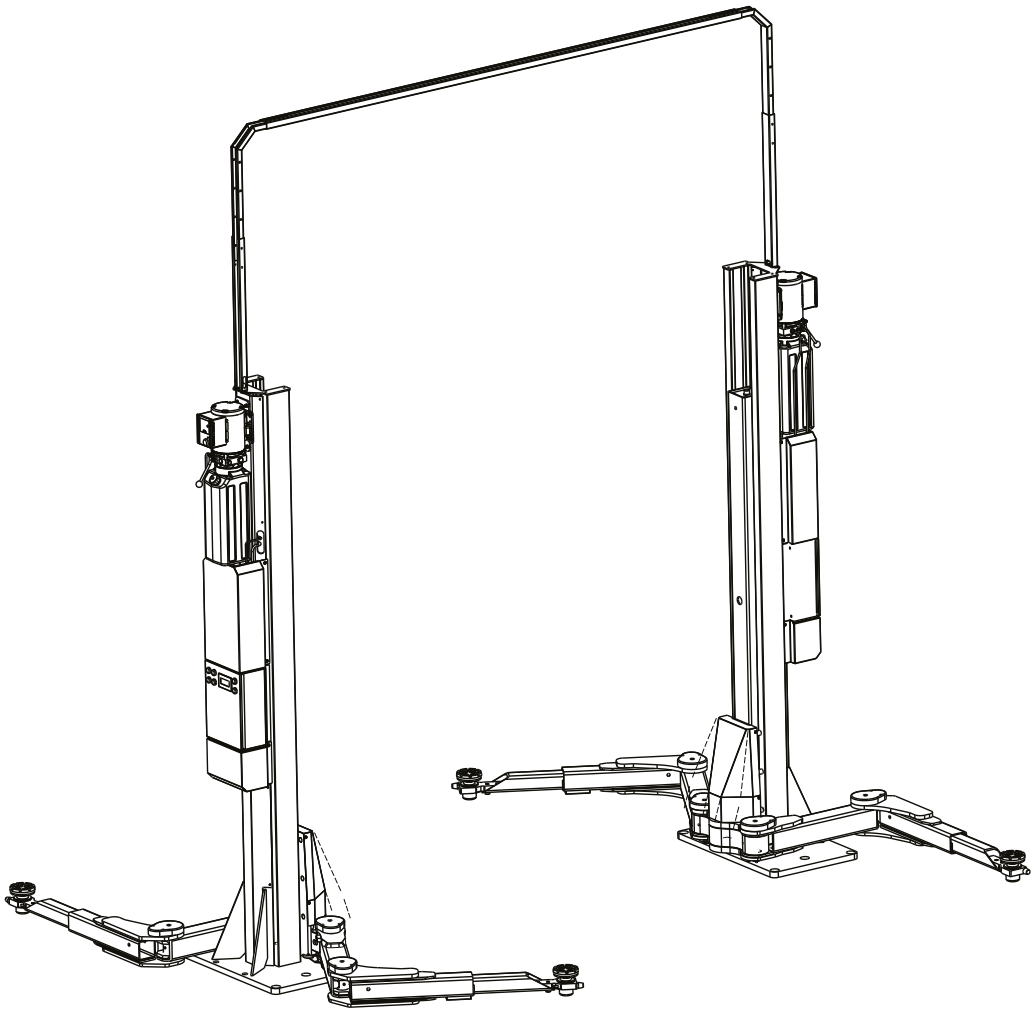


Operating manual | Inspection book

including spare parts list
Version: USA
Manual date: 13.01.2020

POWER LIFT HDL 15000
POWER LIFT HDL 18000

Serial No.

Made in Germany

OPI-POWER LIFT HDL 15000 - HDL 18000-V1.0-EN

1 General informations

Important safety instructions – Save these instructions

1.1 Lift purpose

Nussbaum lifting systems are the result of over 35 years' experience in the automotive lifting industry. The high quality and superior concept ensures reliability, a long Lift lifetime, and a strong economic business solution for your automotive lifting needs. The HDL 15000-18000 are a hydraulic asymmetric two-post Lift with a lifting capacity of 15000/18000 pounds. The Lift features a powerful integrated power unit and hard-chromed cylinders. The maximum load distribution is 15000 lbs (HDL 15000) / 18000 lbs (HDL18000)per arm.

1.2 Liability

To avoid unnecessary damage, injury or death, read all operating instructions carefully. Nussbaum is not liable for any damages, injuries, or deaths resulting from misuse of the Lift. The user carries the risk alone.

There will be no guarantee or liability for incidents involving injuries, death, or damage to equipment if these incidents are the result of one or more of the following:

- Inappropriate use of the Lift to include: Inappropriate installation, operation, and maintenance of the Lift.
- Use of the Lift while security devices are inoperative, not working properly, or are installed incorrectly.
- Failure to follow the operating instructions regarding transport, storage, installation, initiation, operation, and maintenance of the Lift.
- Unauthorized changes to the design and operation of the Lift.
- Wrong or incorrect maintenance practice.
- Catastrophes, acts of God, or external reasons.
- Nussbaum Lifts are warranted with the use of Nussbaum original or replacement parts. Use only replacement parts approved by the original equipment manufacturer or parts meeting original manufacturer specifications. Use of unauthorized parts may void the warranty. For parts, call Nussbaum at 1-704-864-2470.
- It should be recognized that any piece of equipment can be dangerous when operated improperly.

1.3 Owner/Employer responsibilities

Automotive lift institute safety requirements for operation, inspection and maintenance (ANSI/ALI ALOIM)

The Owner/Employer shall insure that lift operators are qualified and that they are trained in the safe use and operation of the lift: ALI SM10-1 safety manual; AL-ST-17; ANSI/ALOIM:2008 (R2013), American National Standard for Automotive Lifts-Safety Requirement for Operation, Inspection and Maintenance; ALI/WL Series, ALI Uniform Warning Label Decals/Placards; and in case of frame engaging lifts, ALI/LP-GUIDE, Vehicle Lifting Points/Quick Reference Guide for Frame Engaging Lifts and SAE J2184, Vehicle Lifting Points for Service Garage Lifting.

The Owner/Employer shall establish procedures to periodically inspect the lift in accordance with the lift manufacturer's instructions or ANSI/ALOIM:2008 (R2013), American National Standard for Automotive Lifts-Safety Requirements for Operation, Inspection and Maintenance; and the employer shall insure that the lift inspectors are qualified and that they are adequately trained in the inspection of the lift.

The Owner/Employer shall establish procedures to periodically maintain the lift in accordance with the lift manufacturer's instructions or ANSI/ALOIM:2008 (R2013), American National Standard for Automotive Lifts-Safety Requirements for Operation, Inspection and Maintenance; and the employer shall insure that the lift maintenance personnel are qualified and that they are adequately trained in the maintenance of the lift.

The Owner/Employer shall maintain the periodic inspection and maintenance records recommended by the manufacturer or ANSI/ALOIM:2008 (R2013), American National Standard for Automotive Lifts-Safety Requirements for Operation, Inspection and Maintenance.

The Owner/Employer shall display the lift manufacturer's operating instructions; ALI SM10-1 safety manual; AL-ST-17; ANSI/ALOIM:2008 (R2013), American National Standard for Automotive Lifts-Safety Requirement for Operation, Inspection and Maintenance; ALI/WL Series, ALI Uniform Warning Label Decals/Placards; and in case of frame engaging lifts, ALI/LP-GUIDE, Vehicle Lifting Points/Quick Reference Guide for Frame Engaging Lifts; in a conspicuous location in the lift area convenient to the operator.

Additional owner/employer responsibilities

- Shall require that Personal Protective Equipment (PPE) be used according to the appropriate regulations.
- Shall display the "Safety Regulations" and adhere to them closely.
- Shall ensure that all safety- and danger signs on and around the Lift are observed and followed!
- Shall follow the specified time intervals between the recommended inspection and maintenance procedures and tests.

- Shall use only spare parts that comply with the technical requirements specified by the manufacturer.
- Shall ensure that loose screws, nuts, and bolts are firmly tightened after maintenance.
- Shall not modify the Lift without written consent of Nussbaum.
- Shall ensure that these instructions are maintained and available to all personnel that install, use or maintain the lift. This document contains important information about installation, operation, and maintenance of the automotive Lift. Any changes to the installation and or location of the automotive Lift must be documented.

1.4 Lift operator responsibilities

- Shall read and understand all safety and warning instructions in the manual or affixed to the lift.
- Shall be trained to operate and use the HDL 15000-18000 Lift for its designed use.
- Shall be familiar with accident prevention and basic labor safety regulations.
- Shall not allow unauthorized personnel to operate the Lift.

Information of warning

Pay close attention to the danger and important information symbols shown below. Carefully read all marked passages throughout this manual.

Danger! This sign indicates danger to life. Improper handling of the described operation may cause serious injury or death.

Caution! This sign warns against possible damage to the automotive Lift or other material defects in case of improper handling.

Attention! This sign indicates an important function or note.

1.5 Safety regulations

The Safety Regulations must be observed and strictly adhered to while working with the automotive Lift. Read the safety regulations and the ANSI/ ALI ALOIM manual included with the lift documentation carefully before working with the Lift!

Important safety instructions – read all instructions

- The total weight of the lifted vehicle must not exceed 15000 pounds (HDL 15000) / 18000 pounds (HDL 18000).
- The automotive Lift must be in its lowest position, and the Lift Carry Arms must be swung out before a vehicle can be driven into the Lift area.
- Total load must be distributed evenly on all arms.
- The Lift must not be installed in a hazardous location or in washing bays.
- The Lift must be checked by a service technician after initial installation and after repairs or changes have been made to the Lift.
- The operating and maintenance instructions must be followed while working with the Lift.
- Pre-check low clearance or specially equipped vehicles for ample clearance to avoid damage to the vehicle and/or Lift.
- Only trained personnel are to operate the Lift.
- No one is to stand within the working area (danger area) during vehicle lifting and lowering operations.
- No one is to occupy a vehicle during any phase of Lift operation.
- No one is to climb onto the automotive Lift when in a raised position.
- For unusual vehicles you may choose to instruct the user to contact Nussbaum for lifting advice.
- The main electrical switch must be switched off and locked out or tagged out according to OSHA Regulations before maintenance or repair work is performed on the Lift.
- The operator must continue to observe the vehicle and Lift throughout the lifting or lowering operation.
- Check the center of gravity of the vehicle if heavy parts, such as the engine are removed.
- If heavy parts such as the engine must be removed, the center of gravity will change. Secure the vehicle before removing parts to avoid the possibility of the vehicle becoming insecure.
- **Read all instructions** before operating lift.
- Care must be taken as burns may occur from touching hot parts.
- Do not operate the Lift with a damaged cord or if the Lift has been damaged – until it has been examined by a qualified service person.
- To reduce the risk of fire, do not operate Lift in the vicinity of open containers of flammable liquids (gasoline).
- Adequate ventilation should be provided when working on operating internal combustion engines.
- Keep hair, loose clothing, fingers, and all parts of body away from moving parts.
- Use only as described in this manual. Use only manufacturer's recommended attachments.
- **Always wear safety glasses.** Everyday eyeglasses only have impact resistant lenses, they are not safety glasses.
- The proper positioning of the carrier plate below the vehicle is to be checked again after the vehicle has been raised slightly.
- After each set down of the vehicle, check the lift-

ing arm positions below the fixture points again and adjust as required.
- When disassembling heavy, consider any possible centre of mass shifts. The vehicle is to be appropriately secured using suitable materials (e.g. tensioning belts, beams, etc.) against falling.
- After design and maintenance on load bearing parts the lift must be inspected by a technical expert.
- Vehicles may only be attached at fixture points approved by the vehicle manufacturer.
- The entire lifting and lowering process is to be continuously observed.
- Initial access to the lift is only permitted after the main switch has been turned off and secured, and the operating lever is additionally secured against unauthorised use.

Save these instructions!

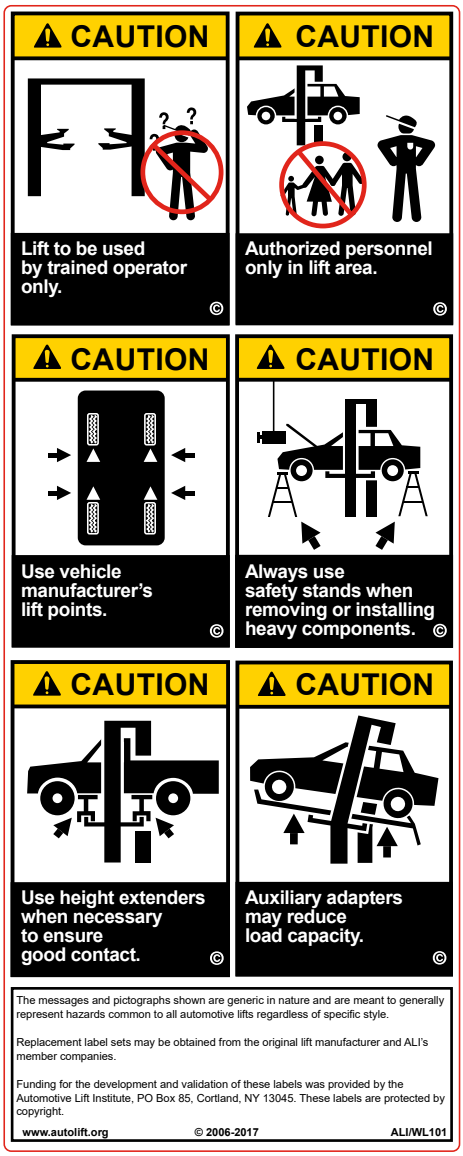
1.6 Safety devices

Nussbaum has designed several saftety features into each Lift to ensure safe and efficient operations under a variety of conditions. Warranties will be voided and dangerous working conditions exist if any of the listed devices are altered or disabled.

- **Over-pressure valve**
  Hydraulic system fuse against over-pressure.
- **Check valve**
  Secure the vehicle against unauthorised lowering.
- **Main switch with curtain lock device**
  Fuse to prevent unauthorised use.
- **Command / downstream system with latch**
  Secure against unauthorised lowering of the lift.
- **Deadman controls**
  Lift movement stops when the operating lever is released.
- **Lifting arm block**
  Secures the lifting arm against horizontal movement in a lifted condition.

1.7 Safety labels affixed to lift

Warning Label pictographs used with permission of Automotive Lift Institute.



Read all labels and verify that all authorized users fully understand the meaning of each caution / warning / safety instruction. Do not remove or deface safety labels from the lift.

1.8 Protocols

Technical documentation contains important information for safe operation and for retaining functional safety of the lift.

- To verify lift set up, the assembly protocol form is to be completed, signed and sent to the manufacturer.
- Forms are available in this inspection book for use in verifying single, regular and extraordinary safety checks. Use the forms to document inspections and leave the completed forms in the inspection book.
- The lift master forms must record changes to the construction or changes to set up location.

1.9 Set up and test the lift

Safety relevant work on the lift and safety inspections may only be done by personnel specifically trained to carry it out. They are designated in general and in this documentation as technical experts and specialists (competent people).

- Technical experts are people (freelance expert engineers, TÜV specialists) that may inspect and assess due to their education and experience with lifts. They are knowledgeable in the appropriate work safety and accident prevention regulations.
- Specialists (competent people) are people who have sufficient knowledge and experience with lifts and have participated in a special factory training by the lifts manufacturer.

Set up protocol

After successful set up, complete this form fully, sign it, make a copy and send the original to the manufacturer within a week. The copy remains in the inspection book.

Nussbaum Automotive Solutions, LP
1932 Jordache Court
Gastonia, NC 28052
Fax: 1-704-864-2476
Email: warranty@nussbaum-usa.com

The lift with serial number _____ was set up on (date) _____

at (company name) _____ in (town, city) _____

checked for function and safety and put into operation.

The set up was done by the operating company / specialist (score out the one that does not apply).
After successful inspection of function and safety by a trained assembler, the lift is transferred without electrical connection (e.g. plug) to on-site power supply An on-site electrical connection between the lift and the power supply is to be done by a qualified electrician (see details in the electrical plan).

The operating company confirms proper lift set up, has read and will comply with all information contained in this operating manual and inspection book, and will keep this document accessible to trained operators at all times.

The specialist confirms proper lift set up, has read all information in this operating manual and inspection book, and has transferred the documents to the operating company.

_____	_____	_____
Date	*Name, operating company and company stamp*	*Operating company signature*
_____	_____	_____
Date	*Name, specialist*	*Signature of specialist*

Service partner: _____
Stamp

**) See enclosed anchor manufacturer sheet*

Transfer protocol

The lift with serial number _____ was set up on (date) _____

at (company name) _____ in (town, city) _____

checked for function and safety and put into operation.

The following listed people (operators) were trained to handle the lift after it was set up by a trained assembler of the manufacturer or a contract partner (specialist).

(Date, name, signature, empty lines must have a scored out)

_____	_____	_____
Date	*Name*	*Signature*
_____	_____	_____
Date	*Name*	*Signature*
_____	_____	_____
Date	*Name*	*Signature*
_____	_____	_____
Date	*Name*	*Signature*
_____	_____	_____
Date	*Name*	*Signature*
_____	_____	_____
Date	*Name, specialist*	*Signature of specialist*

Service partner: _____

Stamp

2 System master sheet

2.1 Manufacturer

Otto Nussbaum GmbH & Co. KG
Korker Straße 24
D-77694 Kehl-Bodersweier

2.2 Purpose

The lift is a lifting tool for raising vehicles up to a total weight of 15000 lbs (7000 kg) or 18000 lbs (8000 kg) for normal workshop operation.

The set up of the standard lift is not permitted in explosion endangered work shops and washing halls.
The lift is not set up for moving people.

After construction and significant maintenance changes on load carrying parts the lift must be inspected afterwards by a specialist who approves the changes.

2.3 Changes to the design / construction

Inspections by a technical expert are required before recommissioning (date, type of change, technical expert signature).

_____

_____

Name, address of technical expert

_____ _____

Location, date *Technical expert signature*

2.4 Changing the assembly location

Inspections by a technical expert are required before recommissioning (date, type of change, specialist signature).

_____

_____

Name, address of technical expert

_____ _____

Location, date *Signature of Technical Expert of Safety inspections*

3 Technical information

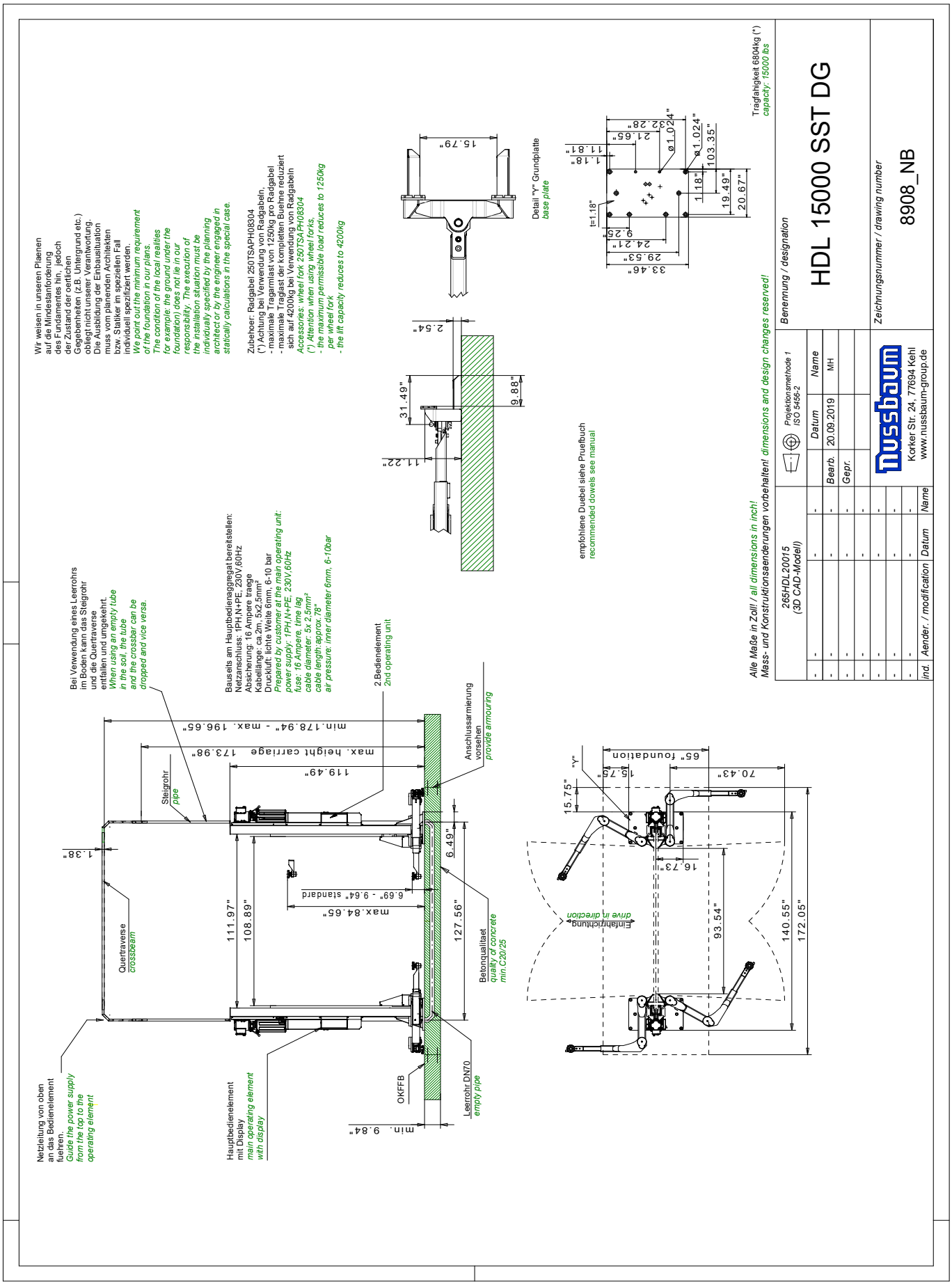
3.1 Technical data

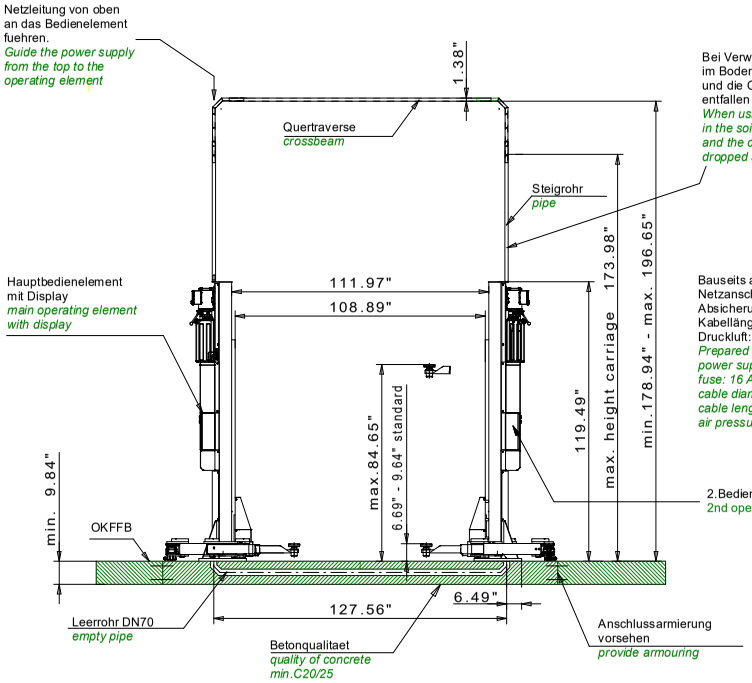
Load carrying capacity	HDL 15000 = 15000 lbs (6500 kg) HDL 18000 = 18000 lbs (8000 kg)
Loading a lifting arm	A single load from only one lifting arm may not happen
Lift / lowering time	approx. 70 sec. / 55 sec.
Standard operating voltage	1 ~/N+PE, 230 V, 60 Hz
Motor capacity	HDL 15000: 2x3 HP HDL 18000: 2x3 HP
Motor speed	3450 rpm
Operating pressure	HF 8000: 3900 psi
Pressure relief valve	HDL 15000: approx. 3600 psi HDL 18000: approx. 3700 psi
Oil volume	approx. 4,5 GAL
Noise level L_{PA}	≤70 dB
on-site connection	1 ~/N+PE, 230 V, 60 Hz with 16 Amp slow blow fuse according to VDI Regulations
Noise level LPA:	≤70 dB
on-site connection:	1~/N+PE, 230 V, 60 Hz with 16 A fuses, slow, according to US regulations

3.2 Safety devices

- **Over-pressure valve**
  Hydraulic system fuse against over-pressure
- **Check valve**
  Secure the vehicle against unauthorised lowering
- **Lockable main switch**
  Fuse to prevent unauthorised use
- **Hydraulically unlockable safety system on the cylinders**
  Secure against unauthorised lowering of the lift.
- **Up Off**
  Safety against a vehicle driving too widely onto the lift.
- **Pneumatic lifting arm block**
  Safety against adjusting the lifting arm

3.3 Data sheets



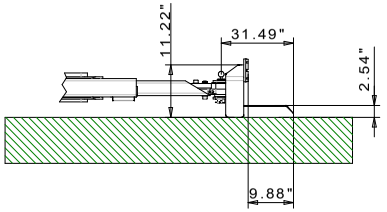


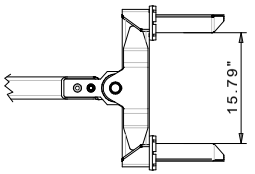
Bei Verwendung eines Leerrohrs im Boden kann das Steigrohr und die Quertraverse entfallen und umgekehrt.
When using an empty tube in the soil, the tube and the crossbar can be dropped and vice versa.

Bauseits am Hauptbedienaggregat bereitstellen:
Netzanschluss: 1PH,N+PE, 230V,60Hz
Absicherung: 16 Ampere träge
Kabellänge: ca.2m, 5x2,5mm²
Druckluft: lichte Weite 6mm, 6-10 bar
Prepared by customer at the main operating unit:
power supply: 1PH,N+PE, 230V,60Hz
fuse: 16 Ampere, time lag
cable diameter: 5x 2,5mm²
cable length:approx.78"
air pressure: inner diameter 6mm, 6-10bar

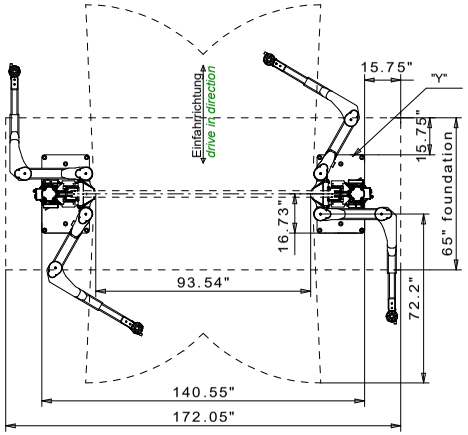
Wir weisen in unseren Plaenen auf die Mindestanforderung des Fundamentes hin, jedoch der Zustand der oertlichen Gegebenheiten (z.B. Untergrund etc.) obliegt nicht unserer Verantwortung. Die Ausbildung der Einbausituation muss vom planenden Architekten bzw. Statiker im speziellen Fall individuell spezifiziert werden.
We point out the minimum requirement of the foundation in our plans. The condition of the local realities for example: the ground under the foundation) does not lie in our responsibility. The execution of the installation situation must be individually specified by the planning architect or by the engineer engaged in statically calculations in the special case.

Zubehoer: Radgabel 250TSAPH08304
(*) Achtung bei Verwendung von Radgabeln,
- maximale Tragarmlast von 1250kg pro Radgabel
- maximale Traglast der kompletten Buehne reduziert sich auf 4200kg bei Verwendung von Radgabeln
Accessories: wheel fork 250TSAPH08304
(*) Attention when using wheel forks,
- the maximum permissible load reduces to 1250kg per wheel fork
- the lift capacity reduces to 4200kg

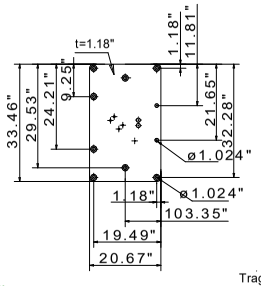




Detail "Y" Grundplatte
base plate



empfohlene Duebel siehe Pruefbuch
recommended dowels see manual



Alle Maße in Zoll! / all dimensions in inch!
Mass- und Konstruktionsaenderungen vorbehalten! dimensions and design changes reserved!

Tragfahigkeit 8165kg (*)
capacity: 18000 lbs

- (3D CAD-Modell)				Projektionsmethode 1 ISO 5456-2		
					Datum	Name
-	-	-	-	Bearb.	20.09.2019	MH
-	-	-	-	Gepr.		
-	-	-	-			
-	-	-	-			
-	-	-	-			
-	-	-	-			
ind.	Aender. / modification	Datum	Name			

Nussbaum
Korker Str. 24, 77694 Kehl
www.nussbaum-group.de

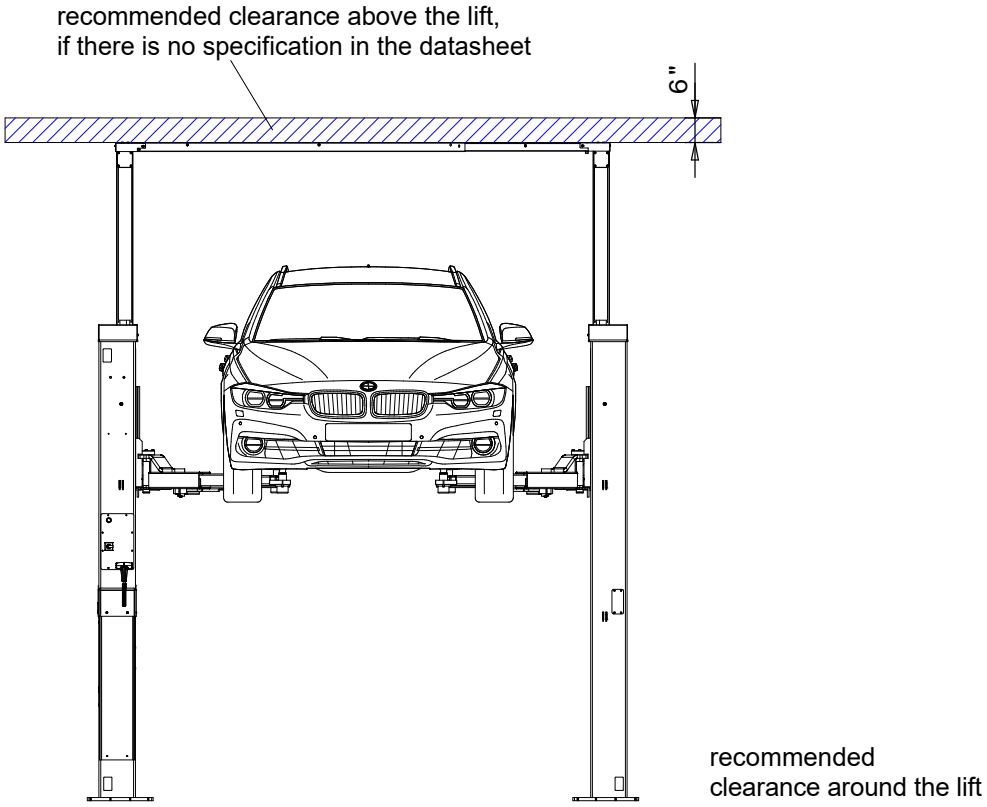
Benennung / designation

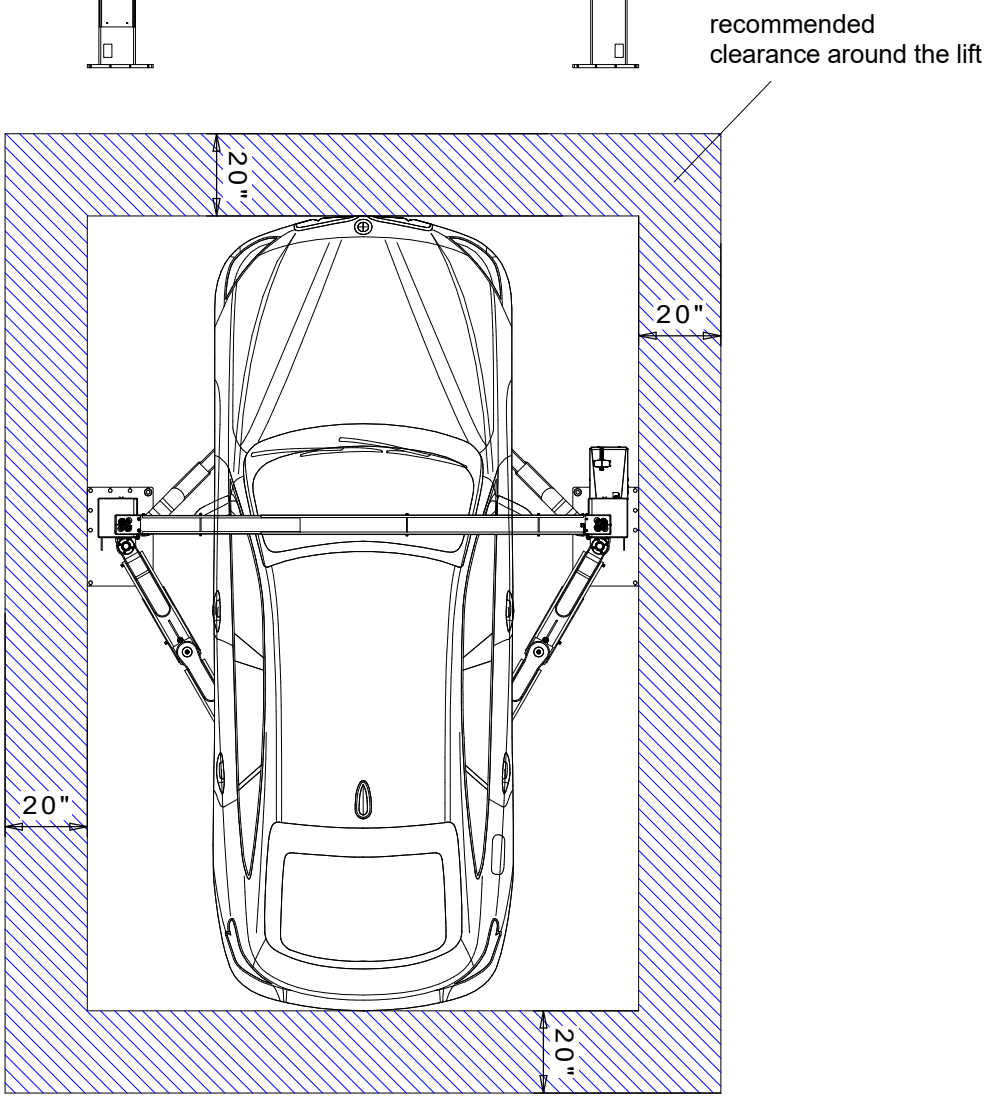
HDL 18000 SST DG

Zeichnungsnummer / drawing number

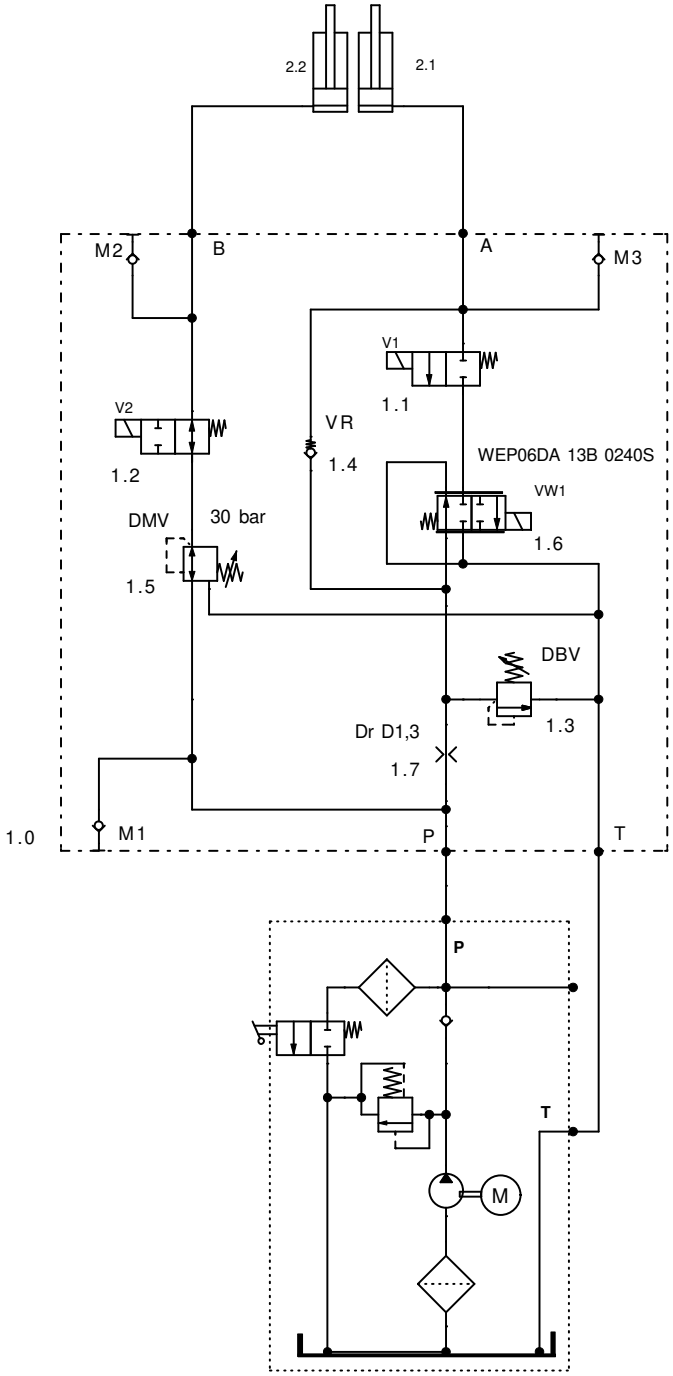
8909_NB

Clearance around the lift



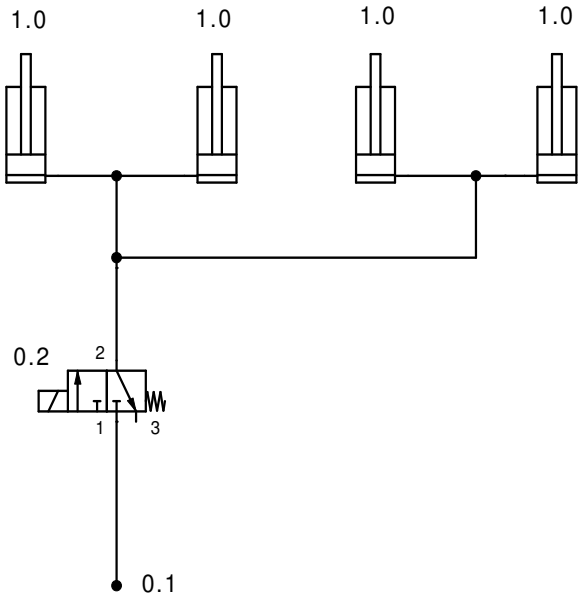


3.4 Hydraulic plan / per lift column



0.1	SPX 240	POWER UNIT	1.5	162406	PRESSURE REDUCING VALVE
			1.6	161060	PROPORTIONAL VALVE
1.0	99-540-11-00-5	BLOCK COMPLETE	1.7	99-540-60-11-5	THROTTLE ORIFICE
1.1	158502	2/2 WAY VALVE			
1.2	158503	2/2 WAY VALVE	2.1	265HDL2200	CYLINDER
1.3	155211	PRESSURE RELIEF VALVE	2.2		SST CYLINDER
1.4	130053	CHECK VALVE			

3.5 Pneumatic plan



0.1		AIR PRESSURE 6–10 BAR		960049	COIL
0.2	960047	VALVE	1.0	265HDL28220	CYLINDER

3.6 Electrical circuit diagram

Grounding according to local regulations

Before commissioning check whether the nominal motor current matches the motor protection relay. Check all terminal points for proper connection and that all contact screws are tight.
Before commissioning, check all wiring and controls for proper function. Do not permit commissioning from the unauthorized side.

These plans were generated on a CAD system. To keep plans to the current state, we ask that you request Nußbaum to make the changes.

These circuit diagrams are intellectual property. They may not be given to third parties or reproduced without our permission!

Rights to make changes are retained.

Circuit diagram and switch documents

Circuit diagrams were made to the best of our knowledge.
No warranty for the correctness of provided circuit diagrams and switch documents is given. This is particularly relevant for switches that were completed by us according to third party plans. This was done by us from purchaser provided manufacturer documentation.

Functional test of switch systems

Circuit diagrams are not standard documents. When checking the control cabinet at the factory, field devices such as sensors, thermostats and motors cannot be included. For this reason, even with careful inspection, functional and switch errors cannot always be prevented.
Deficiencies are removed within the scope of guarantee during commissioning. During commissioning, if our services are not used, then no deficiency liability is accepted. Rework, including informing of circuit diagrams of switch systems not commissioned by us are therefore only done to an invoice according to our service terms and conditions. Costs for rework by third parties cannot be hounored.

Inhaltsverzeichnis

Spalte X: eine automatisch erzeugte Seite wurde manuell nachbearbeitet

WUPJ005D 24.02.1994

Seite	Seitenbenennung	Seitenzusatzfeld	Datum	Bearbeiter	X
1	Deckblatt		25.01.2006	BOE	
2	Inhaltsverzeichnis		25.01.2006	BOE	
3	Änderung		25.01.2006	BOE	
4	Einspeisung		25.01.2006	BOE	
5	Steuerspannung		25.01.2006	BOE	
6	Achscontroller		25.01.2006	BOE	
7	Ventile		25.01.2006	BOE	
8	Bedientasten		25.01.2006	BOE	
9	frei		25.01.2006	BOE	
10	X1		25.01.2006	BOE	
11	X1.1		25.01.2006	BOE	
12	X2		25.01.2006	BOE	
13	X2.1		25.01.2006	BOE	
14	Stückliste		25.01.2006	BOE	x
15	Stückliste		25.01.2006	BOE	x

1 3

			Datum		Nussbaum Hebetechnik GmbH & Co.KG Korker Straße 24 D -77694 Kehl - Bodersweier Tel.: +49(0)7853/899-0 Fax.: +49(0)7853/8787	2.XX HDL SST 1 x 230V	=	
			Bearb.	BOE			+	
			Gepr.	04.09.19			Inhaltsverzeichnis	Bl. 2
Änderung	Datum	Name	Norm		Urspr.	Ers. f. / Ers. d.		15 Bl.

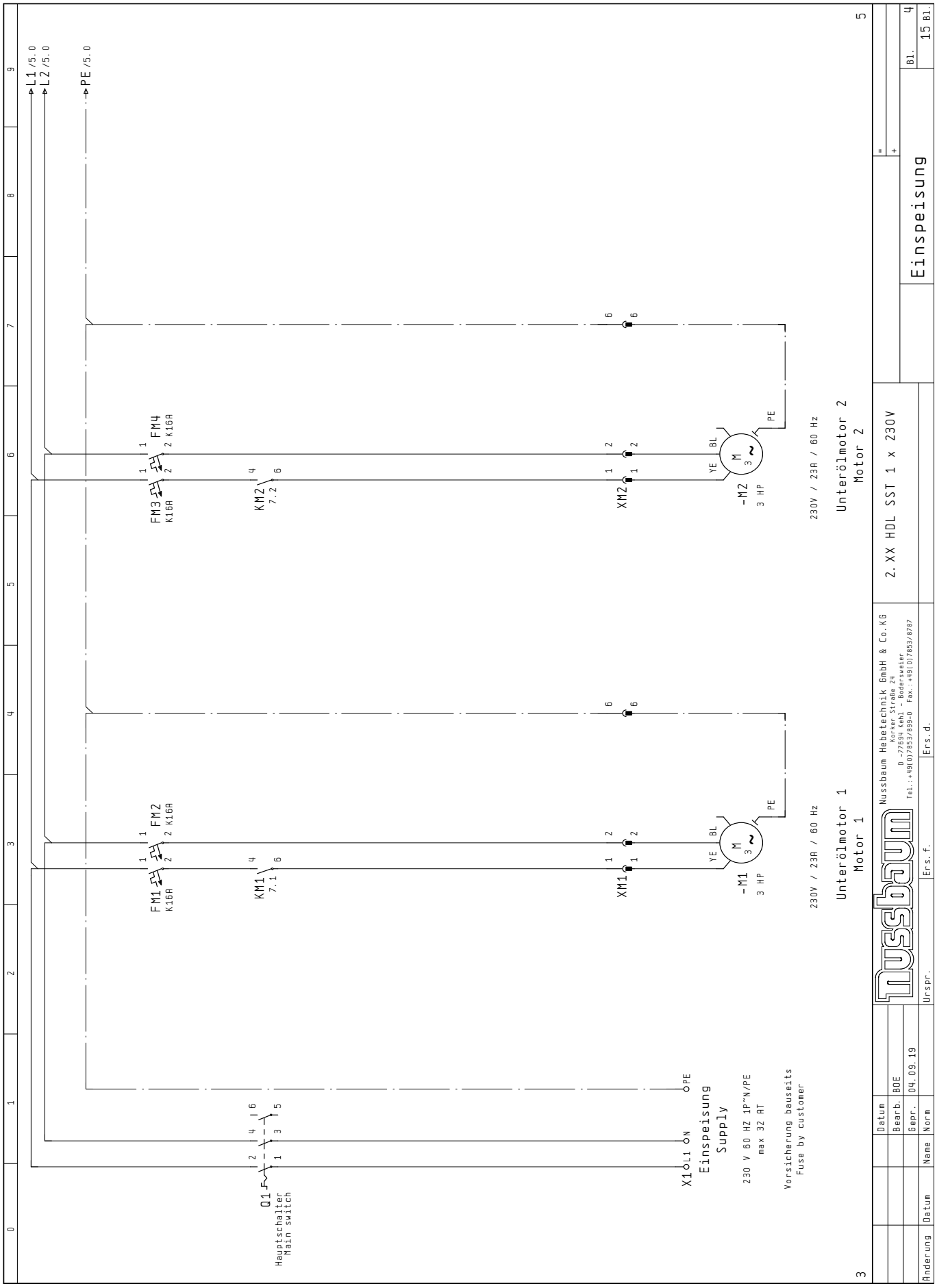
0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9

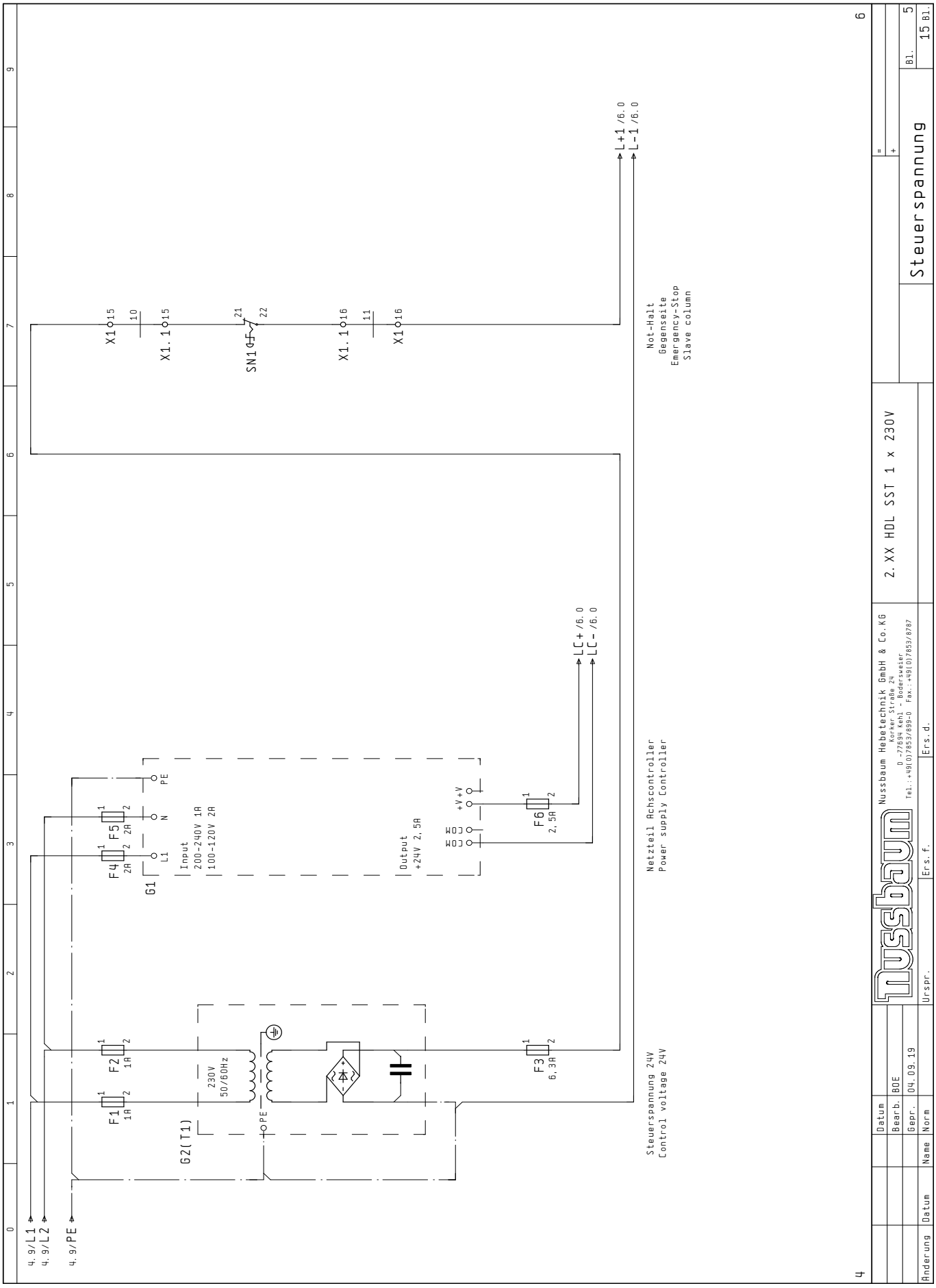
ÄNDERUNGS-INFORMATIONEN

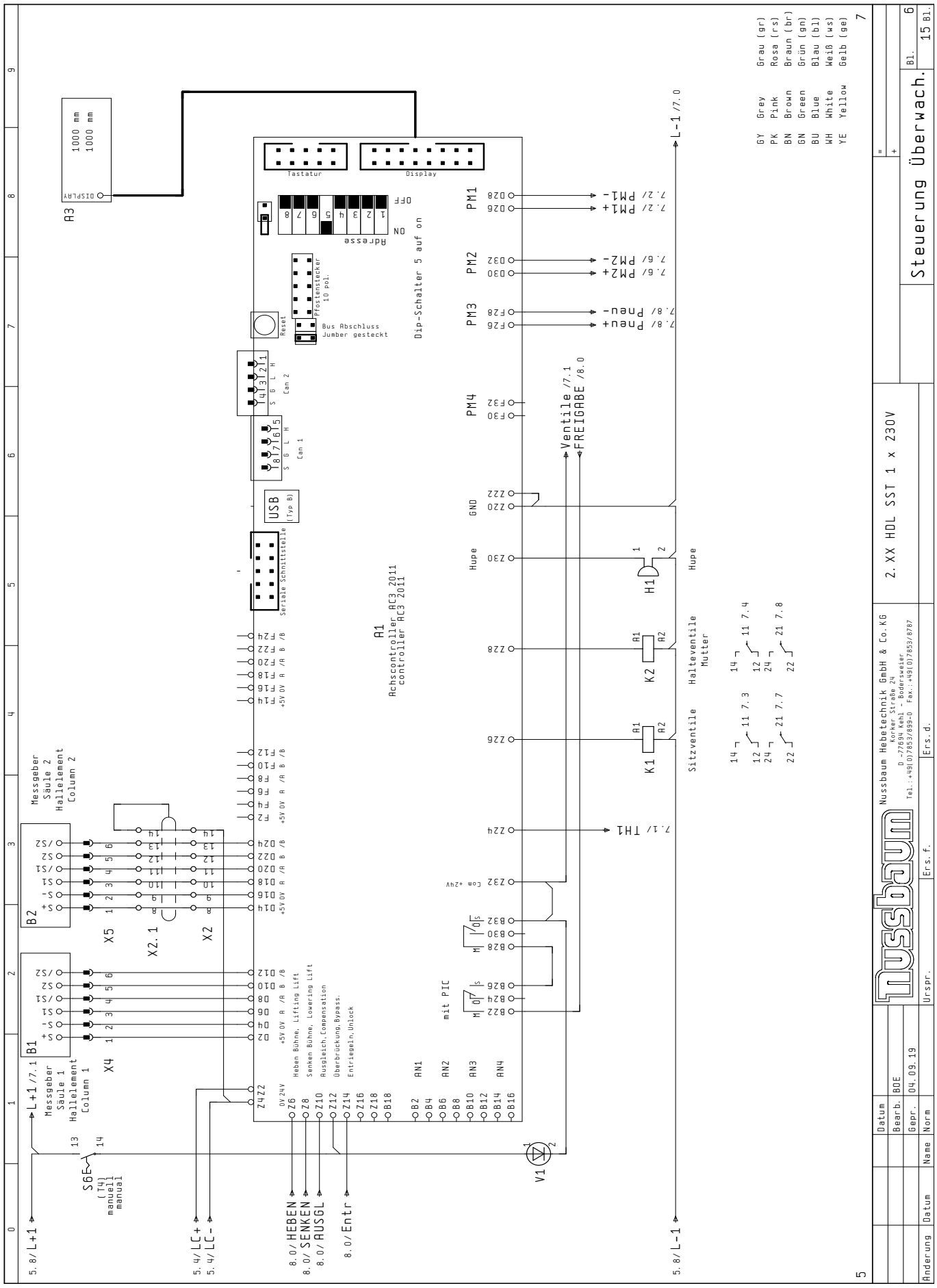
Nr.	Datum	Firma	Bearbeiter	Änderungen	ORT/SEITE
1	25.01.2006	NB	Boe	Thermokontakte von Motor eingefügt	
2	16.04.2015	NB	Boe	seit 03 / 2016 enfällt Pneumatikventil Gegenseite	

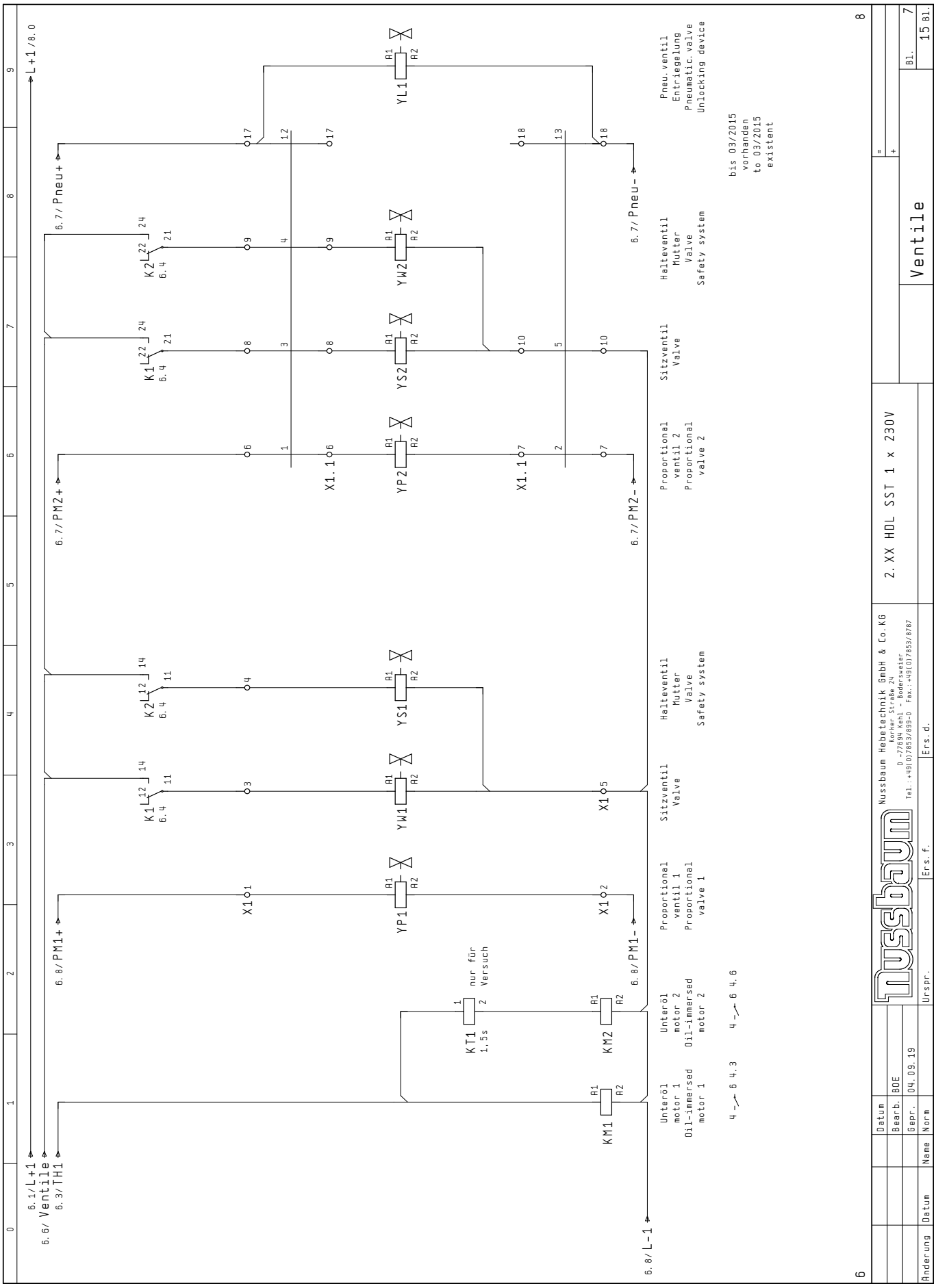
2 4

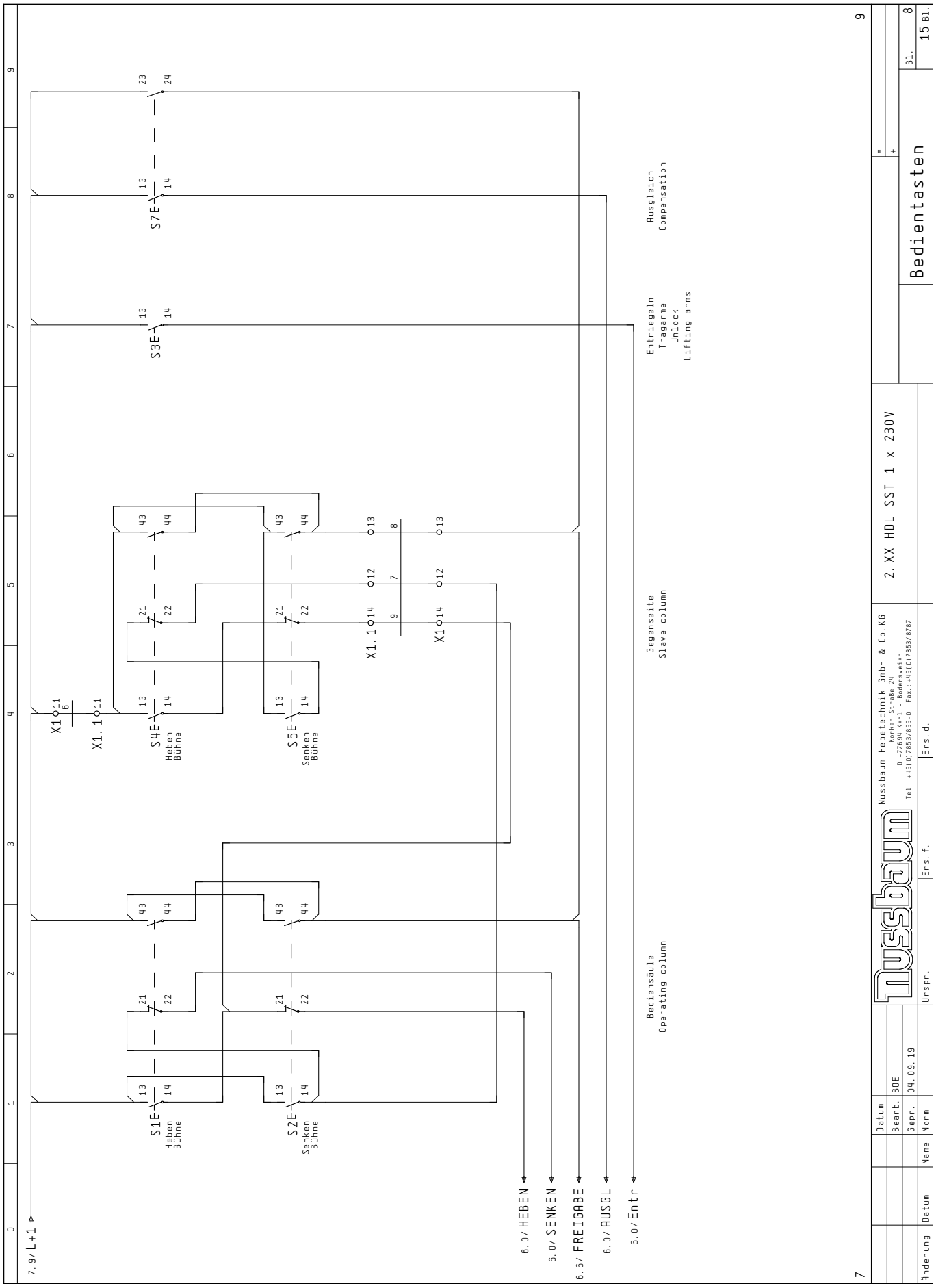
			Datum		Nussbaum	Nussbaum Hebetechnik GmbH & Co.KG Korker Straße 24 D -77694 Kehl - Bodersweier Tel.: +49(0)7853/899-0 Fax.: +49(0)7853/8787	2.XX HDL SST 1 x 230V		=
			Bearb.	BOE					+
			Gepr.	04.09.19				Änderung	Bl. 3
Änderung	Datum	Name	Norm		Urspr.	Ers.f.	Ers.d.		15 Bl.


L1 /5.0
L2 /5.0
PE /5.0
FM4
2 K16A
FM3
K16A
KM2
7.2
XM2
-M2
3 HP
230V / 23A / 60 Hz
Unterölmotor 2
Motor 2
FM2
2 K16A
FM1
K16A
KM1
7.1
XM1
-M1
3 HP
230V / 23A / 60 Hz
Unterölmotor 1
Motor 1
Q1
Hauptschalter
Main switch
X1 L1 N PE
Einspeisung
Supply
230 V 60 HZ 1P*N/PE
max 32 AT
Vorsicherung bauseits
Fuse by customer
Nussbaum Hebetechnik GmbH & Co.KG
Korker Straße 24
D -77694 Kehl - Bodersweier
Tel.: +49(0)7853/699-0 Fax.: +49(0)7853/8787
2.XX HDL SST 1 x 230V
Einspeisung
Datum
Bearb. BOE
Gepr. 04.09.19
Name
Norm
Urspr.
Ers.f.
Ers.d.
Änderung
Datum
Bl. 4
15 Bl.


4.9/L1
4.9/L2
4.9/PE
G2(T1)
230V
50/60Hz
F1
1A
F2
1A
PE
G1
Input
200-240V 1A
100-120V 2A
F4
2A
F5
2A
L1
N
PE
Output
+24V 2,5A
+V
+V
F6
2,5A
F3
6,3A
LC+ /6.0
LC- /6.0
Netzteil Achscontroller
Power supply Controller
Steuerspannung 24V
Control voltage 24V
X1 15
10
X1.1 15
21
SN1
22
X1.1 16
11
X1 16
L+1 /6.0
L-1 /6.0
Not-Halt
Gegenseite
Emergency-Stop
Slave column
Nussbaum Hebetechnik GmbH & Co.KG
Korker Straße 24
D -77694 Kehl - Bodersweier
Tel.:+49(0)7853/699-0 Fax.:+49(0)7853/8787
2.XX HDL SST 1 x 230V
Steuerspannung
Bl. 5
15 Bl.
Datum
Bearb. BOE
Gepr. 04.09.19
Norm
Name
Datum
Änderung
Urspr.
Ers.f.
Ers.d.


Steuerung Überwach.
2. XX HDL SST 1 x 230V
Nussbaum Hebetechnik GmbH & Co. KG
A1
Achscontroller AC3 2011
controller AC3 2011
A3
DISPLAY
1000 mm
1000 mm
Tastatur
Display
Adresse
Dip-Schalter 5 auf on
Reset
Bus Abschluss
Jumber gesteckt
Pfostenstecker
10 pol.
Can 2
Can 1
USB
(Typ B)
Serielle Schnittstelle
PM1
PM2
PM3
PM4
GND
Hupe
Ventile /7.1
FREIGABE /8.0
Sitzventile
Halteventile
Mutter
K1
K2
H1
B1
B2
X4
X5
X2.1
X2
S6E
(T4)
manuell
manual
Messgeber
Säule 1
Hallelement
Column 1
Messgeber
Säule 2
Hallelement
Column 2
mit PIC
Heben Bühne, Lifting Lift
Senken Bühne, Lowering Lift
Ausgleich, Compensation
Überbrückung, Bypass.
Entriegeln, Unlock
5. 8/ L+1
5. 8/ L-1
5. 4/ LC+
5. 4/ LC-
8. 0/ HEBEN
8. 0/ SENKEN
8. 0/ AUSGL
8. 0/ Entr
GY Grey Grau (gr)
PK Pink Rosa (rs)
BN Brown Braun (br)
GN Green Grün (gn)
BU Blue Blau (bl)
WH White Weiß (ws)
YE Yellow Gelb (ge)


L+1/8.0
6.1/L+1
6.6/Ventile
6.3/TH1
6.7/Pneu+
6.7/PM2+
6.8/PM1+
6.8/L-1
6.7/Pneu-
6.7/PM2-
6.8/PM1-
K1 6.4
K2 6.4
KT1 1,5s
nur für Versuch
KM1
KM2
YP1
YP2
YW1
YW2
YS1
YS2
YL1
X1.1
X1
Unteröl motor 1 Oil-immersed motor 1
Unteröl motor 2 Oil-immersed motor 2
Proportional ventil 1 Proportional valve 1
Proportional ventil 2 Proportional valve 2
Sitzventil Valve
Halteventil Mutter Valve Safety system
Pneu.ventil Entriegelung Pneumatic valve Unlocking device
bis 03/2015 vorhanden to 03/2015 existent
4 → 6 4.3
4 → 6 4.6
Nussbaum Hebetechnik GmbH & Co.KG
Korker Straße 24
D -77694 Kehl - Bodersweier
Tel.:+49(0)7853/899-0 Fax.:+49(0)7853/8787
2.XX HDL SST 1 x 230V
Ventile
Datum
Bearb. BOE
Gepr. 04.09.19
Norm
Name
Datum
Änderung
Urspr.
Ers.f.
Ers.d.
Bl. 7
15 Bl.


7.9/L+1
S1E Heben Bühne
S2E Senken Bühne
S4E Heben Bühne
S5E Senken Bühne
S3E
S7E
X1.1
X1
Bediensäule
Operating column
Gegenseite
Slave column
Entriegeln Tragarme
Unlock Lifting arms
Ausgleich
Compensation
6.0/HEBEN
6.0/SENKEN
6.6/FREIGABE
6.0/AUSGL
6.0/Entr
Nussbaum Hebetechnik GmbH & Co.KG
Korker Straße 24
D -77694 Kehl - Bodersweier
Tel.: +49(0)7853/699-0 Fax.: +49(0)7853/8787
2.XX HDL SST 1 x 230V
Bedientasten
Bl. 8
15 Bl.
Datum
Bearb. BOE
Gepr. 04.09.19
Norm
Name
Datum
Änderung
Urspr.
Ers. f.
Ers. d.

Klemmenplan

WUPKM02D / 22.04.1996

Leistenbezeichnung

X1

Funktionstext	Kabelname WM2	WG2	WM1	Kabeltyp	Ziel-bezeichnung	Anschluß	Klemmen-nummer	Brücken	Klemmen-Symbol	Ziel-bezeichnung	Anschluß	Kabelname WM1	Kabeltyp	Seite/Pfad
							L1			Q1	1			4.0
							N			Q1	3			4.1
Einspeisung							PE			XM1		PE		4.1
Kondensator	1				X1.1	U	U			KM2	4			4.6
Unterölmotor 2	2				X1.1	V	V			KM2	8			4.6
=	3				X1.1	TH3	TH							4.7
=	4				X1.1	TH4	TH			KM1	A1			4.7
=	PE				X1.1	PE	PE			XM1		PE		4.7
										G2(T1)	PE			
Proportional ventil 1					YP1	A1	1			A1	D26			7.3
=					YP1	A2	2			A1	D28			7.3
Sitzventil					YW1	A1	3			K1	11			7.3
Halteventil Mutter					YS1	A1	4			K2	11			7.4
Sitzventil					YW1	A2	5			KM2	A2			7.3
Proportional ventil 2		1			X1.1	6	6			A1	D30			7.6
=		2			X1.1	7	7			A1	D32			7.6
Sitzventil		3			X1.1	8	8			K1	21			7.7
Halteventil Mutter		4			X1.1	9	9			K2	21			7.8
Sitzventil		5			X1.1	10	10							7.7
Bediensäule		6			X1.1	11	11			S1	43			8.4
										S3	13			
Gegenseite		7			X1.1	12	12			S2	14			8.5
=		8			X1.1	13	13			S2	44			8.5
										S7	24			
=		9			X1.1	14	14			S2	21			8.5
Not-Halt Gegenseite		10			X1.1	15	15			F3	2			5.7
=		11			X1.1	16	16			S6	13			5.7
Halteventil Mutter		12			X1.1	17	17			A1	F26			7.8
=		13			X1.1	18	18			A1	F28			7.8
Unterölmotor 1			3		XM1		19			A1	Z24			4.4
=			4		XM1		20							4.4

Änderung | Datum | Name | Norm | Datum 04.09.19 | Bearb. UB1 | Gepr. 04.09.19 | Urspr. | Ers.f. | Ers.d.

Nussbaum Hebetechnik GmbH & Co. KG
Nussbaumstraße 24
D-77694 Kehl-Bodersweier
Tel.: +49(0)7853/699-0 Fax.: +49(0)7853/6787

2.XX HDL SST 1 x 230V

X1

Bl. 10 / 15 Bl.

9 11

0 1 2 3 4 5 6 7 8 9

Klemmenplan

WUPKM02D / 22.04.1996

Leistenbezeichnung: X1.1

Funktionstext	Kabelname	Kabeltyp	Ziel-bezeichnung	Anschluß	Klemmen-nummer	Brücken	Klemmen-Symbol	Ziel-bezeichnung	Anschluß	Kabeltyp	Kabelname	WM2 Delflex	WG2 Delflex	Seite/Pfad
Kondensator			XM2		U			X1	U			1		4.6
Unterölmotor 2			XM2		V			X1	V			2		4.6
"			XM2		TH3			X1	TH			3		4.7
"			XM2		TH4			X1	TH			4		4.7
"			XM2		PE			X1	PE			PE		4.7
Proportional ventil 2			YP2	A1	6			X1	6				1	7.6
"			YP2	A2	7			X1	7				2	7.6
Sitzventil			YS2	A1	8			X1	8				3	7.7
Halteventil Mutter			YW2	A1	9			X1	9				4	7.8
Sitzventil			YS2	A2	10			X1	10				5	7.7
Bediensäule			S4	13	11			X1	11				6	8.4
Gegenseite			S4	22	12			X1	12				7	8.5
"			S5	44	13			X1	13				8	8.5
"			S5	22	14			X1	14				9	8.5
Not-Halt Gegenseite			SN1	21	15			X1	15				10	5.7
"			SN1	22	16			X1	16				11	5.7
Halteventil Mutter					17			X1	17				12	7.8
"					18			X1	18				13	7.8

Änderung | Datum | Name | Norm | Gepr. 04.09.19 | Bearb. UB1 | Datum 04.09.19

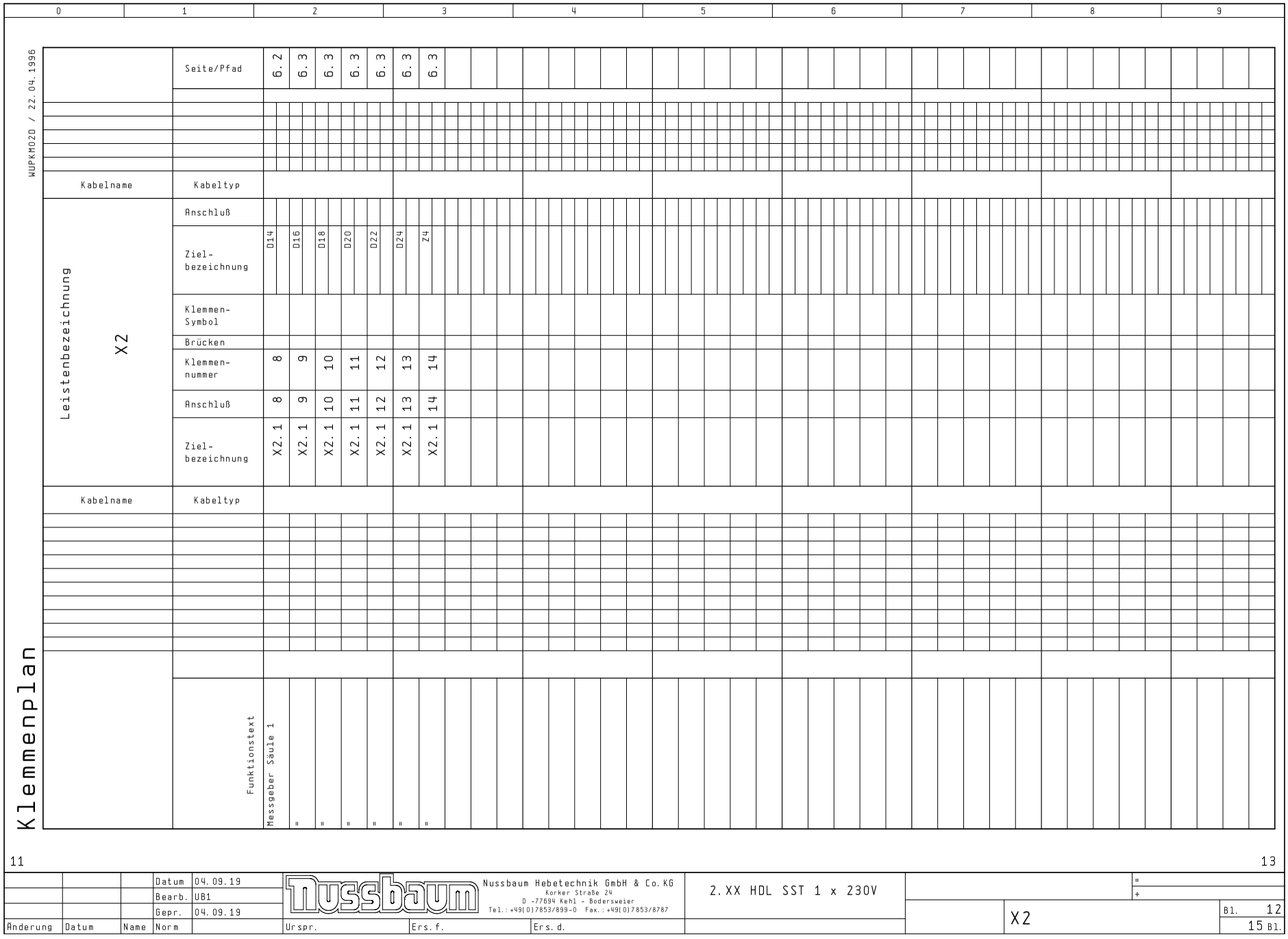
Ursp. | Ers.f. | Ers.d.

Nussbaum Hebetechnik GmbH & Co. KG
D-77694 Kehl - Bodersweier
Korker Straße 24
Tel.: +49(0)7853/6093-0 Fax.: +49(0)7853/6787

2.XX HDL SST 1 x 230V

X1.1

Bl. 11 / 15 Bl.


0 1 2 3 4 5 6 7 8 9
WUPKM02D / 22.04.1996
Klemmenplan
Leistenbezeichnung
X2
Kabelname
Kabeltyp
Seite/Pfad
6.2 6.3 6.3 6.3 6.3 6.3 6.3
Anschluß
Ziel-bezeichnung
D14 D16 D18 D20 D22 D24 Z4
Klemmen-Symbol
Brücken
Klemmen-nummer
8 9 10 11 12 13 14
Anschluß
8 9 10 11 12 13 14
Ziel-bezeichnung
X2.1 X2.1 X2.1 X2.1 X2.1 X2.1 X2.1
Kabelname
Kabeltyp
Funktionstext
Messgeber Säule 1
11
13
Datum 04.09.19
Bearb. UB1
Gepr. 04.09.19
Änderung Datum Name Norm
Nussbaum Hebetechnik GmbH & Co. KG
Korker Straße 24
D -77694 Kehl - Bodersweier
Tel.: +49(0)7853/899-0 Fax.: +49(0)7853/8787
Urspr. Ers. f. Ers. d.
2.XX HDL SST 1 x 230V
X2
Bl. 12
15 Bl.

Klemmenplan

WUPKM02D / 22.04.1996

Funktionstext	Kabelname	Kabeltyp	Leistenbezeichnung X2.1 Zielbezeichnung	Anschluß	Klemmennummer	Brücken	Klemmen-Symbol	Zielbezeichnung	Anschluß	Kabelname	Kabeltyp	Seite/Pfad
Messgeber Säule 1			X5	1	8			X2	8			6.2
"			X5	2	9			X2	9			6.3
"			X5	3	10			X2	10			6.3
"			X5	4	11			X2	11			6.3
"			X5	5	12			X2	12			6.3
"			X5	6	13			X2	13			6.3
"			Schirm		14			X2	14			6.3

Änderung | Datum | Name | Norm | Gepr. 04.09.19 | Bearb. UB1 | Datum 04.09.19

Urspr. | Ers.f. | Ers.d.

Nussbaum Hebetechnik GmbH & Co. KG
Korker Straße 24
D-77694 Kehl - Bodersweier
Tel.: +49(0)7853/693-0 Fax.: +49(0)7853/6787

2.XX HDL SST 1 x 230V

X2.1

Bl. 13 / Bl. 15

12 14

0 1 2 3 4 5 6 7 8 9

0	1	2	3	4	5	6	7	8	9

Stückliste Bill of materials

NUSTÜCK1 17.01.2003

Bauteilbenennung Component design.	Menge Amount	Bezeichnung Designation	Typen nummer Model number	Lieferant Supplier	Artikelnummer Article number
A1	1	Achscontroller ASC 2009 (AC3)	940262	Nussbaum	940262
A1	1	Federleiste 64pol für Achscontroller	LEITERPLATTENSTECKVERBIN 64P	Harting	996892
A1	36	Federkontakt FC zum Crimpen (Einzelkontakte)	FEDERKONTAKT FC ZUM CRIMPEN	Harting	996891
A1	1	Blechhalter ASC			035UNI03012
A1	1	Leiterkartenhalter/ Kartentasche	120X10029	Zubehör	992045
A1	1	Befestigungssatz für Leiterkartenhalter	120X10059	Zubehör	992046
A1	2	4-poliger MICRO COMBICON Ttecker Phönix	FK-MC 0,5/4-ST-2,5	Phoenix Contact	994015
A1	1	Hinterer Blechhalter für ASC			040UNI03064
A1	1	Abstandshalter PCB M3x13 mm	653-9403		992676
A1	1	Kunststoffschraube für ASC	984M3X006PA4		984M3X006PA4
A3	1	Display mit Flachbandleitung konfektioniert	DEM16481 SY-LY/L + LEITUNG	Nussbaum	175RGK03001
A3	1	Displayrahmen klein , komplett	240TSRM21133	Nussbaum	240TSRM21133
B1	1	HALLELEMENTSCHALTER HDD-16MS60BL,5-55ND1/5	HDD-16MS60BL,5-55ND1/5	Nussbaum	990658
B2	1	HALLELEMENTSCHALTER HDD-16MS60BL,5-55ND1/5	HDD-16MS60BL,5-55ND1/5	Nussbaum	990658
F1	1	Sicherungsklemme Trenner 5*20 mm	M4/8.SF	Entrelec	990661
F1	1	Feinsicherung 522.517	FEINSICHERUNG	GIF	9951863
F2	1	Sicherungsklemme Trenner 5*20 mm	M4/8.SF	Entrelec	990661
F2	1	Feinsicherung 522.517	FEINSICHERUNG	GIF	9951863
F3	1	Sicherungsklemme Trenner 5*20 mm	M4/8.SF	Entrelec	990661
F3	1	Feinsicherung	FEINSICHERUNG	GIF	990286
F4	1	Sicherungsklemme Trenner 5*20 mm	M4/8.SF	Entrelec	990661
F4	1	Feinsicherung	FEINSICHERUNG	GIF	990302
F5	1	Sicherungsklemme Trenner 5*20 mm	M4/8.SF	Entrelec	990661
F5	1	Feinsicherung	FEINSICHERUNG	GIF	990302
F6	1	Sicherungsklemme Trenner 5*20 mm	M4/8.SF	Entrelec	990661
F6	1	Feinsicherung	FEINSICHERUNG	GIF	990124
FM1	1	Sicherungsautomat 1 pol. 16 A Typ K	EP61 K16	General Elektric	992826
FM2	1	Sicherungsautomat 1 pol. 16 A Typ K	EP61 K16	General Elektric	992826
FM3	1	Sicherungsautomat 1 pol. 16 A Typ K	EP61 K16	General Elektric	992826
FM4	1	Sicherungsautomat 1 pol. 16 A Typ K	EP61 K16	General Elektric	992826
G1	1	Schalt-Netzgerät Achscontroller DC 24 V /2,5A	S60-F24 NICHT MEHR VERWENDEN	Pewatron	940101
G2(T1)	1	Trafo + Gleichrichter + Kondensator	TRAFO 1-PH	Schmelzer	990835
H1	1	Digisond akustischer Signalgeber	B/P 228	Deltron Components	990331
K1	1	INDUSTRIERELAIS 24V 4 Wechsler	274I	BTR	990267
K1	1	Industrierelaissockel für 4 Wechsler	110178	BTR	990381
K2	1	INDUSTRIERELAIS 24V 4 Wechsler	274I	BTR	990267
K2	1	Industrierelaissockel für 4 Wechsler	110178	BTR	990381
KM1	1	Leisungsrelais 24VDC	T92 P7D22-24	Tycon	99084221
KM2	1	Leisungsrelais 24VDC	T92 P7D22-24	Tycon	99084221
KT1	1	Ansprechverzögert 1,5 s	ZWEIDRAHT ZEITRELAIS	BTR	990212
Q1	1	Hauptsch. Not-Aus 3p 40A ,11kW	A2251/6.1050	Merz GmbH	990375
S1	1	Drucktaste flach o.Tast.Platte (M22)	M22-D-X	Moeller	990130
S1	1	Tastenplatte Pfeil (M22)	M22-XD-S-X7	Moeller	990131
S1	1	Befestigungsadapter (M22)	M22-A	Moeller	990965
S1	2	Kontaktelement 1S (M22)	M22-K10	Moeller	990133
S1	1	Kontaktelement 1Ö (M22)	M22-K01	Moeller	990181
S2	1	Drucktaste flach o.Tast.Platte (M22)	M22-D-X	Moeller	990130
S2	1	Tastenplatte Pfeil (M22)	M22-XD-S-X7	Moeller	990131
S2	1	Befestigungsadapter (M22)	M22-A	Moeller	990965
S2	2	Kontaktelement 1S (M22)	M22-K10	Moeller	990133

13 15

			Datum	04.09.19	Nussbaum	Nussbaum Hebetechnik GmbH & Co.KG Korker Straße 24 D -77694 Kehl - Bodersweier Tel.:+49(0)7853/899-0 Fax.:+49(0)7853/8787	2.XX HDL SST 1 x 230V		=
			Bearb.	BOE					+
			Gepr.	04.09.19				Stückliste	Bl. 14
Änderung	Datum	Name	Norm		Ursprr.	Ers.f.	Ers.d.		15 Bl.

Stückliste Bill of materials

NUSTÜCK1 17.01.2003

Bauteilbenennung Component design.	Menge Amount	Bezeichnung Designation	Typen nummer Model number	Lieferant Supplier	Artikelnummer Article number
S2	1	Kontaktelement 1Ö (M22)	M22-K01	Moeller	990181
S3	1	Drucktaste flach o.Tast.Platte (M22)	M22-D-X	Moeller	990130
S3	0	Tastenplatte Entriegeln (M22)	M22-XD-S-X12	Moeller	9901311
S3	1	Befestigungsadapter (M22)	M22-A	Moeller	990965
S3	1	Kontaktelement 1S (M22)	M22-K10	Moeller	990133
S4	1	Drucktaste flach o.Tast.Platte (M22)	M22-D-X	Moeller	990130
S4	1	Tastenplatte Pfeil (M22)	M22-XD-S-X7	Moeller	990131
S4	1	Befestigungsadapter (M22)	M22-A	Moeller	990965
S4	2	Kontaktelement 1S (M22)	M22-K10	Moeller	990133
S4	1	Kontaktelement 1Ö (M22)	M22-K01	Moeller	990181
S5	1	Drucktaste flach o.Tast.Platte (M22)	M22-D-X	Moeller	990130
S5	1	Tastenplatte Pfeil (M22)	M22-XD-S-X7	Moeller	990131
S5	1	Befestigungsadapter (M22)	M22-A	Moeller	990965
S5	2	Kontaktelement 1S (M22)	M22-K10	Moeller	990133
S5	1	Kontaktelement 1Ö (M22)	M22-K01	Moeller	990181
S6	1	Drucktaster Einbau klein 1S	DS 131	OSER GmbH	990366
S7	1	Drucktaste flach o.Tast.Platte (M22)	M22-D-X	Moeller	990130
S7	1	Start (I)(M22)	M22-XD-G-X1	Moeller	991045
S7	1	Befestigungsadapter (M22)	M22-A	Moeller	990965
S7	2	Kontaktelement 1S (M22)	M22-K10	Moeller	990133
SN1	1	NOT-AUS-Taster rot (M22)	M22-PV	Moeller	9950186
SN1	1	Unterlegschild NOT - AUS gelb quadr.	M22-XYK	Moeller	992387
SN1	1	Befestigungsadapter (M22)	M22-A	Moeller	990965
SN1	1	Kontaktelement 1Ö (M22)	M22-K01	Moeller	990181
V1	1	Sperrdiode BYV 28 -100 1000V;3A	BYV 28 -100	Conrad Elektronik	940042
WG2	1	Steuerleitung mit num. Adern (1461,0)	PVC-STEUERLEITUNG FLEX	Kabel Wächter GmbH & Co.KG	991303
YL1	1	Ventilstecker Bosch klein für Pneumatik	GERÄTESTECKER	Bosch GmbH	980600
YP1	1	Ventilstecker C182 9 N21 schwarz	GERÄTESTECKER	Seehausen	118620
YP2	1	Ventilstecker C182 9 N21 schwarz	GERÄTESTECKER	Seehausen	118620
YS1	1	Ventilstecker C182 9 N21 schwarz	GERÄTESTECKER	Seehausen	118620
YS2	1	Ventilstecker C182 9 N21 schwarz	GERÄTESTECKER	Seehausen	118620
YW1	1	Ventilstecker C182 9 N21 schwarz	GERÄTESTECKER	Seehausen	118620
YW2	1	Ventilstecker C182 9 N21 schwarz	GERÄTESTECKER	Seehausen	118620

14

			Datum	04.09.19	Nussbaum	Nussbaum Hebetechnik GmbH & Co.KG Korker Straße 24 D -77694 Kehl - Bodersweier Tel.: +49(0)7853/899-0 Fax.: +49(0)7853/8787	2.XX HDL SST 1 x 230V	=
			Bearb.	BOE				+
			Gepr.	04.09.19				Stückliste Bl. 15
Änderung	Datum	Name	Norm		Urspr.	Ers.f.	Ers.d.	15 Bl.

POS	BMK	QTY.	DESIGNATION 1	ORDER ITEM NUMBER	MANUFACTURER	ITEM NUMBER	SCREEN. PATH
1	A1	1	AXIS CONTROLLER ASC 2009 (AC3)	940262	NUSSBAUM	940262	6-1
2	A1	1	SPRING BAR 64-POLE FOR AXIS CONTROLLER	09 06 264 3201	HARTING	996892	6-1
3	A1	36	SPRING CONTACT FC FOR CRIMPING (SINGLE CONTACT)	09 06 000 8482	HARTING	996891	6-1
4	A1	1	PANEL HOLDER ASC			035UNI03012	6-1
5	A1	1	CIRCUIT BOARD HOLDER / CARD POCKET		ACCESSORIES	992045	6-1
6	A1	1	FASTENING SET FOR CIRCUIT BOARD HOLDER		ACCESSORIES	992046	6-1
7	A1	2	4-POLE MICRO COMBICON PLUG PHÖNIX	18 81 34 1	PHOENIX CONTACT	994015	6-1
8	A1	1	REAR PANEL HOLDER FOR ASC			040UNI03064	6-1
9	A1	1	SPACER PCB M3X13 MM	653-9403		992676	6-1
10	A1	1	PLASTIC SCREW FOR ASC	984M3X006PA4		984M3X006PA4	6-1
11	A3	1	DISPLAY FITTED WITH RIBBON CABLE	DEM16481 SY-LY/L + LINE	NUSSBAUM	175RGK03001	6-8
12	A3	1	DISPLAY FRAME, SMALL, COMPLETE	240TSRM21133	NUSSBAUM	240TSRM21133	6-8
13	B1	1	HALL ELEMENT SWITCH HDD-16MS60BL.5-55ND1/5	HDD-16MS60BL,5-55ND1/5	NUSSBAUM	990658	6-1
14	B2	1	HALL ELEMENT SWITCH HDD-16MS60BL.5-55ND1/5	HDD-16MS60BL,5-55ND1/5	NUSSBAUM	990658	6-2
15	F1	1	SAFETY CLAMP ISOLATOR 5*20 MM	0115657.25	ENTRELEC	990661	5-1
16	F1	1	FINE FUSE 522.517	1A SLOW BLOW FUSE 5X20	GIF	9951863	5-1
17	F2	1	SAFETY CLAMP ISOLATOR 5*20 MM	0115657.25	ENTRELEC	990661	5-1
18	F2	1	FINE FUSE 522.517	1A SLOW BLOW FUSE 5X20	GIF	9951863	5-1
19	F3	1	SAFETY CLAMP ISOLATOR 5*20 MM	0115657.25	ENTRELEC	990661	5-1
20	F3	1	FINE FUSE	6.3A SLOW BLOW FUSE 5X20	GIF	990286	5-1
21	F4	1	SAFETY CLAMP ISOLATOR 5*20 MM	0115657.25	ENTRELEC	990661	5-3
22	F4	1	FINE FUSE	2A SLOW BLOW FUSE 5X20	GIF	990302	5-3
23	F5	1	SAFETY CLAMP ISOLATOR 5*20 MM	0115657.25	ENTRELEC	990661	5-3
24	F5	1	FINE FUSE	2A SLOW BLOW FUSE 5X20	GIF	990302	5-3
25	F6	1	SAFETY CLAMP ISOLATOR 5*20 MM	0115657.25	ENTRELEC	990661	5-3
26	F6	1	FINE FUSE	2.5A SLOW BLOW FUSE 5X20	GIF	990124	5-3
27	FM1	1	CIRCUIT BREAKER 3-POLE 25 A TYPE K	681643	GENERAL ELEKTRIC	992833	4-3
28	FM2	1	CIRCUIT BREAKER 3-POLE 25 A TYPE K	681643	GENERAL ELEKTRIC	992833	4-3
29	FM3	1	CIRCUIT BREAKER 3-POLE 25 A TYPE K	681643	GENERAL ELEKTRIC	992833	4-6

POS	BMK	QTY.	DESIGNATION 1	ORDER ITEM NUMBER	MANUFACTURER	ITEM NUMBER	SCREEN. PATH
30	FM4	1	CIRCUIT BREAKER 3-POLE 25 A TYPE K	681643	GENERAL ELEKTRIC	992833	4-6
31	G1	1	MAINS DEVICE SWITCH AXIS CONTROLLER DC 24 V / 2.5 A	S60-F24	PEWATRON	940101	5-3
32	G2(T1)	1	TRANSFORMER + RECTIFIER + CAPACITOR	MSE 84/29,5 5371	SCHMELZER	990835	5-1
33	H1	1	DIGISOND ACOUSTIC SIGNALLING UNIT	B/P 228	DELTRON COMPONENTS	990331	6-5
34	K1	1	INDUSTRIAL RELAY 24 V 4 WECHSLER	110012-25.14.09.08	BTR	990267	6-4
35	K1	1	INDUSTRIAL RELAY SOCKET FOR 4 WECHSLER	110178	BTR	990381	6-4
36	K2	1	INDUSTRIAL RELAY 24 V 4 WECHSLER	110012-25.14.09.08	BTR	990267	6-4
37	K2	1	INDUSTRIAL RELAY SOCKET FOR 4 WECHSLER	110178	BTR	990381	6-4
38	KM1	1	POWER RELAY 24 VDC	T92 P7D22-24	TYCON	99084221	7-1
39	KM2	1	POWER RELAY 24 VDC	T92 P7D22-24	TYCON	99084221	7-2
40	KT1	1	ADDRESSING DELAY 1.5 S	VZE -E05 1,5 S	BTR	990212	7-2
41	Q1	1	MAIN SW. EMERGENCY STOP 3P 63A 22KW	MZ 37002	MERZ GMBH	991259	4-0
42	S1	1	PUSH BUTTON FLAT OR BUTTON PLATE (M22)	M22-D-X	MOELLER	990130	8-1
43	S1	1	BUTTON PLATE ARROW (M22)	M22-XD-S-X7	MOELLER	990131	8-1
44	S1	1	FASTENING ADAPTER (M22)	M22-A	MOELLER	990965	8-1
45	S1	2	CONTACT ELEMENT 1S (M22)	M22-K10	MOELLER	990133	8-1
46	S1	1	CONTACT ELEMENT 1Ö (M22)	M22-K01	MOELLER	990181	8-1
47	S2	1	PUSH BUTTON FLAT OR BUTTON PLATE (M22)	M22-D-X	MOELLER	990130	8-1
48	S2	1	BUTTON PLATE ARROW (M22)	M22-XD-S-X7	MOELLER	990131	8-1
49	S2	1	FASTENING ADAPTER (M22)	M22-A	MOELLER	990965	8-1
50	S2	2	CONTACT ELEMENT 1S (M22)	M22-K10	MOELLER	990133	8-1
51	S2	1	CONTACT ELEMENT 1Ö (M22)	M22-K01	MOELLER	990181	8-1
52	S3	1	PUSH BUTTON FLAT OR BUTTON PLATE (M22)	M22-D-X	MOELLER	990130	8-7
53	S3	1	BUTTON PLATE UNLOCK (M22)	M22-XD-S-X12	MOELLER	9901311	8-7
54	S3	1	FASTENING ADAPTER (M22)	M22-A	MOELLER	990965	8-7
55	S3	1	CONTACT ELEMENT 1S (M22)	M22-K10	MOELLER	990133	8-7
56	S4	1	PUSH BUTTON FLAT OR BUTTON PLATE (M22)	M22-D-X	MOELLER	990130	8-4
57	S4	1	BUTTON PLATE ARROW (M22)	M22-XD-S-X7	MOELLER	990131	8-4
58	S4	1	FASTENING ADAPTER (M22)	M22-A	MOELLER	990965	8-4
59	S4	2	CONTACT ELEMENT 1S (M22)	M22-K10	MOELLER	990133	8-4
60	S4	1	CONTACT ELEMENT 1Ö (M22)	M22-K01	MOELLER	990181	8-4
61	S5	1	PUSH BUTTON FLAT OR BUTTON PLATE (M22)	M22-D-X	MOELLER	990130	8-4

POS	BMK	QTY.	DESIGNATION 1	ORDER ITEM NUMBER	MANUFACTURER	ITEM NUMBER	SCREEN. PATH
62	S5	1	BUTTON PLATE ARROW (M22)	M22-XD-S-X7	MOELLER	990131	8-4
63	S5	1	FASTENING ADAPTER (M22)	M22-A	MOELLER	990965	8-4
64	S5	2	CONTACT ELEMENT 1S (M22)	M22-K10	MOELLER	990133	8-4
65	S5	1	CONTACT ELEMENT 1Ö (M22)	M22-K01	MOELLER	990181	8-4
66	S6	1	PUSH BUTTON INSERTION SMALL 1S	DS 131	OSER GMBH	990366	6-1
67	S7	1	PUSH BUTTON FLAT OR BUTTON PLATE (M22)	M22-D-X	MOELLER	990130	8-8
68	S7	1	START (I) (M22)	M22-XD-G-X1	MOELLER	991045	8-8
69	S7	1	FASTENING ADAPTER (M22)	M22-A	MOELLER	990965	8-8
70	S7	2	CONTACT ELEMENT 1S (M22)	M22-K10	MOELLER	990133	8-8
71	SN1	1	EMERGENCY STOP BUTTON RED (M22)	M22-PV	MOELLER	9950186	5-7
72	SN1	1	EMERGENCY STOPP UNDERLAY SIGN YELLOW SQUARE	M22-XYK	MOELLER	992387	5-7
73	SN1	1	FASTENING ADAPTER (M22)	M22-A	MOELLER	990965	5-7
74	SN1	1	CONTACT ELEMENT 1Ö (M22)	M22-K01	MOELLER	990181	5-7
75	V1	1	BLOCKING DIODE BYV 28 -100 1000 V; 3 A		CONRAD ELEKTRONIK	940042	6-1
76	WG2	1	CONTROL LINE WITH NUM. WIRES (14G1,0)	ÖPVC-JZ	KABEL WÄCHTER GMBH & CO.KG	991303	5-7
77	X1	16	GROUNDING CLAMP	16518822	ENTRELEC	ENT.16518822	7-3
78	X1	16	BLANK SIGN	23100007	ENTRELEC	ENT.23100007	7-3
79	X1.1	11	GROUNDING CLAMP	16518822	ENTRELEC	ENT.16518822	7-6
80	X1.1	11	BLANK SIGN	23100007	ENTRELEC	ENT.23100007	7-6
81	X4	1	PLUG CONN. DEVICE PLUG KU. 6-POLE	172-8951	RS	990918	6-1
82	X4	1	PLUG CONN. DEVICE PLUG KU. 6-POLE	172-9077	RS	990919	6-1
83	X4	6	PIN INSERT FOR DEVICE PLUG	172-9140	SPÖRLE GMBH	991330	6-1
84	X4	6	JACK INSERT FOR DEVICE PLUG	172-9134	SPÖRLE GMBH	991331	6-1
85	X5	1	PLUG CONN. DEVICE PLUG KU. 6-POLE	172-8951	RS	990918	6-2
86	X5	1	PLUG CONN. DEVICE PLUG KU. 6-POLE	172-9077	RS	990919	6-2
87	X5	6	PIN INSERT FOR DEVICE PLUG	172-9140	SPÖRLE GMBH	991330	6-2
88	X5	6	JACK INSERT FOR DEVICE PLUG	172-9134	SPÖRLE GMBH	991331	6-2
89	XM1	1	PLUG HOUSING 6-POLE KU	05 0-180906-0	AMP	990327	4-3
90	XM1	5	FLAT PLUG SLEEVE PLUG 6.3 MM	5.447.123.111	AMP	990328	4-3
91	XM1	5	CONTROL LINE WITH COLOUR WIRES (5G2,5)	ÖPVC-JZ	KABEL WÄCHTER GMBH & CO.KG	991435	4-3

POS	BMK	QTY.	DESIGNATION 1	ORDER ITEM NUMBER	MANUFACTURER	ITEM NUMBER	SCREEN. PATH
92	XM1	1	POWER CABLE 6000 MM	232SL03310	NUSSBAUM	232SL03310	4-3
93	XM2	1	PLUG HOUSING 6-POLE KU	05 0-180906-0	AMP	990327	4-6
94	XM2	5	FLAT PLUG SLEEVE PLUG 6.3 MM	5.447.123.111	AMP	990328	4-6
95	XM2	5	CONTROL LINE WITH COLOUR WIRES (5G2,5)	ÖPVC-JZ	KABEL WÄCHTER GMBH & CO.KG	991435	4-6
96	XM2	1	POWER CABLE 6000 MM	232SL03310	NUSSBAUM	232SL03310	4-6
97	YL1	1	VALVE PLUG BOSCH SMALL FOR PNEUMATICS	1834 484 051	BOSCH GMBH	980600	7-9
98	YP1	1	VALVE PLUG C182 9 N21 BLACK	KA132000B9 PG 9	SEEHAUSEN	118620	7-3
99	YP2	1	VALVE PLUG C182 9 N21 BLACK	KA132000B9 PG 9	SEEHAUSEN	118620	7-6
100	YS1	1	VALVE PLUG C182 9 N21 BLACK	KA132000B9 PG 9	SEEHAUSEN	118620	7-4
101	YS2	1	VALVE PLUG C182 9 N21 BLACK	KA132000B9 PG 9	SEEHAUSEN	118620	7-7
102	YW1	1	VALVE PLUG C182 9 N21 BLACK	KA132000B9 PG 9	SEEHAUSEN	118620	7-3
103	YW2	1	VALVE PLUG C182 9 N21 BLACK	KA132000B9 PG 9	SEEHAUSEN	118620	7-8

4 Installation

The installation of the Lift is performed by manufacturer trained technicians or by the manufacturer's distribution partner. The Lift owner may use their trained mechanics to install the Lift. The installation must be performed according to the following regulations:

- Use architectural plans, if available, to determine Lift location.
- Lift is intended for indoor installation only. Installation in an outdoor application is prohibited and will void the warranties of the product.
- Always consult a qualified person regarding local regulations for seismic requirements. The owner has to consult a qualified person to address any local or state requirements (per the ALCTV standard: "a qualified person should be consulted to address any seismic loads and other local or state requirements")
- Do not install Lift in hazardous locations, pit or depression areas, or washing stalls.
- Concrete must have compression strength (see chapter 8).
- Mount on a foundation deeper than the local external frost line.
- Be sure to read the ANSI/ALI ALIS prior to installation.
- The installer has to return the instructional materials furnished with the lift back to the owner.

Shiping / parts list

POS	ITEM NAMES	ITEM CODES	QUANTITY	LOCATION
1	COLUMN MASTER WITH LIFTING CARRIAGE AND LIFTING ARMS		1	BOX
2	COLUMN SLAVE WITH LIFTING CARRIAGE AND LIFTING ARMS		1	BOX
3	RISER	232SL05070	2	BOX
4	TRANSVERSE TUBE		1	BOX
5	COVER	265HDL01032	2	BOX
6	MEASURING HOSE 500 MM	982048	1	BOX
7	LOCKING PIN	250HDL48119	4	BOX
8	SCREW PACKAGE			PLASTIC BAG
	CYLINDER SCREWS M6 X 12		10	PLASTIC BAG
	NUT 6,4 - 9021ST ZN		10	PLASTIC BAG
9	MANUAL	975497	1	BOX

5 Operating manual

When handling the lift, it must absolutely comply with safety regulations. Carefully read the safety regulations in Section 4 before first operation!

5.1 Lifting the vehicle

- Drive the vehicle into the middle of the lift lengthwise.
- Secure the vehicle against rolling away. Apply the handbrake, put into gear.
- To swivel the lifting arm inwards, the "unlock" button must be pushed on the operating unit. This opens the pneumatic interlock.
  Swing in the lifting arms and place the adjustable receiving plate at the vehicle manufacturer specified points. As soon as the lift is raised, the lifting arm is interlocked.
- Consider the total centre of mass, this must be as close as possible to the middle of the lift.
  Depending on the vehicle type, it may be required to raise the receiving plate so that the vehicle is horizontal in a raised state.

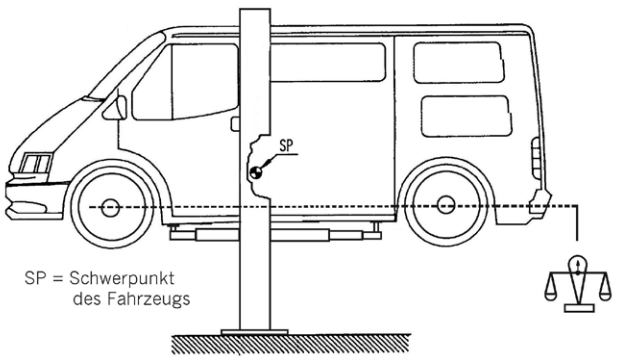


Figure 1

- Inspect the hazardous area. No person or object may stand in the working area of the lift, or on the lift.

- Switch on controls. Turn the main switch to position “1”
- Lift the vehicle until the wheels are off the ground. Push the “Lift” button.
- If the wheels are not blocked, interrupt the lifting process and check for proper seating of the carrier plate.

Ensure secure vehicle placement on the carrier plate, otherwise there is a danger of the vehicle dropping.

- Raise the vehicle to the desired working height.
- Always observe the complete lifting process.

Figure 2: Main operating elements

A “Lift” button
B “Lower” button
D Optional balance buttons are possible
E Button “Unlock the lifting arm”
F Display

Bild 3: 2. operating element

A “Lift” button
B “Lower” button
C Emergency stop button
E Optional buttons on this operating element “Unlock the lifting arm”

5.2 Lowering the vehicle

- Inspect the hazardous area. No person or object may stand in the working area of the lift, or on the lift.
- Place the vehicle to the desired work position or lower it to the lowest position.
  Push the “Lower” button. The lift raises briefly (unlocking the safety cylinder) before the actual lowering process starts.
- Before reaching the lowest position the lift stops the lowering process for safety reasons (CE stop).
  After a recheck of the hazardous area, push the “Lower” button again. During lowering to the lowest position an acoustic warning signal can be heard.
- The lowering process must be continuously observed.
- Once the lifting arms have reached the detectable lowest position, swivel the lifting arms outwards. For this, push the “unlock” button.
- The vehicle can be driven off the lift.

5.3 Travel measurement

- To measure the travel of the threaded spindle, a Hall sensor is attached to the hydraulic cylinders which counts the external ring in magnetised increments. These increments are transmitted and compared on the computer control system (axis controller). An uneven lift rail is balanced to the same height during a lifting or lowering movement. The current height position of the lift can be read off from the display.
- The computer control system monitors the entire process of the lift during “lifting” and “lowering”.
- The lift lowers during normal operation at 0.05 metres per second (HDL 6500: 0.039 meter per second)
  If the speed increases, e.g. due to a defect in the hydraulic system, the computer control system detects this problem and removes hydraulic supply to the unlocking cylinders. The interactive safety system is activated and the lift remains in place.

5.4 Manual equalization of the lifting rails

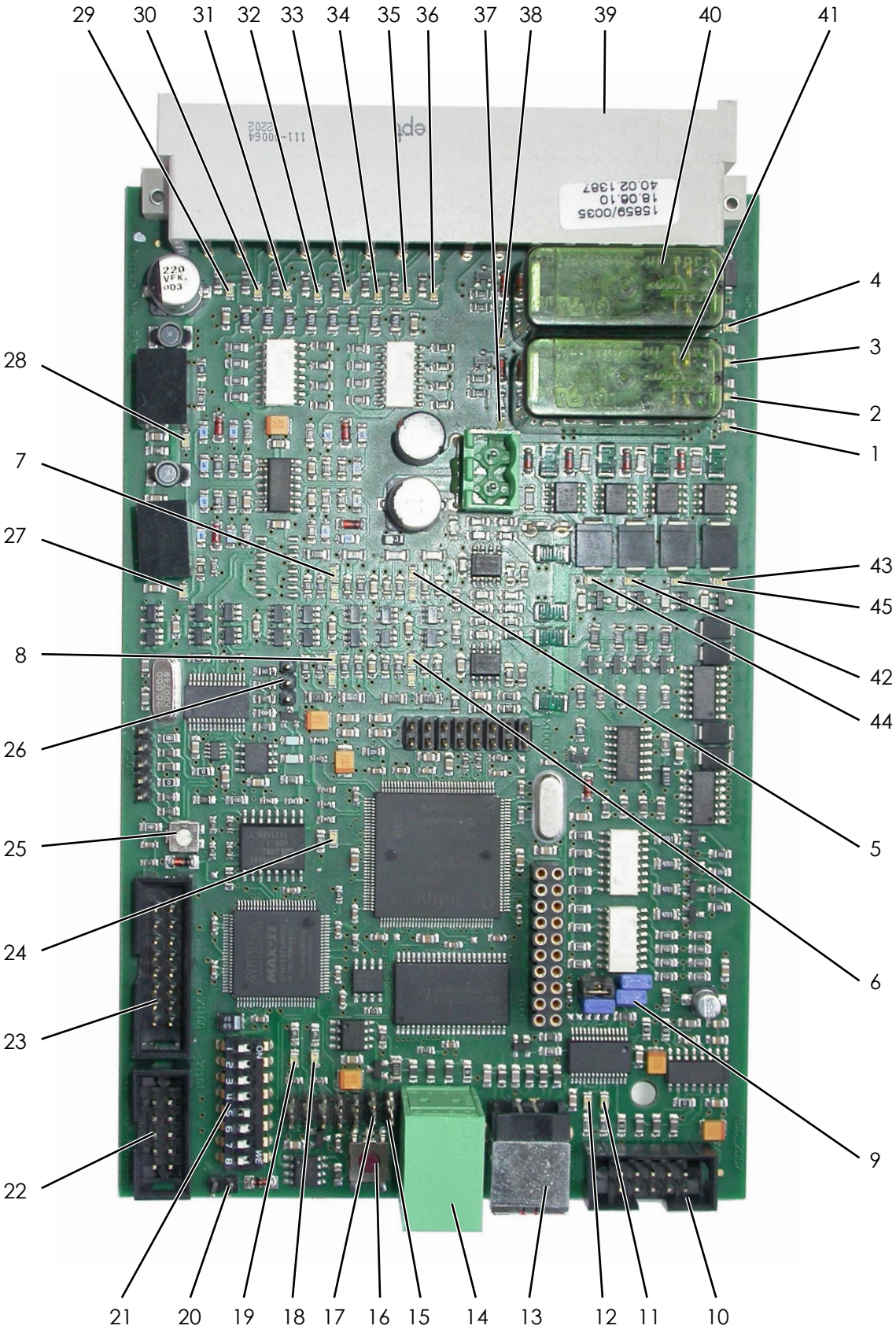
Access to the DIP switch may solely be done by a trained and authorised specialist and only with the main switch turned off.

Once the Computer Control System detects a height difference of approx. 40 mm from one lift rail to another, the lift automatically sets down.

5.4.1 Axle controller ASC2010

Settings

Jumper settings



1	LED OUT 1
2	LED OUT 2
3	LED OUT 3
4	LED OUT 4
5	2 LED RED ENCODER AXIS 1
6	2 LED RED ENCODER AXIS 2
7	2 LED RED ENCODER AXIS 3
8	2 LED RED ENCODER AXIS 4
9	X603 X604 4 JUMPER FOR INTERFACES SWITCHOVER
10	X601 RS232- CONNECTOR
11	GREEN LED: USB RECEIVING
12	RED LED: USB TRANSMITTING
13	X600 USB TYPE B CONNECTOR
14	X602 2XCAN BUS CONNECTOR
15	JP600 CAN 1 TERMINATION
16	S1100 CPU RESET BUTTON
17	JP601 CAN 2 TERMINATION
18	GREEN LED: CAN STATUS
19	RED LED: CAN STATUS
20	JP1100 JUMPER FOR PROGRAMMING
21	S1101 DIP SWITCHES 1-8
22	X1101 CONNECTOR FOIL KEYBOARD
23	X1100 DISPLAY CONNECTOR
24	GREEN LED: CPU STATUS (FLASHES)
25	P1101 POTENTIOMETER CONTRAST DISPLAY
26	X501 ZERO JUMPER PIC
27	LED GREEN 5 V
28	LED GREEN 3.3 V
29	RED LED: IN 1
30	RED LED: IN 2
31	RED LED: IN 3
32	RED LED: IN 4
33	RED LED: IN 5
34	RED LED: IN 6
35	RED LED: IN 7
36	RED LED: IN 8
37	GREEN LED: RELAY K500
38	GREEN LED: RELAY K700
39	X901 64-PIN CONNECTOR STRIP
40	K700 RELAY CPU MONITORING
41	K500 RELAY PIC MONITORING
42	LED PWM 1
43	LED PWM 2
44	LED PWM 3
45	LED PWM 4

Designator: **JP1100**

Purpose	Programming mode See description Programming the µControllers
Open	Normal operation
Closed	Programming
Standard	Open

Designator: **JP600**

Purpose	Can BUS 1 See below under CAN-Bus
Open	No termination
Closed	120 Ω termination
Standard	Closed

Designator: **X501**

Purpose	Zero PIC See description PIC
Closed	Zeroing after switching on if opened within 2s
Standard	Open

Potentiometer P1101 contrast for LCD Display

The contrast for the LCD display can be adjusted with the P1101 potentiometer.
After changing a display this must be reset under certain circumstances, especially if the dis-play does not appear or there are black squares.

Reset S1100 button

After activation of the S1100 button the microprocessor performs a reset, i.e. the program restarts. This is similar to switching on the 24V supply voltage again.

DIP switch S1101

The sliding switches 1 to 8 of the S1101 switch block can be switched off and on. The position on the side with the designation „ON“ means that the switch is turned on.

The meaning of the switch is determined in the program, i.e. it has no application-specific functions.

Normal HB:
• Dip switch 5 – Automatic

Controlled operation **(only for trained persons!)**:
• Dip-switches 1-4 (with 2 axes): Axis 1-4
• Dip-switch 7 „zero“

Program description of the PIC

Zeroing PIC

Manual:
A jumpered bridge over the push pin X501 Pin 1 and 2 while turning on the supply voltage and removing this bridge within the first 2 seconds after turning on the voltage carries out a ZE-ROING of the counter status.
The LED K500 must light up.

Only stick the push pin (jumper) for saving on **one** pin (➞ bridge open)

6 Behaviour in cases of error

Defective operational readiness of the lift may be due to a simple error. Check the system for the listed sources of error.
If the error cannot be removed after an inspection to the named causes, then inform customer service or your dealer.

Independent repairs to the lift, especially on the safety devices, as well as inspections and repairs to electrical systems are prohibited. Work on electrical systems may only be done by electricians.

Problem: Motor does not start!

possible causes:	*Repair:*
no power supply	Check the power supply
The main switch is not switched on	Check the main switch
The main switch is defective	Check main switch
Defective fuse	Have fuses checked
Power supply interrupted	Inform customer service
Thermal fuse of the motor is active	Let the water cool
Lift rails are uneven by more than 40 mm	Manual equalisation see Section 5.3
Motor defective	Inform customer service

Problem: Motor starts, load is not lifted!

possible causes:	*Repair:*
The vehicle is too heavy	Unload vehicle
Hydraulic oil filling level is too low	Refill hydraulic oil
The emergency discharge screw is not closed	Check the emergency discharge screws
Hydraulic valve defective	Inform customer service
Mechanical pump defective	Inform customer service
Coupling defective	Inform customer service

Problem: The lift cannot be lowered!

possible causes:	*Repair:*
Lifting table is sitting on an obstacle	(see Section 6.1)
Hydraulic valve defective	Inform customer service
Defective fuse	Have fuses checked
Safety system does not unlock	Inform customer service
Incorrect push button actuated	

Problem: The lift arms cannot be swivelled in or out.

possible causes:	*Repair:*
The unlock switch is not pushed, or is defective	Have the button checked
No or insufficient compressed air available	Check air pressure
Compressed air line defective air flow noises	Check the path of the compressed air line. If required, inform customer service

6.1 Moving onto an obstacle

If the lift lowers onto an obstacle, the system automatically switches off, as soon as an unevenness of approx. ± 40 mm is detected.

6.1.1 Remove the obstacle

Access to the DIP switch may solely be done by a trained and authorised specialist and only with the main switch turned off.

- Remove the covers on the unit and the electrical box.
- Push the reset button 1 on the circuit board and hold it down. (See Figure 5)

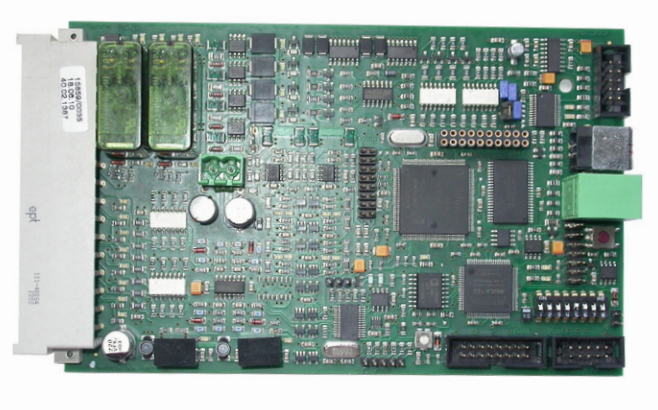


Figure 5: Circuit board - axis controller

- Release the reset button.
- Set all DIP switches to the „off“ position.
- Place the DIP switch 1 and 2 to the „on“ position.

This process can only be done when the lift is not in the uppermost position.

- Observe the vehicle and the reaction of the vehicle.
- Push the “▲” button until the obstacle can be removed.
- The lift rail that is higher must be lowered with the help of the dip switch, (see Section “5.4”)

The lift rails first move to unlock upwards.

For large differences of the two lift rails it can be practical in some circumstances, to lift the lower lift rails.

- After balancing the lift rail a reset must be done as follows:
- Set all DIP switches to the „off“ position.
- DIP switch 5 in the „on“ position.
- Push the „▼“ button until the lift (both lift rails) have reached the lowest position and the warning signal can no longer be heard.
- Push the DIP switch 7 to the „on“ position.
- DIP switch 5 remains in the „on“ position.
- Push the DIP switch 7 to the „off“ position. LED K700 must light continuously.
- If necessary a reset of the pics must be done. (See Section 5.4 Axle controller – zeroing Pic)
- An additional light diode must flash every second.
- The lift must be raised and lowered several times without a vehicle while observing the entire lifting and lowering process.
- The covers must be replaced.

6.2 Emergency discharge of the lift

An emergency discharge is an access into the lift controls and may only be done by experienced specialists. The emergency discharge must be done in the following described sequence, otherwise it can lead to damage and hazard to life and limb.

Any kind of external leakage (defective hydraulic pipe) is not permitted and must immediately taken care of. This is absolutely necessary especially before an emergency discharge.

An emergency discharge can only be done by personnel who are trained to operate the lift.

Reason which make an emergency discharge necessary are for example, electrical blackout, for errors in the lowering valves, etc.
For a power outage or defective valves, there is the option of lowering the lift to the lowest position with some manual movements, so the vehicle can be moved from the lift.

Do an emergency discharge

- Switch off the main switch and secure against re-start (shut down).
- Loosen and remove all unit covers.
- For safety reasons, block off the endangered area and the lift leaving ample room.
- Loosen and remove 2 counter nuts (spanner width 41) at the upper end of the lift rails in the direction of the arrow. This procedure must be done on all lift rails.

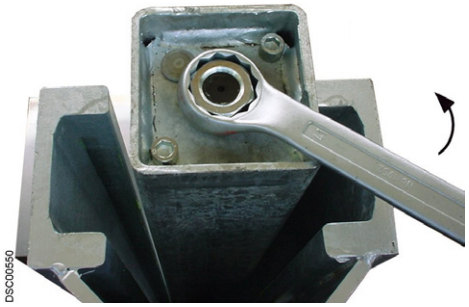


Figure 6

- The piston rods can jam in the upper bore of the lift rail when they are limited by any contamination deposits. To loosen these connections, we recommend a commercially available solvent and simultaneous lubricant (e.g. WD40). Spray this penetrating spray generously between the thread and bore. The treatment time depends on the degree of contamination.

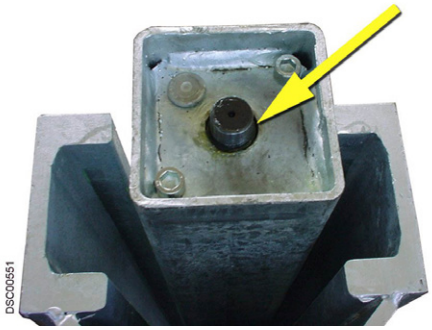


Figure 7

- The cover of the mini-measurement connection and the tank cover must be loosened. Unscrew the corresponding mini-measurement hydraulic line approx. 500 mm long (available from your dealer) and guide into the tank.

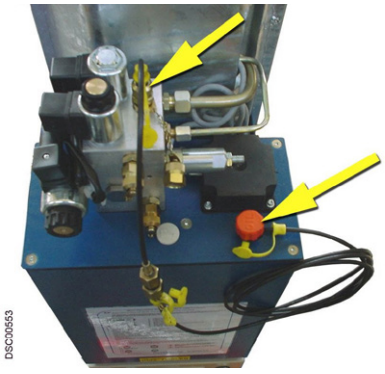


Figure 8

- Screw on the long threaded sleeve (available from your dealer) and tighten clockwise using a suitable tool (spanner width 24) Lower the lift rails approx. 5-10 cm. Repeat the process on the next lift rails etc. The lift rails may only be lowered in steps of 5-10 cm until the entire lift has reached the lowest position.

Figure 9

Warning!! Only lower each column alternately by a max. of 5-10 cm otherwise there is a danger of falling.

The entire emergency discharge must always be observed by the operator.

The lift must be stopped until the defective parts are exchanged.

The lift may only be operated again once it has been returned to a seamless condition seen from a safety point of view.

- Afterwards, do a reset as described in the operating manual.

6.3 Reset after an emergency discharge

A reset may only be done once the lift is in its lowest position.

Access to the DIP switch may only be done by a trained, authorised specialist.

a) There may not be any vehicles on the lift.
b) Remove the rear column covers on the operating column.
c) Loosen and remove the electrical box cover.
d) Push button 1 (reset button) and hold it down.
e) Switch off the main switch and wait 5 seconds (hold the reset button down).
f) Switch on the main switch and wait 5 seconds. (Hold down the reset button).
g) Release the reset button.
h) Push the “Lower” button until the lift (both platforms) have reached the lowest position.
i) If required, repeat steps d) to h) to be sure that the lift has reached the lowest position.
j) Afterwards, place the DIP switch 7 to the “on” position.
k) DIP switch 5 remains in the “on” position.
l) Repeat steps d) to h).
m) Afterwards, place the DIP switch 7 to the “off” position. DIP switch 5 remains in the “on” position.
n) Only 3 light diodes are permanently lit on the circuit board. An additional light diode must flash every second.
o) The lift must be raised and lowered several times without a vehicle while observing the entire lifting and lowering process.
p) The covers must be replaced.

7 Maintenance and care

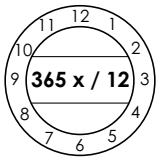
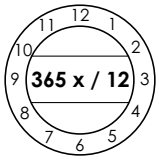
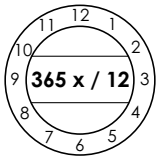
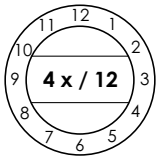
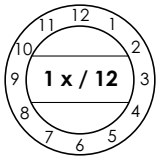
Before maintenance, do all preparation work so there is no danger to life or limb or object damage during maintenance and repair work.

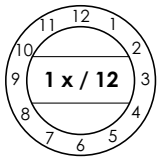
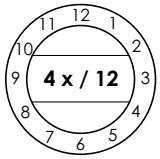
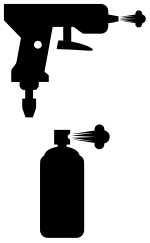
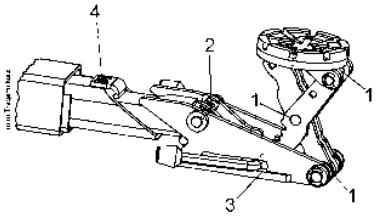
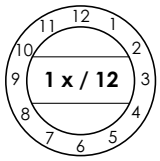
To guarantee the largest possible availability and functional capacity of the system, ensure the list of any cleaning, care and maintenance work is done. The system is to be serviced at regular intervals according to the following plan. For intensive operation and higher degree of contamination shorten the service interval.
The complete function of the system is to be observed during daily use. Customer service must be informed of any malfunctions or leaks.

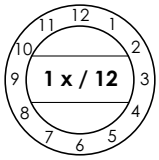
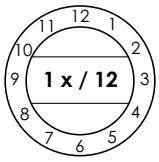
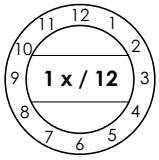
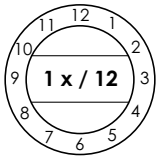
7.1 Maintenance plan

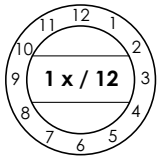
Before beginning service, disconnect from power. The work area around the lift is to be secured against unauthorised use.

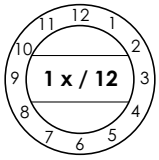
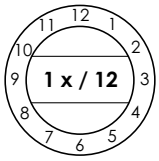
						
Visual inspection	**Spray**	**Oil**	**Lubricate**	**Clean with compressed air**	**Clean**	**Inspect**

Time frame		**Position Type of maintenance**	**Person in charge**	**Maintenance plan**
As required			Lift owner / employer	The lift cylinder can sweat and small oil droplets can form on the base plate, this is however, not a leak.
Daily			Lift owner / employer	Model and information signs, labels, brief operating instructions, safety stickers and warning information are to be cleaned and exchanged if damaged.
Daily			Lift owner / employer	Check the foot bumper for condition and function. Exchange if damaged.
Daily			Lift owner / employer	The rubber acceptance plate is to be checked for wear and replaced if necessary.
Every 3 months			Lift owner / employer	Check the tracks and the lift rail equalization parts for wear. After cleaning, grease with multi-purpose grease. We exclusively recommend that MO-2 high performance lubricating grease is used. (available for purchase directly from Oest).
Annually			Trained service personnel	Check the lifting arm block and gear for wear. Exchange if there is visible damage.

<table>
<tr><th colspan="2">Time frame</th><th>Position
Type of maintenance</th><th>Person in charge</th><th>Maintenance plan</th></tr>
<tr><td>Annually</td><td> 
</td><td>  </td><td>Trained service personnel</td><td>Lifting arm booms, lifting arm bolts, carrier plate threaded bolts are to be checked for ease of running. If required, lightly grease with multi-purpose grease. Do not over-lubricate.</td></tr>
<tr><td>Every 3 months</td><td> 
</td><td>  </td><td>Lift owner / employer</td><td>Version with MINI-MAX lifting arm
1. Blow out and spray bolts. Check the rollers for wear.
2. Check the locking screws (this is only screwed in lightly and is then glued (Loctite)). Screws may not be completely tightened otherwise the ease of running of the Mini-Max mechanism is no longer guaranteed.
3. Clean and spray this frictional surface. „Penetrating oil“ similar to Top 2000 from Autol.
4. Check the safety plate for damage and exchange if required.
 
</td></tr>
<tr><td>Annually</td><td> 
</td><td>  </td><td>Trained service personnel</td><td>Check all fastening screws and anchors with a torque wrench.
Fastening class 8.8
<table>
<tr><td></td><td>0.08*</td><td>0.12**</td><td>0.14***</td></tr>
<tr><td>M8</td><td>17.9</td><td>23.1</td><td>25.3</td></tr>
<tr><td>M10</td><td>36</td><td>46</td><td>51</td></tr>
<tr><td>M12</td><td>61</td><td>80</td><td>87</td></tr>
<tr><td>M16</td><td>147</td><td>194</td><td>214</td></tr>
<tr><td>M20</td><td>297</td><td>391</td><td>430</td></tr>
<tr><td>M24</td><td>512</td><td>675</td><td>743</td></tr>
</table>
Fastening class 10.9
<table>
<tr><td></td><td>0.08*</td><td>0.12**</td><td>0.14***</td><td></td></tr>
<tr><td>M8</td><td></td><td>26.2</td><td>34</td><td>37.2</td></tr>
<tr><td>M10</td><td>53</td><td>68</td><td>75</td><td></td></tr>
<tr><td>M12</td><td>90</td><td>117</td><td>128</td><td></td></tr>
<tr><td>M16</td><td>216</td><td>285</td><td>314</td><td></td></tr>
<tr><td>M20</td><td>423</td><td>557</td><td>615</td><td></td></tr>
<tr><td>M24</td><td>730</td><td>960</td><td>1060</td><td></td></tr>
</table>
* Lubricated slide friction number 0.8 MoS2
** Lightly oiled slide friction number 0.12
*** Ensured slide friction number 0.14 screw with micro-encapsulated plastic</td></tr>
</table>

Time frame		Position Type of maintenance	Person in charge	Maintenance plan
Annually			Trained service personnel	All weld seams must have a visual inspection. Stop the system and contact the manufacturer if there are cracks or breaks in weld seams of the lift.
Annually			Trained service personnel	Check electrical components for function and condition. • Plug. • Operating lever with button switch. • During assembly and maintenance always check the condition of electrical lines. All cables and lines must be secured so they cannot be crushed, kinked or contact any moving assembly.
Annually			Trained service personnel	Optional energy set: • Electrical socket • Pneumatic connection Check for condition and function.
Annually			Trained service personnel	**Check the paint:** • Check the powder coating and improve if required. Damage by external influences is to be treated immediately after detection. If these points are not treated, infiltration of deposits of all kinds can cause wide-ranging and permanent damage. These points are to be lightly sanded (120 grit), cleaned and degreased. Afterwards, rework with a suitable touch up paint (note the RAL No.). • Check galvanised surfaces, touch up as needed. White rust is fostered by permanent humidity, poor ventilation. The affected areas can be treated by using a sanding cloth (A 280 grit). If required, the parts are to be treated with a suitable, resistant material (paint etc.). Check the RAL colour selection. • Rust is brought out by mechanical damage, wear, aggressive deposits (de-icing salt, leaking operating fluids) cleaning that is not done or incomplete. The affected areas can be treated by using a sanding cloth (A 280 grit). If required, post-treat the areas with a resistant material (paint etc.).

Time frame		Position Type of maintenance	Person in charge	Maintenance plan
Annually			Trained service personnel	According to manufacturer instructions, the hydraulic oil should be changed every two years in normal operations. Various environmental influences e.g. location, temperature swings, intensive operation etc, can have an influence on the quality of the hydraulic oil. For this reason, the oil must be checked during annual safety inspections and maintenance. The oil is used if it has a milky colour or if the hydraulic oil smells unpleasantly. To change oil, lower the lift is to its lowest position then suction the oil out of the oil container and replace the contents. The manufacturer recommends high-quality clean hydraulic oil. The required oil volume and type is to be taken from the technical data. After filling (18), the hydraulic oil must be between the upper and lower marking on the oil dipstick, or approx. 2 cm below the oil filling opening. Dispose of the old oil according to regulations to the intended location (district offices, environmental protection office or commercial regulatory office has the obligation to disclose about disposal points).

Time frame		Position Type of maintenance	Person in charge	Maintenance plan
Annually			Trained service personnel	Hydraulic hose lines Storage and duration of use Excerpt from DIN20066:2002-10 • For permitted loading, hoses undergo a natural change. This limits the duration of use. • Improper storage, mechanical damage and unpermitted loads are the most frequent cause of breakdowns. • The duration of use of a hose line including any storage time should not exceed six years. Hose lines are to be replaced if/when, • Damage to the outer coating up to the insert (chafe marks, cuts, cracks). • The outer coating becomes brittle (crack formation). • Deformation from the natural shape in the depressurised and pressurised conditions. • Leakage. • Damage or deformation of the mounting fixture. • Meandering of the mounting fixture. • The lifetime has been exceeded. Repair of the hose line using the implemented hose / mounting fixture is not permitted. Extending the replacement intervals given in the guideline is possible if the inspection for safe-work condition is done in adjusted, shortened time frames, if required and by competent personnel. If there is an extension of the replacement interval, no situation may occur which could result in injury of employees or other personnel.
Annually			Trained service personnel	Excerpt from BGR237: Specifications for the hydraulic hose lines. Normal specification: Recommended exchange intervals: 6 years (operation duration including max. 2 years storage time). Increased demands e.g. by • Increased usage times e.g. multi-shift, short cycle times and pressure impulses. • Increased exterior and interior (due to media) influences which significantly reduce the lifetime of the hose lines. Recommended exchange intervals: 6 years (operation duration including max. 2 years storage time).

7.2 Cleaning the lift

A regular and expert clean helps retain the value of the lift.
Additionally, it can also be a pre-requisite for the preservation of guarantee claims for any eventual corrosion damage.
The best protection for the lift is regular removal of contaminants of any kind.
This includes above all:

- De-icing salt
- Sand, pebbles, earth
- Industrial dust of all types
- Water, also in connection with other environmental influences
- Aggressive deposits of all types
- Permanent humidity due to insufficient ventilation

The frequency of lift cleaning depends, among other things on the frequency of use, of lift handling, of workshop cleanliness, and the location of the lift. Furthermore, the degree of contamination depends on the time of year, the weather conditions and workshop ventilation. Under adverse circumstances, weekly lift cleaning might be required, however a monthly cleaning may be sufficient.

Do not use and aggressive and abrasive materials for cleaning, rather use mild cleaners, e.g. a commercially available detergent and lukewarm water.

- For cleaning, do **not** use high pressure washers (e.g. steam cleaners).
- Carefully remove all contamination with a sponge, or if required with a brush.
- Make sure that there is no residue of the cleaner on the lift.
- Rub the lift dry with a cloth after cleaning.

8 Assembly and commissioning

8.1 Set up guidelines

- Lift set up is done by trained manufacturer personnel or a contract partner. If the operating company has appropriately trained assemblers, the lift can also be set up by them. Set up is to be done according to the assembly instructions.
- A standard lift may not be set up in explosion endangered spaces or wash halls. (It is necessary to consult with your dealer).
- Before setting up, verify that there is a sufficient foundation or make it according to the guidelines in the foundation plan. The set up location must be level and even. Foundations in open air and spaces where winter storms or frost are to be expected, must have a foundation to frost depth.
- An on-site electrical connection of 1 ~/N + PE, 230V, 60Hz is to be provided. The supply is to be secured on-site with 16 ampere fuses. The connection point is located on the operating boxes.
- To protect the electrical cable all cable conduits are to be fitted with cable sleeves or flexible plastic pipes.

8.1.1 Set up and anchoring the lift

Before setting up the lift, ensure that everything possible is done to prevent accidents due to careless assembly. This includes, above all, the use of safe auxiliary means (e.g. cranes, forklifts and a sufficient number of people), diverse supports and a sufficient barrier to prevent unauthorised access.

- Carefully remove the lift from the wooden crate and check for damage.
- Position and align the lift columns according to the data sheet at the desired set up location.
- Guide the supply line to the operating column (on-site).
- Connect the electrical cables and measurement cables to both columns.
- Check the position of the lift again.
- Fill with approx. 17 litres of clean hydraulic oil into the oil container of the unit.
- Holes for floor anchorings are to be placed through the holes in the base plates. Clean the bore holes by blowing them out with air. Guide the safety anchor into the drilled holes but do not fasten them yet.
  The lift manufacturer recommends Liebig safety anchors or similar anchors from other reputable anchor manufacturers Hilti, Fischer (with approval) while following their conditions. Information can be given from your anchor suppliers.
- Before anchoring the lift, check whether the load-bearing concrete is of quality min. C20/25 up to the finishing level of the completed floor. In this case, take the anchor length from "anchor length without floor covering". If there is a floor covering (tiles, screed) on the load carrying concrete, the thickness of this covering must be determined and the anchor length selected according to "anchor length with floor covering".
- Briefly push the "Lift" button. Consider the rotation direction of the motor.
- If the lift rail does not lift, the rotation direction of the motor must be checked again and if required two phases of the power supply must be exchanged. (only for 3-phase AC supply).
- Check the precise vertical set up of the lift columns and if required make sure there is a suitable support (panel strips) that make contact with the floor.
  To prevent vertical oscillations of the column, it is necessary to position the support in the middle and not only on the edge of the base plate.

- Tighten the anchor to the required torque (see the conditions of the anchor manufacturer).

! Each anchor must be tightened to the required torque. Safe operation and stability of the lift are not guaranteed with a lower torque.

- If required, do a reset before first operation. (see Section 6.3).
- Raise the lift approx. 800 mm.
- Mount the lifting arm. Secure the bolts with the locking rings.
- The lift must be moved to the "lift" and "lower" end positions without a vehicle.
- The safety devices must be checked.
- Move the lift with the load into the end position several times. (see Section 5.1).
- Check the hydraulic lines again for leak-tightness.
- Check the anchor fastenings again.

In case of malfunction, firstly inform customer service.

8.2 Commissioning

Before commissioning, a single safety inspection must be done (use the "single safety inspection" form)

If the lift set up is done by a specialist (factory trained assembler) then he can also do the safety inspection. If the set up is done by the operating company then a specialist must be tasked with the safety inspection. The specialist confirms seamless operation of the lift on the set up protocol for single safety inspection and releases the lift for use.

After commissioning, the set up protocol must be completed and sent to the manufacturer.

8.3 Changing the assembly location

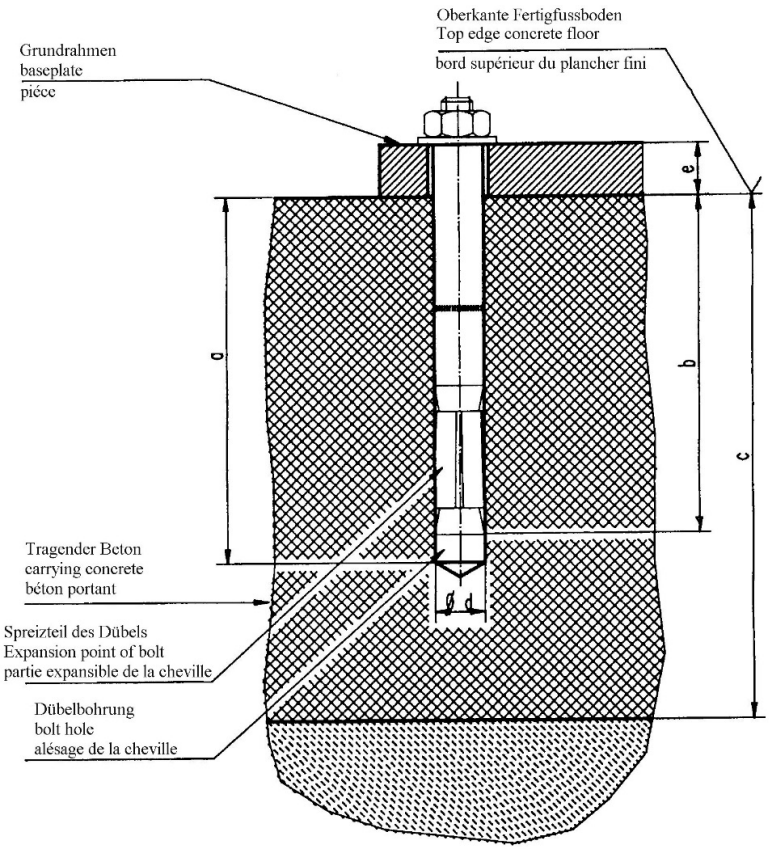
To change the assembly location the pre-conditions must be met according to the assembly guidelines. The location change is to be done according to the following sequence.

- Move the lifting stage upwards to approx. 1,000 mm.
- Remove the tank covers
- Remove the lifting arm.
- Lower the lift to the lowest position.
- Disconnect power.
- Loosen base plate anchors.
- Transport the lift to the new assembly location.
- Assemble the lift according to the procedure during assembly and anchoring before first commissioning.

! Use new anchors. The old anchors are no longer fit for purpose!

Before re-commissioning, a safety inspection must be done by a specialist (use the regular safety inspection form)

8.3.1 Selection the Liebig anchor without floor cover (2.65 HDL SST, 2.70 HDL SST, 2.80 HDL SST)



Liebig anchor

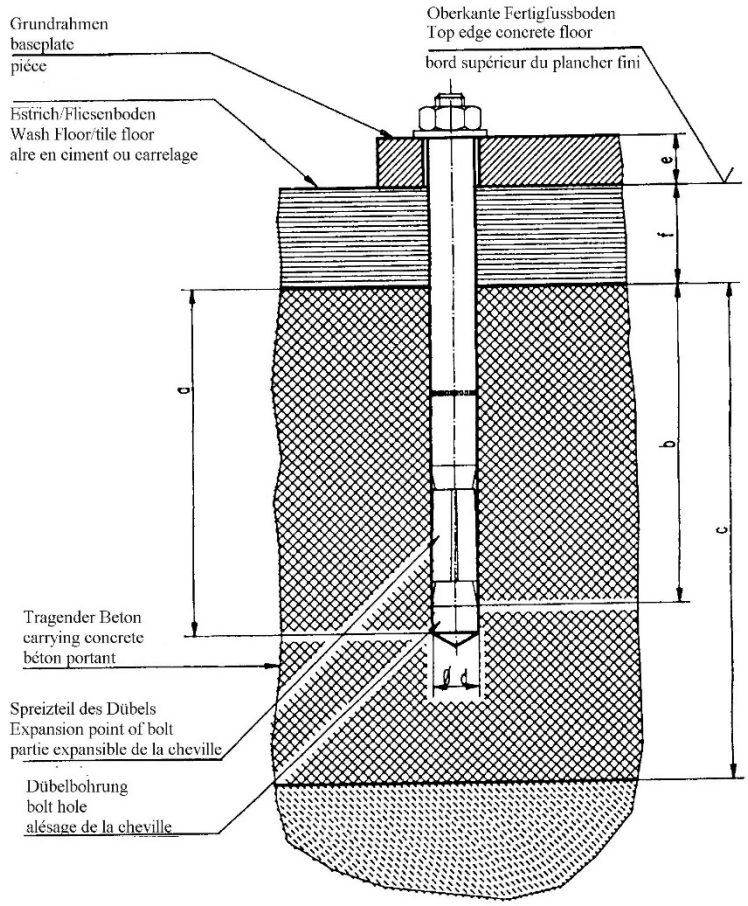
Anchor type		BM16-25/100/40
Drill depth (mm)	**a**	125
Min. anchoring depth (mm)	**b**	100
Concrete thickness (mm)	**c**	min. 200*
Drill diameter (mm)	**d**	25
Drilled part thickness (mm)	**e**	0–40
Concrete quality		Min.C20/25 (B25) normal reinforcement[1]
Number of anchors (pc.)		Depending on the lift type
Torque of the anchors		115 Nm

(*) Min. concrete thickness when using the above-mentioned anchor, otherwise follow the details in the foundation plans.

Similar value anchors and other known brands of anchor manufacturers can be used when considering the conditions.

(1) Description of normal reinforcement:
A normal reinforcement is present if the axis separation in the area of the anchor with a rod diameter of ≥ 10 mm is 150 mm, or for a rod diameter of ≤ 10 mm is 100 mm.

8.3.2 Selection the Liebig anchor with floor cover (2.65 HDL SST, 2.70 HDL SST, 2.80 HDL SST)



Liebig anchor

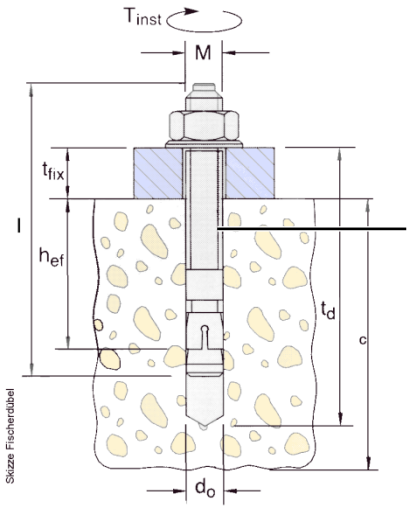
Anchor type		BM16-25/100/65	BM16-25/100/100
Drill depth (mm)	**a**	125	125
Min. anchoring depth (mm)	**b**	100	100
Concrete thickness (mm)	**c**	min. 200*	min. 200*
Drill diameter (mm)	**d**	25	25
Component thickness (mm)	**e+f**	40–65	65–100
Concrete quality		Min.C20/25 normal reinforcement[1]	
Number of anchors (pc.)		depending on the lift type	
Torque of the anchors		115 Nm	115 Nm

(*) Min. concrete thickness when using the above-mentioned anchor, otherwise follow the details in the foundation plans.

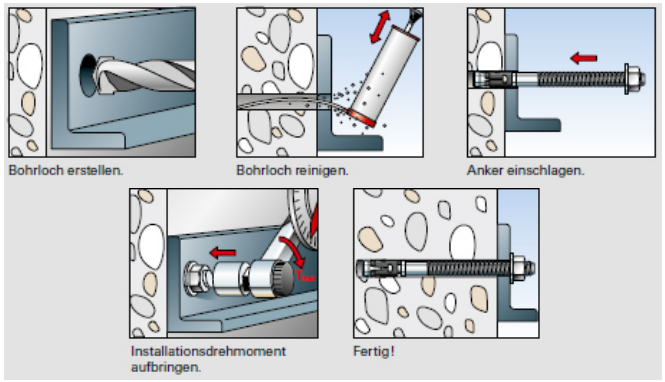
Similar value anchors and other known brands of anchor manufacturers can be used when considering the conditions.

(1) Description of normal reinforcement:
A normal reinforcement is present if the axis separation in the area of the anchor with a rod diameter of ≥ 10 mm is 150 mm, or for a rod diameter of ≤ 10 mm is 100 mm.

8.3.3 Fischer anchor



Marking the anchoring depth

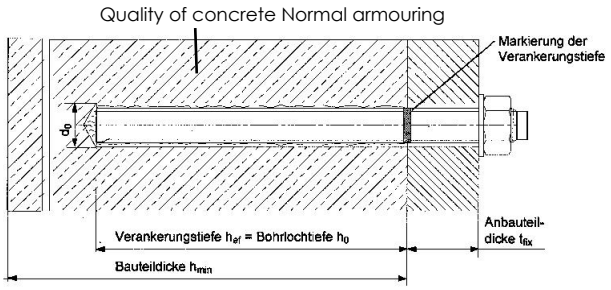


subject to alterations!

fischer anchor		**2.65 HDL SST 2.70 HDL SST 2.80 HDL SST**
typ of dowel		FH 24/100 B Order No. 970267
drilling depth (mm)	t_d	255
min.anchorage depth (mm)	h_{ef}	125
thickness of concrete (mm)	c	see current founda-tion-diagram draw-ing
diameter of bore (mm)	d_0	24
thickness of the lift-piece (mm)	t_{fix}	0–100
turníng moment (Nm)	M_D	120
Total length (mm)	l	272
Thread	M	M16
piece number	a	4
	b	8
	c	10
	d	12
	e	16
	f	20
	g	14

It is possible to use equivalent safety-dowels (with license) of other manufacturer but observe their regulations.

8.3.4 Hilti injection anchor (2.65 HDL SST, 2.70 HDL SST, 2.80 HDL SST)



subject to alterations!

Adhesive and anchor rod: HIT-HY 200-A + HIT-V (5.8) M16
Art. Hilti: 387066 HIT-V-5.8 M16x300 / 2022696

Seismic / filling set or suitable filling method

Effective anchoring depth: h_{ef} = 190.0 mm
Material: 5.8
Registration number: ETA 11/0493
Issued / valid: 2/3/2017 | -
Anchor plate: lx x ly x t = 850.0 mm x 525.0 mm x 30.0 mm
Ground: Cracked concrete, C20/25, fc,cube = 25,00 N/mm2; h = 226,0 mm, Temp.: 24 °C (max. 40 °C)
Installation: Drilled hole: hammer-drilled, dry
Reinforcement: No reinforcement or rod spacing ≥ 150 mm (each diameter) or ≥ 100 mm (diameter ≤ 10mm)
No edge length reinforcement
Reinforcement is provided to prevent cracks according to EOTA TR 029, 5.2.2.6.

Observe necessarily the installation description of the dowel manufacturer. Use longer dowels with version with floor pavement and tiles.

It is possible to use equivalent injections dowels (with license) of other manufacturer but observe their regulations.

9 Safety inspection

The safety inspection is required to guarantee operational safety of the lift. It is to be done:

1. before first commissioning after setting up the lift
   Use the “single safety inspection” form

2. After first commissioning, check regularly at least once per year.
   Use the “regular safety inspection” form

3. After changes to the lift construction.
   Use the “extraordinary safety inspection” form

ℹ *Single and regular safety inspections must be done by a specialist. It is recommended to do maintenance at the same time.*

ℹ *After a change in construction (for example changing the load carrying capacity or changing the lifting height) and after significant maintenance on load carrying parts (e.g. welding work), inspection by a technical expert is required (extraordinary safety inspection).*

This inspection book contains forms for copying to be used for safety inspections.
Please use the appropriate form, record the condition of the inspected lift and leave the completed form in this inspection book.

9.1 Single safety inspection before commissioning

Copy, Complete and leave in the inspection book Serialnumber:_____

Test step	OK	Defect Missing	Retest	Remarks
General condition of lift	☐	☐	☐	
Model plate	☐	☐	☐	
Quick operating manual	☐	☐	☐	
Warning label	☐	☐	☐	
Condition button "▲/▼" + Main switch	☐	☐	☐	
Condition of the "Balance" "Unlock" buttons	☐	☐	☐	
Condition / function display	☐	☐	☐	
Operating boxes condition	☐	☐	☐	
Bridging switch function	☐	☐	☐	
Condition / function lifting arm block	☐	☐	☐	
Interac. function Safety system	☐	☐	☐	
Function ease of travel of the lifting arm	☐	☐	☐	
Condition of the lifting arm / elastomer overlay	☐	☐	☐	
Carrier plate fuse	☐	☐	☐	
Securing the bolts	☐	☐	☐	
Condition of bolts and bearing seating	☐	☐	☐	
Condition of weld seams	☐	☐	☐	
Load bearing construction (deformations, cracks)	☐	☐	☐	
Fastening screw torque	☐	☐	☐	
Fastening anchor torque	☐	☐	☐	
Unit condition	☐	☐	☐	
Piston rods surface condition	☐	☐	☐	
Condition of covers	☐	☐	☐	
Hydraulic system leak-tightness	☐	☐	☐	
Hydraulic oil filling level	☐	☐	☐	
Hydraulic line conditions	☐	☐	☐	
Condition electrical lines	☐	☐	☐	
Functional test lift with vehicle	☐	☐	☐	
Function of equalization of the lifting rails	☐	☐	☐	

**) Place a checkmark in the relevant, if a retest is required then check it again!*

Safety inspection done on: _____

Performed by company: _____

Name, address of specialist: _____

Result of inspection:

☐ Continued operation questionable, reinspection required
☐ Continued operation possible, remove defects by _____
☐ No deficiencies, continue to operate

_____ _____

Signature of specialist *Operating company signature*

If requested to take care of deficiencies

Deficiency removed on: _____ _____

Operating company signature

(Use a new form for reinspection!)

9.2 Regular safety inspection and maintenance

Copy, Complete and leave in the inspection book Serialnumber:_____

Test step	OK	Defect Missing	Retest	Remarks
General condition of lift	☐	☐	☐	
Model plate	☐	☐	☐	
Quick operating manual	☐	☐	☐	
Warning label	☐	☐	☐	
Condition button "▲/▼" + Main switch	☐	☐	☐	
Condition of the "Balance" "Unlock" buttons	☐	☐	☐	
Condition / function display	☐	☐	☐	
Operating boxes condition	☐	☐	☐	
Bridging switch function	☐	☐	☐	
Condition / function lifting arm block	☐	☐	☐	
Interac. function Safety system	☐	☐	☐	
Function ease of travel of the lifting arm	☐	☐	☐	
Condition of the lifting arm / elastomer overlay	☐	☐	☐	
Carrier plate fuse	☐	☐	☐	
Securing the bolts	☐	☐	☐	
Condition of bolts and bearing seating	☐	☐	☐	
Condition of weld seams	☐	☐	☐	
Load bearing construction (deformations, cracks)	☐	☐	☐	
Fastening screw torque	☐	☐	☐	
Fastening anchor torque	☐	☐	☐	
Unit condition	☐	☐	☐	
Piston rods surface condition	☐	☐	☐	
Condition of covers	☐	☐	☐	
Hydraulic system leak-tightness	☐	☐	☐	
Hydraulic oil filling level	☐	☐	☐	
Hydraulic line conditions	☐	☐	☐	
Condition electrical lines	☐	☐	☐	
Functional test lift with vehicle	☐	☐	☐	
Function of equalization of the lifting rails	☐	☐	☐	

**) Place a checkmark in the relevant, if a retest is required then check it again!*

Safety inspection done on: _____

Performed by company: _____

Name, address of specialist: _____

Result of inspection:

☐ Continued operation questionable, reinspection required
☐ Continued operation possible, remove defects by _____
☐ No deficiencies, continue to operate

_____ _____

Signature of specialist *Operating company signature*

If requested to take care of deficiencies

Deficiency removed on: _____ _____

Operating company signature

(Use a new form for reinspection!)

Regular safety inspection and maintenance

Copy, Complete and leave in the inspection book Serialnumber:_____

Test step	OK	Defect Missing	Retest	Remarks
General condition of lift	☐	☐	☐	
Model plate	☐	☐	☐	
Quick operating manual	☐	☐	☐	
Warning label	☐	☐	☐	
Condition button "▲/▼" + Main switch	☐	☐	☐	
Condition of the "Balance" "Unlock" buttons	☐	☐	☐	
Condition / function display	☐	☐	☐	
Operating boxes condition	☐	☐	☐	
Bridging switch function	☐	☐	☐	
Condition / function lifting arm block	☐	☐	☐	
Interac. function Safety system	☐	☐	☐	
Function ease of travel of the lifting arm	☐	☐	☐	
Condition of the lifting arm / elastomer overlay	☐	☐	☐	
Carrier plate fuse	☐	☐	☐	
Securing the bolts	☐	☐	☐	
Condition of bolts and bearing seating	☐	☐	☐	
Condition of weld seams	☐	☐	☐	
Load bearing construction (deformations, cracks)	☐	☐	☐	
Fastening screw torque	☐	☐	☐	
Fastening anchor torque	☐	☐	☐	
Unit condition	☐	☐	☐	
Piston rods surface condition	☐	☐	☐	
Condition of covers	☐	☐	☐	
Hydraulic system leak-tightness	☐	☐	☐	
Hydraulic oil filling level	☐	☐	☐	
Hydraulic line conditions	☐	☐	☐	
Condition electrical lines	☐	☐	☐	
Functional test lift with vehicle	☐	☐	☐	
Function of equalization of the lifting rails	☐	☐	☐	

**) Place a checkmark in the relevant, if a retest is required then check it again!*

Safety inspection done on: _____

Performed by company: _____

Name, address of specialist: _____

Result of inspection:

☐ Continued operation questionable, reinspection required
☐ Continued operation possible, remove defects by _____
☐ No deficiencies, continue to operate

_____ _____

Signature of specialist *Operating company signature*

If requested to take care of deficiencies

Deficiency removed on: _____ _____

Operating company signature

(Use a new form for reinspection!)

Regular safety inspection and maintenance

Copy, Complete and leave in the inspection book Serialnumber:_____

Test step	OK	Defect Missing	Retest	Remarks
General condition of lift	☐	☐	☐	
Model plate	☐	☐	☐	
Quick operating manual	☐	☐	☐	
Warning label	☐	☐	☐	
Condition button "▲/▼" + Main switch	☐	☐	☐	
Condition of the "Balance" "Unlock" buttons	☐	☐	☐	
Condition / function display	☐	☐	☐	
Operating boxes condition	☐	☐	☐	
Bridging switch function	☐	☐	☐	
Condition / function lifting arm block	☐	☐	☐	
Interac. function Safety system	☐	☐	☐	
Function ease of travel of the lifting arm	☐	☐	☐	
Condition of the lifting arm / elastomer overlay	☐	☐	☐	
Carrier plate fuse	☐	☐	☐	
Securing the bolts	☐	☐	☐	
Condition of bolts and bearing seating	☐	☐	☐	
Condition of weld seams	☐	☐	☐	
Load bearing construction (deformations, cracks)	☐	☐	☐	
Fastening screw torque	☐	☐	☐	
Fastening anchor torque	☐	☐	☐	
Unit condition	☐	☐	☐	
Piston rods surface condition	☐	☐	☐	
Condition of covers	☐	☐	☐	
Hydraulic system leak-tightness	☐	☐	☐	
Hydraulic oil filling level	☐	☐	☐	
Hydraulic line conditions	☐	☐	☐	
Condition electrical lines	☐	☐	☐	
Functional test lift with vehicle	☐	☐	☐	
Function of equalization of the lifting rails	☐	☐	☐	

**) Place a checkmark in the relevant, if a retest is required then check it again!*

Safety inspection done on: _____

Performed by company: _____

Name, address of specialist: _____

Result of inspection:

☐ Continued operation questionable, reinspection required
☐ Continued operation possible, remove defects by _____
☐ No deficiencies, continue to operate

_____ _____

Signature of specialist *Operating company signature*

If requested to take care of deficiencies

Deficiency removed on: _____ _____

Operating company signature

(Use a new form for reinspection!)

Regular safety inspection and maintenance

Copy, Complete and leave in the inspection book Serialnumber:_____

Test step	OK	Defect Missing	Retest	Remarks
General condition of lift	☐	☐	☐	
Model plate	☐	☐	☐	
Quick operating manual	☐	☐	☐	
Warning label	☐	☐	☐	
Condition button "▲/▼" + Main switch	☐	☐	☐	
Condition of the "Balance" "Unlock" buttons	☐	☐	☐	
Condition / function display	☐	☐	☐	
Operating boxes condition	☐	☐	☐	
Bridging switch function	☐	☐	☐	
Condition / function lifting arm block	☐	☐	☐	
Interac. function Safety system	☐	☐	☐	
Function ease of travel of the lifting arm	☐	☐	☐	
Condition of the lifting arm / elastomer overlay	☐	☐	☐	
Carrier plate fuse	☐	☐	☐	
Securing the bolts	☐	☐	☐	
Condition of bolts and bearing seating	☐	☐	☐	
Condition of weld seams	☐	☐	☐	
Load bearing construction (deformations, cracks)	☐	☐	☐	
Fastening screw torque	☐	☐	☐	
Fastening anchor torque	☐	☐	☐	
Unit condition	☐	☐	☐	
Piston rods surface condition	☐	☐	☐	
Condition of covers	☐	☐	☐	
Hydraulic system leak-tightness	☐	☐	☐	
Hydraulic oil filling level	☐	☐	☐	
Hydraulic line conditions	☐	☐	☐	
Condition electrical lines	☐	☐	☐	
Functional test lift with vehicle	☐	☐	☐	
Function of equalization of the lifting rails	☐	☐	☐	

**) Place a checkmark in the relevant, if a retest is required then check it again!*

Safety inspection done on: _____

Performed by company: _____

Name, address of specialist: _____

Result of inspection:

☐ Continued operation questionable, reinspection required
☐ Continued operation possible, remove defects by _____
☐ No deficiencies, continue to operate

_____ _____

Signature of specialist *Operating company signature*

If requested to take care of deficiencies

Deficiency removed on: _____ _____

Operating company signature

(Use a new form for reinspection!)

Regular safety inspection and maintenance

Copy, Complete and leave in the inspection book Serialnumber:_____

Test step	OK	Defect Missing	Retest	Remarks
General condition of lift	☐	☐	☐	
Model plate	☐	☐	☐	
Quick operating manual	☐	☐	☐	
Warning label	☐	☐	☐	
Condition button "▲/▼" + Main switch	☐	☐	☐	
Condition of the "Balance" "Unlock" buttons	☐	☐	☐	
Condition / function display	☐	☐	☐	
Operating boxes condition	☐	☐	☐	
Bridging switch function	☐	☐	☐	
Condition / function lifting arm block	☐	☐	☐	
Interac. function Safety system	☐	☐	☐	
Function ease of travel of the lifting arm	☐	☐	☐	
Condition of the lifting arm / elastomer overlay	☐	☐	☐	
Carrier plate fuse	☐	☐	☐	
Securing the bolts	☐	☐	☐	
Condition of bolts and bearing seating	☐	☐	☐	
Condition of weld seams	☐	☐	☐	
Load bearing construction (deformations, cracks)	☐	☐	☐	
Fastening screw torque	☐	☐	☐	
Fastening anchor torque	☐	☐	☐	
Unit condition	☐	☐	☐	
Piston rods surface condition	☐	☐	☐	
Condition of covers	☐	☐	☐	
Hydraulic system leak-tightness	☐	☐	☐	
Hydraulic oil filling level	☐	☐	☐	
Hydraulic line conditions	☐	☐	☐	
Condition electrical lines	☐	☐	☐	
Functional test lift with vehicle	☐	☐	☐	
Function of equalization of the lifting rails	☐	☐	☐	

**) Place a checkmark in the relevant, if a retest is required then check it again!*

Safety inspection done on: _____

Performed by company: _____

Name, address of specialist: _____

Result of inspection:

☐ Continued operation questionable, reinspection required
☐ Continued operation possible, remove defects by _____
☐ No deficiencies, continue to operate

_____ _____

Signature of specialist *Operating company signature*

If requested to take care of deficiencies

Deficiency removed on: _____ _____

Operating company signature

(Use a new form for reinspection!)

Regular safety inspection and maintenance

Copy, Complete and leave in the inspection book Serialnumber:_____

Test step	OK	Defect Missing	Retest	Remarks
General condition of lift	☐	☐	☐	
Model plate	☐	☐	☐	
Quick operating manual	☐	☐	☐	
Warning label	☐	☐	☐	
Condition button "▲/▼" + Main switch	☐	☐	☐	
Condition of the "Balance" "Unlock" buttons	☐	☐	☐	
Condition / function display	☐	☐	☐	
Operating boxes condition	☐	☐	☐	
Bridging switch function	☐	☐	☐	
Condition / function lifting arm block	☐	☐	☐	
Interac. function Safety system	☐	☐	☐	
Function ease of travel of the lifting arm	☐	☐	☐	
Condition of the lifting arm / elastomer overlay	☐	☐	☐	
Carrier plate fuse	☐	☐	☐	
Securing the bolts	☐	☐	☐	
Condition of bolts and bearing seating	☐	☐	☐	
Condition of weld seams	☐	☐	☐	
Load bearing construction (deformations, cracks)	☐	☐	☐	
Fastening screw torque	☐	☐	☐	
Fastening anchor torque	☐	☐	☐	
Unit condition	☐	☐	☐	
Piston rods surface condition	☐	☐	☐	
Condition of covers	☐	☐	☐	
Hydraulic system leak-tightness	☐	☐	☐	
Hydraulic oil filling level	☐	☐	☐	
Hydraulic line conditions	☐	☐	☐	
Condition electrical lines	☐	☐	☐	
Functional test lift with vehicle	☐	☐	☐	
Function of equalization of the lifting rails	☐	☐	☐	

**) Place a checkmark in the relevant, if a retest is required then check it again!*

Safety inspection done on: _____

Performed by company: _____

Name, address of specialist: _____

Result of inspection:

☐ Continued operation questionable, reinspection required
☐ Continued operation possible, remove defects by _____
☐ No deficiencies, continue to operate

_____ _____

Signature of specialist *Operating company signature*

If requested to take care of deficiencies

Deficiency removed on: _____ _____

Operating company signature

(Use a new form for reinspection!)

Regular safety inspection and maintenance

Copy, Complete and leave in the inspection book Serialnumber:_____

Test step	OK	Defect Missing	Retest	Remarks
General condition of lift	☐	☐	☐	
Model plate	☐	☐	☐	
Quick operating manual	☐	☐	☐	
Warning label	☐	☐	☐	
Condition button "▲/▼" + Main switch	☐	☐	☐	
Condition of the "Balance" "Unlock" buttons	☐	☐	☐	
Condition / function display	☐	☐	☐	
Operating boxes condition	☐	☐	☐	
Bridging switch function	☐	☐	☐	
Condition / function lifting arm block	☐	☐	☐	
Interac. function Safety system	☐	☐	☐	
Function ease of travel of the lifting arm	☐	☐	☐	
Condition of the lifting arm / elastomer overlay	☐	☐	☐	
Carrier plate fuse	☐	☐	☐	
Securing the bolts	☐	☐	☐	
Condition of bolts and bearing seating	☐	☐	☐	
Condition of weld seams	☐	☐	☐	
Load bearing construction (deformations, cracks)	☐	☐	☐	
Fastening screw torque	☐	☐	☐	
Fastening anchor torque	☐	☐	☐	
Unit condition	☐	☐	☐	
Piston rods surface condition	☐	☐	☐	
Condition of covers	☐	☐	☐	
Hydraulic system leak-tightness	☐	☐	☐	
Hydraulic oil filling level	☐	☐	☐	
Hydraulic line conditions	☐	☐	☐	
Condition electrical lines	☐	☐	☐	
Functional test lift with vehicle	☐	☐	☐	
Function of equalization of the lifting rails	☐	☐	☐	

**) Place a checkmark in the relevant, if a retest is required then check it again!*

Safety inspection done on: _____

Performed by company: _____

Name, address of specialist: _____

Result of inspection:

☐ Continued operation questionable, reinspection required
☐ Continued operation possible, remove defects by _____
☐ No deficiencies, continue to operate

_____ _____

Signature of specialist *Operating company signature*

If requested to take care of deficiencies

Deficiency removed on: _____ _____

Operating company signature

(Use a new form for reinspection!)

Regular safety inspection and maintenance

Copy, Complete and leave in the inspection book Serialnumber:_____

Test step	OK	Defect Missing	Retest	Remarks
General condition of lift	☐	☐	☐	
Model plate	☐	☐	☐	
Quick operating manual	☐	☐	☐	
Warning label	☐	☐	☐	
Condition button "▲/▼" + Main switch	☐	☐	☐	
Condition of the "Balance" "Unlock" buttons	☐	☐	☐	
Condition / function display	☐	☐	☐	
Operating boxes condition	☐	☐	☐	
Bridging switch function	☐	☐	☐	
Condition / function lifting arm block	☐	☐	☐	
Interac. function Safety system	☐	☐	☐	
Function ease of travel of the lifting arm	☐	☐	☐	
Condition of the lifting arm / elastomer overlay	☐	☐	☐	
Carrier plate fuse	☐	☐	☐	
Securing the bolts	☐	☐	☐	
Condition of bolts and bearing seating	☐	☐	☐	
Condition of weld seams	☐	☐	☐	
Load bearing construction (deformations, cracks)	☐	☐	☐	
Fastening screw torque	☐	☐	☐	
Fastening anchor torque	☐	☐	☐	
Unit condition	☐	☐	☐	
Piston rods surface condition	☐	☐	☐	
Condition of covers	☐	☐	☐	
Hydraulic system leak-tightness	☐	☐	☐	
Hydraulic oil filling level	☐	☐	☐	
Hydraulic line conditions	☐	☐	☐	
Condition electrical lines	☐	☐	☐	
Functional test lift with vehicle	☐	☐	☐	
Function of equalization of the lifting rails	☐	☐	☐	

**) Place a checkmark in the relevant, if a retest is required then check it again!*

Safety inspection done on: _____

Performed by company: _____

Name, address of specialist: _____

Result of inspection:

☐ Continued operation questionable, reinspection required
☐ Continued operation possible, remove defects by _____
☐ No deficiencies, continue to operate

_____ _____

Signature of specialist *Operating company signature*

If requested to take care of deficiencies

Deficiency removed on: _____ _____

Operating company signature

(Use a new form for reinspection!)

Regular safety inspection and maintenance

Copy, Complete and leave in the inspection book Serialnumber:_____

Test step	OK	Defect Missing	Retest	Remarks
General condition of lift	☐	☐	☐	
Model plate	☐	☐	☐	
Quick operating manual	☐	☐	☐	
Warning label	☐	☐	☐	
Condition button "▲/▼" + Main switch	☐	☐	☐	
Condition of the "Balance" "Unlock" buttons	☐	☐	☐	
Condition / function display	☐	☐	☐	
Operating boxes condition	☐	☐	☐	
Bridging switch function	☐	☐	☐	
Condition / function lifting arm block	☐	☐	☐	
Interac. function Safety system	☐	☐	☐	
Function ease of travel of the lifting arm	☐	☐	☐	
Condition of the lifting arm / elastomer overlay	☐	☐	☐	
Carrier plate fuse	☐	☐	☐	
Securing the bolts	☐	☐	☐	
Condition of bolts and bearing seating	☐	☐	☐	
Condition of weld seams	☐	☐	☐	
Load bearing construction (deformations, cracks)	☐	☐	☐	
Fastening screw torque	☐	☐	☐	
Fastening anchor torque	☐	☐	☐	
Unit condition	☐	☐	☐	
Piston rods surface condition	☐	☐	☐	
Condition of covers	☐	☐	☐	
Hydraulic system leak-tightness	☐	☐	☐	
Hydraulic oil filling level	☐	☐	☐	
Hydraulic line conditions	☐	☐	☐	
Condition electrical lines	☐	☐	☐	
Functional test lift with vehicle	☐	☐	☐	
Function of equalization of the lifting rails	☐	☐	☐	

**) Place a checkmark in the relevant, if a retest is required then check it again!*

Safety inspection done on: _____

Performed by company: _____

Name, address of specialist: _____

Result of inspection:

☐ Continued operation questionable, reinspection required
☐ Continued operation possible, remove defects by _____
☐ No deficiencies, continue to operate

_____ _____

Signature of specialist *Operating company signature*

If requested to take care of deficiencies

Deficiency removed on: _____ _____

Operating company signature

(Use a new form for reinspection!)

Regular safety inspection and maintenance

Copy, Complete and leave in the inspection book Serialnumber:_____

Test step	OK	Defect Missing	Retest	Remarks
General condition of lift	☐	☐	☐	
Model plate	☐	☐	☐	
Quick operating manual	☐	☐	☐	
Warning label	☐	☐	☐	
Condition button "▲/▼" + Main switch	☐	☐	☐	
Condition of the "Balance" "Unlock" buttons	☐	☐	☐	
Condition / function display	☐	☐	☐	
Operating boxes condition	☐	☐	☐	
Bridging switch function	☐	☐	☐	
Condition / function lifting arm block	☐	☐	☐	
Interac. function Safety system	☐	☐	☐	
Function ease of travel of the lifting arm	☐	☐	☐	
Condition of the lifting arm / elastomer overlay	☐	☐	☐	
Carrier plate fuse	☐	☐	☐	
Securing the bolts	☐	☐	☐	
Condition of bolts and bearing seating	☐	☐	☐	
Condition of weld seams	☐	☐	☐	
Load bearing construction (deformations, cracks)	☐	☐	☐	
Fastening screw torque	☐	☐	☐	
Fastening anchor torque	☐	☐	☐	
Unit condition	☐	☐	☐	
Piston rods surface condition	☐	☐	☐	
Condition of covers	☐	☐	☐	
Hydraulic system leak-tightness	☐	☐	☐	
Hydraulic oil filling level	☐	☐	☐	
Hydraulic line conditions	☐	☐	☐	
Condition electrical lines	☐	☐	☐	
Functional test lift with vehicle	☐	☐	☐	
Function of equalization of the lifting rails	☐	☐	☐	

**) Place a checkmark in the relevant, if a retest is required then check it again!*

Safety inspection done on: _____

Performed by company: _____

Name, address of specialist: _____

Result of inspection:

☐ Continued operation questionable, reinspection required
☐ Continued operation possible, remove defects by _____
☐ No deficiencies, continue to operate

_____ _____

Signature of specialist *Operating company signature*

If requested to take care of deficiencies

Deficiency removed on: _____ _____

Operating company signature

(Use a new form for reinspection!)

9.3 Exceptional safety inspection

Copy, Complete and leave in the inspection book Serialnumber:_____

Test step	OK	Defect Missing	Retest	Remarks
General condition of lift	☐	☐	☐	
Model plate	☐	☐	☐	
Quick operating manual	☐	☐	☐	
Warning label	☐	☐	☐	
Condition button "▲/▼" + Main switch	☐	☐	☐	
Condition of the "Balance" "Unlock" buttons	☐	☐	☐	
Condition / function display	☐	☐	☐	
Operating boxes condition	☐	☐	☐	
Bridging switch function	☐	☐	☐	
Condition / function lifting arm block	☐	☐	☐	
Interac. function Safety system	☐	☐	☐	
Function ease of travel of the lifting arm	☐	☐	☐	
Condition of the lifting arm / elastomer overlay	☐	☐	☐	
Carrier plate fuse	☐	☐	☐	
Securing the bolts	☐	☐	☐	
Condition of bolts and bearing seating	☐	☐	☐	
Condition of weld seams	☐	☐	☐	
Load bearing construction (deformations, cracks)	☐	☐	☐	
Fastening screw torque	☐	☐	☐	
Fastening anchor torque	☐	☐	☐	
Unit condition	☐	☐	☐	
Piston rods surface condition	☐	☐	☐	
Condition of covers	☐	☐	☐	
Hydraulic system leak-tightness	☐	☐	☐	
Hydraulic oil filling level	☐	☐	☐	
Hydraulic line conditions	☐	☐	☐	
Condition electrical lines	☐	☐	☐	
Functional test lift with vehicle	☐	☐	☐	
Function of equalization of the lifting rails	☐	☐	☐	

**) Place a checkmark in the relevant, if a retest is required then check it again!*

Safety inspection done on: _____

Performed by company: _____

Name, address of specialist: _____

Result of inspection:

☐ Continued operation questionable, reinspection required
☐ Continued operation possible, remove defects by _____
☐ No deficiencies, continue to operate

_____ _____

Signature of specialist *Operating company signature*

If requested to take care of deficiencies

Deficiency removed on: _____ _____

Operating company signature

(Use a new form for reinspection!)

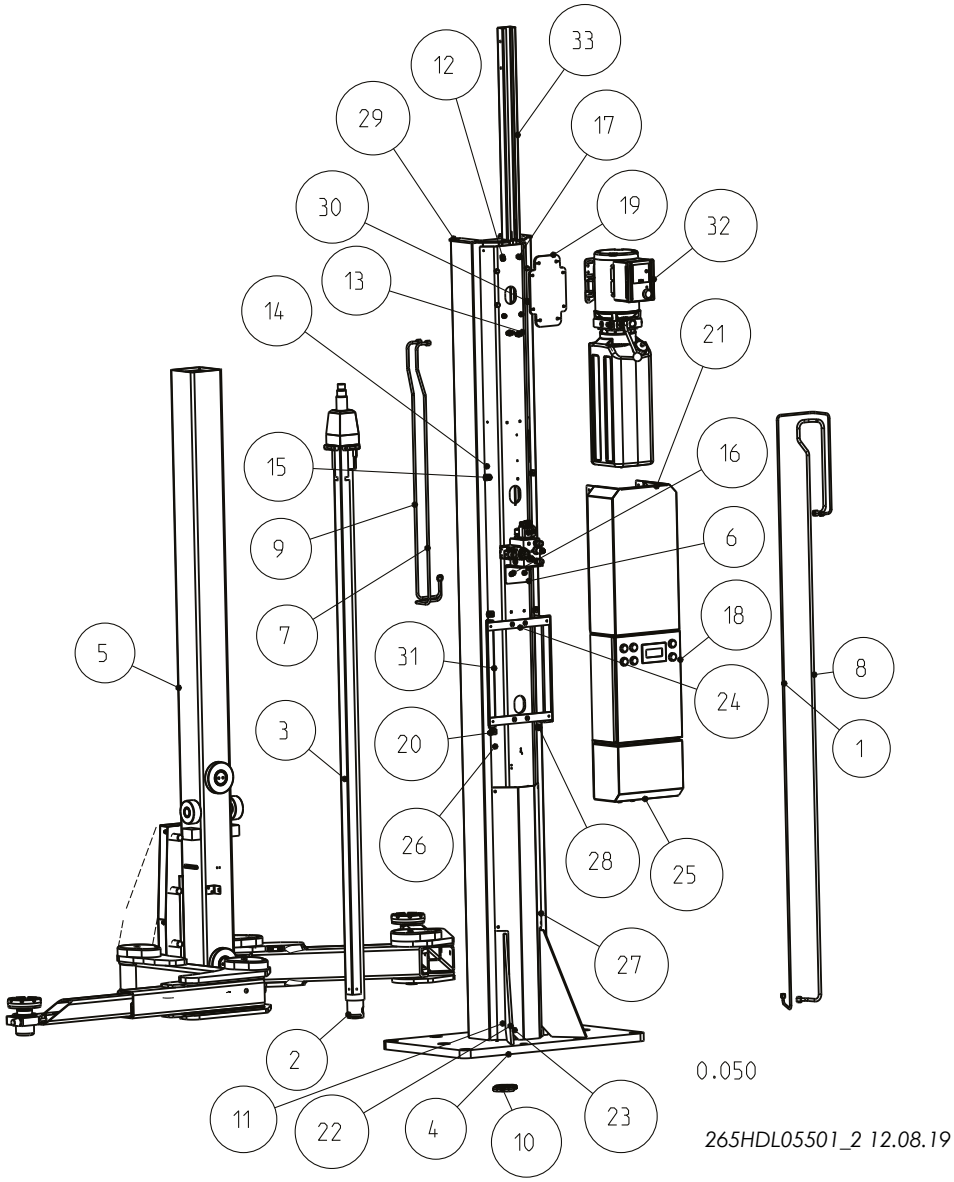
Nussbaum

Spare parts list

POWER LIFT HDL 15000
POWER LIFT HDL 18000

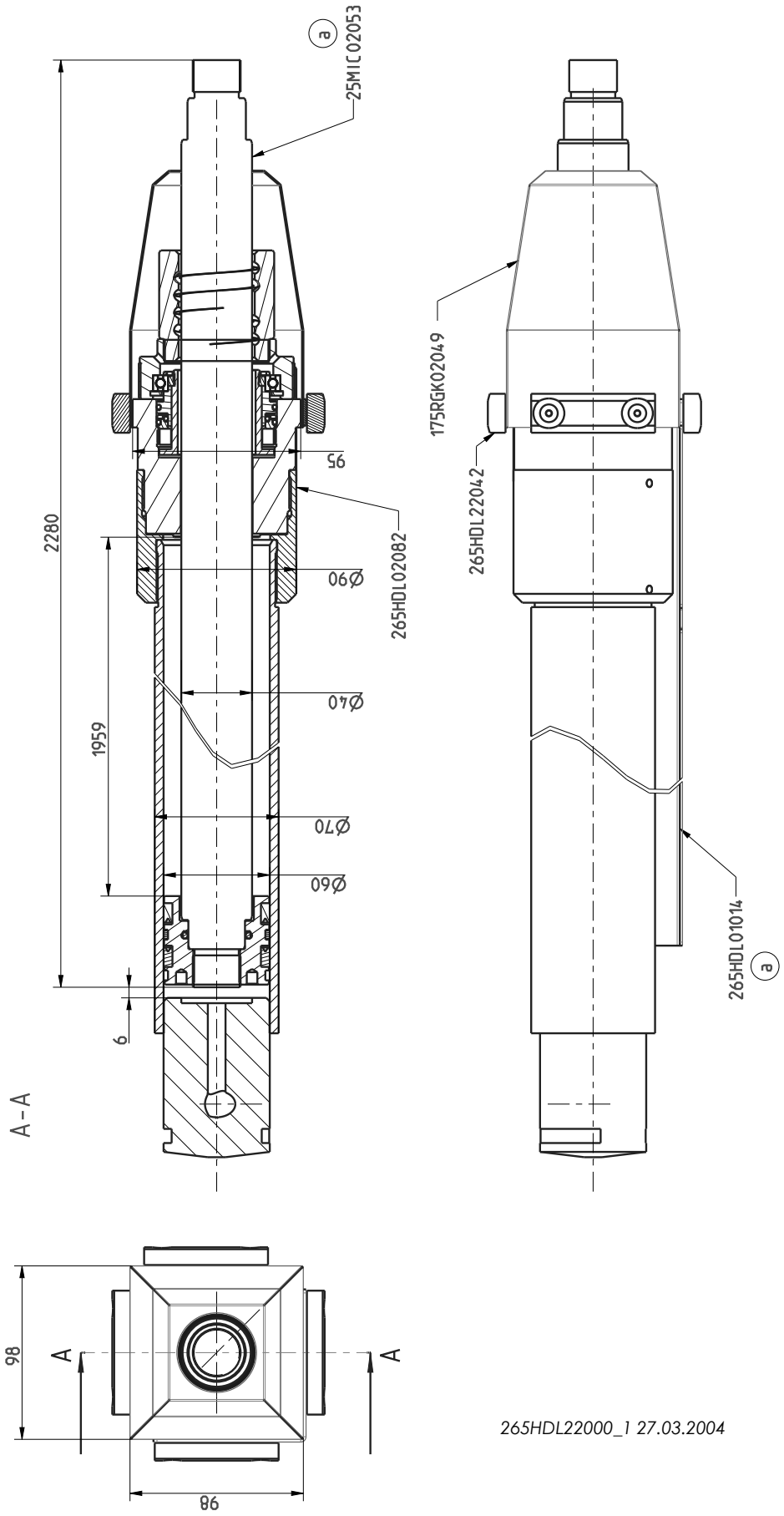
Made in Germany

Column complete



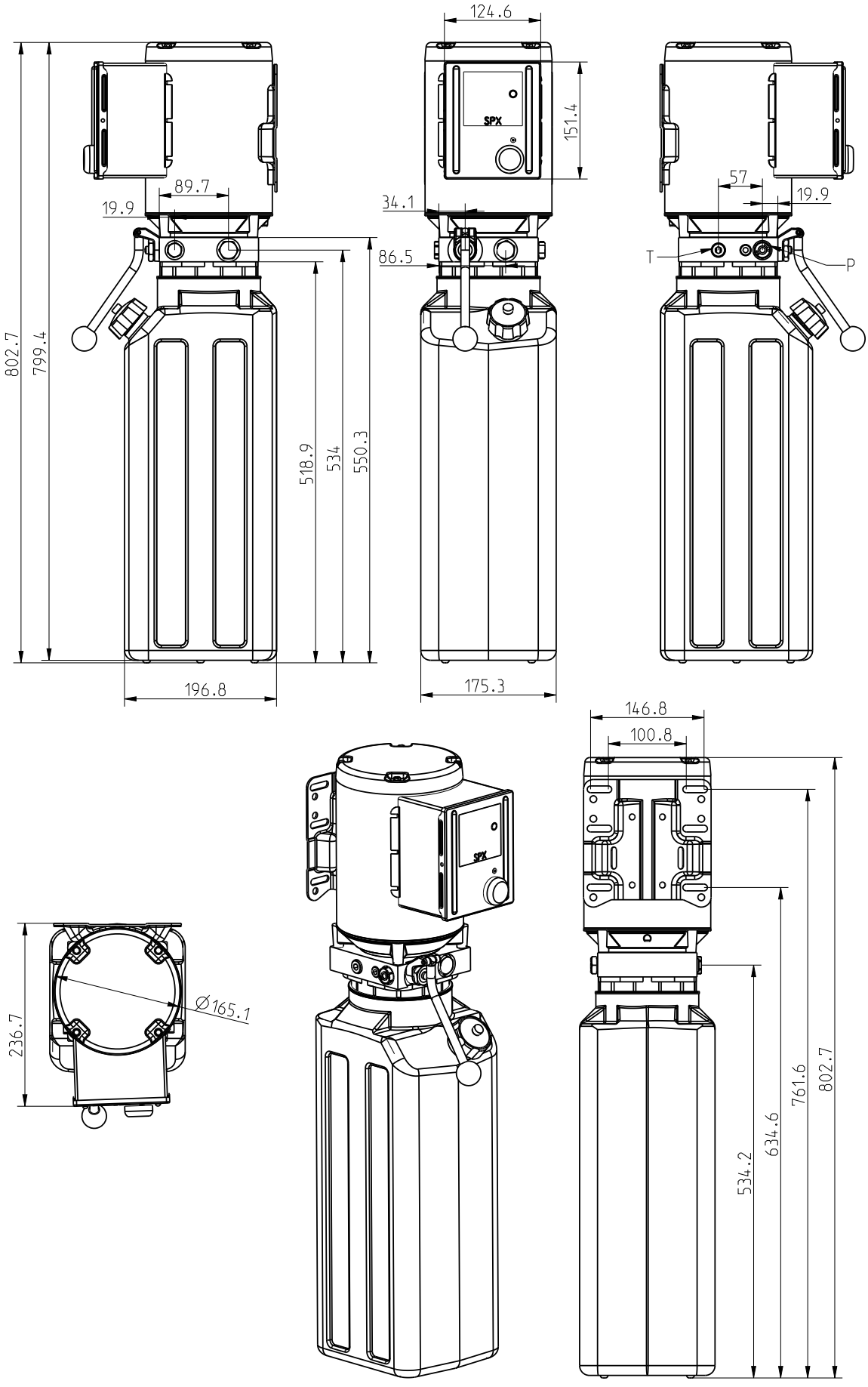
1	265HDL01758_BG	DOWNPIPE
2	265HDL02050	PIPE
3	265HDL02053	ROD
4	265HDL05503	LIFTING COLUMN
5	265HDL26400	LIFT RAILS WITH LIFTING ARMS
6	265HDL01750	ASSEMBLY UNIT BLOCK
7	265HDL01755_BG	P-PIPE TO THE UNIT
8	265HDL01762_BG	P-PIPE TO THE CYLINDER
9	265HDL01756_BG	T-PIPE TO THE UNIT
10	265HDL05050	CYLINDER HOLDER WELDED PART
11	92353-EL6	STRAIGHT SCREW FITTING
12	9125_1-A8_4	WASHER
13	93901-L8A-G1_4	STRAIGHT SCREW-IN SOCKET
14	93901-L6A-G1_8	SUPPORTS
15	9912-M5X10	CYLINDER SCREW
16	9912-M8X16	CYLINDER SCREW
17	9912-M8X20	CYLINDER SCREW
18	ELEKTROKASTEN	
19	265HDL02712	ADAPTER PLATE
20	265HDL05219	MOUNTING PANEL
21	265HDL01766	BLOCK COVER
22	265HDL05218	POWER CHAIN GUIDE
23	ZS15_01_L10RB3_8	STRAIGHT SCREW IN FITTING
24	175RGK05074	HOLDER
25	265HDL01032	HOOD
26	RO6X1_5X2085	HYDRAULIC PIPE
27	265HDL05214	CABLE COVER BOTTOM
28	9SEM05X006ZN	FLANGED BUTTON HEAD SCREW
29	265HDL09013	COLUMN COVER TOP
30	9933M8X12ZN	HEXAGONAL SCREW
31	175RGK01016	SIDE COVERS
32	240SLK01400	SPX UNIT USA
33	232SL05070	RISER

Cylinder assy.

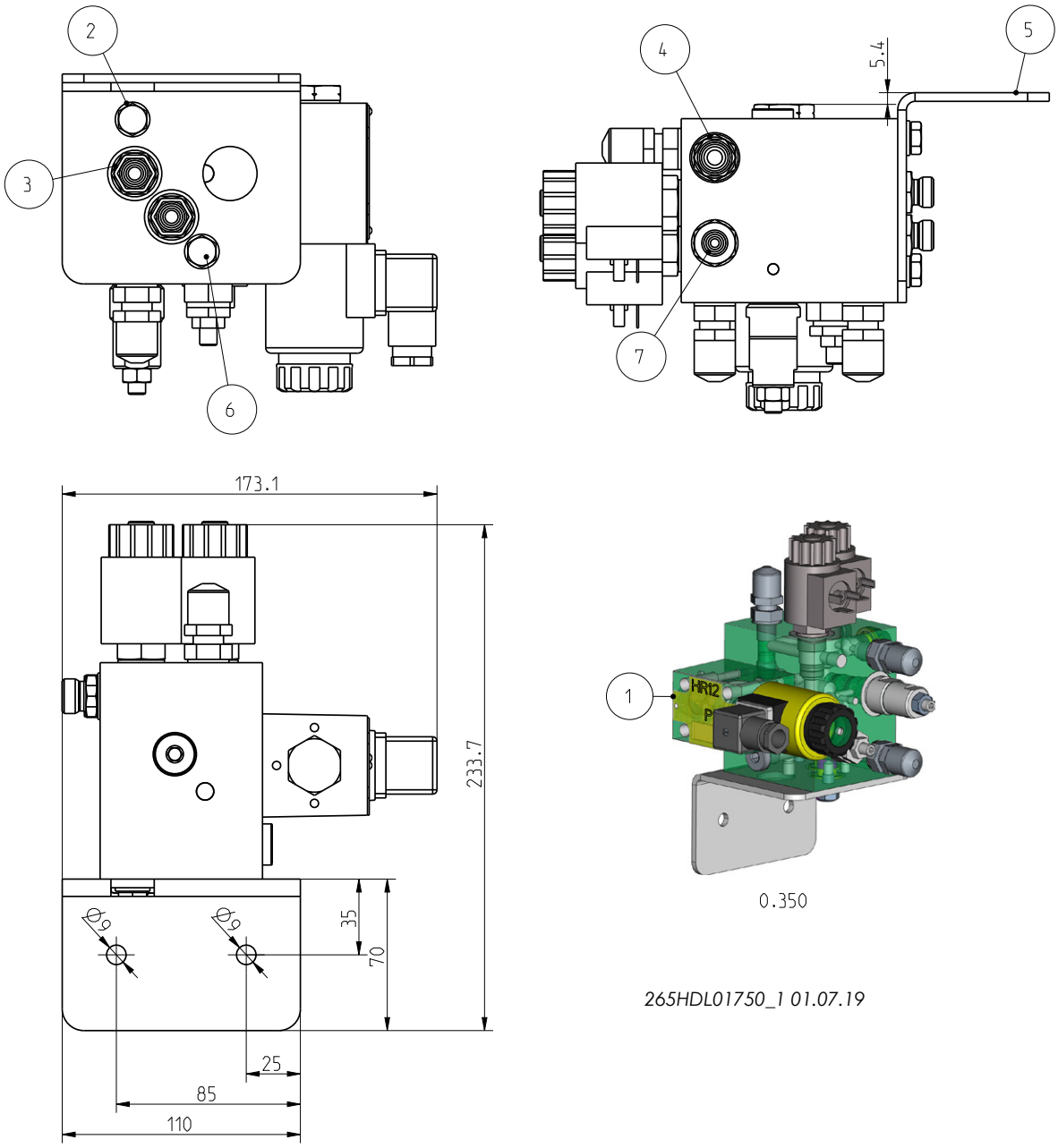


265HDL22000_1 27.03.2004

SPX Unit USA


124.6
151.4
89.7
19.9
34.1
86.5
802.7
799.4
518.9
534
550.3
196.8
175.3
57
19.9
T
P
146.8
100.8
Ø165.1
236.7
534.2
634.6
761.6
802.7

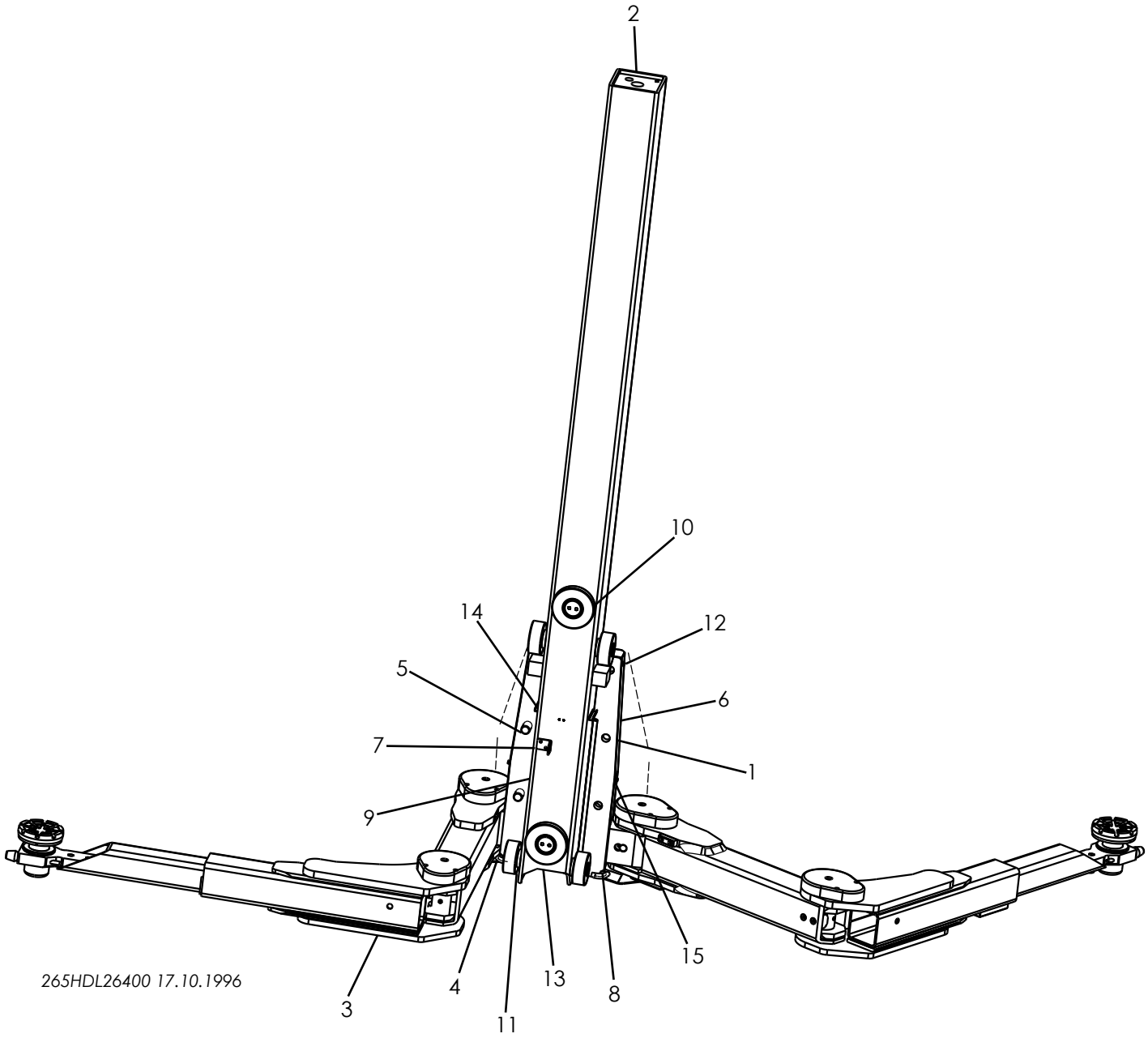
Block Mounting Assembly



265HDL01750_1 01.07.19

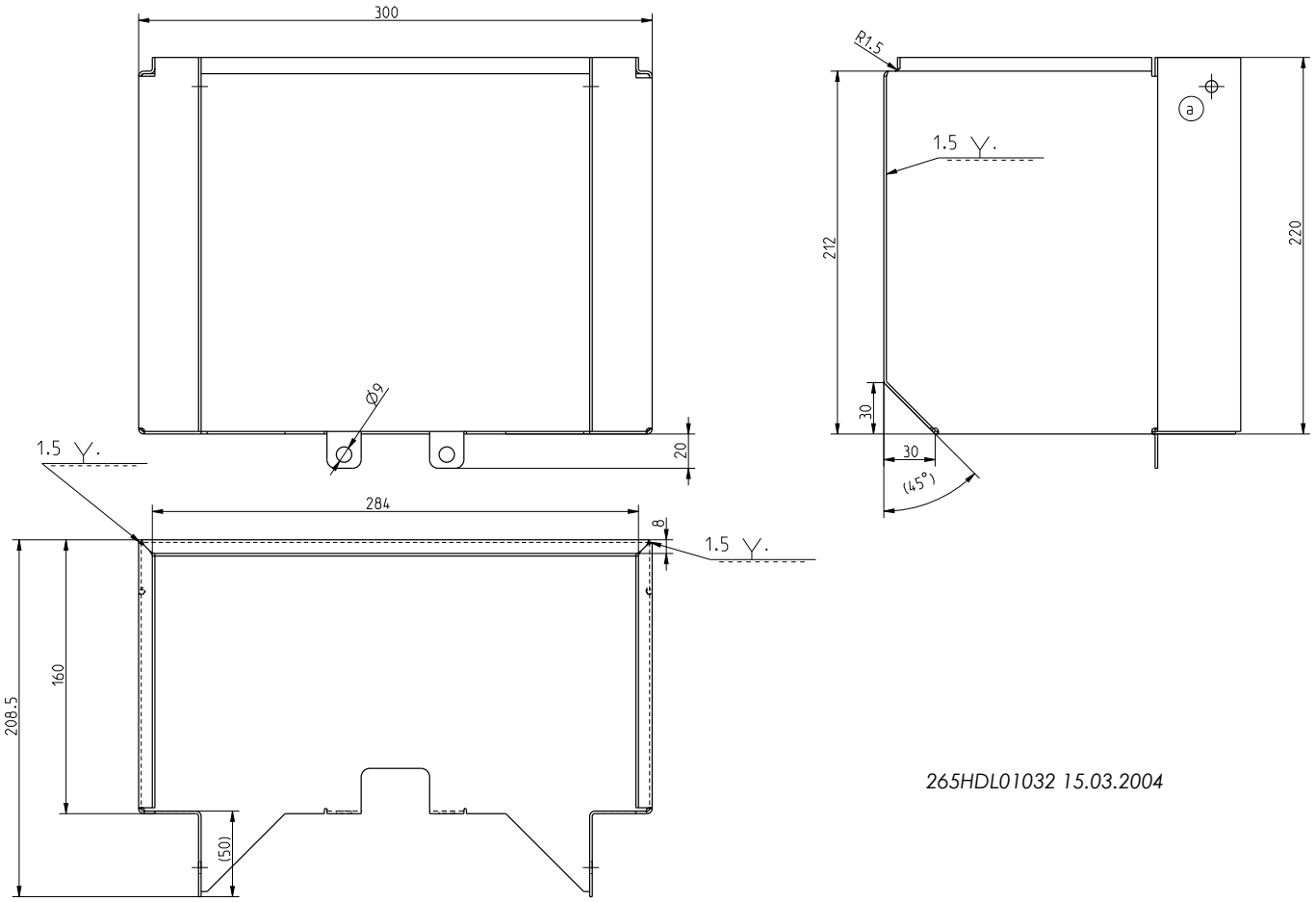
1	99-540-11-00-5	CONTROL BLOCK WHEEL GRIPPER	4	93901-L10A-G4_4	SUPPORTS
2	91125_1-A8_4	WASHER	5	265HDL01754	BLOCK HOLDER
3	93901-L8A-G1_4	STRAIGHT SCREW-IN SOCKET	6	9933M8X12ZN	HEXAGONAL SCREW
			7	93901-L06-G1_4	SUPPORTS

Lift rails with lifting arms



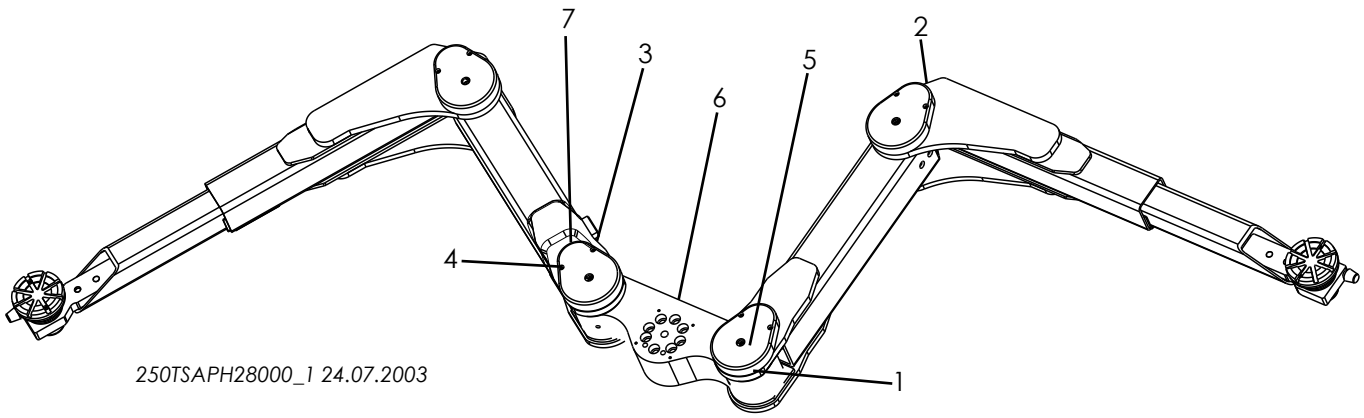
1	265HDL06413	SCREW ON PLATE	8	265HDL06442	SPACER BAR
2	265HDL06403	LIFT RAILS	9	RO12X1K5X400	CABLE PIPE
3	250TSAPH28000	LIFTING ARM FIXTURE COMPLETE	10	LR211KDDUAH09	ROLLER
			11	LR5307KDD	ROLLER
4	RO12X1K5X52	-	12	9125_1-A5_3	WASHER
5	9S933M24X80	9S933M24X80	13	250TSAPH08126	HOSE COVER
6	265HDL06432	COVER	14	265HDL06445	U-PROFILE
7	265HDL06436	FASTENING BRACKET	15	9912-M5X20	CYLINDER SCREW

Hood



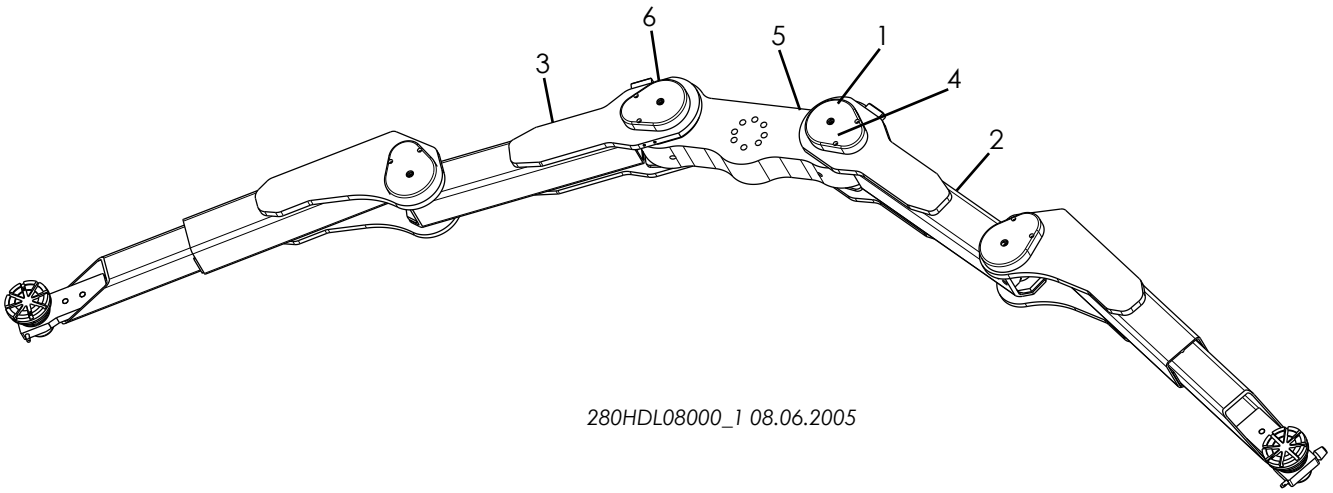
265HDL01032 15.03.2004

Lifting arm fixture complete



1	250TSAPH28079	BOLTS ASSY.	5	250TSAPH08084	BOLT RETAINER
2	250TSAPH28001	LIFTING ARM	6	250TSAPH08104	LIFTING ARM FIXTURE COMPLETE
3	250TSAPH28002	LIFTING ARM	7	250TSAPH08088	TOOTHED LOCK WASHER
4	9912-M5X30	CYLINDER SCREW			

Lifting arm fixture complete



280HDL08000_1 08.06.2005

1	280HDL08079	BOLTS ASSY.	4	250TSAPH08084	BOLT RETAINER
2	280HDL08001	LIFTING ARM 1	5	280HDL08094	LIFTING ARM FIXTURE COMPLETE
3	280HDL08002	LIFTING ARM 2	6	250TSAPH08088	TOOTHED LOCK WASHER 1

Dealer address/phone:

Nussbaum Automotive Solutions, LP • 1932 Jordache Court • Gastonia, NC 28052
www.nussbaum-usa.com • E-Mail: warranty@nussbaum-usa.com

Fax: 1-704-864-2476
Service Hotline International: +49 180-5 288 911

OPI-POWER LIFT HDL 15000 - HDL 18000-V1.0-EN_012020 - Artikelnummer: 975539