

# H.I.B.

Industriekühlsysteme



**Bedienungsanleitung**



**Operating Instructions**



**Instructions de Service**

RS Nr. 120110730

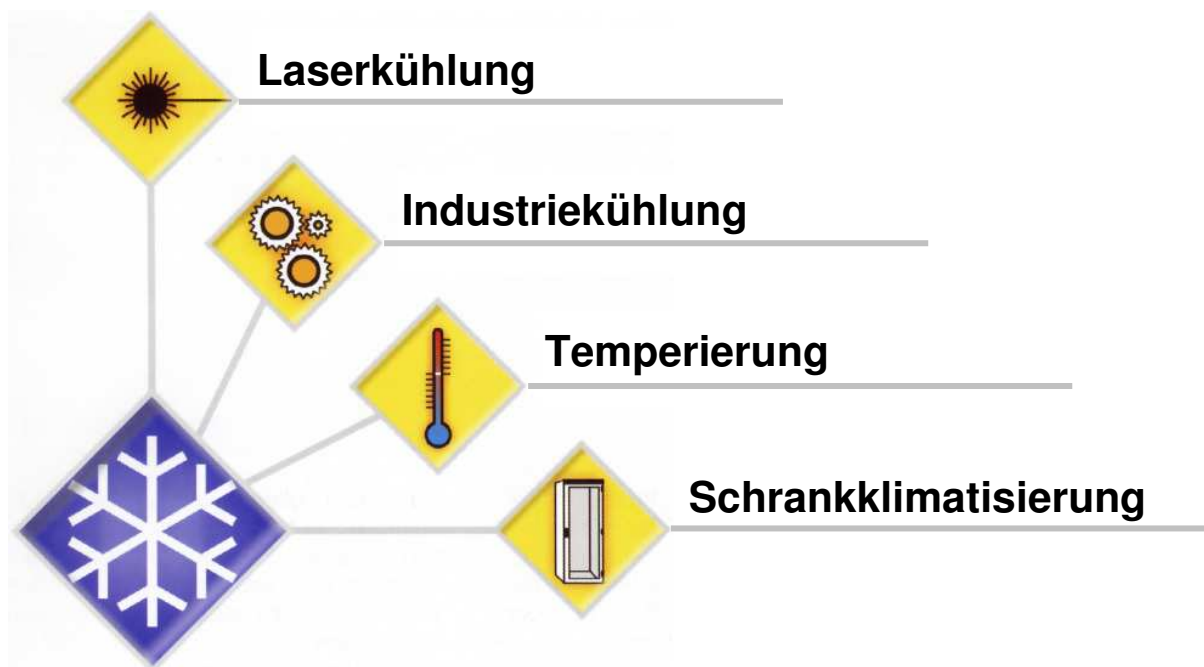
HIB Nr. 31.610.01

RS Nr. 120110985

HIB Nr. 10.006.00

RS Nr. 120110986

HIB Nr. 31.700.00



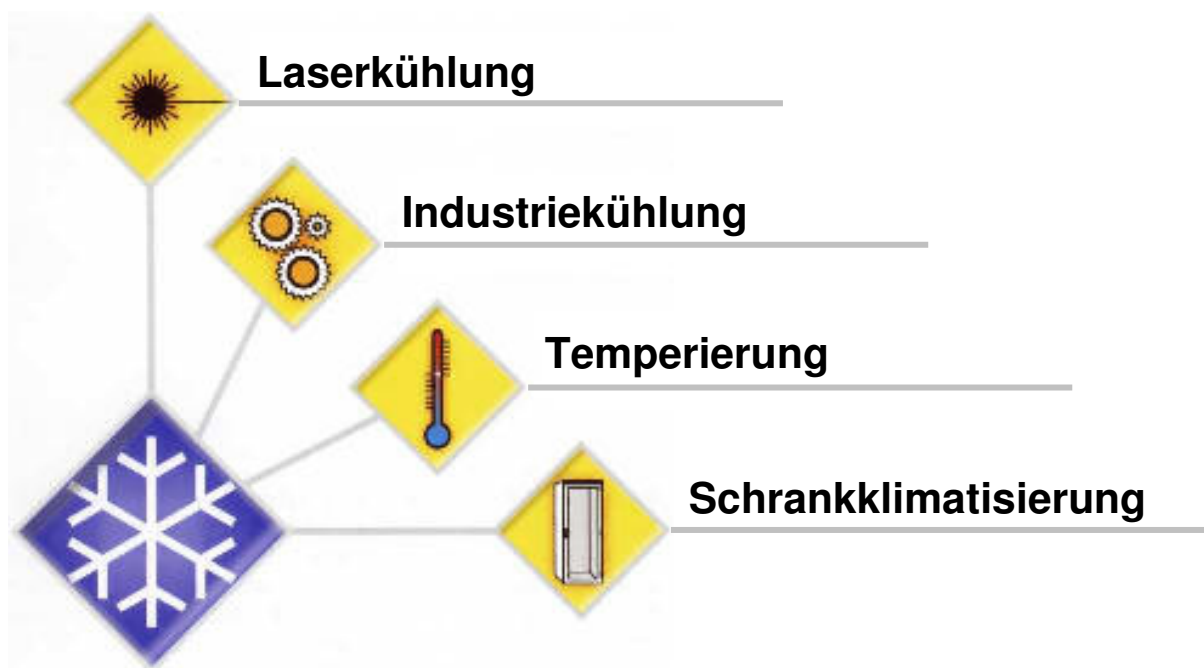
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### Operating Instructions

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## 1.0 Foreword (WW)

This operating manual is designed to familiarize the user with the machine/unit and its designated use.

This manual contains important notes which are to be observed during the installation, operation and maintenance of the unit, in order to guarantee safe, proper and economical use of the system.

Observing the instructions helps to avoid dangers, to reduce repair cost and downtime, and to increase the reliability of the machine / unit.

The operating manual must always be available wherever the machine/unit is in use.

This operating manual must be read and applied by any person in charge of carrying out work with and on the machine/unit, such as

- **operation** including setting up, troubleshooting in the course of work, evacuation of production waste, care and disposal of fuels and consumables.
- **Installation, set-up, wiring**
- **maintenance** (servicing, inspection, repair)
- **transport**

In addition to the operating manual and to the mandatory rules and regulations for accident prevention and environmental protection in the country and place of use of the machine/unit, the generally recognized technical rules for safe and proper working must also be observed.

### Attention:

**The markings for transport and stocking indicated on the packaging have to be observed under all circumstances.**



### Note:

**Please check the type of manual (see Annex A, Type List) against the label on your H.I.B device.**



## 1.1 Abbreviations used in this Operating Manual

|    |         |
|----|---------|
| L  | Air     |
| RK | Recolor |
| W  | Water   |

### Commentary to the chiller:

WW = RS Nr. 120110730 = HIB Nr. 31.610.01 = 19" 6HE  
Wasser/Wasser System mit 3-2-Wegeventil

WLb= RS Nr. 120110985 = HIB Nr. 10.006.00 = 19" 6HE  
Kompressor / Luft K hlsystem mit Hei gas-Bypassventil

WLb= RS Nr. 120110986 = HIB Nr. 31.700.00 = 19" 6HE  
Kompressor / Luft K hlsystem mit Hei gas-Bypassventil

## 2.0 Warning notes and symbols (WLb,WW)

### 2.1 Symbols (WLb,WW)



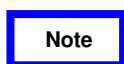
#### **Warning:**

This heading is used whenever the ignorance or inaccurate obeying of factory rules, working rules, laid down work routines, etc. can lead to the death, injury to or an accident of a person.



#### **Attention:**

This heading is used whenever the ignorance or inaccurate obeying of factory rules, working rules, laid down work routines, etc. can lead to damage to the system.



#### **Note:**

This heading is used when an exceptional feature should be taken notice of.

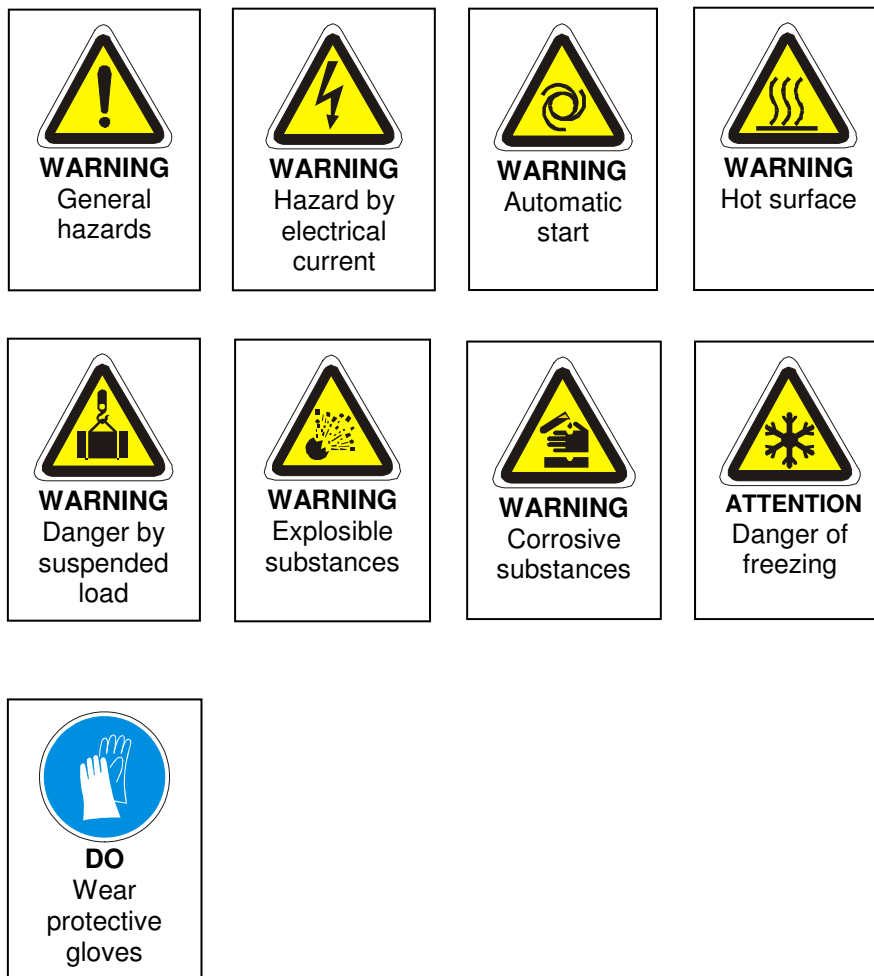


#### **DO**

This heading is used when technical rules or regulations require that a course of action be observed.

## 2.2 Warning notices and symbols used (WLb,WW)

The following warning notices and symbols are used in this operating manual:



## 2.3 Safety / Prevention of accidents (WLb,WW)

### 2.3.1 General notes (WLb,WW)

This operating manual contains basic notes to be observed for startup, operation and maintenance. Read it before starting the unit without fail.

**The manufacturer declines any responsibility for damage and breakdowns resulting from a failure to observe this operating manual.**

### 2.3.2 Qualification and training of personnel (WLb,WW)

The personnel for operation, maintenance, inspection and assembly must be adequately qualified for the work concerned. The user must clearly specify the sphere of responsibility, competence, and supervision of the personnel.



### 2.3.3 Dangers when the notes on safety are ignored (WLb,WW)

Ignoring the safety regulations can have a harmful effect on persons or cause damage to the system or environment. Ignoring the safety regulations may cause a loss of claim for damages.

### 2.3.4 Safety-conscious working (WLb,WW)

Observe the notes on safety given in the operating manual, the national rules for the prevention of accidents in force, as well as any internal instructions by the user for working, operation and safety.

### 2.3.5 Notes on safety for the user / operator (WLb,WW)

Any guard preventing accidental contact of moving parts must not be removed when the machine / unit is running. Take appropriate steps to preclude any hazard by electric power. (For relevant details see the rules of the VDE and the local energy supply companies)

#### **WARNING**

**Mechanical, pneumatic, hydraulic or electrical components of the unit must in no case be overridden or changed.**

The employer shall instruct the insured persons on:

- the dangers when handling refrigerating plants and cooling units
- the safety regulations, and
- the conduct in the case of accidents and failures and the steps to be taken in such cases

before they start their work for the first time and at reasonable intervals, however, at least once a year. (see VBG 20 §19)

### 2.3.6 Notes on safety for maintenance, inspection, and assembly work (WLb,WW)

On principle, cleaning and maintenance of the machine / unit must be carried out with the machine / unit at standstill only. The procedure for shutdown of the unit given in the operating manual must be observed without fail. Immediately after completing the work all safety and guarding devices must be replaced and/or put into service again.

### 2.3.7 Unauthorized modification or use of spare parts (WLb,WW)

Modification of or changes to the machine / unit are only permitted after previous consultation of the manufacturer. Original spare parts and accessories authorized by the manufacturer serve for ensuring safety. The use of any other parts may make the liability for the ensuing consequences invalid.

## 2.3.8 Improper operating modes (WLb,WW)

The operating safety of the delivered machine / unit is only guaranteed with **proper use**. The limits stated in the **technical data** must never be exceeded.

### WARNING

The unit is **not** suitable for use in an explosible atmosphere.  
The unit must **not** be used for cooling flammable or explosible substances.



## 2.3.9 Handling of refrigerants (WLb)

The refrigerant has some kind of irritant effect on skin and mucous membranes. Liquid refrigerants on the skin may cause frostbite. Refrigerants may decompose and form toxic decomposition products (e.g. hydrogen chloride, phosgene) in the presence of naked flames or hot surfaces. The refrigerant volatilizes when it escapes in gaseous form to the air. Intentionally blowing off and/or discharging the refrigerant is not permitted. Transport and/or install refrigerating plants in such a way that they cannot be damaged by in-house transportation or traffic.

### WARNING

When refrigerant is escaping the unit, you must never smoke in the vicinity of the unit / machine  
The gases will decompose to cauterizing acids in the burning cigarette that will damage your lungs.



### ATTENTION

Repairing the cooling circuit may be by an expert firm only.



## 2.3.10 Plant log (WLb,WW)

The user is obliged to keep a plant log up to date in accordance with ES 378-2 paragraph 11.5.

The following data shall be entered into the log:

- Details of all maintenance and repair work
- Amount and kind of (new, re-used or recycled) of the refrigerant filled up, for each filling-up
- Amount of refrigerant drained of the plant, for each draining
- If there is an analysis of the re-used refrigerant, the results shall also be recorded in the log
- Origin of the re-used refrigerant
- Changes to and replacement of components of the plant
- Results of all periodic routine checks
- Prolonged periods of downtime





WARNING

### 3.0 General description of the unit (WLb,WW)

#### 3.1 Usage to the intended purpose (WLb,WW)

The unit serves for cooling the water or refrigerant required for the working or finishing process.

The unit is designed as stand-alone or integrated device, depending on the configuration concerned.

**WARNING:**

- **Unauthorized modifications of and changes to the unit**  
- **Use for any other purpose**  
**are forbidden for safety reasons.**

#### 3.2 Description of operation of compressor-cooled systems (WLb)

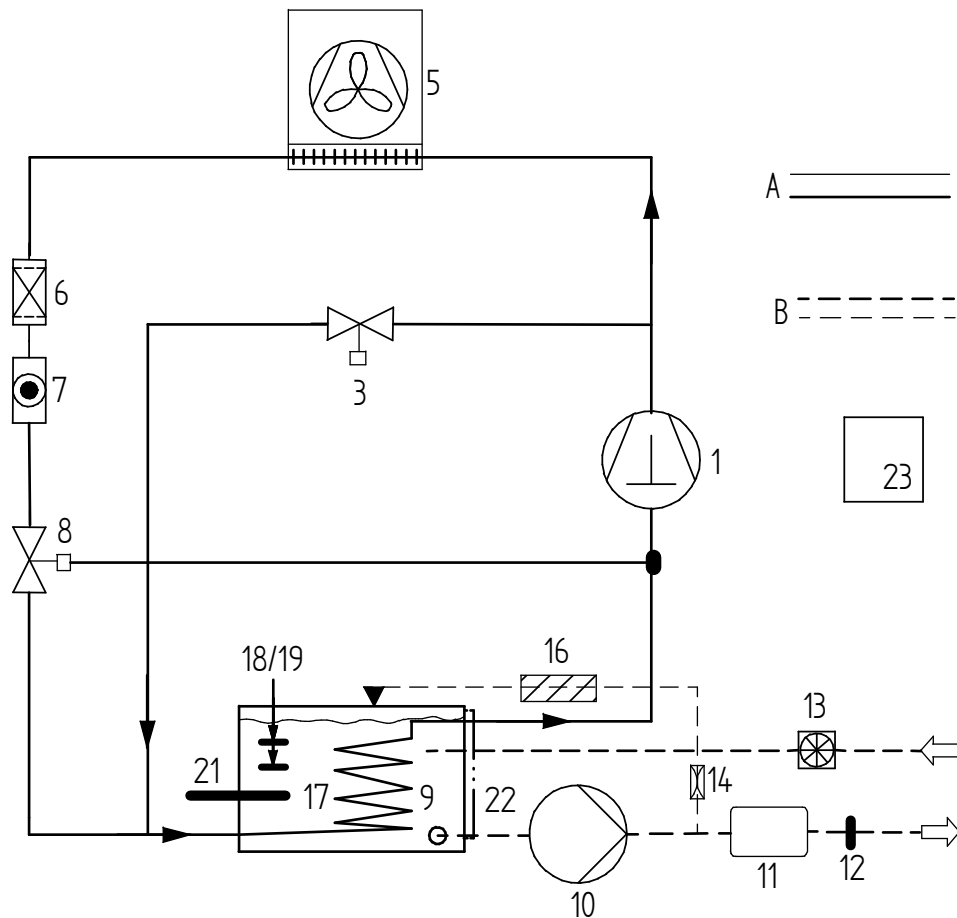
The process water (DI-water) is supplied to the consumer (laser) and back by the circulating pump (10). The flow controller (13) mounted in the water circuit monitoring the flow and breaking at too low flow. The absorbed heat is dissipated via the cooling circuit to the ambient air. A sensor (19) mounted in the storage tank protects the circulating pump against running dry with breaking the system. Another sensor (18) monitors the level and advice goes to low medium.

**Refrigerating Operation:** Absorbed heat is dissipated to the refrigerant gas by the evaporator (9). Any refrigerant that evaporates during this process is drawn in and compressed by the compressor (1). The compressed refrigerant (hot gas) is then cooled and liquefied in the condenser (5). The heat released during this process is dissipated to the ambient air. Liquefied refrigerant is again injected into the evaporator via the expansion valve (8) and absorbs heat during this process.

Hot gas bypass operation (WLb): A 2/2 way valve (3) mounted in the cooling circuit controls the required cooling capacity as a function of the measured process water temperature via the temperature sensor (12) and the controller / maincontroller (23) through breaking the bypass.

**Functional diagram see following page =>**

WLs / RS Nr. 120110985 / HIB Nr. 10.006.00  
RS Nr. 120110986 / HIB Nr. 31.700.00



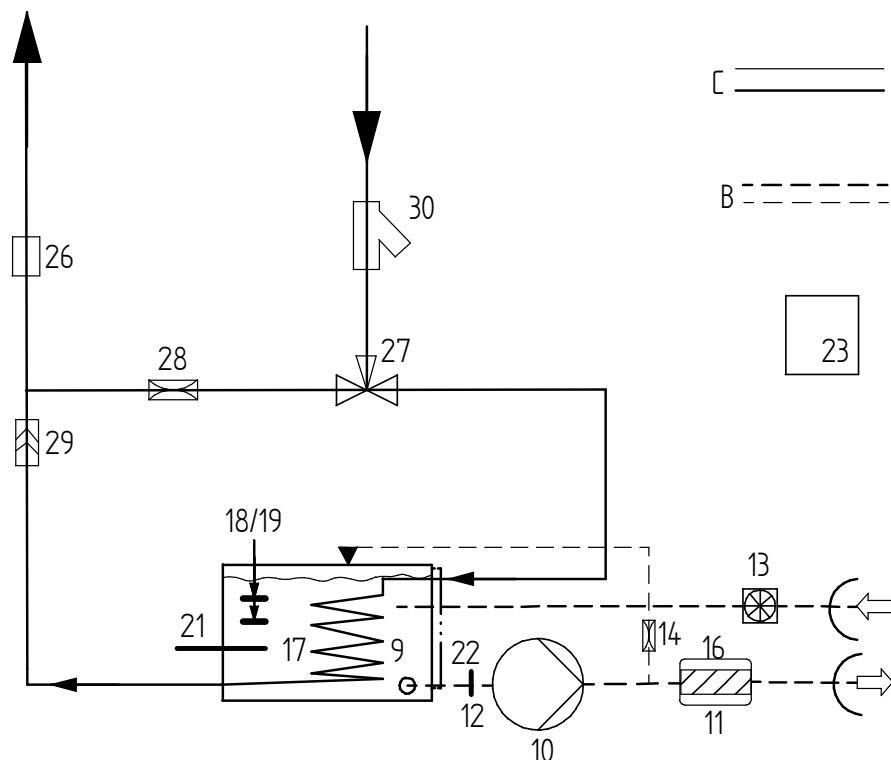
## Description of Figure

- |                                 |                                     |
|---------------------------------|-------------------------------------|
| A: Pipe with refrigerant medium | 11 Filter                           |
| B: Pipe with DI-water           | 12 Temperature sensor               |
| 01 Kompressor                   | 13 Flow rate sensor                 |
| 03 2/2 way valve "cooling"      | 14 Ventilation bypass with aperture |
| 05 Condenser with fan           | 16 DI-cartridge                     |
| 06 Refrigerant medium drier     | 17 Tank                             |
| 07 Inspection glass             | 18 Level sensor 1                   |
| 08 Thermostatic expansion valve | 19 Level sensor 2                   |
| 09 Evaporator                   | 21 Heating element                  |
| 10 Pump                         | 22 Level indicator                  |
|                                 | 23 Control / Main controller        |

## 3.3 Description of operation of water/water-cooled systems (WW) WW RS Nr. 120110730 = HIB Nr. 31.610.01

The process water (DI-water) is supplied to the consumer (laser) and back by the circulating pump (10). The flow controller (13) mounted in the water circuit monitoring the flow and breaking at to low flow. The absorbed heat is dissipated via the cooling circuit to the ambient air. A sensor (19) mounted in the storage tank protects the circulating pump against running dry with breaking the system. Another sensor (18) monitors the level and advice to low medium.

**Refrigerating Operation:** A 3/2 way valve (27) arranged in the urban water – in-house water circuit controls the amount of urban water this flow trough the cooling coil in the tank and thus the required refrigerating capacity in dependence on the measured process water temperature via the temperature sensor (12). A flow restrictor mounted in the return line reduce the flow to exact 6ltr/min.



### Description of Figure / water-water cooled system (WW)

|    |                               |    |                  |
|----|-------------------------------|----|------------------|
| 10 | circulating pump              | 28 | orifice plate    |
| 11 | particle filter               | 29 | non-return valve |
| 12 | temperature sensor            | 30 | dirt arrester    |
| 13 | flow controller               |    |                  |
| 14 | air-bypass with orifice plate |    |                  |
| 16 | Di- cartridge                 |    |                  |
| 17 | tank                          |    |                  |
| 18 | low level sensor              |    |                  |
| 19 | high level sensor             |    |                  |
| 21 | heating                       |    |                  |
| 22 | level indication              |    |                  |
| 23 | Maincontroller                |    |                  |
| 26 | flow restrictor               |    |                  |
| 27 | 3/2 way-valve                 |    |                  |



**Note****Note:**

The machine performance of water-cooled recoolers depends on the water temperature. The lower the water temperature, the higher the overall performance of the unit.

## 3.4 Heating Operation (WLb,WW)

After prolonged periods of standstill or under certain operating conditions it may become necessary to heat the cooling water by means of a heating element to reach the process temperature faster or to maintain it. The unit controller will cut the heating element in if required.

## 4.0 Transport (WLb,WW)

The machine / unit may be transported in the original packing only until the first startup. Notify the manufacturer immediately if you detect any damage. When the machine / unit is given another place in a plant, all connections of the machine / unit must be disconnected. Any dislocating of the machine / unit must be done in such a way that damage is excluded. Should there be a damage despite these notes, have the machine / unit inspected and/or repaired, if required, by an expert before you start it again.

### **WARNING**

**The machine / unit has a weight of (see appendix A, Technical Data)  
Use appropriate means for transporting it.  
Observe all relevant safety regulations without fail.**

**As a rule, work on the electrical system must be carried out by expert personnel; the valid wiring diagram and the VDE guidelines must be observed.**



**WARNING**



**WARNING**

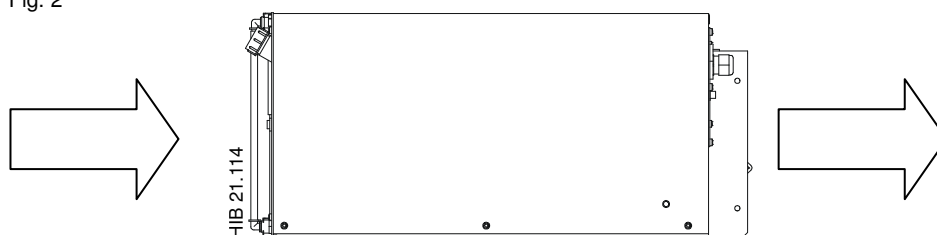
## 5.0 Installation / Startup (WLb,WW)

### 5.1 Installation (WLb,WW)

The location of the unit should be selected in such a way that it will always be easily accessible for the operating personnel and that it is not subjected to extreme heat, e.g. near a heating Protect the unit against humidity. If the unit is to be installed in areas where there is danger of frost, it must be specially equipped for such an installation.

The unit has been specially designed for mounting in 19" racks. Place the unit into the bay in the direction of the arrow and mount it. The direction of installation (direction of the arrow) marks the flow of the cooling air, too. Free flow must be ensured.

Fig. 2

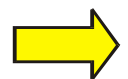


ATTENTION

#### ATTENTION

Contact Messrs. HIB before you install the device in damp locations and before you operate the device in the wet . Operating the device beyond the ambient temperatures stated in the technical data sheet will result in damage to the device.

For air-cooled versions the following applies especially: (WLb)



ATTENTION

#### ATTENTION

The user must provide adequate ventilation for dissipating the waste heat. Consult Messrs. H.I.B. before you install any air guiding systems.



WARNING

#### WARNING

As a rule, work on the electrical system must be carried out by expert personnel; the valid wiring diagram and the VDE guidelines must be observed.

Compare the mains voltage at site with the nameplate of the unit.

## 5.2 Start-up (WLb,WW)

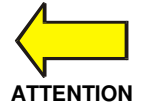
### **WARNING**

Before startup, read the operating manual, especially the section containing the notes on safety without fail.



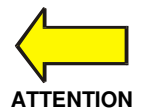
### **ATTENTION**

Check whether the provided supply lines (pipes/hoses for supply and return flow line) are connected properly and whether there are any leaks. In the case of plants with a tank, make sure that the tank is filled with the proper medium. (see # Filling the Tank) In the case of units without a tank of their own, make sure that the entire plant system is completely filled with medium before start-up.



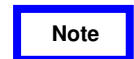
### **ATTENTION**

If parts of the lines or other connected elements are mounted at a higher level than the intended level of the liquid, prevent the medium from flowing back when the plant is at standstill by suitable devices.



### **Note**

The unpacked unit has to be left in operating position for some 24 hours prior to startup so that the cooling oil may collect after transport.

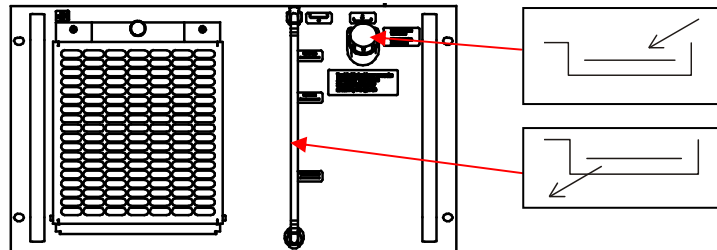




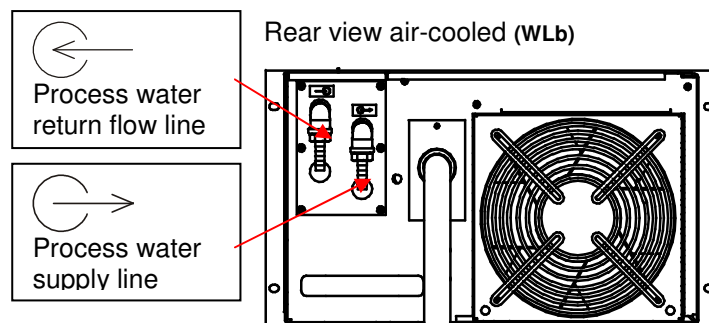
## 5.2.1 Connections of air-cooled and water cooled Devices

The devices may have customer-specific connection configurations. If there is a difference, pay attention to the symbology of the connections.

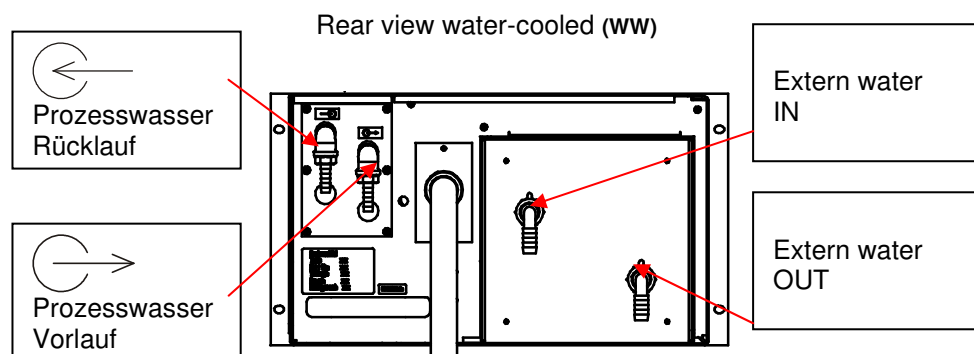
Front view air-cooled and water cooled (,WLb,WW)



Figur 5



Figur 6



Figur 7

## 5.2.2 Filling of tank (WLb,WW)

### Note

#### Note

**Use only the specified cooling medium!! Observe the manufacturer's notes!**

For filling, unscrew the tank cover and fill in the medium until it reaches the marking (maximum level). Make sure no dirt gets into the tank during filling.

### Note

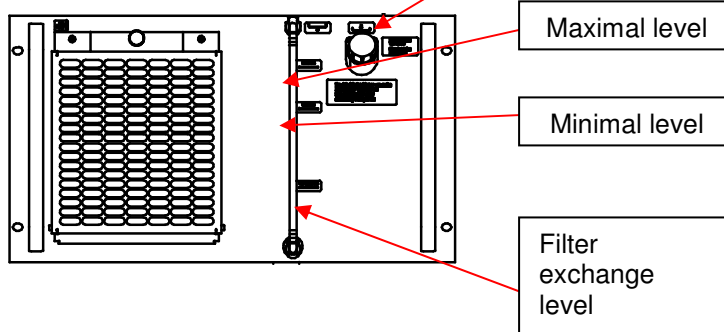
#### Note

**Use only clean medium. Make sure no dirt gets into the tank.**

#### Check whether:

- hoses have been run properly and have been mounted as per the identification,
- the unit has been filled and vented
- water level max., (omitted with automatic metered addition)
- the domestic water pipe is connected and open in case of automatic re-dosing (solenoid valve or float valve)
- connection to the mains is available,
- circulating pump has been connected, filled and vented.

Figur 8



## 5.2.3 Evacuating the circulating pump (WLb,WW)

In the case of units that have a separate tank, evacuating the pump separately is not required. Make sure that the pump will not run dry. The level in the tank should always be between min and max (see Start-Up). When the entire system is filled for the first time, repeated topping-up of the water supply may be required.

In the case of units without a tank of their own, make sure that the supplying line system is completely filled with medium.

## 6.0 Operation (WLb,WW)

### 6.1 Switching On / Switching Off

Is via the maincontroller

### 6.2 Adjusting the set point

Is via the maincontroller

#### **ATTENTION**

**Risk of freezing !**

**At water temperatures below +8 °C, the plant may only be operated with anti-freeze (-20 °C)!**

**Consult the manufacturer should you intend to use the unit for any other fields of application.**



**ATTENTION**

## 7.0 Service and maintenance (WLb,WW)

### 7.1 Inspection

When the mechanical parts are running irregularly or when there are strange noises, switch off the machine / unit.



#### WARNING

**Make the unit dead by means of the master switch and/or the protective motor switches when carrying out maintenance and secure against inadvertent switching-on.**



#### WARNING

**There are hot components behind the covers.  
When the covers are removed for maintenance or repair work, make sure not to touch these components !**



#### DO

**Wear protective gloves when you reach into this area.**



#### Warning:

**Do not reach within the range of rotation of the fan blade. Danger of injuries when the fan blade starts to rotate. Before you open the front cover, the plant must be switched off by means of the master switch and must be secured against inadvertent switching on.**

### 7.2 Maintenance schedule

| WHEN?             | WHAT?   | WHERE?   | !     |
|-------------------|---------|--|-------|
| Weekly            | check   | Water level  | # 7.3 |
| Weekly            | check   | Fins of condenser  | # 7.5 |
| Monthly           | check   | Air filter<br>Particle collector<br>Deionising cartridge | # 7.4 |
| Yearly            | check   | Electric system, safety                                  |       |
| Customer-specific | replace | Air filter   | # 7.4 |

## 7.3 Topping up the cooling water (check water level weekly) (WLb,WW)

Check the water level in the tank weekly. A low level of the liquid will be indicated via the device control/main controller.

## 7.4 Replacing the air filter (check the air filter once a month) (WLb)

Make sure that the filter mat upstream of the condenser remains sufficiently pervious to ensure the required heat exchange. Replace the filter mat at intervals that you determine yourself considering the service conditions concerned.

### WARNING

**Make the unit dead by means of the master switch and/or the protective motor switches when carrying out maintenance and secure against inadvertent switching-on.**



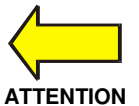
### ATTENTION

**A soiled filter mat will cause the refrigerating capacity of the unit to decrease. As a result of the additionally increasing power consumption of the compressor, the efficiency of the plant / machine will drop considerably.**



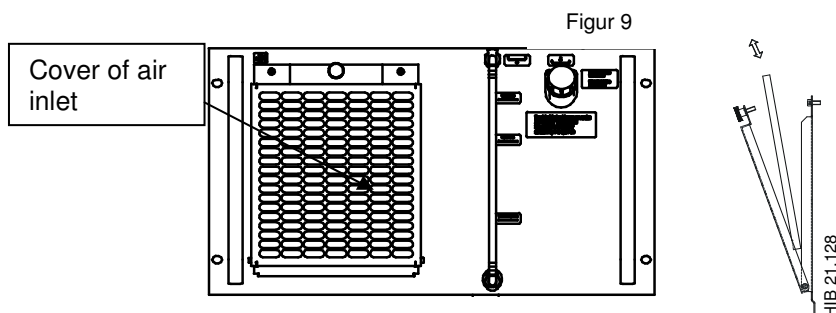
### ATTENTION

**The filter mat may be replaced by instructed personnel only.**



### WARNING

**There are hot components behind the covers. When the covers are removed for maintenance or repair work, make sure not to touch these components !**



When replacing the filter mat, pay attention to its structure and/or the direction of air flow. Observe the relevant guidelines for disposal when you dispose of the soiled filter mat.

Proceed as follows:

- Dismount cover
- Replace filter by new one
- Mount cover

Figur 10

## 7.5 Cleaning the condenser (check the fins once a month) (WLb)

Make sure with air-cooled units that the fins of the compressor are always clean to ensure the required heat exchange. Clean the fins of the condenser of dust and fluffing by means of compressed air. Determine the intervals for cleaning yourself taking the service conditions into consideration.

### ATTENTION

Cleaning may be done by instructed personnel only.

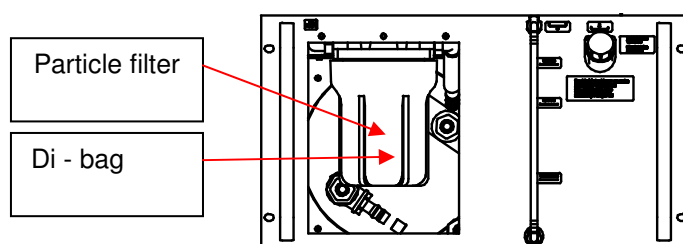
### DO

Wear protective gloves when you reach into this area. (Sharp fins – danger of injury!)

## 7.6 Replacing the Particle Collector / Deionising Cartridge (WLs,WLb,WW)

Check the particle collector for soiling at regular intervals (also see maintenance schedule). Replace the filter cartridge in time, before the flow volume is reduced.

Fig. 11



### ATTENTION

This maintenance job may be done by instructed personnel only.

### WARNING

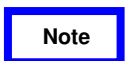
There are hot components behind the covers.  
When the covers are removed for maintenance or repair work, make sure not to touch these components !

### Note

For units with flushing device see # 10.4.

Proceed as follows:

- Switch the unit off and secure it against being switched on
- Drain the tank (see 9.2.2)
- Remove filter mat
- Remove the filter frame
- Unscrew the filter case (transparent bottom part)
- Pull the filter cartridge off to the bottom
- Mount new filter cartridge
- Clean filter case
- Mount filter case
- Fill the tank
- Deaerate the unit (# Start-Up 5.2)
- Install the filter frame
- Insert the filter mat

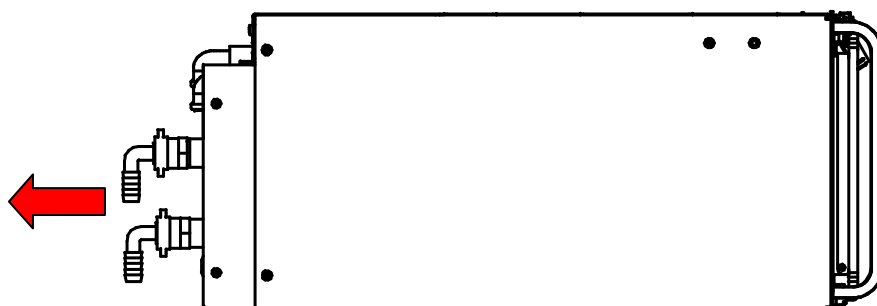
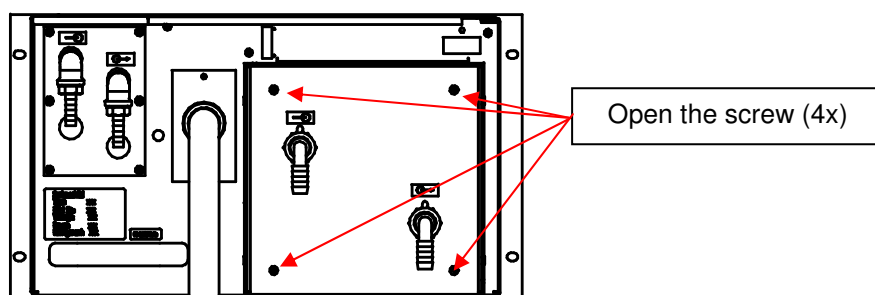


## 7.7 Replacing the dirt arrester (WW)

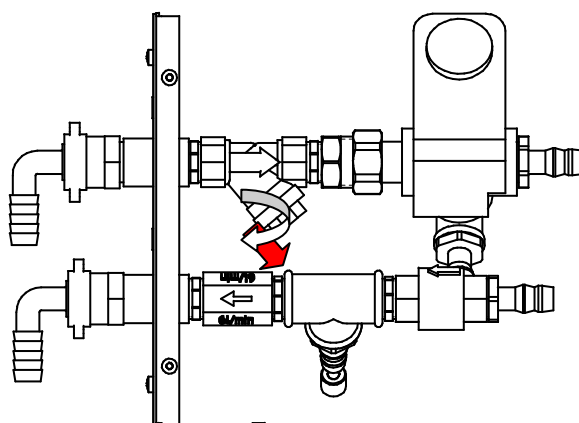
### procedure:

- Close the Water extern
- Loosen the screw
- Sheet opening
- Open the Srew on the dirt arrester
- Clean the Dirt arrester
- Close the screw
- Insert the sheet
- Close the srew on the sheet
- Open the Water extern

Figur 12



Figur 13



Figur 14



## 8.0 Repair (WLb,WW)

### 8.1 Repair and elimination of failures (WLb,WW)

#### ATTENTION

Repairing the refrigerant circuit may be by an expert firm only. Should there be any problems, please contact the manufacturer.

Make sure there is adequate venting.

#### WARNING

As a rule, work on the electrical system must be carried out by expert personnel; the valid wiring diagram and the VDE guidelines must be observed.

Compare the mains voltage at site with the nameplate of the unit.

### 8.2 Failures compressor-cooled systems (WLb)

#### 8.2.1 Lack of refrigerant (WLb)

You will notice a lack of refrigerant by a marked drop in the refrigerating capacity. If this is the case, there is a leak in the cooling circuit. You will see a lot of gas bubbles in the sight glass.



#### ATTENTION

Repairing the cooling circuit may be by an expert firm only.



#### WARNING

When refrigerant is escaping the unit, you must never smoke in the vicinity of the unit / machine

The gases will decompose to cauterizing acids in the burning cigarette that will damage your lungs.

Never use a naked flame when checking for leaks!

#### 8.2.2 Compressor overloaded – High-pressure cut-out triggers (WLs,WLb)

- high ambient temperature (>+42 °C)
- failure to observe required intervals (=>Installation 5.1)
- defective fan
- soiled fan/fins/filter (=> change filter)
- high water supply line temperature (=> range of usability – Technical data)



## 8.2.3 Compressor constantly switching on and off – Low pressure cut-out triggers (option) (WLb)

A possible cause for constant switching on and off is:

- Excess refrigerating capacity of the chilling unit  
(=>range of usability – Technical data)
- Loss of refrigerant

## 8.2.4 High water supply line temperature(WLb)

During operation, the cooling unit is running into a reliable condition. The refrigerating unit keeps the water supply line temperature at the set point adjusted. Possible causes for a deviation are:

- Heat input > the refrigerating capacity at this operating point (=>range of usability – Technical data)
- high ambient temperatures > 42 °C (=>range of usability – Technical data)
- failure to observe the required intervals (=>Installation 5.1)
- defective fan
- soiled condenser
- lack of refrigerant
- low water level in tank

## 8.3 Failures water-cooled systems (WW)

### 8.3.1 High water supply line temperature (WW)

During operation, the cooling unit is running into a reliable condition. The refrigerating unit keeps the water supply line temperature at the set point adjusted. Possible causes for a deviation are:

- Heat input > the refrigerating capacity at this operating point (=> Annex A, range of usability – Technical data)
- high cooling water temperature (=> external cooling circuit – Annex A, Technical Data)
- no or too under external cooling water, water pressure may be too low (=> check connections – Annex A, Technical Data)
- no or too under external cooling water possibly contaminated with dirt trap (=> Clean filter cf. 7.7)
- 3/2 way valve clogged (=> clean valve, place a filter ahead, if required)

## 8.4 General failures (WLb,WW)

### 8.4.1 Overload current

All electrical drive mechanisms of the refrigerating plant are protected by protective switch. The protective switch may trigger in the following cases:

- one phase missing
- overloading of the plant
- wrong mains voltage
- wrong frequency
- motor defective
- defective supply lead of motor concerned
- excess temperature in control cabinet
- For installations WLb, WW is customer-specific devices. The hedge is in the customer's laser system.

**Note:**

**For installations WLb, WW is customer-specific devices.  
The hedge is in the customer's Lasercontroller**

### 8.4.2 No pump power (WLs,WLb,WW)

This fault may be due to the following causes:

- Pump rotating in the wrong direction
- Pump not vented (=> Start-up)
- Water level in tank below minimum
- Operating Mode Flushing (#10.4)

## 9.0 Dismounting (WLb,WW)

### 9.1 Electric connection (WLb,WW)

#### WARNING

As a rule, work on the electrical system must be carried out by expert personnel; the valid wiring diagram and the VDE guidelines must be observed.  
Make the unit dead.



### 9.2 Scrapping (WLb,WW)

#### ATTENTION

All components of the unit must be disposed of according to the applicable rules and regulations.



Scrapping and disposal of refrigerators and heat-pumps is regulated by standard EN 378-4 : 2000-09.

#### 9.2.1 Refrigerant (WLb)

#### ATTENTION

The refrigerant may only be drained by a specialised firm for refrigeration and air-condition engineering and must then be disposed of in accordance with the relevant rules and regulations.

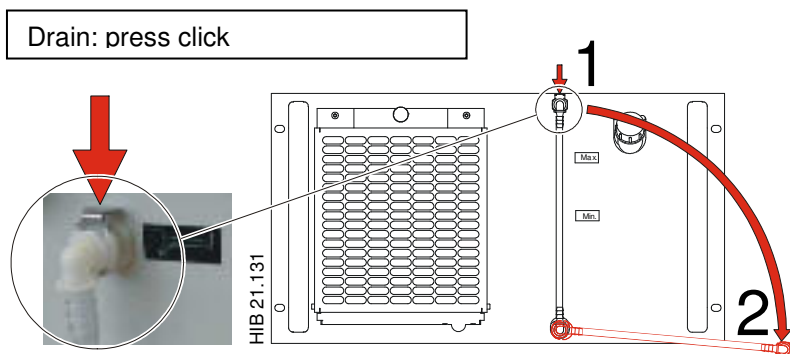


Recycling-organisations for halocarbon refrigerant have to be corresponding to standard ISO/DIS 11650 or a equivalent standard.

#### 9.2.2 Process water (WLb,WW)

#### ATTENTION

The process water must be disposed of in accordance with the relevant rules and regulations.



Figur 15

## **10.0 Technische Daten:**

**10.1 Technische Daten für RS Nr. 120110730 HIB Nr. 31.610.01**

**10.2 Technische Daten für RS Nr. 120110985 HIB Nr. 10.006.00**

**10.3 Technische Daten für RS Nr. 120110986 HIB Nr. 31.700.00**

## **HIB Technical Data**

**RKH/W-00700-W-HC-06E-2-DI**

**Art. Nr. / Part No.31.610.01 – 120110730**

**Water-water cooled systems with 3/2 valve 0-10V (CAN)**

|                           |   |
|---------------------------|---|
| European commodity index: | 841 989 10  |
| Device designation:       | RKH/W-00700-W-HC-06E-2-DI   |
| Mat. No. / Part No.:      | HIB 31.610.01 / RSM 120110730   |
| Operating voltage:        | 198-253V1PH50/60Hz  |
| Current consumption:      | 5A (max. 6,5A)  |
| Rated cooling capacity:   | 500W based on<br>25 °C coolant temperature<br>40 °C ambient<br>20 °C temperature extern water<br>>5l/min flow (extern water)<br><br>600W based on<br>25 °C coolant temperature<br>35 °C ambient<br>19 °Ctemperature extern water<br>>5l/min flow (extern water) |
| Operating temperature:    | +21 °C - +28 °C   |
| Ambient temperature:      | + 5 °C - +42 °C   |
| Water extern:             | max. 6bar / 15-20 °C tw1 / >5l/min  |
| Cooling medium:           | De- ionized Water <5µS/cm   |
| Tank capacity:            | 6 ltrs  |
| Heating:                  | Heating cartridge in the tank 700W  |
| Flow controller:          | SIKA VTH Hallsensor 360p/l/min<br>Measuring range: 2...20l/min  |
| Pump:                     | immersion pump Y2051.0130<br>Operating point 9l/min bei 30m   |

Änderungsstand: A 19.10.2009  
H.I.B Systemtechnik GmbH  
Winterbruckenweg 30  
86316 Friedberg/Derching

(ak – Standardisierung)  
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Internet: [www.h-i-b.de](http://www.h-i-b.de)

|                                      |   |
|--------------------------------------|---|
| controller:                          | Can Controller  |
| Control accuracy:                    | +/- 0,1K  |
| Partikle filter:                     | Partikle filter: 20µm<br>DI water bag put into the filter |
| Electrical connection:               | rubber connector/ interface RJ45                          |
| Hydraulic connection:                | 2x 12mm hose connection                                   |
| Hydraulic connection (Extern Water): | 2x 3/4" AG  |
| Dimensions:                          | 19" 6HE   |
| Paint:                               | Front RAL 7035 light grey<br>frame blue chromated         |
| <b>Other components:</b>             |   |
| 3/2 valve:                           | 0 bis 10V über Mikro                                      |
| Flow delimiter:                      | 6ltrs/min in the Bypass                                   |

## Spare parts list

**Cooling:** RKH/W-00700-W-HC-06E-2-DI  
**Mat. No.:** 31.610.01 - 120110730

| Description                      | Part Number |
|----------------------------------|-------------|
| <b>Electric components:</b>      |             |
| Circuit board 3111               | 00.514.62   |
| Circuit board 3101               | 00.514.45   |
| Schutzschalter thermisch         | 00.514.61   |
| temperature sensor PT100         | 00.511.07   |
| Heating cartridge M20 x 1,5      | 00.500.28   |
| Pump assembly                    | 40.100.34   |
| Circulation pump Y2051.0130      | 00.501.60   |
| <b>Water tangent components:</b> |             |
| Flow delimiter 6l                | 00.531.90   |
| 3/2 valve                        | 00.508.80   |
| 3/2 valve                        | 00.508.81   |
| Floating switch                  | 00.517.31   |
| Flow controller VTH              | 00.508.05   |
| Dirt arrester                    | 00.500.73   |
| <b>Other components:</b>         |             |
| Filter case                      | 00.501.45   |
| Filtercartridge 20µm             | 00.502.61   |
| DI-bag                           | 00.502.17   |
| Air filter pad                   | 00.502.73   |
| Level indication                 | 40.101.83   |
| CPC connector in the front       | 00.502.51   |
| CPC connector in the tank        | 00.502.50   |
| Screw cap ¾" on the tank         | 00.531.18   |
|                                  |             |
|                                  |             |
|                                  |             |

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## **HIB Technical Data**

### **RKH/W 500 L/PID 19" 6HE**

### **Art. Nr. / Part No. 10.006.00 – 120110985**

### **compressor-air cooled systems with hotgas-Bypass (CAN)**

|                           |   |
|---------------------------|---|
| European commodity index: | 841 989 10  |
| Device designation:       | RKH/W 500 L/PID 19" 6HE   |
| Mat. No. / Part No.:      | HIB 10.006.00 / RSM 120107164   |
| Operating voltage:        | 198-254V1PH50/60HZ  |
| Current consumption:      | 4,5A (max. 9A)  |
| Rated cooling capacity:   | 500W based on<br>max. 25 °C coolant temperature<br>max. 32 °C ambient<br>> 5l/min flow (intern water)<br><br>350W based on<br>max. 25 °C coolant temperature<br>max. 40 °C ambient<br>>5l/min flow (intern water) |
| Operating temperature:    | +21 °C - +28 °C   |
| Ambient temperature:      | +5 °C bis +40 °C  |
| condenser:                | air cooled  |
| Refrigerant:              | R134a / 400gr.  |
| Cooling medium:           | De- ionized Water <5µS/cm   |
| Tank capacity:            | 6ltrs<br>Heating cartridge in the tank 700W   |
| Flow controller           | SIKA VTH15 Hallsensor 360p/l/min<br>Measuring range 2...20ltrs/min  |
| Pump:                     | immersion pump Y2051.0130<br>Operating point 9l/min at 30m  |

Änderungsstand: C 11.02.2010



|                        |  |
|------------------------|--|
| controller:            | CAN Controller   |
| Control accuracy:      | +/-0,1K  |
| Partikle filter:       | partikle filter 20µm<br>DI water bag put into the filter |
| Electrical connection: | line filter with fuse / RJ45                             |
| Hydraulic connection:  | 2x 12mm hose connection                                  |
| Air direction:         | air intake from the front, air outlet back               |
| Air intake filter:     | Air intake filter in front                               |
| Dimensions:            | 19" 6HE  |
| Paint:                 | Front RAL 7035 lightgrey<br>Chassis blue chromated       |

Änderungsstand: C 11.02.2010

## Spare parts list

**Cooling system:** RKH/W 500L 19“ 6HE HC

**Part.no.:** 10.006.00 - 120110985

| <b>description</b>                        | <b>H.I.B Part. No.</b> |
|---|------------------------|
| <b>Refrigerant components:</b>            |                        |
| Compressor FR7GH                          | 00.521.35              |
| Pressure switch HD23,5                    | 00.531.65              |
| Dryer 6mm löt                             | 00.521.03              |
| Expansion valve TUB 1,0kW                 | 00.522.17              |
| <b>Electronic components:</b>             |                        |
| CAN circuit board (Can Controller)        | 00.514.45              |
| Circuit board                             | 00.514.62              |
| Temperature sensor PT100                  | 00.511.07              |
| Temperature sensor NTC                    | 00.513.47              |
| condenser 1,5µF                           | 00.522.10              |
| condenser 5µF                             | 00.524.14              |
| Fan S2E                                   | 00.523.20              |
| Rubber connector 10A                      | 00.518.87              |
| Fuse 10A                                  | 00.518.94              |
| <b>Water tangent components:</b>          |                        |
| Circulation pump NPY 2051.00130 (50/60Hz) | 00.501.60              |
| Pump assembly                             | 40.100.34              |
| Flow controller SIKA VTH 15K5             | 00.508.05              |
| Heating cartridge M20 x 1,5               | 00.500.28              |
| Floating switch                           | 00.517.31              |
| Filter case                               | 00.501.45              |
| <b>Other components:</b>                  |                        |
| DI-bag                                    | 00.502.17              |
| Filtercartridge 20µm                      | 00.502.61              |
| Level indication                          | 40.101.83              |
| Air filter pad                            | 00.502.73              |
| CPC connector in the front                | 00.502.51              |

Änderungsstand: C 11.02.2010



|                           |           |
|---------------------------|-----------|
| CPC connector in the tank | 00.502.50 |
| Screw cap ¾“ on the tank  | 00.531.18 |
|                           |           |
|                           |           |

Änderungsstand: C 11.02.2010

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Internet: [www.h-i-b.de](http://www.h-i-b.de)

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## **HIB Technical Data**

### **RKH/W-01000-L-HC-07E-2-DI**

### **Art. Nr. / Part No. 31.700.00 – 120110986**

### **compressor- air cooled systems with CAN Interface**

|                              |  |
|------------------------------|--|
| European commodity index:    | 841 989 10   |
| Device designation:          | RKH/W 500 L/PID 19" 6HE  |
| Mat. No. / Part No.:         | H.I.B 31.700.00 RSM 120110986  |
| Operating voltage:           | 198-254V1PH50/60HZ   |
| Current consumption:         | 7.5A / max. 9.5 (Fuse 10A)   |
| Rated cooling capacity:      | 700W based on<br>max. 25 °C coolant temperature<br>max. 32 °C ambient<br>> 5l/min flow (intern water)<br><br>500W based on<br>max. 25 °C coolant temperature<br>max. 40 °C ambient<br>>5l/min flow(intern water) |
| Operating temperature:       | +21 °C - +28 °C  |
| Ambient temperature:         | +5 °C bis +40 °C   |
| Maximum ambient temperature: | 42 °C  |
| condenser:                   | air cooled   |
| Refrigerant:                 | R134a / 400gr.   |
| Cooling medium:              | De- ionized Water <5µS/cm  |
| Tank capacity:               | 6ltrs<br>Heating cartridge in the tank 700W  |
| Flow controller              | VTH15 K5<br>Measuring range 1...20ltrs/min   |
| Pump:                        | immersion pump Y2051.0130<br>Operating point 9l/min bei 30m  |

Änderungsstand: A 27.10.2009

|                        |  |
|------------------------|--|
| controller:            | external   |
| Control accuracy:      | +/-0,1K  |
| Partikle filter:       | partikle filter 20µm<br>DI water bag put into the filter |
| Electrical connection: | rubber connector / 5 pol.                                |
| Hydraulic connection:  | 2x 12mm hose connection                                  |
| Air direction:         | air intake from the front, air outlet over the back      |
| Air intake filter:     | Air intake filter in front                               |
| Dimensions:            | 19" 6HE  |
| Paint:                 | chassis blue chromated<br>Front RAL 9002 greywhite       |

Änderungsstand: A 27.10.2009

## Spare parts list

**Cooling:** RKH/W-01000-L-HC-07E-2-DI

**Mat. No.:** 31.700.00 - 120110986

| Description                      | Part Number |
|----------------------------------|-------------|
| <b>Cooling components:</b>       |             |
| Compressor GP12TG                | 00.521.02   |
| Expansion valve TUB 1,4kW        | 00.521.06   |
| HGB solenoid valve               | 00.523.41   |
| HGB connector                    | 00.524.02   |
| HGB inductor                     | 00.524.03   |
| Pressure switch 23,5 bar         | 00.531.65   |
|                                  |             |
| <b>Electric components:</b>      |             |
| Temperature sensor NTC           | 00.513.47   |
| Temperature sensor PT100         | 00.511.07   |
| Floating switch                  | 00.517.31   |
| Heating cartridge                | 00.500.28   |
| Flow controller VTH 15K5         | 00.508.05   |
| Circuit board 3101               | 00.514.45   |
| Circuit board 3111               | 00.514.62   |
| Condenser 1,5µF                  | 00.522.10   |
| Fan S4E 250                      | 00.522.34   |
| Protected switch                 | 00.514.61   |
| Thermo switch                    | 00.512.17   |
| Rubber connector line filter 10A | 00.511.26   |
|                                  |             |
| <b>Mechanical components:</b>    |             |
| Pump assembly                    | 40.100.34   |
| Circulation pump Y2051.0130      | 00.501.60   |
|                                  |             |
| <b>Other components:</b>         |             |
| Air filter pad                   | 00.502.73   |
| Level indication                 | 40.101.83   |

Änderungsstand: A/mb 27.10.2009



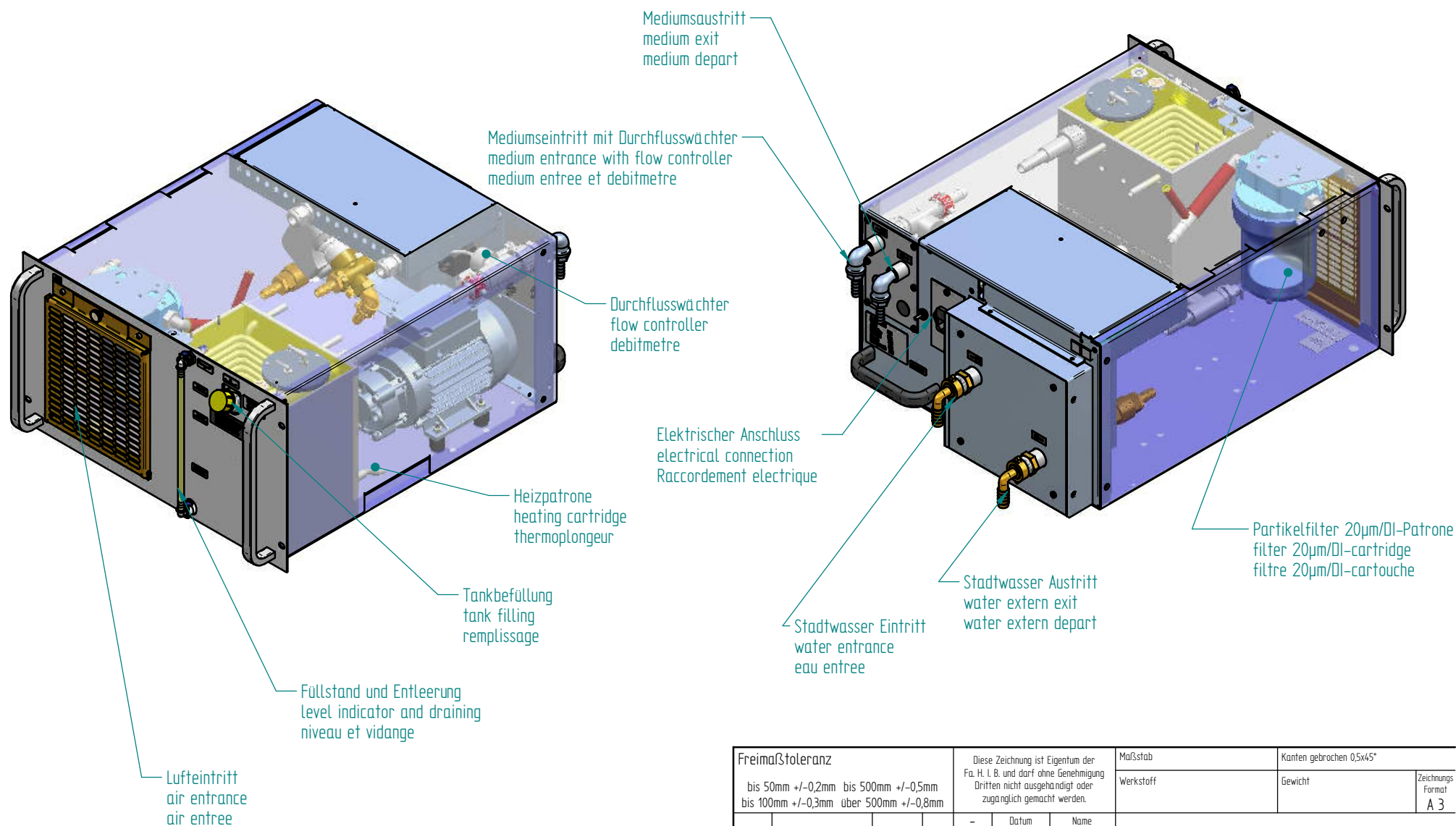
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|----------------------------|-----------|
| CPC connector in the front | 00.502.51 |
| CPC connector in the tank  | 00.502.50 |
| Screw cap ¾“ on the tank   | 00.531.18 |
| Filter case                | 00.501.45 |
| Filtercartridge 20µm       | 00.502.61 |
| DI-bag                     | 00.502.17 |

Änderungsstand: A/mb 27.10.2009

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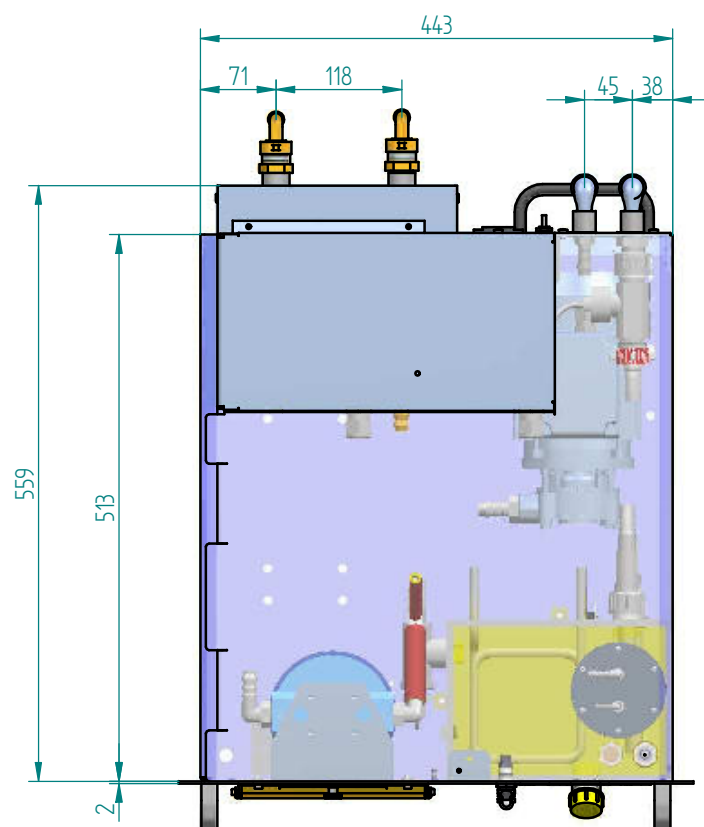
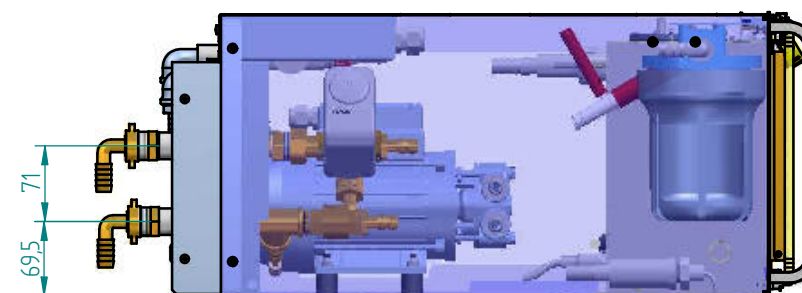
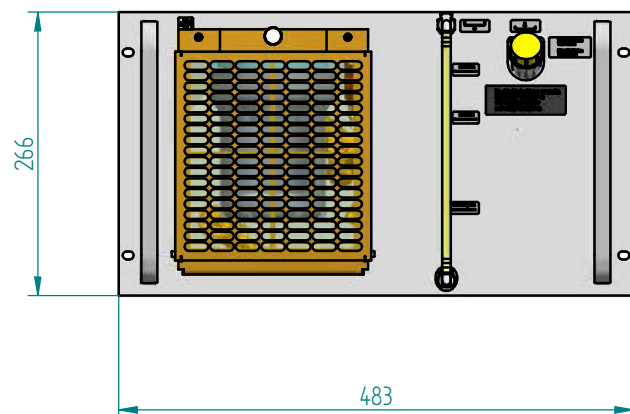
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|------------------|-------|--|
| Datum            | Stand | Änderung   |
| 19.10.2009       | A/mb  | Am Stadtwasseranschluss wird ein Schmutzfänger eingesetzt.(AM 256) |
| 12.02.2010       | B/mb  | Kaltgerätestecker geändert (AM 395)                                |



|  |          |            |  |       |            |           |                             |                   |
|--|----------|------------|--|-------|------------|-----------|-----------------------------|-------------------|
| Freimaßtoleranz  |          |            | Diese Zeichnung ist Eigentum der Fa. H. I. B. und darf ohne Genehmigung Dritten nicht ausgehändigt oder zugänglich gemacht werden. |       |            | Maßstab   | Kanten gebrochen 0,5x45°    |                   |
| bis 50mm   | +/-0,2mm | bis 500mm  | +/-0,5mm   |       |            | Werkstoff | Gewicht                     | Zeichnungs-Format |
| bis 100mm  | +/-0,3mm | über 500mm | +/-0,8mm   |       |            |           |                             | A 3               |
|  |          |            |  | -     | Datum      | Name      | RKH/W-00700-W-HC-06E-2-DI   |                   |
|  |          |            |  | Gez.  | 22.07.2009 | Bruggen   |                             |                   |
|  |          |            |  | Gepr. |            |           |                             |                   |
| Zust.  | Änderung | Datum      | Name   | Norm  |            |           | Zeichnungs-Nr.              |                   |
|  |          |            |  |       |            |           | 31.610.01 - 120110730       |                   |
| <b>H.I.B.</b><br>H.I.B. Systemtechnik GmbH<br>Winterbrückenweg 30 86316 Friedberg<br>Tel. 0821/7477140 Fax. 0821/7477141 |          |            |  |       |            |           | Blatt                       | 1                 |
|  |          |            |  |       |            |           | 4                           | BL                |
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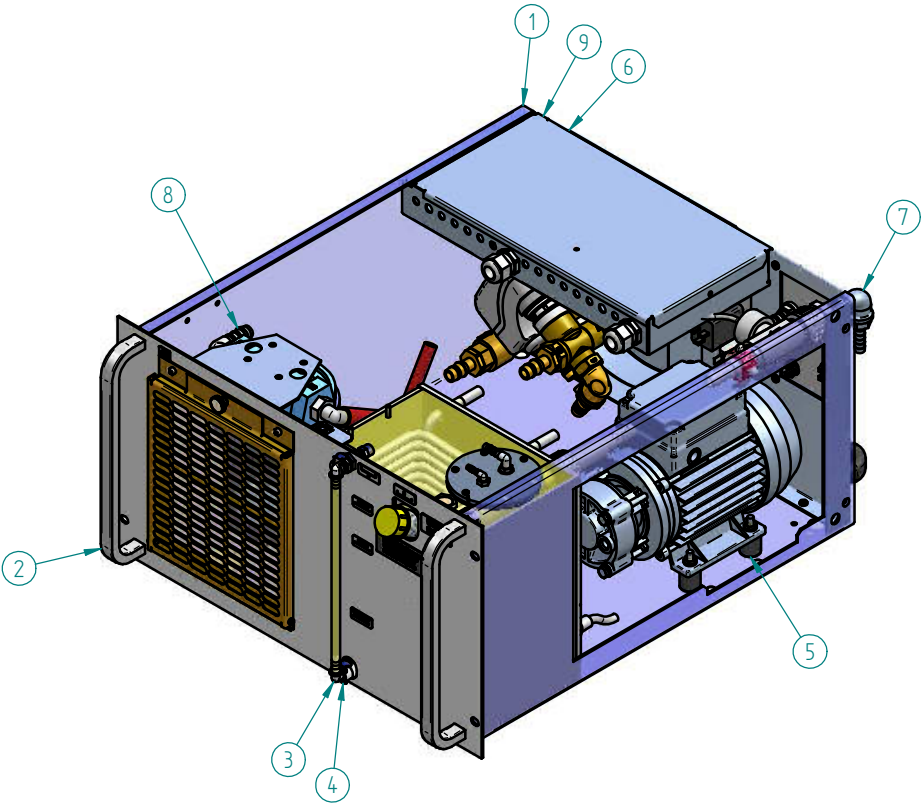
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|------------------|-------|--|
| Datum            | Stand | Änderung   |
| 19.10.2009       | A/mb  | Am Stadtwasseranschluss wird ein Schmutzfänger eingesetzt.(AM 256) |
| 12.02.2010       | B/mb  | Kaltgerätestecker geändert (AM 395)                                |



|  |          |  |      |  |                          |                       |
|--|----------|--|------|--|--------------------------|-----------------------|
| Freimaßtoleranz  |          | Diese Zeichnung ist Eigentum der Fa. H. I. B. und darf ohne Genehmigung Dritten nicht ausgehändigt oder zugänglich gemacht werden. |      | Maßstab  | Kanten gebrochen 0,5x45° |                       |
| bis 50mm +/-0,2mm bis 500mm +/-0,5mm bis 100mm +/-0,3mm über 500mm +/-0,8mm  |          |  |      | Werkstoff  | Gewicht                  | Zeichnungs Format A 3 |
|  |          |  |      | -  | Datum                    | Name                  |
|  |          |  |      | Gez.   | 22.07.2009               | Brugger               |
|  |          |  |      | Gepr.  |                          |                       |
| Zust   | Änderung | Datum  | Name | Norm   |                          |                       |
| <b>H.I.B</b><br>H.I.B Systemtechnik GmbH<br>Winterbrückenweg 30 86316 Friedberg<br>Tel. 0821/7477140 Fax. 0821/7477141 |          |  |      | RKH/W-00700-W-HC-06E-2-DI  |                          |                       |
|  |          |  |      | Zeichnungs-Nr. 31.610.01 - 120110730                             |                          |                       |
|  |          |  |      | Blatt 2  |                          |                       |
|  |          |  |      | 4 BL   |                          |                       |
|  |          |  |      | Datei Zeich 31.610.01 Maßblatt 0.dxf Datei Bauteil 31.610.01.asm |                          |                       |

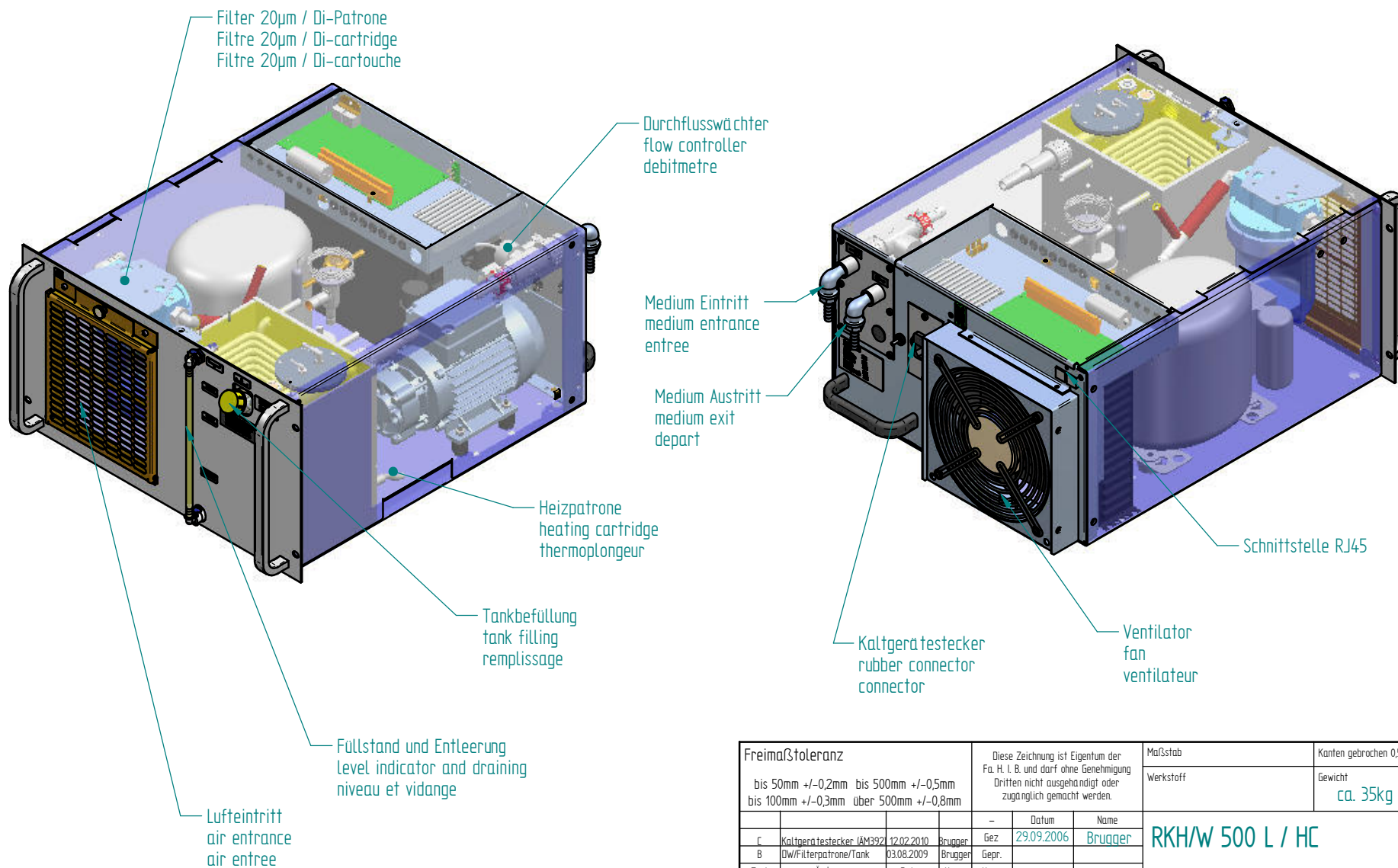


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| 19.10.2009       | A/mb  | Am Stadtwasseranschluss wird ein Schmutzfänger eingesetzt.(AM 256) |
| 12.02.2010       | B/mb  | Kaltgerätestecker geändert (AM 395)                                |

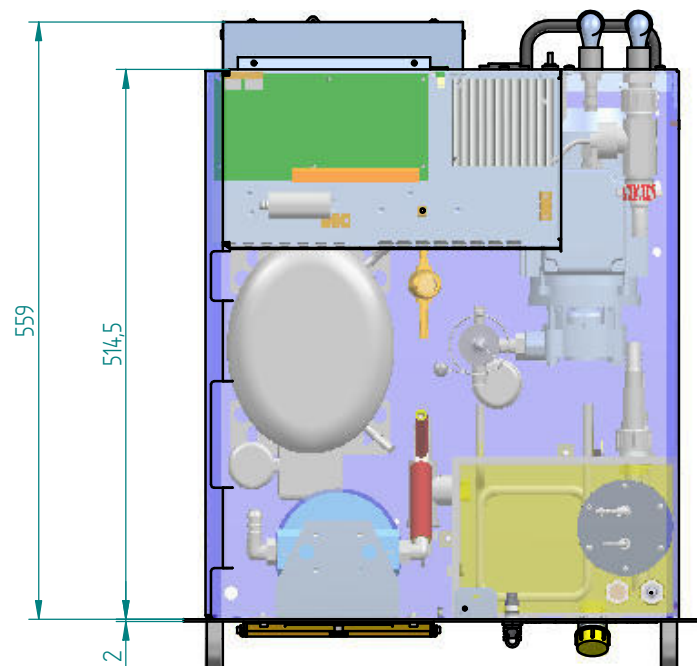
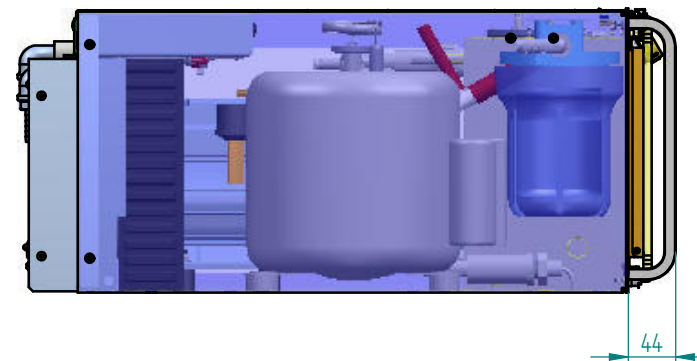
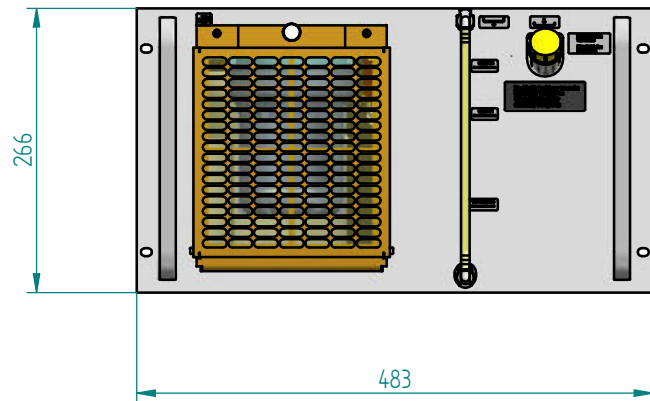


| Pos.Nr. | Dokumentnummer | Titel                              | Material | Menge |
|---------|----------------|------------------------------------|----------|-------|
| 1       | 40.104.56 BG   | Grundgerät 6HE                     |          | 1     |
| 2       | 40.105.80 BG   | Frontplatte kpl.                   |          | 1     |
| 3       | 40.101.83 BG   | Füllstandsanzeige 6HE              |          | 1     |
| 4       | 40.104.79 BG   | Tank BG 6HE Heizung                |          | 1     |
| 5       | 40.100.34 BG   | Pumpen BG Y 2051.0130              |          | 1     |
| 6       | 40.105.81 BG   | Wasseranschluss mit 3/2 Wegeventil |          | 1     |
| 7       | 40.104.55 BG   | Wasseranschluss BG VTH 15K5        |          | 1     |
| 8       | 40.100.37 BG   | Filterpatrone                      |          | 1     |
| 9       | 00.203.89 BG   | Rückwand m. E-Box Rofin CAN W/W    |          | 1     |
| 10*     | 00.102.01      | Filterpatrone 20µm                 |          | 1     |
| 11*     | 00.102.01      | Deionisierbeutel                   |          | 1     |
| 12*     |                | PN-Schild Rofin                    |          | 1     |
| 13*     |                | Serienschild                       |          | 1     |

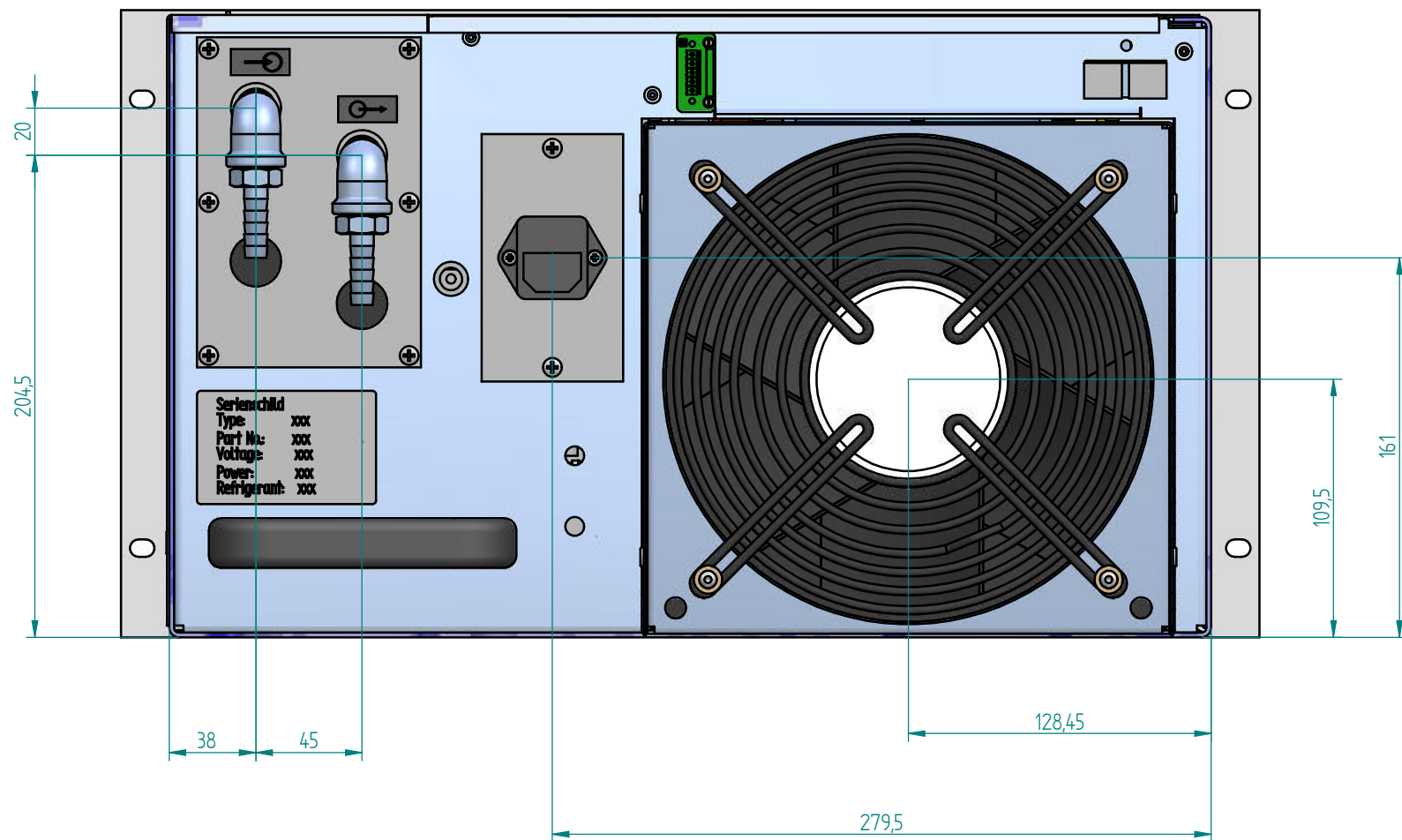
|   |          |       |  |       |            |                                      |                          |                       |
|---|----------|-------|--|-------|------------|--------------------------------------|--------------------------|-----------------------|
| Freimaßtoleranz   |          |       | Diese Zeichnung ist Eigentum der Fa. H. I. B. und darf ohne Genehmigung Dritten nicht ausgehändigt oder zugänglich gemacht werden. |       |            | Maßstab                              | Kanten gebrochen 0,5x45° |                       |
| bis 50mm +/-0,2mm bis 500mm +/-0,5mm bis 100mm +/-0,3mm über 500mm +/-0,8mm   |          |       |  |       |            | Werkstoff                            | Gewicht                  | Zeichnungs Format A 3 |
|   |          |       |  | -     | Datum      | RKH/W-00700-W-HC-06E-2-DI            |                          |                       |
|   |          |       |  | Gez   | 22.07.2009 |                                      |                          |                       |
|   |          |       |  | Gepr. | Bruggen    |                                      |                          |                       |
| Zust  | Änderung | Datum | Name   | Norm  |            |                                      |                          |                       |
| <div>H.I.B.</div> <div>H.I.B Systemtechnik GmbH<br/>Winterbrückenweg 30 86316 Friedberg<br/>Tel. 0821/7477140 Fax. 0821/7477141</div> |          |       |  |       |            | Zeichnungs-Nr.                       |                          | Blatt                 |
|   |          |       |  |       |            | 31.610.01 - 120110730                |                          | 4                     |
|   |          |       |  |       |            | Datei Zeich 31.610.01 Maßblatt 0.dxf |                          | 4 BL                  |
|   |          |       |  |       |            | Datei Bauteil 31.610.01.asm          |                          |                       |



|  |  |   |            |  |       |            |         |                           |  |                             |  |
|--|--|---|------------|--|-------|------------|---------|---------------------------|--|-----------------------------|--|
| Freimaßtoleranz  |  |   |            | Diese Zeichnung ist Eigentum der Fa. H. I. B. und darf ohne Genehmigung Dritten nicht ausgehandigt oder zugänglich gemacht werden. |       |            |         | Maßstab                   |  | Kanten gebrochen 0,5x45°    |  |
| bis 50mm +/-0,2mm bis 500mm +/-0,5mm<br>bis 100mm +/-0,3mm über 500mm +/-0,8mm |  |   |            |  |       |            |         | Werkstoff                 |  | Gewicht<br>ca. 35kg         |  |
|  |  |   |            |  |       |            |         | RKH/W 500 L / HC          |  |                             |  |
|  |  |   |            |  |       |            |         |                           |  |                             |  |
|  |  |   |            |  |       |            |         |                           |  |                             |  |
| C  |  | Kaltgerätestecker (AM392)   | 12.02.2010 | Brugger  | Gez   | 29.09.2006 | Brugger |                           |  |                             |  |
| B  |  | DW/Filterpatrone/Tank   | 03.08.2009 | Brugger  | Gepr. |            |         |                           |  |                             |  |
| Zust   |  | Änderung  |            | Datum  | Name  | Norm       |         |                           |  |                             |  |
| H.I.B.   |  | Handwerk und Industriebedarf<br>Industriekühlung und Temperierung<br>Robert-Bosch-Str. 15 86167 Augsburg<br>Tel. 0821/7477140 Fax. 0821/7477141 |            |  |       |            |         | Zeichnungs-Nr.            |  | Blatt 1                     |  |
|  |  |   |            |  |       |            |         | 10.006.00 – 120110985     |  | 13 BL                       |  |
|  |  |   |            |  |       |            |         | Datei Zeich 10-006-00.dft |  | Datei Bauteil 10-006-00.asm |  |

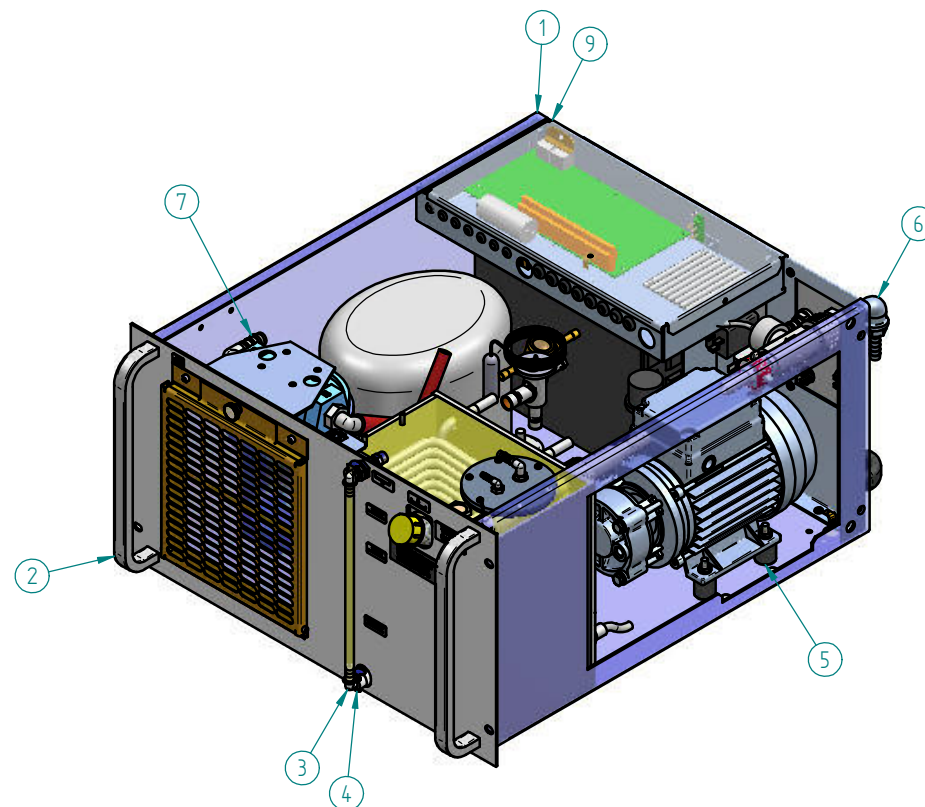


|   |                           |            |         |   |            |         |                           |  |                             |  |     |
|---|---------------------------|------------|---------|---|------------|---------|---------------------------|--|-----------------------------|--|-----|
| Freimaßtoleranz   |                           |            |         | Diese Zeichnung ist Eigentum der<br>Fa. H. I. B. und darf ohne Genehmigung<br>Dritten nicht ausgehandelt oder<br>zugänglich gemacht werden. |            |         | Maßstab                   |  | Kanten gebrochen 0,5x45°    |  |     |
| bis 50mm +/-0,2mm bis 500mm +/-0,5mm<br>bis 100mm +/-0,3mm über 500mm +/-0,8mm  |                           |            |         |   |            |         | Werkstoff                 |  | Gewicht<br>ca. 35kg         |  | A 3 |
|   |                           |            |         | -   | Datum      | Name    | RKH/W 500 L / HC          |  |                             |  |     |
| C   | Kaltgerätestecker (AM392) | 12.02.2010 | Brugger | Gez   | 29.09.2006 | Brugger |                           |  |                             |  |     |
| B   | DW/Filterpatrone/Tank     | 03.08.2009 | Brugger | Gepr.   |            |         |                           |  |                             |  |     |
| Zust  | Anderung                  | Datum      | Name    | Norm  |            |         |                           |  |                             |  |     |
| <div>H.I.B.</div> <div>Handwerk und Industriebedarf<br/>Industriekühlung und Temperierung<br/>Robert-Bosch-Str. 15 86167 Augsburg<br/>Tel. 0821/7477140 Fax. 0821/7477141</div> |                           |            |         |   |            |         | Zeichnungs-Nr.            |  | Blatt                       |  |     |
|   |                           |            |         |   |            |         | 10.006.00 - 120110985     |  | 2                           |  |     |
|   |                           |            |         |   |            |         |                           |  | 13 BL                       |  |     |
|   |                           |            |         |   |            |         | Datei Zeich 10-006-00.dft |  | Datei Bauteil 10-006-00.asm |  |     |



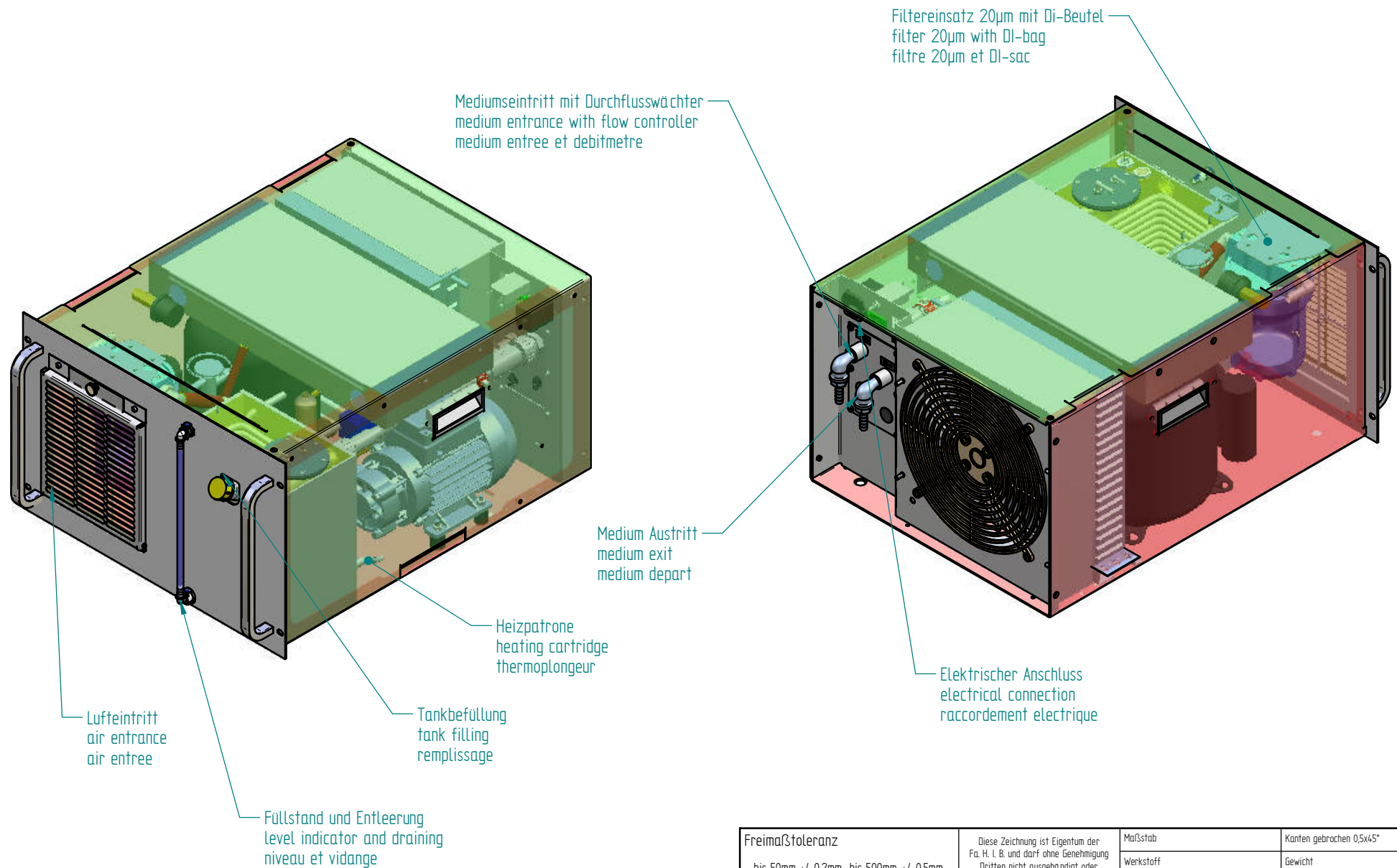
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|--|---------------------------|------------|---------|--|------------|---------|---------------------------|--|--------------------------|--|-----------------------------|--|
| Freimaßtoleranz  |                           |            |         | Diese Zeichnung ist Eigentum der Fa. H. I. B. und darf ohne Genehmigung Dritten nicht ausgehandelt oder zugänglich gemacht werden. |            |         | Maßstab                   |  | Kanten gebrochen 0,5x45° |  |                             |  |
| bis 50mm $\pm 0,2\text{mm}$ bis 500mm $\pm 0,5\text{mm}$<br>bis 100mm $\pm 0,3\text{mm}$ über 500mm $\pm 0,8\text{mm}$   |                           |            |         |  |            |         | Werkstoff                 |  | Gewicht<br>ca. 35kg      |  |                             |  |
|  |                           |            |         |  |            |         |                           |  | A 3                      |  |                             |  |
|  |                           |            |         | -  | Datum      | Name    | RKH/W 500 L / HC          |  |                          |  |                             |  |
| C  | Kaltgerätestecker (AM392) | 12.02.2010 | Brugger | Gez  | 29.09.2006 | Brugger |                           |  |                          |  |                             |  |
| B  | Öl/Filterpatrone/Tank     | 03.08.2009 | Brugger | Gepr.  |            |         |                           |  |                          |  |                             |  |
| Zust   | Anderung                  | Datum      | Name    | Norm   |            |         |                           |  |                          |  |                             |  |
| <div>H.I.B.</div> <div>Handwerk und Industriebedarf</div> <div>Industriekühlung und Temperierung</div> <div>Robert-Bosch-Str. 15 86167 Augsburg</div> <div>Tel. 0821/7477140 Fax. 0821/7477141</div> |                           |            |         |  |            |         | Zeichnungs-Nr.            |  |                          |  | Blatt                       |  |
|  |                           |            |         |  |            |         | 10.006.00 - 120110985     |  |                          |  | 3                           |  |
|  |                           |            |         |  |            |         |                           |  |                          |  | 13 Bl.                      |  |
|  |                           |            |         |  |            |         | Datei Zeich 10-006-00.dft |  |                          |  | Datei Bauteil 10-006-00.asm |  |





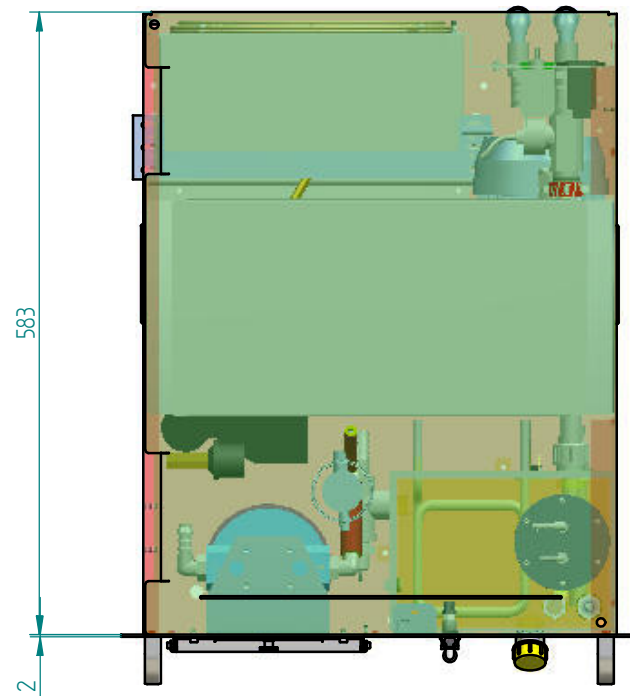
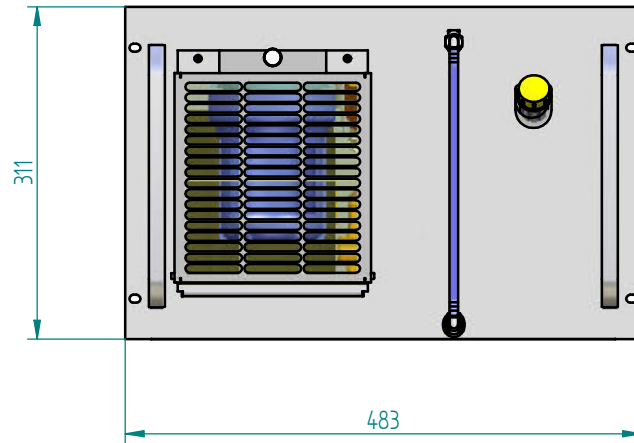
| Pos.Nr. | Dokumentnummer | Titel                             | Material | Menge |
|---------|----------------|-----------------------------------|----------|-------|
| 1       | 40.101.66 BG   | Grundgerät 6HE 500W L             |          | 1     |
| 2       | 40.105.80 BG   | Frontplatte kpl.                  |          | 1     |
| 3       | 40.101.83 BG   | Füllstandsanzeige 6HE             |          | 1     |
| 4       | 40.104.79 BG   | Tank BG 6HE Heizung               |          | 1     |
| 5       | 40.100.34 BG   | Pumpen BG Y 2051.0130             |          | 1     |
| 6       | 40.104.55 BG   | Wasseranschluss BG VTH 15K5       |          | 1     |
| 7       | 40.100.37 BG   | Filterpatrone                     |          | 1     |
| 8*      | 40.106.62 BG   | HGB Heissgasbypass 230V bis 2,5kW |          | 1     |
| 9       | 00.202.38 BG   | Rückwand mit E-Box Rofin          |          | 1     |
| 12*     |                | Serienschild                      |          | 1     |

|  |  |  |  |  |  |         |  |                             |  |                          |  |
|--|--|--|--|--|--|---------|--|-----------------------------|--|--------------------------|--|
| Freimaßtoleranz  |  |  |  | Diese Zeichnung ist Eigentum der Fa. H. I. B. und darf ohne Genehmigung Dritten nicht ausgehandigt oder zugänglich gemacht werden. |  |         |  | Maßstab                     |  | Kanten gebrochen 0,5x45° |  |
| bis 50mm +/-0,2mm bis 500mm +/-0,5mm<br>bis 100mm +/-0,3mm über 500mm +/-0,8mm   |  |  |  |  |  |         |  | Werkstoff                   |  | Gewicht<br>ca. 35kg      |  |
|  |  |  |  |  |  |         |  | RKH/W 500 L / HC            |  |                          |  |
|  |  |  |  |  |  |         |  |                             |  |                          |  |
|  |  |  |  |  |  |         |  |                             |  |                          |  |
| C Kaltgerätestecker (AM392)  |  |  |  | 12.02.2010   |  | Brugger |  | Gez                         |  | 29.09.2006 Brugger       |  |
| B DW/Filterpatrone/Tank  |  |  |  | 03.08.2009   |  | Brugger |  | Gepr.                       |  |                          |  |
| Zust   |  |  |  | Änderung   |  | Datum   |  | Name                        |  | Norm                     |  |
| <div>H.I.B.</div> <div>Handwerk und Industriebedarf</div> <div>Industriekühlung und Temperierung</div> <div>Robert-Bosch-Str. 15 86167 Augsburg</div> <div>Tel. 0821/7477140 Fax. 0821/7477141</div> |  |  |  |  |  |         |  | Zeichnungs-Nr.              |  |                          |  |
|  |  |  |  |  |  |         |  | 10.006.00 – 120110985       |  |                          |  |
|  |  |  |  |  |  |         |  | Datei Zeich 10-006-00.dft   |  |                          |  |
|  |  |  |  |  |  |         |  | Datei Bauteil 10-006-00.asm |  |                          |  |
|  |  |  |  |  |  |         |  | Blatt 4                     |  |                          |  |
|  |  |  |  |  |  |         |  | 13 BL                       |  |                          |  |

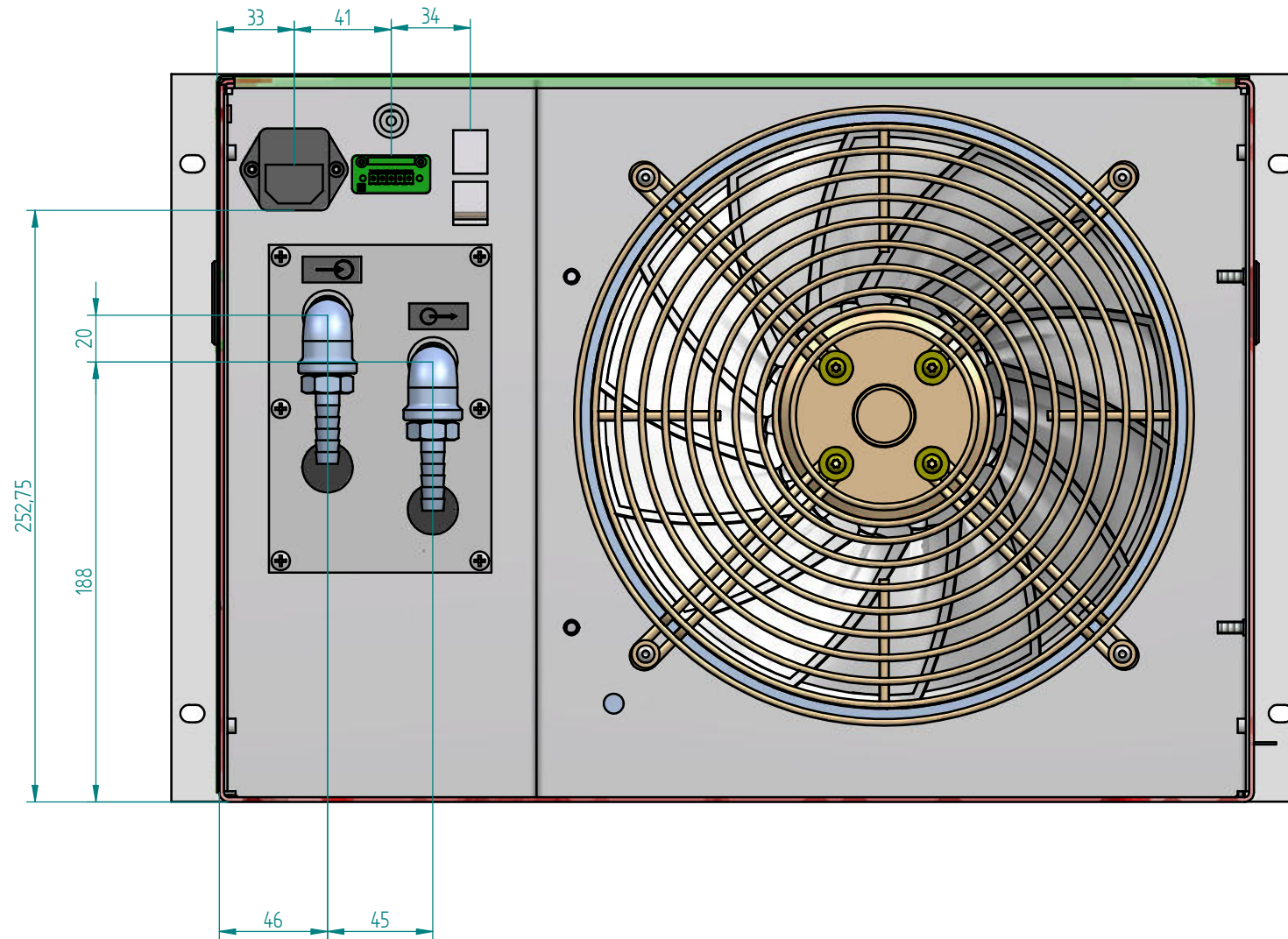


|  |                   |            |  |       |            |   |                          |                                   |
|--|-------------------|------------|--|-------|------------|---|--------------------------|-----------------------------------|
| Freimaßtoleranz  |                   |            | Diese Zeichnung ist Eigentum der Fa. H. I. B. und darf ohne Genehmigung Dritten nicht ausgehändigt oder zugänglich gemacht werden. |       |            | Maßstab                                 | Kanten gebrochen 0,5x45° |                                   |
| bis 50mm +/-0,2mm bis 500mm +/-0,5mm<br>bis 100mm +/-0,3mm über 500mm +/-0,8mm   |                   |            |  |       |            | Werkstoff                               | Gewicht<br>43,731 kg     | A 3                               |
| B  | Kaltgerätestecker | 12.02.2010 | Bruggen  | Gez   | 17.08.2007 | bruggen                                 | RKH/W-1000-L-HC-2-DI     |                                   |
| 1A   | Standardisierung  | 27.10.2009 | Bruggen  | Gepr. |            |   |                          |                                   |
| Zust   | Anderung          | Datum      | Name   | Norm  |            |   |                          |                                   |
| <b>H.I.B.</b><br>Handwerk und Industriebedarf<br>Industriekühlung und Temperierung<br>Winterbrückenweg 30 86316 Friedberg<br>Tel. 0821/7477140 Fax. 0821/7477141 |                   |            |  |       |            | Zeichnungs-Nr.<br>31.700.00 - 120110986 |                          | Blatt<br>1                        |
|  |                   |            |  |       |            | Datei Zeichn                            | 31.700.00 Rofin.dft      | Datei Bauteil 31.700.00 Rofin.asm |

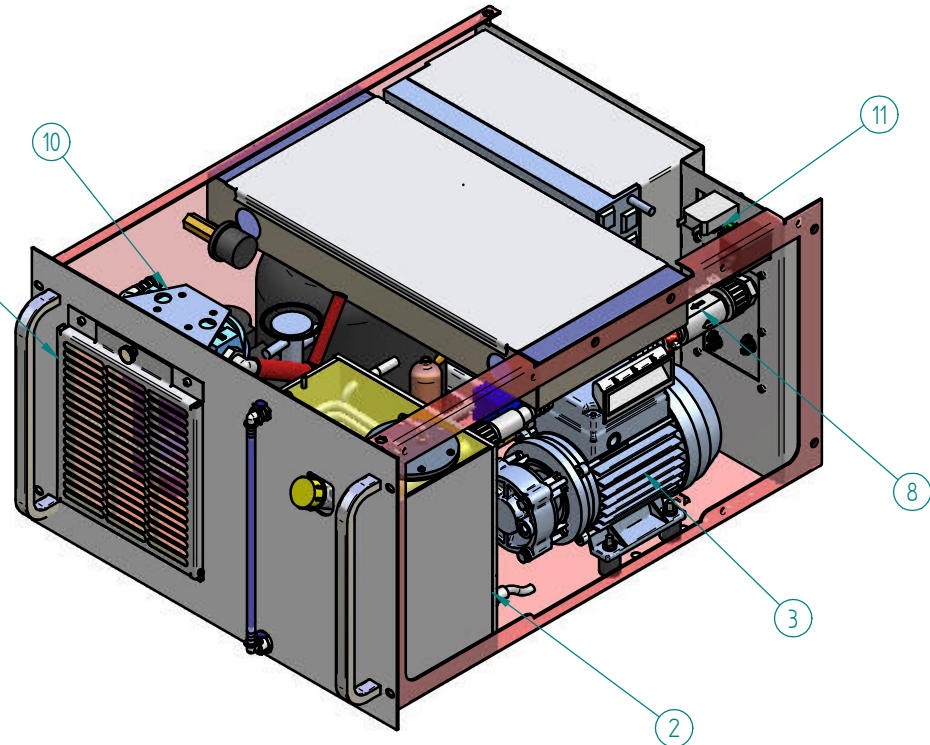




|   |                   |            |   |       |            |             |                          |                      |                     |
|---|-------------------|------------|---|-------|------------|-------------|--------------------------|----------------------|---------------------|
| Freimaßtoleranz   |                   |            | Diese Zeichnung ist Eigentum der<br>Fa. H. I. B. und darf ohne Genehmigung<br>Dritten nicht ausgehandelt oder<br>zugänglich gemacht werden. |       |            | Maßstab     | Kanten gebrochen 0,5x45° |                      |                     |
| bis 50mm +/-0,2mm bis 500mm +/-0,5mm<br>bis 100mm +/-0,3mm über 500mm +/-0,8mm  |                   |            |   |       |            | Werkstoff   | Gewicht<br>43,731 kg     |                      | A 3                 |
|   |                   |            |   | -     | Datum      | Name        |                          | RKH/W-1000-L-HC-2-DI |                     |
| B   | Kaltgerätestecker | 12.02.2010 | Brugger   | Gez   | 17.08.2007 | brugger     |                          |                      |                     |
| A   | Standardisierung  | 27.10.2009 | Brugger   | Gepr. |            |             |                          |                      |                     |
| Zust  | Anderung          | Datum      | Name  | Norm  |            |             |                          |                      |                     |
|   |                   |            |   |       |            |             |                          |                      |                     |
| <div>H.I.B.</div> <div>Handwerk und Industriebedarf<br/>Industriekühlung und Temperierung<br/>Winterbrückenweg 30 86316 Friedberg<br/>Tel. 0821/7477140 Fax. 0821/7477141</div> |                   |            |   |       |            |             | Zeichnungs-Nr.           |                      | Blatt               |
|   |                   |            |   |       |            |             | 31.700.00 - 120110986    |                      | 2                   |
|   |                   |            |   |       |            |             |                          |                      | 4 BL                |
|   |                   |            |   |       |            | Datei Zeich | 31.700.00 Rofin.dft      | Datei Bauteil        | 31.700.00 Rofin.asm |



|  |                   |            |         |  |            |         |   |                          |                                   |
|--|-------------------|------------|---------|--|------------|---------|---|--------------------------|-----------------------------------|
| Freimaßtoleranz  |                   |            |         | Diese Zeichnung ist Eigentum der Fa. H. I. B. und darf ohne Genehmigung Dritten nicht ausgehandelt oder zugänglich gemacht werden. |            |         | Maßstab                                 | Kanten gebrochen 0,5x45° |                                   |
| bis 50mm +/-0,2mm bis 500mm +/-0,5mm<br>bis 100mm +/-0,3mm über 500mm +/-0,8mm   |                   |            |         |  |            |         | Werkstoff                               | Gewicht<br>43,731 kg     | A 3                               |
| B  | Kaltgerätestecker | 12.02.2010 | Brugger | Gez  | 17.08.2007 | brugger | RKH/W-1000-L-HC-2-DI                    |                          |                                   |
| A  | Standardisierung  | 27.10.2009 | Brugger | Gepr.  |            |         |   |                          |                                   |
| Zust   | Anderung          | Datum      | Name    | Norm   |            |         |   |                          |                                   |
| <b>H.I.B.</b><br>Handwerk und Industriebedarf<br>Industriekühlung und Temperierung<br>Winterbrückenweg 30 86316 Friedberg<br>Tel. 0821/7477140 Fax. 0821/7477141 |                   |            |         |  |            |         | Zeichnungs-Nr.<br>31.700.00 - 120110986 |                          | Blatt<br>3                        |
|  |                   |            |         |  |            |         | Datei Zeichn                            | 31.700.00 Rofin.dft      | Datei Bauteil 31.700.00 Rofin.asm |



| Pos.Nr. | Dokumentnummer | Titel                            | Material           | Menge |
|---------|----------------|----------------------------------|--------------------|-------|
| 1*      | 40.103.60 BG   | Grundgerät 7HE RNM 1000W L       |                    | 1     |
| 2*      | 40.104.79 BG   | Tank BG 6HE Heizung              |                    | 1     |
| 3*      | 40.100.34 BG   | Pumpen BG Y 2051.0130            |                    | 1     |
| 4*      | 40.103.61 BG   | Frontplatte 7HE kpl. breit RSM   |                    | 1     |
| 5*      | 00.518.87      | Kaltgerätestecker                | Elektromaterial    | 1     |
| 6*      | 00.514.47      | Buchse 5-pol                     | 1829374<br>Phoenix | 1     |
| 7*      | 40.100.87 BG   | Füllstandsanzeige 7HE kpl.       |                    | 1     |
| 8*      | 40.104.55 BG   | Wasseranschluss BG VTH 15K5      |                    | 1     |
| 9*      | 40.103.62 BG   | E-Box Rofin 7HE                  |                    | 1     |
| 10*     | 40.100.37 BG   | Filterpatrone                    |                    | 1     |
| 11*     | 00.514.61      | Schutzschalter thermisch         | Typ 157            | 1     |
| 12*     | 40.108.22 BG   | HGB Heissgasbypass 24V bis 2,5kW |                    | 1     |

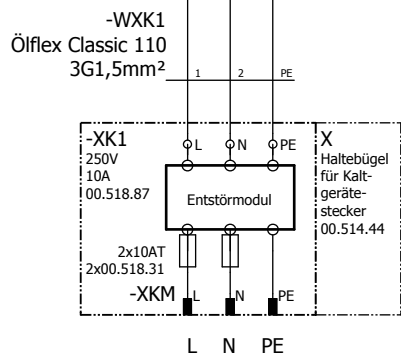
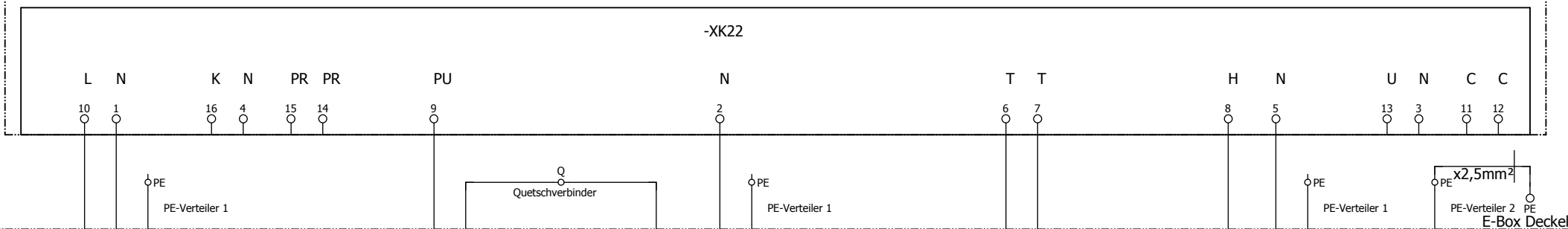
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|--|-------------------|------------|---------|--|------------|---------|---|-----------|--------------------------|------------|
| Freimaßtoleranz  |                   |            |         | Diese Zeichnung ist Eigentum der Fa. H. I. B. und darf ohne Genehmigung Dritten nicht ausgehandigt oder zugänglich gemacht werden. |            |         |   | Maßstab   | Kanten gebrochen 0,5x45° |            |
| bis 50mm +/-0,2mm bis 500mm +/-0,5mm<br>bis 100mm +/-0,3mm über 500mm +/-0,8mm   |                   |            |         |  |            |         |   | Werkstoff | Gewicht<br>43,731 kg     | A 3        |
|  |                   |            |         | -  | Datum      | Name    | RKH/W-1000-L-HC-2-DI                    |           |                          |            |
| B  | Kaltgerätestecker | 12.02.2010 | Brugger | Gez  | 17.08.2007 | brugger |   |           |                          |            |
| A  | Standardisierung  | 27.10.2009 | Brugger | Gepr.  |            |         |   |           |                          |            |
| Zust   | Anderung          | Datum      | Name    | Norm   |            |         |   |           |                          |            |
| <b>H.I.B.</b><br>Handwerk und Industriebedarf<br>Industriekühlung und Temperierung<br>Winterbrückenweg 30 86316 Friedberg<br>Tel. 0821/7477140 Fax. 0821/7477141 |                   |            |         |  |            |         | Zeichnungs-Nr.<br>31.700.00 - 120110986 |           |                          | Blatt<br>4 |
|  |                   |            |         |  |            |         | Datei Zeichn 31.700.00 Rofin.dft        |           |                          | 4 BL       |
|  |                   |            |         |  |            |         | Datei Bauteil 31.700.00 Rofin.asm       |           |                          |            |

|                         |   |   |                    |
|-------------------------|---|---|--------------------|
| Kunde:                  | Rofin Sinar   | <u>LASTSTROMKREIS</u>                           |                    |
| Anlagenbezeichnung 1:   | RKH/W-00700-W-HC-06E-2-DI   | Spannung:                                       | 198-253V 1Ph       |
| Anlagenartikelnummer 1: | 31.610.01   | Frequenz:                                       | 50/60Hz            |
| Anlagenbezeichnung 2:   | ---   | Stromaufnahme max.                              | 2,5A max. 6,5A     |
| Anlagenartikelnummer 2: | ---   | Drehfeld:                                       | ---                |
| Firma:                  | H.I.B. Systemtechnik GmbH<br>Winterbruckenweg 30<br>86316 Friedberg | Leiterquerschnitt und -farbe:                   | 1,5mm²/schwarz     |
|                         |   | <u>STEUERSTROMKREIS</u>                         |                    |
| Bauteilbeschriftung:    | JA  | Spannung:                                       | 24V DC             |
| Kabelbeschriftung:      | JA  | Frequenz:                                       | ---                |
| Aderbeschriftung:       | JA  | Stromaufnahme max.                              | 1A                 |
| Sonstiges/Bemerkung:    | Bauortkennzeichnung/Schilder gelasert                               | Leiterquerschnitt und -farbe:                   | 0,75mm²/dunkelblau |
|                         |   | Leiterquerschnitt und -farbe<br>externer Kreis: | 0,75mm²/orange     |
| Regler:                 | Ertle CAN-Regler  |   |                    |
| Software:               | ---   |   |                    |

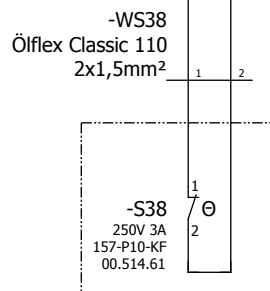
```

| Relaisplatine
| 3111
| 00.514.62

```

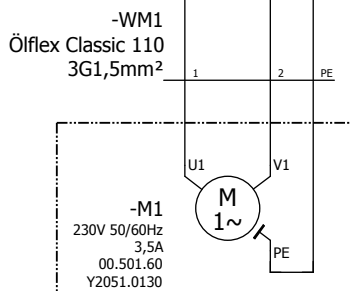


230V 50/60Hz  
2,5 max. 6,5A

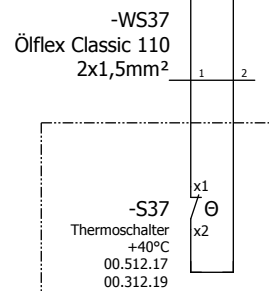


Position Rückwand

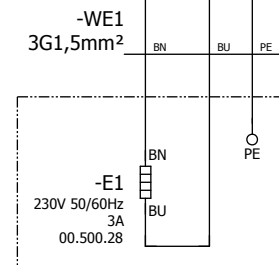
Pumpe /pump  
Schutzschalter thermisch  
circuit breaker high temp.



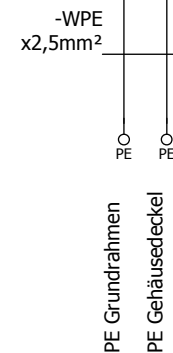
Pumpe  
pump



Heizung/heater  
Schutzschalter thermisch  
circuit breaker high temp.

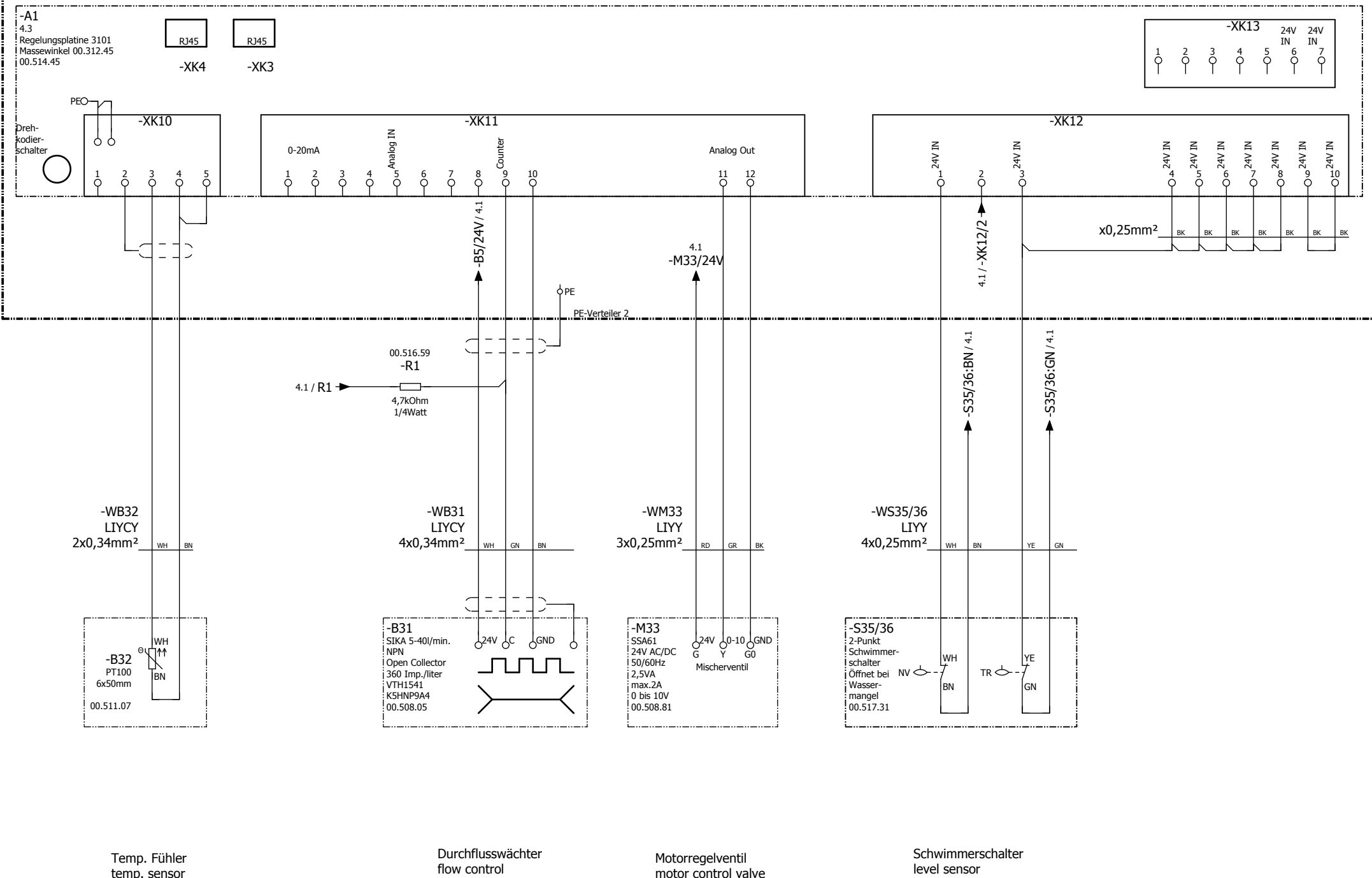


Heizung  
heater

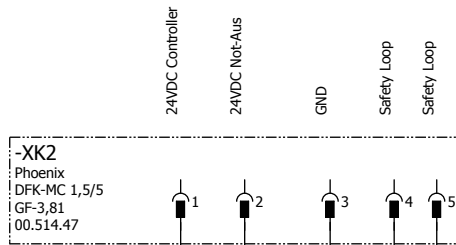


|            |            |        |        |            |                           |            |  |   |            |  |                            |           |       |   |
|------------|------------|--------|--------|------------|---------------------------|------------|--|---|------------|--|----------------------------|-----------|-------|---|
|            |            |        | Datum  | 30.04.2010 | RKH/W-00700-W-HC-06E-2-DI |            | 230V 50/60Hz<br>(198-253V)<br>2,5A max. 6,5A | H.I.B. Systemtechnik GmbH<br>Winterbruckenweg 30<br>86316 Friedberg | 00.203.89S |  | Einspeilung/Laststromkreis |           |       |   |
|            |            |        | Bearb. | h.mueller  |                           |            |  |   |            |  | Input/load circuit         |           |       |   |
| Netzfilter | 09.02.2010 | Müller | Stand  | A1         | Rofin Sinar               |            |  |   |            |  | Stromlaufplan              | 31.610.01 | Blatt | 2 |
| Änderung   | Datum      | Name   | Gepr   | Arbogast   | Erstellt:                 | 29.07.2009 |  |   |            |  |                            |           | Blatt | 1 |

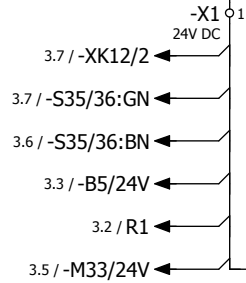
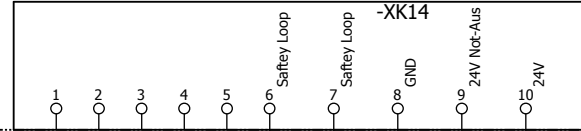
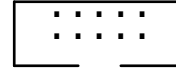
E-BOX  
2.0

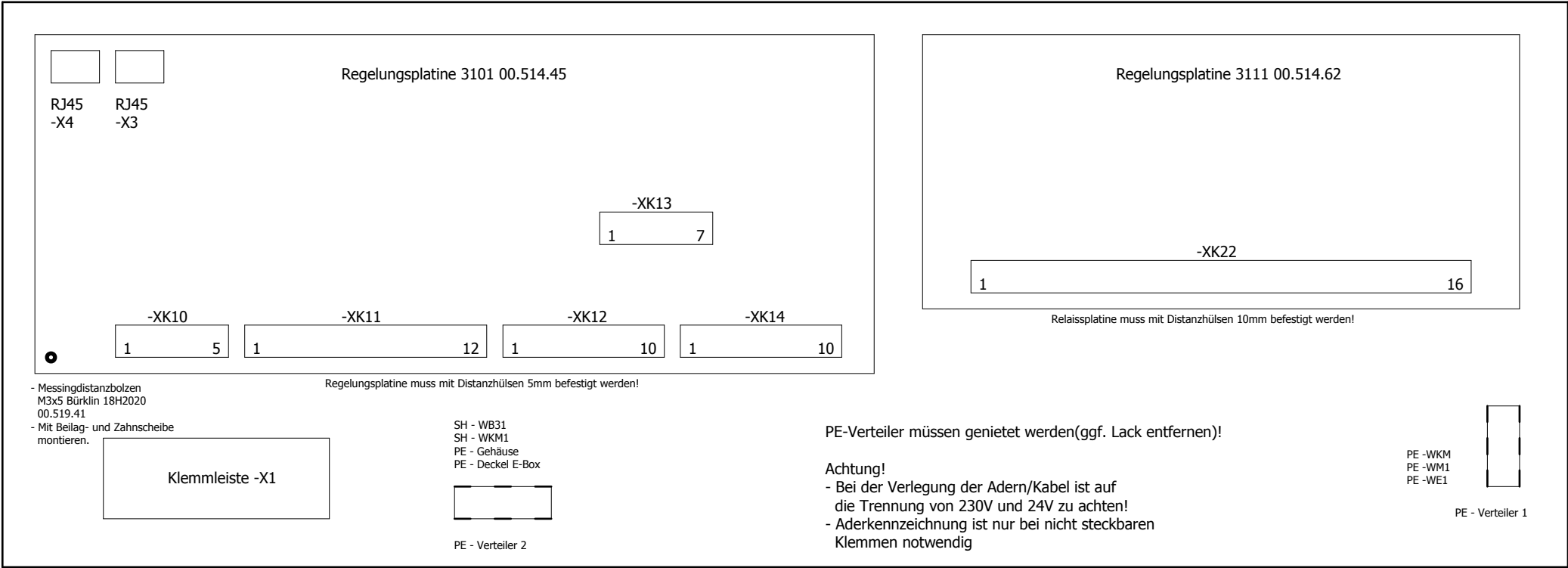


24V/DC 1A

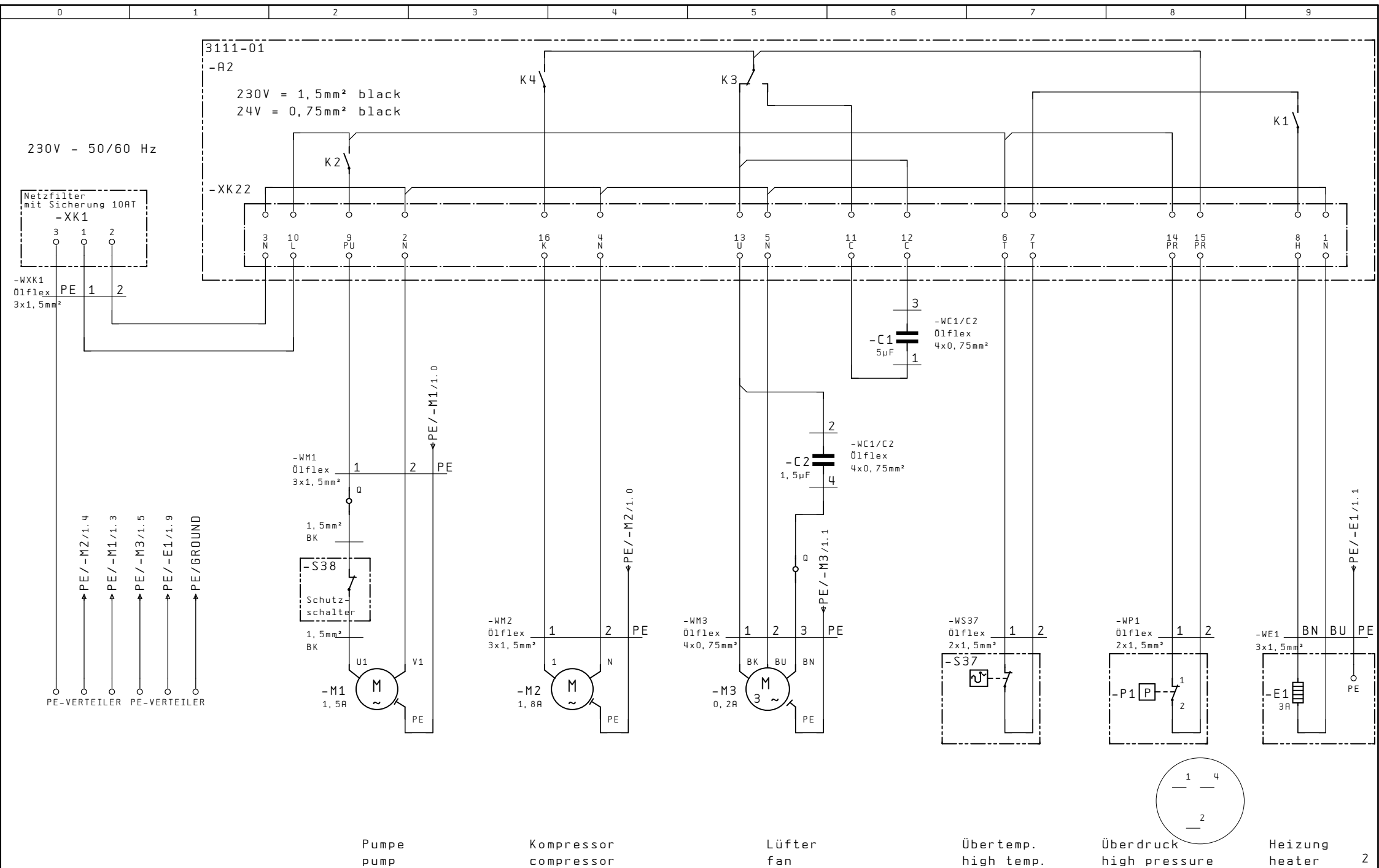



-A1  
3.0  
Regelungsplatine 3101  
Massewinkel 00.312.45  
00.514.45

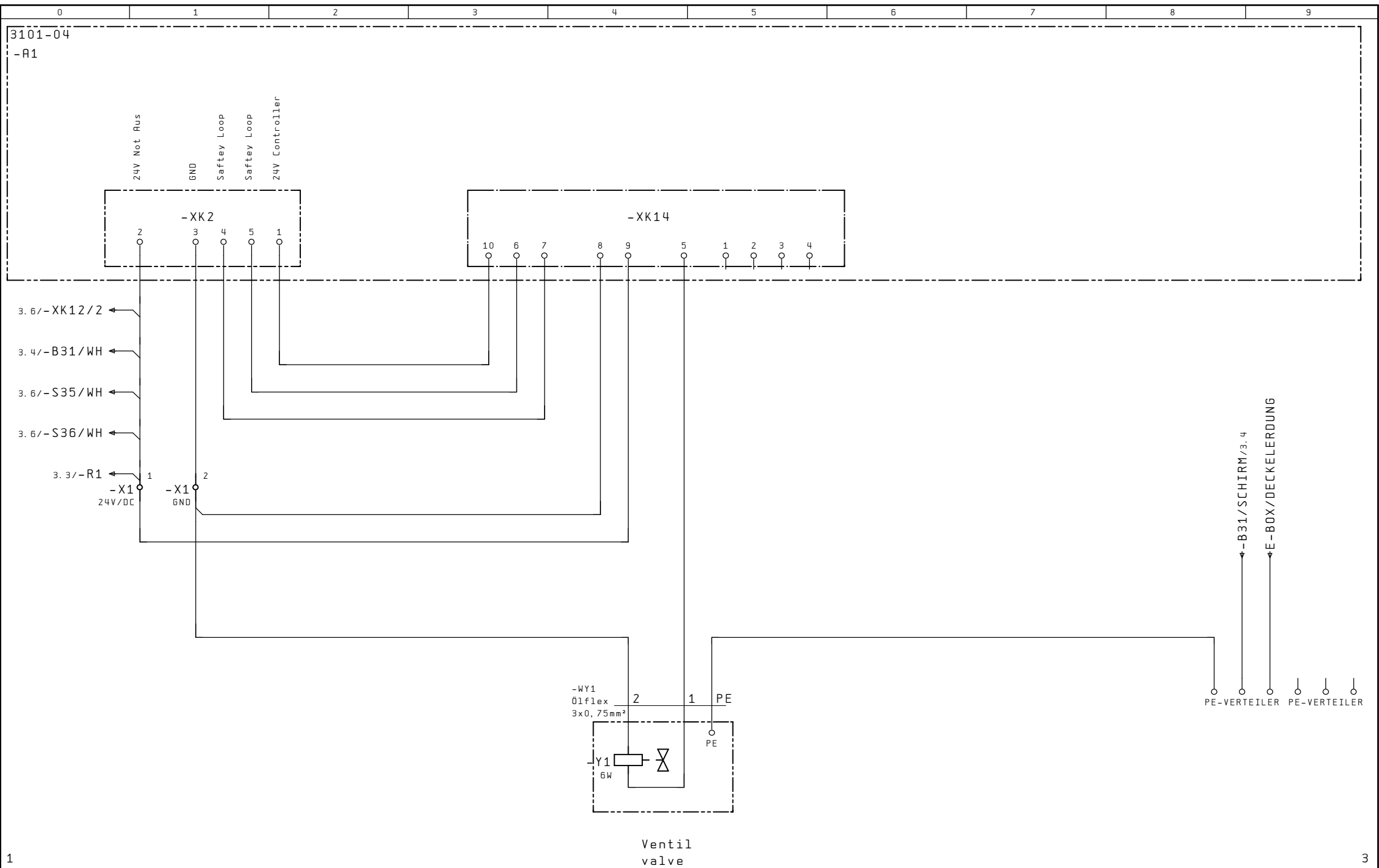





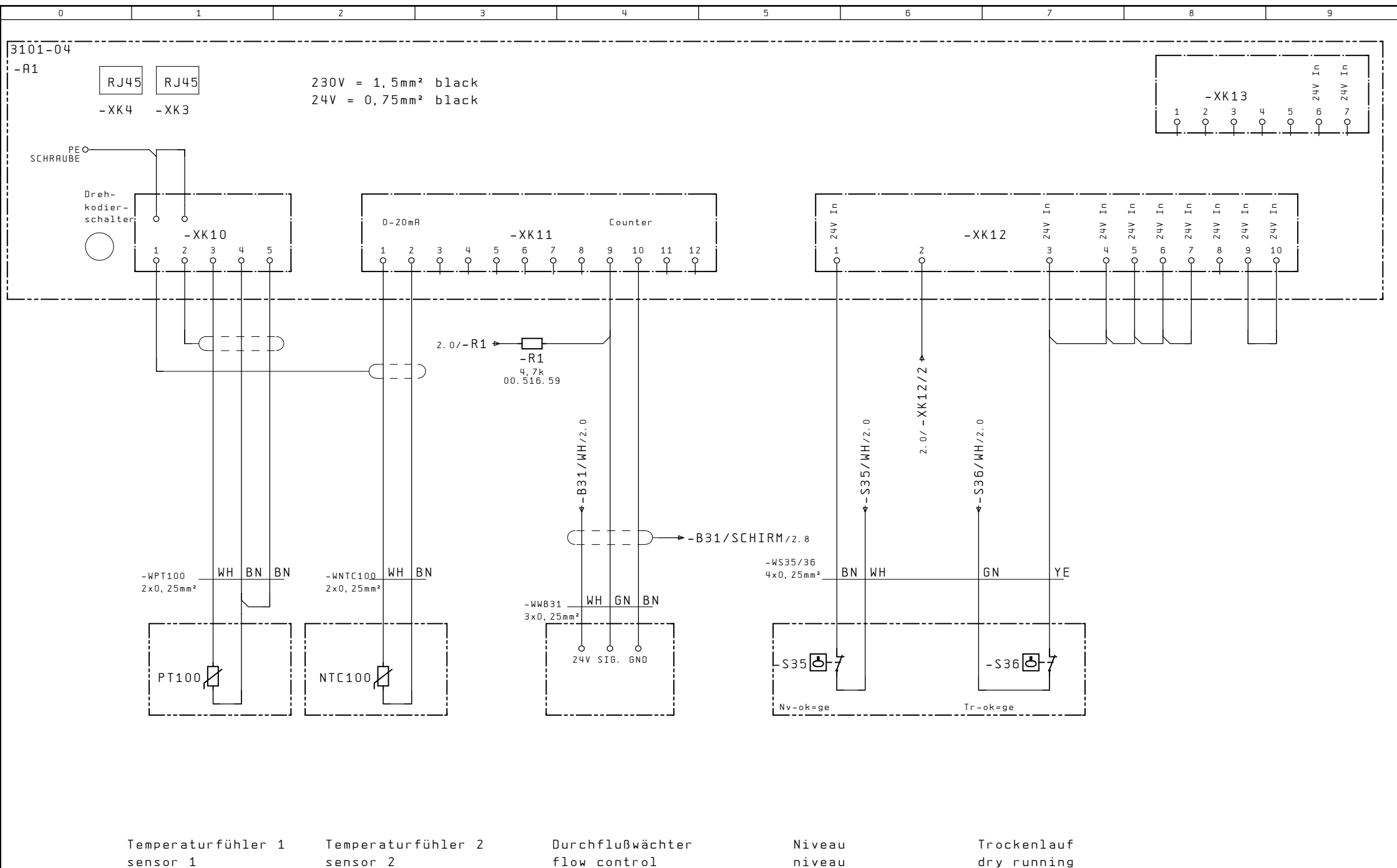





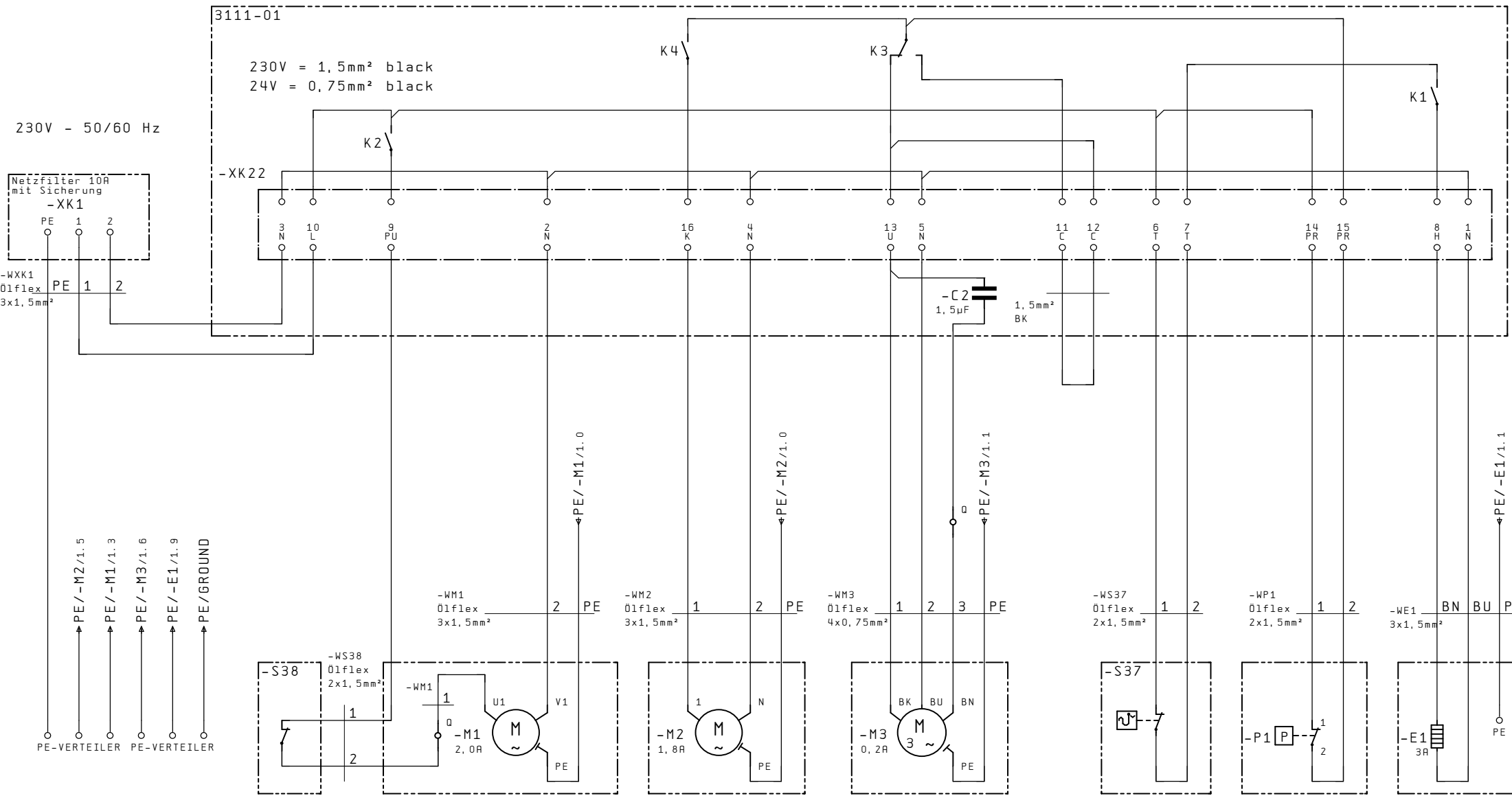
|            |       |          |      |        |               |   |            |  |                      |  |                    |           |  |               |
|------------|-------|----------|------|--------|---------------|---|------------|--|----------------------|--|--------------------|-----------|--|---------------|
| -B31/Über  |       | 09.12.09 | Arbo | Datum  | 28. Sep. 2005 |  | RKH/W 500L |  | H. I. B              |  | 00.202.38S         |           |  |               |
| Kabeleinf. |       | 05.10.09 | Arbo | Bearb. | Arbo          |   | Rofin      |  | Robert-Bosch-Str. 15 |  |                    |           |  |               |
| Kabeleinf. |       | 20.07.09 | Arbo | Gepr.  | 19. Jul. 2010 |   |            |  | 86167 Augsburg       |  |                    |           |  |               |
| Anderung   | Datum | Name     | Norm | Urspr. | Ers. f.       | Ers. d.   |            |  |                      |  | Anderungsstand: A6 | 10.006.00 |  | B1. 1<br>4 B1 |



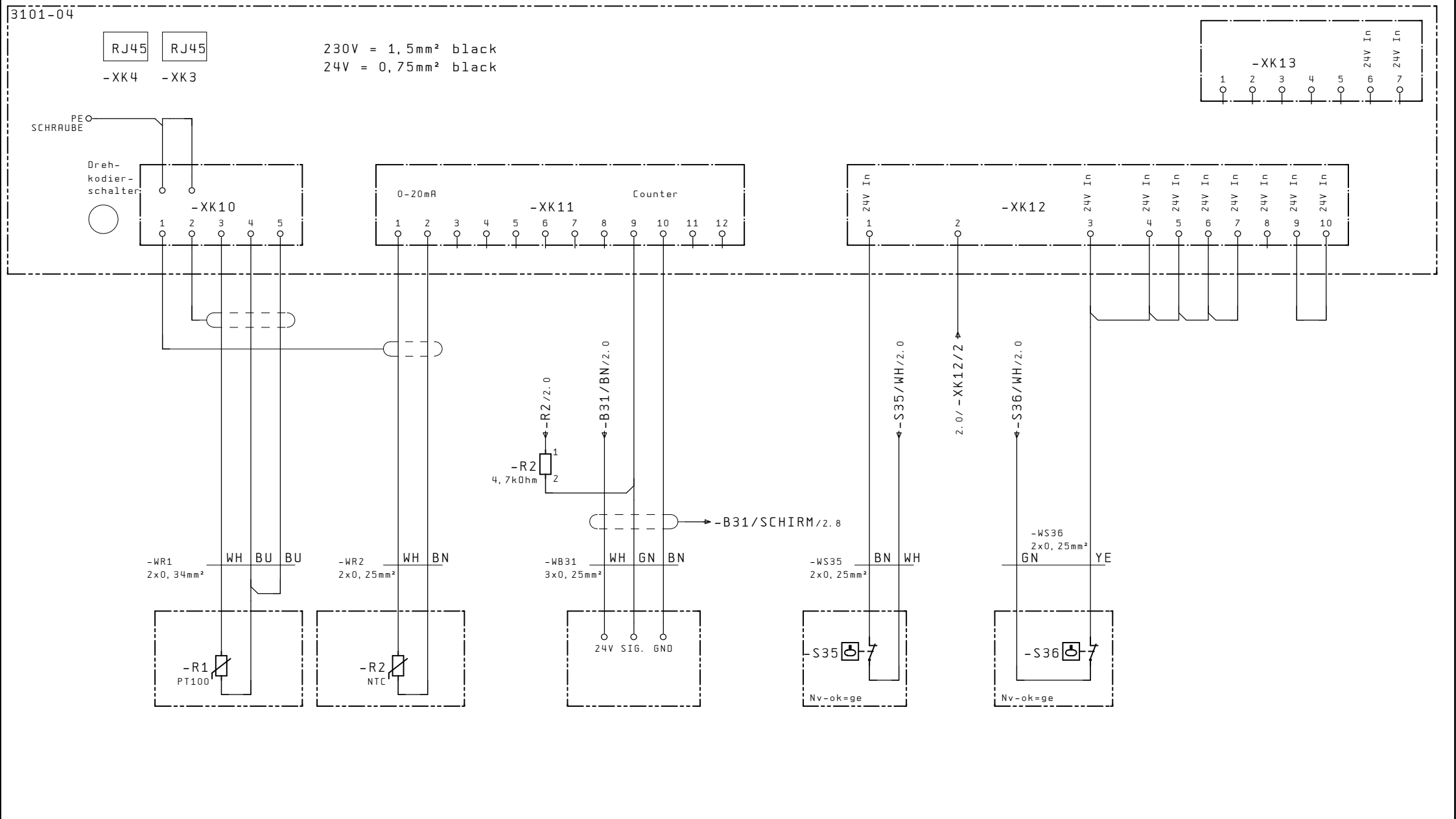
|            |  |  |          |               |  |  |               |         |   |       |                       |  |           |  |     |  |   |
|------------|--|--|----------|---------------|--|--|---------------|---------|---|-------|-----------------------|--|-----------|--|-----|--|---|
|            |  |  | Datum    | 28. Sep. 2005 |  |  | RKH/W 500L    |         | H. I. B<br>Robert-Bosch-Str. 15<br>86167 Augsburg |       | 00.202.38S            |  | =         |  |     |  |   |
|            |  |  | Bearb.   | Arbo          |  |  |               |         |   |       |                       |  | +         |  |     |  |   |
| -B31/Über  |  |  | 09.12.09 | Arbo          |  |  |               |         |   |       |                       |  |           |  |     |  |   |
| Kabeleinf. |  |  | 05.10.09 | Arbo          |  |  | Rofin         |         |   |       | Änderungsstand:<br>R6 |  | 10.006.00 |  | B1. |  | 2 |
| Kabeleinf. |  |  | 20.07.09 | Arbo          | Gepr.  |  | 19. Jul. 2010 |         |   | 4 B1. |                       |  |           |  |     |  |   |
| Änderung   |  |  | Datum    | Name          | Norm   |  | Urspr.        | Ers. f. | Ers. d.   |       |                       |  |           |  |     |  |   |



|            |  |          |      |        |               |  |  |            |                      |                       |  |           |       |
|------------|--|----------|------|--------|---------------|--|--|------------|----------------------|-----------------------|--|-----------|-------|
| 331/Über   |  | 09.12.09 | Arbo | Datum  | 21. Nov. 2008 |  |  | RKH/W 500L | H. I. B              | 00.202.38S            |  | =         |       |
| Kabeleinf. |  | 05.10.09 | Arbo | Bearb. | Arbo          |  |  | Rofin      | Robert-Bosch-Str. 15 |                       |  | +         |       |
| Kabeleinf. |  | 20.07.09 | Arbo | Gepr.  | 19. Jul. 2010 |  |  |            | 86167 Augsburg       | Änderungsstand:<br>A6 |  | 10.006.00 | B1. 4 |
| Änderung   |  | Datum    | Name | Norm   | Urspr.        |  |  | Ers. f.    | Ers. d.              |                       |  |           | 4 B1. |







**Einbauerklärung nach Maschinenrichtlinie 2006/42/EG**  
*Declaration of Incorporation acc. to Directive 2006/42/EG)*

**Firma:** H.I.B Systemtechnik GmbH  
*Company:*

**Anschrift:** Winterbrückenweg 30  
*address:* D- 86316 Friedberg / Derching  
**Tel.:** +49 (0) 821 – 747 71 40

**als Hersteller erklärt für folgendes Produkt (unvollständige Maschine):**  
*as manufacturer declares for the following product (partly complete machinery):*

**Bezeichnung:** Wasserrückkühler /  
*designation:* Ölrückkühler

**Modell:** RKH/ xxxxx  
*model:* RK/ xxxxx

**dass die grundlegenden Anforderungen der o.g. Richtlinie anwendbar sind und – soweit für die unvollständige Maschine zutreffend - eingehalten werden.**

*that the essential requirements of the a.m. directive are applicable and – as far as applicable for the partly complete machinery – will be adhered.*

**Risikobeurteilung und -analyse wurden nach Anhang I 2006/42/EG Artikel ausgeführt.**  
*Risk assessment and analysis are implemented according to appendix I 2006/42/EG.*

**Die speziellen technischen Unterlagen gemäß Anhang VII Teil B Richtlinie 2006/42/EG wurden erstellt und werden der zuständigen Behörde auf begründetes Verlangen elektronisch übermittelt.**

*Relevant technical documentation in accordance with appendix VII part B directive 2006/42/EG were provided and are conveyed electronically to the responsible authority on justified demand.*

**Die Inbetriebnahme ist so lange untersagt bis festgestellt ist, dass die Maschine, in die die unvollständige Maschine eingebaut werden soll, den Bestimmungen der o.g. Richtlinien entspricht.**

*The operating is not permitted until it is ascertained that the machine, into which the partly complete machinery is to be built in, corresponds to the regulations of the a.m. directives.*

**Bemerkungen / Remarks:**

Folgende Anforderungen der Richtlinie Maschinen (2006/42/EG) wurden berücksichtigt:

Anhang I, Artikel 1.1.2, 1.1.3, 1.1.5, 1.2.1, 1.2.2, 1.2.3, 1.2.4, 1.3.1, 1.3.2, 1.3.3, 1.3.4, 1.3.6, 1.3.7, 1.3.8.1, 1.3.8.2, 1.4.1, 1.4.2, 1.5.1, 1.5.4, 1.5.5, 1.5.6, 1.5.8, 1.6.3 und 1.6.4

**Dokumentationsbevollmächtigter / Representative for documentation:**

**Name:** Monika, Brugger  
*name:*  
 e-mail: m.bugger@h-i-b.de

**Anschrift:** H.I.B Systemtechnik GmbH  
*address:* Winterbrückenweg 30  
 D – 86316 Friedberg / Derching

**Ausstellungsort/-datum:** Derching, 22.01.2010  
*place / date*

**Funktion des Unterzeichners** Geschäftsführer  
*Role of signee:*

**Name des Unterzeichners:** Artur Kraus  
*name:*

**Unterschrift:**  
*signature:*