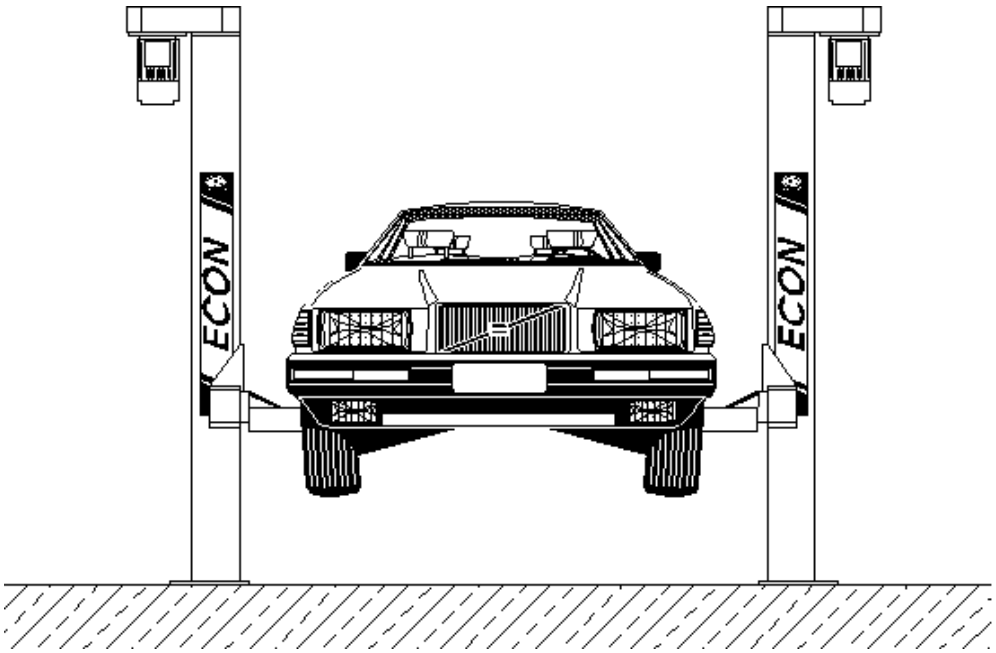
Standard Operating Procedures and User´s Manual



2-Column Lifting Platform

ECON-Lift

for passenger cars and commercial vehicles

Version 5 of these Standard Operating Procedures dated **11th March 1997**
Econ-Lift 2.5 t / 2.8 t / 3.0 t / 3.2 t / 5.0 t Software from: V 1.3
MB Econ-Lift 2.5 t Software V 1.34a

The contents of these operating instructions have been checked with great care. However, errors cannot be fully excluded.

These instructions are intended for users with previous technical knowledge in the field of vehicle testing technology.

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EU-ECON
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English

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Table of Contents

Chapter 1

Safety Instructions

Chapter 2

Description

Chapter 3

Installation

Chapter 4

Operations

Chapter 5

Maintenance, Troubleshooting

Chapter 6

Warranty, Service

Chapter 1

Safety Instructions

1.1. Safety Instructions

 ***Safety warnings are used to indicate danger and help to prevent injury to individuals.***

- The car lift is only to be **used as described in the operating instructions**!
- **Only skilled personnel** who have been trained in the operation of the lifting platform may operate the lift.
- **Explosion protection!**
  The lifting platform is not to be erected in rooms liable to contain explosive mixtures! Standard lifting platforms have no EX-protection.
- The main switch serves as **EMERGENCY-OFF** switch.
  It should be in position 0 during an emergency situation.
- **Persons are not permitted in the danger zone during lifting and lowering cycles.**
- **Unauthorized persons may not in any way be positioned underneath the lifted vehicle**!
- **The net load capacity** stated on the identification plate **may not be exceeded!**
- Avoid **one-sided load burden on the support arms**!
- The **vehicle** may only be lifted **at the points recommended by the vehicle** manufacturer**!**
- **Running motors** can be **dangerous!** Potential carbon monoxide poisoning.
- **Persons may not climb on or be transported on the lifting platform.**
- Before Repair-/Maintenance-/Set up work, **turn off main switch and secure against tampering.**
- Secure the test stand from unauthorized usage by **locking the main switch.**
- **All work done on electrical parts** of the equipment is to be carried out by **trained, qualified electricians or service technicians only**.
- **Protect all parts of the installation from humidity and moisture!**

1.2. Further Information

At installation pay attention that:

- **Standard lifting platforms may not be operated in washing halls, rooms with high humidity or outdoors!** The lifting platform must be protected from any form of **water splashing**! **Never clean the lifting platform with high pressure cleaners or steam cleaners!**
- Low ceilings require installation of a **ceiling light barrier**. This can be ordered from the manufacturer.

For safe operation pay attention to the following:

- **Read the standard operating procedures and user`s manual thoroughly!** MAHA will not accept and is not liable for any claims for damage or service costs incurred due to non-compliance with these operating instructions.
- **All official Accident Prevention Regulations must be thoroughly complied with!**
- The center of gravity shifts when heavy parts of the vehicle are removed (motor, transmission) during repair and this can cause the vehicle to tip.
- Keep the lifting platform and **surrounding work area clean**.
- Do not lay any parts, tools, etc. on the lifting platform or support arms.
- All work done on impulse sensors and proximity switches should be carried out by **trained electricians.**

1.3. Safety Features

The Econ Lift Series has several safety features:

- **Electronic synchronisation monitoring**, which controls the symmetric raising and lowering actions of both carriage guides. Should one carriage guide block both motors will switch off automatically.
- **Electronic support nut fracture monitoring on each column**. If a support nut were to fracture then the lift can only be moved back to the original ground position.
- **Belt rupture safeguard** on each column. Should a belt be defective both motors will switch off automatically.
- **Motor overload protection** on each column.
- In case of support nut failure the **catch nut** takes over the load burden currently on the lift.
- **Foot protection bar** on the support arms.

1.4. Safety Guidelines

The following points were taken into consideration at construction:

- The safety regulations correspond with the prEN 1493.
- The lifting platform meets the safety demands of the following guidelines:
  - 89/392/EWG in connection with 91/368/EWG and 93/44/EWG EG-Maschinery guidelines.
  - 73/23/EWG EG-Low Voltage guidelines.
  - 89/336/EWG EG -guidelines regarding electro-magnetic tolerance.

CE-Declaration of Conformity from 21.12.1995.

Pay attention during operation:

- The Accident Prevention Regulations of the country in which the test stand is being operated apply.
- The following guidelines apply within the European Union countries:
  - 89/391/EWG Safety and Health Protection for the Employee.
  - 89/654/EWG Safety and Health Protection in the Work Area.
  - 89/655/EWG Safety and Health Protection when using Working Materials.
  - 89/656/EWG Safety and Health Protetion when using personal Protective Clothing.
  - 92/58/EWG Safety and/or Health Protection Identification at the Place of Work

EU-Guidelines are available from:

DITR German Information Center for Technical Rules in DIN e.V.
10772 Berlin

Regulations may vary depending on the country.

Chapter 2

Description

2.1. General Information about Usage and Application

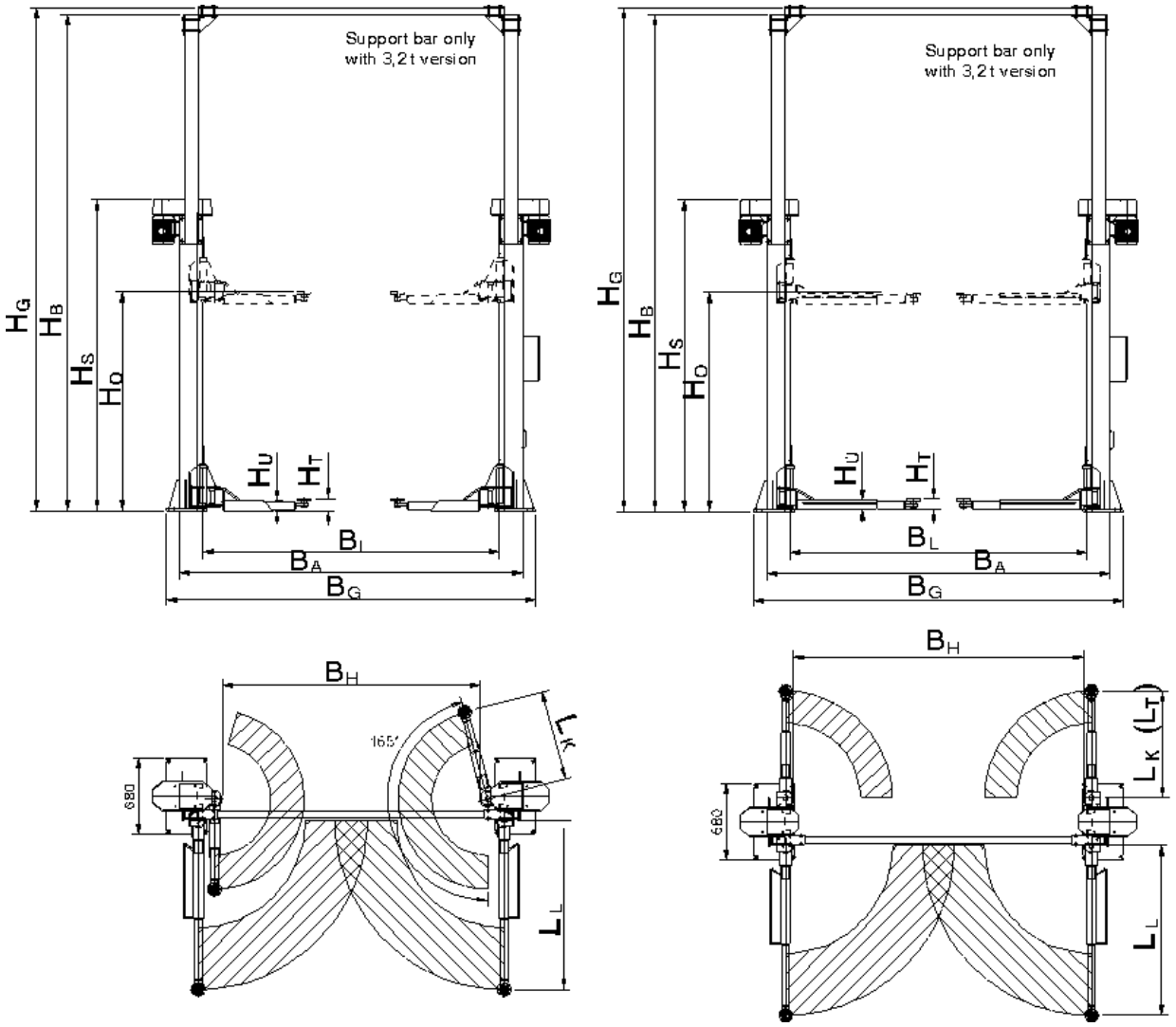
The motor vehicle lifting platform ECON is a lifting device for secure lifting of vehicles to be repaired up to a total weight of 2.5 t / 2.8 t / 3.0 t / 3.2 t / 5.0 t. Pay attention to the identification plate on the lift.
The max. load capacity may not be exceeded.

⚠ **Load weight should be evenly distributed so that one support arm is not disproportionately burdened!**

⚠ **The lifting platform is not to be erected in rooms liable to contain explosive mixtures! Standard lifting platforms have no EX-protection!**

The lifting platform construction may not be changed. Only authorized, trained personnel are permitted to erect the lifting platform.

2.2. Equipment Overview / Technical Data Econ-Lift 2,8 t / 3,0 t / 3,2 t



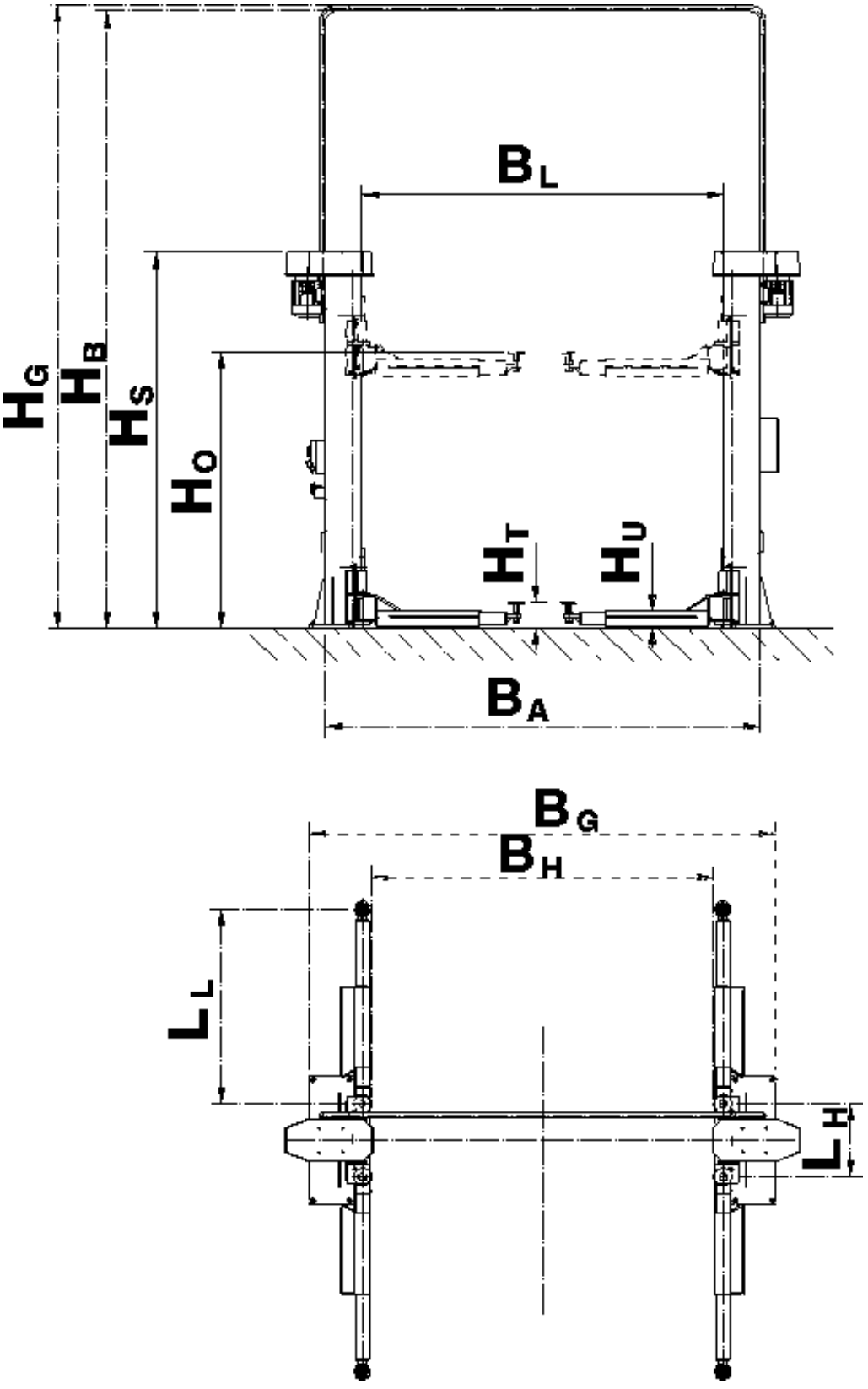
Econ-Lift asymmetric **Econ-Lift symmetric**

	2,8 t sym./asym.	3,0 t sym./asym.	3,2 t sym./asym. with yoke	3,2 t sym./asym. without yoke
Load capacity [t]	2,8	3,0	3,2	3,2
Net weight [kg]	850	850	960	865
Column height H_S in mm	2770	2770	2770	2770
Total height H_G	4480	*	4480	4480
Height from floor to lower edge of frame H_B	4360	*	4420	4420
Lifting height in mm	1900	1900	1900	1900
Max. lifting height H_O in mm	2070	2090	2090	2090
Bottom clearance H_U in mm	90	110	110	110
Adjusting range of support disc H_T in mm	80 - 105	95 - 120	100 - 145	100 - 145
Adjusting range telescopic disc H_T in mm	80 - 175	95 - 190	100 - 195	100 - 195
Extension range of short support arm L_K in mm	667-952 / 500-800	667-952 / 500-800	667-952 / 500-800	667-952 / 500-800
Optional extension range of telescopic arm L_T	667 / 1160	667-1160 / 507-1055	667-1160 / 507-1055	667-1160 / 507-1055
Extension range of long support arm L_L in mm	957 - 1510	957 - 1510	957 - 1510	957 - 1510
Outside column width B_A	3066	3066	3066	3066
Lift-, Lowering time in s	42	42	42	42
Max. column inside clearance width B_L in mm	2650	2650	2650	2650
Max. total width B_G in mm	3300	3300	3300	2650
Column clearance B_H between lowered support arms in mm	2590 / 2300	2300	2590 / 2300	2590 / 2300
Doweling	10 x UPAT shear dowels UKA 3 M 16	12 x UPAT shear dowels UKA 3 M 16	10 x UPAT shear dowels UKA 3 M 16	10 x UPAT shear dowels UKA 3 M 16
Concrete grade	BN 25	BN 25	BN 25	BN 25
Drive power	2 x 2,2 kW	2 x 2,2 kW	2 x 2,2 kW	2 x 2,2 kW
Supply voltage	3 x 400 V (380 V) 50 Hz	3 x 400 V (380 V) 50 Hz	3 x 400 V (380 V) 50 Hz	3 x 400 V (380 V) 50 Hz
Fuse	16 A	16 A	16 A	16 A
Packing dimensions (Lx Wx H) in mm	3000x 800x 800	3000x 800x 800	3000x 800x 800	3000x 800x 800

The 2,8 t and the 3,0 t lifting platform can be converted to a 3,2 t lifting platform using a conversion kit.
* The reinforcement frame is not standard on the 2,8 t and 3,0 t lifting platform. This is only necessary on the 3,2 t version.

Subject to technical changes without notice!

2.3. Equipment Overview/Technical Data Econ-Lift 5001



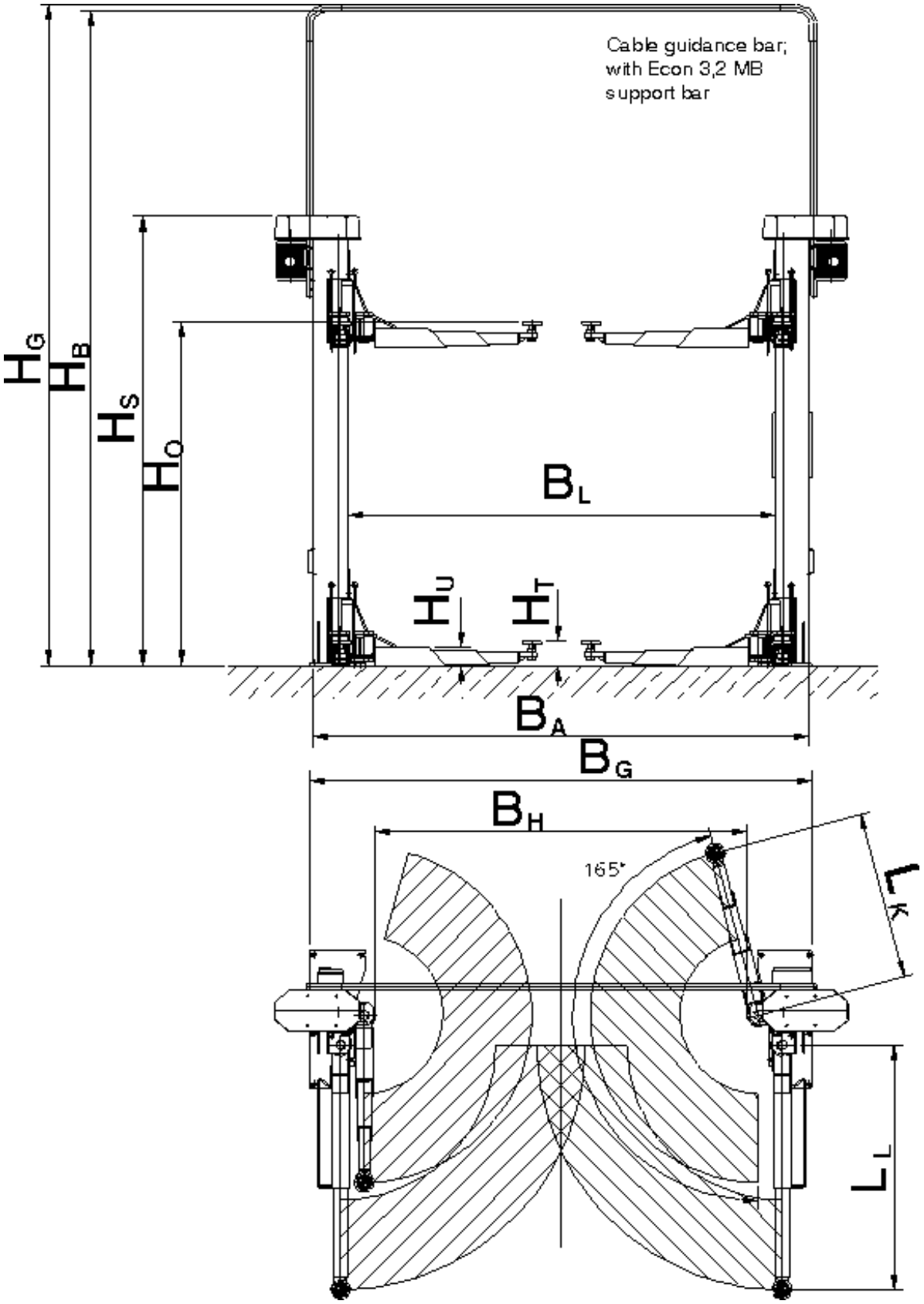
Econ-Lift 5001

	Econ-Lift 5001
Load capacity [t]	5,0
Net weight [kg]	1220
Column height H_S in mm	2800
Total height H_G	4640
Height from floor to lower edge of frame H_B	4600
Lifting height in mm	1900
Max. lifting height H_O in mm	2120
Bottom clearance H_U in mm	140 resp. 160*
Support arm mounting separation L_H in mm	546
Adjusting range of support disc H_T in mm	130-220
Extension range of telescopic support arm L_L in mm	950-1450 resp. 860-1880*
Outside column width B_A	3560
Lift / Lowering time in s	40 / 38
Max. column inside clearance width B_L in mm	3020
Max. total width B_G in mm	3750
Column clearance B_H between lowered support arms in mm	2870
Doweling	12 x UPAT shear dowels UKA 3 M 16
Concrete grade	min. BN 25
Drive power	2 x 4,0 kW
Supply voltage	3 x 400 V+N+PE 50 Hz
Fuse	35 A

*doubly telescopic support arms (optional), required for long wheel base (4025 mm).

Subject to technical changes without notice!

2.4. Equipment Overview/Technical Data Econ-Lift MB



Econ-Lift MB

	Econ-Lift 2,5 MB	Econ-Lift 3,2 MB
Load capacity [t]	2,5	3,2
Net weight [kg]	850	960
Column height H_S [mm]	2774	
Total height H_G [mm]	min. 4080, max. 4480 *	
Height from floor to lower edge of frame H_B [mm]	min. 4040, max. 4360 *	
Lifting height [mm]	1900	
Max. lifting height H_O [mm]	2080	
Bottom clearance H_U [mm]	110	
Adjusting range of support disc for cars H_T [mm]	105 - 180	
Adjusting range of support disc for all terrain vehicle H_T [mm]	190	
Adjusting range support disc MB 100 H_T [mm]	200	
Extension range of the short support arm L_K [mm]	485 - 1034	
Extension range of the long support arms L_L [mm]	957 - 1510	
Lift-, Lowering time [s]	32	42
Outside column width B_A [mm]	3056	
Max. column inside clearance width B_L [mm]	2640	
Max. total width B_G [mm]	3100	
Column clearance B_H between lowered support arms [mm]	2290	
Doweling	12 x UPAT shear dowels UKA 3 M 16	
Concrete grade	BN 25	
Drive power	2 x 2,2 kW	
Supply voltage	3 x 400 V (380 V) 50 Hz	
Fuse	16 A	

* The cable guide bar is optional with the Econ 2,5 MB. The column height is the same as the total height when the cable bar guide is not used.

Subject to technical changes without notice!

2.5. Noise Emission

The noise emission value created when the lifting platform is in operation is less than 70 dB (A) in the work area of the operational personnel.

Test conditions: lift loaded with vehicle (car); measured from the operating pult in head room of the operator; measuring carried out during the complete test procedure; distance between operating pult and lifting platform depends on practical situation.

The car lift ECON meets the EN 1493 requirements regarding noise emission values of less than 85 dB (A).

Chapter 3

Installation

3.1. General Information

The Econ-Lift is to erected by **trained, skilled MAHA** mechanics.
Should the operator have suitably trained mechanics at his disposal they are allowed to install the lifting platform. Familiarity with shear dowels and skilled electrical connection knowledge are important criteria for properly installing the lifting platform.
Read the installation instructions in the Technical Handbook carefully before installation!

3.2. Location

A special location for the lifting platform is not required, but it should **never** be erected in **hazardous locations**.
Motors and electrical equipment should be protected at all times from splashing water. In areas of high humidity it is possible that condensed water can build up in the control box. This can lead to problems with the electrical system.
Extreme humidity can also cause corrosion damage.
The operator is responsible for providing electrical connections; a 3~/N + PE 400/230 V (380/220 V), 50 Hz. The mains connection shall be protected in accordance with VDE 0100 with T 16 A slow fuse. (Econ 2,5/3,2) / 35 A (Econ 5001).
If an energy box is planned a compressed air hose DN8 must be attached to the left hand column.

Standard cable entry into the column is at the top of the operating column or through the hole in the base. In each case the cable must be protected by a **cable sleeve**. The mains supply shall be connected to the terminals in the switch box on the operating column.

Before the lift is erected a sufficient foundation based on the manufacturers instructions is to be constructed. A level base is necessary. Foundations shall be arranged **below frost level** with construction sites which are outside or in enclosed areas where winter temperatures and frost are anticipated.

The operator is responsible for choosing a suitable location for the installation of the lift!

3.3. Foundation

A concrete grade quality of B25-reinforced is required. A **minimum concrete thickness** of **200 mm** is required for the dowels.

- **Proof that slab load capacity has been met shall be supplied by the purchaser.**

Foundation plans for the Econ-Lift symmetric / asymmetric (Technical Data sheet 540), Econ-Lift 5000 (Technical Data sheet 1001) as well as Econ-Lift MB (Technical Data sheet 1008) can be requested from MAHA.

Chapter 4

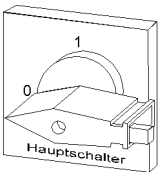
Operations

4.1. Operational Elements

There are 3 operational elements on the Econ-Lift.

The **main switch** serves to switch on the entire system and if switched off takes on the function of an Emergency Off switch.

⚠ **The main switch must always be accessible.**



Main switch

The **Lift button** is marked with an arrow pointed upward. The lift stops moving upward when the button is released. Once the lift reaches its top position it automatically stops.

"Lift" button

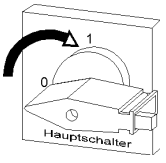
The **Lowering button** is marked with an arrow pointed downward. The lift stops moving downward when the button is released. Once the lift reaches its lowest position it automatically stops.

"Lower" button

4.2. Preparation

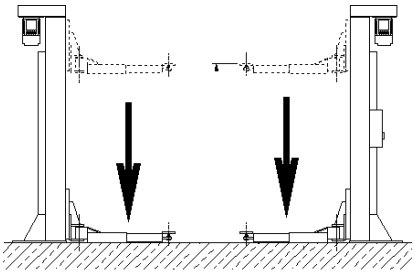
The main switch is located on the control box and should be put in position **'1'**.

⚠ **The main switch serves as the "Emergency OFF" switch and must be put in position '0' in an emergency situation!**

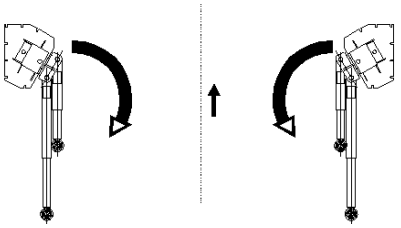


Main switch

Lower the support arms (see Lowering). Once the arms are in the lowest position they are no longer blocked and can then be swung out of the working area.



⚠ **The working area should be kept clear of dirt!**



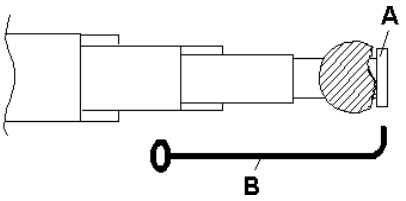
Lower support arms and move to the side

Drive the vehicle between the columns making sure that it is centrally positoned. Make sure that the front doors can be opened! **Pull on the parking brake!**

⚠ **The actual vehicle weight of the vehicle being lifted may not exceed the max. load capacity of 2,5 / 2,8 / 3,0 / 3,2 / 5,0 t (see model plates)!**

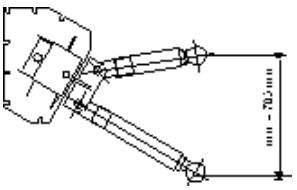
The support disc must all be in the same position. (height)

The ECON-Lift equipped with the option 'doubly telescopic support arms' is supplied with a movable rod (**B**).
The left and the right column is equipped with a mounting support where the movable rod (**B**) can be stored when not in use.
The movable rod (**B**) is inserted in the prepared pipe (**A**) which is located at the end of the support disc plate. This provides the facility to position the support arms at the lifting points recommended by the vehicle manufacturer.



The support arms are placed under the vehicle and lifted at the points recommended by the vehicle manufacturer.

⚠ **The min. distance between a pair of support discs must be at least 700 mm.**



The distance between the support discs should be as wide as possible to ensure stable raising of the vehicle.

4.3. Lifting

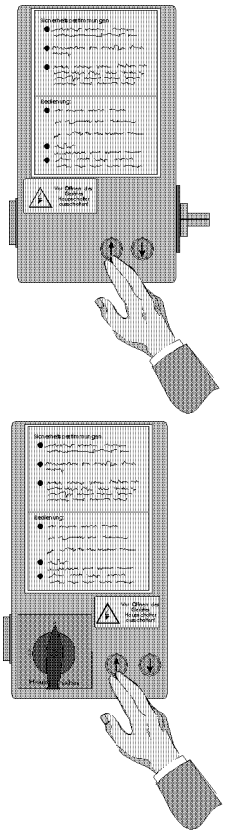
Once the support arms are in the desired position the vehicle can be lifted. To do this, press the button with the upward pointed arrow ⓘ. As soon as the button is released the lift will stop moving.

⚠ **The lift may only be operated by trained personnel!**

⚠ **No persons are allowed in the work area while the lift is being raised!**

Once the support discs have been positioned under the vehicle their proper positioning should be checked carefully.

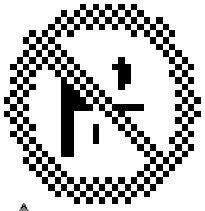
⚠ **During the lifting process pay close attention to the vehicle and the lift!**



Lifting

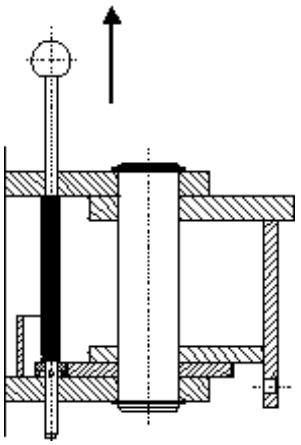
If the support arms are to be moved while in a raised position the locking lever must be released in order to swing the arms.

⚠ **This may not be done while a vehicle is on the lift!**



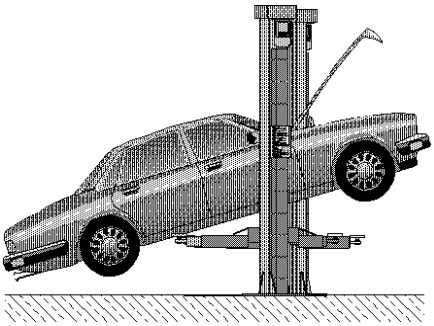
⚠ **Persons are not to be transported on the lift and any sort of climbing on the lift is forbidden.**

The vehicle can now be raised to the desired height.



Releasing the locking lever

4.4. Working on a Raised Vehicle



⚠ **The center of gravity may shift if heavy parts are added to or removed from the vehicle during repair. Close attention should be paid to this during all repair work. It is possible the vehicle may tip.**

It may be necessary to lower the vehicle and reposition it on the lift.

⚠ **No parts, tools etc. are to be placed on the lifting platform or the support arms as they may fall down and injure someone.**

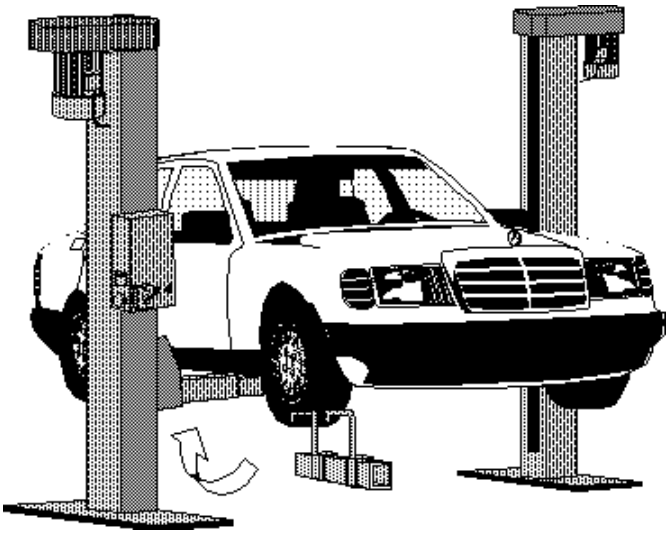
4.4.1. Securing of MB-All-Terrain Vehicles and MB 100 Transporters

If an **aggreate** or an **axle** is removed from a Mercedes-Benz all-terrain vehicle or a MB 100 Transporter then the vehicle must be secured to the support arms with a strap.

4.4.2. Safety Insert Pin Mounting for Mercedes-Benz Vehicles

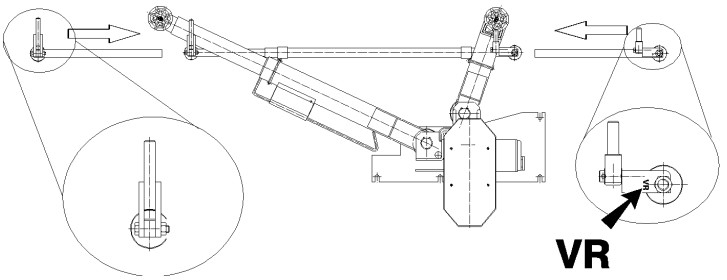
If an aggregate or an axle is removed from a Mercedes-Benz vehicle which is being worked on while on the lift, Mercedes Benz requires that the Safety Insert Pin Mounting system is used as an additional security against vehicle tipping.

The Safety Insert Pin Mounting can only be fixed on the support arms when the lift is in a **raised position**. Therefore the lift with vehicle should be raised halfway. Then the support pipe can be attached to the support arms of the lift as shown on the diagram.



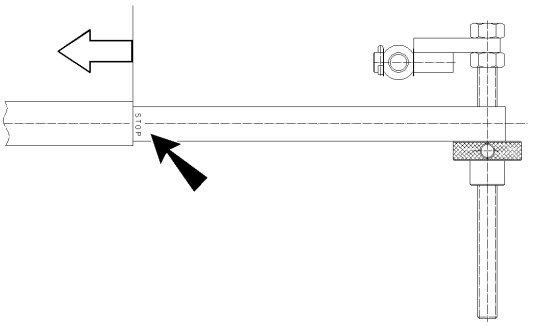
Attaching the support pipe

The extensions are put into the support pipes. The extension marked "RF" is placed at the right-hand front side (as seen from the driving direction.) The extension marked "LF" is placed on the left -hand side. The rear extensions are both the same and therefore not marked. The extensions are pushed in as far as is dictated by the vehicles own strapping holes.



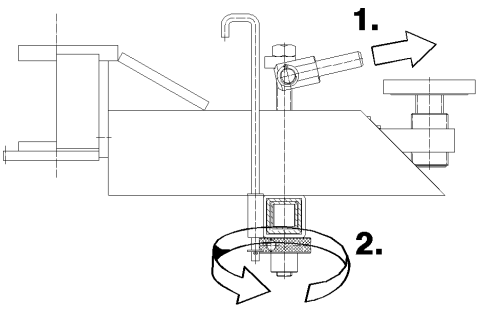
Extension pushed into the right hand support pipe (shown without a vehicle)

As a minimum the extensions must be pushed in at least up to the stop mark. It may be necessary to adjust the support pipe.



Stop mark

The pins are inserted into the vehicles own jack holes and tightened with a knurl nut.



Insert in the attachment holes and tighten with knurl nut.

- The Safety Insert Pin Mounting must be checked after every lift movement.

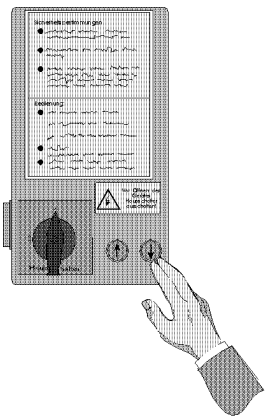
4.5. Lowering

⚠ **Pay attention that persons are not in the working area while the lift is being lowered!**

Remove all tools, racks etc. from the working area.

- The Mercedes-Benz vehicle Safety Insert Pin Mounting should be removed before lowering.

Press the key with the downward arrow ⓿, until the carriage has reached the ground plate. At this point the lift will stop automatically.
The support arms can now be swung around.

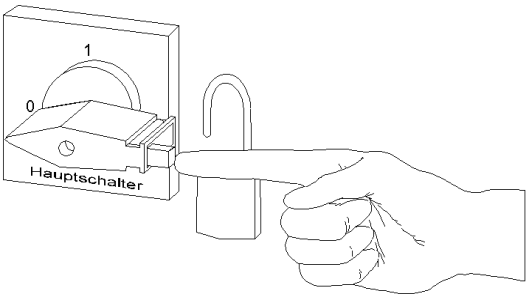


Lowering

4.6. Securing against Tampering

⚠ **The lift must be secured against tampering!**

The main switch should be in the **'0' position**. The extended pin should be pressed and a padlock can be hung on the main switch. In this way the lift is propected from tampering.



Locking the main switch

Chapter 5

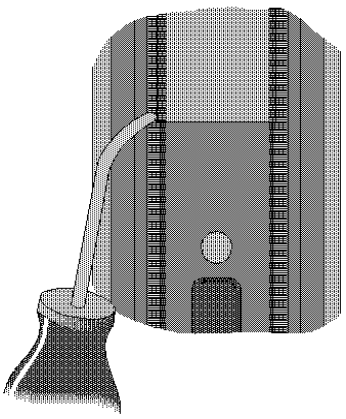
Maintenance, Troubleshooting

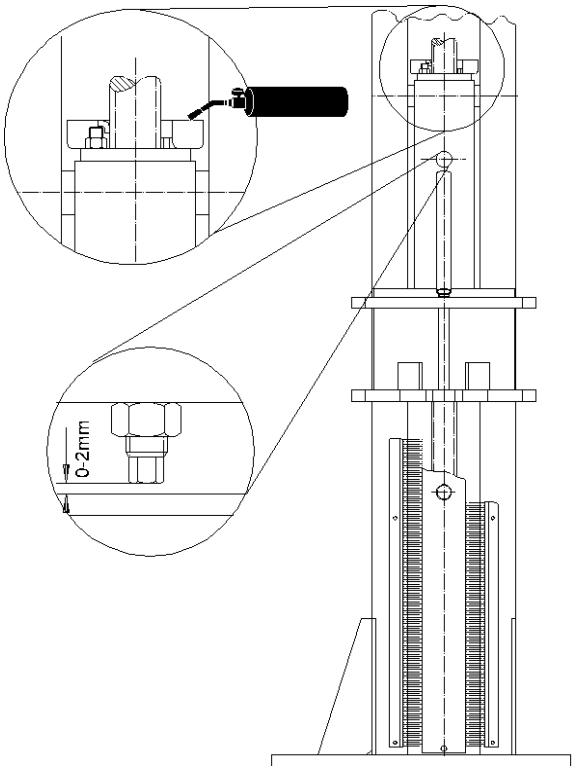
5.1. Maintenance

To ensure the lifts proper functioning and longevity regular servicing schedules should be followed.

a) The support arm extension and the support disc threading should be well greased. It is recommended to use lithium soap grease.

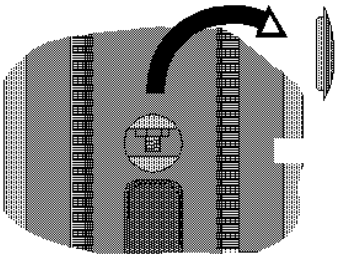
b) The oil level of the oil pan should be checked quarterly. It is located on the carriage slides behind the spindle cover sheet. (see the upper part of the diagram to the right) The pan should have at least 5 mm of oil in it. If the oil is not up to this level refill it. The neck of the oil can be directly applied through the brush cover of the column.





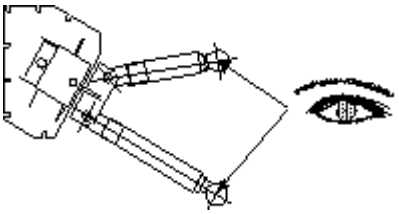
It is recommended to use **SAE 140** transmission oil or the manufacturer's transmission oil- order number 360004.

c) Wear and tear on the support nut must be checked annually. Remove the plastic cap from the spindle cover sheet and move the carriage slides so that the control drill holes lines up with the window.
If there is no visible gap this is an indicatioin that the support nut is worn down beyond the permissable limit. The support nut must be replaced. The gap is approximately 2 mm. ex factory.



⚠ **The lift should be put out of service until the support nut has been replaced. The main switch should be locked.**

d) Check the rubber support discs for wear and replace if necessary.



5.2. Repair Notes

⚠ **Only trained, skilled electricians are allowed to check impulse sensor and proximity switches.**

Immediately contact your MAHA dealer or the MAHA service center when there are problems with impulse sensors or proximity switches.

⚠ **Unskilled work on electrical parts of the lifting platform can be life threatening.**

⚠ **The main switch should be switched off and secured before any repair work or malfunction troubleshooting is done on the lift!**

Malfunctions due to unskilled repair or adjustment work are not covered by the warranty.

5.3. Troubleshooting List

The following list makes malfunction search easier.

Malfunction	Possible cause	Remedy
The lift stops at an indefinite position during raising. LED is lit up on the mother board. The lift can be lowered in this position.	a) Load capacity has been exceeded when lifting. b) The distance from the impulse sensor to the belt pulley is too large.	a) Check permissable gross weight. Check spindle lubrication and V-belt tension. b) Check Impulse sensor distance. (Have it repaired.). After the lift has been lowered at least **2 cm** the lifting function is possible again.
The lift stops at an indefinite position during lowering. LED is lit up on the mother board (see illustr. on next page. The lift can be raised in this position.	a) The spindle hits an obstruction during operation and lifts out. b) The distance from the impulse sensor to the belt pulley is too large.	a) Remove obstruction. b) Check upper impulse sensor. (have it repaired). After the lift has been raised at least **5 cm** the lowering function is possible again.
The platform is in the upper range. After the RESET key has been pressed and the lowering knob pressed both motors start up briefly but then stop again. Once the "Lift" knob has been pressed the motors start up again only briefly. The lifting platform does not react when further keys are pressed. The red LED lights up on the mother board after about 5 seconds (see illustr. on next page).	No impulses from the upper impulse sensor.	Check upper impulse sensor. (have it repaired)

Malfunction	Possible cause	Remedy
The platform stops at a height of ca. 260 mm. (measured from the floor to the lower edge of the carriage) The lifting platform can only be lowered from this position. Lifting is not possible. The LED on the board is blinking.	a) The distance between the catch nut and the support nut (on the lifting spindle) is too small b) The proximity switch is defective or falsely set.	a) Check the support nut for wear and tear. b) Check the distance of the proximity switch to the trigger cam on the frame and on the catch nut. (2.5 mm).
The platform stops at a height of ca. 400 mm. (measured from the floor to the lower edge of the carriage) The lifting platform can only be lowered from this position. Lifting is not possible. The LED on the board is blinking. (see diagram below)	No impulse is received from the trigger cam on the frame or the catch nut.	Check the proximity switch. (Contact MAHA-Service Dept.). Check the distance of the proximity switch to the trigger cam on the frame and on the catch nut.
The lift can only be put into ground position. The lift cannot be raised.	The support nut is fractured and the load is being carried by the catch nut.	Have the support nut repaired. ⚠ **Put the lift out of operation and lock the main switch.**
Shortly after the raising procedure starts the lift stops and the power supply fuse blows out. Neither raising nor lowering is possible.	All motors run simultaneously. The resulting voltage peak triggers the fuse. The DIP-Switch 4 (see diagram) is positioned to "ON".	Switch DIP-Switch 4 (see diagram below) on the control mother board to position "OFF". The motors will now start up staggered.

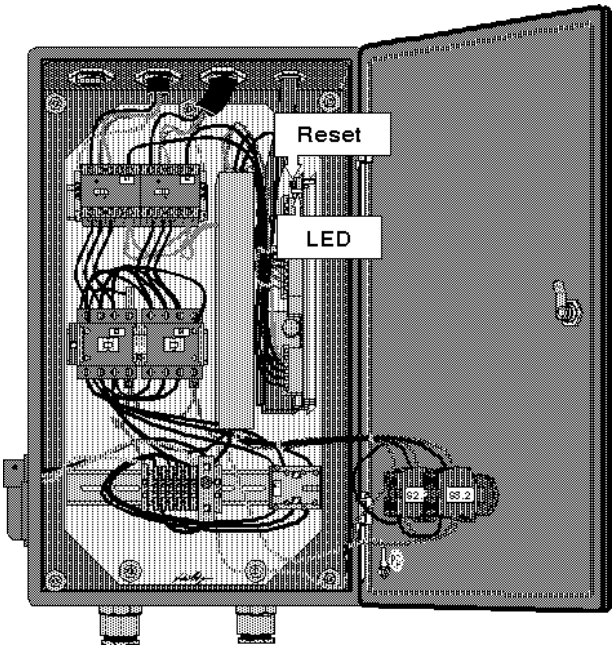


Fig.: Opened control cabinet

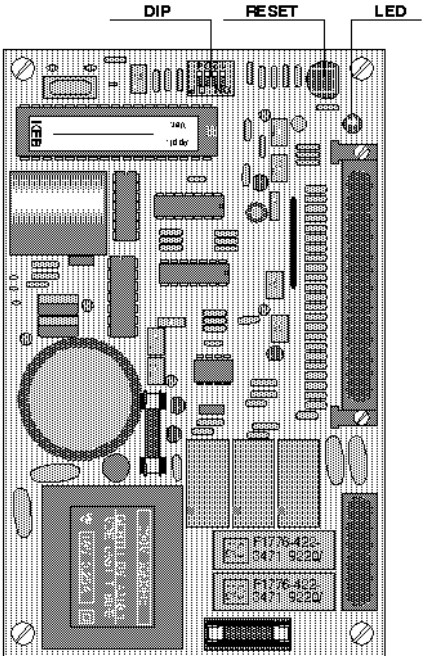


Fig.: Control mother board

5.4. Lowering after Power Failure

Remove the motor cover plates. Each lifting spindle can be individually turned at the big belt pulleys. The lifting carriage can now be lowered manually. Make sure that the height difference between the two columns does not exceed 20 mm.
Once the power supply is restored, a zero reset must be conducted. Press the "**0**" key until the lifting carriage stops in the lowest position.

Attention: The lifting carriage may be lowered only during power failure!

Chapter 6

Warranty, Service

6.1. Warranty

Based on the General Conditions of Sale MAHA will grant a warranty and agrees to repair or replace faulty components free of charge during the warranty period, provided that the product is returned to MAHA - directly or through an approved MAHA dealer - or is repaired and/or installed by an authorized engineer. This warranty shall only apply if the product was installed by an authorized engineer.

Damage due to incorrect alterations or gross negligence shall not be covered by the warranty.

The MAHA product warranty shall only apply if a completed service card is submitted together with a signed original proof of the purchase, stating the date of purchase and the serial number of the product.
A regular service schedule must also be manintained.

6.2. Warranty Exclusion Clause

Warranty coverage provisions stipulate that all MAHA products are to be used properly, that is, in strict accordance with manufacturer's installation and operating instructions, including subsequent operational and service information.

Excluded from warranty coverage is all normal wear and tear on vehicle parts of test vehicles due to operational requirements. In addition, warranty coverage does not include damage to vehicles or MAHA equipment or other products which occurs based on subsequent changes, modifications or other deviations from the original vehicle model undertaken on individual vehicles.

6.3. Service

MAHA maintains service centres in numerous countries. These centres will be available at any time to answer product queries. For product repairs contact your MAHA dealer or MAHA directly. All repairs carried out after termination of the warranty period shall be invoiced.

Address of Central Service Department:

MAHA Maschinenbau Haldenwang GmbH & Co. KG.
D-87490 Haldenwang; Germany
Telephone : 08374 / 585-0
Telefax : 08374 / 585-491