Operating Instructions
Only for Authorized Service Technicians

Brine-Water and Water-Water Heat Pumps AQUATOP TC

02/2008 Art. No. 11 051 525 GB

Table of Contents

Basic Information

Safety Notes

Safety Notes
The following notes and information are generally used in the **operating instructions:**

Comply with **information** about function and operation.

Always comply with and observe all safety notes and safety **information.**

Information about the operating **instructions** of the controller LOGON B WP

Setup, installation, configuration, and initial startup of the heat pump system must be carried out by a qualified technician applying the relevant statutory rules, regulations, and guide-lines, as well as the operating instructions.

The use of the heat pump must be reported to the local utility or electric company.

Do not exceed a tilt of 30° when tran-sporting the heat pump. Avoid exposing the heat pump to any type of moisture or humidity.
Protect the heat pump from damage and dirt during all construction phases.

Components and piping of the cooling circuit may never be used for transport.

The heat pump is fastened to the transport pallet.

All electric circuits must be de-energized before opening the unit.

All work on the cooling circuit must be carried out by trained technicians who must be familiar with and trained in the use and handling of the coolant.

Never us harsh, abrasive, acidic or chlorine-containing cleansers on the surface of the equipment.

General

General

Usage Range
The heat pump is designed only for heating as well as generating service water.
The heat pump can be utilized in newly installed or existing heating systems by complying with the usage limits as defined by the AQUATOP planning document.

Setup
The heat pumps can be set up on a smooth, level, and plane surface without the need of a base or pedestal. The installation room must be dry and frost-free. Rooms with much humidity such as laundry rooms, etc. are not very suitable for installing the heat pump. The min. clearances must be adhered with for all equipment to ensure access in case of maintenance and control tasks.

Function Principle of the Brine-Water/Water-Water Heat Pump
The heat pump converts the heat contained in the soil or rock (groundwater) with a low temperature into heat with a higher temperature. This is achieved by routing the brine liquid through a heat exchanger in the soil (groundwater) and a pump to the evaporator. The liquid working medium in the evaporator boils and evaporates at a low temperature and low pressure. The evaporation heat required is drawn from the brine liquid and returned to the heat exchanger.

The evaporated working medium is suctioned by the compressor and compressed to a higher pressure. The compressed, gaseous working medium is fed to the condenser where it is condensed at a high pressure and high temperature.
The condensation heat is transferred to the heating water and the temperature of that water increases.

The energy transferred to the heating water corresponds with the energy previously extracted from the soil (groundwater) plus the small amount of electrical energy required for compressing the working medium.

Energy-Saving Use of the Heat Pump System
Your decision to obtain a heat pump heating system is an important contribution to saving the environment by having lower emissions and reduce your primary energy use.
Please observe the following points to ensure your new heating system functions efficiently:

The heat pump heating system must be carefully dimensioned and installed.

Avoid unnecessarily high flow temperatures. The lower the flow temperature on the heating side the more efficient the heat pump is working. Make sure the controller is set correctly and properly.

Rush airing (several windows open at once for short period) is to be preferred over continuously leaving a small gap open. Rush airing reduces the energy consumption.

Basic Information

Legal Guidelines, Rules, Warranty Terms, Receiving Inspection

General Information
These operating instructions serve the correct installation, adjustment, and maintenance of the equipment.
The following information must therefore be read carefully and the heat pump must be installed, inspected, and maintained by correspondingly trained technicians.

The manufacturer is not liable for mechanical, hydraulic, or electrical modifications after the warranty expires. The warranty becomes null and void in case of not explicitly authorized actions carried out contrary to or in violation of these operating instructions.
All applicable safety standards must be observed during installation. Check whether the properties of the power supply system match those of the heat pump (type plate).
These operating instructions and the electrical scheme (diagram) of the heat pump must be stored carefully and made available to the operating personnel if needed.

The manufacturer is not liable for personal injury or property damage, direct or indirect, caused by noncompliance with these instructions.
The equipment may be opened only by qualified personnel.

Legal Guidelines and Rules
All guidelines based on CE standards were observed during design and manufacture of the heat pump.
(See CE Conformity Declaration.)
Compliance with the corresponding SEV, EN, and IEC standards is required for the electrical connection of the heat pump. The connection specifications of the local utility or electric company must be complied with as well.

Explanations Concerning Our Warranty Terms
Our warranty does not cover damages caused by or due to the following reasons:
- Unsuitable or improper use or operation,
- Incorrect setup, adjustment, or incorrect initial startup by buyer or third parties
- Installation of third party parts
- Operating the equipment under overpressure or in excess of the specifications indicated by the factory
- Noncompliance with the notes and information of the operating instructions

The heat pumps have a warranty period of 24 months after the day of delivery. The sales, delivery, and warranty terms and conditions according to the order confirmation apply in all other instances.

Receiving Inspection
The equipment is shipped on a wooden pallet and a corresponding protective cover.
The equipment must be checked for completeness and transport damage upon receipt.

If damages are detected, the corresponding damage must be noted immediately on the shipping document and identified with the following phrase: "Conditional acceptance due to obvious damage."

Delivery Scope

Preattached tubes in rear of unit

Additional items enclosed in accessory bag

The following components are included with the heat pump:

1 1 Plexiglas cover
2 1 controller receptacle
3 1 front panel
4 1 LOGON B WP controller
5 1 exterior sensor
6 4 vibration dampening rubber pads
7 4 tube seals
8 1 set of documentation
9 4 vibration-dampening tubes

Transport and Setup

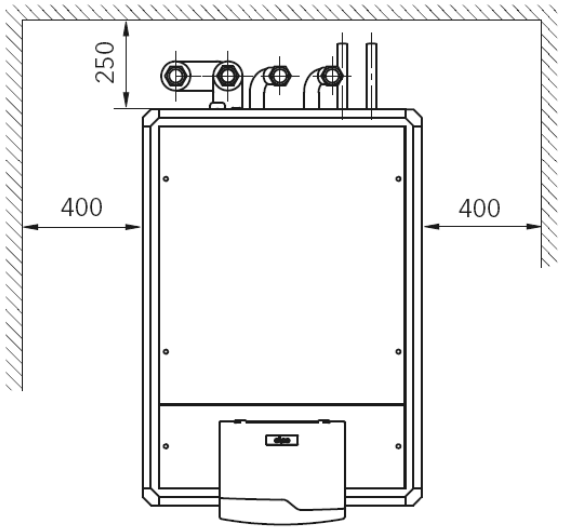
Transport
Before every transport, make sure the lifting or transport equipment has the lifting power needed to transport the respective equipment weight. All of the tasks described here must be carried out based on the relevant safety standards. This applies to tasks associated with the equipment as well as the process or procedure of each task itself.

Transport with Forklifts, Lifting Platform or Similar Equipment
Insert forks lengthwise under the wooden pallet.
When lifting, make sure the weight is equally distributed. Never tilt the heat pump beyond max. 30° (in any direction) when transporting it. Avoid exposing the heat pump to any type of moisture or humidity.
(Also applies to setup and installation!)
Never stack objects on the heat pump or hang up wet clothes over it.

Setup
The heat pump is designed to be set up in an interior location (IPXO, i.e. only dry rooms). The base frame must be set up on a smooth, level, and plane surface.
The heat pump must be setup in a way that allows servicing the pump without access problems. This is ensured when complying with the wall clearances depicted below.

After moving the unit to the installation location, remove the transport protection and safety elements and attach the vibration dampening rubber pads included with the equipment into the now exposed threaded openings at the bottom of the unit.
These pads are also adjustable to ensure the heat pump is level.

Plan view with min. clearances



Control station

Transport and Setup
Hydraulic Connections

After the unit is placed into position, make sure to check for visible damage. Properly dispose off the packaging material.

The flexible connection tubes and hoses included in the delivery scope are attached to the rear of the AQUATOP TC.
The heating and the heat reclamation sides are connected to the rear as well (hold on to nut when tightening cap nut to prevent twisting the flexible connection lines).

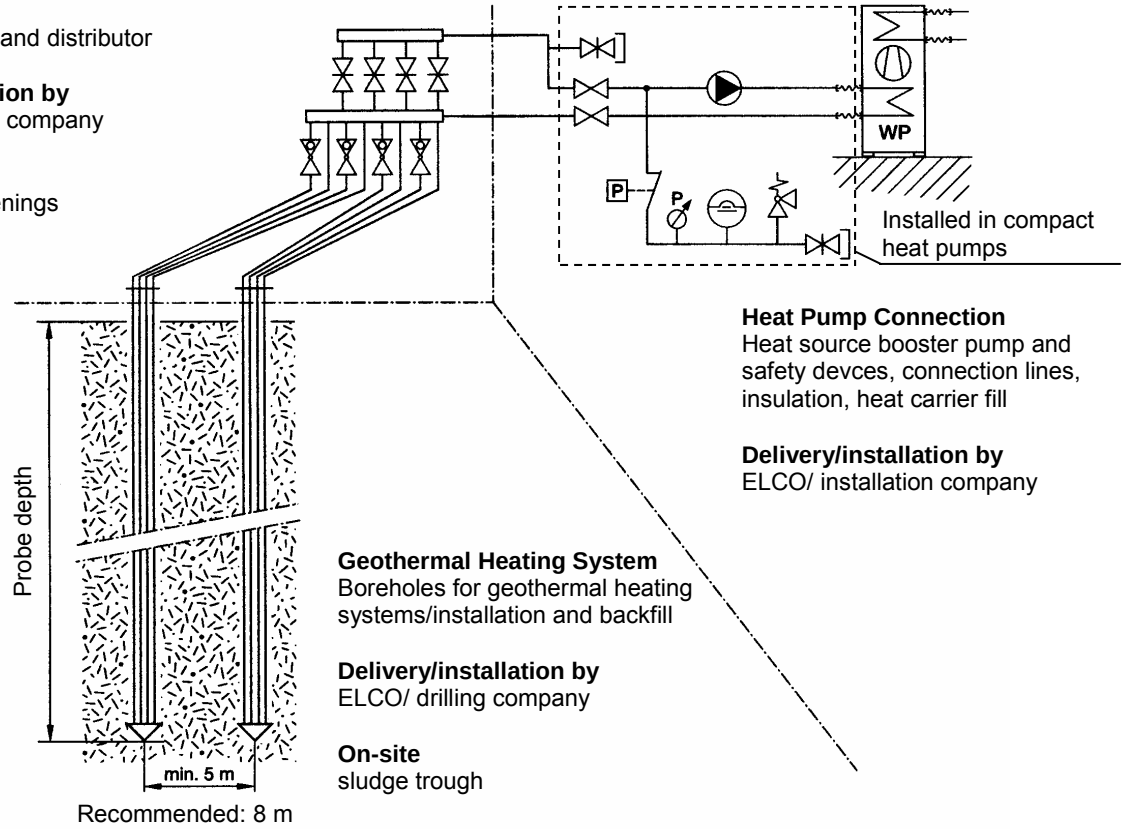
Heat Reclamation Connection

Geothermal Heating System / Geothermal Tube Collector

Connections
Connection pipes and distributor

Delivery/installation by
ELCO/ installation company

On-site
Trenches and openings



Heat Pump Connection
Heat source booster pump and safety devces, connection lines, insulation, heat carrier fill

Delivery/installation by
ELCO/ installation company

Geothermal Heating System
Boreholes for geothermal heating systems/installation and backfill

Delivery/installation by
ELCO/ drilling company

On-site
sludge trough

The general schematic also applies to geothermal tube collectors.

Brine-side circulating pump, expansion vessel, manometer, charging element, and safety valve are already installed into the AQUATOP TC unit.

Lead safety line at an incline into suitable collection container.

Heat Reclamation Connection

Water (with intermediate circuit)

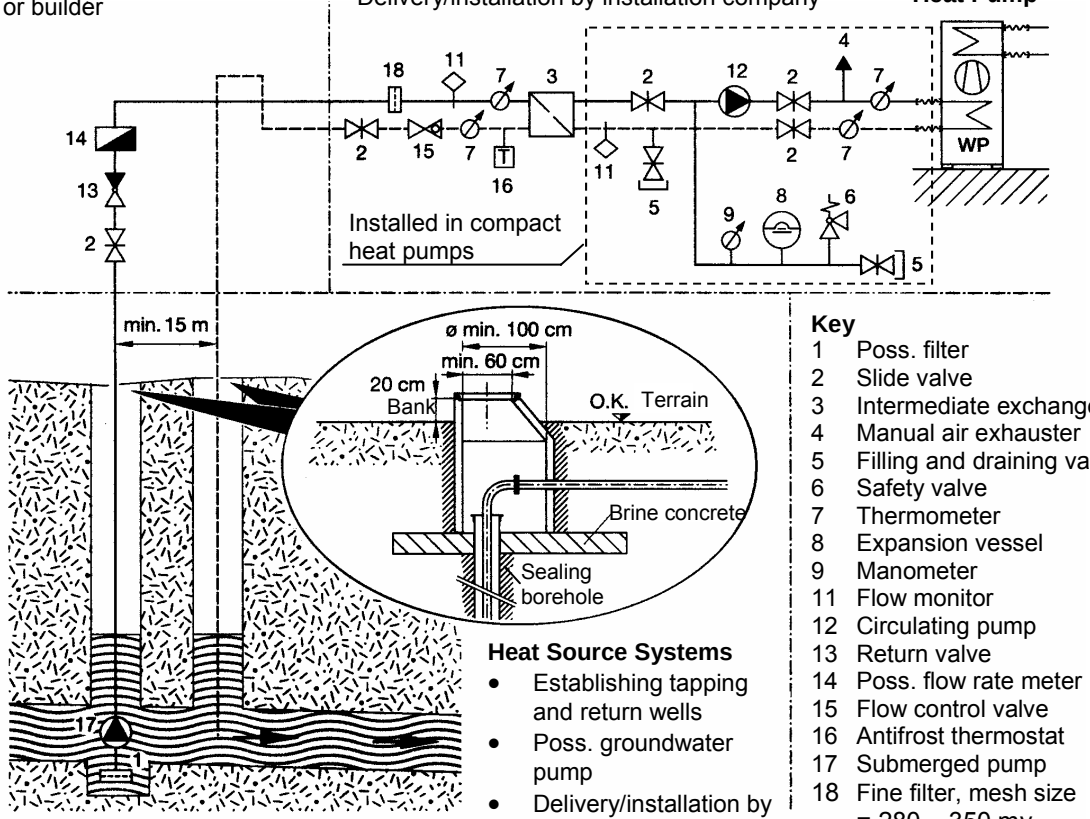
Connections
- Tapping and return lines
- Trenches and opening

Delivery/installation by installation company or builder

Intermediate Circuit
- Poss. groundwater pump
- Establishing intermediate circuit incl. heat carrier fill

Delivery/installation by installation company

Heat Pump



Heat Source Systems
- Establishing tapping and return wells
- Poss. groundwater pump
- Delivery/installation by installation company or drilling company

Key

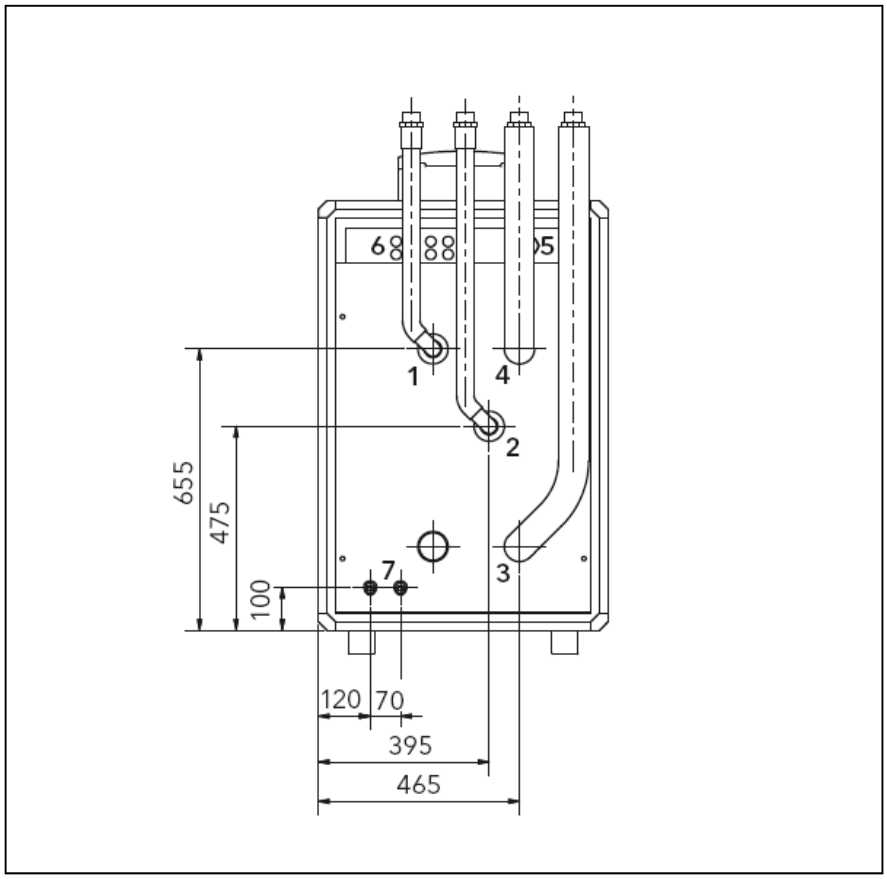
1 Poss. filter
2 Slide valve
3 Intermediate exchanger
4 Manual air exhauster
5 Filling and draining valve
6 Safety valve
7 Thermometer
8 Expansion vessel
9 Manometer
11 Flow monitor
12 Circulating pump
13 Return valve
14 Poss. flow rate meter
15 Flow control valve
16 Antifrost thermostat
17 Submerged pump
18 Fine filter, mesh size = 280 – 350 my

When using groundwater or well water as heat source, the following must be observed:
- Min. temperature > = 7°C
- Filtered, clean water; provide water filter in pressure line

Brine-side circulating pump, expansion vessel, manometer, charging element, and safety valve are already integrated into the AQUATOP TC.

Lead safety line at an incline into suitable collection container.

Heater-Side Connection



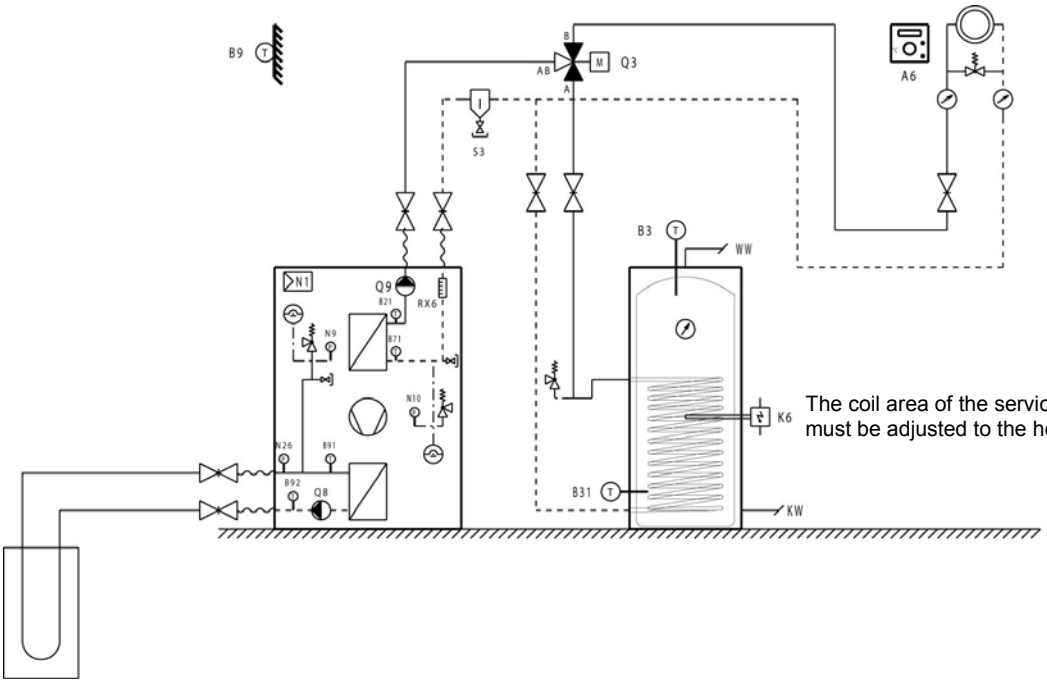
Key

1 Heating water outlet, inside thread
2 Heating water inlet, inside thread
3 Heat source outlet, inside thread
4 Heat source inlet, inside thread
5 Electrical feed
6 Sensor cable
7 Safety valve outlet

Heater-Side Connection

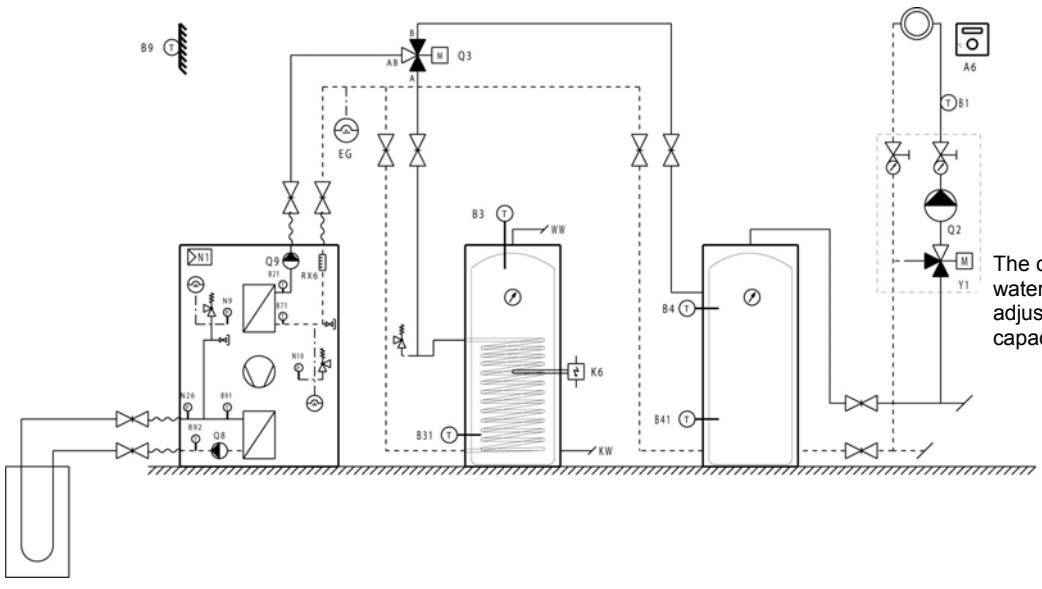
Two different basic concepts exist:

a) Direct connection, without buffer storage, comply with min. circulating water volume requirement



The coil area of the service water storage must be adjusted to the heat pump capacity.

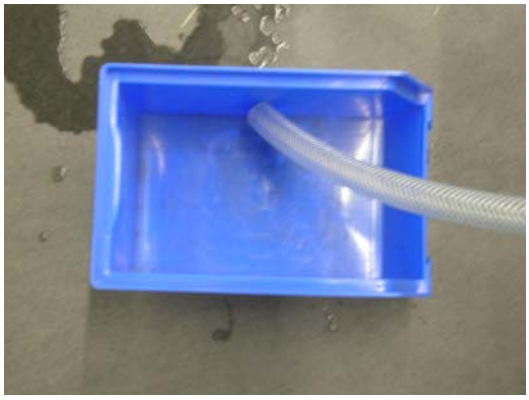
b) Indirect connection, with buffer for hydraulic decoupling



The coil area of the service water storage must be adjusted to the heat pump capacity.

Condensate and Safety Line

The condensate line and the safety line of the heating side must be installed freely visible and at an incline towards the building drainage system.



The safety line of the heat reclamation side (heat gain with brine) must be installed freely visible and at an incline, leading into a suitable collection container.

Electrical Connection

General

Compliance with the corresponding SEV, EN, IEC, as well as the corresponding VDE standards is required for the electrical connection of the heat pump. The connection specifications of the local utility or electric company must be complied with as well.

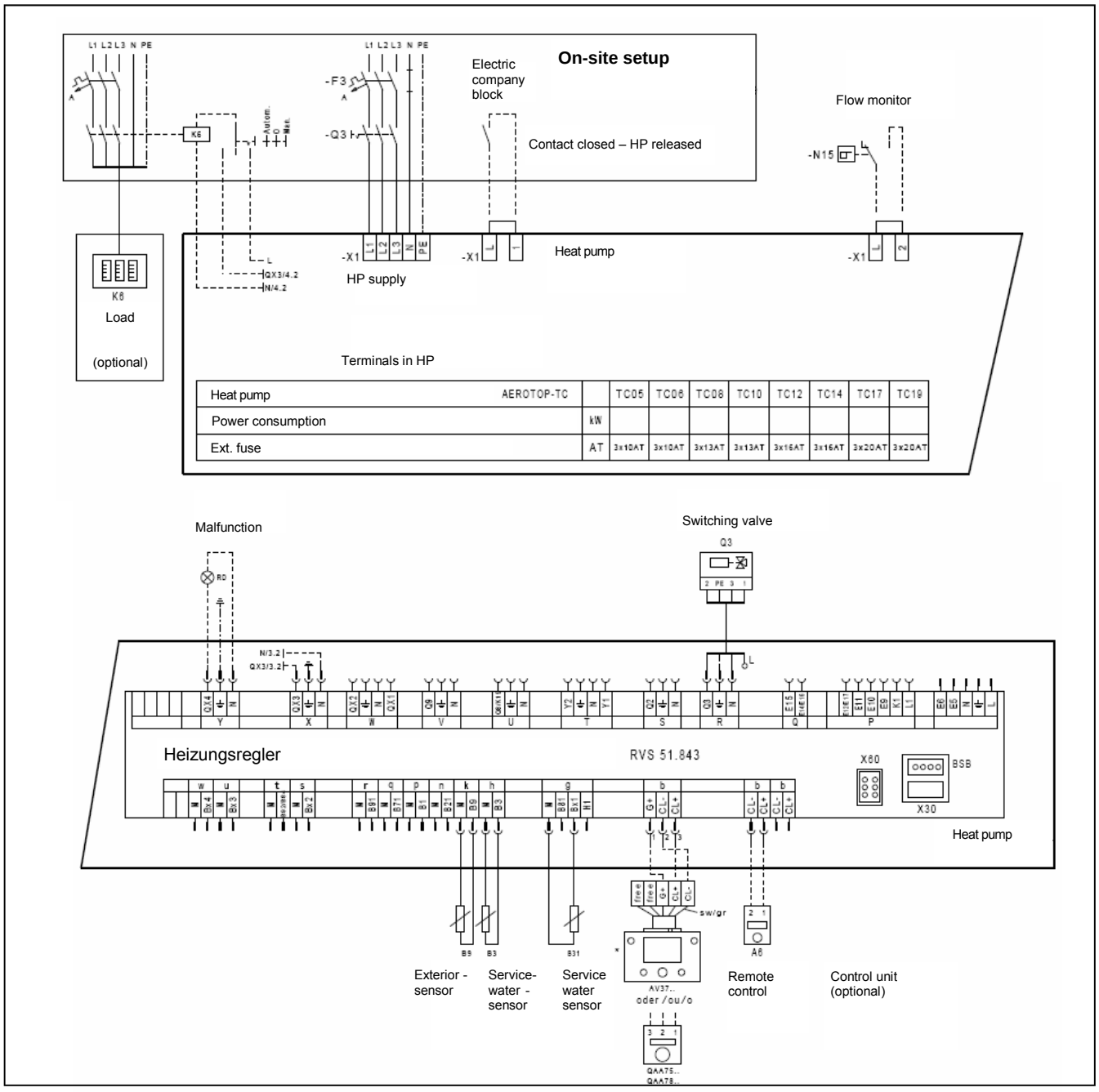
The power supply to the equipment must be interrupted before each electrical connection or service or maintenance work. The upper cover on the equipment must be removed for the electrical connection. This requires unscrewing four hexagonal screws on the rear upper cover plate of the unit and removing the cover by pulling towards the top.

The power supply is carried out via the inlet of the cable connection at the rear side of the heat pump. All other necessary control connections such as flow monitor, frost protection, thermostat, and temperature sensor are also at the rear of the heat pump.

Power Supply to the Switchbox
The power supply for the heat pump must feature a main switch or all-pole cut-off switch with a contact distance of at least 3 mm, as well as a 3-pole circuit breaker with shared trigger for all outer conductors. See technical data or type plate on rear of heat pump for the tripping current! The power cables must have a cross-section that meets the equipment output as well as locally applicable rules and standards.

Electrical Connection

Wiring Diagram and Terminal Assignment



The sensors, pumps, mixing valves, etc. to be connected may vary depending on the system configuration and are listed in the corresponding standard documentation.

Depending on the technical connection requirements (TCR) of the electric company, a separate input of power element (compressor) and control element (control, pumps) may be needed. Comply with the corresponding connection scheme (diagram)!

Hot cables and sensor cables must be installed separately!

Control Panel

The front cover, the controller case, and the control panel are to be assembled in the following order:

Connection Plug to Control Panel 1
Insert the connection plug to the control panel through the opening in the front upper cover plate.

Connection Plug to Control Panel 2

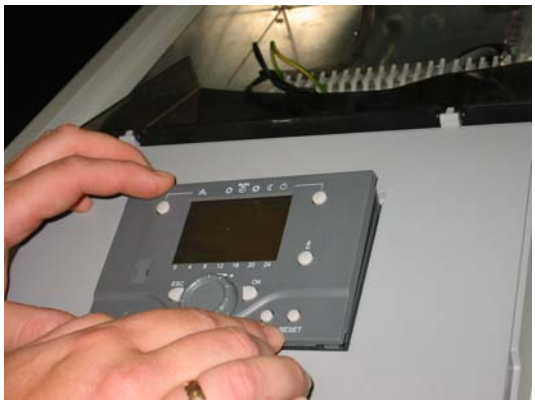
Insert Controller Receptacle into Upper Front Cover Plate
The controller receptacle is inserted into the 4 lengthwise grooves of the upper front cover panel.
Make sure the connection plug is threaded through the opening for the control panel.

Insert Connection Plug into Control Panel

Assembly

Control Panel

Insert Control Panel into Controller Case



Attach Front Cover
Insert the front cover panel into the controller case from bottom to top while holding at a slant.

Snap Front Cover into Place
Snap front cover into the provided lengthwise grooves.

Charging Geothermal Heating Systems

Problems and Issues
Incorrect Brine Concentration
Flushing

Problems
Problems with charging a geothermal heating system (GHS) with antifreeze may occur occasionally and result in a reduced capacity of the system or even total system failure. Most problems are as follows:

Dirt in the Circuit
Drilling companies generally strive to fill only clean water into geothermal heating systems. However, dirt may reach the probe due to inattention. This dirt can damage the circulating pump or the evaporator of the heat exchanger.

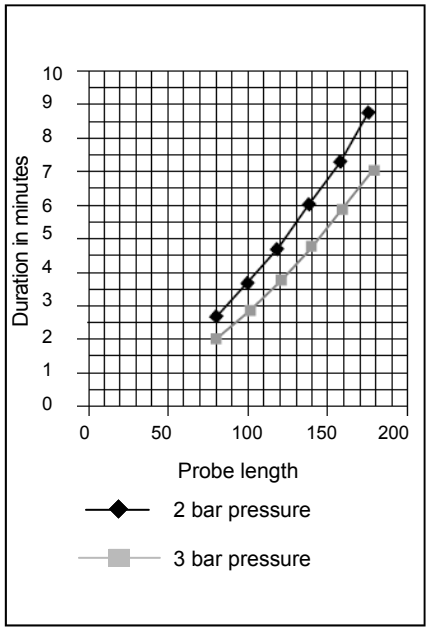
Insufficiently Mixed Brine Solution
If the correctly calculated antifreeze volume is charged directly as a concentrate without corresponding mixing device, individual probes may jam or become completely disconnected due to the viscosity of the concentrate. Water without the required glycol content circulates in the remaining probes. Without the required glycol content, the heat pump may freeze already upon initial startup, which may destroy the associated evaporator.

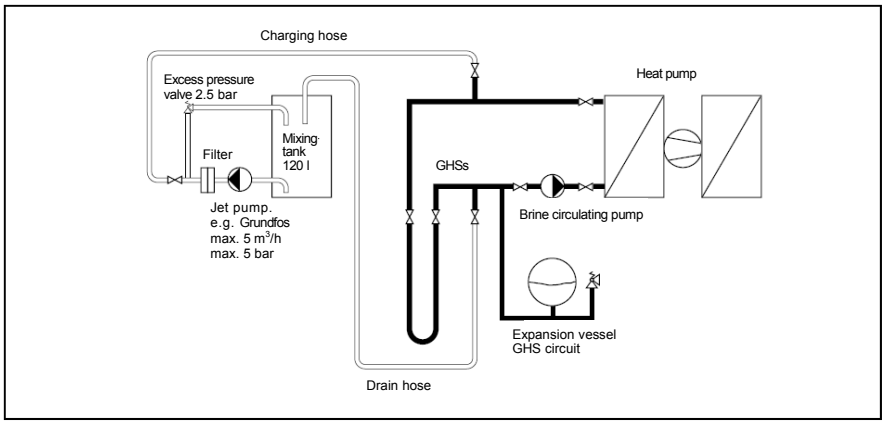
Incorrect Brine Concentration
In some cases, the detected glycol concentration differed greatly from the calculation.
This was mostly due to a lack of the proper equipment to prepare the mixture correctly. If the concentration is too high, the heat pump's capacity is reduced and works less efficiently. The heat pump may also overheat. An insufficient concentration (<20%) may cause corrosion and frost damage.

Correctly Charging the GHS with the Help of a Mixing Tank, Mixing Equipment with Filter
All of the problems listed previously can be avoided by properly charging the GHS circuit. The right equipment can make all the difference as well.
Use a mixing and charging tank to charge the GHS circuit according to the following requirements:
- Clean mixture
- Correct concentration:
- Homogeneous mixing

Flushing
Use filtered potable water and pressure to flush first the circulating pump of the GHS circuit and the evaporator and remove pollutants such as welding beads, little stones, and dirt.
After closing a slider in the heat pump circuit, each circuit of the GHS is flushed one after the other.
A pressure of 2 bar is used to flush a 140-m long ø 32 mm probe for 6 minutes as depicted below.

Min. Flushing Time for 32-mm Probe





Charging with Antifreeze
Correctly Charging a Geothermal Heating System Circuit

Charging with Antifreeze
After flushing, the entire geothermal heating system circuit is to be filled with clean tap water. Follow the steps below to prepare the required concentration of antifreeze with a 100% concentrate. For example:
The required antifreeze concentration is 25% (ideal range is 25-30%) with a 140-m Duplex® ø 32 mm BHE.
(Content per meter = 4 pipes x 10 dm, length x 0.13 dm,
inner radius^2 x rr = 2.12 l/m.)

Geothermal heating system (probe) diameter	Content per meter
25 mm	1,31 l/m
32 mm	2,12 l/m
40 mm	3,34 l/m

Correctly Charging a Geothermal Heating System in 14 Steps

1. Flush the GHS circuit as described on page 18.

2. Calculate the probe volume acc. to table above. One GHS (GHS ø 32 mm) has 2.12 l/m content per meter. This yields the following GHS content for our example: 140 m x 2.12 l/m = 296.8 liters (297 l). Do not forget the content of the connection lines up to the heat pump, 30 liters in our example. This results in a total system content of 297 liters + 30 liters = 327 liters.

3. Required volume of 100% antifreeze concentrate: 25% of 327 liters = 82 liters.

4. Close the sliders to the heat pump. Remove the drain hose from the tank and place in drain.

5. Open the sliders of the GHS – if several probes have been installed, one slider after the other is opened during charging.

6. Fill the mixing tank with an approx. mixture of 1:1 of antifreeze concentrate and fresh water. Depending on tank size, not all of the 82 liters of concentrate fit into the tank (see calculation, item 3).

7. Switch the feed pump on. As soon as the tank begins to empty, continuously fill in the remaining antifreeze concentrate and additional fresh water into the mixing tank at a ratio of approx. 1:1. Make sure that always at least 40 liters of mixed reserve remains in the tank. Volume markers can be attached to the edge of the tank to help you determine its volume.

8. The feed pump is allowed to run until the entire antifreeze mixture – except for the 40 liters reserve – are filled in and then is switched off at once. Excess tap water drains from the drain hose into the drain.

9. Now insert the drain hose into the tank, turn the feed pump back on, and allow it to run until glycol and water are thoroughly mixed. This takes about 6-times to 8-times as long as it takes for flushing (see diagram, item flushing).

10. Close charging valves at drain hose and then those at the geothermal heating system distributor. The excess pressure valve (2.5 bar) routes the excess mixture back into the tank. Shut off feed pump. About 40 liters remain in the tank. Some of the mixture was absorbed by the expansion of the geothermal heating system.

11. In case of relatively long geothermal heating systems and insufficiently mixed mixture, the excess pressure valve at the tank is triggered and thereby intensifies mixing.

12. If several GHSs are combined into one system, the second, third, etc. GHS is first flushed and then charged individually until all have been processed.

13. Once all geothermal heating systems are charged, the evaporator and the brine circulating pump must be charged next. All sliders to the geothermal heating systems are closed for this purpose and the sliders to the evaporator are opened. The remaining mixture is now carefully pumped via the slider at the filling hose. Allow water in the circuit to escape via the drain hose. As soon as the glycol mixture emerges as the drain hose (color change), close the corresponding valve and allow the pump pressure to charge the expansion vessel (2.5 bar). Then close the valve at the filling hose. The system is now charged with the correct concentration and correct operating pressure without introducing pollutants to the system.

14. Now carry out a pressure test. This test should be performed over an extended period to avoid the hassle of finding leaks later on. Note: Antifreeze mixtures are more likely to result in leaks earlier than water alone!

Charging with Antifreeze
Correctly Charging a Geothermal Heating System Circuit

Heating and Brine Charging Valves

The brine circuit is to be charged with a charging pressure of 1 bar (diaphragm-type expansion vessel initial pressure) + 0.3 bar as brine header = total of **1.3 bar**.

The temperature difference during this operation should not exceed 4 K between sole inlet and outlet.

Flushing and charging (heating side).

The heating side must be flushed and charged as well.

The initial pressure in the diaphragm-type expansion vessel (heater, factory-set at 1 bar) must be adjusted to meet local requirements. (Static height in m 0.1 bar.).

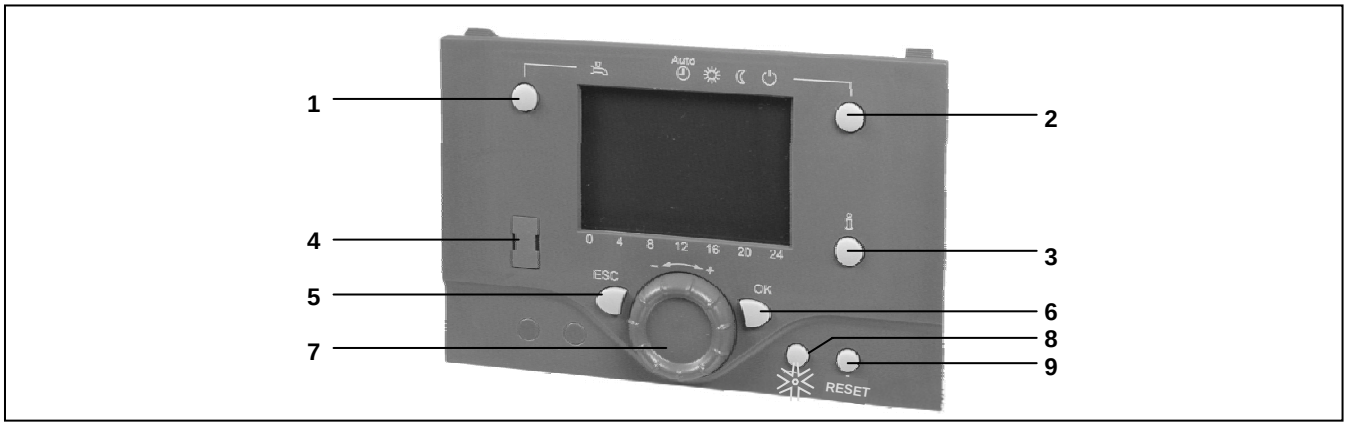
The charging pressure should be as follows while cold: initial pressure diaphragm-type expansion vessel + 0.2 bar (water header).

The Aquatop TC 19 and the AQUATOP TC 11 HT are equipped with 2 heater-side expansion vessels.

Important: Comply with water quality, VDI 2035

Charging must be carried out in accordance with DIN EN 1717.

Heat Pump Controller LOGON B RVS51



Control Based on Atmospheric Conditions, Featuring the Following:

- Illuminated display, status and function indicators in plain text.
- Standard program default setting, setpoints, date, time.
- Automatic switching between summer/winter time.
- Preset standard timed programs for heating and hot water heating.
- Complete control and monitoring of the HP incl. 2 heating circuits and potable water heating, buffer in one unit.
- Highly flexible application options due to wireless transfer to room controller and exterior sensor (optimal for renovations).
- Vacation program.
- Info key for quickly querying the most important temperatures and system states.
- Floor drying function.
- Room temperature control with accessory QAA75 and QAA78.
- Demand-based heater shut-off.
- Easy initial startup of system due to sensor self-detection or presetting to specific scheme.
- Adjustable min. and max. flow temperatures.
- Pump overrun.
- Integrated operating hours counter.
- Thermal disinfection of hot water with electrical immersion heater in PWH tank can be enabled in addition.
- 2-lead bus interface for controller accessories.
- Trend logging (data logging function).

Key:

1 Operating mode key service water
Switches on potable water heating. (Bar in display below water faucet.)

2 Select heating operation
Sets 4 different heating operating modes.

3 Info key
Displays information without affecting control.

4 Service plug (BSB)
2-wire connection.

5 Return key ESC

6 Confirmation key OK
These two keys are needed together with the large rotary knob (7) for programming and configuring the controller. Settings not adjustable with the control elements are programmed into the control unit.

Press the ESC key to jump one step back. Set or adjusted values are not applied.

7 Room temperature control knob, navigation, and settings
- Changes the comfort setting of the room.
- Use this rotary knob to select and adjust settings during programming.

8 Cooling key
Cooling cycle key activates passive cooling via the heat source for type AQUATOP T units in combination with the corresponding accessories.

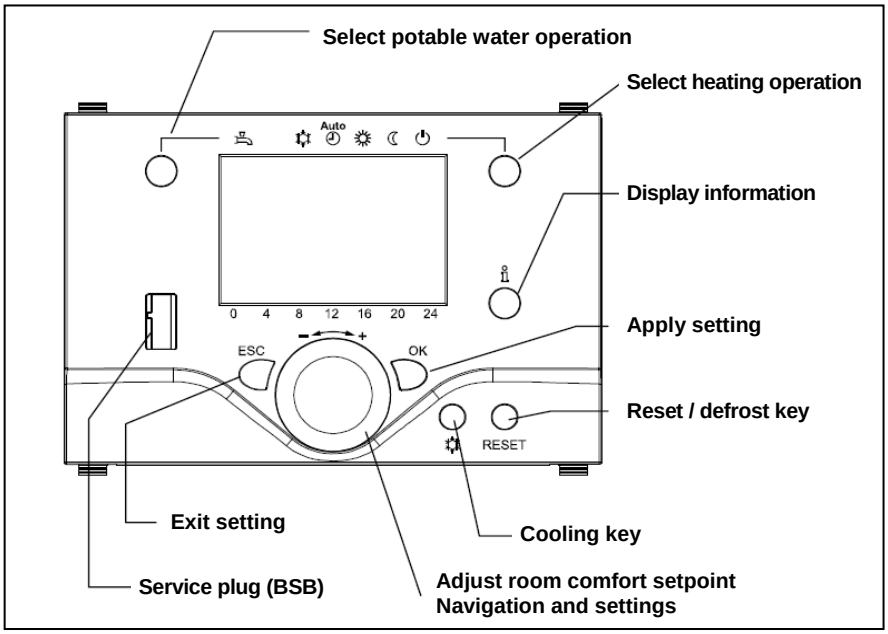
9 HP Reset and HP defrosting key
The reset key triggers a reset of the heat pump.

Quickstart
LOGON B RVS51.843, Control Elements

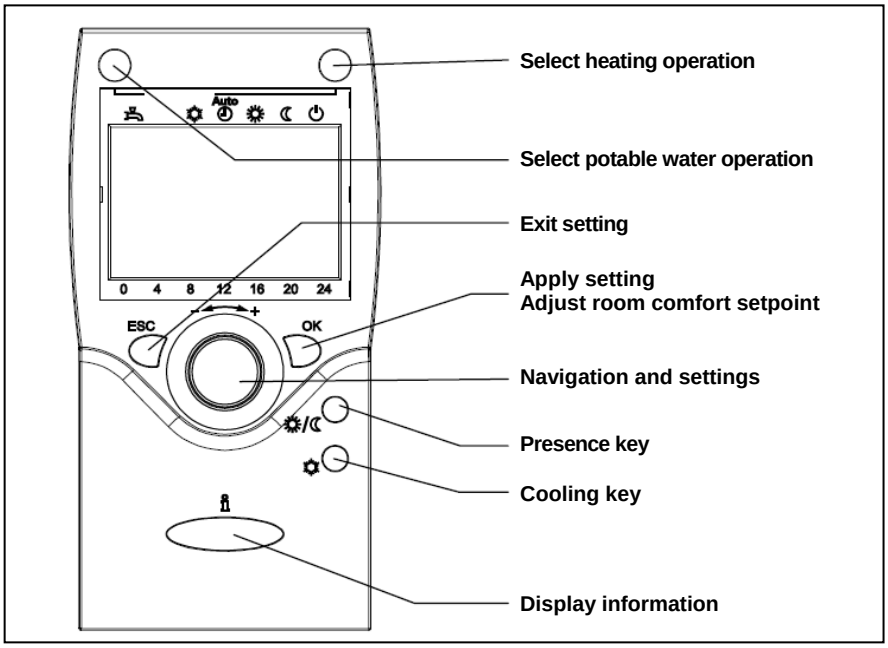
Control Units

Control Panel AVS37.294/309

Control unit installation variations:
Snapped into HP front panel (interior HP setup) or inside the building, with the help of the wall mounting plate, attached to wall (exterior HP setup).



Room Controllers QAA75...
QAA75.611 /301:
Room controller, wired.

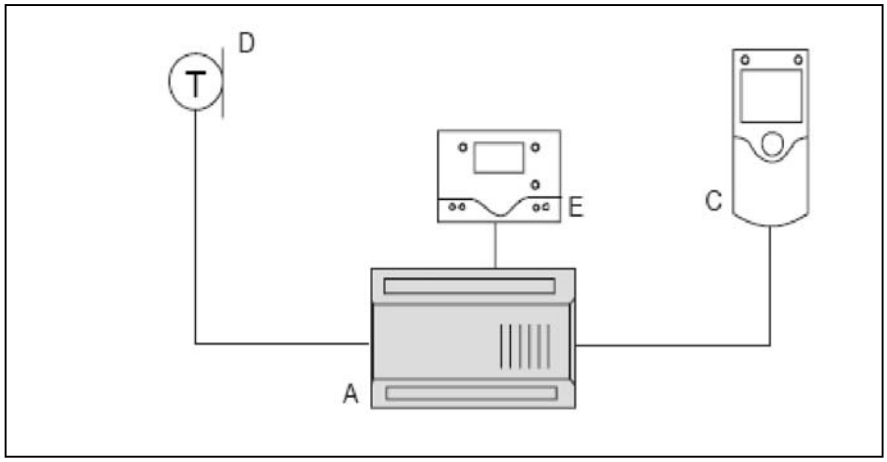


Operating Options
Using control panel "plain text"
(Additional room controller optional)
A Basic unit RVS...
C Room controller QAA75...
D Exterior temp. sensor AVS13...
E Control panel AVS37.294 (plain text)

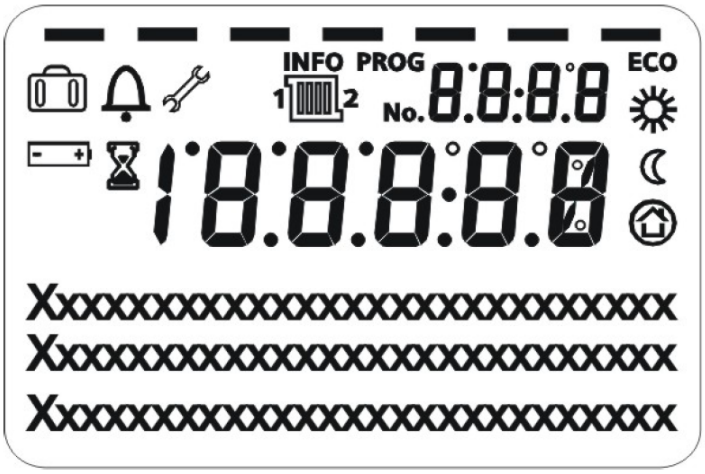
The room controller should be placed in the primary occupancy room after considering the following items:

- Select the placement location in such a way that the sensor is able to obtain accurate room temperature readings and is not affected by direct sunlight or another heat or cold source (approx. 1.5 above floor level).
- When mounting to wall, there must be sufficient room to slide unit in and out.

If the unit is removed from its base, it is no longer functional.



Quickstart
LOGON B RVS51.843



- Heat to comfort setpoint
- Heat to reduced setpoint
- Heat to frost protection setpoint
- Cool
- Process running – please wait
- Replace battery
- Vacation function activated
- Refers to heat circuit
- Maintenance/special function
- Error messages
- INFO — Info level activated
- PROG — Setting level activated
- ECO — Heater temporary shut off
ECO function active

Basic Display (Key Level)

Press **OK** (1x)

End user

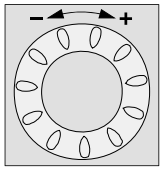
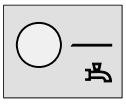
- Select desired setting
- Confirm with **OK**
- Use **ESC** to return to basic display

Press **OK** (1x)
Press **INFO** (3 seconds)

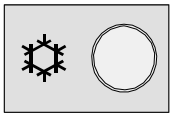
Initial startup / Service technician

- Select desired user level
- Confirm with **OK**
- Select desired setting
- Confirm with **OK**
- Use **ESC** to return to basic display

Basic Display

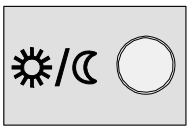
Key	Action	How To	Display/Function
	Change operating mode or cycle	Factory setting:	**Automatic Mode** AUTO **ON** The automatic operating mode adjusts the room temperature as set with the timer program.
			Continuous operation ☼ **or** ☽ Keeps the room temperature at the selected operating level.
		- Press key 1x	☼ **Heat to comfort setpoint ON** • Heating operation without timer program to comfort setpoint • Protective functions active
		- Press key again	☽ **Heat to reduced comfort setpoint ON** • Heating operation without timer program to reduced setpoint • Protective functions active • Su/Wi automatic switching (ECO functions and automatic day heating limit inactive with continuous operating with comfort setpoint
		- Press key again	**Protective mode** ⏻ **ON** While in protective mode, the heater is switched off but remains protected from frost (frost-protection temperature).
	Adjust room comfort setpoint	- Use rotary knob left/right. - Confirm with OK or: - Press ESC	Changes the heating comfort setpoint during the active heating cycle. **Comfort setpoint** ☼ **applied** **Comfort setpoint not applied** - The basic display is depicted after 3 seconds
		Press OK - Select control side heating circuit and: - Set the "reduced comfort setpoint"	**Reduced comfort setpoint** ☽ **applied**
		Tip: Wait for at least 2 hours after changing settings so that the room temperature can adjust.	
	Switch potable water operation ON or Off	- Press key 1x	**Potable water operation ON/OFF** (Bar under potable water symbol visible/hidden) - ON: Potable water is prepared according to the selected switching program. - OFF: No potable water preparation, protective function is active

Basic Display

<table>
<tr><th>Key</th><th>Action</th><th>How To</th><th>Display/Function</th></tr>
<tr><td colspan="4"></td></tr>
<tr><td>  </td><td>Cooling operation
Switch ON or Off</td><td>- Press key 1x</td><td>Cooling operation ON/OFF
(Bar under cooling cycle symbol visible/ hidden)

Passive cooling via HP switched ON/ OFF.

The "cooling" operating mode adjusts the room temperature as set with the timer program.

Cooling mode characteristics:
- Manual cooling mode
- Cooling operation acc. to timer program
- Temp. setpoint acc. to
- "Cooling comfort setpoint"
- Protective functions active
- Su/Wi automatic switching active</td></tr>
<tr><td rowspan="3">  </td><td rowspan="3">Presence key:
(If you are leaving the rooms for a short time during the comfort period, use this key to lower the temperature temporary to save heating or cooling energy.)</td><td>In heating mode:
- Press key 1x

- Press key again</td><td>Switching from comfort setpoint to reduced comfort setpoint

Switching from reduced comfort setpoint to comfort setpoint</td></tr>
<tr><td>In cooling mode:
- Press key 1x

- Press key again</td><td>Switching from comfort setpoint to OFF.

Switching from cooling OFF to comfort setpoint.</td></tr>
<tr><td colspan="2">! The presence function only works while in automatic mode.
! The current selection is active until the next switching acc. to heating program.</td></tr>
<tr><td>  </td><td>Displays various information.</td><td>- Press key 1x
- Press key again
- Press key again
- …

- Press key
  </td><td>INFO segment is displayed

1. Use the info key to query and display various information.
- Room temperature
- Room setpoint
- Exterior temperature
- Potable water temperature
- Buffer storage temp.
- Puffer storage setpoint
- HP setpoint
- HP flow temp.
- HP return temp.
- …
- Heat circuit status
- Potable water status
- Heat pump status
- Solar status
- Buffer storage status
- Floor function
- Date & time
- Customer service phone
- Inlet/outlet temp. of source

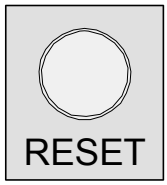
2. The display may depict one of the following symbols as well:

Error message
If this symbol is depicted, a system malfunction has occurred. Press the info key for additional information.

Maintenance
If this symbol is depicted, a service message or a special operating mode has occurred. Press the info key for additional information.

Back to basic display, INFO segment is turned off</td></tr>
</table>

Basic Display

Key	Action	How To	Display/Function
	Reset and defrost function	- Press key 1x and less than 3 seconds	**Triggers reset** Any pending heat pump error messages, counters, and other resettable parameters are reset all at one when pressing this key. The preset switching-on delay in case of malfunctions is thereby bridged. Do not use this function during normal operation!

Parameterization

Initial startup (sometimes referred to as "commissioning") involves the following tasks:

- The correct assembly, setup, and electrical installation are prerequisites.
- Make all system-specific adjustments. The "configuration" control side is particularly important. Select the corresponding control level as follows:
- On the room controller, use OK to switch to programming.
- Keep the info depressed for at least 3 seconds and use the rotary knob to select the "initial startup" control level. Then press OK. Perform function check. Reset the damped exterior temperature.
  (Control side "Diagnose consumer," control line damped exterior temperature 8703)

- Basic display "room temperature"
- Press 1 x OK
- Press INFO > 5 seconds
- Use +/- rotary knob to select "initial startup or technician" level, for example
- Press 1 x OK
- Use +/- rotary knob to select "parameter 1612 reduced setpoint," for example from potable water menu
- Press 1 x OK
- Use +/- rotary knob to change current value
- Press 1 x OK -> value is saved
- Press 2 x ESC to return to basic display

Overview of Initial Startup Parameters
Parameter lines E (end user) and I (initial startup) are displayed in the initial startup level.
The complete parameter list (with lines E, I and F) is displayed in the technician level.

	Control line	Control level	Function	Unit	Min	Max	Factory settings
Time and date	1	E	Hours/Minutes	hh:mm	00:00	23:59	-
	2	E	Day/Month	dd.mm	1.01	31.12	-
	3	E	Year	yyyy	2004	2099	-
	4	F	Summer time start	dd.mm	1.01	31.12	25.03
	5	F	Summer time end	dd.mm	1.01	31.12	25.10
Control unit	20	E	Language	-	Deutsch, English, Francais, Italiano, Nederlands		Deutsch
	40	I	Unit address	-	Room controller 1, room controller 2, HMI, service unit		Room controller 1
	42	I	Room contr. 1 assignment	-	Heating circuit 1, heating circuit 1 and 2		Heating circuit 1
	44	I	Operation HC2	-	Together with HC1, independent		Together with HC1
	46	I	Operation HCP	-	Together with HC1, independent		Together with HC1
	48	I	Presence key active duration	-	None, heating circuit 1, heating circuit 2, together		Heating circuit 1
Timer program heating circuit 1	500	E	Preset value	-	Mon - Sun, Mo - Fri, Sat - Sun, Mon, Tue, Wed, Thu, Fri, Sat, Sun		Mon - Sun
	501	E	1. phase ON	hh:mm	00:00	24:00	06:00
	502	E	1. phase OFF				22:00
	503	E	2. phase ON				- - . - -
	504	E	2. phase OFF				- - . - -
	505	E	3. phase ON				- - . - -
	506	E	3. phase OFF				- - . - -
	516	E	Default values	-	Yes	No	No

F = Function E = End User I = Initial Startup

Parameterization

	Control line	Control level	Function	Unit	Min	Max	Factory settings
Timer program heating circuit 2	520 . . . 536 (same as timer program heating circuit 1)						
Timer program 3 / HCP	540	E	Preset value	-	Mon - Sun, Mo - Fri, Sat - Sun, Mon, Tue, Wed, Thu, Fri, Sat, Sun		Mon - Sun
	541	E	1. phase ON	hh:mm	00:00	24:00	06:00
	542	E	1. phase OFF				22:00
	543	E	2. phase ON				- - . - -
	544	E	2. phase OFF				- - . - -
	545	E	3. phase ON				- - . - -
	546	E	3. phase OFF				- - . - -
	556	E	Default values	-	Yes	No	No
Timer program 4 / PWH	560	E	Preset value	-	Mon - Sun, Mo - Fri, Sat - Sun, Mon, Tue, Wed, Thu, Fri, Sat, Sun		Mo - So
	561	E	1. phase ON	hh:mm	00:00	24:00	00:00
	562	E	1. phase OFF				05:00
	563	E	2. phase ON				- - . - -
	5 64	E	2. phase OFF				- - . - -
	565	E	3. phase ON				- - . - -
	566	E	3. phase OFF				- - . - -
	5 76	E	Default values	-	Yes	No	No
Vacation heating circuit 1	642	E	Vacation period 1 HC1: First day	dd.mm	1.01	31.12	--.--
	643	E	Vacation period 1 HC1: Last day	dd.mm	1.01	31.12	--.--
	648	E	Vacation operating level 1 HC1	-	Frost protection	Reduced	Frost protection
Vacation heating circuit 2	652 . . . 658 (same as vacation heating circuit 1)						
Vacation heating P	662 . . . 668 (same as vacation heating circuit 1)						
Heating circuit 1	710	E	Comfort setpoint	°C	Value from control line 716	Value from control line 713	20
	712	E	Reduced setpoint	°C	Value from control line 714	Value from control line 710	19
	714	E	Frost protection setpoint	° C	4	Value from control line 712	10
	720	E	Slope of the characteristic	-	0.1	4	0.8
	730	E	Summer/winter switching temperature	°C	- - - / 8	30	20
	740	I	Min. flow setpoint	°C	8	Value from control line 741	8
	741	I	Max. flow setpoint	°C	Value from control line 741	95	50
	850	F	Floor drying function	-	OFF, function heating, ready for covering heating, function/surface ready, manual		OFF
	851	F	Floor setpoint, manual	°C	0	95	25
	855	E	Floor setpoint, current	°C	0	95	0
	856	E	Floor, current day	-	0	32	0

F = Function E = End User I = Initial Startup

Parameterization

	Control line	Control level	Function	Unit	Min	Max	Factory settings
Cooling circuit 1	901	E	Operating mode	-	OFF		
	902	E	Comfort setpoint	°C	Value from control line 710		
	907	E	Release	-	24h/day, timer program heating circuit, timer program 3/HCP, timer program 4/PWH		24h/day
	908	I	Flow setpoint at ExT 25°C	°C	8	35	20
	909	I	Flow setpoint at ExT 35 °C	°C	8	35	16
	912	E	Cooling limit at ExT	°C	8	35	24
	923	I	Min. flow setpoint at ExT 25°C	°C	8	35	18
	924	I	Min. flow setpoint at ExT 35°C	°C	8	35	18
	945	I	Mixing valve in heating mode	-	Opened	Closed	Opened
Heating circuit 2	1010 . . . 1156 (same as heating circuit 1)						
Heating circuit P	1300	E	Operating mode heating circuit P	-	Protective mode, automatic, reduced, comfort		Automatic
	1310 . . . 1456 (same as heating circuit 1)						
Potable water	1610	E	Potable water temperature, rated setpoint	°C	Value from control line 1612	TempBwMax	55
	1612	E	Reduced setpoint	°C	8	Value from control line 1610	40
	1620	I	Potable water release	-	24h/day, timer program, heating circuit, timer program 4		Timer program 4
	1630	I	Load priority	-	Absolute, sliding, none, MC sliding, PC absolute		Absolute
	1640	F	Legionella function	-	OFF, periodic, fixed day of week		OFF
Heat pumps	2800	I	Frost protection condens. pump	-	OFF	ON	ON
	2802	I	Flow time condens. pump	s	0	240	10
	2803	I	Overrun time condens. pump	s	0	240	10
	2815	I	Source temp. min. water HP (B92)	°C	- - - / -20	30	3
	2816	I	Source temp. min. brine HP (B91)	°C	- - - / -30	50	-5
	2817	I	Switching diff. source protect.	°C	1	10	3
	2818	I	Increase source protection temp.	°C	0	10	2
	2819	I	Flow time, source	s	0	240	40
	2820	I	Overrun time, source	s	0	240	10
	2840	I	Switching diff. return temp.	°C	1	20	4
	2842	I	Compressor run time, min.	min	0	120	10
	2843	I	Compressor standstill time, min.	min	0	120	20
	2844	F	Switch off temp. max.	°C	8	100	57
	2860	F	Block level 2 at PWH	-	OFF	ON	OFF
	2861	F	Release level 2 below ExT	°C	-30	30	-5
	2886	F	Compensation heat deficit	-	OFF	ON	ON
	2951	I	Source temp. defrost release	°C	5	20	12
	2958	I	No. of defrost cycles, max.	-	0	10	4
	2962	I	Duration defrost block	min	0	100	15
	2963	I	Time until forces defrost	min	60	600	150
	2964	I	Defrost duration, max.	min	1	42	15
	2965	I	Evaporator drip time	min	0	10	0
	3000	I	Switch off temp. max. cooling	°C	20	60	35

F = Function E = End User I = Initial Startup

Parameterization

	Control line	Control level	Function	Unit	Min	Max	Factory settings
Solar	3810	F	Temp. diff. ON exchanger 1	°C	Value from control line 3811		8
	3811	F	Temp. diff. OFF exchanger 1	°C	0		4
	3812	F	Load temp. min. exchanger 1	°C	- - - / 8		30
	3830	F	Collector start function	min	- - - / 5		10
	3831	F	Min. run time collect. pump	s	5		31
	3840	F	Collector frost protection	°C	- - - / -20		- - -
	3850	F	Collector overheat protection	°C	- - - / 30		90
	3860	F	Evapor. heat carriers	°C	- - - / 60		110
Buffer storage	4709	I	Forced loading heating	-	None, forced loading setpoint heating, index pointer setpoint heating		None
	4710	I	Forced loading setpoint heating	°C	20	80	50
	4711	I	Forced loading point in time	hh:mm	- - - / 00:00	23:50	02:00
	4712	I	Max. forced loading duration	h	1	20	4
Potable water storage	5056	F	Re-cooling generator/HC	-	OFF	ON	OFF
	5057	F	Re-cooling collector	-	OFF, summer, always		Always
	5060	F	Electr. immersion heater operating mode	-	Auxiliary, summer, always		Auxiliary
	5061	F	Electrical immersion heater release	-	24h/day, potable water release, timer program 4/PWH		Potable water release
	5090	F	With buffer storage	-	No	Yes	No
Configuration	5700	I	System scheme, preset values	-	- - - / 1	16	- - -
	5710	I	Heating circuit 1	-	OFF	ON	ON
	5711	I	Cooling circuit 1		OFF, 4-conductor system, 2-conductor system		OFF
	5712	I	Using mixing valve 1		None, heating, cooling, heating and cooling		Heating and cooling
	5731	I	Potable water actuator Q3	-	None, charge pump, reversing valve		Charge pump
	5800	I	Heat source	-	Brine, water, air		Water
	5801	I	HC spread at ExT -10°C	°C	0	20	7
	5870	I	Combination storage	-	No	Yes	No
	5890	I	Relay output QX1	-	None, compressor 2 K2, electrical immers. heater flow K26, electrical immers. heater buffer K16		None
	5891	I	Relay output QX2	-	None, circulating pump Q4, electrical immersion heater PWH K6 alarm output K10, heating circuit pump HCP Q20, H1 pump Q15, 2. pump level HC1 Q21, 2. pump level HC2 Q22, pump level HCP Q23, directional valve cooling Y21, process reversal valve Y22, collector pump Q5		None
	5892	I	Relay output QX3	-	None, circulating pump Q4, electrical immersion heater PWH K6 alarm output K10, heating circuit pump HCP Q20, H1 pump Q15, 2. pump level HC1 Q21, 2. pump level HC2 Q22, pump level HCP Q23, directional valve cooling Y21, process reversal valve Y22, collector pump Q5		None
	5894	I	Relay output QX4	-	None, circulating pump Q4, electrical immersion heater PWH K6 alarm output K10, heating circuit pump HCP Q20, H1 pump Q15, 2. pump level HC1 Q21, 2. pump level HC2 Q22, pump level HCP Q23, directional valve cooling Y21, process reversal valve Y22, collector pump Q5		Alarm output K10
	5930 5931 5932 5933	I	Sensor input BX1, BX2, BX3, BX4	-	None, buffer storage sensor B4, buffer storage sensor B41, collector sensor B6, potable water sensor B31, hot gas sensor B82, coolant sensor fluid B83		None
	5950	I	Function input H1	-	Operating mode switching HCs+PWH, operating mode switching HCs, operating mode switching HC1, operating mode switching HC2, operating mode switching HCP, error /alarm message, minimal flow setpoint, heat demand, dew point monitor, flow setpoint increase hygro		Operating mode switching HCP

Parameterization

	Control line	Control level	Function	Unit	Min	Max	Factory settings
Configuration	5951	I	Operating action contact H1	-	Normally closed contact (NCC), normally open contact (NOC		NOC
	5952	I	Min. flow setpoint H1	°C	8	120	40
	5954	I	Heat demand 10V H1	°C	5	130	60
	6007	F	Operating action input E14, E16	-	NCC	NOC	NCC
	6020	I	Function expansion module 1	-	No function, heating circuit, cooling circuit 1		Heating circuit
	6110	F	Time constant, building	h	0	50	10
	6120	F	System frost protection	-	OFF	ON	ON
	6200	I	Save sensor	-	No	Yes	No
	6201	F	Delete sensor	-	No	Yes	No
	6204	F	Save parameter	-	No	Yes	No
	6205	F	Reset parameter	-	No	Yes	No
	6212	I	Control number generator 1	-	0	199999	0
	6213	I	Control number generator 2	-	0	199999	0
	6215	I	Control number storage	-	0	9 19999	0
	6217	I	Control number heating circuits	-	0	199999	2
Failure	6710	I	Reset alarm relays	-	No	Yes	No
	6711	I	Reset heat pump	-	No	Yes	No
	6740	F	Flow temperature 1 alarm	min	- - - / 10	240	- - -
	6741	F	Flow temperature 2 alarm	min	- - - / 10	240	- - -
	6800 - 6819	F	Time stamp and error code, error history 1-18		0	255	Only displays: Date, time, error code, error type
Maintenance Service	7070	I	HP time interval	Months	- - - / 1	240	- - -
	7071	I	HP time since maintenance	Months	0	240	0
	7072	I	Max starts compr1 / op hours	-	- - - / 0.1	12	- - -
	7073	I	Act starts compr1 / op hours	-	0	12	0
	7074	I	Max starts compr2 / op hours	-	- - - / 0.1	12	- - -
	7075	I	Act starts compr2 / op hours	-	0	12	0
	7076	I	Spread condens max/week	-	- - - / 1	250	- - -
	7077	I	Act spread condens max/week	-	0	250	0
	7078	I	Spread condens min/week	-	- - - / 1	250	- - -
	7079	I	Act spread condens min/week	-	0	250	0
	7080	I	Spread evap max/week	-	- - - / 1	250	- - -
	7081	I	Act spread evap max/week	-	0	250	0
	7082	I	Spread evap min/week	-	- - - / 1	250	- - -
	7083	I	Act spread evap min/week	-	0	250	0
	7090	I	PWH storage time interval	Months	- - - / 1	240	- - -
	7091	I	PWH storage since maintenance	Months	0	240	0
	7092	I	PWH charge temp HP min	°C	8	80	40
	7093	I	Act. PWH charge temp. HP	°C	8	80	-
	7141	E	Emergency operation	-	OFF	ON	OFF
	7142	F	Emergency operation function type	-	Manual	Automatic	Manual
	7150	I	Exterior temp. simulation	°C	- - - / -50	50	- - -
	7181	I	Customer service phone	Digits	0	16	

Parameterization

	Control line	Control level	Function	Unit	Min	Max	Factory settings
Input/output test	7700	I	Relay test	-	No test, all off, source pump Q8, fan K19, condenser 1 K1, condensate pump Q9, potable water pump Q3, heat circuit pump Q2, heat circuit mixing valve open Y1, heat circuit mixing valve closed Y2, relay output QX23 module 1, relay output QX21 module 1, relay output QX22 module 1, relay output QX1, relay output QX2, relay output QX3, relay output QX4		No test
	7730	I	Exterior temperature B9	°C	-50	50	-
	7732	I	Flow temperature B1	°C	0	140	-
	7750	I	B3 potable water temperature	°C	0	140	-
	7770	I	Flow temperature HP B21	°C	0	140	-
	7771	I	Return temperature HP B71	°C	0	140	-
	7772	I	Hot gas temperature B81	°C	0	140	-
	7775	I	Source input temp. B91	°C	-50	50	-
	7777	I	Sensor temperature B92, B84	°C	-50	50	-
	7820	I	Sensor temperature BX 1	°C	-28	350	-
	7821	I	Sensor temperature BX 2	°C	-28	350	-
	7822	I	Sensor temperature BX 3	°C	-28	350	-
	7823	I	Sensor temperature BX 4	°C	-28	350	-
	7830	I	Sensor temperature BX21 module 1	°C	-28	350	-
	7840	I	Voltage signal H1	Volt	0	10	-
	7841	I	Contact status H1	-	Opened	Closed	-
	7885	I	Low rate E5	-	0 V	230 V	-
	7886	I	HP block E6	-	0 V	230 V	-
	7889	I	Low pressure monitor E9	-	0 V	230 V	-
	7890	I	High pressure monitor E10	-	0 V	230 V	-
	7891	I	Coil guard compressor 1 E11	-	0 V	230 V	-
	7895	I	Pressure/flow source E15	-	0 V	230 V	-
	7896	I	Signal input E12, E17	-	0 V	230 V	-
	7897	I	Signal input E14, E16	-	0 V	230 V	-
Status	8000	I	Status heating circuit 1	-	Different status messages		
	8001	I	Status heating circuit 2	-			
	8002	I	Status heating circuit P	-			
	8003	I	Potable water status	-			
	8006	I	Heat pump status	-			
	8007	I	Solar status	-			
	8010	I	Buffer storage status	-			
	8050 - 8069	I	Time stamp and status code, error history 1				

Parameterization

	Control line	Control level	Function	Unit	Min	Max	Factory settings
Generator diagnosis	8400	I	Compressor 1 K1	-	OFF	ON	-
	8401	I	Compressor 2 K2	-	OFF	ON	-
	8402	I	Electr. immers. heater flow K26	-	OFF	ON	-
	8403	I	Source pump Q8 / fan K19	-	OFF	ON	-
	8405	I	Condenser pump Q9	-	OFF	ON	-
	8410	E	Return temperature HP	°C	0	140	-
	8411	E	HP setpoint	°C	0	140	-
	8412	E	Flow temperature HP	°C	0	140	-
	8415	I	Hot gas temperature 1	°C	0	140	-
	8416	I	Hot gas temperature max	°C	0	140	-
	8417	I	Hot gas temperature 2	°C	0	140	-
	8420	I	Coolant temperature, liquid	°C	0	140	-
	8425	I	Temp. spread condenser	°C	-50	140	-
	8426	I	Temp. spread evaporator	°C	-50	140	-
	8427	E	Source input temperature	°C	-50	50	-
	8428	I	Source input min	°C	-50	50	-
	8429	E	Source output temperature	°C	-50	50	-
	8430	I	Source output min	°C	-50	50	-
	8440	I	Rest level 1 standstill time min	min	(0) 1	255	---
	8441	I	Rest level 2 standstill time min	min	(0) 1	255	---
	8442	I	Rest level 1 run time min	min	(0) 1	255	---
	8443	I	Rest level 2 run time min	min	(0) 1	255	---
	8444	I	Rest time limit source temp min	min	(0) 1	65535	---
	8445	I	Rest time auto reset	h	(0) 1	255	---
	8446	I	Compressor sequence	-	1-2, 2-1		---
	8450	F	Op hours compressor 1	h	0	65535	0
	8451	F	Start counter compressor 1	-	0	199999	0
	8470	I	Fan K19	-	OFF	ON	---
	8471	I	Process reversal valve Y22	-	OFF	ON	---
	8475	I	Evaporator temperature	°C	-50	50	0
	8477	I	Temp. diff. defrost actual value	°C	-50	50	0
	8478	I	Temp. diff. defrost setpoint	°C	-50	50	0
	8480	I	Rest time defrost block	min	0	255	0
	8481	I	Rest time forced defrost	h/min	00:00	07:00	00:00
	8485	I	No. of defrost cycles	-	0	10	0
	8510	I	Collector temperature 1	°C	-28	350	-
	8511	I	Collector temperature 1 max	°C	-28	350	200
	8512	I	Collector temperature 1 min	°C	-28	350	-28
	8513	I	dT collector 1 / PWH	°C	-28	350	0

Parameterization

	Control line	Control level	Function	Unit	Min	Max	Factory settings
Consumer diagnosis	8700	E	Exterior temperature	°C	-50	50	-
	8701	E	Exterior temperature min	°C	-50	50	
	8702	E	Exterior temperature max	°C	-50	50	
	8703	I	Exterior temperature damped	°C	-50	50	
	8704	I	Exterior temperature mixed	°C	-50	50	
	8730	I	Heating circuit pump Q2	°C	OFF	ON	
	8731	I	Heating circuit mixing valve open Y1	-	OFF	ON	
	8731	I	Heating circuit mixing valve open Y2	-	OFF	ON	
	8740	E	Room temperature 1	°C	0	50	
	8741	E	Room setpoint 1	°C	4	35	
	8743	E	Flow temperature 1	°C	0	140	
	8744	E	Flow setpoint 1	°C	0	140	
	8751	I	Cooling circuit pump Q24	-	0	1	
	8752	I	Cooling circuit mixing valve open Y2	-	0	1	
	8753	I	Cooling circuit mixing valve close Y2	-	0	1	
	8754	I	Directional valve cooling Y21	-	0	1	
	8756	E	Flow temperature cooling 1	°C	0	140	
	8757	E	Flow setpoint cooling 1	°C	0	140	
	8760	I	Heating circuit pump Q6	-	OFF	ON	
	8761	I	Heating circuit mixing valve open Y5	-	OFF	ON	
	8762	I	Heating circuit mixing valve open Y6	-	OFF	ON	
	8770	E	Room temperature 2	°C	0	50	
	8771	E	Room setpoint 2	°C	4	35	
	8773	E	Flow temperature 2	°C	0	140	
	8774	E	Flow setpoint 2	°C	0	140	
	8800	E	Room temperature P	°C	0	50	
	8801	E	Room setpointP	°C	4	35	
	8803	E	Flow setpoint P	°C	0	140	
	8820	I	Potable water pump Q3	-	OFF	ON	
	8821	I	Electrical immersion heater PWH K6	-	OFF	ON	
	8830	E	Potable water temperature 1	°C	0	140	
	8831	E	Potable water setpoint	°C	8	80	
	8832	I	Potable water temperature 2	-	0	140	
	8970	I	Electrical immersion heater buffer K16	-	OFF	ON	
	8980	E	Buffer storage temperature 1	°C	0	140	
	8981	E	Puffer storage nominal value	°C	0	140	
	8982	E	Buffer storage temperature 2	°C	0	140	
	9031	I	Relay output QX1	-	0	1	
	9032	I	Relay output QX2	-	0	1	
	9033	I	Relay output QX3	-	0	1	
	9034	I	Relay output QX4	-	0	1	

Troubleshooting AQUATOP LOGON WP

Malfunction	Cause	Remedy, Action
106: Source temperature too low B-W HP	Brine output temperatures too low (parameter 2816, -5°C) A1 Low volume flow A2 Geothermal heating system badly charged A3 Geothermal heating system comp. not in order A4 Slider closed A5 Pump not running	A1 Check pump output A2 Vent geothermal heating system A3 Set flow control A4 Open slider A5 Check thermo relays, phases and relays
106: Source temperature too low W-W HP	While the HP is running and the groundwater return temperature at thermostat, built in downstream of HP, is less than 3°C (parameter 2815, corresponding setting 3°C), switching to frost protection. A Frost protection thermostat incorrectly set or defective. B Groundwater volume flow too low. The module switches the respective unit to the safety state when a malfunction or error occurs.	 A Check frost protection thermostat for function or not properly set, replace if needed. B With too low groundwater output temperatures, the system cannot be operated. Min. water temperatures were not determined. B1 Check filter for dirt B2 Check evaporator for dirt B3 With existing intermediate circuit, check function of intermediate circuit, check plate exchanger for dirt B4 Check flow switch setting (triggers too late) B5 Check water level in well and check its dropping during operation.
107: Hot gas compressor (B 81)	A Too little coolant B Compressor leak	A Top off coolant B Replace compressor The cooling technician must be called in these cases.
222: HP at HP operation, high pressure malfunction	High pressure compressor High-pressure pressure controller triggered in cooling circuit. No heat. A In heating mode A1 Insufficient flow rate A2 Slider closed A3 Heating circulation pump not running A4 Overflow valve incorrectly set A5 Heating curve set too steep B High-pressure pressure controller actuated too early The module switches the respective unit to the safety state when a malfunction or error occurs.	 A1 Check flow heating water (OT =3-5 K) A2 Open slider. Check flap valves A3 Make heating circuit pump functional again/replace pump. A4 Repeat overflow valve setting procedure A5 Set heating curve lower B If A can be precluded, check at which heating water output temperature from the heat pump the high-pressure pressure controller is actuated. If the switching point is significantly below 65°C, it is possible that B1 The switching point of the pressure controller is too low (the pressure controller setting has changed) B2 The amount of coolant is too high The cooling technician must be called in these cases.

Troubleshooting AQUATOP LOGON WP

Malfunction	Cause	Remedy, Action
223: HP when starting HC High pressure malfunction when starting heating circuit.	A Water in system too cold.	A Below 10 °C: Increase temperature in system with electr. immersion heater.
224: HP when starting potable water heating High pressure malfunction when starting PWH.	Service water operation. A Boiler charging pump/3-way valve not running B Air in system C Slider closed D Heat exchanger too small E Sensor positioned incorrectly (too low)	 A Unblock pump/3-way valve or replace B Vent system C Open slider, check flap valve D Check with retailer E Mount sensor correctly
226: Coil guard compressor	A Phase interrupt (compressor is getting hot)	A Check all three phases (wait until coil guard has cooled down, this may take several hours).
225: Low pressure malfunction	Low pressure compressor E9 Low pressure pressure controller triggered in cooling circuit. A Insufficient flow of brine-water in evaporator	 A A1 Blocked brine pump, make brine pump function again A11 Defrost thickened brine in evaporator (remove insulation, use hairdryer to melt or let sit for 1 day) A2 In case of inhomogeneous brine mixtures, the brine may become thickened in the evaporator. A21 Better mixing of brine
	B Leak in cooling circuit	B If all items above have been checked and of the compressor switches to low pressure malfunction within a few seconds after being started, then the cooling circuit has a leak. Oil residues in the unit are another indicator of a leak in the cooling circuit (do not mistake oil for brine). B1 In case of a leak in the cooling circuit, the cooling service technician must be called.
	C Pressure controller defective	C Check switching point (important: depends on coolant type)
	D Plugged filter	D Measure temperature upstream and downstream of filter (AT max 2 K)
	E Defective or blocked injection valve	E Check or replace injection valve Check and insulate sensor
	F Incorrect amount of coolant	F Empty and recharge acc. to type plate.

Troubleshooting AQUATOP LOGON WP

Malfunction	Cause	Remedy, Action
228: Flow controller water source	A W-W heat pump No flow	A1 Checker whether corresponding sliders are opened A2 Check function flow switch (while keeping groundwater pump running, check switching point of flow switch by slowly closing/opening slider) A3 Check function of groundwater pump
229: Pressure monitor GHS/geothermal probe/tube collector system	A B-W heat pump Brine pressure too low The module switches the respective unit to the safety state when a malfunction or error occurs.	A1 Check brine pressure with manometer A2 Check function of brine pressure monitor A3 Recharge brine A4 Check expansion vessel when recharging brine (if pressure increases quickly when recharging brine, expansion vessel malfunction) A5 If occurring several times, check brine circuit for leaks
230: Thermo relays		
230: Thermo relays brine pump	Brine pump / groundwater pump A Pump failure A1 Pump blocked A2 Motor protection was triggered A3 Defective pump The module switches the respective unit to the safety state when a malfunction or error occurs.	 A1 Eliminate pump block, determine cause of block A2 Check why motor protection was triggered A21 Check power consumption of pump (ampere) A22 Check trigger value of motor protection A23 Check motor protection for defects A3 Replace pump if defective
Electric company block active	External block by utility or electric company	No malfunction, HP continues to run once block period is over.

Characteristic Curves NTC 1 k
Characteristic Curves NTC 10 k

Characteristic Curve NTC 1K for Exterior Temperature Sensor B9

T [°C]	R[Ohm]	T [°C]	R[Ohm]	T [°C]	R[Ohm]
-30.0	13'034	0.0	2'857	30.0	827
-29.0	12'324	1.0	2'730	31.0	796
-28.0	11'657	2.0	2'610	32.0	767
-27.0	11'031	3.0	2'496	33.0	740
-26.0	10'442	4.0	2'387	34.0	713
-25.0	9'889	5.0	2'284	35.0	687
-24.0	9'369	6.0	2'186	36.0	663
-23.0	8'880	7.0	2'093	37.0	640
-22.0	8'420	8.0	2'004	38.0	617
-21.0	7'986	9.0	1'920	39.0	595
-20.0	7'578	10.0	1'840	40.0	575
-19.0	7'193	11.0	1'763	41.0	555
-18.0	6'831	12.0	1'690	42.0	536
-17.0	6'489	13.0	1'621	43.0	517
-16.0	6'166	14.0	1'555	44.0	500
-15.0	5'861	15.0	1'492	45.0	483
-14.0	5'574	16.0	1'433	46.0	466
-13.0	5'303	17.0	1'375	47.0	451
-12.0	5'046	18.0	1'320	48.0	436
-11.0	4'804	19.0	1'268	49.0	421
-10.0	4'574	20.0	1'218	50.0	407
-9.0	4'358	21.0	1'170		
-8.0	4'152	22.0	1'125		
-7.0	3'958	23.0	1'081		
-6.0	3'774	24.0	1'040		
-5.0	3'600	25.0	1'000		
-4.0	3'435	26.0	962		
-3.0	3'279	27.0	926		
-2.0	3'131	28.0	892		
-1.0	2'990	29.0	859		

Characteristic Curves NTC 10 k for Sensors B1, B3, B4, B21, B41, B71, B81, B91, and B92

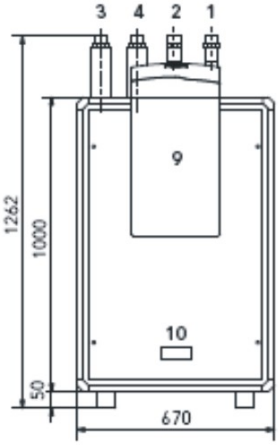
T [°C]	R[Ohm]	T [°C]	R[Ohm]	T [°C]	R[Ohm]
-30.0	175203	50.0	3605	130.0	298
-25.0	129289	55.0	2989	135.0	262
-20.0	96360	60.0	2490	140.0	232
-15.0	72502	65.0	2084	145.0	206
-10.0	55047	70.0	1753	150.0	183
-5.0	42158	75.0	1481	155.0	163
0.0	32555	80.0	1256	160.0	145
5.0	25339	85.0	1070	165.0	130
10.0	19873	90.0	915	170.0	117
15.0	15699	95.0	786	175.0	105
20.0	12488	100.0	677	180.0	95
25.0	10000	105.0	586	185.0	85
30.0	8059	110.0	508	190.0	77
35.0	6535	115.0	443	195.0	70
40.0	5330	120.0	387	200.0	64
45.0	4372	125.0	339		

Equipment Dimensions

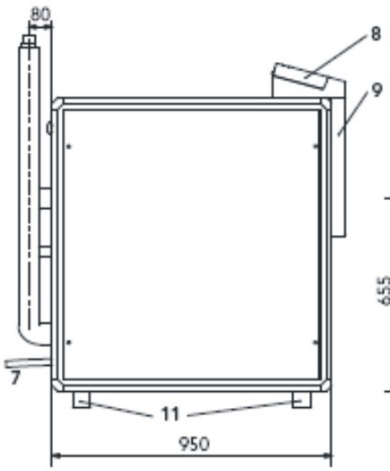
AQUATOP
T05C+T06C, T08C-T14C,
T07C-HT, T11C-HT, T19C

Dimensional Drawing

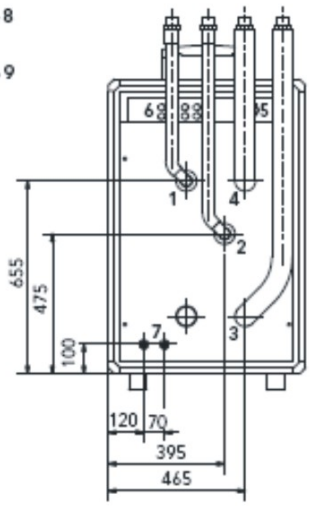
Front view
(control side)



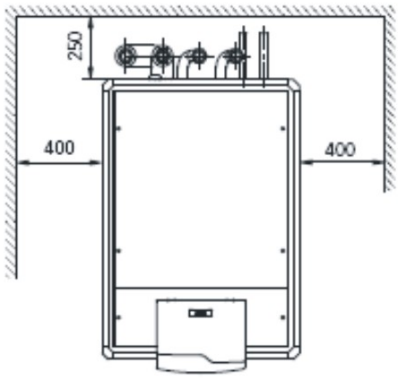
Right view



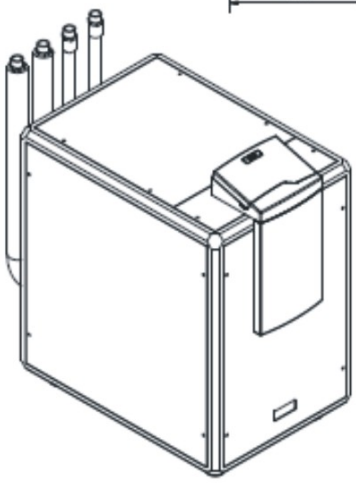
Left view



Plane view with min. clearances



Control station



			AQUATOP	T05C+T06C	T08C-T14C T07C-HT T11C-HT	T19C
1	Heating water	Outlet	Internal thread	1"	1"	1"
2	Heating water	Inlet	Internal thread	1"	1"	1"
3	Heat source	Outlet	Internal thread	1"	1¼"	1½"
4	Heat source	Inlet	Internal thread	1"	1¼"	1½"
5	Electrical feed			PG 13,5 + PG 29		
6	Sensor cable					
7	Safety valve	Outlet	Brine and heater	ø 15/21 mm		
8	Controller					
9	Controller cover					
10	Front panel holding plate					
11	Vibration dampening rubber pads	Diameter Height ø Screws	40 mm 30 mm M8x23mm			

Technical Data

AQUATOP T05C-T10C

Heat Pump Type AQUATOP			**T05C**	**T06C**	**T08C**	**T10C**
Model Type			**Compact Heat Pumps**			
Standard Data Heat Pumps Brine			W35 W50	W35 W50	W35 W50	W35 W50
Heating capacity (Qh)	B0	kW	5.4 5.0	6.5 6.1	8.2 7.7	9.6 9.0
Cooling capacity (Qo)	B0	kW	4.2 3.3	5.0 4.0	6.3 5.0	7.4 5.9
El. power consumption 1) (Pe)	B0	kW	1.2 1.8	1.5 2.1	1.9 2.7	2.2 3.1
Performance rating 1) (COP)	B0	(-)	4.5 2.8	4.3 2.7	4.4 2.8	4.5 2.9
Standard Data Heat Pumps Water						
Heating capacity (Qh)	W10	kW	7.1 6.7	8.7 8.1	11.0 10.2	12.9 12.0
Cooling capacity (Qo)	W10	kW	5.9 4.9	7.2 6.0	9.1 7.5	10.8 8.9
El. power consumption 1) (Pe)	W10	kW	1.2 1.8	1.5 2.1	1.9 2.7	2.2 3.1
Performance rating 1) (COP)	W10	(-)	5.9 3.8	5.8 3.7	5.9 3.8	6.0 3.8
Coolant			R 407 c			
Oil			Ester oil			
Oil charge		l	1.0	1.1	1.1	1.1
Charge volume coolant		kg	1.4	1.7	1.85	2.0
Geothermal heating system length (50 W/m acc. to AWP)	DN 32	m	84	100	126	2 x 74
Evaporator, Brine Side						
Water content WT		l	1.5	1.9	1.9	2.4
Volume flow (3.0 K Δt with B0/W35)		l/h	1326	1584	1992	2352
Volume flow intermediate circuit (3.0 K Δt with W10/W35)		l/h	1863	2281	2877	3433
Pressure loss (3.0 K Δt with B0/W35)		kPa	11	6	15	10
Pressure loss (3.0 K Δt with W10/W35)		kPa	22	12	31	21
Medium water/ethylene glycol		%	75/25			
Installed brine pump			RS 25/7	RS 25/7	Top S 25/10	Top S 25/10
Residual pressure with SO/W35		kPa	46	50	95	102
Residual pressure with W10/W35		kPa	31	35	77	83
Condenser Heating Side						
Water content WT		l	1.8	1.8	1.8	2.0
Volume flow (10 K Δt)		l/h	666	798	1008	1182
Pressure loss (10 K Δt)		kPa	2	5	6	6
Medium water		%	100			
Installed heat pump			RS 25/4	RS 25/4	RS 25/4	RS 25/4
Pressure loss 10 K Δt		kPa	33	27	24	22
Usage Range						
Heat source temperature	min./max.	°C	-8 / +20	-8 / +20	-8 / +20	-8 / +20
Heating flow temperature	min./max.	°C	20/55	20/55	20/55	20/55

AQUATOP T05C-T10C

Heat Pump Type AQUATOP			T05C	T06C	T08C	T10C
Electrical Data						
Operating voltage, feed			3 x 400 V			
Rated input with B0 / W35	PNT	kW	1.2	1.5	1,9	2.2
Ext. fuse		AT	13	13	13	16
Rated current immersion heater	I max.	A	10	10	10	10
Rated current heat pump	I max.	A	4.2	5.1	5.6	7.0
Current with blocked rotor (LRA)	LRA	A	24	32	40	46
Starting current with soft starter	VSA	A	12.5	17.5	17.5	17.5
Power consumption el. immersion heater	max.	kW	6/4/2			
Power consumption circulating pumps	max.	kW	0.2	0.2	0.45	0.5
Starts per hour	max.		3	3	3	3
Start delay after power outage		sec.	60-120			
Dimensions / Connections / Misc.						
Operating weight		kg	189	192	193	194
Dimensions	WxDxH	mm	670x950x1050	670x950x1050	670x950x1050	670x950x1050
Heating circuit connection	IT	inch	1"	1"	1"	1"
Brine circuit connection	IT	inch	1"	1"	1¼"	1¼"
Sound power level	Lwa	dB(A)	41	41	41	43
Sound level at 5-m distance 2)	Lpa	dB(A)	25	25	25	25
Expansion vessel heater	V	l	12	12	12	12
Set default pressure heating circuit	p	bar	1.0	1.0	1.0	1.0
Expansion vessel brine circuit	V	l	12	12	12	12
Set default pressure brine circuit	p	bar	1.0	1.0	1.0	1.0
Safety valve (brine/heater)	p	bar	3	3	3	3
Switching point brine pressure monitor	p	bar	0.65	0.65	0.65	0.65

1) without circulating pump
2) measured value averaged around heat pump (free field)
3) residual delivery pressure is indicated at highest level

AQUATOP T12C-T19C

Heat Pump Type AQUATOP			T12C		T14C		T19C	
Model Type			Compact Heat Pumps					
Standard Data Heat Pumps Brine			W35	W50	W35	W50	W35	W50
Heating capacity (Qh)	B0	kW	12	11.3	14.4	13.5	18.5	17.3
Cooling capacity (Qo)	B0	kW	9.2	7.6	11.1	9	14.5	11.9
El. power consumption 1) (Pe)	B0	kW	2.8	3.8	3.3	4.5	4.0	5.5
Performance rating 1) (COP)	B0	(-)	4.3	3.0	4.3	3.0	4.6	3.2
Standard Data Heat Pumps Water								
Heating capacity (Qh)	W10	kW	15.9	14.7	19.1	17.5	24.5	22.3
Cooling capacity (Qo)	W10	kW	13.3	11.0	15.6	12.7	20.3	16.7
El. power consumption 1) (Pe)	W10	kW	2.6	3.7	3.5	4.8	4.2	5.8
Performance rating 1) (COP)	W10	(-)	6.0	4.0	5.5	3.7	5.8	3.9
Coolant			R 407 c					
Oil			Ester oil					
Oil charge		l	1.36		1.85		1.89	
Charge volume coolant		kg	2.2		2.4		2.7	
Geothermal heating system length (50 W/m acc. to AWP)	DN 32	m	2 x 92		2 x 111		3 x 97	
Evaporator, Brine Side								
Water content WT		l	2.0		2.1		2.4	
Volume flow (3.0 K Δt with B0/W35)		l/h	2928		3516		4625	
Volume flow (3.0 K Δt with W10/W35)		l/h	4233		4941		6475	
Pressure loss (3.0 K Δt with B0/W35)		kPa	15		14		21	
Pressure loss (3.0 K Δt with W10/W35)		kPa	31		28		41	
Residual pressure with SO/W35		kPa	93		89		71,5	
Residual pressure with W10/W35		kPa	65.5		61		28.5	
Medium water/ethylene glycol		%	75/25					
Installed brine pump			Top S 25/10		Top S 25/10		Top S 25/10	
Condenser Heating Side								
Water content WT		l	2,4		2,9		2,9	
Volume flow (10 K Δt)		l/h	1476		1770		2272	
Pressure loss (10 K Δt)		kPa	9		10		12	
Medium water		%	100					
Installed heat pump			RS 25/6		RS 25/6		RS 25/7	
Residual pressure 10 K Δt		kPa	35		30		38	
Usage Range								
Heat source temperature	min./max.	°C	-8 / +20		-8 / +20		-8 / +20	
Heating flow temperature	min./max.	°C	20/55		20/55		20/55	

AQUATOP T12C-T19C

Heat Pump Type AQUATOP			T12C	T14C	T19C
Electrical Data					
Operating voltage, feed			3 x 400 V		
Rated input with B0 / W35	PNT	kW	2.8	3.3	4.0
Ext. fuse		AT	16	20	20
Rated current immersion heater	I max.	A	10,0	10,0	10,0
Rated current heat pump	I max.	A	10,0	12,4	14,0
Current with blocked rotor (LRA)	LRA	A	50	66	74
Starting current with soft starter	VSA	A	25	27.5	33.8
Power consumption el. immersion heater	max.	kW	6/4/2		
Power consumption circulating pumps	max.	kW	0.2	0.3	0.5
Starts per hour	max.		3	3	3
Start delay after power outage		sec.	60-120		
Dimensions / Connections / Misc.					
Operating weight		kg			
Dimensions	WxDxH	mm	670x960x1050	670x960x1050	670x960x1050
Heating circuit connection	IT	inch	1"	1"	1"
Brine circuit connection	IT	inch	1¼"	1¼"	1½"
Sound power level	Lwa	dB(A)	45	48	51
Sound level at 5-m distance 2)	Lpa	dB(A)	27	31	34
Expansion vessel heater	V	l	12	12	2 x 12
Set default pressure heating circuit	p	bar	1,0	1,0	1,0
Expansion vessel brine circuit	V	l	12	12	12
Set default pressure brine circuit	p	bar	0.5	0.5	0.5
Safety valve (brine/heater)	p	bar	3	3	3
Switching point brine pressure monitor	p	bar	0.65	0.65	0.65

1) without circulating pump
2) measured value averaged around heat pump (free field)
3) residual delivery pressure is indicated at highest level

AQUATOP T07C-HT, T11C-HT

Heat Pump Type AQUATOP			**T07C-HT**	**T11C-HT**
Model Type			**Compact Heat Pumps**	
Standard Data Heat Pumps Brine			W35 W50	W35 W50
Heating capacity (Qh)	B0	kW	7.3 7.2	10.9 10.5
Cooling capacity (Qo)	B0	kW	5.7 5.0	8.6 7.4
El. power consumption 1) (Pe)	B0	kW	1.6 2.2	2.3 3.1
Performance rating 1) (COP)	B0	(-)	4.6 3.2	4.7 3.4
Standard Data Heat Pumps Water				
Heating capacity (Qh)	W10	kW	9.6 9.2	14.1 13.6
Cooling capacity (Qo)	W10	kW	8.0 6.9	11.7 10.4
El. power consumption 1) (Pe)	W10	kW	1.6 2.3	2.4 3.2
Performance rating 1) (COP)	W10	(-)	5.9 4.1	6.0 4.2
Coolant			R 134a	
Oil			Ester oil	
Oil charge		l	1.4	1.7
Charge volume coolant		kg	1.75	2.0
Geothermal heating system length (50 W/m acc. to AWP)	DN 32	m	1 x 114	2 x 86
Evaporator, Brine Side				
Water content WT		l	2.4	2.9
Volume flow (3.0 K Δt with B0/W35)		l/h	1818	2743
Volume flow intermediate circuit (3.0 K Δt with W10/W35)		l/h	2552	3700
Pressure loss (3.0 K Δt with B0/W35)		kPa	12	13
Pressure loss (3.0 K Δt with W10/W35)		kPa	24	24
Medium water/ethylene glycol		%	75/25	
Installed brine pump			Top S 25/10	Top S 25/10
Residual pressure with SO/W35		kPa	102	96
Residual pressure with W10/W35		kPa	86	78
Condenser Heating Side				
Water content WT		l	2.0	2.4
Volume flow (10 K Δt with B0/W35)		l/h	897	1341
Pressure loss		kPa	4	5
Medium water		%	100	
Installed heat pump			RS 25/4	RS 25/6
Residual pressure 10 K Δt		kPa	27	40
Usage Range				
Heat source temperature	min./max.	°C	-6 / +20	-6 / +20
Heating flow temperature	min./max.	°C	20/65	20/65

AQUATOP T07C-HT, T11C-HT

Heat Pump Type AQUATOP			T07C-HT	T11C-HT
Electrical Data				
Operating voltage, feed			3/N/PE400V/50Hz	
Rated input with B0 / W35	PNT	kW	1.6	2.3
Ext. fuse		AT	16	20
Rated current immersion heater	I max.	A	10.0	10.0
Rated current heat pump	I max.	A	10.0	13.5
Current with blocked rotor (LRA)	LRA	A	50	74
Starting current with soft starter	VSA	A	25	40
Power consumption el. immersion heater	max.	kW	6/4/2	
Power consumption circulating pumps	max.	kW	0.3	0.4
Starts per hour	max.		3	3
Start delay after power outage		sec.	60-120	
Dimensions / Connections / Misc.				
Operating weight		kg	198	206
Dimensions	WxDxH	mm	670x950x1050	670x950x1050
Heating circuit connection	IT	inch	1"	1"
Brine circuit connection	IT	inch	1¼"	1¼"
Sound power level	Lwa	dB(A)	40	45
Sound level at 5-m distance 2)	Lpa	dB(A)	27	32
Expansion vessel heater	V	l	12	12
Set default pressure heating circuit	p	bar	1.0	1.0
Expansion vessel brine circuit	V	l	12	12
Set default pressure brine circuit	p	bar	1.0	1.0
Safety valve (brine/heater)	p	bar	3	3
Switching point brine pressure monitor	p	bar	0.65	0.65

1) without circulating pump
2) measured value averaged around heat pump (free field)
3) residual delivery pressure is indicated at highest level

Initial Startup Log

elco heating solutions

Initial Startup Log

Order No. | For Report No. | Report. E

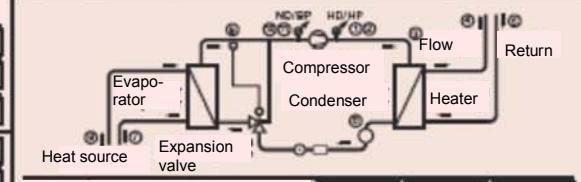
Unit address
Name
Street Address
ZIP/City

Installation company
Street Address
ZIP/City

Unit type | Fabrikat
Year of manuf. 2 0 | Erzeugnis Nr.
Serial No. | Index Nr.
Standard No. | Schema Nr.

Operating modes
- Monovalent
- kW capacity 2. HS
- Monoenergetic
- Bivalent/Parallel

Construction heating
- Free cooling
- Activ cooling
- Solar
- Cascade



1	Condensation temperature	°C		
2	Condensation pressure HP	bar		
3	Hot gas temperature	°C		
4	Heating flow temperature	°C		
5	Heating return temperature	°C		
6	Subzero cooling temperature	°C		
7	Heat source output temperature	°C		
8	Heat source input temperature	°C		
9	Overheating temperature	°C		
10	Evap. temperature NP	°C		
11	Evap. pressure NO	bar		
12	Ground water temp. prim. + sec.	°C		

	Make/Model	Type	Level	Capacity W	Voltage V	Current A	Thermal relay	Current consumption L1	L2	L3
Compressor 1										
Fan/Brine pump										
Charge pump										
Heating pump 1										
Heating pump 2										
Boiler pump										

Controls
0 = not installed
1 = good
2 = remedied
3 = not remedied

- Coolant (R)
- Coolant volume (Kg)
- High pressure (bar)
- Low pressure (bar)
- Humidity/Inspection glass
- Air gap heater

- Heat source brine + water
- Glycol charge heat source
- Frost protection (°C)
- Flow monitor
- Dewpoint W (cooling)
- Frost protection (°C)
- Filter strength ground water

Heat source air
- Air duct free
- Cold bridges
- Capping grille
- Condensation water
- Defrost sensor free

Electrical setup
- Terminals and contacts
- Heater controller
- Electric company block
- Soft starter
- Thermal relay
- Controlled rotational direc.
- Outside installation

Line	LOGON B	General Settings
70	Version	
1630	Service water pr.	°C
712	Room temperature	°C
730	Summer/Winter HC1	°C
720	Heating curve HC1	
1030	Summer/Winter HC2	°C
1020	Heating curve HC2	
5051	Electr. heat use	
5700	Preset value	
5930	BX1 / BX1	
5931	BX2 / BX2	
5932	BX3 / BX3	
5933	BX4 / BX4	

5950	Function H1	
5891	Output QX3	
5892	Output QX2	
1630	Service water pr.	
741	Max flow HC1	°C
2840	Switching diff. Return	K
2842	Min. run-time	Min.
6212	C. No. Prod. 1	
6213	C. No. Prod. 2	
6215	C. No. Storage	
6217	C. No. HC	
7700	Relay test	
B50	Screed function	
B51	Floor/screed function	

LOGON B Sole

2818	QS-Temp.	
	Cooling	
901	Operating mode	
902	Comfort setpoint	
923	Min. flow setpoint	
924	Min. flow setpoint at	
945	Mixing valve	
5711	Cooling circuit	
5712	Mixer use	
2815	Antifreeze	

Notes:

Date d/m/y 2 0

Signature SFM | Signatur Client

Art. Nr. 11090 296

Notes

Service:

ELCO GmbH
D - 64546 Mörfelden-Walldorf

ELCO Austria GmbH
A - 2544 Leobersdorf

ELCOTHERM AG
CH - 7324 Vilters

ELCO-Rendamax B.V.
NL - 1410 AB Naarden

ELCO Belgium n.v./s.a.
B - 1731 Zellik