

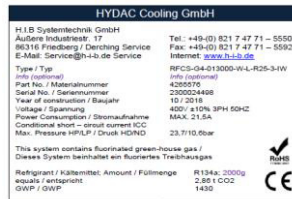


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**Installation and maintenance manual  
for  
cabinet cooler**

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## 1.0 Name plate



*hier kleben*

### 1.1 Model code

<i>Example</i>	<b>HCC-</b>	<b>S-</b>	<b>C-</b>	<b>01000--</b>	<b>O-</b>	<b>1-</b>	<b>UL-</b>
<b>Mounting position</b> <b>S</b> = Side / Seitlich <b>T</b> =Top / Oben							
<b>Cooling system</b> <b>C</b> = Compressor <b>A-W</b> = Air-Water / Luft-Wasser <b>A-A</b> = Air-Air / Luft-Luft							
<b>Cooling capacity</b> in watts(W)							
<b>Mounting location</b>							
<b>Supply voltage</b>							
<b>Other information</b> (optional, for example UL)							

## Scope of the installation and maintenance manual

This Installation and maintenance manual covers the recoolers:

See Annex and technical data sheet.

Read the Installation and maintenance manual before startup .

Keep and make available these Installation and maintenance manual for further use!



**WARNUNG**

The unit is not suitable for use in an explosible atmosphere.

The unit must not be used for cooling flammable or explosible substances.

This operating manual was made to the best of our knowledge. Nevertheless and despite the greatest care, it cannot be excluded that mistakes could have crept in. Therefore please understand that in the absence of any provisions to the contrary hereinafter our warranty and liability – for any legal reasons whatsoever – are excluded in respect of the information in this operating manual. In particular, we shall not be liable for lost profit or other financial loss. This exclusion of liability does not apply in cases of intent and gross negligence. Moreover, it does not apply to defects which have been deceitfully concealed or whose absence has been guaranteed, nor in cases of culpable harm to life, physical injury and damage to health. If we negligently breach any material contractual obligation, our liability shall be limited to foreseeable damage. Claims due to the Product Liability shall remain unaffected. In the event of translation, only the original version of the operating manual in German is legally valid. The operator of the cooler shall ensure that all written information and warnings are in the official language(s) of the community where the chiller is placed on the market / put into service.

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## 2.0 Foreword

The Installation and Maintenance Instructions are intended to help you to become acquainted with the cooler/system and make use of its possible applications as intended.

The Installation and Maintenance Instructions aim to increase the safety of the workers and consumers in all life phases of the device.

The Installation and Maintenance Instructions should only be used in conjunction with the attached additional documents. The additional documents are supplementary. If both documents describe the same function, the additional documents have a higher priority.

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.

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

The Installation and Maintenance Instructions must be read and applied by everyone:

- **Operation**
- **Specialist electrician**
- **Specialist personnel**
- **Cooling specialist**
- **Qualified personnel for transport and storage**

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.



**WARNING**

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

**NOTE**

Please check the type of manual (see Annex, Type List) against the label on your device. This installation and maintenance manual is only valid for the device mentioned in annex.

## 3.0 Machinery Directive 2006/42/EC

The Installation and Maintenance Instructions were revised on 2020-04-29 in accordance with the Machinery Directive 2006/42/EC.

Equivalent in the Machinery Directive	Implementation measures
Avoid accidents by increasing the safety in the design of the device	Inherent design, potential hazards are discovered and reduced in the design process. Design manual with key information on inherent design available to all designers.
Provision of safety of persons, in particular through employees and consumers	Installation of electric and mechanical safety parts
CE marking in accordance with industrial standard alongside manufacturer's information	CE marking alongside name plate
Risk assessment	Risk assessment and risk minimisation measures carried out
Documentation	Adapted
Compliance with harmonised industrial standards	Taken into account in the risk analysis

*Table in accordance with number 34 of the Inter-institutional Agreement on Better Lawmaking  
Equivalencies between the Machinery Directive 2006/42/EC and implementation measures.*

## 4.0 Warning notes and symbols

### 4.1 Symbols



WARNING

#### **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

#### **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

#### **NOTE:**

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






MANDATORY

#### **MANDATORY:**

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





## 4.1.1 Warning notices and symbols used

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

 <b>WARNING</b> General hazards	 <b>WARNING</b> Hazard by electrical current	 <b>WARNING</b> Automatic start	 <b>WARNING</b> Hot surface
 <b>WARNING</b> Warning against cuts	 <b>WARNING</b> Explosive substances	 <b>WARNING</b> Corrosive substances	 <b>WARNING</b> Danger of freezing
 <b>MANDATORY</b> Wear protective gloves	 <b>MANDATORY</b> Wear protective clothing	 <b>MANDATORY</b> Wear eye protection	 <b>MANDATORY</b> Wear foot protection



## 4.1.2 Personal protective equipment (PPE)

Pictogram	Description
	Protective gloves, mechanical hazard (7010-M009) Protective gloves are used to protect the hands from friction, grazing, piercing injuries or deeper injuries and from making contact with hot surfaces.
	Protective work clothing (7010-M010) Protective work clothing is tight-fitting work clothing with low tearing strength, with tight sleeves and without any protruding parts.
	Safety goggles (7010-M004) Safety goggles serve to protect the eyes from flying parts and spraying liquid.
	Wear foot protection (7010-M008). The mandatory action signs label work areas where suitable work protection shoes or boots must be worn.

## 4.2 Safety / Prevention of accidents

### 4.2.1 General notes

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

Commissioning refers to the initial use, as intended, of a device covered by the Machinery Directive in the European Community, i.e. the time at which the device must be compliant with the Machinery Directive and all other EU directives and EU regulations that apply to the device.

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

### 4.2.2 Observe regulatory information

Observe the following regulatory information and directives:

- Legal and local regulations for accident prevention
- Legal and local regulations for environmental protection
- Country-specific regulations, organisation-specific regulations

## 4.2.3 Qualification and training of personnel

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.

Designation	Description
Operator	Operators have been instructed by the owner about the tasks allocated to them and possible risks in case of inappropriate behaviour. Tasks which go beyond the scope of normal operation may only be performed by the operator if specified in these Operating Instructions and expressly authorised by the owner.
Specialist electrician	Specialist electricians have sufficient specialist training, knowledge and experience and awareness of the relevant industrial standards and regulations to allow them to perform work on electrical systems and independently recognise and avoid potential hazards. Specialist electricians have been specially trained for the specific operating location in which they work and are aware of the relevant industrial standards and regulations.
Specialist personnel	Specialist personnel have sufficient specialist training, knowledge and experience and awareness of the relevant industrial standards and regulations to allow them to perform work assigned to them and independently recognise and avoid potential hazards.
Cooling specialist	Cooling specialists have been trained and certified for the specific operating area in which they work and are aware of the relevant industrial standards and regulations. The certification includes the required skills for the prevention of emissions, the recovery of fluorinated greenhouse gases and safe handling of cooling equipment of the relevant type and size. Cooling specialists have sufficient specialist training and experience to allow them to perform work on cooling systems and independently recognise and avoid potential hazards.
Skilled personnel for transport and storage	These personnel must be familiar with and have received instruction in the handling of lifting equipment and accessories for transporting machinery and machine parts, in addition to hydraulic units.

## 4.2.4 Dangers when the notes on safety are ignored

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.

## 4.2.5 Safety - conscious working

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

## 4.2.6 Notes on safety for the user / operator

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 person on:

- the dangers when handling refrigerating plants and cooling
- The safety regulations
- 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)

### **4.2.7 Notes on safety for maintenance, inspection and assembly work**

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.

### **4.2.8 Unauthorised modification or use of spare parts**

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

## 5.0 Reference

### 5.1 Instructions for use

- Please find out even before starting up about the measures for installation, set up, operation and maintenance
- These operating instructions contain basic advice that is to be observed during start-up, operation and maintenance
- No liability is accepted by the manufacturer for damage and operating faults that arise from a failure to observe these manual.

### 5.2 Residual risks, arranged by risk reduction measures

(according to DIN EN ISO 12100)

#### 5.2.1 Residual risks on the housing

Risk	Risk reduction	Residual risk
Shape, edges, corners	Avoidance of sharp edges and corners, protective clothing	Quality of sheet metal and other purchased parts
Mechanical stability	Design-based	Negligent behaviour
Stability against tipping over	Design-based	Incorrect transport
Kinetic energy, fan	Guard device	Power failure during testing. Negligence
Hazards arising from noise	Fans configured in accordance with legal limits	Personal hypersensitivity

#### 5.2.2 Residual risks in the water circuit

Risk	Risk reduction	Residual risk
Shape, edges, corners	Avoidance of sharp edges and corners, protective clothing	Quality of fittings and other purchased parts
Mechanical stability	Design-based, components selected on basis of suitability and specification	Transport damage, installation error

## 5.2.3 Residual risks of electric system/electronics

Risk	Risk reduction	Residual risk
Shape, edges, corners	Design-based, avoidance of sharp edges and corners	Negligent behaviour, quality of sheet metal and purchased parts
Stability against falling off, breaking off	Design-based, prescribed distancing and regulations are observed.	Negligent behaviour
Mechanical stability	Design-based, mechanical components and other purchased parts are used on basis of suitability and specification.	Part error, installation error
Live components	Training and instruction, earthing/protective conductor, secure covering, use of warning signs	During inspection and service work, it may be necessary to work on live parts.
Live components, controller in faulty condition	Training and instruction, earthing/protective conductor	During inspection and service work, it may be necessary to work on live parts.
Live equipment, faulty condition	Design-based, coordination between the grid form, the earthing system and the fuses, warning signs, electrical inspections	During inspection and service work, it may be necessary to work on live parts.
Live components, sensors, faulty condition	Design-based, safety extra-low voltage, qualified personnel	Negligent behaviour
Short circuit or overload	Design-based, overload protection, earthing, warning signs	Negligent behaviour Misuse

## 5.3 Safety instructions

### 5.3.1 When removing housings

- The device should be disconnected from the power supply
- You should check whether the fan has stopped turning. If this is the case, then the repairs and maintenance may be carried out.
- 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.



#### WARNING

Affixed on the packaging instructions for transport and storage must be observed!

- 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 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.

- 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.

### 5.3.2 Improper operating modes

The operating safety of the delivered machine / unit is only guaranteed with proper use. The limit 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.

### 5.3.3 Staff qualifications and training

The personnel for the operation, maintenance, inspection and installation must be suitably qualified for his work. The staff's areas of responsibility and supervision must be precisely specified by the operating firm.

### 5.3.4 The device's emission of airborne noise (see technical data sheet)

As the work area or work areas are not specified or cannot be specified, the measurements of the A-weighted sound pressure value are taken at a distance of 1m from the device surface and 1.60m above the ground. The highest emission sound pressure value is given (see technical data sheet).

## 6.0 General description of the unit

### 6.1 Usage to the intended purpose

The HCC Series conditioners are designed for wall installation and operating in vertical position. The air conditioners can't be used or transported in a different position from the one for which they were designed. Air conditioners are not suitable for installation on commercial and residential ambient. They are not suitable to be used by person (included children) with physical, sensory, mental capacities are reduced, or with lack of experience or knowledge, unless they could to take advantage, with intermediation of a responsible person of their security, overseeing or instruction about use of device/unit. Children have to be supervised to make sure they don't play with unit. Air conditioners can't be installed on mobile part, on devices/parts that transfer vibration, oscillating parts, inclined parts (not levelled). In general air conditioners can't be installed on following situations: zone strong heat radiation, with strong magnetic fields, with free flames, with fire risk, with inflammable products, with explosive atmosphere, with saline atmosphere, with aggressive atmosphere. For any doubt, please consult the manufacturer.



**WARNING**

Warning:

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



**ATTENTION**

Before each opening of enclosure, where one or more air conditioners are installed, it is necessary to switch off power supply of unit

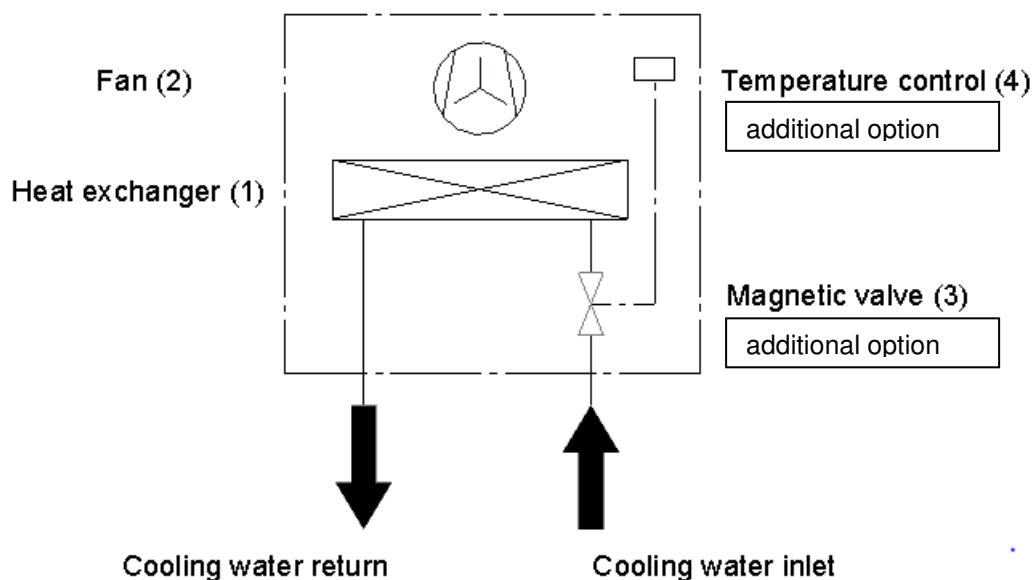
## 6.2 Operating principle

The air conditioners are designed to cool electric cabinets with degree of protection IP54 and are suitable for industrial environments.

Air/water heat exchanger are particularly appropriate for the temperature range of up to +70°C where comparable units, such as air/air heat exchanger, enclosure cooling units or fan-and-filter units, cannot be used for system reasons to effectively and economically dissipate heat loss.

Air conditioners cannot be used outside safety limits specified on the name-plate. Conditioners must not be transported or used in positions that differ from those for which they were designed. The manufacturer is not responsible for any malfunctions caused by failure to comply with these instructions. The operator bears the entire risk.

The air/water heat exchanger consists of the essential parts heat exchanger (1) and fan (2).



The heat loss from the cabinet is transferred to the cooling medium water in a finned heat exchanger. A fan (2) blows the internal enclosure air over the heat exchanger (1); except for the inlet and outlet water and the condensed water discharge, the unit is closed to the environment. The magnetic valve (3 option) controls the cooling output by changing the water flow volume depending on the required setpoint temperature and the water inlet temperature.

## 7.0 Unpacking and handling

A visual inspection must be performed before and during unpacking in order to discover any damage that might have occurred during transportation.

Please watch out for loose parts, dents, scratches etc.

Any damage is to be reported immediately to the transport company (Note „Terms concerning instances of damage“). More over ZVEI's "Standard terms and conditions" in the relevant latest version apply.

Before the packaging material is disposed of, it is necessary to check whether there are any loose functional parts still in it.

To permit claims under the guarantee to be processed, we request precise information of the defect (possibly a photo) and a statement of the description of the devices's serial number.



### ATTENTION

If the product cannot be installed immediately or needs to be transported to its final destination, after checking it should be repacked in its original packing and stored in a protected location.

Storage limits: temperature (min:-40°C, max:+60°C), humidity (max 90%, not condensing).

### 7.1 General information

In the event of transportation, we recommend emptying the device's liquid container.

Please always keep the device in its operating orientation when handling it.

Work on the device may only be performed by experts. The relevant safety and environmental regulations are to be observed.

In the design of the devices following standards were used:

- EG- machinery Directive 2006/42/EG
- DIN EN ISO13732-1:2008-12 Ergonomie der thermischen Umgebung
- EG- Low Voltage Directive
- DIN EN ISO12100-1, -2 Safety of machinery
- EN 60204-1 Electrical equipment of machines

The device has been checked at the factory as regards its seals.

It is certified that the device has been subjected to an electrical safety test in the factory before being dispatched.

### 7.2 Technical Data and type plate

Please find the technical data in the annex.

The information on the plate is to be noted when giving statements and for maintenance. It is located on the side of the device.



## 8.0 Installation

Make sure following points before installation:

- cabinet on which the air conditioner has to be installed has a IP54, or higher, protection degree
- make sure that available voltage is correct
- the interior of the cabinet is clean
- holes, screws, wires do not interface with the equipment already installed
- air conditioner will work on vertical position (laid perfectly)
- cabinet is not located near to heat sources or hot air flows
- if it installed on the door, make sure that the hinges can support the weight of the unit
- if the depth of the exchanger prevents the door from opening fully, fit a door stop
- make sure that there is enough space both internally and externally
- the internal of the cabinet allows a correct circulation of air, avoiding recirculation
- make sure that it is possible to carry out a correct system of discharge of condensate



**NOTE**

it is recommended to install the unit as high as possible

## 9.0 Installation of air conditioner



**WARNING**

Disconnect the power supply of the cabinet before carrying out any work on the cabinet

### 9.1 Selection of the cultivation situation see accessory material

#### 9.1.1 Mounting with screws

- Make the holes in according the dimension sheet
- Fasten the unit through the holes in the mounting surface from the inside of the cabinet using the appropriate washers, spring washers and screws.

#### 9.1.2 Mounting with stud bolts

- Make the holes in according the dimension sheet
- Insert the 4 spacers (external thread) into the mounting surface through the holes, and secure from the inside of the enclosure using the relevant washers and nuts.
- Push the device over the spacers and secure with the relevant washers and screws
- Twist the side locking screws in the enclosure cover in a clockwise direction as far as they will go, until the sealing tape adheres securely (max. 2.0Nm).
- Using the stoppers, seal the 4 openings in the cover.

### 9.2 Connecting the condensate discharge

A flexible condensate discharge hose Ø 12mm can be fitted to the air/water heat exchanger

## The condensate discharge

- must be laid with a suitable and constant gradient (no siphoning).
- must be laid without kinks.
- must not have a reduced cross-section if extended

Connect a suitable hose to the condensate nozzle (at the bottom of the unit) and secure it with a hose clip.

Lay the condensate hose, e.g. into a drain.

To prevent the water from backing up, the hose cross-section must not be restricted!

## 9.3 Connecting the water connection

In its delivered state, a compression-proof, flexible cooling water hose Ø 12mm or a fixed pipework may be connected to the air/water heat exchanger for both the inlet and the return. For this solutions are G 1/2" male threads on the unit.



**NOTE**

The water circuit should be protected from ingress of dirt or excess pressure (maximum permitted operating pressure 10bar)!



**NOTE**

Observe the flow direction and check for leaks!



**NOTE**

The units do not have any separate ventilation. For pressure-sealed systems, install the appropriate ventilation equipment on the water side.

### 9.3.1 Venting / filling

When commissioning the control cabinet cooler for the first time, the device must be disconnected from the power supply to ensure complete venting.

### 9.3.2 Specification of external water (optional)

Dirt particles have to be <200µm.

Visual nature: transparent, pure, free from oils and fats.

Dissoved matter in water	Unit	
pH-value considering to SI- Index		7 to 9
Saturation index (SI) (Delta pH-value)		-0,2<0<+0,2
Total hardness	°dH	<6
Conductivity	µS/cm	>200
filterable material mg/l	mg/l	<30
Chloride	mg/l	<100
Free chlorine	mg/l	<0,5

Hydrogen sulfide H <sub>2</sub> S	mg/l	<0,05
Ammoniac (NH <sub>3</sub> /NH <sub>4</sub> <sup>+</sup> )	mg/l	<2
Sulfate	mg/l	<100
Hydrogen carbonate	mg/l	<300
Hydrogen carbonate / Sulfate	mg/l	>1
Sulfide	mg/l	<1
Nitrate	mg/l	<100
Nitrite	mg/l	<0,1
Dissolved iron	mg/l	<0,2
Manganese	mg/l	<0,1
Dissolved aggressive carbon dioxide	mg/l	<20

## 9.4 Electrical connection

The cooling device is designed in accordance with the electrical circuit diagram (See annex). The direction or rotation of the axial fan is to be checked.



WARNING

It must be safeguarded in accordance with the current consumption of the chiller provided. See technical data sheet.



WARNING

Mains voltage and mains frequency must match the nominal values stated on the device's type plate.



WARNING

The unit must be integrated into the EMERGENCY–STOP circuit on the customer side and can thus be switched off without voltage.



WARNING

Work on electrical systems may only be performed by experts. The relevant local safety regulations are to be observed.

### 9.4.1 Overvoltage protection and supply line load

The unit does not have its own overvoltage protection. Measures must be taken by the operator at the supply end to ensure effective lightning and overvoltage protection. The mains voltage must not exceed a tolerance of  $\pm 10\%$ .

## 10.0 Service and maintenance

### 10.1 Inspection

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

### 10.2 Maintenance schedule

What needs to be checked?	When are checks needed?	How should checks be performed?
Electric system, safety	Every year	Visual inspection
Ribs of the heat exchanger	Customer-specific (depending on air contamination) (every six months recommended)	Visual inspection, if necessary clean
Condensate drain	Customer-specific (every six months and after commissioning recommended)	Visual inspection, if necessary clean

### 10.3 Maintenance generally



WARNING

Disconnect the chiller from all electrical power supplies and secure against inadvertent switching-on while carrying out maintenance.



MANDATORY

Wear protective gloves when you reach into this area. Increased risk of injury because of the sharp fins.



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.

## 11.0 For waste and recycling

The environmental requirements for recovery, recycling and disposal of materials and the refrigeration unit must be respected in accordance with DIN EN 378 and ROHS directives. For this purpose, the operator should be responsible.

## 12.0 Dismounting

### 12.1 Electric connection



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. Disconnect the chiller from all electrical power supplies.

## 12.2 Scrapping



WARNING  
WARNING

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

## 12.3 External water



WARNING

The external water system must be completely emptied by to avoid frost damage.

## 13.0 Guarantee terms and conditions

For the warranty provided by us, please refer to the General Conditions of Sale and Delivery of HYDAC Cooling GmbH. You will find these under [www.hydac.com](http://www.hydac.com) / AGB (General terms and conditions).

Damage and functional faults caused by incorrect handling or failure to observe the operating instructions do not fall within the terms of the guarantee. The guarantee is extinguished if the system structure has been interfered with or the serial number on the chiller has been changed or made illegible.

The chiller has been carefully tested and set in the factory. If you nevertheless have a complaint, please contact your contract partner with confidence. Please do not forget to tell us the name of your specialist or technician responsible in case of further enquiries.

### For the conservation of the following warranty please:

- Enclose a precise description of the defect with your letter.
- Enclose the proof of purchase in the form of a copy of a delivery note or invoice.
- Note on it the type and manufacturing reference number and serial number of the device.

## **14.0 Annex**

**14.1 Technical data**

**14.2 Spare parts list**

**14.3 Dimension sheet**

**14.4 Test report**

**14.5 Declaration of Incorporation / CE Declaration of Conformity**