

# **Acond Aconomis S, N, R**

## **Heat Pump - air - water**

### **Installation manual**

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## 1. Explanation of symbols, validity of documentation

### 1.1 Symbols used on labels

Brand Compliance



It proves that the product has been assessed before being placed on the market and meets EU legislative requirements - i.e. the manufacturer has verified that the product meets all relevant essential requirements (safety, health, environmental protection).



Caution, contains flammable refrigerant R290!!!

### 1.2 Symbols used



Important information that does not involve a risk to people or material values is marked with white letters and a blue circle. They are bordered from the text by a box.



Warning instructions in the text are marked by a red warning triangle with a white exclamation mark and bordered by a box

### 1.3 Validity of documentation

The instructions in this documentation apply to **Acond Aconomis®** heat pump models air/water with **ACOND® THERM** control with version sw 150.XX.

Failure to comply with these instructions during installation, operation and maintenance will void **ACOND a.s.**'s obligations under the warranty.

**ACOND a.s.** reserves the right to change parts of the documentation and specifications without prior notice.

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## 2. Important information



If the installation is not used in winter or cannot be started up for operational reasons (e.g. due to a serious malfunction) and is not filled with antifreeze, the water must be drained from the heating system, otherwise there is a risk of frost damage to the installation.



**!! Do not disconnect the heat pump from the power supply for an extended period of time (several days) !!! The backup battery may be discharged, the control software deleted and data lost. Any call-out of the technician will be charged according to the supplier's current price list.**



The equipment must not be operated by persons with insufficient experience and knowledge (including children) unless they are under the supervision of instructed persons responsible for their safety.

### 2.1 Security

- The equipment is safe to operate when used properly.
- The design and construction of the device are in accordance with the relevant DIN/VDE regulations.
- Each person working on the instrument must read, understand and follow the relevant instructions before starting work.
- Any person carrying out work on the equipment must comply with the locally applicable occupational safety and health regulations. This applies in particular to the use of personal protective clothing.

#### 2.1.1 Personal protective equipment



Any person carrying out maintenance and repair work must use protective equipment.

#### 2.1.2 Fire-fighting equipment

The device is safe under normal conditions. In the event of unforeseen circumstances and improper operation of the equipment, damage and fire may occur. Fire extinguishers suitable for extinguishing electrical equipment must be used to extinguish the fire, i.e.

- Powder extinguisher
- Snow extinguisher



**Caution, the unit contains flammable refrigerant!  
In the event of a refrigerant leak, disconnect the unit from the power supply and contact the**



**Caution, the unit contains flammable refrigerant!  
In case of fire, disconnect the equipment from the power source and call 112!**



**No handling of open flames near the outdoor unit!**

## 2.1.3 Treatment of the device



Do not use chlorine to treat painted and stainless steel surfaces and avoid abrasive materials and wire!

Treat lacquered and polycarbonate surfaces with a damp cloth and detergent and then wipe the surface dry with a soft cloth.

You can treat stainless steel surfaces:

- Special preparations for stainless steel materials that polish and protect the surface
- Detergent can be used to degrease



Due to the risk of damage to the heat pump casing, do not use any type of spray around the heat pump. This applies in particular to: solvents

Cleaning agents containing chlorine  
Colors  
Adhesives

## 2.1.4 Installation and Maintenance

- Observe the locally applicable regulations!
- Only install the heat pump outdoors or in mechanical rooms that comply with EN 378-3!
- A degasser with a safety valve suitable for R290 refrigerant (e.g. degasser - DF DG HP 32 E - G 5/4" MMM VS Smart Plus 2.5 bar with insulation) must be installed at the water outlet of the heat pump to drain the refrigerant to the outside in case of failure of the plate heat exchanger in the pump.
- A non-return valve must be installed at the water inlet of the heat pump.
- Do not install heat pumps in aggressive environments or in environments with higher salt content in the air!
- If the condensate is discharged into the waste pipe, it must be at a non-freezing depth on the pipe or inside the building where there is no risk of freezing, a siphon shall be placed.
- Do not install heat pumps in ventilation systems!
- Do not constrict or obstruct the sides of the heat pump!
- Never start the heat pump when the fan cover is removed!
- Installation, maintenance and repairs may only be carried out by authorised installers (*see chap. 15*)

## 2.1.5 Life-threatening electric shock

- Before opening the heat pump or carrying out work on electrical parts, disconnect the mains voltage completely and take precautions against accidental switching on.
- Have only a qualified electrician carry out the electrical connection and work on the electrical parts.
- When installing and carrying out electrical work, follow the relevant EN, VDE or locally applicable safety regulations.



### Electric current warning

- Only carry out all electrical installation work and electrical connections in accordance with national and local regulations.
- The connection to the mains must be made as a fixed connection only.
- The device must be able to be disconnected from the mains at all poles at a distance of at least 3mm.
- This requirement is met by the use of circuit breakers, switches, fuses, etc.
- If current protectors are required by local regulations, these type B protectors must be sensitive to all types of currents (RCDs).

### 2.1.6 Risk of injury due to frost



At the air outlet of the heat pump, the air temperature is about 5 °C below the ambient temperature, so the surroundings can be icy and slippery.

## 2.2 Service inspections and maintenance



The operator is responsible for the safety and environmental compatibility of the heat pump. If refrigerant leaks from a leaky area, personal injury or environmental damage may result.

If you find a leak that is leaking refrigerant, disconnect the heat pump from the power supply. The pump must be disconnected from the mains and secure the heat pump against accidental switching on (e.g. by written warning at the circuit breaker). Inform customer service.



**RISK OF INJURY!** Only authorized refrigeration technicians may work on the refrigerant circuit, see *chap.15*.

### 2.2.1 System modifications



Before you change the settings of the control computer, find out what these changes mean first! Do not make design changes that could affect the safe operation of the heat pump!

Only authorized installers may modify the following components:

- Heat pump unit
- Refrigerant and water piping, supply

## 2.3 Protection against damage



**Never stick foreign objects into the outdoor unit of the heat pump! The heat pump operates in intermittent automatic operation, the fan runs at high speed and injury may result.**

### 2.3.1 Water quality and volume

All water (including heating water) must meet the parameters for drinking water according to ČSN 252/2004 Coll., but in addition the maximum total hardness must be below 1.25 mmol/l, the chloride content below 85 mg/l and the pH between 6.8 and 8.0.

Table 1: Volume of water in the plant

Model	Acond Aconomis S	Acond Aconomis N	Acond Aconomis R
Volume of water in the device [l]	0,6	1,45	2,7

## Technical data

Table 2: Technical data

Model	Acond Aconomis S	Acond Aconomis N	Acond Aconomis R
Compressor	Double rotary EDTN180D32EFZ	Double rotary EDTM310D85EMT	Double rotary WHP37600PSKTQ9JK
Voltage code; protection*)	1~N/PE/230V/50Hz; B16A	1~N/PE/230V/50Hz; B16A	3~N/PE/400V/50Hz; B16A
Maximum current [A]	9	13	15
Starting current current [A]	<5	<5	<5
Degree of protection of the outdoor unit	IP24	IP24	IP24
Degree of protection of the indoor unit	IP20	IP20	IP20
Dimensions (HxWxD) [mm]	1060 x 650 x 450	1210 x 850 x 450	-
Pump weight [kg]	85	105	-
Prated [kW] **)	4	7,5	-
Maximum heat loss of the building [kW] ***)	-	-	-
Refrigerant	R290	R290	R290
Refrigerant weight [kg]	0,29	0,45	-
Maximum permissible pressure - high pressure section [bar]	30	30	30
Maximum permissible pressure - low pressure section [bar]	30	30	30
Acoustic performance at A7/W55 [dB(A)]	53	54	-
Air temperature limits [°C]	-25 to 38	-25 to 38	-25 to 38
Water temperature limits [°C]	20 to 75	20 to 75	20 to 75
Minimum water flow [m <sup>3</sup> /h]	0,22	0,3283	-
Maximum water flow [m <sup>3</sup> /h]	0,95	1,1738	-

\*) follow local regulations

\*\*) medium-temperature applications (A-10/W55) according to 14 825



\*\*\*) In the losses of the building (at -15°C) it is necessary to include the heating of DHW, swimming pool if they are installed. For the stated maximum losses of each model, it is necessary that the bivalent controlled source has a minimum power for model S - 5kW, for model N - 9kW.

Table 3: Performance parameters

Model	Acond Aconomis S	Acond Aconomis N	Acond Aconomis R
Prated [kW] *)**)	4	7,5	-
Seasonal energy efficiency [%]*)**)	156,9	149,5	-
Heating capacity A7/W35 EN 14 511 [kW]	2,74	4,758	-
COP A7/W35 EN 14 511 [1]	5,08	4,952	-
Heating capacity A7/W55 EN 14 511 [kW]	2,35	4,095	-
COP A7/W55 EN 14 511 [1]	3,18	3,075	-
SCOP W35 [1]**)	4,89	4,75	-
SCOP W55 [1]**)	4,00	3,81	-
Energy class - heating 35°C**)	A+++	A+++	-
Energy class - heating 55°C**)	A+++	A++	-
Cooling	YES	YES	YES

\*) Medium temperature application (55°C water temperature) according to 14 511

\*\*) Equithermal regulation

\*\*\*) The DHW heating and swimming pool, if fitted, must be included in the building losses (at -15°C). For the stated maximum losses of each model, it is necessary that the bivalent controlled source has a minimum output for model S - 5kW, for model N - 9kW.

### 3. Dimensional drawing of the heat pump

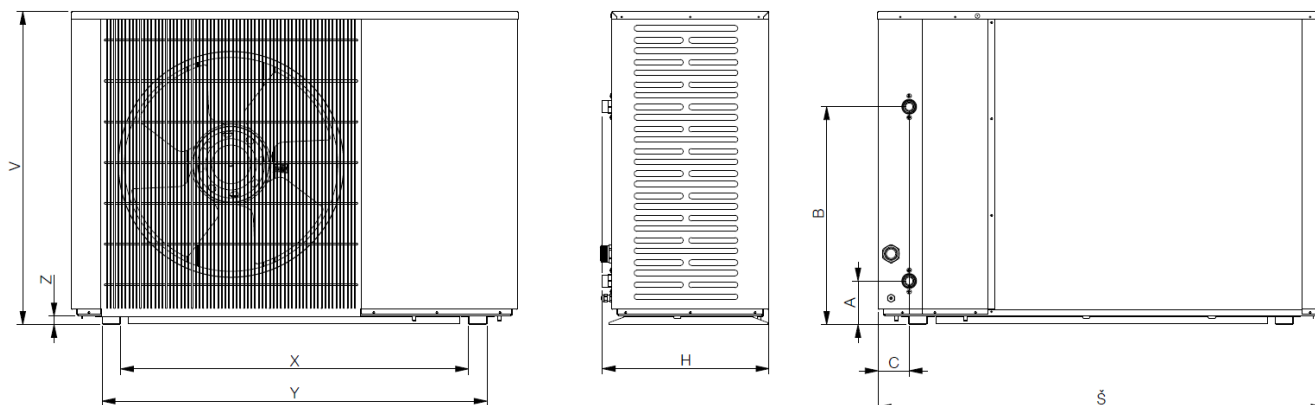


Image 1: Dimensional drawing of the heat pump

Table 4: Dimensional drawing

Type	Acond Aconomis S	Acond Aconomis N	Acond Aconomis R
V [mm]	650	850	-
W [mm]	1060	1210	-
H [mm]	450	450	-
A [mm]	130	118	-
B [mm]	409	589	-
C [mm]	142	84	-
X [mm]	775	918	-
Y [mm]	875	1018	-
Z [mm]	23	23	-
T -hot water	G1" DIN ISO 228	G1" DIN ISO 228	G1" DIN ISO 228
S - cold water	G1" DIN ISO 228	G1" DIN ISO 228	G1" DIN ISO 228

## 4. Manipulation



More than one person must be working while the equipment is being handled. The weight of the equipment must be taken into account, see **Table 2**.

The equipment must be transported to the installation site packed and secured on a wooden pallet. For handling of the equipment are the holes shown in red, see **Image 2** into which, for example, hooks are inserted.

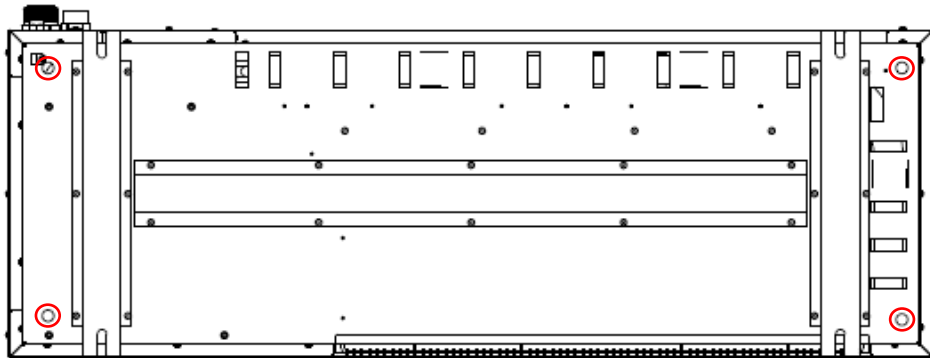


Image 2: Manipulation holes



During transport, the device must be sufficiently secured to prevent movement.

## 5. Place of installation

For all work carried out:

- It is necessary to comply with the regulations in force at the site, legal regulations, regulations and guidelines.
- Respect the noise data see **Image 3**.

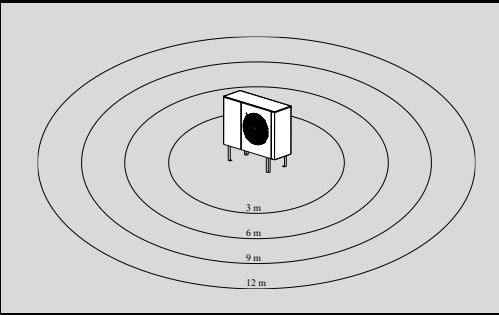
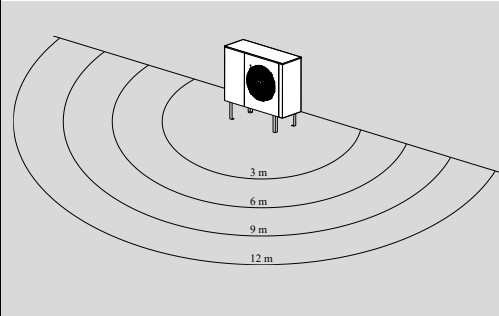
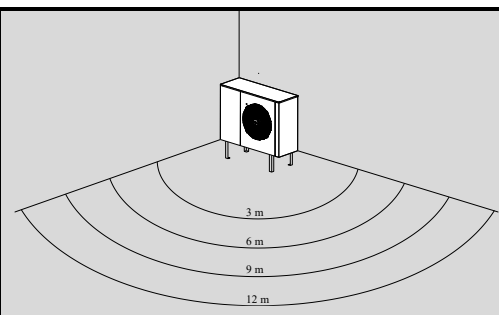
Sound pressure values (A7/W55) are measured according to EN 12 102-1 dB(A)				
Distance	Model			Illustrative picture
	Acond Aconomis S	Acond Aconomis N	Acond Aconomis R	
<b>IN OPEN SPACE</b>				
3m	35,5	36,5	-	
6m	29,5	30,5	-	
9m	25,9	26,9	-	
12m	23,4	24,4	-	
<b>AT ZDI</b>				
3m	38,5	39,5	-	
6m	32,5	33,5	-	
9m	28,9	29,9	-	
12m	26,4	27,4	-	
<b>IN THE CORNER</b>				
3m	41,5	42,5	-	
6m	35,5	36,5	-	
9m	32	33	-	
12m	29,5	30,5	-	

Image 3: Acoustic pressure

Refrigeration equipment located outdoors shall be arranged so as to prevent refrigerant leakage into the building or into areas where persons and property may be endangered. Refrigerant shall not be allowed to escape into any fresh air ventilation opening, doorway, trap door or similar openings in the event of a leak. There shall be natural or forced ventilation where a shelter is constructed for components of the refrigeration system located in an open area. There shall be no sources of ignition such as sockets, light poles, lamps or electrical switches in the protection zone, *see Image 4*.

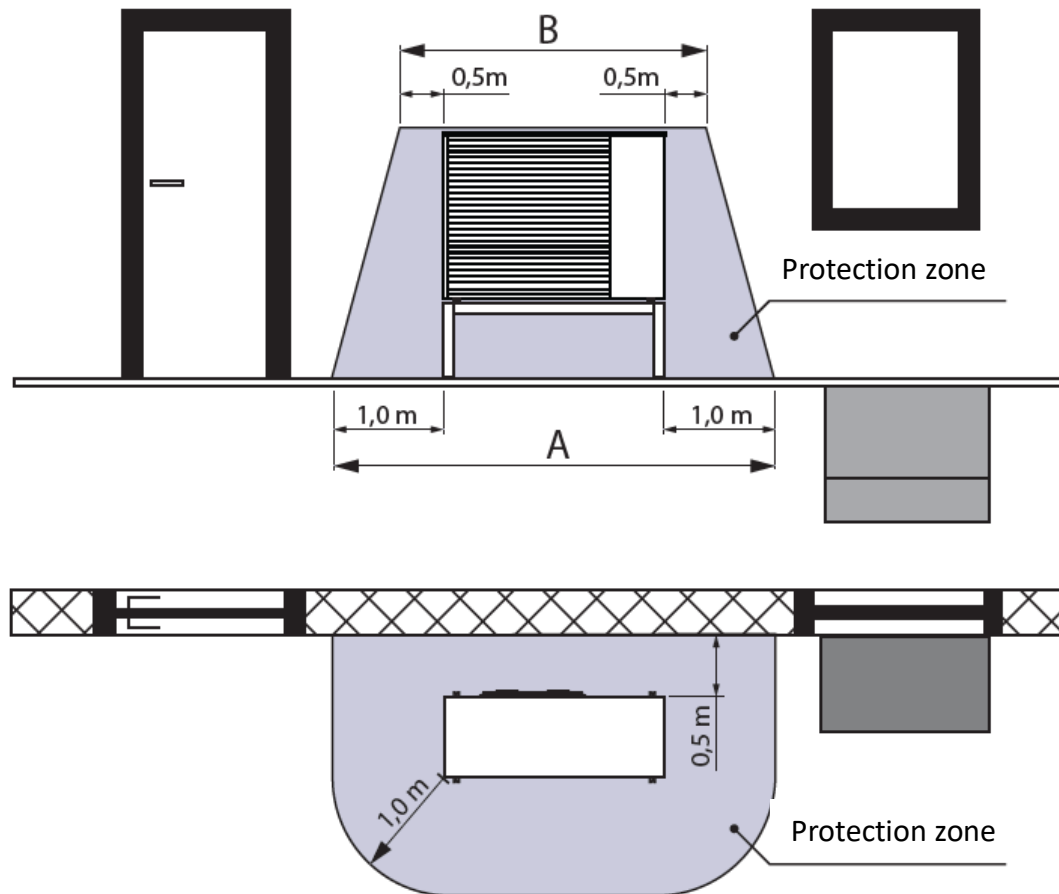


Image 4

Dimension	Acond Aconomis S	Acond Aconomis N	Acond Aconomis R
A	3060	3210	-
B	2060	2210	-

## 5.1 Information at the place of operation

The installer shall provide sufficiently protected documentation, which shall be located close to the operating point of the refrigeration equipment and shall be clearly legible. This information at the point of operation shall include at least the following information:

- Phone numbers for fire, police, hospital and burn centre
- Detailed flammability data

## 5.2 Foundation under the heat pump

The heat pump is mounted either on the supplied stool (optional equipment) or directly on the concrete base, which is raised above the ground level by the possible height of the snow cover and mounting profiles located at the bottom of the pump. Both placement options are described in the supplied **construction readiness instructions**. The concrete foundation must be load-bearing, solid and horizontal. It is not recommended to locate the heat pump near rooms with low noise requirements, e.g. next to a bedroom. Ensure that the outdoor unit will not disturb neighbours. The condensate drain flows freely into a properly prepared subfloor.

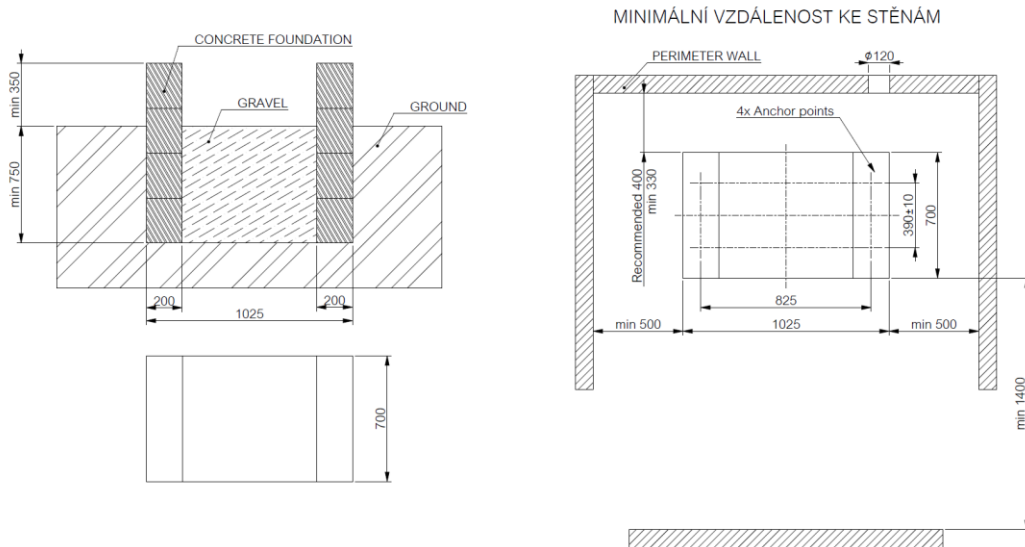


Image 5: Base under Acondomis S without stool under heat pump

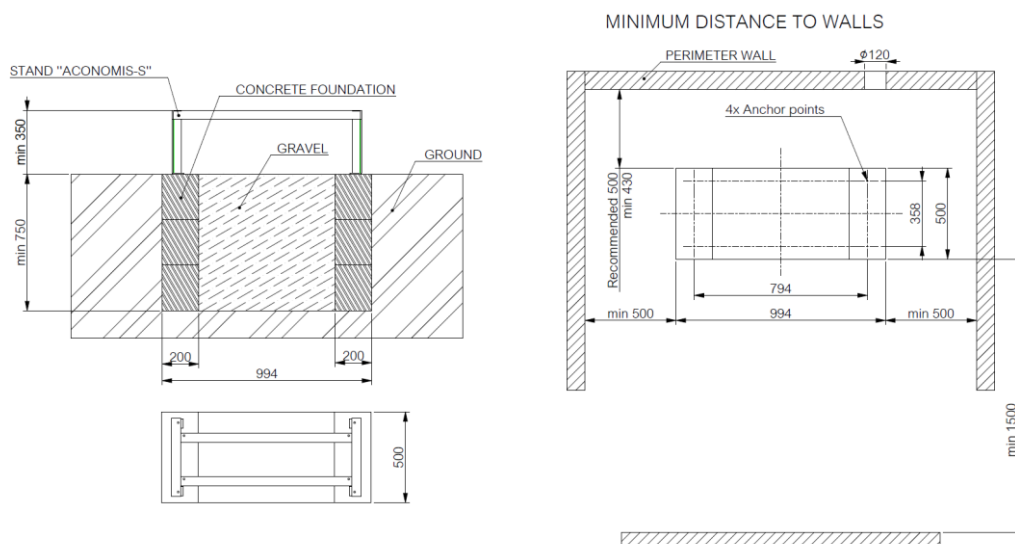
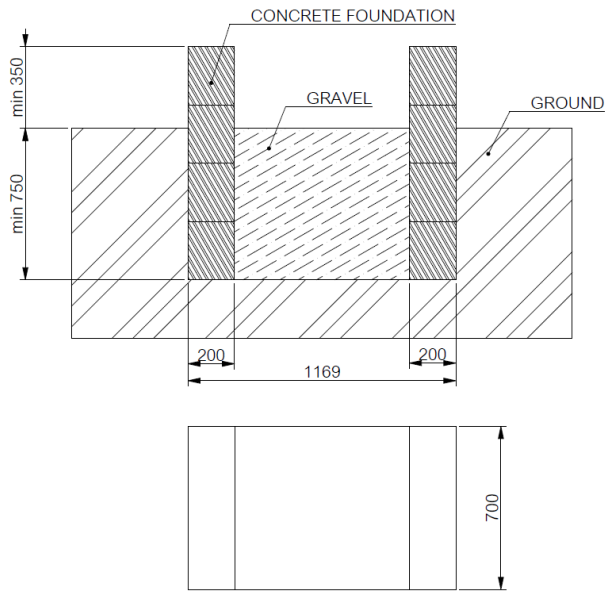


Image 6: Base under Acondomis S with stool under heat pump



### MINIMÁLNÍ VZDÁLENOST KE STĚNÁM

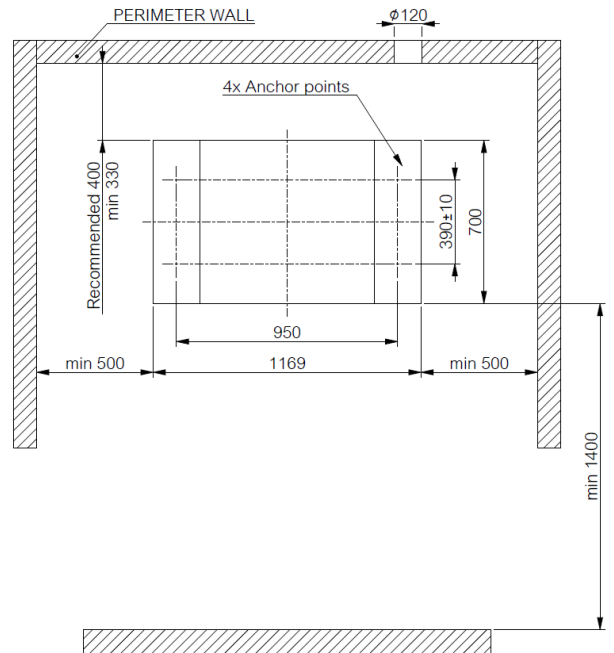
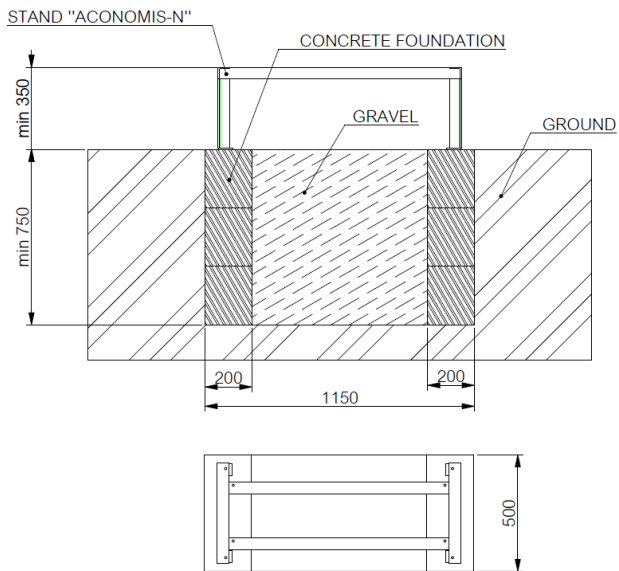


Image 7: Base under Aconomis N without stool under heat pump



### MINIMUM DISTANCE TO WALLS

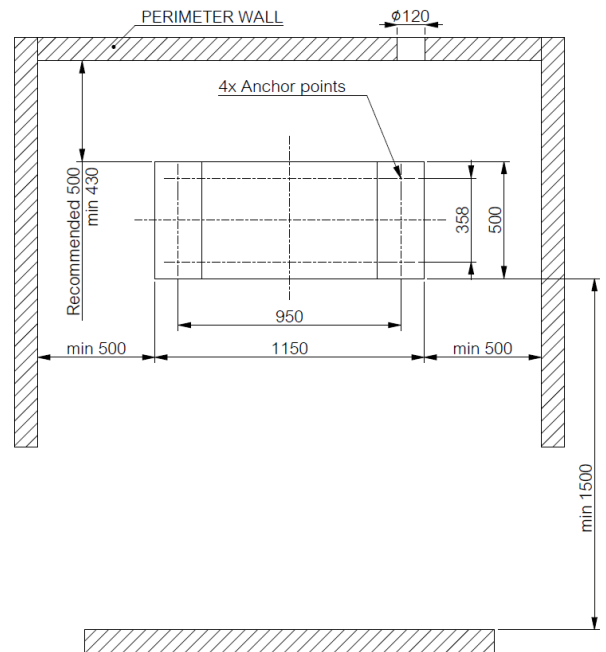


Image 8: Base under Aconomis N with stool under heat pump



Do not place the unit in windy locations where it would be exposed to direct gusts of strong wind. Such placement reduces fan performance, thereby impairing the efficiency of the heat pump and increases the evaporator defrost time. When installed in a section exposed to wind the wind must be prevented from significantly affecting the fan section.

Ensure that there is at least 200-300 mm of space above the outdoor unit. The bench under the pump is 350mm high.



If the outdoor part of the heat pump is located under a sloping roof, a canopy must be installed over the heat pump to prevent mechanical damage to the equipment from falling snow, icicles, continuous dripping of large amounts of water, etc.



At the air outlet of the heat pump, the air temperature is about 5 °C below the ambient temperature, so the surroundings can be icy and slippery.



- The air intake and exhaust side must be free.
- The air should not blow on pavements, patios and walls.
- Installation in a cavity is not recommended due to the deterioration of air exchange around the heat pump.
- In order to minimize noise reflections caused by the heat pump and to improve airflow around the evaporator, it is not advisable to install a heat pump in alcoves, wall corners or between walls.
- The base for the heat pump must be horizontal.



### 5.3 Fixing the heat pump

Use 4 M6x1 ISO 4017 screws with a length of 25mm or more to fix the heat pump to the stool to 35mm.

If a stool other than the supplier's stool is used, the stool used must ensure safe operation of the heat pump!

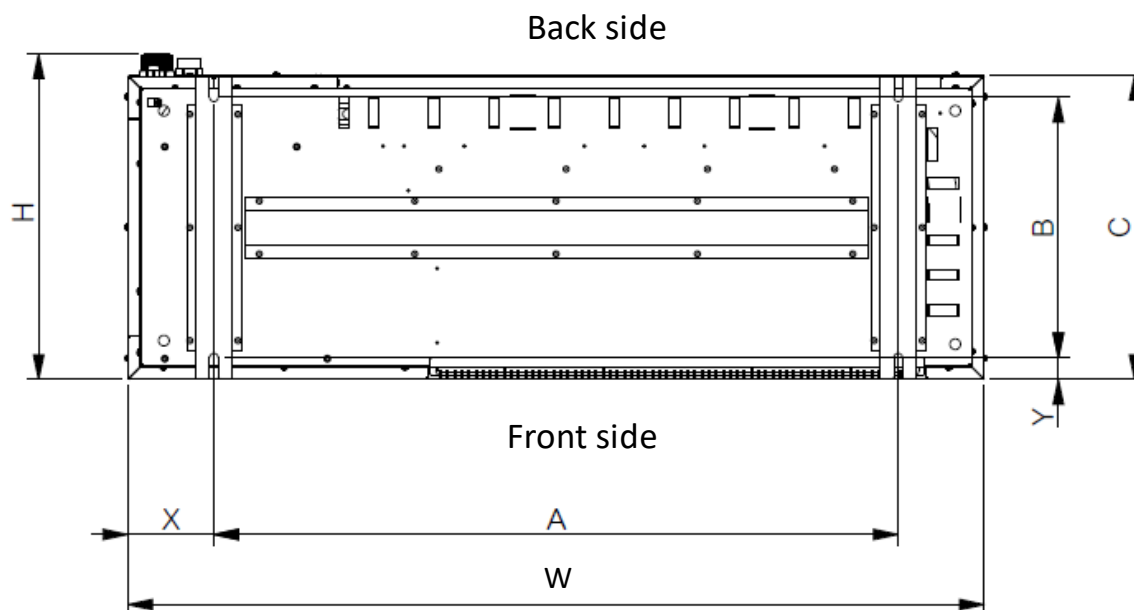


Image 9: Bottom view - mounting holes

Table 5: Dimensions for pump mounting

Type	Acond Aconomis S	Acond Aconomis N	Acond Aconomis R
A [mm]	825	969	-
B [mm]	368	368	-
C [mm]	430	430	-
W [mm]	1060	1210	-
X [mm]	120	122	-
Y [mm]	23	31	-
H [mm]	450	450	-



The location of the condensate drain must be taken into account when creating the stool!

## 5.4 Condensate drainage

If the recommended design of the foundation for the outdoor heat pump unit is followed, the condensate formed on the evaporator is drained into the subsoil and frosting in the vicinity of the heat pump is minimised (*see Image 10*).



Image 10: Example of a heat pump base design

## 6. Refrigerant circuit

Use the fill valves to connect to the refrigerant circuit. Their location in the refrigerant circuit is indicated in *Image 11*.

If it is necessary to change the refrigerant, follow the **chapter 14**.



**RISK OF INJURY!** Only authorised refrigeration technicians may work on the refrigerant circuit, *see chap. 15*



Under no circumstances is it permitted to mix different types of refrigerants!

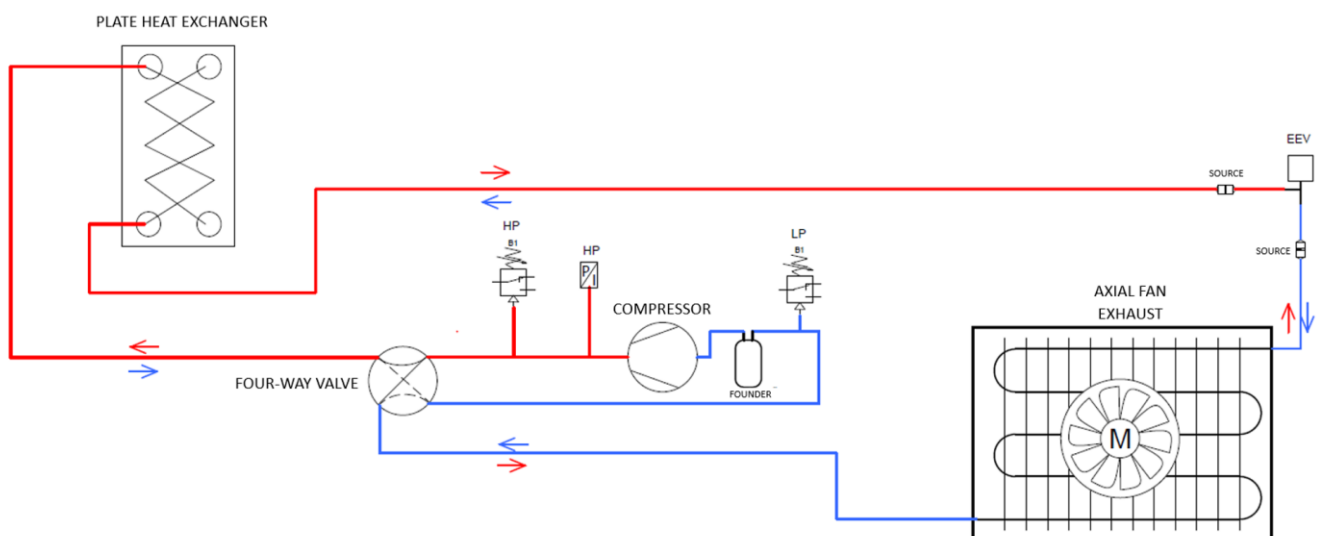


Image 11: Refrigerant circuit

## 6.1 Compressor oil

The compressor oil charge is designed to last the lifetime of the equipment. It can only be changed in the event of compressor or refrigeration circuit failures.

Table 6: Compressor oil

Model	Acond Aconomis S	Acond Aconomis N	Acond Aconomis R
Oil	PAG VG60	PAG XS-601C1	HAF68
Oil volume [l]	0,3	0,6	1,15



Oil changes must only be designed and carried out by authorised refrigeration engineers, see *chap. 15*.

## 7. Hydraulic connection

The hydraulic connection can be changed according to the option purchased.

## 8. Protective measures

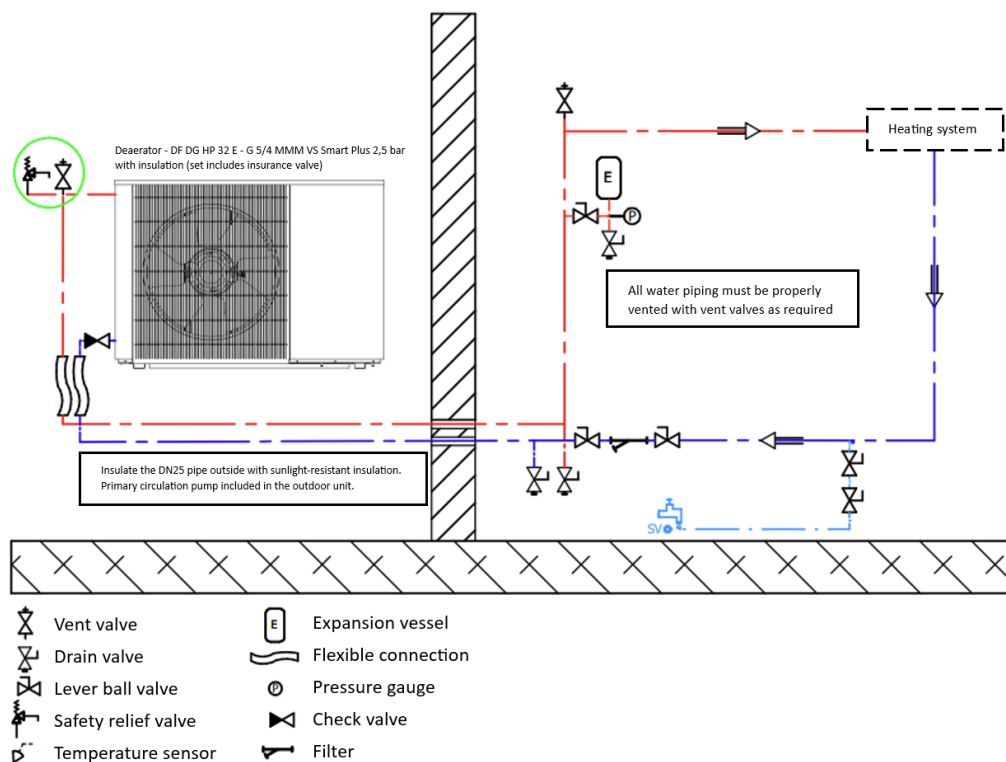


Image 12: Hydraulic connection

The installer shall propose instructions for emergency procedures relevant to the cooling equipment that must be followed in the event of failures and accidents of other kinds.

## 9. Access to the outdoor unit



Wrap the grommets with mineral wool or otherwise seal the hole around the grommet (e.g. with foam). Do not use mounting foam, which transmits vibrations from the outdoor unit when it hardens!

To connect the outdoor unit to a piece of equipment located inside the heated building, a **120mm** diameter hole must be punched. The penetration is not included in the delivery. If the customer does not make it, extra work will be charged.

## 10. Technical room

The technical room where the internal part of the heat pump will be located must be sufficiently spacious and dry. The air temperature must be between 10°C and 35°C and the relative humidity should not consistently exceed 70%.

The internal part of the heat pump must not be placed in the bath or shower area. These spaces are defined in CSN 33 2000-7-701 ed. 2.

## 11. Preparation of the electrical connection

Before installing the heat pump, the customer shall secure the JYTY-O 2x1 communication cable from the junction box or from the indoor unit, to the C-ID room unit in the reference room.

The customer will also provide a 5E UTP Ethernet cable to connect the switchboard or the internal heat pump unit to the Internet. The connection will be used to monitor the operation of the heat pump and to change the heating parameters.

The customer will also connect a CYKY J 3x1.5 cable to the distribution box or indoor unit (see attached diagram), whose neutral conductor (N, blue) will be switched by the HDO signal.

### 11.1 Power connection

The customer will provide the main supply cable for the heat pump and its protection will be designed by the installer according to the selected heat pump performance variant.

All storage vessels and DHW storage tanks must be electrically connected to the earth conductor (PE).

- Connect the appliance to the installation made according to the instructions in the Construction Readiness Manual.
- Check that the supply line has been inspected.
- Make the power connection of the individual parts of the installation along the entire length without connection.
- The connection between the outdoor unit and the indoor unit of the heat pump must be made with a wire whose length must not exceed 30m. If the length of the wire is longer, it is necessary to use a wire with a larger cross-section or to check the tripping capability of the pre-assigned protective element by measuring the tripping loop impedance.
- After the installation is complete, verify that the wiring is correct according to the documentation.
- Check the continuity of all conductors according to DIN 60335-1.

- Check whether the electrical insulation resistance is higher than  $1M\Omega$  by measuring the resistance between the protective conductor and the phase conductors. This test is only carried out on the interconnecting conductors. If you measure a lower resistance, try to find the cause. If you do not find it, do not hand over the installation to the customer.

## 12. Heat pump installation

- The installation of the heat pump must follow the chapter **2.1.4**
- Fix the indoor heat pump unit in the technical room, *see chapter 10*.
- Place the outdoor unit in accordance with *chapter 5*.
- Wire the switchboard according to the diagrams supplied with the heat pump. The wires are routed according to the applicable standard in rails, pipes, protectors or grids. Connect the cables to the pre-prepared terminals in the outdoor and indoor unit. For the outdoor unit it is necessary to remove the side cover plate, *see Image 13*
- Unscrew the three fixing screws and then slide the cover downwards by approximately 2cm. The covers are connected by protective conductors, to the grounded parts of the pump. These wires must be reconnected during reassembly.

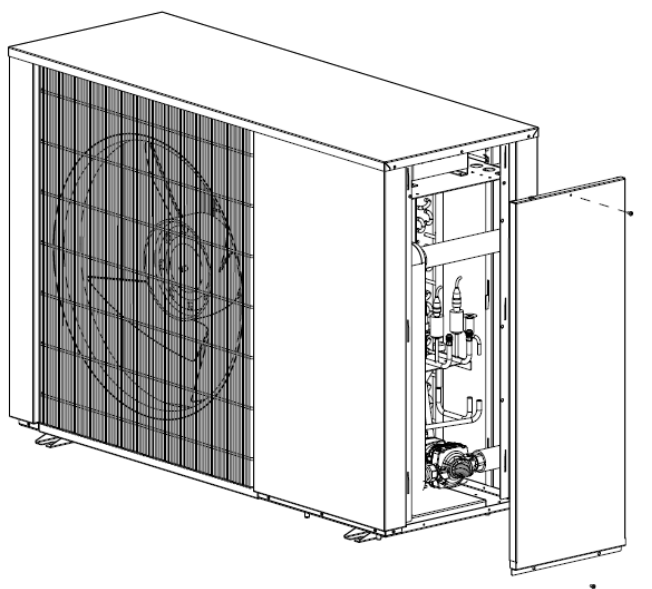


Image 13: Disassembly of the cover plate

## 12.1 Installation of the accumulation vessel

The heating system may be fitted with a stainless steel vessel designed for heating water storage or a stainless steel hot water storage tank (hereinafter referred to as vessels), which must be installed and operated in accordance with the instructions in this documentation.



Although the container is all stainless steel, it is not maintenance-free! Follow the instructions in this manual! If these instructions are not followed, the warranty provided for these products cannot be honoured!

- Installation, assembly and all service work may only be carried out by a person qualified to carry out the relevant work.
- The containers **are not** intended for use in very aggressive environments (stables, poultry houses, industrial plants).
- The vessel must not be put into operation and further operated without a fully functional **safety valve**. It shall be supplied and sized by a qualified installer according to the parameters of the system protected by this relief valve. The maximum possible operating pressure of the vessel is 0,6 MPa. Each safety valve must be checked regularly for functionality at least once every six months (by manually releasing the water) and replaced in the event of a malfunction. Caution - hot water may leak from the valve! The vessel supplier is not responsible for defects caused by malfunctioning of the safety valve.
- The container is supplied as a complete product and cannot be further modified. Any modifications to the container (additional welding, replacement of protective elements, change of original use, etc.) are considered as a gross interference with the technical design and affect the acceptance of the warranty.
- Stainless steel vessels can only be connected using brass, bronze, stainless steel (stainless steel class according to DIN 1.4301 and higher) or plastic (electrically insulating) fittings and components.  
If iron, galvanized or otherwise surface-plated components (nickel-plated, chrome-plated, etc.) are used, no warranty for damage to the tank can be accepted.
- In the case of copper or galvanized pipes routed into a stainless steel vessel, it is necessary to prevent the formation of **an electric cell**, therefore the copper or galvanized pipe must be electrically separated from the stainless steel vessel. The optimum solution is to change from copper or galvanized pipe to plastic pipe before the actual connection to the vessel. In no case must the electrically conductive connection between the copper or galvanized pipe and the stainless steel vessel.
- The receptacles are fitted with a **grounding bolt, which** must be grounded using a CY grounding conductor with a cross section of at least 4mm<sup>2</sup>. At the same time, all transitions and fittings connected to the vessel must be galvanically connected and grounded to a single point using the above-mentioned earthing conductor. The grounding resistance shall be as required for the application.
- In the event of a defect in the supplied storage tank, the user is obliged to submit a valid document (the building inspection report) of the grounding check and its results. The manufacturer reserves the right to carry out its own inspection and measurements.



In the case of connecting the grounding of the container to a line that has not been validly inspected, the manufacturer shall not be liable for any injuries resulting from the operation of the container so installed, nor for any damage that may occur to the container.

- If the water supply to the tank is connected to a copper or galvanised pipe or to a cast iron water main, a fine filter must be installed on the water supply to the DHW cylinder for drinking water.

## 12.2 Instructions for operation, maintenance and servicing of the DHW tank and storage vessel

- At each inspection and servicing of vessels, the vessel grounding and all grounded vessels shall be checked and measured. A record shall be made of the result of the measurements.
- During maintenance it is necessary to clean the inside of the container. Cleaning is carried out by rinsing the inside of each vessel with pressurised water, without the use of chemical agents. Dirt and water are drained out through the bottom neck.
- For each safety valve, a periodic function check must be carried out at least once every six months (by manually draining the water). If a fault is detected, the valve must be replaced.
- The magnesium anode, which is fitted to each vessel, must be checked regularly during use. The first check shall be carried out no later than 6 months after commissioning, and the interval for the next check shall be determined according to the result of the check. The interval between inspections shall not exceed 2 years.
- In case of more than 50% loss of the magnesium anode (original diameter approx. 20 mm), it is necessary to replace it. Replacement is done either by a complete replacement including the brass nut, or just by fitting a new anode rod into the original brass nut (turning with an M8 screw).
- A new anode can be purchased directly from the supplier. The anode rod must be designed for use in stainless steel vessels.
- In the case of a stainless steel vessel fitted with an electronic anode, the anode must be designed for stainless steel vessels, the type of anode must correspond to the size of the vessel and a separate installation and operating manual must be followed. The approval of the vessel supplier is required for the fitting of an electronic anode to a stainless steel vessel.
- All replacement parts of the vessel (sumps, heating elements, thermostats, etc.) can be ordered from the supplier.
- The sumps for sensors can be installed exclusively in stainless steel (stainless steel class according to DIN 1.4301 and higher) or brass. If other sumps are used, the warranty will not be honoured.
- The auxiliary heating elements in the vessels must be stainless steel (stainless steel class according to DIN 1.4301 and higher) with brass or stainless steel flange. If heating elements made of other materials are used, the warranty will not be honoured.

## 12.3 Bivalent source

The indoor heat pump unit is ready for control connection without potential bivalent source contact. Always place the AKU sensor (T02) in the sump of the accumulation vessel.

## 12.4 Connecting the communication cable

Insulate the shielding wire of the communication cable carefully, do not connect. In case of interference problems, connect only at one point of the installation, preferably in the indoor unit (in the switchboard) to the PE ground terminal.

According to the applicable regulations, connect the frame of the outdoor CH unit to the stool.

Recommendation - insulate both ends of the shield, do not connect.

## 13. Commissioning the heat pump



When commissioning the heat pump, it is necessary to set all the parameters listed in this documentation correctly. Commissioning of the heat pump by a technician will be charged according to the company's tariff.



Danger of damage to the equipment through unprofessional intervention!  
Before changing any of the heat pump parameters, check what the change will do!

### 13.1 Check before commissioning

Check that:

- the installation and assembly of the heat pump is carried out according to the instructions in this manual
- the heating circuit is flushed, filled and carefully vented
- all ball valves of the heating circuit are open
- the fan grille is free of dirt and obstructions

### 13.2 Setting heat pump parameters via PC



Danger of damage to the device through unprofessional intervention!  
Before changing any of the heat pump parameters, check what the change will do!

Parameter settings can be made directly on the panel of the control unit located in the switchboard, we strongly recommend connecting the computer via UTP cable to the control unit.

After completion of the installation of the CH and connection to the electricity. Set the basic parameters according to the following instructions:

- connect your laptop to the ETH interface of the control electronics in the indoor unit (middle ETH slot)
- enter the IP address 192.168.134.176 into the browser (note that the ETH interface of the notebook must be set to the same address space - the IP address of the ETH interface of the notebook must be 192.168.134.xxx, where xxx is any number from the interval (1 - 255) except 176)



- A login interface appears to enter a username and password - ask the service department for the details

### STEP 1 PAIRING OF OUTDOOR AND INDOOR UNIT

SY01:  - factory setting - attention, cause the loss of individual settings!

SY05:  - TYPE OF HP: 1-> R, 2-> N, 3-> R1f, 4-> SNB172FEKMT      **OUTDOOR UNIT C-OE-3971D**

	<input type="text" value="-0.70"/> Bar - MIN. LP SENSOR VALUE	6.6 Bar	ADDRESS: <input type="text" value="DBE1"/>
LP	<input type="text" value="8.0"/> Bar - MAX. LP SENSOR VALUE		COMMUNICATION: ok
	<input type="text" value="0.00"/> Bar - MIN. HP SENSOR VALUE	8.1 Bar	INICIALIZATION: ok
HP	<input type="text" value="30.0"/> Bar - MAX. HP SENSOR VALUE		ADDRESSING: ok

IV01:  - refrigerant type: 1 -> R410A, 2 -> R290       - outdoor unit is not installed - no alarms

STEP 1 OK

Image 14: Pairing - step 1

- after logging in you will be prompted to pair the outdoor unit with the indoor unit and to set the type of sensors fitted (see label in the indoor unit) and to set the type of CH (see **Image 14**)
- after entering the parameters and clicking on the **PAIR** button, the parameters will be entered and after a few seconds the text "UNIT PAIRING FAILED" will disappear and it will be possible to click on STEP1 OK to go to the next step of the recruitment
- if the text "COMMUNICATION FAULT WITH OUTDOOR UNIT" appears under parameter settings, check the connection of the communication cable between the outdoor and indoor unit (the control electronics in the outdoor unit must flash the orange and red LEDs 2 times rapidly)
- after confirming **STEP1 OK**, another table for setting appears - the most common system parameters necessary for hiring the TC (see **Image 15**).

### STEP 2 PARAMETERS REQUIRED FOR FIRST STARTING HP

SY09:  - type of task HP (0-> three-way valve for DHW not installed  
1-> three-way valve for DHW is installed, 2-> ground collector)

SY12:  - reset average outdoor temperature

SY16:  - DHW heating is installed

SY18:  - 0 -> 1 heating circuit, 1 -> 2 heating circuits

SY22:  - activation of preheating DHW in storage tank

SY23:  - storage tank of heating water installed

SY28:  - 0 -> radiators, 1 -> floor heating - heating circuit 1st

SY29:  - 0 -> radiators, 1 -> floor heating - heating circuit 2nd

SY32:  - hysteresis of DHW: 0 -> symmetrical, 1 -> under

SY40:  - outdoor unit is not installed - no alarms

STEP 2 OK

Image 15: Pairing - step 2

- after setting the parameters necessary for hiring the CH, click on **STEP 2 OK** and another table will appear (see **Image 16**).

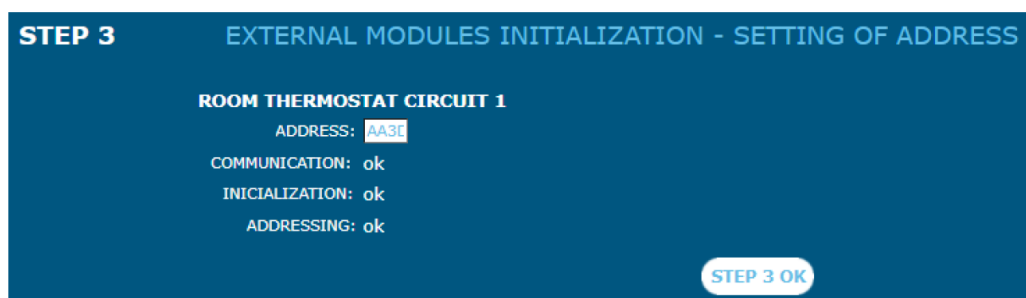


Image 16: Pairing - step 3

- enter the address of the room thermostat (under the bottom cover of the respective thermostat) and click on **STEP 3 OK**, another table will appear (see **Image 17**).

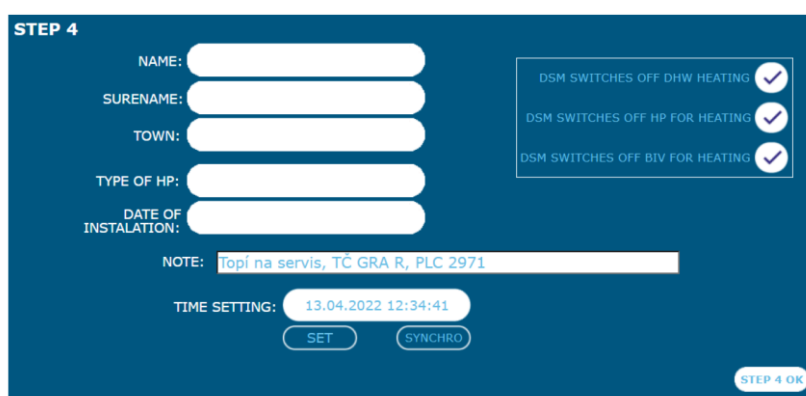


Image 17: Pairing - step 4

- fill in the relevant data, you can set the time in the control unit (if the connection is functional Internet connection, click on the **SYNCHRO** button, otherwise enter the time manually and click on **SET**). On the right side of the page, set the behaviour of the CH according to the HDO signal (high/low tariff switching). When you have finished entering, click **STEP 4 OK**, the control system will switch to the service page and the CH can be started.
- all settings from the individual steps are available on the Service Information page (appears after clicking on the "i" in the service page menu in the upper left corner).



When the return water temperature is low (warning W02), the heating rods are pinned. Caution, the the air evaporator of the heat pump may freeze!

The pump service page is displayed, see **Image 18**. In the upper right corner of the web interface we can change the language.

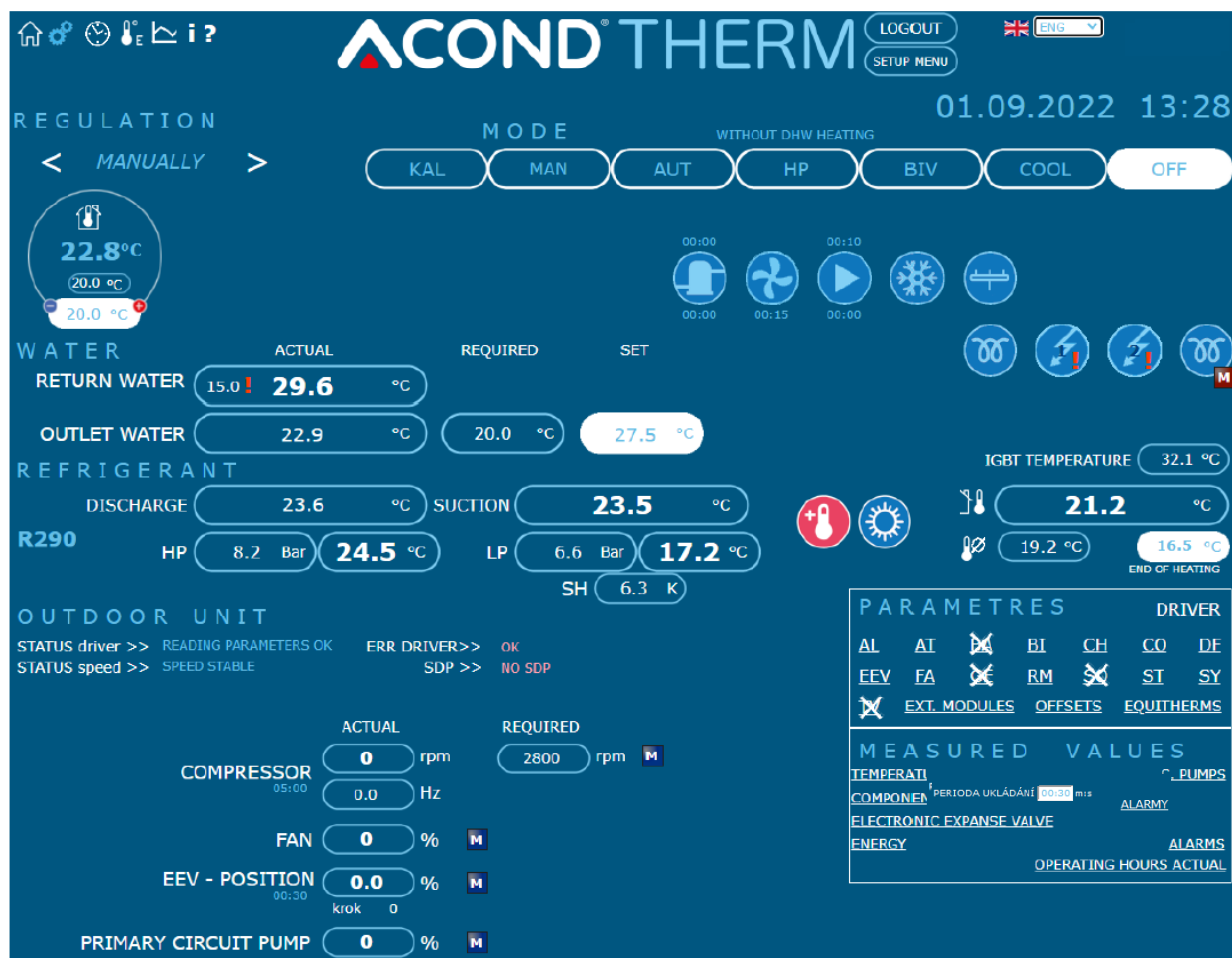


Image 18: Service page

In case of connection problems, the IP address of the control unit can be found on its display. On the control board, see **Image 19**, you need to press the Mode button and then the down arrow.

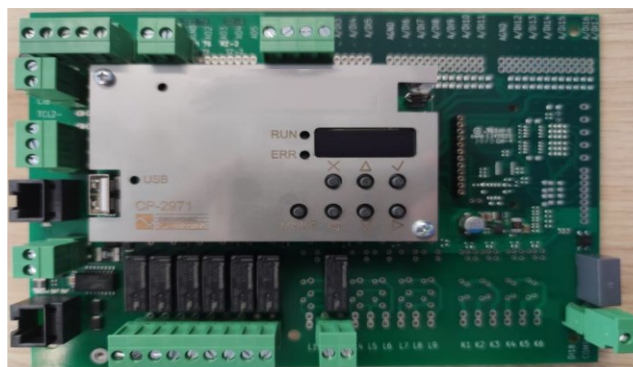


Image 19: CP 2971 regulation

### 13.2.1 System parameters

Logging in with the service login will take you directly to the service page of the pump. If you leave to the home user page, you can get back to the service environment via the screwdriver icon and wrench icon in the bottom right corner.

The system parameters page can be accessed via the SY link in the lower right part of the Service page, see **Image 20**. On the page it is possible to set additional system parameters that were not set during pump startup. It is recommended to go through all SY parameters one by one.

**SY - SYSTÉMOVÉ PARAMETRY**

SY01:  - tovární nastavení

SY02:  - aktivace ModbusTCP

SY03:  °C - konec vytápění

SY04:  °C - přírůstek (úbytek) SY03 při kliknutí na sněhuláka/sluníčko

SY05:  - typ TČ: 1-> R, 2-> N, 3-> R1f, 4-> SNB172FEKMT

SY06:  - jazyk: 1-> česky, 2-> anglicky, 4-> polsky, 8-> německy

SY09:  - typ úlohy TČ (0-> bez trojcestu pro TUV, 1-> TUV přes trojcest, 2-> zemní kolektor, 3-> Genius)

SY10:  m:s - doba pozastavení měření zpátečky po přepnutí ohřevu TUV  
Doběh ohřevu TUV, ustálení teplot

SY11:  - HDO nastaveno trvale

SY12:  - reset průměrné venkovní teploty

SY13:  h:m - max. doba přepnutí do manuálního režimu

SY14:  - změna žádané teploty v místnosti podle časového plánu povolena

SY15:  - útlum ventilátoru podle času povolen

SY16:  - aktivace TUV

SY17:  - časový plán pro ohřev TUV povolen

SY18:  - 0 -> 1 topný okruh, 1 -> 2 topné okruhy

SY19:  - 0 -> split, 1 -> monoblok

SY20:  m:s - doba mezi spuštěními oběhovky TČ v případě nečinnosti

SY21:  m:s - délka spuštění oběhovky TČ v případě nečinnosti

SY22:  - aktivace předehřevu

SY23:  - 0 -> bez AKU, 1 -> s AKU (ovládána systémová oběhovka)

SY24:  °C - min. SY03 - konec vytápění

SY25:  °C - max. SY03 - konec vytápění

SY26:  - 0 -> nevypíná komp. při odmrazení  
1 -> vypíná komp. při odmrazení

SY27:  - 0 -> bez soláru, 1 -> se solárem

SY28:  - 0 -> radiátory, 1 -> podlahovka - 1. topný okruh

SY29:  - 0 -> radiátory, 1 -> podlahovka - 2. topný okruh

SY30:  - 0 -> systém bez bazénu, 1 -> s bazénem

SY31:  - 0 -> solár do bazénu, 1 -> solár do aku, 2 -> solár do TUV

SY32:  - hystereze TUV: 0 -> souměrná, 1 -> spodní (Dražice)

SY33:  - směšování podlahy osazeno

SY34:  - počet dní do zablokování - neplatí

SY35:  - časový plán teploty v místnosti povolen - 2. okruh

SY36:  - aktivace funkce Neplatič

SY37:  - zapnutí DHCP 0 -> povoleno, 1 -> zakázáno

SY38:  - 1. okruh 0 -> interní čidlo C-ID, 1 -> externí čidlo C-ID

SY39:  - 2. okruh 0 -> interní čidlo C-ID, 1 -> externí čidlo C-ID

SY40:  - není osazena venkovka - ignoruj poruchy

SY41:  - časový plán teploty zpátečky povolen

SY42:  - bivalence běží bez ohledu na HDO

SY43:  - TUV běží bez ohledu na HDO

SY44:  - periodické promíchávání u monobloku podle param. SY20 a SY21  
povoleno i v létě (nutné při chlazení z aku)

SY45:  - perioda filtrace čidel (5s)

SY46:  - chlazení osazeno

SY47:  - regulace ekviterm 0 -> TČ neběží, když je natopeno  
1 -> TČ běží, i když je natopeno, dohřívá aku

SY48:  - prostorový termostat nahrazen čidlem NTC10k

SY50:  - biv za aku, systémová oběhovka běží s bivalencí

SY51:  - DLT senzor připojen k driveru

**PARAMETRY DRIVER**

<input type="checkbox"/> AL	<input type="checkbox"/> AT	<input checked="" type="checkbox"/> BI	<input type="checkbox"/> CH	<input type="checkbox"/> CO	<input type="checkbox"/> DF
<input type="checkbox"/> EEV	<input type="checkbox"/> FA	<input checked="" type="checkbox"/> RM	<input checked="" type="checkbox"/> ST	<input type="checkbox"/> SY	
<input checked="" type="checkbox"/> EXT. MODULES	<input type="checkbox"/> OFFSETS	<input type="checkbox"/> EKVITERMY			

U SERVISU, MILEVSKO: TČ GRA R

Image 20: System parameters

Parameter	Meaning of
AL01	Temperature difference T01 and T02 for flow alarm (A16)
AL02	Flow Failure Delay (A16)
BI06	Biv 1 allowed
BI07	Biv 2 allowed
RM01	Desired room temperature 1. circuit
RM02	Radiators - hysteresis RM01
RM06	Flooring - max. overtemperature in the room to start the operating system.
RM07	Flooring - max. overtemperature in the room for stop ob. sys.
RM08	The assigned heartbeat. in the room of the 2nd heating circuit
RM09	Radiatory circuit 2 - hysteresis RM08
RM12	Floor - max. temperature overrun in the room for starting the operating system
RM13	Flooring - max. temperature overrun in the room for stop control system
ST01	Target return water temperature (T01)
ST02	Hysteresis ST01
SY01	Factory settings - after changing the value to 1, all parameters are set to factory settings, the value is changed to 0 again. <b>Attention, all previously set parameters will be overwritten!</b>
SY03	End of heating in °C
SY05	Type of TC :1->Grandis-R , 2->Grandis-N N, 3->Grandis-R SP, 0->not selected
SY09	Heat pump task type: 0 -> without three-way valve for DHW 1 -> with three-way valve for full DHW heating by heat pump 2 -> ground collector 3 -> Genius hybrid system
SY11	TC ignores HDO signal
SY42	Bivalence runs regardless of HDO
SY43	DHW running regardless of HDO
SY12	Reset average outdoor temperature
SY16	TUV activation
SY18	0 -> 1 heating circuit, 1 -> 2 heating circuits
SY19	0 → split, 1 → monoblock
SY22	Preheating activation - set to 1 if a storage tank with an exchanger for DHW preheating is installed

SY23	0 -> without AKU, 1 -> with AKU
SY27	0 -> without Solar, 1 -> with Solar
SY30	0 -> system without pool, 1 -> system with pool
SY28	0 → radiators installed in the 1st heating circuit 1 → underfloor heating installed in the 1st heating circuit
SY29	0 → radiators installed in the 2nd heating circuit 1 → underfloor heating installed in the 2nd heating circuit
SY32	0 → hydrobox (symmetrical hysteresis of DHW) 1 → boiler with built-in heat exchanger (lower DHW hysteresis) e.g. Dražice
SY36	Activate the Do not pay, do not change function
SY37	0 -> DHCP enabled, 1 -> DHCP disabled
SY38	1st circuit 0 -> internal C-ID sensor, 1 -> external C-ID sensor
SY39	2nd circuit 0 -> internal C-ID sensor, 1 -> external C-ID sensor
TV01	Preheating allowed in summer
TV02	Desired DHW temperature
TV03	Hysteresis TUV
TV04	Temperature T01 for DHW heating
TV05	Antisepsis allowed
TV12	Reverse temperature for preheating in summer

### 13.2.2 Verification of heat pump functions



Image 21: Pump function pictograms

On the service page, the pump can be switched to manual mode, in which the individual components can be switched independently regardless of the control software algorithm. The components are started by clicking on the individual icons showing the components.

In the picture above the mode selection, start the primary circuit circulator and vent the heating system.

Check the functionality of the heating rods - with the primary circulation pump switched on, switch on the individual heating rods, monitor the temperature rise at the outlet of the CH, or measure the power consumption of the heating rods.

Then start the fan, you need to enter the fan speed (by clicking on the M symbol in the blue square next to the desired fan speed, a window will appear in which the percentage of the maximum fan speed is entered and then confirmed with an arrow or an entree) and check the fan.

Turn on the compressor, enter the speed in manual mode (again M in the blue square next to the desired speed value and confirm with an arrow or entree) and watch the water temperature at the outlet of the CH rise, the HP value rise and the LP and suction values fall.

If a three-way valve for DHW heating is fitted, check that when it is switched in the DHW web interface (tap symbol), the three-way valve turns and the water temperature rises at the boiler inlet. If the water temperature at the boiler inlet does not rise, it is necessary to switch the phases on the valve actuator. Leave the DHW heater on for a while (at least 5 minutes) to allow the water temperature rise in the boiler to become apparent.

After checking the DHW heating, switch the three-way valve to heating and again wait at least 5 minutes to see that the heating system is operational. If the temperature in the storage tank is below approx. 25°C, the circulation pump to the system is not running, so it should be tested in manual mode.

### 13.2.3 Setting the desired control

**AcondTherm** - the heating water temperature is calculated from the room temperature and the outside temperature.

**Equiterm** - the heating water temperature is calculated based on the outside temperature.

**Standard** - manual temperature input.

## 13.3 Filling the heating circuit



Danger of damage to the device by improper workmanship! Only flush the heating circuit with water pressure below 2.5 bar.

- Before commissioning, flush the heating circuit of the heat pump with a filler and drain tap for 5 minutes.
- Flush the heating circuit with clean water.
- Fill the heat pump using the filling and filling tap, dismantle the filling hose after filling.
- When filling, vent the heating system gradually.

## 14. Dismantling

When decommissioning, local laws, guidelines and standards for the recovery, reuse and disposal of heat pump cartridges and components must be followed.



RISK OF INJURY! Only authorized refrigeration technicians may work on the refrigerant circuit, see chap. 15



Danger of electric shock! Disconnect the heat pump before disassembling it from the power supply.



Caution, the unit contains flammable refrigerant! In the event of a refrigerant leak, disconnect the device from the power supply and contact the service!



No handling of open flames near the outdoor unit!

## 14.1 Disposal

The technician responsible for removal from the system must be familiar with all the details of equipment disposal. It is recommended to drain the refrigerant from the circuit. In order to reuse the refrigerant, the used refrigerant must be free of dirt, oil residues, etc. that may be present in the refrigerant.

The following steps must be followed:

- Get to know the unit and its functionality.
- Disconnect the unit from the power supply.
- Before starting to drain the refrigerant, make sure that the following is met
  - All tools for draining the refrigerant are available;
  - Use work and protective equipment;
  - The refrigerant extraction is controlled by an authorised person;
- Make sure that the skimmed refrigerant bomb is placed on the scale.
- Switch on the extraction and proceed as instructed by the manufacturer of the extraction equipment. The extraction equipment must be suitable for flammable refrigerant.
- When sucking, do not exceed 80% of the contents of the bomb and do not exceed the maximum allowable pressure.
- When the refrigerant extraction is complete, close all valves in the refrigeration circuit and remove the bomb.
- Mark the unit in a visible location with a label indicating that the unit has been removed from the system and does not contain refrigerant. The label must be dated and signed by an authorised person.

## 14.2 Recycling

Ensure safe extraction of refrigerant. If cylinders are used for extraction, the cylinders designed for this purpose must be used. Make sure you have a sufficient volume of extraction bottle(s) beforehand. Cylinders must be appropriately labeled (e.g. special recycling cylinders for refrigerant recovery and recycling). Empty cylinders must be evacuated. The extraction equipment must be accompanied by step-by-step instructions. Hoses for extraction shall be fitted with leak-free couplings. The evacuated refrigerant must be returned to the manufacturer in the prescribed cylinders. If you are removing compressor or compressor oil, it must be evacuated so that it does not contain any flammable components. Before returning the compressor to the manufacturer, the compressor must be evacuated.

## 15. Links

In the event of a heat pump fault, visit <https://acond.cz/tepelna-cerpadla/servis/> .

## 16. Line diagrams

The line diagrams are annexed to this document.