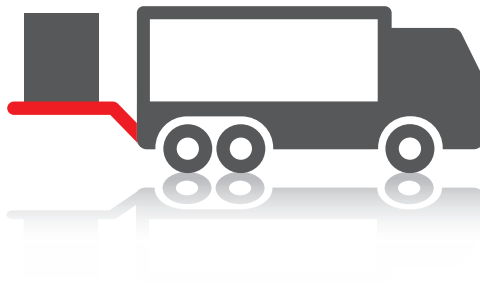


Operating Instructions

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 Pushbuttons, each	82
Optional Operating Method: Foot Control	88
Optional Operating Method: Hand Cable Control with two 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:

SIGNAL WORD



Description of type and source of hazard

Description of consequences if instructions are not observed

► Description of actions to eliminate the hazard

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

The signal word designates the severity of the hazard:

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

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 of 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

E Electrical Cylinders

- 1000 E

Retractable Tail Lifts**F Platform single-folded**

- 750 KUZ to 3000 KUZ
- 1250 KLUZ to 1500 KLUZ
- 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

G Platform double-folded

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

Foldable Tail Lifts**K Four-cylinder model**

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

L Two-cylinder model

- 1000 HFL to 1500 HFL
- 750 twifold to 1500 twifold

M One-cylinder model

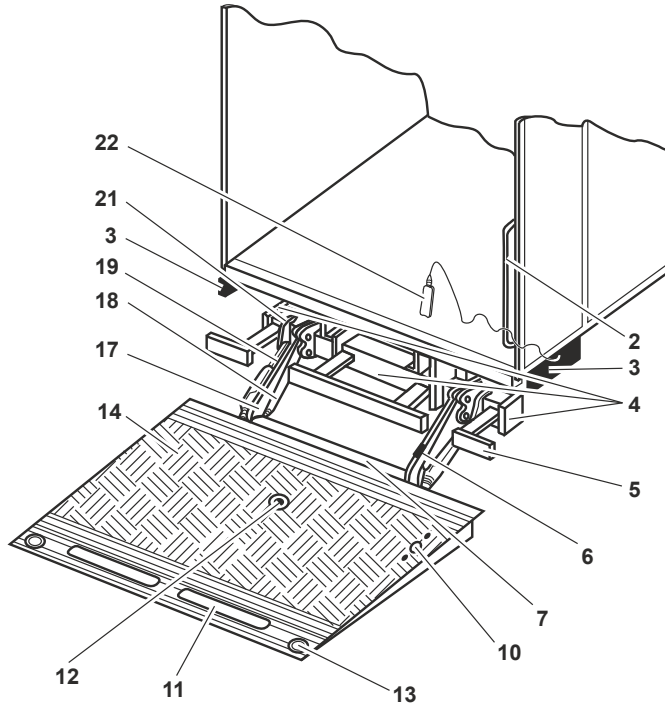
- unifold
- 350 to 500 Tuck-under

Column Lifts**V Standard column lift**

- 4000V

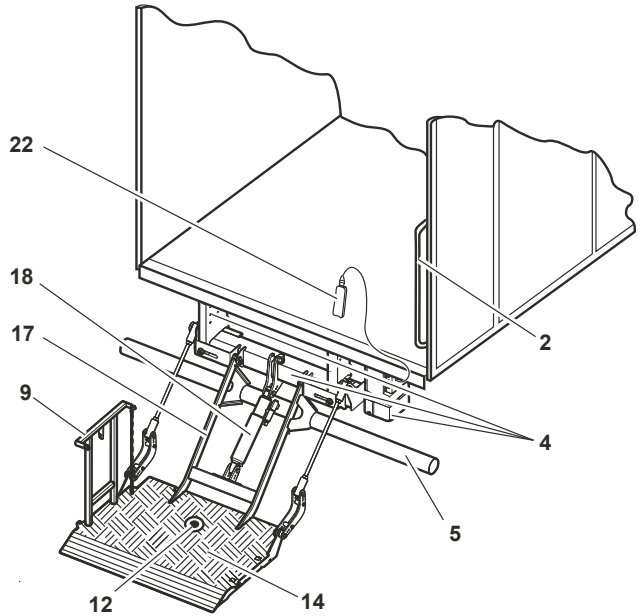
Model Overviews

A Standard Tail Lifts



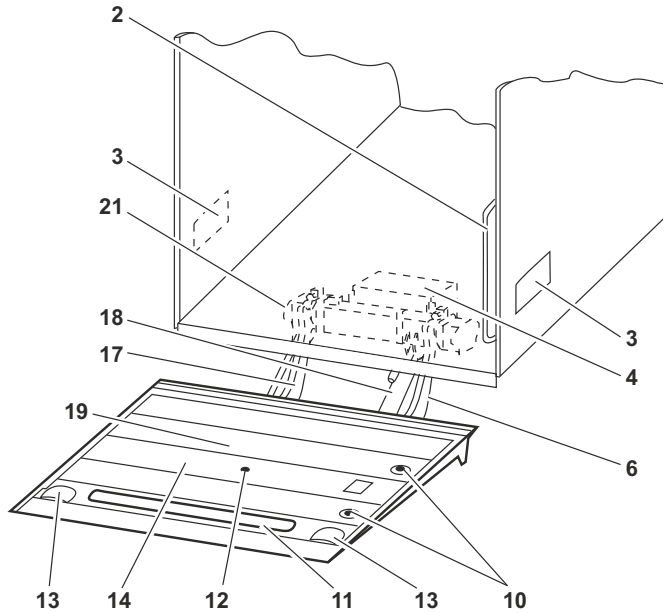
- | | |
|---|--|
| 2 Supporting strap on body (not in scope of delivery) | 11 Roll stop (roll-off protection, optional) |
| 3 Lateral operating panel | 12 Payload center of gravity |
| 4 Hydraulic unit | 13 Warning lights (optional) |
| 5 Underrun bumper | 14 Platform |
| 6 Lift arms switch b13, tilt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

B Standard Tail Lifts



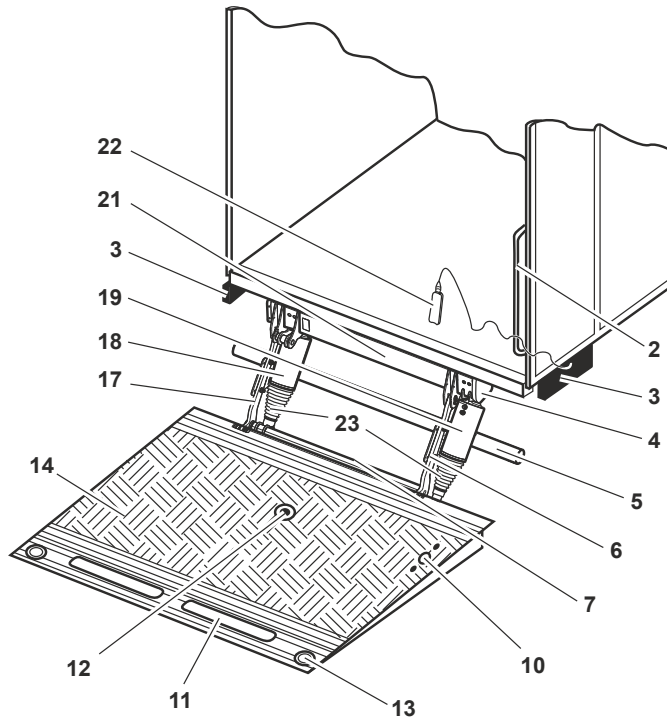
- | | |
|---|-------------------------------------|
| 2 Supporting strap on body
(not in scope of delivery) | 12 Payload center of gravity |
| 4 Hydraulic unit | 14 Platform |
| 5 Underrun bumper | 17 Torsion frame |
| 9 Railing | 18 Lift cylinder |
| | 22 Hand cable control |

C Standard Tail Lifts



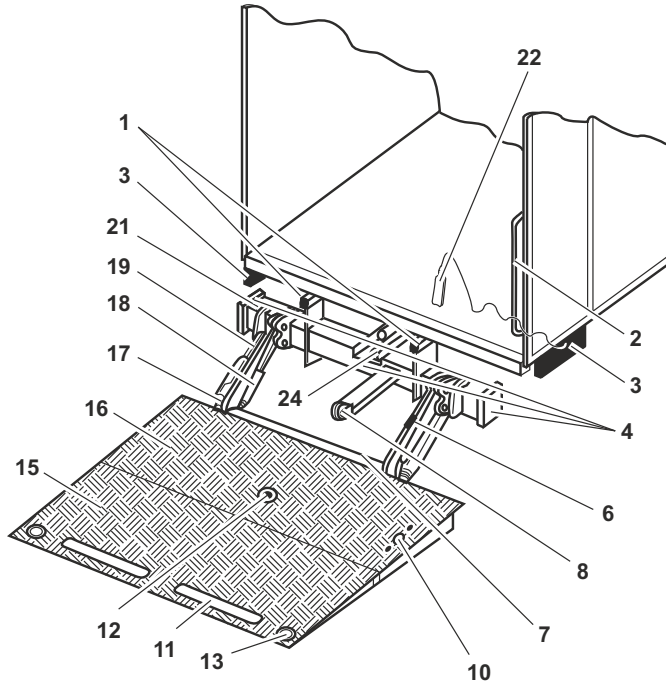
- | | |
|--|---|
| 2 Supporting strap on body
(not in scope of delivery) | 13 Warning lights
(optional) |
| 3 Lateral operating panel | 14 Platform |
| 4 Hydraulic unit | 17 Torsion frame |
| 6 Lift arms switch b13 | 18 Lift cylinder |
| 10 Foot control | 19 Tilt cylinder (covered by
platform) |
| 11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

E Standard Tail Lifts with Electrical Cylinders



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

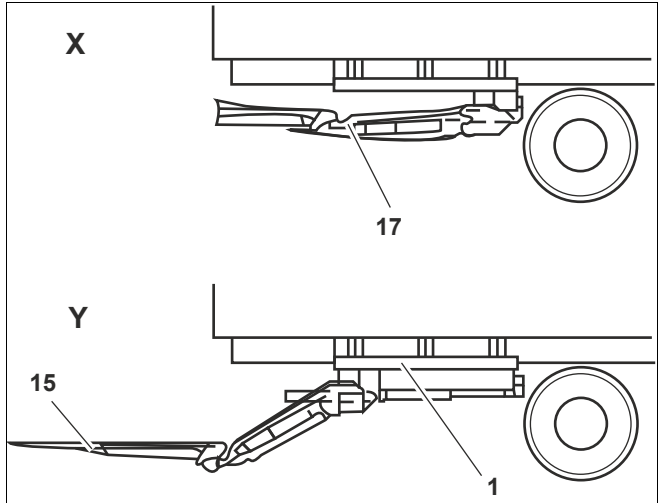
F G Retractable Tail Lifts



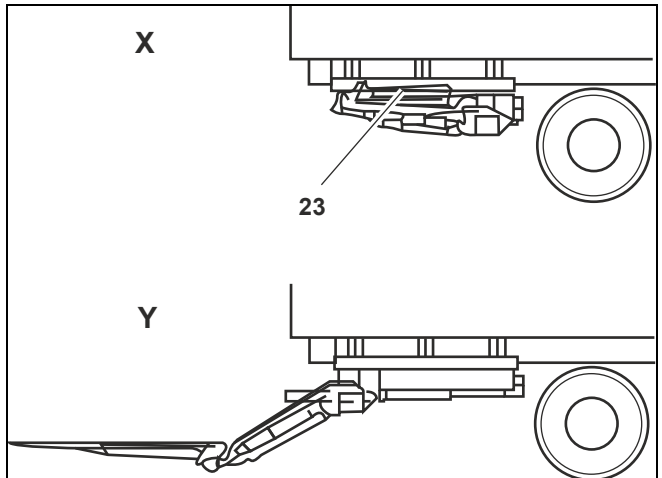
- | | | | |
|----|--|----|-----------------------------|
| 1 | Guide rails | 12 | Payload center of gravity |
| 2 | Supporting strap on body
(not in scope of delivery) | 13 | Warning lights (optional) |
| 3 | Lateral operating panel | 15 | Folding part of platform |
| 4 | Hydraulic unit | 16 | Stationary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

Retraction Equipment

F



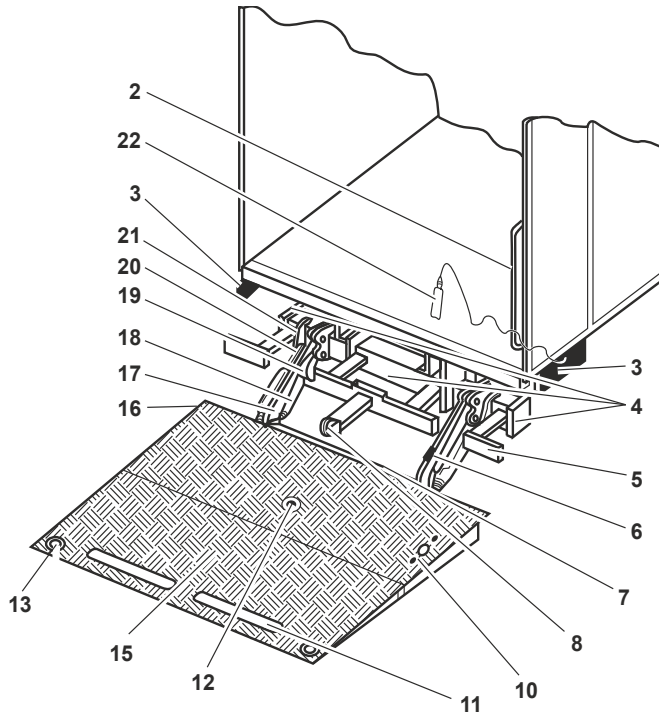
G



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

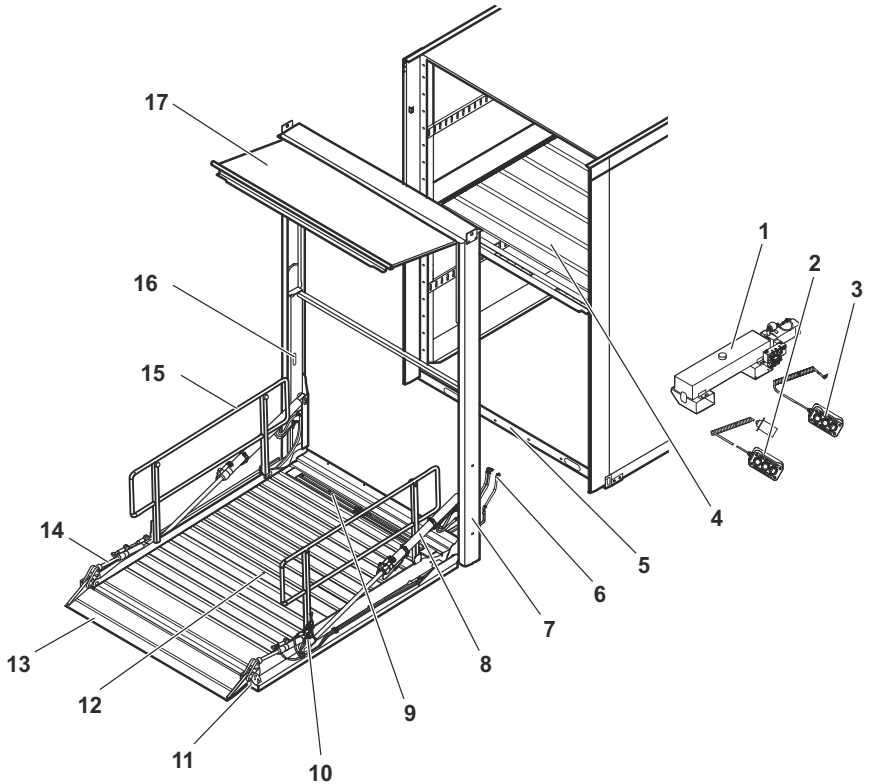
- X Transport position
- Y Operating position

K L M Foldable Tail Lifts



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

V Column Lifts



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

Presetting the Tail Lift

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

A C F

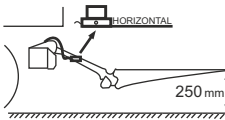
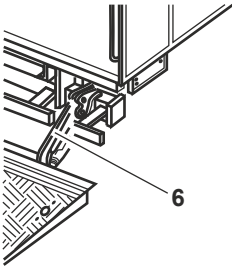
Setting the Ground Adjustment Timing

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.



A E F G K

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

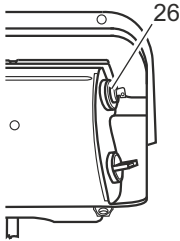
To switch on the tail lift using the **switch** in the driver's cab:

- ▶ 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

CAUTION!



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**



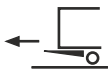
The platform opens and moves from the vertical transport position to the desired operating position. This position is stored and reverted to when lifting the platform after the ground adjustment.

- **Close**



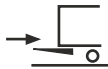
The platform closes and moves from the horizontal operating position to the vertical transport position.

- **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.

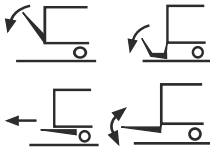
The foldable models **M** tilt gradually during lifting to the horizontal operating position.

- **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.

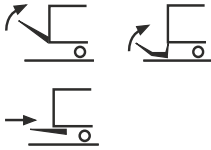
Lifting the Platform



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.

CAUTION!**Risk of injury!**

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).

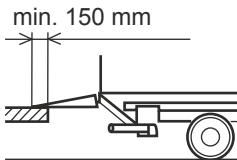
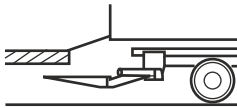
Loading or Unloading the Platform on the Ground

- ▶ 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**CAUTION!****Risk of falling when loading at a ramp!**

Person can trip and fall down if there is an edge between ramp and platform during loading or unloading.

- ▶ When the vehicle is unloaded and is lifted up by the spring action, lower the platform manually.

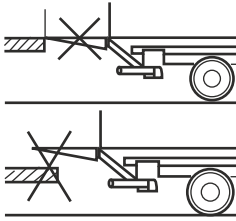


You can load your vehicle at a ramp in two possible ways:

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.

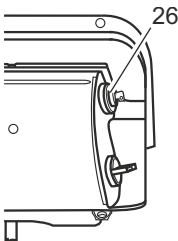
- ▶ Before driving, lock the tail lift after folding in.
- ▶ Make sure that the warning lights **(25)** in the driver's cab are not lit.

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:

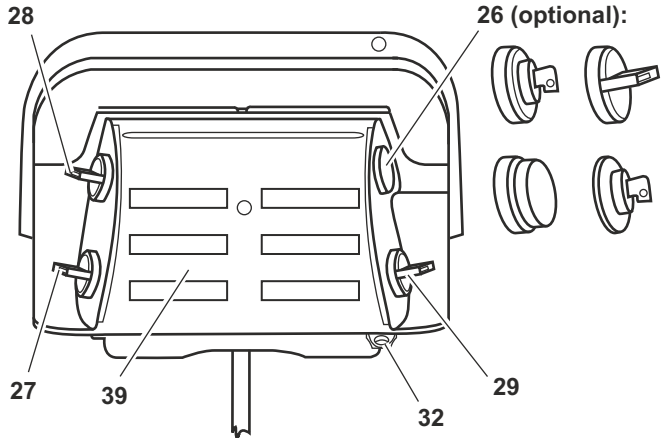
1. using the lateral operating element (depending on the model, see p. 37 to p. 106),
2. using the two manual cable switches (for column lift, see p. 82),
3. using the foot control (optional, see p. 88) or
4. using the hand cable control (optional, see p. 90) or
5. using the radio remote control unit (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	p. 38 to p. 48
B	p. 76 to p. 80
C	p. 50
F	p. 52 to p. 58
G	p. 60 to p. 68
K	p. 72 to p. 74
L	p. 76 to p. 78
M	p. 76 to p. 80

A E 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

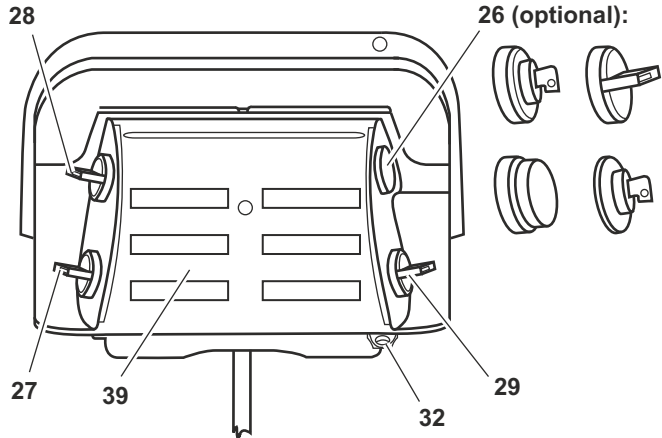


- ▶ Turn the rotary switches **(28)** and **(29)** simultaneously upward and hold them in this position until the platform is closed.

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

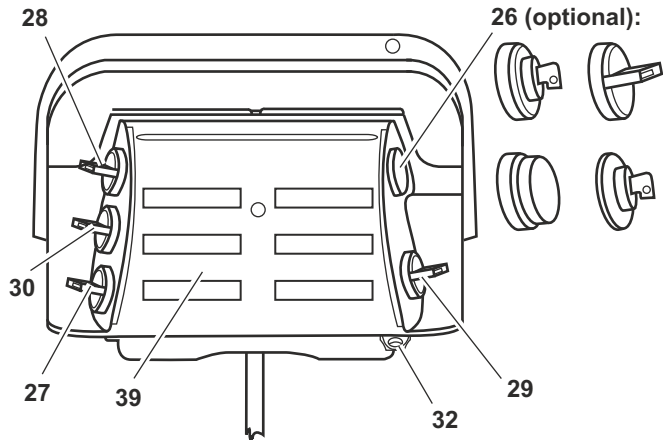


- ▶ Turn the rotary switches **(28)** and **(29)** simultaneously upward and hold them in this position until the platform is closed.

The platform moves to the vertical transport position.

- ▶ Close the platform interlock (if present).

A 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.

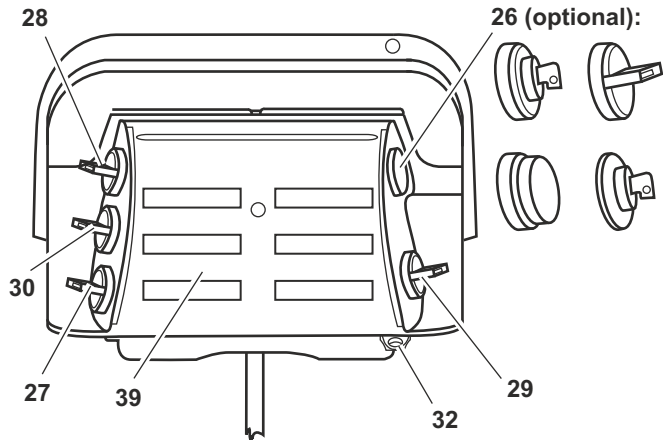
If an optional load safety device is present, the platform closes approximately to 80° and is lowered a small amount. Finally, it moves to the vertical transport position and is lifted into the load safety device.

- ▶ Close the platform interlock (if present).

Retracting the Hydraulic Stabilizer Feet

- ▶ Turn the rotary switch **(30)** upward until the stabilizer feet are completely retracted.

A 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.

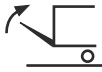
Lifting the Platform



- ▶ 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.

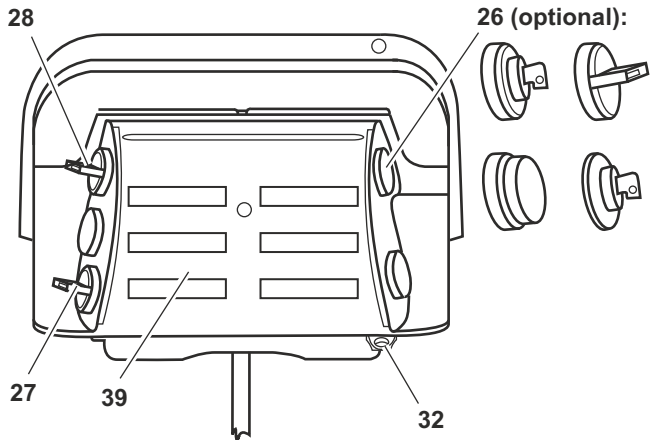
If an optional load safety device is present, the platform closes approximately to 80° and is lowered a small amount. Finally, it moves to the vertical transport position and is lifted into the load safety device.

- ▶ 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.

A E 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.

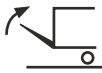
Lifting the Platform



- ▶ 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

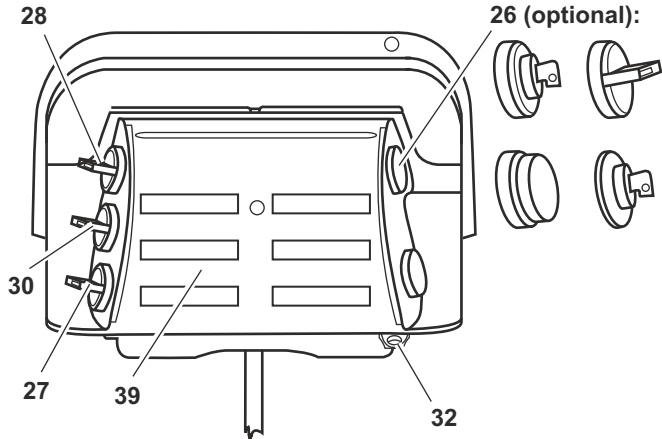


- ▶ Turn the rotary switch **(28)** upward and hold it in this position until the platform is closed.

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.

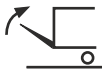
Lifting the Platform



- ▶ 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.

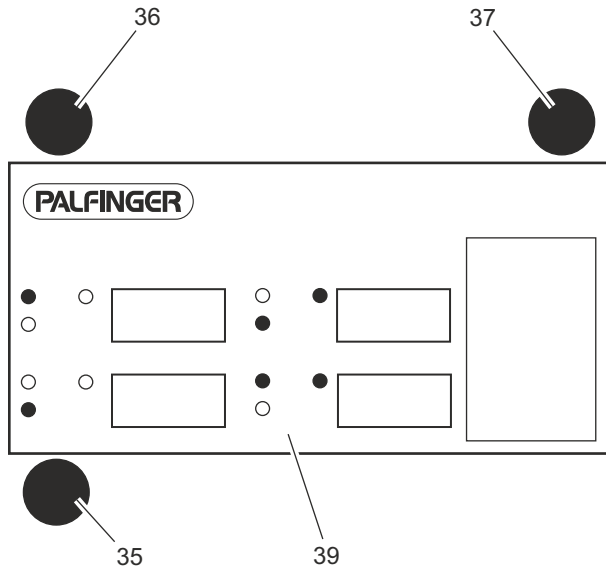
If an optional load safety device is present, the platform closes approximately to 80° and is lowered a small amount. Finally, it moves to the vertical transport position and is lifted into the load safety device.

- ▶ Close the platform interlock (if present).

Retracting the Hydraulic Stabilizer Feet

- ▶ Turn the rotary switch **(30)** upward until the stabilizer feet are completely retracted.

C Operation Using Two-hand Control and Pushbuttons



- 35** Pushbutton: lower/lift
- 36** Pushbutton: open/close
- 37** Pushbutton: lift/close
- 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).
- ▶ 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.

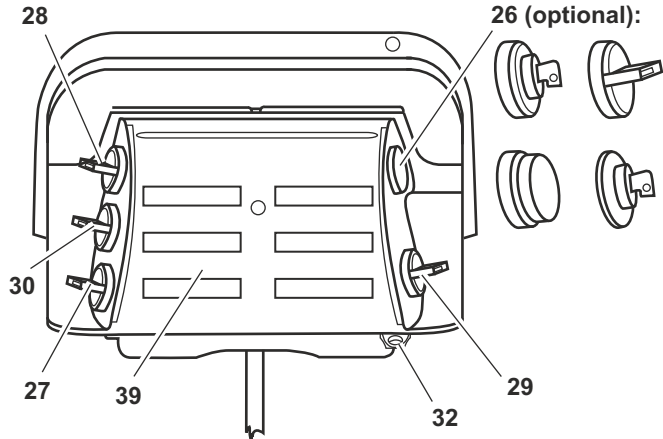
The platform tilts to the horizontal or preset position before it is lifted.

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).

F 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!

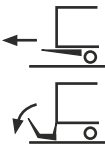


Risk of accidents and injury!

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.

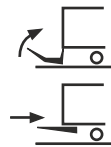
Lifting the Platform



- ▶ 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.

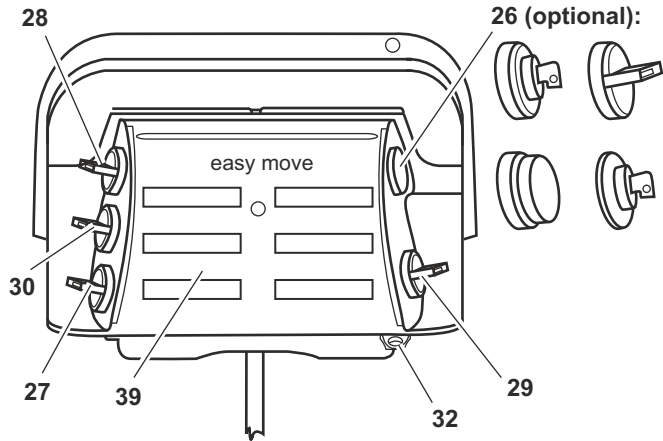
The platform tilts to the horizontal or preset position before it is lifted into the loading position.

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.

F 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!

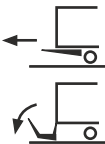


Risk of accidents and injury!

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.

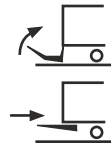
Lifting the Platform



- ▶ 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

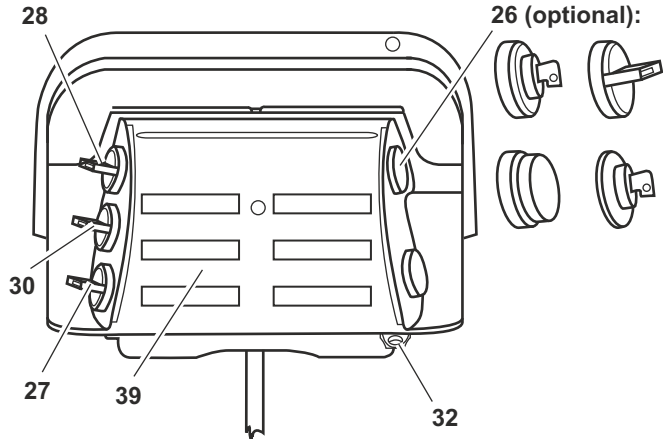


- ▶ Protect your hands with gloves.
- ▶ Pull the handle with both hands to fold back the folding part of the platform.
- ▶ Turn the rotary switch **(30)** upward and hold it in this position until the platform is completely retracted. Observe that the platform can be retracted without obstruction.

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).

F 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!

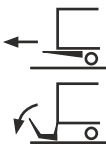


Risk of accidents and injury!

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.

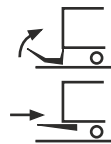
Lifting the Platform



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

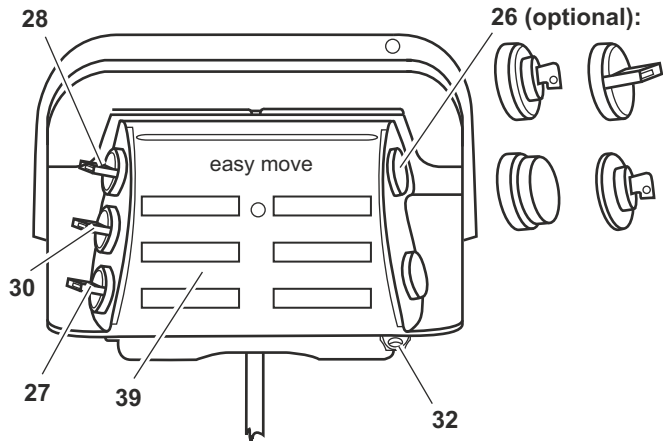
The platform tilts to the horizontal or preset position before it is lifted into the loading position.

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).

F 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!

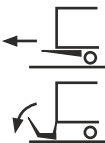


Risk of accidents and injury!

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.

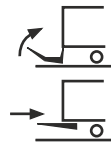
Lifting the Platform



- ▶ 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

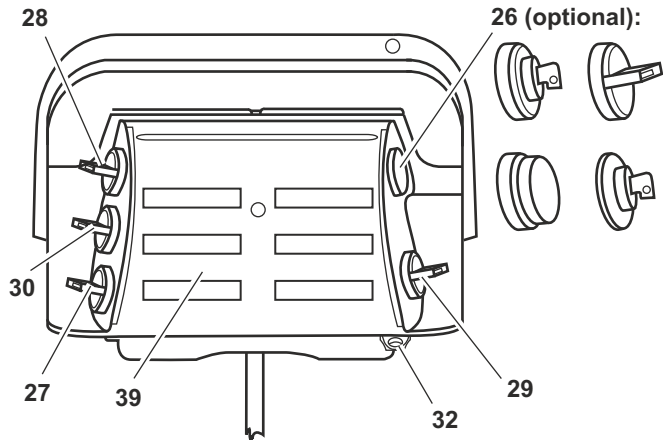


- ▶ Protect your hands with gloves.
- ▶ Pull the handle with both hands to fold back the folding part of the platform.
- ▶ Turn the rotary switch **(30)** upward and hold it in this position until the platform is completely retracted. Observe that the platform can be retracted without obstruction.

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 safe-guard.

- ▶ 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!

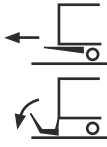


Risk of accidents and injury!

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.

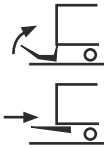
Setting the BDF Position

- ▶ 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

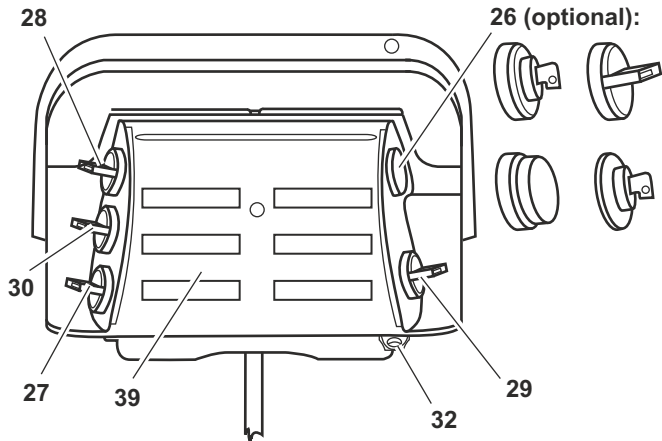
- ▶ Turn the rotary switches **(27)** and **(29)** simultaneously upward and hold them in this position until the torsion frame is located above its horizontal position.
- ▶ Turn the rotary switch **(30)** upwards.
The platform moves to the preset BDF position.
- ▶ Turn the rotary switches **(27)** and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

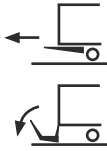


Risk of accidents and injury!

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.

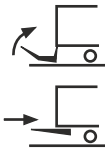
Setting the BDF Position

- ▶ 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

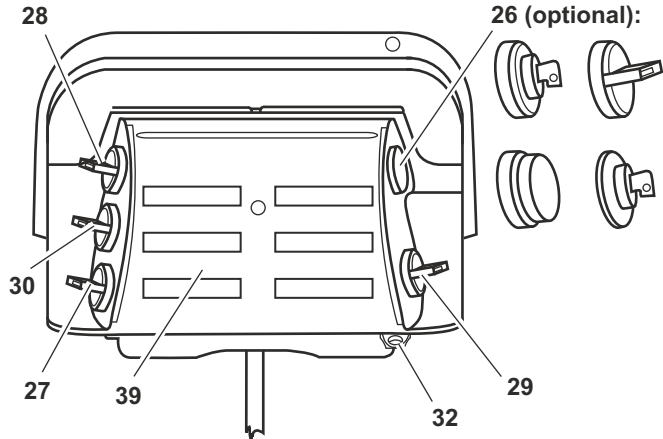
- ▶ Turn the rotary switches **(27)** and **(29)** simultaneously upward and hold them in this position until the torsion frame is located above its horizontal position.
- ▶ Turn the rotary switch **(30)** upwards.
The platform moves to the preset BDF position.
- ▶ Turn the rotary switches **(27)** and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

G 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!

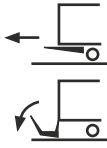


Risk of accidents and injury!

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.

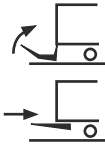
After the platform has touched the ground it tilts and adjusts to the ground.

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.

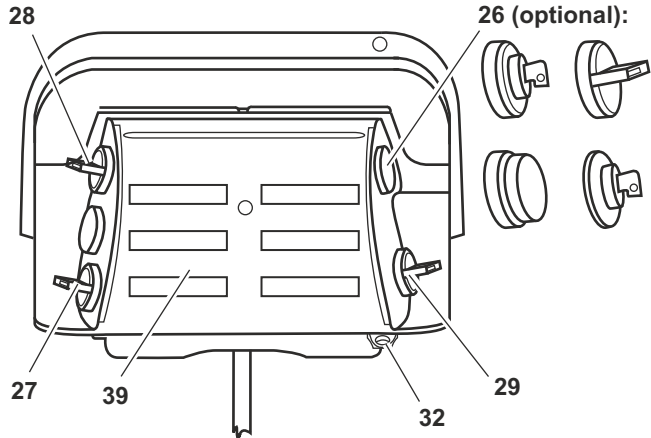


Folding In and Retracting the Platform

- ▶ 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.

K 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



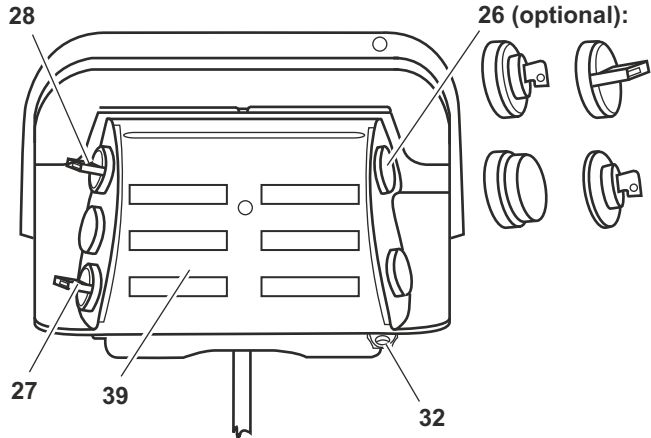
- ▶ Turn the rotary switches **(27)** and **(29)** simultaneously upward and hold them in this position until the platform has reached the loading position.

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).

K 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



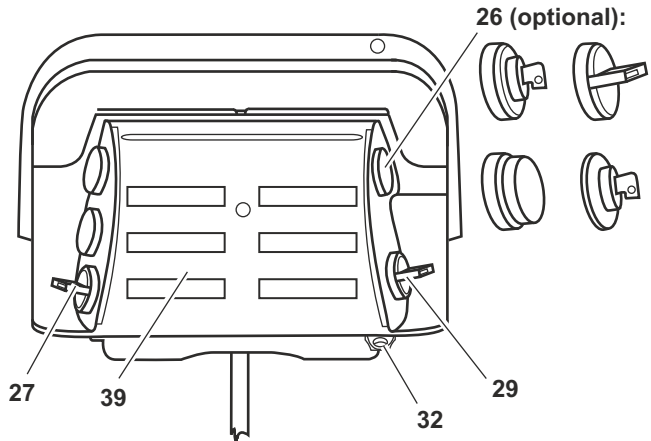
- ▶ Turn the rotary switch **(27)** upward and hold it in this position until the platform is adjusted flush to the ground.

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.

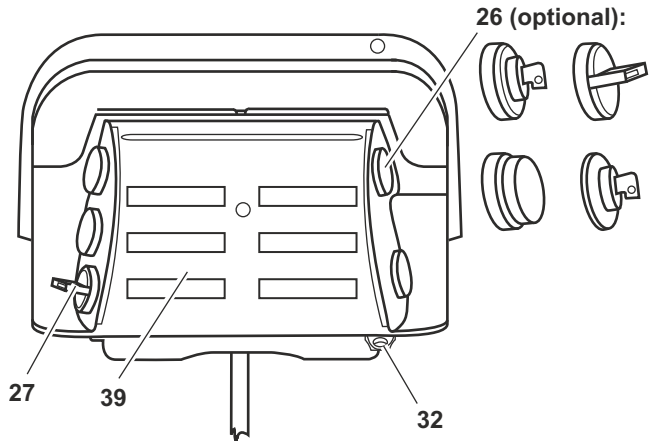
After the platform has touched the ground it tilts and adjusts to the ground.

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.

B L M Operation Using One-hand Control

- 26** Optional: key control, rotary switch, emergency-off pushbutton, E30 key
- 27** Rotary switch: lift/lower
- 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) 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

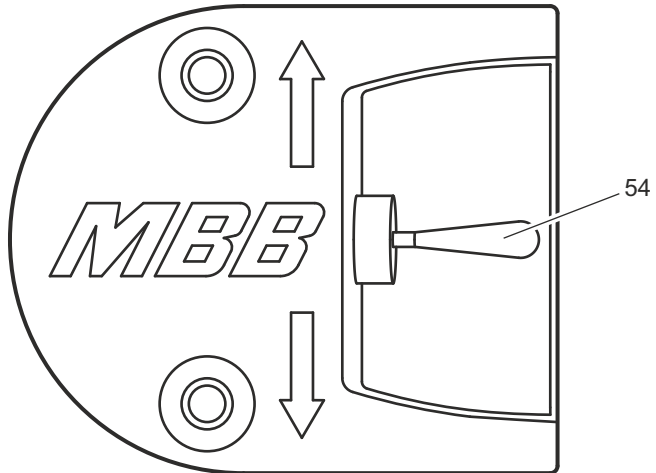


- ▶ Turn the rotary switch (27) upward and hold it in this position until the platform is adjusted flush to the ground.
After the platform has touched the ground it tilts and adjusts to the ground.

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.

B M 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



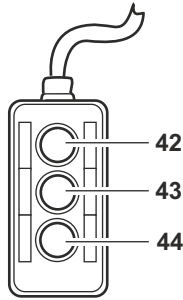
- ▶ Press the toggle switch **(54)** upward and hold it in this position until the platform reaches the loading position while lifting.

Folding In the Platform



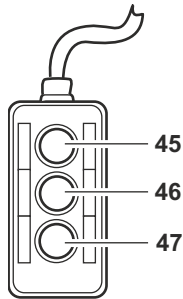
- ▶ Make sure that the platform is in horizontal position touching the ground.
- ▶ Protect your hands with gloves.
- ▶ Fold the platform tip onto the platform.
- ▶ Close the platform interlock (if present).
- ▶ Swivel the platform up to the roller at the support tube.

V 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.

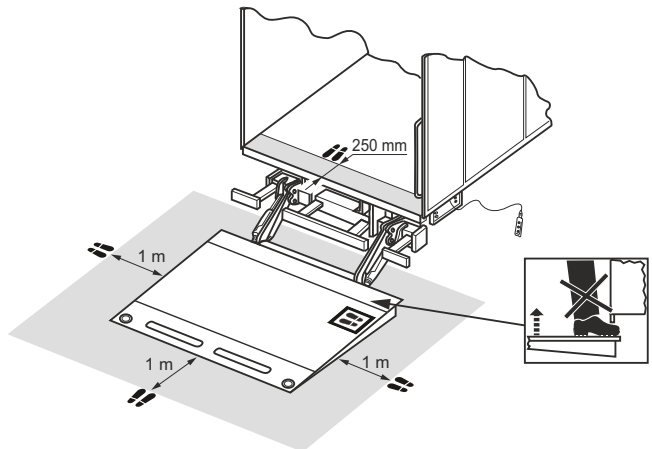
- ▶ Before operating the column lift, read chapter "General Operation" from p. 23.

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.

**Operator positions
for hand cable
control**



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.

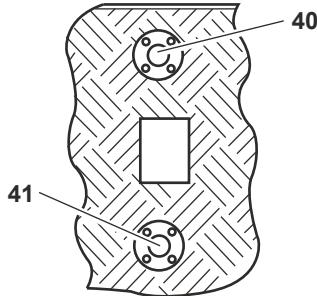
Closing the Platform



- ▶ 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.

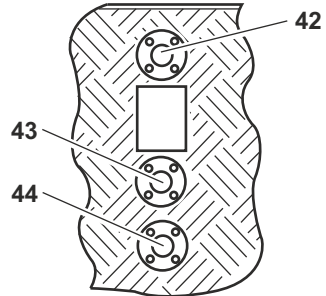
ABCEFGKLM Optional Operating Method: Foot Control

Platform with 2 foot controls
(standard control)



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

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



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

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

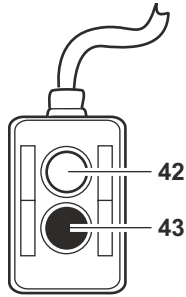


- ▶ Step on the foot control **(43)** and on the additional foot control **(42)**.

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

A B C E F G K L M

Optional Operating Method: Hand Cable Control with two Pushbuttons



42 Pushbutton: lift

43 Pushbutton: 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.

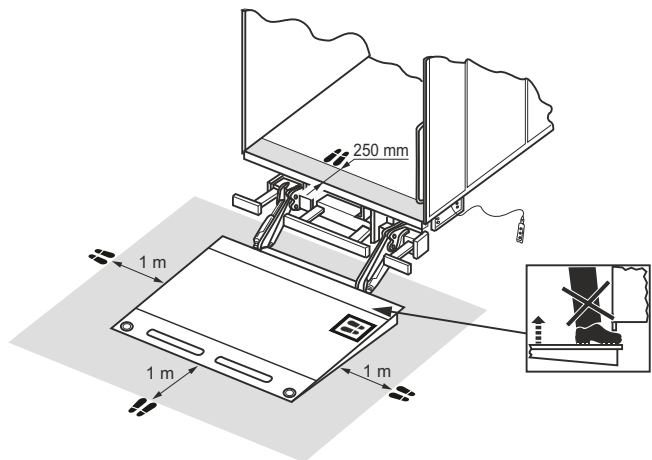
- ▶ Before operating the tail lift, read chapter “General Operation” from p. 23.

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

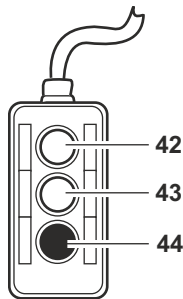


- ▶ Press the pushbutton **(42)** and keep it pressed until the platform has reached the loading position.

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

A C E F G K L M

Optional Operating Method: Hand Cable Control with three Pushbuttons



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

DANGER!



Risk of accidents and injury!

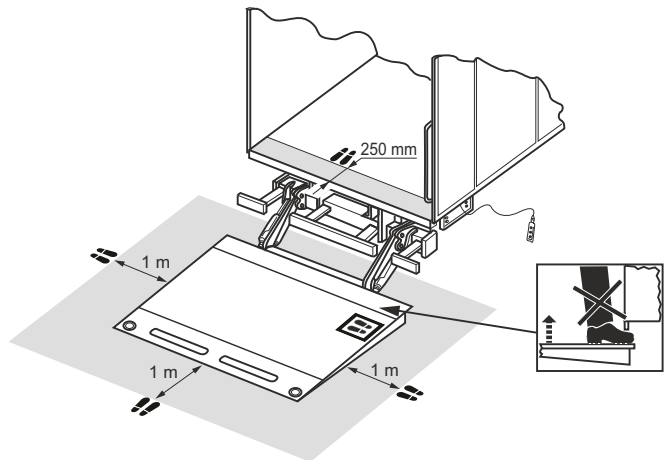
If the instructions in chapter “General Operation” are not observed during operation of the tail lift, personal injuries and material damage can occur.

- ▶ 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.

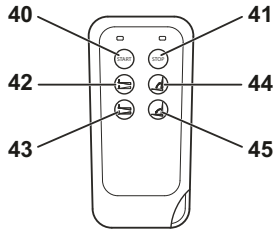
Before the platform is lifted it tilts to the horizontal position.

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.

ACFGKL Optional Operating Method: Wireless Remote Control Unit (Standard)

SafetyPoint
(optional)



- 40 Pushbutton: start
- 41 Pushbutton: stop
- 42 Pushbutton: lift
- 43 Pushbutton: lower
- 44 Pushbutton: close
- 45 Pushbutton: open

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.

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.

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.

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.

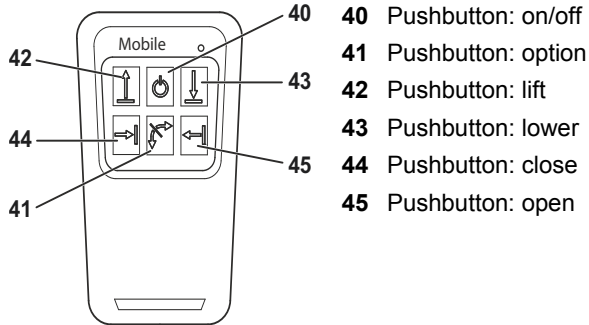
- ▶ Close the platform interlock (if present).

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)**.

A C F G K L

Optional Operating Method: Wireless Remote Control Unit (Nordic)



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.

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.

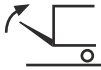
Before the platform is lifted it tilts to the horizontal position.

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).

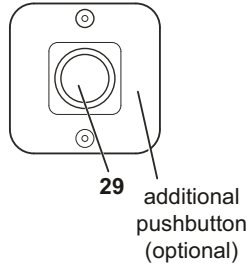
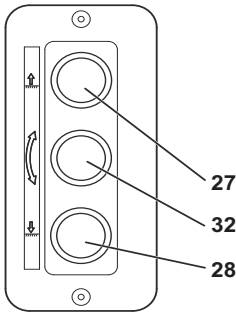
Setting the Platform to its Horizontal Position

- ▶ 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.

A C E K L Special Operating Elements



- 27 Pushbutton: lift/close
- 28 Pushbutton: lower/open
- 29 Pushbutton: additional pushbutton
- 32 Pushbutton: close/open

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).
- ▶ 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.

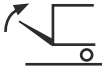
Lifting the Platform



- ▶ 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.

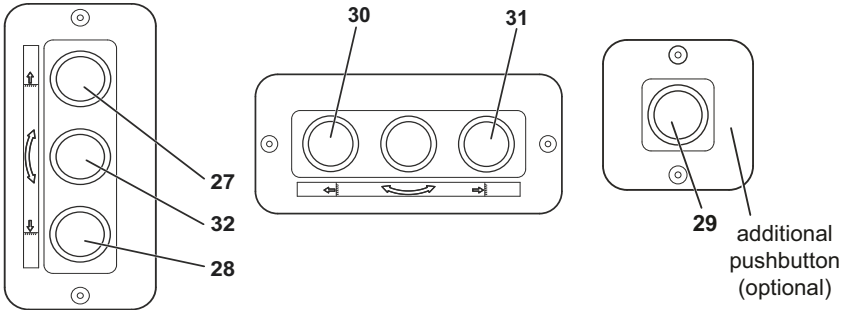
Closing the Platform



- ▶ 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



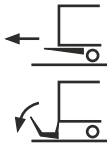
- ▶ Press the pushbuttons **(27)** and optionally **(29)** simultaneously and hold them in this position until the platform has reached the vehicle loading floor height.

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

Setting the Platform to its Horizontal Position

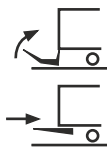
- ▶ To adjust a steeper tilt of the platform, press both pushbuttons **(27)**, **(32)** and optionally **(29)** simultaneously and hold them in this position until the platform has reached the required tilt angle.
- ▶ To adjust a flatter tilt of the platform, press both pushbuttons **(28)**, **(32)** 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



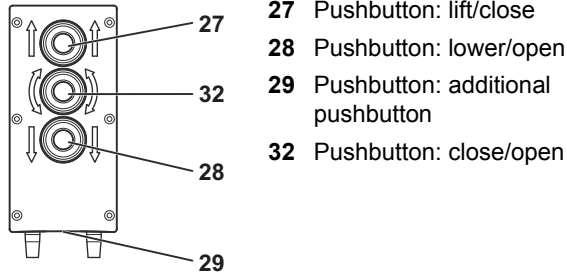
- ▶ Loosen the platform interlock (if present).
- ▶ Press the pushbuttons **(28)** and optionally **(29)** simultaneously and hold them in this position until the platform has completely lowered.
The platform is lowered so that it can be extended without obstruction.
- ▶ Press the pushbutton **(30)** 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.

A C E K L Special Operating Elements



- 27 Pushbutton: lift/close
- 28 Pushbutton: lower/open
- 29 Pushbutton: additional pushbutton
- 32 Pushbutton: close/open

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).
- ▶ 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.

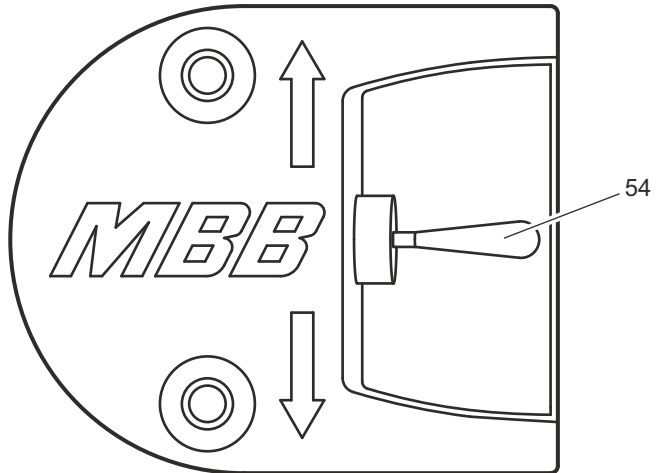
The platform tilts to the horizontal or preset position before it is lifted.

Closing the Platform



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

All Models

Special Operating Elements for Hydraulic Stabilizer Feet**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.

A Programming a Key Code

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

Key (Combination) to be Pressed		
Lift	Close	Lift
3-times	3-times	3-times

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:

Key (Combination) to be Pressed		
Lift	Close	Lift
x-times	x-times	x-times

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.

- ▶ Close the platform, but leave the control box switched on.
- ▶ Disconnect plug J 11.
- ▶ Disconnect plug J 30.
- ▶ Connect the service plug.
- ▶ Connect plug J 11.

The service counter is cleared.

- ▶ Disconnect the service plug.
- ▶ Connect plug J 30.
- ▶ 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:

- ▶ Switch on the control box.
- ▶ Open the platform so that it is in horizontal position.
- ▶ Disconnect plug J 11.
- ▶ Disconnect plug J 30.
- ▶ Connect the service plug.
- ▶ Connect plug J 11.
- ▶ Disconnect the service plug.
- ▶ Connect plug J 30.

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.

- ▶ 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 (7 segments, static, System LED flashing green (2 Hz))	
Status	Description
Status 0 =>	System switched on and all right, control box switched off
Status 1 =>	System switched on and all right, control box switched on

Error indication (7 segments, flashing (0.5 Hz), System LED flashing red (2 Hz))		
Status	Description	Action for error reset
Error 2 =>	Undervoltage	Switch off/on control box
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)		
Status	Description	Action for error reset
Error 9 =>	While lifting the platform, the "motor relay coil resistance" error was detected.	Automatic error reset as soon as correct values are reached
Error "a" =>	Not used or reserved	
Error "b" =>	While opening the platform, the "valve coil resistance open S3_S4" or "motor relay resistance" error was detected.	Automatic error reset as soon as correct values are reached
Error "c" =>	While closing the platform, the "motor relay resistance" or "S5" error was detected.	
Error "d" =>	While lowering the platform, the "valve coil resistance lower_S1_S2" error was detected	

Service functions <i>(not available for all models)</i>		
Status	Description	Action for disabling
Error "E" =>	Emergency program, sensor system being bridged. Re-enable by pressing and holding "Open" and "Lower" push-buttons for more than 10 seconds.	Switch off/on control box
Error "P" =>	Error diagnosis of all inputs is active. Warnfix is activated upon each push-button actuation.	Remove service plug

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.

A B C F G K L M

Maintenance Intervals

Activity	Daily	Depending on Usage	Monthly	Quarterly	Semi-annually	Annually
Checking the function and presence of the safety and warning devices	X					
Cleaning the tail lift		X				
Checking the battery		X				
Checking the carbon brushes at the electric motor		X				
Checking the oil level and refilling oil, if necessary			X			
Checking the bolts and nuts for tight seat			X			
Checking the screw fittings and pipes of the hydraulic system						X
Lubricating the low-maintenance bearings		X				
Changing the oil						X
Applying wax spray to the PC board		X				
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.		X				

Activity	Daily	Depending on Usage	Monthly	Quarterly	Semi-annually	Annually
For retractable tail lifts: Cleaning and lubricating guide rails		X				
If unused for more than 3 months: Moving (open, lower, lift, close) tail lift several times				X		

E Maintenance Intervals

Activity	Daily	Depending on Usage	Monthly	Quarterly	Semi-annually	Annually
Checking the function and presence of the safety and warning devices	X					
Cleaning the tail lift		X				
Checking the battery		X				
Checking the bolts and nuts for tight seat			X			
Lubricating the low-maintenance bearings		X				
Checking the bellows			X			
Applying wax spray to the PC board		X				
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		X				
If unused for more than 3 months: Moving (open, lower, lift, close) tail lift several times				X		

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.

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

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.

A B C F G K L M 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.

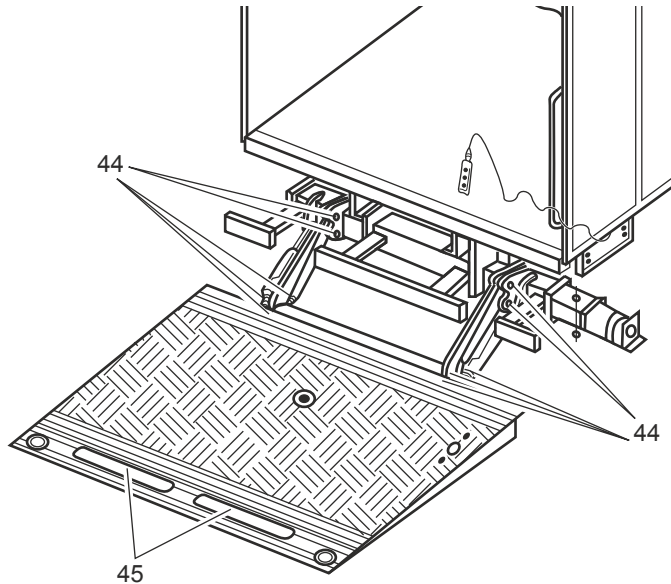
Greasing and Lubricating

- ▶ 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. They 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.

A B C E Standard Models (Upright Platform)

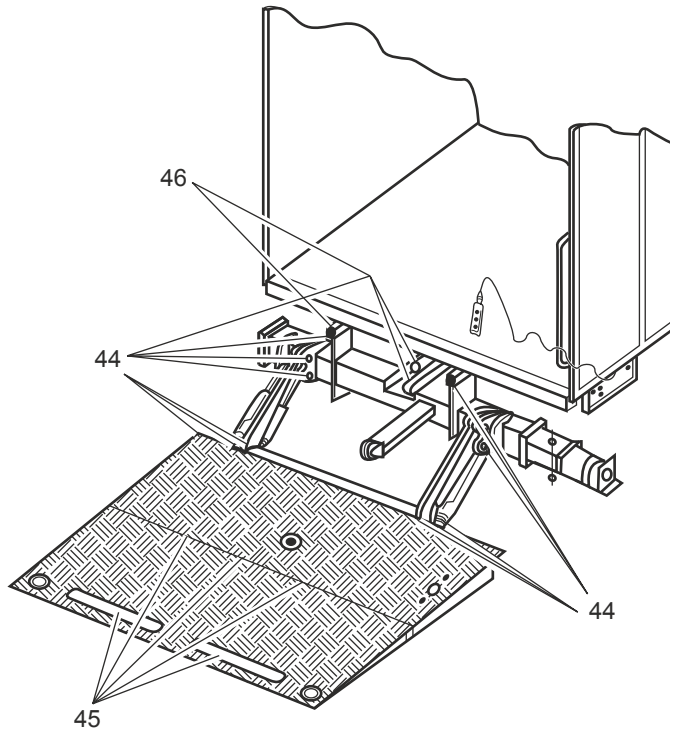
44 Conical lubricating heads (grease nipples)

45 Roll-off protection bearings

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).

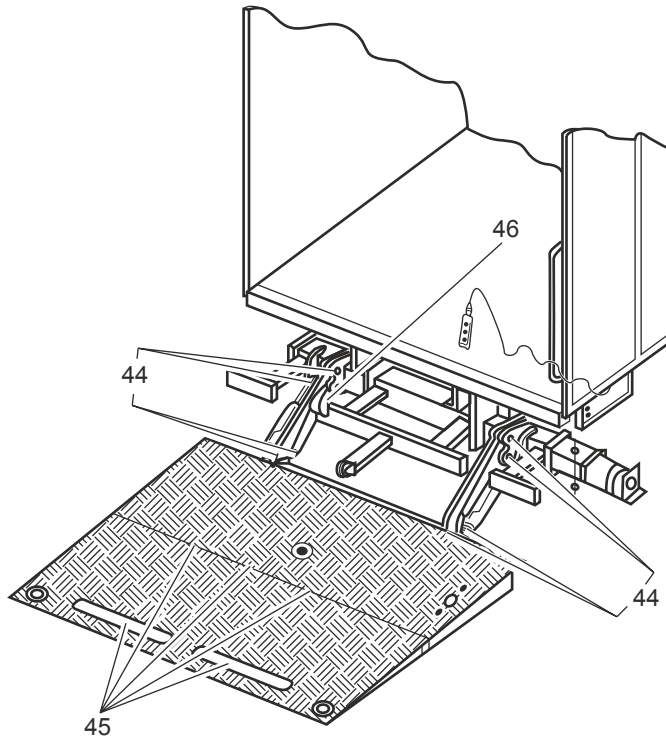
FG Retractable Models



- 44** Conical lubricating head
- 45** Roll-off protection bearings and joint of folding platform
- 46** Sliding consoles in the guide rails (nozzle lubrication)

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).

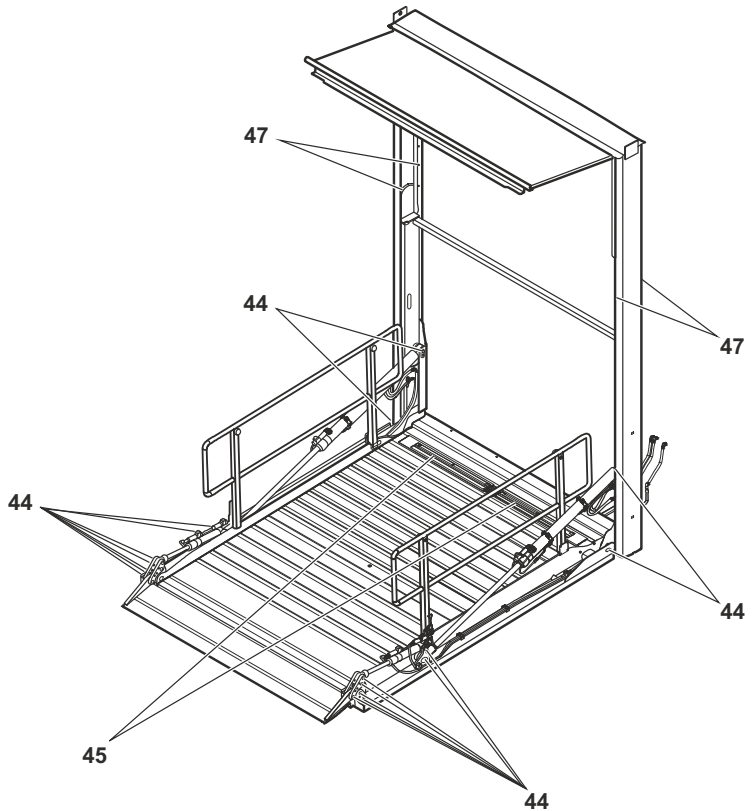
K L M Foldable Models

- 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).

V Column Lifts



- 44** Conical lubricating head
- 45** Roll-off protection bearings
- 47** Sliding surface of the slider

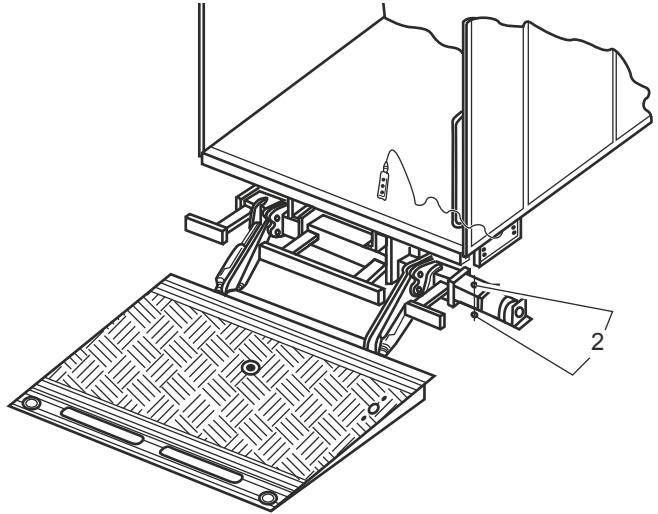
To grease and lubricate:

- ▶ 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.

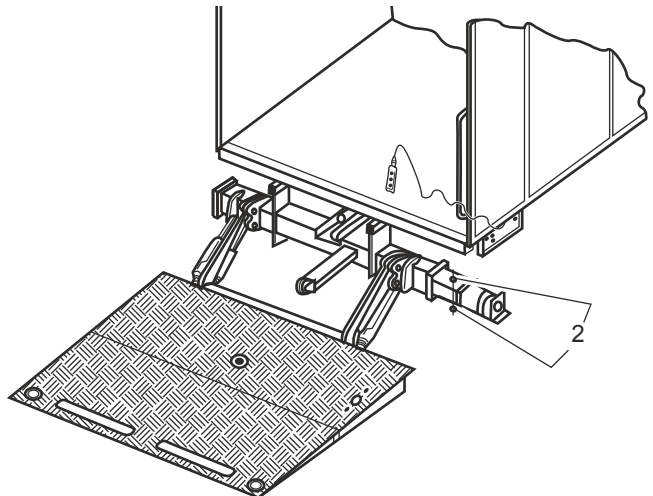
Monthly Maintenance

Checking the Oil Level

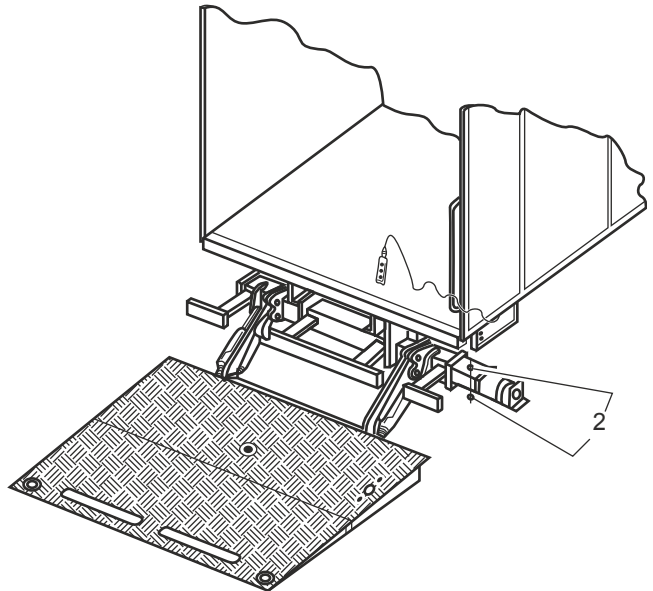
A B C Standard Tail Lifts



F G Retractable Models



K L M Foldable Models



2 Hydraulic unit on support tube

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.

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

A B C F G K L

Changing the Hydraulic Oil

CAUTION!

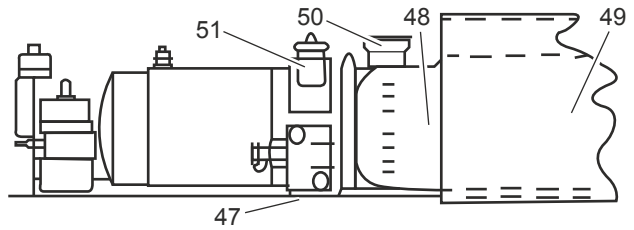


Risk of injury or material damage through waste oil!

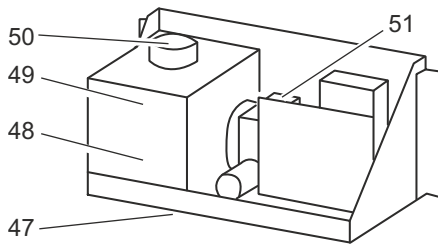
If you do not change the oil in the hydraulic unit once a year, condensation water could accumulate, especially at temperatures below the freezing point. This disturbs the function of the tail lift. Persons could be injured and material could be damaged.

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

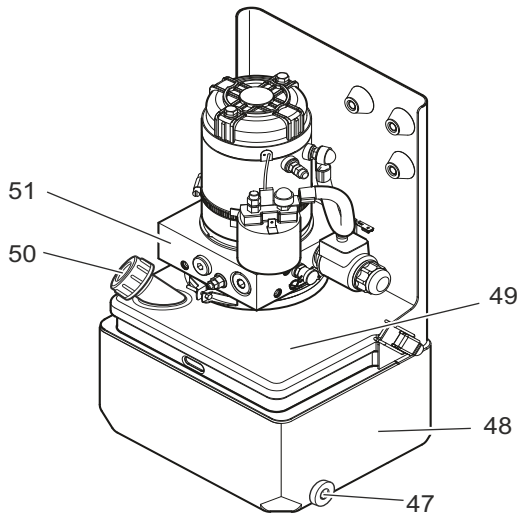
Slide-in Unit:



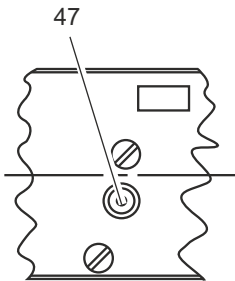
Box-type Unit:



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 the regulations.

V Changing the Hydraulic Oil

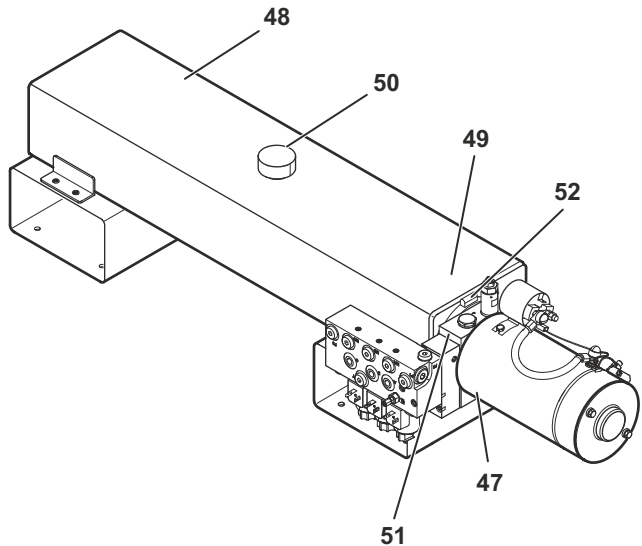
CAUTION!



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 the regulations.

All Models **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.

A C F G K L M Troubleshooting Tables

Before switching on		
Fault	Possible cause	Remedy
Optical indication in driver's cab flashes rapidly	Tilt sensor b15 defective	Replace tilt sensor b15

Switching on (LED on PC board flashes with the same rate as the turn signal)		
Fault	Possible cause	Remedy
Optical indication in driver's cab flashes furiously	Lift arms switch b13 defective (short-circuit)	Replace lift arms switch b13
	Tilt sensor b15 guide rod defective	Replace tilt sensor b15
LED on PC board does not flash	ON/OFF switch in driver's cab defective	Check connections 2 and 4 with test lamp
	Fuses in unit e1 or e2 have tripped	Replace fuses
	PC board in sealing cover defective	Replace PC board

 Open (Platform opens to the horizontal operating position – this position is stored and moved to after the ground adjustment during lifting)		
Fault	Possible cause	Remedy
Platform does not open with motor	No signal at output J 1/3	Use test lamp to check according to circuit diagram
	Motor contactor defective	Check motor contactor
Platform does not open	Rotary switches, pushbuttons, or toggle switches defective	Use test lamp to check contacts in operating element according to circuit diagram, use ground connection JK at PC board
	No voltage at valve plug S 3 or S 4, defective cable	Check with test lamp
	Control valve S 5 or pressure splitter stuck	Clean or replace



Open

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

Fault	Possible cause	Remedy
Warning lights on platform are not flashing when platform is open	Tilt sensor b15 at the platform misadjusted or defective	Adjust or replace
	PC board defective	Replace
	Plugs defective	Replace
	Warning lamps defective	Replace
	Initiator b25 misadjusted or defective	Adjust or replace




Extend


Fault	Possible cause	Remedy
Platform does not extend, motor is running	Solenoid valves S 7 and S 8 leaking	Clean or replace
	Solenoid valve S 8 does not open	Clean or replace
	Lowering brake valve S 11 does not open	Clean or replace
	Piston seal in guide cylinder defective	Replace




Fold out (model KUZF)


Fault	Possible cause	Remedy
Platform does not unfold, motor is running	Solenoid valves S 7 and S 8 leaking	Clean or replace
	Solenoid valve S 12 does not open	Clean or replace
	Valve S 10 does not open	Clean or replace
	Piston seal in folding cylinder defective	Replace


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


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


 Lift platform off the ground (platform tilts into the horizontal operating position that was stored when it was opened)		
Fault	Possible cause	Remedy
Platform does not tilt into the horizontal operating position when operated via foot controls	The foot controls were actuated too fast (shorter than 1 s) or too slow (longer than 3 s) after each other	Release both foot controls, wait a few seconds, and repeat procedure
	Foot control defective	Disconnect plug connection in the platform, check foot controls with continuity tester
	Cable no. 2 to platform defective	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
Platform does not tilt into the horizontal position when lifting	Directional valve S 5 stuck or defective	Clean or replace
	Tilt sensor b15 defective	Replace

Platform tilts further than the preset angle	Tilt sensor b15 defective	Replace
	Directional valve S 5 stuck or defective	Clean or replace
Platform does not tilt into the horizontal operating position but is lifted	PC board does not deliver output at J 1/12	Check plug J 1 terminal 12 with test lamp, use ground connection JK of the PC board
	Valve S 5 in unit does not switch on	Check with test lamp
Platform does not tilt into the horizontal operating position, but is lifted, optical indicator in driver's cab flashes rapidly	Tilt sensor b15 platform defective	Replace tilt sensor b15
Platform tilts further than the preset angle when the platform is lifted	Tilt sensor b15 defective	Replace
	Directional valve stuck or defective	Clean or replace

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

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

 Retract		
Fault	Possible cause	Remedy
Platform does not retract, motor is running	Solenoid valves S 7 and S 8 leaking	Clean or replace
	Solenoid valve S 7 does not open	Clean or replace
	Solenoid valve S 11 does not open	Clean or replace
	Piston seal in guide cylinder defective	Replace


 Fold in (for model KUZF)		
Fault	Possible cause	Remedy
Platform does not unfold, motor is running	Solen. valves S 7 + S 8 leaking	Clean or replace
	Solen. valve S 12 does not open	Clean or replace
	Solen. valve S 9 does not open	Clean or replace
	Piston seal in folding cylinder defective	Replace


Switch on Warnfix (Warnfix is automatically switched on when the platform is opened or extended, left and right lights are switched in parallel)		
Fault	Possible cause	Remedy
Warning lights are not flashing	Short-circuit in lamp or cabling	Repair short-circuit
	Lamp defective	Replace
	Initiator b25 defective	Replace


E Troubleshooting Tables


Before switching on		
Fault	Possible cause	Remedy
Optical indication in driver's cab flashes rapidly	Tilt sensor b15 defective	Replace tilt sensor b15


Switching on (LED on PC board flashes with the same rate as the turn signal)		
Fault	Possible cause	Remedy
Optical indication in driver's cab flashes furiously	Lift arms switch b13 defective (short-circuit)	Replace tilt sensor b15
	Tilt sensor b15 guide rod defective	Replace tilt sensor b15
LED on PC board does not flash	ON/OFF switch in driver's cab defective	Check connections 2 and 4 with test lamp
	Fuses in power unit e1 or e2 have tripped	Replace fuses
	PC board in sealing cover defective	Replace PC board


 Open (Platform opens to the horizontal operating position – this position is stored and moved to after the ground adjustment during lifting)		
Fault	Possible cause	Remedy
Platform does not open	Rotary switches, pushbuttons, or toggle switches defective	Use test lamp to check contacts in operating element according to circuit diagram, use ground connection JK at PC board
	Motor contactor -K4 or relay -K5 defective	Check motor contactor and relay
	Output J4/14, JK or J43/90 does not deliver output signal	Use test lamp to check according to circuit diagram
Warning lights on platform are not flashing when platform is open	Tilt sensor b15 at the platform misadjusted or defective	Adjust or replace
	PC board defective	Replace
	Plugs defective	Replace
	Warning lamps defective	Replace

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

 Ground adjustment (platform tilts)		
Fault	Possible cause	Remedy
Emergency actuation:		
Actuate "Open" (28) pushbutton and additional pushbutton (29) on lateral control element until platform tilts		
Platform does not tilt	Output J4/15, J4/14, JK or J42/81 does not deliver output signal	Use test lamp to check according to circuit diagram
	Seating too tight	Grease all seating points
Platform does not tilt, opt. indicator in driver's cab flashes rapidly	Tilt sensor b15 guide rod defective	Replace tilt sensor b15

 Lift platform off the ground (platform tilts into the horizontal operating position that was stored when it was opened)		
Fault	Possible cause	Remedy
Platform does not tilt into the horizontal operating position when operated via foot controls	The foot controls were actuated too fast (shorter than 1 s) or too slow (longer than 3 s) after each other	Release both foot controls, wait a few seconds, and repeat procedure
	Foot control defective	Disconnect plug connection in the platform, check foot controls with continuity tester
	Cable no. 2 to platform defective	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
When being lifted, the platform does not tilt to its horizontal position or tilts beyond the pre-set position	Tilt sensor b15 defective	Replace
Platform does not tilt into the horizontal operating position but is lifted	Output J43/90, J1/12, JK or JK does not deliver output signal	Use test lamp to check according to circuit diagram
	Motor contactor -K3 is defective	Check motor contactor
Platform does not tilt into the horizontal operating position, but is lifted, optical indicator in driver's cab flashes rapidly	Tilt sensor b15 platform defective	Replace

 Lift (platform moves up to loading edge)		
Fault	Possible cause	Remedy
Platform does not lift up	Rotary switches, pushbuttons, or toggle switches defective	Use test lamp to check contacts in operating element according to circuit diagram, use ground connection JK at PC board
	PC board does not deliver output at J 1/3 or J 42/81	Use test lamp to check PC board according to circuit diagram
	Motor contactor -K1 defective	Check motor contactor

 Close (platform closes)		
Fault	Possible cause	Remedy
Platform does not close	Rotary switches, pushbut- tons, or toggle switches de- fective	Use test lamp to check con- tacts in operating element ac- cording to circuit diagram, use ground connection JK at PC board
	PC board does not deliver output on J 1/12, J43/90 or JK	Use test lamp to check PC board according to circuit di- agram
	Motor contactor -K1 defective	Check motor contactor
In its closed end position the platform does not reach the vehicle loading floor height	End of box insufficiently rein- forced	Reinforce box according to details in assembly drawing
	Bearings worn out (after lon- ger usage)	Replace bearing pins, bear- ing bushes

Switch on Warnfix


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


Fault	Possible cause	Remedy
Warning light does not flash	Short-circuit in lamp or ca- bling	Repair short-circuit
	Lamp defective	Replace


V Troubleshooting Tables


Before switching on		
Fault	Possible cause	Remedy
Optical indication in driver's cab flashes rapidly	Tilt sensor b15 defective	Replace tilt sensor b15


Switching on (LED on PC board flashes with the same rate as the turn signal)		
Fault	Possible cause	Remedy
LED on PC board does not flash	Fuses in unit e1 or e2 have tripped	Replace fuses
	PC board in sealing cover defective	Replace PC board


 Open (platform opens until reaching operating position)		
Fault	Possible cause	Remedy
Platform does not open with motor	Output J1/3 does not deliver output signal	Use test lamp to check according to circuit diagram
	Motor contactor defective	Check motor contactor
Platform does not open	Pushbutton defective	Use test lamp to check contacts in operating element according to circuit diagram, use ground connection JK at PC board
	No voltage at valve plug S4 or S5, defective cable	Check with test lamp
	Control valve S6 or pressure valve locked	Clean or replace
Warning lights on platform are not flashing when platform is open	Tilt sensor b15 at the platform misadjusted or defective	Adjust or replace
	PC board defective	Replace
	Plugs defective	Replace
	Warning lamps are defective	Replace

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


 Lower (platform moves down until reaching the ground)		
Fault	Possible cause	Remedy
Platform does not come down	Flow valve R 1 or R 2 at lift cylinder stuck or defective	Clean or replace
	Slide bearing sluggish	Clean and lubricate slide bearing
	Hydraulic oil too thick	Change oil, use oil grade as recommended
	Solenoid valve S 1 or S 2 defective	Clean or replace

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

 Fold out		
Fault	Possible cause	Remedy
Link bridge does not fold out, motor is running	Solenoid valves S 10 and S 11 do not open	Clean or replace
	Solenoid valve S 7 does not open	Clean or replace
	Piston seal in tilt cylinder defective	Replace

 Fold in		
Fault	Possible cause	Remedy
Link bridge does not fold in, motor is running	Solenoid valve S 7 does not open	Clean or replace
	Solenoid valve S 12 does not open	Clean or replace
	Solenoid valve S 13 does not open	Clean or replace
	Piston seal in tilt cylinder defective	Replace

Switch on Warnfix (Warnfix is automatically switched on when the platform is opened, left and right lights are switched in parallel)		
Fault	Possible cause	Remedy
Warning light does not flash	Short-circuit in lamp or cabling	Repair short-circuit
	Lamp defective	Replace

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

Technical Data

All Models

Recommended Battery Capacity

Load weight [kg]	Recommended battery capacity
up to 1250	12 V = 1 x 143 Ah 24/12 V, 24 V = 2 x 12 V, 2 x 105 Ah
1250 to 1750	12 V = 1 x 180 Ah 24/12 V, 24 V = 2 x 12 V, 2 x 143 Ah
over 1750 to 4000	24/12 V, 24 V = 2 x 12 V, 2 x 180 Ah

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

Load weight [kg]	Recommended alternator [Watt]
up to 1250	630
1250 to 1750	730
over 1750 to 4000	1000

All Models

Temperature Range for Tail Lift Usage

Standard	"Cold climate" option
-20 °C to +60 °C	-40 °C to +60 °C

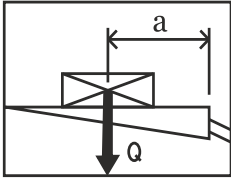
Load Diagrams

The following tables show the maximum allowed weight of the payload (Q). The table applicable for your tail lift can also 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.

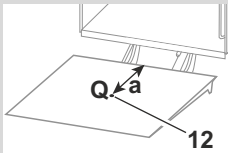


DANGER!



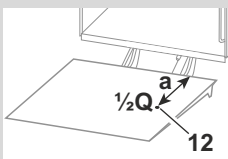
Risk of personal injury and material damage!

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:

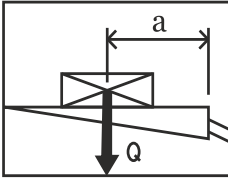
- ▶ Load the tail lift not heavier than the payload (Q), which is indicated in the table next to the respective load distance (a)!



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

- ▶ Load the tail lift **not heavier than half the payload** ($\frac{1}{2}Q$), which is indicated in the table next to the respective load distance (a)!

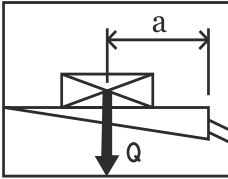
A



	a [mm]	Q [kg]		a [mm]	Q [kg]	
350 K	850	350	1500 K 1500 K 1500 KS	1000	1500	
	1000	300		1200	1250	
	1200	250		1500	1000	
	1500	200		1850	800	
	1800	160		2400	600	
500 K	600	500	1750 K 1750 KS 1750 KK	850	1750	
500 KB	700	430		1000	1450	
500 KSP	820	360		1300	1150	
500 K1TL/R	1120	260		1650	900	
500 K2TL/R 500 KRM 500 duo[®] 500 neo	1800	160		2400	600	
750 K	600	750	2000 KL 2000 KS 2000 KK	750	2000	
750 KB	700	650		900	1650	
750 KSP	820	550		1100	1300	
750 M	1120	400		1600	950	
750 K1TL/R 750 K2TL/R 750 duo[®] 750 neo 750 MA 750 M1TL/R 750 MSP	1800	250		2400	600	
1000 Athlet[®] quattro	600	1000		2000 K	1000	2000
	750	800			1200	1650
	950	600			1500	1350
	1400	400	1800		1100	
	1000 E 1000 rentfix[®]	2400	230		2100	950
1000 K	700	1000	2500 KL	750	2500	
	875	800		900	2050	
	1150	600		1100	1700	
	1700	400		1600	1150	
	2400	250		2400	750	
1250 K 1250 KL	720	1250	2500 K 2500 KK	1000	2500	
	900	1000		1400	1785	
	1200	750		1600	1560	
	1800	500		1800	1385	
	2400	370		2400	1040	

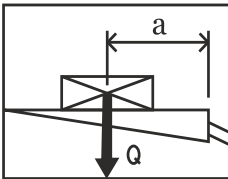
	a [mm]	Q [kg]		a [mm]	Q [kg]
1500 KL 1500 rentfix®	600	1500	3000 K	1000	3000
	720	1250		1200	2000
	900	1000		1500	1600
	1200	750		1800	1300
	2400	370		2400	1000

B



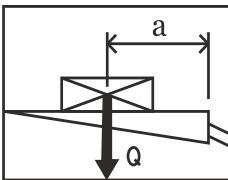
	a [mm]	Q [kg]
500 GBL	600	500
	700	430
	820	360
	1120	260
	1800	160

C



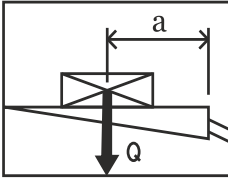
	a [mm]	Q [kg]		a [mm]	Q [kg]
350 minifix	850	350	500 minifix	600	500
	1000	300		700	430
	1200	250		820	360
	1500	200		1120	260
	1800	160		1800	160

E



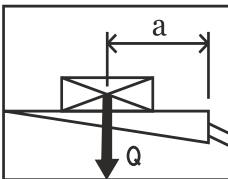
	a [mm]	Q [kg]
1000 E	600	1000
	750	800
	950	600
	1400	400
	2400	230

F



	a [mm]	Q [kg]		a [mm]	Q [kg]
750 KUZ	600	750	1750 KUZP 1750 KUZ 1750 KUZK	850	1750
	700	650		1000	1450
	820	550		1300	1150
	1120	400		1650	900
	1800	250		2400	600
1000 KUZ 1000 KUFR	700	1000	2000 KUZP 2000 KUZ 2000 KUZK 2000 TrailGate 2000 TruckGate	750	2000
	875	800		900	1650
	1150	600		1100	1300
	1700	400		1600	950
	2400	250		2400	600
1250 KLUZF 1250 KUFR	720	1250	2500 KUZ	750	2500
	900	1000		900	2050
	1200	750		1100	1700
	1800	500		1600	1150
	2400	370		2400	750
1500 KLUZ 1500 KUFR	600	1500	3000 KUZ	800	3000
	720	1250		1200	2000
	900	1000		1500	1600
	1200	750		1800	1300
	2400	370		2400	1000
1500 KUZP 1500 KUZ 1500 KUZK 1500 KUZF 1500 TrailGate 1500 TruckGate	1000	1500			
	1200	1250			
	1500	1000			
	1850	800			
	2400	600			

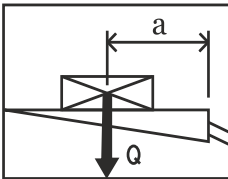
G



	a [mm]	Q [kg]		a [mm]	Q [kg]
750 KUZFM	600	750	1750 KUZF 1750 KUZFM	850	1750
	700	650		1000	1450
	820	550		1300	1150
	1120	400		1650	900
	1800	250		2400	600

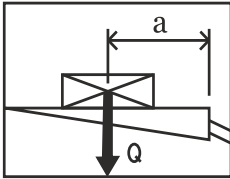
	a [mm]	Q [kg]		a [mm]	Q [kg]
1000 KUZFM	600	1000	2000 KUZF 2000 KUZFM	750	2000
	750	800		900	1650
	950	600		1100	1300
	1400	400		1600	950
	2400	230		2400	600
1500 KUZF 1500 KUZFM	1000	1500			
	1200	1250			
	1500	1000			
	1850	800			
	2400	600			

K



	a [mm]	Q [kg]		a [mm]	Q [kg]
1000 KF 1000 KFN	600	1000	1500 KF 1500 KFN	600	1500
	750	800		720	1250
	1000	600		900	1000
	1500	400		1200	750
	2400	250		2400	370
1250 KF 1250 KFN	720	1250	2000 KF	750	2000
	900	1000		900	1650
	1200	750		1100	1300
	1800	500		1600	950
	2400	370		2400	600

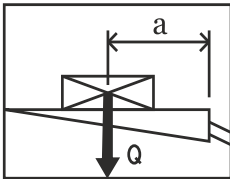
L



	a [mm]	Q [kg]
750 twinfold	600	750
	700	650
	820	550
	1120	400
	1800	250
1000 twinfold	600	1000
	750	800
	950	600
	1400	400
	2400	230
1000 HFL	650	1000
	850	800
	1150	600
	1700	400
	2400	250

	a [mm]	Q [kg]
1250 HFL	550	1250
	650	1000
	900	750
	1350	500
	2400	250
1500 twinfold	600	1500
	720	1250
	900	1000
	1200	750
	2400	370

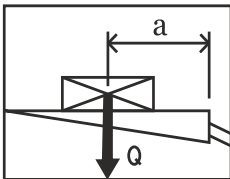
M



	a [mm]	Q [kg]
unifold	600	1000
	750	800
	950	600
	1400	400
	2400	230
350 Tuck-under	850	350
	1000	300
	1200	250
	1500	200
	1800	160

	a [mm]	Q [kg]
500 Tuck-under	600	500
	700	430
	820	360
	1120	260
	1800	160

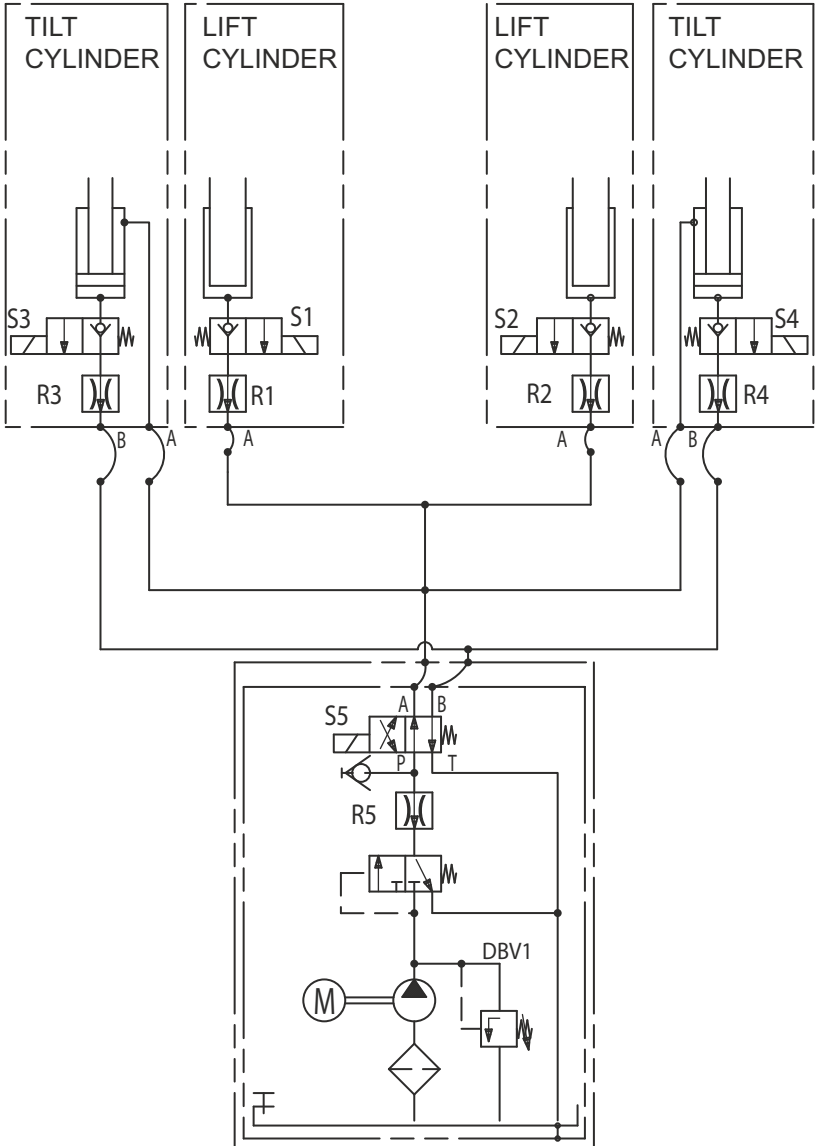
V



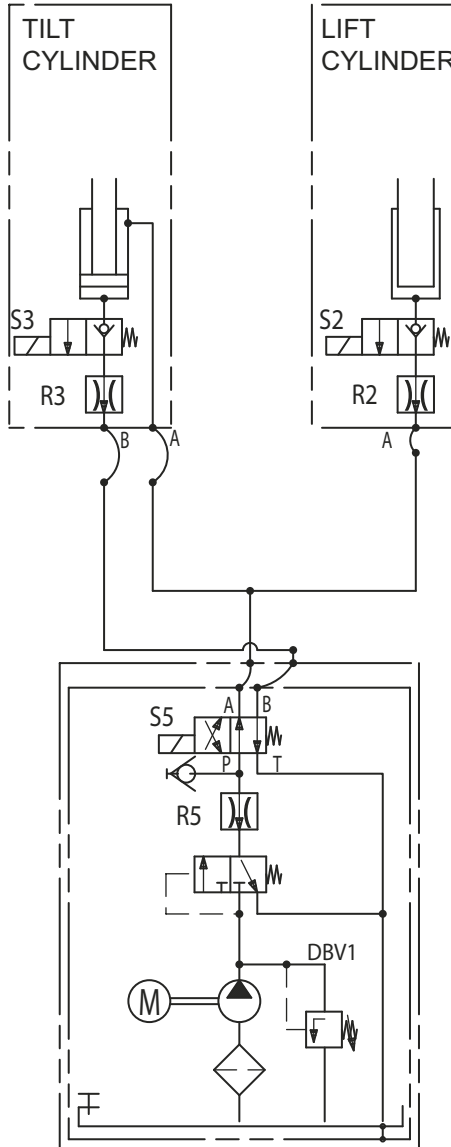
	a [mm]	Q [kg]
4000V	1500	4000
	1750	3400
	2000	3000
	2250	2600
	2500	2400

Hydraulic Diagrams

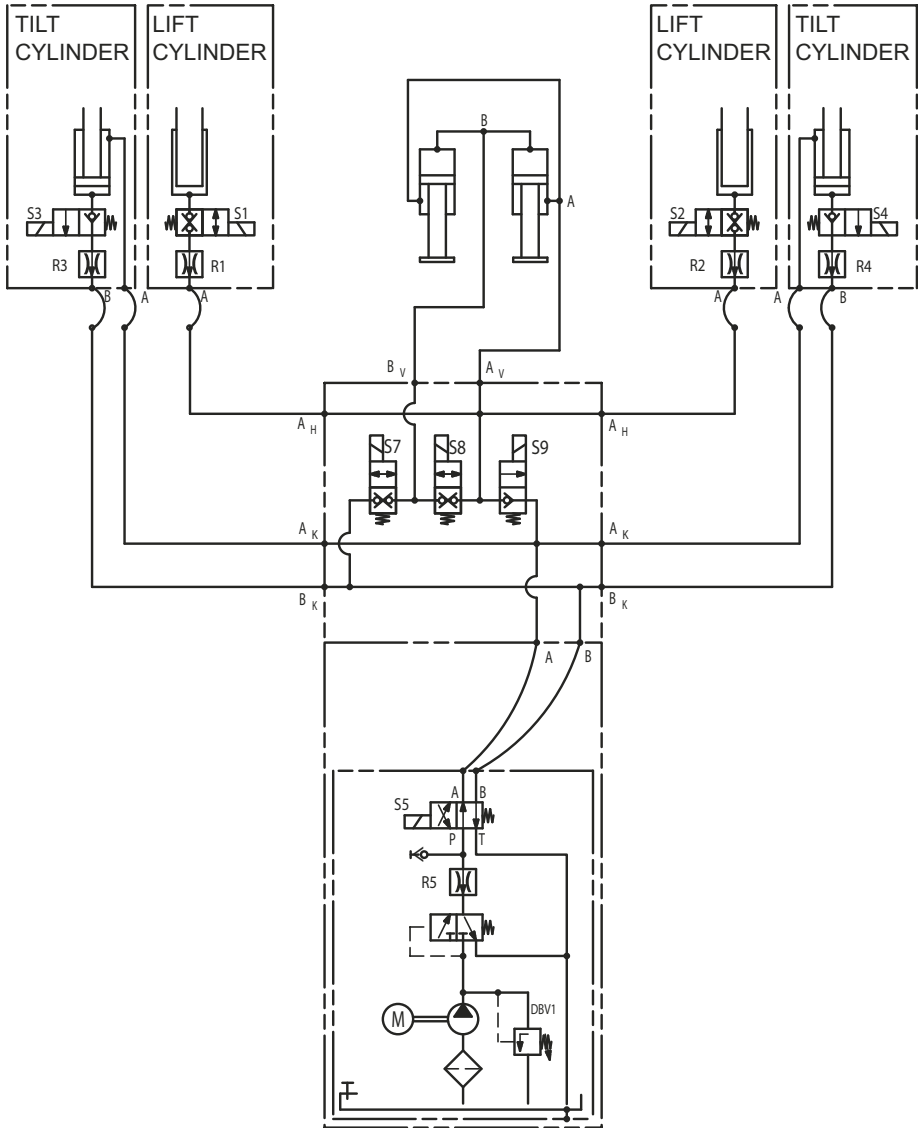
A K Standard Tail Lift with Four Cylinders 96-560.98-00.00-00



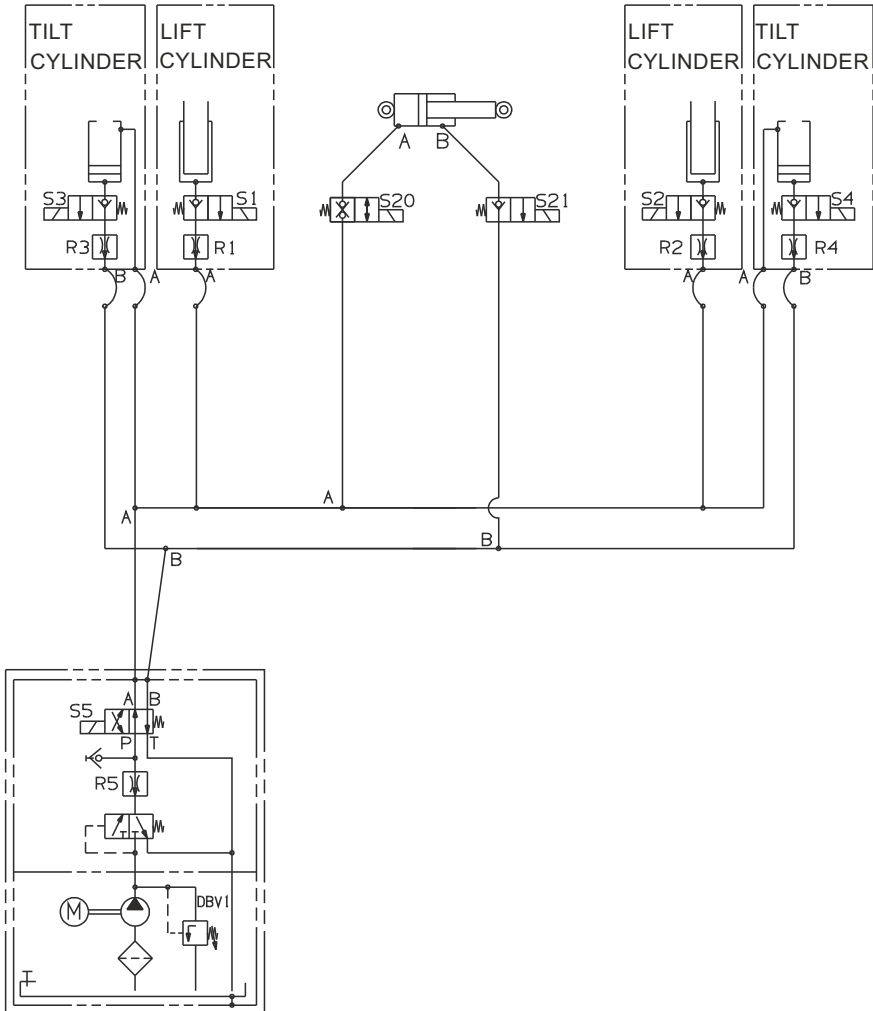
A C Standard Tail Lift with Two Cylinders
97-510.98-00.00-00



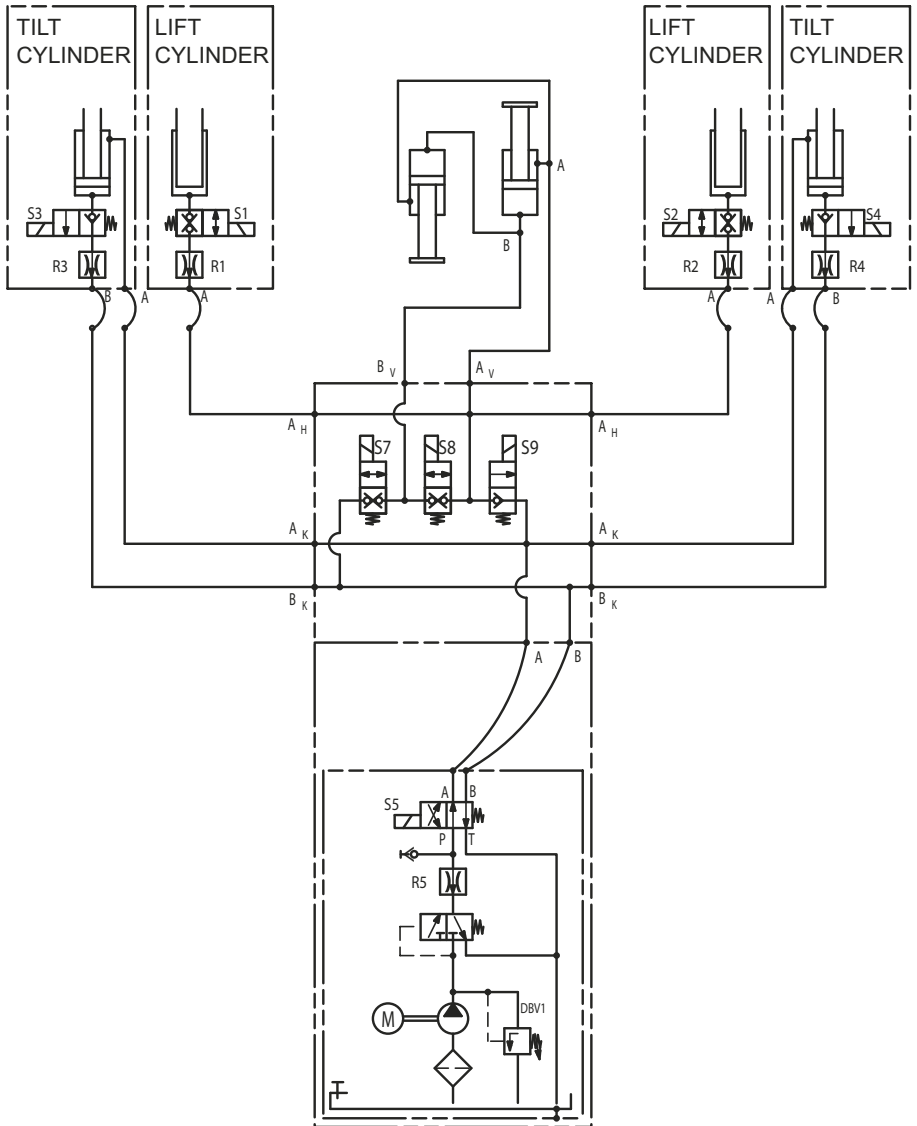
A Standard Tail Lift with Hydraulic Support
96-524.98-01.00-00



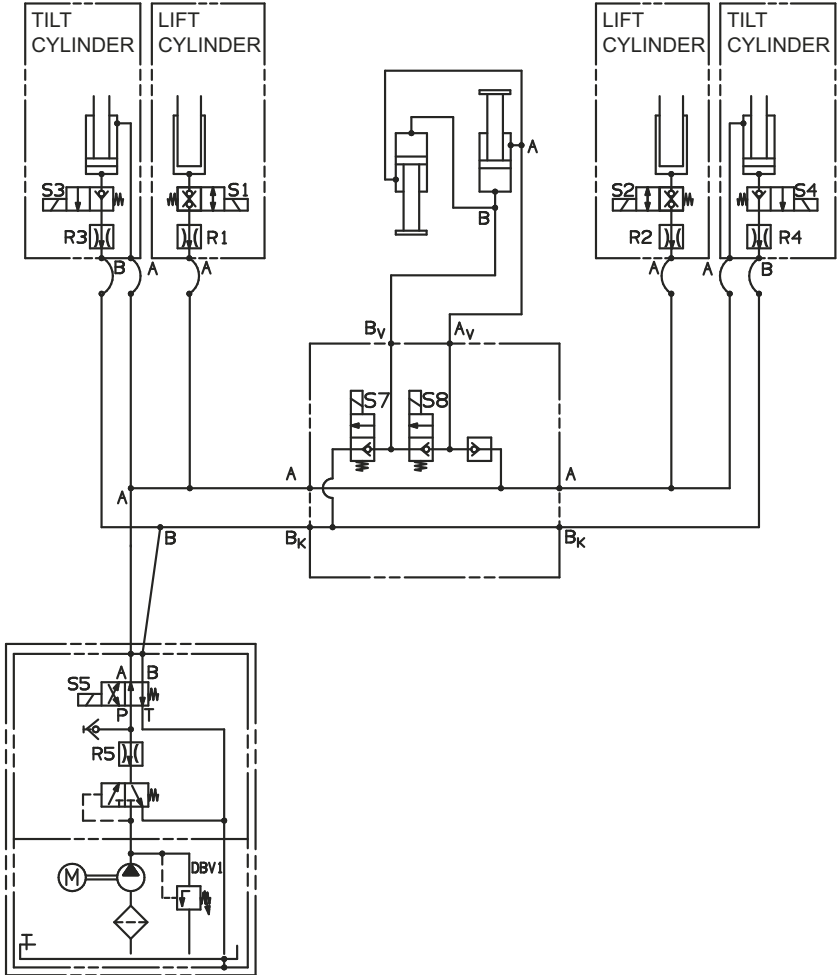
A Standard Tail Lift with Hydraulic Underrun Bumper
99-514.98-01.00-00



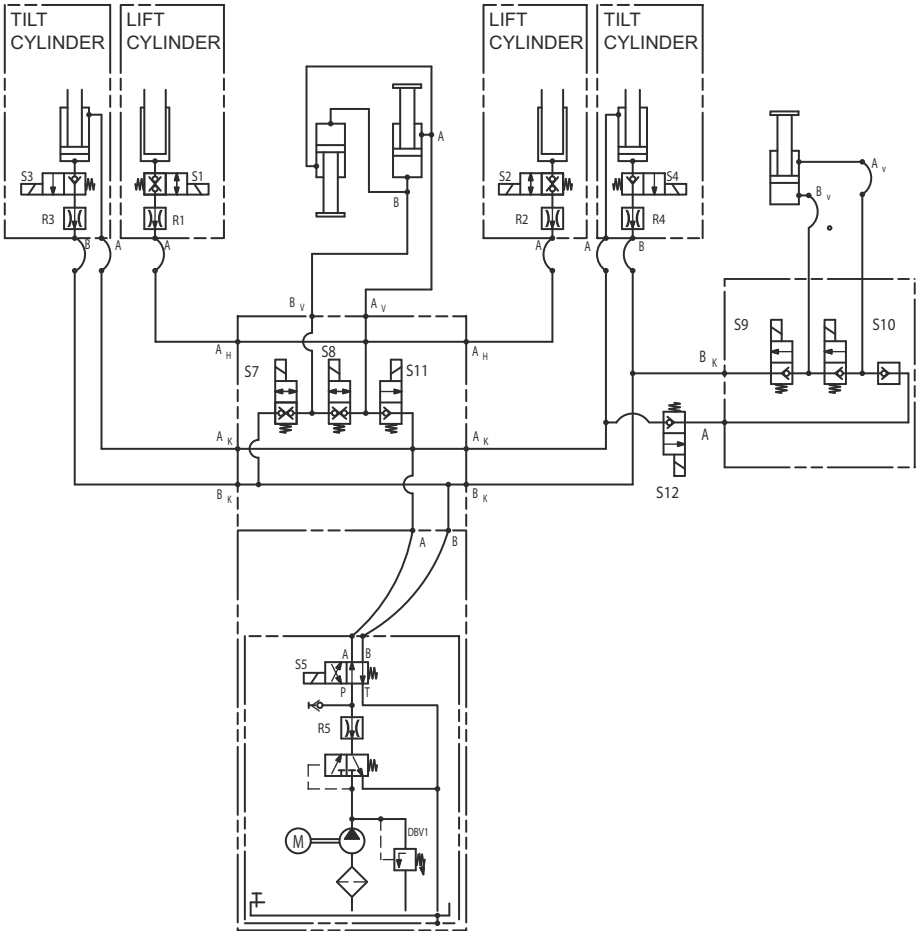
FG Retractable Tail Lift
95-585.98-01.00-00



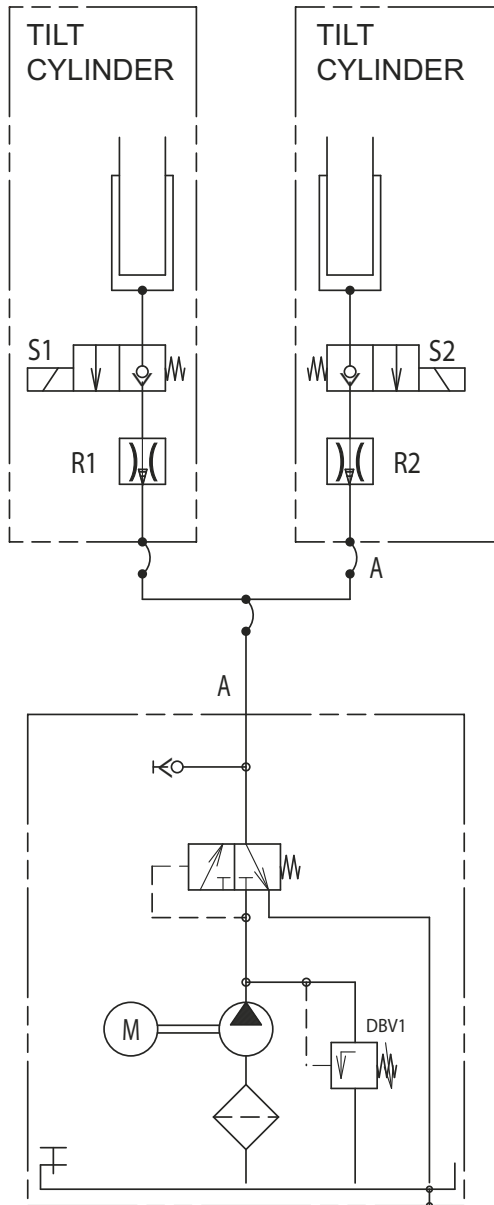
F Retractable Tail Lifts, Models 750 KUZ, 750 KUZFM, 1000 KUZFM, 1500 to 2000 KUZK
 96-543.98-00.00-00



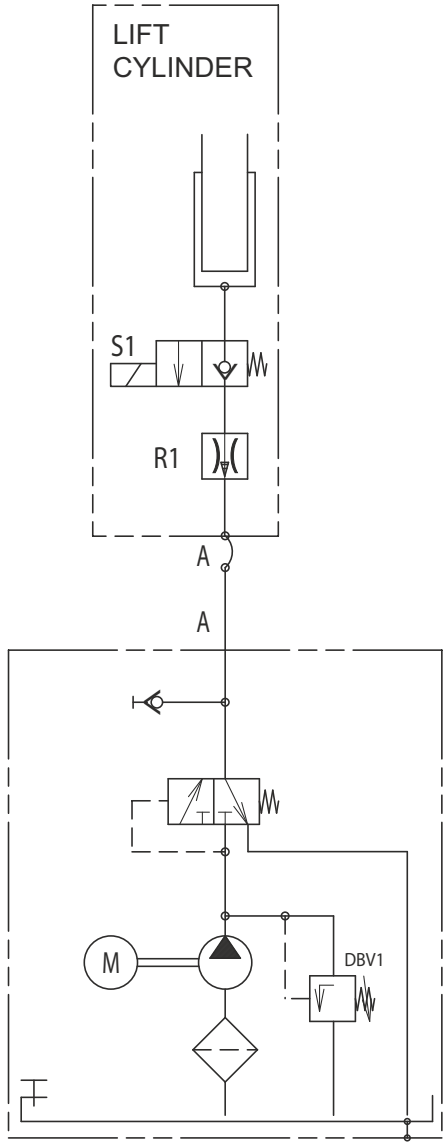
G Retractable Tail Lift
00-514.98-00.00-00



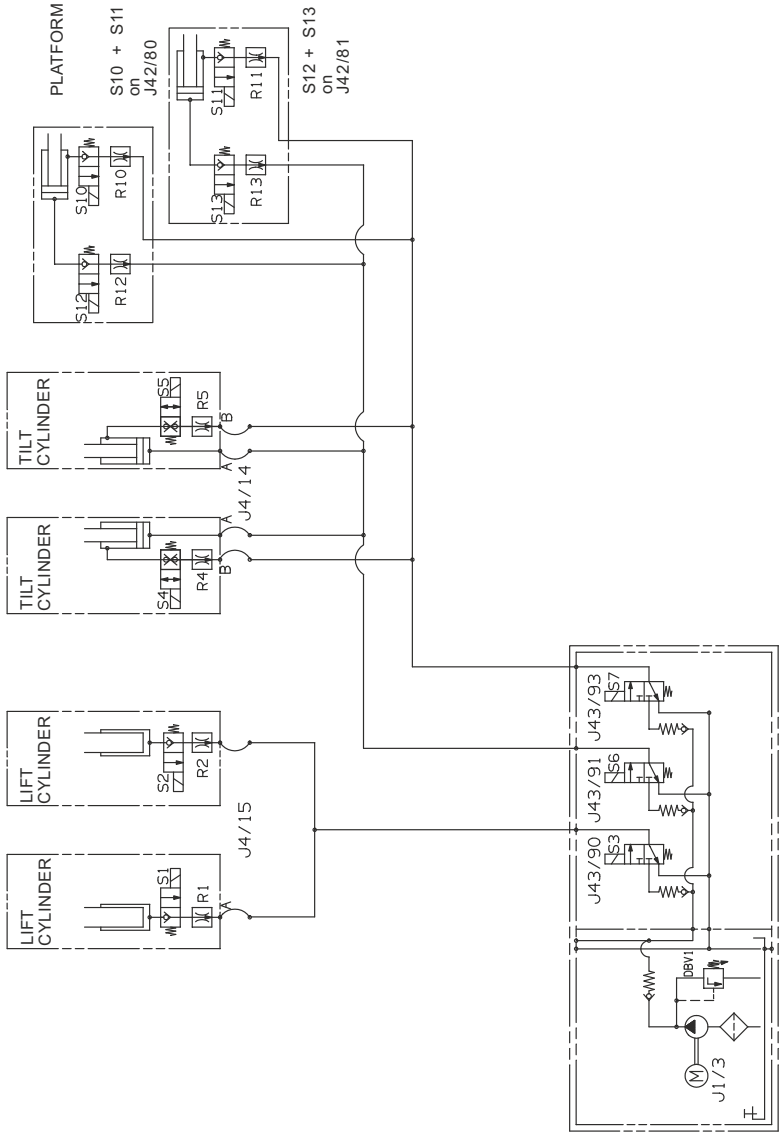
L **Foldable Tail Lift**
93-505.60-08.00-00



B M Foldable Tail Lift
02-528.60-08.00-00



V Column Lifts
09-545.98-00.00-00



Lubricants and Operating Media

Recommended Hydraulic Oil Grades

- Tellus 15
Operation temperature: $-20\text{ }^{\circ}\text{C}$ to $60\text{ }^{\circ}\text{C}$
 - Aero Shell Fluid 4
Operation temperature: $-40\text{ }^{\circ}\text{C}$ to $60\text{ }^{\circ}\text{C}$
- “Cold climate” option
- Aero Shell Fluid 4 + low temperature gaskets against vitrification of sealing material
Operation temperature: up to $-40\text{ }^{\circ}\text{C}$

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 $-20\text{ }^{\circ}\text{C}$ to $60\text{ }^{\circ}\text{C}$. 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:

		Permissible load masses	Demonstrated max. test forces (DIN EN 12642)
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:	600 to 800 mm		
Nominal load:	500 kg to 750 kg		
Platform heights : up to 2,000 mm		5,000 kg	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		8,000 kg	2,400 daN
Platform heights : up to 1,800 mm		7,500 kg	2,250 daN
Platform heights : up to 2,000 mm		7,000 kg	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		12,000 kg	3,600 daN
Platform heights : up to 2,200 mm		11,000 kg	3,300 daN
Platform heights : up to 2,400 mm		10,000 kg	3,000 daN
Platform heights : up to 2,600 mm		9,000 kg	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

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

Permissible load masses	Demonstrated max. test forces (DIN EN 12642)
16,000 kg	4,800 daN
14,500 kg	4,350 daN
13,000 kg	3,900 daN
11,500 kg	3,450 daN
10,000 kg	3,000 daN

Platform heights : up to 2,000 mm

Platform heights : up to 2,200 mm

Platform heights : up to 2,400 mm

Platform heights : up to 2,600 mm

Platform heights : up to 2,800 mm

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

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

Platform heights : up to 2,000 mm

Platform heights : up to 2,200 mm

Platform heights : up to 2,400 mm

Platform heights : up to 2,600 mm

Platform heights : up to 2,800 mm

Platform heights : up to 3,000 mm

21,000 kg	6,300 daN
19,000 kg	5,700 daN
17,000 kg	5,100 daN
15,000 kg	4,500 daN
13,000 kg	3,900 daN
11,000 kg	3,300 daN

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 $\mu_0 = 0.30$
- 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

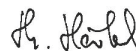
TÜV NORD Mobilität GmbH & Co. KG

Hannover, 25/3/2008

Martin Keller

MBB LIFTSYSTEMS AG

Ganderkesee



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
folding part of platform 14
foot control 14, 88
- 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

PALFINGER

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