according to the marking at the oil reservoir or dip stick. The fill level should be 2/3 of the dip stick.

**Note:** Exclusively use oils listed in the chapter “Lubricants and Operating Media” from p. 161.

- After filling the oil reservoir, run the equipment through two full working cycles.
- Check the oil level (see chapter “Checking the Oil Level” from p. 120) and refill or drain oil as required.
- Push the hydraulic unit back into the support tube and fasten it.
- Dispose of the waste oil according to the regulations.
Protecting the Main Switch from Corrosion

To protect the main switch with strip fuse against corrosion:

► Grease the main switch with contact grease.

Checks

With every tail lift a test data booklet is provided. According to this test data booklet the following checks must be performed by a specialist of your contractor repair shop:

• Check after installation, confirming the satisfactory commissioning in writing in the test data booklet.

• Periodic verification which must be performed at least once a year. The essential scope of checks is described in the test data booklet. The check must be confirmed in the test data booklet in writing.

• Extraordinary check after major repairs or structural changes. The check must be confirmed in the test data booklet in writing.

Structural changes are only allowed with the consent of the manufacturer. Any warranties shall become void if modifications at the tail lift are performed without our consent. The manufacturer shall not be held responsible for damages, accidents, etc. The same applies for the usage of third-party spare parts, if their use has not been explicitly approved.
All Models

Eliminating Faults

Faults may occur even in the best maintained and serviced tail lift.

The following description of possible faults will enable you to recognize faults quickly and eliminate them saving time and costs. Principally, troubleshooting and the elimination of faults should be done in the contractor repair shops. In the list of repair shops you find the information how to find our contractor repair shops. If necessary, you can request the list free of charge from our sales offices or the factory.

For troubleshooting, preferably a test lamp can be used. Use the ground connector on the PC board for troubleshooting.

Before troubleshooting, check the following:

- Make sure that the tail lift is switched on in the driver's cab.
- Check whether the battery main switch is switched on.
- Make sure that the main fuse for the power supply is intact.
- Check the two control-circuit fuses of the hydraulic unit or power unit for correct function.
- Check the control voltage fuse for 12 V systems at the vehicle battery for correct function.
- Make sure that the vehicle batteries function correctly and are charged.
- Verify that the ground cable on the hydraulic unit or power unit establishes a good connection between the tail lift and the vehicle.
- Make sure that the oil reservoir is sufficiently filled (except model E).
- Check that mechanical or electrical components, for example cables, are not damaged.

WARNING!

Risk of burns in case of short-circuits!

Serious burns can occur in case of a short-circuit of the high-power batteries.

- Before starting any work at the electric system, disconnect the battery main switch or disconnect the negative lead from the battery.

If more faults occur in the tail lifts you should not try to eliminate the faults yourself, but by contractor repair shops and with the aid of the following tables. The list of repair shops shows you the nearest repair shop and provides further contact information.
### Troubleshooting Tables

#### Before switching on

<table>
<thead>
<tr>
<th>Fault</th>
<th>Possible cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optical indication in driver’s cab flashes rapidly</td>
<td>Tilt sensor b15 defective</td>
<td>Replace tilt sensor b15</td>
</tr>
</tbody>
</table>

#### Switching on

(LED on PC board flashes with the same rate as the turn signal)

<table>
<thead>
<tr>
<th>Fault</th>
<th>Possible cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optical indication in driver’s cab flashes furiously</td>
<td>Lift arms switch b13 defective (short-circuit)</td>
<td>Replace lift arms switch b13</td>
</tr>
<tr>
<td></td>
<td>Tilt sensor b15 guide rod defective</td>
<td>Replace tilt sensor b15</td>
</tr>
<tr>
<td>LED on PC board does not flash</td>
<td>ON/OFF switch in driver’s cab defective</td>
<td>Check connections 2 and 4 with test lamp</td>
</tr>
<tr>
<td></td>
<td>Fuses in unit e1 or e2 have tripped</td>
<td>Replace fuses</td>
</tr>
<tr>
<td></td>
<td>PC board in sealing cover defective</td>
<td>Replace PC board</td>
</tr>
</tbody>
</table>

#### Open

(Platform opens to the horizontal operating position – this position is stored and moved to after the ground adjustment during lifting)

<table>
<thead>
<tr>
<th>Fault</th>
<th>Possible cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Platform does not open with motor</td>
<td>No signal at output J 1/3</td>
<td>Use test lamp to check according to circuit diagram</td>
</tr>
<tr>
<td></td>
<td>Motor contactor defective</td>
<td>Check motor contactor</td>
</tr>
<tr>
<td>Platform does not open</td>
<td>Rotary switches, pushbuttons, or toggle switches defective</td>
<td>Use test lamp to check contacts in operating element according to circuit diagram, use ground connection JK at PC board</td>
</tr>
<tr>
<td></td>
<td>No voltage at valve plug S 3 or S 4, defective cable</td>
<td>Check with test lamp</td>
</tr>
<tr>
<td></td>
<td>Control valve S 5 or pressure splitter stuck</td>
<td>Clean or replace</td>
</tr>
</tbody>
</table>
## Open

(Platform opens to the horizontal operating position – this position is stored and moved to after the ground adjustment during lifting)

<table>
<thead>
<tr>
<th>Fault</th>
<th>Possible cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warning lights on platform are not flashing when platform is open</td>
<td>Tilt sensor b15 at the platform misadjusted or defective</td>
<td>Adjust or replace</td>
</tr>
<tr>
<td></td>
<td>PC board defective</td>
<td>Replace</td>
</tr>
<tr>
<td></td>
<td>Plugs defective</td>
<td>Replace</td>
</tr>
<tr>
<td></td>
<td>Warning lamps defective</td>
<td>Replace</td>
</tr>
<tr>
<td></td>
<td>Initiator b25 misadjusted or defective</td>
<td>Adjust or replace</td>
</tr>
</tbody>
</table>

## Extend

<table>
<thead>
<tr>
<th>Fault</th>
<th>Possible cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Platform does not extend, motor is running</td>
<td>Solenoid valves S 7 and S 8 leaking</td>
<td>Clean or replace</td>
</tr>
<tr>
<td></td>
<td>Solenoid valve S 8 does not open</td>
<td>Clean or replace</td>
</tr>
<tr>
<td></td>
<td>Lowering brake valve S 11 does not open</td>
<td>Clean or replace</td>
</tr>
<tr>
<td></td>
<td>Piston seal in guide cylinder defective</td>
<td>Replace</td>
</tr>
</tbody>
</table>

## Fold out (model KUZF)

<table>
<thead>
<tr>
<th>Fault</th>
<th>Possible cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Platform does not unfold, motor is running</td>
<td>Solenoid valves S 7 and S 8 leaking</td>
<td>Clean or replace</td>
</tr>
<tr>
<td></td>
<td>Solenoid valve S 12 does not open</td>
<td>Clean or replace</td>
</tr>
<tr>
<td></td>
<td>Valve S 10 does not open</td>
<td>Clean or replace</td>
</tr>
<tr>
<td></td>
<td>Piston seal in folding cylinder defective</td>
<td>Replace</td>
</tr>
<tr>
<td>Fault</td>
<td>Possible cause</td>
<td>Remedy</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Platform does not come down or too slowly, but opening operation works</td>
<td>Flow valve R 1 or R 2 at lift cylinder stuck or defective</td>
<td>Clean or replace</td>
</tr>
<tr>
<td></td>
<td>Seating too tight</td>
<td>Grease all seating points</td>
</tr>
<tr>
<td></td>
<td>Hydraulic oil too thick</td>
<td>Change oil, use oil grade as recommended</td>
</tr>
<tr>
<td>Platform does not come down when operated with foot controls</td>
<td>The foot controls were actuated too fast (less than 1 s) or too slow (more than 3 s) after each other</td>
<td>Release both foot controls, wait a few seconds, and repeat procedure</td>
</tr>
<tr>
<td></td>
<td>Foot control defective</td>
<td>Disconnect plug connection in the platform, check foot controls with continuity tester</td>
</tr>
<tr>
<td></td>
<td>Cable no. 2 to platform defective</td>
<td>Actuate both foot controls and check the voltage at plugs J 3/6 and J 3/5 on the PC board using a test lamp</td>
</tr>
<tr>
<td>Platform does not come down when operated with lateral operating element</td>
<td>Rotary switches, pushbuttons, or toggle switches defective</td>
<td>Use test lamp to check contacts in operating element according to circuit diagram, use ground connection JK at PC board</td>
</tr>
<tr>
<td></td>
<td>PC board does not deliver output at J 4/15</td>
<td>Disconnect plug J 4, check terminal 15 with test lamp</td>
</tr>
<tr>
<td></td>
<td>PC board does not deliver output at J 1/12</td>
<td>Disconnect plug J 1, check terminal 12 with test lamp</td>
</tr>
<tr>
<td></td>
<td>No voltage at valve plug S 1 or S 2, defective cable</td>
<td>Check with test lamp</td>
</tr>
<tr>
<td></td>
<td>Valve S 5 in unit does not switch on</td>
<td>Check with test lamp</td>
</tr>
<tr>
<td>Platform tilts during lowering</td>
<td>Lift arms switch b13 misadjusted</td>
<td>Adjust</td>
</tr>
<tr>
<td>Platform tilts automatically</td>
<td>Solenoid valves S 3 and S 4 at tilt cylinder contaminated or defective</td>
<td>Clean or replace</td>
</tr>
<tr>
<td></td>
<td>Piston seal in tilt cylinder defective</td>
<td>Replace</td>
</tr>
<tr>
<td>Platform comes down automatically</td>
<td>Solenoid valves S 1 and S 2 at lift cylinder contaminated or defective</td>
<td>Clean or replace</td>
</tr>
</tbody>
</table>
## Ground adjustment
*(platform tilts)*

<table>
<thead>
<tr>
<th>Fault</th>
<th>Possible cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emergency actuation: Actuate “Open” (28) pushbutton and additional pushbutton (29) on lateral control element until platform tilts</td>
<td>Lift arms switch b13 misadjusted or defective</td>
<td>Adjust lift arms switch b13 so that the platform tilts after touching the ground</td>
</tr>
<tr>
<td></td>
<td>PC board does not deliver output at J 4/14</td>
<td>Check at connection bl (signal) of plug J 41 (lift arms switch) with test lamp</td>
</tr>
<tr>
<td></td>
<td>No voltage at valve plug S 3 or S 4, defective cable</td>
<td>Disconnect plug J 4, check terminal 14 with test lamp</td>
</tr>
<tr>
<td></td>
<td>Solenoid valves S 3 and S 4 at tilt cylinder contaminated or defective</td>
<td>Clean or replace</td>
</tr>
<tr>
<td></td>
<td>PC board has stored error</td>
<td>De-energize, check with test lamp</td>
</tr>
<tr>
<td></td>
<td>Flow valve R 5 or pressure splitter stuck or defective</td>
<td>Clean or replace</td>
</tr>
<tr>
<td></td>
<td>PC board defective</td>
<td>Replace</td>
</tr>
<tr>
<td>Platform does not tilt, optical indicator in driver’s cab flashes rapidly</td>
<td>Tilt sensor b15 guide rod defective</td>
<td>Replace tilt sensor b15</td>
</tr>
</tbody>
</table>

## Lift platform off the ground
*(platform tilts into the horizontal operating position that was stored when it was opened)*

<table>
<thead>
<tr>
<th>Fault</th>
<th>Possible cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Platform does not tilt into the horizontal operating position when operated via foot controls</td>
<td>The foot controls were actuated too fast (shorter than 1 s) or too slow (longer than 3 s) after each other</td>
<td>Release both foot controls, wait a few seconds, and repeat procedure</td>
</tr>
<tr>
<td></td>
<td>Foot control defective</td>
<td>Disconnect plug connection in the platform, check foot controls with continuity tester</td>
</tr>
<tr>
<td></td>
<td>Cable no. 2 to platform defective</td>
<td>Actuate both foot controls and check the voltage at plugs J 3/6 and J 3/5 on the PC board using a test lamp</td>
</tr>
<tr>
<td>Platform does not tilt into the horizontal position when lifting</td>
<td>Directional valve S 5 stuck or defective</td>
<td>Clean or replace</td>
</tr>
<tr>
<td></td>
<td>Tilt sensor b15 defective</td>
<td>Replace</td>
</tr>
<tr>
<td>Fault</td>
<td>Possible cause</td>
<td>Remedy</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Platform tilts further than the preset angle</td>
<td>Tilt sensor b15 defective</td>
<td>Replace</td>
</tr>
<tr>
<td></td>
<td>Directional valve S 5 stuck or defective</td>
<td>Clean or replace</td>
</tr>
<tr>
<td>Platform does not tilt into the horizontal operating position but is</td>
<td>PC board does not deliver output at J 1/12</td>
<td>Check plug J 1 terminal 12 with test lamp, use ground connection JK of</td>
</tr>
<tr>
<td>lifted</td>
<td>Valve S 5 in unit does not switch on</td>
<td>the PC board</td>
</tr>
<tr>
<td>Platform does not tilt into the horizontal operating position, but</td>
<td>Tilt sensor b15 platform defective</td>
<td>Replace tilt sensor b15</td>
</tr>
<tr>
<td>is lifted, optical indicator in driver’s cab flashes rapidly</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Platform tilts further than the preset angle when the platform is</td>
<td>Tilt sensor b15 defective</td>
<td>Replace</td>
</tr>
<tr>
<td>lifted</td>
<td>Directional valve stuck or defective</td>
<td>Clean or replace</td>
</tr>
</tbody>
</table>

### Lift

**Fault** (platform moves up to loading edge)

<table>
<thead>
<tr>
<th>Fault</th>
<th>Possible cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Platform does not lift up</td>
<td>Rotary switches, pushbuttons, or toggle switches</td>
<td>Use test lamp to check contacts in operating element according to</td>
</tr>
<tr>
<td></td>
<td>defective</td>
<td>circuit diagram, use ground connection JK at PC board</td>
</tr>
<tr>
<td></td>
<td>PC board does not deliver output at J 1/3</td>
<td>Check PC board according to circuit diagram at plug J 1/3 with test</td>
</tr>
<tr>
<td></td>
<td>Motor contactor in unit does not switch on or is</td>
<td>lamp</td>
</tr>
<tr>
<td></td>
<td>defective</td>
<td></td>
</tr>
<tr>
<td>Platform is not lifted up although</td>
<td>Directional valve S 5 stuck or defective</td>
<td>Clean or replace</td>
</tr>
<tr>
<td>hydraulic unit is running</td>
<td>Solenoid valves S 1 and S 2 at lift cylinder</td>
<td>Clean or replace</td>
</tr>
<tr>
<td></td>
<td>contaminated or defective</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Suction filter at pump contaminated</td>
<td>Clean or replace</td>
</tr>
<tr>
<td></td>
<td>Platform overloaded</td>
<td>Reduce load according to load diagram</td>
</tr>
<tr>
<td></td>
<td>Hydraulic pump defective</td>
<td>Replace</td>
</tr>
<tr>
<td></td>
<td>Electric motor defective</td>
<td>Replace</td>
</tr>
<tr>
<td></td>
<td>Pressure splitter contaminated or defective</td>
<td>Clean or replace</td>
</tr>
<tr>
<td></td>
<td>Pressure relief valve misadjusted or defective</td>
<td>Adjust and lock the valve or replace it</td>
</tr>
</tbody>
</table>
## Close
*(platform closes)*

<table>
<thead>
<tr>
<th>Fault</th>
<th>Possible cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Platform does not close</td>
<td>Rotary, pushbutton or toggle switches defective</td>
<td>Check contacts in operating element according to circuit diagram using test lamp</td>
</tr>
<tr>
<td></td>
<td>PC board does not deliver output at J 1/3 or J 1/1</td>
<td>Check PC board acc. to circuit diagram at plug J 1/3 and 1/12 with test lamp</td>
</tr>
<tr>
<td></td>
<td>Motor contactor or valve S 5 in unit do not switch on</td>
<td>Check with test lamp</td>
</tr>
<tr>
<td>In its closed end position the platform does not reach the vehicle loading floor height</td>
<td>End of box insufficiently reinforced</td>
<td>Reinforce box according to the details in assembly drawing</td>
</tr>
<tr>
<td></td>
<td>Bearings worn out (after longer usage)</td>
<td>Replace bearing pins, bearing bushes</td>
</tr>
</tbody>
</table>

## Retract

<table>
<thead>
<tr>
<th>Fault</th>
<th>Possible cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Platform does not retract, motor is running</td>
<td>Solenoid valves S 7 and S 8 leaking</td>
<td>Clean or replace</td>
</tr>
<tr>
<td></td>
<td>Solenoid valve S 7 does not open</td>
<td>Clean or replace</td>
</tr>
<tr>
<td></td>
<td>Solenoid valve S 11 does not open</td>
<td>Clean or replace</td>
</tr>
<tr>
<td></td>
<td>Piston seal in guide cylinder defective</td>
<td>Replace</td>
</tr>
</tbody>
</table>

## Fold in
*(for model KUZF)*

<table>
<thead>
<tr>
<th>Fault</th>
<th>Possible cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Platform does not unfold, motor is running</td>
<td>Solen. valves S 7 + S 8 leaking</td>
<td>Clean or replace</td>
</tr>
<tr>
<td></td>
<td>Solen. valve S 12 does not open</td>
<td>Clean or replace</td>
</tr>
<tr>
<td></td>
<td>Solen. valve S 9 does not open</td>
<td>Clean or replace</td>
</tr>
<tr>
<td></td>
<td>Piston seal in folding cylinder defective</td>
<td>Replace</td>
</tr>
</tbody>
</table>

## Switch on Warnfix
*(Warnfix is automatically switched on when the platform is opened or extended, left and right lights are switched in parallel)*

<table>
<thead>
<tr>
<th>Fault</th>
<th>Possible cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warning lights are not flashing</td>
<td>Short-circuit in lamp or cabling</td>
<td>Repair short-circuit</td>
</tr>
<tr>
<td></td>
<td>Lamp defective</td>
<td>Replace</td>
</tr>
<tr>
<td></td>
<td>Initiator b25 defective</td>
<td>Replace</td>
</tr>
</tbody>
</table>
## Troubleshooting Tables

### Before switching on

<table>
<thead>
<tr>
<th>Fault</th>
<th>Possible cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optical indication in driver's cab flashes rapidly</td>
<td>Tilt sensor b15 defective</td>
<td>Replace tilt sensor b15</td>
</tr>
</tbody>
</table>

### Switching on

(LED on PC board flashes with the same rate as the turn signal)

<table>
<thead>
<tr>
<th>Fault</th>
<th>Possible cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optical indication in driver's cab flashes furiously</td>
<td>Lift arms switch b13 defective (short-circuit)</td>
<td>Replace tilt sensor b15</td>
</tr>
<tr>
<td></td>
<td>Tilt sensor b15 guide rod defective</td>
<td>Replace tilt sensor b15</td>
</tr>
<tr>
<td>LED on PC board does not flash</td>
<td>ON/OFF switch in driver's cab defective</td>
<td>Check connections 2 and 4 with test lamp</td>
</tr>
<tr>
<td></td>
<td>Fuses in power unit e1 or e2 have tripped</td>
<td>Replace fuses</td>
</tr>
<tr>
<td></td>
<td>PC board in sealing cover defective</td>
<td>Replace PC board</td>
</tr>
</tbody>
</table>

### Open

(Platform opens to the horizontal operating position – this position is stored and moved to after the ground adjustment during lifting)

<table>
<thead>
<tr>
<th>Fault</th>
<th>Possible cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Platform does not open</td>
<td>Rotary switches, pushbuttons, or toggle switches defective</td>
<td>Use test lamp to check contacts in operating element according to circuit diagram, use ground connection JK at PC board</td>
</tr>
<tr>
<td></td>
<td>Motor contactor -K4 or relay -K5 defective</td>
<td>Check motor contactor and relay</td>
</tr>
<tr>
<td></td>
<td>Output J4/14, JK or J43/90 does not deliver output signal</td>
<td>Use test lamp to check according to circuit diagram</td>
</tr>
<tr>
<td>Warning lights on platform are not flashing when platform is open</td>
<td>Tilt sensor b15 at the platform misadjusted or defective</td>
<td>Adjust or replace</td>
</tr>
<tr>
<td></td>
<td>PC board defective</td>
<td>Replace</td>
</tr>
<tr>
<td></td>
<td>Plugs defective</td>
<td>Replace</td>
</tr>
<tr>
<td></td>
<td>Warning lamps defective</td>
<td>Replace</td>
</tr>
</tbody>
</table>
### Lower

<table>
<thead>
<tr>
<th>Fault</th>
<th>Possible cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Platform does not lower, but can be opened</td>
<td>Lift cylinder is stuck</td>
<td>Briefly press Lift pushbutton, then press Lower pushbutton again</td>
</tr>
<tr>
<td></td>
<td>Seating too tight</td>
<td>Grease all seating points</td>
</tr>
<tr>
<td></td>
<td>Output J4/15 or J42/81 does not deliver output signal</td>
<td>Use test lamp to check according to circuit diagram</td>
</tr>
<tr>
<td></td>
<td>Motor contactor -K2 or relay -K7 defective</td>
<td>Check motor contactor and relay</td>
</tr>
<tr>
<td>Platform does not come down when operated with foot controls</td>
<td>Foot controls were actuated too fast (shorter than 1 s) or too slow (longer than 3 s) after each other</td>
<td>Release both foot controls, wait a few seconds, and repeat procedure</td>
</tr>
<tr>
<td></td>
<td>Foot control defective</td>
<td>Disconnect plug connection in the platform, check foot controls with continuity tester</td>
</tr>
<tr>
<td></td>
<td>Cable no. 2 to platform defective</td>
<td>Actuate both foot controls and check the voltage at plugs J 3/6 and J 3/5 on the PC board using a test lamp</td>
</tr>
<tr>
<td>Platform does not come down when operated with lateral operating element</td>
<td>Rotary switches, pushbuttons, or toggle switches defective</td>
<td>Use test lamp to check contacts in operating element according to circuit diagram, use ground connection JK at PC board</td>
</tr>
<tr>
<td></td>
<td>Cable no. 3 to operating element defective</td>
<td>Actuate rotary switches one after another and check voltage across connector J30 according to circuit diagram using a test lamp</td>
</tr>
<tr>
<td>Platform tilts during lowering</td>
<td>Lift cylinder lowers too slowly or not at all</td>
<td>Lubricate bearings, briefly actuate Lift pushbutton, then press Lower pushbutton again</td>
</tr>
</tbody>
</table>

### Ground adjustment

#### (platform tilts)

<table>
<thead>
<tr>
<th>Fault</th>
<th>Possible cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emergency actuation: Actuate “Open” (28) pushbutton and additional pushbutton (29) on lateral control element until platform tilts</td>
<td>Output J4/15, J4/14, JK or J42/81 does not deliver output signal</td>
<td>Use test lamp to check according to circuit diagram</td>
</tr>
<tr>
<td></td>
<td>Seating too tight</td>
<td>Grease all seating points</td>
</tr>
<tr>
<td>Platform does not tilt</td>
<td>Tilt sensor b15 guide rod defective</td>
<td>Replace tilt sensor b15</td>
</tr>
<tr>
<td>Platform does not tilt, opt. indicator in driver’s cab flashes rapidly</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Lift platform off the ground
(platform tilts into the horizontal operating position that was stored when it was opened)

<table>
<thead>
<tr>
<th>Fault</th>
<th>Possible cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Platform does not tilt into the horizontal operating position when operated via foot controls</td>
<td>The foot controls were actuated too fast (shorter than 1 s) or too slow (longer than 3 s) after each other</td>
<td>Release both foot controls, wait a few seconds, and repeat procedure</td>
</tr>
<tr>
<td>Foot control defective</td>
<td></td>
<td>Disconnect plug connection in the platform, check foot controls with continuity tester</td>
</tr>
<tr>
<td>Cable no. 2 to platform defective</td>
<td></td>
<td>Actuate both foot controls and check the voltage at plugs J 3/6 and J 3/5 on the PC board using a test lamp</td>
</tr>
<tr>
<td>When being lifted, the platform does not tilt to its horizontal position or tilts beyond the pre-set position</td>
<td>Tilt sensor b15 defective</td>
<td>Replace</td>
</tr>
<tr>
<td>Platform does not tilt into the horizontal operating position but is lifted</td>
<td>Output J43/90, J1/12, JK or JK does not deliver output signal</td>
<td>Use test lamp to check according to circuit diagram</td>
</tr>
<tr>
<td>Motor contactor -K3 is defective</td>
<td></td>
<td>Check motor contactor</td>
</tr>
<tr>
<td>Platform does not tilt into the horizontal operating position, but is lifted, optical indicator in driver’s cab flashes rapidly</td>
<td>Tilt sensor b15 platform defective</td>
<td>Replace</td>
</tr>
</tbody>
</table>

### Lift
(platform moves up to loading edge)

<table>
<thead>
<tr>
<th>Fault</th>
<th>Possible cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Platform does not lift up</td>
<td>Rotary switches, pushbuttons, or toggle switches defective</td>
<td>Use test lamp to check contacts in operating element according to circuit diagram, use ground connection JK at PC board</td>
</tr>
<tr>
<td>PC board does not deliver output at J 1/3 or J 42/81</td>
<td></td>
<td>Use test lamp to check PC board according to circuit diagram</td>
</tr>
<tr>
<td>Motor contactor -K1 defective</td>
<td></td>
<td>Check motor contactor</td>
</tr>
</tbody>
</table>
### Close
*(platform closes)*

<table>
<thead>
<tr>
<th>Fault</th>
<th>Possible cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Platform does not close</td>
<td>Rotary switches, pushbuttons, or toggle switches defective</td>
<td>Use test lamp to check contacts in operating element according to circuit diagram, use ground connection JK at PC board</td>
</tr>
<tr>
<td></td>
<td>PC board does not deliver output on J 1/12, J43/90 or JK</td>
<td>Use test lamp to check PC board according to circuit diagram</td>
</tr>
<tr>
<td></td>
<td>Motor contactor -K1 defective</td>
<td>Check motor contactor</td>
</tr>
<tr>
<td>In its closed end position the platform does not reach the vehicle loading floor height</td>
<td>End of box insufficiently reinforced</td>
<td>Reinforce box according to details in assembly drawing</td>
</tr>
<tr>
<td></td>
<td>Bearings worn out (after longer usage)</td>
<td>Replace bearing pins, bearing bushes</td>
</tr>
</tbody>
</table>

### Switch on Warnfix
*(Warnfix is automatically switched on when the platform is opened or extended, left and right lights are switched in parallel)*

<table>
<thead>
<tr>
<th>Fault</th>
<th>Possible cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warning light does not flash</td>
<td>Short-circuit in lamp or cabling</td>
<td>Repair short-circuit</td>
</tr>
<tr>
<td></td>
<td>Lamp defective</td>
<td>Replace</td>
</tr>
</tbody>
</table>
## Troubleshooting Tables

### Before switching on

<table>
<thead>
<tr>
<th>Fault</th>
<th>Possible cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optical indication in driver's cab flashes rapidly</td>
<td>Tilt sensor b15 defective</td>
<td>Replace tilt sensor b15</td>
</tr>
</tbody>
</table>

### Switching on (LED on PC board flashes with the same rate as the turn signal)

<table>
<thead>
<tr>
<th>Fault</th>
<th>Possible cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>LED on PC board does not flash</td>
<td>Fuses in unit e1 or e2 have tripped</td>
<td>Replace fuses</td>
</tr>
<tr>
<td></td>
<td>PC board in sealing cover defective</td>
<td>Replace PC board</td>
</tr>
</tbody>
</table>

### Open (platform opens until reaching operating position)

<table>
<thead>
<tr>
<th>Fault</th>
<th>Possible cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Platform does not open with motor</td>
<td>Output J1/3 does not deliver output signal</td>
<td>Use test lamp to check according to circuit diagram</td>
</tr>
<tr>
<td></td>
<td>Motor contactor defective</td>
<td>Check motor contactor</td>
</tr>
<tr>
<td>Platform does not open</td>
<td>Pushbutton defective</td>
<td>Use test lamp to check contacts in operating element according to circuit diagram, use ground connection JK at PC board</td>
</tr>
<tr>
<td></td>
<td>No voltage at valve plug S4 or S5, defective cable</td>
<td>Check with test lamp</td>
</tr>
<tr>
<td></td>
<td>Control valve S6 or pressure valve locked</td>
<td>Clean or replace</td>
</tr>
<tr>
<td>Warning lights on platform are not flashing when platform is open</td>
<td>Tilt sensor b15 at the platform misadjusted or defective</td>
<td>Adjust or replace</td>
</tr>
<tr>
<td></td>
<td>PC board defective</td>
<td>Replace</td>
</tr>
<tr>
<td></td>
<td>Plugs defective</td>
<td>Replace</td>
</tr>
<tr>
<td></td>
<td>Warning lamps are defective</td>
<td>Replace</td>
</tr>
</tbody>
</table>
### Lift
(platform moves up to loading edge)

<table>
<thead>
<tr>
<th>Fault</th>
<th>Possible cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Platform does not lift up</td>
<td>Pushbutton defective</td>
<td>Use test lamp to check contacts in operating element according to circuit diagram, use ground connection JK at PC board</td>
</tr>
<tr>
<td></td>
<td>PC board does not deliver output at J 1/3</td>
<td>Check PC board according to circuit diagram at plug J 1/3 with test lamp</td>
</tr>
<tr>
<td></td>
<td>Motor contactor in unit does not switch on or is defective</td>
<td>Check motor contactor with test lamp</td>
</tr>
<tr>
<td></td>
<td>Thermostick tripped</td>
<td>Allow motor to cool down</td>
</tr>
<tr>
<td>Platform is not lifted up although hydraulic unit is running</td>
<td>Directional valve S 3 stuck or defective</td>
<td>Clean or replace</td>
</tr>
<tr>
<td></td>
<td>Solenoid valves S 1 and S 2 at lift cylinder contaminated or defective</td>
<td>Clean or replace</td>
</tr>
<tr>
<td></td>
<td>Suction filter at pump contaminated</td>
<td>Clean or replace</td>
</tr>
<tr>
<td></td>
<td>Platform overloaded</td>
<td>Reduce load according to load diagram</td>
</tr>
<tr>
<td></td>
<td>Hydraulic pump defective</td>
<td>Replace</td>
</tr>
<tr>
<td></td>
<td>Electric motor defective</td>
<td>Replace</td>
</tr>
<tr>
<td></td>
<td>Pressure splitter contaminated or defective</td>
<td>Clean or replace</td>
</tr>
<tr>
<td></td>
<td>Pressure relief valve misadjusted or defective</td>
<td>Adjust and lock the valve or replace it</td>
</tr>
</tbody>
</table>

### Lower
(platform moves down until reaching the ground)

<table>
<thead>
<tr>
<th>Fault</th>
<th>Possible cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Platform does not come down</td>
<td>Flow valve R 1 or R 2 at lift cylinder stuck or defective</td>
<td>Clean or replace</td>
</tr>
<tr>
<td></td>
<td>Slide bearing sluggish</td>
<td>Clean and lubricate slide bearing</td>
</tr>
<tr>
<td></td>
<td>Hydraulic oil too thick</td>
<td>Change oil, use oil grade as recommended</td>
</tr>
<tr>
<td></td>
<td>Solenoid valve S 1 or S 2 defective</td>
<td>Clean or replace</td>
</tr>
</tbody>
</table>
### Lower

*(platform moves down until reaching the ground)*

<table>
<thead>
<tr>
<th>Fault</th>
<th>Possible cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Platform does not come down when operated with hand cable control</td>
<td>Pushbutton defective</td>
<td>Use test lamp to check contacts in operating element according to circuit diagram, use ground connection JK at PC board</td>
</tr>
<tr>
<td></td>
<td>PC board does not deliver output at J 4/15</td>
<td>Disconnect plug J 4, check terminal 15 with test lamp</td>
</tr>
<tr>
<td></td>
<td>No voltage at valve plug S 1 or S 2, defective cable</td>
<td>Check with test lamp</td>
</tr>
<tr>
<td>Platform comes down automatically</td>
<td>Solenoid valves S 1 and S 2 at lift cylinder contaminated or defective</td>
<td>Clean or replace</td>
</tr>
</tbody>
</table>

### Fold out

<table>
<thead>
<tr>
<th>Fault</th>
<th>Possible cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Link bridge does not fold out, motor is running</td>
<td>Solenoid valves S 10 and S 11 do not open</td>
<td>Clean or replace</td>
</tr>
<tr>
<td></td>
<td>Solenoid valve S 7 does not open</td>
<td>Clean or replace</td>
</tr>
<tr>
<td></td>
<td>Piston seal in tilt cylinder defective</td>
<td>Replace</td>
</tr>
</tbody>
</table>

### Fold in

<table>
<thead>
<tr>
<th>Fault</th>
<th>Possible cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Link bridge does not fold in, motor is running</td>
<td>Solenoid valve S 7 does not open</td>
<td>Clean or replace</td>
</tr>
<tr>
<td></td>
<td>Solenoid valve S 12 does not open</td>
<td>Clean or replace</td>
</tr>
<tr>
<td></td>
<td>Solenoid valve S 13 does not open</td>
<td>Clean or replace</td>
</tr>
<tr>
<td></td>
<td>Piston seal in tilt cylinder defective</td>
<td>Replace</td>
</tr>
</tbody>
</table>
### Switch on Warnfix
(Warnfix is automatically switched on when the platform is opened, left and right lights are switched in parallel)

<table>
<thead>
<tr>
<th>Fault</th>
<th>Possible cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warning light does not flash</td>
<td>Short-circuit in lamp or cabling</td>
<td>Repair short-circuit</td>
</tr>
<tr>
<td></td>
<td>Lamp defective</td>
<td>Replace</td>
</tr>
</tbody>
</table>

### Close
(platform closes)

<table>
<thead>
<tr>
<th>Fault</th>
<th>Possible cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Platform does not close at all or only on one side</td>
<td>Emergency control of tilt cylinder activated or both activated.</td>
<td>Screw out knurled screws of solenoid valves</td>
</tr>
<tr>
<td>Platform does not close</td>
<td>Pushbutton defective</td>
<td>Check contacts in operating element according to circuit diagram using test lamp</td>
</tr>
<tr>
<td></td>
<td>PC board does not deliver output at J 1/3 or J 43/93</td>
<td>Check PC board according to circuit diagram at plug J 1/3 and 43/93 with test lamp</td>
</tr>
<tr>
<td></td>
<td>Motor contactor or valve S 7 in unit do not switch on</td>
<td>Check with test lamp</td>
</tr>
<tr>
<td></td>
<td>Initiator B 25 defective</td>
<td>Check with test lamp according to circuit diagram, replace if required</td>
</tr>
</tbody>
</table>
Technical Data

All Models

Recommended Battery Capacity

<table>
<thead>
<tr>
<th>Load weight [kg]</th>
<th>Recommended battery capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>up to 1250</td>
<td>12 V = 1 x 143 Ah</td>
</tr>
<tr>
<td></td>
<td>24/12 V, 24 V = 2 x 12 V, 2 x 105 Ah</td>
</tr>
<tr>
<td>1250 to 1750</td>
<td>12 V = 1 x 180 Ah</td>
</tr>
<tr>
<td></td>
<td>24/12 V, 24 V = 2 x 12 V, 2 x 143 Ah</td>
</tr>
<tr>
<td>over 1750 to 4000</td>
<td>24/12 V, 24 V = 2 x 12 V, 2 x 180 Ah</td>
</tr>
</tbody>
</table>

Note: If you use the vehicle exclusively for short-haul transports in urban traffic frequent loading operations, you should a battery of the next higher capacity level. In addition it is recommended to use a stronger alternator.

All Models

Alternators for Recharging the Battery

<table>
<thead>
<tr>
<th>Load weight [kg]</th>
<th>Recommended alternator [Watt]</th>
</tr>
</thead>
<tbody>
<tr>
<td>up to 1250</td>
<td>630</td>
</tr>
<tr>
<td>1250 to 1750</td>
<td>730</td>
</tr>
<tr>
<td>over 1750 to 4000</td>
<td>1000</td>
</tr>
</tbody>
</table>

All Models

Temperature Range for Tail Lift Usage

<table>
<thead>
<tr>
<th>Standard</th>
<th>“Cold climate” option</th>
</tr>
</thead>
<tbody>
<tr>
<td>–20 °C to +60 °C</td>
<td>–40 °C to +60 °C</td>
</tr>
</tbody>
</table>
Load Diagrams

The following tables show the maximum allowed weight of the payload (Q). The table applicable for your tail lift can also to be found on the lateral operating element.

The payload (Q) comprises everything placed on the platform, e. g. the transported goods, the operator, and any material handling equipment.

The maximum permissible payload (Q) depends on the load distance (a). The load distance (a) is the distance between the rear edge of the truck load area and the payload center of gravity (12).

The maximum permissible payload (Q) for the respective maximum permissible load distance (a) is permanently indicated on the platform surface with corresponding markings.

Risk of personal injury and material damage!

If the maximum permissible payload (Q) or the maximum permissible load distance (a) is exceeded, the tail lift could fall down! This can result in personal injuries or the tail lift could be severely damaged. In such a case any warranties shall become void!

When you position the payload (Q) in the center between the left and right platform edge:

▶ Load the tail lift not heavier than the payload (Q), which is indicated in the table next to the respective load distance (a)!

When you position the payload (Q) at the left or right platform edge:

▶ Load the tail lift not heavier than half the payload (½Q), which is indicated in the table next to the respective load distance (a)!
<table>
<thead>
<tr>
<th>a [mm]</th>
<th>Q [kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>850</td>
<td>350</td>
</tr>
<tr>
<td>1000</td>
<td>300</td>
</tr>
<tr>
<td>1200</td>
<td>250</td>
</tr>
<tr>
<td>1500</td>
<td>200</td>
</tr>
<tr>
<td>1800</td>
<td>160</td>
</tr>
<tr>
<td>600</td>
<td>500</td>
</tr>
<tr>
<td>700</td>
<td>430</td>
</tr>
<tr>
<td>820</td>
<td>360</td>
</tr>
<tr>
<td>1120</td>
<td>260</td>
</tr>
<tr>
<td>1800</td>
<td>160</td>
</tr>
<tr>
<td>600</td>
<td>750</td>
</tr>
<tr>
<td>700</td>
<td>650</td>
</tr>
<tr>
<td>820</td>
<td>550</td>
</tr>
<tr>
<td>1120</td>
<td>400</td>
</tr>
<tr>
<td>1800</td>
<td>250</td>
</tr>
<tr>
<td>600</td>
<td>1000</td>
</tr>
<tr>
<td>750</td>
<td>800</td>
</tr>
<tr>
<td>950</td>
<td>600</td>
</tr>
<tr>
<td>1400</td>
<td>400</td>
</tr>
<tr>
<td>2400</td>
<td>230</td>
</tr>
<tr>
<td>700</td>
<td>1000</td>
</tr>
<tr>
<td>875</td>
<td>800</td>
</tr>
<tr>
<td>1150</td>
<td>600</td>
</tr>
<tr>
<td>1700</td>
<td>400</td>
</tr>
<tr>
<td>2400</td>
<td>250</td>
</tr>
<tr>
<td>720</td>
<td>1250</td>
</tr>
<tr>
<td>900</td>
<td>1000</td>
</tr>
<tr>
<td>1200</td>
<td>750</td>
</tr>
<tr>
<td>1800</td>
<td>500</td>
</tr>
<tr>
<td>2400</td>
<td>370</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>a [mm]</th>
<th>Q [kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000</td>
<td>1500</td>
</tr>
<tr>
<td>1200</td>
<td>1250</td>
</tr>
<tr>
<td>1500</td>
<td>1000</td>
</tr>
<tr>
<td>1850</td>
<td>800</td>
</tr>
<tr>
<td>2400</td>
<td>600</td>
</tr>
<tr>
<td>850</td>
<td>1750</td>
</tr>
<tr>
<td>1000</td>
<td>1450</td>
</tr>
<tr>
<td>1300</td>
<td>1150</td>
</tr>
<tr>
<td>1650</td>
<td>900</td>
</tr>
<tr>
<td>2400</td>
<td>600</td>
</tr>
<tr>
<td>750</td>
<td>2000</td>
</tr>
<tr>
<td>900</td>
<td>1650</td>
</tr>
<tr>
<td>1100</td>
<td>1300</td>
</tr>
<tr>
<td>1600</td>
<td>950</td>
</tr>
<tr>
<td>750</td>
<td>2000</td>
</tr>
<tr>
<td>900</td>
<td>1650</td>
</tr>
<tr>
<td>1100</td>
<td>1300</td>
</tr>
<tr>
<td>1600</td>
<td>950</td>
</tr>
<tr>
<td>1000</td>
<td>2000</td>
</tr>
<tr>
<td>1200</td>
<td>1650</td>
</tr>
<tr>
<td>1500</td>
<td>1350</td>
</tr>
<tr>
<td>1800</td>
<td>1100</td>
</tr>
<tr>
<td>2100</td>
<td>950</td>
</tr>
<tr>
<td>700</td>
<td>1000</td>
</tr>
<tr>
<td>875</td>
<td>800</td>
</tr>
<tr>
<td>1150</td>
<td>600</td>
</tr>
<tr>
<td>1700</td>
<td>400</td>
</tr>
<tr>
<td>2400</td>
<td>250</td>
</tr>
<tr>
<td>720</td>
<td>1250</td>
</tr>
<tr>
<td>900</td>
<td>1000</td>
</tr>
<tr>
<td>1200</td>
<td>750</td>
</tr>
<tr>
<td>1800</td>
<td>500</td>
</tr>
<tr>
<td>2400</td>
<td>370</td>
</tr>
<tr>
<td>1000</td>
<td>2500</td>
</tr>
<tr>
<td>1400</td>
<td>1785</td>
</tr>
<tr>
<td>1600</td>
<td>1560</td>
</tr>
<tr>
<td>1800</td>
<td>1385</td>
</tr>
<tr>
<td>2400</td>
<td>1040</td>
</tr>
</tbody>
</table>
### 1500 KL
**1500 rentfix**

<table>
<thead>
<tr>
<th>a [mm]</th>
<th>Q [kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>600</td>
<td>1500</td>
</tr>
<tr>
<td>720</td>
<td>1250</td>
</tr>
<tr>
<td>900</td>
<td>1000</td>
</tr>
<tr>
<td>1200</td>
<td>750</td>
</tr>
<tr>
<td>2400</td>
<td>370</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>a [mm]</th>
<th>Q [kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000</td>
<td>3000</td>
</tr>
<tr>
<td>1200</td>
<td>2000</td>
</tr>
<tr>
<td>1500</td>
<td>1600</td>
</tr>
<tr>
<td>1800</td>
<td>1300</td>
</tr>
<tr>
<td>2400</td>
<td>1000</td>
</tr>
</tbody>
</table>

### 500 GBL

<table>
<thead>
<tr>
<th>a [mm]</th>
<th>Q [kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>600</td>
<td>500</td>
</tr>
<tr>
<td>700</td>
<td>430</td>
</tr>
<tr>
<td>820</td>
<td>360</td>
</tr>
<tr>
<td>1120</td>
<td>260</td>
</tr>
<tr>
<td>1800</td>
<td>160</td>
</tr>
</tbody>
</table>

### 350 minifix

<table>
<thead>
<tr>
<th>a [mm]</th>
<th>Q [kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>850</td>
<td>350</td>
</tr>
<tr>
<td>1000</td>
<td>300</td>
</tr>
<tr>
<td>1200</td>
<td>250</td>
</tr>
<tr>
<td>1500</td>
<td>200</td>
</tr>
<tr>
<td>1800</td>
<td>160</td>
</tr>
</tbody>
</table>

### 500 minifix

<table>
<thead>
<tr>
<th>a [mm]</th>
<th>Q [kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>600</td>
<td>500</td>
</tr>
<tr>
<td>700</td>
<td>430</td>
</tr>
<tr>
<td>820</td>
<td>360</td>
</tr>
<tr>
<td>1120</td>
<td>260</td>
</tr>
<tr>
<td>1800</td>
<td>160</td>
</tr>
</tbody>
</table>

### 1000 E

<table>
<thead>
<tr>
<th>a [mm]</th>
<th>Q [kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>600</td>
<td>1000</td>
</tr>
<tr>
<td>750</td>
<td>800</td>
</tr>
<tr>
<td>950</td>
<td>600</td>
</tr>
<tr>
<td>1400</td>
<td>400</td>
</tr>
<tr>
<td>2400</td>
<td>230</td>
</tr>
</tbody>
</table>
### Tabelle F

<table>
<thead>
<tr>
<th>a [mm]</th>
<th>Q [kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>600</td>
<td>750</td>
</tr>
<tr>
<td>700</td>
<td>650</td>
</tr>
<tr>
<td>820</td>
<td>550</td>
</tr>
<tr>
<td>1120</td>
<td>400</td>
</tr>
<tr>
<td>1800</td>
<td>250</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>a [mm]</th>
<th>Q [kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>700</td>
<td>1000</td>
</tr>
<tr>
<td>875</td>
<td>800</td>
</tr>
<tr>
<td>1150</td>
<td>600</td>
</tr>
<tr>
<td>1700</td>
<td>400</td>
</tr>
<tr>
<td>2400</td>
<td>250</td>
</tr>
</tbody>
</table>

**750 KUZ**

<table>
<thead>
<tr>
<th>a [mm]</th>
<th>Q [kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>700</td>
<td>1000</td>
</tr>
<tr>
<td>875</td>
<td>800</td>
</tr>
<tr>
<td>1150</td>
<td>600</td>
</tr>
<tr>
<td>1700</td>
<td>400</td>
</tr>
<tr>
<td>2400</td>
<td>250</td>
</tr>
</tbody>
</table>

**1000 KUZ**

<table>
<thead>
<tr>
<th>a [mm]</th>
<th>Q [kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>720</td>
<td>1250</td>
</tr>
<tr>
<td>900</td>
<td>1000</td>
</tr>
<tr>
<td>1200</td>
<td>750</td>
</tr>
<tr>
<td>1800</td>
<td>500</td>
</tr>
<tr>
<td>2400</td>
<td>370</td>
</tr>
</tbody>
</table>

**1250 KUZ**

<table>
<thead>
<tr>
<th>a [mm]</th>
<th>Q [kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>600</td>
<td>1500</td>
</tr>
<tr>
<td>720</td>
<td>1250</td>
</tr>
<tr>
<td>900</td>
<td>1000</td>
</tr>
<tr>
<td>1200</td>
<td>750</td>
</tr>
<tr>
<td>2400</td>
<td>370</td>
</tr>
</tbody>
</table>

**1500 KUZ**

<table>
<thead>
<tr>
<th>a [mm]</th>
<th>Q [kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000</td>
<td>1500</td>
</tr>
<tr>
<td>1200</td>
<td>1250</td>
</tr>
<tr>
<td>1500</td>
<td>1000</td>
</tr>
<tr>
<td>1850</td>
<td>800</td>
</tr>
<tr>
<td>2400</td>
<td>600</td>
</tr>
</tbody>
</table>

**1750 KUZ**

<table>
<thead>
<tr>
<th>a [mm]</th>
<th>Q [kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>850</td>
<td>1750</td>
</tr>
<tr>
<td>1000</td>
<td>1450</td>
</tr>
<tr>
<td>1300</td>
<td>1150</td>
</tr>
<tr>
<td>1650</td>
<td>900</td>
</tr>
<tr>
<td>2400</td>
<td>600</td>
</tr>
</tbody>
</table>

**2000 KUZ**

<table>
<thead>
<tr>
<th>a [mm]</th>
<th>Q [kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>750</td>
<td>2000</td>
</tr>
<tr>
<td>900</td>
<td>1650</td>
</tr>
<tr>
<td>1100</td>
<td>1300</td>
</tr>
<tr>
<td>1600</td>
<td>950</td>
</tr>
<tr>
<td>2400</td>
<td>600</td>
</tr>
</tbody>
</table>

**2500 KUZ**

<table>
<thead>
<tr>
<th>a [mm]</th>
<th>Q [kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>800</td>
<td>3000</td>
</tr>
<tr>
<td>1200</td>
<td>2000</td>
</tr>
<tr>
<td>1500</td>
<td>1600</td>
</tr>
<tr>
<td>1800</td>
<td>1300</td>
</tr>
<tr>
<td>2400</td>
<td>1000</td>
</tr>
</tbody>
</table>

**3000 KUZ**

<table>
<thead>
<tr>
<th>a [mm]</th>
<th>Q [kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>750</td>
<td>2500</td>
</tr>
<tr>
<td>900</td>
<td>2050</td>
</tr>
<tr>
<td>1100</td>
<td>1700</td>
</tr>
<tr>
<td>1600</td>
<td>1150</td>
</tr>
<tr>
<td>2400</td>
<td>750</td>
</tr>
</tbody>
</table>

### Tabelle G

<table>
<thead>
<tr>
<th>a [mm]</th>
<th>Q [kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>600</td>
<td>750</td>
</tr>
<tr>
<td>700</td>
<td>650</td>
</tr>
<tr>
<td>820</td>
<td>550</td>
</tr>
<tr>
<td>1120</td>
<td>400</td>
</tr>
<tr>
<td>1800</td>
<td>250</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>a [mm]</th>
<th>Q [kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>750</td>
<td>2000</td>
</tr>
<tr>
<td>900</td>
<td>1650</td>
</tr>
<tr>
<td>1100</td>
<td>1300</td>
</tr>
<tr>
<td>1600</td>
<td>950</td>
</tr>
<tr>
<td>2400</td>
<td>600</td>
</tr>
</tbody>
</table>

**1750 KUZFM**

<table>
<thead>
<tr>
<th>a [mm]</th>
<th>Q [kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>850</td>
<td>1750</td>
</tr>
<tr>
<td>1000</td>
<td>1450</td>
</tr>
<tr>
<td>1300</td>
<td>1150</td>
</tr>
<tr>
<td>1650</td>
<td>900</td>
</tr>
<tr>
<td>2400</td>
<td>600</td>
</tr>
</tbody>
</table>

**1750 KUZF**

<table>
<thead>
<tr>
<th>a [mm]</th>
<th>Q [kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>850</td>
<td>1750</td>
</tr>
<tr>
<td>1000</td>
<td>1450</td>
</tr>
<tr>
<td>1300</td>
<td>1150</td>
</tr>
<tr>
<td>1650</td>
<td>900</td>
</tr>
<tr>
<td>2400</td>
<td>600</td>
</tr>
</tbody>
</table>
### 1000 KUZFM

<table>
<thead>
<tr>
<th>a [mm]</th>
<th>Q [kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>600</td>
<td>1000</td>
</tr>
<tr>
<td>750</td>
<td>800</td>
</tr>
<tr>
<td>950</td>
<td>600</td>
</tr>
<tr>
<td>1400</td>
<td>400</td>
</tr>
<tr>
<td>2400</td>
<td>230</td>
</tr>
</tbody>
</table>

### 1500 KUZF 1500 KUZFM

<table>
<thead>
<tr>
<th>a [mm]</th>
<th>Q [kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000</td>
<td>1500</td>
</tr>
<tr>
<td>1200</td>
<td>1250</td>
</tr>
<tr>
<td>1500</td>
<td>1000</td>
</tr>
<tr>
<td>1850</td>
<td>800</td>
</tr>
<tr>
<td>2400</td>
<td>600</td>
</tr>
</tbody>
</table>

### 2000 KUZF 2000 KUZFM

<table>
<thead>
<tr>
<th>a [mm]</th>
<th>Q [kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>750</td>
<td>2000</td>
</tr>
<tr>
<td>900</td>
<td>1650</td>
</tr>
<tr>
<td>1100</td>
<td>1300</td>
</tr>
<tr>
<td>1600</td>
<td>950</td>
</tr>
<tr>
<td>2400</td>
<td>600</td>
</tr>
</tbody>
</table>

### 1000 KF 1000 KFN

<table>
<thead>
<tr>
<th>a [mm]</th>
<th>Q [kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>600</td>
<td>1000</td>
</tr>
<tr>
<td>750</td>
<td>800</td>
</tr>
<tr>
<td>1000</td>
<td>600</td>
</tr>
<tr>
<td>1500</td>
<td>400</td>
</tr>
<tr>
<td>2400</td>
<td>250</td>
</tr>
</tbody>
</table>

### 1500 KF 1500 KFN

<table>
<thead>
<tr>
<th>a [mm]</th>
<th>Q [kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>720</td>
<td>1250</td>
</tr>
<tr>
<td>900</td>
<td>1000</td>
</tr>
<tr>
<td>1200</td>
<td>750</td>
</tr>
<tr>
<td>1800</td>
<td>500</td>
</tr>
<tr>
<td>2400</td>
<td>370</td>
</tr>
</tbody>
</table>

### 1250 KF 1250 KFN

<table>
<thead>
<tr>
<th>a [mm]</th>
<th>Q [kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>720</td>
<td>1250</td>
</tr>
<tr>
<td>900</td>
<td>1000</td>
</tr>
<tr>
<td>1200</td>
<td>750</td>
</tr>
<tr>
<td>1800</td>
<td>500</td>
</tr>
<tr>
<td>2400</td>
<td>370</td>
</tr>
</tbody>
</table>

### 2000 KF

<table>
<thead>
<tr>
<th>a [mm]</th>
<th>Q [kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>750</td>
<td>2000</td>
</tr>
<tr>
<td>900</td>
<td>1650</td>
</tr>
<tr>
<td>1100</td>
<td>1300</td>
</tr>
<tr>
<td>1600</td>
<td>950</td>
</tr>
<tr>
<td>2400</td>
<td>600</td>
</tr>
<tr>
<td></td>
<td>L</td>
</tr>
<tr>
<td>------</td>
<td>--------------------</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>750 twinfold</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>1250 HFL</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>1000 twinfold</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>1000 HFL</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note:**
- **L:** Represents twinfold configurations with load capacities and dimensions.
- **M:** Represents unfold and tuck-under configurations.
- **V:** Represents load capacities for different height configurations.
- **HFL:** High Flat Load configurations with detailed dimensions and capacities.
- **Twinfold:** Indicates twinfold load configurations.
- **Unifold:** Indicates unfold load configurations.
- **Tuck-under:** Indicates tuck-under configurations.

These specifications are crucial for understanding the load-bearing capacities and suitable applications for each configuration.
Hydraulic Diagrams

Standard Tail Lift with Four Cylinders
96-560.98-00.00-00

Diagram showing hydraulic connections and components for a standard tail lift with four cylinders.
Standard Tail Lift with Two Cylinders
97-510.98-00.00-00

Diagram showing the connections of TILT CYLINDER and LIFT CYLINDER with components labeled S3, R3, S2, R2, S5, R5, DBV1, and other symbols indicating pressure and flow.
Standard Tail Lift with Hydraulic Support
96-524.98-01.00-00
Standard Tail Lift with Hydraulic Underrun Bumper
99-514.98-01.00-00
Retractable Tail Lift
95-585.98-01.00-00
Retractable Tail Lifts, Models 750 KUZ, 750 KUZFM, 1000 KUZFM, 1500 to 2000 KUZK
96-543.98-00.00-00
Retractable Tail Lift
00-514.98-00.00-00
Foldable Tail Lift
93-505.60-08.00-00

TILT CYLINDER

TILT CYLINDER

S1

R1

S2

R2

A

A

M

DBV1
Foldable Tail Lift
02-528.60-08.00-00
Column Lifts
09-545.98-00.00-00
Lubricants and Operating Media

Recommended Hydraulic Oil Grades

- Tellus 15
  Operation temperature: –20 °C to 60 °C
- Aero Shell Fluid 4
  Operation temperature: –40 °C to 60 °C

“Cold climate” option
- Aero Shell Fluid 4 + low temperature gaskets against vitrification of sealing material
  Operation temperature: up to –40 °C

Environment-friendly Oils

Increasing awareness for the environment calls for environment-friendly, biodegradable oils for hydraulic equipment. On request we can supply you with an oil grade tested by us. The operation temperature of this oil is listed as –20 °C to 60 °C. Please contact us.

When using other oil types, this may result in damage to cylinder seals or annoying noise.

Recommended Lubricant Grease

- Shell Retinax HD2
- Comparable lubricant grease

Available Accessories

The available accessories are listed in the spare parts catalog of your contractor repair shop. The list of repair shops shows you the nearest repair shop and provides further contact information.
Certificate for securing of cargo with tail lifts
Requirements specification and load prerequisites

1. Information on the tail lift
Tail lift manufacturer: MBB LIFTSYSTEMS AG
Fockestraße 53
27777 Ganderkesee
Tail lift type: Standard – tail lift with 2 tilt and 2 lift cylinders
with platforms: Aluminum and steel
Lift arm length: up to 1,100 mm

The tail lifts fulfill the requirements of DIN EN 12642 Code XL

2. Information on types and equipment for tail lifts
The tail lift is to secure cargos in the location named under point 4 under maintenance of the
loading conditions named under point 3, if the following equipment components are present:

2.1. Tail lift 500 – 750 K, 500 – 750 KB, 500 – 750 KSP
Platform dimensions:
Height: 1,200 – 2,000 mm
Width: 1,750 – 2,600 mm
Bearing bolt diameter Ø25 mm
Lift arm length: 500 to 800 mm
Nominal load: 500 kg to 750 kg
Platform heights: up to 2,000 mm
Permissible load masses: 5,000 kg
Demonstrated max. test forces (DIN EN 12642): 1,500 daN

2.2. Tail lift 500 – 1000 ATHLET quattro and 500 – 1000 rentfix
Platform dimensions:
Height: 1,200 – 2,000 mm
Width: 1,750 – 2,600 mm
Bearing bolt diameter Ø25 mm
Lift arm length: 600 to 800 mm
Nominal load: 500 kg to 1,000 kg
Platform heights: up to 1,600 mm
Permissible load masses: 8,000 kg
Demonstrated max. test forces (DIN EN 12642): 2,400 daN
Platform heights: up to 1,800 mm
Permissible load masses: 7,500 kg
Demonstrated max. test forces (DIN EN 12642): 2,250 daN
Platform heights: up to 2,000 mm
Permissible load masses: 7,000 kg
Demonstrated max. test forces (DIN EN 12642): 2,100 daN

2.3. Tail lift 1000 K – 1500 KL
Platform dimensions:
Height: 1,200 – 2,600 mm
Width: 1,750 – 2,600 mm
Bearing bolt diameter Ø28 mm
Lift arm length: 700 to 900 mm
Nominal load: 1,000 kg to 1,500 kg
Platform heights: up to 2,000 mm
Permissible load masses: 12,000 kg
Demonstrated max. test forces (DIN EN 12642): 3,600 daN
Platform heights: up to 2,200 mm
Permissible load masses: 11,000 kg
Demonstrated max. test forces (DIN EN 12642): 3,300 daN
Platform heights: up to 2,400 mm
Permissible load masses: 10,000 kg
Demonstrated max. test forces (DIN EN 12642): 3,000 daN
Platform heights: up to 2,600 mm
Permissible load masses: 9,000 kg
Demonstrated max. test forces (DIN EN 12642): 2,700 daN

This certificate is comprised of 2 pages and is only valid in its complete form.
2.4. Tail lift 1500 – 2500 K, 1500 – 2000 KS, 1500 – 2500 KK

<table>
<thead>
<tr>
<th>Platform Heights</th>
<th>Permissible Load Masses</th>
<th>Demonstrated Max. Test Forces (DIN EN 12642)</th>
</tr>
</thead>
<tbody>
<tr>
<td>up to 2,000 mm</td>
<td>16,000 kg</td>
<td>4,800 daN</td>
</tr>
<tr>
<td>up to 2,200 mm</td>
<td>14,500 kg</td>
<td>4,350 daN</td>
</tr>
<tr>
<td>up to 2,400 mm</td>
<td>13,000 kg</td>
<td>3,900 daN</td>
</tr>
<tr>
<td>up to 2,600 mm</td>
<td>11,500 kg</td>
<td>3,450 daN</td>
</tr>
<tr>
<td>up to 2,800 mm</td>
<td>10,000 kg</td>
<td>3,000 daN</td>
</tr>
</tbody>
</table>

Platform dimensions:
- Height: 1,200 – 2,800 mm
- Width: 1,750 – 2,600 mm
- Bearing bolt diameter Ø36 mm
- Lift arm length: 700 to 1,100 mm
- Nominal load: 1,500 kg to 2,500 kg

2.5. Tail lift 2000 – 3000 K, 2000 – 3000 KK

<table>
<thead>
<tr>
<th>Platform Heights</th>
<th>Permissible Load Masses</th>
<th>Demonstrated Max. Test Forces (DIN EN 12642)</th>
</tr>
</thead>
<tbody>
<tr>
<td>up to 2,000 mm</td>
<td>21,000 kg</td>
<td>6,300 daN</td>
</tr>
<tr>
<td>up to 2,200 mm</td>
<td>19,000 kg</td>
<td>5,700 daN</td>
</tr>
<tr>
<td>up to 2,400 mm</td>
<td>17,000 kg</td>
<td>5,100 daN</td>
</tr>
<tr>
<td>up to 2,600 mm</td>
<td>15,000 kg</td>
<td>4,500 daN</td>
</tr>
<tr>
<td>up to 2,800 mm</td>
<td>13,000 kg</td>
<td>3,900 daN</td>
</tr>
<tr>
<td>up to 3,000 mm</td>
<td>11,000 kg</td>
<td>3,300 daN</td>
</tr>
</tbody>
</table>

Platform dimensions:
- Height: 1,200 – 3,000 mm
- Width: 1,750 – 2,600 mm
- Bearing bolt diameter Ø40 mm
- Lift arm length: 800 to 1,100 mm
- Nominal load: 2,000 kg to 3,000 kg

The condition of the tail lifts is to be inspected regularly according to VDI 2700.

3. Information on the loading

The tail lifts are in the position to secure cargos in the location named under point 4 under maintenance of the listed equipment named under point 3 under the following loading conditions:

- Sliding-friction value of a least \( \mu_s = 0.30 \)
- Form-fit loading against driving direction
- Loading with clearance at least tail lift width less 10 cm

4. Information on load

The tail lift is assured for the following cargos under maintenance of the conditions listed under point 2 and 3, according to the parameters of recognized rules of technology, e.g. acceleration values according to DIN EN 12195-1, of the VDI directives 2700 following pages and the certificates and appraisals.

- General cargo
- Palletized loading

TÜV NORD Mobilität GmbH & Co. KG  
MBB LIFTSYSTEMS AG
Hannover, 25/3/2008

Martin Keller  
Signature of the responsible party

This certificate is comprised of 2 pages and is only valid in its complete form.
Index

A
accessories 161
alternators 144
annual maintenance 123

B
battery capacity 144
battery check 114
battery main switch 25, 35
bolts check 122
breather filter 124, 126

C
carbon brush check 114
checks 128
clamp 126
cleaning 114
closing the platform 29
conical lubricating head 116
control panel 12

D
delivery contents 11

E
easy move 54, 58
explanation of terms 29
extending the platform 29, 30

F
faults 129
troubleshooting tables 130, 136, 140
folding in the platform 29
folding out the platform 29

G
greasing 115
ground adjustment of platform 22, 30, 40
guide cylinder 14
guide pulley 14
guide rails 14

H
hand cable control 14, 90, 92
holding bar on platform 14
hydraulic diagrams 151
hydraulic oil
  changing 123, 126
  environment-friendly oils 161
  recommendations 161
hydraulic oil reservoir 124, 126
hydraulic stabilizer feet 26
hydraulic system check 122
hydraulic unit 14

K
key code 25, 35
  programming 106
key control 25, 34

L
lateral operating element 37
lateral operating panel 14
lift arms switch 14
lift cylinder 14
lifting the platform 29
lowering the platform 29
low-maintenance bearings 123
lubricants 161
lubricating 115

M
main switch 128
maintenance 110
  annual 123
  before starting 113
  depending on usage frequency 114
  monthly 120
mechanical stabilizer feet 26
model overview 12, 14
monthly maintenance 120

N
Nordic 98
nuts check 122

O
oil 115, 120
oil drain plug 124, 126
oil level check 120
one-hand control 37
  easy move 58
  hydraulic stabilizer feet 48
opening the platform 29
operating element
  foot control 88
  hand cable control 90, 92
  lateral 37
  Nordic wireless remote control unit 98
  special operating elements 100, 102, 104
  two hand cable controls 82
  wireless remote control unit
    (standard) 96
operating media 161
operator position. 115

overview
  column lifts 21
  foldable tail lifts 13, 20
  retractable tail lifts 13, 18
  retraction equipment 19
  standard tail lift 12, 14, 17

P
payload 145
payload center of gravity 14, 115
platform 14
  close 29, 31, 37
  extend 29, 37
  fold in 29, 31, 37
  fold out 29, 30, 37
  ground adjustment 29
  lift 29, 31
  load 31
  lower 29, 30, 37
  moving 28
  open 29, 30, 37
  platform tilt 29
  position horizontally 29, 37
  retract 29, 31, 37
  unload 31
platform package 14
platform tilt 22, 30
presetting the tail lift 22
pushbutton 37

Q
qualification of personnel 7

R
refresh marks 115
retracting the platform 29
roll stop 14
roll-off protection bearings 116
rotary switch 37
S
safety devices 113
  checking 113
safety instructions 8
service 110
service counter 107
setting the platform tilt 30
setting the platform to its horizontal position 30
sliding console in the guide rails 117
spare parts 161
special operating elements 100, 102, 104
stabilizer feet
  hydraulic 26, 42
  mechanical 26
standard wireless remote control unit 96
stationary part of platform 14
suction filter 124, 126
support tube 14
supporting strap on body 14
switch in driver’s cab 24, 34

T
tail lift 29
  close 29, 31, 37
  extend 29, 30, 37
  fold in 29, 31, 37
  fold out 29, 30, 37
  ground adjustment 29
  lift 29, 31
  load 31
  lower 29, 30, 37
  moving 28
  open 29, 30, 37
  platform tilt 29
  position horizontally 29, 37
  presetting 22
  retract 29, 31, 37
  switch off 34
  switching on 24
  unload 31
tail lift models 12, 14
technical data 144
temperature range 144
tilt cylinder 14
tilt sensor 14
toggle switch 37
torsion frame 14
troubleshooting 107
two hand cable controls 82
two-hand control 37
easy move 54
  hydraulic stabilizer feet 42, 44
  pushbuttons 50

U
underrun bumper 14

V
valve block 124, 126

W
warning devices 113
warning lights 14
wireless remote control unit 96, 98
MBB PALFINGER GmbH
Fockestraße 53
D-27777 Ganderkesee/Hoykenkamp
Tel.: +49-4221 8530
Fax: +49-4221 87536
infombb@palfinger.com
www.palfinger.com/mbbcom

MBB INTER S.A.S.
Rue de l’Eglise
F-61310 Silly en Gouffern
Tel.: +33-2 33 12 44 00
Fax: +33-2 33 12 44 01
francembb@palfinger.com
www.palfinger.com

MBB PALFINGER s.r.o.
Gogolova 18
SK-85101 Bratislava
Tel.: +421-252 636 611
Fax: +421-252 636 612
mbbhubfix@stonline.sk

RATCLIFF PALFINGER Ltd.
Bessemer Road
Welwyn Garden City
UK-Herts AL7 1ET
Tel.: +44-01707 325571
Fax: +44-01707 327752
inforatcliff@palfinger.com
www.palfinger.com