

**Operating instructions**

# **Vacuum Lifting Device Uplifter UPG 600**

**Note**

The operating instructions were written in German. Keep for future reference. Subject to technical changes, printing errors and mistakes.

**Publisher**

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<b>Index</b> .....	6
<b>1 Important information</b> .....	7
1.1 The technical documentation is part of the product.....	7
1.2 Notes on handling this operating manual.....	7
1.3 Applicable documents.....	7
1.4 Symbols.....	7
1.5 Information signs on the lifting device.....	8
1.6 Type plate.....	9
<b>2 Basic safety instructions</b> .....	10
2.1 Intended use.....	10
2.2 Non-intended use.....	10
2.3 Personnel qualification.....	10
2.4 Warnings in this document.....	11
2.5 Danger area.....	11
2.6 Environmental and operating conditions.....	11
2.7 Personal protective equipment.....	12
2.8 Safety devices.....	13
2.9 Technical condition.....	13
2.10 Responsibility of the operator.....	13
2.11 Country-specific regulations for the operator.....	14
<b>3 Product description</b> .....	15
3.1 Lifting device with manual slide valve.....	15
3.1.1 Components.....	15
3.1.2 Main switch.....	15
3.1.3 Manual slide valve.....	16
3.2 Lifting device with buttons.....	17
3.2.1 Components.....	17
3.2.2 Main switch.....	18
3.2.3 Control panel.....	18
3.2.4 Radio remote control (option).....	18
3.3 Vacuum pump.....	19
3.4 Suction plates.....	19
3.5 Energy supply.....	19
3.6 Load arm with hydraulic cylinder (option).....	20
<b>4 Technical data</b> .....	21
4.1 Lifting device.....	21
4.2 Vacuum generation.....	21
<b>5 Transport and storage</b> .....	22
5.1 Protective equipment.....	22
5.2 Check delivery.....	22
5.3 Remove packaging.....	22
5.4 Transporting lifting equipment.....	23
5.5 Storing the lifting device.....	23
<b>6 Installation</b> .....	24
6.1 Security.....	24

6.1.1	Safety instructions for installation .....	24
6.1.2	Protective equipment.....	24
6.2	Attach lifting device .....	24
6.3	External release signal for releasing the load .....	25
6.4	Tests before commissioning.....	25
<b>7</b>	<b>Operation .....</b>	<b>26</b>
7.1	Security.....	26
7.1.1	Personnel qualification.....	26
7.1.2	Safety instructions for operation.....	26
7.1.3	Protective equipment.....	27
7.1.4	Use lifting equipment properly.....	27
7.1.5	Behaviour in an emergency .....	28
7.2	Check before starting work.....	28
7.3	Adjusting the position of the suction plates .....	29
7.4	Suction plate assembly .....	29
7.5	Move support bolt .....	31
7.6	Working without load arm .....	31
7.6.1	Dismantle load arm .....	32
7.6.2	Suspending lifting equipment from shackles.....	33
7.6.3	Attach load arm .....	33
7.7	Suck in load .....	33
7.7.1	Lifting device with manual slide valve .....	35
7.7.2	Lifting device with buttons / radio remote control.....	36
7.8	Handle load .....	36
7.9	Guiding a lifted load safely .....	36
7.10	Swivel load .....	37
7.10.1	Swivel load (without hydraulic cylinder).....	37
7.10.2	Swivel load (with hydraulic cylinder option).....	38
7.11	Turn load .....	40
7.12	Lay down load .....	41
7.12.1	Lifting device with manual slide valve .....	42
7.12.2	Lifting device with buttons / radio remote control.....	42
7.13	Parking the lifting device.....	43
7.14	Charge battery .....	43
<b>8</b>	<b>Troubleshooting.....</b>	<b>45</b>
8.1	Security.....	45
8.1.1	Safety instructions for troubleshooting .....	45
8.1.2	Protective equipment.....	46
8.2	Help with faults.....	46
<b>9</b>	<b>Maintenance.....</b>	<b>49</b>
9.1	Security.....	49
9.1.1	Safety instructions for maintenance.....	49
9.1.2	Protective equipment.....	50
9.2	Regular examinations .....	50
9.3	Maintenance plan .....	51
9.4	Check safety devices.....	52
9.4.1	Check pressure gauge and warning device .....	52
9.4.2	Check vacuum hoses and hose clamps .....	52
9.4.3	Checking the tightness of the lifting device .....	53
9.4.4	Check pressure drop at dust filter.....	53
9.5	Clean dust filter.....	53
9.6	Cleaning the lifting device .....	55

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9.7	Replace battery .....	55
<b>10</b>	<b>Decommissioning and recycling.....</b>	<b>57</b>
10.1	Security.....	57
10.2	Taking the lifting device out of operation.....	57
10.3	Dispose of lifting equipment.....	57
<b>11</b>	<b>Declarations of conformity.....</b>	<b>58</b>
11.1	EU conformity.....	58
11.2	UKCA compliance .....	59

## Index

<b>A</b>		<b>P</b>	
Automatic switch-off	19	Test load	52, 53
<b>B</b>		<b>R</b>	
Battery	15, 17, 19, 19, 43, 48, 55, 57	Friction disc	51
Charger	19, 43, 51	Cleaning agents	55
Charge status display	18, 19, 51	Residual vacuum	41, 42, 43
<b>D</b>		<b>S</b>	
DGUV Regulation	50	Focus	34
Turntable	51	Safety devices	13, 52
Throttle valve	20, 39	Dust filter	46, 51, 53, 53
<b>E</b>		<b>T</b>	
Energy saving	19	Temperature range	12
Spare parts orders	9	Support bolt	15, 17, 20, 31, 51
Spare parts	13	Load capacity, maximum permissible	24, 26
<b>F</b>		Type plate	9
Radio remote control	17, 18, 36, 42, 47	<b>U</b>	
Battery of the	47	Ambient pressure	12
<b>G</b>		Ambient air	12
Hearing protection	27	<b>V</b>	
Noise level	27	Vacuum pump	15, 17, 19
Plain bearing bush	51	<b>W</b>	
<b>H</b>		Warning device	47, 51, 52
Manual slide valve	15, 35, 42, 46	Warning tone	35, 52, 52
Main switch	15, 17, 18		
Hydraulic cylinder	15, 17, 20, 48		
Throttle valve	20, 39, 48		
<b>K</b>			
Cold cleaner	55		
Chain hoist	24		
<b>L</b>			
Charger	7, 15, 17, 19, 43, 48		
State of charge indicator	19		
Load arm	15, 20, 24, 31, 31, 34, 41		
<b>M</b>			
Pressure gauge	18, 36, 51, 52		
Minimum vacuum	12, 35, 36, 47, 52, 52		

# 1 Important information

## 1.1 The technical documentation is part of the product

1. For trouble-free and safe operation, follow the instructions in the documents.
  2. Keep the technical documentation near the product. It must be accessible to personnel at all times.
  3. Pass on the technical documentation to subsequent users.
- ⇒ Failure to observe the instructions in this operating manual may result in life-threatening injuries!
- ⇒ Uplifter accepts no liability for damage or operational faults resulting from non-compliance with the instructions.

If you still have questions after reading the technical documentation, contact Uplifter Service at:  
[www.uplifter.de](http://www.uplifter.de)

## 1.2 Note on handling this operating manual

The UPG product is commonly called a lifting device.

Uplifter GmbH & Co KG is generally referred to as Uplifter in these operating instructions.

These operating instructions contain important notes and information on the various operating phases of the hoist:

- Transport, storage, commissioning and decommissioning
- Safe operation, necessary maintenance work, rectification of possible faults

The operating instructions describe the UPG lifting device at the time of delivery by Uplifter.

The illustrations shown are examples. They may deviate from the product depending on the design.

## 1.3 Applicable documents

- Operating instructions Battery
- Operating instructions Charger
- Electrical circuit diagram
- Spare and wear parts list
- Operating instructions for vacuum generator (vacuum pump or vacuum blower)
- Operating instructions Dust filter

## 1.4 Symbols



This sign indicates useful and important information.

- ✓ This sign stands for a prerequisite that must be fulfilled before an action step can be taken.
- ▶ This sign stands for an action to be performed.
- ⇒ This sign stands for the result of an action.

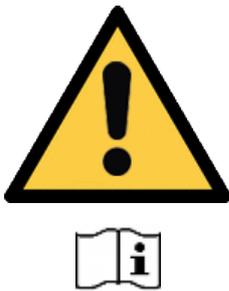
Actions consisting of more than one step are numbered:

1. First action to be performed.
2. Second action to be performed.

### 1.5 Information signs on the lifting device

Read instruction

27.03.01.00291



Next UVV inspection (valid for Germany)

27.03.01.00544



Safety instructions

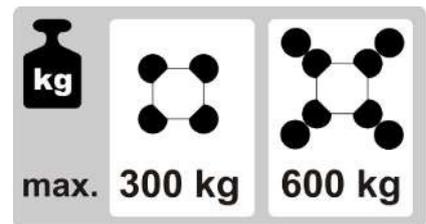
Date clock for UVV inspection

27.03.01.00055

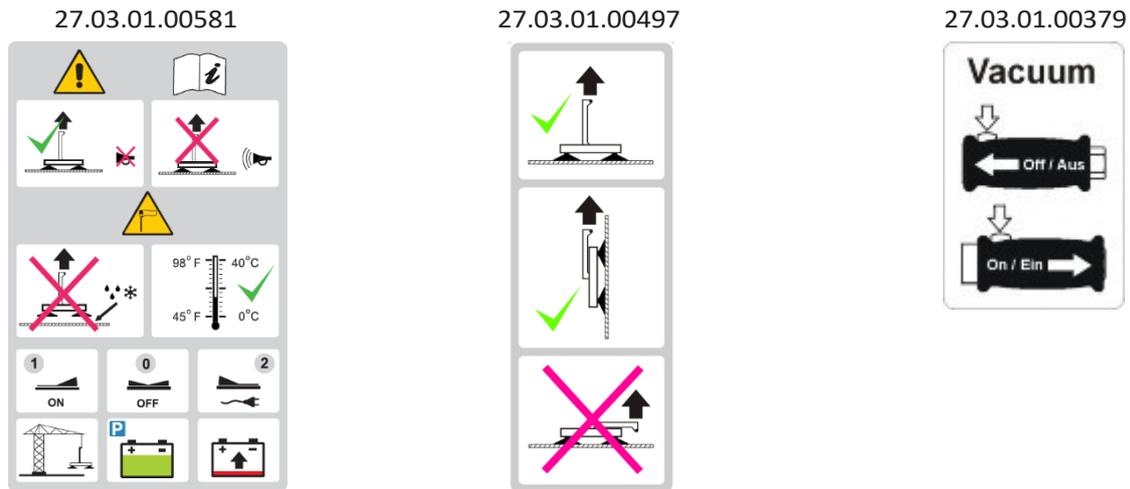


Handling

Permissible load 27.03.01.00498



Hand slide valve



## 1.6 Nameplate

The type plate contains the following data depending on the product:

- Device abbreviation
- Order number
- Serial number or SNR
- Year of manufacture
- Max. permissible load
- Dead weight
- Electrical voltage

The type plate is firmly attached to the product and must always be clearly legible. It contains product identification data and important technical information.

- ▶ For spare parts orders, warranty claims or other enquiries, have the information on the type plate ready.

## 2 Basic safety instructions

### 2.1 Intended use

The UPG 600 lifting device is used exclusively for the manual lifting, transporting and, if necessary, also swivelling or rotating of suction-tight loads close to the ground and not close to the ground with the aid of a suitable lifting aid.

The load can be picked up in a horizontal or vertical position. The load can be rotated and swivelled using the lifting device.

The suction surfaces of the load to be lifted must be suction-tight, i.e. if the vacuum generation fails, the lifted load must be held for at least five minutes. This must be ensured by several lifting tests during commissioning or before handling an unknown load ([> see chap. 6.4 Tests before commissioning, p. 25](#)).

Protective films must be removed at least in the area of the suction plates.

The load to be lifted must have sufficient inherent stability so that it is not damaged during gripping and handling.

The lifting device is built according to the state of the art and is delivered in a safe condition, however, dangers may arise during use. Observe the warnings in these operating instructions.

The maximum permissible load must not be exceeded (> see chapter Technical data).



When suction plates are switched off, the lifting capacity of the lifting device is reduced in proportion to the number of suction plates switched off.

### 2.2 Use not in accordance with the intended purpose

Uplifter accepts no liability for damage caused by the use of the lifting device for purposes other than those described in the intended use. Use of the lifting device for loads that are not specified in the order confirmation or that have physical properties other than the loads specified in the order confirmation is deemed to be improper use.

In particular, the following types of use are considered improper:

- Use as a climbing aid.
- Lifting people or animals.
- Store the load in the aspirated state.
- Suction of building parts, equipment or the subsoil.
- Aspiration of liquid.
- Suction of bulk material (e.g. granulates).
- Evacuating objects at risk of implosion.
- Supporting the lifting movement by applying external forces.
- Suspending loads with ropes, chains or similar.

### 2.3 Personnel qualification

Unqualified personnel cannot recognise risks and are therefore exposed to higher dangers! The operator must ensure the following points:

- The personnel must be authorised for the activities described in these operating instructions.
- Staff must be over 18 years of age and physically and mentally fit.

- The product may only be operated by persons who have undergone appropriate training.
- Staff must receive regular safety training (frequency according to country-specific regulations).
- Work on the electrical system may only be carried out by qualified electricians.
- Installation as well as repair and maintenance work may only be carried out by qualified personnel of Uplifter GmbH & Co. KG or by persons who can prove that they have received appropriate training from Uplifter.

The following target groups are addressed in these operating instructions:

- Persons trained in the operation and cleaning of the product.
- Mechanical and electrical specialists who are responsible for the installation, troubleshooting and maintenance of the product.

Valid for Germany:

A skilled worker is someone who, on the basis of his technical training, knowledge and experience, as well as his knowledge of the relevant regulations, can assess the work assigned to him, recognise possible dangers and take suitable safety measures. A skilled worker must comply with the relevant technical regulations.

## 2.4 Warnings in this document

Warnings warn of hazards that may occur when handling the product. The signal word indicates the danger level.

Signal word	Meaning
<b>DANGER</b>	Indicates a hazard with a high risk that will lead to death or serious injury if not avoided.
<b>WARNING</b>	Indicates a hazard with medium risk that can lead to death or serious injury if not avoided.
<b>CAUTION</b>	Indicates a hazard with a low risk that may result in minor or moderate injury if not avoided.
<b>NOTE</b>	Indicates a hazard that leads to property damage.

## 2.5 Danger area

Persons who are in the danger zone of the UPG lifting device can suffer life-threatening injuries.

The danger zone of the UPG lifting device includes the following areas:

- The area directly under the lifting device and the load.
- The immediate surroundings of the lifting device and the load.

## 2.6 Environmental and operating conditions



### **⚠ DANGER**

#### **Uncontrolled movements of the lifting device due to wind**

Risk of injury

- ▶ Only work with the lifting device in a windless environment.



### CAUTION

#### **Hazardous\* aerosols, dusts, vapours, gases or solvents in the ambient air**

Risk of injury from the load falling down due to damage in vacuum-carrying components (vacuum generator, vacuum supply hoses, suction cup, ...)!

Danger of respiratory problems due to hazardous substances that are sucked in and distributed by the vacuum generator.

- ▶ Before starting work, make sure that the ambient air does not contain any hazardous substances.
- ▶ Ensure that there are no hazardous substances on the load that can be sucked in.

⇒ \*) Examples of hazardous substances: acids, alkalis, conductive dusts, flammable media, ...



### CAUTION

#### **Clogging of the vacuum system due to suction of liquids**

Risk of injury from the load falling down!

- ▶ Do not aspirate any liquids or bulk materials.
- ▶ Observe the pressure gauges and the signal of the warning device.

The UPG lifting device may only be operated under the following conditions:

- Temperature range from 0°C to +40°C.
- The contact surfaces between the suction cup and the load must be free from moisture, wetness, dirt, dust, oil or other substances that reduce friction.
- The UPG lifting device must be sufficiently dimensioned for the load case.

**Negative list:** The product must **not** be operated under the following conditions:

- Use in an explosive environment may cause an explosion.
- The required minimum vacuum cannot be achieved at an ambient pressure of below 820 mbar (corresponds to locations above 1600 m above sea level).
- ▶ If in doubt, consult Uplifter before commissioning.

## **2.7 Personal protective equipment**

To avoid injury, always wear suitable protective equipment appropriate to the situation.

Observe the instructions on protective equipment in the respective chapters as well as country-specific regulations.

## 2.8 Safety devices

The lifting device has the following safety devices:

- Two redundant vacuum circuits:  
The components of the vacuum circuits are colour-coded.
  - A vacuum manometer shows the current vacuum in the vacuum distributor for each vacuum circuit.
  - Audible warning device:  
A warning tone sounds when the vacuum is between 0 bar and -0.6 bar.
  - A warning tone sounds when the battery charge level is insufficient.
  - A vacuum reservoir with a non-return valve for each vacuum circuit maintains the vacuum for at least five minutes in the event of a power failure (> see chapter Intended use).
- ▶ Before each start-up, ensure that the safety devices are in perfect condition ([> see chap. 9 Maintenance, p. 49](#)).

## 2.9 Technical condition

If the product is operated in a defective condition, safety and function are impaired.

- Only operate the product in technically perfect original condition.
- Follow the maintenance schedule (> see chapter Maintenance).
- Only use Uplifter original spare parts.
- If the operating behaviour changes, check the unit for faults. Remedy faults immediately!  
If the fault cannot be remedied immediately, take the unit out of operation and mark it as defective.
- Do not modify or alter the product without authorisation.
- Do not under any circumstances render safety devices ineffective.
- Ensure that the vacuum hoses are not damaged by pointed or sharp-edged objects.

Uplifter accepts no liability for the consequences of any change outside its control.

## 2.10 Responsibility of the operator

The operator is obliged to carry out a risk assessment for the environmental conditions at the place of use.

The operator is jointly responsible to third parties in the working area of the product. There must be no unclear competences.

- Ensure that the product cannot be put into operation by unauthorised persons.
- Ensure that the product cannot be used during maintenance or servicing work.
- Clearly define the responsibilities for the different activities.
- Ensure that responsibilities are respected.
- When handling unknown loads, carry out tests to ensure safe operation.

### **2.11 Country-specific regulations for the operator**

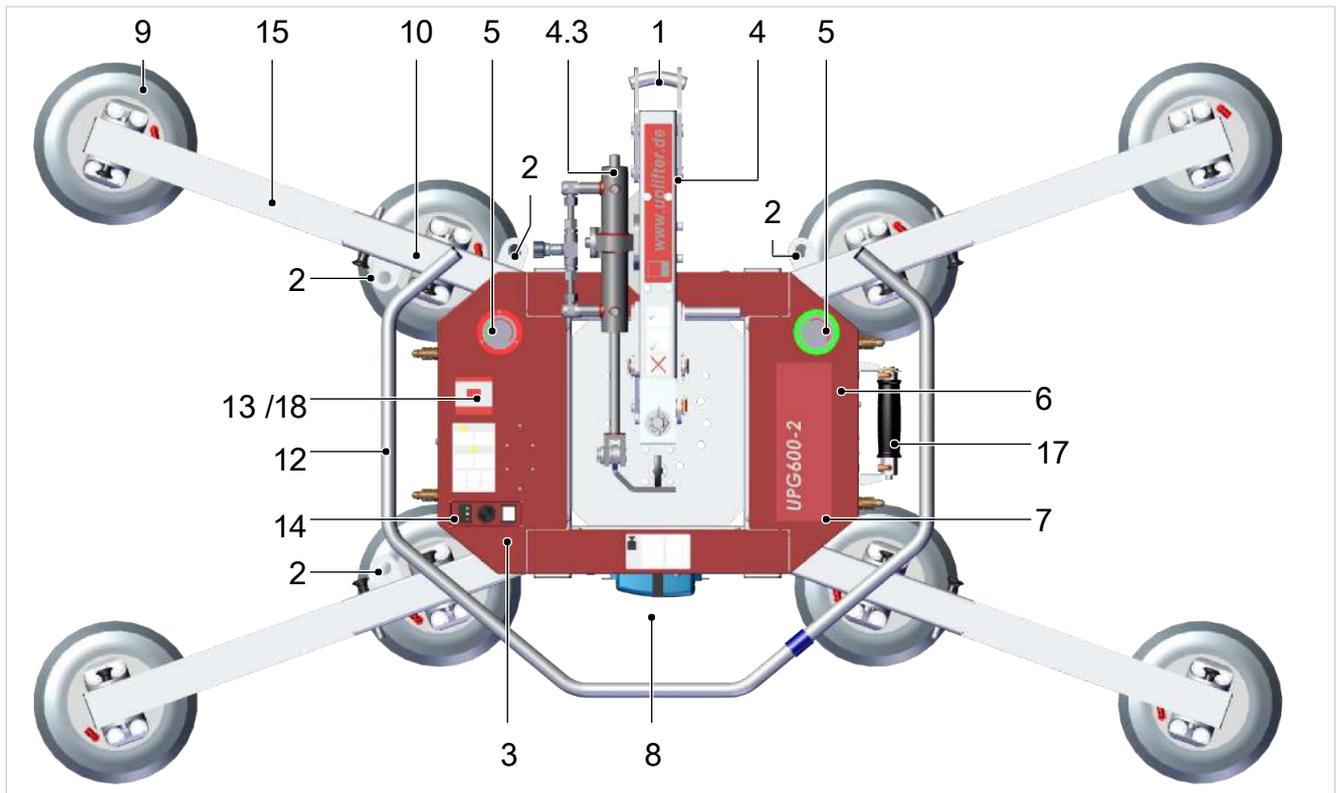
- Observe the country-specific regulations on accident prevention, safety inspection and environmental protection.
- Do not use the lifting equipment until you have ensured that the lifting gear (crane, chain hoist, etc.) with which it is handled complies with national regulations and safety rules.

## 3 Product description

### 3.1 Lifting device with manual slide valve

#### 3.1.1 Components

UPG 600 with manual slide valve (17)



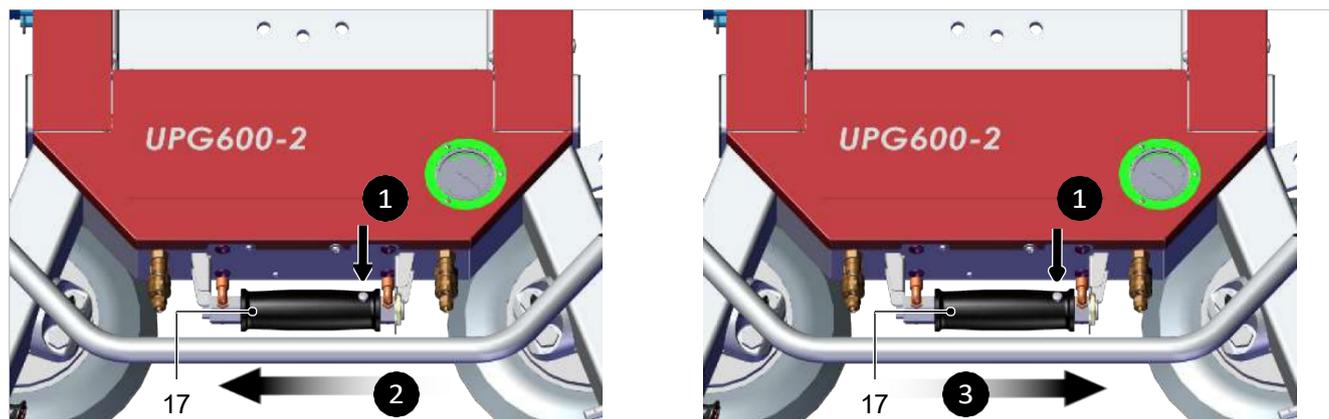
1	Support bolt	9	Suction plate
2	Additional suspension eyes (only use in pairs (> see chap. Working without load arm))	10	Load traverse base body
3	Main switch	12	Operating handle
4	Load arm	13	Battery cover
4.3	Hydraulic cylinder for lowering (option)	14	Battery charge level indicator
5	Vacuum pressure gauge circuit 1 / circuit 2	15	Load beam extension
6	Device cover	17	Manual slide valve
7	Vacuum pump (under the unit cover (6))	18	Battery (under the battery cover)
8	Charger		

#### 3.1.2 Main switch

The main switch (3) is used to switch the lifting device on or off.

Switch position main switch	Function
0	OFF
1	ONE
2	Charging mode

### 3.1.3 Manual slide valve



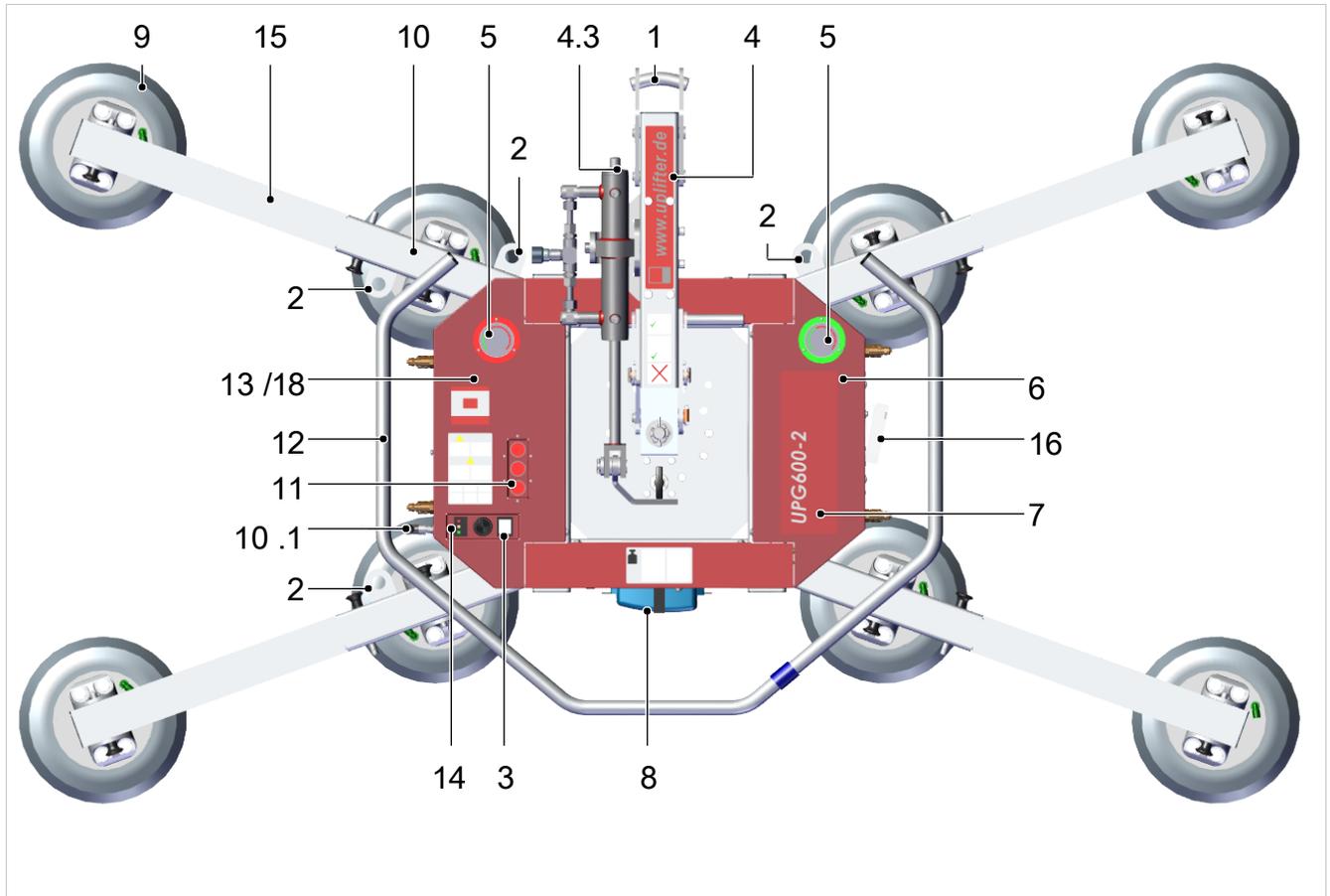
Function manual slide valve:

- Suck in the load: Press the locking button **1** and push the manual slide valve (17) spring-assisted in the direction of **2**.
- Release the load: Press the locking button **1** and push the manual slide valve (17) against the spring force in the direction of **3**.

## 3.2 Lifting device with buttons

### 3.2.1 Components

UPG 600 with control panel, push-button for load suction / release (11) or radio remote control (option, 16)



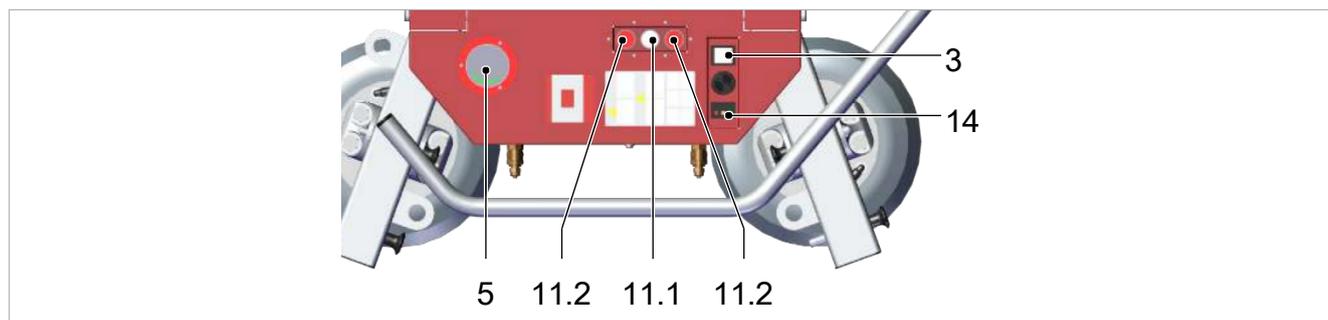
1	Support bolt	10	Load traverse base body
2	Additional suspension eyes (only use in pairs (> see chap. Working without load arm))	10.1	Socket for external potential-free free signal
3	Main switch	11	Control panel, button for load suction / release
4	Load arm	12	Operating handle
4.3	Hydraulic cylinder for lowering (option)	13	Battery cover
5	Vacuum pressure gauge circuit 1 / circuit 2	14	Battery charge level indicator
6	Device cover	15	Load beam extension
7	Vacuum pump (under the unit cover (6))	16	Transmitter Radio remote control (option)
8	Charger	18	Battery (under the battery cover)
9	Suction plate		

### 3.2.2 Main switch

The main switch (3) is used to switch the lifting device on or off.

Switch position main switch	Function
0	OFF
1	ONE
2	Charging mode

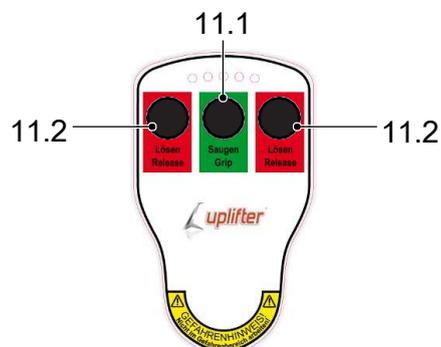
### 3.2.3 Control panel



3	Main switch	11.1	Suck in load
5	Vacuum manometer	11.2	Detach load (press simultaneously)
		14	Battery charge level indicator

### 3.2.4 Radio remote control (option)

The radio remote control (option) makes it possible to maintain a certain safety distance when lifting or releasing the load. The radio remote control may only be used with visual contact to the lifting device. The buttons on the control panel remain active.



11.1	Suck in load	11.2	Release load (press simultaneously)
------	--------------	------	-------------------------------------

The radio remote control can also be retrofitted to existing units. See separate installation instructions. See the operating instructions for the radio remote control in the appendix.

The radio remote control has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. The radio remote control generates, uses and can radiate radio frequency waves which, if not used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If the radio remote control causes interference to radio or TV reception when switched on or off, it is recommended that the interference be corrected by one or more of the following measures:

- Increase the distance between the radio remote control and the receiver.
- Consult the Uplifter GmbH & Co. KG service or an experienced radio/TV specialist.

### 3.3 Vacuum pump

The vacuum pump (7) is designed for smooth and suction-tight loads.

For energy saving, the vacuum generator is automatically switched off as soon as the vacuum is reduced from

-0.73 bar is reached. The vacuum generator switches on again automatically as soon as the vacuum drops below -0.63 bar.



#### **! DANGER**

**Falling of the load due to unauthorised adjustment of the automatic switch-off of the vacuum generator.**

Severe injuries or death!

- ▶ The automatic switch-off of the vacuum generator is optimally set at the factory and must not be adjusted.

### 3.4 Suction plates

The suction plates (9) are used to suck in the loads. The choice of suction plates depends on the load (weight, geometry and surface properties). All suction plates must be fully seated on the load in order to be able to lift the load.

### 3.5 Energy supply

The lifting device is powered by a rechargeable 12 V battery (lead battery).

To charge the battery, the charger must be connected to the mains voltage ([> see chap. 7.14 Charging the battery, p. 43](#)).

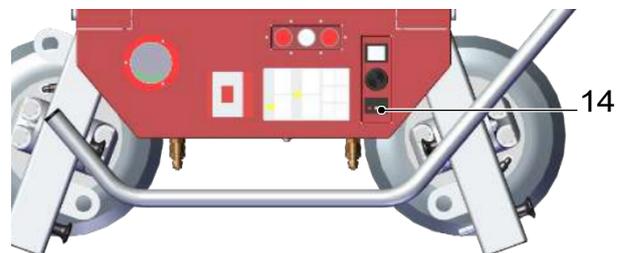


When the charger is disconnected from the mains, the main switch must be set to **0** to avoid deep discharge of the battery.



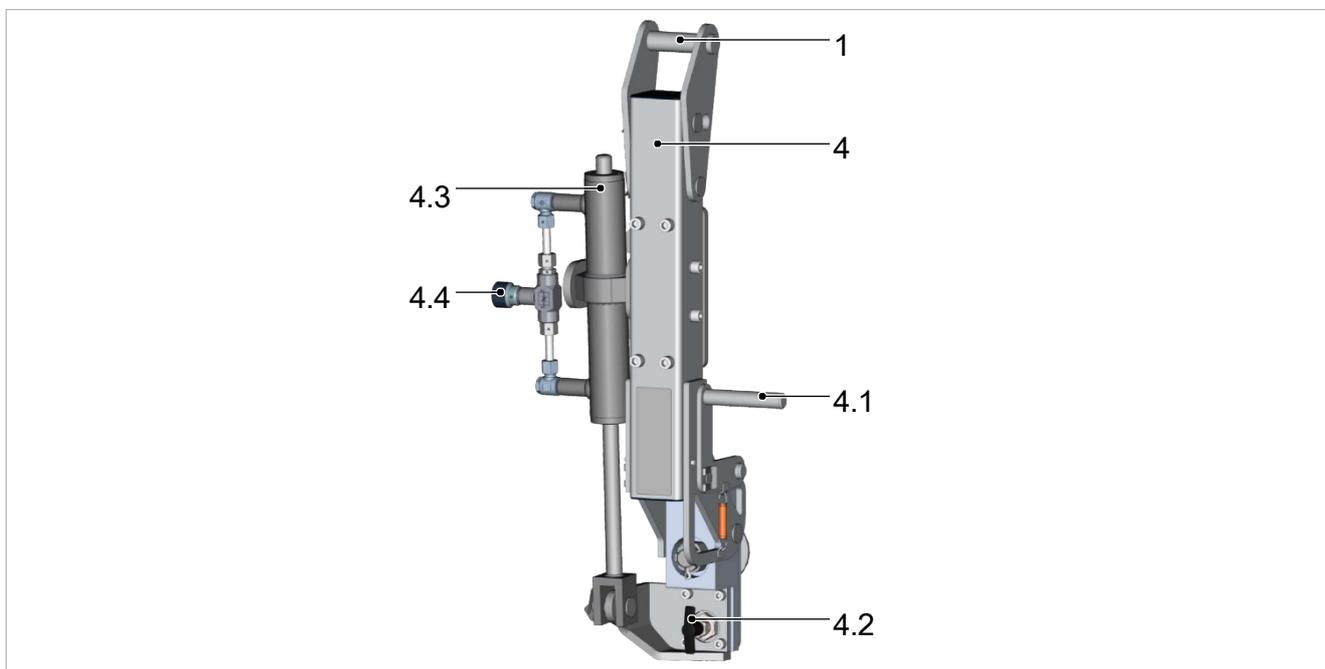
See the charger operating instructions in the appendix.

The display (14) shows the charge status of the battery an:



Display (14)	State of charge
RED	<p>The battery is discharged. The safety mode is activated.</p> <p>The current cycle continues, but no further cycle may be started after detachment.</p> <ul style="list-style-type: none"> <li>▶ Charge the battery.</li> </ul>
YELLOW	<p>The battery is partially discharged.</p> <ul style="list-style-type: none"> <li>▶ Charge the battery.</li> </ul>
GREEN	<p>The battery is charged.</p> <ul style="list-style-type: none"> <li>▶ The lifting device is ready for use.</li> </ul>

### 3.6 Load arm with hydraulic cylinder (option)



1	Support bolt	4.3	Hydraulic cylinder for lowering
4	Load arm	4.4	Throttle valve
4.1	Operating lever for detent		
4.2	T-handle		

The load arm is used to attach the lifting device to the hoist and to swing the load. In confined working conditions, the load arm can be dismantled.

The hydraulic cylinder enables the load to be held steplessly at the desired swivel angle.

## 4 Technical data

### 4.1 Lifting device

	With 4 suction plates	With 6 suction plates	With 8 suction plates
Max. Load capacity	300 kg	450 kg	600 kg
Dead weight	71 kg	80 kg	89 kg
Workpiece minimum size	1,200 x 1,000 mm	2,600 x 1,200 mm	2.400 x 1.400 mm
Capacity of the battery (lifting device with manual sliding valve)	9.0 Ah		
Unit voltage	12 V DC		
Charging voltage and charging current	See charger type plate.		
Operating time	approx. 8 h		
Pumped medium	Air		

#### Requirements for the maximum permissible load:

- The specified permissible loads refer to a vacuum of -0.6 bar .
- The load is suction-tight.
- All suckers are occupied by the load.
- The contact surfaces between the suction cup and the load must be free from moisture, wetness, dirt, dust, oil or other substances that reduce friction.

Above an altitude of 1600 m above sea level, the lifting device must not be used, as the required minimum vacuum cannot be achieved due to the lower air pressure.

### 4.2 Vacuum generation



For technical data, see the type plate on the vacuum generator.

## 5 Transport and storage

### 5.1 Protective equipment

The following protective equipment is required for handling:

- Safety shoes safety class S1 or better
- Solid work gloves Safety category 2231 or better
- Industrial safety helmet according to EN 397

### 5.2 Check delivery

The scope of delivery can be taken from the order confirmation. The weights and dimensions are listed in the delivery papers.

1. Check the entire consignment for completeness using the enclosed delivery papers.
2. Possible damage due to inadequate packaging or transport must be reported immediately to the carrier and Uplifter.



#### CAUTION

##### **Battery damaged during transport**

Danger of explosion due to sparks or open fire! Danger of chemical burns due to escaping acid!

- ▶ Keep sparks and open flames away from the hoist.
- ▶ Have the battery replaced by qualified personnel.
- ▶ Wear acid-proof work gloves.
- ▶ Wear protective goggles.



See the battery operating instructions in the appendix.

### 5.3 Remove packaging

The unit is delivered in a transport box with fixing straps attached.



#### **NOTE**

##### **Sharp knives or blades**

Damage to the components!

- ▶ When opening the packaging, make sure that no components are damaged.

1. Remove marked transport aids and fuses.
2. Open and remove the fixing straps.
3. Keep the packaging for later transport or storage.

## 5.4 Transport lifting device

The lifting device may only be transported by persons who are authorised and qualified to transport it with lifting equipment or industrial trucks.



### **WARNING**

#### **Falling objects during handling**

Severe injuries or death!

- ▶ Ensure that the lifting aids and slings used are sufficiently dimensional.
- ▶ Secure the components before handling in accordance with the country-specific regulations.



### **WARNING**

#### **Serious injuries or death due to falling objects!**

- ▶ Before any handling, make sure that there are no persons in the danger zone.
- ▶ Ensure that there are no loose objects on the lifting device.

## 5.5 Store lifting device

If the lifting device is not used for a long period of time, it must be stored correctly to protect it from damage. Possibilities for correct storage:

- Let the lifting device hang close to the ground.
- Unhook the lifting device and put it into storage.



### **NOTE**

#### **Damage to the suction plates due to unsuitable parking situation!**

- ▶ The lifting device can be parked for a short time on a smooth, level surface.
- ▶ Do not store the lifting device on the suction plates.



### **NOTE**

#### **The effects of ozone, light (especially UV), heat, oxygen, moisture and mechanical influences can shorten the service life of rubber products.**

Damage to the suction plates due to incorrect storage!

- ▶ Keep rubber parts such as suction cups and suction plates cool (0°C to +15°C, but max. 25°C), dark, dry, low-dust, protected from weather, ozone and draughts, and chip-resistant.  
Store in an unobstructed manner (e.g. suitable stacking without deformation).

1. Store the lifting device protected from the weather.
2. Store the lifting device in a well-ventilated place free from frost.

## 6 Installation

### 6.1 Security

#### 6.1.1 Safety instructions for installation

The lifting device may only be installed and serviced by qualified electricians and mechanics.



#### **WARNING**

##### **Improper assembly**

Severe injuries or death!

- ▶ Assembly or disassembly is only permitted in a de-energised and depressurised state.
- ▶ Ensure that the permissible load of the lifting equipment (crane, chain hoist, sling, etc.) is at least as great as the dead weight and the permissible load of the Lifting device together.
- ▶ Ensure that the hoist is in perfect condition.
- ▶ Attach the lifting device only with the aid of the support pin (1).

#### 6.1.2 Protective equipment

The following protective equipment is required for installation and for troubleshooting, maintenance and repair work:

- Safety shoes safety class S1 or better
- Solid work gloves Safety category 2231 or better
- If necessary, personal protective equipment against falls from a height (PPE)

### 6.2 Attach lifting device



#### **CAUTION**

**Lifting or setting down with the load arm locked can damage the lifting device.**

Risk of injury from the load falling down!

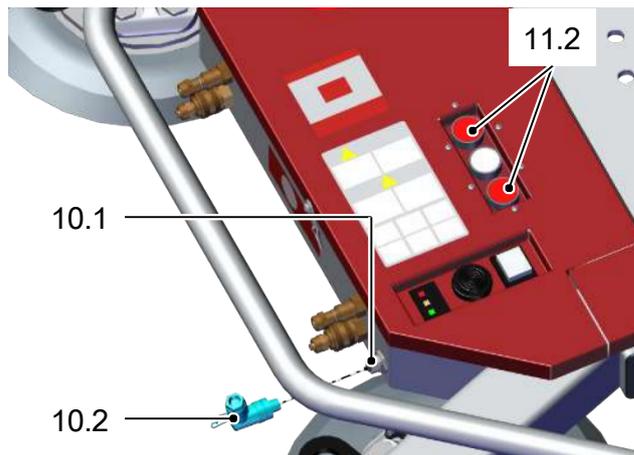
- ▶ Never lift or set down the load from the horizontal with the load arm locked!

1. Set up the load arm and engage it (> see chapter Suctioning the load).
2. Lifting device with hydraulic cylinder: Close the throttle valve to lock the hydraulic cylinder.
3. Ensure that the permissible load of the hoist (crane or chain hoist) is at least as great as the dead weight and the permissible load of the hoist together (see type plate).
4. Attach the UPG lifting device using the support pin (1).

### 6.3 External release signal for releasing the load

The lifting device has an interface for connecting an external module (e.g. counterweight traverse). An external potential-free limit switch can be connected to the socket (10.1). As long as the limit switch is open (for example, as long as the counterweight traverse is being used), the load cannot be released.

The socket is bridged with a plug (10.2) at the factory so that the load can be released during normal operation.



As long as the socket (10.1) is not bridged with the plug (10.2), the buttons for releasing the load (11.2) are ineffective.

#### Pin assignment of the socket:

- Pin 1 = 12 V DC
- Pin 2 = Signal In

### 6.4 Tests before commissioning

1. Check all screw connections for tightness.
2. Check the tightness of the vacuum system Check the tightness of the lifting device.
3. Check all functions of the lifting device:
  - ⇒ Suck in load
  - ⇒ Remove load
  - ⇒ Pivot (option)
  - ⇒ Turn
4. Carry out several lifting attempts with one load.

**Lifting tests:** The installation is completed when the following conditions are met:

- After the power supply fails, the load is held for at least another five minutes (**only for suction-tight loads**).
- The load to be lifted has sufficient inherent stability so that it is not damaged during gripping and handling.

## 7 Operation

### 7.1 Security

#### 7.1.1 Personnel qualification

The product may only be used by operators who meet the following requirements:

- The operating personnel have reached the age of 18.
- The operating personnel are physically and mentally fit and can be expected to reliably perform the tasks assigned to them.
- The operating personnel have been instructed in the use of the lifting device and have read and understood the operating instructions.

#### 7.1.2 Safety instructions for operation

- ▶ Before the first commissioning and after each maintenance or repair, check the product for proper functioning ([> see chap. 6.4 Checks before commissioning, p. 25](#)).

#### Hazards due to falling of the load or the lifting device:



#### **⚠ WARNING**

##### **Serious injuries or death due to falling objects!**

- ▶ Before any handling, make sure that there are no persons in the danger zone.
- ▶ Never carry loads over people.
- ▶ Observe the maximum permissible load (see type plate and load label).
- ▶ Ensure that there are no loose objects on the load.
- ▶ Do not store loads in a suspended position.



#### **⚠ CAUTION**

##### **The surface of the load is dusty, dirty, oily, damp or icy.**

Risk of injury from the load falling down!

- ▶ Before any handling, ensure that the surface of the load is clean, dry and free of ice.



#### **⚠ CAUTION**

##### **When placing the load vertically:**

##### **The load chain is not tensioned when the load is detached.**

Risk of injury from the lifting device falling into the load chain!

- ▶ Before detaching the load, make sure that the load chain is lightly tensioned.



### **⚠ CAUTION**

#### **Damaged load**

Risk of injury from the load falling down!

- ▶ Before any handling, make sure that the load has sufficient inherent stability.
- ▶ Make sure that the load is not damaged in the area of the suction plates.



### **⚠ CAUTION**

#### **Shearing of the load due to collision with the environment**

Risk of injury!

- ▶ During handling, make sure that there are no interfering contours or obstacles in the working area.

#### **Other hazards:**



### **⚠ CAUTION**

#### **Risk of injury due to exposed suction points**

- ▶ Do not look, listen or reach into suction points.
- ▶ Do not place open suction points near eyes or body orifices.
- ▶ Do not place suction plates on the body.

#### **7.1.3 Protective equipment**

The following protective equipment is required for operation:

- Safety shoes safety class S1 or better
- Depending on the load, sturdy work gloves
- Industrial safety helmet according to EN 397
- Close fitting clothes
- If necessary, use a hair net.



### **⚠ CAUTION**

#### **High noise level due to leakage between load and suction pad**

Hearing damage!

- ▶ Measure the noise level with typical loads.
- ▶ Depending on the load surface, noise levels may occur that require the wearing of hearing protection.

#### **7.1.4 Use lifting equipment properly**

Improper use of the hoist may result in danger to operators and damage to the product.

- The main switch must remain on during the entire handling.
- Check the battery charge level regularly.

- Keep an eye on the vacuum gauges.
- Handling must not be supported or hindered by additional external forces.
- Do not pull, drag or drag loads at an angle.
- Do not tear loose any stuck loads with the lifting device.
- Avoid swaying of the load.
- Always handle a load with one lifting device only.
- Guide the lifting device as close to the ground as possible.
- Take off the load before longer breaks.



Always guide and handle the lifting device at an ergonomically favourable working height.

### 7.1.5 Behaviour in an emergency



#### **CAUTION**

#### **Risk of injury due to emergency situation!**

- ▶ Inform all persons in the vicinity of the danger area immediately.
- ▶ Do not step into the danger zone.
- ▶ If possible, put the load down safely.

#### **An emergency exists in the following situations:**

- Failure of the vacuum generation, e.g. in case of power failure.
- In the event of a leak, e.g. a hose rupture.
- In the event of a collision.
- Vacuum drop during handling below the minimum vacuum of -0.6 bar into the red area of the manometer.
  - This also applies to lifting devices with two redundant vacuum circuits.

#### **Before resuming work with the lifting device:**

- ▶ Determine and eliminate the cause of the vacuum generation failure.

## 7.2 Check before starting work

1. Ensure that the battery is charged (see charge level indicator).
2. Check the safety devices (> see chapter Checking the safety devices).
3. Ensure that all locking pins and securing bolts are engaged.
4. Visually check all load-bearing screw connections.
5. If necessary, clean the vacuum connections and insertion sleeves to prevent leaks.
6. Remove the protective covers from the suction plates.

### 7.3 Adjusting the position of the suction plates



#### **⚠ DANGER**

#### **Two vacuum circuits: Falling of the load due to unauthorised interchanging of the suction plates**

Severe injuries or death!

✓ The even distribution of the suction plates of both vacuum circuits is a prerequisite for safe handling.

▶ The suction plates of different vacuum circuits must not be interchanged.



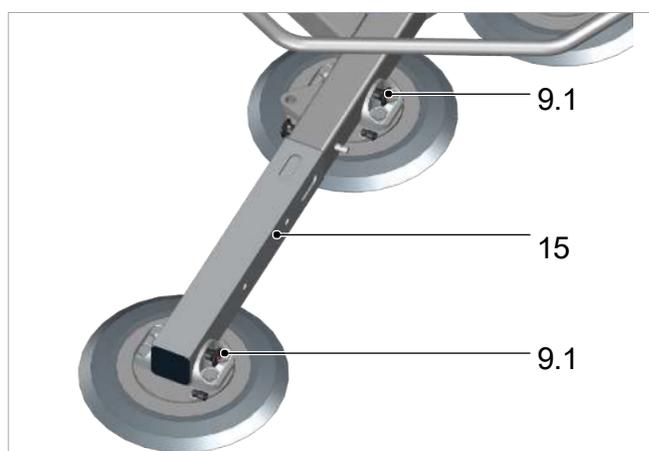
The vacuum connections (9.2) of the two vacuum circuits differ in size so that the redundant two-circuit system cannot be overridden.

1. Press the red button on the back of the locking bolt (9.1) and pull out the locking bolt.

2. Push the extension (15) or the suction plate into the desired position.

3. Push the locking bolt (9.1) into the detent until the pawls engage.

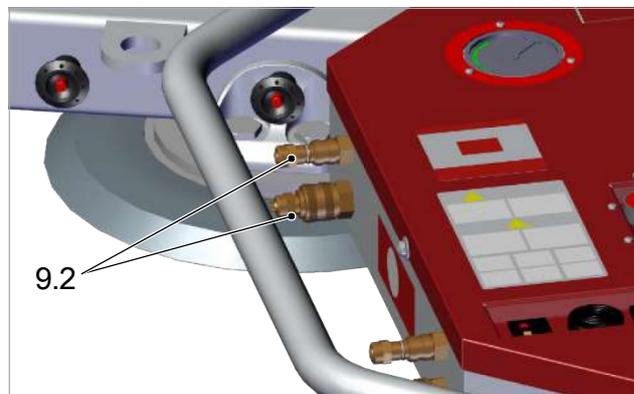
4. Check the vacuum connections.



### 7.4 Suction plate arrangement

The suction plates of the two vacuum circuits must be arranged in such a way that the load cannot fall down if one vacuum circuit fails.

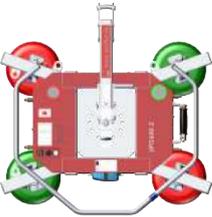
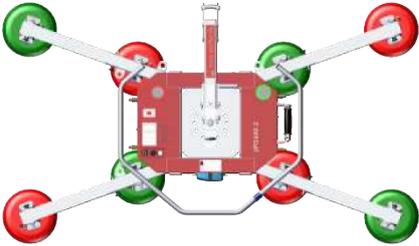
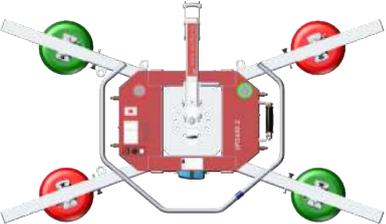
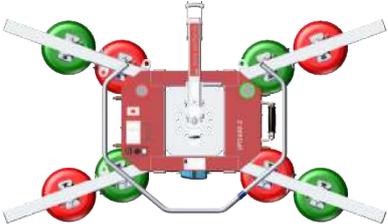
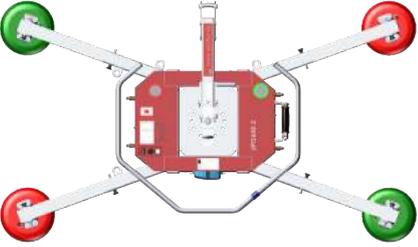
▶ Always keep the hose couplings and insertion nozzles clean to prevent leaks.





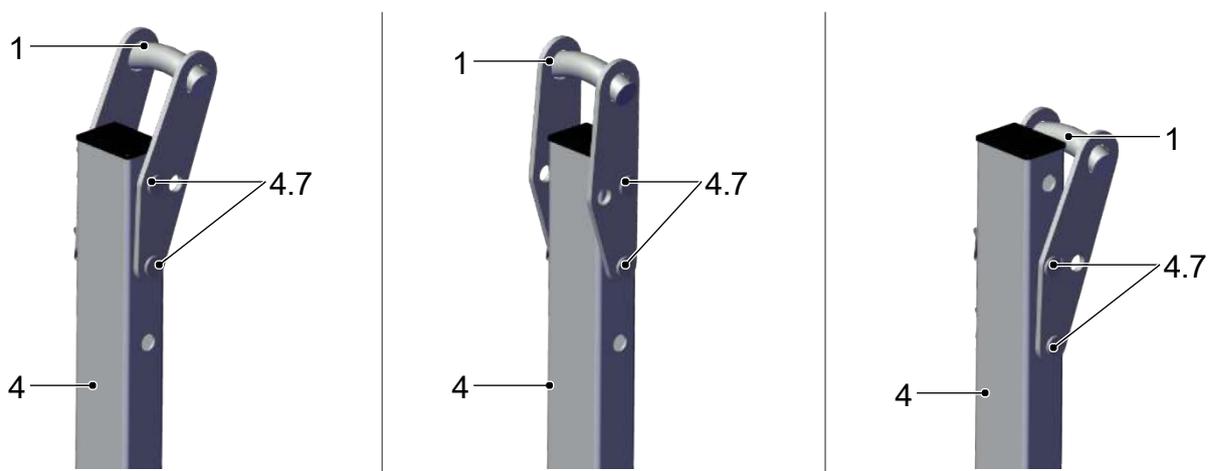
The vacuum connections (9.2) of the two vacuum circuits differ in size so that the redundant two-circuit system cannot be overridden.

The illustrations below show how the suction plates may be arranged.

With 4 suction plates	With 6 suction plates	With 8 suction plates
		
		
		
		
		

## 7.5 Move support bolt

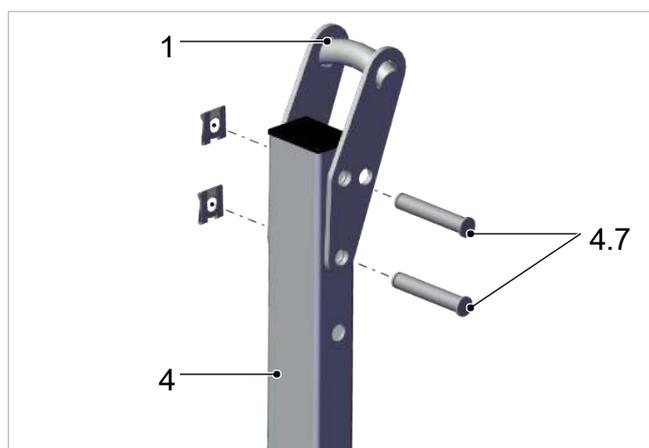
If necessary, the support bolt can be moved.



Possible positions

1	Support bolt	4	Load
4.7	Locking bolt with locking plate		

1. Remove both securing bolts (4.7).



2. Move the support bolt (1).
3. Replace both locking bolts (4.7) and secure with the locking plate.

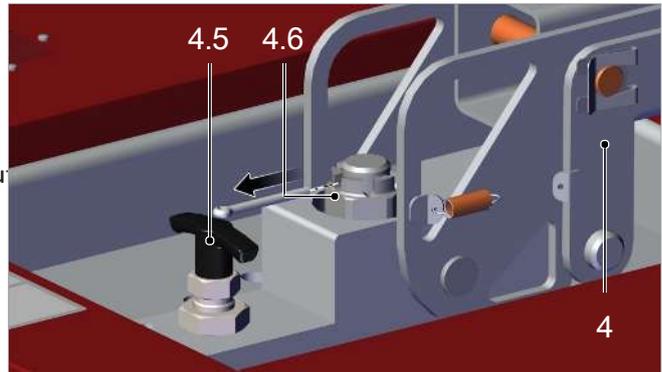
## 7.6 Working without load arm

In case of very narrow mounting conditions, the load arm can be dismantled to reduce the overall height of the lifting device.

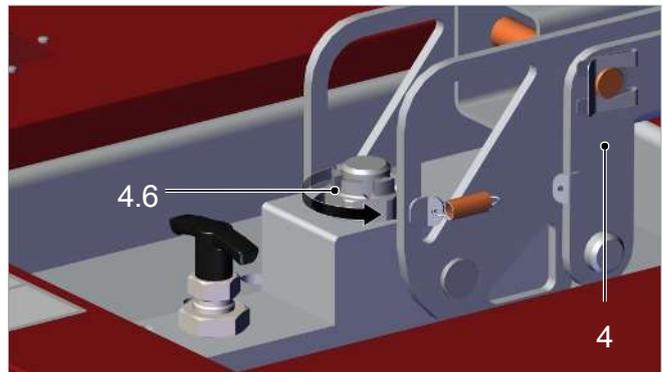
In this case, the functions of turning and swivelling are omitted. The unit is then attached to the crane using shackles and load straps or chains.

### 7.6.1 Dismantle load arm

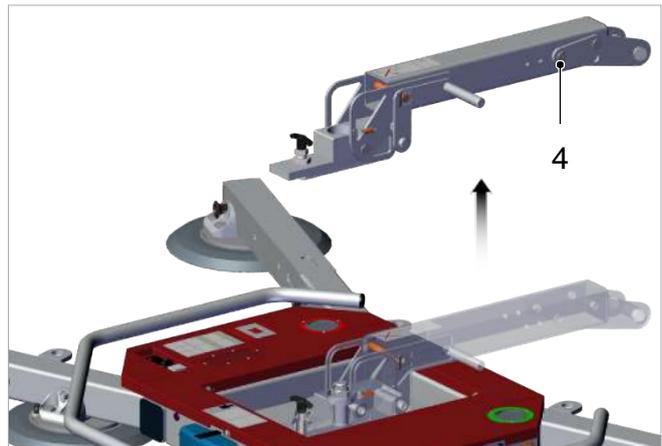
1. Remove the cotter pin (4.5) of the castellated nut (4.6) remove.



2. Unscrew the castle nut (4.6) from the bolt.



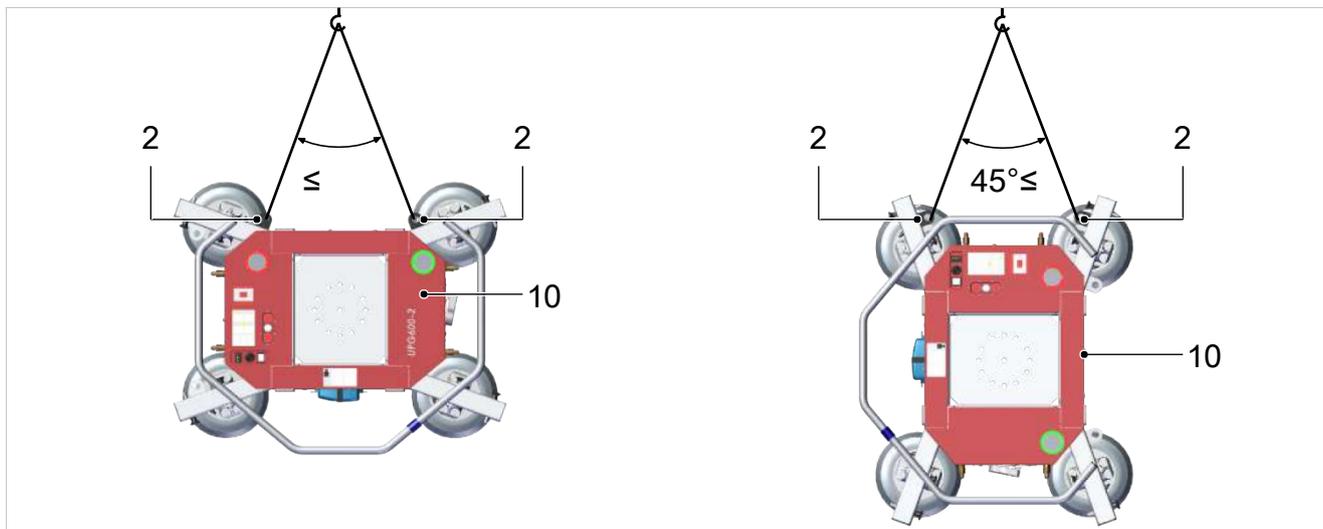
3. Pull off the load arm (4) with bearing block in the direction of the arrow.



⇒ The load arm (4) is dismantled.

### 7.6.2 Suspend lifting equipment from shackles

There are four suspension eyes (2) on the base body (10). The lifting device may only be attached with two lifting eyes (see illustration).



1. Hook the shackles onto two opposite suspension eyes (2).
2. Ensure that the angle between the load belts or chains does not exceed 45°.

### 7.6.3 Attach load arm

(> see chap. 7.6.1 Dismantle load arm, p. 32)

1. Put on the load arm (4) with bearing block.
  2. Tighten the castellated nut (4.6) by hand and then loosen it again by approx. half a turn.
  3. Secure the castellated nut (4.6) with a **new** locking split pin (4.5).
- ⇒ The load arm is securely fastened.

## 7.7 Suck in load



### ⚠ WARNING

#### Falling objects due to insufficient vacuum

Severe injuries or death!

- ▶ Before lifting the load, make sure that the minimum vacuum of -0.6 bar is reached (warning tone OFF).



### ⚠ CAUTION

#### Uncontrolled rotating or swinging movements due to sticking or tilting of the load

Danger of crushing and impact!

- ▶ Before lifting, make sure that the load does not stick or tilt.

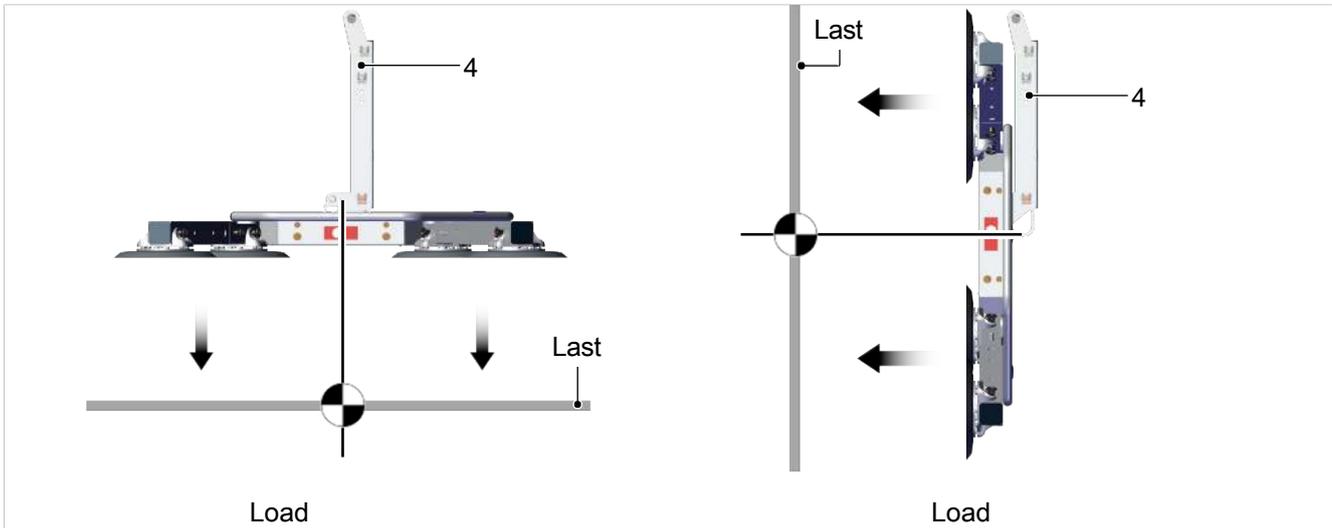


## ⚠ CAUTION

Lifting or setting down with the load arm locked can damage the lifting device.

Risk of injury from the load falling down!

- ▶ Never lift or set down the load from the horizontal with the load arm locked!



## ⚠ CAUTION

Vertical suction: Sucking in below the centre of gravity can lead to a very fast swivelling movement.

Risk of injury due to uncontrolled movements of the lifting device!

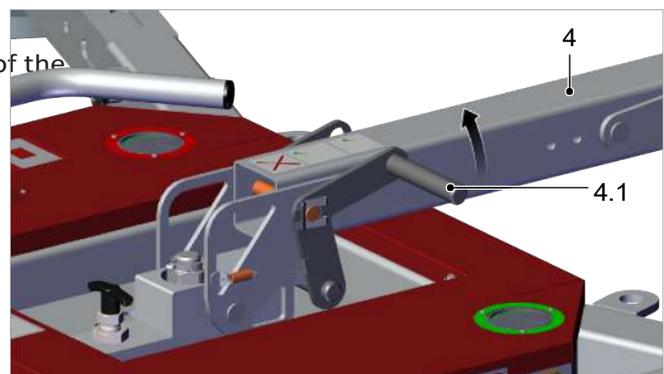
- ▶ Suck in the load as precisely as possible at the centre of gravity.

- ✓ The lifting device is adapted to the size of the load (number of suction plates, length of extensions).

1. Adjust the load arm depending on the position of the

**The load is sucked in horizontally:** Unlock the load arm (4) using the control lever (4.1) and place it perpendicular to the load.

**The load is sucked in vertically:** The load arm (4) parallel to the load and ensure that it is securely locked.



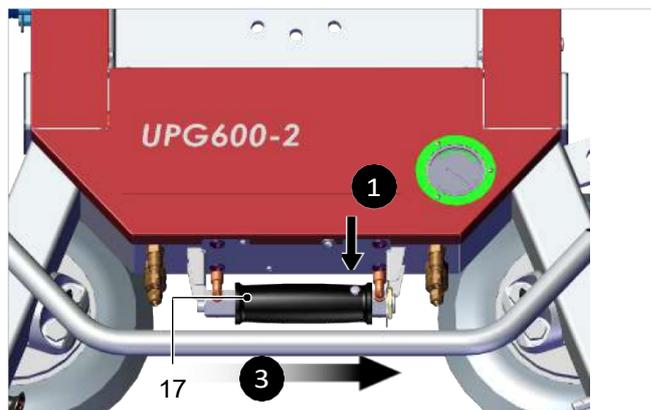
2. Switch on the main switch (3).
3. Position the lifting device horizontally or vertically above the centre of gravity (+/-5 cm) of the load.
4. Carefully place the lifting device on the load.

5. Ensure that all suction plates are fully seated on the load.

### 7.7.1 Lifting device with manual slide valve

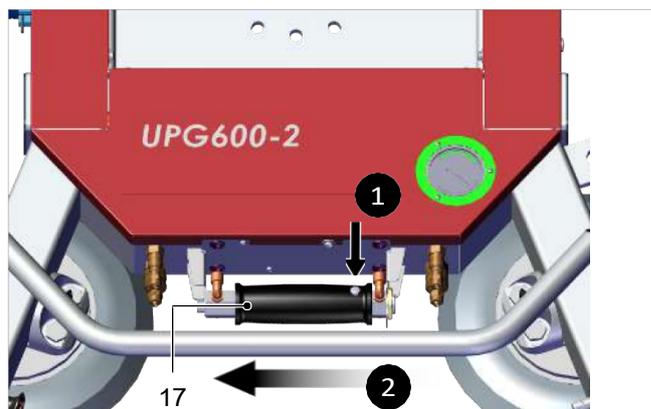
- ✓ The lifting device is placed on the load.
- ✓ All suction plates are covered by the load.

1. Press the locking button **1** and push the manual push valve (17) against the spring force in the direction of **3**.



- ⇒ The vacuum reservoir is evacuated.
- ⇒ A warning tone sounds until the minimum vacuum of -0.6 bar is reached.

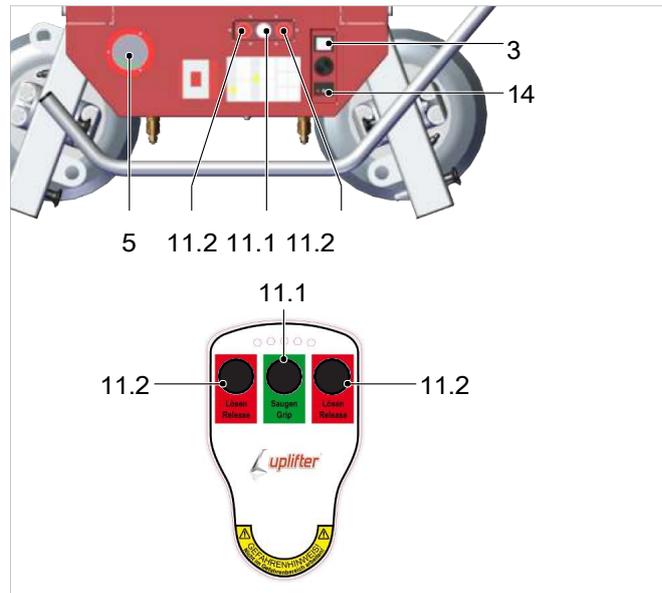
2. Press the locking button **1** and push the manual slide valve (17) spring-assisted in the direction of **2**.



- ⇒ The load is sucked in.

### 7.7.2 Lifting device with buttons / radio remote control

- ✓ The lifting device is placed on the load.
- ✓ All suction plates are covered by the load.



- ▶ On the control panel or on the radio remote control, press the button (11.1) **Suck in the load.** press.

⇒ The load is sucked in.

### 7.8 Handle load

- ✓ The load is sucked in.
- 1. Make sure that only one piece of the load to be lifted is lifted at a time. Carefully detach adhering parts with a suitable tool before lifting the load further.
- 2. Observe the pressure gauges. Do not lift the load until the minimum vacuum of -0.6 bar is reached on both pressure gauges (pressure gauge needle in the green area).
- 3. As soon as the warning tone has gone out (vacuum above -0.6 bar ), carefully lift the load (operate the lifting aid in the feingang).
- 4. Compensate for any pendulum movements with the operating handle.

⇒ The load can now be rotated, swivelled or transported horizontally.

### 7.9 Guide lifted load safely



#### **⚠ DANGER**

#### **Falling objects when handling over 1.8 m**

Severe injuries or death!

- ▶ When handling loads whose lower edge is over 1.8 m, cordon off the working area.
- ▶ Wear industrial safety helmet.



## **⚠ CAUTION**

### **Risk of injury due to collision!**

- ▶ Walk behind the lifting device in the direction of movement and keep a safe distance.

Note for lifted loads:

- Never carry loads over people.
- Only work with good visibility over the entire working area.
- Guide the lifting device as close to the ground as possible.
- Adapt the transport speed to the conditions and avoid jerky movement.
- Guide the load with the operator handle.

## **7.10 Swivel load**

### **7.10.1 Swivel load (without hydraulic cylinder)**



## **⚠ WARNING**

### **Danger of crushing during the swivelling process!**

- ▶ Do not reach into the lifting device during the swivelling process.



## **⚠ WARNING**

### **Swivel movement of the load**

Risk of injury to operator or other persons

- ▶ Always guide the lifting device by the handle during handling.
- ▶ Ensure that there are no persons or objects in the danger zone.



## **⚠ CAUTION**

### **Simultaneous use of the swivel and rotate function**

Risk of injury due to uncontrolled movements of the lifting device

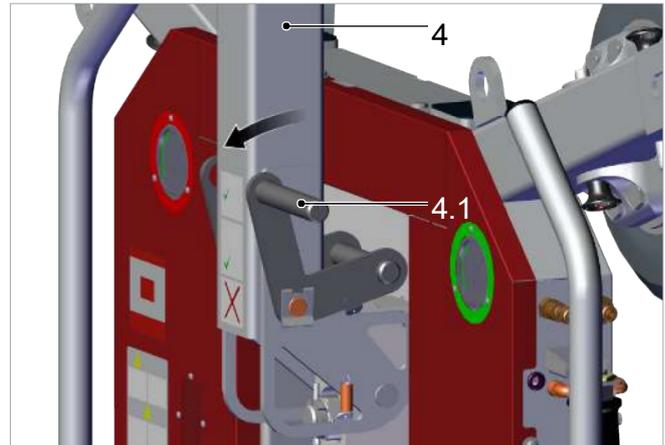
- ▶ Never use the swivel and rotate functions at the same time.



The load arm is only locked parallel to the base body!

✓ Swivelling / unlocking is only possible when the load is set down.

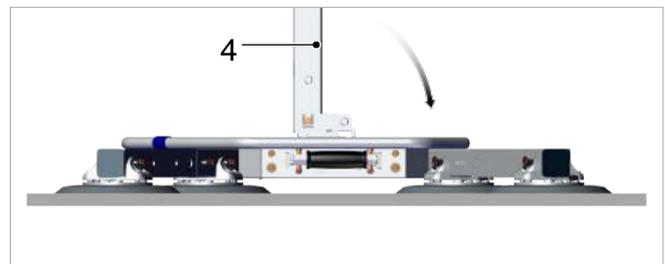
1. Pull the control lever for detent (4.1).



⇒ The load arm (4) is unlocked.

2. Raise the lifting device with load slowly and without jerking.

3. Allow the load to swing horizontally in a controlled manner.



4. When the swivelling process has started, release the operating lever for detent (4.1).

⇒ The operating lever (4.1) swivels to its initial position with spring force.

⇒ The load can now be transported and deposited horizontally.

### 7.10.2 Swivel load (with hydraulic cylinder option)



#### **⚠ WARNING**

##### **Danger of crushing during the swivelling process**

Danger of hand injuries!

- ▶ Do not reach into the lifting device during the swivelling process.



#### **⚠ WARNING**

##### **Swivel movement of the load**

Risk of injury to operator or other persons

- ▶ During handling, always guide the lifting device by the operating handle.
- ▶ Ensure that there are no persons or objects in the danger zone.



## CAUTION

### Simultaneous use of the swivel and rotate function

Risk of injury due to uncontrolled movements of the lifting device

- ▶ Never use the swivel and rotate functions at the same time.

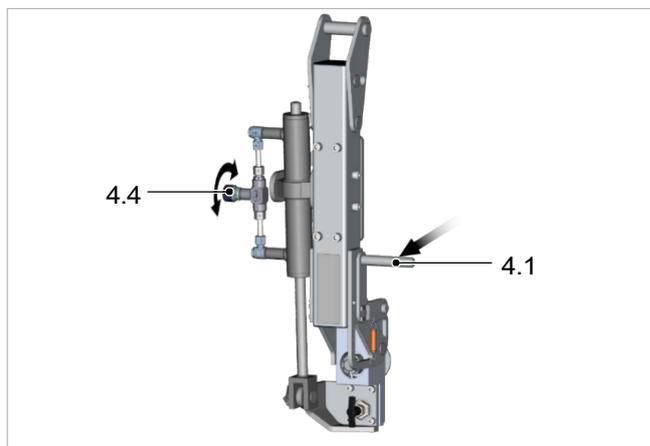


The load arm is only locked parallel to the base body!

✓ Swivelling / unlocking is only possible when the load is set down.

1. Suck in the load at the centre of gravity (11.1) and set it down.

2. Close the throttle valve (4.4) of the hydraulic cylinder.



3. Pull the control lever for detent (4.1).

4. Slowly open the throttle valve (4.4).

⇒ Due to the shifted centre of gravity, the load slowly swings into the horizontal position by itself. By opening or closing the throttle valve, the swivelling process can be accelerated or slowed down.

5. When the swivelling process has started, release the operating lever for detent (4.1).

⇒ The operating lever (4.1) swivels to its initial position with spring force.

6. When the desired swing angle is reached, close the throttle valve completely.

⇒ The load can be transported and deposited at the desired swivel angle (> see chapter Depositing the load).

7. To swing the load again, carefully open the throttle valve.

⇒ The swivel speed can be regulated with the throttle valve.

8. Swivel the load beam by hand to the desired swivel angle.
9. When the desired swing angle is reached, close the throttle valve completely.

### 7.11 Turn load



#### **⚠ WARNING**

##### **Rotation of the load**

Risk of injury to operator or other persons

- ▶ Always guide the lifting device by the handle during handling.
- ▶ Ensure that there are no persons or objects in the danger zone.



#### **⚠ WARNING**

##### **Centre of gravity of the load outside the centre**

Serious injuries due to uncontrolled movements of the load during rotation

- ▶ Always suck in the load at the centre of gravity.
- ▶ Do not transport loads with surfaces that reduce lateral force (release agents, oil, dust, etc.).



#### **⚠ CAUTION**

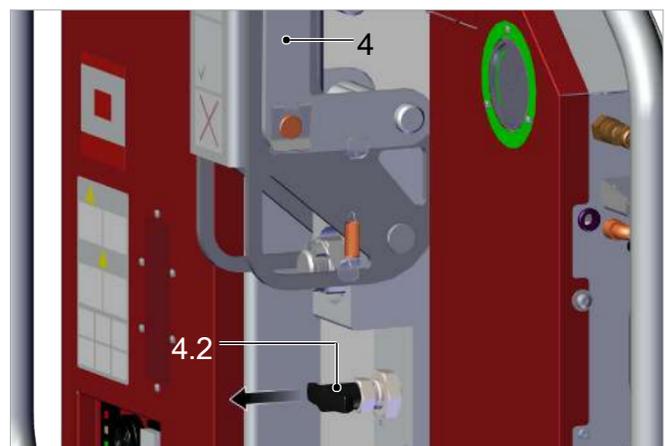
##### **Simultaneous use of the swivel and rotate function**

Risk of injury due to uncontrolled movements of the lifting device

- ▶ Never use the swivel and rotate functions at the same time.

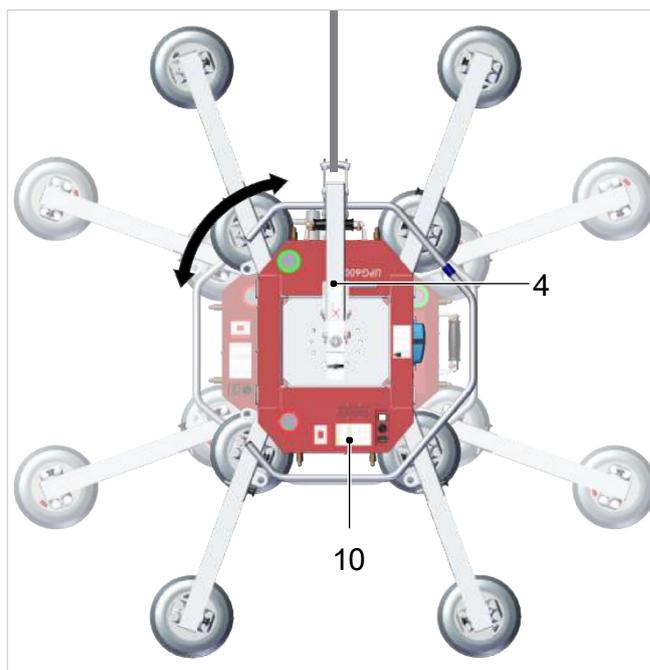
- ✓ The load is sucked in and lifted so that it can be turned. (> see chapter Lifting the load).

1. Pull the T-handle (4.2) in the direction of the arrow and hold it.



- ⇒ The load beam is unlocked and can be rotated with the load.

2. Turn the load.



⇒ The load beam can be locked in 27° or 36° steps (12 positions).

## 7.12 Lay down load



### ⚠ CAUTION

#### Residual vacuum on the suction plates

Risk of injury due to dragging of the sucked-in load during lifting!

- ▶ Do not lift the lifting device until the residual vacuum has completely dissipated.
- ▶ If necessary, loosen the sealing lips from the load by hand.



### ⚠ CAUTION

#### Lifting or setting down with the load arm locked can damage the lifting device.

Risk of injury from the load falling down!

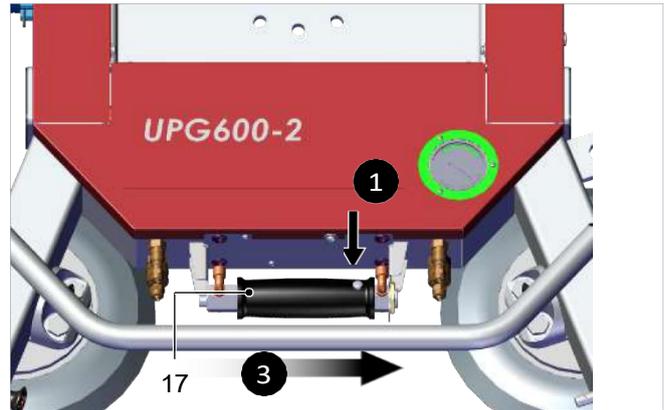
- ▶ Never lift or set down the load from the horizontal with the load arm locked!

Ensure before loosening the load:

- The load is securely placed and cannot slip or tip.
- The residual vacuum is completely removed.
- ▶ Lower the load and place it securely so that it cannot slip or tip.

### 7.12.1 Lifting device with manual slide valve

1. Press the locking button **1** and push the manual push valve (17) against the spring force in the direction of **3**.



⇒ The load is released.

⇒ A residual vacuum remains.

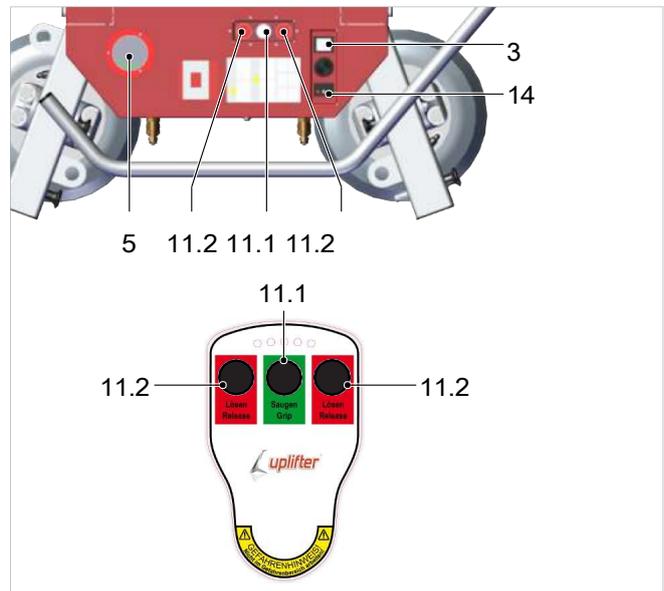
2. Lift the lifting device when the residual vacuum is completely reduced. If necessary, loosen the sealing lips from the load by hand.

⇒ The lifting device can be lifted.

⇒ The lifting device is ready for the next operation.

### 7.12.2 Lifting device with buttons / radio remote control

1. On the control panel or on the radio remote control press both buttons **LOAD RELEASE** (11.2) simultaneously and keep them pressed.



⇒ The load is released.

⇒ A residual vacuum remains.

2. Lift the lifting device when the residual vacuum is completely reduced.  
If necessary, loosen the sealing lips from the load by hand.

- ⇒ The lifting device can be lifted.
- ⇒ The lifting device is ready for the next operation.

### 7.13 Parking the lifting device



#### NOTE

##### **Damage to the suction plates due to unsuitable parking situation!**

- ▶ The lifting device can be parked for a short time on a smooth, level surface.
- ▶ Do not store the lifting device on the suction plates.

Possibilities of correct parking:

1. Place the lifting device on a storage rack, if available.
2. Let the hoist hang in a safe position close to the ground. Ensure that the hoist cannot be used by unauthorised persons.
3. If the lifting device cannot be parked close to the ground, cordon off the danger area under the lifting device.

For long-term decommissioning ([> see chap. 10.2 Decommissioning the lifting device, p. 57](#)).

### 7.14 Charge battery



#### NOTE

##### **Overheating and formation of explosive gases.**

Danger of explosion!

- ▶ During charging, ensure that the environment is sufficiently ventilated.

Charge the battery after each use so that the lifting device is always ready for use. The charger can remain connected without interruption.

It is not possible to work with the lifting device during the charging process. The charging process can be interrupted by pulling out the mains plug.



When the charger is disconnected from the mains, the main switch must be set to **0** to avoid deep discharge of the battery.



See the charger operating instructions in the appendix.

1. Set the main switch to **2**.
2. Insert the mains plug of the charger into a mains socket.

3. Observe the error light on the charger and the 4-stage charge level indicator.
  - ⇒ YELLOW lights up: The battery is 80 % charged (charging time approx. 8 hours).
  - ⇒ GREEN lights up: The battery is fully charged.
4. Pull out the mains plug at the end of the charging process.
5. Set the main switch to **1**.
  - ⇒ The lifting device is ready for the next operation.

## 8 Troubleshooting

### 8.1 Security

#### 8.1.1 Safety instructions for troubleshooting

Faults on the lifting device may only be repaired by qualified mechanical and electrical specialists. The personnel must have read and understood the operating instructions.



#### **⚠ DANGER**

##### **Electric shock due to live electrical components**

Severe injuries or death!

- ▶ Before carrying out installation, maintenance or troubleshooting work, make sure that the electrical components are not live.
- ▶ Pull out the mains plug.



Before troubleshooting or servicing, disconnect the cable from the battery's positive terminal to avoid short-circuit damage to the components.



#### **⚠ WARNING**

##### **Risk of injury due to negative pressure!**

- ▶ Switch off the vacuum generator before troubleshooting or carrying out maintenance work.
- ▶ Make sure that no stored residual vacuum remains in the vacuum circuit.



#### **⚠ WARNING**

##### **Unexpected movements**

Severe injuries or death!

- ▶ Before working on the UPG hoist, make sure that no crane movement can take place.



#### **⚠ WARNING**

##### **Risk of injury due to improper maintenance or troubleshooting**

- ▶ After any maintenance or troubleshooting, check the proper functioning of the product, especially the safety devices.



#### **⚠ CAUTION**

##### **Hot surfaces on the vacuum generator**

Risk of burns!

- ▶ Allow the vacuum generator to cool down before troubleshooting or carrying out maintenance work.

### 8.1.2 Protective equipment

The following protective equipment is required for installation and for troubleshooting, maintenance and repair work:

- Safety shoes safety class S1 or better
- Depending on the load, sturdy work gloves
- Close fitting clothes
- If necessary, use a hair net.
- Industrial safety helmet according to EN 397
- When working on the battery, acid-proof work gloves and protective goggles

### 8.2 Help with faults

- ▶ If the load cannot be lifted, go through the following list to find and correct the fault:

Malfunction	Cause	Remedy
Vacuum generator is working, but load is not sucked in.	Not all suction plates cover the load. Leakage air is sucked in.	▶ Position the lifting device on the load in such a way that all the Suction plates completely cover the load.
	Dust filter is dirty.	▶ Clean the filter cartridge of the dust filter or Replace
	The filter cartridge is inserted incorrectly.	▶ Check the installation position of the filter cartridge.
	The dust filter is not closed.	▶ Close the dust filter cover.
	Hose or fittings are leaking.	▶ Replace or seal components.
	Valves are dirty.	▶ Have valves cleaned by Uplifter Service.
	<b>Hand slide valve:</b> The manual slide valve is in the "release load" position.	▶ Manual slide valve in "Suck in load" position push
	The hand slide valve is defective.	▶ Replace hand slide valve.
	Solenoid valve is in position <b>LOAD RELEASE.</b>	▶ Press the button (11.1).
	Electromagnetic valve is defective.	▶ Repair or replace the solenoid valve.
<b>Load beam with extension:</b> A vacuum hose of an extension is not connected to the vacuum connection.	▶ Connect the vacuum hose.	
The load cannot be detached.	Electromagnetic valve is defective.	▶ Repair or replace the solenoid valve.
	Button is defective.	▶ Replace the defective button.

Malfunction	Cause	Remedy
	The socket for the external release signal (10.1) is not bridged with the connector (10.2).	▶ Bridge the socket with the plug.
	The external enable signal is not present.	▶ Check the external contact.
Minimum vacuum -0.6 bar is not reached.	The sealing lip of the suction plate is damaged.	▶ Replace suction plate.
	Load has cracks, gaps or is porous.	Handling of the load is not permitted with this lifting device.
	Pressure gauge is defective.	▶ Replace pressure gauge.
	Hose or fittings are leaking.	▶ Seal or replace components.
	Vacuum switch is adjusted or defective.	▶ Contact the Uplifter service.
	Site of operation higher than 1600 above sea level.	▶ Observe the maximum height of the place of use.
Warning device triggers.	Load has cracks, gaps or is too permeable to air.	Handling of the load is not permitted with this lifting device.
	The sealing lip of the suction plate is damaged.	▶ Replace sealing lip.
	Hose or fittings are leaking.	▶ Seal or replace components.
	Vacuum switch is adjusted or defective.	▶ Contact the Uplifter service.
	<b>Lifting device with battery:</b> Battery voltage too low.	▶ Charge or replace the battery.
Radio remote control (option) does not work.	The battery is discharged.	<ol style="list-style-type: none"> <li>1. Charge or replace the battery.</li> <li>2. See the operating instructions for the radio remote control.</li> </ol>
The vacuum generation does not work.	The main switch is not set to 1.	▶ Set the main switch to 1.
	The fuse is defective.	▶ Check the fuse and replace it if necessary.
	The battery is discharged.	▶ Charge or replace the battery.
	The electrical power supply is interrupted.	▶ Check the wiring.
	The vacuum generation is defective.	▶ Check the vacuum generation and give-contact the Uplifter service if necessary.
The automatic switch-off of the vacuum pump does not work.	Leak in the suction system.	Check the suction system for leaks and repair if necessary.

<b>Malfunction</b>	<b>Cause</b>	<b>Remedy</b>
	Site of operation higher than 800 m above sea level.	Above 800 m above sea level, the vacuum pump operates continuously.
The battery is not charged.	The main switch is not set to 2.	Turn the main switch to 2.
The error light on the charger lights up.	Error on the charger.	See the charger operating instructions in the appendix.
The hydraulic cylinder does not lock.	Hydraulic cylinder is leaking. Oil has leaked out.	▶ Replace hydraulic cylinder.
	Throttle valve defective.	▶ Replace hydraulic cylinder.

## 9 Maintenance

### 9.1 Security

#### 9.1.1 Safety instructions for maintenance

The lifting device may only be installed and serviced by qualified electricians and mechanics.

The personnel must have read and understood the operating instructions.



#### **⚠ DANGER**

##### **Electric shock due to live electrical components**

Severe injuries or death!

- ▶ Before carrying out installation, maintenance or troubleshooting work, make sure that the electrical components are not live.
- ▶ Pull out the mains plug.



Before troubleshooting or servicing, disconnect the cable from the battery's positive terminal to avoid short-circuit damage to the components.



#### **⚠ WARNING**

##### **Risk of injury due to negative pressure!**

- ▶ Switch off the vacuum generator before troubleshooting or carrying out maintenance work.
- ▶ Make sure that no stored residual vacuum remains in the vacuum circuit.



#### **⚠ WARNING**

##### **Unexpected movements**

Severe injuries or death!

- ▶ Before working on the UPG hoist, make sure that no crane movement can take place.



#### **⚠ WARNING**

##### **Risk of injury due to improper maintenance or troubleshooting**

- ▶ After any maintenance or troubleshooting, check the proper functioning of the product, especially the safety devices.



#### **⚠ CAUTION**

##### **Hot surfaces on the vacuum generator**

Risk of burns!

- ▶ Allow the vacuum generator to cool down before troubleshooting or carrying out maintenance work.

### 9.1.2 Protective equipment

The following protective equipment is required for installation and for troubleshooting, maintenance and repair work:

- Safety shoes safety class S1 or better
- Depending on the load, sturdy work gloves
- Close fitting clothes
- If necessary, use a hair net.
- Industrial safety helmet according to EN 397
- When working on the battery, acid-proof work gloves and protective goggles

### 9.2 Regular examinations

- Observe country-specific regulations.
- Observe the inspection dates prescribed by the country.
- Only release the lifting device for use after it has been approved by the authorities.

Inspection sticker with last and next inspection date



- Only when the test has been successfully completed may the inspector affix the test badge.

Valid for Germany: According to DGUV regulation 52 and rule 100-500, the operator of a crane system with vacuum lifting device is obliged to have the system inspected by an expert at least once a year.



As a special service, Uplifter GmbH & Co. KG offers an inspection contract for an annual inspection with proof of expertise within Germany. Please note the inspection seal on the system. We will gladly send you a corresponding offer.

Telephone number Uplifter-Service : 09433/20499-370.

### 9.3 Maintenance plan



Uplifter specifies the following inspections and inspection intervals. The operator must comply with the legal and safety regulations applicable at the place of use. The intervals apply to single-shift operation. In case of heavy use, e.g. in multi-shift operation, the intervals must be shortened accordingly.

Maintenance activity	Daily	Weekly	Monthly	Semi-annual	Annual
<ul style="list-style-type: none"> <li>• Check pressure gauge</li> <li>• Check warning device</li> </ul>	X				X
Check the battery's state of charge.	X				X
Check the function of the charger.	See the operating instructions for the charger in the appendix.				
Check and clean the sealing lips of the suction plates, replace if worn.		X			X
Clean dust filter, replace if necessary.		X			X
Check load-bearing screw connections for tightness.			X		X
Check the tightness of both vacuum circuits.			X		X
Check the condition of the vacuum hoses. Replace broken, kinked, leaking vacuum hoses.			X		X
Check the condition of the hose connections.				X	X
Check supporting parts, e.g. suspension for deformation, wear or other damage.				X	X
Check the support bolt for deformation, wear or other damage.					X
Turntable: Check wear of the friction disc and the plain bearing bushes ( <a href="#">&gt; see chap. 7.6.1 Load arm demonstration, p. 32</a> ).					X
Check the legibility of the type plate and load plate. Clean if necessary.					X
Check legibility of warning signs. Clean if necessary.					X
Inspection sticker up to date? Observe country-specific regulations.					X
Check the general condition of the hoist.					X
The operating instructions are available, legible and accessible to personnel.					X
Check the electrical installation and cable connections.					X
Check electrical vacuum generation.	See the operating instructions of the vacuum generator in the appendix.				

## 9.4 Check safety devices



### CAUTION

#### Insufficient vacuum during the test

Risk of injury from falling objects!

- ▶ For all intake tests, lift the load only a few centimetres.



Check the safety devices at the beginning of each work shift (in case of interrupted operation) or once a week (in case of continuous operation).

- ▶ Take the product out of operation and mark it as defective as soon as a safety device does not function properly.

### 9.4.1 Check pressure gauge and warning device

Test the function of the warning device each time before starting work.

- ✓ The hand slide valve (17) is closed.
- 1. Switch on the main switch (3).
  - ⇒ A warning tone sounds until the minimum vacuum of -0.6 bar is reached.
- 2. If no warning tone sounds, shut down the lifting device and have the warning device checked.
- 3. Place the lifting device on a load with an absorbent, smooth surface, e.g. a sheet of metal.
- 4. Open the vacuum supply.
  - ⇒ The load is sucked in.
  - ⇒ **Do not** lift the load!
- 5. As soon as the vacuum is built up, create a slight leak at the sealing lip.
  - ⇒ If the vacuum falls below the minimum vacuum of -0.6 bar, the warning tone must sound.
- If the lifting device has a second vacuum circuit, repeat this test on the second vacuum circuit.
- The alarm threshold of the warning device is factory-set to the lifting device. Never adjust the alarm threshold.
- Both pressure gauges must show the same value.
- 1. If no warning tone sounds, shut down the lifting device and have the warning device checked.
- 2. If a pressure gauge does not show the above values, shut down the lifting equipment and have the warning device and the pressure gauge checked.

### 9.4.2 Check vacuum hoses and hose clamps

1. Check the vacuum hoses for wear.
2. Replace damaged vacuum hoses (chafing, breaks, kinks, etc.).
3. Check the hose clamps for tightness and retighten if necessary.

### 9.4.3 Check the tightness of the lifting device

Check the tightness of the entire lifting device monthly.

1. Switch on the vacuum generator.
  2. Place the lifting device on a load with an absorbent, smooth surface, e.g. a sheet of metal.
  3. Open the vacuum supply.
  4. Let the vacuum build up until it stops rising.
  5. Lift the load only a few centimetres.
  6. Switch off the vacuum generator.
  7. Observe the pressure drop at the pressure gauges.
- ⇒ The vacuum may drop by a maximum of 0.1 bar within 5 minutes.

- ▶ After the test, detach the lifting device from the load (> see chapter Laying down the load).

If the vacuum degrades more quickly:

1. Inspect suction plate or sealing lip, hose, hose connections and screw connections for damage and leaks and replace if necessary.
2. Check the vacuum filter, clean or replace the filter cartridge if necessary.

### 9.4.4 Check pressure drop at dust filter

- ▶ Check the pressure drop at dust filter. If  $P \geq 0.2$  bar or after 2 years at the latest, replace the filter cartridges.

## 9.5 Clean dust filter



### **⚠ DANGER**

#### **Insufficient vacuum due to blocked dust filter.**

Serious injuries or death due to falling of the load!

- ▶ Depending on the dust load, clean the dust filter at least once a week.



### **NOTE**

#### **Dust gets into the pipes when the filter cartridge is removed.**

Damage to the vacuum generator

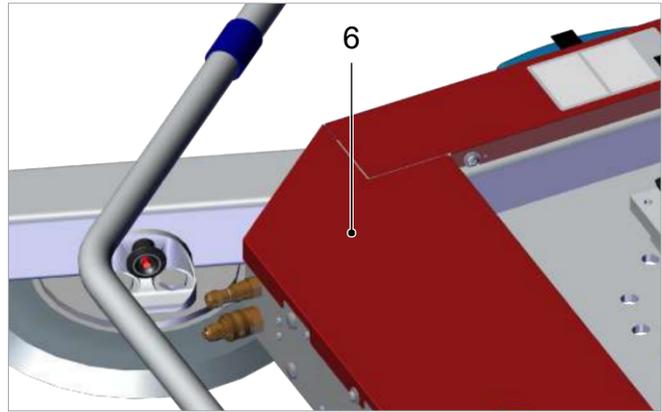
- ▶ When removing the filter cartridge, make sure that no dust gets into the pipes.
- ▶ Do not tap out the filter cartridge.

✓ The lifting device stands on a stable base.

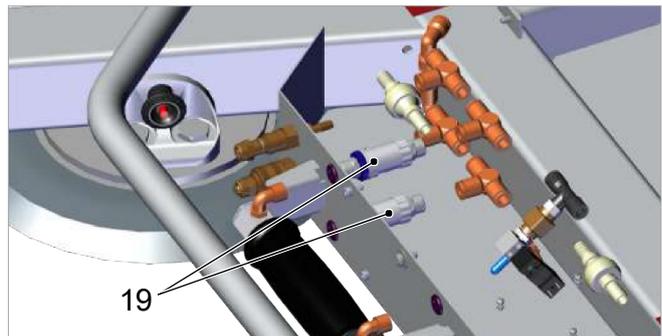
1. Switch off the main switch (3).

2. Remove the unit cover (6).

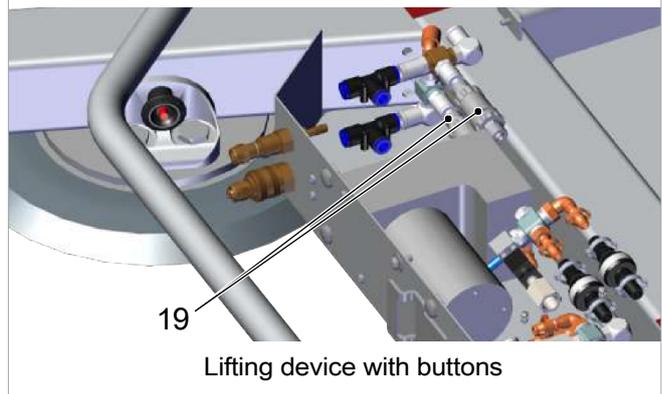
Make sure that the hose connections cannot be torn off.



3. Open the filter housings (19).



Lifting device with manual slide valve



Lifting device with buttons

4. Remove the filter cartridges.
5. Blow out the filter cartridges from the inside to the outside or clean them with water.
6. Replace heavily soiled or damaged filter cartridges.
7. Replace the filter cartridges.
8. Close the filter housings.
9. Replace the unit cover (6) and fasten it again with the fastening screws.
10. Before restarting, check the proper functioning and the safety devices.

## 9.6 Cleaning the lifting device

Only clean UPG lifting devices with warm soapy water.



### NOTE

#### Aggressive Cleaning agent

Damage to the suction plates and vacuum hoses!

- ▶ Do not use aggressive cleaning agents such as cold cleaners, carbon tetrachloride, hydrocarbons or vinegar cleaners.
- ▶ Do not use sharp-edged objects (wire brushes, sandpaper, etc.).



### NOTE

#### Moisture ingress

Damage to the electronics!

- ▶ When cleaning, make sure that no moisture gets into the electronics.

- Clean the suction plates at least once a week with an active cleaning agent containing surfactants (pH neutral).
- Clean mechanically at the same time (soft brush or ultrasound).
- Allow to dry at room temperature.
- Replace damaged or worn suction plates or sealing lips (e.g. with cracks, holes or corrugation) immediately.  
When replacing the sealing lip, make sure that the suction connection is not covered by the sealing lip.
- With multiple suction pads, always replace all suction plates or sealing lips!

## 9.7 Replace battery



### WARNING

#### The battery contains diluted sulphuric acid.

Danger due to severe burns

- ▶ Wear protective goggles.
- ▶ Wear acid-proof work gloves.



Event	Measure
After skin contact	► Clean with soap and water.
After inhalation of acid mists	1. Breathe fresh air. 2. Consult a doctor.
After eye contact	1. Rinse under running water for several minutes. 2. Consult a doctor.
After ingestion	1. Drink plenty of water immediately. 2. Consult a doctor. 3. Swallow activated charcoal after consultation with the doctor.
After spillage	1. Fix spilled acid with binding agent (e.g. sand). 2. Neutralise spilled acid with lime or soda and dispose of according to local regulations.

✓ The lifting device stands on a stable base.

1. Switch off the main switch (3).
2. Remove the battery cover (13).

Make sure that the hose connections cannot be torn off.

⇒ Make sure that the hose connections cannot be torn off.

3. Disconnect the power cables from the battery without creating a short circuit between the poles.  
⇒ Avoid a short circuit between the poles.
4. Loosen the Velcro fastener.
5. Replace the battery (18).
6. Close the Velcro fastener.
7. Reconnect the power cables.
8. Make sure that the poles are not reversed. The positive pole can be recognised by the fuse.
9. Put on the battery cover (13) and fasten it again with the fastening screws.
10. Set the main switch (3) to 2.
11. Insert the mains plug of the charger into a mains socket.
12. Dispose of used batteries at a collection point. (> see chapter Decommissioning and recycling).

## 10 Decommissioning and recycling

### 10.1 Security

The lifting device may only be taken out of service and prepared for disposal by qualified personnel.

### 10.2 Take the lifting device out of operation

1. Set the main switch to **0**.
2. Park the lifting equipment safely.
3. In the event of a defect, clearly mark the lifting device.
4. Remove the lifting device from the hoist.
5. Dismantle the suction plates.
6. If necessary, pull a protective cover over all suction plates.
7. Place the load arm horizontally and turn it to the free corner.
8. Store the lifting device free of damage and secure it against unauthorised use.



If the product is not used for a longer period of time, the battery must either be removed and stored in a dry and well-ventilated place or remain permanently connected to the charger (> see chap. Charging the battery) (main switch to **2**).

### 10.3 Dispose of lifting device

1. Take the lifting device out of operation.
2. Dismantle and dispose of the suction plates.
3. Loosen the hose clamps and pull off the vacuum hoses.
4. Dismantle and remove the vacuum generator according to the separate operating instructions.
5. Dismantle and dispose of the charger.
6. Dismantle the battery and dispose of it in accordance with the following instructions.
7. Dismantle the base body and dispose of it.



For proper disposal, please contact a disposal company for technical goods with the advice to observe the disposal and environmental regulations applicable at that time. Uplifter will be happy to assist you in finding a suitable company.



#### NOTE

#### The battery contains a liquid hazardous to water

Danger of environmental damage!

- ▶ Hand in used batteries at a collection point.
- ▶ Do not dispose of used batteries with the residual waste.
- ▶ Transport batteries upright, secure against tipping and short-circuited.
- ▶ Transport damaged batteries in a suitable container.

## 11 Declarations of conformity

### 11.1 EU conformity

#### EU Declaration of Conformity

The manufacturer Uplifter confirms that the UPG lifting device described in these operating instructions complies with the following relevant EC directives:

2006/42/EC	Machinery Directive
2014/30/EU	Electromagnetic compatibility
2011/65/EU	RoHS Directive

The following harmonised standards were applied:

EN ISO 12100	Safety of machinery - General principles for design - Risk assessment and risk reduction
EN ISO 13849-1	Safety of machinery - Safety-related parts of control systems - Part 1: General principles for design
EN ISO 13857	Safety of machinery - Safety distances to prevent hazard zones from being reached by the upper and lower limbs
EN ISO 2151	Acoustics - Noise test code for compressors and vacuum pumps - Engineering method for accuracy class 2
EN ISO 4414	Fluid power - General rules and safety requirements for pneumatic systems and their components
EN 1012-1	Compressors and vacuum pumps - Safety requirements - Part 1: Compressors
EN 13035-1	Machines and plants for the manufacture, treatment and processing of flat glass - Safety requirements - Part 1: Equipment for storage, handling and transportation within the factory
EN 13035-2	Machines and plants for the manufacture, treatment and processing of flat glass - Safety requirements - Part 2: Equipment for storage, handling and transportation outside the factory
EN 13155+A2	Cranes - Safety - Loose load handling attachments
EN 14238+A1	Cranes - Hand-guided manipulators
EN 60204-1+A1+AC	Safety of machinery - Electrical equipment of machines - Part 1: General requirements
EN 61000-6-2+AC	Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity for industrial environments
EN 61000-6-3+A1+AC	Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission for residential, commercial and light-industrial environments
EN 61000-6-4+A1	Electromagnetic compatibility - Part 6-4: Generic standards - Emission for industrial environments
EN 300 330	Radio equipment in the frequency range 9 kHz to 25 MHz and inductive loop systems in the frequency range 9 kHz to 30 MHz
EN IEC 63000	Technical documentation for the assessment of electrical and electronic equipment with regard to the restriction of hazardous substances

Other technical standards and specifications have been applied:

EN 301 489-1	Electromagnetic compatibility for radio equipment and services Part 1: Common technical requirements
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The EU declaration of conformity valid at the time of product delivery is supplied with the product or made available online. The standards and guidelines cited here reflect the status at the time of publication of the operating and installation instructions.

## 11.2 UKCA compliance

### Declaration of Conformity (UKCA)

The manufacturer Uplifter confirms that the product described in this manual complies with the following relevant UK legislation:

2008	Supply of Machinery (Safety) Regulations
2012	The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations
2016	Electromagnetic Compatibility Regulations

The following harmonised standards were applied:

EN ISO 12100	Safety of machinery - General principles for design - Risk assessment and risk reduction
EN ISO 13849-1	Safety of machinery - Safety-related parts of control systems - Part 1: General principles for design
EN ISO 2151	Acoustics - Noise test code for compressors and vacuum pumps - Engineering method for accuracy class 2
EN ISO 4414	Fluid power - General rules and safety requirements for pneumatic systems and their components
EN 1012-1	Compressors and vacuum pumps - Safety requirements - Part 1: Compressors
EN 13035-1	Machines and plants for the manufacture, treatment and processing of flat glass - Safety requirements - Part 1: Equipment for storage, handling and transportation within the factory
EN 13035-2	Machines and plants for the manufacture, treatment and processing of flat glass - Safety requirements - Part 2: Equipment for storage, handling and transportation outside the factory
EN 13155+A2	Cranes - Safety - Loose load handling attachments
EN 14238+A1	Cranes - Hand-guided manipulators
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EN 61000-6-3+A1+AC	Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission for residential, commercial and light-industrial environments
EN 61000-6-4+A1	Electromagnetic compatibility - Part 6-4: Generic standards - Emission for industrial environments
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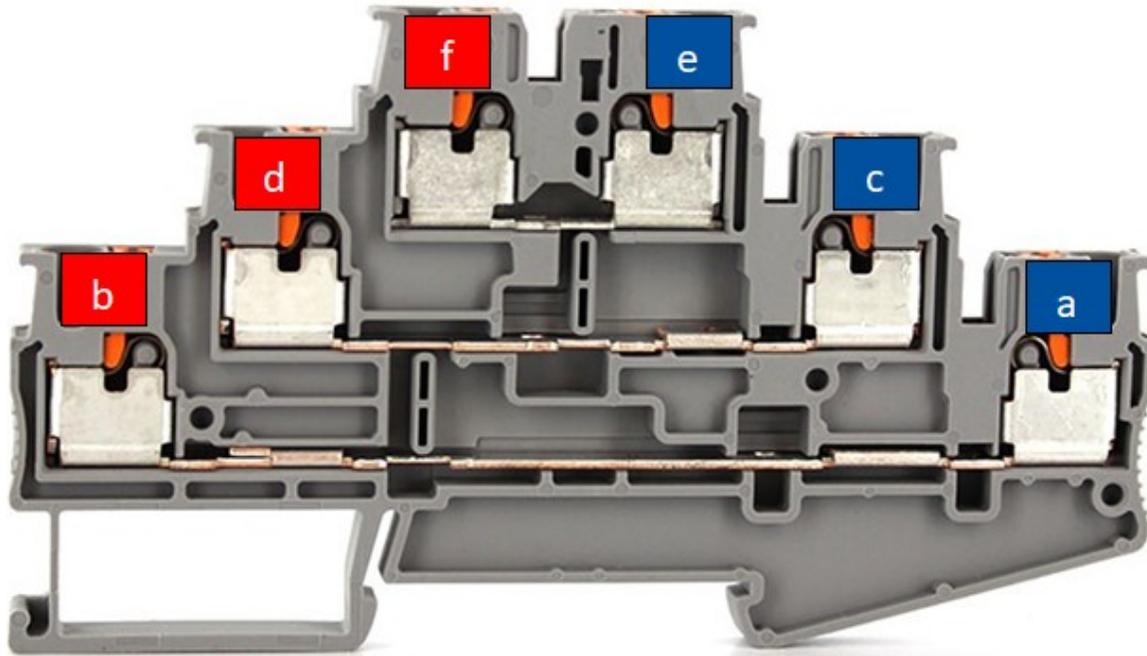




# Definition of multi-level terminals

**EXTERN**

**INTERN**



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Date		17.02.21			Definition of multi-level clamps		Project number		Attachment		=VM
Ed.		DLS			20HS-00025		Location		+CBI		
Certified		ZF-SE			Ers. d.						
State	Change	Date	Name	standard	DIN 81346	Ers. f.					Zeichnung
0		1					4	5		snu	





/5.5 X1:3a

-7PF1  
Undervoltage monitor  
21.05.05.00075

/5.7 X1:10c

-7KF1  
Undervoltage  
21.02.03.00070

-7KF2  
EMC lock  
21.02.03.00070

-7KF3  
Pump control  
Circle 1  
21.02.03.00070

/5.8 X1:13c

/6.5 14  
/6.5 12 | 11

/8.2 14  
/8.2 12 | 11

/6.2 14  
/6.2 12 | 11

-7BP1

Vacuum switch  
circuit 1  
10.06.02.00737



U s/a  
OUT2  
GND  
OUT1/ C/Q  
-7WG1  
4x0, 25mm<sup>2</sup>  
10.06.02.00084  
/5.4 X1:1b  
/5.6 X1:9d

-XD1  
-XD1  
/6.5 Horn (2)  
a b  
a b

-7BP2

Vacuum switch  
Circle 2  
10.06.02.00737



U s/a  
OUT2  
GND  
OUT1/ C/Q  
-7WG2  
4x0, 25mm<sup>2</sup>  
10.06.02.00084  
/5.4 X1:2b  
/5.7 X1:10d

-7XD1  
Alarm  
Pumpensteuerung  
Circle 1  
21.02.03.00070  
a b  
a b  
14

**Component parameters**  
2021-05-26 17:10:14

- BMK:-7BP2  
Symbol name:VSi/IO\_Link without  
Artikel:10.06.02.00737  
Function text:Vacuum switch  
Additional text 1:Circle 2

**Component parameters**  
2021-05-26 17:10:14

- BMK:-7WG1  
Symbol name:Cable  
Artikel:10.06.02.00084

**Component parameters**  
2021-05-26 17:10:14

**Component parameters**  
2021-05-26 17:10:14

- BMK:-XD1  
Symbol name:Multi-level clamp,PT  
Artikel:21.05.01.00280  
Manufacturer:PHOENIX CONTACT

- BMK:-7KF2  
Symbol name:Relay  
Artikel:21.02.03.00070  
Function text:EMC lock  
Zusatzartikel.1:21.04.05.00028

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Date 17.02.21

Ed. DLS

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Project number

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20HS-00025

Location

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State Change

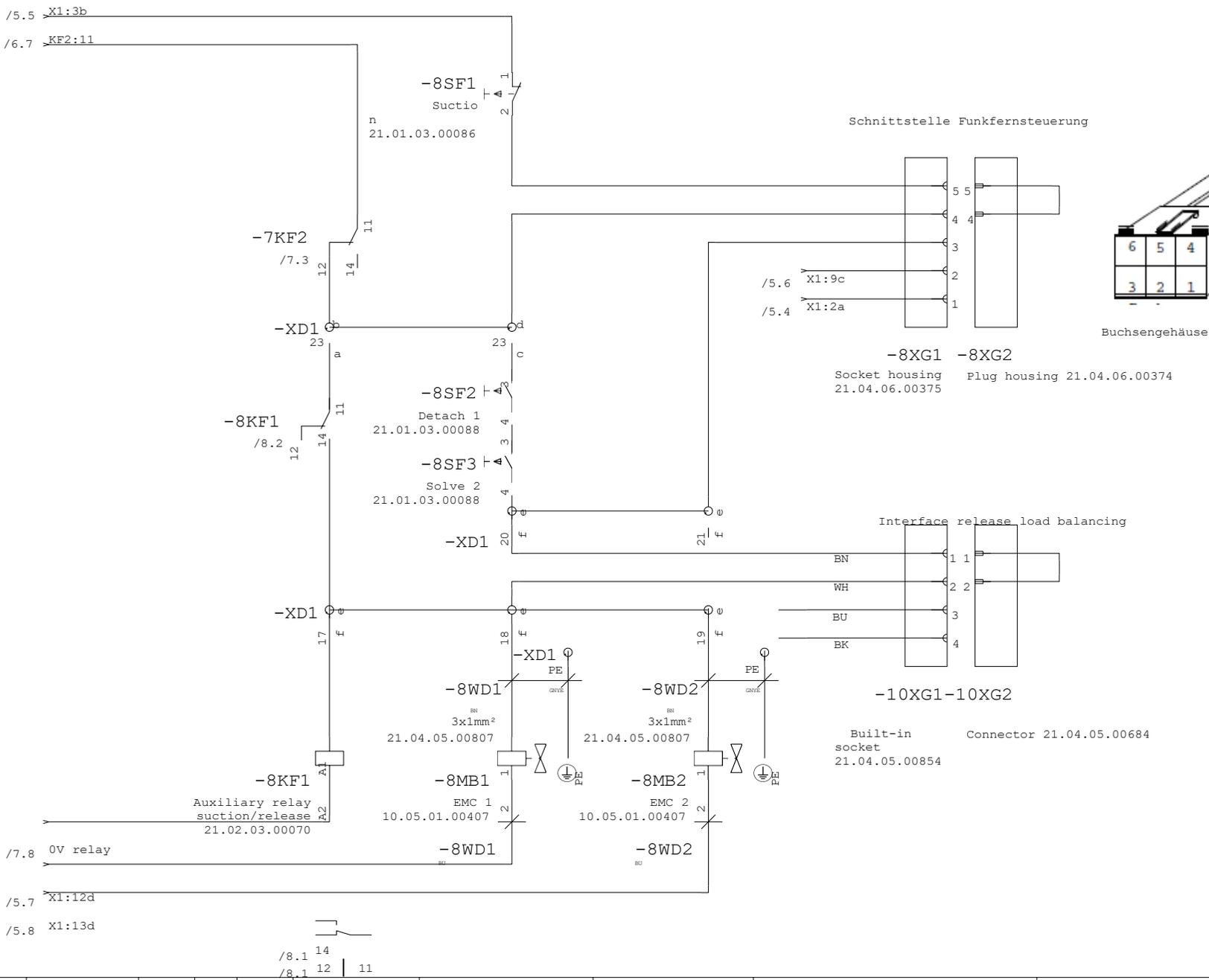
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Name 1

standard

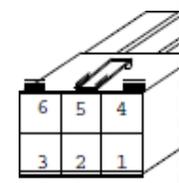
DIN 81346

Ers. f.



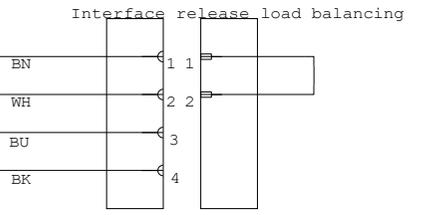
**Component parameters**  
2021-05-26 17:10:14

**Component parameters**  
2021-05-26 17:10:15



Buchsengehäuse

-8XG1 -8XG2  
Socket housing Plug housing 21.04.06.00374



-10XG1-10XG2  
Built-in socket Connector 21.04.05.00684



EMC / Interface FFS

Project number

20HS-00025

Location

+CP\_1

Date

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Date 17.02.21

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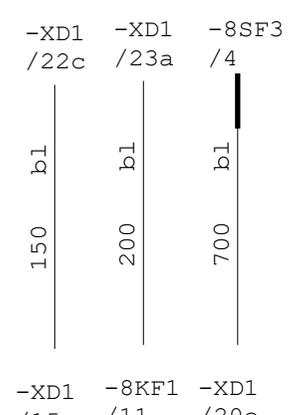
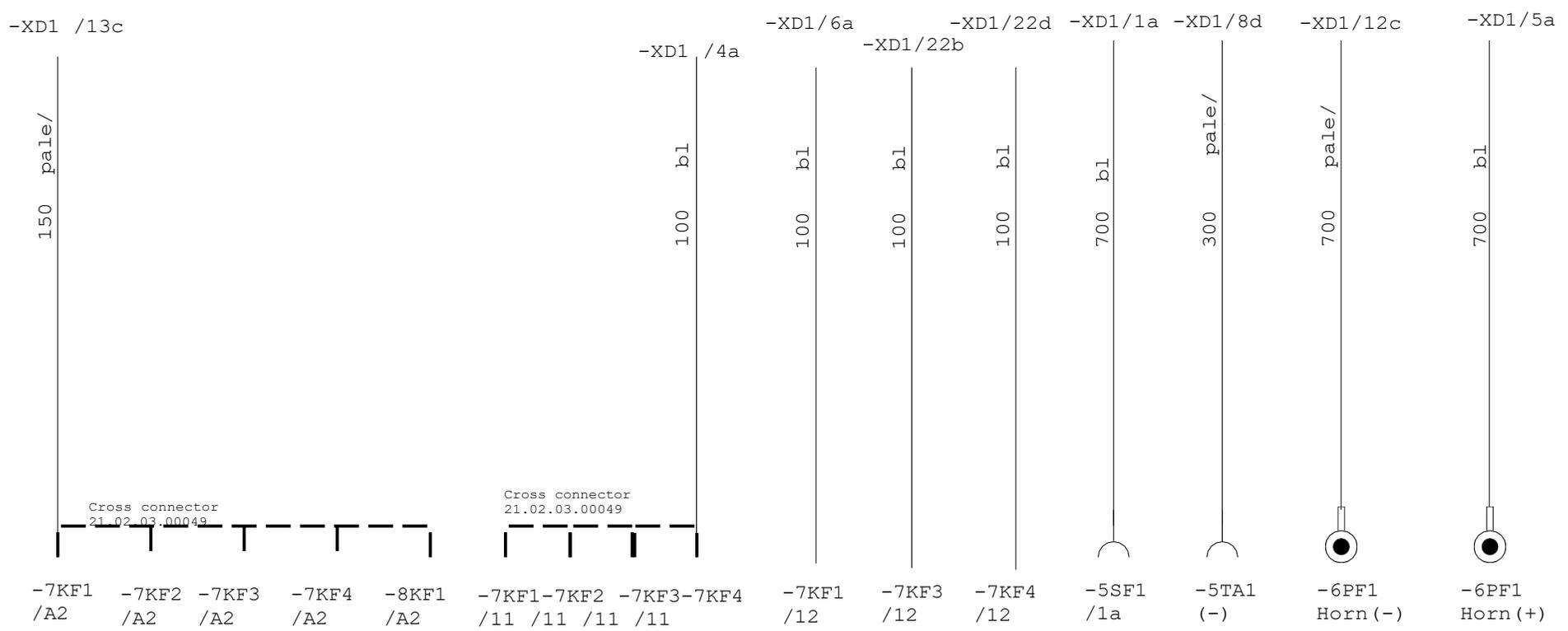
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Date



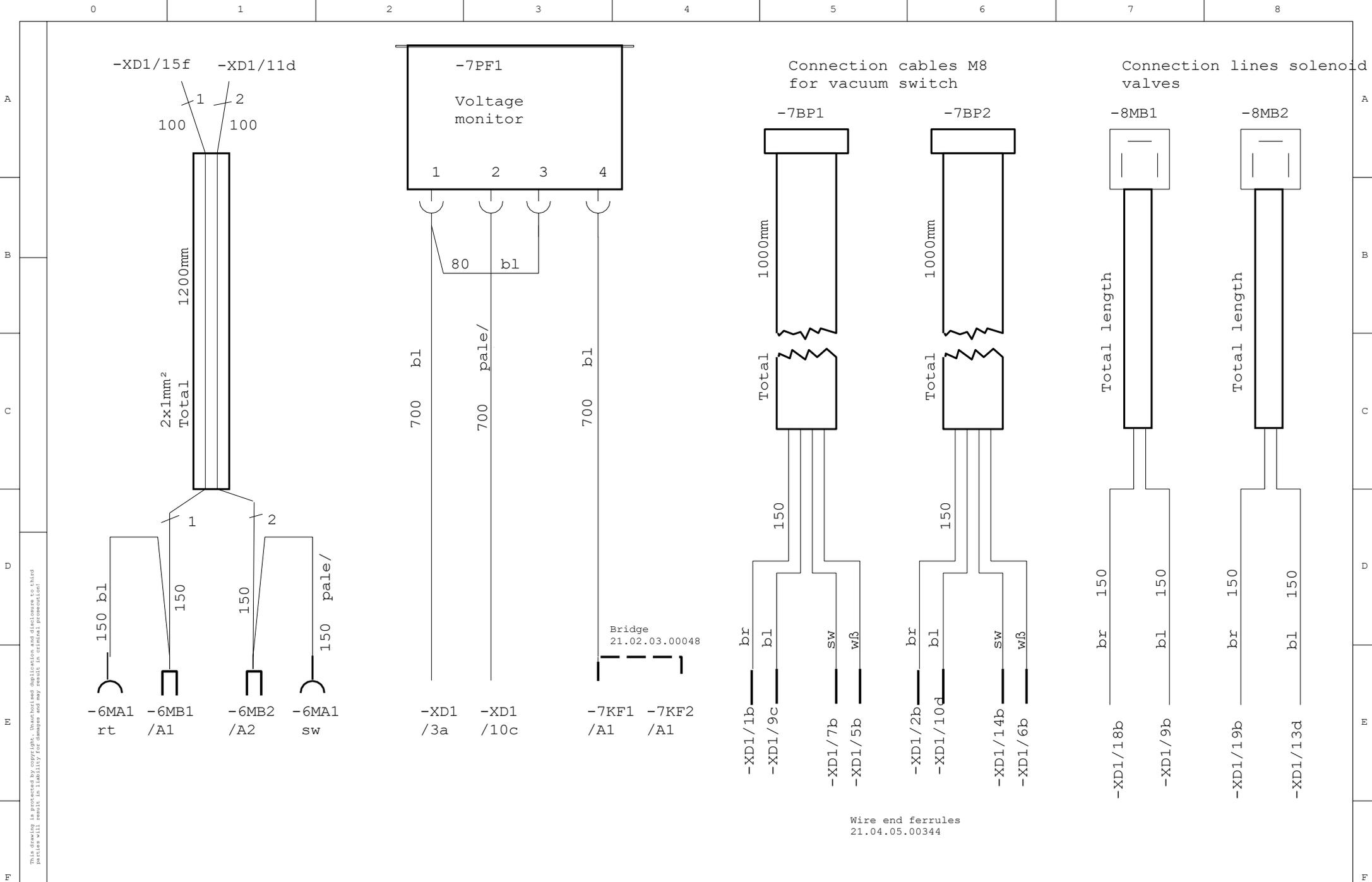
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	Wire end ferrule		
	stripped without sleeve		
	Round connector	21.04.05.00060	
	Round connector	21.04.05.00061	
	Flat plug sleeve	21.04.05.00139	
	Flat plug sleeve		21.04.05.00028
	Flat plug sleeve		21.04.05.00187
	Ring cable lug M3		21.04.05.00078
	Ring cable lug M4		21.04.05.00022
	Fuse holder		21.05.06.00100

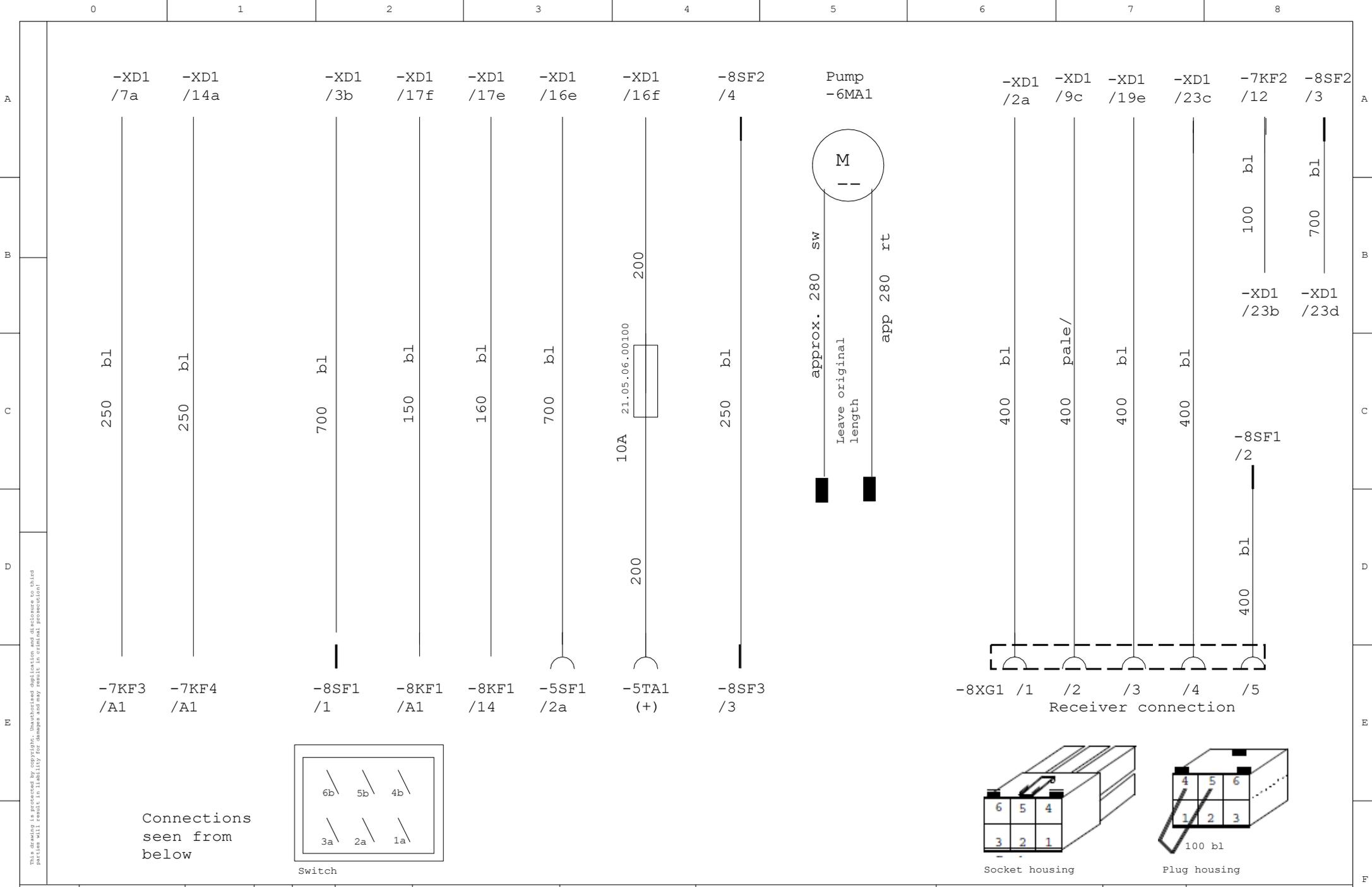
-XD1 /15e -8KF1 /11 -XD1 /20e

Date	17.02.21		Project number	20HS-00025	Attachment	=VM
Ed.	DLS		Location	+CB_1		
State	Change	0	Certified standard	ZF-SE	DIN 81346	2
Date	N	1	Erst. f.			



Wire end ferrules  
21.04.05.00344

Date		17.02.21			Project number		Attach ment		=VM	
Ed.		DLS			20HS-00025		Location		+CB_1	
Certified		ard			ZP=SE					
State	Change	Date	Name	fied	DIN 81346	Ers. f.		Ers. d.		Zeichnung
0			stand			2		4		5



Date		17.02.21				Project number		Attach ment		=VM	
Ed.		DLS ame				20HS-00025		Location		+CB_1	
State		Change		Date		N		1		2	
Certified standard		ZF-SE		DIN 81346		Ers. f.					

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### Material list

Article number	Quantity	BMK	Manufacturer	Designation
21.04.05.00854	1	=VM+CB_1-10XG1		Built-in socket
10.06.02.00737	2	=VM+CB_1-7BP1		VSi/IO_Link without display
17.01.05.00057	1	=VM+FFS-9KF1	TELERADIO	Radio remote control
21.01.03.00040	2	=VM+CB_1-8SF2	MERKLIN	Loosen insertion plate
21.01.03.00041	1	=VM+CB_1-8SF1	MERKLIN	Suck insertion sign
21.01.03.00080	1	=VM+CB_1-5SF1	MALUSKA	Changeover switch 2-pole 3 positions
21.01.03.00082	2	=VM+CB_1-8SF2	SCHNEIDER ELECTRIC	Switching element NO
21.01.03.00083	1	=VM+CB_1-8SF1	SCHNEIDER ELECTRIC	Auxiliary contact NC
21.01.03.00086	1	=VM+CB_1-8SF1	SCHNEIDER ELECTRIC	ILLUMINATED PUSHBUTTON ZB5 WH
21.01.03.00088	2	=VM+CB_1-8SF2	SCHNEIDER ELECTRIC	ILLUMINATED PUSHBUTTON ZB5 RD
21.02.03.00070	5	=VM+CB_1-7KF3		Relay
21.04.01.00091	2 m	=VM+CB_1-5WD1	LAPP	UL-CSA-HAR Style 1015 / 1.0 DBWH
21.04.01.00125	6 m	=VM+CB_1-5WD2	LAPP	UL-CSA-HAR Style 1015 / 1.0 DB
21.04.02.00001	1,2 m	=VM+CB_1-6WD1	LAPP	ÖLFLEX 110 2x1mm²
21.04.02.00054	0,3 m	=VM+FFS-9WG1	LAPP	ÖLFLEX 150 QUATTRO 7G1/18AWG
21.04.05.00002	10	=VM+FFS-9KF1		Wire end ferrule RT 1mm²
21.04.05.00028	27	=VM+CB_1-5SF1		Flat plug sleeve 6.3x0.8

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Date	17.02.21		Material list	Project number	20HS-00025	Attachment	=VM
Ed.	DLS						Place
Certi	ard	ZF-SE		VacuMaster	Glass 600 Release		
State	Change	Date	Name	fied	DIN 81346	Ers. f.	Ers. d.
0	1	stand	2	3	4	5	

Zeichnung snu

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Materials list

Article number	Quantity	BMK	Manufacturer	Designation
21.04.05.00060	2	=VM+CB_1-6PF1		Round plug contact male
21.04.05.00061	2	=VM+CB_1-6PF1		Round plug contact female
21.04.05.00078	2	=VM+CB_1-6PF1		Crimp cable lug M3 ring shape
21.04.05.00139	2	=VM+CB_1-5TA1		Flat plug sleeve
21.04.05.00187	2	=VM+CB_1-6PF1		Flat plug sleeve 2.8 x 0.5
21.04.05.00684	1	=VM+CB_1-10XG2	Phoenix Contact	Connector
21.04.06.00374	2	=VM+FFS-9XG1		Connector housing
21.04.06.00375	1	=VM+CB_1-8XG1		Socket housing
21.04.06.00378	9	=VM+CB_1-10XG2		Plug contact
21.04.06.00379	10	=VM+CB_1-10XG1		Contact socket
21.05.01.00231	2	=VM+CB_1-XD1		Clipfix-35 end holder
21.05.01.00251	1	=VM+CB_1-XD1	PHOENIX CONTACT	End cap GY PHO
21.05.01.00280	21	=VM+CB_1-XD1	PHOENIX CONTACT	Multi-level clamp,PT 1.5-3L
21.05.01.00281	1	=VM+CB_1-XD1	PHOENIX CONTACT	Protective conductor multi-level terminal,PT 1.5-3PE
21.05.01.00372	2	=VM+CB_1-XD1	PHOENIX CONTACT	Through terminal Quattro PT 1.5
21.05.04.00037	1	=VM+CB_1-5FC1		Flat fuse 10A
21.05.05.00059	1	=VM+CB_1-6PF1	AVENT	Sounder KPEG-650SA

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Date	17.02.21		Materials list	Project number	Attach ment	=VM					
Ed. Certi	DLS ard			20HS-00025	Place	+					
State	Change	Date	Name	filed	DIN 81346	Ers. f.	Ers. d.	VacuMaster Glass 600 Release	Load Balance		Zeichnung
0	1	stand	2	3	4	5					snu





# Circuit diagrams

Manufacturer J.Schmalz GmbH  
 Johannes Schmalz Str.1  
 Glatten  
 Germany  
  
 System designation VacuMaster Glass 600  
 Release load balancing  
 Work order number 20HS-00025  
 Drawing number 17.01.01.00294  
 Project start 21.08.19  
 Year of manufacture 2018  
 Version / Review V.00  
 Language EN  
  
 Project manager TP  
 Mechanical design TBZ  
 Electrical design DLS

Last change 10.05.2021  
 Last changed by DLS  
 Inspection date 10.05.2021  
 Inspector ZF-SE

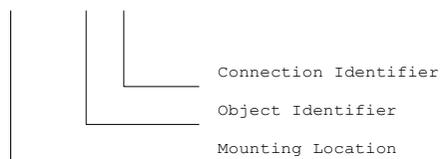
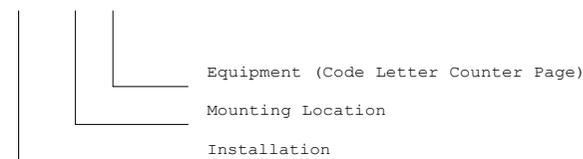
WSCAD version 6.4.1.6  
 Total number of pages 14

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			Date	17.02.21			Cover Sheet	Project number	Installation=VM		
		Drn By	LZ		20HS-00025			City	+		
Status	Rev.	Date	Name	Stand.	DIN 81346			Created for	Created by	Drawing number	Sheet
								17.01.01.00294	of	14	

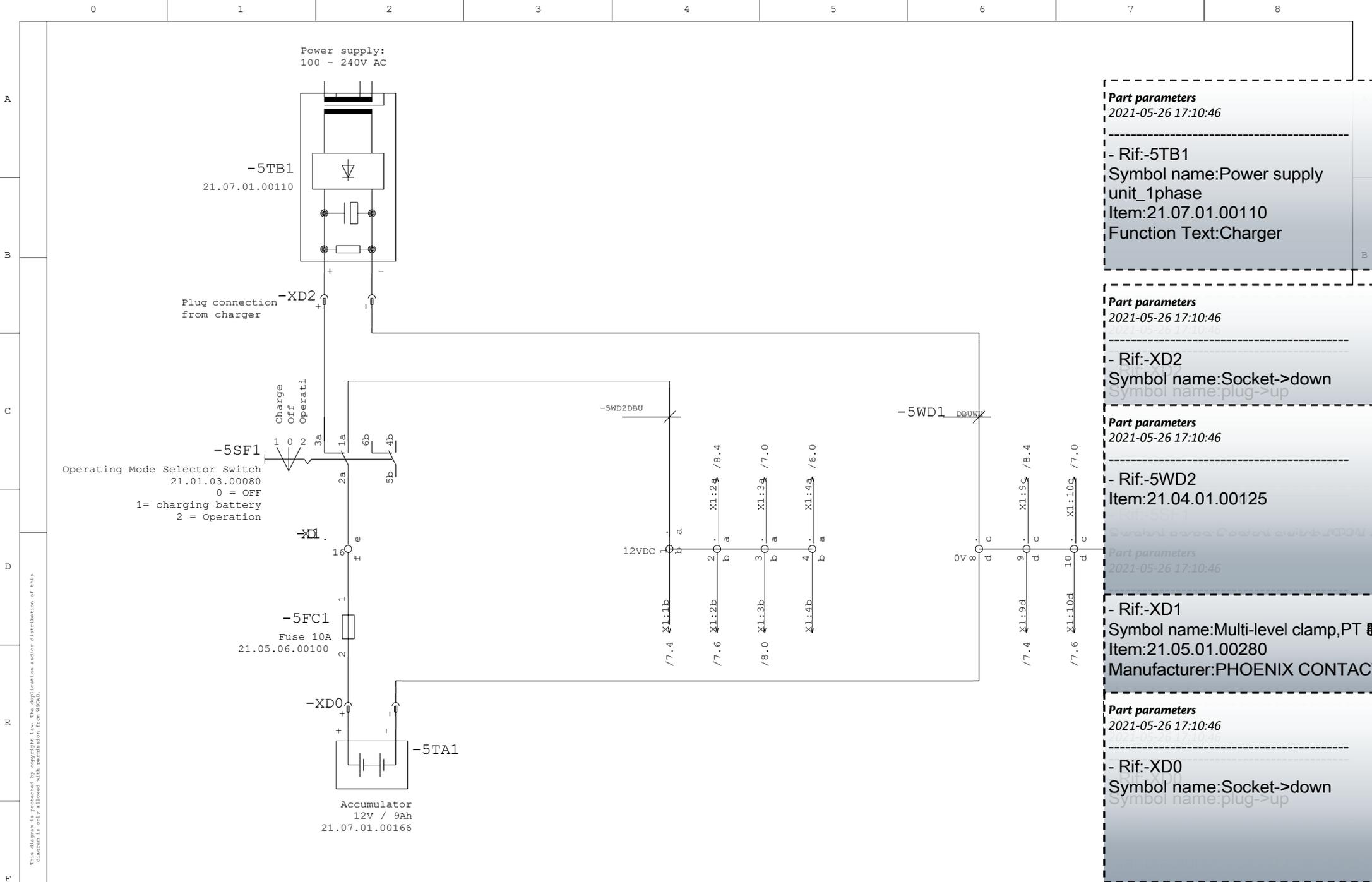
# Switchgear Technical Data

Technical specifications	Core Colors	Terminal Blocks In Control Cabinet
Operating Voltages : 12V DC Control Voltages : 12V DC Frequency : - Control Cabinet : Rittal Form/Type : - Type / Line : H05V-K / H07V-K Cross Section : min. 0,5mm <sup>2</sup> Control Terminals : Phoenix / Push In Current Clamps : Phoenix / Push In	Main Circuits : Black (BK) Control Voltage Ac ==> 230 Vac : Red (RD) Neutral : Light Blue (BU) Protective Ground : Green-Yellow ( GNYE ) Dc Control Voltage : Dark Blue ( DB ) ==> 24Vdc Dc Control Voltage : Dark Blue - White ( DBWH ) ==> 0Vdc External Voltage : Orange ( OR )	VM : VacuMaster CB_1 : Cabinet FFS : remote control

Terminal Block Identification	Identification Block	RIF composition
Example :  +CB1 - X1 : 1.a  	= Installation + Mounting Location - Equipment	Example :  =GS +CB1 -X1  

Date		17.02.21			Switchgear Technical Data		Project number		Installation=VM	
Drn By		LZ			20HS-00025		City		+CB1	
Che.		ZF-SE					Drawing number		Sheet 2	
Status	Rev.	Date	Name	Stand.	DIN 81346	Created for	Created by	17.01.01.00294		of 14

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**Part parameters**  
2021-05-26 17:10:46

- Rif:-5TB1  
Symbol name:Power supply  
unit\_1phase  
Item:21.07.01.00110  
Function Text:Charger

**Part parameters**  
2021-05-26 17:10:46

- Rif:-XD2  
Symbol name:Socket->down  
Symbol name:plug->up

**Part parameters**  
2021-05-26 17:10:46

- Rif:-5WD2  
Item:21.04.01.00125

**Part parameters**  
2021-05-26 17:10:46

- Rif:-XD1  
Symbol name:Multi-level clamp,PT  
Item:21.05.01.00280  
Manufacturer:PHOENIX CONTACT

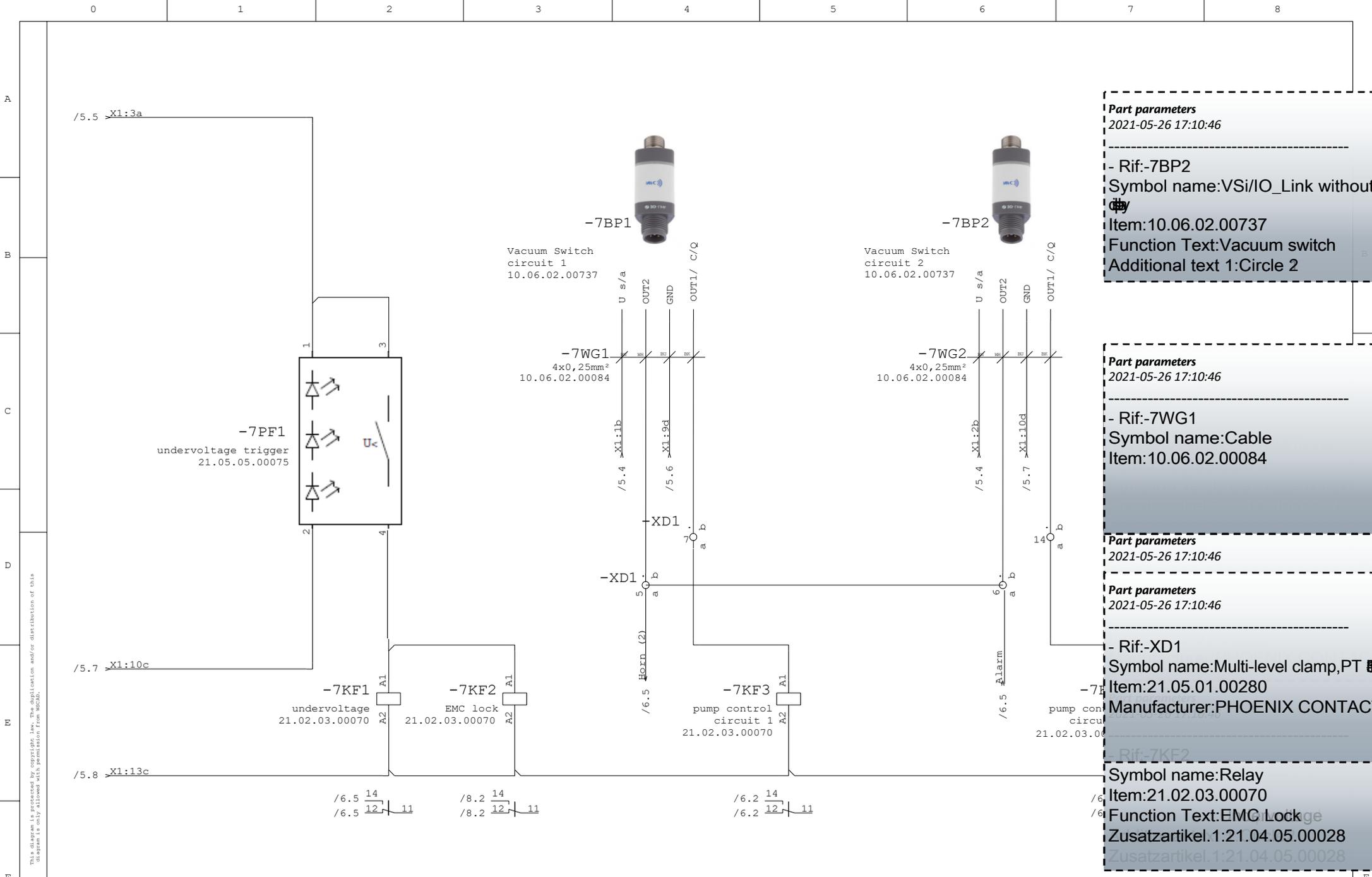
**Part parameters**  
2021-05-26 17:10:46

- Rif:-XD0  
Symbol name:Socket->down  
Symbol name:plug->up

Additional text 1:12V / 9Ah

		Date	17.02.21			Feed-in		Project number	
		Drn By	LZ			SCHMALZ		20HS-00025	
		Che.	ZF-SE					Drawing number	
Status	Rev.	Date	Name	Stand.	DIN 81346	Created for	Created by	17.01.01.00294	
0	1	2	3	4	5	6	7	Sheet 4	
							of 14		8





**Part parameters**  
 2021-05-26 17:10:46

- Rif:-7BP2  
 Symbol name:VSi/IO\_Link without  
 Item:10.06.02.00737  
 Function Text:Vacuum switch  
 Additional text 1:Circle 2

**Part parameters**  
 2021-05-26 17:10:46

- Rif:-7WG1  
 Symbol name:Cable  
 Item:10.06.02.00084

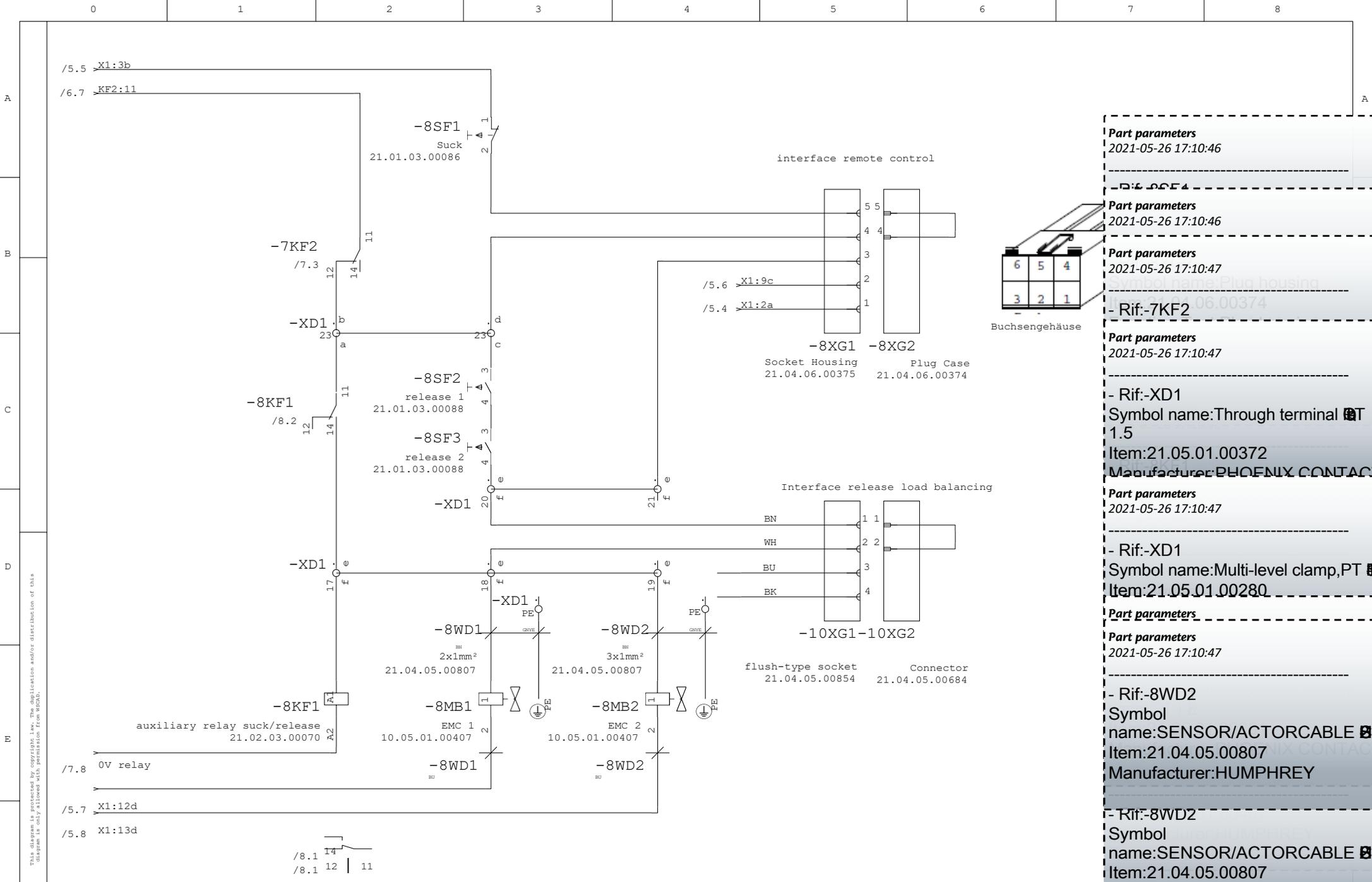
**Part parameters**  
 2021-05-26 17:10:46

**Part parameters**  
 2021-05-26 17:10:46

- Rif:-XD1  
 Symbol name:Multi-level clamp,PT  
 Item:21.05.01.00280  
 Manufacturer:PHOENIX CONTACT

Rif:-7KF2  
 Symbol name:Relay  
 Item:21.02.03.00070  
 Function Text:EMC Lockge  
 Zusatzartikel.1:21.04.05.00028  
 Zusatzartikel.1:21.04.05.00028

Date		17.02.21				Sensor technology		Project number		Installation=VM	
Drn By		LZ				20HS-00025		City +CB_1			
Che.		ZF-SE		Stand. DIN 81346		Drawing number		Sheet 6		Created for	
Status	Rev.	0	D	Name	1	Stand.	DIN 81346	2		Created for	



**Part parameters**  
2021-05-26 17:10:46

**Rif: -8SF1**

**Part parameters**  
2021-05-26 17:10:46

**Part parameters**  
2021-05-26 17:10:47

**Rif: -7KF2**

**Part parameters**  
2021-05-26 17:10:47

**Rif: -XD1**  
Symbol name: Through terminal  
1.5  
Item: 21.05.01.00372  
Manufacturer: PHOENIX CONTACT

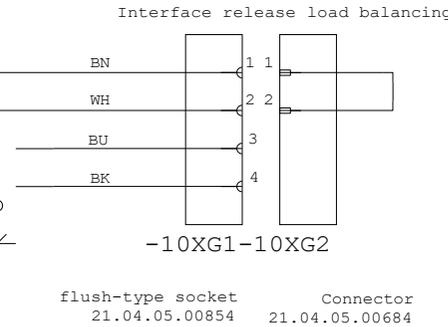
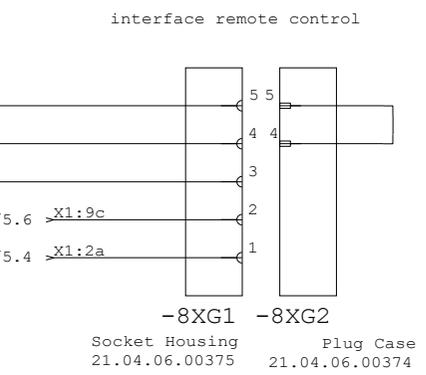
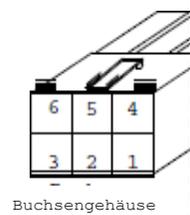
**Part parameters**  
2021-05-26 17:10:47

**Rif: -XD1**  
Symbol name: Multi-level clamp, PT  
Item: 21.05.01.00280

**Part parameters**  
2021-05-26 17:10:47

**Rif: -8WD2**  
Symbol name: SENSOR/ACTORCABLE  
Item: 21.04.05.00807  
Manufacturer: HUMPHREY

**Rif: -8WD2**  
Symbol name: SENSOR/ACTORCABLE  
Item: 21.04.05.00807  
Manufacturer: HUMPHREY  
Function Text: 2x1mm<sup>2</sup>



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Date		17.02.21			EMC / Interface FFS	Project number		20HS-00025		City		FCB_1	
Drn By		LZ				Drawing number		2		Sheet		7	
Che.		ZF-SE				Status		Rev.		0		Created for	

**Part parameters**  
2021-05-26 17:10:47

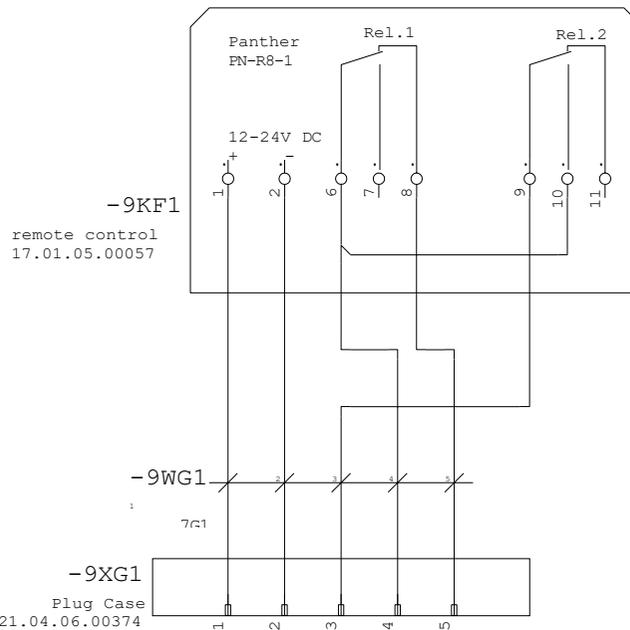
- Rif:-9KF1  
Symbol name:Radio\_Receiver Panther R8-1  
Item:17.01.05.00057  
Function Text:Radio remote control  
Zusatzartikel.3:27.03.01.00742

**Part parameters**  
2021-05-26 17:10:47

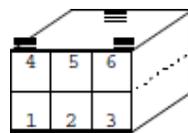
- Rif:-9WG1  
Symbol name:Cable  
Item:21.04.02.00054

Function Text:Plug housing  
Zusatzartikel.1:21.04.06.00378

+FFS  
additional option: remote control  
17.01.05.00059



Sealing plug left

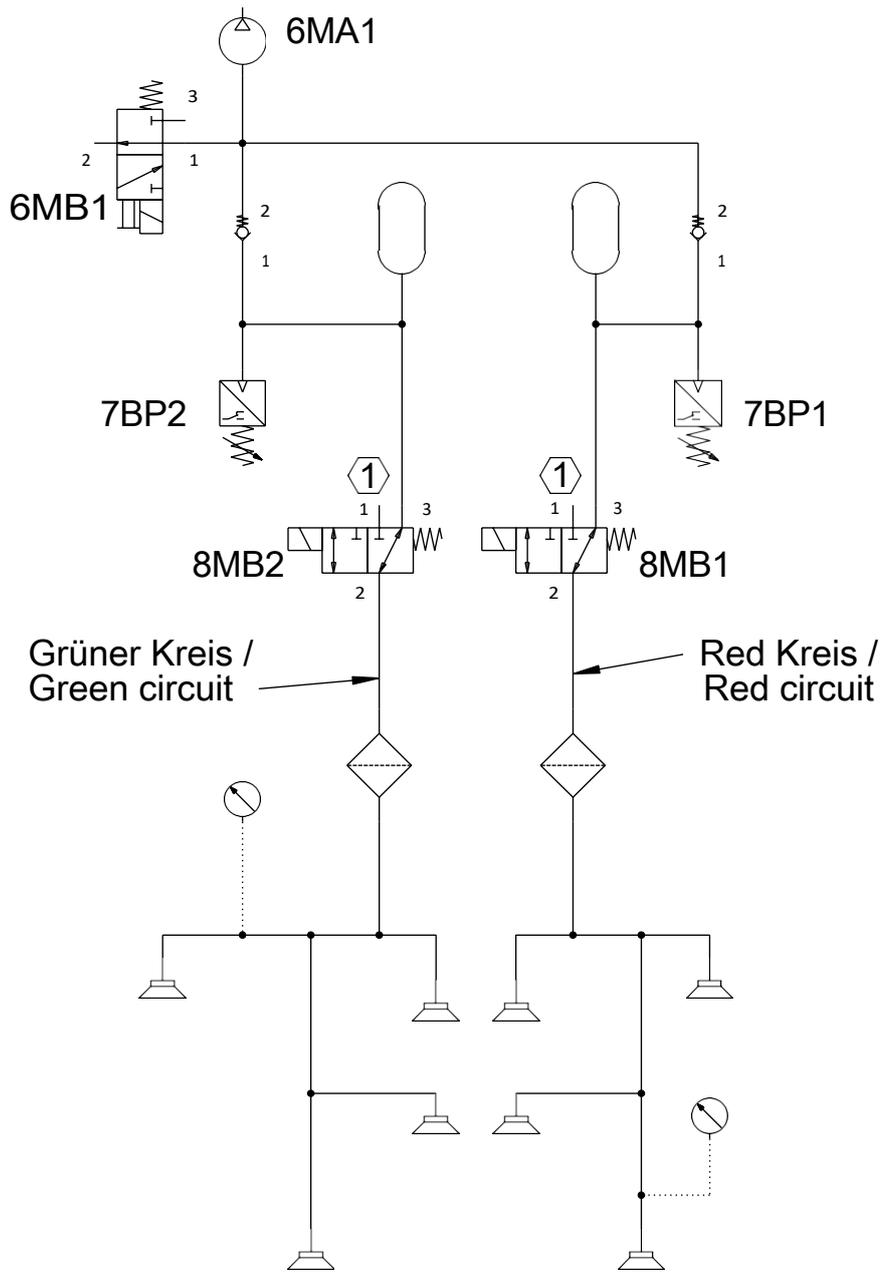


X4 connector

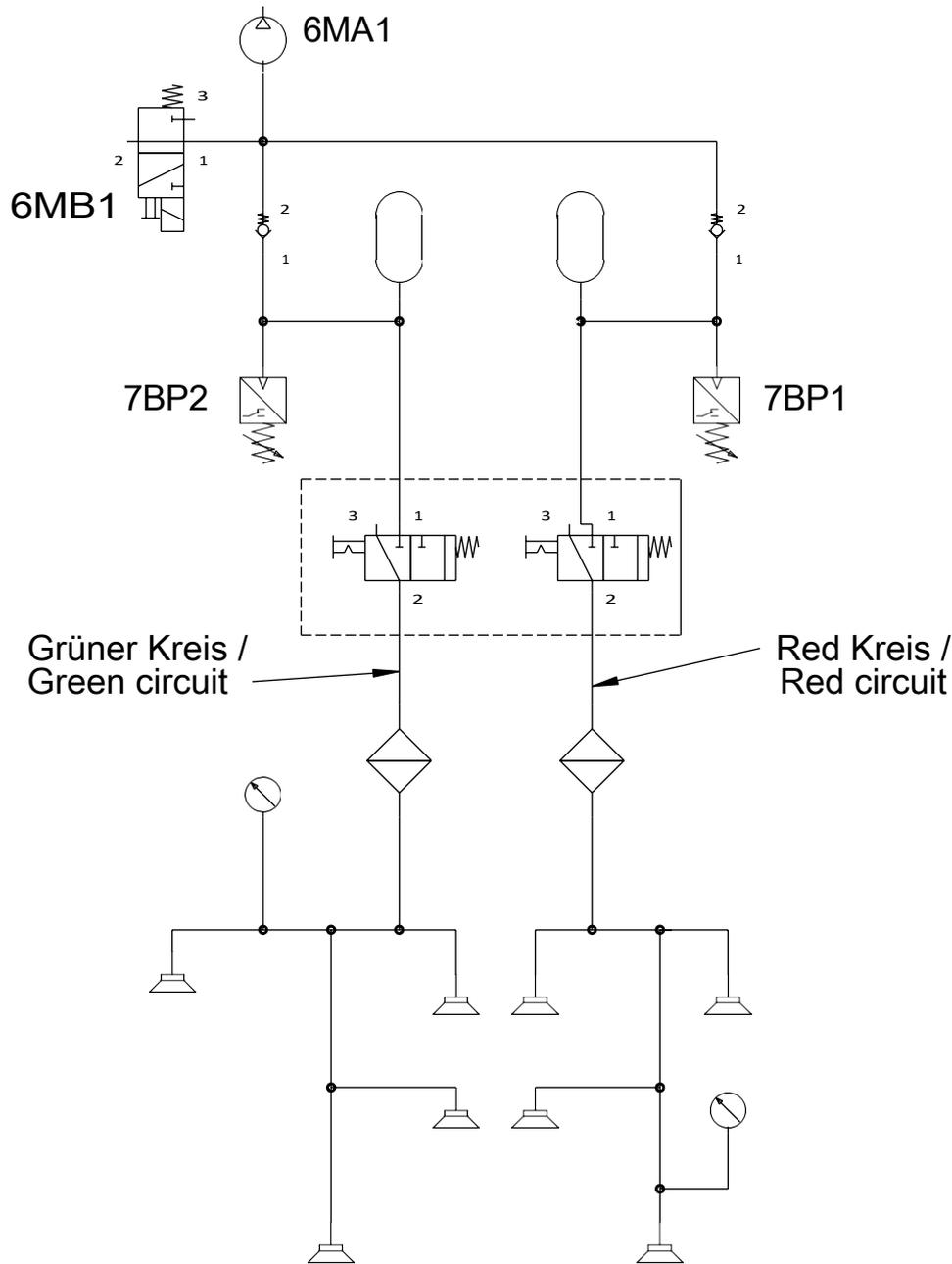


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		Che.	ZF-SE							Drawing number		Sheet 8
Status	Rev.	Date	Name	Stand.	DIN 81346	Created for	Created by			17.01.01.00294		of 14



1	A2020-11-0109/Dimensions changed / Measure changed	24.11.2020	BMR	26.11.2020	BMR	Released Released
2	A2021-01-0026/Drawing rep. correct / Drawing rep. correct	18.01.2021	BMR	27.01.2021	TBZ	
Index/Rev	Type of change / modification	Datum edb. / date of modification	Name edited by	Datum gepr. / date of verification	Name gepr. / verified by	aktueller Status / actual status
Nicht tolerierte Maße / dimension without tolerance Assembly group		Surface/surface	DIN A4 format	Maßstab / scale	Gewicht / weight	Volume / Volume
mitgelten Normen / complying with the standard		-		1:1	-	-
		Date/date	Name/name	Mat. Assembly	Oberflächenbehandlung / surface treatment - Assembly - / - Assembly -	
		Edited / create	24.07.2019	BMR	-	
Item no. of the customer - Order no. / item number of customer - order number		Geprüft / -verified	27.01.2021	TBZ	-	
Copyright rights according to DIN ISO 16016 paragraph 4.2 are claimed copyright reserved DIN ISO 16016 paragraph 4.2				Designation / partname <b>Pneumatic circuit diagram</b> Pneumatic circuit diagram PNEU-PLAN VM-GLASS 600-EMV-2Circuit		
		Zeichnungsnummer / number of Blatt/sheet			drawingIndex/Rev	
		17.01.01.00261			2 1/1	



1	A2021-02-0021/Drawing rep. correct / Drawing rep. correct	02.02.2021	BMR	18.02.2021	TBZ	Released Released
Index/Rev	Type of change / modification	Datum edb. / date of modification	Name edited by	Datum gepr. / date of verification	Name gepr. / verified by	aktueller Status / actual status
Nicht tolerierte Maße / dimension without tolerance Assembly group mitgelten Normen / complying with the standard	Surface/surface	DIN A4 format	Maßstab / scale	Gewicht / weight		Volume / Volume
	-		1:1	-		-
Item no. of the customer - Order no. / item number of customer - order number	Date/date	Name/name	Mat. Assembly	Oberflächenbehandlung / surface treatment - Assembly - / - Assembly -		
	23.07.2019	BMR	Mat.-nr. Assembly/Assembly	-		
Copyright rights according to DIN ISO 16016 paragraph 4.2 are claimed copyright reserved DIN ISO 16016 paragraph 4.2	Geprüft / verified		Designation / partname			
	18.02.2021	TBZ	<b>Pneumatic circuit diagram</b> Pneumatic circuit diagram <b>PNEU-PLAN VM-GLASS 600-HSV-2Circuit</b>			
		Zeichnungsnummer / number of Blatt/sheet		drawingIndex/Rev		
		17.01.01.00257		1 1/1		



# Circuit documents

Manufactur J.Schmalz GmbH  
 Johannes Schmalz Str.1  
 Glatten  
 Germany

System designation VacuMaster Glass 600  
 Manual slide valve

Drawing number 17.01.01.00235

Project start 16.02.21

Year of 2021

Version / Revision V.02

Language EN

Project Manager TP

Mechanical Design TBZ

Electrical construction DLS

Last change Last 23.03.21

editor Examination DLS

date 18.02.21

Auditor ZF-SE

WSCAD version 6.4.1.6

Total number of 10

Date 16.02.21

Ed. DLS  
Certified

ZF-SE



Cover page

Project number

19HS-00276

Attachment

Place +

=VM

VacuMaster Glass 600 Manual  
slide valve

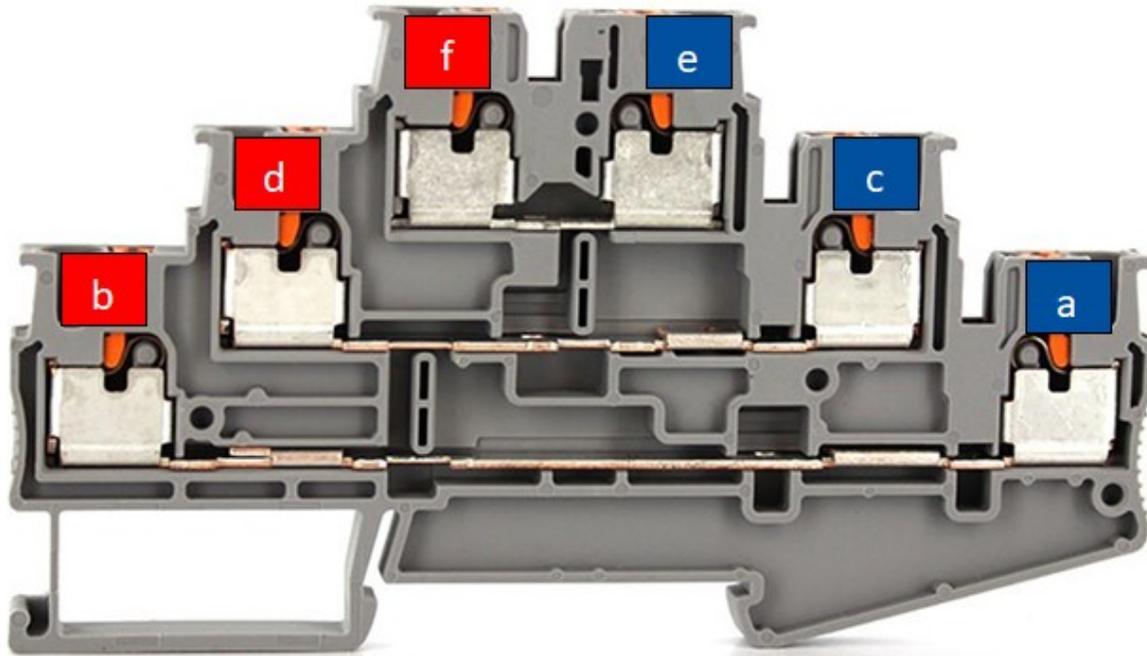
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# Definition multi-level terminals

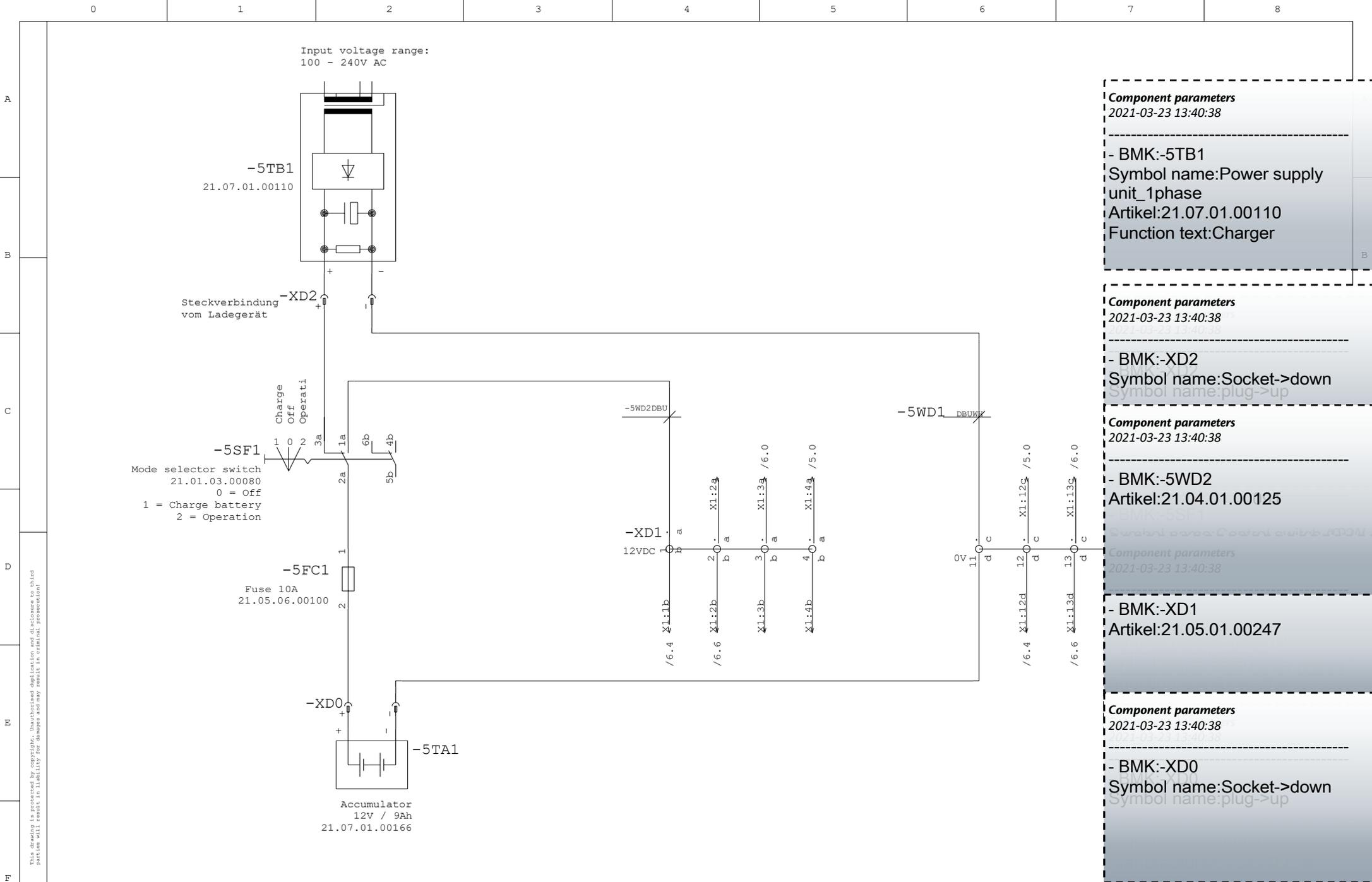
**EXTERN**

**INTERN**



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Date		16.02.21			Definition of multi-level clamps		Project number		Attachment		=VM	
Ed.		DLS			19HS-00276		Location		+CBI			
Certified		ZF-SE			Ers. d.							
State	Change	Date	Name	standard	DIN 81346	Ers. f.					Zeichnung	
0		1					4	5			snu	



**Component parameters**  
2021-03-23 13:40:38

- BMK:-5TB1  
Symbol name:Power supply unit\_1phase  
Artikel:21.07.01.00110  
Function text:Charger

**Component parameters**  
2021-03-23 13:40:38

- BMK:-XD2  
Symbol name:Socket->down  
Symbol name:plug->up

**Component parameters**  
2021-03-23 13:40:38

- BMK:-5WD2  
Artikel:21.04.01.00125

**Component parameters**  
2021-03-23 13:40:38

- BMK:-XD1  
Artikel:21.05.01.00247

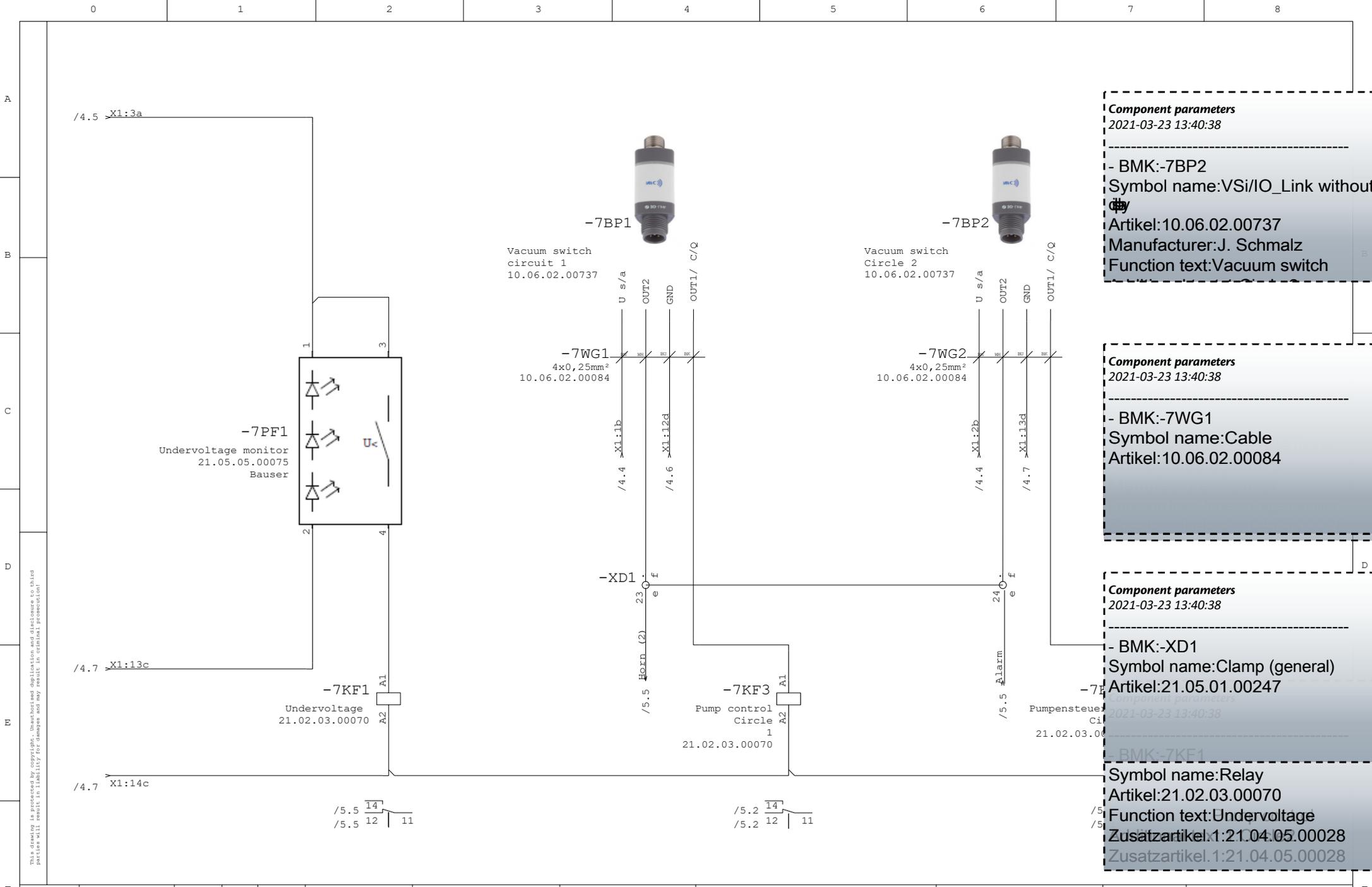
**Component parameters**  
2021-03-23 13:40:38

- BMK:-XD0  
Symbol name:Socket->down  
Symbol name:plug->up

Function text:Accumulator

Date	16.02.21		Feed-in	Project number	19HS-00276	Location	FCB_1
Ed.	DLS		ZF-SE				
State	Change	Date	Name	standard	DIN 81346	Efs. f.	Ers. d.
0	1	2	3	4	5		





**Component parameters**  
 2021-03-23 13:40:38

- BMK:-7BP2  
 Symbol name:VSi/IO\_Link without  
 Artikel:10.06.02.00737  
 Manufacturer:J. Schmalz  
 Function text:Vacuum switch

**Component parameters**  
 2021-03-23 13:40:38

- BMK:-7WG1  
 Symbol name:Cable  
 Artikel:10.06.02.00084

**Component parameters**  
 2021-03-23 13:40:38

- BMK:-XD1  
 Symbol name:Clamp (general)  
 Artikel:21.05.01.00247

**Component parameters**  
 2021-03-23 13:40:38

- BMK:-7KF1  
 Symbol name:Relay  
 Artikel:21.02.03.00070  
 Function text:Undervoltage  
 Zusatzartikel.1:21.04.05.00028  
 Zusatzartikel.1:21.04.05.00028

Date		16.02.21			Sensor technology	Project number		Attachment =VM	
Ed.		DLS				19HS-00276		Location +CB_1	
State		Change		Certified standard		ZF-SE		DIN 81346	







A

B

C

D

E

F

A

B

C

D

E

F

### Materials list

Article number	Quantity	BMK	Manufacturer	Designation
10.06.02.00737	2	=VM+CB_1-7BP1	J. Schmalz	VSi/IO_Link without display
21.01.03.00080	1	=VM+CB_1-5SF1	MALUSKA	Changeover switch 2-pole 3 positions
21.02.03.00070	4	=VM+CB_1-7KF3		Relay
21.04.01.00091	2 m	=VM+CB_1-5WD1	LAPP	UL-CSA-HAR Style 1015 / 1.0 DBWH
21.04.01.00125	6 m	=VM+CB_1-5WD2	LAPP	UL-CSA-HAR Style 1015 / 1.0 DB
21.04.02.00001	1,2 m	=VM+CB_1-6WD1	LAPP	ÖLFLEX 110 2x1mm²
21.04.05.00028	23	=VM+CB_1-5SF1		Flat plug sleeve 6.3x0.8
21.04.05.00060	2	=VM+CB_1-6PF1		Round plug contact male
21.04.05.00061	2	=VM+CB_1-6PF1		Round plug contact female
21.04.05.00078	2	=VM+CB_1-6PF1		Crimp cable lug M3 ring shape
21.04.05.00139	2	=VM+CB_1-5TA1		Flat plug sleeve
21.04.05.00187	2	=VM+CB_1-6PF1		Flat plug sleeve 2.8 x 0.5
21.05.01.00231	2	=VM+CB_1-XD1		Clipfix-35 end holder
21.05.01.00247	16	=VM+CB_1-XD1	PHOENIX CONTACT	Standard terminal block PT 1.5
21.05.01.00251	1	=VM+CB_1-XD1	PHOENIX CONTACT	End cap GY PHO
21.05.01.00372	1	=VM+CB_1-XD1	PHOENIX CONTACT	Through terminal Quattro PT 1.5
21.05.04.00037	1	=VM+CB_1-5FC1		Flat fuse 10A

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Date	16.02.21		Materials list	Project number	19HS-00276	Attachment	=VM
Ed. Certi	DLS ard		ZF-SE	Place	VacuMaster Glass 600 Manual	slide valve	
State	Change	Date	Name	filed	DIN 81346	Efs. f.	Efs. d.
0	1	stand	2	3	4	5	

Zeichnung





# Circuit diagrams

Manufacturer J.Schmalz GmbH  
 Johannes Schmalz Str.1  
 Glatten  
 Germany

System designation VacuMaster Glass 600  
 Manual slide valve

Drawing number 17.01.01.00235

Project start 16.02.21

Year of manufacture 2021

Version / Review V.02

Language EN

Project manager Thomas Pfeifle

Mechanical design TBZ

Electrical design DLS

Last change 23.03.21

WSCAD version 6.4.1.6

Last changed by DLS

Total number of pages 10

Inspection date 18.02.21

Inspector ZF-SE

		Date	16.02.21				Cover Sheet	Project number	Installation=VM
		Drn By	LZ					19HS-00276	City
		Che.	ZF-SE				VacuMaster Glass 600 Manual slide valve	Drawing number	Sheet 1
Status	Rev.	Date	Name	Stand.	DIN	Created for		Created by	17.01.01.00235

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A  
B  
C  
D  
E  
F

A  
B  
C  
D  
E  
F

0 1 2 3 4 5 6 7 8

0 1 81346 3 4 5 6 7 8

# Switchgear Technical Data

## Technical specifications

Operating Voltages : 12V DC  
 Control Voltages : 12V DC  
 Frequency : -  
 Control Cabinet : Rittal  
 Form/Type : -  
 Type / Line : H05V-K / H07V-K  
 Cross Section : min. 0,5mm<sup>2</sup>  
 Control Terminals : Phoenix / Push In  
 Current Clamps : Phoenix / Push In

## Core Colors

Main Circuits : Black (BK)  
 Control Voltage Ac ==> 230 Vac : Red (RD)  
 Neutral : Light Blue (BU)  
 Protective Ground : Green-Yellow ( GNYE )  
 Dc Control Voltage ==> 24Vdc : Dark Blue ( DB )  
 Dc Control Voltage ==> 0Vdc : Dark Blue - White ( DBWH )  
 External Voltage : Orange ( OR )

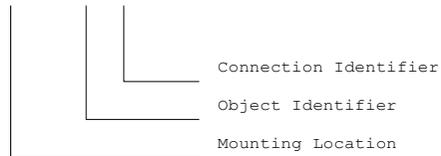
## Terminal Blocks In Control Cabinet

VM : VacuMaster  
 CB\_1 : Cabinet  
 FFS : remote control

## Terminal Block Identification

Example :

+CB1 - X1 : 1.a



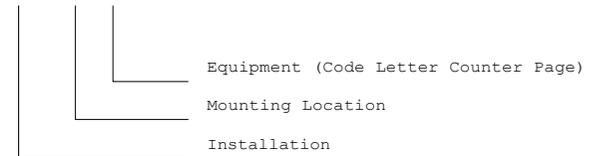
## Identification Block

= Installation  
 + Mounting Location  
 - Equipment

## RIF composition

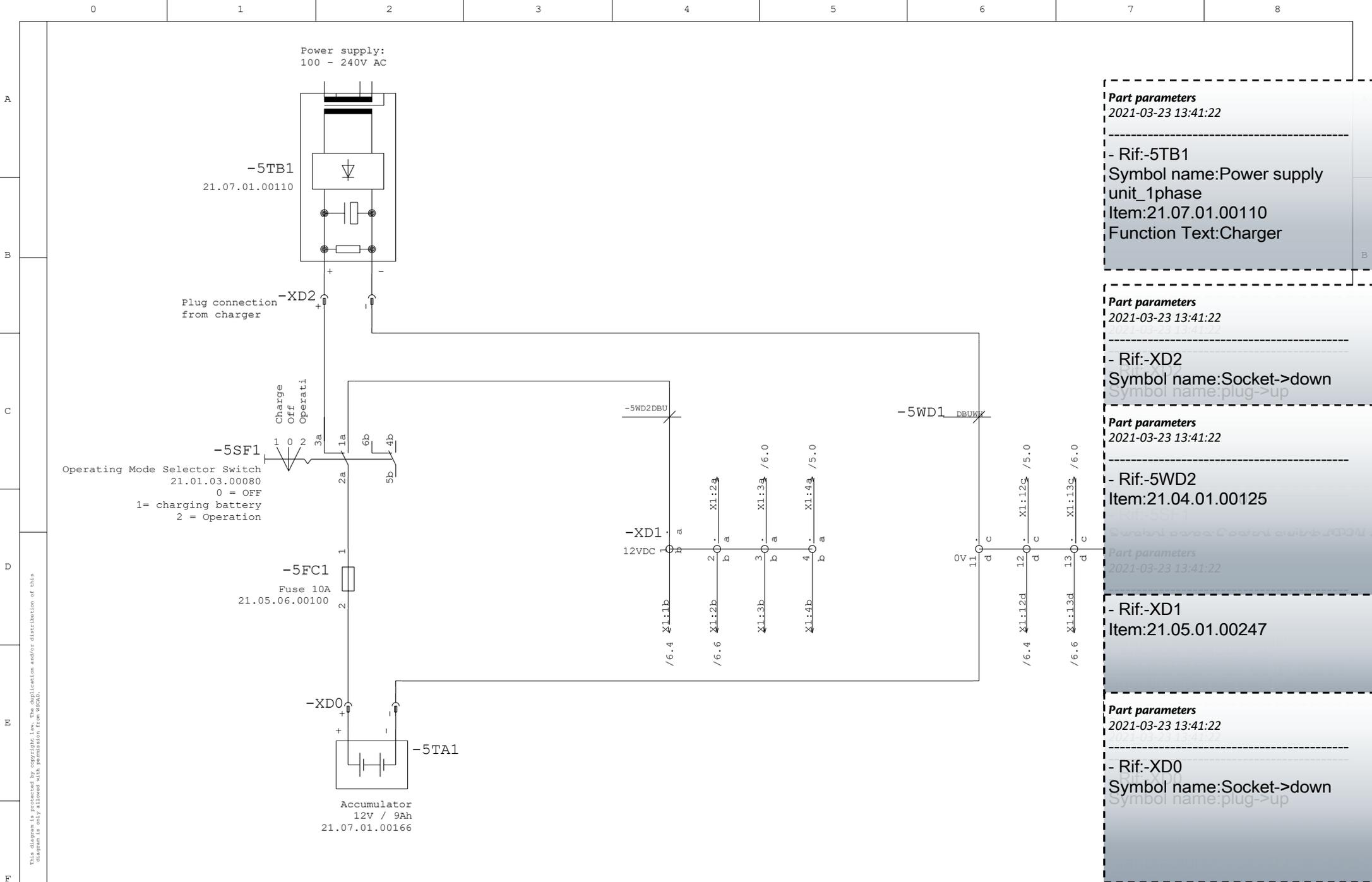
Example :

=GS +CB1 -X1



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		Date	16.02.21			Switchgear Technical Data		Project number		Installation=VM			
		Drn By	LZ					19HS-00276		City		+CB1	
		Che.	ZF-SE							Drawing number		Sheet 2	
Status	Rev.	Date	Name	Stand.	DIN 81346	Created for	Created by	17.01.01.00235		of 18			



**Part parameters**  
2021-03-23 13:41:22

- Rif:-5TB1  
Symbol name:Power supply  
unit\_1phase  
Item:21.07.01.00110  
Function Text:Charger

**Part parameters**  
2021-03-23 13:41:22

- Rif:-XD2  
Symbol name:Socket->down  
Symbol name:plug->up

**Part parameters**  
2021-03-23 13:41:22

- Rif:-5WD2  
Item:21.04.01.00125

**Part parameters**  
2021-03-23 13:41:22

- Rif:-XD1  
Item:21.05.01.00247

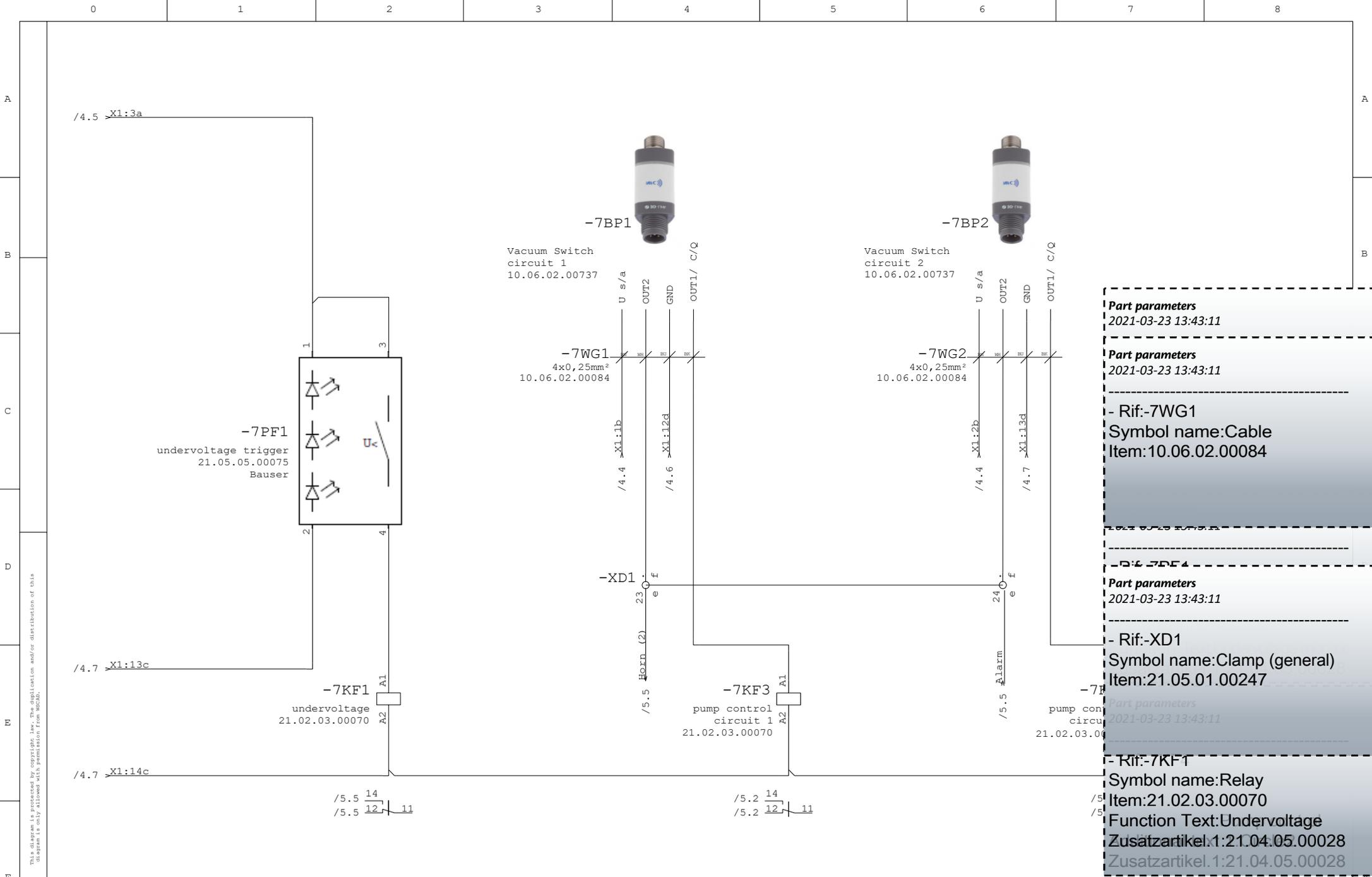
**Part parameters**  
2021-03-23 13:41:22

- Rif:-XD0  
Symbol name:Socket->down  
Symbol name:plug->up

**Additional text** 1:12V / 9Ah

Date	16.02.21		Feed-in	Project number		Drawing number 17.01.01.00235	Sheet 4 of 18
Drn By	LZ			19HS-00276			
Che.	ZF-SE						
Status	Rev.	Date	Name	Stand.	DIN 81346	Created for	Created by





**Part parameters**  
2021-03-23 13:43:11

**Part parameters**  
2021-03-23 13:43:11

- Rif:-7WG1  
Symbol name:Cable  
Item:10.06.02.00084

**Part parameters**  
2021-03-23 13:43:11

- Rif:-XD1  
Symbol name:Clamp (general)  
Item:21.05.01.00247

**Part parameters**  
2021-03-23 13:43:11

- Rif:-7KF1  
Symbol name:Relay  
Item:21.02.03.00070  
Function Text:Undervoltage  
Zusatzartikel.1:21.04.05.00028  
Zusatzartikel.1:21.04.05.00028

Date		16.02.21			Sensor technology		Project number		Installation=VM	
Drn By		LZ			19HS-00276		City +CB_1			
Che.		ZF-SE			Drawing number		Sheet		6	
Status	Rev.	0	D	Name	Stand.	DIN 81346	2		Created for	