The versatile one...

HUBTEX.

Operating instructions and spare parts lists

Rev. 01

Type:	MQ 40 EL/AC
Series:	2125/1
Machine no.:	56.022
Year of construction:	2004

Electric Multidirectional Sideloader

HUBTEX.

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Enclosures (not embodied in the ring-binder)

- Spare parts lists
- Hydraulic
- Electrical documentation

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Order modifications

date	*state of revision*	*modifications*	*remarks*
12.08.2011	Rev.01	Technical Specification	N4
		Guiding device	TD-26-6001-00A
		Cabin	TD-23-0057-00sx

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We thank you for the trust that you have placed in us by purchasing a **HUBTEX** industrial truck and we wish you much fun and success with your new **HUBTEX** industrial truck.

HUBTEX industrial trucks are developed according to the latest state of the art, manufactured with utmost care and are subject to constant quality control.

The present operating manual is intended to make it easier for you to get familiar with your **HUBTEX** industrial truck and to apply the industrial truck in accordance with its intended purpose.

The operating manual provides you with important information on the safe, proper and economical operation of your **HUBTEX** industrial truck. You have to observe the operating manual to ensure reliability and long life of your **HUBTEX** industrial truck and to avoid danger.

The operating manual does not take into account local regulations which the operator of the equipment as well as the maintenance staff employed by the latter have to comply with.

The **HUBTEX** industrial truck may only be used in the fields of application defined in the Technical Specification. This applies to types of load, load weights and lifting heights, etc.

The operating manual always has to be kept in the place of use of the **HUBTEX** industrial truck. All people working with or on the **HUBTEX** industrial truck have to read and use it.

The most important operating data and the machine number are printed on the nameplate. Please mention them when asking questions or ordering spare parts.

HUBTEX is engaged in the continuous further development of its industrial trucks. We kindly ask four your understanding that no claims can be asserted due to any information and illustrations contained in this operating manual.

If you need any additional information or in case of damage please contact the next **HUBTEX** branch office / agency, or directly our maintenance department.

Please note!

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Order Confirmation no.: 56022/4 N4 customer's no.: 517260

your order / your ref:	during HUBTEX factory visit 07/07/2004 by Mr. Cox	date:	12.07./12.08./15.09./11.10.04 26.10.04/28.08.08/02.04.09/01.08.11
subject:	HM 502/3 - ASD (Klöckner), Blackburn	our ref:	LBe/JHü

Technical Specification

HUBTEX Electric-Multidirectional-Sideloader, MQ 40 EL/AC (Series 2125/1)

Operating conditions:

working hours per year:	2500	/1
floor conditions:	concrete, average / rough	/1
gradients:	non	/1
utilization:	2-shift - 5 days / week	/1
ambient temperature:	< 35 ° C	/1
application:	handling of profiles and sheet material	/1
	ferrous and non-ferrous	/1

Basic capacity:

4000 kg at lc	600 mm	up to lift height h3	5250 mm	

Derated capacity:

with reduced mast reach v = 1375 mm

4000 kg at lc	875 mm	up to lift height h3	4000 mm	
2300 kg at lc	875 mm	up to lift height h3	6300 mm	
1800 kg at lc	875 mm	up to lift height h3	6800 mm	
3150 kg at lc	1000 mm	up to lift height h3	4000 mm	/3
1800 kg at lc	1000 mm	up to lift height h3	6300 mm	/3
1400 kg at lc	1000 mm	up to lift height h3	6800 mm	/3

load moment monitoring to match the required capacities

with max. mast reach v = 1650 mm

4000 kg at lc	750 mm	up to lift height h3	4000 mm	
2350 kg at lc	750 mm	up to lift height h3	6800 mm	
3400 kg at lc	875 mm	up to lift height h3	4000 mm	/1
2000 kg at lc	875 mm	up to lift height h3	6800 mm	/1
2800 kg at lc	1000 mm	up to lift height h3	4000 mm	/1
1500 kg at lc	1000 mm	up to lift height h3	6800 mm	/1

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Lifting device: **3-stage mast H70TI**

collapsed height :	h1	3473	mm
free lift :	h2	2238	mm
lift height :	h3	6800	mm
extended height :	h4	8035	mm
clear height of building:		8080	mm
height of carriage :	vh	1235	mm

- mast reach damper
- mast reach stop with override button at v = 1375 mm /1
- intermediate lift limitation with override button at h3: 5270 mm /N3

Load pick-up device: spreaded fork-carriage, type III, GTL = 3700 mm
hydraulic fork tilt +5 / -3 degrees
- additional butterfly bearing in support /N4

1 pair of outer forks:
hydraulic fork adjustment 860 - 3700 mm
(outside of forks)
l = 1500 mm, special tapered profile for section splitting
cross section: 50 mm x 150 mm

1 pair of inner forks:
hydraulic fork adjustment 500 - 1250 mm
(outside of forks)
l = 1500 mm
cross section: 50 mm x 100 mm

- demountable 250 mm deep fork back stops /1

Measurements of unit:

height over cabin:	Sh	2500 mm	+ 280 mm WL	/2
frame length:	L	2440 mm		
cab overhang:		180 mm		
total length:	GL	3700 mm		
dimension:	b	1030 mm		
loadbed width:	NB	1525 mm		
frame width:	B	2555 mm		
mast reach:	V	1650 mm	max.	
height over loadarm:	Rh	500 mm		
loadarm opening:	Ra	1340 mm		

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subject:	HM 502/3 - ASD (Klöckner), Blackburn	our ref:	LBe/JHü

	clearance:		165	mm
	turning radius approx.:	Wa	2250	mm
	floor pressure (static):	approx.	1600	kg/m²

Working aisle AST: 2805 mm including 125 mm safety distance per side

Main aisle UST: frame length or max. load length + 1000 mm

Rail guidance:

distance between rails:	FSA	2655	mm
height of rails:	FSH	200	mm
height of enter rail:		200	mm
distance over rollers:	FRA	2645	mm
roller overhang loadside:		50	mm
roller overhang batteryside:		40	mm
guiding rollers		single / PU (welded to chassis)	

"reinforced frame area for guide roller positioning" /1

Recommendation: length of enter rail 600 mm / angle 10 degrees

Remark: All rail measurements have to be checked and confirmed!

Aisle recognition: by ultrasonic-sensors with guards
- automatically length drive
- with override switch for aisle recognition

Steering system: electronic program controlled 4-wheel steering system
with direction preselection, 4 programs, code H4
diagonal, longitudinal, cross and circle

Speeds approx.:

driving with/without load :	8 / 9 km/h
lifting with/without load:	0,20 / 0,25 m/s
lowering with/without load:	0,30 / 0,25 m/s
mast reach with/without load:	0,20 m/s

Order Confirmation no.: 56022/4 N4 customer's no.: 517260

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subject: HM 502/3 - ASD (Klöckner), Blackburn our ref: LBe/JHü

- length and cross drive in creep speed (4 km/h) /1
  at h3 > 3000 mm /1

Chassis: 4-wheel chassis with 2 motors and heavy-duty rollers at loadside

Tyres: drive wheel: **super elastic**
load wheel: **super elastic**

Wheel measurements: drive wheel: 2 x d = 457 x 200 mm
load wheel: 4 x d = 377 x 110 mm

Motor power: (S2 = 60 min.) 2 x 4,0 kW AC /1

Gradability: approx. 8 % with load
approx. 12 % without load

Frame: 2-part frame (articulated) for permanent floor pressure of all 4 wheels (mechanical level compensation)

- **white xenon beacons; with guards, one in the middle of each loadarm, direction sensitive**

Brake system: automatically activated counter-current plugging brake, maintenance-free
electro-magnetic parking brake

Motor control: Battery power is inverted via motor specific controls. Each control monitors and adjusts motor field characteristics to ensure smooth starts, acceleration and braking while minimizing energy consumption. This proven control system can create maximum motor torque from a dead stop - a major safety consideration when working on ramps or fast paced applications.

Hydraulic system: - steplessly operating and smoothly working proportional valves

Order Confirmation no.: 56022/4 N4 customer's no.: 517260

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subject:	HM 502/3 - ASD (Klöckner), Blackburn	our ref:	LBe/JHü

lifting power: 14,0 kW AC
steering power: 4,0 kW AC

- preparation for laser scanner on hydraulic side (monitoring load overhang within working aisle) /N2 /N2

Operation:

via multifunction lever (joystick) for:
- lifting / lowering
- mast reach / retract
- fork tilt
- fork adjustment of inner forks
- fork adjustment of outer forks
- direction preselection cross / length drive
- horn

via push button:
- circle and diagonal drive

Driver´s cabin:

cross-seat cabin: Q850 L = 830 mm x B = 850 mm
- rubber mounted
- protection roof (openings as per ISO 6055)
- security glass at load side
- mesh wire at front and battery side (reinforced metal frame at battery side) /N2
- leaving / entering from aisle
- rotating warning light on cabin roof; with heavy-duty guard /1 (operated when the truck is switched on)
- audible warning system (operated by the accelerator pedal with key switch to turn it off)
- 2 working lights on cabin roof; with heavy-duty guard /1
- rubber floor mat - non slip
- Sick laser scanner on cabin roof to monitor racks /N1 within the aisle (load overhang) /N1
- reinforced cabin retaining system /N2

Remark:

1 big guard for working lights and rotating warning light /1
will be accepted ! /1

Cabin Interior:

multiple adjustable spring suspended seat with integrated seat switch, seat cover leatherette
- seat belt 2-point lap type

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Order Confirmation no.:	**56022/4 N4**	customer's no.: 517260	
your order / your ref:	during HUBTEX factory visit 07/07/2004 by Mr. Cox	date:	12.07./12.08./15.09./11.10.04 26.10.04/28.08.08/02.04.09/01.08.11
subject:	HM 502/3 - ASD (Klöckner), Blackburn	our ref:	LBe/JHü

HIT (HUBTEX Information Terminal) indicating:
- password / keycode
- date / time
- hour meter
- battery capacity
- maintenance cycles
- steering program
- drive speed
- wheel position
- status reports

Finish:

weather proof 2 pot finish
Klöckner blue **RAL 270 2029 /** black-grey **RAL 7021**
No HUBTEX logos
(customer will supply his own for factory fitment - positions to be advised)

Battery:

(to be supplied by HUBTEX (UK) Ltd.)
48 V, 6 EPzS, 930 Ah according to
battery drawing no.: I 300 43 45
minimum weight: 1350 kg

(to be supplied by HUBTEX Fulda)
battery cover according to drawing no. I3001692

Charger:

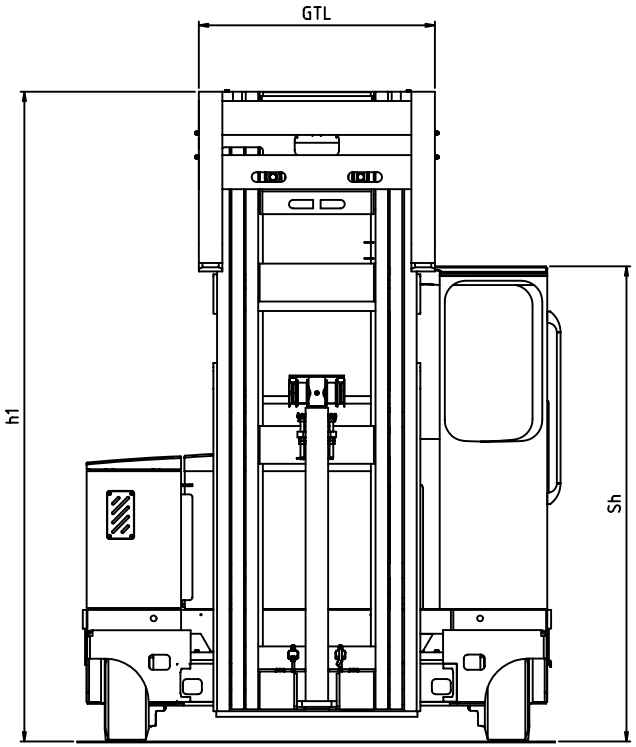
(to be supplied by HUBTEX (UK) Ltd.)

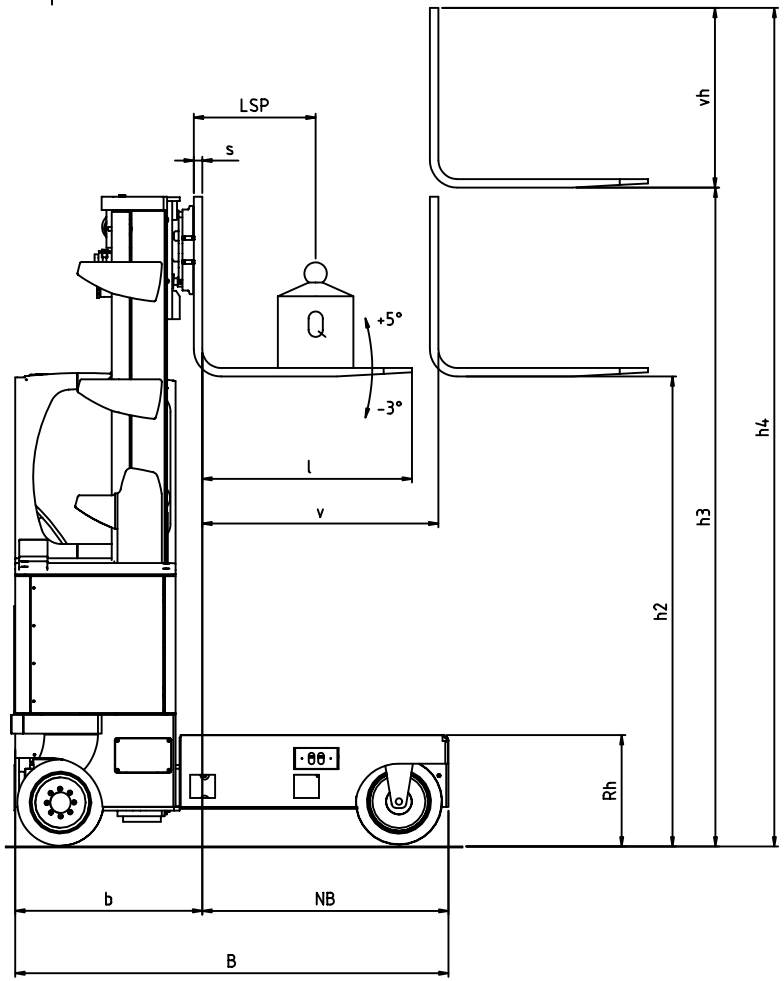
Documentation:

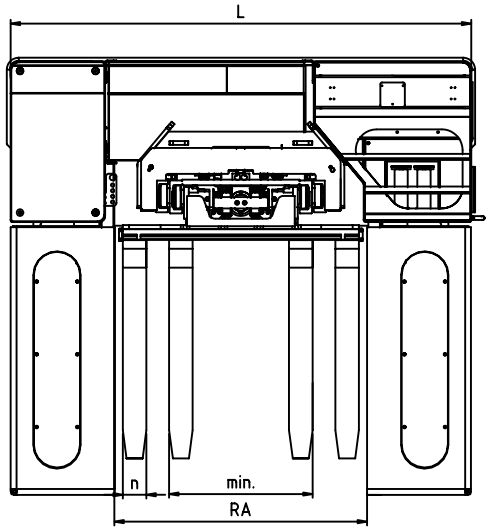
1) manuals: each 5-fold engl.
maintenance instructions: each 5-fold engl.
spare parts lists: each 5-fold engl/ger/fre
(3 x customer / 2 x service)
All documentation on CD-ROM

2) chain certificates separate from certificate of conformity

3) 1 set spare truck plates - load and serial number







Maße ohne Toleranzangabe nach DIN ISO 2768 T1 C				Schutz-vermerk nach DIN 34 beachten !		Oberfläche	Maßstab 1:20	Position –	Menge –
							–	–	
							–	–	
					Datum	Name			
					Bearb. 22.03.04	JHi	Maßblatt Serie 2125/2126/2127/2128		
					Gepr. 22.03.04	TM	MQ25-35 EL/AC		
					Norm 22.03.04	TM			
							HUBTEX	M2001724	Blatt – Bl
Zust.	Änderungen	Datum						Dateiname	

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Type	**MQ 40 EL/AC (2125/1)**
No.	**56.022**

main dimensions	height over cabin	Sh	[mm]	2500+280 warning light
	frame length	L	[mm]	2440+180 cab overhang
	frame width	B	[mm]	2555
	dimension	b	[mm]	1030
	loadbed width	NB	[mm]	1525
	loadbed height	Rh	[mm]	500
	loadbed opening	Ra	[mm]	1340
	mast reach	v	[mm]	1650
	turning radius	Wr	[mm]	2250
	collapse height	h1	[mm]	3473
	free lift	h2	[mm]	2238
	maximum lift height	h3	[mm]	6800
	extended height	h4	[mm]	8035
	fork carriage lenght	Gtl	[mm]	3700
	height of carriage	vh	[mm]	1235
	hydraulic fork adjustment		[mm]	860-3700 (outer forks) 500-1250 (inner forks)
	hydraulic fork tilt		[°]	+5 / -3
	fork lenght	l	[mm]	1500
	fork cross section	a x b	[mm]	50 x 150 (outer forks) 50 x 100 (inner forks)

wheels and chassis	tire equipment, load side			Super-Elastic
	tire equipment, drive side			Super-Elastic
	tire size, load side		[mm]	377 x 110
	tire size, drive side		[mm]	457 x 200
	number of wheels, load side (x = driven)		[pcs.]	4
	number of wheels, drive side (x = driven)		[pcs.]	2x
	road clearance		[mm]	165
	wheel base, load side		[mm]	1959
	wheel base, drive side		[mm]	1986

performance	drive motor rating (s_2 =60 min)		[kW]	2 x 4,0
	pump motor (s)		[kW]	14
	power motor steering		[kW]	4
	travel speed loaded		[km/h]	8
	travel speed empty		[km/h]	9
	lifting speed loaded		[m/s]	0,2
	lifting speed empty		[m/s]	0,25
	lowering speed loaded		[m/s]	0,3
	lowering speed empty		[m/s]	0,25
	mast travel speed loaded		[m/s]	0,2
	mast travel speed empty		[m/s]	0,2
	max. gradability loaded		[%]	8
	max. gradability empty		[%]	12

addit-ional	aisle width		[mm]	2805
	sound level		[dB(A)]	70
	vibration			
	hydr. pressure for attachments		[bar]	180

For further data see load diagram and nameplate

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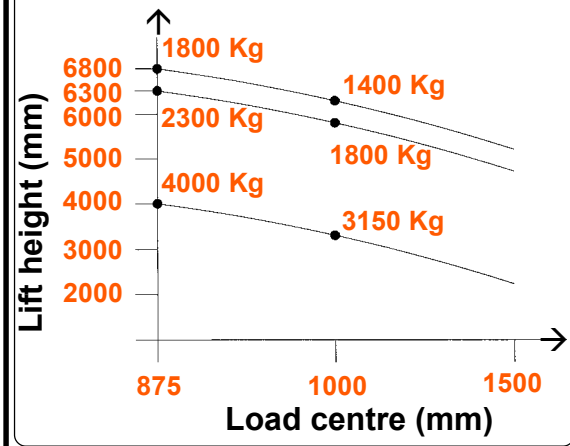
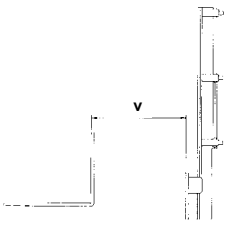
Tragfähigkeit
load capacity
Capacité de charge

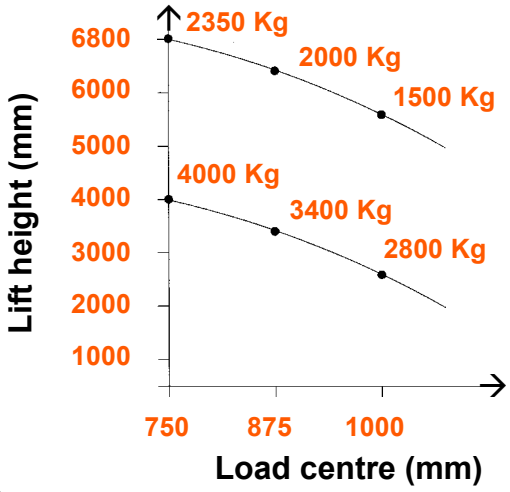
Maschinen-Nr. / machine number / numero de fabrication	56.022

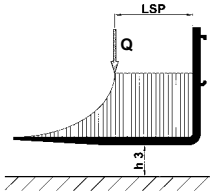
Mastvorschub (v) 1.375 mm
mast reach (v) 1.375 mm
course latérale du mât (v) 1.375 mm





Mastvorschub (v) 1.650 mm
mast reach (v) 1.650 mm
course latérale du mât (v) 1.650 mm





Der Aufenthalt im Lastbereich ist verboten !
The stay in the load range is forbidden !
Défense de stationner sous le charge !

TD-98-0014-00def

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Typ type modéle		**MQ 40 EL/ AC (2125/1)**
Maschinen-Nr. machine number numero de fabrication		**56.022**
Baujahr year of production année de fabrication		**2004**
Leergewicht ohne Batterie structural weight without battery poids operationnel sans batterie		**7.250 kg**
Batteriegewicht weight of battery poids de la batterie	+ 5%	**1.350 kg**
Batteriespannung voltage of batterie tension de la batterie		**48 V**
Nennantriebsleistung nominal drive power puissance de propulsion	(s_2 = 60 min)	**2 x 4,0 kW**

CE Made in Germany

TD-98-1001-01def

Typenschild
Nameplate
Plaque signalétique

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EC - Declaration of Conformity

according to EC - guideline for machines 98/37/EG, appendix II A

We herewith confirm that the following machine

manufacturer:	**HUBTEX Maschinenbau GmbH & Co. KG**
type:	**Electric Multidirectional Sideloader** **MQ 40 EL/AC (2125/1)**
machine no.:	**56.022**
year of construction:	**2004**

is corresponding to the following relevant regulations:

EC-guideline:	**98/37/EG**	machines
	2004/108/EG	electromagnetic compatibility
harmonized standards:	**DIN EN ISO 12100-1**	Safety of machinery; Basic concepts, general principles for design; Part 1: Basic terminology, methodology
	DIN EN ISO 12100-2	Safety of machinery; Basic concepts, general principles for design; Part 2: Technical principles
	DIN EN 349	Safety of machinery; Minimum gaps to avoid crushing of parts of the human body
	DIN EN 1175-1	Safety of industrial trucks - Electrical requirements - Part 1: General requirements for battery powered trucks
	DIN EN 1726-1/A1	Safety of industrial trucks - Part 1: Self-propelled trucks up to and including 10 000 kg capacity and tractors with a drawbar bull up to and including 20 000 N Part 1: General requirements

Fulda, the 12.08.2011

Jürgen Keller
(Managing Director Technical)

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DESCRIPTION OF UNIT

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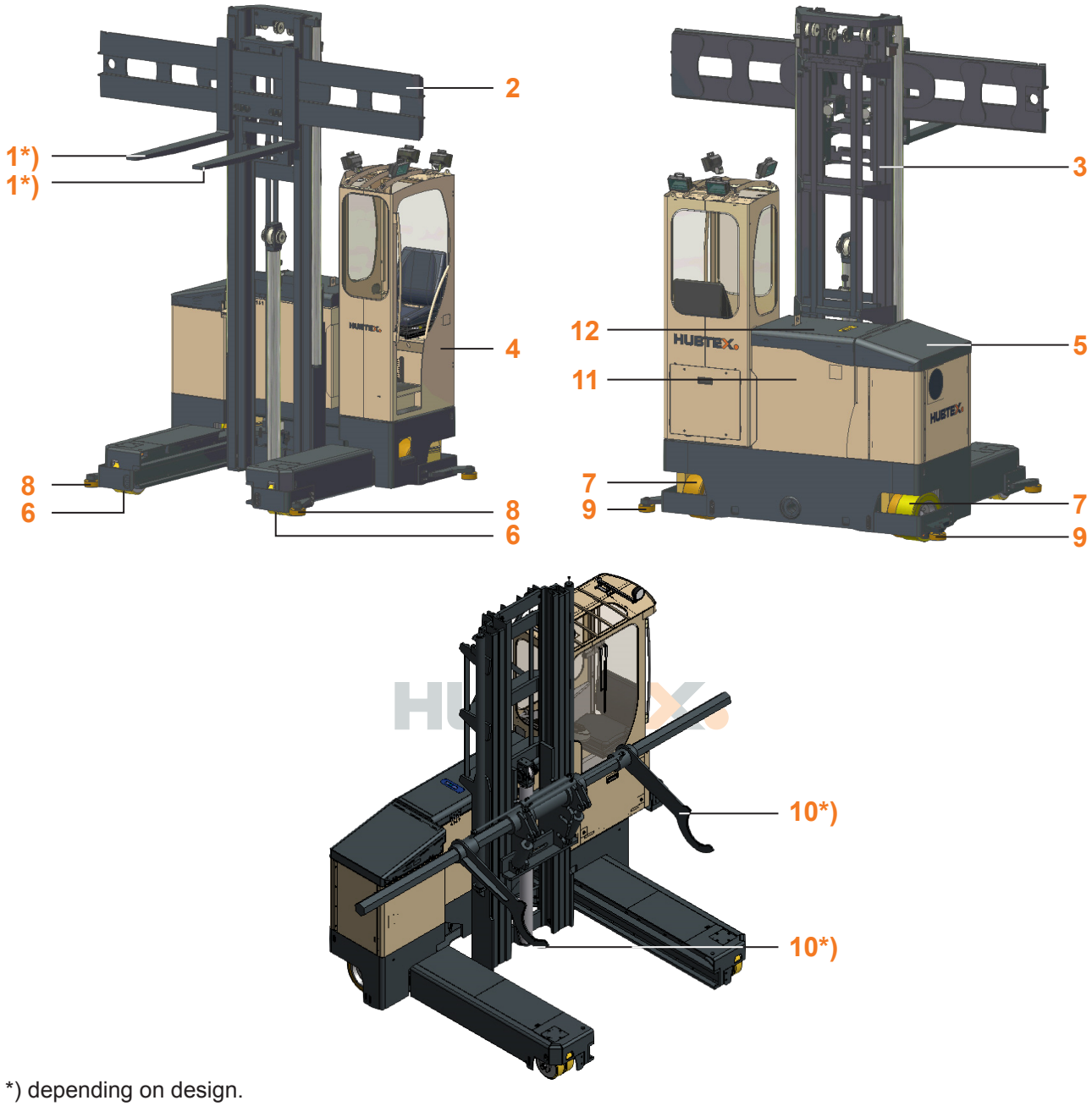
1. General overview



*) depending on design.

1	Fork arms
2	Fork carrier
3	Lift mast
4	Cabin
5	Hydraulic system
6	Load wheels
7	Driving wheels
8	Guiding rollers, front
9	Guiding rollers, rear
10	Grippers
11	Battery
12	Battery cover

2. Intended use

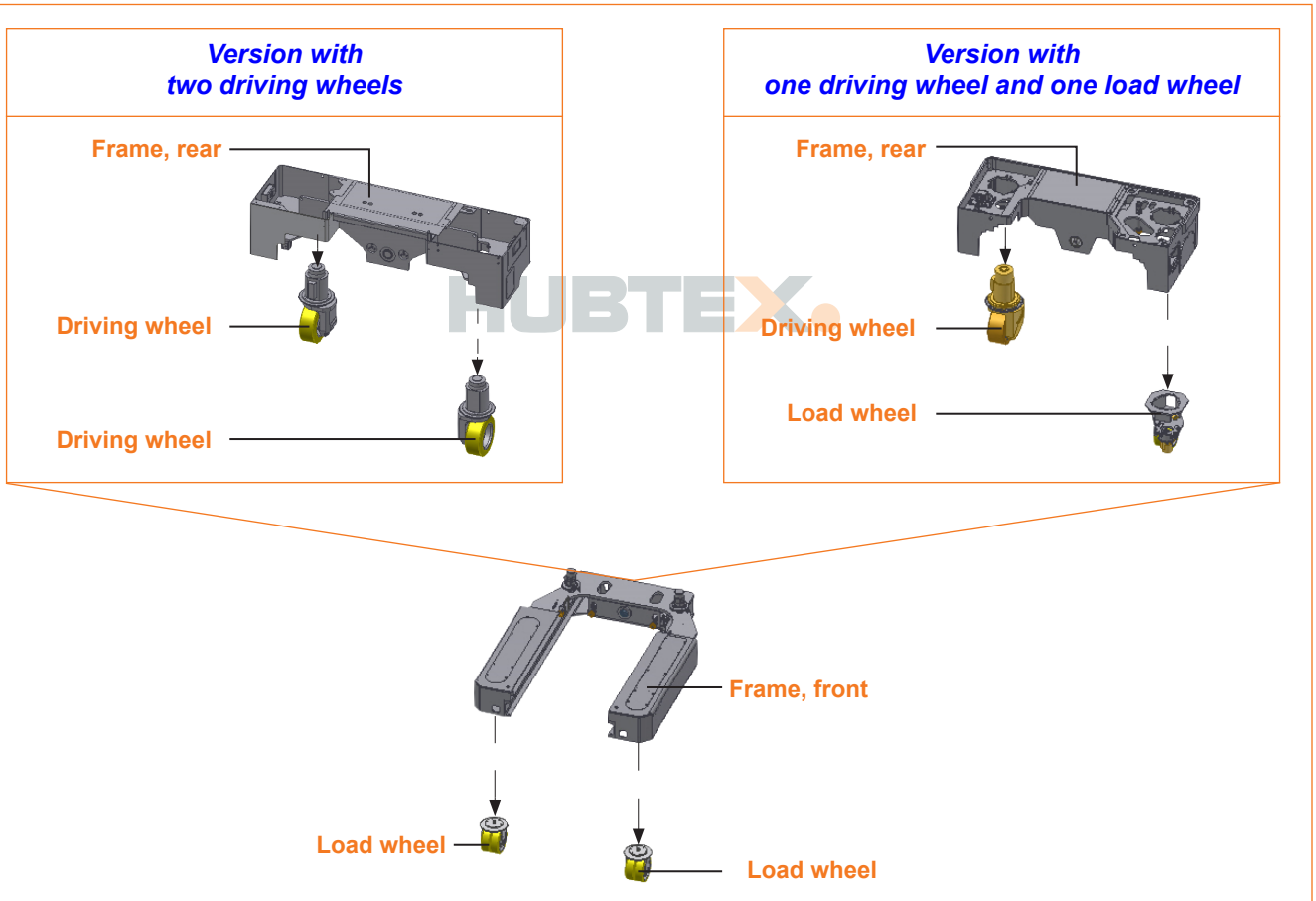
The high-lift truck is a battery-operated, stacking industrial truck which can be used for stacking and removing loads transversely to the direction of motion to one side.

3. Frame, chassis and driving control

Two-piece frame (articulated frame) for permanent ground contact of all four wheels, i.e. the load-bearing chassis frame is suspended in an oscillating axle which ensures permanent ground contact of all four wheels, even on uneven ground.
Level differences of the road ways are immediately compensated.

A modern high frequency control with energy recuperation is used as control system for jerk-free starting, braking and acceleration (only for high-lift trucks with AC control).

The high-lift truck is equipped with four-wheel chassis. Depending on the version, the high-lift truck consists of one / two driving wheels and one / two heavy-duty double rollers (load wheels) on the load side.
Depending on the version, the high-lift truck can also be equipped with one driving wheel and one load wheel and two heavy-duty double rollers (load wheels) on the load side.

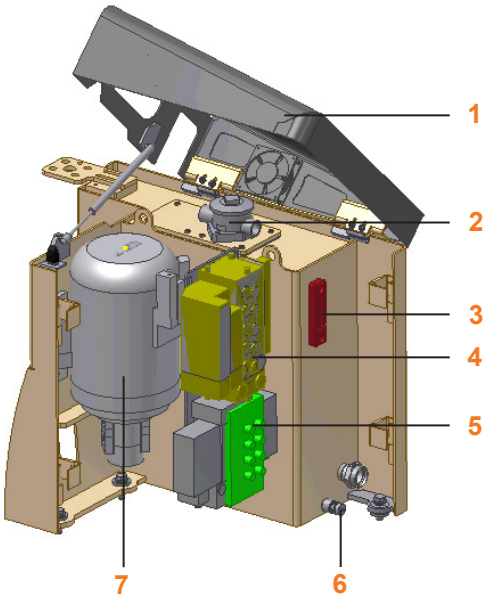


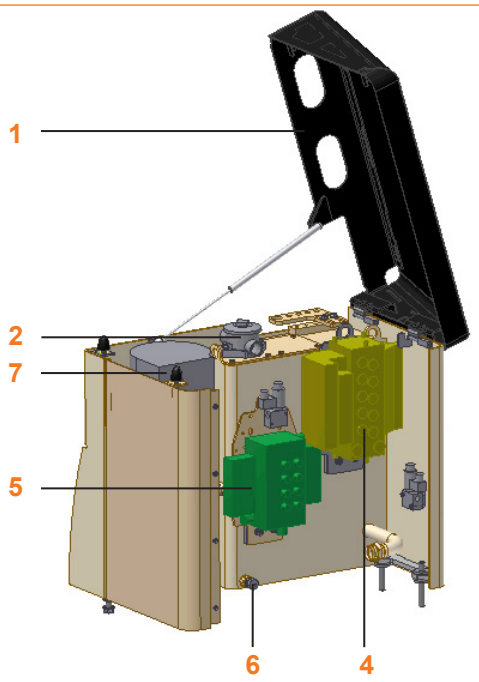
4. Braking

The high-lift truck is equipped with a service brake and a parking brake.
The service brake is a reverse current brake which is operated by means of a brake pedal. The parking brake is an electro-magnetic brake which is activated by actuation of the pushbutton located on the operator panel.
An emergency-stop switch is used as "emergency brake".

5. Hydraulic system

Proportional valve technology, infinitely variable and jerk-free operation.
Representation examples:





1 Hydraulic system cover
2 Hydraulic oil inlet
3 Hydraulic oil level indicator / hydraulic oil temperature indicator
4 Control block
5 Steering block
6 Draining the hydraulic oil
7 Electrohydraulic pump

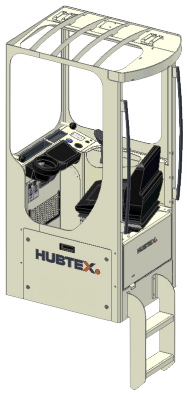
6. Cabin versions

6.1 D cabin / L cabin / Q cabin

Laminated window panes and / or protective grating as well as a standardized protective roof ensure optimal safety and all-round view for the operator in the cab.
The operator panel is located in the cab. It is clearly structured. All operation and control elements are arranged in a user-friendly manner and marked with symbols that are easy to understand.
The vehicle seat is a multi-adjustable, spring mounted comfort seat with integrated seat switch. The functions of the truck will only work if the driver sits on the seat.
Representation examples:

Q cabin

D cabin

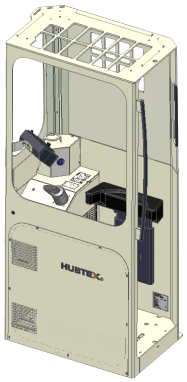


L cabin

6.2 SU cabin

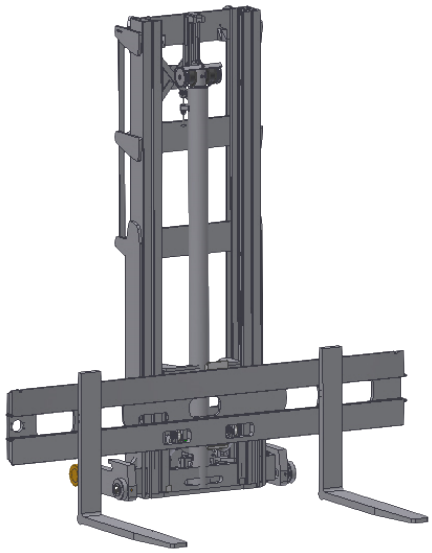
Laminated window panes and / or protective grating as well as a standardized protective roof ensure optimal safety and all-round view for the operator in the cab.
The operator panel is located in the cab. It is clearly structured. All operation and control elements are arranged in a user-friendly manner and marked with symbols that are easy to understand.
The standing aid is height-adjustable. All high-lift truck functions can only be performed if the dead man's footswitch / the foot plate is actuated.
Representation example:

SU cabin



7. Load pick-up

The load is picked up by means of fork arms or grippers.

Version with fork arms	*Version with grippers*
	

8. Special equipment (option)

Optional equipment of the high-lift truck can comprise, amongst other things:

- aisle recognition
  (optionally with aisle recognition by means of ultrasonic sensors or aisle recognition by means of high-frequency antenna and transponder)
- **HUBTEX** personal protection system (PPS)
- lifting height preselection device
- load weighing device
- camera and monitor
- working headlamps
- heating

.

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SAFETY INSTRUCTIONS

Table of contents

Definition

An engine-driven industrial truck is an industrial truck driven by engine power (called industrial truck hereinafter) - with the exception of rail cars - that is designed to convey, pull, push, lift, stack up, or transfer to racks loads of all types, controlled by a walk-along operator or by a driver sitting or standing on the truck or a specially arranged platform. Before putting the **HUBTEX** industrial truck in operation and before starting any maintenance work on the **HUBTEX** industrial truck these operating instructions absolutely have to be read and observed.

1. Explanation of symbols and safety information

This symbol is used to draw the reader's attention to particularly important contents of the operating instructions, to ensure that regulations, instructions, rules of conduct and correct work procedures are observed and damage or destruction of the **HUBTEX** industrial truck is avoided.

General notice

Comply with the operating instructions

Wear protective goggles and outfit

Buckle up!

Danger of explosion, avoid short-circuits

Electrolyte is strongly caustic

Danger of crushing

Danger of hot surface

Riding prohibited

Presence under floating loads is prohibited

Use of cellular phones is prohibited

Smoking prohibited

No open flames, glow or sparks

Spraying with water prohibited

This symbol is used to indicate measures to be taken to protect the environment

Hazardous to the environment

2. Type of use of the industrial truck and areas of application

2.1 Usage of the HUBTEX industrial truck in conformity with intended purpose

Operational safety of the **HUBTEX** industrial truck is only guaranteed if it is used as directed.
As directed use implies that the **HUBTEX** industrial truck is operated as described in the technical specifications.
Any type of use diverging from or exceeding the described use is considered unintended use. **HUBTEX** will not be liable for any damages arising from this kind of use; the risk for this is borne exclusively by the operating authority.
Operation of this **HUBTEX** lift truck is only permitted, if the following regular operating conditions prevail:

- Operation (driving and stacking) on a firm, horizontal, even and finished floor, in a moderate climatic zone at ambient temperatures from >0° to +30°C,
- For driving with loaded forks at low position the lifting mast/ fork carrier have to be in tilt back position. Make sure the speed is suitable for local conditions.
- Loading with lifting mast in vertical position and fork arms in horizontal position,
- For operation the centre of gravity of the load should be approx. in the middle between the guides of the lifting mast.

Use as intended also includes the observation of the operating instructions and an adherence to the inspection and maintenance specifications.

2.1.1 Damages and deficiencies

Damage to or other shortcomings in the **HUBTEX** industrial truck or mounted devices must be immediately reported to the overseer. **HUBTEX** industrial trucks and mounted devices that are not operationally safe must not be used till they are properly repaired.
Safety devices and switches must not be removed or rendered ineffective. Parameters that have been set and are intended to be fixed may only be changed with the consent of the manufacturer.

2.1.2 Danger zone

No third party is allowed to be present within the danger zone of the **HUBTEX** industrial truck

Danger!

Danger zone
A danger zone is the area where people are endangered by movements of the **HUBTEX** industrial truck, its working equipment, its load suspension devices or by the loaded materials This includes the area where truck equipment can lowered or fall down.

2.1.3 Requirements for the travel ways

The floors of driveways have to be firm, horizontal, plain and prepared. Make sure that the ground is sufficiently fortified, free of dirt and objects lying around. Gullies, railway crossings, etc. have to be levelled and possibly covered by ramps to allow passing over them with the least possible bumping.
A sufficient distance has to be maintained between the highest part of the **HUBTEX** industrial truck or its load and stationary components in the surroundings.
Only ways approved for travelling by the operating authority or its representative may be used for driving. The travel ways have to be free of obstacles. The loads must be deposited and stored in areas designated for that purpose only. The operating authority and its representative are responsible for ensuring that unauthorised third parties are prevented from trespassing the working area.

All travel ways have to be marked visibly and be kept free of obstacles.
Travel ways have to be laid out in such a way as to avoid sharp curves, excessive gradients as well as passages that are too narrow or low..
The right of way for driverless industrial trucks has to be warranted and observed.
The width of a single-track travel way with simultaneous pedestrian traffic should be at least 1000 mm greater than the width of the **HUBTEX** industrial truck or its load, respectively.
The width of a two-track travel way with simultaneous pedestrian traffic should be at least 1400 mm greater than twice the width of the **HUBTEX** industrial truck or its load, respectively.
In the EU zone, compliance is required with the Directive 89/654/EEC (minimum specifications for safety and health protection in places of work). The respective national specifications apply for the non-EU-zone.

2.1.4 Dangerous spots

Dangerous places on driving paths must be secured or marked by boards similar to the normal traffic signs.
You have to announce unavoidable obstacles long enough ahead of time and mark them with well visible warning tape.
Passage heights have to be sufficient to allow the **HUBTEX** industrial truck to pass. They have to be shown clearly.

2.1.5 Special deployment areas

When used in special areas, additional rules must be complied with, for example for:

- explosion-prone areas
- fire-endangered areas
- cold storage houses
- areas of public traffic

Protection from fire

The owner/operator must ensure sufficient fire protection in the vicinity of the **HUBTEX** industrial truck, according to the relevant application of the **HUBTEX** industrial truck. Depending on the application, additional fire protection should be provided on the **HUBTEX** industrial truck. In case of doubt, the responsible supervisory authority must be asked.

2.1.6 Gradients

Compliance is required with the climbing capability given in the data sheet.
Gradients and downward slopes must have a sufficiently rough surface. At the upper and lower ends, even and uniform transitions must prevent the load from settling on the floor or from any damage being caused to the driving mechanism.
Driving downhill is only allowed in longitudinal driving direction. Drive slowly and carefully on slopes. All other driving directions (crosswise travel, carousel travel, curve travel, diagonal travel), as well as driving narrow curves is only allowed on completely flat grounds (0% slope)!

2.2 Usage conformant with intended purpose with attachments

2.2.1 Usage with attachments

Attachments may only be used conformant with intended purpose, as described in the respective operating instructions.
The driver must be instructed in the operation of the attachments.

2.2.2 Assignment of attachments to the HUBTEX industrial truck

If attachments are not supplied by **HUBTEX** together with the industrial truck, compliance is required with the specifications of **HUBTEX** and the specifications of the attachment unit manufacturer.

2.2.3 Fastening

The fastening of the attachment and the connection of the energy supply for power-driven attachments must be entrusted only to technically competent persons according to the specifications of the manufacturer. After every assembly, the working of the attachments must be checked before the first commissioning.

2.2.4 Load capacity

The permissible load bearing capacity of the attachments and the permissible loading (load bearing capacity and load torque) of the **HUBTEX** industrial truck in combination of attachment and useful load must not be exceeded. Comply with the specifications of the manufacturer.When determining the load bearing capacity, also take into account the intrinsic weight of the attachment and the resultant load torque.

2.3 Usage of the HUBTEX industrial truck conformant with intended purpose, in narrow aisles

2.3.1 Securing the narrow aisles

It is prohibited for unauthorised persons to enter the narrow aisles (traffic paths of industrial trucks in shelf-lined storage areas without safety distances for persons coming from the opposite side); through-traffic of persons is also prohibited. These work areas must be marked correspondingly. Existing safety devices on the **HUBTEX** industrial trucks or the shelf-lined storage areas for avoiding dangers and for protecting persons must be checked daily. They must not be rendered inoperational, or misused, readjusted or removed. Shortcomings in the safety devices must be reported without delay and switched off.

2.3.2 Movement into the narrow aisle

Before driving into a narrow aisle, the driver must check whether there are persons or other industrial trucks in that narrow aisle. If that is the case, and if there are not enough measures provided for the protection of persons or against meeting up with another industrial truck, the driver must not enter the narrow aisle.

2.3.3 Driving into narrow aisles

Moving into narrow aisles is only permitted for industrial trucks that are intended for the purpose. If a narrow aisle is fitted with a non-mechanical guidance system, then if the guidance system is faulty or switched off, the industrial truck may only be driven out at crawling speed.

2.3.4 Persons in the narrow aisle

If persons on foot have to be present in the narrow aisle for operational reasons, suitable protective measures must be taken.

2.3.5 State of the driving path

There must be an even, dry and horizontal driving surface available in the narrow aisles. Dirt and objects fallen down must be removed without delay. Potholes or damage to the driving track must not be driven on.

2.3.6 Handling the loading goods

Only pallets that do not exceed the specified maximum dimension should be stored. Loading aids that can cause damage and improperly constructed loading units must not be stored.
The load should be put on the slinging devices in such a manner, or secured on it in such a manner, that it cannot get displaced or cannot fall down. The loading units should be stored in such a way that the existing aisle width is not reduced by projecting parts.

2.3.7 Emergency stop device

If the automatic emergency stop device gets triggered (e.g. if a person enters the danger area, the guidance is lost or the electrical control fails) the industrial truck is braked till it comes to a standstill. Before the commissioning, the cause of the fault must be determined and the fault rectified.

2.3.8 System-dependent devices

System-dependent devices must be agreed with the manufacturer. Safety devices that go together with the industrial truck usage must be checked regularly.

2.4 Unintended use

Only the user, not **HUBTEX**, is to be held responsible for any danger emanating from improper use of the truck.

2.5 Special risks while using the HUBTEX industrial truck

Special approval by **HUBTEX** and, if necessary, the public authority in charge has to be obtained if the truck is to be used in an unusual way and the operator is uncertain as to whether it can be carried out as directed and safely.

2.6 Remaining risks and dangers

Even if the work is done carefully and all rules and regulations are observed it may still happen that dangerous situations can arise while using the **HUBTEX** industrial truck.
The **HUBTEX** industrial truck as well as all system components comply with the currently valid safety regulations. However, remaining risks cannot be excluded even if the truck is used as directed and all cautions are observed.
In the area surrounding the actual danger zone of the **HUBTEX** industrial truck remaining risks cannot be excluded either. For this reason people in the vicinity have to pay special attention to the **HUBTEX** industrial truck in order to be able to react quickly in case of any occurring malfunction or breakdown.

Attention!

All people near the **HUBTEX** industrial truck have to be informed about safety hazards emanating from the **HUBTEX** industrial truck.
In addition, we would like to draw your attention to the safety specifications in this operating manual.

Residual dangers may be, among others:

- Leaking fuels through faulty seals or fissures of lines or containers, etc.
- Danger of accident while driving under unfavourable conditions (ground unevenness, poor visibility...)
- Falling, stumbling, etc. while moving on the **HUBTEX** industrial truck.
- Human error: Noncompliance with safety regulations
- Danger of crushing by turning driving wheels from longitudinal to transversal drive, or vice versa

3. Operations with the HUBTEX industrial trucks, general regulations

The owner/operator must ensure that for the respective transportation process, a suitable industrial truck including the equipment is available.
In the EU zone, compliance is required with the Directive 98/655/EEC in the version 95/63/EG (Directive regarding minimum specifications for safety and health protection when workers use operating equipment while working). The respective national specifications apply for the non-EU-zone.

3.1 Driving permit

All persons operating the **HUBTEX** industrial trucks with a driver's cabin or driver's pedestal must be at least 18 years of age and trained accordingly. They have to have demonstrated to the operating authority or someone authorised by it their ability to drive the truck and handle loads and they must be expressly entrusted with the operation. In addition, special knowledge of the **HUBTEX** industrial trucks to be operated is necessary.

3.2 Rules for the driver

3.2.1 Rights, duties and rules of conduct of the truck operator

The operators of **HUBTEX** industrial trucks have to be instructed on their rights and duties. The operator has to be granted his/her necessary rights. The operator must wear protective clothing in accordance with the operating conditions. If there is a risk that small objects could fall through the protective roof, the truck operator must wear a safety helmet. The truck operator must be made aware of the operating instructions which are to be made accessible to him/her at any time. The operating company has to ensure that the truck operator understands all safety information.
Truck operators are prohibited from operating the **HUBTEX** industrial truck under the influence of alcohol, medicine, drugs or any other narcotic agents. Truck operators detecting symptoms of fatigue in themselves must immediately stop driving the **HUBTEX** industrial truck, or working on it.

3.2.2 Prohibition of use by unauthorized persons

During working time, the truck operator is responsible for the **HUBTEX** industrial truck. The truck operator must not allow the operation of the **HUBTEX** industrial truck by unauthorized persons. Upon leaving the **HUBTEX** industrial truck, the truck operator has to protect it against unauthorized use. The truck operator may only give other persons a ride on the truck if the **HUBTEX** industrial truck is especially equipped for passengers. In such cases, the number of passengers permitted to ride on the truck must not be exceeded. The truck operator must ensure that the passengers are trained accordingly and wear the necessary protective clothing.

3.2.3 Persons in the danger zone

The driver must ensure, before starting and during operation of his **HUBTEX** industrial truck that there is nobody present in the danger zone. In case of any danger to persons, a timely warning signal must be given. If persons do not leave the danger zone in spite of a warning, the driver must immediately stop work with the **HUBTEX** industrial truck.
The owner/operator must inform all persons who are present in the vicinity of the **HUBTEX** industrial truck about the dangers associated with the operation of industrial trucks.

3.2.4 Presence under load

It is not permitted to step below lifted forks or attachments or to wait under them - regardless of whether the truck is loaded or not. Climbing into or reaching into moving parts of a **HUBTEX** industrial truck (e.g. in lifting frame, pushers, operating devices, load slinging devices) is prohibited.

3.3 Checking before the daily starting of the HUBTEX industrial truck

Before beginning operation, the operator has to make sure the **HUBTEX** industrial truck is in safe operating condition. Before starting work, for example, the following checks must be carried out

- whether the service brake and the parking brake or the automatic brake (emergency stop) are working.
- that the securing of the slinging devices does not have any shortcomings with regard to being pushed out and displaced.
- that the slinging devices do not have any recognisable damage (bending, cracks or wear).
- that the wheel tires are not damaged in any way
- whether the hydraulic system shows any damage or leaks in the visible area. Damaged hoses must be replaced.
- that the warning devices are working.
- the charging state, fastening, and cable connections of the battery are OK, the closing caps of the cells clean and dry
- the battery connector is plugged in firmly.

Please refer to the chapter Startup for further details.

3.4 Driving and braking

3.4.1 Starting

Before the battery-powered **HUBTEX** industrial truck is made ready for operation, a check should be carried out that the movement direction switch or the movement direction indicator is in neutral, and the movement actuation is not actuated.

3.4.2 Behaviour while driving

When driving in the traffic inside the company premises, the driver must comply with the operational regulations or the rules of traffic for driving on public roads. The speed has to be adapted to local conditions. He must drive slowly, e.g. around curves, near and in narrow passages, when driving through swinging doors, at places of poor visibility, on uneven driving tracks. He must always keep a safe braking distance to vehicles and persons in front of him and always have his vehicle under control. Sudden stops, quick turns, overtaking at dangerous or blind spots of the road must be avoided.
HUBTEX industrial trucks with a driver seat or driver pedestal must not be put in motion from the ground.
While driving it is forbidden (among other things) to:

- let arms or legs hang out of the vehicle
- lean your body out beyond the perimeter of the **HUBTEX** industrial truck
- climb over from the vehicle to another vehicle or to stationary components
- carry along other persons
- wearing earphones
- to open doors (option)
- to take off the safety belt (option)

3.4.3 Visibility while driving

The driver has to face in driving direction and must be able to keep in view a sufficiently sizeable part of the travel way. While driving, he must make sure that his way is clear. If the view of the driver is impaired by the materials to be transported, the load has to be at the rear of the **HUBTEX** industrial truck. If this is impossible a second person has to walk in front of the **HUBTEX** industrial truck as warning guard. The truck must be driven at walking speed and with special care.
Driving is not permitted with the load lifted. If visual aids (e.g. mirrors, camera/monitor) are required to achieve sufficient visibility, driving with the help of visual aids must be carefully practised. If reversing with the help of the rearview mirror, particular care must be exercised.

3.4.4 Braking

The driving speed must be selected such that there is a sufficient braking distance to the vehicle in front. Here, it must be remembered that the pure braking distance as such increases disproportionately to the speed and that if the **HUBTEX** industrial truck is braked hard, the drive wheels can skid or the **HUBTEX** industrial truck can tilt over.
After washing the **HUBTEX** industrial truck, a braking trial must be carried out.
In case of failure of the service brake the **HUBTEX** industrial truck must be brought to a standstill by actuation of the parking brake.
In case of uncontrolled movements (lifting frame or driving) the emergency stop switch should be actuated. The driver must be carefully trained to operate the emergency stop switch.

3.4.5 Stability

HUBTEX industrial trucks must be operated in such a way that the danger of overturning is avoided. The causes of the overturning have been described earlier (accident situations).

3.5 Handling the load

3.5.1 Taking up the load

In order to ensure a safe take-up of the load, the driver must ensure that the fork prongs are sufficiently wide of one another and are moved as much as possible below the load. The load must not project too much across the tips of the prongs, and the prongs must not project too much over the load.
The driver must ensure that the load is in proper condition. Only secure and carefully stacked loads may be moved. Loads must be taken up and transported centrally as far as possible.

3.5.2 Moving the load in and out of store

The following sequence must always be followed:

- move right up to the stack with a load that is lowered and tilted backwards and withdrawn in keeping with the regulations
- make the fork prongs horizontal
- lift the load to stack height
- carefully move the lifting frame till the load is moved onto the stack, if required, move the load
- set down the load
- move the lifting frame back to such an extent that the fork prongs can be lowered without touching the stack
- lower the fork prongs clear of the floor and make them horizontal
- move only with the lowered load tilted backwards and the lifting frame withdrawn
- tilting forward with the load lifting device raised only before or above the stack

3.5.3 Small and large loads

If there is a danger of small loads falling between the protective roof trusses, an additional, suitable load protecting grate or an additional grille must be used on the driver protecting roof.
If there is a danger that lifted large, compact load units, for example, paper rolls, can fall on the driver's protective roof, a check must be carried out first whether the existing protective roof is suitable for this use. If required, suitable measures must be taken.
Always pay attention to possible hazards resulting from wind forces when handling lightweight voluminous loads.

3.5.4 Transporting pallets (loading units)

Generally, pallets should be transported individually. Simultaneous transportation of several loading units is only permissible if the technical preconditions of the **HUBTEX** industrial truck are fulfilled and the transportation is permitted by **HUBTEX**.

3.5.5 Transporting swinging loads

Transporting swinging loads is only permitted with the permission of **HUBTEX**.
Attention must be paid to the following when transporting swinging loads:
Swinging of the load must be prevented by the correct choice of speed and driving methods (careful braking, steering).
Never make jerky movements.
Driving on inclines or slopes with hanging loads is forbidden.
It must not be possible for the slinging aids of the hanging load to get unintentionally moved or loosened.
Care must be taken that there is nobody present on the driving path and in the direction of the movement. Care must be taken that no persons can get jeopardised by the swinging loads.
If required, suitable aids (for example, holding ropes or rods) should be provided and used by the persons for guiding the load.
It may be necessary to limit the load depending on the oscillation length. **HUBTEX** should be contacted for this purpose.

3.5.6 Transporting molten loads

Transporting molten loads is only permitted with the permission of **HUBTEX**.
Attention must be paid to the following when transporting molten loads:
Spilling out of the load must be prevented by the correct choice of speed and driving methods (careful braking, steering). Never make jerky movements.
Driving on inclines or slopes with molten loads is forbidden.

3.5.7 Detachable driver safety roof

If the **HUBTEX** industrial truck is equipped with a detachable driver safety roof, the load may be lifted, with the drive safety roof taken off, to a maximum of 1.80 m above the ground.

3.6 Driving on inclines, in goods lifts, on loading bridges and in containers

3.6.1 Driving on inclines

The stiffness specified in the data sheet of the operating instructions must be complied with.
On inclines, the load must be on the higher side. Driving downhill is only allowed in longitudinal driving direction. Drive slowly and carefully on slopes. All other driving directions (crosswise travel, carousel travel, curve travel, diagonal travel), as well as driving narrow curves is only allowed on completely flat grounds (0% slope)!
The driver must first ensure that ground provides sufficient grip. Turning and tilted approaching as well as parking the **HUBTEX** industrial truck on inclines is not permitted.

3.6.2 HUBTEX industrial trucks in goods lifts

Only lifts that have a sufficient lifting capacity and for which the owner/operator has granted permission for driving into may be used. In the lift, the **HUBTEX** industrial truck must be secured in such a way that no part of it can, for example, come in contact with the wall.
The **HUBTEX** industrial truck must be secured in such a way that it cannot be unintentionally set in motion.

3.6.3 Driving on loading bridges

Before driving onto a loading bridge, the driver must ensure that the bridge has been properly installed and secured and has sufficient capacity. Driving onto the loading bridge must be slow and careful. The driver must make sure that the vehicle to be loaded or unloaded is sufficiently secured against movement and is suitable for the load of the **HUBTEX** industrial truck.

3.6.4 Driving into containers

The **HUBTEX** industrial truck must be suitable for driving into containers.
The driver must make sure that the container to be loaded or unloaded is sufficiently secured against movement and is suitable for the load of the **HUBTEX** industrial truck.

3.7 Proper securing when leaving the HUBTEX industrial truck

When leaving the **HUBTEX** industrial truck, the drive must be switched off, the parking brake applied, the load take-up devices completely lowered and the operating lever set to „neutral“. **HUBTEX** industrial trucks must not be parked on sloping ground. In special cases, the **HUBTEX** industrial truck should be secured, for example, by wedges; ignition keys must be taken out. The driver must not hand over the ignition key or the driver code to other persons without express instructions.

3.8 Out-of-the-ordinary deployment

For every usage where the driver is not sure whether it is in conformity with intended purpose, the agreement of the supervisor must be obtained. In particularly difficult cases, such as the simultaneous use of two industrial trucks for transporting heavy or bulky goods, the supervisor himself must be present at the site of deployment and take on the responsibility and leadership for the transport.

3.9 Electromagnetic compatibility (EMC)

If disturbing magnetic fields (>10 V/m) occur in the area of deployment of the **HUBTEX** industrial trucks, the owner/operator must check whether the **HUBTEX** industrial truck is suitable for the purpose. In the case of very EMC-sensitive appliances in the area of use of the **HUBTEX** industrial truck, it is necessary to check whether the operation of the **HUBTEX** industrial truck is likely to cause faults in these machines.

3.10 Electrostatic charge

If, as a result of the tire design and quality of the ground, an electrostatic charge occurs, suitable discharge of the voltage must be ensured.

3.11 Noise and vibrations

See the data sheet in the operating manual.

4. Additional regulations for certain types of industrial trucks

4.1 Electrical industrial trucks

When setting up and operating the battery charging stations, the legal regulations of the EU member states or other states in which the **HUBTEX** industrial truck is being deployed, must be complied with. The following safety rules must be followed for the maintenance of, charging and replacing the batteries:

4.1.1 Maintenance personnel

Recharging, servicing and replacement of batteries has to be carried out by trained personnel in accordance with the regulations issued by the manufacturers of the battery, the recharging device, and the **HUBTEX** industrial truck. The handling specifications of the battery and the operating manual of the charger must be followed.

4.1.2 Fire protective measures

Smoking and open fires are prohibited when handling batteries. In the area of the **HUBTEX** industrial truck that has been parked for charging, no flammable substances and no operating equipment that sparks may be located at a distance of at least two metres. The room must be sufficiently well ventilated. Fire extinguishing equipment must be ready to hand.

4.1.3 Secure shut-off

While working on the battery, shut off the **HUBTEX** industrial truck and secure it from unintentional starting. Before resuming operation of the **HUBTEX** industrial truck, the protective covers and the connections have to be put back into normal operating condition.

4.1.4 Exchanging the battery

To avoid short-circuits, batteries with open poles or connectors must be covered by a rubber mat. When using hoists to replace a battery, apply vertical pull to avoid squeezing the battery case. Hooks must be located in such a way that when they are released from crane equipment, they cannot fall on the batteries. If the battery changing is carried out with a battery transport car, it is necessary to ensure that while the battery is being pushed, the **HUBTEX** industrial truck and the battery transport car are secured against unintentional movements.

4.1.5 Weight and dimensions of the battery

Weight and dimensions of the battery influence the stability of the **HUBTEX** industrial truck. When changing the battery, the weight proportions must not be changed. Complementary loads must not be removed nor shifted.

4.1.6 Fastening the battery

After every change, the fastening should be checked and if required, adjusted. In order to avoid hazards owing to unforeseen movement, batteries in the **HUBTEX** industrial truck must be fastened, as prescribed by **HUBTEX**.

4.1.7 Damage to cables

When installing or unmounting the battery, care must be taken not to damage the battery cables.

4.1.8 Maintenance of the battery

The cell covers of the batteries must be kept dry and clean. Spilled battery acid must be neutralised immediately. Terminals and cable lugs must be clean, lightly coated with Polfett and firmly screwed. Compliance is required with the specifications of battery manufacturer.

4.1.9 Charging the battery

Before the loading process, battery cables and charging cables must be examined for damage and if required, replaced. The plug may be disconnected from the socket only with the **HUBTEX** industrial truck and the charger switched off. During the charging of the battery, sufficient ventilation of the battery chamber must be ensured, for example, by opening the battery chamber hood. No metallic objects may be put on the battery.
If the charger is located in the **HUBTEX** industrial truck, then after the charging process, the plug of the charger must be pulled and the cable stowed away safely. Compliance is required with the other specifications on this in the operating manual.

4.2 Sideloader

4.2.1 Driver restraining devices (for forklift trucks with short frame lengths)

Before driving, the existing driver restraining devices must be put on or closed. If a cabin is used as a driver restraining device, the doors must not be hung out or open.

4.2.2 Footwear

The driver of the sideloader must wear strong footwear. Safety shoes are recommended.

4.3 Forklift truck with a workplace that can be raised, as well as HUBTEX industrial trucks that are built for driving with raised loads

4.3.1 Securing against overturning

The driver must not leave the driving position when the load is raised - climbing in constructional equipment or on to other vehicles is not permitted. Exceptions to this are **HUBTEX** industrial trucks that are set up for such applications.

4.3.2 Setting the brakes

When re-setting the brakes on the **HUBTEX** industrial truck, owing to the dependance of the stability on the braking delay, the value specified by the manufacturer must not be exceeded.

4.3.3 Entering the load take-up equipment

If the load take-up equipment is raised more than 1.2 metres above the ground, it may only be stepped upon if it is set up for the purpose and there are securing devices for protecting the operator from falling.
These securing devices and securing devices of the driver's station that can be raised must not be rendered ineffective, misused or removed.

4.3.4 Emergency descent, emergency lowering

If the raised driver's station gets blocked, the driver must be lowered using the emergency lowering device.
The driver must be instructed in the handling of the emergency descending device. The application and handling of the emergency descent device must be practised at regular intervals. If the load take-up equipment is lowered by an assistant using the emergency lowering device that is located at a lower level, the driver and the assistant must be in contact with one another. Both must be in a safe area so that there is no endangerment. In the case of **HUBTEX** industrial trucks with a driver's station that can be raised up to 3 m, the driver must be instructed on how to safely leave the raised driver's station in an emergency, in accordance with the information in the operating manual.

4.3.5 Footwear

The driver of the sideloader with the workplace that can be raised as well as drivers of **HUBTEX** industrial trucks that are built for driving with raised load must wear safety shoes.

4.4 HUBTEX industrial trucks in explosion-susceptible areas

Only such **HUBTEX** industrial trucks and attachments may be deployed as are equipped for use in explosion-susceptible areas.

5. Additional regulations for operation with special equipment

5.1 Attachments on HUBTEX industrial trucks

If attachments are deployed on **HUBTEX** industrial trucks, the operating manual of the attachment manufacturer must be followed. If the **HUBTEX** industrial truck is equipped with a side pusher device, this device is to be used while driving.
Loads may only be transported with attachments if they can be securely located, bound and held.
If attachments are used, the loading capacity specification plate must be used for the purpose for the combination of **HUBTEX** industrial truck and attachment.
In case of retrospective mounting of an attachment, too, the prescribed loading capacity specification plate for the combination of **HUBTEX** industrial truck and attachment should be used.

5.2 Working platform on HUBTEX industrial trucks

If **HUBTEX** industrial trucks are used in exception cases for activities at a height (for example, changing lamps), a working platform provided for the purpose should be used on the load take-up equipment.Compliance is required with the operating manual of the working platform. Before persons are raised, a check should be carried out whether the working platform is securely fastened. Compliance is required with the national specifications.

5.3 HUBTEX industrial trucks in road traffic

Compliance is required with the specifications existing for driving **HUBTEX** industrial trucks on public roads in the individual counties or states.

5.4 HUBTEX industrial trucks for handling containers

In the case of tank containers, by choosing the correct speed and method of driving (careful braking, steering), intense movement of the fluid must be prevented. Never make jerky movements.
In case of refrigerated containers, care must be taken that the centre of gravity of the container, by means of the centre of gravity adjustment / side pusher, is in the longigudinal axis of the vehicle.
In the case of **HUBTEX** industrial trucks that are built for driving with raised containers, the load must only be lifted to such an extent that the driver has an adequate view of the road/ towards the front.

6. Maintenance and upkeep

6.1 Modifying the HUBTEX industrial truck and accompanying attachments

6.1.1 Essential modifications to the HUBTEX industrial truck and accompanying attachments

Essential modifications are, for example, changes that influence the stability, the performance, the speed, the strength of the components etc. Such modifications to the **HUBTEX** industrial truck may only be made after obtaining the permission of **HUBTEX**. The CE declaration of conformity that accompanies the vehicle is rendered null and void when an essential modification is carried out. The entity carrying out the modification becomes the manufacturer, and is obliged to issue a new CE declaration of conformity. This also applies to modifications to the accompanying attachments (exchangeable equipment).

Before carrying out an essential modification, contact HUBTEX without fail.

6.1.2 Conditions for essential modifications to the HUBTEX industrial truck by the owner/operator

Owner/operators may only make modifications to the **HUBTEX** industrial trucks and attachments if **HUBTEX** has closed down the business and there is no successor in the business. However, the owner/operators must:

- ensure that the modifications to be made are planned, checked and executed by an expert engineer for industrial trucks and their safety;
- have permanent records of the planning, test(s) and execution of the modification;
- make and approve the corresponding changes to the plates for specifying the loading capacity, on the decal pictures and stickers as well as in the operating and workshop manuals;
- make a permanent and easily visible marking on the industrial truck, from which the type of modification(s) made, the date of the modification(s) and the name and address of the organisation entrusted with this task can be seen.

6.2 Persons for upkeep and recurring testing

Only qualified and authorised persons may carry out the upkeep work. The recurring testing must be carried out by an expert. The expert must submit an attestation and assessment, without being influenced by operational and economical circumstances, only from the perspective of safety. He must have enough knowledge and experience to be able to evaluate the condition of a **HUBTEX** industrial truck and the efficacy of the protective devices according to the accepted rules of engineering and the fundamentals for examining industrial trucks. **HUBTEX** has trained persons for the upkeep and recurring tests.

6.3 Carrying out the upkeep

6.3.1 Intervals for the upkeep

The intervals must be kept according to the specifications of the manufacturer.

6.3.2 Recurring testing

In the EU zone, in a recurring inspection, compliance is required with the Directive 95/63/EG (Directive regarding minimum specifications for safety and health protection when workers use operating equipment while working).
For non-EU countries, compliance is required with the national specifications.
A recurring inspection by an expert must include inspection of the condition of the components and devices and the completeness and efficacy of the safety devices.
In addition, the **HUBTEX** industrial trucks must be thoroughly checked for damage, which could have been caused by improper use. An inspection record should be created. The results of the inspection must be preserved at least till the next inspection.
The owner/operator is responsible for the immediate rectification of shortcomings.

6.4 Quality and quantity of the required operating equipment

Only the operating equipment specified in the operating manual may be used.

6.5 Spare parts

Only spare parts that comply with the manufacturer's specifications may be used. If spare parts are used that have not been approved by **HUBTEX**, incorrect quality or assignment may result in increased risk of accident. Any party using spare parts that have not been approved is wholly liable for any damage that arises. If spare parts are used that have not been approved by the manufacturer, the manufacturer's CE declaration of conformity loses its validity.

6.6 Maintenance work for which no special qualification is required

The driver may only carry out simple maintenance work such as checking the oil level or the fluid level in the battery. Further information can be taken from the operating manual.

6.7 Disposal of greases, oils and batteries

Any waste and lubricants released during repairs, maintenance or cleaning must be collected in an appropriate manner and disposed of according to national regulations.
This must only be performed at locations specifically intended for this purpose. Care must be taken that environmental pollution is avoided.

6.8 Special measures

6.8.1 Measures for maintenance and upkeep

In order to prevent accidents during maintenance and repair work, the appropriate safety precautions must be taken, e.g.:

- It must be ensured that the **HUBTEX** industrial truck is not moved or started unintentionally (remove battery plug of electro-sideloader).
- If it is necessary to work underneath the raised load carrying device, the load carrier and the inner frame(s) of the lifting mast should be secured to prevent them from falling, e.g. by means of sufficiently thick pieces of square timber or chains.
- The **HUBTEX** industrial truck should be prevented from moving unintentionally by activating the parking brake and positioning wedges under the wheel.
- The lifting mast should be prevented from being tilted accidentally.
- It should be ensured that persons do not become jammed between the mast and the frame.
- Hydraulic lines should be depressurised

6.8.2 Lifting and jacking up

To lift **HUBTEX** industrial trucks components and attachments, attach hoists only to the points especially designed for this purpose. When jacking up the equipment, use suitable equipment (e.g. wedges, square timber) to prevent the units from sliding away or tipping over.

6.8.3 Cleaning work

Do not use combustible fluids for cleaning. Safety measures must be taken to prevent sparking due to short circuits (e.g. by disconnecting the battery). If **HUBTEX** industrial trucks are cleaned using hot water devices, all parts susceptible to damage – especially the electrical parts – must be carefully covered up. Signs and labels must not be sprayed directly. A minimum distance of 20 cm, a pressure of max. 50 bar and a temperature of max. 85 °C must be adhered to.
Electrical and electronic components must be cleaned using lightly compressed air and a non-metallic brush.

6.8.4 Working on the electrical equipment

Work on the electrical equipment of **HUBTEX** industrial trucks may only be carried out in voltage-free state. Only trained and authorised staff are allowed to test, check and adjust live parts, and they have to be careful and observe all safety regulations. Rings, metal armbands etc. must be removed before starting work with electrical components.
To avoid damage to electrical equipment with electronic components, such as electronic movement control, stroke control, these must be dismantled from the vehicle before starting electrical welding work.

6.8.5 Safety devices

After maintenance and upkeep work, all safety devices must be mounted again and checked for correct functioning.

6.8.6 Settings

Observe the adjustment values of the respective components when repairing and exchanging hydraulic and electric components.

6.8.7 Tyres

The quality of the tyres affects the stability and the travel characteristics of **HUBTEX** industrial trucks. Changes may only be made after agreement with **HUBTEX**. When wheels or tyres are changed, it should be ensured that the **HUBTEX** industrial truck does not show any tilt (e.g. by always changing left and right wheels at the same time).

7. Transport, first commissioning and storage of the HUBTEX industrial truck as well as disposal

7.1 Weights and dimensions

See the rating plate and technical data sheet of the **HUBTEX** industrial truck.

7.2 Transport and loading

When transporting **HUBTEX** industrial trucks, the requirements given in the operating manual must be observed.
When lifting **HUBTEX** industrial trucks or the relevant attachments, the slings must be attached to the slinging points specified by the manufacturer.
When driving on to transporters (for example, low-bed trucks) care must be taken that a sufficient distance is kept from edges, loading bridges etc.. Ramps with sufficient loading capacity must be used for driving on to transporters (for example, low-bed trucks).
The vehicle must be secured during transport against undesired movement by means of applied parking brake and wedges, belts etc.
The transportation personnel must have a driving license according to Section 3.1.

7.3 Assembly of the HUBTEX industrial truck and if required, the attachments on HUBTEX industrial trucks

If parts of the **HUBTEX** industrial truck are assembled at the place of deployment, or if attachments are installed, compliance is required with the specifications in the operating instructions. Before commissioning, the working of the **HUBTEX** industrial truck and if applicable, the attachment must be checked by an expert.

7.4 Checking before first commissioning

Before the first commissioning of the **HUBTEX** industrial truck, a check must be carried out according to the specifications in the operating instructions.

7.5 Towing and moving

The **HUBTEX** industrial truck may only be towed using rigid connecting elements (towing rod), if the brake of the industrial truck to be towed is no longer functional. The towing vehicle must have sufficient traction and brake force for the unbraked hauled load. The load should be removed prior to towing, and the tines lowered to approx. 300 mm above the level of the floor. There must be a driver on the towed industrial truck.
The towing distance should be as short as possible. The towing speed must be low enough to ensure complete safety during towing.
Following towing, the **HUBTEX** industrial truck must be secured to prevent it from rolling away. Further specifications in the operating instructions should be adhered to.

7.6 Measures to be taken in case of long periods of shutdown/storage

In case of long periods of storage of the **HUBTEX** industrial truck, measures should be taken to prevent corrosion. The battery should be removed. **HUBTEX** industrial trucks should be jacked up in order to avoid flat tyres. Further specifications in the operating instructions should be adhered to.
Regarding the battery, the information contained in the operating instructions of the battery manufacturer must be observed.

8. Instructions for health-conscious behaviour

8.1 Avoiding back problems

The driver of a **HUBTEX** industrial truck is subjected to stress by vibrations. Vibration stress while sitting, across many years, can result in damage to the spinal column. The restricted pose in the upper body particularly stresses the neck and lumbar regions of the spinal column.
The owner/operator must minimise the stress of the driver by suitable measures. The driver can contribute to effectively reducing damage to his spinal column or even to avoid it completely by taking certain steps.
The German guilds and the equivalent organisations in other countries provide detailed information and training for reducing back problems of the **HUBTEX** industrial truck driver. Essential points in this respect are described below.

8.2 Measures to be taken by the owner/operator

The topmost objective must be to eliminate or reduce the stresses at the origin at the workplace. This includes: creation of positive workplace conditions. This includes good, easily negotiable roads inside the works, an optimum internal transportation system, sufficient place for shunting work, avoiding long reverse movements and frequent changes in tasks.

8.3 Steps to be taken by the driver

The advantages of the optimised work conditions can only be seen if the driver also uses them. The most important details are:

- Correct adjustment of driver's seat
- Back-friendly climbing up and down, always facing the truck
- Avoiding unnecessarily long sitting phases by frequently getting off the truck.
- Mini-exercises on the truck
  These can be done discreetly every time you get the chance:
  - Slow lifting and lowering of the ribcage (Tarzan chest)
  - Shoulder circling
  - Rocking of the foot (lifting the toes and heels alternately)
  - Buttock swings (slow forward and backward movement of the buttocks)
- Fitness exercises on the forklift truck. Use the breaks for these important exercises. Do the exercises slowly and in a controlled manner, never in a jerky fashion. Exercise with calm and relax while doing the exercises:
  - Shoulder stretching, with arms outstretched to the front and down
  - Shoulder rotation, with arms bent inwards
  - Expanding the neck/chest with hands behind the head
  - Expanding shoulder/arm with one hand from below and the other from above on the back
  - Shoulder stretches with arms stretched downwards to the side
  - Head swinging, forward and back, but inclined to the side, first to the right, then left

9. Accident situations

The following accident situations are intended to make the driver conscious of what he must pay particular attention to when working with the **HUBTEX** industrial trucks.

9.1 Collisions

Collisions can easily occur in case of loads impairing vision. Therefore, for the driver, the following holds good: Drive particularly slowly and if in doubt, stop immediately. For regular use with vision-impairing loads, for example, several beverage pallets next to each other and one on top of the other, there are tried-and-tested visual aids available, consisting of cameras and monitors. Even for short reverse movements, the driver must always look in the direction of movement.

9.2 Climbing up or down

Serious ankle injuries occur repeatedly while getting down from industrial trucks.
Therefore, the following applies: Always get off facing the vehicle.

9.3 Crushing and shearing

Negligence on the part of the driver can result in crushing or shearing of fingers, hands or arms on the lifting frame. Therefore, never reach into the lifting frame. If another person comes in the vicinity of the lifting frame, the lifting or lowering movement must be stopped immediately.

9.4 Truck tilts over

If the forklift truck overturns, the driver is often seriously injured or killed.
The main causes of overturning are:

- Driving around a curve without a load
- Excessive speed at curves
- Driving with raised load
- Driving with a load moved out to one side
- Turning with tilted movement on downward or upward slopes
- Carrying the load on the valley side on upward or downward slopes
- Wide loads
- Driving swinging loads
- Ramp lamp or step
- Truck loading:
  Despite all the safety measures, overturning accidents still happen, for example if the truck starts moving although the fork prongs are still over the loading surface, the loading bridge is not in the correct position or the the forklift goes over the edge with one wheel.
- Lifted load:
  The load may only be lifted in front of the stack or the rack, since otherwise, even at a low speed and a small curve, there is an acute danger of overturning.
- Tilting forward of the mast with load taken up
- Driving on uneven paths
- Overloading
- If the wind is strong, the transportation of loads with a large area can result in overturning of the **HUBTEX** industrial truck.
- When fluids are being transported, the change in the position of the centre of gravity within a lifted container owing to the action of mass forces, for example upon braking or starting or at a curve, can result in the **HUBTEX** industrial truck overturning.

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STARTUP

1. General

Notice!

We expressly refer to the section "Safety instructions" once again.
All items are to be observed.

2. First startup

Danger!

The first startup may only be carried out by accordingly authorized and trained staff.

In general you have to check before startup if the machine is completely equipped and all parts are in perfect condition.

You have to check whether the **HUBTEX** industrial truck has lost operating fluids (inspect the industrial truck for traces of oil).

Dismantled parts (e.g. lifting mast, safety guard, ...) have to be mounted properly by accordingly trained staff.

Caution!

Observe the safety regulations.
Hoisting equipment must have a sufficient load-carrying capacity.

When starting up the **HUBTEX** industrial truck, check the functions of all units and safety devices.

Caution!

Only operate the HUBTEX industrial truck with built-in battery.
Rectified alternating current will damage the built-in electronics.

Danger!

If **HUBTEX** industrial trucks or attachments thereof do not work properly or are not roadworthy, you are not allowed to use them before fault remedy.

Safety devices and switches must not be removed or rendered ineffective.

3. Inspection prior to start of work (daily inspection)

Prior to start of work and/or every day, the driver of the HUBTEX industrial truck has to make sure that the HUBTEX industrial truck is in safe operating condition.

Each time prior to start of work the following has to be checked (depending on type and design of the truck):

- that the safety devices protecting the load suspension devices from lifting out and shifting are not defective.
- that the load suspension devices are not defective.
- that the lifting and reach-out devices are in perfect condition.
- that the load chains are evenly tightened.
- that the wheel tires are not damaged in any way.
- that the hydraulic system is in perfect condition.
- that the hydraulic oil level is ok.
- that the **HUBTEX** industrial truck has not lost operating fluids (check parking area for traces of oil).
- that the charge state, the fastenings and the cable connections of the batteries are ok and the cover closures of the cells are clean and dry.
- that the battery connector fits tightly.
- that the warning labels and indication plates are available and in a legible condition. Damaged or missing labels/plates are to be replaced.
- that the ascending stairs to the operator's station are clean and free of ice.
- that all panes in the cabin are clean and free of ice.
- that all functions of the vehicle seat and the safety belt are in excellent operating condition.
- that the braking system works. Foot brake, parking brake, emergency stop switch and, if applicable, dead man's switch must be fully operational.
- that additional safety equipment is mounted and in proper operating condition.

Danger!

Deficiencies and damage must be reported to the responsible persons.

If **HUBTEX** industrial trucks or attachments thereof do not work properly or are not roadworthy, you are not allowed to use them before fault remedy.

Safety devices and switches must not be removed or rendered ineffective.

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OPERATING INSTRUCTIONS

Table of Contents

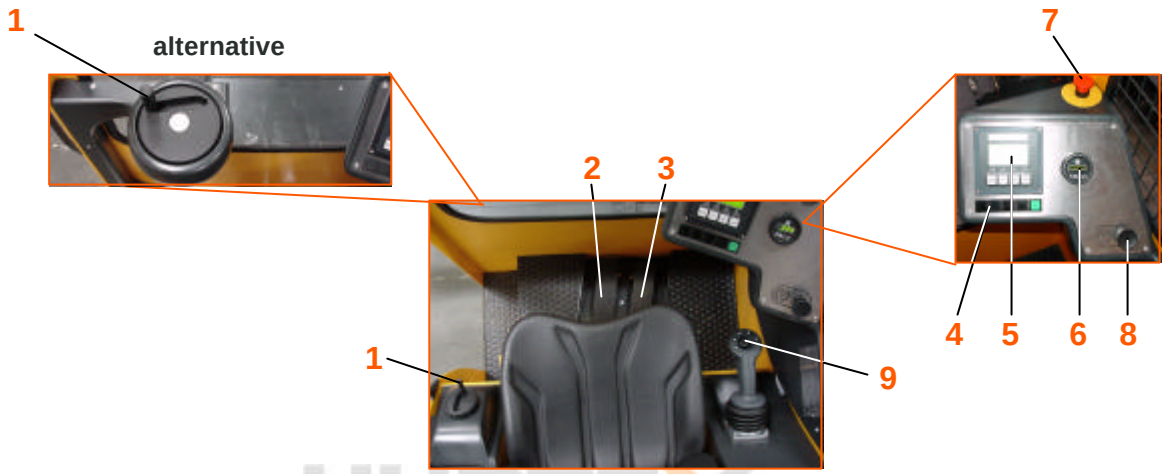
1 GENERAL

We explicitly would like to draw your attention to the chapter „safety information“.
All points have to be observed.

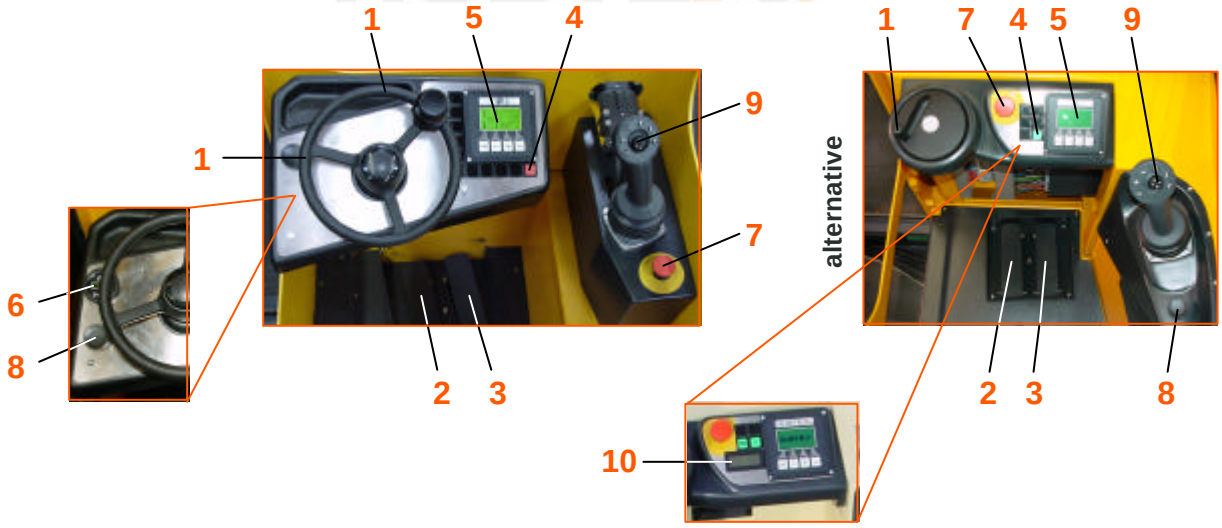
2 OVERVIEW

2.1 GENERAL ARRANGEMENT

Type MQ ...

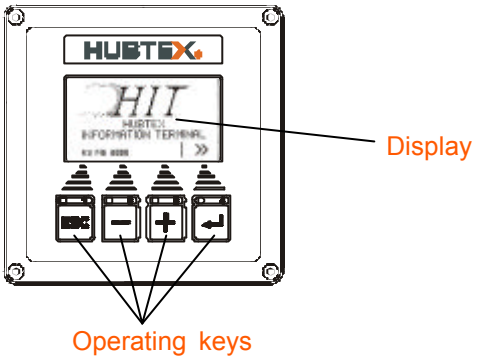


Type MD ... + ML ...



1 Steering wheel
2 Brake pedal
3 Accelerator pedal
4 Control and operator panel with additional functions (option) and the reset key
5 HUBTEX Information Terminal (HIT)
6 Accumeter GE Control (Option)
7 Emergency-stop switch
8 Parking switch
9 Joystick
10 Height of lift indication (option)

2.2 THE HUBTEX INFORMATION TERMINAL (HIT)



The sideloader is mainly operated with the HIT.
Operation includes

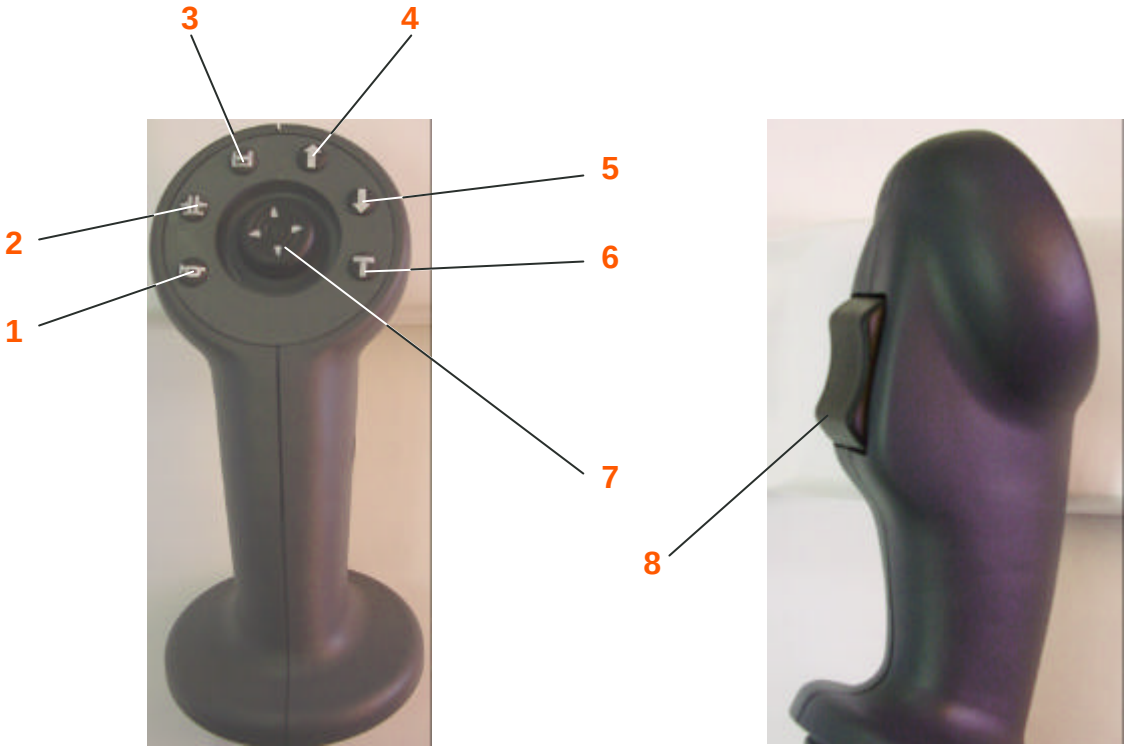
- switching on and off
- code programming
- selection and steering programs

and

- setting the electronic steering control.

For details please refer to the information below.

2.3 THE JOYSTICK



1 Horn
2 Key „push forks together“ (option)
3 Key „extend forks“ (option)
4 Key extend telescopic forks (option)
5 Key retract telescopic forks (option)
6 Key select alternative steering program
Attention : For changing the steering program you have to stop the truck first!
In one driving direction you are allowed to change from a main to an alternative steering programm
7 Driving direction switch
8 Switch for forks tilt up/down

2.4 CONTROL AND OPERATOR PANEL WITH ADDITIONAL FUNCTIONS (OPTION) AND THE RESET KEY

Positioning help
After activate the switch the travelling motion will be carry out in creep speed.

Reset key
has to be pressed to release emergency-off

Key for bridging “intermediate lifting movement limitation“ (option)
is displayed in the HIT.
By pressing the pushbutton again the forks can be lifted higher.

Key for bridging “stop mast reachout“ (option)
is displayed in the HIT.
For extending the lifting mast even more, press the key.

Switch and illuminated push button “driver seat heating” (option)
lights up as long as the heater lights up

Pushbutton “move away“ (option)
By pressing this pushbutton additionally the driving position lock can be unlocked for a short time.
So for instance the sideloader can approach a load with creep feed although it has entered a person protection zone.

Key and illuminated push button “chain monitoring” (option)
As soon as the forks settle on the ground (chain sagging or breaking), the functions “lifting” and “lowering” will be locked.
ATTENTION
If chains break, stop the sideloader immediately!
If you press the button additionally, you can unlock the function and proceed in creep feed. As soon as the chain does not sag any more the signal lamp will extinguish.

Pushbutton “screen wiper“ (option)

Pushbutton “spotlight“ (option)

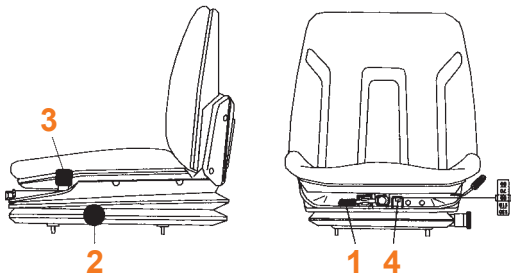
2.5 THE TRUCK SEAT

The sideloader seat is equipped with a contact switch. The functions of the truck will only work, if the driver sits on the seat

3 ADJUSTMENT OF THE SEAT

For correct seat position:

- you have to be able to reach the furthest operational control without leaving the back rest
- adjust the back rest to your body size accordingly



ATTENTION
For seat adjustment you have to stop the truck.

3.1 WEIGHT ADJUSTMENT

The swinging system is set to the operator's weight with crank (1).
The number in the window (4) has to be the same as the operator's weight.

3.2 HORIZONTAL ADJUSTMENT

Pull the handle (2) out and put the seat in position.
Release the handle.

3.3 BACK REST ADJUSTMENT

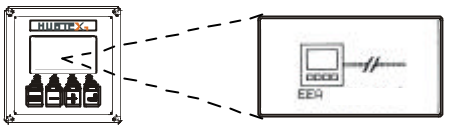
Pull the lever (3) back and set the back rest in the desired position using your back.
Back rest adjustment is connected to the adjustment system of the seat cushion.

4 SWITCHING ON AND OFF THE SIDELOADER

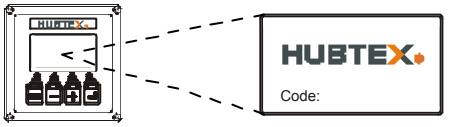
ATTENTION
If fork lifts are equipped with a platform, before changing the power supply plugs (fork lift / platform, or platform / fork lift) you have to log out at the last active operator panel!

4.1 SWITCHING ON (LOGIN)

As soon as you plugged in the battery connector, the following picture will appear on the display.



If connection has been successfully made after plugging in the battery plug the login screen will display standby mode.



Now you have to enter the code. (Only possible to enter the code, if the driver sits on his seat !
The code number is composed of numbers 1, 2, 3 and 4. The numbers are shown in the right top of the operating keys.

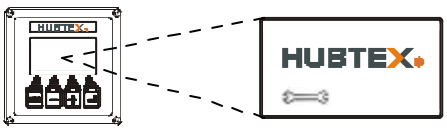
The following codes are available:

Driver codes (6 digit starting with 1)
All truck functions are available. No access to special functions.
Master codes (8 digit starting with 2)
In addition to the driver code there is a master code which serves for setting the integrated clock, for unlocking the login-lock after entering the wrong code three times, as well as for some special functions.
Service codes (8 digit)
In addition to the master code with the service code you get access to all special functions.

ATTENTION
When entering a wrong code the horn will blow.
After having entered the wrong code three times, access will be locked. It can only be unlocked by entering a master code!
You can stop entering the code at any time by just not entering all 6 digits of the code. After a short while the code will be automatically cleared without registering an error entry. Then you may enter the code again.

In the display the following picture will appear:

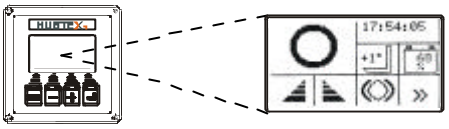
after having entered the wrong code three times



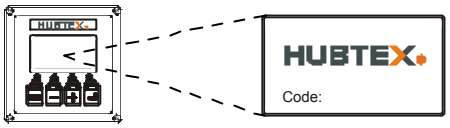
after entering the correct code

4.2 SWITCHING OFF (LOGOUT)

For regular switching off
- all operational controls (joystick and driving direction switch) have to be set to neutral position.
-press the parking brake switch
If these conditions are fulfilled, the display will show the following picture:



By actuating both left keys simultaneously  the sideloader is switched off.
In the display the following picture will appear:

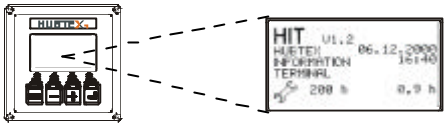


If the driver's seat has not been occupied for some time, the control will log out automatically.

5 DISPLAYS OF THE HUBTEX INFORMATION TERMINAL (HIT)

5.1 INFORMATION DISPLAY

To display general operating data the sideloader has to be switched off.
Then switch over to operating data display by pressing the right key .



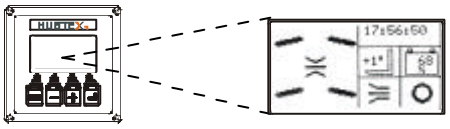
In this menu point
- the version number of the software
- date
- time
- operating hours
- maintenance interval hours

will be displayed.

The information display is left with the ESC key or automatically after 10 seconds.

5.2 DISPLAY IN NORMAL OPERATION

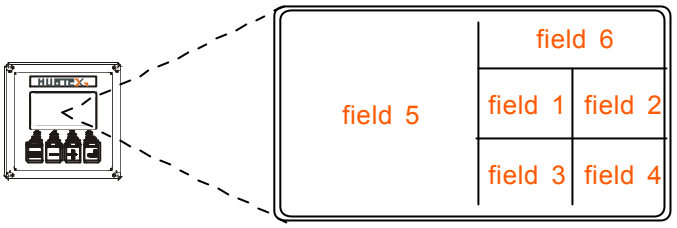
In normal operation the electronic steering controls and monitors all functions of the sideloader. The HIT display informs the driver about all operating conditions and its keyboard also serves for operation.
For variable and easy operation key allocation changes according to the current operating condition. The current function of the respective key is shown in the display.



In the example in the picture you can select circle drive with the key and front axle steering with the key.

5.3 EXPLANATION OF DISPLAY FIELDS

In normal operation the display is subdivided in 6 fields:



In fields 1 to 4 parameters and operating condition are displayed by using different symbols.
In field 5 the steering program and steering setting are shown.
In field 6 the actual time and a possible error code of the system are displayed.

Display in field no. 1

In this field the fork tilt, load and driving speed are displayed.

NOTE:
If fork tilt and load display are both activated, fork tilt display will have priority. In this case only overload will be displayed!
If the speed indicator is on, speed will always be displayed when driving. Subsequently, if fork tilt and load display are both activated, fork tilt display will have priority!

Fork tilt display

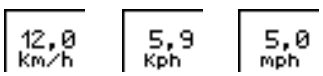
Fork tilt is displayed from +9° to -9°, whereby positive values represent up-tilt and negative values down-tilt. 0° (zero) represents horizontal position.
The maximum angle is saved as parameter, higher values will not be displayed.

Load display (option)

The taken load is monitored by a sensor. The signal will be displayed in five steps. If the threshold before the last stop is passed, lifting movement will be switched off.

NOTE:
If you tilt empty forks up against the stop, overload will be displayed.
If the forks are tilt down against the stop, the lifting movement is switched off. “Stop lifting active” will be shown in the display.

Driving speed display



The speed is displayed in
- km/h (kilometers per hour)
- kph (kilometers per hour)
- mph (miles per hour).

The selection is made with parameters

Display in field no. 2

In this field ***battery capacity*** is displayed.

A battery controller finds the battery capacity and displays it.
If the battery falls below a preset values (10%), the display will start flashing, signalizing that you have to charge the battery. Lifting speed will be reduced to 70%.

Display in field no. 3

In this field operating conditions and steering program setting are displayed.

Display „parking brake closed“

Display „emergency-off switch actuated“

Display „maintenance interval expired“

ATTENTION
As soon as a maintenance interval has expired, lifting speed will be reduced to 70%!

or

Display „control fault“, the respective error code will be displayed in field no. 6 (not if the sideloaders are equipped with GE-control)

Display „carbon brushes worn“

Display „control fault“, the respective error code will be displayed in field no. 6 (not if the sideloaders are equipped with GE-control)

Display “control fault”, the respective error code will be displayed in field no. 6 (not if the sideloaders are equipped with GE-control)

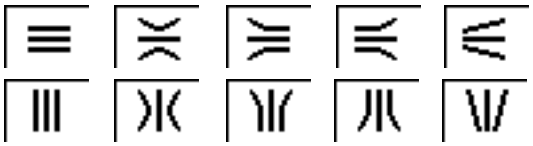
Display “pressure over maximum“

Display “driving stop“

Display “operator door open“

Selection of steering program

A steering program is selected with the  key. For a description of the steering program please see below.



Display in field no. 4

In this field operating instructions and steering program setting are displayed.
Operating instructions requesting action of the driver for better discernibility are displayed in flashing inverted letters.

Operating instruction "loosen parking brake"

Operating instruction "select driving direction"

Operating instruction "ease your foot off the accelerator"

Operating instruction "actuate key for moving away from obstacle"

Operating instruction "actuate seat switch"

Operating instruction "actuate reset key"

Operating instruction "put joystick to neutral position"

Operating instruction "lifting stop active"
can be bridged with a respective key on the control and operator panel (option)

Operating instruction „mast reachout stop active"
can be bridged with a respective key on the control and operator panel (option)

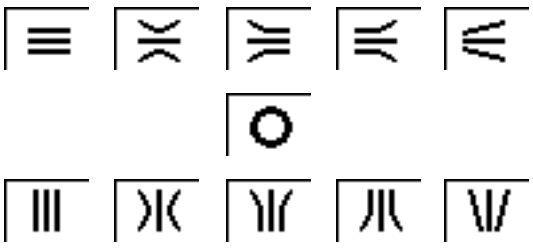
Operating instruction "actuate foot switch"

Operating instruction "chain supervision active"

Note: paging to information page with key 

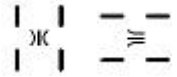
Selection of steering program

A steering program is selected with the  key. For a description of the steering program please see below.

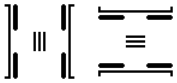


Display in field no. 5

In this field steering programs and steering angle are displayed.



The steering program and current wheel angle are displayed.



Aisle tracking is displayed

Display "ON (OFF)"
The symbol signalizes that you may switch off the electronic control. For switching off actuate both keys  and  simultaneously.

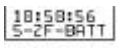
Display "hydraulic operation"

Display person protection system"
If a person protection system is used, an obstacle is displayed, if someone enters the protected field.

Display "sleep mode"
If two or more operator panels are used, the HIT not being used will display sleep mode.

Display in field no. 6

This field displays the current time and possible error codes of the control.



The ***time*** is displayed at the top and a possible ***error code*** below.

S-ZF-01
Computer and programming error. Tests can be made in idle or operative condition.

S-ZF-02
Improper operating sequence,
e.g. when switching on the sideloader, the driving or brake pedal have already been actuated, or the accelerator or brake pedal is not in basic position.

S-ZF-03
Error in the power circuit of the driving motor control

S-ZF-04
Potentiometer voltage for driving or breaking already too high in idle condition. Defective potentiometer or cables of driving or brake transmitter.

S-ZF-05
Driving control cannot run at maximum capacity, or does not switch off correctly.

S-ZF-06
Error in contactor outputs or contactor coils.

S-ZF-07
Overtemperature in the control. Capacity of the control is slowly reduced.

S-ZF-08
Contactors do not make contact, or power connections are open.

S-ZF-09
Contacts of contactors glued together and cannot break contact.

S-ZF-BATT
Battery low.

S-ZF-FB
Both driving direction inputs were actuated at the same time. Error in driving direction switch or subsequent relays.

S-ZP-01
Computer and programming error. Tests can be made in idle or operative condition.

S-ZP-02
Improper operating sequence,
e.g. during start a hydraulic function has already been selected.

S-ZP-03
Error in the power circuit of the pump motor control

S-ZP-04
Potentiometer voltage for lifting already to high in idle condition. Potentiometer or cables of joystick defective.

S-ZP-05
Pump control cannot run at maximum capacity, or does not switch off correctly.

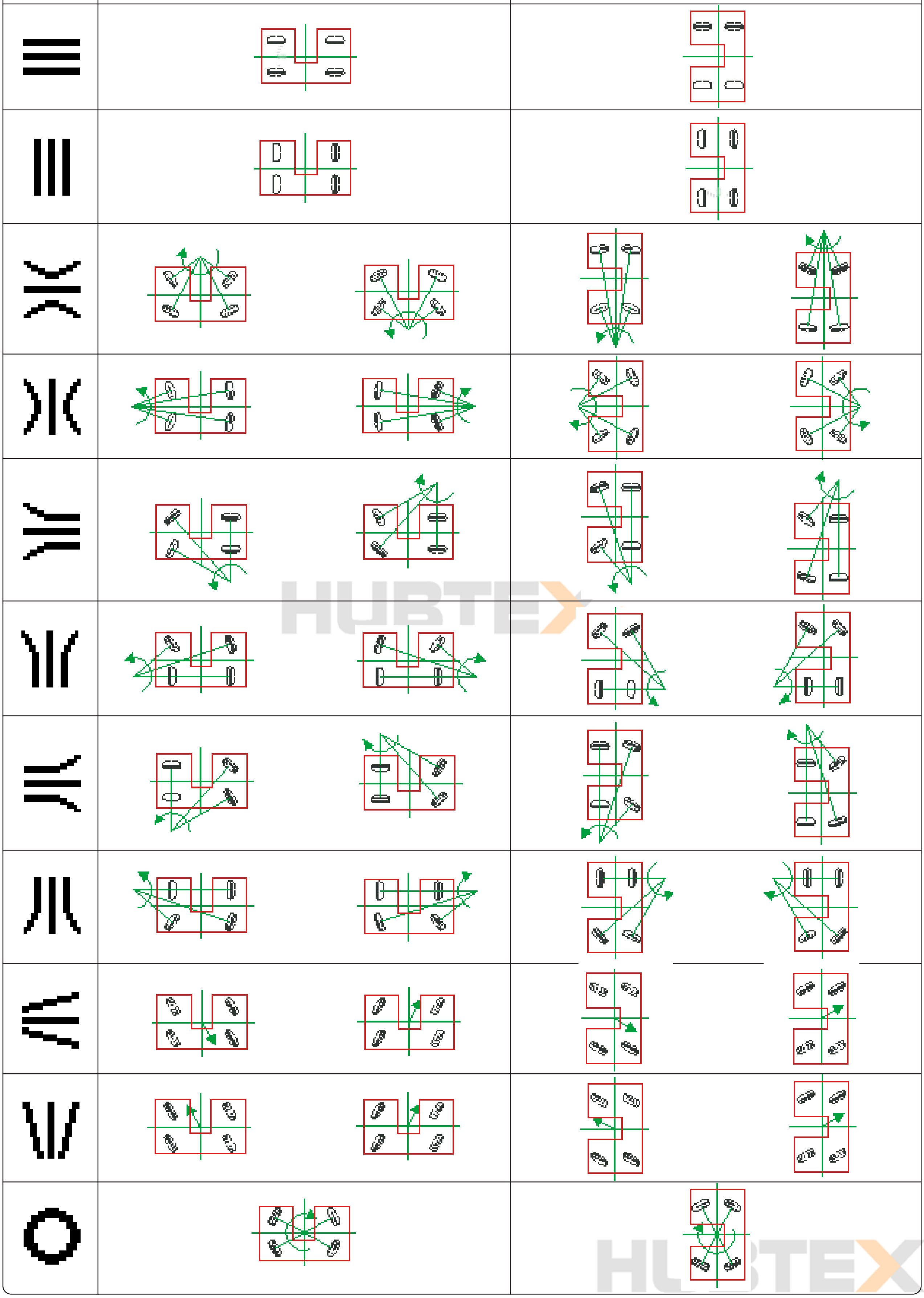
S-ZP-06
Error in contactor outputs or contactor coils.

S-ZF-07
Overtemperature in the control. Capacity of the control is slowly reduced.

S-ZF-BATT
Battery low.

5.4 DISPLAY OF POSSIBLE STEERING PROGRAMS

	Q-cabine	L- and D-cabine



6 DRIVING

ATTENTION
Driving will only be possible if the driver sits on his seat !
Set the fork arms as low as possible !
Move the lifting mast back as far as possible!

ATTENTION
Optionally various interlocks (e.g. lighting height h3) may change the sideloader automatically to creep feed or they even stop it completely!

Positioning help
After activate the switch the travelling motion will be carry out in creep speed.

1 **Sit down on the seat**

2 **Switch the sideloader on**

3 **Release the parking brake switch**

4 **Select steering program**

ATTENTION
For changing steering programs you have to stop the truck!

The wheel adjustment is shown in the main field of the display.
An alternative steering program is shown in the display.
To select an alternative steering program press the right key (Enter) or the respective key (right bottom) on the joystick.


Driving direction switch

5 **Select driving direction (forward / backward)**

6 **Control the driving speed with the accelerator pedal**
the driving speed is infinitely variable

7 **Steering with the steering wheel**

8 **Stopping and braking**
Release the foot from the accelerator pedal and press the brake pedal.

7 BRAKING

There are different possibilities:

7.1 BRAKING DURING NORMAL OPERATION

Release the foot from the accelerator pedal and press the brake pedal.

7.2 BRAKING IN EMERGENCY SITUATION

Actuate the parking brake switch,
Actuate the emergency stop switch
or
unplug the battery connector

ATTENTION
emergency-off has to be acknowledged with the reset key

R

8 PARKING

ATTENTION
Do not park the HUBTEX sideloader uphill or downhill !

1 Set the fork arms to lowest possible position

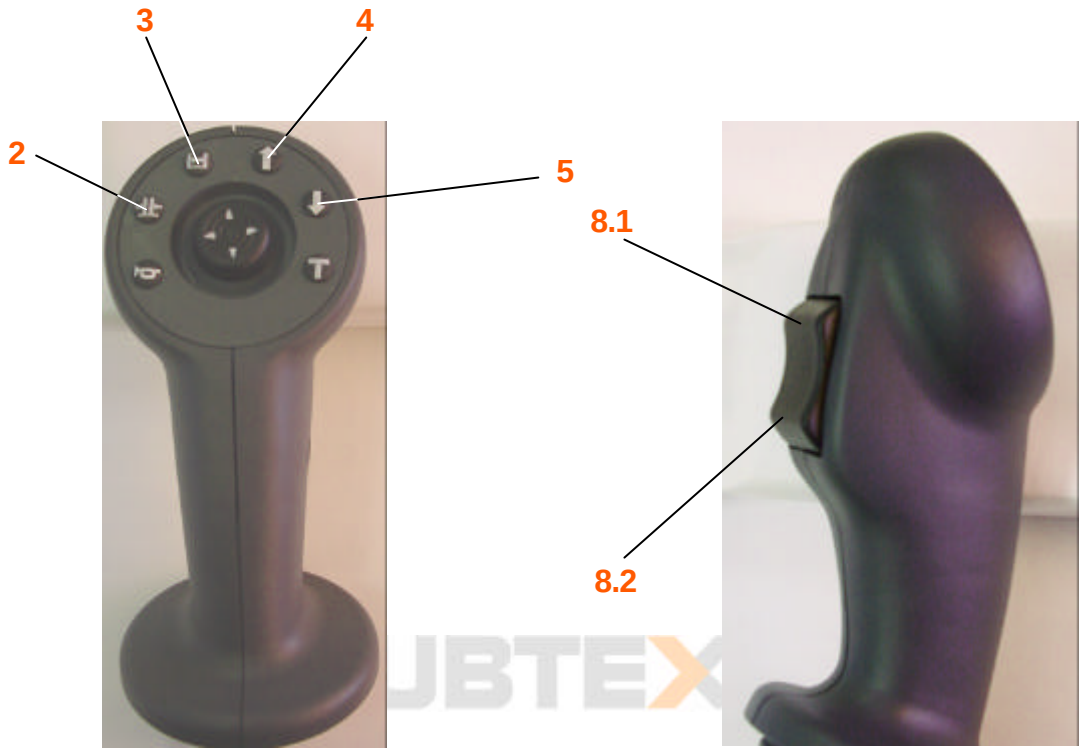
2 Press the parking brake switch at the operator panel

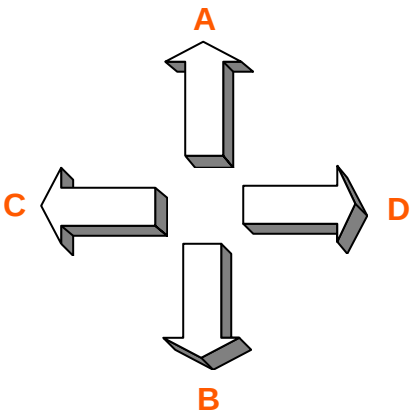
3 Switch the HUBTEX side loader off when leaving it

In case of longer standstill of the HUBTEX sideloader for some time you should unplug the battery connector.

9 MOVEMENTS OF FORK ARMS AND MAST

ATTENTION
For moving fork arms or lifting mast you have to stop the side loader!





2 push forks together(option)
3 extend forks(option)
4 extend telescopic forks (option)
5 Retract telescopic forks (option)
8.1 swivel forks up
8.2 swivel forks down
A lower the lifting mast
B lift the lifting mast
C reach the lifting mast
D retract the lifting mast

10 BATTERY RECHARGE

1 Drive the sideloader to the recharging station

2 Park the sideloader safely

3 Switch off the sideloader

4 Open the battery cover

5 Recharge the battery using the battery recharge connector




ATTENTION
Observe the operating instructions of the batteries and the battery charging system !

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TABLE OF CONTENTS MAINTENANCE

Standard

- Maintenance sideloader

Options (only if contained in the scope of delivery)

- Maintenance personal protection equipment
- Battery
- Battery charger

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MAINTENANCE

Table of Contents

1 GENERAL

We explicitly would like to draw your attention to the chapter "Safety instructions". All points must be observed.

Thorough and professional maintenance is one of the most important requirements for safe operation of HUBTEX industrial trucks. If you neglect regular maintenance intervals, the HUBTEX industrial sideloader will fail inevitably and endanger operators and plant equipment.
Maintenance includes every action needed to maintain safety in operation and to prevent early wear.
For maintenance works HUBTEX industrial trucks have to be secured to avoid unintentional movement.

1.1 MAINTENANCE PERSONNEL

Only qualified and authorised personnel are permitted to maintain HUBTEX industrial trucks. HUBTEXMaschinenbau GmbH & Co. KG offer especially trained maintenance engineers for this purpose.

1.2 MAINTENANCE INTERVALS

HUBTEX industrial trucks need to be maintained according to our instructions or by our maintenance staff. These instructions apply to normal working conditions. In case of difficult working conditions or multi-shift operation maintenance accordingly has to be done more often.
First maintenance has to be done after 50 working hours. In addition to checking all functions, in particular fastening screws and hydraulic screw connections have to be checked and retightened if necessary Furthermore you have to do all works stated in the inspection interval list.
All further maintenance work has to be carried out in accordance with the inspection interval list.

You have to document the first maintenance (after 50 operating hours) as well as the inspection intervals every 500 and every 1000 operating hours in a way that can be understood!
During every maintenance note the actual operating hours shown on the accumeter.

Checks must be carried out by a qualified person according to HUBTEX specifications every 2000 - 2400 operating hours and at least once per year or following any events that resulted in damage being caused.

Checks according to HUBTEX specifications must be documented in such a way that they may be understood!
The due-date for the next inspection is indicated by a sticker attached to the HUBTEX industrial truck.

1.3 SPARE PARTS

Only spare parts that comply with the manufacturer's specifications may be used. If spare parts are used that have not been approved by the manufacturer of the industrial truck, incorrect quality or alignment may result in increased risk of accident. Any party using spare parts that have not been approved is wholly liable for any damage that arises. If spare parts are used that have not been approved by the manufacturer, the manufacturer's CE declaration of conformity loses its validity.

1.4 DISPOSAL OF GREASES, OILS AND BATTERIES

Any waste and lubricants released during repairs, maintenance or cleaning must be collected in an appropriate manner and disposed of according to national regulations. This must only be performed at locations specifically intended for this purpose. Care should be taken to ensure that no damage is caused to the environment.

2 INSTRUCTIONS TO PREVENT ACCIDENTS

2.1 SAFETY PRECAUTIONS

In order to prevent accidents during maintenance and repair work, the appropriate safety precautions must be taken, e.g.:

- It must be ensured that the industrial truck is not moved or started unintentionally (remove battery plug of electro-sideloader).
- If it is necessary to work underneath the raised load carrying device, the load carrier and the inner frame(s) of the lifting mast should be secured to prevent them from falling, e. g. by means of sufficiently thick pieces of square timber or chains.
- The industrial truck should be prevented from moving unintentionally by activating the fixing brake and positioning wedges under the wheel.
- The lifting mast should be prevented from being tilted accidentally.
- In the case of reach trucks, it should be ensured that persons do not become jammed between the mast and the frame.
- Hydraulic lines should be depressurised.
- Only purpose-built ascending aids that meet the appropriate standards may be used for accessing maintenance points in high-up positions (e.g. lubrication points on the lifting mast).

2.2 LIFTING AND JACKING UP

To lift HUBTEX industrial trucks and accessories attach hoists to the points especially designed for this purpose.

ATTENTION
The load suspension devices must have a sufficient load-carrying capacity!

When jacking up use suitable equipment (e.g. wedges, square timber) to prevent the units from sliding away or tipping over.

2.3 CLEANING

Do not use combustible fluids for cleaning. Safety measures must be taken to prevent sparking due to short circuits (e.g. by disconnecting the battery). If HUBTEX industrial trucks are cleaned using hot water units, all parts susceptible to damage – especially the electrical parts – must be carefully covered up. Signs and labels must not be sprayed directly. A minimum distance of 20 cm, a pressure of max. 50 bar and a temperature of max. 85 °C must be adhered to.

Electrical and electronic components must be cleaned using lightly compressed air and a non-metallic brush.

2.4 WORKING WITH ELECTRICAL EQUIPMENT

Working with the electrical equipment is only allowed if all parts are dead. Only trained and authorised staff are allowed to test, check and adjust live parts, and they have to be careful and observe all safety regulations.

2.5 WELDING OPERATIONS

All welding operations must be agreed with the HUBTEX welding supervisory body.
For welding all electrical components and the piston rods of hydraulic cylinders have to be covered. Disconnect the electronic control from the power supply. Connect the welding set to ground as close as possible to the welding point.

2.6 SAFETY DEVICES

After maintenance and repair work all safety devices have to be refitted and checked for proper function.

2.7 SETTINGS

Observe the adjustment values of the respective components when repairing and exchanging hydraulic and electric components. Speeds are not to be changed in any case.

2.8 TYRES

The quality of the tyres affects the stability and the travel characteristics of HUBTEX industrial trucks. Changes may only be made after agreement with the industrial truck manufacturer. When wheels or tyres are changed, it should be ensured that the industrial truck does not exhibit any tilt (e.g. by always changing left and right wheels at the same time).

2.9 TOWING AND MOVING

Only **persons qualified to do so** may carry out any towing operations of HUBTEX industrial trucks.
The traction vehicle must have a sufficient tractive and braking force for the unbraked trailing load. The load must be lowered before towing, the prongs must be lowered to about 300 mm above floor level. The spring resistance brake of the driving wheels must be opened by manual ventilation, or the spring resistance brakes must be dismantled completely. The lock chains of the guided wheels should be loosened and the individual wheels put in the desired towing direction by lifting. The towing path must be as short as possible. The towing speed must be low enough that safe towing is ensured. After the towing, the industrial truck must be secured against rolling away.

2.10 MEASURES TO BE TAKEN IN CASE OF LONG PERIODS OF SHUT-DOWN/STORAGE

In case of long periods of shut-down/storage, measures should be taken to prevent corrosion. The battery should be removed. Industrial trucks should be jacked up in order to avoid flat tyres. Further specifications in the operating instructions should be adhered to.

3. MAINTENANCE INTERVALS

Location	To do	Comment	A = first maintenance after 50 operating hours	B = maintenance every 500 operating hours or six-monthly	B = maintenance every 1000 operating hours or annually	D = annual testing according to the HUBTEX maintenance schedule (Directive 89/655/EEC)
Steering	Check function: travel in a straight line		■	◆	●	✓
	Check tension of steering chain		■	◆	●	✓
	Lubricate steering chain			◆	●	✓
	Check wheel alignment for all steered axles			◆	●	✓
	Check hydraulic motors are securely mounted			◆	●	✓
	Check steering potentiometers are securely mounted			◆	●	✓
	Verify that steering cylinders are securely mounted and check the chain attachment, if present		■	◆	●	✓
	Check that steering wheel/steering arm fit securely		■	◆	●	✓
	HIT terminal: read off, evaluate and erase fault memory		■	◆	●	✓
Driving wheels	Change gear oil	See "wheel hub drive"	■		●	
	Check gear oil level			◆		
	Check carbon brushes with DC	See "wheel hub drive"		◆	●	
	Remove the coal dust around the carbon brushes	Blow off with dry compressed air	■	◆	●	
	Retighten wheel screws/wheel nuts	See tightening torques for wheel screws/ wheel nuts	■	◆	●	✓
	Retighten fastening screws on the frame	See tightening torques for screws	■		●	
	Check wheel coverings for wear and damage	Replace if < 50 % of the initial value		◆	●	✓
	Live ring bearings - check play of wheel bearings and lubricate		■		●	✓
Load wheels	Retighten fastening screws on the frame				●	
	Check wheel coverings for wear and damage	Replace if < 50 % of the initial value		◆	●	✓
	Check live ring/ tapered roller bearings	Check play of the gearing and readjust if required	■		●	
	Lubricate load wheels			◆	●	
Brakes	**Test 1** When the accelerator pedal/"Drive" joystick is released, automatic braking by plugging is activated The intensity of this may be set at the driving controls. Braking distance without nominal load: approx. 2.5 x sideloader length Braking distance with nominal load: approx. 3.0 x sideloader length		■	◆	●	✓
	Test 2 Braking by reversing the position of the driving direction switch with the accelerator depressed/ by reversing the position of the "Drive" joystick"		■	◆	●	✓

Location	To do	Comment	A = first maintenance after 50 operating hours	B = maintenance every 500 operating hours or six-monthly	B = maintenance every 1000 operating hours or annually	D = annual testing according to the HUBTEX maintenance schedule (Directive 89/655/EEC)
Brakes	**Test 3** After the accelerator pedal is released and the brake pedal is depressed to approx. 2/3 of its travel distance, intensified braking by plugging ensues. The intensity of this may be set at the driving controls.		■	◆	●	✓
	Test 4 When the brake pedal is fully depressed, the electro-magnetic brake is activated. Test braking distance by emergency braking (with and without nominal load).		■	◆	●	✓
	Speed (km/h)	Max. braking distance (m)				
	4.0	1.57				
	4.5	1.77				
	5.0	1.96				
	5.5	2.16				
	6.0	2.35				
	6.5	2.55				
	7.0	2.75				
	7.5	2.94	■	◆	●	✓
	8.0	3.14				
	8.5	3.34				
	9.0	3.53				
	9.5	3.94				
	10.0	4.36				
	10.5	4.81				
	11.0	5.28				
	11.5	5.77				
	12.0	6.29				
	Test 5 When the black push-pull button (switch) is depressed, the electro-magnetic brake engages		■	◆	●	✓
	Test 6 When the red emergency stop push-pull button (switch) is depressed, the electro-magnetic brake engages.		■	◆	●	✓
	Test 7 Switch the unit off. When it is shut down, the electro-magnetic brake engages.		■	◆	●	✓
	Test function of accelerator pedal/ "Drive" joystick		■	◆	●	✓
	Check that accelerator and brake pedal are		■	◆	●	✓
	Check air gap between anchor disc and magnetic component	See "wheel hub drive"		◆	●	✓
	Lubricate brake and accelerator pedals	Not applicable for standup cabin		◆	●	✓
	For hydraulic brake system: ✓ Check fixing brake locking device ✓ Check wear on brake disc and on both brake caliper pads ✓ Check leaktightness of brake cylinders and brake lines ✓ Check play of brake linkage/ brake cable			◆	●	✓

Location	To do	Comment	A = first maintenance after 50 operating hours	B = maintenance every 500 operating hours or six-monthly	B = maintenance every 1000 operating hours or annually	D = annual testing according to the HUBTEX maintenance schedule (Directive 89/655/EEC)
Frame/ chassis	Check the connection between the two frame components - the tensioning set	See tightening torques		◆	●	✓
	Check function of cradle frame		■	◆	●	✓
	If necessary, adjust frame guides, then lubricate these		■	◆	●	
	Check weld seams	Carry out visual inspection, and if necessary check for cracks by means of liquid penetrant inspection			●	✓
	Check mast reach out motors are securely mounted			◆	●	
	Check mast reach out cylinders are securely mounted			◆	●	
	Check that the counterweights are securely mounted, if present				●	✓
Mast	Check lifting mast profiles for distortion			◆	●	✓
	Check weld seams	Carry out visual inspection, and if necessary check for cracks by means of liquid penetrant inspection		◆	●	✓
	Check lifting chain using a wear ruler	Max. permissible elongation: 3 %			●	✓
	Check lifting chain for cracks and bolts/clips for signs of wear and chamfering				●	✓
	Check end stop of support on inner frame		■	◆	●	✓
	Check end stop on inner/ middle frame		■	◆	●	✓
	Check tension of lifting chain and ensure that it is tensioned evenly		■	◆	●	✓
	Inspect check nuts for chain tensioning screw and safety pin		■	◆	●	✓
	Check chain deflection roller for wear		■	◆	●	✓
	Lubricate chain deflection roller		■	◆	●	✓
	Are the tubes in the lifting mast evenly and sufficiently tensioned?		■	◆	●	✓
	Lubricate lifting chains			◆	●	
	Check screws for free lift guide and, if required, reapply glue and retighten	For lifting masts H60SI and H70SI only: use Loctite 241	■		●	✓
	Check mast reach out guide and reset if		■	◆	●	✓
	Check tension of mast reach out chains			◆	●	✓
	Lubricate mast reach out chains			◆	●	
	Check that lifting cylinder(s) is (are) mounted securely				●	✓
	Tighten fastening screws	See tensioning torques	■	◆	●	✓
	Check mast reach out roller tensioning sets	See tensioning torques	■		●	✓

Location	To do	Comment	A = first maintenance after 50 operating hours	B = maintenance every 500 operating hours or six-monthly	B = maintenance every 1000 operating hours or annually	D = annual testing according to the HUBTEX maintenance schedule (Directive 89/655/EEC)
Mast	Check that lifting mast is in a vertical position	Approx. 0.5° towards rear when no nominal load is present. Corrected by moving the tensioning sets of the rear mast reach out rollers			•	✓
	Check function of limit switch systems in accordance with technical specifications		■		•	✓
Fork carriage (hexagonal shaft, frontal contstruction)	Check that swivel cylinders are set evenly				•	✓
	Check plain bearing and swivel head of swivel cylinders			◆	•	✓
	Lubricate plain bearing and swivel head of swivel cylinders			◆	•	
	Check that bolts are securely mounted		■	◆	•	✓
	Check weld seams	Carry out visual inspection, and if necessary check for cracks by means of liquid penetrant inspection			•	✓
Fork tine adjustment (gripper adjustment)	Lubricate fork carriage and chain		■	◆	•	
	Check chain tension			◆	•	✓
	Check the side stops that prevent the fork tines (grippers) from slipping off to the side.		■	◆	•	✓
Fork tines	Surface cracks: A thorough visual inspection for cracks, particularly at the kink in the fork and at the upper and lower mountings	Check for cracks by means of a liquid penetrant inspection. If surface cracks are found, that fork tine may no longer be used.	■	◆	•	✓
	Height difference between the fork points:	Permissible height differences according to HUBTEX guidelines: Standard fork tines: 10 mm, Blade fork tines: 6 mm			•	✓
	Locking device: (if present)	A check must be made to ensure that the locking device is in good condition			•	✓
	Check legibility of labelling:	Load capacity, load centre and manufacturer designation			•	✓
	Wear:	When the thickness of the fork tine blade or back reaches 90 % of its original thickness, that fork tine may no longer be used			•	✓

Location	To do	Comment	A = first maintenance after 50 operating hours	B = maintenance every 500 operating hours or six-monthly	B = maintenance every 1000 operating hours or annually	D = annual testing according to the HUBTEX maintenance schedule (Directive 89/655/EEC)
Fork tines	Fork tine mount: The backing surface of the upper hook and the supporting surfaces of both hooks should be checked for wear, fractures or other forms of distortion.	If any of these faults are present to such an extent that the distance to the fork carriage becomes too great, then the fork tine affected may no longer be used			•	✓
	Endurance test: Check fork tines under max. nominal load while retaining the load centre position.	After removal of the max. nominal load, there must be no long-term distortion (warpage)			•	✓
Gripper Option)	Check parallelity				•	✓
	Check height differences for grippers	Permissible height differences according to HUBTEX guidelines: 6 mm			•	✓
	Check weld seams	Check for cracks by means of a liquid penetrant inspection		◆	•	✓
Driver's cab	Check canopy for damage		■	◆	•	✓
	Check weld seams	Visual inspection			•	✓
	Check that cab is securely mounted (vibration damping)		■	◆	•	✓
	Check step treads and handles				•	✓
	Check glass/ guard for damage				•	✓
	Check adjustment of driver's seat	Longitudinal adjustability and weight adjustment, not applicable for standup cabin			•	✓
	Check function of seat contact switch	Not applicable for standup cabin	■	◆	•	✓
	Check the mechanical and electrical locking of the swivelling seat (Option)	With the seat swivelled out, switching off the drive controller	■	◆	•	✓
	Check the mechanical and electrical locking of the steering wheel swivelling platform (Option)	With the steering wheel swivelling platform swung out, switching off the drive controller	■	◆	•	✓
	Closed driver's cab: Check heating and ventilation systems. Check lock on cab door.			◆	•	✓
Electrohydraulic pump	Check carbon brushes with DC	See "Electro-hydraulic pump"		◆	•	✓
	Check that the electro-hydraulic pump and the motor cable are securely mounted		■	◆	•	✓
	Visual inspection of all rubber buffers				•	✓
	Check noises emitted by the motor and the pump		■	◆	•	✓

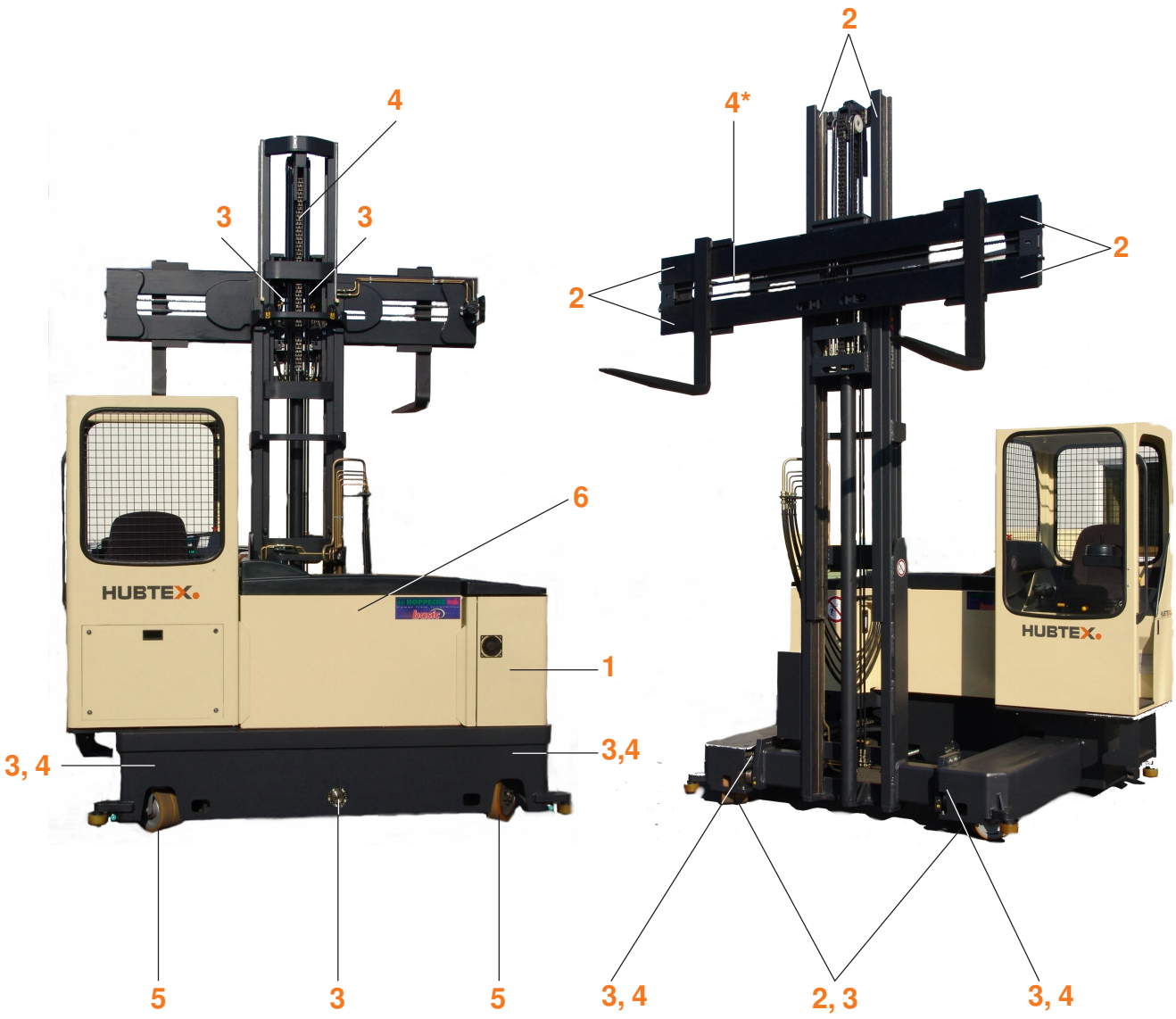
Location	To do	Comment	A = first maintenance after 50 operating hours	B = maintenance every 500 operating hours or six-monthly	B = maintenance every 1000 operating hours or annually	D = annual testing according to the HUBTEX maintenance schedule (Directive 89/655/EEC)
Hydraulic system	Check oil level			◆	●	
	Change hydraulic oil	If a new pump is installed, also change hydraulic oil	■		●	
	Change filter element of reverse flow filter	If a new pump is installed, also change filter element	■		●	
	High-pressure filter (if present) - change filter element	If a new pump is installed, also change filter element	■		●	
	Change high-pressure safety filter	- every 3000 operating hours. If a new pump has been installed, replace completely.				
	Change ventilation filter				●	✓
	Oil/air cooler (if present): check function of temperature switch and ventilator motor			◆	●	✓
	Check that hydraulic unit is securely mounted		■	◆	●	✓
	Check leaktightness of hydraulic reservoir	Visual inspection	■	◆	●	✓
	Perform visual inspection of hydraulic tubes/fittings	Any of the following conditions means that immediate replacement of the hose line is necessary: Displacement of tube fittings; Damage, incisions or wear on the outer layer (reinforcement layer is exposed) Hardened, stiff or charred tube, or cracks caused by heat build-up Cracks or damaged/heavily corroded fittings Leaks in the tube or at the fitting Kinked, crushed, flattened or twisted tube Bubbled, soft, worn or loose outer layer		◆	●	✓
	Check screw connections of tubes for leaktightness	Retighten screw connections of tubes. Damaged hydraulic pipes must be replaced immediately	■	◆	●	✓
	Check leaktightness of hydraulic cylinders and hydraulic motors		■	◆	●	✓
	Check hydraulic pressures at the hydraulic cylinder end positions	For default hydraulic pressures see red adhesive label on the hydraulic unit			●	✓

Location	To do	Comment	A = first maintenance after 50 operating hours	B = maintenance every 500 operating hours or six-monthly	B = maintenance every 1000 operating hours or annually	D = annual testing according to the HUBTEX maintenance schedule (Directive 89/655/EEC)
Hydraulic system	Check all hydraulic functions	The operating lever must spring back into the zero position	■	◆	●	✓
	When the load carrying device is raised with a nominal load at normal operating temperature, the hydraulic fluid must not fall of its own accord by more than 100 mm	Normal hydraulic fluid operating temperature is approx. 40 °C			●	✓
Electrical equipment	Check cable for wear and damage			◆	●	✓
	Clean dust and other contamination from the electrical equipment				●	
	Replace brake and start relay				●	
	Check contacts				●	✓
	Check function of the emergency stop button		■	◆	●	✓
	Check function of all display instruments		■	◆	●	✓
	Check visual and acoustic warning devices	Blinker lamps, revolving lights, buzzer	■	◆	●	✓
	Check working headlamps and driving direction lamps, if present		■	◆	●	✓
	Check drive lock and speed reduction according to the technical specifications		■	◆	●	✓
Side loader	Check completeness and legibility of type plate, load diagram, symbols, adhesive safety labels and labelling of the actuator components		■	◆	●	✓
Accessories and additional equipment (Options)						
	Battery					
	Check retainers that prevent the battery from moving or tipping				●	✓
	Check the protection of the battery poles against unintentional contact	Battery cover or sheet metal covering			●	✓
	Check battery cable and connector		■	◆	●	✓
	Check battery for damage and leakage		■	◆	●	✓
	Check fill level: visual inspection	See "Battery" operating instructions			●	✓
	Check insulation: min. 1 KiloOhm per Volt of battery voltage				●	✓
	Battery charging system					
	Check according to manufacturer's instructions	See "Battery charging system" operating instructions				
	Telescope forks					
	Clean and lubricate the contact surfaces of the inner fork					Weekly
	Check wear on outer shoe		■	◆	●	✓
	Check guide plate at tip of inner fork			◆	●	✓
	Check split pins				●	✓

Location	To do	Comment	A = first maintenance after 50 operating hours	B = maintenance every 500 operating hours or six-monthly	B = maintenance every 1000 operating hours or annually	D = annual testing according to the HUBTEX maintenance schedule (Directive 89/655/EEC)
	Replace split pins			◆	●	
	Rack guide rollers					
	Check wheel coverings for wear and damage	Replace when outer diameter is reduced to < 90 % of its original value		◆	●	✓
	Check for secure mounting and positioning		■	◆	●	✓
	Rack gear recognition by means of ultrasonic detectors					
	Check function		■	◆	●	✓
	Check that sensors are securely mounted and check sensor connection cables		■	◆	●	✓
	Rack gear recognition by means of transponder					
	Check function (inching movement)	See technical specifications	■	◆	●	✓
	Check that high-frequency antenna is securely mounted and check antenna connection cable		■	◆	●	✓
	Lifting height-dependend speed reduction and locking					
	Check function	See technical specifications	■	◆	●	✓
	Lifting height limiter with bypass button					
	Check function	See technical specifications	■	◆	●	✓
	Lifting height preselection equipment					
	Check function	See technical specifications	■	◆	●	✓
	Fork zero-setting display					
	Check function of proximity switch		■	◆	●	✓
	Check for secure mounting and check connection		■	◆	●	✓
	Load torque monitoring					
	Check function of pressure switch/ pressure sensor		■	◆	●	✓
	Check for secure mounting and check connection cable		■	◆	●	✓
	Check pressure setting		■	◆	●	✓
	Video camera/ monitor					
	Check function		■	◆	●	✓
	Check for secure mounting and check connection cable		■	◆	●	✓
	Inductive tracking system					
	Check that antenna is mounted correctly and		■	◆	●	✓
	Check tracking along guide wire		■	◆	●	✓
	Make a test drive along guide wire	Vehicle must not deviate. If deviation > 20 mm, the speed is reduced to inching	■	◆	●	✓
	Check that max. travel speed on guide wire is 6.0 km/h		■	◆	●	✓

Location	To do	Comment	A = first maintenance after 50 operating hours	B = maintenance every 500 operating hours or six-monthly	B = maintenance every 1000 operating hours or annually	D = annual testing according to the HUBTEX maintenance schedule (Directive 89/655/EEC)
	Replace camera's UVA fluorescent tubes	Every 8000 operating hours				✓
	Personnel protection system					
	Prior to commissioning, the sensors should be checked daily before use for contamination and, if necessary, cleaned with a soft cloth					✓
	Sideloader with elevating driver's seat					
	Check mounting of cab; retighten fastening screws		■	◆	●	✓
	Check cab barrier	When barrier is open, no function is possible	■	◆	●	✓
	Check weld seams on cab mounting	Carry out visual inspection, and if necessary check for cracks by means of liquid penetrant inspection			●	✓
	Check step treads and handles				●	✓
	Check canopy for damage		■	◆	●	✓
	Check glass/ guard for damage				●	✓
	Check function of emergency lowering device				●	✓
	Safety equipment, speed reduction and drive cut-out must comply with technical specifications		■	◆	●	✓
	Descender					
	Test by the manufacturer	After each rescue operation				
	Test by the manufacturer	Even if the descender was not used			●	
	Diesel auxiliary heating					
	The heat exchanger must be replaced after 10 years	See diesel auxiliary heating operating instructions				
	The openings of the heating air, combustion air and exhaust air ducts should, after long periods of shut-down, be checked and, if necessary, cleaned					
Further extra and safety equipment may be found in the technical specifications. The function of these should also be checked			■	◆	●	✓

4. LUBRICATION POINTS



1	HLP 46	Hydraulic oil	5	SAE 85-90	Gear oil
2	GP 0 H-40	Greases for profiles	6	△	Greases for battery
3	K2N 30	Greases for bearings			
4	△	Chain spray			

*) depending on design.

5. HYDRAULIC OIL, LUBRICANTS, GREASES

Operational reliability and economy of the HUBTEX industrial truck strongly depend on the quality of the lubricants used. The following qualities have proven themselves to be suitable.

5.1 HYDRAULIC OIL

5.1.1 AMBIENT TEMPERATURES of -5 °C to +25 °C

Designation: ISO VG 32 HM
DIN 51524 part 2, HLP
Recommended make: Texaco HLP 32
Shell Tellus oil 32
AGIP OSO 32

5.1.2 AMBIENT TEMPERATURES of +10 °C to +40 °C

Designation: ISO VG 46 HM
DIN 51524 part 2, HLP
Recommended make: Texaco HLP 46
Shell Tellus oil 46
AGIP OSO 46

5.1.3 AMBIENT TEMPERATURES of +25 °C to +50 °C

Designation: ISO VG 68 HM
DIN 51524 part 2, HLP
Recommended make: Texaco HLP 68
Shell Tellus oil 68
AGIP OSO 68

For required hydraulic oil quantity, see adhesive label on tank.

5.2 GEAR OIL FOR WHEEL HUB DRIVES

Designation: Gear oil SAE 85-90
Recommended make: Aral gear oil EP 85 W 90
Texaco GEARTEX EP-A 85 W 90

For required gear oil quantity please refer to the nameplate on the wheel hub drive.

5.3 GREASES FOR PROFILES

Designation: DIN 51826-GP 0 H-40, semi-liquid
Recommended make: Texaco MULTIFAK EP 0

5.4 GREASE FOR BEARINGS

Designation: DIN 51825-K2N-30
Recommended make: Texaco MOLYTEX EP 2

5.5 LUBRICANT FOR CHAINS

Designation: Chain spray MOx-active chain and adhesive lubricants (with organic molybdenum compound for improved capacity)
Recommended make: OKS 451, chain and adhesive lubricants
(OKS Spezialschmierstoffe GmbH (special lubricants), Munich).

6. CHANGING HYDRAULIC OIL

For safety reasons it is prohibited to loosen screw fittings, connections and devices as long as the unit is under pressure. Before starting oil change lower the load and switch off the pumps.

Take care of tidiness because dirt is the enemy of each hydraulic main. Clean the outer parts of all screws before loosening them. Close all openings with caps in order to protect the system from dirt. If possible, do not use cotton waste for cleaning the oil tanks. Fill up the unit only by hopper.

Deaerate the inlet pipe after having changed hydraulic oil.

7. HYDRAULIC TUBES

Hydraulic hoses and connections have to be inspected every 500 working hours.
Hydraulic hoses should be exchanged every 6000 working hours or 6 years maximum.

Visual inspection of the hose / fitting
If you note one of the following circumstances you will have to switch off and replace the hose immediately:

- fitting on the hose is loose and slides
- outer lining is damaged, cut or rubbed off (reinforcement visible)
- hose is hard, stiff or has sweated surface, or cracks by excessive heat
- fittings have cracks or are damage, or strongly corroded
- leaking spots on the hose or fitting
- hose has kinks, is squeezed, flat or twisted
- outer lining has bubbles, is soft, worn or loose

8. WHEEL HUB DRIVE

8.1 MOTOR

The maintenance intervals strongly depend on the operating conditions. Under normal operating conditions maintenance will be required every 500 operating hours.
Three-phase motors of industrial trucks are maintenance-free.

8.1.1 CARBON BRUSHES

Check carbon brushes for wear and smooth running and replace them, if required. The length of the carbon brushes should not be less than 20 mm.
Only the quality recommended by the maker should be used.
Since carbon dust settles near the carbon brushes, the dust must be blown off with dry compressed air.

8.1.2 BRUSH ROCKER

Check spring action of the brush rocker and easy-running of the brush fingers.

8.1.3 COMMUTATOR

If you note deep grooves on the surface or the surface is not circular any more, you will have to turn the commutator on a lathe. After that you will have to cut the isolation between the segments of the commutator with a saw about 0.5 mm deep.

8.1.4 BEARINGS

The life of the bearings depends on the operating conditions and the bearing temperature.
Replace a „noisy“ bearing, because it is not possible to regrease it.
Note: only use the bearings listed in the spare parts list (dust-tight 2 RS) .

8.1.5 DISASSEMBLY OF THE MOTOR

1. Remove cover plate

2. Take off carbon brushes

3. Remove electro-magnetic brake:
   - loosen the fastening screws of the brake
   - remove the magnetic part of the brake
   - remove the lock washer
   - remove hub and rotor
   - remove the feather key

4. Remove end plate
   - unscrew the fastening screws of the housing
   - pull off the end plate approx. 40 mm (be careful, since the cables are fastened inside)
   - change the carbon brushes, if necessary

5. Remove anchor (if required)
   - loosen the cables at the brush rocker
   - remove the end plate
   - pull the anchor out of the profile bush

6. Reassemble in reverse sequence

8.2 GEAR

8.2.1 OIL CHANGE

The first oil change should take place after 50 operating hours at the time of the first inspection. The next oil changes will be due every 1000 running hours or at least once a year.

8.2.2 OIL LEVEL

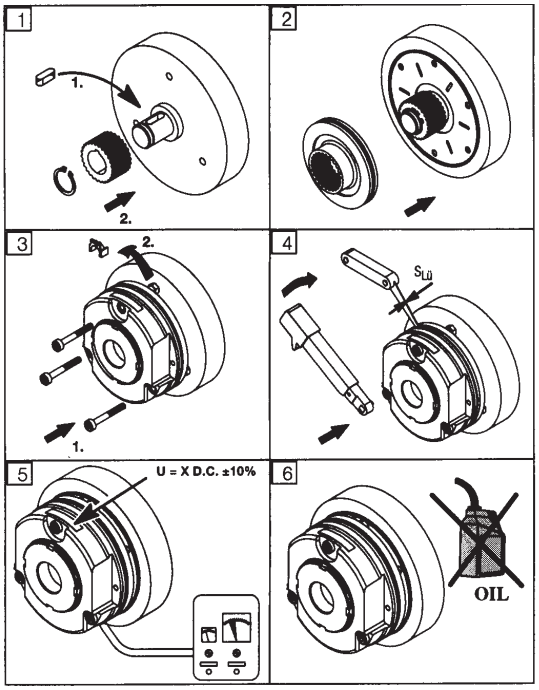
Check the gear for possible leakage.
Check the oil level at least every six months.
For checking the oil level turn the wheel of the drive unit until the waste oil screw is at the lowest possible position.
The second screw is for filling and checking.
Fill in the oil up to the lower edge of the oil screw. Clean the magnet of the waste oil screw and remove all residual oil; replace the conical nipples.
Oil volume: see nameplate on the gear

8.2.3 WORKING TEMPERATURE

The acceptable maximum temperature in continuous operation is 80° C.

8.3 ELECTRO-MAGNETIC BRAKE

Check the air gap $s_{LÜ}$ and the thickness of the brake disk during every maintenance.



Baugröße Size / Taille ----·□□	$s_{LÜ}$ + 0.0 - 0.1 (mm)	Anzugsmomente der Befestigungsschrauben [Nm] Tightening torques for fastening screws [Nm] Couples de serrage des vis de fixation [Nm]
06	0.2	2.8
08		5.5
10		9.5
12	0,6	
14		23
16		
18		
20		46
25		

9. ELECTRO-HYDRAULIC PUMP

ATTENTION
Before starting maintenance please disconnected the power supply!

9.1 PUMP MOTOR

9.1.1 Ball bearing

Both ball bearings are maintenance free. If you have to pull off the ball bearings for repair, you will have to replace them. In any case the sealing parts (shaft sealing rings, ...) have to be replaced!
If a bearing to be replaced only has one sealing lip, you will have to grease it with quality bearing grease (Staburags NBU 8EP).
After approximately 10.000 operating hours the bearings have to be replaced.

9.1.2 Carbon brushes (not applicable for three-phase AC drive technology)

The wear of the carbon brushes should be checked every 6 months or after 500 operating hours.
Remove all carbon dust from the brush chamber and check the carbon for smooth running.
The length of the carbon brush should not wear down below the minimum lengths stated below.

Brush length	17	22	28	30	31	32	40
Wear	8	12	14	15	16	16	20
Minimum length	9	10	14	15	15	16	20

If the length of the carbon brushes has worn down below the stated values, you will have to replace them by original carbon brushes to guarantee equal motor characteristics.
If brush springs have low pressure, you have to replace them.

Part no.	Dimensions
3001731	8 x 28 x 30.5
3001827	8 x 32 x 32
3001796	10 x 32 x 32
3001849	10 x 32 x 32
3001798	10 x 32 x 32
3001878	6 x 32 x 30.5
3001812	10 x 25 x 22

9.1.3 Commutator (not applicable for three-phase AC drive technology)

The measurements given below are the maximum amounts by which the commutator may be turned off at one side, compared with a new commutator. For this, the mica must be subsequently sawed at least 0.5 mm deep (the width of the mica must remain unchanged, and the edges must be free from burr).

Collector		one side machining
Brush diameter	22 mm	1.0 mm
Brush diameter	36 mm up to and incl. 64 mm	1.5 mm
Brush diameter	67 mm up to and incl. 100 mm	2.0 mm
Brush diameter	107 mm	2.5 mm
Brush diameter	126 mm	5.0 mm

9.2. HYDRAULIC PUMP

Normally the hydraulic pump is maintenance free.

9.3. ASSEMBLY/DISASSEMBLY

Assembly and disassembly are carried out according to the spare part drawing and list.

ATTENTION
After exchanging the electro-hydraulic pump you have to replace the high-pressure safety filter and to deaerate the inlet hose!

10. TIGHTENING TORQUES

10.1 SCREW TIGHTENING TORQUES

Dimension	Property class		
	8.8	10.9	12.9
	Nm	Nm	Nm
M 4	2.8	4.1	4.8
M 5	5.5	8.1	9.5
M 6	9.6	14	16
M 8	23	34	40
M 10	49	69	83
M 12	86	120	145
M 14	125	185	220
M 16	210	295	355
M 18	280	400	470
M 20	410	580	690
M 22	540	760	890
M 24	710	1,000	1,200
M 27	1,050	1,500	1,800
M 30	1,450	2,000	2,400
M 8 x 1	25	37	43
M 10 x 1.25	49	71	83
M 12 x 1.25	87	130	150
M 12 x 1.5	83	120	145
M 14 x 1.5	135	200	235
M16 x 1.5	210	310	360
M 18 x 1.5	315	450	530
M 20 x1.5	440	557	730
M 22 x 1.5	590	840	980
M 24 x 2	740	1,050	1,250
M 27 x 2	1,100	1,550	1,800
M 30 x 2	1,500	2,150	2,500

10.2 WHEEL SCREW TIGHTENING TORQUES

Art. No.	Tightening torque Nm
4190304	66
4190305	66
4190306	66
4190307	66
4190308	66
4190309	66
4190311	66
4190314	135
4190315	135
4190317	135
4190321	66
4190322	66
4190323	66
4190324	66
4190325	66
4190326	66
4190327	66
4190328	66
4190331	66
4190332	66
4190333	66
4190334	66
4190335	66
4190336	66
4190338	66
4190339	66
4190349	135
4190351	66
4190352	305
4190353	430
4190355	135
4190358	115
4190361	66
4190362	66
4190369	195
4190374	135

Art. No.	Tightening torque Nm
4190451	45
4190455	66
4190456	66
4190457	66
4190458	66
4190459	66
4190460	400
4190461K	66
4190462K	66
4190467K	400
4190468	66
4190471K	400
4190472	400
4190473	280
4190474	115
4190475	280
4190477	115
4190478	115
4190479	280
4190480	115
4190480K	115
4190481	115
4190481K	115
4190483	115
4190484	280
4190490	66
4190491	66
4190492	66
4190493	66
4190494	66
4190495	66
4190496	115
4190497	115
4190498	66
4190499	66
4190502	280
4190503	115

10.3 TENSIONING SET TIGHTENING TORQUES

Art. No.	Tightening torque Nm
2826002	127
2826010	37
2826020	37
2826045	70
2826050	70
2826070	127
2826090	127

11. TEST REPORT

FOR THE TESTING ACCORDING TO THE DIRECTIVE 95/63/EG AND THE HUBTEX MAINTENANCE

Test Report
For the testing according to the Directive 95/63/EG
and the HUBTEX Maintenance Specification no.: _____

Type of testing
☐ regular testing
☐ extraordinary testing

Test report no.: _____

Customer no.: _____

Order no.: _____

Address of the owner-operator/customer:
_____
_____
_____
_____
_____

Device type: _____

Manufacturer: _____

Year of manufacture: _____

Machine no.: _____

Operating hours: _____

Tester: _____

Telephone: _____

Test location: _____

Test date: _____

Participant: _____

No.	Description of fault	Fault code	Carried out on	by

Fault code: 0 = no 1 = yes 2 = immediately 3 = before resuming operation

Test results

Doubts about resuming operation	☐	YES	☐	NO
Re-testing required	☐	YES	☐	NO
Test label attached	☐	YES	☐	NO

Validity of test label _____ **Next test** _____

Date _____ **Signature** _____

This test report must be preserved for a reasonable period of time.

12. DOCUMENTATION OF MAINTENANCE WORK

12.1 MAINTENANCE INTERVALS

at _____ Operating hours on _____ Date _____ Name and signature Stamp

50 operating hours

☐ Hydraulic oil changed ☐ Gear oil (drive wheels) changed ☐ See comments

at _____ Operating hours on _____ Date _____ Name and signature Stamp

500 operating hours or 6-monthly

☐ Hydraulic oil changed ☐ Gear oil (drive wheels) changed ☐ See comments

at _____ Operating hours on _____ Date _____ Name and signature Stamp

1000 operating hours or once a year

☐ Hydraulic oil changed ☐ Gear oil (drive wheels) changed ☐ See comments

at _____ Operating hours on _____ Date _____ Name and signature Stamp

1500 operating hours or 6-monthly

☐ Hydraulic oil changed ☐ Gear oil (drive wheels) changed ☐ See comments

at _____ Operating hours on _____ Date _____ Name and signature Stamp

2000 operating hours or once a year

☐ Hydraulic oil changed ☐ Gear oil (drive wheels) changed ☐ See comments

at _____ Operating hours on _____ Date _____ Name and signature Stamp

2500 operating hours or 6-monthly

☐ Hydraulic oil changed ☐ Gear oil (drive wheels) changed ☐ See comments

at _____ Operating hours on _____ Date _____ Name and signature Stamp

3000 operating hours or once a year

☐ Hydraulic oil changed ☐ Gear oil (drive wheels) changed ☐ See comments

at _____ Operating hours on _____ Date _____ Name and signature Stamp

3500 operating hours or 6-monthly

☐ Hydraulic oil changed ☐ Gear oil (drive wheels) changed ☐ See comments

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4000 operating hours or once a year

at Operating hours on Date Name and signature Stamp

☐ Hydraulic oil changed ☐ Gear oil (drive wheels) changed ☐ See comments

4500 operating hours or 6-monthly

at Operating hours on Date Name and signature Stamp

☐ Hydraulic oil changed ☐ Gear oil (drive wheels) changed ☐ See comments

5000 operating hours or once a year

at Operating hours on Date Name and signature Stamp

☐ Hydraulic oil changed ☐ Gear oil (drive wheels) changed ☐ See comments

5500 operating hours or 6-monthly

at Operating hours on Date Name and signature Stamp

☐ Hydraulic oil changed ☐ Gear oil (drive wheels) changed ☐ See comments

6000 operating hours or once a year

at Operating hours on Date Name and signature Stamp

☐ Hydraulic oil changed ☐ Gear oil (drive wheels) changed ☐ See comments

6500 operating hours or 6-monthly

at Operating hours on Date Name and signature Stamp

☐ Hydraulic oil changed ☐ Gear oil (drive wheels) changed ☐ See comments

7000 operating hours or once a year

at Operating hours on Date Name and signature Stamp

☐ Hydraulic oil changed ☐ Gear oil (drive wheels) changed ☐ See comments

7500 operating hours or 6-monthly

at Operating hours on Date Name and signature Stamp

☐ Hydraulic oil changed ☐ Gear oil (drive wheels) changed ☐ See comments

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at Operating hours on Date Name and signature Stamp

8000 operating hours or once a year

☐ Hydraulic oil changed ☐ Gear oil (drive wheels) changed ☐ See comments

at Operating hours on Date Name and signature Stamp

8500 operating hours or 6-monthly

☐ Hydraulic oil changed ☐ Gear oil (drive wheels) changed ☐ See comments

at Operating hours on Date Name and signature Stamp

9000 operating hours or once a year

☐ Hydraulic oil changed ☐ Gear oil (drive wheels) changed ☐ See comments

at Operating hours on Date Name and signature Stamp

9500 operating hours or 6-monthly

☐ Hydraulic oil changed ☐ Gear oil (drive wheels) changed ☐ See comments

at Operating hours on Date Name and signature Stamp

10000 operating hours or once a year

☐ Hydraulic oil changed ☐ Gear oil (drive wheels) changed ☐ See comments

at Operating hours on Date Name and signature Stamp

10500 operating hours or 6-monthly

☐ Hydraulic oil changed ☐ Gear oil (drive wheels) changed ☐ See comments

at Operating hours on Date Name and signature Stamp

11000 operating hours or once a year

☐ Hydraulic oil changed ☐ Gear oil (drive wheels) changed ☐ See comments

at Operating hours on Date Name and signature Stamp

11500 operating hours or 6-monthly

☐ Hydraulic oil changed ☐ Gear oil (drive wheels) changed ☐ See comments

12.2 CHANGING THE HYDRAULIC OIL

Operating hours	Date

Operating hours	Date

12.3 COMMENTS

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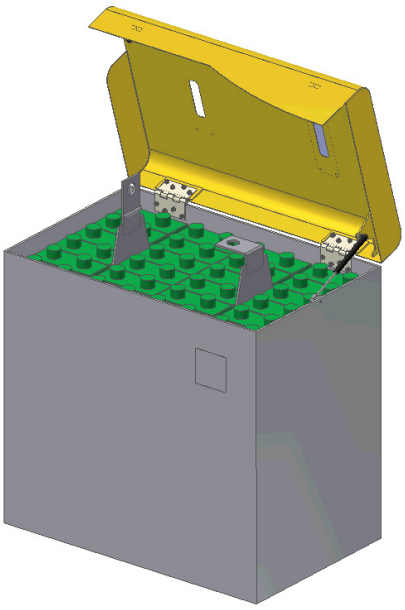
BATTERY AND BATTERY CHARGER



Notice!

Battery and battery charger are not part of **HUBTEX** delivery.

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NOTICE FOR SPARE PARTS ORDER

HUBTEX as quality manufacturer attaches great value to original spare parts.
Why is this so?
On the one hand, the warranty becomes void if non-original spare parts are used.
On the other hand, several product pirates offer seemingly identical spare parts which, in fact, are of inferior quality.

In case of spare orders, the following indications are necessary:

- **Type and series** *(e.g. MQ 40 (2125-EL))*
- **Machine no.** *(e.g. 63.000)*
- **Year of construction** *(e.g. 2011)*
- **Parts name** *(e.g. driving unit)*
- **Piece no.** *(e.g. 1 piece)*
- **Order no.** *(e.g. 4190376)*

You must send spare parts order to your dealer or to one of our companies:

HUBTEX Maschinenbau GmbH & Co. KG

Industriepark West
Werner-von-Siemens-Str. 8
36041 Fulda, Germany

☎	+49-661-8382-453
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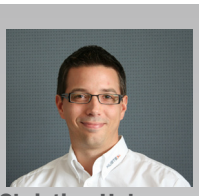
Your HUBTEX-customer service is always at your disposal!

HUBTEX.

Ersatzteil-Service
Spare parts-service
Service des piéces détachées



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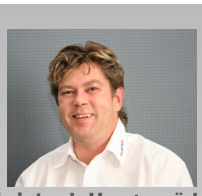
christian.hohmann@hubtex.com



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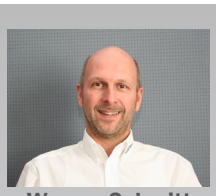
Telefon: +49-661-8382-454
christoph.hergenroeder@hubtex.com



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Responsable service après-vente

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Service des ventes, commercial

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Management
Management

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If you are pleased with our product tell your friends. If not, talk to us! We are always here to listen.

Si vous êtes satisfaits de nos produits, dites le à vous amis, si vous êtes insatisfaits, dites le nous s'il vous plait.

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Wer sollte Ihr **HUBTEX**-Fahrzeug besser verstehen als wir?

HUBTEX Service bietet Ihnen neben einem exzellenten Service langfristige Investitionssicherheit, eben „**Das Know how des Herstellers**“.

Who should understand your **HUBTEX**-vehicle better than we do?

Apart from excellent service, **HUBTEX** offers you long-term investment security which is indeed „**the manucfacturer´s know-how**“.

Qui mieux que nous peut comprendre votre engin **HUBTEX**?

Le SAV **HUBTEX** offre, en plus d’un excellent service, une sécurité de l’investissement à long terme grâce « **au savoir-faire constructeur** ».

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Spare parts lists

www.hubtex.com

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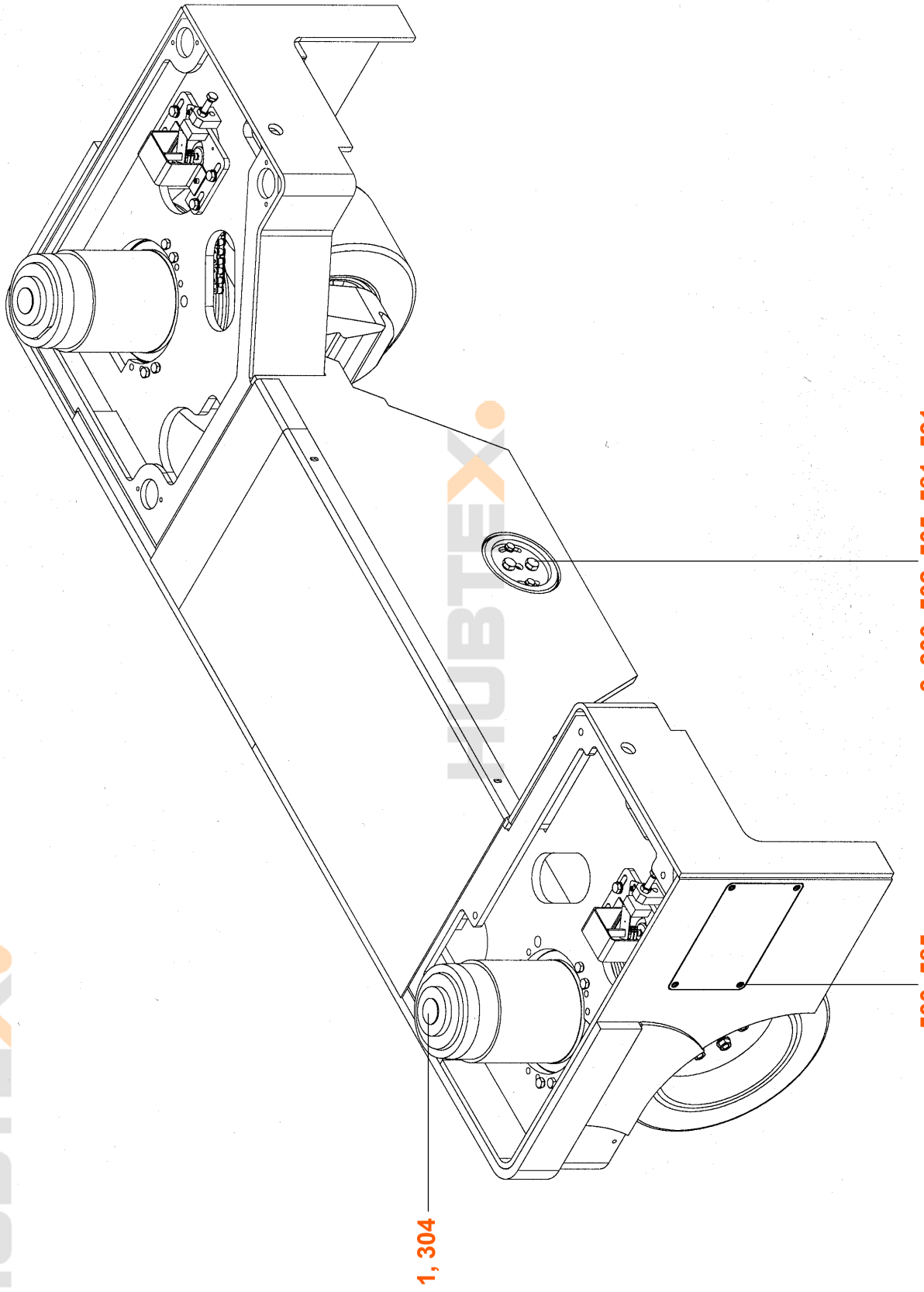

Rahmen hinten
chassis back
châssis en arriére

I0000875
TD-22-0178-00

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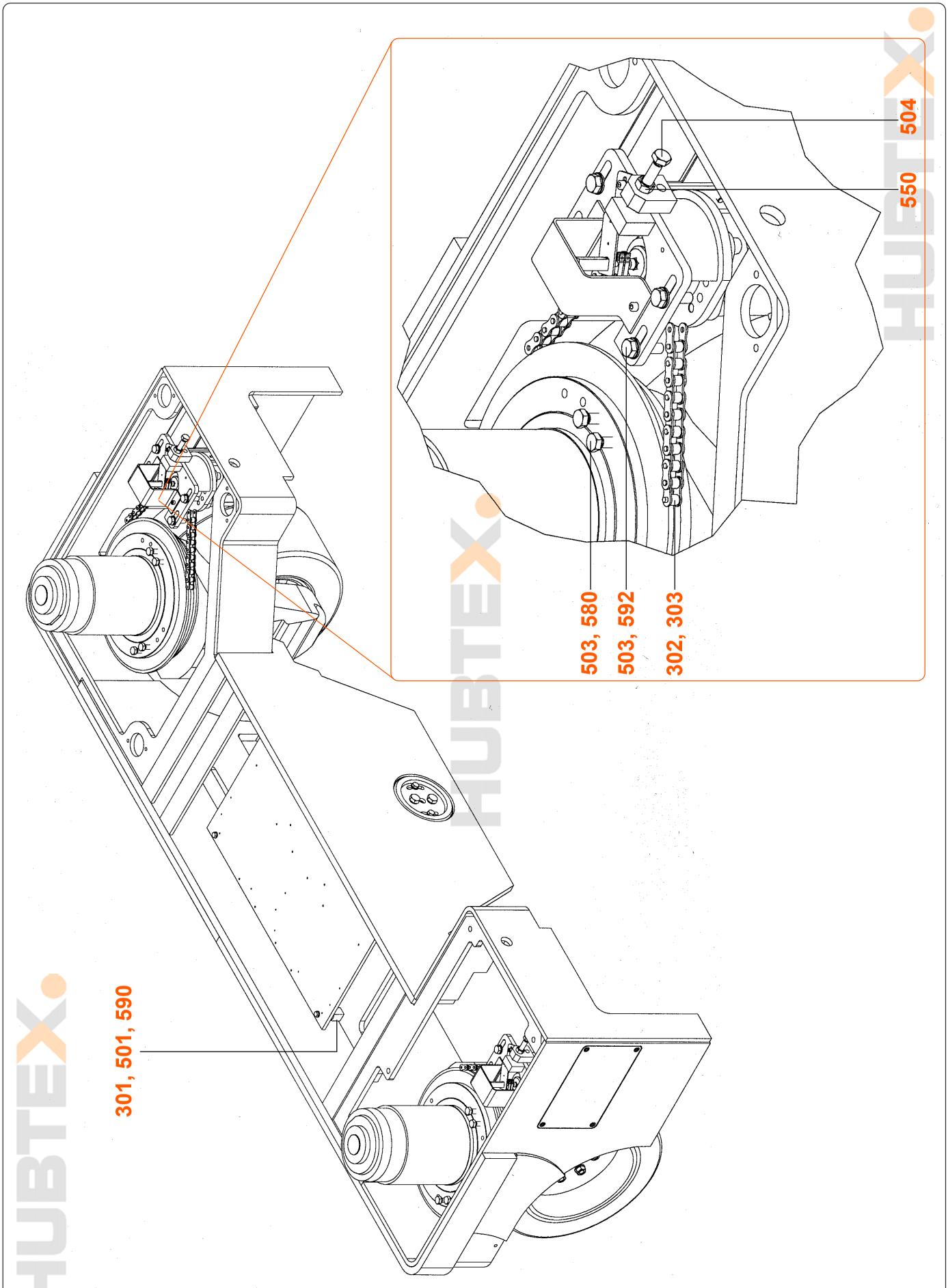

Rahmen hinten
chassis back
châssis en arriére

I0000875
TD-22-0178-00

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Rahmen hinten
chassis back
châssis en arrière

Pos	Stck A	Stck B	Stck C	Teilebezeichnung	parts name	denomination	Bestellnummer order no. no. de commande
1	2	-	-	Antriebseinheit	driving unit	unité de commande	I3004140 A
1	-	2	-	Antriebseinheit	driving unit	unité de commande	I3004140 B
1	-	-	2	Antriebseinheit	driving unit	unité de commande	I3004140 C
3	1	1	1	Achse	axle	essieu	I3004060 C
300	1	1	1	Kegelschmiernippel	hydraulic-tube lubricating nipple	nipple de graissage à cone	6902780
301	4	4	4	Gummipuffer	rubber buffer	tampon au caoutchouc	6223095
302	2	2	2	Kette	chain	chaîne	5474040
303	2	2	2	Verschlußglied	closing link	maillon de fermeture	5464540
304	15l	15l	15l	Getriebeöl	gear oil	huile à engrenages	0173075
500	8	8	8	Schraube	screw	vis	2022039
501	4	4	4	Schraube	screw	vis	2022049
502	2	2	2	Schraube	screw	vis	2022569
503	20	20	20	Schraube	screw	vis	2023129
504	2	2	2	Schraube	screw	vis	2023249
505	2	2	2	Schraube	screw	vis	2024099
550	2	2	2	Mutter	nut	écrou	2501079
580	12	12	12	Schnorr-Sicherung	locking ring	circlip	2623504
581	2	2	2	Schnorr-Sicherung	locking ring	circlip	2623506
585	8	8	8	Scheibe	disk	disque	2613129
590	8	8	8	Scheibe	disk	disque	2601139
591	2	2	2	Scheibe	disk	disque	2601149
592	8	8	8	Scheibe	disk	disque	2601159

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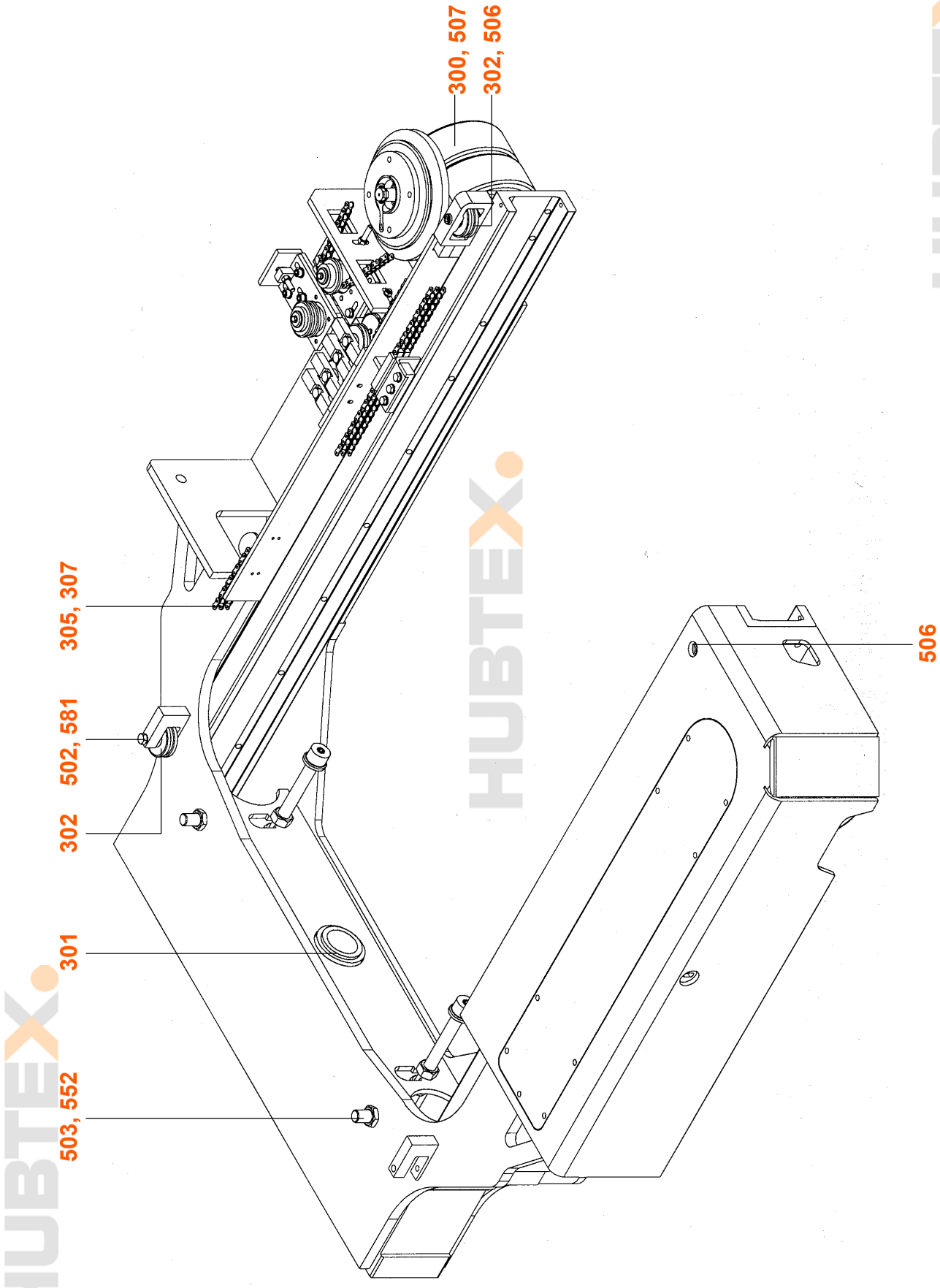

Rahmen vorne
chassis forward
châssis en avant

I0000869
TD-22-0179-02

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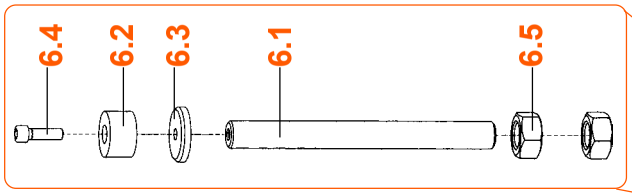

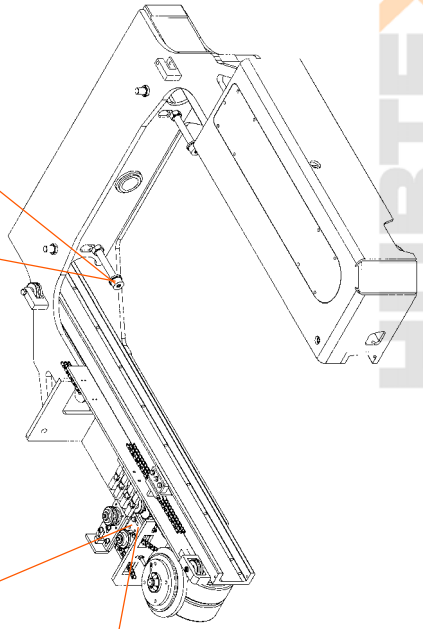

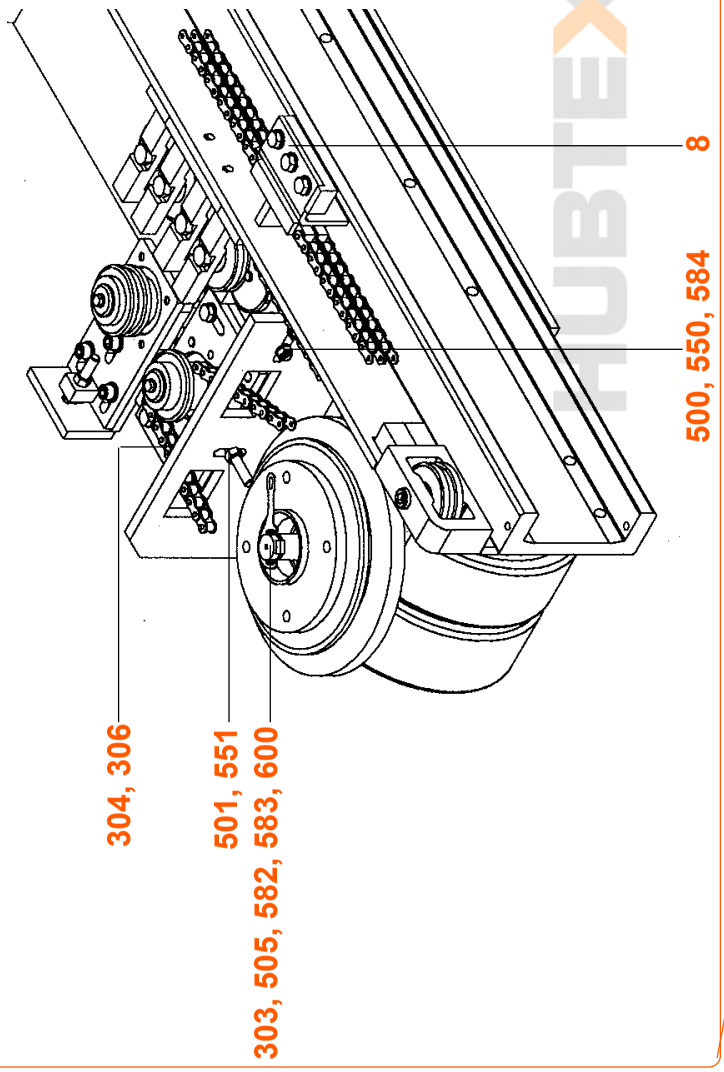

Rahmen vorne
chassis forward
châssis en avant

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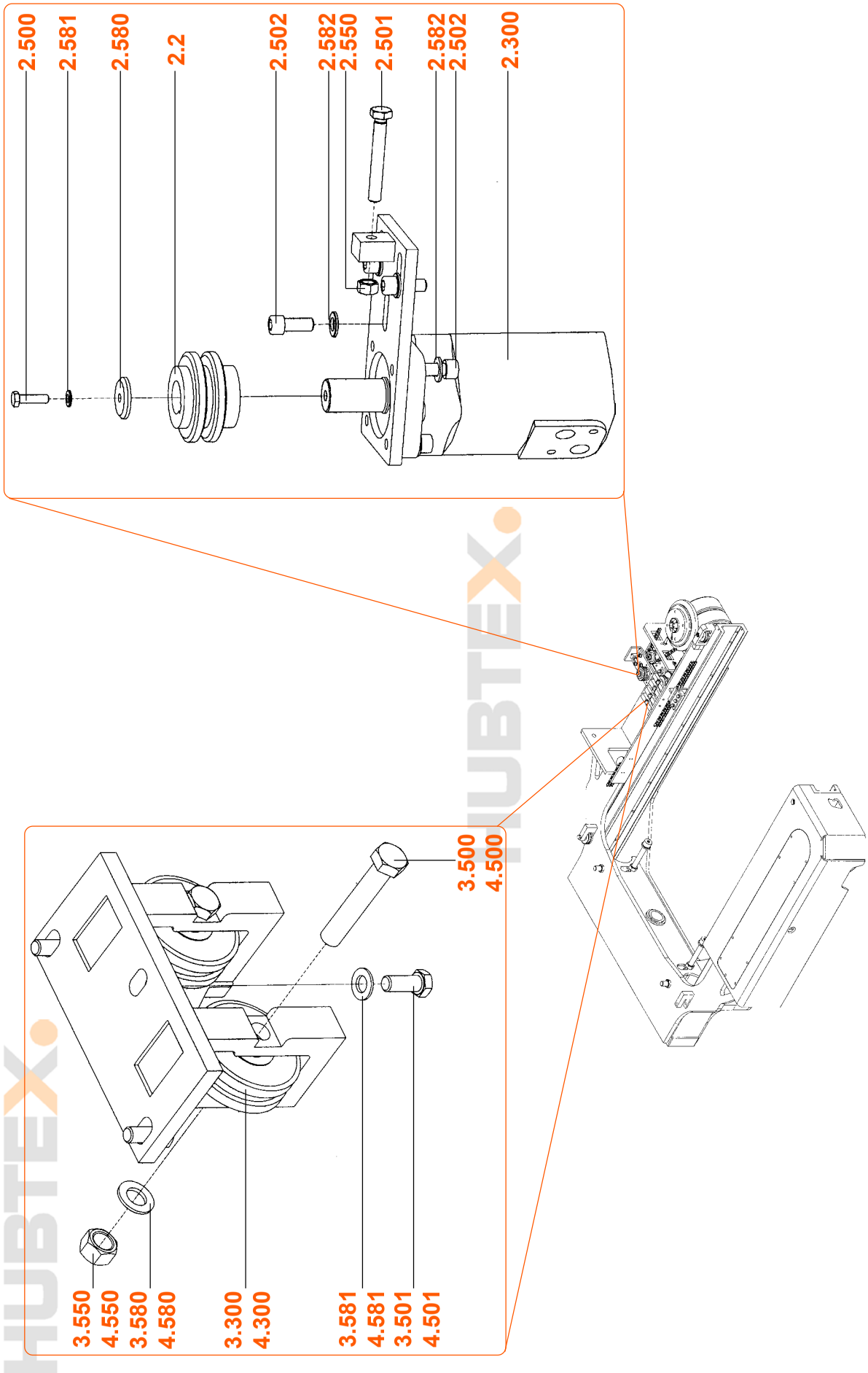

Rahmen vorne
chassis forward
châssis en avant

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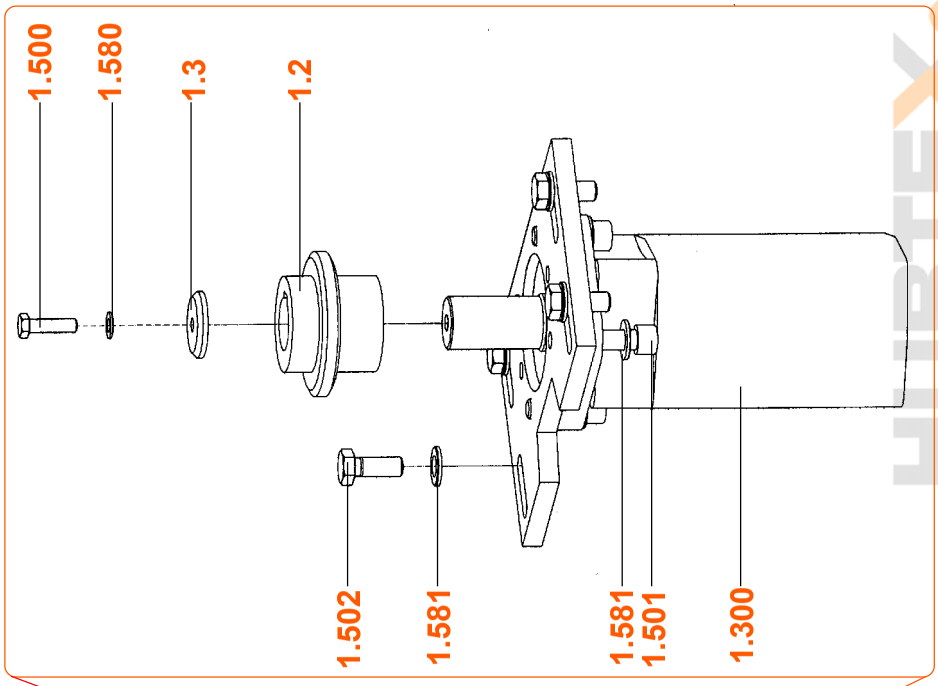

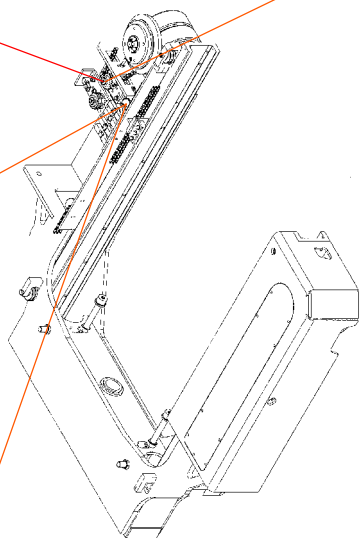

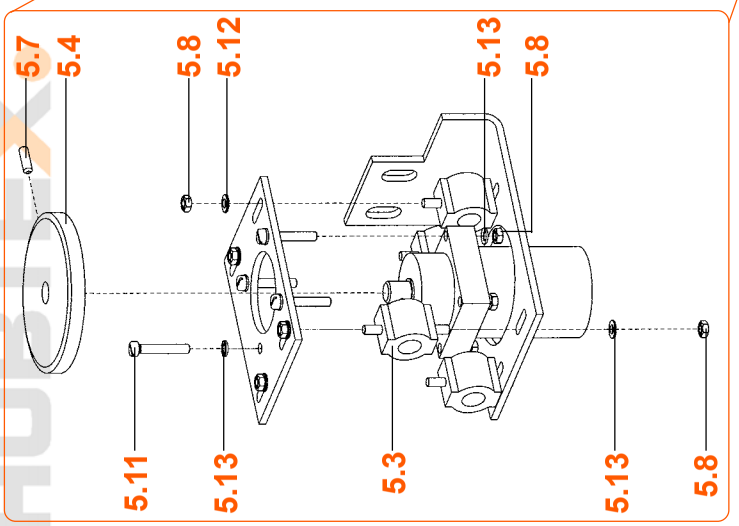

Rahmen vorne
chassis forward
châssis en avant

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TD-22-0179-02

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HUBTEX

Rahmen vorne
chassis forward
châssis en avant

Pos	Stck A	Stck B	Stck C	Teilebezeichnung	parts name	denomination	Bestellnummer order no. no. de commande
1.2	2	2	-	Kettenrad	chain wheel	roue à chaines	0806810
1.3	2	2	-	Endscheibe	disk	disque	I4000129 B
1.300	2	2	-	Hydraulikmotor	hydraulic motor	motor hydraulique	3041110
1.500	2	2	-	Schraube	screw	vis	2022109
1.501	8	8	-	Schraube	screw	vis	2063069
1.502	8	8	-	Schraube	screw	vis	2023109
1.580	2	2	-	Scheibe	disk	disque	2601139
1.581	16	16	-	Scheibe	disk	disque	2601159
2.2	2	2	-	Kettenrad	chain wheel	roue à chaines	0806820
2.300	2	2	-	Hydraulikmotor	hydraulic motor	motor hydraulique	3041110
2.500	2	2	-	Schraube	screw	vis	2022109
2.501	2	2	-	Schraube	screw	vis	2023219
2.502	14	14	-	Schraube	screw	vis	2063059
2.550	2	2	-	Mutter	nut	écrou	2501079
2.580	2	2	-	Scheibe	disk	disque	I4000129 B
2.581	2	2	-	Scheibe	disk	disque	2601139
2.582	14	14	-	Scheibe	disk	disque	2601159
3.300	8	8	-	Kettenspannrad	chain adjusting wheel	roue à tendre la chaine	5451180
3.500	4	4	-	Schraube	screw	vis	2014089
3.501	6	6	-	Schraube	screw	vis	2023109
3.550	4	4	-	Mutter	nut	écrou	2501099
3.580	4	4	-	Scheibe	disk	disque	2601179
3.581	6	6	-	Scheibe	disk	disque	2601159
4.3	8	8	-	O-Formlager	bearing	palier	5519850
4.4	2	2	-	Kettenradscheibe	disk	disque	I4000938
4.7	2	2	-	Gewindestift	setscrew	goupille fileteée	2161560
4.8	24	24	-	Mutter	nut	écrou	2541039
4.11	8	8	-	Schraube	screw	vis	2103629
4.12	16	16	-	Scheibe	disk	disque	2601109
4.13	16	16	-	Schnorr-Sicherung	locking ring	circlip	2623498
5.3	8	8	-	O-Formlager	bearing	palier	5519850

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Rahmen vorne
chassis forward
châssis en avant

Pos	Stck A	Stck B	Stck C	Teilebezeichnung	parts name	denomination	Bestellnummer order no. no. de commande
5.4	2	1	-	Kettenradscheibe	disk	disque	I4000938
5.7	2	2	-	Gewindestift	setscrew	goupille fileteée	2161560
5.8	24	24	-	Mutter	nut	écrou	2541039
5.11	8	8	-	Schraube	screw	vis	2103629
5.12	16	16	-	Scheibe	disk	disque	2601109
5.13	16	16	-	Schnorr-Sicherung	locking ring	circlip	2623498
6.1	2	2	-	Gewindstab	thread rod	tige filetée	I4000311 E
6.2	2	2	-	Endanschlag	limit stop	butée de fin de course	I4000312
6.3	2	2	-	Scheibe	disk	disque	I4000129 F
6.4	2	2	-	Schraube	screw	vis	2063079
6.5	4	4	-	Mutter	nut	écrou	2501159
8	2	2	-	Mastmitnehmer	mast reach block	toc d'entraiment du mât	I3004940
300	2	-	-	Lastrad	load wheel	roue de charge	5222609
300	-	2	-	Lastrad	load wheel	roue de charge	5222563
301	2	2	-	Buchse	sleeve	bague	I4005589
302	8	8	-	Kettenspannrad	chain adjusting wheel	roue à tendre la chaine	5451180
303	2	2	-	Winkelaufnehmer	angel feeder	angle de leveur	4148570
304	2	2	-	Kette	chain	chaîne	5474040
305	2	2	-	Kette	chain	chaîne	5472040
306	2	2	-	Verschlußglied	closing link	maillon de fermeture	5474540
307	2	2	-	Verschlußglied	closing link	maillon de fermeture	5472040
500	4	4	-	Schraube	screw	vis	2023619
501	2	2	-	Schraube	screw	vis	2023249
502	2	2	-	Schraube	screw	vis	2024210
503	2	2	-	Schraube	screw	vis	2036029
505	4	4	-	Schraube	screw	vis	2102050
506	4	4	-	Schraube	screw	vis	2062119
507	16	16	-	Schraube	screw	vis	2063049
508	2	2	-	Schraube	screw	vis	2077790
550	4	4	-	Mutter	nut	écrou	2501069
551	4	4	-	Mutter	nut	écrou	2501079

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Rahmen vorne
chassis forward
châssis en avant

Pos	Stck A	Stck B	Stck C	Teilebezeichnung	parts name	denomination	Bestellnummer order no. no. de commande
552	4	4	-	Mutter	nut	écrou	2511119
580	16	16	-	Schnorr-Sicherung	locking ring	circlip	2623504
581	6	6	-	Schnorr-Sicherung	locking ring	circlip	2623506
582	4	4	-	Scheibe	disk	disque	2601079
583	4	4	-	Scheibe	disk	disque	2601119
584	8	8	-	Scheibe	disk	disque	2601149
600	2	2	-	Spannstift	dowel pin	goupille de serrage	2701580

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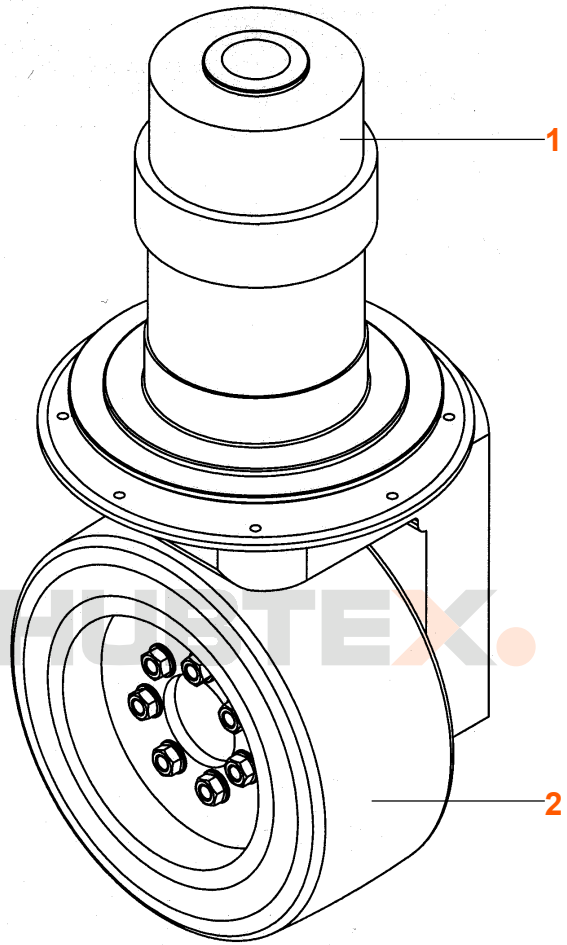
Antriebsrad
driving wheel
roue de commande



Pos	Stck A	Stck B	Stck C	Teilebezeichnung	parts name	denomination	Bestellnummer order no. no. de commande
1	1	1	1	Antriebseinheit	driving unit	unité de commande	4190317
2	1	-	-	Rad	wheel	roue	5223099
2	-	1	-	Rad	wheel	roue	5212111
2	-	-	1	Rad	wheel	roue	5223089

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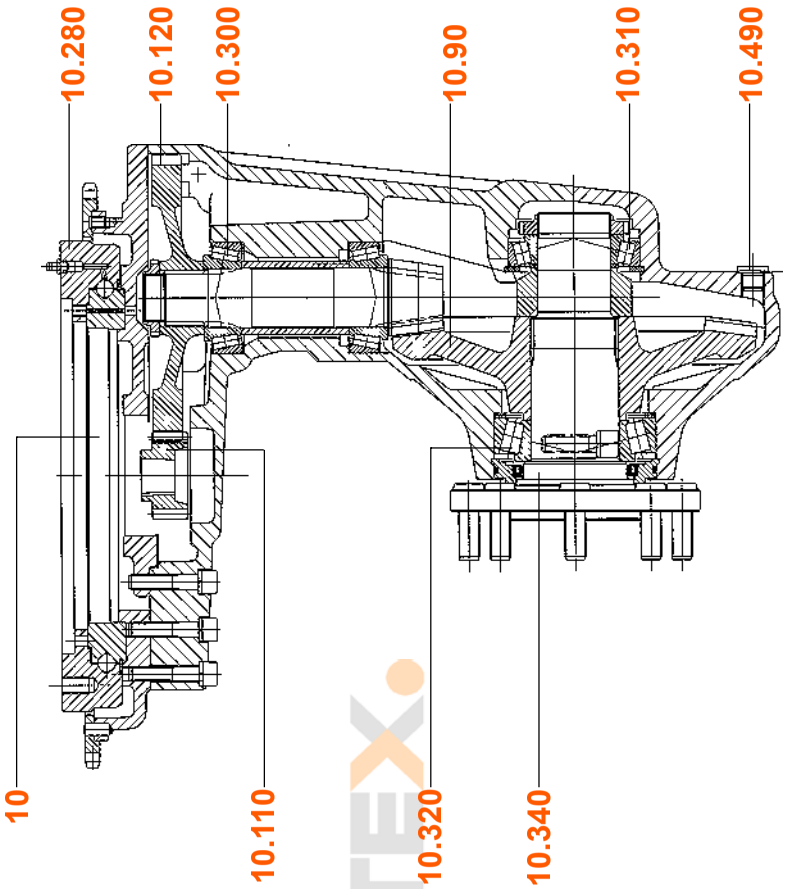

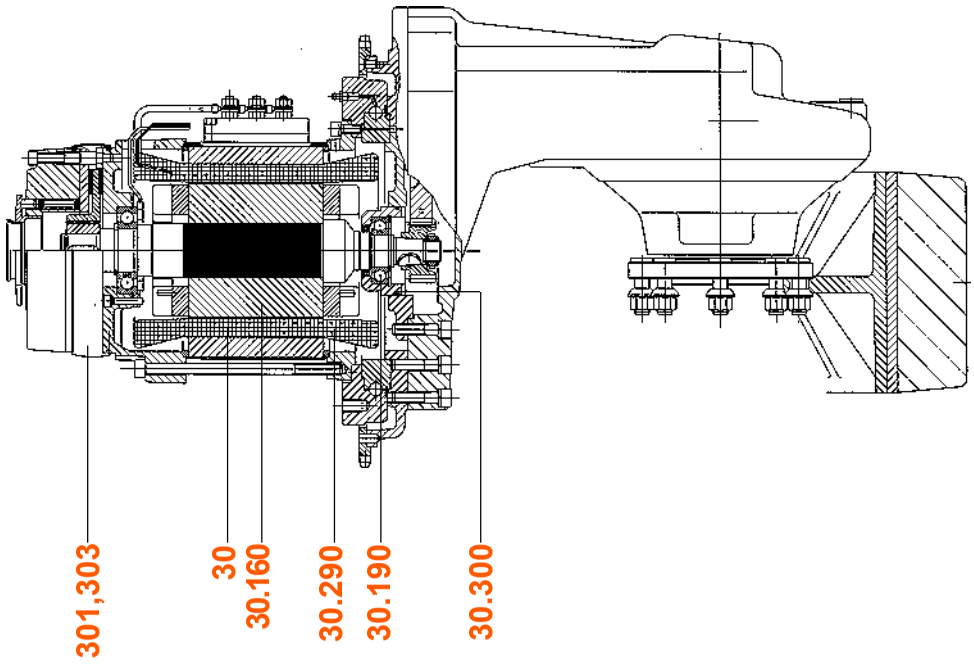

Radnabenantrieb
wheel hub drive
commande au moyeu de roue

4190317
TD-27-0026-04

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Leere Seite
Blank side

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HUBTEX

Radnabenantrieb
wheel hub drive
commande au moyeu de roue

Pos	Stck	Teilebezeichnung	parts name	denomination	Bestellnummer order no. no. de commande
10	1	Radnabenantrieb	wheel hub drive	commande au moyeu de roue	4190182
10.90	1	Kettenrad	chain wheel	roue à chaine	9951359
10.110	1	Stirnritzel	front pinion	pignon de front	9951360
10.120	1	Stirnrad	spur wheel	roue droite	9951361
10.280	1	Drehkranzlager	live ring bearing	palier	9951362
10.300	2	Kegelrollenlager	taper roller bearing	roulement à rouleaux coniques	9951363
10.310	1	Kegelrollenlager	taper roller bearing	roulement à rouleaux coniques	9951364
10.320	1	Kegelrollenlager	taper roller bearing	roulement à rouleaux coniques	9951365
10.340	1	Wellendichtring	rotary shaft	anneau de garniture de l'arbre	9951366
10.480	1	Verschlußschraube	screw	vis	9951123
10.490	1	Magnetverschraubung	magnetic srew connection	raccord à vis magnetique	9951198
1.500	2	Dichtring	packing ring	anneau d'étanchéité	9951124
30	1	Elektromotor	electric motor	moteur electrique	4190184
30.160	1	Anker	armature	induit	9951357
30.190	1	Rillenkugellager	ball bearing	roulement rainuré à billes	9951323
30.290	1	Wellendichtring	rotary shaft seal	bague à léveres avec ressort	9951329
30.300	1	O-Ring	o-ring	joint torique	9951335
301	1	Federkraftbremse	spring pressure brake	frein à tension de ressort	4232043
303	1	Rotor	rotor	rotor	4231999
	6,2l	Getriebeöl	gear oil	huile à engrenages	0173075

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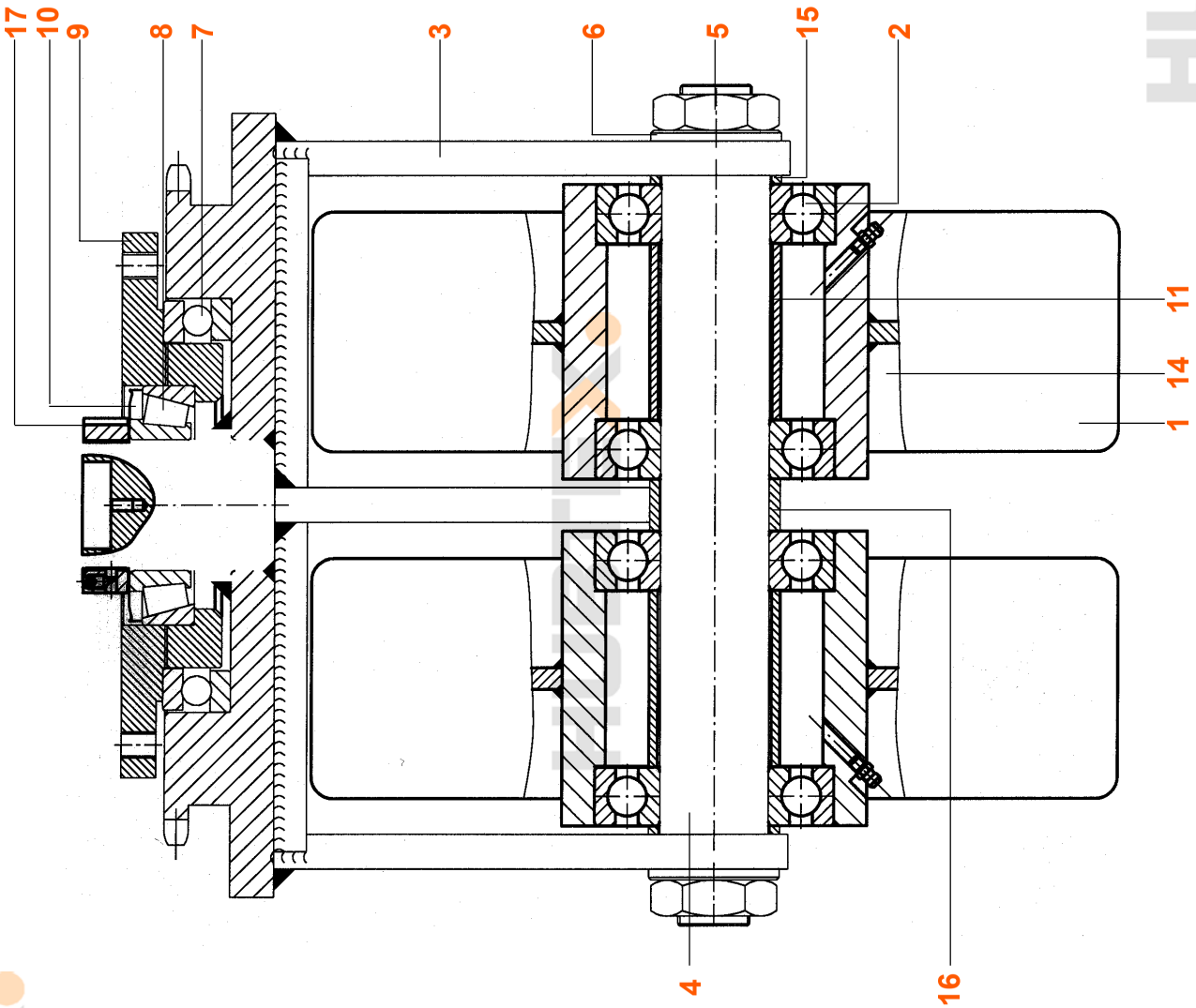

Lastrad
load wheel
roue de charge

5222609
TD-20-0052-00

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Leere Seite
Blank side

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HUBTEX

Lastrad
load wheel
roue de charge

Pos	Stck	Teilebezeichnung	parts name	denomination	Bestellnummer order no. no. de commande
1	2	Rad	wheel	roue	9951602
2	4	Rillenkugellager	deep groove ball bearing	roulement rainuré à billes	5507605
3	1	Gehäuse	housing	boîte	9951601
4	1	Achse	axle	essieu	9951600
5	2	Mutter	nut	écrou	9951599
6	2	Scheibe	disk	disque	9951598
7	1	Rillenkugellager	deep groove ball bearing	roulement rainuré à billes	9951597
8	1	Kegelrollenlager	taper roller bearing	roulement à rouleaux coniques	9951596
9	1	Platte	plate	plaque	9951595
10	1	Nilosring	packing ring	anneau obturateur de garniture	9951594
11	2	Buchse	sleeve	bague	9951593
14	2	Kegelschmiernippel	hydraulic-tube lubricating nipple	nipple de graissage à cone	9951592
15	2	Distanzbuchse	distance push	boîte d'écartement	9951591
16	1	Distanzbuchse	distance push	boîte d'écartement	9951590
17	1	Mutter	nut	écrou	9951589

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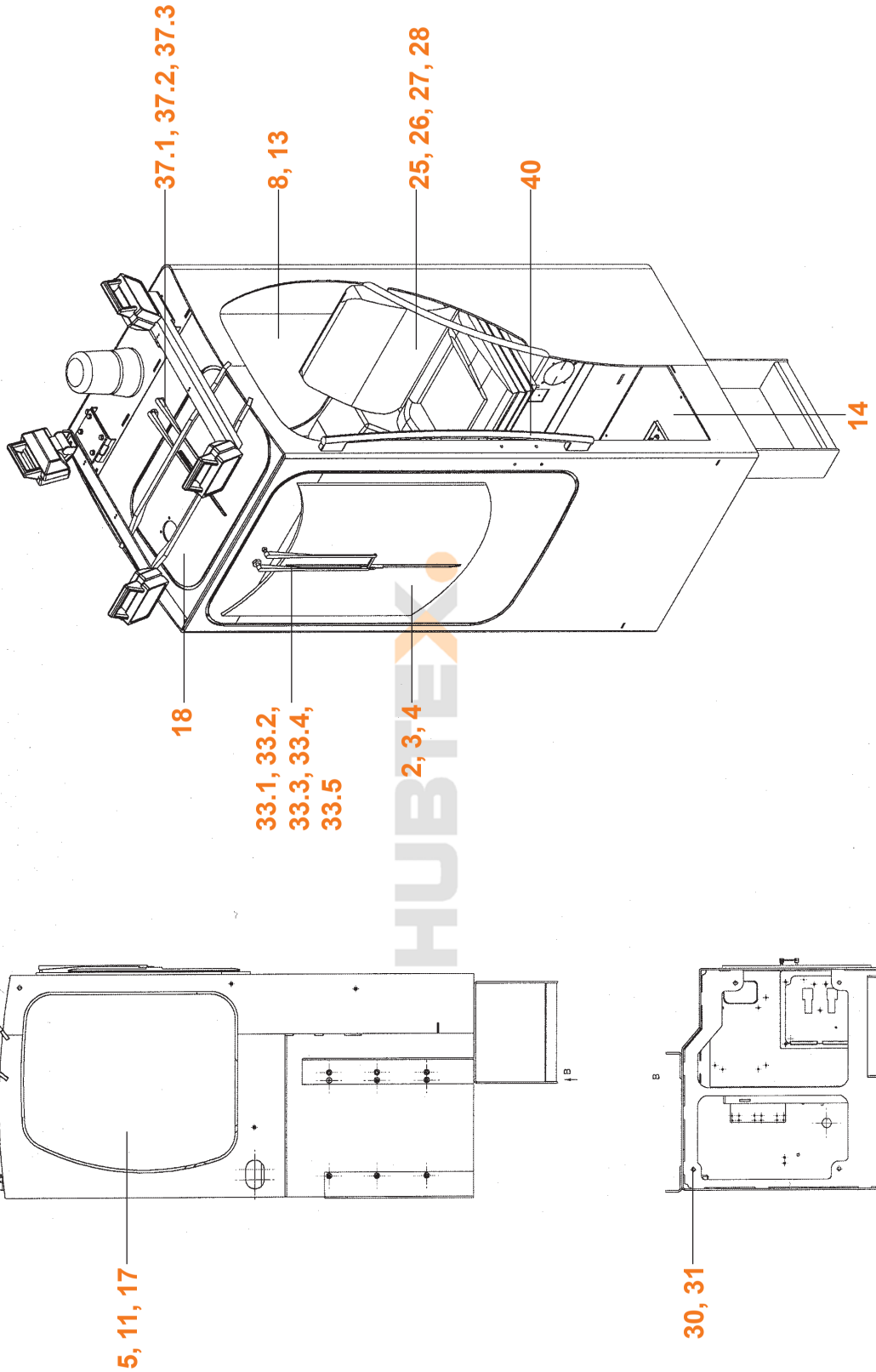

Kabine, kpl.
cabin, compl.
cabine, compl.

I0000510sx
TD-23-0057-00sx

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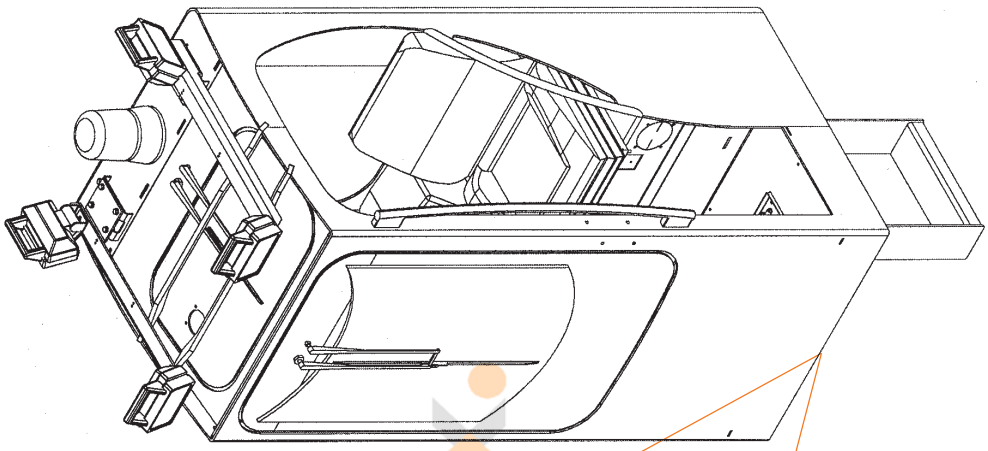

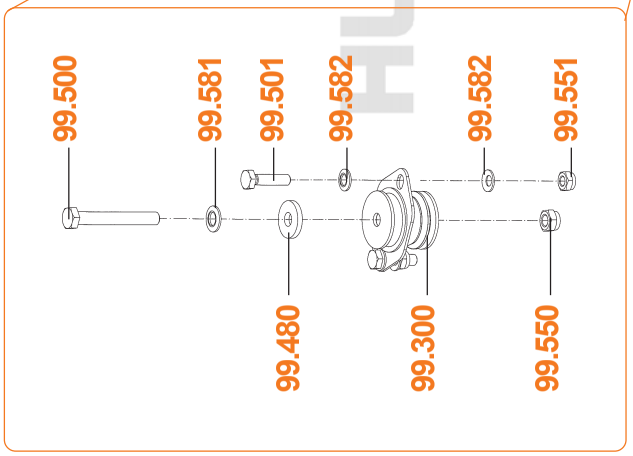

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Kabine, kpl.
cabin, compl.
cabine, compl.

Pos	Stck	Teilebezeichnung	parts name	denomination	Bestellnummer order no. no. de commande
2	1	Scheibe, lastseitig	pane, load side	carreau, côte de charge	I4003872
3	1	Füllerprofil	filling profile	profile de remplissage	6201320
4	1	Klemmprofilgummi	binding profile (rubber)	profilé à clé (caoutchouc)	6201311
5*)	1	Scheibe, frontseitig	pane, front side	carreau, côte de fronton	I4000259
8*)	1	Scheibe, batterieseitig	pane, battery side	carreau, côte de batterie	I4000391
11	1	Gitter, frontseitig	grid, front side	dosseret de protection, côte de for.	I4000266
13	1	Gitter, batterieseitig	grid, battery side	dosseret de protection, côte de bat.	I4016834A
14	1	Gumminoppenmappe	rubber mat	tapis de caoutchouc	6201147
17*)	1	Schiebefenster	sash window	fenêtre à guillotine	6852787
18	1	Schutzdach	overheadguard	protège-conducteur	I4003875 A
25*)	1	Fahrersitz (Standard)	driver's seat (standard)	siége du condueteur (standard)	0830108
26*)	1	Fahrersitz (Kunstleder+Heizung)	driver's seat (heating)	siége du condueteur (chauffge)	0830158
27*)	1	Fahrersitz (Stoffbezug)	driver's seat (fabric covering)	siége du condueteur (étoffe)	0830160
28*)	1	Fahrersitz (Stoffbezug + Heizung)	driver's seat (fabric covering, heating)	siége du commande (entoilage, chauffge)	0830162
30	4	Konsuslager	cone bearing	palier conique	6223064
31	4	Scheibe	disk	disque	6223071
33*)	1	Wischeranbau, lastseitig	windscreen add-on, load side	annexe de essui-glace, côte de charge	I2001163
33.1	1	Scheibe	disk	disque	I4003871
33.2	1	Scheibe, lastseitig	pane, load side	carreau, côte de charge	I4003873
33.3	1	Scheibenwischerarm	wiper arm	bras de monture d'essuie-glace	0835110
33.4	1	Scheibenwischerblatt	wiper blade	raclette d'essuie-glace	0835117
33.5	1	Scheibenwischermotor	windscreen motor	moteur essuie-glace	0835107
37*)	1	Wischeranbau, Kabinendach	windscreen add-on, cabin covering	annexe de essui-glace, couverture de cabine	I2001164
37.1	1	Scheibenwischermotor	windscreen motor	moteur essuie-glace	0835106
37.2	1	Scheibenwischerblatt	wiper blade	raclette d'essuie-glace	0835118
37.3	1	Scheibenwischerarm	wiper arm	bras de monture d'essuie-glace	I4004323
40	1	Handgriff	handle	manette	I3001981
99.300	4	Lager	bearing	palier	6223078
99.500	4	Schraube	screw	vis	2013109
99.501	8	Schraube	screw	vis	2022629
99.550	4	Mutter	nut	écrou	2541079
99.551	8	Mutter	nut	écrou	2541069
99.580	4	Scheibe	disk	disque	2604530
99.581	4	Scheibe	disk	disque	2623504
99.582	16	Scheibe	disk	disque	2623503
*)	1	Gurt	seat belt	ceinture de sécurité	I2001262 B
*)	1	Zettelablage	ticket stacker plate	dépôte de bout de papier	I1000034

*) je nach Ausführung - according to performance - selon exécution

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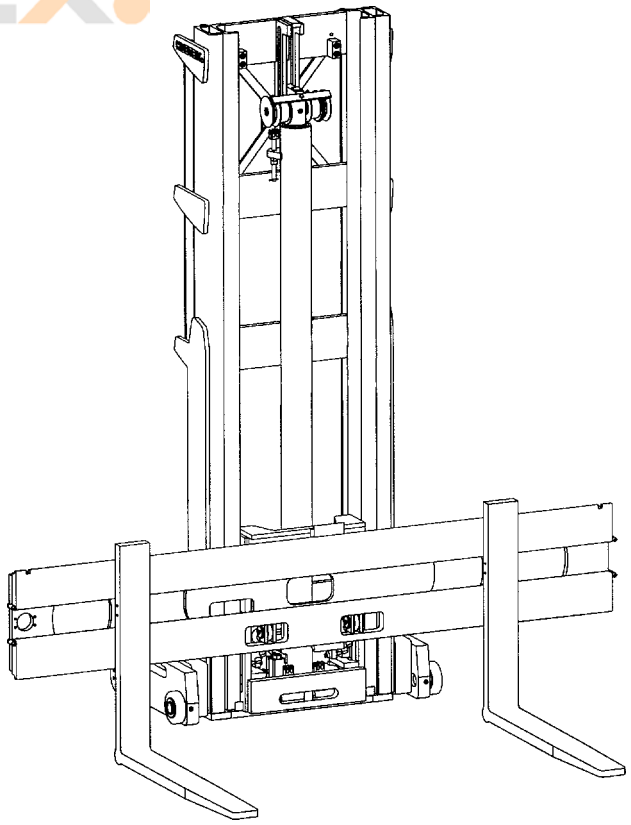

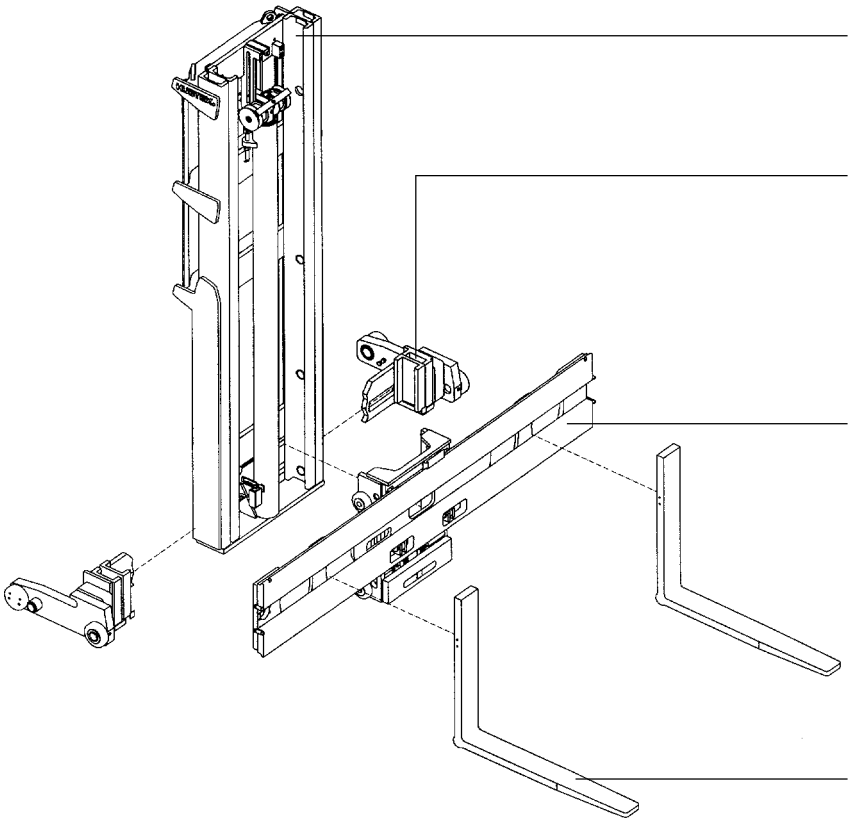

Hubgerüst
mast
mât

Ausschubschlitten
mast widening
elagissement du mat

Gabelträger
fork carrier
tablier porte fourche
Hydraulische Gabelverstellung (Option)
hydraulic fork adjustment (option)
rélage des fourches hydraulique (option)

Gabelzinken
fork
fourchon

Hubgerüst und Anbauten
lift mast and attachments
mât de levage et constructions surajoutées

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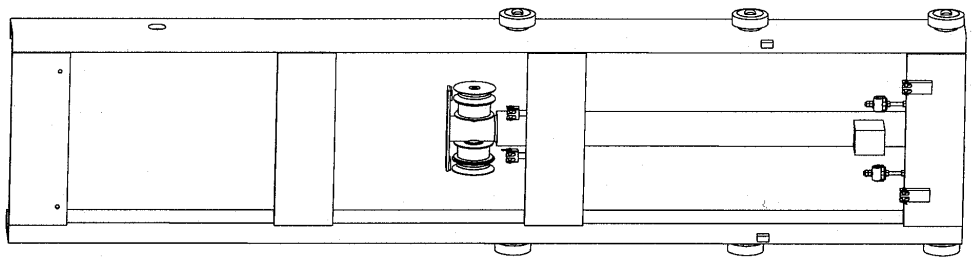
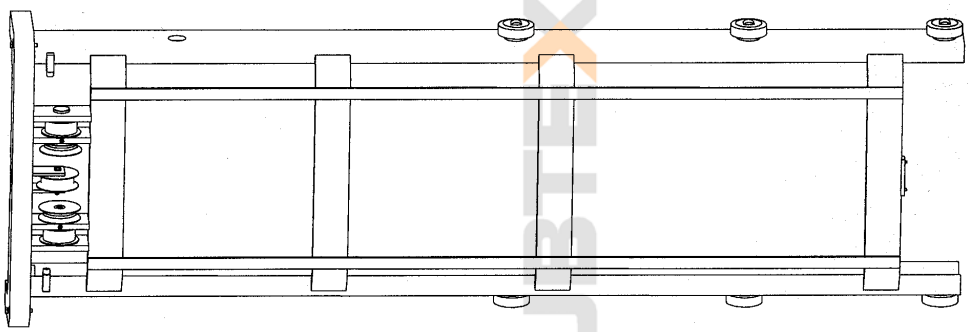
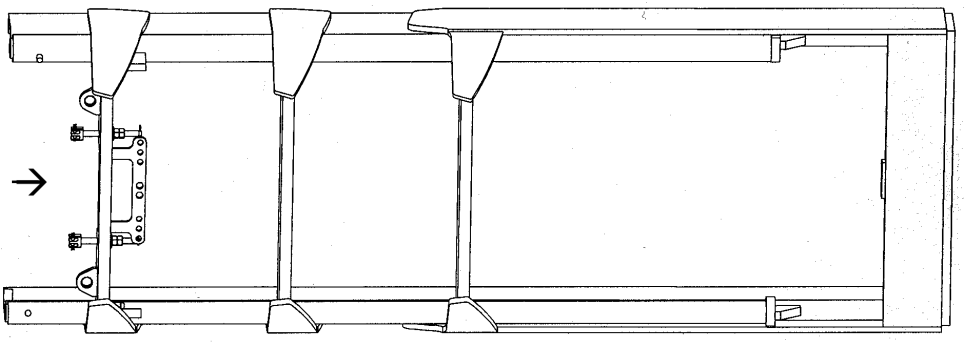


Innengerüst
inner lifting gantry
échafaudage intérieur



Mittengerüst
middle lift framing
cadre de levage central



Außengerüst
outer lifting gantry
bâti de levage extérieur

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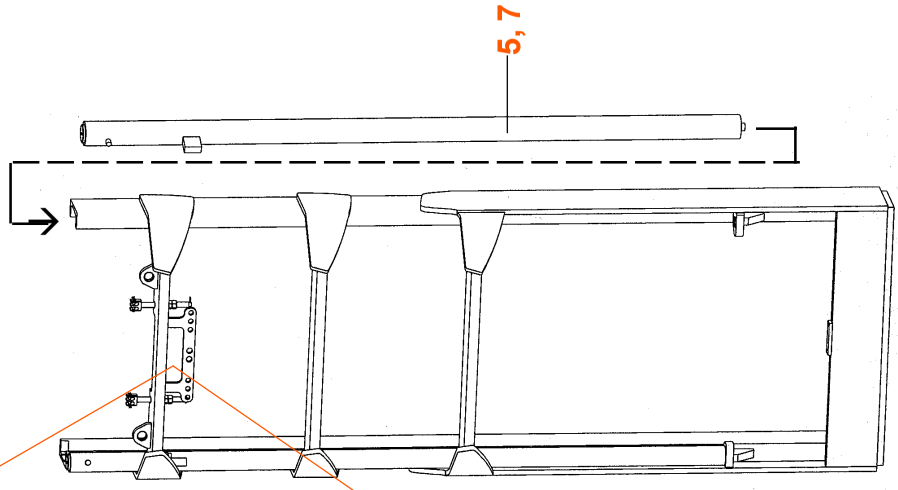
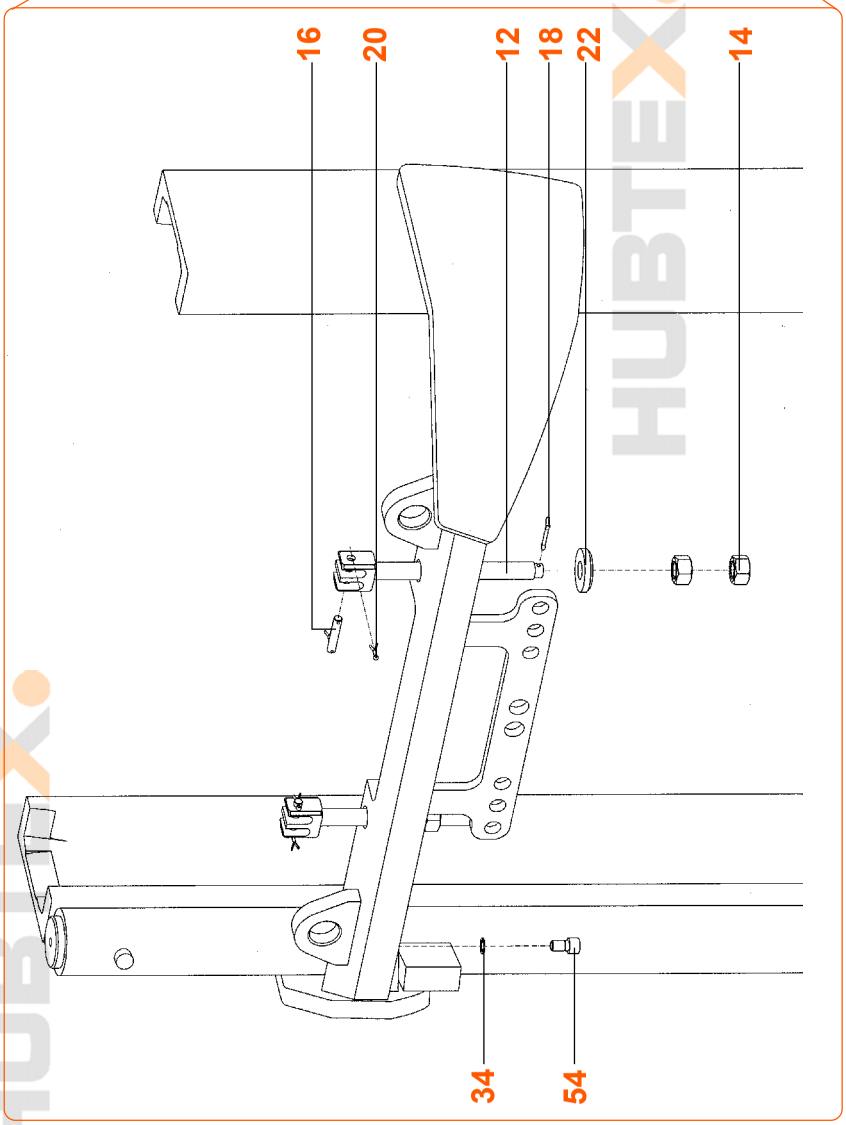


Außengerüst
outer lifting gantry
bâti de levage extérieur



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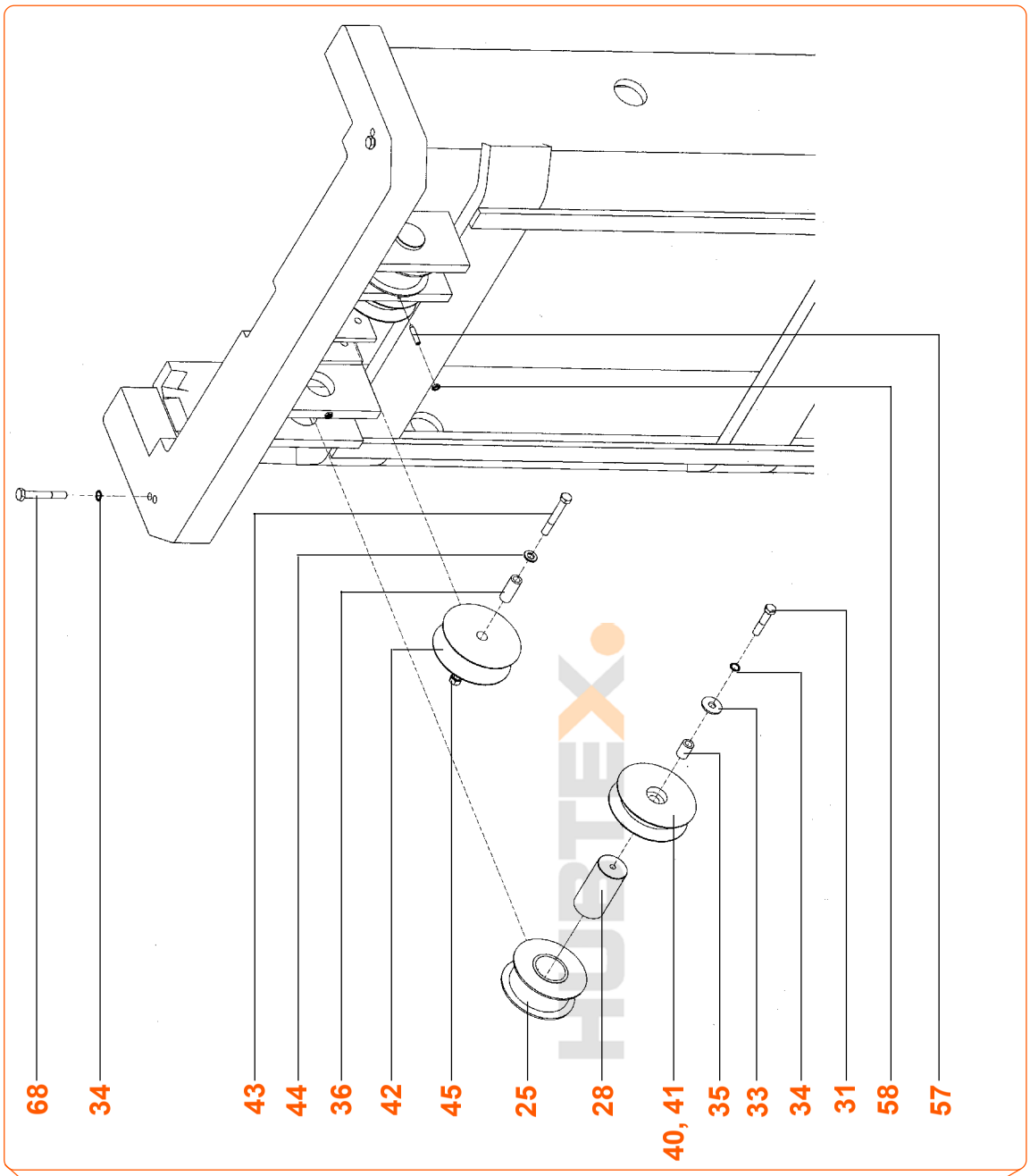

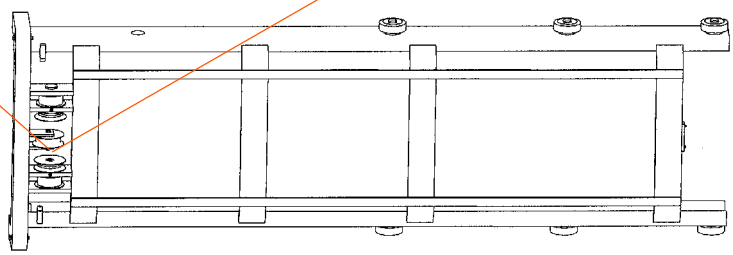

Mittengerüst
middle lift framing
cadre de levage central

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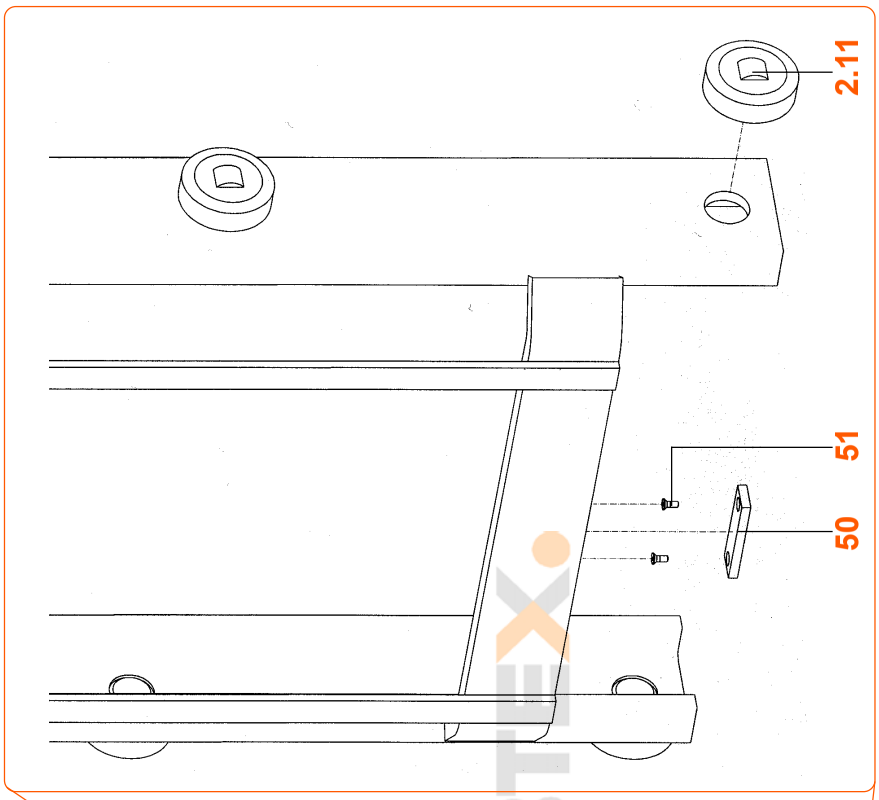

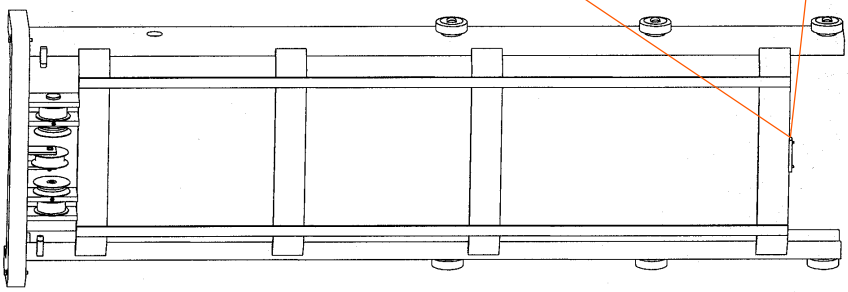

Mittengerüst
middle lift framing
cadre de levage central

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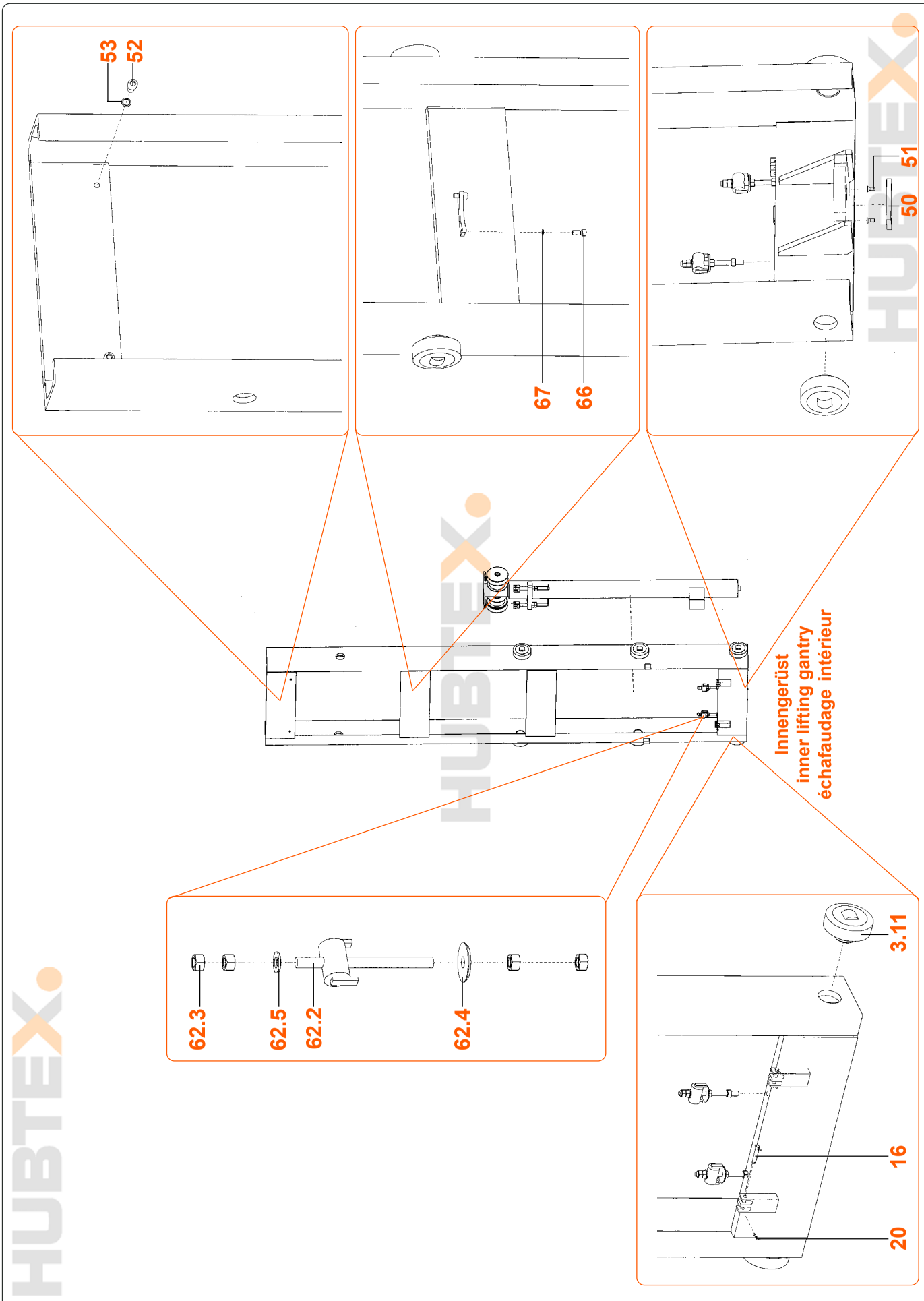

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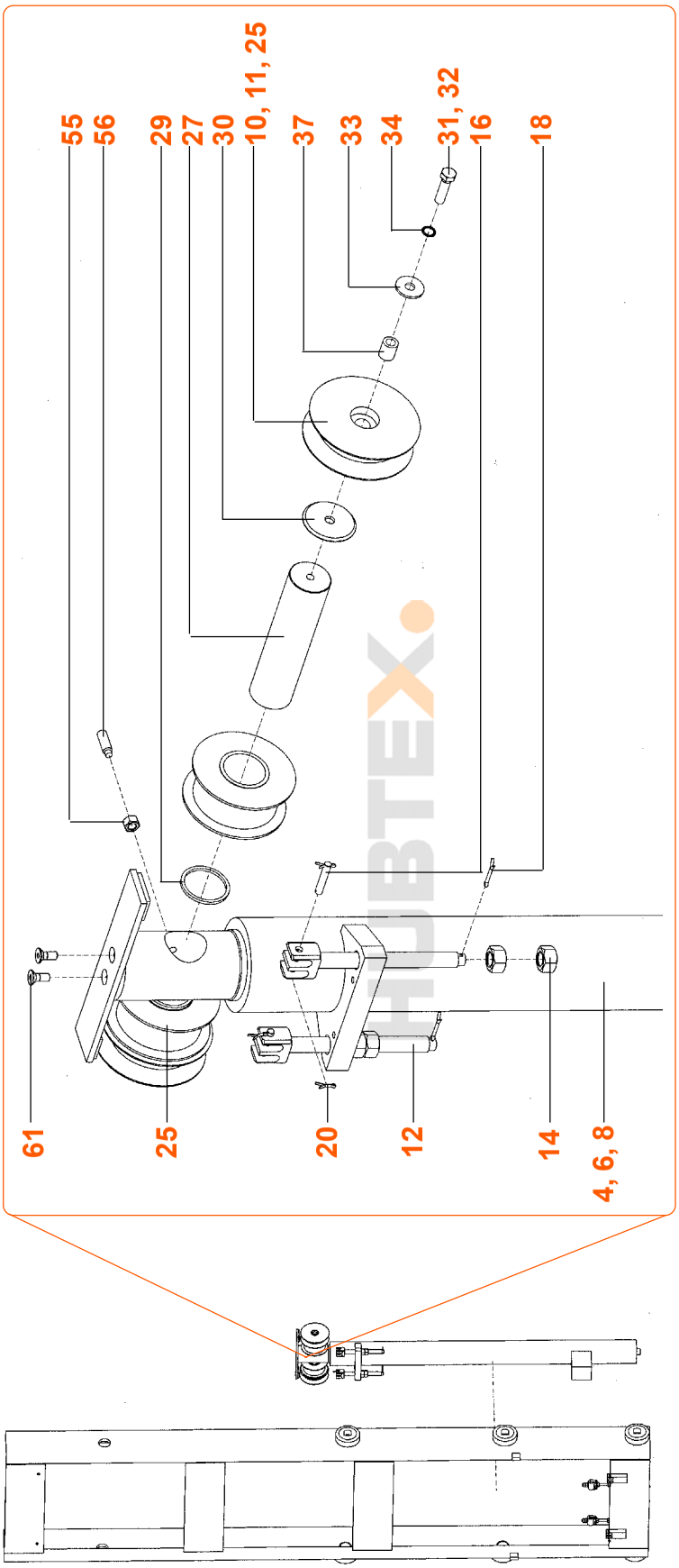

Innengerüst
inner lifting gantry
échafaudage intérieur

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Pos	Stck A	Stck B	Stck C	Teilebezeichnung	parts name	denomination	Bestellnummer order no. no. de commande
2.11	6	6	-	Außenring	outer ring	couronne extérieure	2575190
3.11	6	6	-	Außenring	outer ring	couronne extérieure	2575190
4	1	-	-	Hydraulikzylinder	hydraulic cylinder	cylindre hydrauilque	3708469
4	-	1	-	Hydraulikzylinder	hydraulic cylinder	cylindre hydrauilque	3708471
5	2	-	-	Hydraulikzylinder	hydraulic cylinder	cylindre hydrauilque	3708470
5	-	2	-	Hydraulikzylinder	hydraulic cylinder	cylindre hydrauilque	3708134
6	2	-	-	Leitungsbruchsicherung	line rupture safety valve	clapets de sûreté	3007680
6	-	2	-	Leitungsbruchsicherung	line rupture safety valve	clapets de sûreté	3007665
7	2	-	-	Leitungsbruchsicherung	line rupture safety valve	clapets de sûreté	3007680
7	-	2	-	Leitungsbruchsicherung	line rupture safety valve	clapets de sûreté	3007665
8	1	-	-	Senkbremsventil	flow control valve	régulateurs de débit	3006483
8	-	1	-	Senkbremsventil	flow control valve	régulateurs de débit	3006477
10	2	2	-	Kette	chain	chaîne	5475020
11	2	2	-	Kette	chain	chaîne	5475020
12	4	4	-	Schraube	screw	vis	2394001
14	8	8	-	Mutter	nut	écrou	2501119
16	8	8	-	Splintbolzen	cotter bolt	boulon à goupille fendue	5475024
18	4	4	-	Splint	cotter	goupille	2723050
20	16	16	-	Splint	cotter	goupille	2722520
22	2	2	-	Scheibe	disk	disque	I3000938 E
25	4	4	-	Kettenrolle	chain roller	rouleau de chaine	5477050
27	1	1	-	Rollenachse	axle	essieu	I4001094 C
28	2	2	-	Rollenachse	axle	essieu	I4001285
29	-	2	-	Scheibe	disk	disque	I4001808 F
30	2	2	-	Endscheibe	disk	disque	I3000938 D
31*)	2	2	-	Schraube	screw	vis	2023139
32*)	1	1	-	Schraube	screw	vis	2023089
33	4	4	-	Scheibe	disk	disque	2607120
34	9	9	-	Schnorr-Sicherung	locking ring	circlip	2623504
35	2	2	-	Seilrollenlager	robe roller	rouleau de corde	I4005377 B
36	1	1	-	Seilrollenlager	robe roller	rouleau de corde	I4005377 C

Pos	Stck A	Stck B	Stck C	Teilebezeichnung	parts name	denomination	Bestellnummer order no. no. de commande
37	2	2	-	Seilrollenlager	robe roller	rouleau de corde	I4005377 A
38	2	2	-	Schraube	screw	vis	2013049
40*)	2	2	-	Doppelseilrolle	double robe roller	poulie double	I4000915 B
41*)	2	2	-	Doppelseilrolle	double robe roller	poulie double	I4000915 A
42	1	1	-	Doppelseilrolle	double robe roller	poulie double	I4001286
43	1	1	-	Schraube	screw	vis	2013109
44	1	1	-	Scheibe	disk	disque	2601159
45	1	1	-	Mutter	nut	écrou	2501079
50	2	2	-	Endlagendämpfung	mast reach damper	fin de course de pousser	I4000046
51	4	4	-	Schraube	screw	vis	2082549
52	4	4	-	Schraube	screw	vis	2064009
53	4	4	-	Schnorr-Sicherung	locking ring	circlip	2623506
54	2	2	-	Schraube	screw	vis	2063029
55	1	1	-	Gewindestift	setscrew	goupille fileteée	2153559
56	1	1	-	Mutter	nut	écrou	2541079
57	2	2	-	Gewindestift	setscrew	goupille fileteée	2152579
58	2	2	-	Mutter	nut	écrou	2501059
61	2	2	-	Schraube	screw	vis	2083049
62.2	2	2	-	Gewindestange	thread rod	tige filetée	2280190
62.3	8	8	-	Mutter	nut	écrou	2501079
62.4	2	2	-	Scheibe	disk	disque	I4000129 G
62.5	2	2	-	Scheibe	disk	disque	2601159
66	2	2	-	Schraube	screw	vis	2062569
67	2	2	-	Schnorr-Sicherung	locking ring	circlip	2623503
68	2	2	-	Schraube	screw	vis	2013099
75.1**)	2	2	-	Spannschraube	screw	vis	I3001140
75.2**)	4	4	-	Mutter	nut	écrou	2501119
75.3**)	2	2	-	Feder	spring	ressort	2814482
75.4**)	2	2	-	Scheibe	disk	disque	I4001290 A

Pos. 75.1, 75.2, 75.3, 75.4 ohne Darstellung / without drawing/ non dessiné
*) Option / option / option
**) nur bei Plattform / only for platform / seulement pour plateforme

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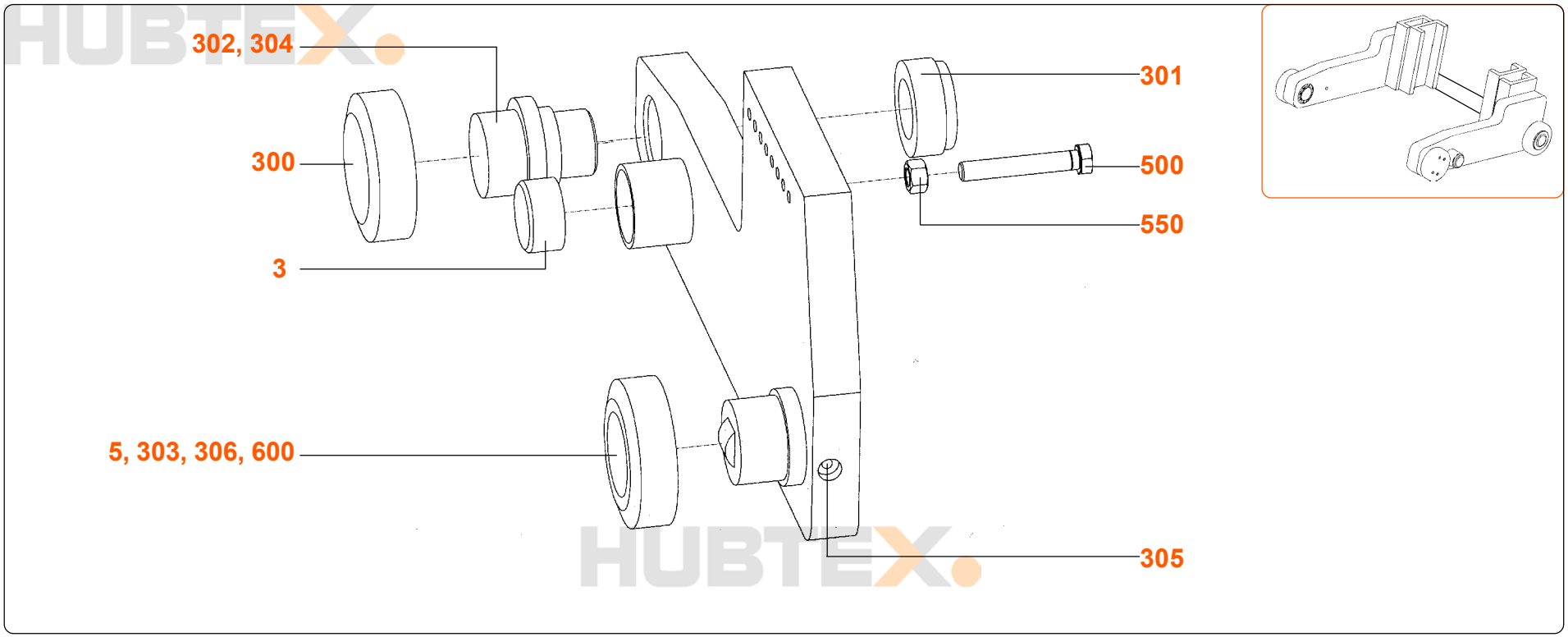
Ausschubschlitten
mast widening
elagissement du mat



Pos	Stck	Teilebezeichnung	parts name	denomination	Bestellnummer order no. no. de commande
3	4	Führungsstein	guide stone	pierre entraînement	40009750
5	2	Scheibe	disk	disque	I4000129 P
300	2	Außenring	outer ring	couronne extérieure	2575090
301	2	Zapfen	journal	pivot	2576040
302	2	Spannsatz	tensioning set	jeu de serrage	2826020
303	2	Außenring	outer ring	couronne extérieure	2575140
304	2	Kegelschmiernippel	hydraulic-tube lubricating nipple	nipple de graissage à cone	6902750
305	2	Kegelschmiernippel	hydraulic-tube lubricating nipple	nipple de graissage à cone	6902780
306	10	Scheibe	disk	disque	5535090
500	2	Schraube	screw	vis	2024259
550	2	Mutter	nut	écrou	2501099
600	2	Sicherungsring	locking ring	circlip	2401690

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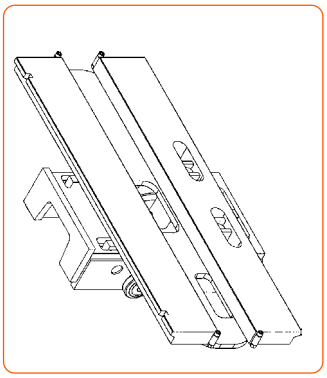
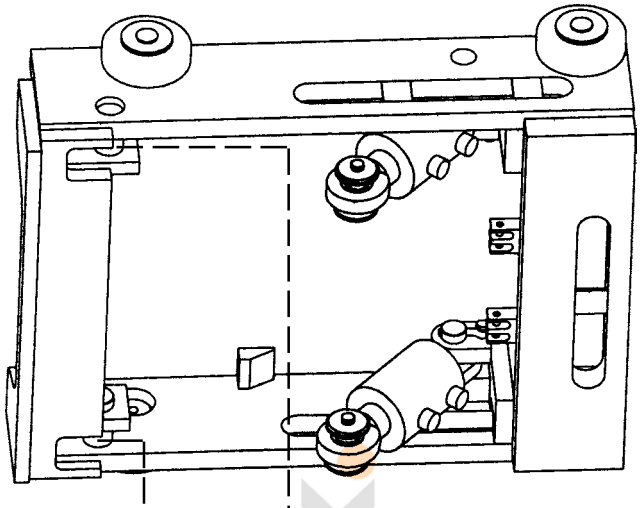
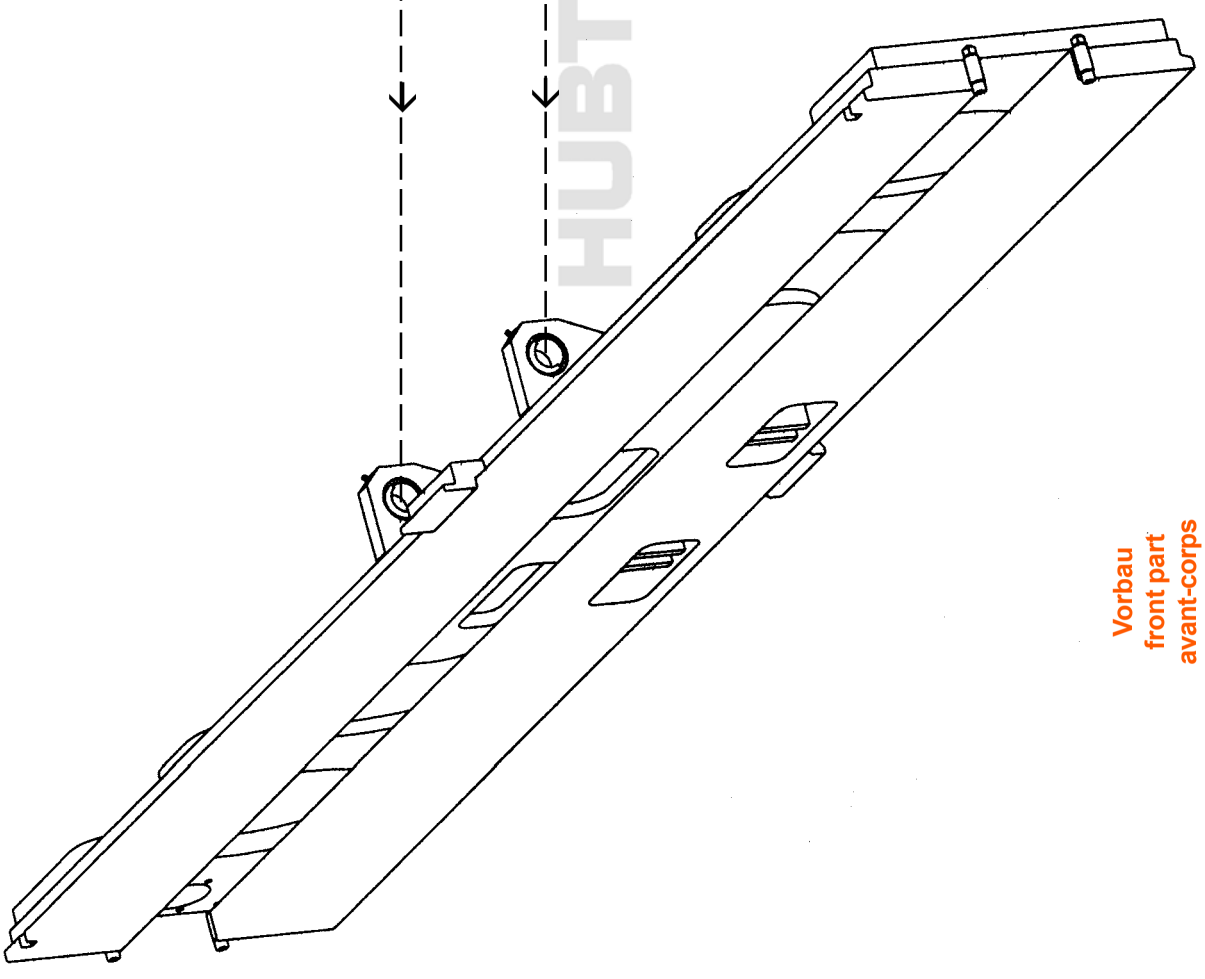




Support
support
support



Vorbau
front part
avant-corps

Gabelträger
fork carrier
tablier porte-fourches

I1001658
TD-26-0197-00

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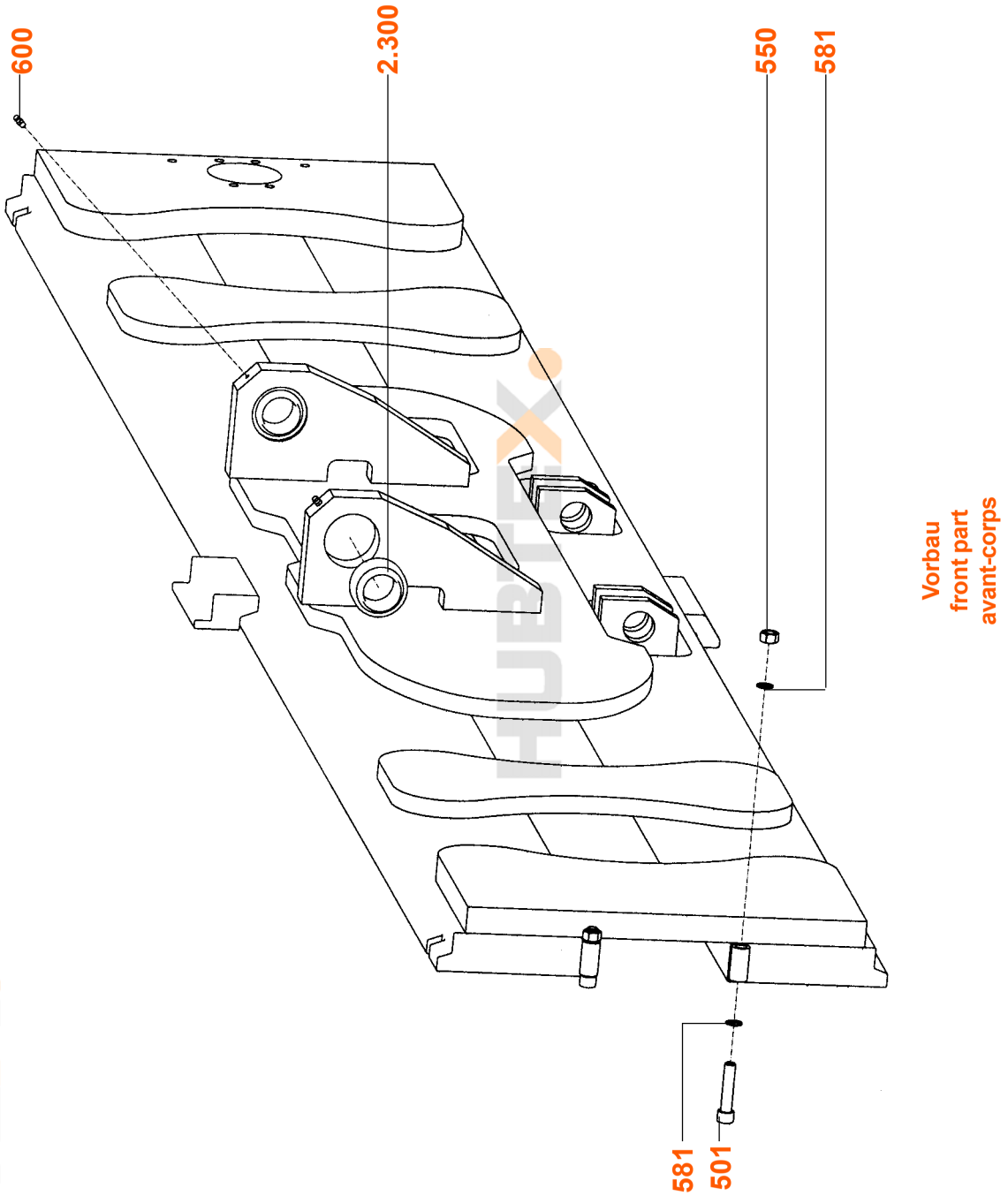

Gabelträger
fork carrier
tablier porte-fourches

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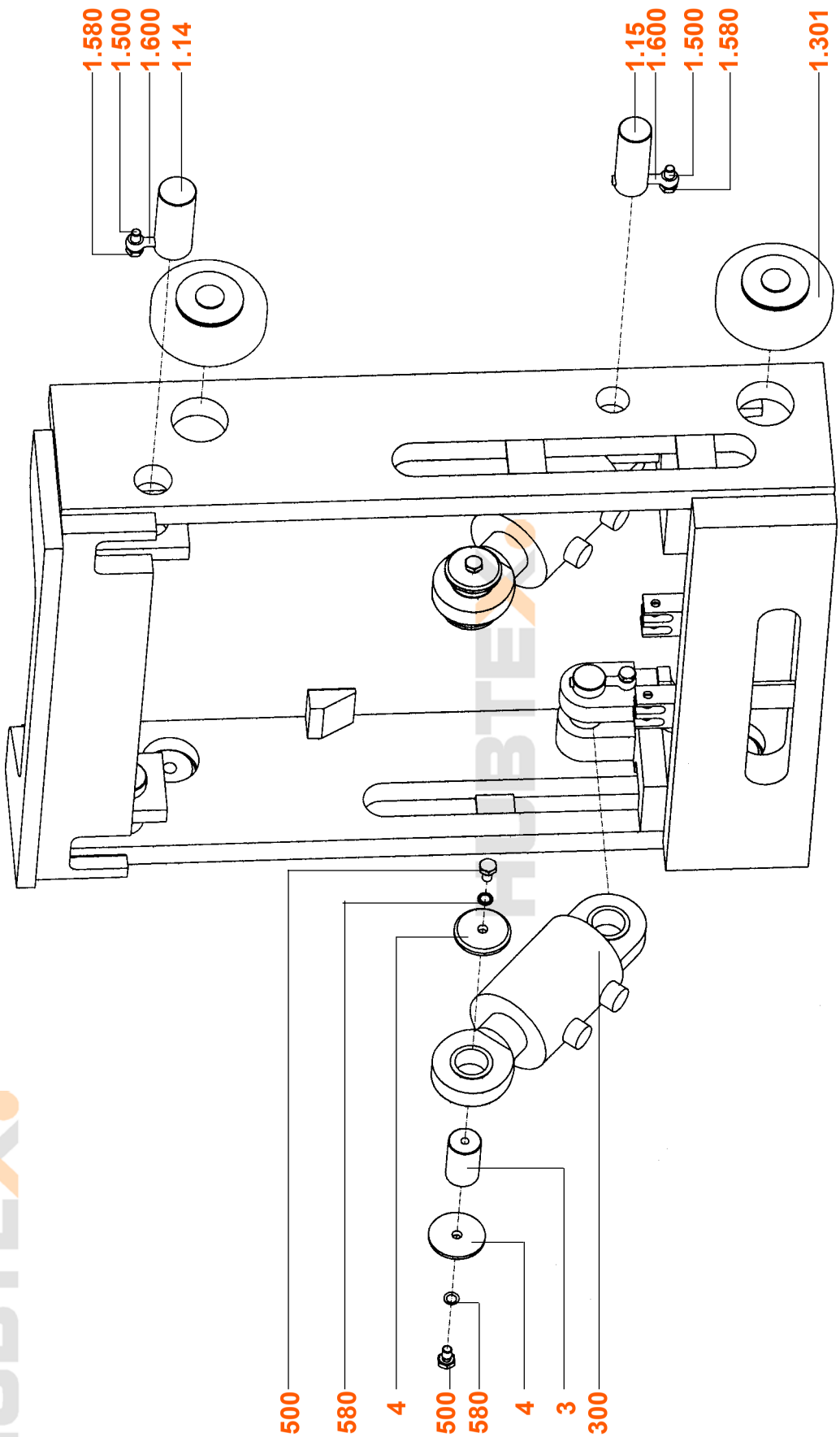

Gabelträger
fork carrier
tablier porte-fourches

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Gabelträger
fork carrier
tablier porte-fourches

Pos	Stck	Teilebezeichnung	parts name	denomination	Bestellnummer order no. no. de commande
1.14	2	Bolzen	pin	boulon	I4005443 H
1.15	2	Bolzen	pin	boulon	I4005443 G
1.301	4	Außenring	outer ring	couronne extérieure	2575190
1.500	4	Schraube	screw	vis	2022589
1.580	4	Scheibe	disk	disque	2623503
1.600	4	Schraube	screw	vis	2307329
2.300	2	Gelenklager	swing bearing	appui articulé	5517770
3	2	Bolzen	pin	boulon	I4000214
4	4	Scheibe	disk	disque	I4000129 Q
300	2	Hydraulikzylinder	hydraulic cylinder	cylindre hydraulique	3708297
500	4	Schraube	screw	vis	2022549
501	4	Schraube	screw	vis	2063099
550	4	Mutter	nut	écrou	2501079
580	4	Scheibe	disk	disque	2623503
581	8	Scheibe	disk	disque	2623504
600	2	Kegelschmiernippel	hydraulic-tube lubricating nipple	nipple de graissage à cone	6902750

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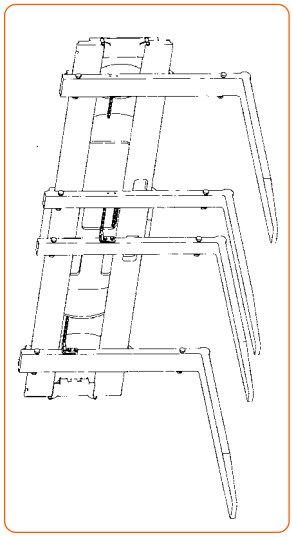

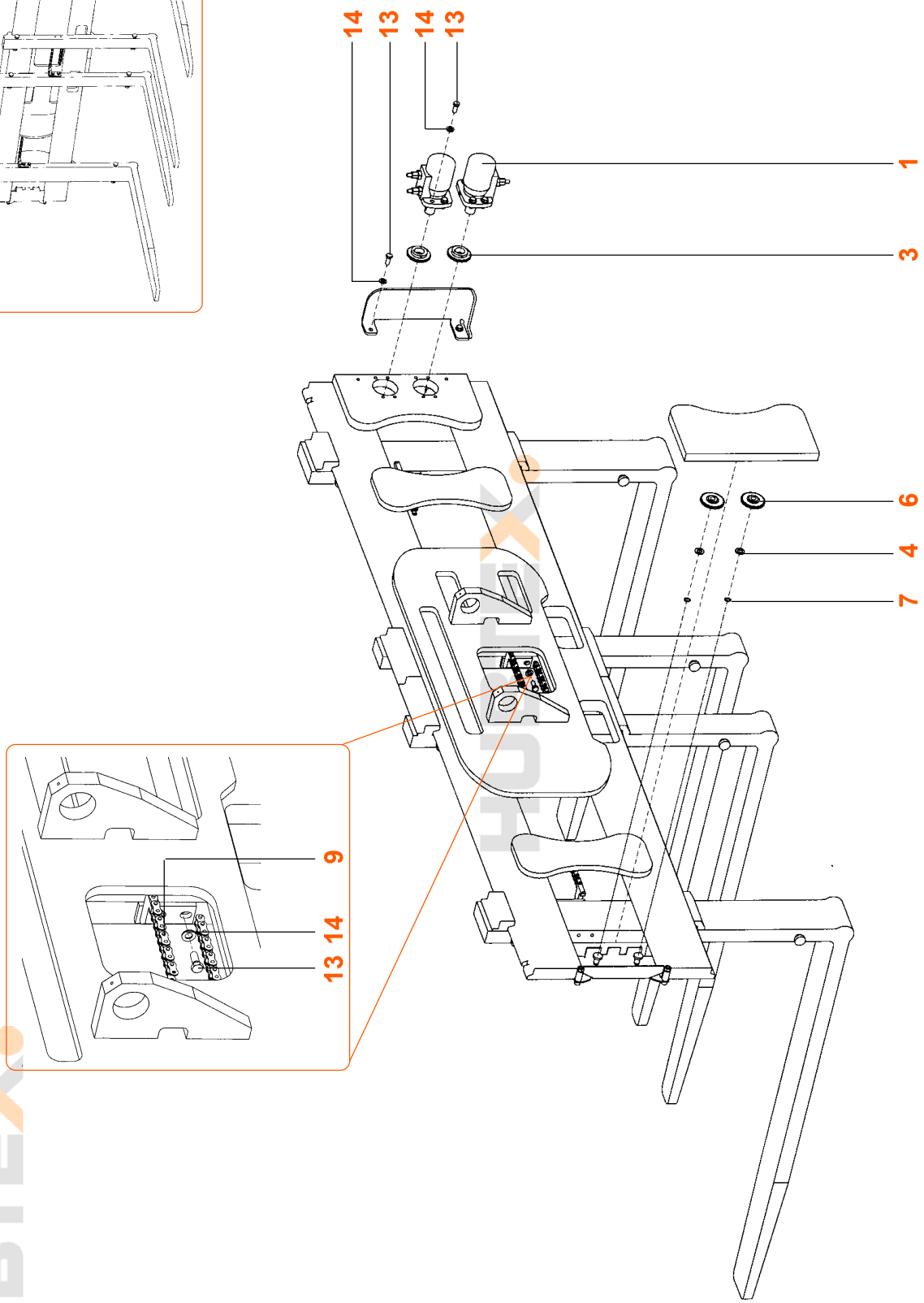

Gabelverstellung
fork adjustment
relage des fourches

I1001660
TD-26-0198-00

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Leere Seite
Blank Side

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Gabelverstellung
fork adjustment
relage des fourches

Pos	Stck	Teilebezeichnung	parts name	denomination	Bestellnummer order no. no. de commande
1	2	Hydraulikmotor	hydraulic motor	moteur hydraulique	3041069
3	2	Kettenrad	chain wheel	roue la chaîne	I4000218
4	2	Scheibe	disk	disque	2601179
6	2	Kettenspannrad	chain adjusting wheel	roue à tendre la chaîne	5451150
7	2	Sicherungsring	lockwasher	arrêt	2401140
9	2	Kette	chain	chaîne	5471030
13	18	Schraube	screw	vis	2023109
14	18	Scheibe	disk	disque	2623504

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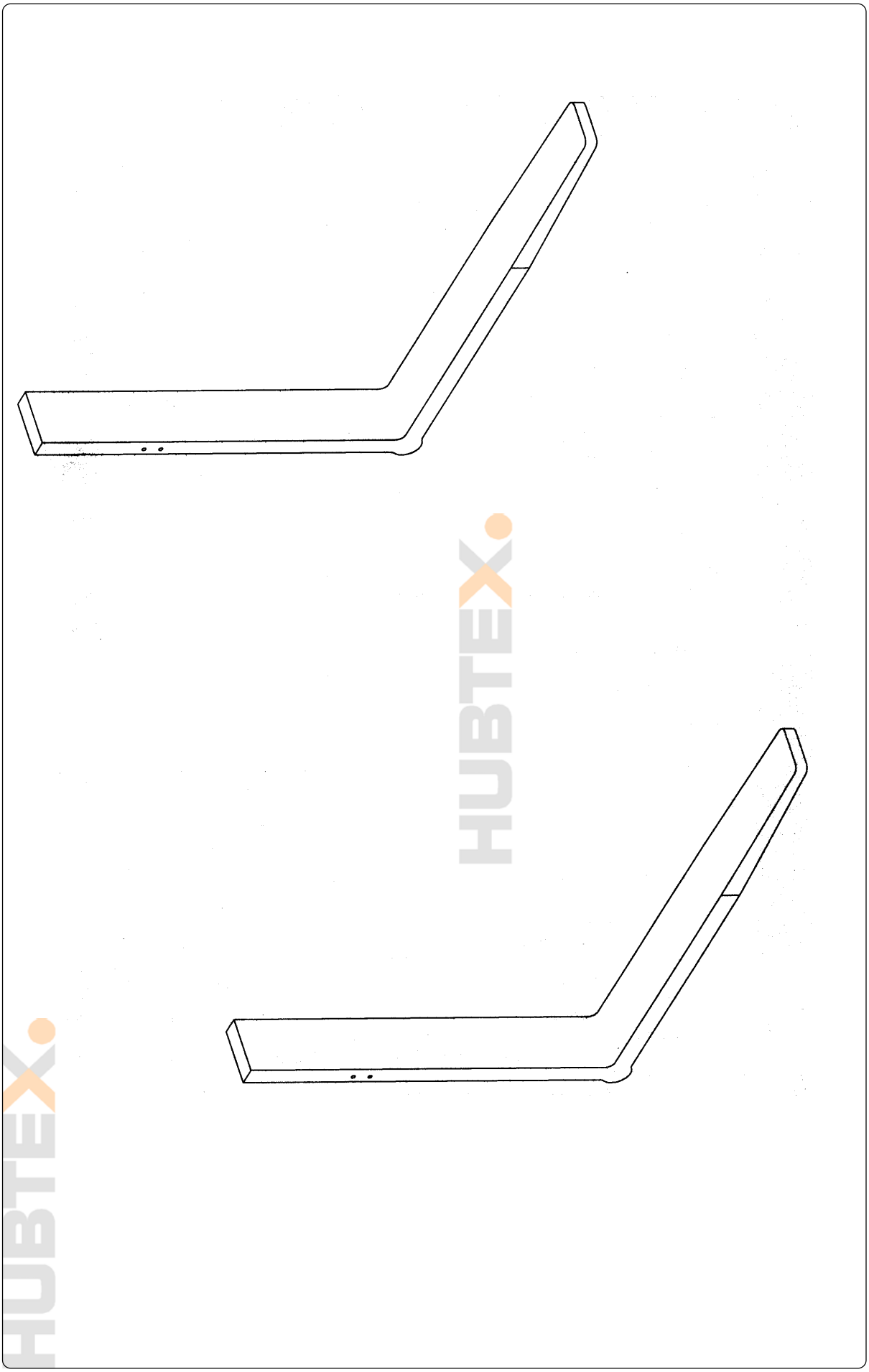

Pos	Paar	Teilebezeichnung	parts name	denomination	Bestellnummer order no. de commande
1	1	Gabelzinken	fork	fourchon	40018541

Gabelzinken
fork
fourchon

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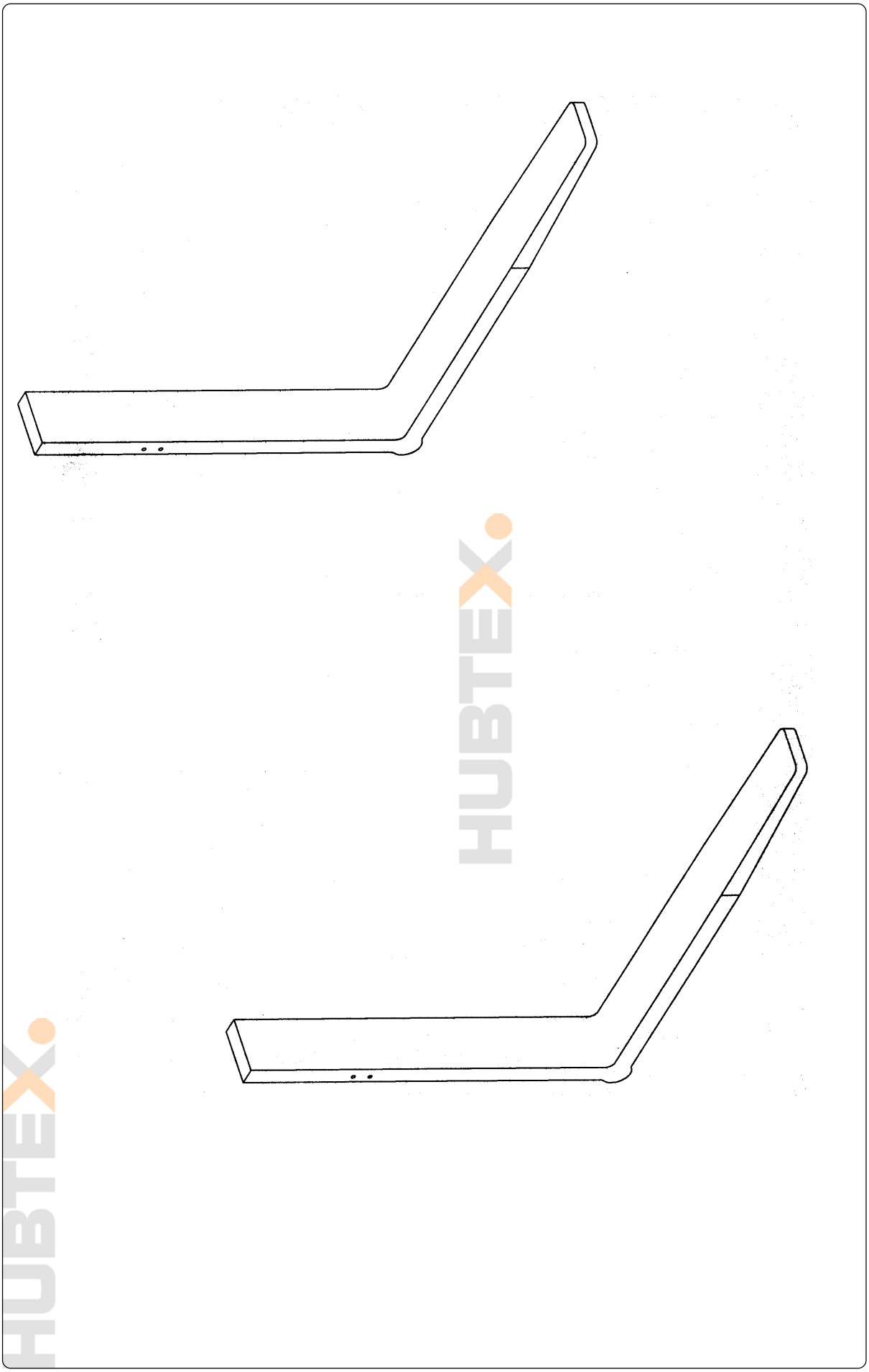

Pos	Paar	Teilebezeichnung	parts name	denomination	Bestellnummer order no. de commande
1	1	Gabelzinken	fork	fourchon	40018882

Gabelzinken
fork
fourchon

TD-25-9999-00

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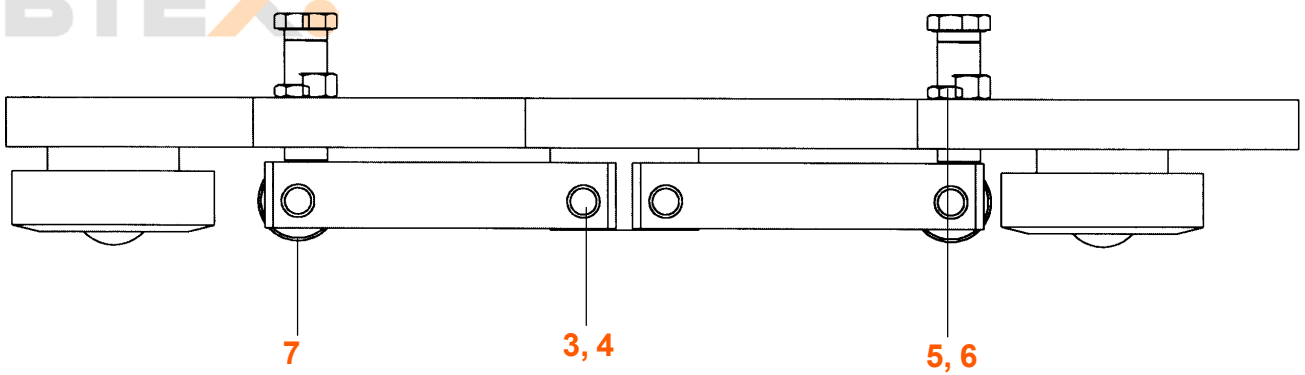
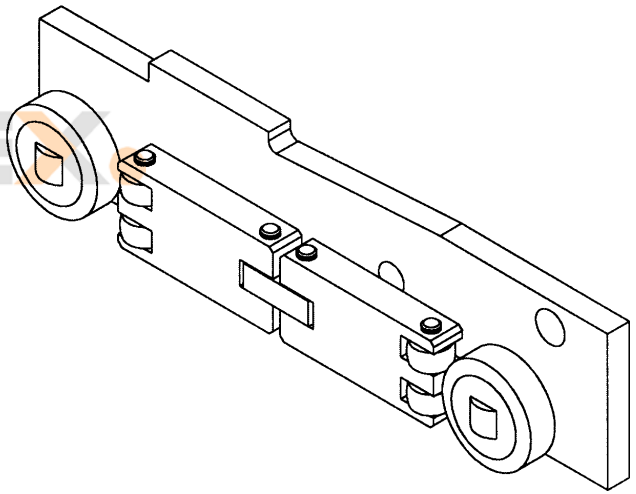
Seitenführung
guiding device
entrainement





Pos	Stck	Teilebezeichnung	parts name	denomination	Bestellnummer order no. no. de commande
3	4	Achse	axle	arbre	I4000239
4	8	Sicherungsring	lockwasher	arrêt	2401180
5	2	Schraube	screw	vis	2024199
6	2	Mutter	nut	écrou	2511059
7	4	Außenring	outer ring	couronne extérieure	5538540

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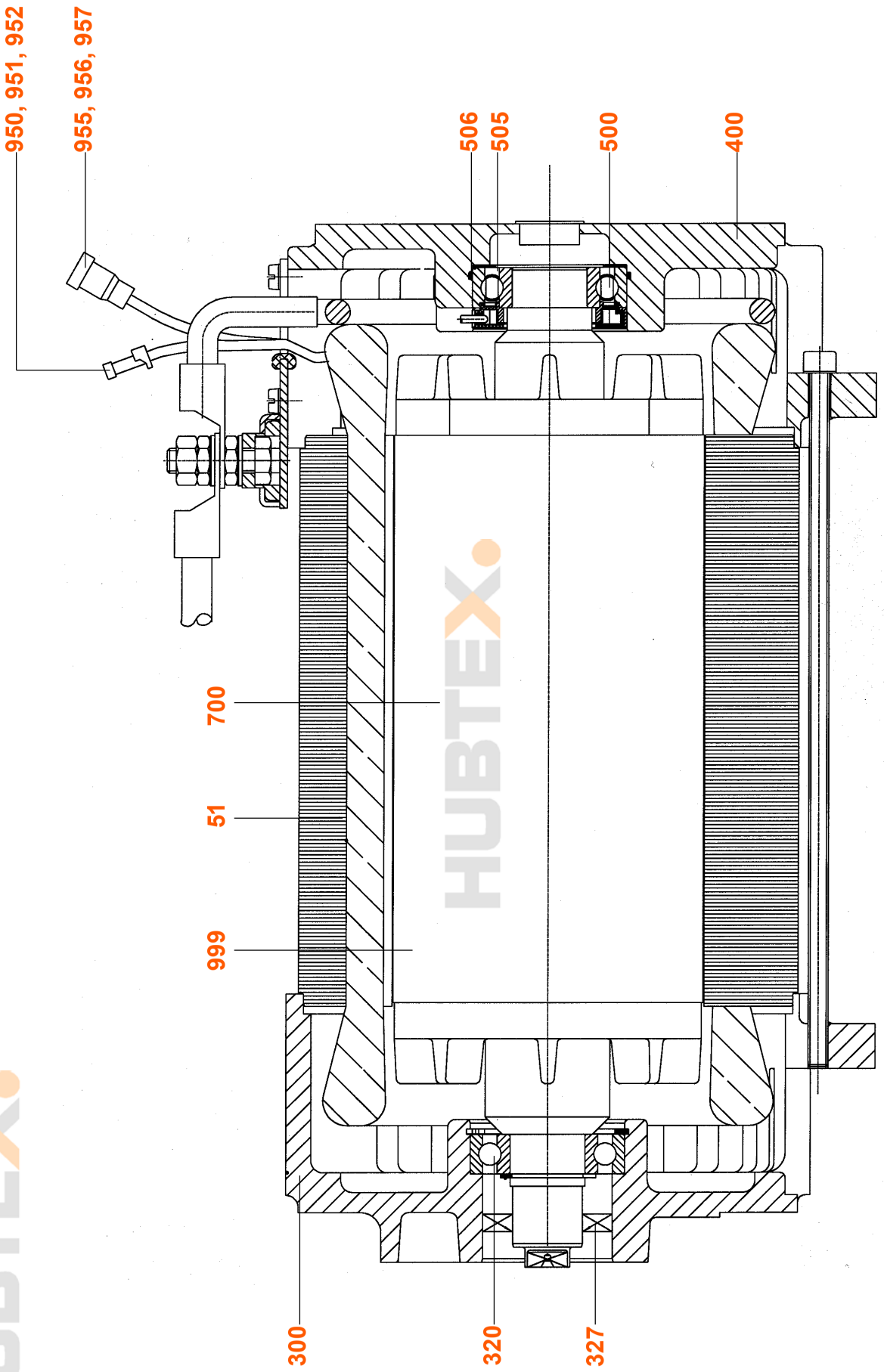

Elektrohydropumpe
electrohydraulic pump
pompe électrohydraulique

3001879
TD-28-1028-01

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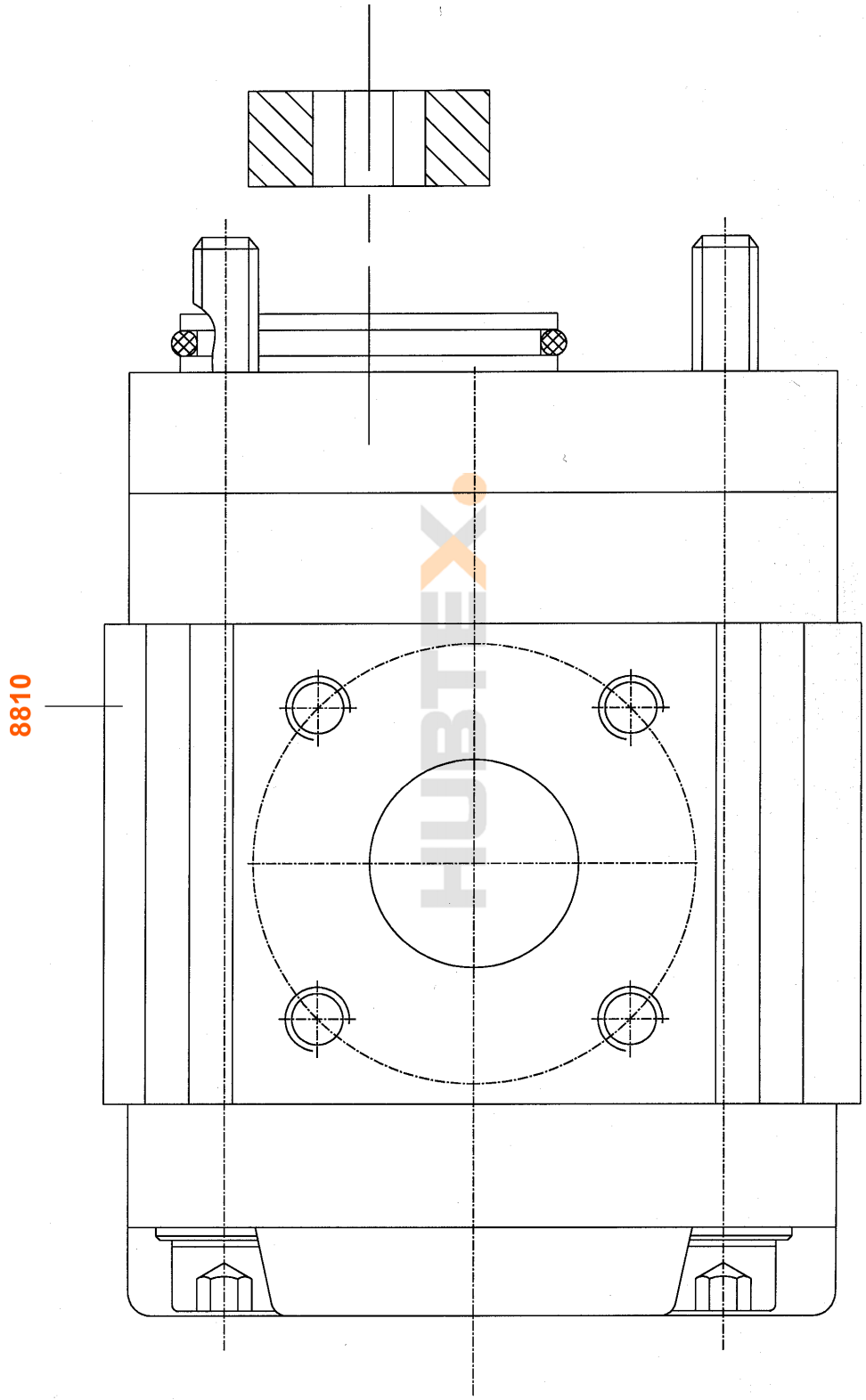

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Elektrohydropumpe
electrohydraulic pump
pompe électrohydraulique

Pos	Stck	Teilebezeichnung	parts name	denomination	Bestellnummer order no. / no. de commande
51	1	Stator	stator	stator	9951614
300	1	A-Lagerschild	end shield	flasque	9951631
320	1	Kugellager	ball bearing	roulement à billes	5509551
327	1	Wellendichtring	rotary shaft seal	bague à lévres avec ressort	9951615
400	1	B-Lagerschild	end shield	flasque	9951632
500	1	Sensorlager	bearing	palier	9951616
505	1	Kugellagerausgleichsscheibe	disk	disque	9951294
506	1	O-Ring	o-ring seal	o-ring	9951617
700	1	Rotor	rotor	rotor	9951297
950	1	Steckergehäuse	connector shell	boîtier de connexion	9951618
951	2	Flachstecker	flat plug	fiche plate	9951619
952	2	Steckerdichtung	packing	joint	9951620
955	1	Steckergehäuse	connector shell	boîtier de connexion	9951621
956	4	Flachstecker	flat plug	fiche plate	9951619
957	4	Steckerdichtung	packing	joint	9951620
999	1	Motor	motor	moteur	9951622
8810	1	Pumpe	pump	pompe	9951623

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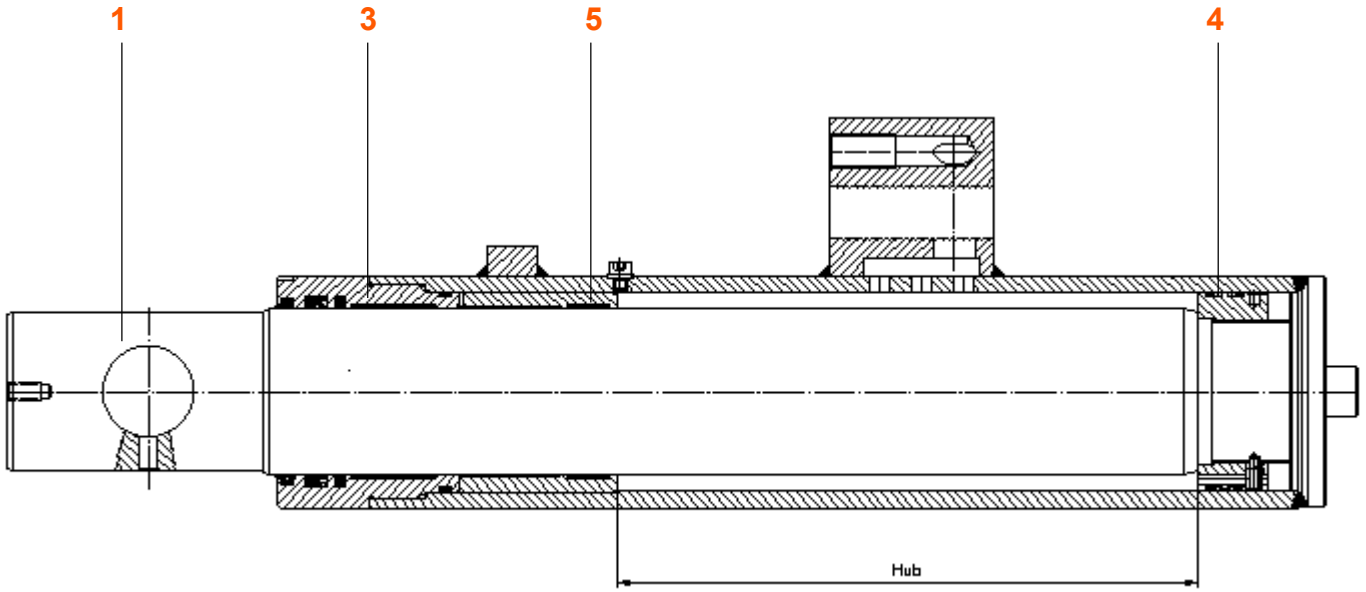
Hydraulikzylinder
hydraulic cylinder
cylindre hydraulique



Pos	Stck	Teilebezeichnung	parts name	denomination	Hub (mm)	Bestellnummer order no. no. de commande
1	1	Kolbenstange	piston rod	tige de piston		3707555
2	1	Mutter	nut	écrou		9951531
4	1	Ring	guide ring	bague de guidage		9951530
5	1	Buchse	sleeve	bague		9951529
	1	**Dichtungssatz**	**packing set**	**jeu de garniture**		**6492067**

3708469
TD-28-0303-00

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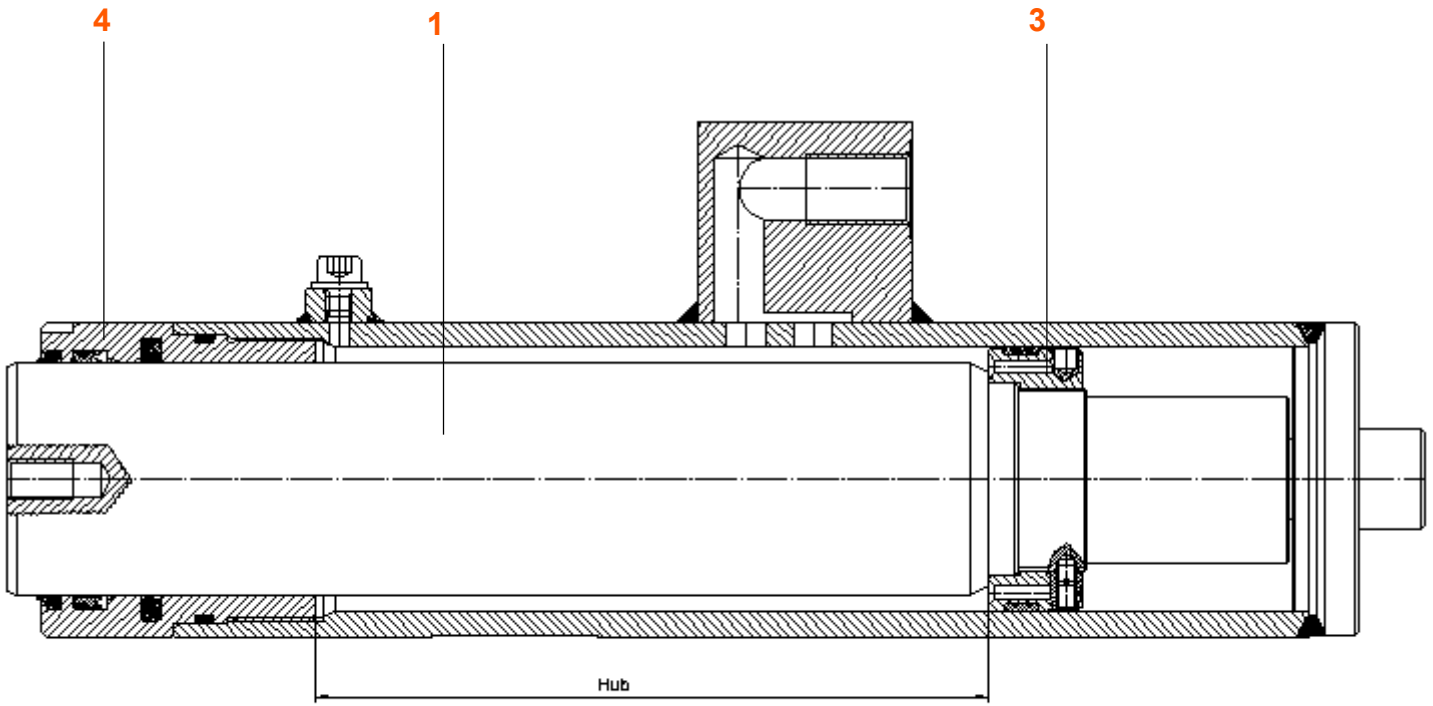
Hydraulikzylinder
hydraulic cylinder
cylindre hydraulique



Pos	Stck	Teilebezeichnung	parts name	denomination	Hub (mm)	Bestellnummer order no. no. de commande
1	1	Kolbenstange	piston rod	tige de piston		3707561
3	1	Ring	guide ring	bague de guidage		3707560
4	1	Mutter	nut	écrou		3707554
	1	**Dichtungssatz**	**packing set**	**jeu de garniture**		**6492154**

3708470
TD-28-0304-00

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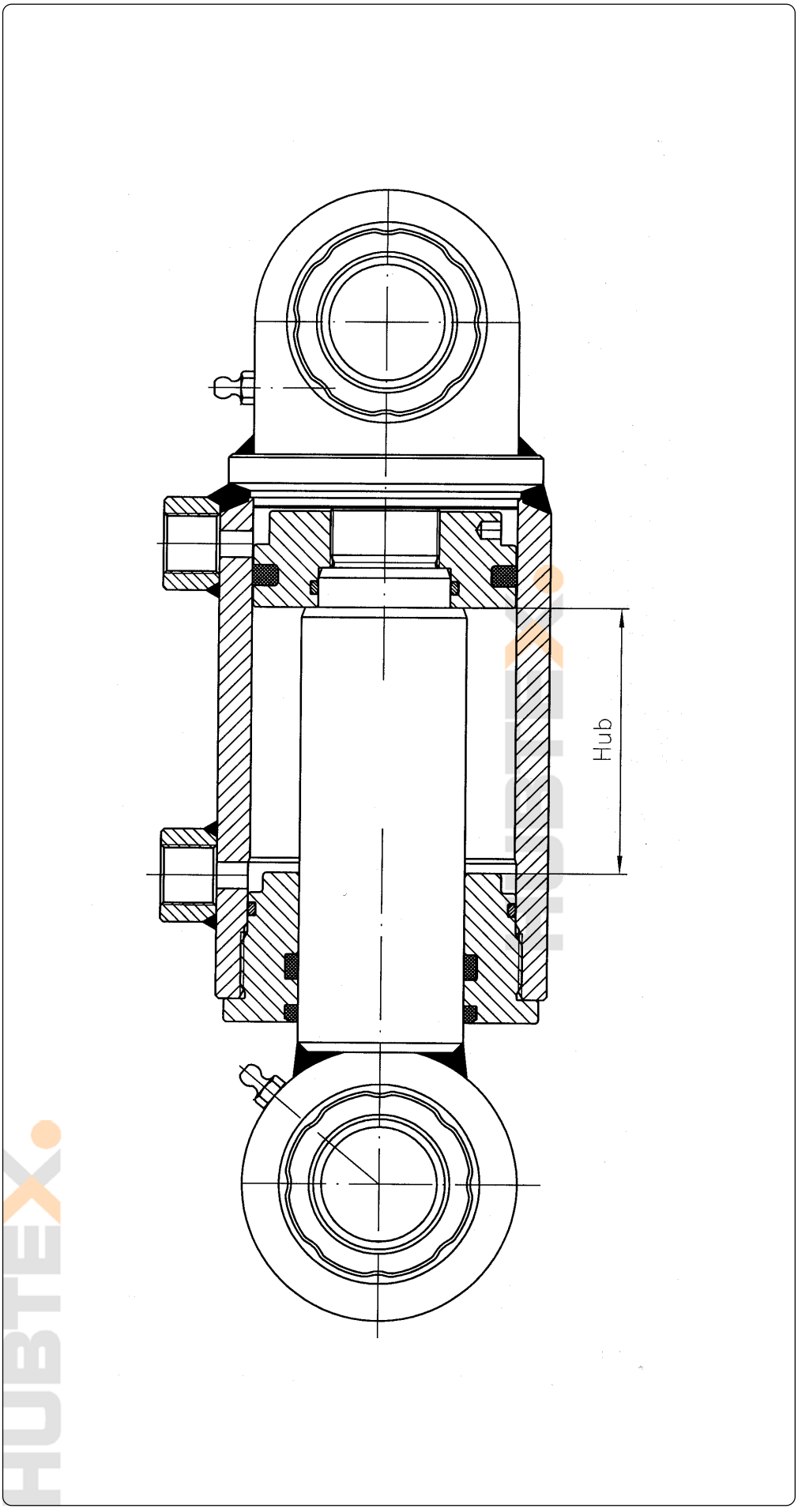

Teilebezeichnung	parts name	denomination	Hub (mm)	Bestellnummer order no. de commande
Hydraulikzylinder kompl.	hydraulic cylinder compl.	cylindre hydraulique compl.	80	3708008
H ydraulikzylinder kompl.	hydraulic cylinder compl.	cylindre hydraulique compl.	105	3708112
Hydraulikzylinder kompl.	hydraulic cylinder compl.	cylindre hydraulique compl.	60	3708253
Hydraulikzylinder kompl.	hydraulic cylinder compl.	cylindre hydraulique compl.	53	3708348
Hydraulikzylinder kompl.	hydraulic cylinder compl.	cylindre hydraulique compl.	45	3708297
Dichtungssatz	**packing set**	**jeu de garniture**		**6491017**

Hydraulikzylinder
hydraulic cylinder
cylindre hydraulique

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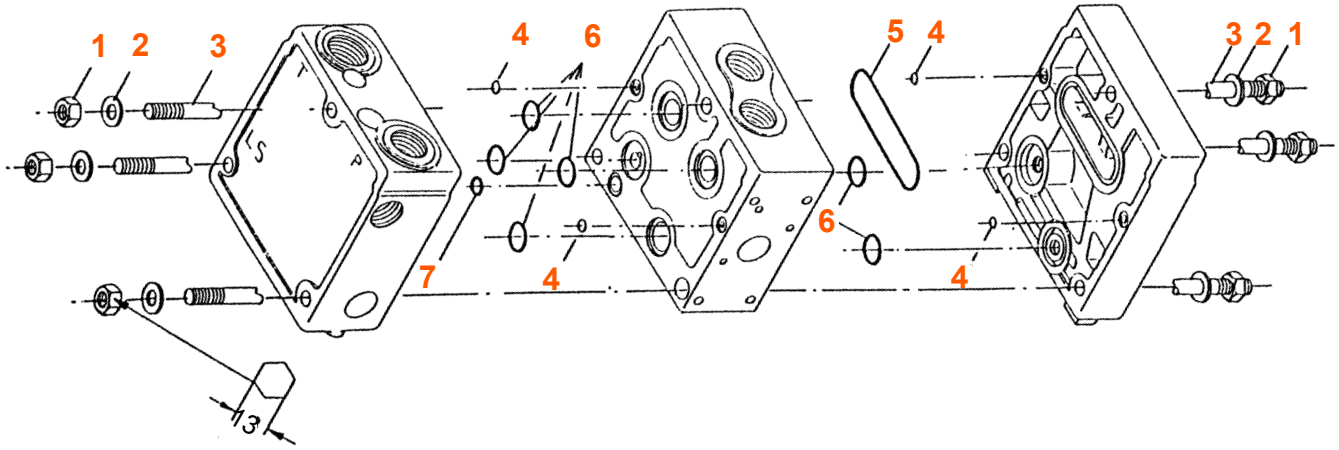
Proportionalsteuerblock
prop. control block
bloc de commande prop.



Pos	Stck	Teilebezeichnung	parts name	denomination	Bestellnummer order no. no. de commande
1	6	Mutter	nut	écru	
2	6	Scheibe	washer	disque	
3	3	Stehbolzen	stay bolt	boulon fileté	
4*	10	O - Ring	o - ring	o - ring	
5*	1	O - Ring	o - ring	o - ring	
6*	18	O - Ring	o - ring	o - ring	
7*	4	O - Ring	o - ring	o - ring	
	1	Dichtungssatz bestehend aus Pos.4 -7	packing set consist of pos 4 - 7	jeu de garniture consiste de pos.4 - 7	6475570
	1	Zusammenbausatz bestehend aus Pos.1 - 7	set consist of po.1 - 7	jeu consiste de pos.1 - 7	3003902

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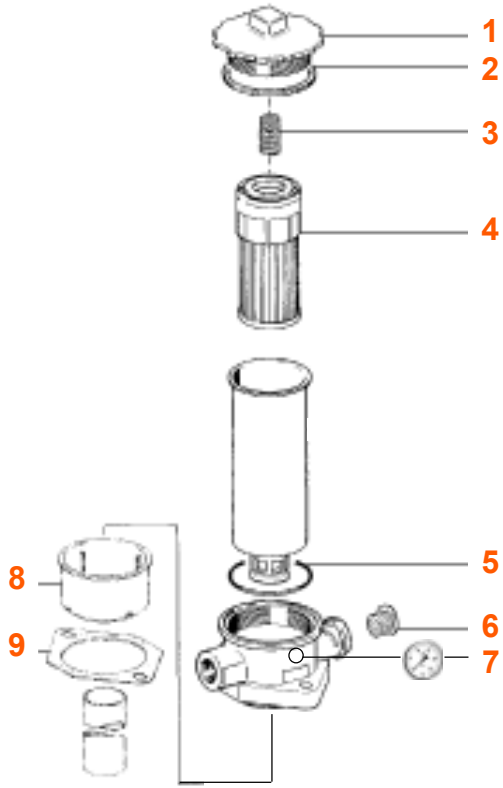
Rücklauffilter
return filter
filtre à retour



Pos	Stck	Teilebezeichnung	parts name	denomination	Bestellnummer order no. no. de commande
1	1	Deckel kpl.	cover compl.	couvercle compl.	3010283
2	1	Flachdichtung	flat packing	garniture plate	3010245
3	1	Feder	spring	boudin	3010246
4	1	Filterelemet	filter element	élément filterant	3010162
5	1	O-Ring	O-ring	O-ring	3010247
6	1	Belüftungsfilter	filter	filtre	3010289
7	1	Manometer	manometer	manométre	3010238
8	1	Ölabscheider	oil seperator	raclette à huile	3010288
9	1	Flachdichtung	flat packing	garniture plate	3010284

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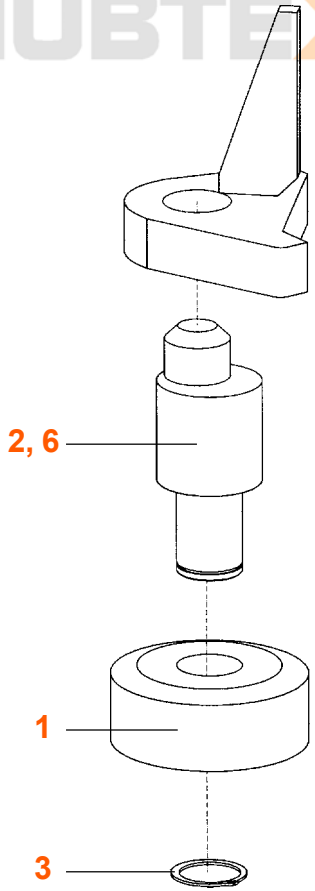
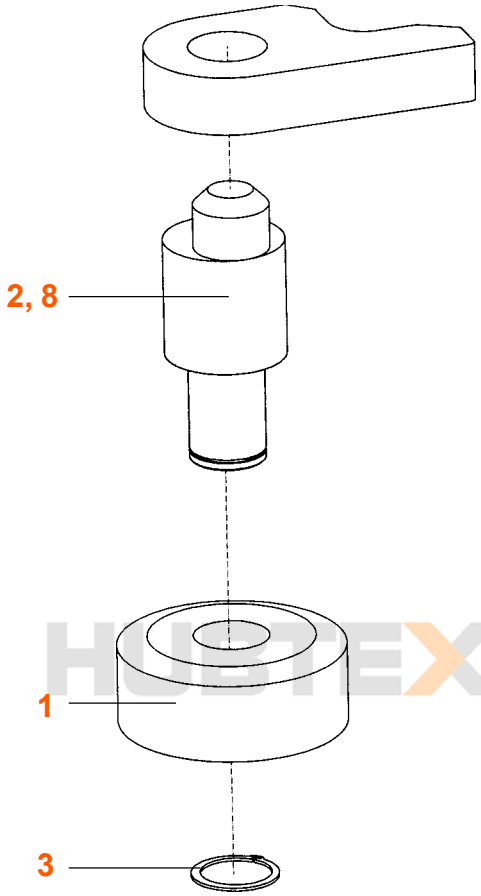
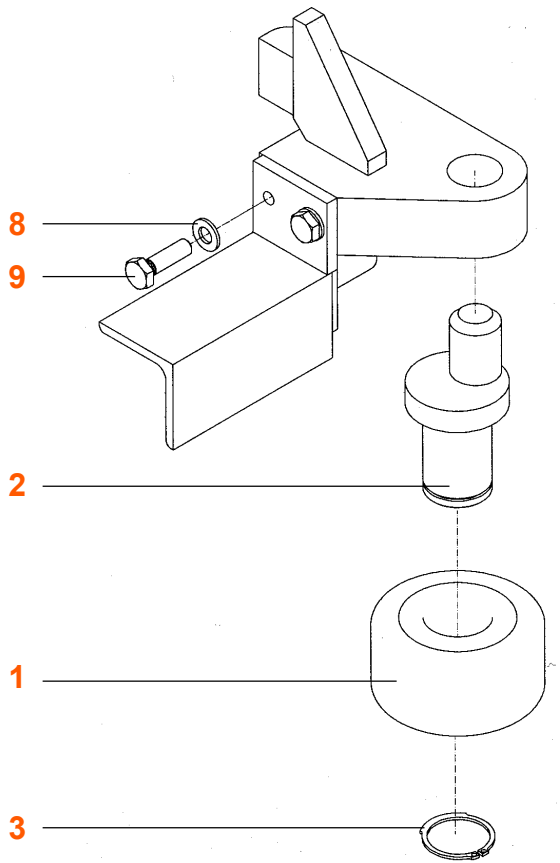
Führungsrolle
guide roll
galet de guidage



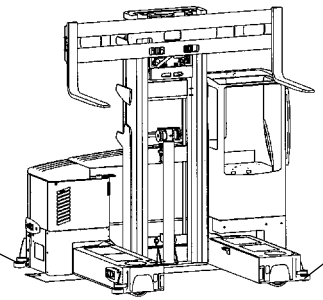
Ausf. A-B / Performance A-B / Exécution A-B



Ausf. C-D / Performance C-D / Exécution C-D



Ausf. E-F mit Gangerkennung /
Performance E-F with aisle recognition /
Exécution E-F avec reconnaissance d'allée



Führungsrollen
guide roll
galet de guidage

Führungsrollen
guide roll
galet de guidage

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Führungsrolle
guide roll
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I0000744
TD-30-0037-02

Pos	Stck A-B	Stck C-D	Stck E-F	Teilebezeichnung	parts name	denomination	Bestellnummer order no. no. de commande
1	2	2	2	Rad	wheel	roue	5223061
2*)	2	2	2	Achse	axle	essieu	I4004331
3	2	2	2	Sicherungsring	locking ring	circlip	2401460
6*)	2	-	-	Achse	axle	essieu	I4003783
8*)	-	2	2	Achse	axle	essieu	I4003783
13	-	-	4	Schraube	screw	vis	2022569
14	-	-	4	Scheibe	disk	disque	2623503

*) Option / option / option

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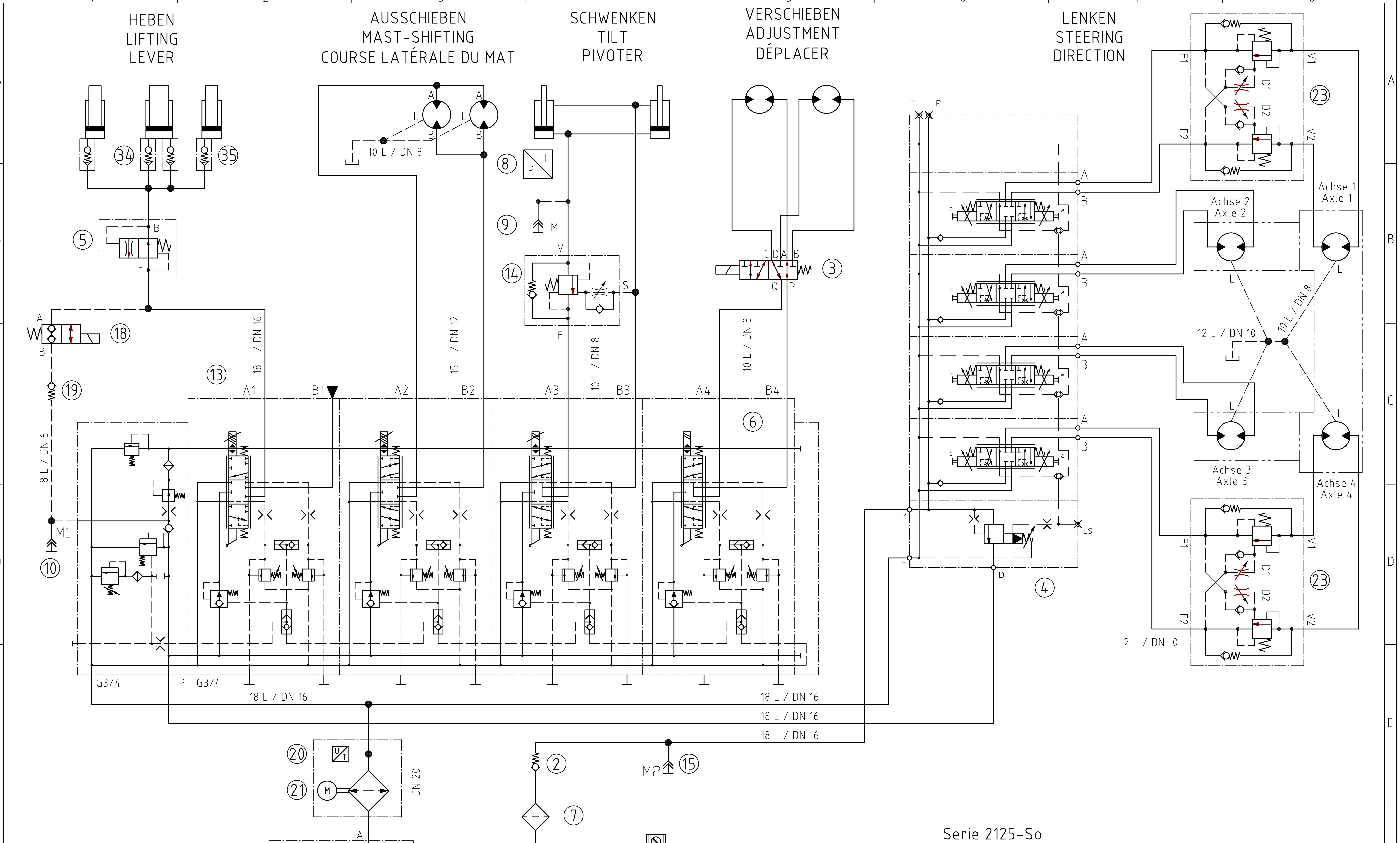
HEBEN
LIFTING
LEVER
AUSSCHIEBEN
MAST-SHIFTING
COURSE LATÉRALE DU MAT
SCHWENKEN
TILT
PIVOTER
VERSCHIEBEN
ADJUSTMENT
DÉPLACER
LENKEN
STEERING
DIRECTION
10 L / DN 8
18 L / DN 16
15 L / DN 12
10 L / DN 8
10 L / DN 8
8 L / DN 6
12 L / DN 10
10 L / DN 8
12 L / DN 10
18 L / DN 16
18 L / DN 16
18 L / DN 16
18 L / DN 16
Achse 1
Axle 1
Achse 2
Axle 2
Achse 3
Axle 3
Achse 4
Axle 4
A1
B1
A2
B2
A3
B3
A4
B4
T G3/4
P G3/4
M1
M2
DN 20
DN 32
14 KW

Serie 2125-So

Maße ohne Toleranzangabe nach DIN ISO 2768 T1 C	Schutzvermerk nach DIN 34 beachten!	Oberfläche	Maßstab – Position – Menge –
	Datum	Name	
Bearb.	06.09.04	JHi	HYDRAULIC CIRCUIT
Gepr.	06.09.04	GK	Hydraulikplan / Plan Hydraulique
Freig.	06.09.04	GK	
Zust. Änderung Datum	HUBTEX		20004299 Blatt – Bl

Dateiname

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Pos.	Stck.	Teilebezeichnung	parts name	denomination	Bestellnummer order no. no. de commande
1	1	Elektrohydropumpe	electrohydraulic pump	pompe électrohydraulique	3001879
2	1	Rückschlagventil	non return valve	valve de retenue	3007140
3	1	Wegesitzventil	directional seat valve	distributeur à siege	3003932
4	1	Lenkventilblock	steering valve block	bloc de soupape de direction	3090000
5	1	Senkbremsventil	flow control valve	régulateurs de débit	3006475
6	1	Schieber	gate valve	vanne	3004180
7	1	Hochdruckfilter	high pressure filter	filtre à haute pression	3010199
9	1	Messverschraubung	screw connection	raccord à vis	3010620
10	1	Messverschraubung	screw connection	raccord à vis	3010610
12	1	Rücklauffilter	non return valve	filtre à refluxc	3010241
13	1	Proportionalsteuerblock	proportional control block	bloc de commande proportionnel	3003807
14	1	Lasthalteventil	load retaining valve	soupape de retenue de charge	3007330
15	1	Messverschraubung	screw connection	raccord à vis	3010650
17	1	Ölwechselventil	oil change valve	soupape de vidange	3003999
18	1	Wegesitzventil	directional seat valve	distributeur à siege	3002856
19	1	Rückschlagventil	non return valve	valve de retenue	3007100
20	1	Temperaturschalter	temperature switch	interrupteur thermostatique	3011006
21	1	Öl / Luftkühler	cooler	réfrigérant	3011005
23	2	Lasthalteventil	load retaining valve	soupape de retenue de charge	3007327
24	1	Druckschalter	switch	interrupteur	3010006
31	1	Ölstand- und Temperaturanzeige	oil level indicator	indicateur d'huile	3039623
34	2	Leitungsbruchsicherung	line rupture safety valve	clapets de sûreté	3007670
35	2	Leitungsbruchsicherung	line rupture safety valve	clapets de sûreté	3007670

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Electrical documentation

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Auftragsspezifikation / Parameterlisten

Order specification / parameter listing

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Auftragsspezifikation
Order specification

Auftrags- / Maschinennummer

Order / machine number: 56.022

Typ / type : MQ 40 EL/AC (2125/1)

Geräteaufbau / design of device:

Baugruppe / unit	Anzahl / number	Identnummer / parts number	Änderung / changes
Standard / standard equipment	1	E0056022	X
Fahrsteuerung / drive control	2	418.18.50	
Pumpensteuerung / pump control	1	418.18.52	
Lenkelektronik / steering control	1	417.82.20	
Auswerteelektronik / evaluation control		..	
Sonderelektronik / special control		..	
Zusatzausrüstung / additional equipment		Lastmomentüberwachung	
		Mastendlagendämpfung	
		Mastausschubstop mit Überbr.	
		Gabelverstellung innen & außen	
		Gangerkennung	
		h3>3000mm Schleichfahrt	
		Rundumkennleuchte	
		Blitzlampen A/B	
		Summer	
		2 Arbeitsscheinwerfer	
		Ölkühler	
Pulteinleger / control panel		20103656A	
Montageplatten / mounting plates		I3003677	
		I3002359	
		I3000299	

Bearbeitet durch / worked out by : S.Hohmann

Datum / date : 30.09.2004

Auftragsspezifikation / Parameterlisten

Order specification / parameter listing

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PS	Vorgabe-wert Desired value	Änderung Changes	Änderung Changes	PS	Vorgabe-wert Desired value	Änderung Changes	Änderung Changes
0	0000	-	-	**39**	0000	-	-
1	0004	-	-	**40**	0090	-	-
2	1111	-	-	**41**	0090	-	-
3	1111	-	-	**42**	0000	-	-
4	0011	-	-	**43**	0100	-	-
5	0000	-	-	**44**	1250	-	-
6	0000	-	-	**45**	0250	-	-
7	2064	-	-	**46**	0250	-	-
8	0014	-	-	**47**	0250	-	-
9	2064	-	-	**48**	0250	-	-
10	1973	-	-	**49**	0030	-	-
11	0000	-	-	**50**	0030	-	-
12	1986	-	-	**51**	0030	-	-
13	0993	-	-	**52**	0030	-	-
14	0100	-	-	**53**	0030	-	-
15	0065	-	-	**54**	0100	-	-
16	0065	-	-	**55**	0240	-	-
17	0065	-	-	**56**	0010	-	-
18	0400	-	-	**57**	0025	-	-
19	0075	-	-	**58**	0015	-	-
20	0075	-	-	**59**	0010	-	-
21	1586	-	-	**60**	0015	-	-
22	0075	-	-	**61**	0000	-	-
23	0075	-	-	**62**	0000	-	-
24	1032	-	-	**63**	0000	-	-
25	0040	-	-	**64**	0000	-	-
26	0040	-	-	**65**	0000	-	-
27	0040	-	-	**66**	0000	-	-
28	0040	-	-	**67**	0000	-	-
29	0000	-	-	**68**	0000	-	-
30	0030	-	-	**69**	0000	-	-
31	0030	-	-	**70**	0000	-	-
32	2064	-	-	**71**	0000	-	-
33	0040	-	-	**72**	0000	-	-
34	0040	-	-	**73**	0000	-	-
35	0101	-	-	**74**	0000	-	-
36	1032	-	-	**75**	0002	-	-
37	0993	-	-	**76**	0000	-	-
38	0000	-	-	**77**	0010	-	-

PS	Vorgabe-wert Desired value	Änderung Changes	Änderung Changes	PS	Vorgabe-wert Desired value	Änderung Changes	Änderung Changes
78	0100	-	-	**117**	0111	-	-
79	0000	-	-	**118**	0000	-	-
80	0300	-	-	**119**	0000	-	-
81	0003	-	-	**120**	0200	-	-
82	0200	-	-	**121**	0200	-	-
83	0040	-	-	**122**	0001	-	-
84	0000	-	-	**123**	0001	-	-
85	0000	-	-	**124**	1011	-	-
86	0000	-	-	**125**	0002	-	-
87	0000	-	-	**126**	0003	-	-
88	0000	-	-	**127**	0007	-	-
89	0000	-	-	**128**	0010	-	-
90	0000	-	-	**129**	0001	-	-
91	0000	-	-	**130**	0010	-	-
92	0030	-	-	**131**	0070	-	-
93	0040	-	-	**132**	0000	-	-
94	0001	-	-	**133**	0000	-	-
95	0000	-	-	**134**	0600	-	-
96	0000	-	-	**135**	0100	-	-
97	0003	-	-	**136**	0000	-	-
98	0000	-	-	**137**	0000	-	-
99	0002	-	-	**138**	0000	-	-
100	0000	-	-	**139**	0003	-	-
101	0000	-	-	**140**	0005	-	-
102	0050	-	-	**141**	0000	-	-
103	0050	-	-	**142**	0000	-	-
104	0000	-	-	**143**	0003	-	-
105	0100	-	-	**144**	0001	-	-
106	0000	-	-	**145**	0000	-	-
107	9999	-	-	**146**	0090	-	-
108	0042	-	-	**147**	0001	-	-
109	0022	-	-	**148**	0120	-	-
110	0093	-	-	**149**	0001	-	-
111	0000	-	-	**150**	0001	-	-
112	0000	-	-	**151**	0001	-	-
113	0000	-	-	**152**	1100	-	-
114	0000	-	-	**153**	2000	-	-
115	1113	-	-	**154**	0010	-	-
116	0222	-	-	**155**	0000	-	-

PS	Vorgabe-wert Desired value	Änderung Changes	Änderung Changes	PS	Vorgabe-wert Desired value	Änderung Changes	Änderung Changes
156	0000	-	-	**195**	0000	-	-
157	0010	-	-	**196**	0000	-	-
158	0050	-	-	**197**	0100	-	-
159	0035	-	-	**198**	0001	-	-
160	0001	-	-	**199**	0000	-	-
161	4000	-	-	**200**	0001	-	-
162	0001	-	-	**201**	0010	-	-
163	0004	-	-	**202**	0000	-	-
164	0011	-	-	**203**	0000	-	-
165	0001	-	-	**204**	0300	-	-
166	0011	-	-	**205**	0000	-	-
167	0600	-	-	**206**	0000	-	-
168	0600	-	-	**207**	0000	-	-
169	0457	-	-	**208**	0010	-	-
170	2650	-	-	**209**	0000	-	-
171	2276	-	-	**210**	0100	-	-
172	0005	-	-	**211**	0000	-	-
173	0035	-	-	**212**	0000	-	-
174	0000	-	-	**213**	1000	-	-
175	0010	-	-	**214**	0000	-	-
176	0010	-	-	**215**	0011	-	-
177	0000	-	-	**216**	0000	-	-
178	0000	-	-	**217**	0000	-	-
179	0000	-	-	**218**	0000	-	-
180	0000	-	-	**219**	0000	-	-
181	0050	-	-	**220**	0100	-	-
182	0020	-	-	**221**	0000	-	-
183	0100	-	-	**222**	0123	-	-
184	0001	-	-	**223**	0000	-	-
185	0080	-	-	**224**	0000	-	-
186	0000	-	-	**225**	0100	-	-
187	0000	-	-	**226**	0021	-	-
188	0000	-	-	**227**	0100	-	-
189	0111	-	-	**228**	0030	-	-
190	0000	-	-	**229**	0000	-	-
191	0000	-	-	**230**	0001	-	-
192	0000	-	-	**231**	0000	-	-
193	0000	-	-	**232**	0000	-	-
194	0000	-	-	**233**	0000	-	-

PS	Vorgabe-wert Desired value	Änderung Changes	Änderung Changes	PS	Vorgabe-wert Desired value	Änderung Changes	Änderung Changes
234	0000	-	-	**273**	0000	-	-
235	0040	-	-	**274**	0000	-	-
236	0000	-	-	**275**	0000	-	-
237	0000	-	-	**276**	0001	-	-
238	0000	-	-	**277**	0015	-	-
239	0000	-	-	**278**	0005	-	-
240	3320	-	-	**279**	0100	-	-
241	3323	-	-	**280**	0100	-	-
242	1323	-	-	**281**	0000	-	-
243	0000	-	-	**282**	0000	-	-
244	3102	-	-	**283**	0100	-	-
245	0000	-	-	**284**	0050	-	-
246	0000	-	-	**285**	0000	-	-
247	0000	-	-	**286**	0000	-	-
248	0000	-	-	**287**	0000	-	-
249	0000	-	-	**288**	0000	-	-
250	0000	-	-	**289**	0075	-	-
251	0000	-	-	**290**	0000	-	-
252	0000	-	-	**291**	0100	-	-
253	0000	-	-	**292**	0070	-	-
254	0000	-	-	**293**	0000	-	-
255	0000	-	-	**294**	0001	-	-
256	0001	-	-	**295**	0000	-	-
257	0000	-	-	**296**	0001	-	-
258	0100	-	-	**297**	0001	-	-
259	0200	-	-	**298**	0000	-	-
260	0050	-	-	**299**	0000	-	-
261	3321	-	-	**300**	0070	-	-
262	0000	-	-	**301**	0000	-	-
263	0000	-	-	**302**	0000	-	-
264	0000	-	-	**303**	0000	-	-
265	0002	-	-	**304**	0000	-	-
266	0000	-	-	**305**	1102	-	-
267	0000	-	-	**306**	0035	-	-
268	0070	-	-	**307**	0035	-	-
269	0001	-	-	**308**	0089	-	-
270	0000	-	-	**309**	0087	-	-
271	0000	-	-	**310**	0150	-	-
272	0001	-	-	**311**	0050	-	-

PS	Vorgabe-wert Desired value	Änderung Changes	Änderung Changes	PS	Vorgabe-wert Desired value	Änderung Changes	Änderung Changes
312	0150	-	-	**351**	0000	-	-
313	0050	-	-	**352**	0000	-	-
314	0020	-	-	**353**	0001	-	-
315	0020	-	-	**354**	0000	-	-
316	0120	-	-	**355**	0300	-	-
317	0120	-	-	**356**	0001	-	-
318	0020	-	-	**357**	0000	-	-
319	0000	-	-	**358**	0000	-	-
320	0120	-	-	**359**	0000	-	-
321	0000	-	-	**360**	0000	-	-
322	0100	-	-	**361**	0000	-	-
323	0200	-	-	**362**	0000	-	-
324	0050	-	-	**363**	0000	-	-
325	2111	-	-	**364**	1105	-	-
326	1865	-	-	**365**	0020	-	-
327	1909	-	-	**366**	0020	-	-
328	2365	-	-	**367**	0070	-	-
329	2325	-	-	**368**	0070	-	-
330	0040	-	-	**369**	0000	-	-
331	0001	-	-	**370**	0000	-	-
332	0000	-	-	**371**	0000	-	-
333	0020	-	-	**372**	0000	-	-
334	0000	-	-	**373**	0000	-	-
335	0000	-	-	**374**	0000	-	-
336	0000	-	-	**375**	0001	-	-
337	0000	-	-	**376**	0000	-	-
338	0000	-	-	**377**	0001	-	-
339	0000	-	-	**378**	4000	-	-
340	0000	-	-	**379**	0001	-	-
341	0000	-	-	**380**	0000	-	-
342	1103	-	-	**381**	0000	-	-
343	0015	-	-	**382**	0000	-	-
344	0015	-	-	**383**	0000	-	-
345	0070	-	-	**384**	0000	-	-
346	0050	-	-	**385**	0000	-	-
347	0000	-	-	**386**	0000	-	-
348	0000	-	-	**387**	1106	-	-
349	0000	-	-	**388**	0020	-	-
350	0000	-	-	**389**	0020	-	-

PS	Vorgabe-wert Desired value	Änderung Changes	Änderung Changes	PS	Vorgabe-wert Desired value	Änderung Changes	Änderung Changes
390	0060	-	-	**429**	0000	-	-
391	0060	-	-	**430**	0000	-	-
392	0000	-	-	**431**	0070	-	-
393	0000	-	-	**432**	0000	-	-
394	0000	-	-	**433**	0030	-	-
395	0000	-	-	**434**	0030	-	-
396	0000	-	-	**435**	0010	-	-
397	0000	-	-	**436**	0010	-	-
398	0001	-	-	**437**	0005	-	-
399	0000	-	-	**438**	0005	-	-
400	0001	-	-	**439**	0005	-	-
401	4000	-	-	**440**	0005	-	-
402	0000	-	-	**441**	0080	-	-
403	0000	-	-	**442**	0000	-	-
404	0000	-	-	**443**	0100	-	-
405	0000	-	-	**444**	0100	-	-
406	0000	-	-	**445**	0100	-	-
407	0000	-	-	**446**	0100	-	-
408	0000	-	-	**447**	0100	-	-
409	0000	-	-	**448**	0100	-	-
410	9999	-	-	**449**	0100	-	-
411	0010	-	-	**450**	0100	-	-
412	0050	-	-	**451**	0000	-	-
413	0000	-	-	**452**	0000	-	-
414	0001	-	-	**453**	0000	-	-
415	0001	-	-	**454**	0000	-	-
416	0001	-	-	**455**	0000	-	-
417	0001	-	-	**456**	0000	-	-
418	0001	-	-	**457**	0000	-	-
419	0001	-	-	**458**	0000	-	-
420	0030	-	-	**459**	0000	-	-
421	0010	-	-	**460**	0001	-	-
422	0000	-	-	**461**	0020	-	-
423	0005	-	-	**462**	0300	-	-
424	0005	-	-	**463**	0100	-	-
425	0005	-	-	**464**	0000	-	-
426	0005	-	-	**465**	0000	-	-
427	0001	-	-	**466**	0000	-	-
428	0001	-	-	**467**	0000	-	-

PS	Vorgabe-wert Desired value	Änderung Changes	Änderung Changes	PS	Vorgabe-wert Desired value	Änderung Changes	Änderung Changes
468	0000	-	-	**490**	0000	-	-
469	0000	-	-	**491**	0000	-	-
470	0000	-	-	**492**	0000	-	-
471	0000	-	-	**493**	0000	-	-
472	0000	-	-	**494**	0000	-	-
473	0000	-	-	**495**	0000	-	-
474	0000	-	-	**496**	0000	-	-
475	0000	-	-	**497**	0000	-	-
476	0000	-	-	**498**	0000	-	-
477	0000	-	-	**499**	0000	-	-
478	0000	-	-	**500**	0000	-	-
479	0000	-	-	**501**	0000	-	-
480	0000	-	-	**502**	0000	-	-
481	0000	-	-	**503**	0000	-	-
482	0000	-	-	**504**	0000	-	-
483	0000	-	-	**505**	0000	-	-
484	0000	-	-	**506**	0000	-	-
485	0000	-	-	**507**	0000	-	-
486	0000	-	-	**508**	0000	-	-
487	0000	-	-	**509**	0000	-	-
488	0000	-	-	**510**	0000	-	-
489	0000	-	-	**511**	0000	-	-

Auftragsspezifikation / Parameterlisten

Order specification / parameter listing

HUBTEX

Softwareversion /
software version:

Bauteil component	1. Eintrag 1st entry	2. Eintrag 2nd entry	3. Eintrag 3rd entry	4. Eintrag 4th entry	5. Eintrag 5th entry
Fahrsteuerung 1 drive control 1	146				
Fahrsteuerung 2 drive control 2	146				
Pumpensteuerung 1 pump control 1	146				
Pumpensteuerung 2 pump control 2	---				
Lenkelektronik steering electronic	V4.02				
Auswerteelektronik evaluation electronic	---				
Terminal terminal					
Joystick joystick					

Steuerung programmiert
Control programmed

Fulda, den

_____

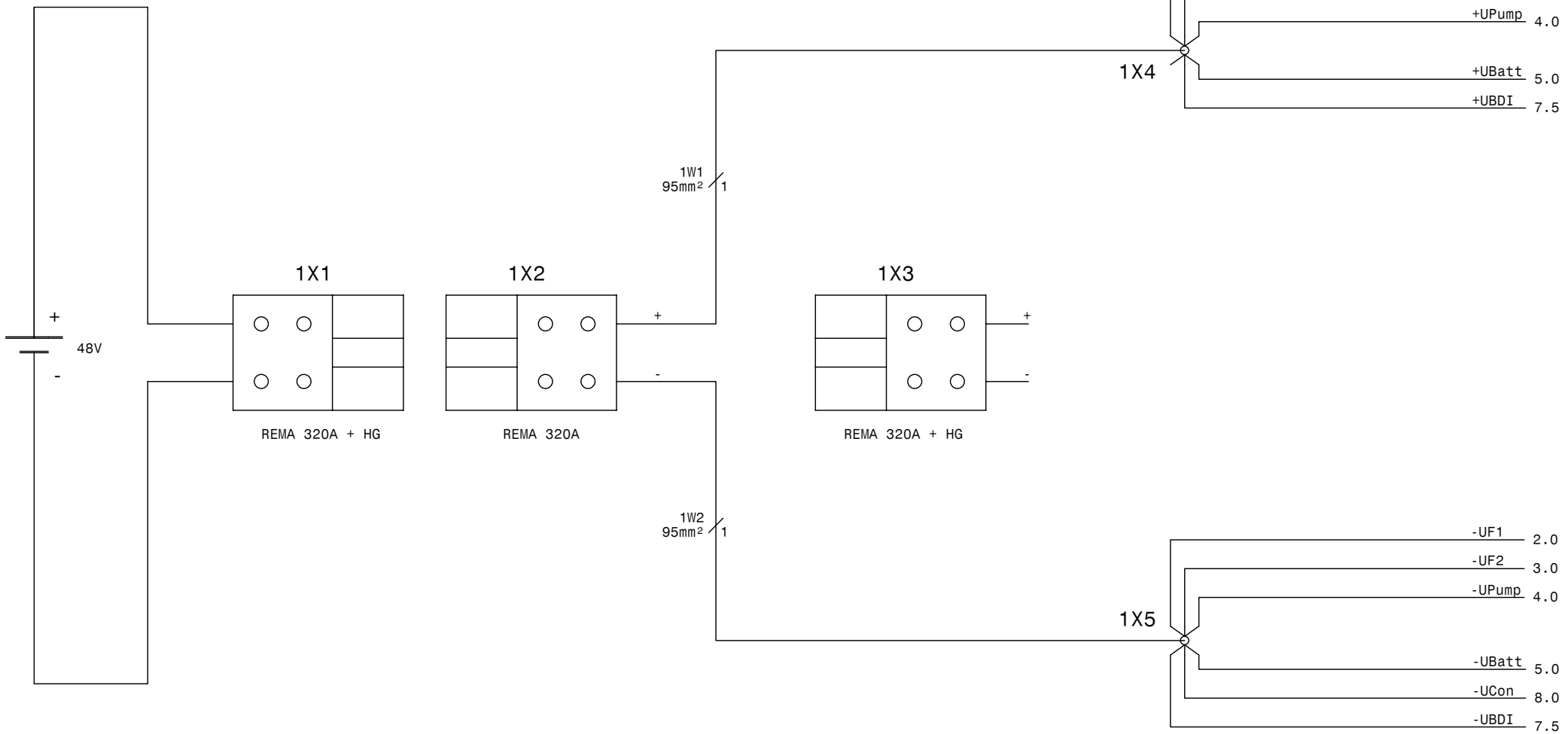
Unterschrift
Signature

Änderungen eingetragen
changes recorded

Fulda, den 18.10.2004

S.Hohmann

Unterschrift
Signature

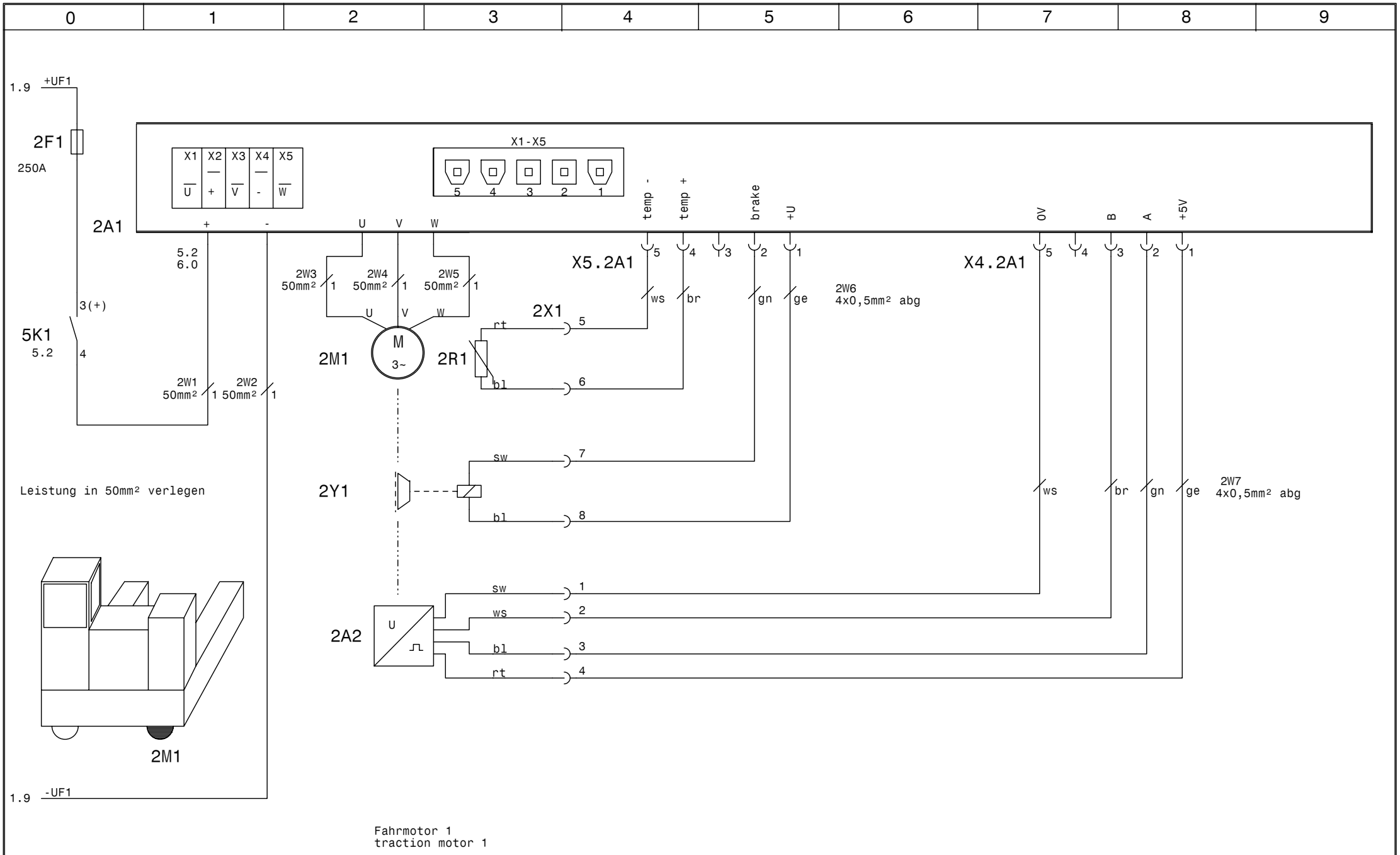


Batterie
battery

Fahrzeug
vehicle

Ladegerät
charger

				Datum	22.09.04			MQ 40 EL/AC / ESTL 2125/1	
				Bearb.	S.Hohmann			Code H4 / 48 V / BPI	
				Gepr.	Meißner			14 kW Pumpe	
Zustand	Änderung	Datum	Name	Freig.	Schmelz	Urspr. 55888	Ers. f.	Ers.d	E0056022 / 56022 / Blatt 1 / Folge 2



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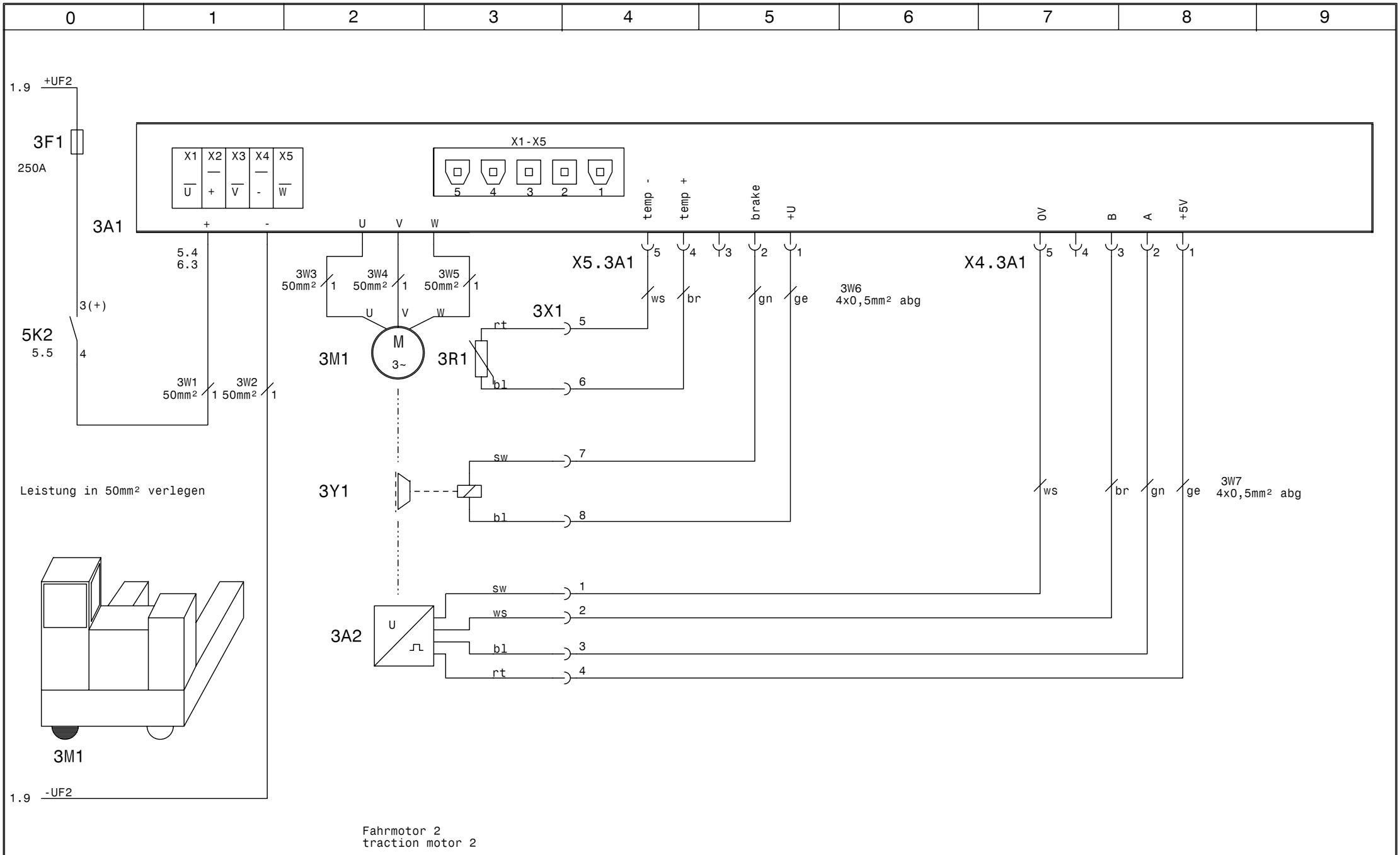
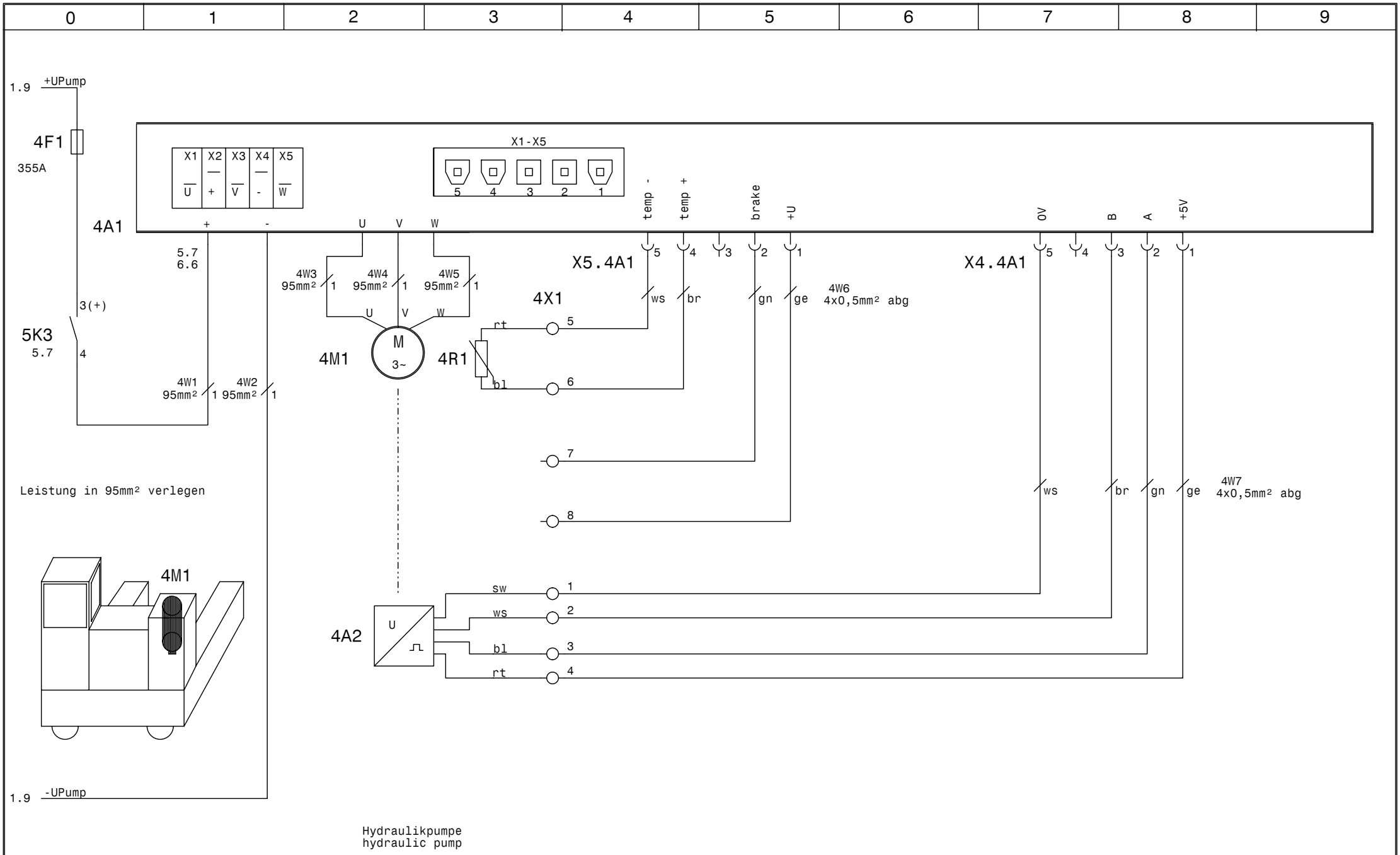
				Bearb.	S.Hohmann			Code H4 / 48 V / BPI		
				Gepr.	Meißner			14 kW Pumpe		
Zustand	Änderung	Datum	Name	Freig.	Schmelz	Urspr. 55888	Ers. f.	Ers.d	E0056022	56022

HUBTEX

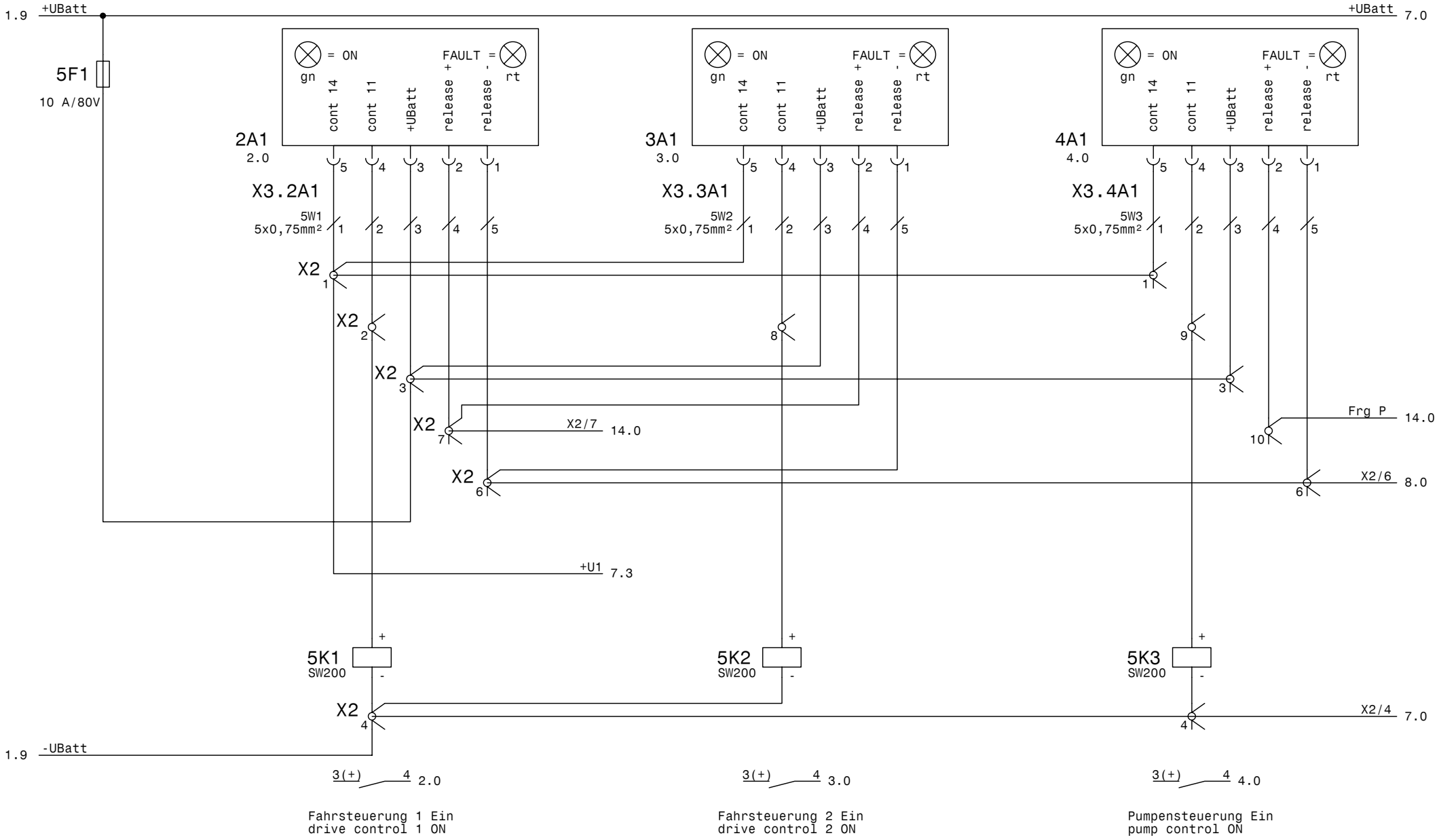
Blatt 2
Folge 3



				Datum	22.09.04			MQ 40 EL/AC / ESTL 2125/1		
				Bearb.	S.Hohmann			Code H4 / 48 V / BPI		
				Gepr.	Meißner			14 kW Pumpe	E0056022	56022
Zustand	Änderung	Datum	Name	Freig.	Schmelz	Urspr. 55888	Ers. f.	Ers.d		Blatt 3 / Folge 4

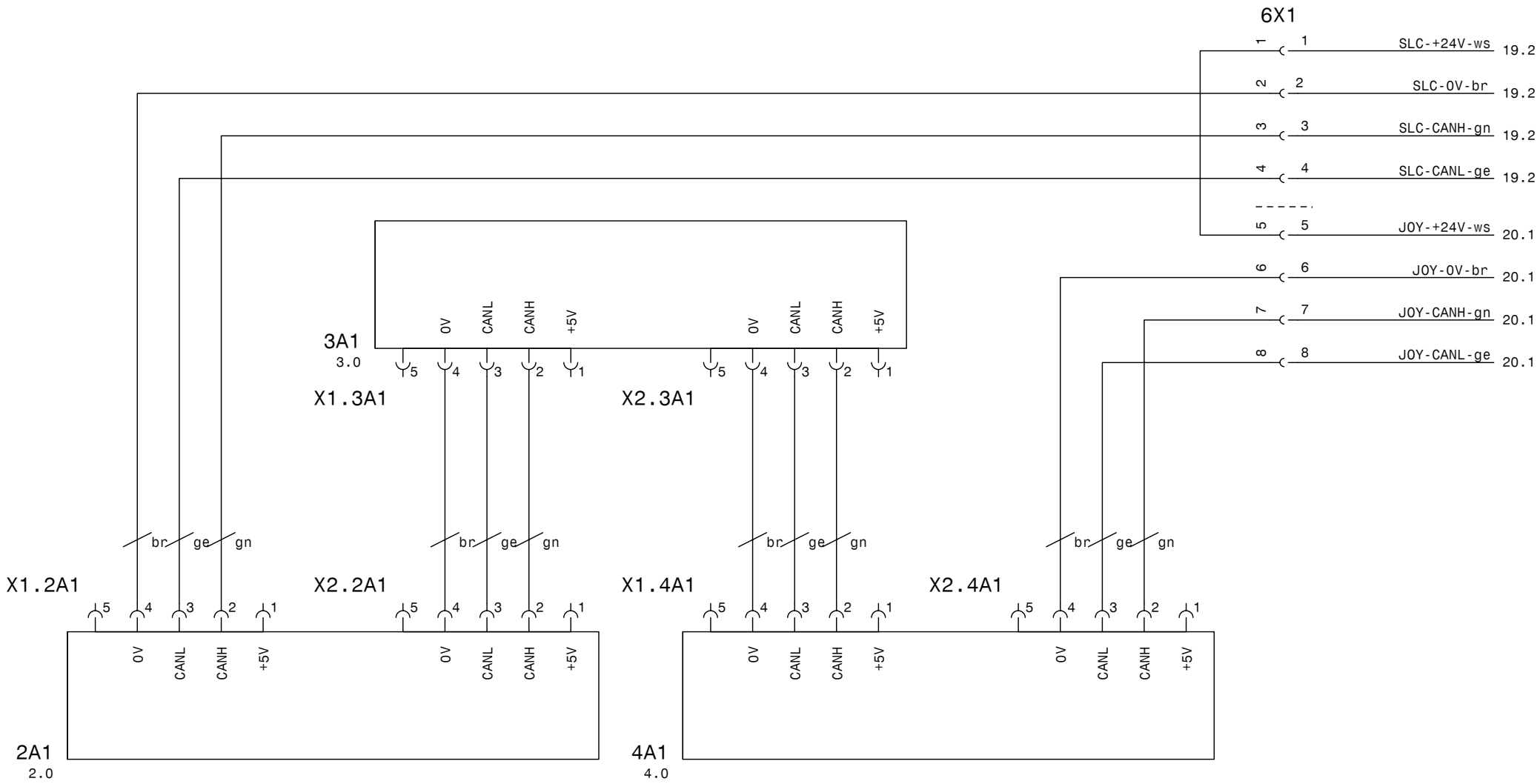


				Datum	22.09.04			MQ 40 EL/AC / ESTL 2125/1		
				Bearb.	S.Hohmann		HUBTEX.	Code H4 / 48 V / BPI		
				Gepr.	Meißner			14 kW Pumpe		
Zustand	Änderung	Datum	Name	Freig.	Schmelz	Urspr. 55888 / Ers. f.	Ers.d		E0056022 / 56022	Blatt 4 / Folge 5



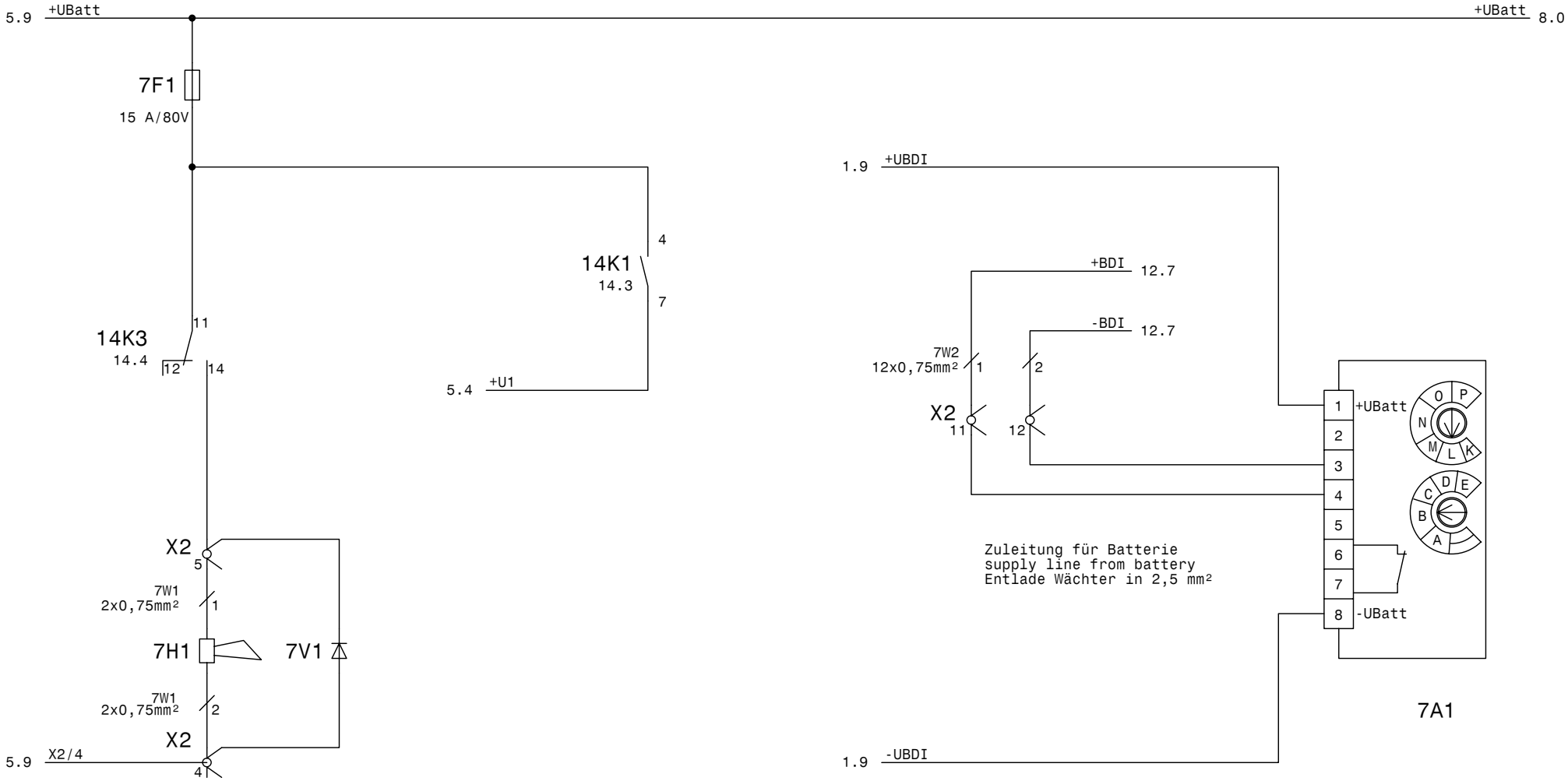
				Datum	22.09.04			MQ 40 EL/AC / ESTL 2125/1	
				Bearb.	S.Hohmann			Code H4 / 48 V / BPI	
				Gepr.	Meißner			14 kW Pumpe	
Zustand	Änderung	Datum	Name	Freig.	Schmelz	Urspr. 55888	Ers. f.	Ers.d	E0056022 / 56022

Blatt 5
Folge 6



CAN-Bus-Verbindung BPI's

				Datum	22.09.04			MQ 40 EL/AC / ESTL 2125/1			
				Bearb.	S.Hohmann			Code H4 / 48 V / BPI			
				Gepr.	Meißner			14 kW Pumpe			
Zustand	Änderung	Datum	Name	Freig.	Schmelz	Urspr. 55888	Ers. f.	Ers.d	E0056022	56022	Blatt 6 / Folge 7

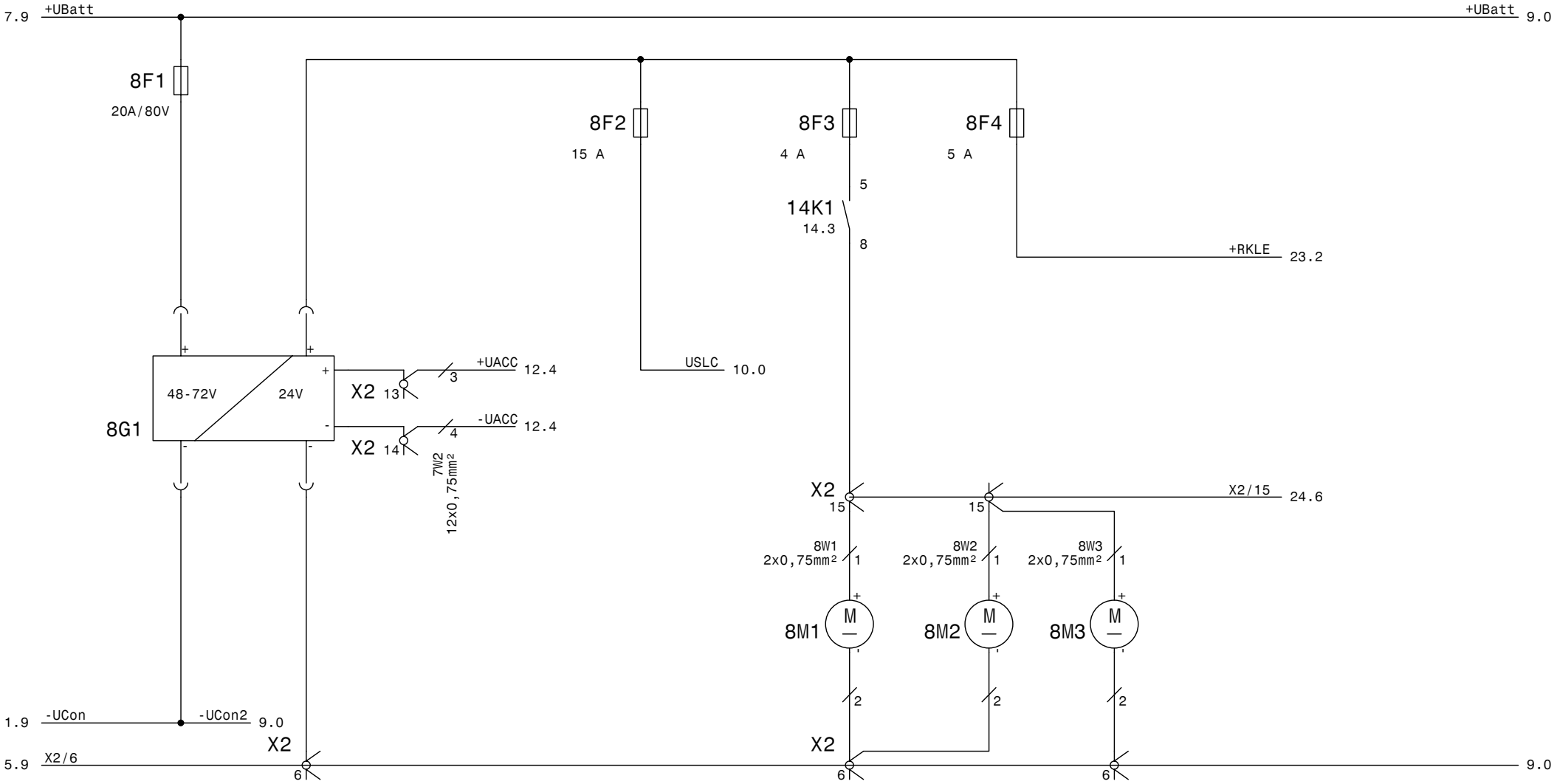


Hupe
horn

Batterieentladewächter
battery discharge indicator

				Datum	22.09.04		HUBTEX.	MQ 40 EL/AC / ESTL 2125/1	
				Bearb.	S.Hohmann			Code H4 / 48 V / BPI	
				Gepr.	Meißner			14 kW Pumpe	
Zustand	Änderung	Datum	Name	Freig.	Schmelz	Urspr. 55888 / Ers. f.	Ers.d	E0056022	56022

Blatt 7
Folge 8



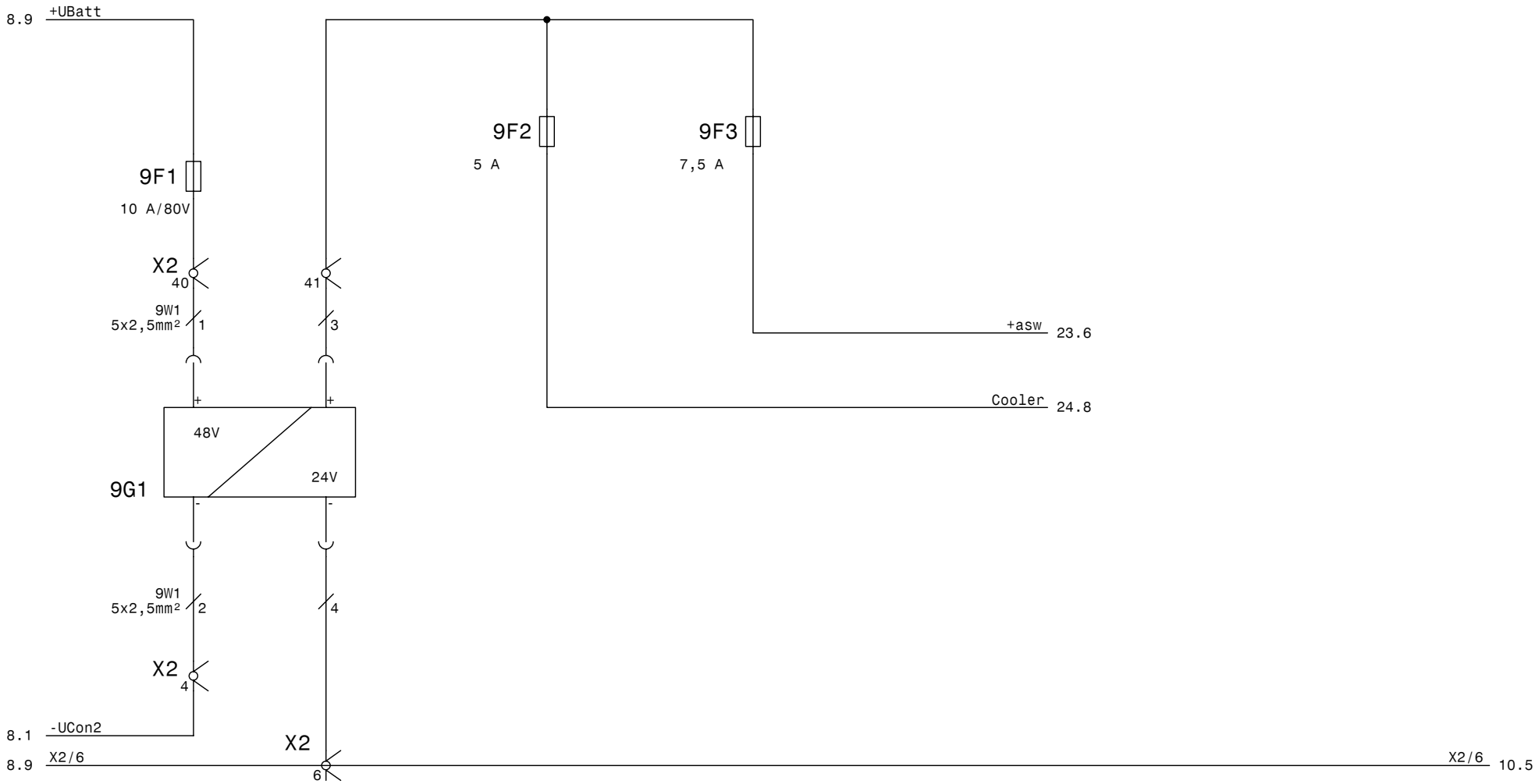
DC/DC Wandler
DC/DC converter

Lüfter
fan

Lüfter
fan

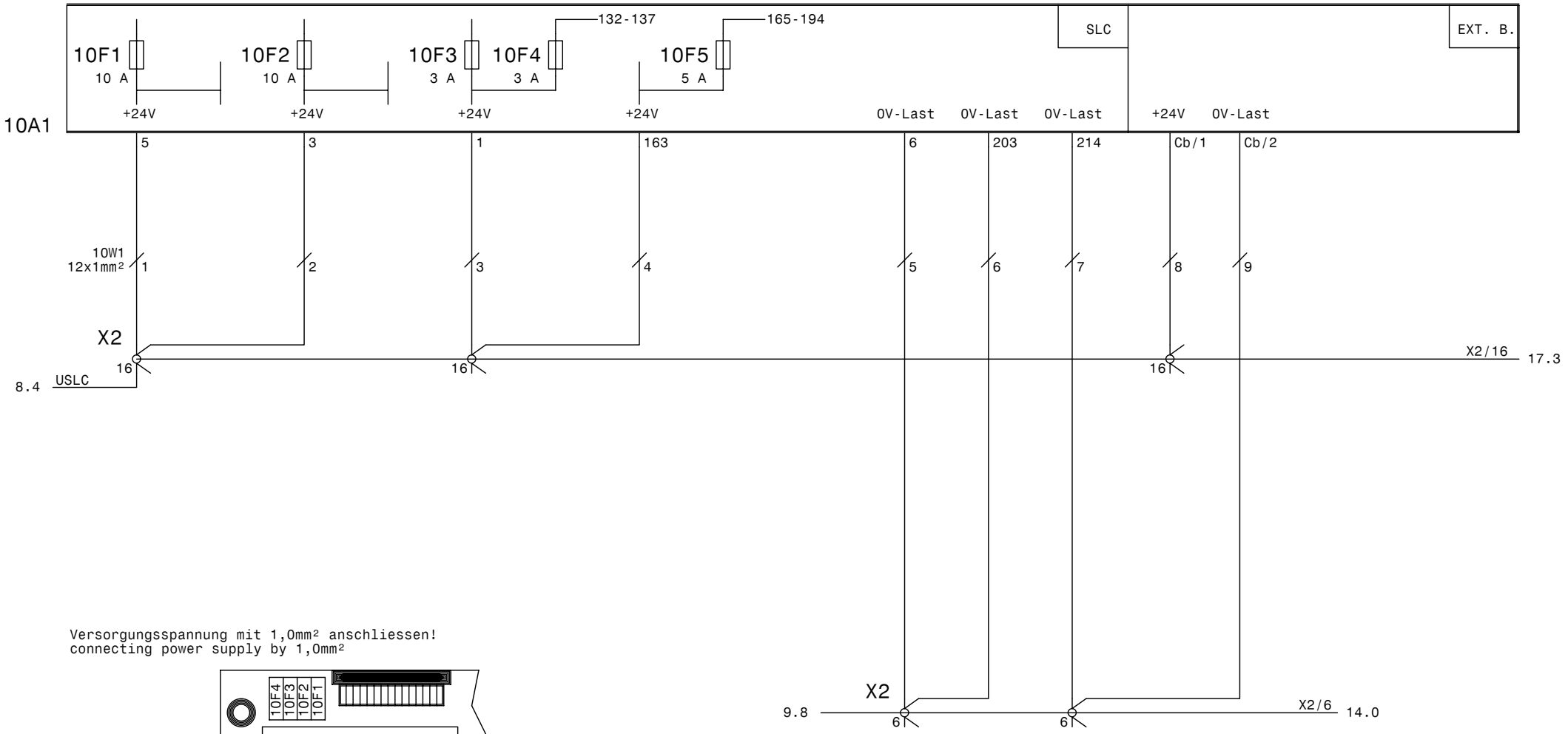
Lüfter Hydro
fan hydro

				Datum	22.09.04			MQ 40 EL/AC / ESTL 2125/1 Code H4 / 48 V / BPI 14 kW Pumpe	
				Bearb.	S.Hohmann				
				Gepr.	Meißner				
Zustand	Änderung	Datum	Name	Freig.	Schmelz	Urspr. 55888	Ers. f.	Ers.d	E0056022 / 56022 / Blatt 8 / Folge 9

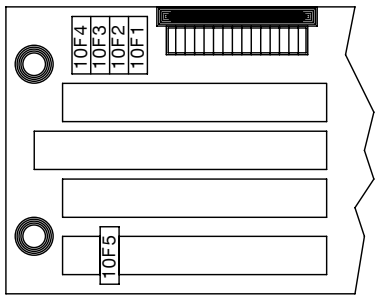


DC/DC Spannungswandler 48V/24V
DC/DC converter 48V/24V

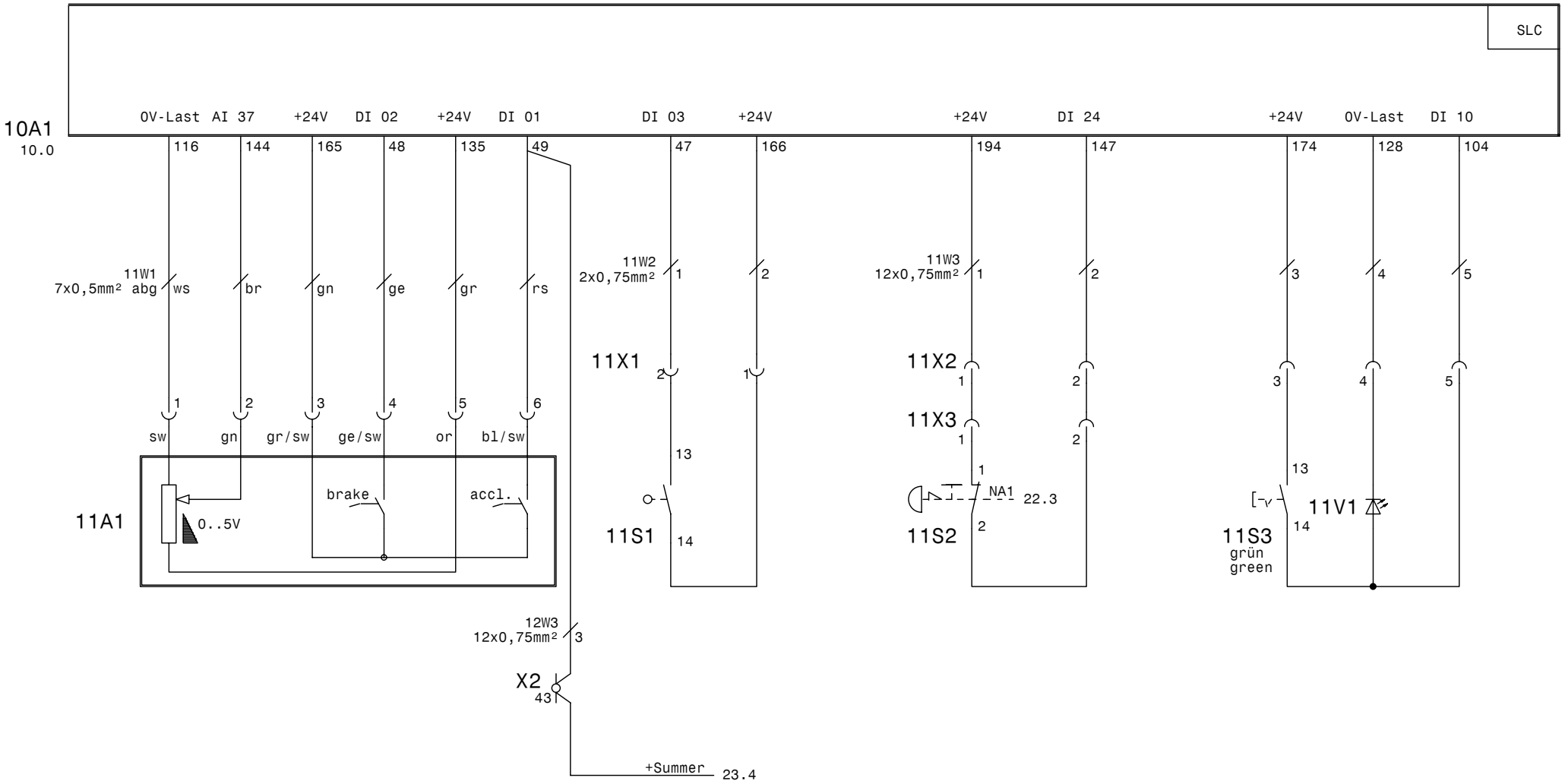
				Datum	22.09.04			MQ 40 EL/AC / ESTL 2125/1			
				Bearb.	S.Hohmann			Code H4 / 48 V / BPI			
				Gepr.	Meißner			14 kW Pumpe			
Zustand	Änderung	Datum	Name	Freig.	Schmelz	Urspr. 55888	Ers. f.	Ers.d	E0056022	56022	Blatt 9 / Folge 10



Versorgungsspannung mit 1,0mm² anschliessen!
connecting power supply by 1,0mm²



				Datum	22.09.04			MQ 40 EL/AC / ESTL 2125/1		
				Bearb.	S.Hohmann			Code H4 / 48 V / BPI		
				Gepr.	Meißner			14 kW Pumpe	E0056022	56022
Zustand	Änderung	Datum	Name	Freig.	Schmelz	Urspr. 55888	Ers. f.	Ers.d		Blatt 10 / Folge 11



Fahr-/ Bremspedal
drive- / brake pedal

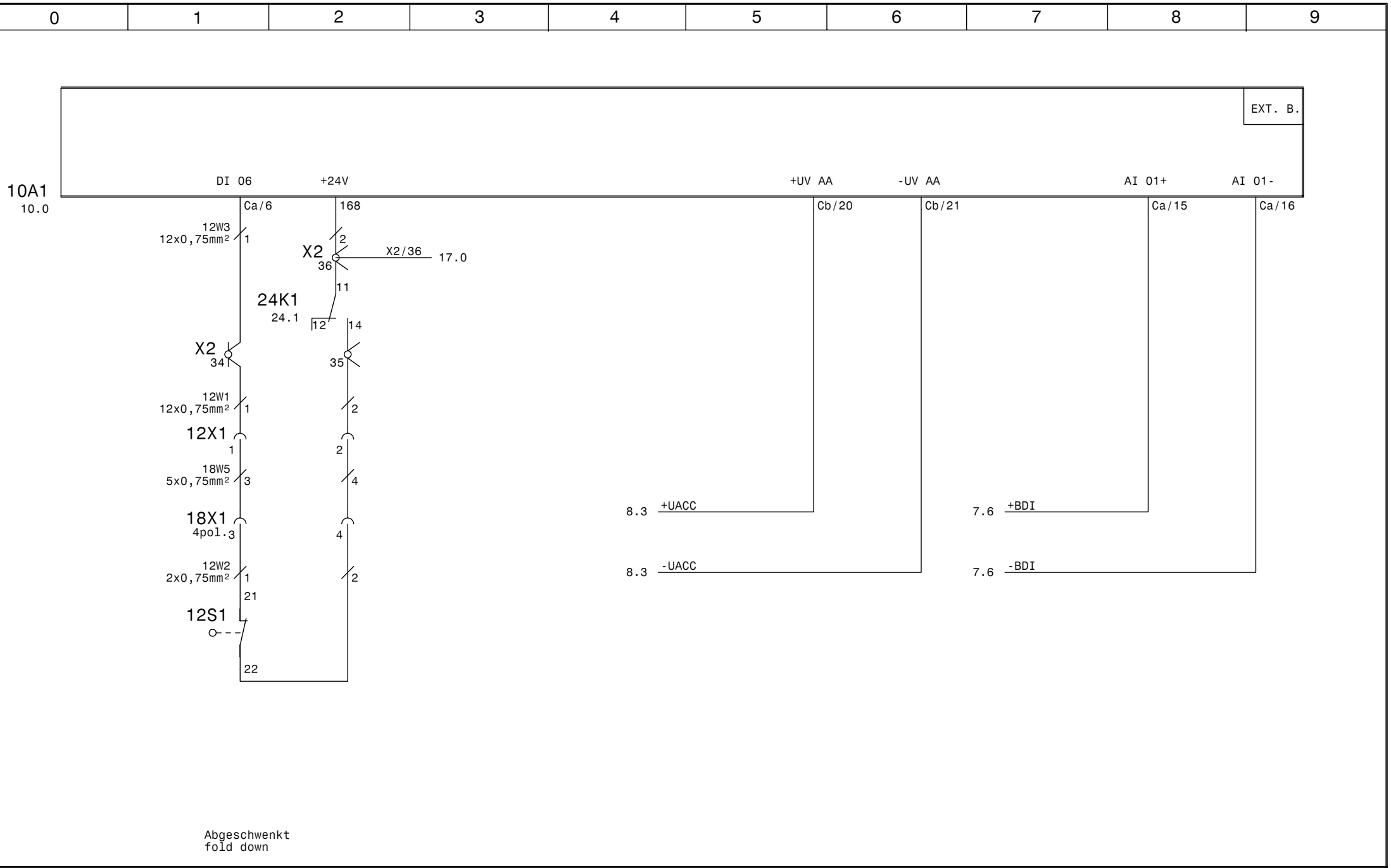
Sitzschalter
seat switch

NOT-AUS
emergency stop

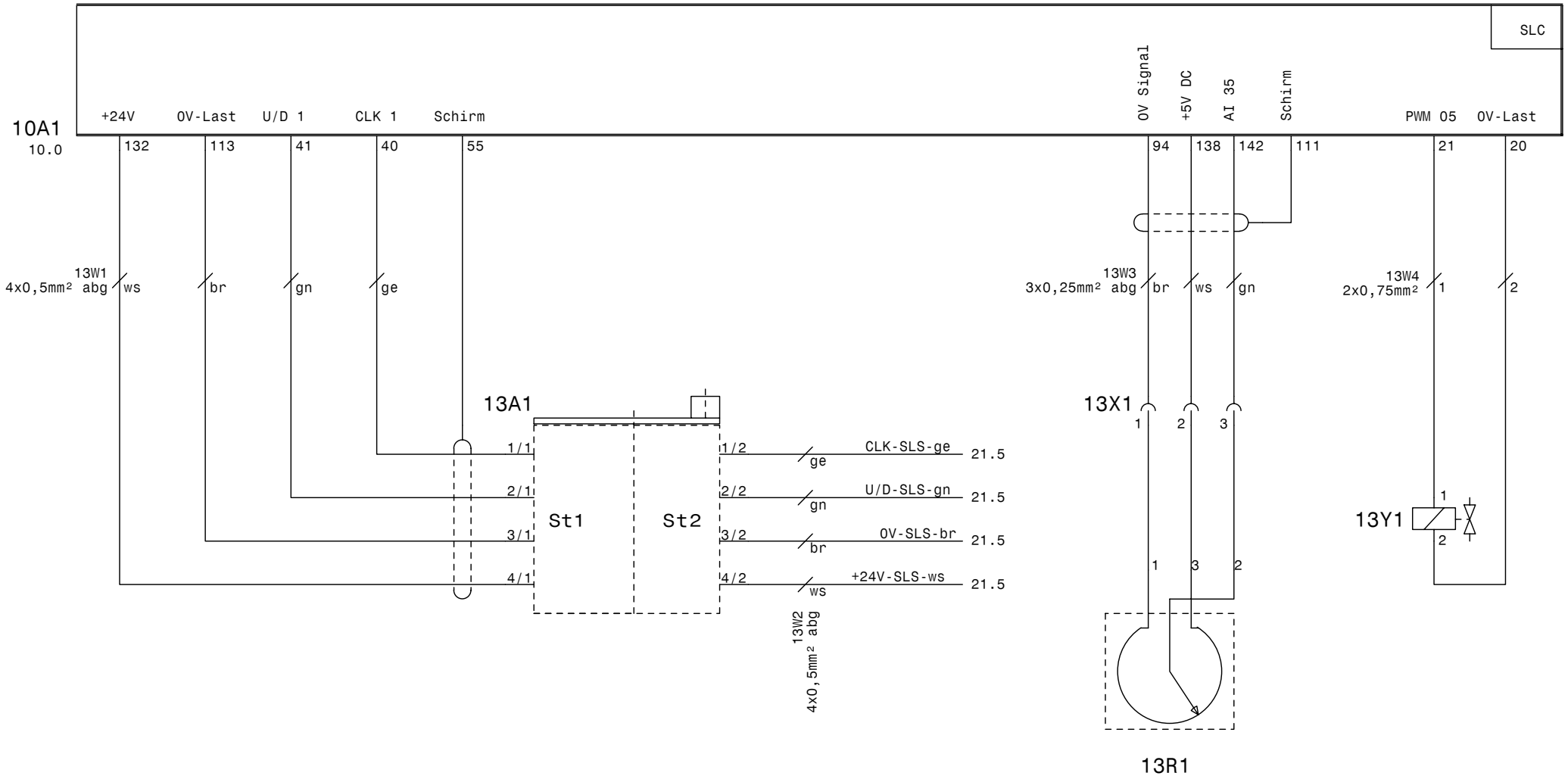
Positioniergeschwindigkeit
positioning speed

				Datum	22.09.04			MQ 40 EL/AC / ESTL 2125/1	
				Bearb.	S.Hohmann			Code H4 / 48 V / BPI	
				Gepr.	Meißner			14 kW Pumpe	
Zustand	Änderung	Datum	Name	Freig.	Schmelz	Urspr. 55888	Ers. f.	Ers.d	E0056022 / 56022

Blatt 11
Folge 12



				Datum	22.09.04			MQ 40 EL/AC / ESTL 2125/1			
				Bearb.	S.Hohmann			Code H4 / 48 V / BPI			
				Gepr.	Meißner			14 kW Pumpe			
Zustand	Änderung	Datum	Name	Freig.	Schmelz	Urspr. 55888	Ers. f.	Ers.d	E0056022	56022	Blatt 12 / Folge 13

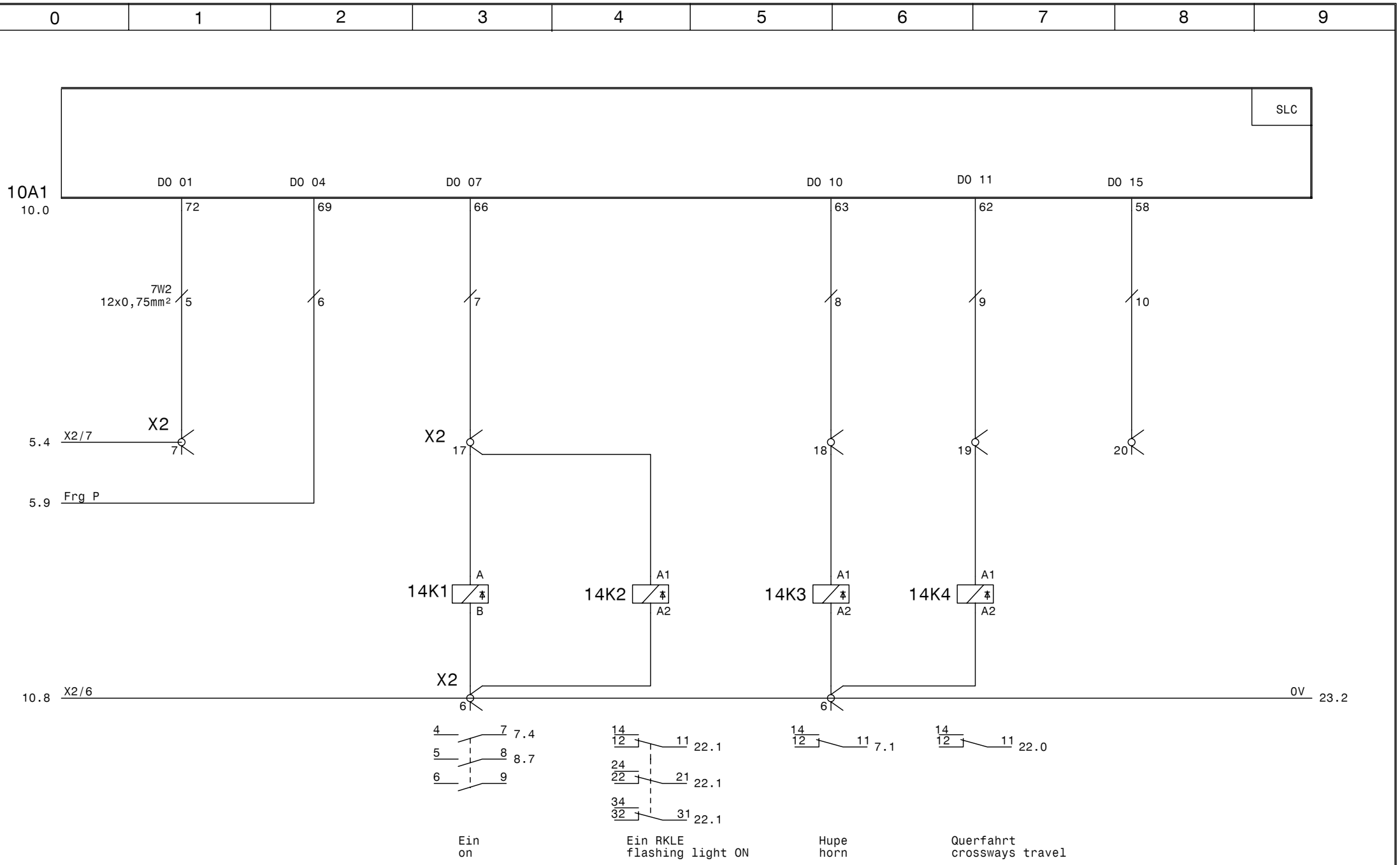


Lenksollwertgeber
steering setpoint generator

Mastausschubpoti
mast reach poti

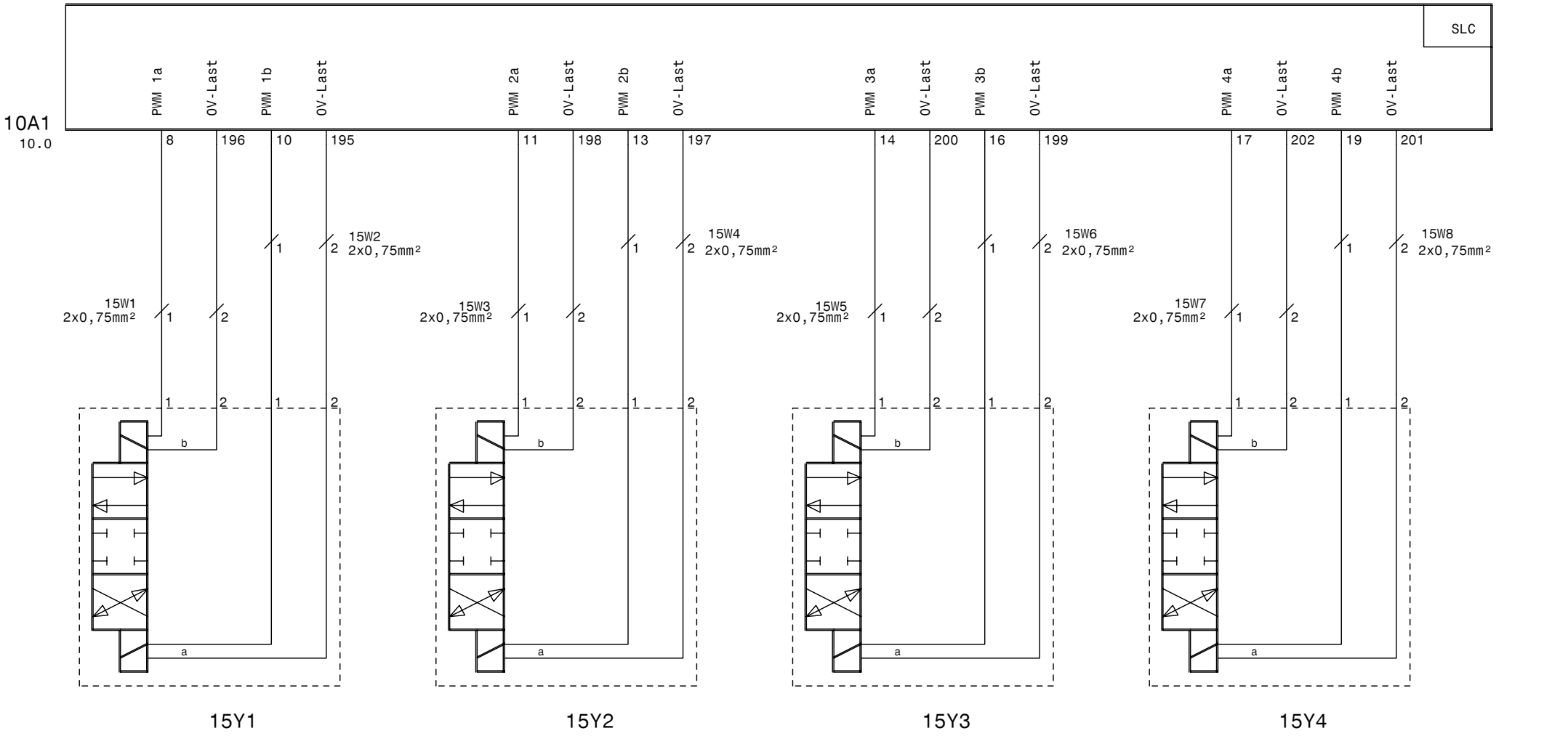
Senken
lowering

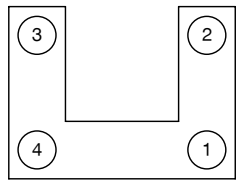
				Datum	22.09.04			MQ 40 EL/AC / ESTL 2125/1			
				Bearb.	S.Hohmann			Code H4 / 48 V / BPI			
				Gepr.	Meißner			14 kW Pumpe			
Zustand	Änderung	Datum	Name	Freig.	Schmelz	Urspr. 55888	Ers. f.	Ers.d	E0056022	56022	Blatt 13 / Folge 14



				Datum	22.09.04			MQ 40 EL/AC / ESTL 2125/1		
				Bearb.	S.Hohmann			Code H4 / 48 V / BPI		
				Gepr.	Meißner			14 kW Pumpe		
Zustand	Änderung	Datum	Name	Freig.	Schmelz	Urspr. 55888	Ers. f.	Ers.d	E0056022	56022

Blatt 14
Folge 15





Wegeventil Achse 1
valve axle 1

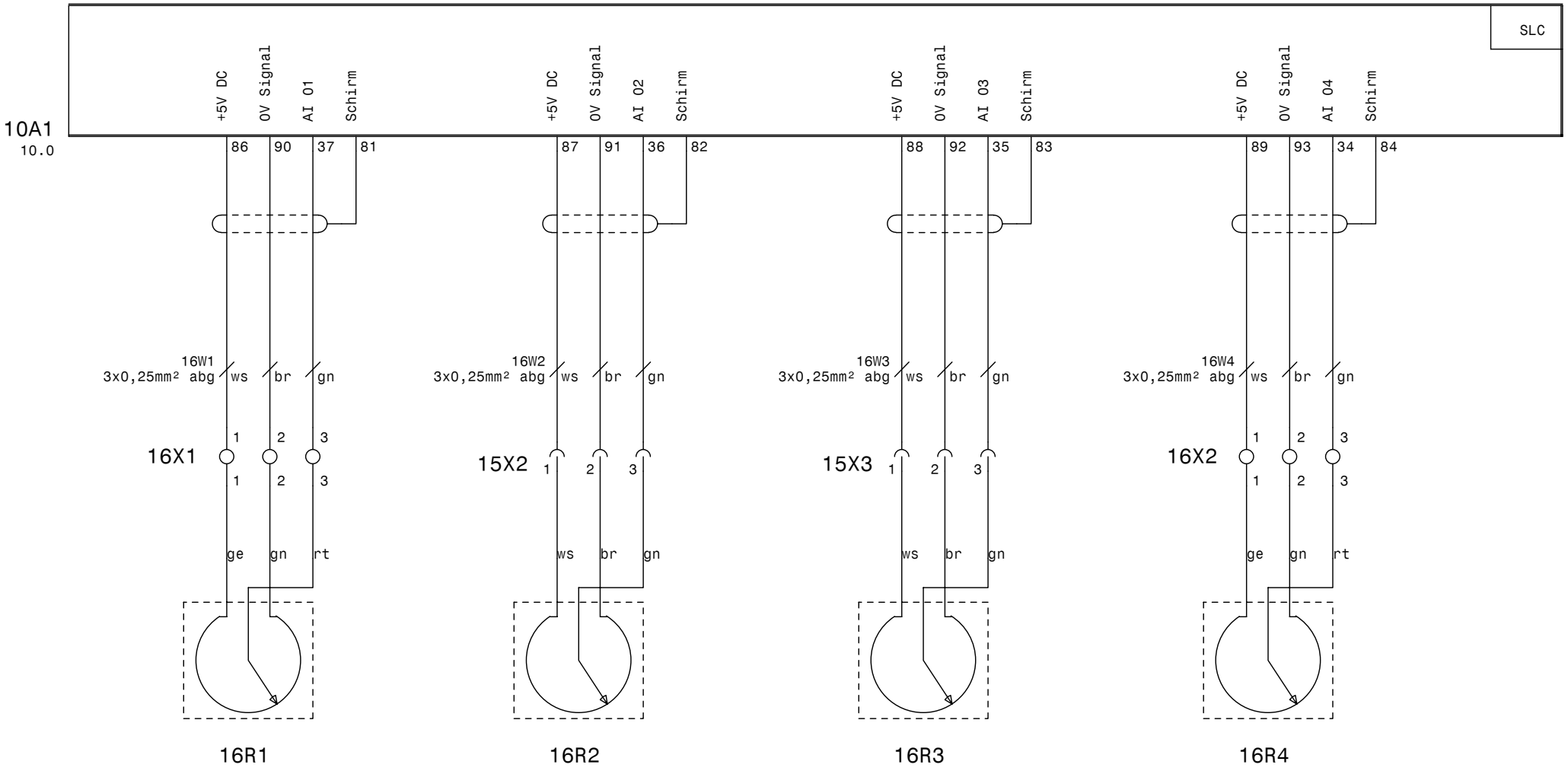
Wegeventil Achse 2
valve axle 2

Wegeventil Achse 3
valve axle 3

Wegeventil Achse 4
valve axle 4

				Datum	22.09.04			MQ 40 EL/AC / ESTL 2125/1		
				Bearb.	S.Hohmann			Code H4 / 48 V / BPI		
				Gepr.	Meißner			14 kW Pumpe		
Zustand	Änderung	Datum	Name	Freig.	Schmelz	Urspr. 55888	Ers. f.	Ers.d	E0056022	56022

Blatt 15
Folge 16



Istwert-Potentiometer A1
actual value potentiometer A1

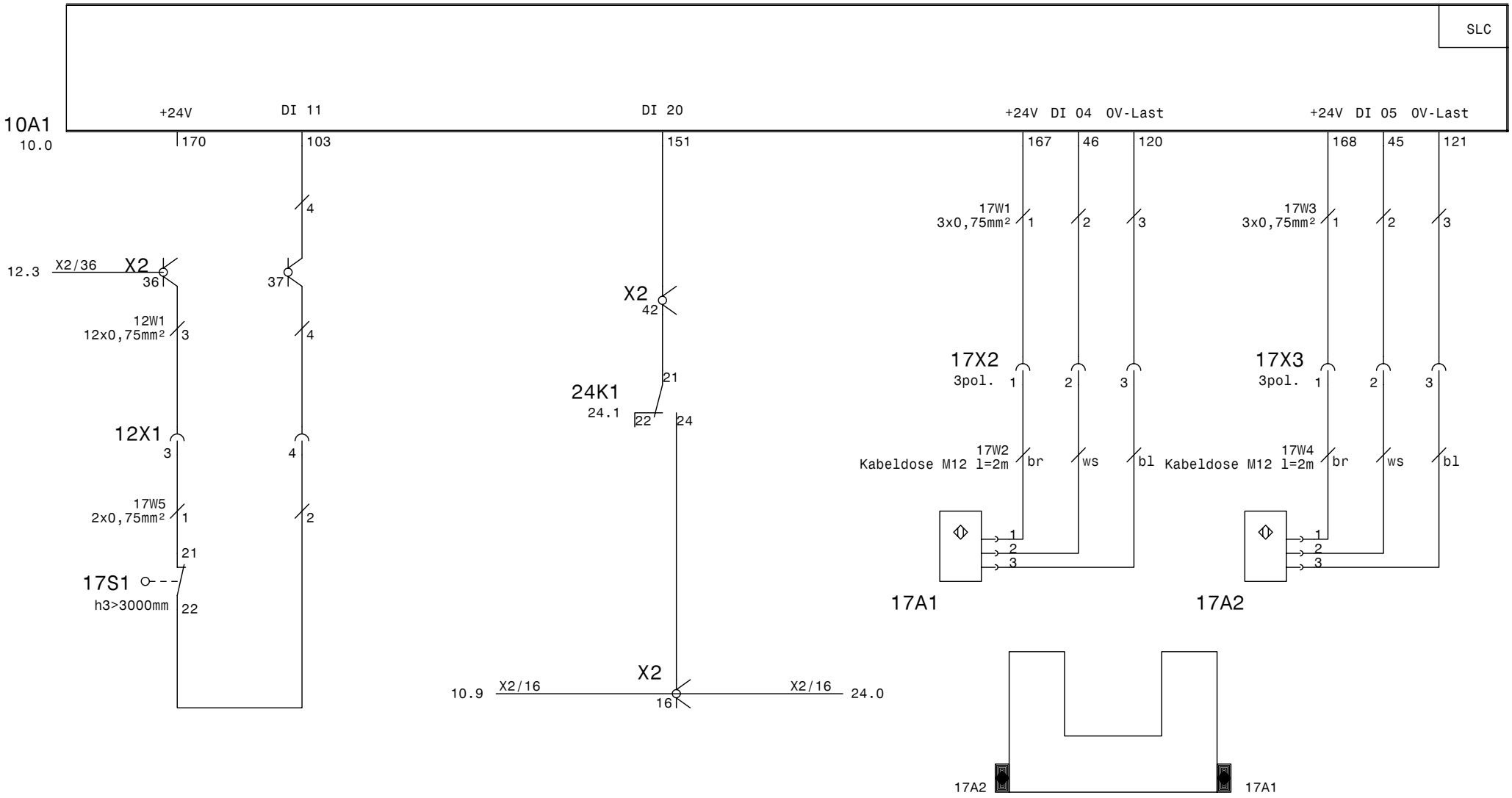
Istwert-Potentiometer A2
actual value potentiometer A2

Istwert-Potentiometer A3
actual value potentiometer A3

Istwert-Potentiometer A4
actual value potentiometer A4

				Datum	22.09.04			MQ 40 EL/AC / ESTL 2125/1	
				Bearb.	S.Hohmann			Code H4 / 48 V / BPI	
				Gepr.	Meißner			14 kW Pumpe	
Zustand	Änderung	Datum	Name	Freig.	Schmelz	Urspr. 55888	Ers. f.	Ers.d	E0056022 / 56022

Blatt 16
Folge 17



Schleichfahrt
creep speed

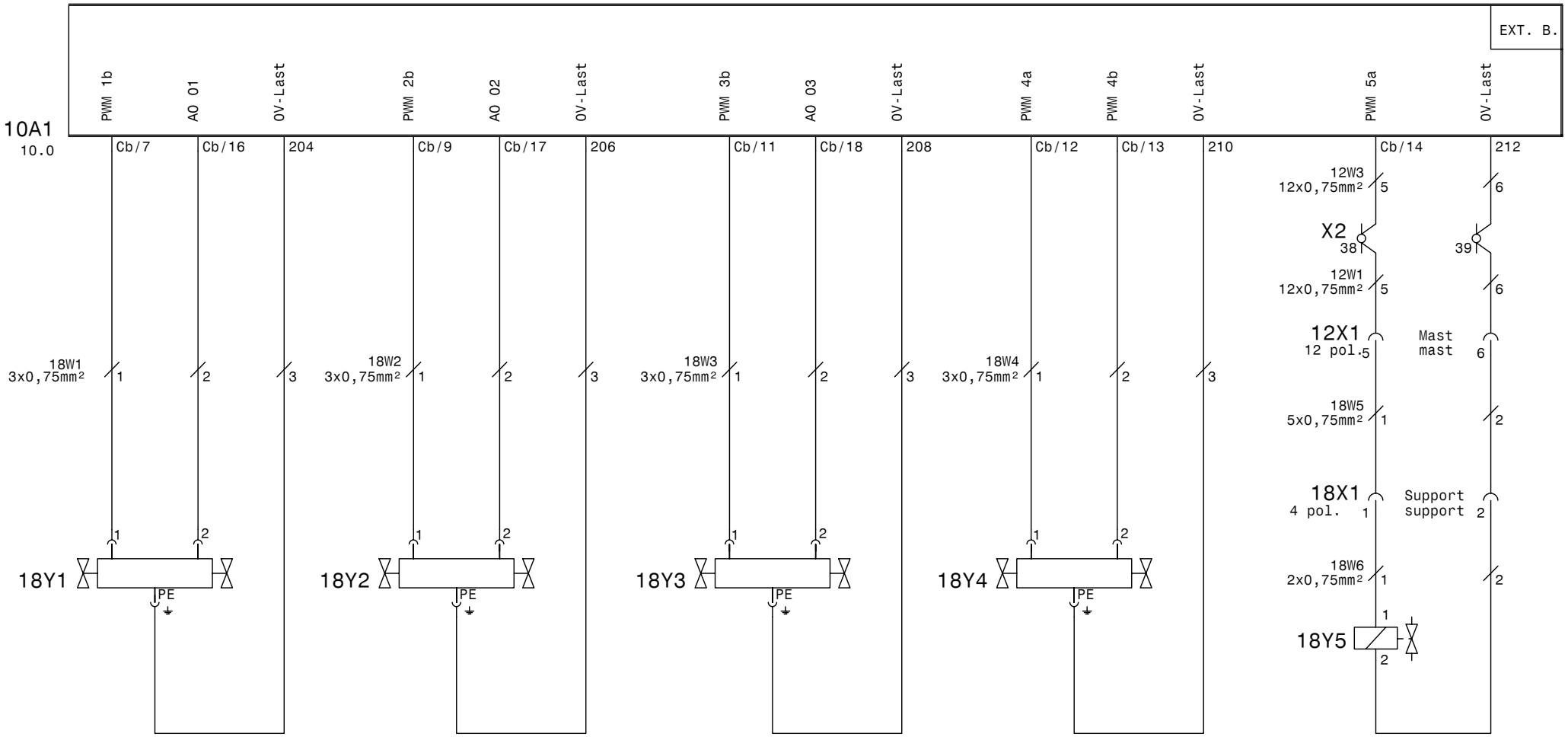
Lastmoment Überwachung
load moment monitoring

Gangerkennung A
aisle recognitation A

Gangerkennung B
aisle recognitation B

				Datum	22.09.04			MQ 40 EL/AC / ESTL 2125/1	
				Bearb.	S.Hohmann			Code H4 / 48 V / BPI	
				Gepr.	Meißner			14 kW Pumpe	
Zustand	Änderung	Datum	Name	Freig.	Schmelz	Urspr. 55888	Ers. f.	Ers.d	E0056022 / 56022

Blatt 17
Folge 18



Wegeventil Heben/Senken
valve lifting/lowering

Wegeventil Mast schieben
valve mast reach

Wegeventil Gabelneigung
valve swiveling

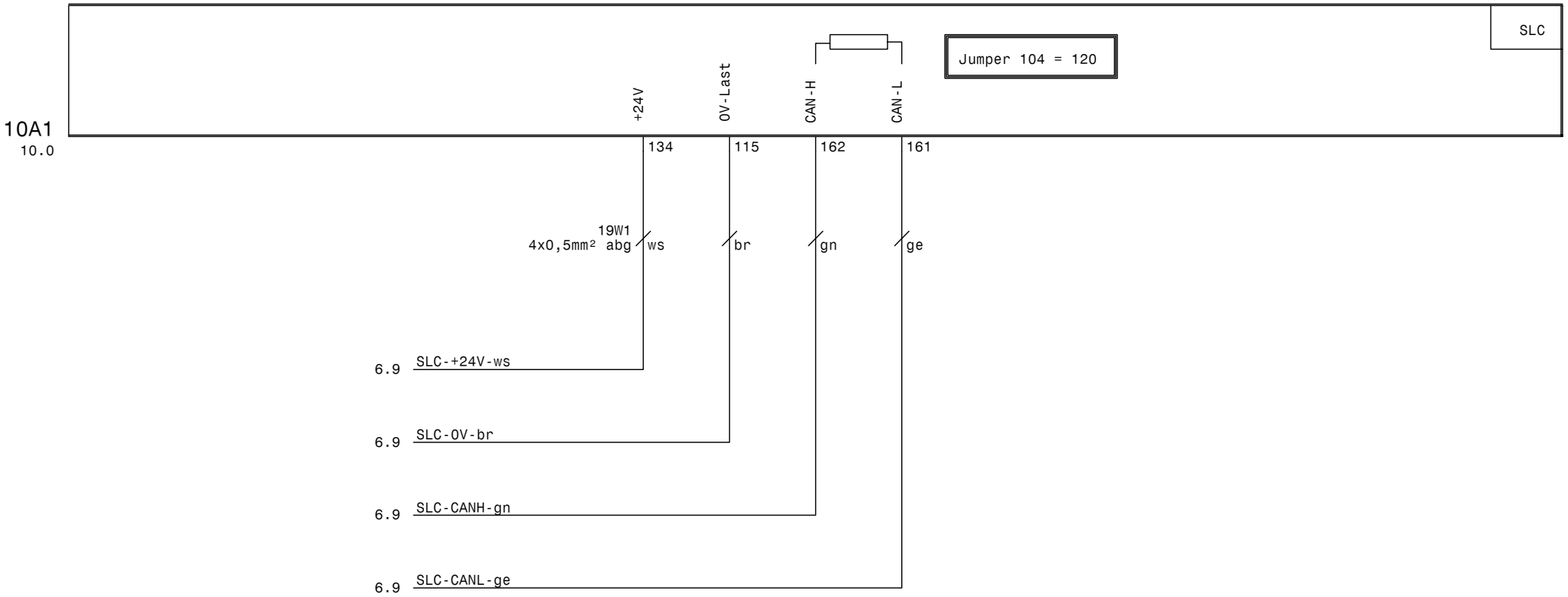
Wegeventil Gabelverstellung
valve forks adjustment

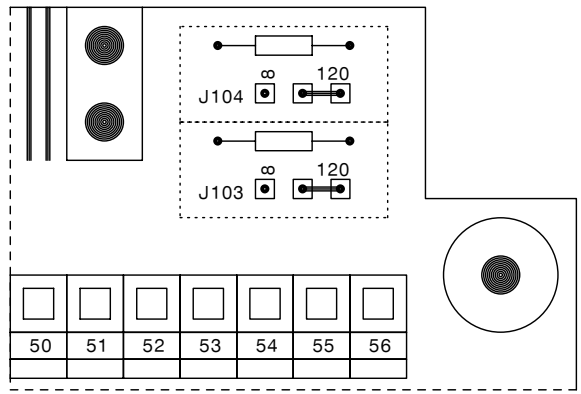
Umschaltung Gabelverstellung (=1)
switching fork adjustment (=1)

				Datum	22.09.04			MQ 40 EL/AC / ESTL 2125/1	
				Bearb.	S.Hohmann			Code H4 / 48 V / BPI	
				Gepr.	Meißner			14 kW Pumpe	
Zustand	Änderung	Datum	Name	Freig.	Schmelz	Urspr. 55888	Ers. f.	Ers.d	E0056022 / 56022

Blatt 18
Folge 19

0	1	2	3	4	5	6	7	8	9

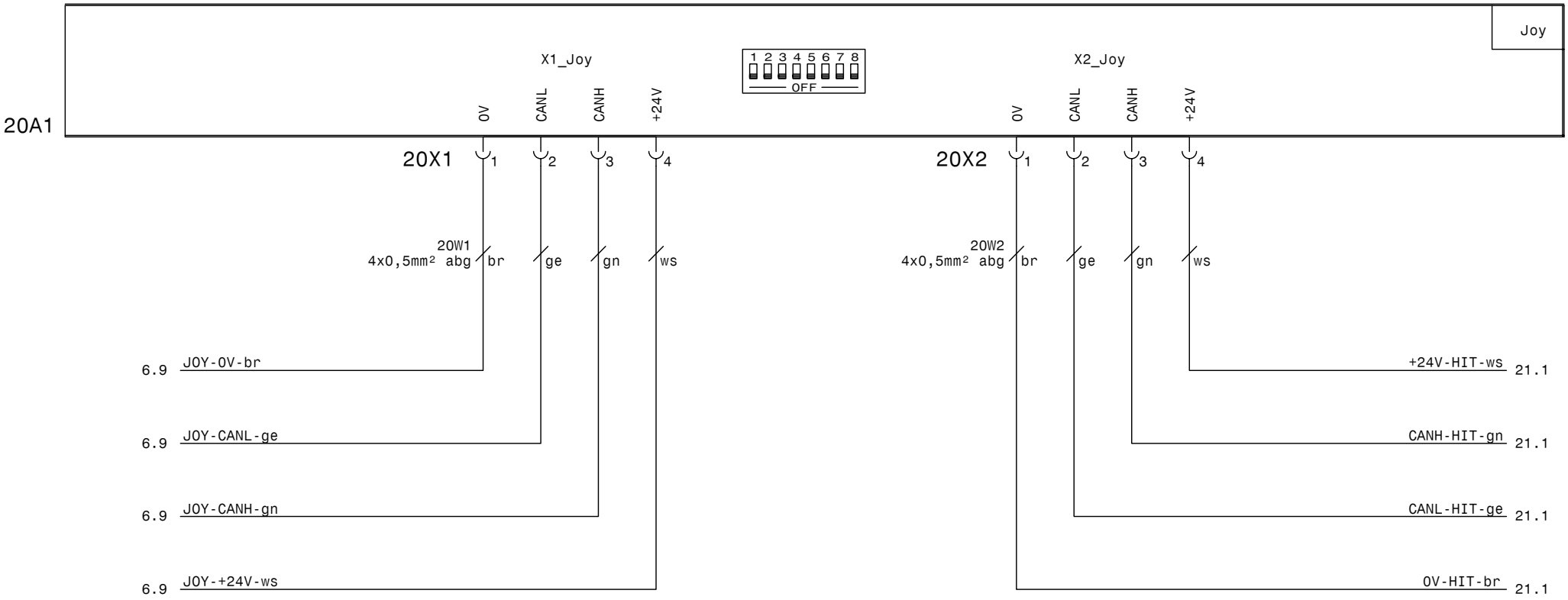




				Datum	22.09.04			MQ 40 EL/AC / ESTL 2125/1	
				Bearb.	S.Hohmann			Code H4 / 48 V / BPI	
				Gepr.	Meißner			14 kW Pumpe	
Zustand	Änderung	Datum	Name	Freig.	Schmelz	Urspr. 55888	Ers. f.	Ers.d	E0056022 / 56022

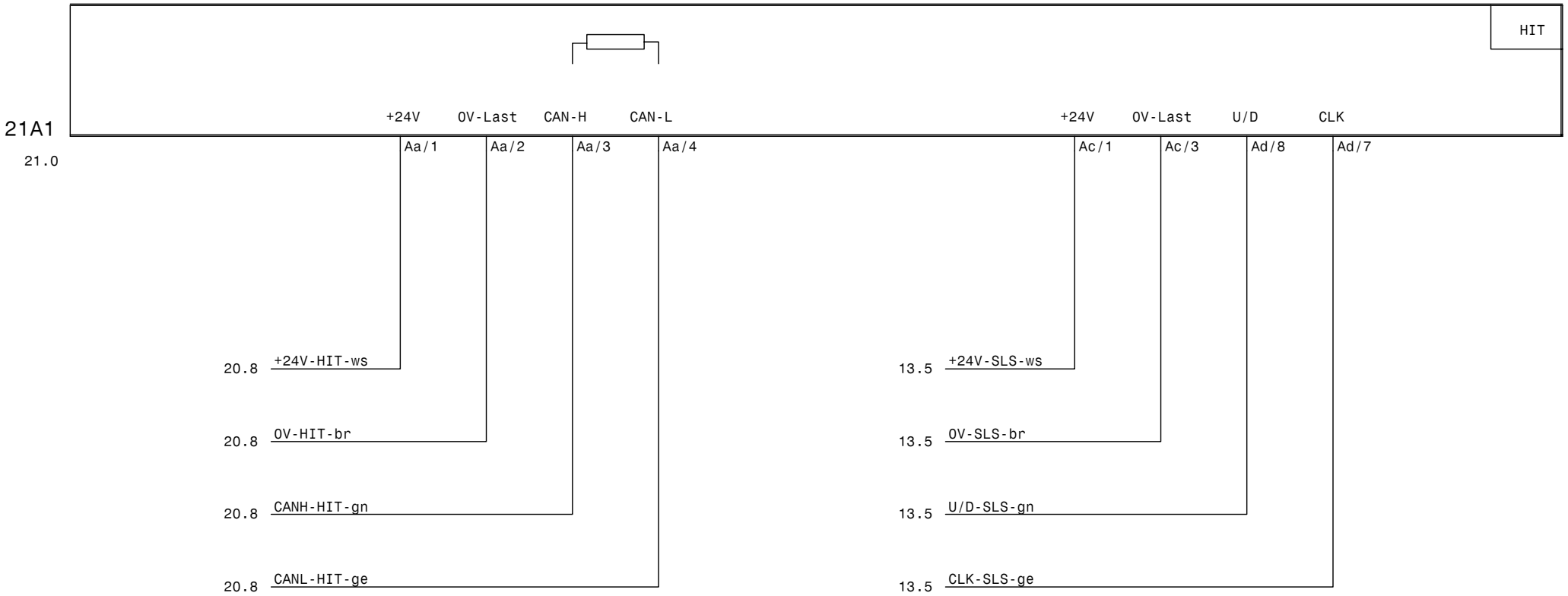
HUBTEX

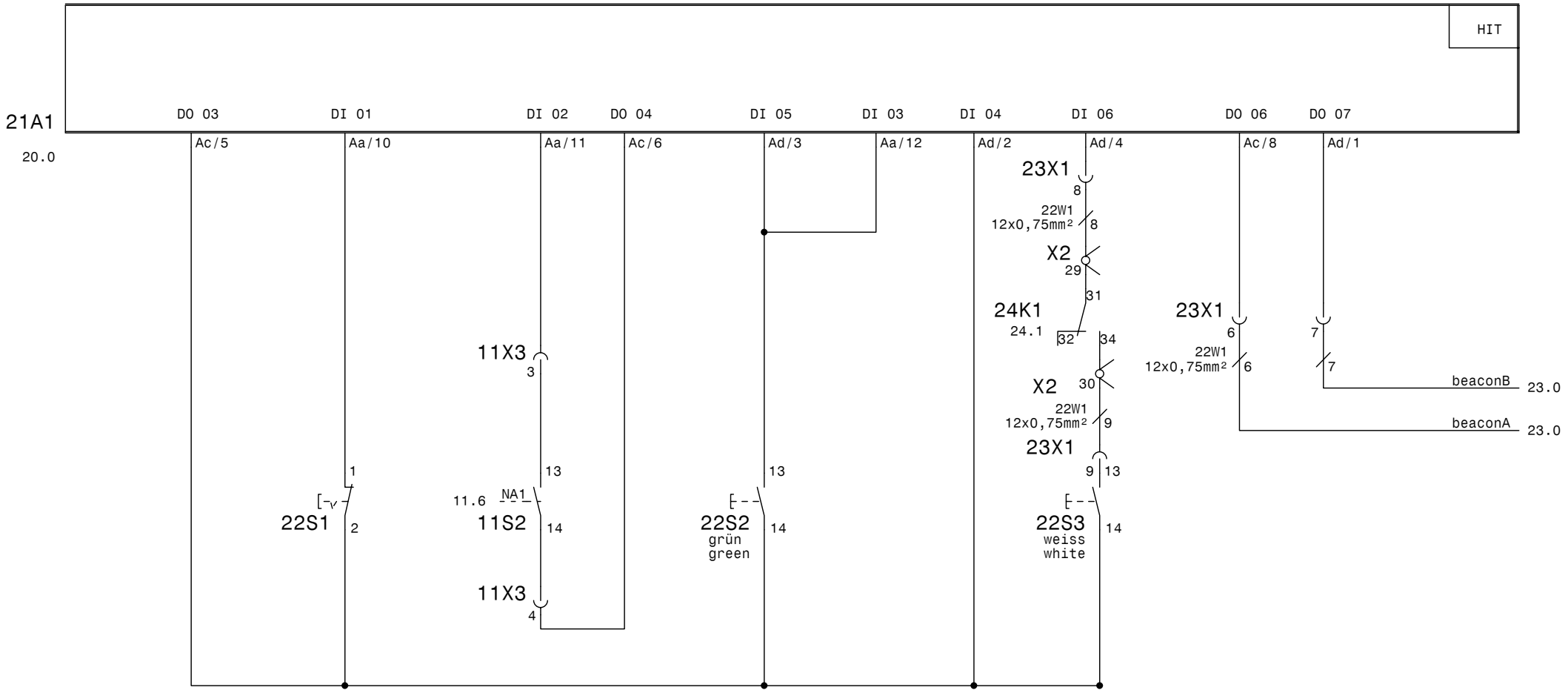
Blatt 19
Folge 20



Joystick
joystick

				Datum	22.09.04			MQ 40 EL/AC / ESTL 2125/1		
				Bearb.	S.Hohmann			Code H4 / 48 V / BPI		
				Gepr.	Meißner			14 kW Pumpe	E0056022	56022
Zustand	Änderung	Datum	Name	Freig.	Schmelz	Urspr. 55888	Ers. f.	Ers.d		Blatt 20 / Folge 21


HIT
21A1
21.0
+24V
OV-Last
CAN-H
CAN-L
+24V
OV-Last
U/D
CLK
Aa/1
Aa/2
Aa/3
Aa/4
Ac/1
Ac/3
Ad/8
Ad/7
20.8 +24V-HIT-ws
20.8 OV-HIT-br
20.8 CANH-HIT-gn
20.8 CANL-HIT-ge
13.5 +24V-SLS-ws
13.5 OV-SLS-br
13.5 U/D-SLS-gn
13.5 CLK-SLS-ge



Parkbremse
parking brake

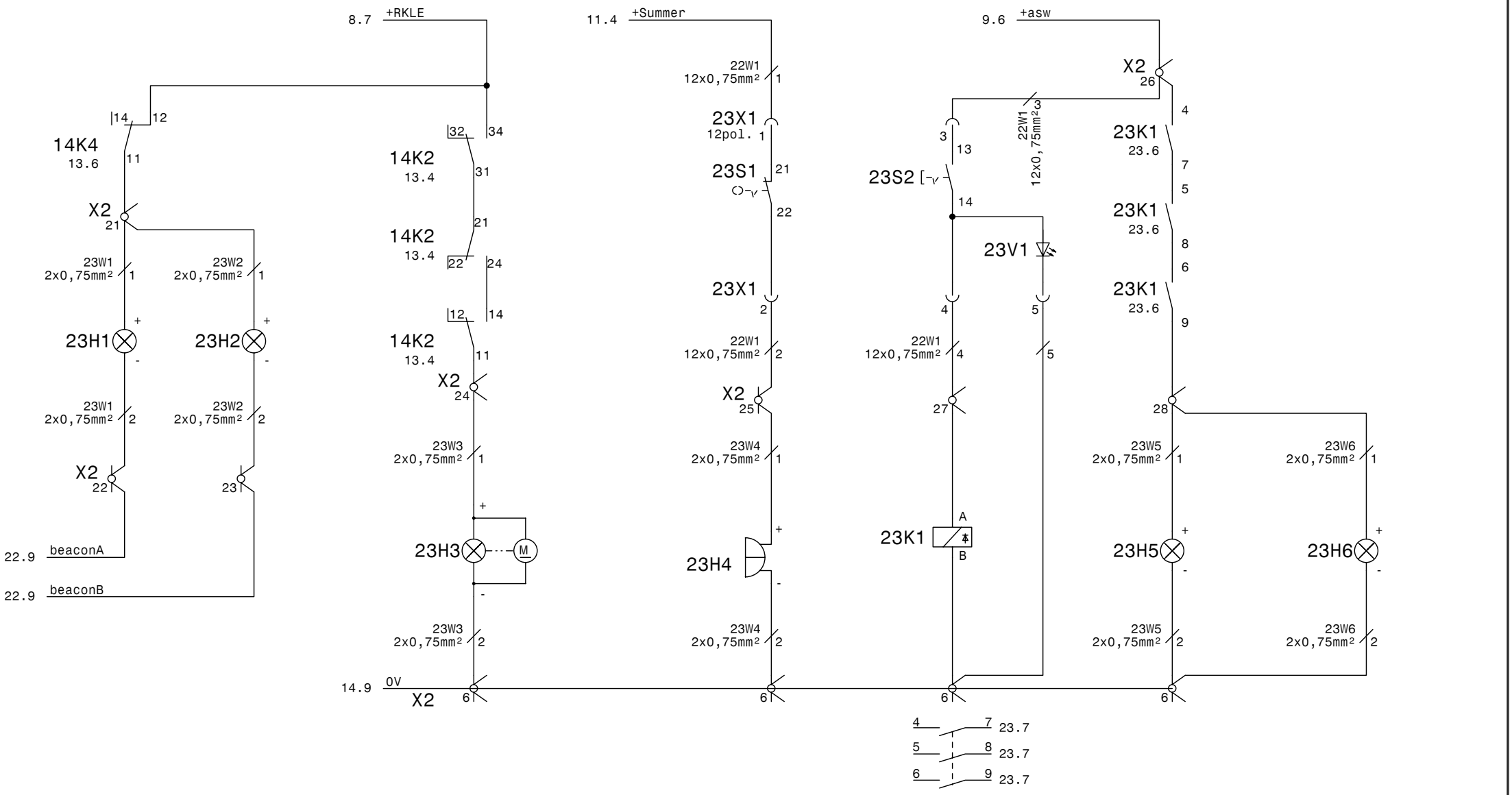
Not-Aus
emergency stop

Reset
reset

Überbr. Mastausschub
overr. mast reach stop

				Datum	22.09.04		HUBTEX.	MQ 40 EL/AC / ESTL 2125/1	
				Bearb.	S.Hohmann			Code H4 / 48 V / BPI	
				Gepr.	Meißner			14 kW Pumpe	
Zustand	Änderung	Datum	Name	Freig.	Schmelz	Urspr. 55888 / Ers. f.	Ers.d	E0056022	56022

Blatt 22
Folge 23



Blitzlampe A
flashing light A

Blitzlampe B
flashing light B

Rundumkennleuchte
flashing light

Summer
buzzer

Arbeitsscheinwerfer
working light

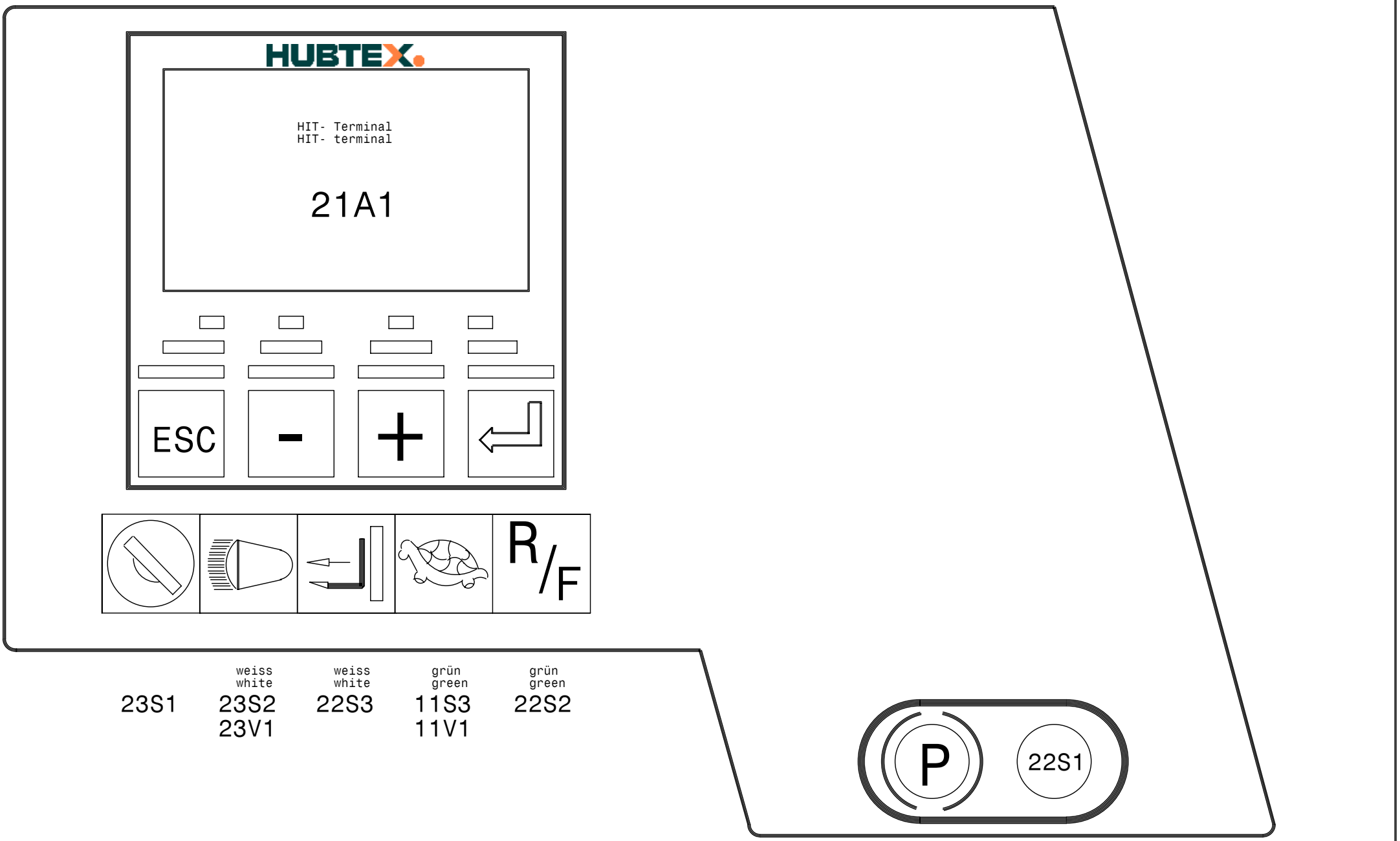
Arbeitsscheinwerfer 1
working light 1

Arbeitsscheinwerfer 2
working light 2

				Datum	22.09.04			MQ 40 EL/AC / ESTL 2125/1	
				Bearb.	S.Hohmann			Code H4 / 48 V / BPI	
				Gepr.	Meißner			14 kW Pumpe	
Zustand	Änderung	Datum	Name	Freig.	Schmelz	Urspr. 55888	Ers. f.	Ers.d	E0056022 / 56022

Blatt 23
Folge 24

				Datum	22.09.04			MQ 40 EL/AC / ESTL 2125/1			
				Bearb.	S.Hohmann			Code H4 / 48 V / BPI			
				Gepr.	Meißner			14 kW Pumpe			
Zustand	Änderung	Datum	Name	Freig.	Schmelz	Urspr. 55888	Ers. f.	Ers.d	E0056022	56022	Blatt 24
											Folge 25



				Datum	22.09.04			MQ 40 EL/AC / ESTL 2125/1		
				Bearb.	S.Hohmann			Code H4 / 48 V / BPI		
				Gepr.	Meißner			14 kW Pumpe		
Zustand	Änderung	Datum	Name	Freig.	Schmelz	Urspr. 55888	Ers. f.	Ers.d	E0056022	56022	Blatt 25 Folge

parts list

cur.no.	qty.	part no.	components name	component identification
1	2	4111266	main contact 320A	1X1
	1	4111260	housing 320A	
	1	4111270	coding pin 320A gray	
	1	4111274	handle	
2	2	4111256	main contact 320A	1X2
	1	4111250	housing 320A	
	1	4111270	coding pin 320A gray	
3	2	4111259	main contact 320A	1X3
	1	4111250	housing 320A	
	1	4111270	coding pin 320A gray	
	1	4111274	handle	
4	1	4181850	AC inverter	2A1
5	1	4143320	fuse 250A	2F1
	1	4143250	fuse holder	
6	1	see mechanics	AC drive motor	2M1
7	1	see mechanics	electric solenoid brake	2Y1
8	1	4167717	plug 8pol.	2X1
	1	4167719	housing	
	8	4167714	pin contact	
	8	4167716	contact	
9	1	4181850	AC inverter	3A1
10	1	4143320	fuse 250A	3F1
	1	4143250	fuse holder	
11	1	see mechanics	AC drive motor	3M1
12	1	see mechanics	electric solenoid brake	3Y1
13	1	4167717	plug 8pol.	3X1
	1	4167719	housing	
	8	4167714	pin contact	
	8	4167716	contact	
14	1	4181852	AC inverter	4A1

				Datum	22.09.04		HUBTEX.	MQ 40 EL/AC / ESTL 2125/1	
				Bearb.	S.Hohmann			Code H4 / 48 V / BPI	
				Gepr.	Meißner			14 kW Pumpe	E0056022 / 56022 / Blatt 1 / Folge 2
Zustand	Änderung	Datum	Name	Freig.	Schmelz	Urspr. ----	Ers. f.	Ers.d	

parts list

cur.no.	qty.	part no.	components name	component identification
15	1	4143340	fuse 355A	4F1
	1	4143250	fuse holder	
16	1	see hydraulics	AC pump motor	4M1
17	1	4160341	terminal strip 8pin	4X1
18	1	4144274	fuse 10A/80V	5F1
	1	4160506	fuse holder	
19	1	4134050	DC contactor SW 200 48V 1S	5K1
20	1	4134050	DC contactor SW 200 48V 1S	5K2
21	1	4134050	DC contactor SW 200 48V 1S	5K3
22	1	4167717	plug 8pol.	6X1
	1	4167719	housing	
	8	4167714	pin contact	
	8	4167716	contact	
23	1	4176430	horn 48V	7H1
24	1	4144275	fuse 15A/80V	7F1
	1	4160506	fuse holder	
25	1	4148971	diode	7V1
26	1	4175026	battery discharge indicator 48V	7A1
27	1	4176656	DC / DC converter 48-72V/24V 20A-0,5A	8G1
28	1	4144276	fuse 20A/80V	8F1
	1	4160506	fuse holder	
29	1	4144255	fuse 15A	8F2
	1	4160506	fuse holder	
30	1	4365010	fan 24V	8M1
31	1	4144251	fuse 4A	8F3
	1	4160506	fuse holder	
32	1	4365010	fan 24V	8M2
33	1	4144252	fuse 5A	8F4
	1	4160506	fuse holder	
34	1	4365010	fan 24V	8M3

parts list

cur.no.	qty.	part no.	components name	component identification
	1	4365011	pritective guard	
35	1	4176657	DC/DC converter 36-48V/24V 250W	9G1
36	1	4144274	fuse 10A/80V	9F1
	1	4160506	fuse holder	
37	1	4144252	fuse 5A	9F2
	1	4160506	fuse holder	
38	1	4144253	fuse 7,5A	9F3
	1	4160506	fuse holder	
39	1	4144286	fuse FK1 10A	10F1
40	1	4178220	steering control SLC 019 661	10A1
	1	4178221	wiring board	
	1	4160111	plug 23pol.	
	1	4160110	plug 16pol.	
41	1	4144286	fuse FK1 10A	10F2
42	1	4144282	fuse FK1 3A	10F3
43	1	4144282	fuse FK1 3A	10F4
44	1	4144284	fuse FK1 5A	10F5
45	1	4181723	accelerator pedal	11A1
46	1	4115012	emergency stop switch	11S2
	1	4114990	contact 1no/1nc with holder	
	1	4114949	adhesive tape emergency stop	
47	1	4121300	actuator	11S3
	1	4121336	contact 1s/1ö +LF	
	1	4121301	switch cover green	
48	1	4121353	LED green 24V	11V1
49	1	4114680	limit switch	12S1
50	1	4178172	setpoint generator SLS 403 610-2	13A1
51	1	4178210	actual value potentiometer	13R1
52	1	see hydraulics	electric solenoid valve	13Y1
53	1	4132522	relay	14K1

parts list

cur.no.	qty.	part no.	components name	component identification
54	1	4132515	relay 24V 3w	14K2
	1	4132001	relay socket	
	1	4132002	retaining clip	
55	1	4132015	relay 24VDC 1w	14K3
56	1	4132015	relay 24VDC 1w	14K4
57	1	see hydraulics	electric solenoid valve	15Y1
58	1	see hydraulics	electric solenoid valve	15Y2
59	1	see hydraulics	electric solenoid valve	15Y3
60	1	see hydraulics	electric solenoid valve	15Y4
61	1	4160340	terminal strip 3pin	16X1
62	1	4148576	potentiometer ML6	16R1
	1	4173090	forked coupling	
63	1	4148570	potentiometer WAL	16R2
64	1	4148570	potentiometer WAL	16R3
65	1	4160340	terminal strip 3pin	16X2
66	1	4148576	potentiometer ML6	16R4
	1	4173090	forked coupling	
67	1	4114872	actuator large roller	17S1
	1	4114871	actuator	
	1	4114870	limit switch	
	1	4114566	mounting plate	
68	1	4115633	ultra sonic sensor	17A1
69	1	4115633	ultra sonic sensor	17A2
70	1	see hydraulics	electric solenoid valve	18Y1
71	1	see hydraulics	electric solenoid valve	18Y2
72	1	see hydraulics	electric solenoid valve	18Y3
73	1	see hydraulics	electric solenoid valve	18Y4
74	1	see hydraulics	electric solenoid valve	18Y5
75	1	4366062	joystick with Hubtexhandle B9	20A1
76	1	4160100	plug 4pol.	20X1

parts list

cur.no.	qty.	part no.	components name	component identification
	1	4160118	strain relief 12,5mm	
77	1	4160100	plug 4pol.	20X2
	1	4160118	strain relief 12,5mm	
78	1	4178227	in-output terminal	21A1
	1	4160101	plug 6pol.	
	1	4160102	plug 8pol.	
	1	4160103	plug 10pol.	
	1	4160104	plug 12pol.	
79	1	4114929	action key (black)	22S1
	1	4114990	contact 1no/1nc with holder	
80	1	4121300	actuator	22S2
	1	4121330	contact 1s/1ö	
	1	4121301	switch cover green	
81	1	4121300	actuator	22S3
	1	4121330	contact 1s/1ö	
	1	4121305	switch cover white	
82	1	4126005	flashing light white	23H1
83	1	4126005	flashing light white	23H2
84	1	4126001	flashing light yellow	23H3
85	1	4176352	buzzer	23H4
86	1	4121315	key switch	23S1
	1	4121330	contact 1s/1ö	
87	1	4121354	LED white 24V	23V1
88	1	4132522	relay	23K1
89	1	4121300	actuator	23S2
	1	4121336	contact 1s/1ö +LF	
	1	4121305	switch cover white	
90	1	4125958	working light 145x74	23H5
	1	4125966	lamp H3 / 24V / 70W	
91	1	4125958	working light 145x74	23H6

				Datum	22.09.04		HUBTEX.	MQ 40 EL/AC / ESTL 2125/1	
				Bearb.	S.Hohmann			Code H4 / 48 V / BPI	
				Gepr.	Meißner			14 kW Pumpe	E0056022 / 56022 / Blatt 5 / Folge 6
Zustand	Änderung	Datum	Name	Freig.	Schmelz	Urspr. ----	Ers. f.	Ers.d	

parts list

cur.no.	qty.	part no.	components name	component identification
	1	4125966	lamp H3 / 24V / 70W	
92	1	see hydraulics	pressure switch	24S1
93	1	4132515	relay 24V 3w	24K1
	1	4132001	relay socket	
	1	4132002	retaining clip	
94	1	see hydraulics	temp. switch	24S2
95	1	4132522	relay	24K2
96	1	see hydraulics	fan oil cooler	24M1

				Datum	22.09.04		HUBTEX.	MQ 40 EL/AC / ESTL 2125/1	
				Bearb.	S.Hohmann			Code H4 / 48 V / BPI	
				Gepr.	Meißner			14 kW Pumpe	E0056022 / 56022 / Blatt 6
Zustand	Änderung	Datum	Name	Freig.	Schmelz	Urspr. ----	Ers. f.	Ers.d	Folge