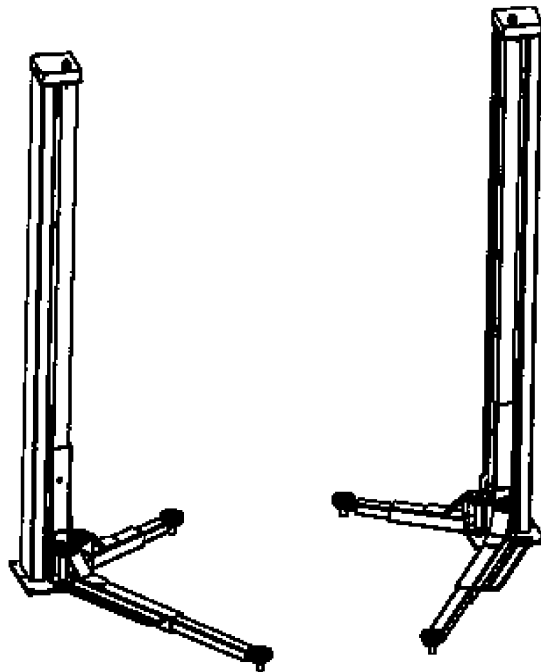


**2.32 SL**

**2.32 SL-T**

**2.32 SL-MB**

**Date: 30.03.1999**



**Operating Instruction and Documentation**

**Serial-number:.....**



**NUßbaum**  
HEBETECHNIK

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## 1. Introduction

The document "**Operating Instructions and Documentation**" contains important information about installation, operation and maintenance of the 2.32 SL/T/MB.

To furnish proof of **installation of the automotive lift** the form "Record of Installation" must be signed and returned to the manufacturer.

To furnish proof of the singular, felt this documentation contains forms. The forms should be used to document the checks. They should not be removed from this documentation.

Every **Changes to the construction** and **displacement** of the automotive lift must be registered in the "**Master document**" of the lift.

### **Installation and check of the automotive lift**

Only specialist staff is allowed to do work concerning safety and to do the safety checks of the lift. They are called experts and competent person in this document.

**Experts** are persons (for example self-employed engineers, experts) which have received instruction and have experience to check and to test automotive lifts. They know the relevant labour and accidents prevention regulations.

**Competent person** are persons who have acquired adequate knowledge and experience with automotive lifts. They took part in training from the lift-manufacturer (servicing technicians of the manufacturer or dealer, are competent)

### **Information of Warning**

To show danger and to show important information the three symbols below are used. Pay attention to those passages, which are marked with these symbols



***Danger!** This sign indicates danger to life. Inexpert handling of the described operation may be dangerous to life.*



***Caution!** This sign cautions against possible damage to the automotive lift or other material defects in case of inexpert handling .*



***Attention!** This sign indicates for an important function or other important notes.*

## 2. Master document of the automotive lift

**2.1 Lift –manufacturer**     Otto Nussbaum GmbH & Co.KG  
Korker Straße 24  
D-77694 Kehl-Bodersweier

### 2.2 Application

The automotive lift 2.32 SL/T/MB is a lifting stage for lifting and repairing vehicles with a laden weight of 3200 kg. It is not allowed to put the load on one or two carrying arms. It is not allowed to install the standard lift in the a explosive location or wash halls. After changing the construction and after repair, the lift has to be checked by an expert again. The operating instruction and the instruction for maintenance have to be observed.

**2.32 SL Versions:**     2.32 SL  
                                  2.32 SL-T (T4 –Van-carrying arms)  
                                  2.32 SL-MB (MB-carrying arms, energy set)



*Changes at the construction, repairs and transposition of lift must be registered in this master document.*

### 2.3 Changes at the construction

**Changes at the construction, expert checking, resumption of work** (date, kind of change, signature of the expert)

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

name, address of the expert

.....  
place, date

.....  
signature of the expert

### 2.4 Displacement of the automotive-lift

**Displacement of the automotive-lift, expert checking, resumption of work** (date, kind of change, signature of the competent)

.....  
.....  
name, address of the competent

.....  
place, date

.....  
signature of the competent

## 2.5 CE-Certificate/attestation of conformity

The automotive lift 2.32 SL with the serial number.....  
Is in accordance with the tested lift (CE-certificate-number 04-205-2494/98)

.....  
place, date

.....  
company stamp, signature

# ZERTIFIKAT CERTIFICATE

**RWTÜV**

Registrier-Nr./Registered No.:  
**04 205-2494/98**

EG-Baumusterprüfbescheinigung gemäß Anhang VI der EG-Richtlinie 98/37/EG  
EC-type approval according to annex VI of the EC-Directive 98/37/EC

Zeichen des Auftraggebers Reference of applicant	Auftragsdatum Date of application	Aktenzeichen File reference	Prüfbericht Nr. Test report No.	Ausstellungsdatum Date of issue	Gültigkeit bis Expiry date
Hr. Müller	01.09.1998	3.1.1-991/98	2492/98 u. 2493/98	11.03.99	11.03.04

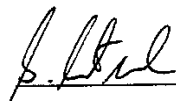
Hiermit wird bestätigt, daß das nachfolgend genannte Produkt den grundlegenden Anforderungen der Richtlinie des Rates vom 22.06.98 zur Angleichung der Rechts- und Verwaltungsvorschriften der Mitgliedstaaten über Maschinen entspricht.  
We hereby certify that the product mentioned below meets the basic requirements of the council directive dated 22.06.98 on the approximation of the laws, regulations and administrative provisions of the member states relating to machinery.

**CE 0044**

Antragsteller  
Applicant: Otto Nußbaum GmbH & Co. KG  
Korker Straße 24, D-77694 Kehl

Fertigungsstätte:  
Manufacturing plant: s. o.

Produktbeschreibung:  
Product description: Kfz-Hebebühne Typ: 2.32 SL



Zertifizierungsstelle des RWTÜV e.V.  
für Gerätesicherheit, Aufzüge  
und Medizintechnik, notifiziert bei der  
EG-Kommission unter Nr. 0044

Rheinisch-Westfälischer  
Technischer Überwachungs-  
Verein e.V., Sitz: Essen  
Langemarckstraße 20  
D-45141 Essen  
Postfach 10 32 61  
D-45032 Essen  
Telephone +49/201 8 25-0  
Telefax +49/201 8 25-33 56

### **3. Technical Information**

#### **3.1 Technical ratings**

Lifting capacity	3200 kg
2.32 SL / 2.32 SL-T / 2.32 SL-MB	
Load of one carrying arm	max. 1067 kg (It is not allowed to put the load on one or two carrying arms.)
Lifting time	appr. 40 sec.
Lifting height	max. 1870 mm
Line voltage	3 x 400 three phase current
Power rating	2 x 1,5 kW
Motor speed	1420 rotation/speed
Sound level	≤ 75 dBA
Connection by customer	Fuse T16 A / 5x 1,5 qmm in accordance with recommendation

#### **3.2 Safety devices**

1. safety switching in case the carrying nut breaks
2. limit stop switch (actuated by electronic control)
3. foot protector
4. synchronism controlled by electronic control system

## 4. Safety regulations

Using automotive lifts for working the Regulations of Accident Prevention (VBG1: General Regulations, VBG14: Automotive lifts) must be observed.

### **Especially the following regulations are very important**

- During working with the lift the operating instructions must be followed.
- The laden weight of the lifted vehicle mustn't be more than 3200 kg for automotive lift 2.32 SL, the lifting capacity of one carrying arm mustn't be more than 1067 kg. It is not allowed to load only one of the carrying arms.
- Only trained personnel over the age of 18 years old are to operate this lift.
- During lifting or lowering the vehicle it must be observed from the operator.
- Position the pads as described of the vehicle manufacturer under the vehicle.
- Observe the complete lifting and lowering.
- Switch on and switch off the main switch, so that the lifting and lowering movement is steady and not abrupt.
- It's not allowed to stay under the lifted or lowered vehicle (except for the operator).
- It's not allowed to transport passengers on the lift or in the vehicle.
- It's not allowed to climb onto the lift during lifting or lowering or onto a lifted vehicle.
- The Automotive Lift must be checked from an expert after changes in construction or after repairing carrying pads.
- It's not allowed to start with operations at the lift before the main switch is switched off.
- It's not allowed to install the standard-automotive lift in hazardous location.



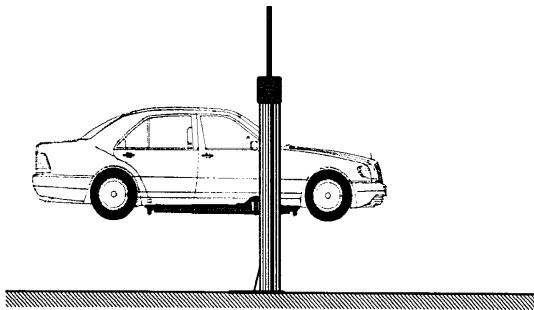
## 5. Operating instructions



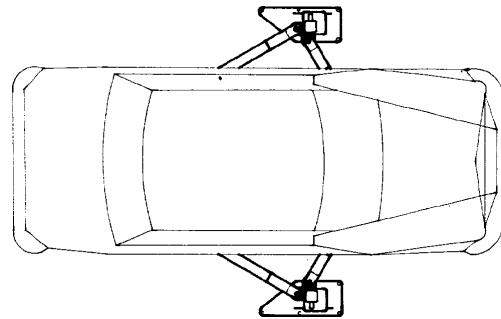
*The Safety Regulations must be observed during working with the automotive lift. Read the safety regulations in chapter 4 carefully before working with the lift!*

### 5.1 Positioning the vehicle

- Drive the vehicle in the lift. Observe the following pictures A and B.



pic. A) the column must be between the steering wheel and the car-door.



pic. B) drive the vehicle in the centre of the lift.

- Position the adjustable pads under the vehicle which are described by the vehicle manufacturer. (see pic.1)



pic1:  
Position the pads under the described points of the vehicle.

- The fixing device of the arms must lock.
- Check the pick up points if the lift is repeatedly lowering in the lowest position.
- Control the dangerous places of the lift and be sure that there are no objects or people in the immediate area of the lift or on the lift.

### 5.2 Synchronism of the automotive lift

- The lift is equipped with an electronic synchronism.
- At the two columns are potentiometer which recognition the actual-Position of the spindle. They recognition the height of the lift.

- A lifting carriage is faster like the other lifting carriage. The electronic control system sees the process and stopped the fast carriage so long until both carriage have the same height again. The permitted regulation range is 18 mm

### 5.3 Lifting the vehicle

- Lift the vehicle free. Check the position of the pads under the vehicle.
- Turn the changing switch in Position „▲“ until the wheels are free. (see pic 2)
- If the wheels are free stop the lifting and check the sit of the pads again.



*Check the pads under the vehicle again, otherwise the vehicle can fall down.*

- Lift the vehicle on the working height.



*The Lift can during the lifting depending on load repeatedly adjusting.*



*Check the fixing device of the arms. The device must lock.*



*pic. 2) the changing switch*

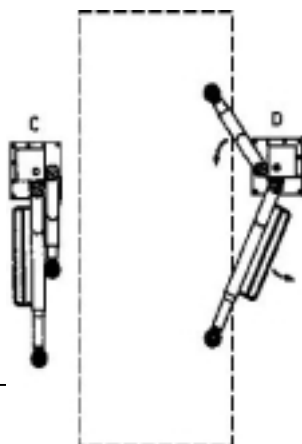
### 5.4 Lowering the vehicle

- Control the dangerous places of the lift and be sure that there are no objects or people in the immediate area of the lift or on the lift.
- Turn the changing switch in Position „▼“ (see pic. 2)
- Lower the lift at the height for working or until the carrying arms reach the lowest position.



*The Lift can during the lowering depending on load repeatedly adjusting.*

- If the lift is in the lowest position turn the carrying arms to the outside (see D) , stop position (C).



C  
the Starting point

D  
if the lift is in the lowest position turn the carrying arms to the stop position (starting point)

## 5.5 LED - (display visibly) at the operating unit

A position measure system observe the lifting and lowering process. Additional the functions are made by a visibly display. Find the explanations following:



### Operating unit at the column

If following LED s are lighten, means this:

- OA1**- LED red - top limit switch is active (master side)
- K1** - LED green - Motor contactor is active (master side)
- UA1**- LED red – below limit switch is active (master side)
- OA2** – LED red – top limit switch is active (slave side)
- K2** - LED green – Motor contactor is active (slave side)
- UA2** – LED red – below limit switch is active (slave side)
- Heben** – LED green – the lift is raising
- Senken** – LED green – the lift is lowering

### Indications at standard function

- raising up:  
the following LED lighten: lifting, K1,K2 - lowering glow
- lowering:  
the following LED lighten: lowering, K1,K2 – lifting glow
- top position is reached (top limit switch is active):  
the following LED lighten: OA1, OA2, lifting – lowering glow
- lower position is reached (below limit switch is active):  
the following LED lighten: UA1, UA2, lowering – lifting glow



## LED-display at faulty function of the 2.32 SL

	Lowerly end position of the lifting carriage			arbitrary position between the end positions			upper end position of the lifting carriage		
	Master-side not plugged in (P1 NOK)	slave-side not plugged in (P2 NOK)	master and slave - side not plugged in (P1 u. P2 NOK)	master-side not plugged in. (P1 NOK)	slave-side not plugged in (P2 NOK)	master and slave-side not plugged in (P1 u. P2 NOK)	master-side not plugged in (P1 NOK)	slave-side not plugged in (P2 NOK)	master and slave-side not plugged in (P1 u. P2 NOK)
possible fault									
turn the reversing switch on "lifting"	!hold! UA1 lighten UA2 lighten "lifting" glow "lowering" glow	!hold! UA1 lighten UA2 lighten "lifting" glow "lowering" glow	!P1 K1 lighten K2 lighten UA1 lighten UA2 lighten "lifting" lighten "lowering" glow	!hold! "lifting" glow. "lowering" glow. UA1 lighten.	!hold! "lifting" glow. "lowering" glow. UA2 lighten.	!P1 K1 lighten K2 lighten UA1 lighten UA2 lighten "lifting" lighten "lowering" glow	!hold! UA1 lighten OA2 lighten "lifting" glow "lowering" glow	!hold! OA1 lighten permanent UA2 lighten permanent "lifting" glow "lowering" glow	!P1 K1 lighten K2 lighten UA1 lighten UA2 lighten "lifting" lighten "lowering" glow
turn the reversing switch on "lowering"	!hold! UA1 lighten UA2 lighten "lifting" glow "lowering" glow	!hold! UA1 lighten UA2 lighten "lifting" glow "lowering" glow	!hold! UA1 lighten UA2 lighten "lifting" glow "lowering" glow	!hold! "lifting" glow. "lowering" glow. UA1 lighten.	!hold! Lifting glow. "lowering" glow. UA2 lighten.	!hold! UA1 lighten UA2 lighten "lifting" glow "lowering" glow	!hold! UA1 lighten OA2 lighten "lifting" glow "lowering" glow	!hold! OA1 lighten permanent UA2 lighten permanent "lifting" glow "lowering" glow	UA1 lighten UA2 lighten "lifting" glow "lowering" glow

**comment:** if the both LED "lifting" and "lowering" glows, and the lift does not move, then is the lift out of the checking area

Legende:

z.B. "UA1 lighten"  
z.B. "lifting glow"

P1 NOK

P2 NOK

P1 o. P2 NOK

P1 u. P2 NOK

!P1

!hold!

diode (LED) "below limit switch" lighten.

diode (LED) "lifting" glow.

Potentiometer 1 at the master-side is not plugged in or the line is interrupt

Potentiometer 2 at the slave-side is not plugged in or the line is interrupt

Potentiometer 1 at the master-side or the Potentiometer 2 at the slave-side is not plugged in or the line is interrupt

Potentiometer 1 at the master-side and Potentiometer 2 at the slave-side is not plugged in or the line is interrupt

attention: the lift only raises, lowering is not possible: the danger exists, the lift can raise about the top limit .

the lift does not move in the desired direction.

## 6. Maintenance

A regular service has to be performed every three months by the lifts operator according to the following schedule. If the lift is in continuous operation or dirty environment, the maintenance rate has to be increased.

During daily operation the lift has to be watched carefully for its correct function. In case of any malfunction the technical service of the retailer has to be informed.

### 6.1 Maintenance schedule of the automotive lift

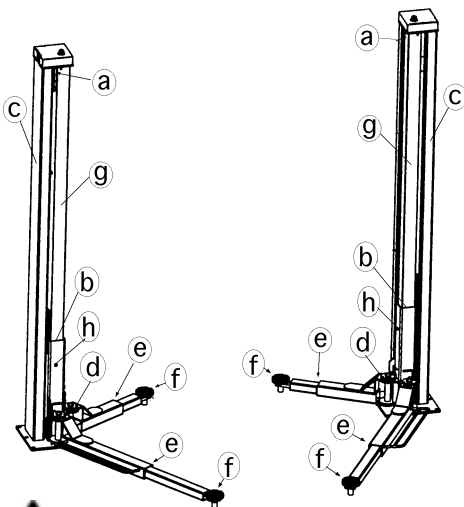
**d,e,f** clean and grease the pull-outs of the carrying arms, bolts of the pads and slide ways of the carriage sliding blocks.

**b** Oiling the spindle and the lubricating felt between the carrying nut and the centring of the spindle one time a month with a thin oil as SAE15W40. Attaching twice lifting and lowering the lift in the end position. After lifting and lowering the lift with load.

The lubricating interval has to be carried out at every maintenance. If the lift is in continuous operation, the maintenance rate has to be increased.

The nut between the column (c) and the covering (g) will be greased with an oil can.

The regular complete lubrication in the mentioned distances secures the absolutely easy operation for the lift.



Pic.3: lubrication plan



*Do not use an biodegradable adhesive oil for greasing the spindle.*



*A normal adhesive oil impaired the qualities of the lift. We recommend a thin Oil: for an example SAE15W40.*

*A over-lubrication or greasing with grease of the spindle through a intensive lubrication supplies reduce the degree of effectiveness of the lift.*

**f** check the rubber pads, otherwise exchange it.

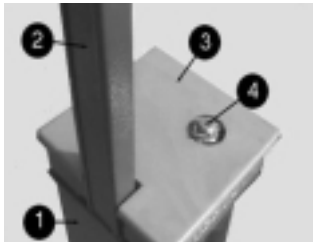
**h** grease sequence nut one time a month with multipurpose fat. Use boring at lifting carriage. (remove the cover)

**a** grease the spindle bearing annually with multipurpose.

Do not use aggressive means for cleaning the workshop floor and the automotive lift. A permanent contact with every kind of liquid is forbidden. Do not use any high pressure device for cleaning the lift.

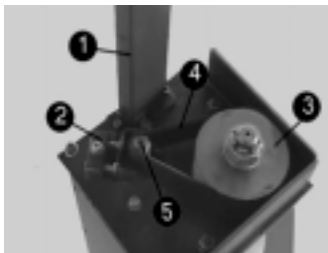
## 6.2 Adjust the Polylex-belt

If the belt was exchanged, the belt must be adjusted. Remove the cover of the belt. (pic.4).

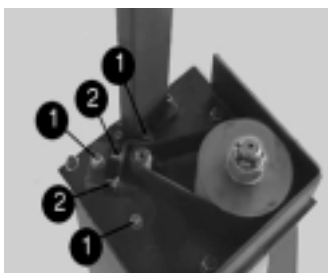


Pic.4: cover of the belt (version with raising pipe)  
1: column  
2: raising pipe  
3: cover of the belt  
4: spindle

The new belt tension must be adjusted at the stretch device. (pic.5). Loose the three screws at the motor easily. (pic. 6, No.1). The belt can be loosened or tightened at the screws. (pic.6, No.2).



Pic.5: position of the belt  
1: raising pipe (optional)  
2: stretch device  
3: V-belt pulley  
4: Polyflex-belt  
5: shaft of the motor



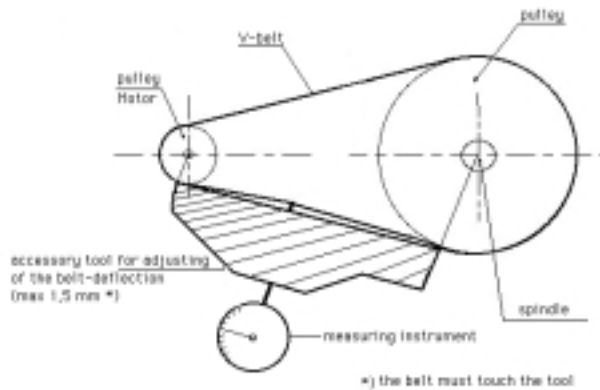
pic.6: adjust the belt tension  
1: the three screws of the motor  
2: adjusting screws

The belt tension gets adjusted with the help of an accessory. (pic. 7; This accessory can be ordered from Nussbaum Hebetchnik).

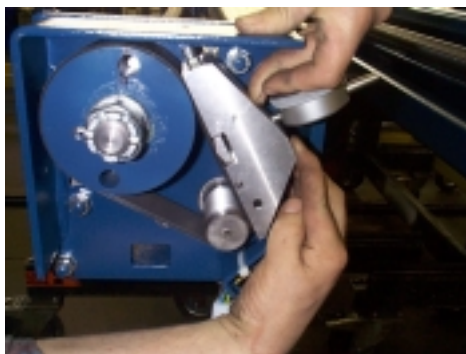


Pic.7: accessory

Put the device on a solid flat surface. Push it down until the pin is on the flat surface too. Put the clock on zero – turn the ring of the clock so long until the indicators are on zero. Put the device on the V- belt (pic.8, 9). The indicator of the clock may only turn mini. 1 (1mm) until 1,5 (1,5mm) turn.



Pic.8: measuring instrument



Pic.9: Put the measuring device on the V-belt

- Bring the screws back in initial position.

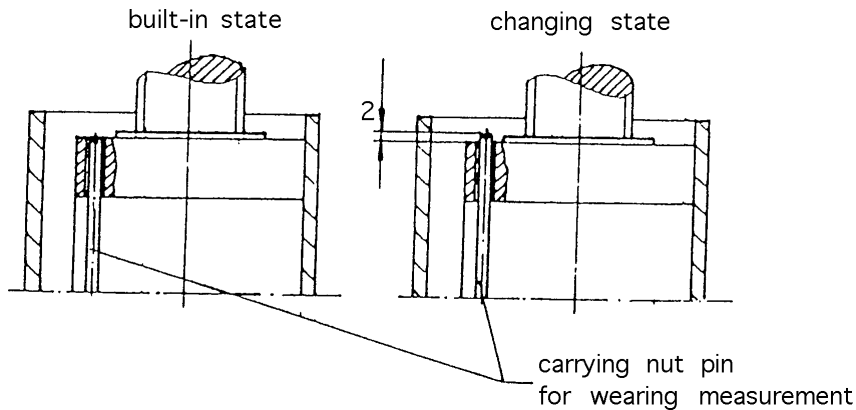
### 6.3 Check the carrying nut system

- carrying nut (optical wearing device). To check the carrying nut, take off the covering of the spindle (pic.3,pos.b). There is a pin built in the carrying plate (pic.10). This pin must be even with the top edge of the carrying plate (upper side of the lifting carriage; built-in state pic.11). If the pin looks 2 mm out of the top edge at the annually check (pic.11 changing state). The carrying nut and the sequence nut must be replaced.



Pic.10: the carrying-nut pin (stift)





Pic.11: carrying nut

## 6.4 Check of the stability of the automotive lift

- check the dowels with a torque key as described by the dowel manufacturer.  
(example: Liebig Company - 80 Nm )

## 7. Troubleshooting

If the lift does not work properly, the reason for this might be quite simple. Please check the lift for the potential reasons mentioned on the following pages. If the cause of trouble cannot be found, please call the technical service of the dealer.

A simple fault delimitation can be carried out at the LED-display of the operating unit.  
(see the step 5.5 LED-Display visibly at the operating unit).



*Repairs at the security devices of the lift as well as repairs and examinations of the electrical fittings are forbidden.*

### **Problem: The lift does not lifting and not lowering!**

#### **possible causes:**

the main switch is not switched on  
the main switch is faulty  
the fuse is faulty  
the feed line is cut  
the motor is overheated  
the plug is not plugged in  
the lift is not in the regulation range

#### **remedying:**

switch it on  
replace it  
replace it  
replace it  
let it cool down  
plug in  
equalize manually

### **Problem: The lift does not lifting!**

#### **possible causes:**

the lift is running at 2 phases  
V-belt is torn/slack  
the lifting nut is broken  
top limit is active

#### **remedying:**

make sure 3 phases by customer  
check it / replace it  
call the service partner  
lower the lift

### **Problem: The lift does not lowering!**

#### **possible causes:**

the bottom limit switch is active  
lift is driven on a obstacle

#### **remedying:**

raise the lift  
equalize manually

### 7.1 Emergency lowering in case of power failure

In case of power failure the lift can not lowered with the motors. In this case there is the possibility to lower the lift manually. Draw the main plug or switch off and lock the main switch and remove the cover of the v-belt pulleys. For this the lift must be turned down to lowest position at the nut on the top end of the spindle. If the lift is in the lowest position removes the vehicle.



*The emergency lowering must only carried out by persons which are instructed to using the lift. Please refer to the regulation "Lowering the vehicle".*

### Procedure – emergency lowering

- loose the main plug; switch off the main switch and lock it.
- remove the cover of the v-belt pulleys.
- lower the lift: turn the nuts (every side) alternately 5 cm until the lift has reached lowest position.
- after the emergency lowering: Do not work with the lift until the faulty parts are exchanged.

### 7.2 Driving onto an obstacle

If the lifting arm or the lifting carriage is driven on a obstacle, the motor from this side locked. The lift switched off if the lifting carriage are not more in the regulation range (approx. 25 – 30 mm) (since 9/99 64 mm).

An additional protection is a temperature control in the motor. Which interrupt the electrical circuit when it is overloaded. You can not work with the lift. Cool down approx. 5 – 10 min. dependently on the outside temperature.

After the locking of the motor check the V-belt if necessary replace it. Call the service-partner.

### 7.3 Function of safety device

The lift is equipped with a safety switching, which controls the wear of the main nut. If the lifting nut is broken, a safety nut which is conducted loose in the spindle, carries the load. After a break of the nut, the lift can only once being lowered in the lowest position. If the lift has reached the lowest position it is not possible to raise the lift. The lifting carriage of the broken side gets mechanically locked. During the lifting the other side is driving out of the regulation range and switched off the lift. You can not work with the lift anymore. Call the service-partner.



*If the safety device is active call the service partner!*



*Switch off the main switch at all repairs and disturbances!*



*The electrical system may only be opened by trained persons!*

## 7.4 Manually equalisation of the carriage

The lift is equipped with a position measuring system which guarantee the synchronisation of the lift. The electrical control recognizes if one lifting carriage is approx. 18 mm earlier at the definite height. The electrical control stopped the motor of this carriage until both carriage have the same height again. After it both motors are working together again.

If the carriages of the lift are driving out of the regulation range/switching off window of approx. 36 mm (since 9/99 64 mm), the electrical control recognizes this and switched off the lift.

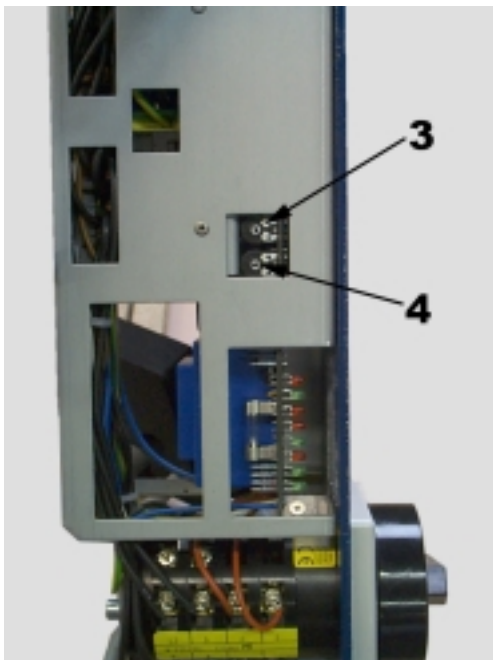
To reach the normal function of the lift you must equal manually the carriages. Remove the cover of the V-Belt pulley at the top of the lift. Equal the lift: turn one nut until the carriage have the same height.

## 7.5 Adjusting of the top limit switch and the bottom limit switch

The operating unit of the lift is equipped with potentiometer. One is for the top limit switch and one is for the bottom limit switch. The Potentiometer may from safety reasons being only adjusted by trained person.

**Out of safety reasons:** The Potentiometer only may be adjusted by competent trained persons.

- Pull the main plug before the maintenance or repair.



pic. G

3 Potentiometer for the upper end-point

4 Potentiometer for the lower end-point



***It is possible if the adjustments are wrong that the lift has malfunctions. It is danger for your life for the lift and the vehicle.***

- Loose the screws of the operating unit. Pull it careful out of the column. (pic. G)
- If the Potentiometer 3 (top-limit) is turned anticlockwise, the upper end-point has been moved up. The lift stops later.

- If the Potentiometer 3 (top-limit) is turned clockwise, the upper end-point has been moved down. The lift stops earlier.
- If the Potentiometer 4 (bottom-limit) is turned anticlockwise, the lower end-point has been moved up. The lift stops earlier.
- If the Potentiometer 4 (bottom-limit) is turned clockwise, the lower end-point has been moved down. The lift stops later.



*After the adjusting do not lifting or lowering to the end position. The lift can lock or jamming!*

*Alter the potentiometer easily. After it operate the lift. Repeat the process until the normal end position is reached.*

- Pay attention at the cover and the rubber behind the operating unit. Do not damaging this parts. If the parts are faulty replace it. Otherwise the protection (IP54) against liquids is no more ensured.

## **8. Installation and Initiation**

### **8.1 Installation of the automotive lift**

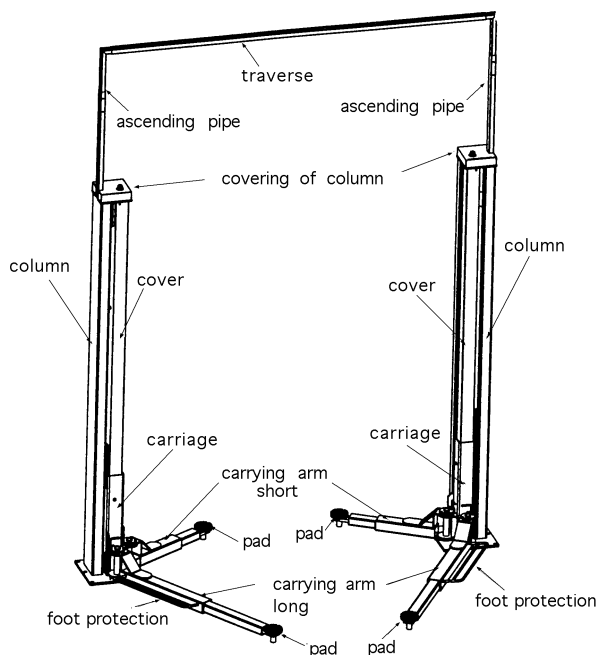
#### **Regulations for the installation**

- The installation of the lift is performed by trained technicians of the manufacturer or its distribution partner. If the operator can provide trained mechanics, he can install the lift by himself. The installation has to be done according to this regulation.
- The standard lift must not be installed in hazardous locations or washing areas.
- Before installation a sufficient foundation must be proved or constructed.
- An even installation place has to be provided. The foundations must be based in a frost resistance depth, both outside and indoors, where you must reckon with frost.
- An electrical supply 3~/N+PE, 400 V, 50 Hz has to be provided. The supply line must be protected with T16A (VDE0100 German regulation). The minimum diameter amounts to 1,5 mm<sup>2</sup>.
- The cable entry in the column is located in operating column topside. Another possibility is the location of the cable entry in a boring at the base plate. However the cable has to be secured with a cable bushing. Do not fold the cables!

#### **8.1.1 Erection and doweling of the lift**

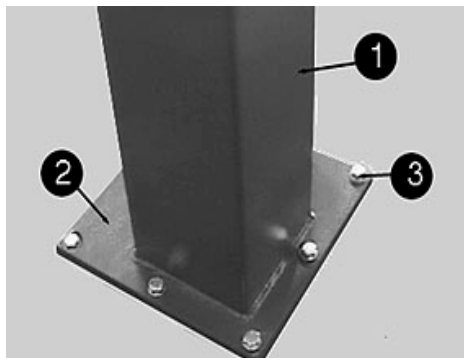
It is necessary to dowel the lift. For this you need a concrete floor with a thickness of at least 200 mm (150 mm with base plate) and a quality of at least B25. In case of doubt a test boring has to be performed and a dowel is to set in. Afterwards the dowel is tighten with a torque which is described of the dowel manufacturer (example: Liebig Company 80 Nm).

If there are defectives (cracks or hairline cracks) in the zone of influence Ø200 mm, the foundation cannot be used to install the lift on it.



pic.12: complete view: automotive lift with ascending pipe and traverse.

A foundation must be constructed in accordance with the data sheet “foundation plan”. It must be paid attention of an even installation place of the lift because of a straight contact between lift and concrete floor.



pic.13: doweling  
1: column  
2: base plate  
3: dowel

- As protection against liquids, should before doweling put a thin foil between the base plate and the concrete.
- Close after this the split between the base plate and the concrete with silicone.
- Bore holes to fix the dowels through the borings of the base plates (pic.13). Clean the holes with pressure air. Put in the dowels. The lift manufacturer demands Liebig safety dowels type B20 or equally good dowels of other manufacturer (with licence) but observe the regulation. (bore hole, torque...). Before doweling check the concrete floor with quality B25 if the concrete floor goes to the top egde of the floor. In this case the dowels have to be chosen according to pic.22. If the ground is covered with floor tiles, the dowels have to be chosen according to pic.21.
- Lining up the column with spirit level.
- If necessary put thin metal sheets between the base plate and the floor until the lift is in the correct vertical position and the contact between the base plate and the floor is available.

- Tighten the dowels with the dynamometric key (example: Liebig-dowel 80 Nm).

**!** *Each dowel must be tightened with the demanded torque. Otherwise the normal function of the lift can not guaranteed.*

- If you need the cable not under the floor mount the traverse and the ascending pipe. Secure the traverse against falling out. Do not hang any additional loads on the traverse and the ascending pipe. (for an example: a ladder)

### 8.1.2 Electro mounting and current connection

#### A) with using traverse and ascending pipe

- Remove the cover at the top of the column.
- Lay the cable after the drawing (pic.17) in the ascending pipe and the traverse. Put the correct plugs together.

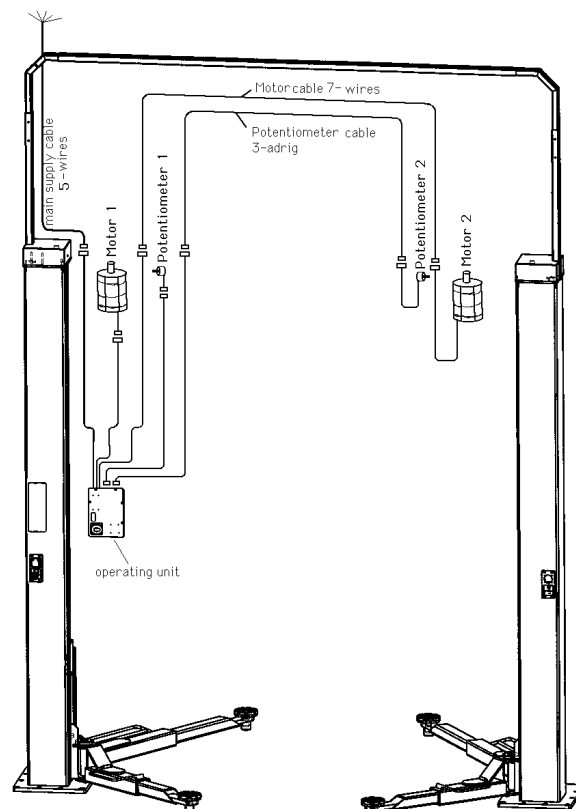
Observe the secure contact between the plugs.

Plug in the 7-wire motor cable (with 2 plugs) in the head plate of the operating column. Lay this cable over the ascending pipe and the traverse to the head plate of the opposite side. Plug in the plug in the head plate of the opposite side.

Plug in the 3-wire potentiometer cable (with 2 plugs) in the head plate of the opposite side. Lay this cable over the ascending pipe and the traverse to the head plate of the opposite side. Plug in the plug in the head plate of the opposite side.

The 5-wire cable (with one plug) is for the main supply. Plug in the plug at the head plate of the operating column.

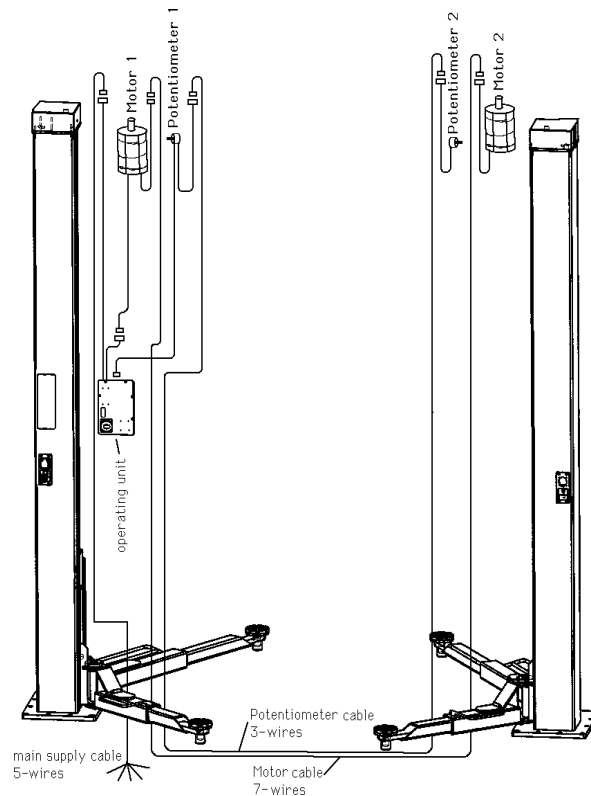
- Push the cover sheets careful in the ascending pipe.



pic.17 cable run with traverse and ascending pipe

**B) without using traverse and ascending pipe (under floor)**

- It is possible to lay the cable under the floor.
- Do not need the traverse and the ascending pipe.
- Make a foundation in accordance with the drawing. The opening for the cable is in the base plate of the lift.
- Pay attention to the cable if you mount the column.
- Lay the cable before positioning of the column through the empty pipe. Move the column to the installation place. Lay the cable through the hole in the base plate to the head plate of the column. Build the column. Pay attention the cables.
- Connect the cables (Plugs) in accordance with the drawing.(pic.19)
- Pay attention the cables does not touches the rotating parts.
- Observe the secure contact between the plugs.



pic.19 cable run without traverse and ascending pipe

**8.1.3 Installation the carrying arms**

- Install carrying arms and bolts top and bottom with enclosed circlips.




*The carrying arms must be secured at both sides, otherwise a correct connection between the lift carriage and the carrying arm can not be guaranteed.*

- Lift and lower the lift with vehicle several times, tighten dowels a second time with the correct torque. (Liebig 80 Nm)



## 8.2 Initiation

 ***Before the initiation a security check must be performed. therefore use form: First security check.***

If the lift is installed by a competent person, he will perform this security check. If the operator installs the lift by himself, he has to instruct a competent person to perform the security check.


The competent confirms the faultless function of the lift in the installation record and form for the security check and allows the lift to be used.

 ***Please send the filled installation record to the manufacturer after installation.***

## 8.3 Changing the installation place

If the place of installation shall be changed, the new place has to be prepared in according to the regulations of the first installation. The changing should be performed in accordance with the following points:

- Lift or lower the carriage to medium height.
- Take away current supply from the lift.
- Remove the cover of the lift.
- Dismount the carrying arms.
- Disconnect the plugs.
- If necessary remove the ascending pipe and the traverse.
- Loosen the dowels.
- Install the lift in accordance with chapter 8 “ Installation and Initiation”


 ***Use new dowels, the used dowels can not be used anymore.***

A security check must be performed before reinitiation by a competent person. Use form “Regular security check”.

## 9. Security check

The security check is necessary to guarantee the safety of the lifting during use. It has to be performed in the following cases:

1. Before the initial operation, after the first installation  
**Use the form “First security check before initiation”**
2. In regular intervals after the initial operation, at least annually.  
**Use the form “Regular security check at least annually”**
3. Every time the construction of that particular lift has been changed.  
**Use the form “Extraordinary security check”**

 ***The first and the regular security check must be performed by a competent person. It is recommended to service the lift at this occasion.***

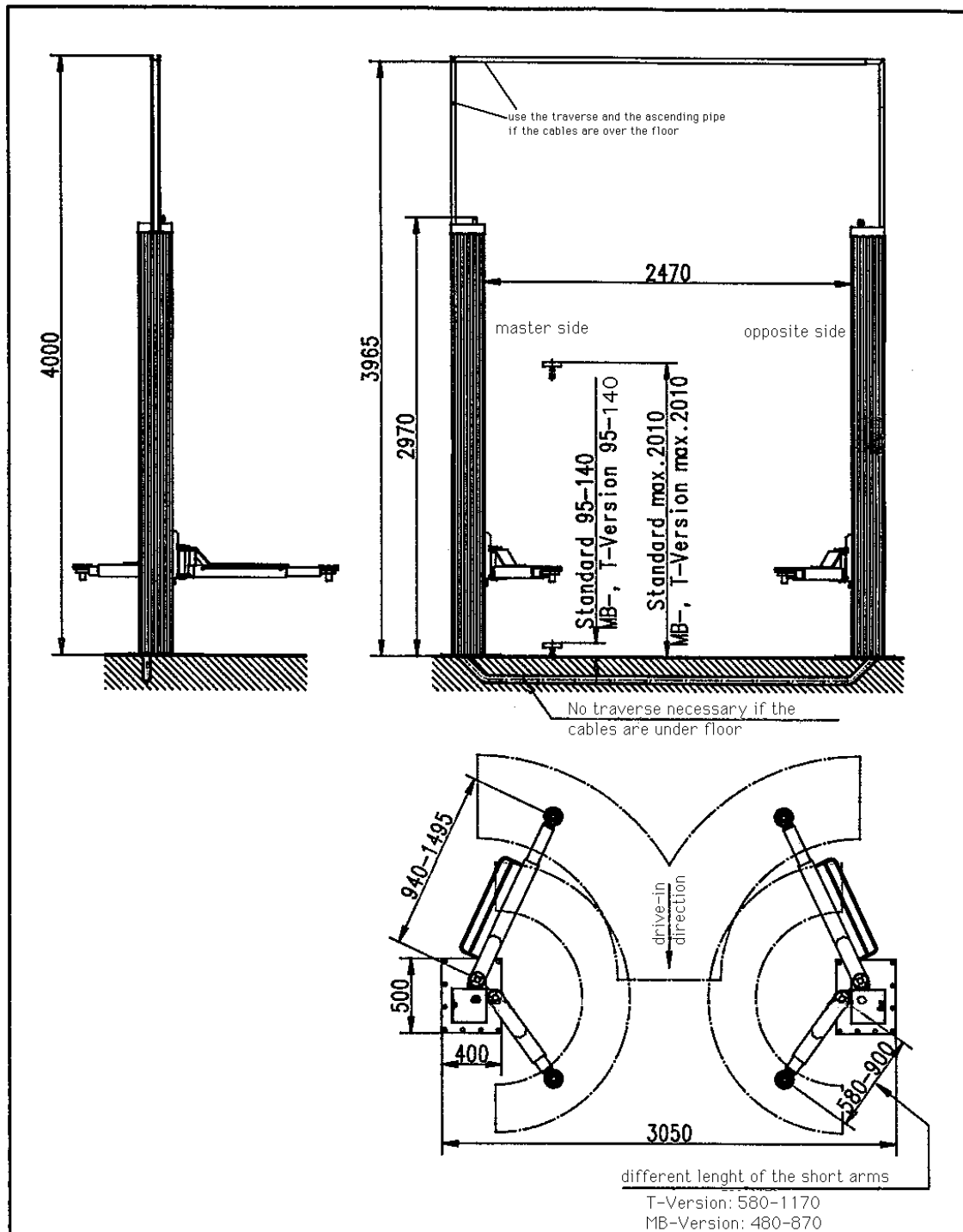




*After the construction of the lift has been changed (changing the lifting height or capacity for example) and after serious maintenance works (welding on carrying parts) an extraordinary security check must be performed by an expert.*

This manual contains form with a schedule for the security checks. Please use the adequate form for the security checks. The form should remain in this manual after they have been filled out. In the following there is a short description about special safety devices.

Datasheet



Subject to alteration

2.32 SL  
1:35

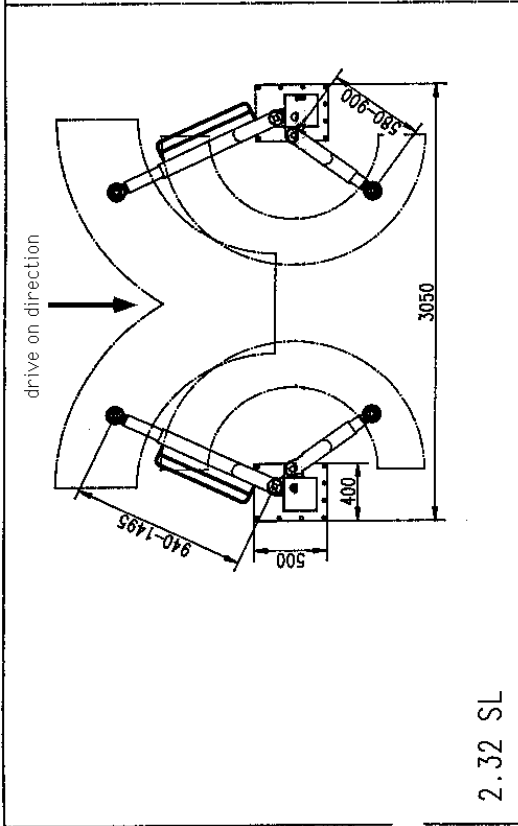
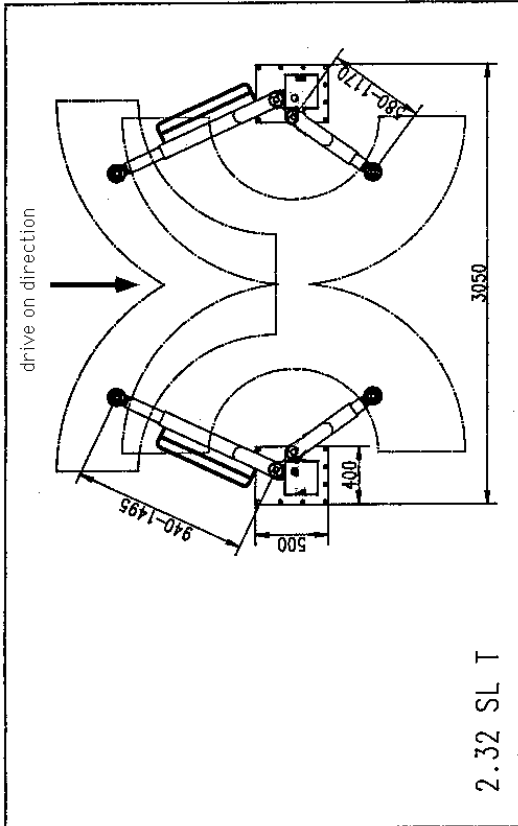
02.11.1998 / VEID


EINBAU1850-1

**TUPfbaum**  
**HEBETECHNIK**

TEL 07853/899-0 FAX 07853/8787  
FERTIGUNGSTECHNIK UND MASCHINENBAU  
77694 KEHL-BODERSWEIER

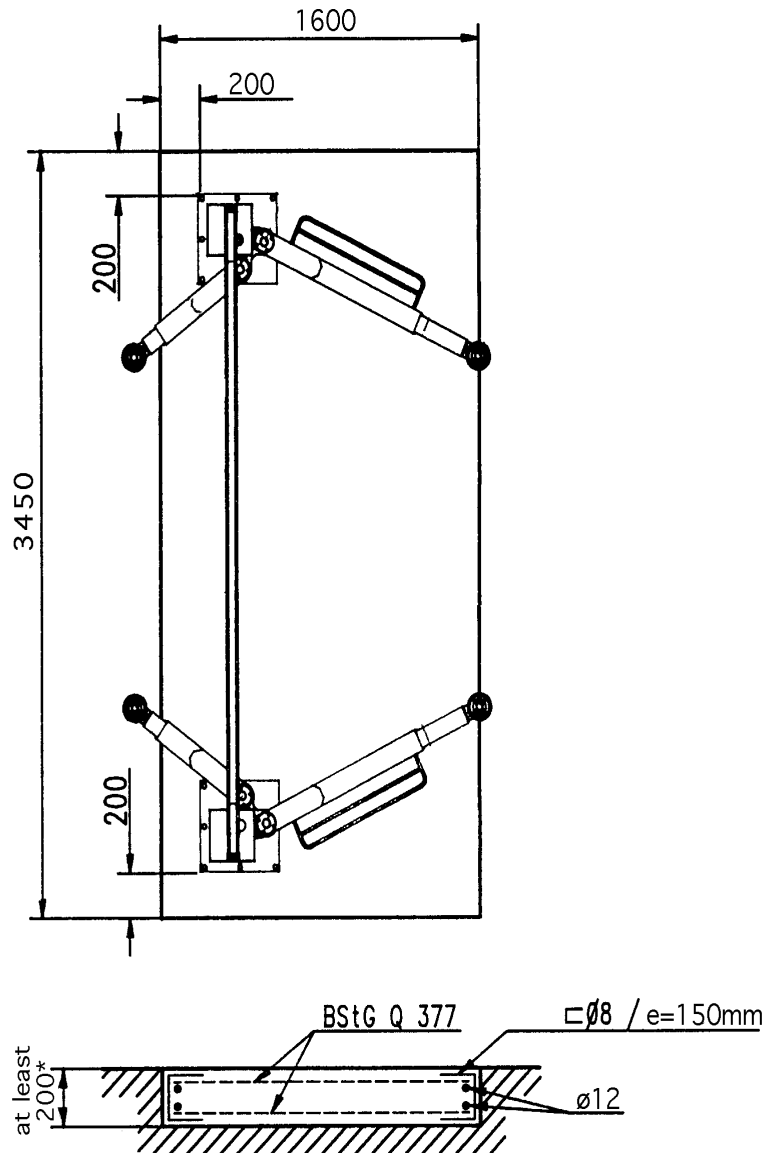
Different versions of the carrying arms



 <p>TEL. 07345 906-0 FAX 07345 906-2 FERTIGUNGSTECHNIK UND MASCHINENBAU 77694 KEHL-BODERSWEIER</p>	
Smart-Lift 2.32 SL	1:30
different carrying arms	
02.11.1998 / VEID	EINBAU1895

subject to alteration

**Foundation plan (Version with traverse and ascending pipe)**



\*) at least 150 mm for version with base frame bow

reinforcement in both directions at the upper and lower side of the plate min 3,5 cm<sup>2</sup>/m  
(for example structural steel Q 377)

revolving Ø8 / e = 150 mm

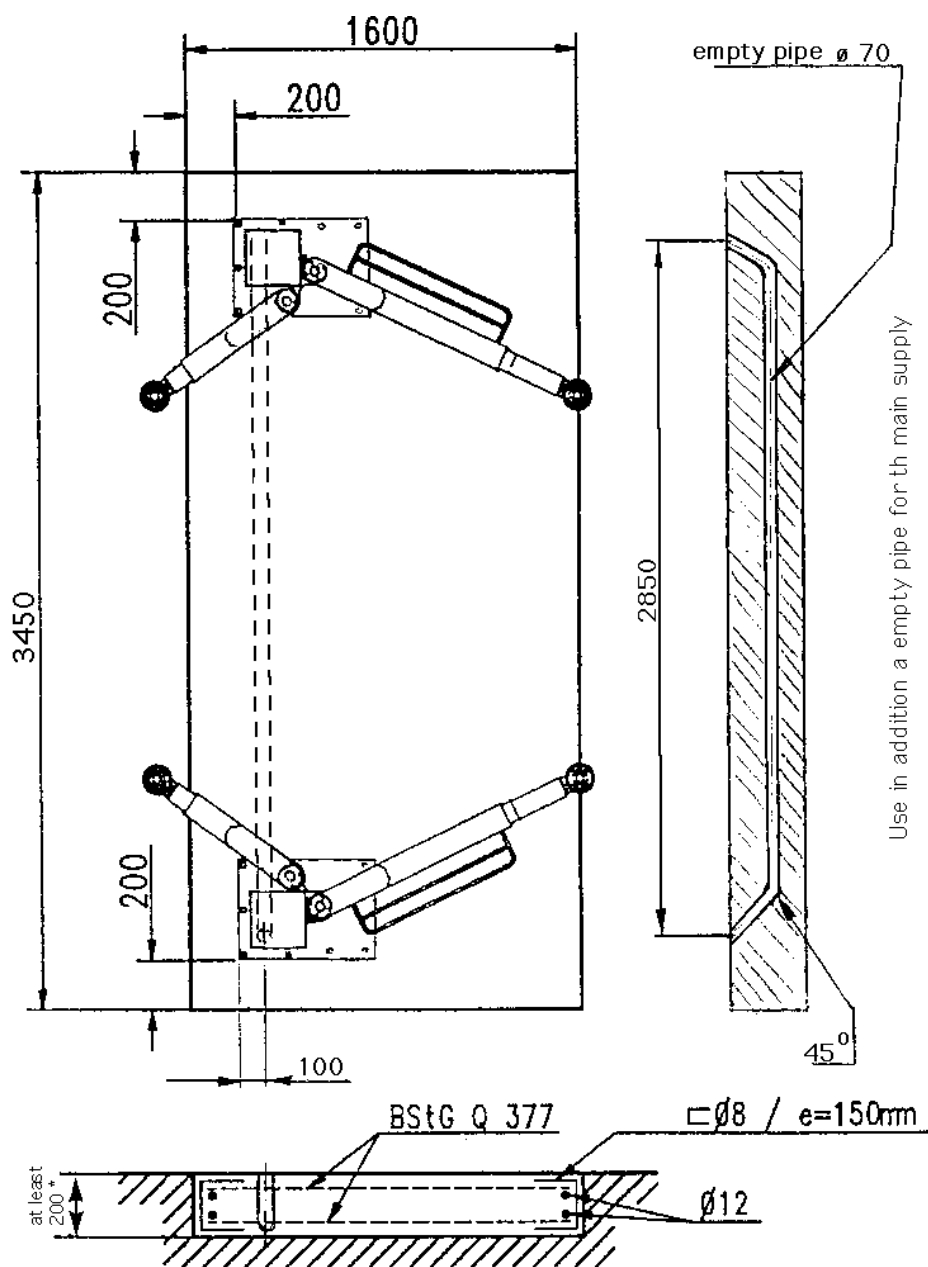
at the edges Ø 12

concrete quality min. B 25 (DIN 1045)

concrete covering for stiffening steel 2 cm

foundation base: frost-protected floor!

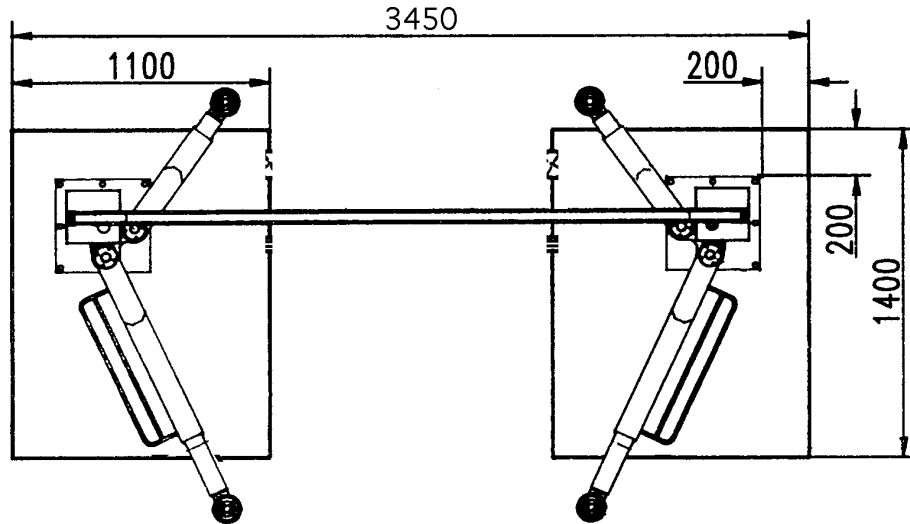
**Foundation plan (Version without traverse and ascending pipe)**



\*) at least 150 mm for version with base frame bow

reinforcement in both directions at the upper and lower side of the plate min 3,5 cm<sup>2</sup>/m  
(for example structural steel Q 377)  
revolving  $\varnothing 8 / e = 150 \text{ mm}$   
at the edges  $\varnothing 12$   
concrete quality min. B 25 (DIN 1045)  
concrete covering for stiffening steel 2 cm  
foundation base: frost-protected floor!

**Block foundation plan**



reinforcement:  
constructional topside or bottom crosswise

□ # ∅ 10/150

circulating at both sides

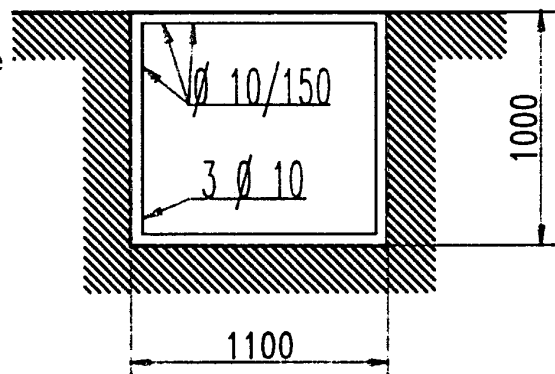
VE 3 ∅ 10

concrete covering for steel-insert

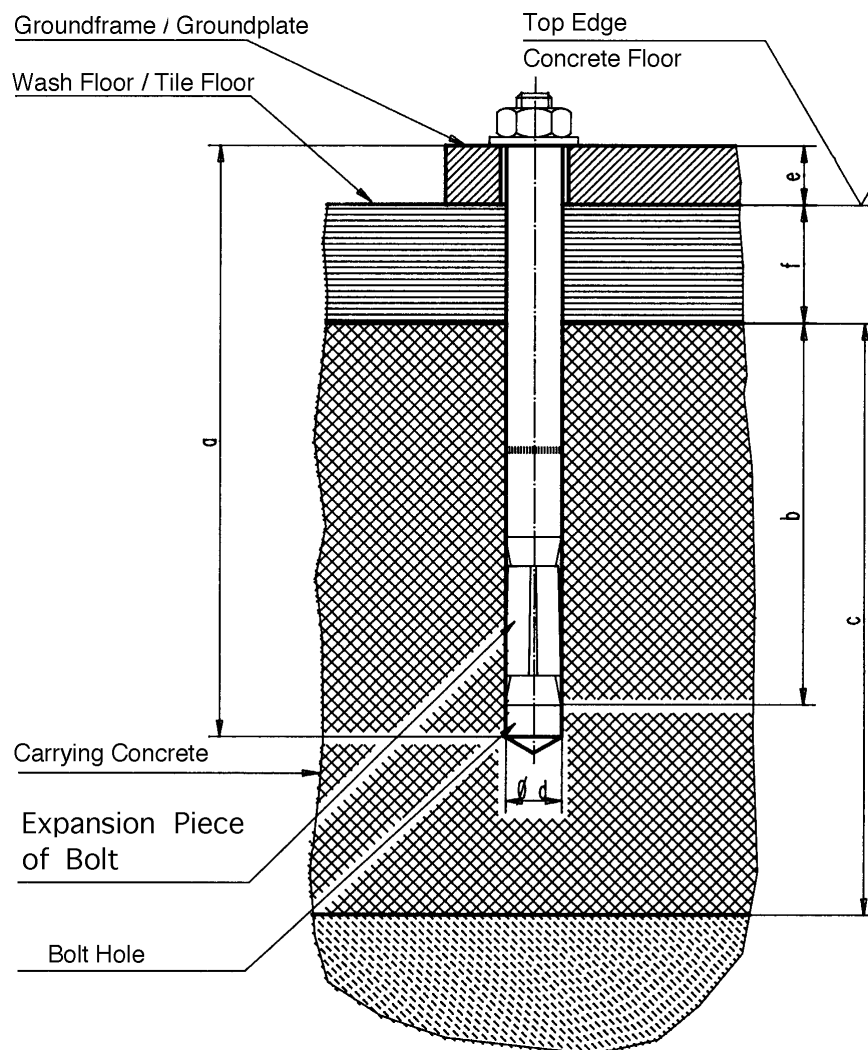
2 cm !

building material: concrete at least BN 250  
steel: structural steel 42150  
structural steel 50155

foundation base: frost-protected floor with  
foundation pressure p from at least 15 N/qcm



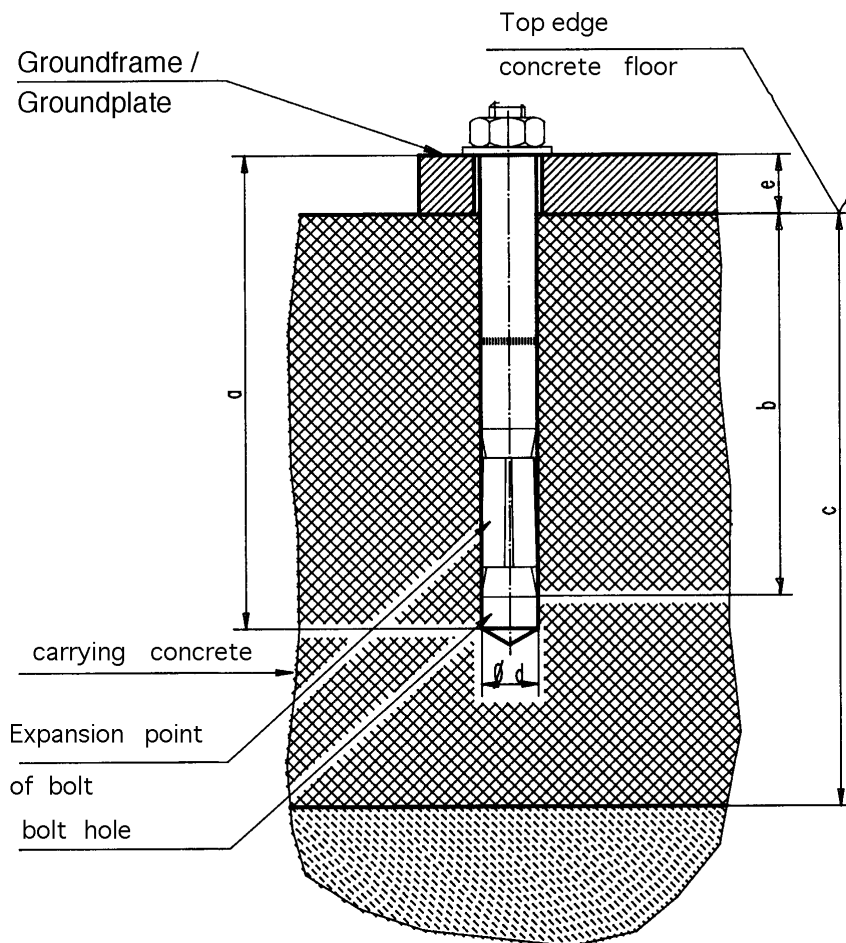
**Pic. 21: choice of the dowel length with floor pavement or tile surface**



**Table to picture 21.**

Dowel type	Liebig B20; UPAT UMV 100 (or UMV80 for version with base frame bow) or equal dowels of other manufacturer (with licence)
Drilling depth	a according to dowel manufacturer
Min. anchorage depth	b 100 mm (80 mm for version with base frame bow)
Thickness of concrete	c at least 200 mm (or at least 150 mm for version with base frame)
Diameter of bore	d according to the dowel manufacturer
Thickness of the lift-pieces with bottom	e+f depending of floor pavement (e=20mm)
starting torque	according to dowel manufacturer
number of dowels	16

**Pic. 22: choice of the dowel length without floor pavement or tile surface**

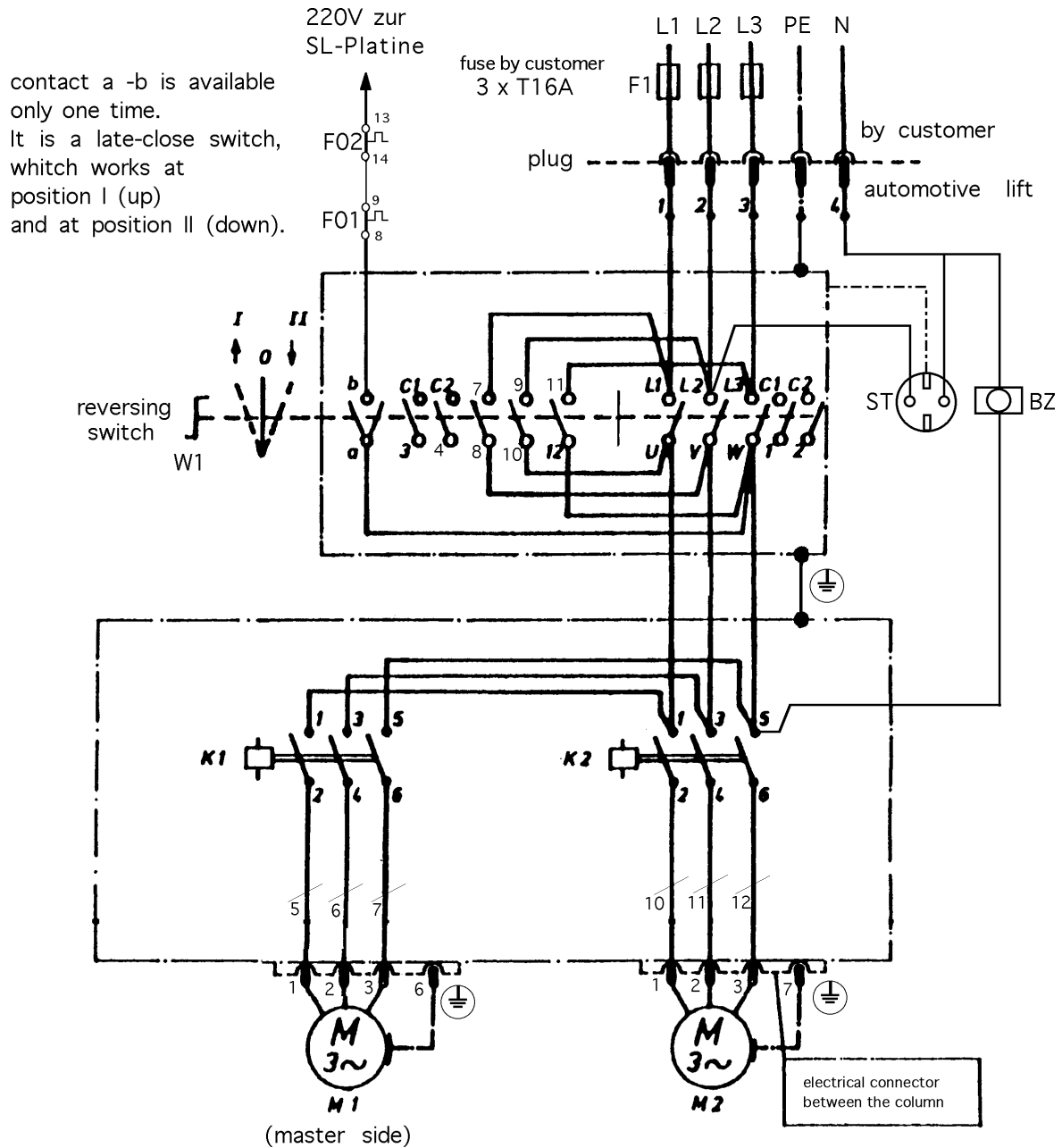


**Table to picture 22.**

Dowel type	Liebig B20; UPAT UMV 100 (or UMV80 for version with base frame bow) or equal dowels of other manufacturer (with licence)
Drilling depth	a according to dowel manufacturer
Min. anchorage depth	b 100 mm (80 mm for version with base frame bow)
Thickness of concrete	c at least 200 mm (or at least 150 mm for version with base frame)
Diameter of bore	d according to the dowel manufacturer
Thickness of the lift-pieces	e = 20mm
starting torque	according to dowel manufacturer
number of dowels	16

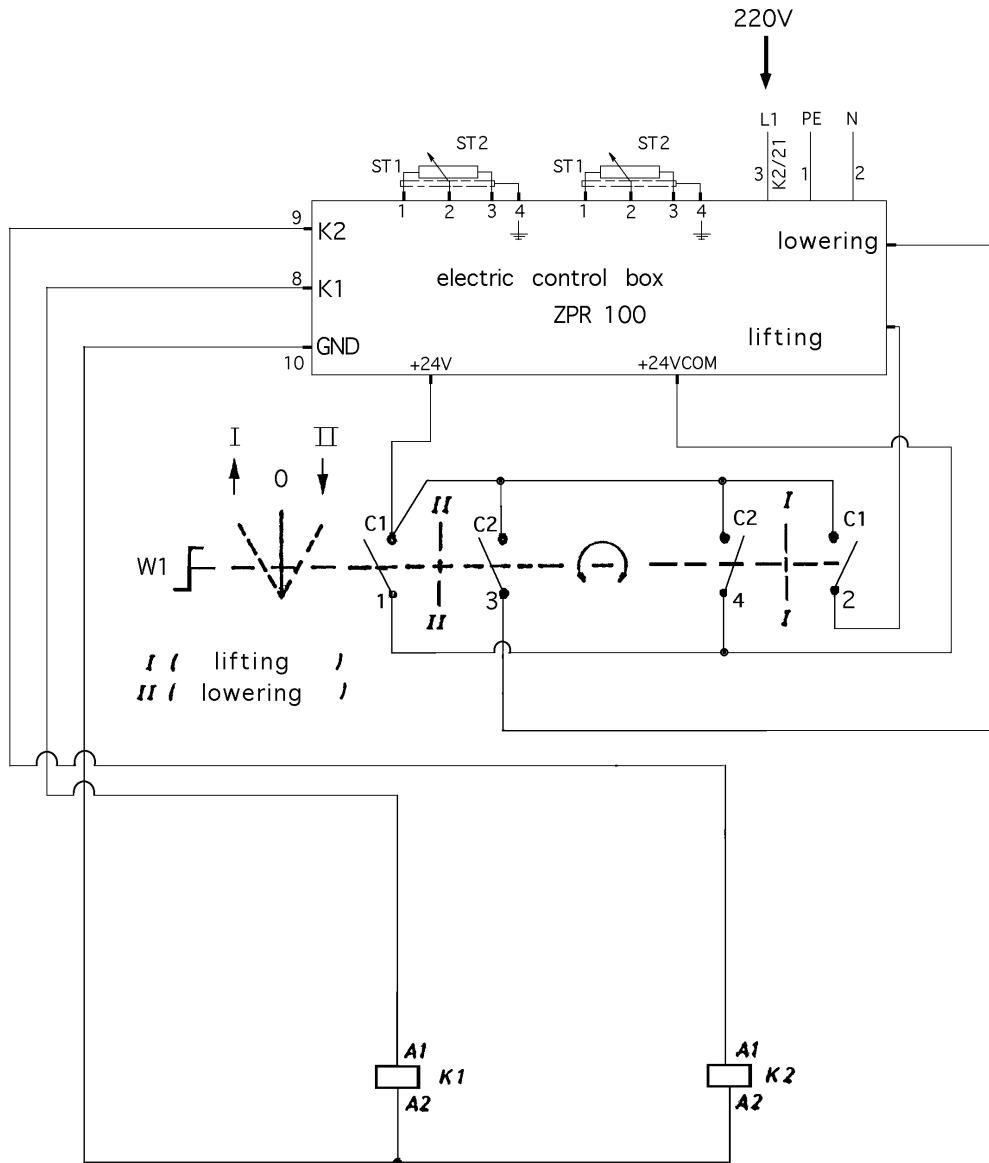


**Electrical diagram drawing Part I**



power supply: 3 phases/N + PE; 50 Hz 400/230V  
 choice of the protection measures: look of the local security regulations (BRD: VDE 0100)  
 by customers: electrical power line is to be secured with time-lag fuse 16 A; min wire-Ø: 1,5 mm<sup>2</sup>

**Electrical diagram drawing Part II**



**Electrical parts list**

- F01: Thermoswitch in the motor
- F02: Thermoswitch in the motor
- K1: up contactor
- K2: up contactor
- M1: Motor 400V, 1420 U/min, 1,5 kW master side
- M2: Motor 400V, 1420 U/min, 1,5 kW opposite side
- W1: reversing switch
- St: socket (MB-Version)
- BZ: elapsed time (MB-Version)



**Filling out and undersigned and copying this sheet and send the original to the lift manufacturer. The copy remains in the Manual.**

**Otto Nussbaum Hebetchnik GmbH & Co.KG**  
**Korker Strasse. 24**  
**77694 Kehl-Bodersweier**  
**Germany**

**Record of installation**

The automotive lift 2.32 SL/T/MB with the  
serial number:..... was installed on:.....  
at the firm:..... at:.....  
the safety was checked and the lift was started.

The installation was effected from the operating authority/competent (please delete as applicable).

The safety of the automotive lift was checked from the competent before the initial operation.

The operating authority attest the installation of the automotive lift, the competent attest the correct initial operation.

.....	.....	.....
date	name of the operating authority	signature of the operating authority

.....	.....	.....
date	name of the competent person	signature of the competent person

Your customer service is the company:.....

.....

**Record of handing over**

The automotive lift 2.32 SL/T/MB with the  
 serial number:..... was installed on:.....  
 at the firm:..... at:.....  
 the safety was checked and the lift was started.

The persons below were introduced after the installation of the automotive lift. The  
 introduction was carried out from an erector of the lift-manufacturer or from a franchised  
 dealer (competent person).

..... date	..... name	..... signature
..... date	..... name	..... signature
..... date	..... name	..... signature
..... date	..... name	..... signature
..... date	..... name	..... signature
..... date	..... name	..... signature
..... date	..... name of competent	..... signature of the competent

Your customer service is the company:.....

.....

**First security check before installation**

 *Filling out and leave in this manual*

kind of check	all right	defect missing	ver-ification	remark
Type plate.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Short operating instruction.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Warning designation.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Designation lifting/lowering.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Detailed operating instruction.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Main switch lockable.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Condition pads.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Direction of rotation.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Abrollsicherung .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Securing of carrying arm bolts.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Securing of pads.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Construction (deformation, cracking).....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Torque of the dowels.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Fixed seat of the carrying screws.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Condition of the spindle and carrying nut.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Condition coverings.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Function equalisation.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Condition electrical wiring.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Condition bolts.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Fixing device of carrying arms.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Condition foot protection.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Condition concrete floor.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Stability of the lift.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Smooth running of the lift.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Function automotive lift with load.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....

**( mark here applicable, in case of verification mark in addition to the first mark!)**

Security check carried out:.....

Carried out the company:.....

Name, address of the competent:.....

Result of the Check:

- Initiation not permitted, verification necessary
- Initiation possible, repair failures until.....
- No failings, Initiation possible

.....  
signature of the expert


.....  
signature of the operator

If failures must be repaired:

Failures repaired at: .....signature of the operator

(Use another form for verification!)

**Regular security check**

 *Filling out and leave in this manual*

kind of check	all right	defect missing	ver- fication	remark
Type plate.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Short operating instruction.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Warning designation.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Designation lifting/lowering.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Detailed operating instruction.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Main switch lockable.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Condition pads.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Direction of rotation.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Abrollsicherung .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Securing of carrying arm bolts.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Securing of pads.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Construction (deformation, cracking).....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Torque of the dowels.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Fixed seat of the carrying screws.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Condition of the spindle and carrying nut.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Condition coverings.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Function equalisation.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Condition electrical wiring.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Condition bolts.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Fixing device of carrying arms.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Condition foot protection.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Condition concrete floor.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Stability of the lift.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Smooth running of the lift.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Function automotive lift with load.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....

**( mark here applicable, in case of verification mark in addition to the first mark!)**

Security check carried out:.....

Carried out the company:.....

Name, address of the competent:.....

Result of the Check:

- Initiation not permitted, verification necessary
- Initiation possible, repair failures until.....
- No failings, Initiation possible

.....  
signature of the expert

.....  
signature of the operator

If failures must be repaired:

Failures repaired at: .....signature of the operator

**(Use another form for verification!)**

**Extraordinary security check**

 *Filling out and leave in this manual*

kind of check	all right	defect missing	ver-ification	remark
Type plate.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Short operating instruction.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Warning designation.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Designation lifting/lowering.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Detailed operating instruction.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Main switch lockable.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Condition pads.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Direction of rotation.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Abrollsicherung .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Securing of carrying arm bolts.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Securing of pads.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Construction (deformation, cracking).....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Torque of the dowels.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Fixed seat of the carrying screws.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Condition of the spindle and carrying nut.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Condition coverings.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Function equalisation.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Condition electrical wiring.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Condition bolts.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Fixing device of carrying arms.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Condition foot protection.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Condition concrete floor.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Stability of the lift.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Smooth running of the lift.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Function automotive lift with load.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....

**( mark here applicable, in case of verification mark in addition to the first mark!)**

Security check carried out:.....

Carried out the company:.....

Name, address of the competent:.....

Result of the Check:

- Initiation not permitted, verification necessary
- Initiation possible, repair failures until.....
- No failings, Initiation possible

.....  
signature of the expert

.....  
signature of the operator

If failures must be repaired:

Failures repaired at: .....signature of the operator

**(Use another form for verification!)**

