SALDA

## *BRINE-WATER HEAT PUMPS*

# SIG 6-17

INSTALLATION AND MAINTENANCE MANUAL

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# 1. Basic Information

## 1.1. Safety Notes

- Setup, installation, configuration, and initial start up 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.
- Any work on the heat pump may only be performed by an authorized and qualified customer service.
- The heat pump must not be tilted more than max. 45° (in either direction).
- Avoid exposing the heat pump to any type of moisture or humidity.
- Protect the heat pump from damage and dirt during all construction phases
- The transport securing devices must be removed prior to commissioning.
- The heating system must be flushed prior to connecting the heat pump.
- The strainer must be fitted in the heat source inlet of the heat pump in order to protect the evaporator against the ingress of impurities
- The brine solution must contain at least 25 % of an antifreeze agent on a mono-ethylene glycol or propylene glycol basis and must be mixed prior to filling.
- The clockwise phase sequence must be observed when connecting the load lines (the heat pump will deliver no output and will be very noisy when the phase sequence is incorrect).
- To prevent the accumulation of deposits (e.g. rust) we recommend using a suitable corrosion protection system.
- Disconnect all electrical circuits from the power supply before opening the enclosure.
- Components and piping of the cooling circuit may never be used for transport.
- 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 use harsh, abrasive, acidic or chlorine-containing cleansers on the surface of the equipment.

## 1.2. Intended use

This device is only intended for use as specified by the manufacturer. Any other use beyond that intended by the manufacturer is prohibited. This requires the user to abide by the manufacturers product information. Please refrain from tampering with or altering the device.

## 1.3. Legal Provisions and Guidelines

This heat pump is designed for use in a domestic environment according to Article 1, Paragraph 2 k) of EC directive 2006/42/EC (machinery directive) and is thus subject to the requirements of EC directive 2006/95/EC (low-voltage directive). It is thus also intended for use by non-professionals for heating shops, offices and other similar working environments, in agricultural establishments and in hotels, guest houses and similar / other residential buildings.

This heat pump conforms to all relevant DIN/VDE regulations and EU directives. For details refer to the EC Declaration of Con formity in the appendix.

The electrical connection of the heat pump must be performed according to and conforming with all relevant VDE, EN and IEC standards. Beyond that, the connection requirements of the local utility companies have to be observed.

The heat pump is to be connected to the heat source and heat distribution systems in accordance with all applicable provisions.

Persons, especially children, who are not capable of operating the device safely due to their physical, sensory or mental abilities or due to their inexperience or lack of knowledge, must not operate this device without supervision or instruction by the person in charge.

Children must be supervised to ensure that they do not play with the device.

## 1.4. Legal Guidelines, Rules, Warranty Terms, Receiving Inspection

### 1.4.1. 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.

### 1.4.2. Legal Guidelines and Rules

All guidelines based on CE standards were observed during design and manufacture of the heat pump. (See CE Conformity Declaration (page 28)).

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.

**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.**

### 1.4.3. 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.”

### 1.5. Energy-Efficient Use of the Heat Pump

By operating this heat pump you contribute to the protection of our environment. A prerequisite for an efficient operation is the proper design and sizing of the heating system and the heat source system. In particular, it is important to keep water flow temperatures as low as possible. All energy consumers connected should therefore be suitable for low flow temperatures. A 1 K higher heating water temperature corresponds to an increase in power consumption of approx. 2.5 %. Low-temperature heating systems with flow temperatures between 30 °C and 40 °C are optimally suited for energy-efficient operation.

## 2. Baseline Unit

### 2.1. Application and main Information

The brine-to-water heat pump is to be used exclusively for the heating of heating water. It can be used in new or previously existing heating systems. Brine is used as the heat transfer medium in the heat source system. Borehole heat exchangers, ground heat collectors or similar systems can be used as the heat source.

The basic device consists of a ready-to-use heat pump for indoor installation, complete with sheet metal casing, control panel and integrated heat pump manager. The refrigerant circuit is hermetically sealed. It contains the Kyoto protocol approved refrigerant R407C with a GWP value of 1610.It is CFC-free, does not deplete ozone and is non-flammable.

All components required for the operation of the heat pump are located in the control box. A sensor for the external temperature including mounting hardware supplied with the heat pump. The voltage supply for the load and control current must be provided by the customer.

### 2.2. Principle of Operation

The heat generated by the sun, wind and rain is stored in the ground. This heat stored in the ground is collected at low temperature by the brine circulating in the ground collector, ground coil or similar device.

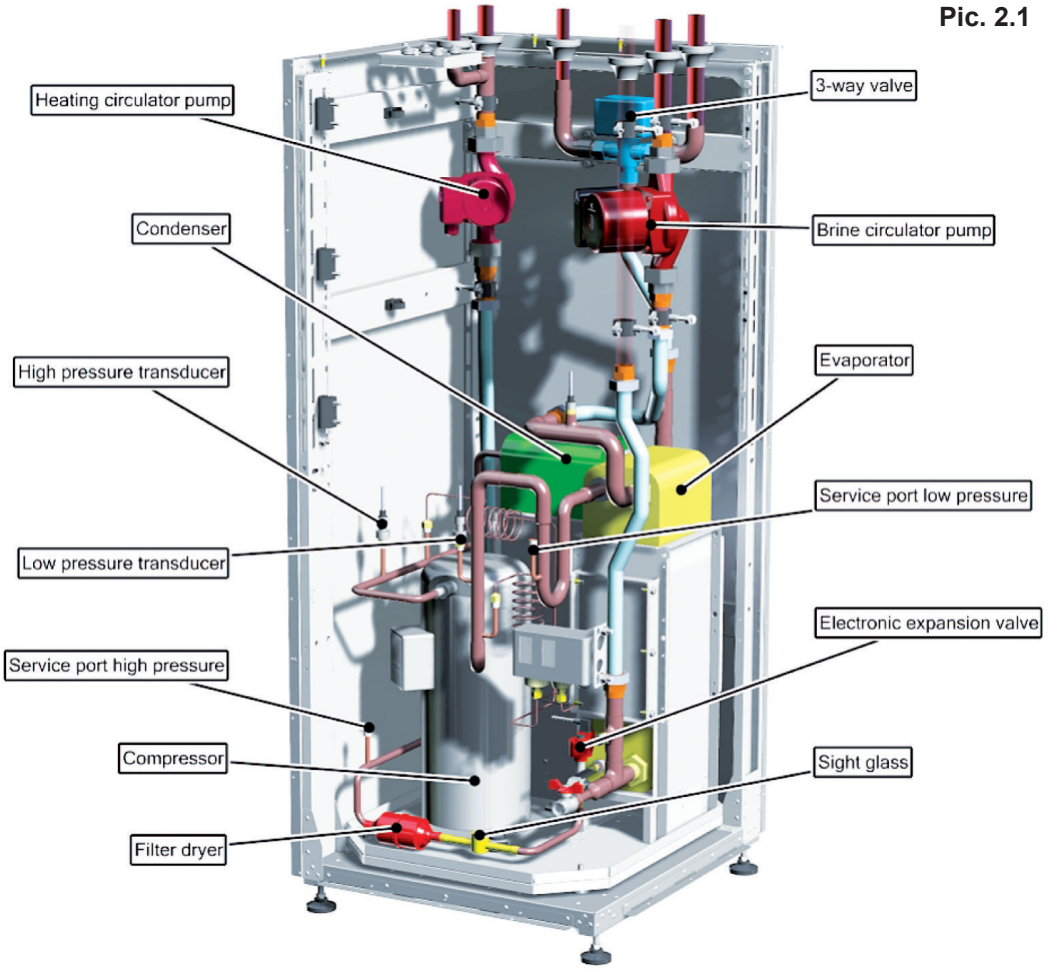
A circulating pump then conveys the warmed brine to the evaporator of the heat pump. There, the heat is given off to the refrigerant in the refrigeration cycle. When so doing, the brine cools so that it can again take up heat energy in the brine circuit.

The refrigerant is drawn in by the electrically driven compressor, is compressed and “pumped” to a higher temperature level. The electrical power needed to run the compressor is not lost in this process, but most of the generated heat is transferred to the refrigerant.

Subsequently, the refrigerant is passed through the condenser where it transfers its heat energy to the heating water. Based on the thermostat setting, the heating water is thus heated to up to 62 °C.

## 2.3. Maln components

Pic. 2.1




# 3. 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.

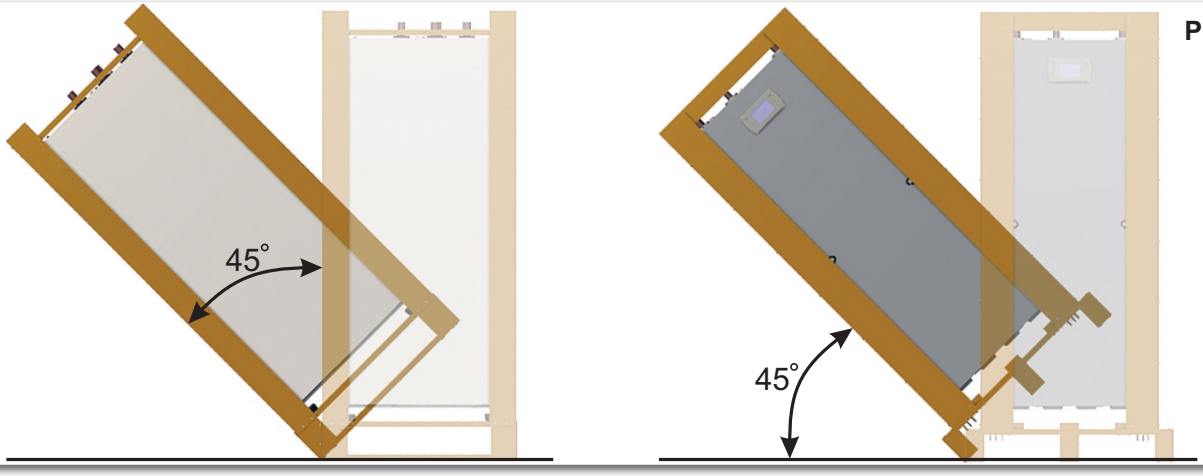
Insert forks lengthwise under the wooden pallet. When lifting, make sure the weight is equally distributed. Never tilt the heat pump beyond max. 45 ° (in any direction) when transporting it. Avoid exposing the heat pump to any type of moisture or humidity. (Also applies to setup and installation!)

Never stack objects on the heat pump or hang up wet clothes over it.

## ATTENTION!

**The heat pump is not secured to the wooden pallet.**
**The heat pump must not be tilted more than 45° (in any direction)**

Pic. 3.1

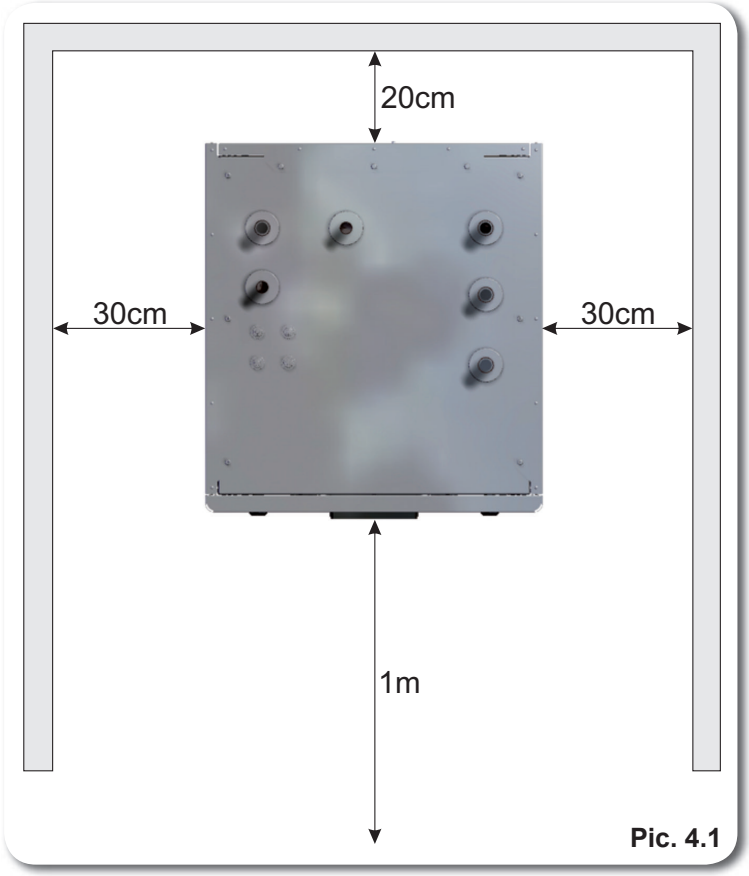


# 4. Installation

## 4.1. General information

### 4.1.1. Place for Instalation

The unit may only be installed indoors in rooms with low humidity on a level, smooth and horizontal surface. The entire base of the frame should lie directly on the floor to ensure a good soundproof seal. If this is not the case, additional sound insulation measures may be necessary.




Pic. 4.1

### 4.1.2. Acoustic Emissions

The heat pump operates silently due to efficient sound insulation. To prevent noise transmission to the foundation, a suitable, sound dampening rubber mat should be placed underneath the base frame of the heat pump.

To prevent any sound from being transmitted to the heating system, we recommend connecting the heat pump to the heating system by means of hose sections.

## 4.2. Heating System Connection

## ATTENTION!

**Flush the heating system prior to connecting the heat pump.**

Before connecting the heating water system to the heat pump, the heating system must be flushed to remove any impurities, residue from sealants, etc. Any accumulation of deposits in the liquifier could cause the heat pump to completely break down.

Once the heating system has been installed, it must be filled, deaerated and pressure-tested.

The sensors which are delivered already connected and loosely placed in the switch box must be mounted and insulated according to the block diagram.

**Minimum heating water flow rate**

The minimum heating water flow rate through the heat pump must be assured in all operating states of the heating system. This can be accomplished, for example, by installing either a manifold without differential pressure or an overflow valve. The procedure for adjusting an overflow valve is described in the Chapter Start-Up. (page 10).

**Antifreeze protection for installation locations prone to frost**

The antifreeze function of the heat pump controller is active whenever the controller and the heat circulating pumps are ready for operation. If the heat pump is taken out of service or in the event of a power failure, the system has to be drained. The heating circuit should be operated with a suitable antifreeze if heat pump systems are implemented in buildings where a power failure can not be detected (holiday home).

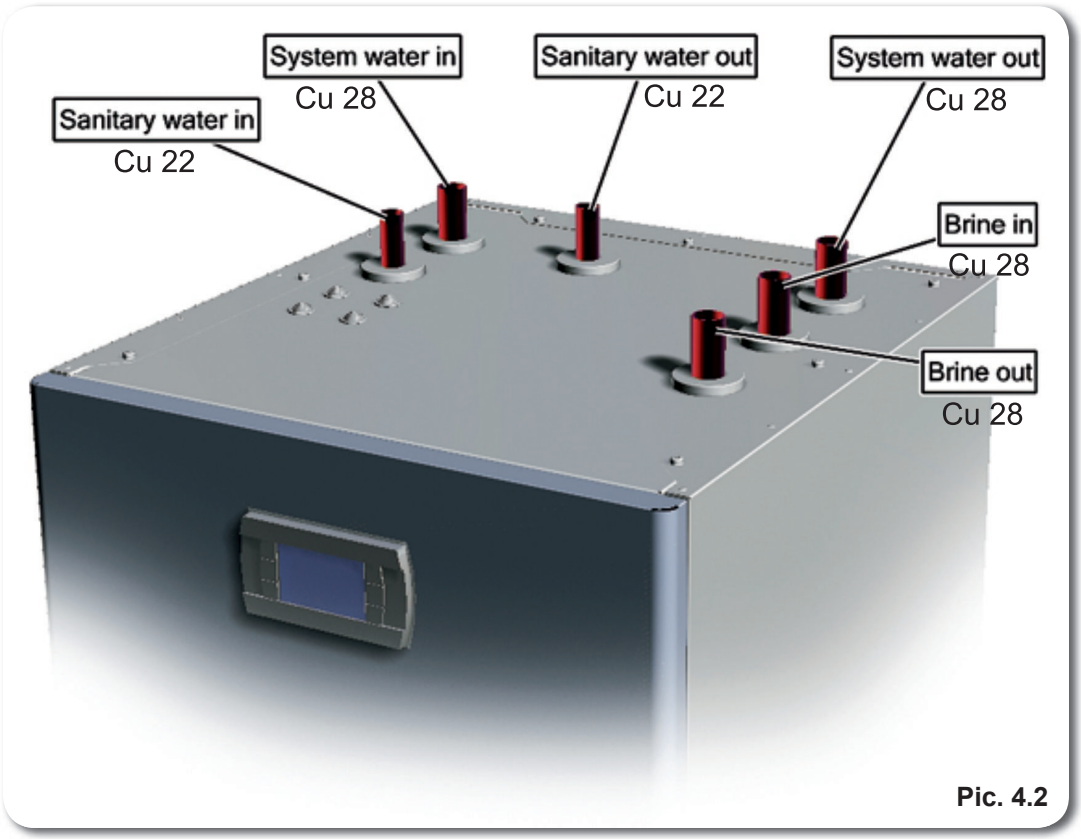
## 4.3.Heat Source Connection

The following procedure must be observed when connecting the heat source:Connect the brine pipe to the heat pump flow and return. The hydraulic plumbing diagram must be adhered to.

**ATTENTION! The dirt trap must be inserted in the heat source inlet of the heat pump to protect the evaporator against the ingress of impurities.**

In addition, a micro bubble air separator must be installed in the heat source system.The brine liquid must be produced prior to charging the system. The liquid must have an antifreeze concentration of at least 25 % to ensure frost protection down to -14 °C.The heat source system must be de-aerated and checked for leaks.

**ATTENTION! The brine solution must contain at least a 25 % concentration of a monoethylene glycol or propylene glycol-based antifreeze, which must be mixed before filling.**



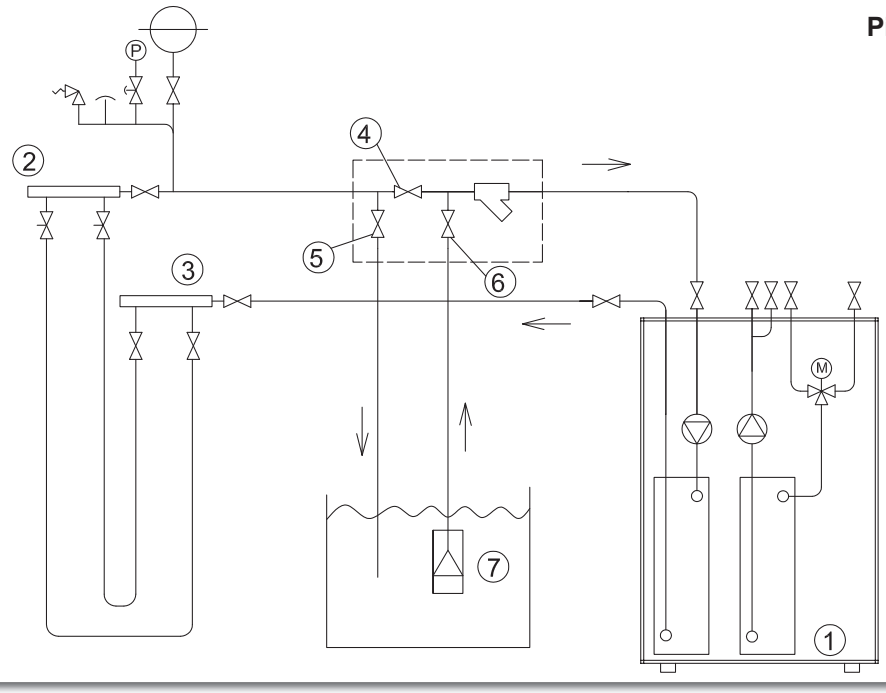

Pic. 4.2

### 4.3.1.Filling and venting the collector system

When filling the collector system mix the water with antifreeze in an open container. The mixture should be protected against freezing down to about -15 °C. The brine is filled by connecting a filling pump.

1. Check the collector system for leakage.
2. Connect the filling pump 7 and return line on the collector system's service connections as shown in picture 4.3.
3. Close the valve 4 between the service connections.
4. Open the valves 5 and 6 on the service connections.
5. Start the filling pump 7 and fill until there is fluid in the return pipe.
6. Swith on a brine circulation pump from control board.
7. The filling pump and the heat pump's brine pump are now operational. The fluid should circulate via the mixing container until it emerges from the return hose without being mixed with air.
8. Stop the filling and heat pump's brine pump and clean the particle filter.
9. Start the filling pump, open the valve between the service connections.
10. Close the valve 5 on the service connection's return line. Now pressurise the system (to max 3 bar) with the filling pump.
11. Close the valve 6 on the service connection.
12. Stop the filling pump 7.

Pic. 4.3




### 4.4.Electrical, Probes and Other Components Connections

**ATTENTION!** Setup, installation, configuration, and initial start up of the heat pump system must be carried out by **a qualified technician** applying the relevant statutory rules, regulations, and guidelines, as well as the operating instructions.

**Electrical circuit diagrams are shown in chapter 10.4.**

The following electrical connections must be established on the heat pump:

1.Main cable to the control panel of the heat pump (see pic. 4.5);
2.DHW control temperature probe B3 (connection ports 45 and 46, see pic. 4.5);

For additional functions the probes and components can be connected:

1. Outside air temperature probe B6 (connection ports 49 and 50, see pict. 4.5);
2. Mixed system outlet temperature probe B8 (connection ports 53 and 54, see pic. 4.5);
3. System 3-way valve (connection ports 38,39 and 40, see pic. 4.5);
4. Flow switch (brine) (connection ports 29 and 30, see pic. 4.5);
5. DHW storage integrated heater (8A resistive) (connection ports 10 and 11, see pic. 4.5);
6. System integrated heater/boiler (8A resistive) (connection ports 15 and 16, see pic. 4.5);
7. Mixed circuit pump (connection ports PE,N and 9, see pic. 4.5).

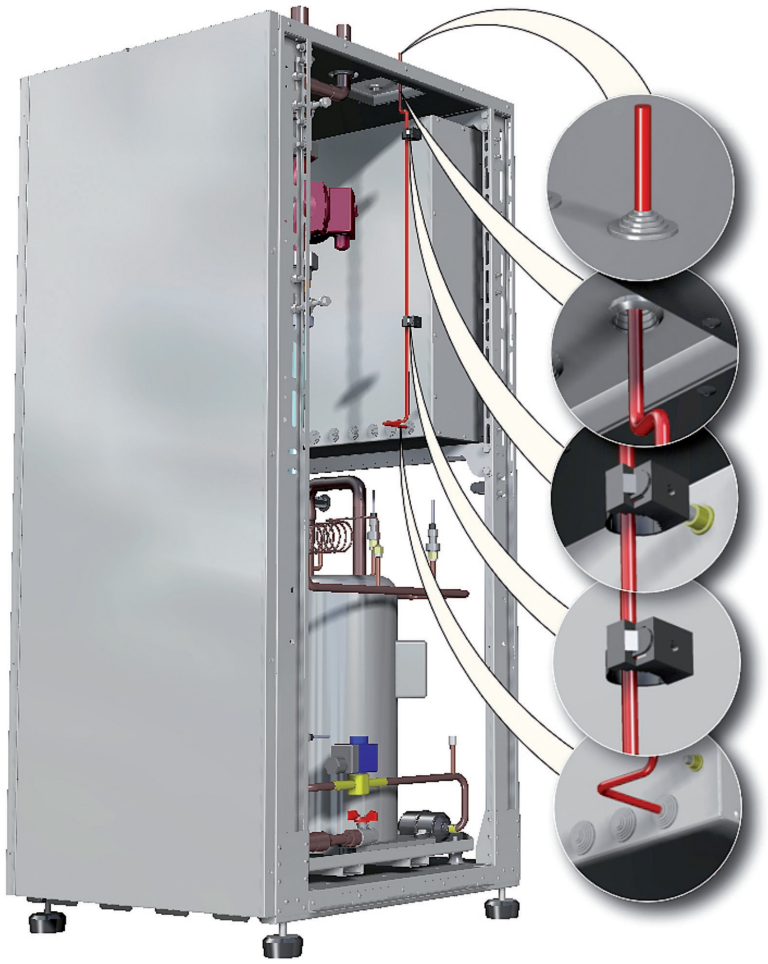
The main cable and all additional cables must be connected as shown in picture 4.4.

In SIG type heat pump is installed scroll type compressor. It can only compress in one rotational direction. Three-phase compressors can rotate in either direction depending upon phasing of the power. There is a 50/50 chance of connecting power incorrectly in such a way to cause rotation in the reverse direction and damage compressor. To avoid this, there is instaled a 3-phase control measurement relay. When pluging the main power suply cable, 3-phase control measurement relay lights yelow (green) color, if light flashes (or lights red) it is necessary to reverse two phases.

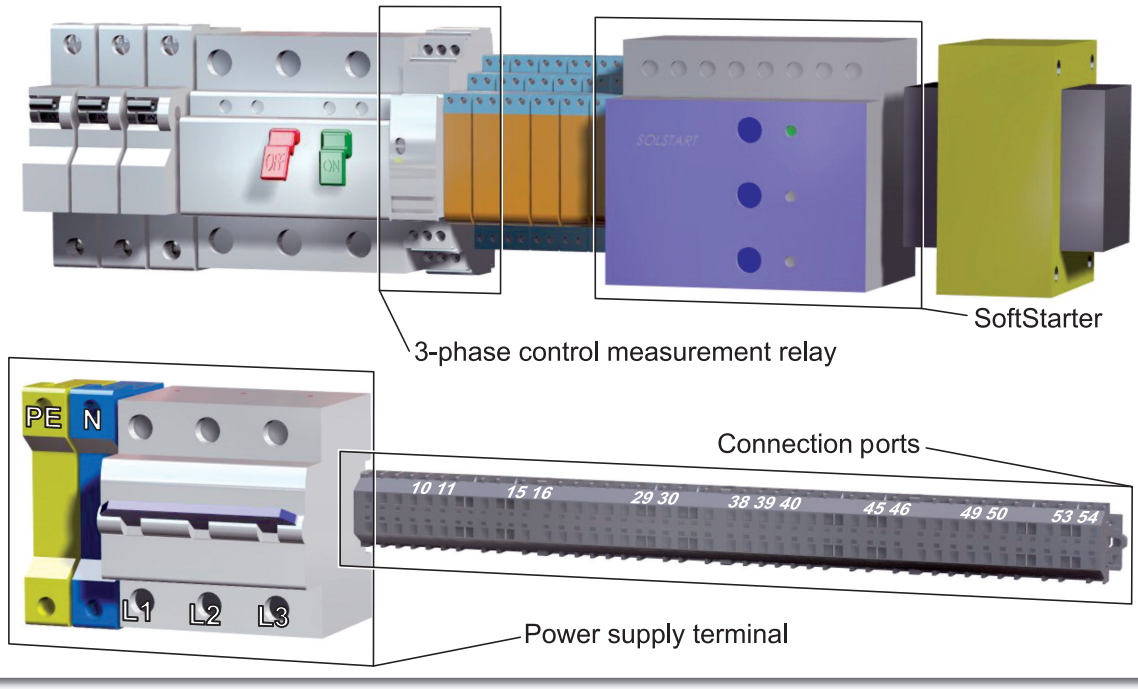
All electrical components required for the operation of the heat pump are located on the control panel.For detailed instructions concerning the connection and functioning of the heat pump controller refer to the operating manual supplied with the controller.

An disconnecting device with a contact gap of at least 3 mm (e.g. utility blocking contactor or power contactor) as well as a 1-pole circuit breaker have to be provided by the customer. The required conductor cross section is to be selected according to the power consumption of the heat pump, **the technical connection requirements of the respective utility company as well as all applicable regulations.** Details on the power consumption of the heat pump are listed on both the product information sheet and the type plate.

Pic. 4.4

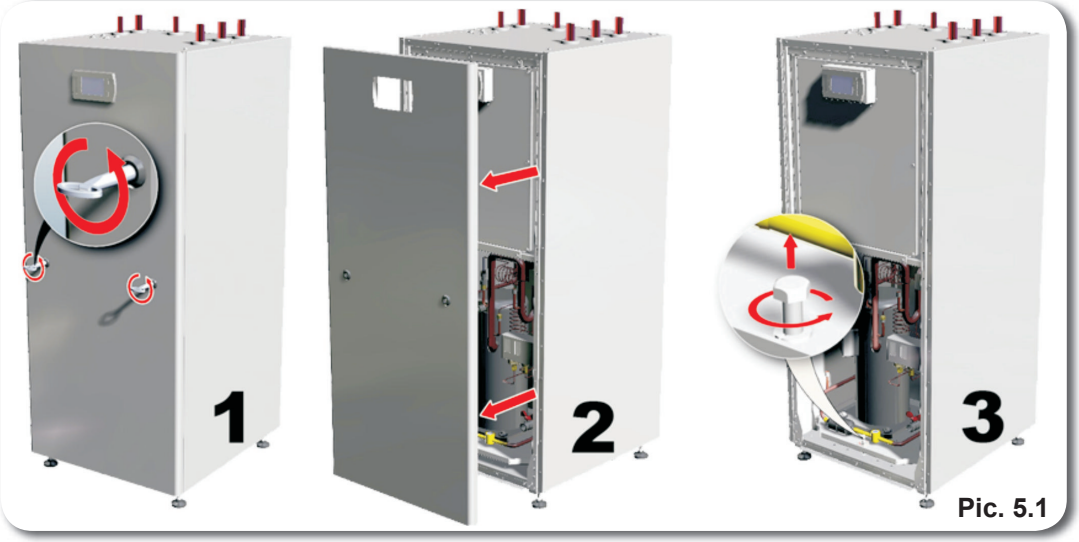


Pic. 4.5



# 5. Start - up

**ATTENTION! Remove the transportation screw before starting the heat pump (see pic. 5.1).**




Pic. 5.1

**The heat pump is started up via the heat pump controller.**

## ATTENTION!

**The heat pump must be started up in accordance with the installation and operating instructions of the heat pump controller.**

If an overflow valve is fitted to assure the minimum heating water flow rate, the valve must be set in accordance with the requirements of the respective heating system. Incorrect adjustment can lead to faulty operation and increased energy consumption. We recommend carrying out the following procedure to correctly adjust the overflow valve:

Close all of the heating circuits that may also be closed during operation (depending on the type of heat pump usage) so that the most unfavourable operating state - with respect to the water flow rate - is achieved. This normally means the heating circuits of the rooms on the south and west sides of the building. At least one heating circuit must remain open (e.g. bathroom).

The overflow valve should be opened far enough to produce the maximum temperature spread between the heating flow and return flow listed in the table below for the current heat source temperature. The temperature spread should be measured as close as possible to the heat pump. The heating element of mono energy systems should be disconnected.

| Heat source temperature | | Max. temperature spread between heating flow and return flow |
|---|---|---|
| From | To | |
| -5°C | 0°C | 10 K |
| 1°C | 5°C | 11 K |
| 6°C | 9°C | 12 K |
| 10°C | 14°C | 13 K |
| 15°C | 20°C | 14 K |
| 21°C | 25°C | 15 K |

Any faults occurring during operation are displayed on the heat pump controller and can be corrected as described in the operating manual of the heat pump controller.

# 6. Maintenance and cleaning

The heat pump is maintenance-free. To prevent faults due to sediment in the heat exchangers, care must be taken to ensure that no impurities can enter either the heat source system or the heating system. In the event that operating malfunctions due to contamination occur nevertheless, the system should be cleaned as described below.

## 6.1. Cleaning the Heating System

The ingress of oxygen into the heating water circuit may result in the formation of oxidation products (rust), particularly if steel components are used. This oxygen enters the heating system via the valves, the circulating pumps and/or plastic pipes. It is therefore essential - in particular with respect to the piping of underfloor heating systems - that only diffusion-proof materials are used.

**ATTENTION! We recommend the installation of a suitable corrosion protection system to prevent the formation of deposits (e.g. rust) in the condenser of the heat pump.**

Residue from lubricants and sealants may also contaminate the heating water.
In the case of severe contamination leading to a reduction in the performance of the liquifier in the heat pump, the system must be cleaned by a heating technician.
According to today's state of knowledge, we recommend using a 5 % phosphoric acid solution for cleaning purposes. However, if cleaning needs to be performed more frequently, a 5 % formic acid solution should be used.
In either case, the cleaning fluid should be at room temperature. We recommend flushing the heat exchanger in the direction opposite to the normal flow direction. To prevent acidic cleaning agents from entering the heating system circuit, we recommend connecting the flushing device directly to the flow and return flow of the liquifier. It is important that the system be thoroughly flushed using appropriate neutralising agents to prevent any damage from being caused by cleaning agent residue remaining in the system.
Acids must be used with great care and all relevant regulations of the employers' liability insurance associations must be adhered to.
If in doubt, contact the manufacturer of the chemicals!

### 6.2. Cleaning the Heat Source System

**ATTENTION! The dirt trap must be inserted in the heat source inlet of the heat pump to protect the evaporator against the ingress of impurities.**

Clean the dirt trap's filter screen one day after start-up and subsequently in weekly intervals. If no more signs of contamination are evident, the filter can be removed to reduce pressure drops.

### 6.3. Sight glass inspection

Sometimes when the heat pump has started you can see the fluid in the refrigerant circuit bubble for a few minutes in the sight glass. This is completely normal. However, if it bubbles continuously you should contact your dealer.
If the sight glass shows green this means there is no moisture in the system. If it is yellow there is moisture in the system. If this happens, contact your dealer.

Pic. 6.1

## 7. Faults / Trouble-Shooting

This heat pump is a quality product and is designed for trouble- free operation. In the event that a fault should occur, it will be indicated on the heat pump manager display. Simply consult the Faults and Trouble-Shooting page in the operating instructions of the heat pump controller. If you cannot correct the fault yourself, please contact your after-sales service technician.

**ATTENTION!**
**Any work on the heat pump may only be performed by authorised and qualified after-sales service technicians.**

**ATTENTION!**
**Disconnect all electrical circuits from the power source prior to opening the device.**

## 8. Decommissioning / Disposal

Before removing the heat pump, disconnect it from the power source and close all valves. Observe all environmentally-relevant requirements regarding the recovery, recycling and disposal of materials and components in accordance with all applicable standards. Particular attention should be paid to the proper disposal of refrigerants and refrigeration oils.

## 9. Device Information

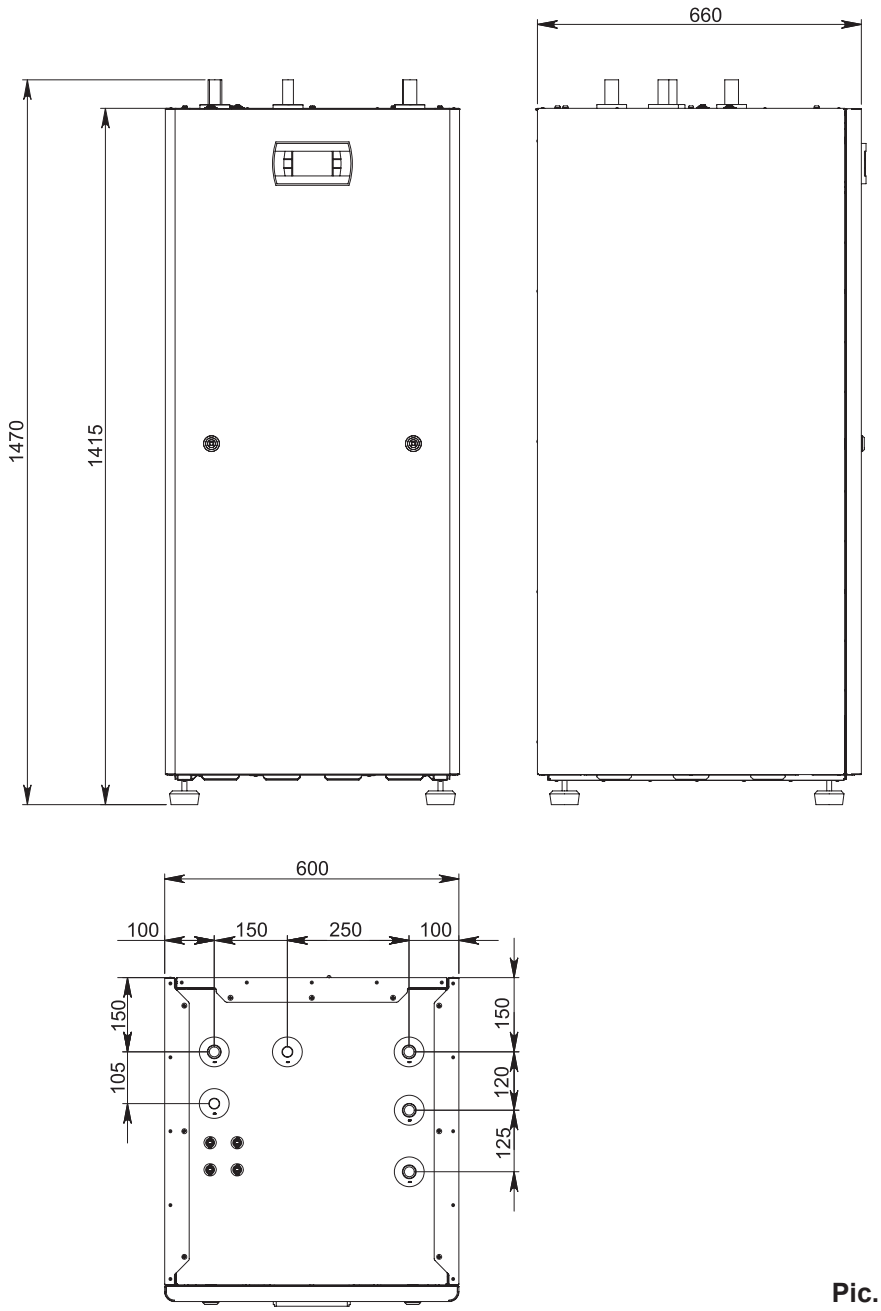
| Heat Pump Type SIG(400) | | 6 | 8 | 10 | 12 | 14 | 17 |
|---|---|---|---|---|---|---|---|
| Model Type | | Compact Heat Pump | | | | | |
| Degree of protection according to EN 60 529 | | IP 20 | | | | | |
| **Performance data:** | | | | | | | |
| Heating capacity at B0/35[1] | kW | 5,6 | 7,6 | 9,6 | 11,1 | 13,6 | 16,3 |
| Electric power consumption | kW | 1,3 | 1,7 | 2,1 | 2,5 | 3 | 3,6 |
| COP | | 4,2 | 4,4 | 4,4 | 4,4 | 4,4 | 4,4 |
| Heating capacity at B0/50[2] | kW | 5,2 | 7,1 | 8,9 | 10,3 | 12,7 | 15,2 |
| Electric power consumption | kW | 1,8 | 2,3 | 2,8 | 3,3 | 4 | 4,8 |
| COP | | 2,8 | 3 | 3 | 3 | 3,1 | 3,1 |
| Operating range,heating medium circuit | ºC | From 20 to 60 | | | | | |
| Operating range,brine circuit | ºC | From -10 to 20 | | | | | |
| **Brine** | | Ethylene Glycol – Water, Ethanol – Water, Propylene Glycol – Water | | | | | |
| Minimum brine concentration | | 25% | | | | | |
| Brine flow (3.0 K Δt with B0/35) | m³/h | 1,25 | 1,76 | 2,23 | 2,55 | 3,15 | 3,76 |
| Min brine flow | m³/h | 0,63 | 0,86 | 1,1 | 1,27 | 1,57 | 1,8 |
| Pressure loss (3.0 K Δt with B0/35) | kPa | 8 | 7 | 7 | 8 | 9 | 9 |
| Residual pressure with (3.0 K Δt with B0/35) | kPa | 31 | 41 | 44 | 40 | 60 | 57 |
| **Heating medium** | | Water | | | | | |
| Heating medium flow (5.0 K Δt with B0/35) | m³/h | 0,96 | 1,31 | 1,67 | 1,9 | 2,35 | 2,8 |
| Min heating medium flow | m³/h | 0,5 | 0,65 | 0,83 | 0,95 | 1,17 | 1,3 |
| Pressure loss (5.0 K Δt with B0/35) | kPa | 4 | 4 | 3 | 3 | 4 | 5 |
| Residual pressure with (5.0 K Δt with B0/35) | kPa | 23 | 34 | 30 | 45 | 40 | 34 |
| Refrigerant; total filing weight | R407c / kg | 1,7 | 1,9 | 2,3 | 2,4 | 2,6 | 2,9 |
| **Electrical Data** | | | | | | | |
| Operating voltage, feed | | 380/420V – 3~50Hz | | | | | |
| Max. operating current | A | 5 | 5,2 | 6,8 | 8,2 | 10,1 | 11,8 |
| Current with blocked rotor (LRA) | A | 26 | 32 | 46 | 51,5 | 64 | 74 |
| Power consumption circulating pumps (max) | kW | 0,14 | 0,21 | 0,23 | 0,32 | 0,43 | 0,43 |
| Starts per hour (max) | | Max 6 | | | | | |
| **Dimensions / Connections** | | | | | | | |
| Weight of the transportable unit inc. Packing | kg | | | | | | |
| Device dimensions without connections (Width x Depth x Hight) | mm | 600 x 655 x 1415 | | | | | |
| Device connections to brine circuit | Cu | 28 | 28 | 28 | 28 | 28 | 28 |
| Device connections to heating system | Cu | 28 | 28 | 28 | 28 | 28 | 28 |
| Device connections to sanitary water heating system | Cu | 22 | 22 | 22 | 22 | 22 | 22 |

[1]-Brine in temperature 0°C heating medium temperature 35°C;
[2]-Brine in temperature 0°C heating medium temperature 50°C;

Subject to technical modification

# 10. Appendix

## 10.1. Dimension Drawings



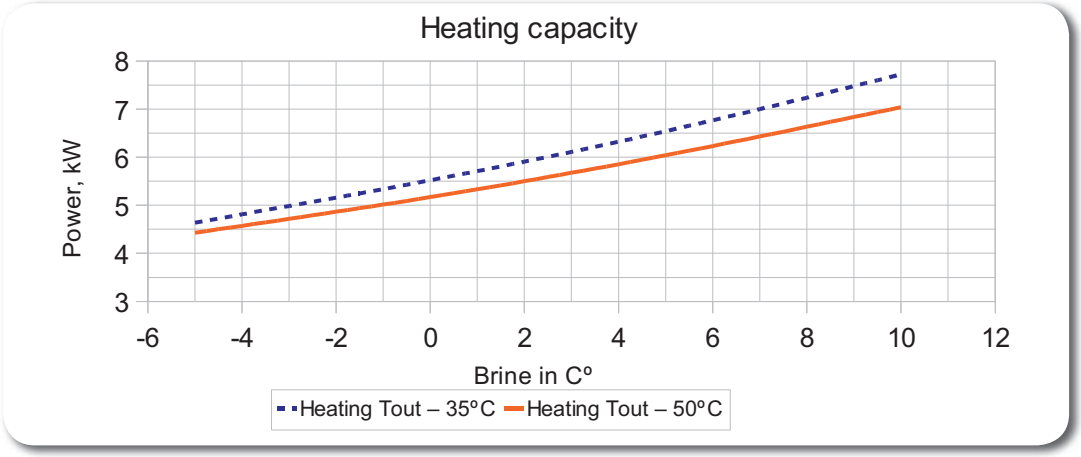

Pic. 10.1

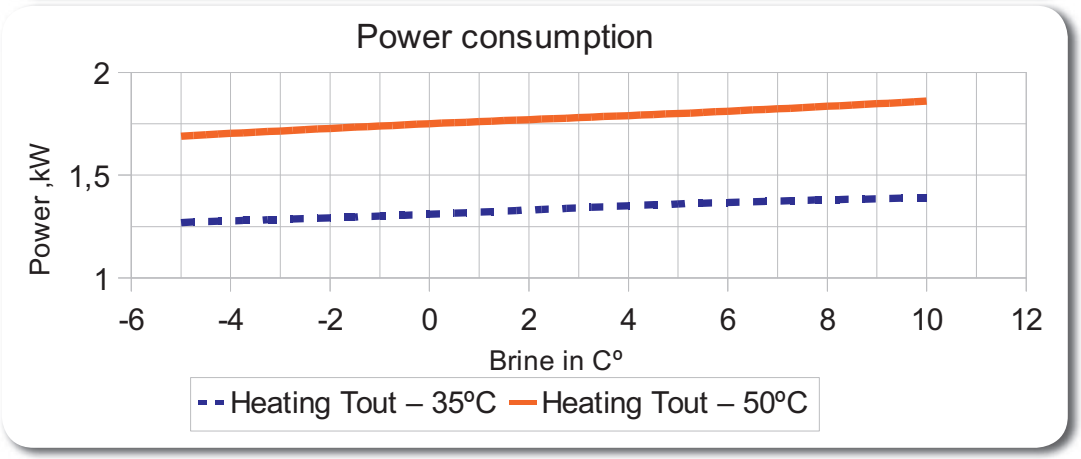
## 10.2. Supply components

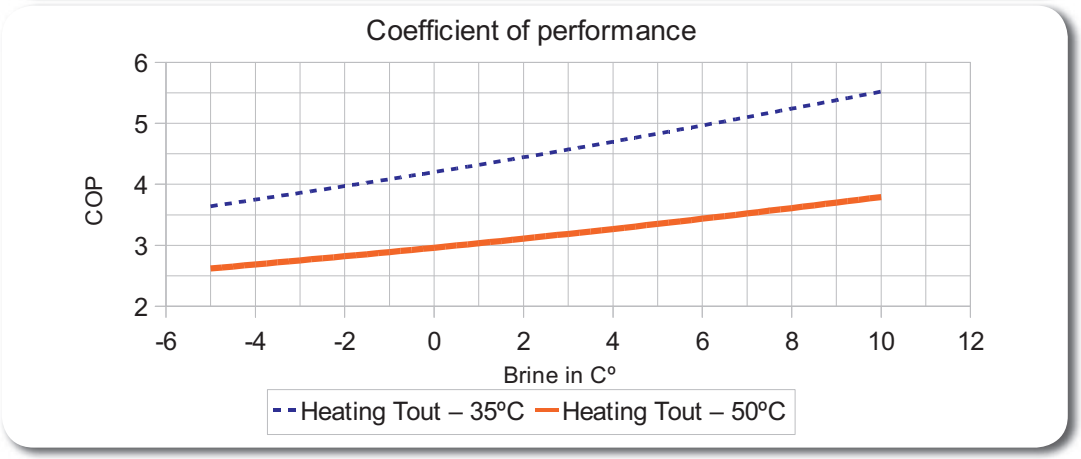
Outside temperature sensor

Temperature sensor

## SIG 6 (400)

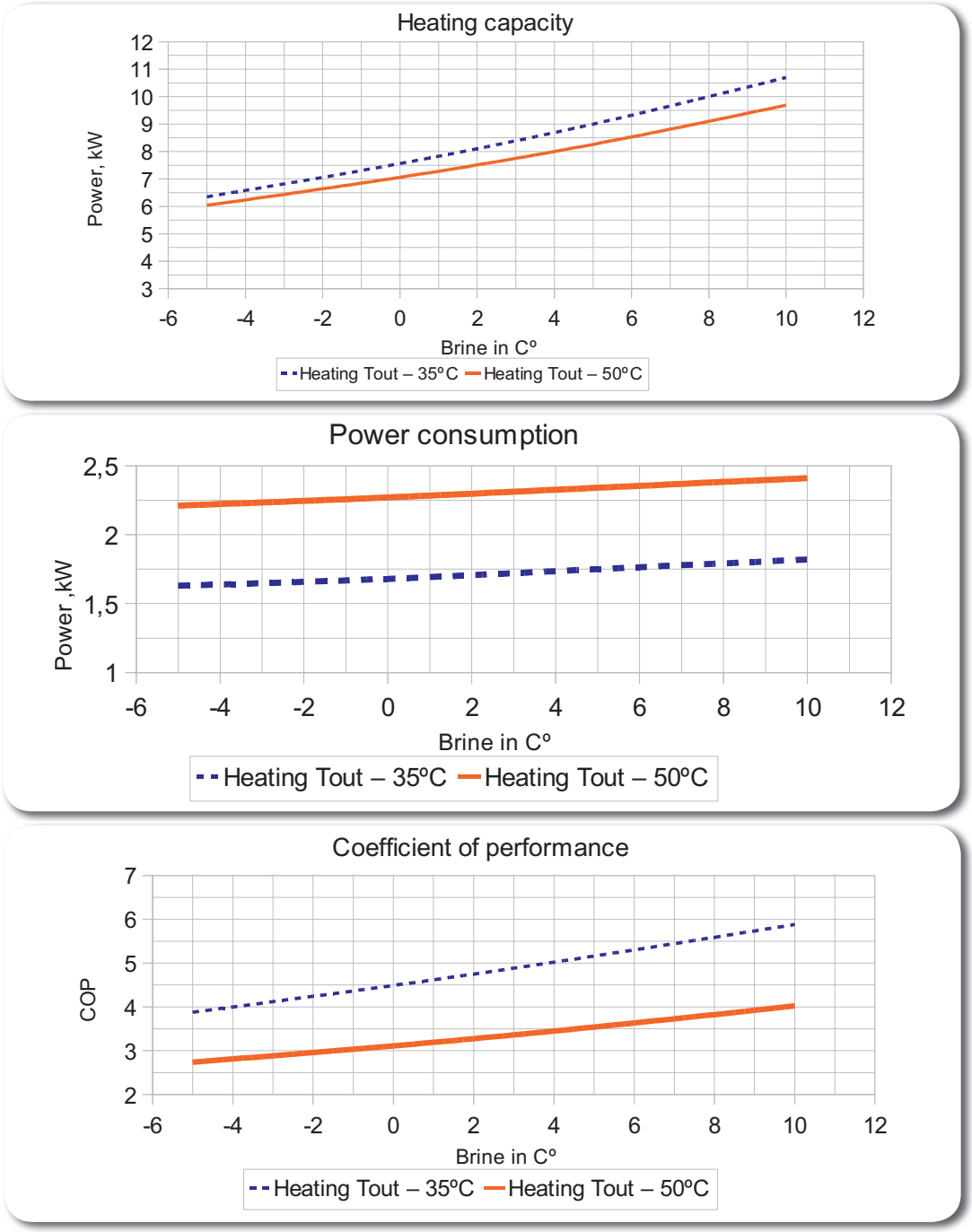


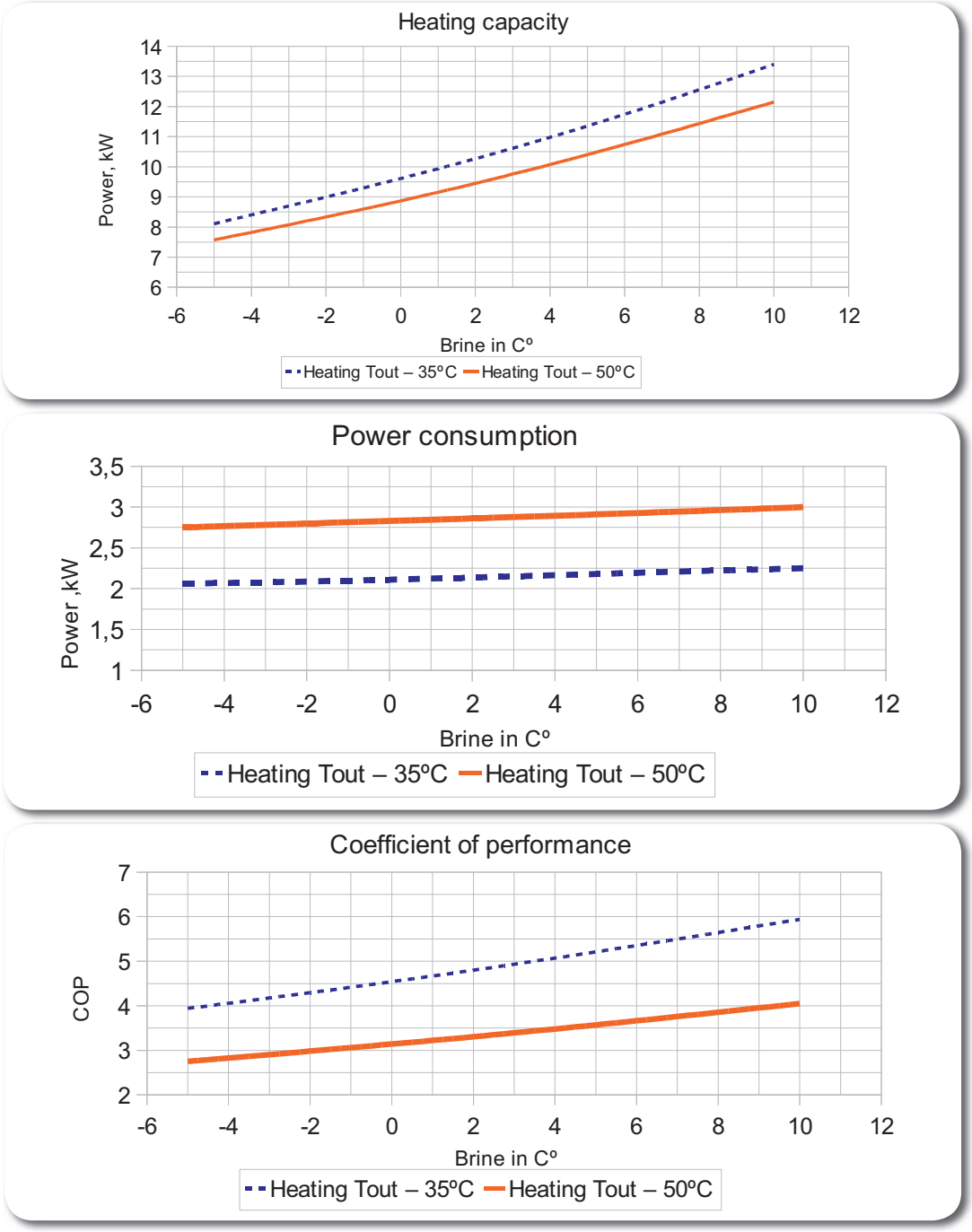

**Pic. 10.3.1**

SIG 8 (400)



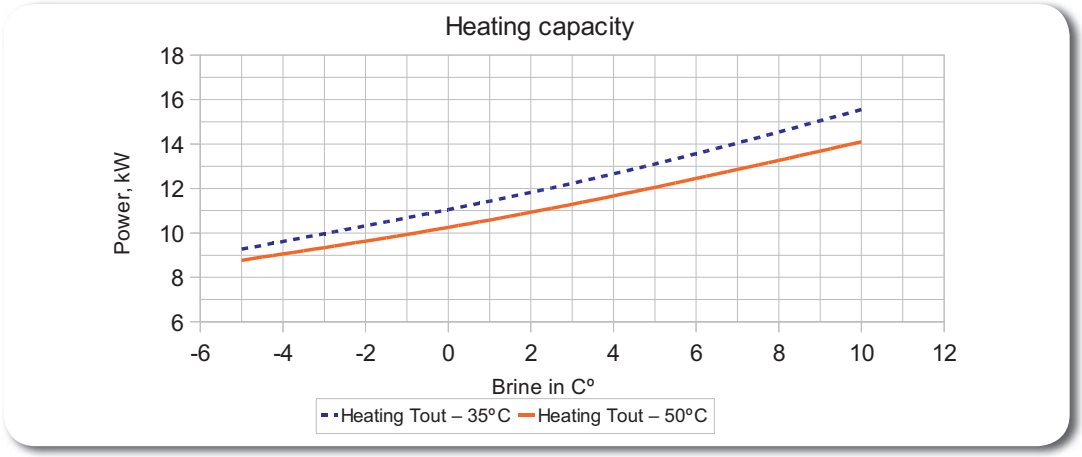

**Pic. 10.3.2**

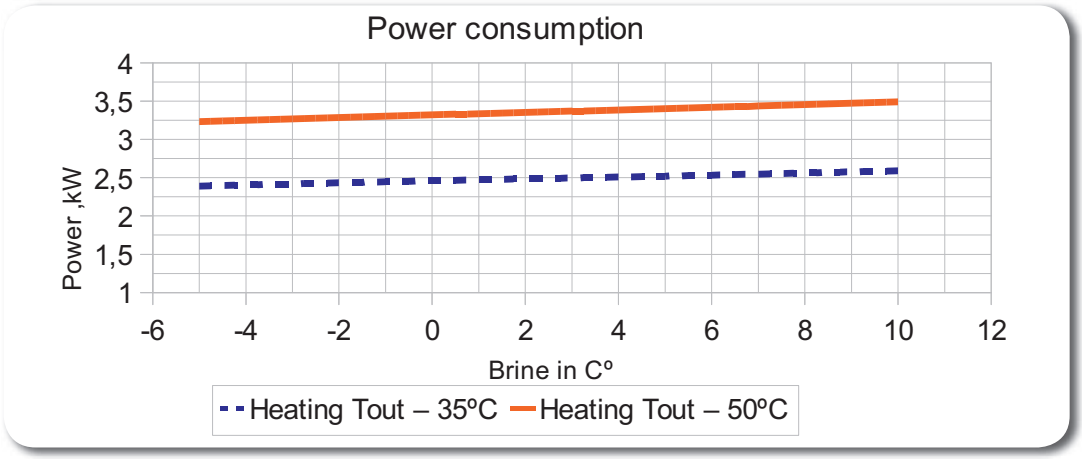
SIG 10 (400)

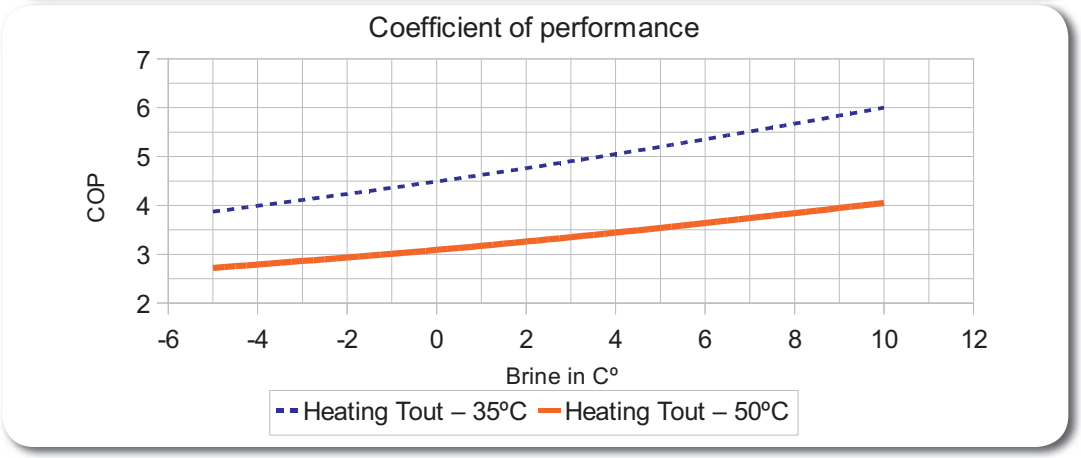



**Pic. 10.3.3**

**SIG 12 (400)**

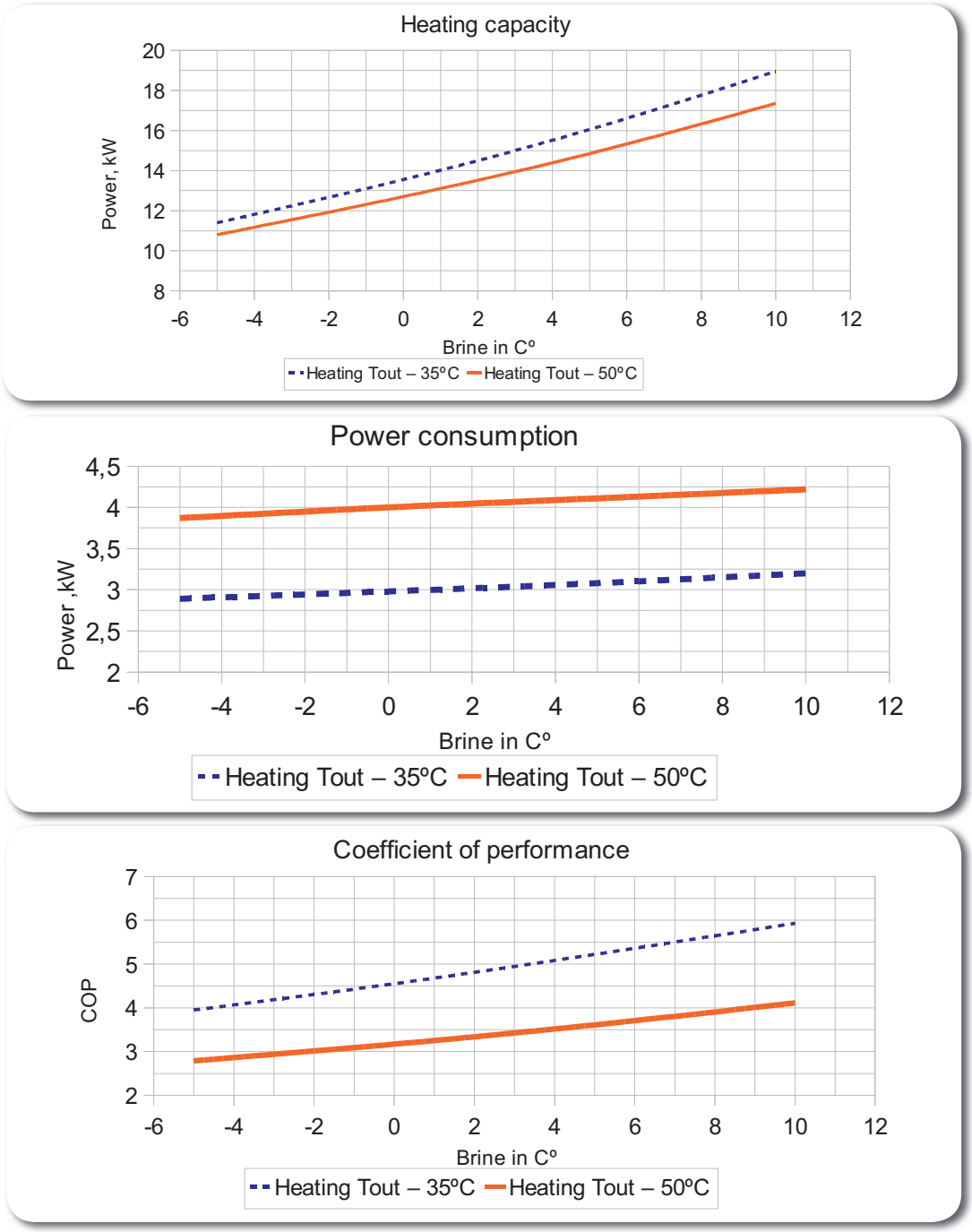


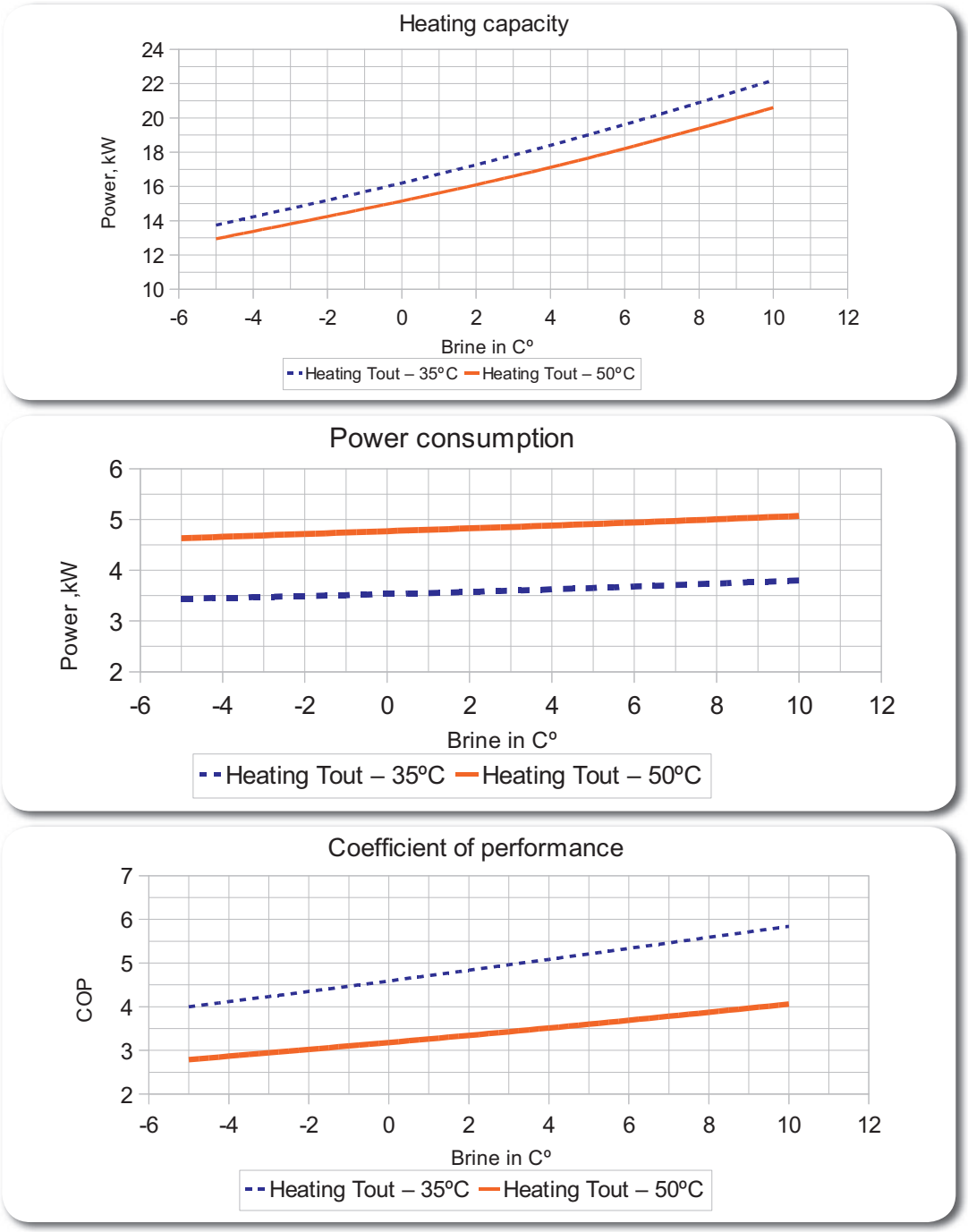

**Pic. 10.3.4**

**SIG 14 (400)**



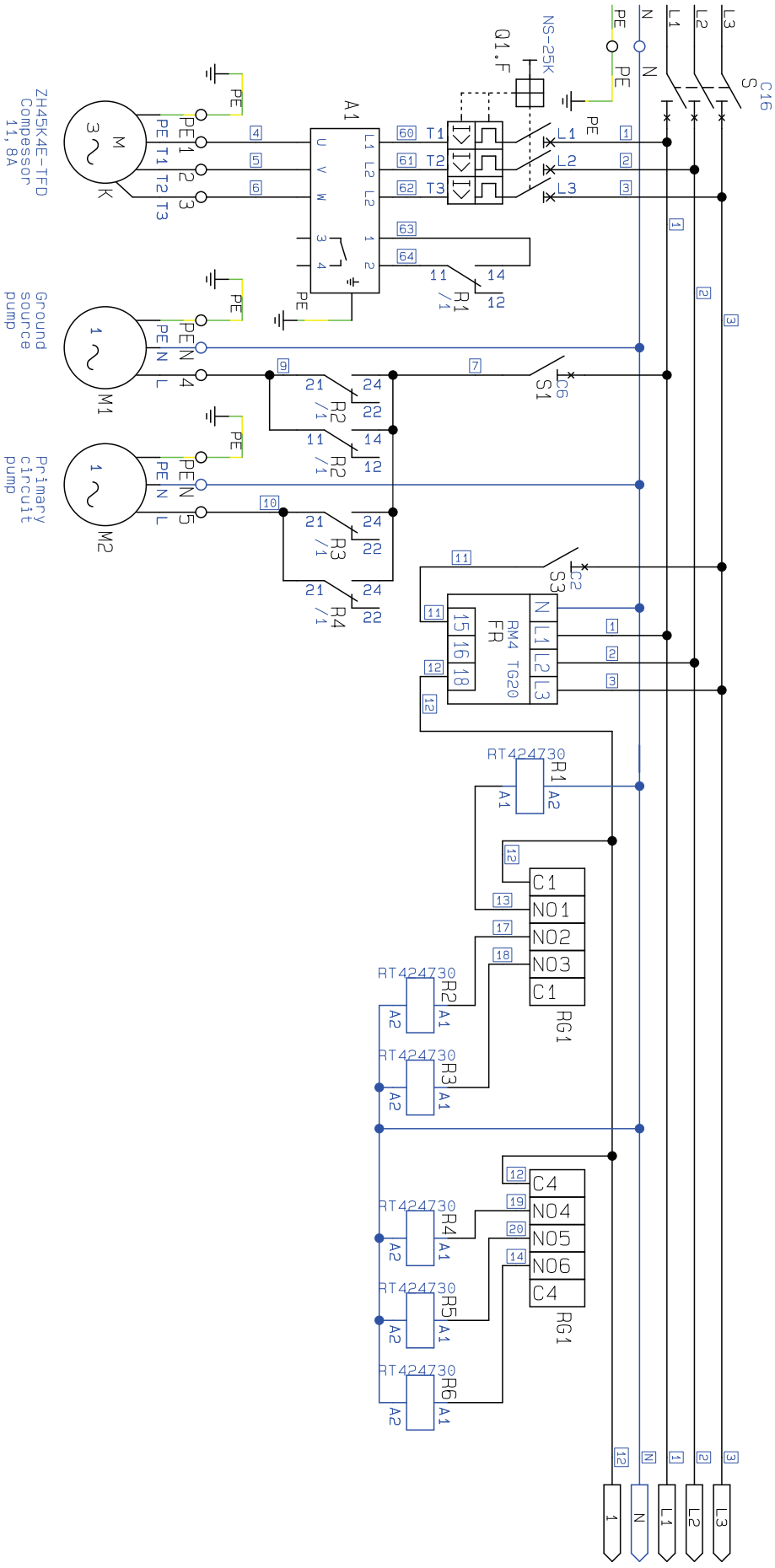

**Pic. 10.3.5**

SIG 17 (400)

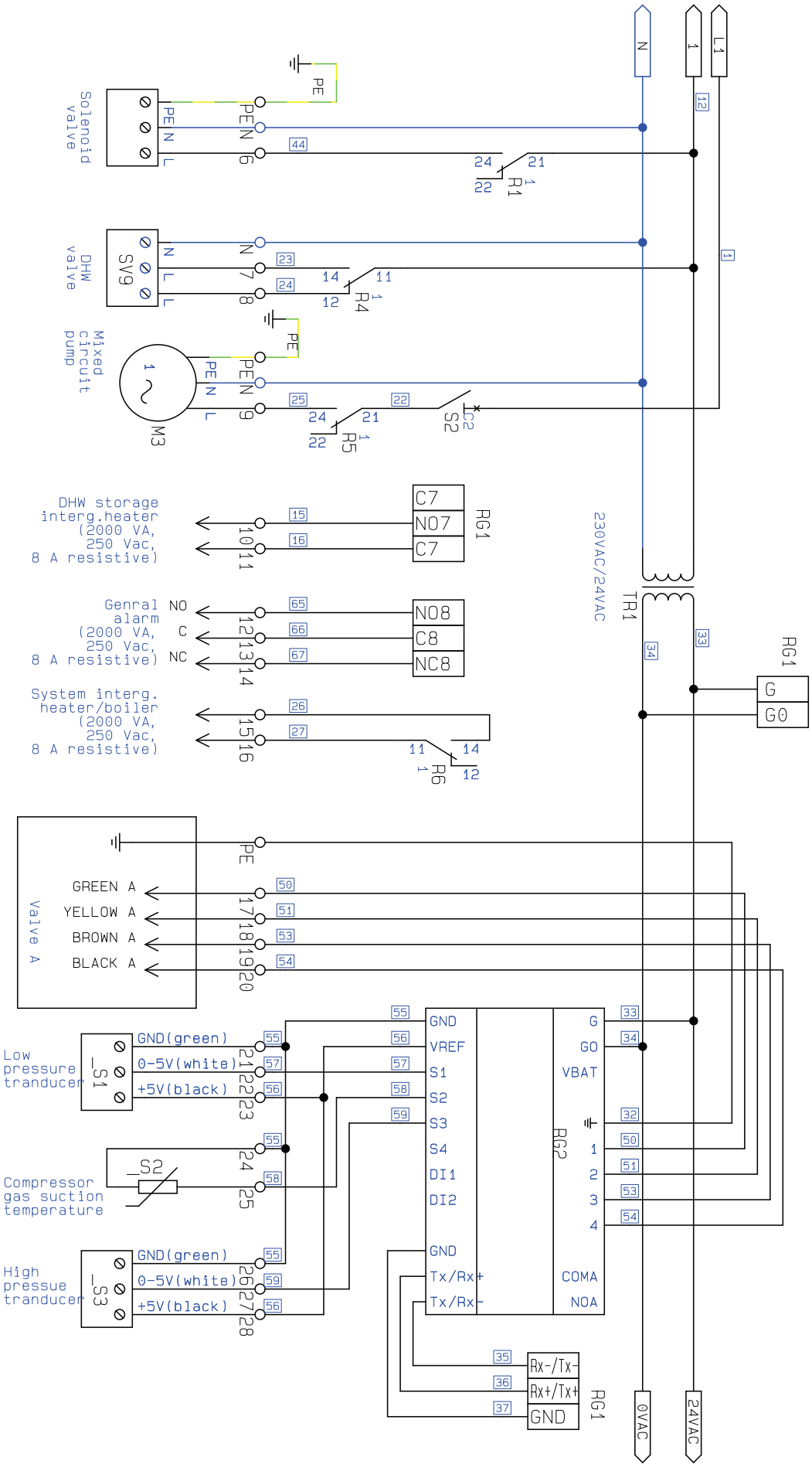



**Pic. 10.3.6**

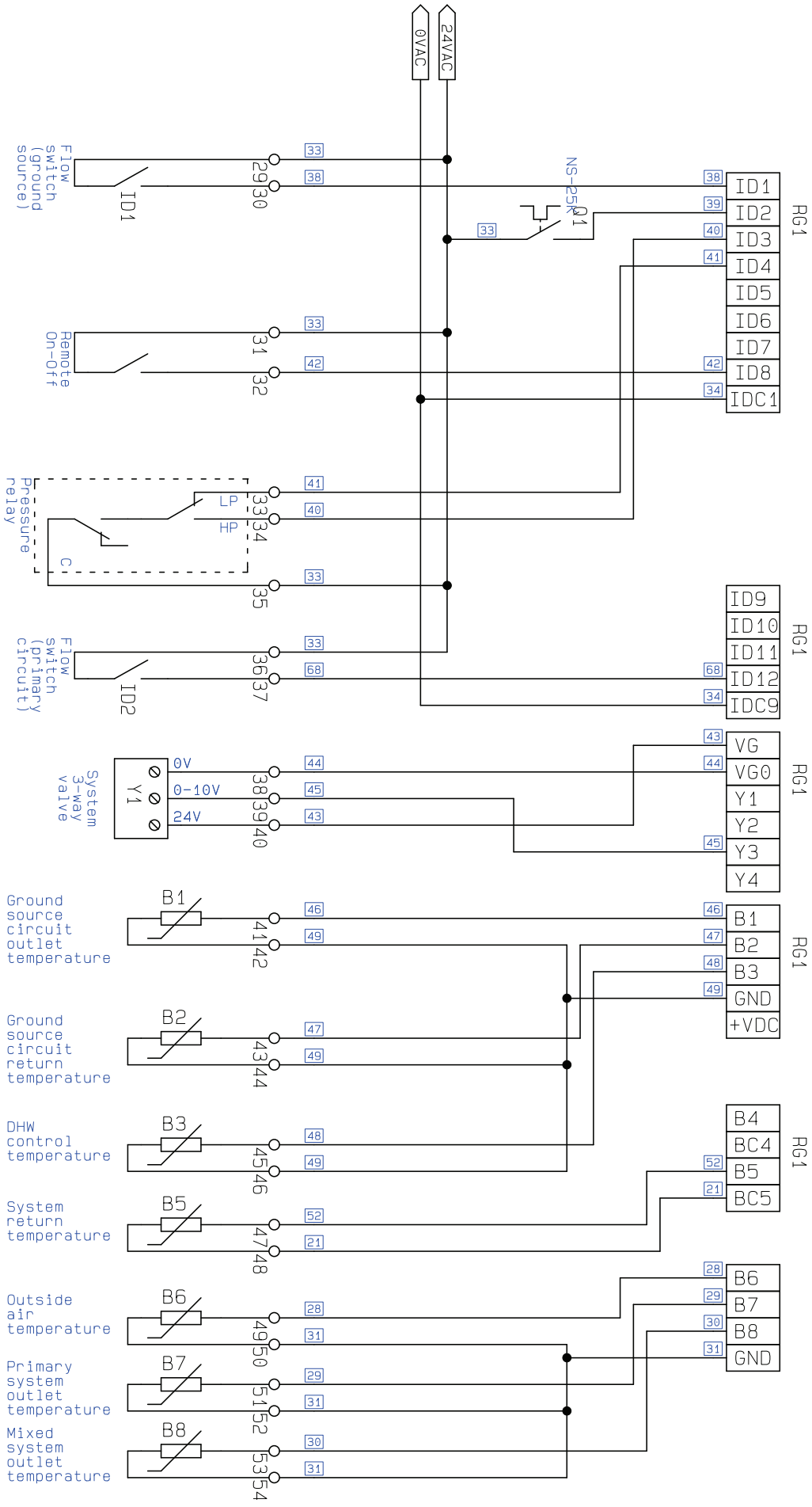
Pic. 10.4.1


ZH45K4E-TFD
Compesor
11,8A
Ground source pump
Primary circuit pump
NS-25K
Q1.F
C16
S
K1
S1
S3
A1
M
M1
M2
RM4 TG20
FR
RT424730
R1
R2
R3
R4
R5
R6
RG1
C1
NO1
NO2
NO3
C4
NO4
NO5
NO6
PE
N
L1
L2
L3
T1
T2
T3

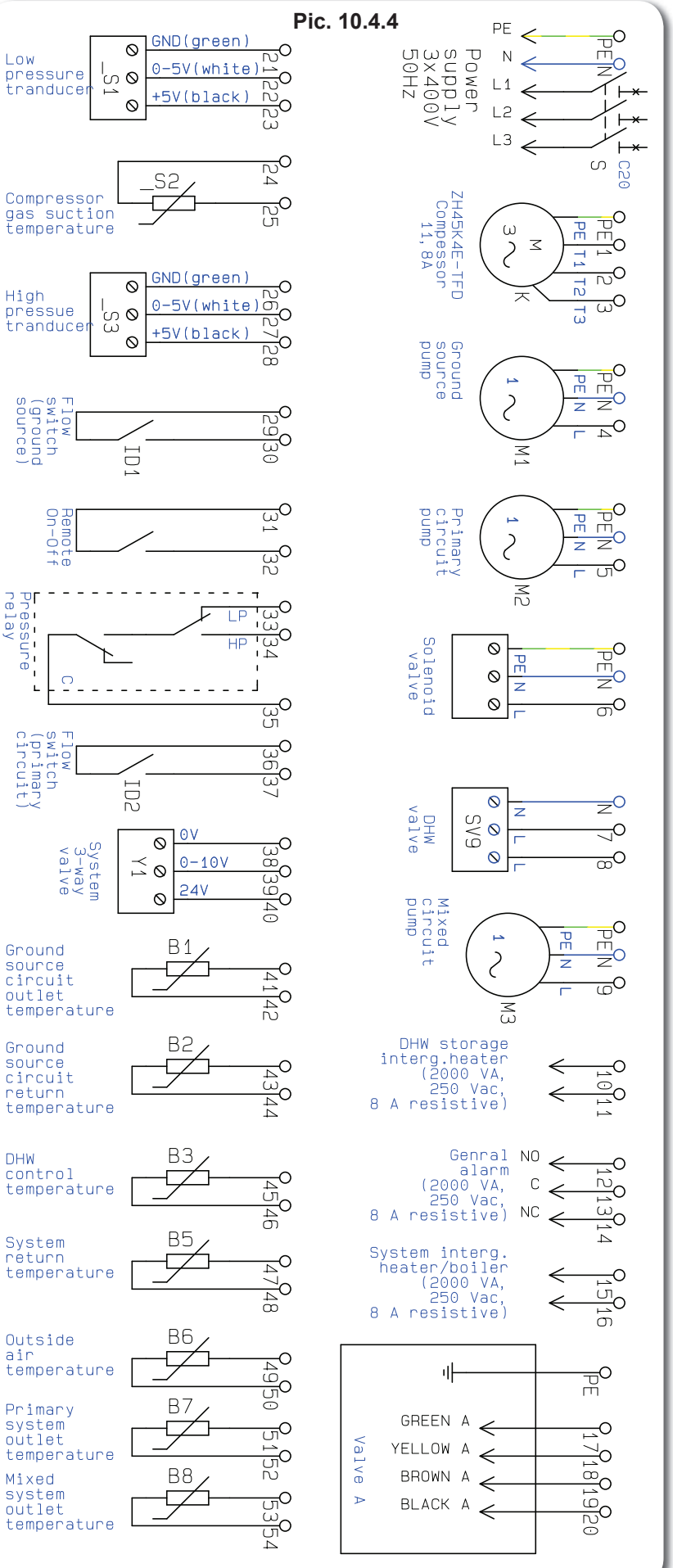
Pic. 10.4.2


N
1
L1
Solenoid valve
PE
PEN
L
6
44
24
21
22
R1
DHW valve
SV9
N
L
7
8
23
24
14
11
12
R4
Mixed circuit pump
M3
9
25
22
S2
R5
DHW storage interg.heater (2000 VA, 250 Vac, 8 A resistive)
10
11
15
16
C7
NO7
RG1
Genral alarm (2000 VA, 250 Vac, 8 A resistive)
NO
C
NC
12
13
14
65
66
67
NO8
C8
NC8
System interg. heater/boiler (2000 VA, 250 Vac, 8 A resistive)
15
16
26
27
R6
230VAC/24VAC
TR1
33
34
G
G0
Valve A
GREEN A
YELLOW A
BROWN A
BLACK A
17
18
19
20
50
51
53
54
Low pressure tranducer
S1
GND(green)
0-5V(white)
+5V(black)
21
22
23
55
57
56
Compressor gas suction temperature
S2
24
25
58
High pressue tranducer
S3
26
27
28
59
GND
VREF
S1
S2
S3
S4
DI1
DI2
Tx/Rx+
Tx/Rx-
RG2
G
G0
VBAT
COMA
NOA
32
1
2
3
4
Rx-/Tx-
Rx+/Tx+
GND
35
36
37
0VAC
24VAC

Pic. 10.4.3


0VAC
24VAC
Flow switch (ground source)
ID1
29
30
33
38
NS-25K
Q1
Remote On-Off
31
32
42
Pressure relay
LP
HP
C
33
34
35
41
40
Flow switch (primary circuit)
ID2
36
37
68
System 3-way valve
Y1
0V
0-10V
24V
38
39
40
44
45
43
Ground source circuit outlet temperature
B1
41
42
46
49
Ground source circuit return temperature
B2
43
44
47
49
DHW control temperature
B3
45
46
48
49
System return temperature
B5
47
48
52
21
Outside air temperature
B6
49
50
28
31
Primary system outlet temperature
B7
51
52
29
31
Mixed system outlet temperature
B8
53
54
30
31
RG1
ID1
ID2
ID3
ID4
ID5
ID6
ID7
ID8
IDC1
ID9
ID10
ID11
ID12
IDC9
VG
VG0
Y1
Y2
Y3
Y4
B1
B2
B3
GND
+VDC
B4
BC4
B5
BC5
B6
B7
B8
GND

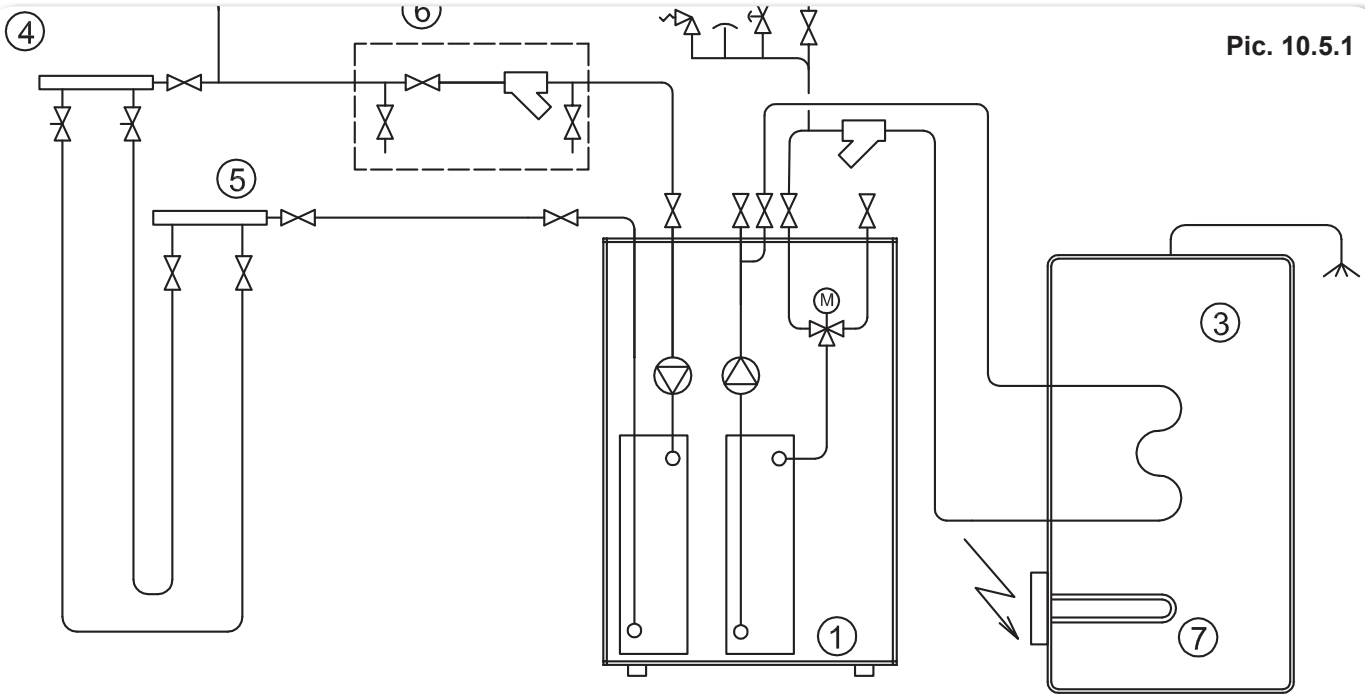
Pic. 10.4.4




| marking | title | quantity |
|---|---|---|
| **S** | Circuit breaker 3P C16 | 1 |
| **S1** | Circuit breaker 1P C6 | 1 |
| **S2, S3** | Circuit breaker 1P C2 | 2 |
| **A1** | Softarter SOLARSTAR17 | 1 |
| **Q1** | Thermal relay NS2-25k 9-14A | 1 |
| **Q1** | Aux contact NS2-AE11 | 1 |
| **FR** | phase sequence relay RM4 TG20 | 1 |
| **TR1** | Transformers 230VAC/24VDC | 1 |
| **R1-R6** | Relay RT424730 witk sock-et RT78726 andRT17017 (230V AC) | 6 |
| **RG1** | Controller PCO3med | 1 |
| **RG2** | Controller EVO | 1 |
| | Terminal WAGO 2002-1201 | 54 |
| | Terminal WAGO 2002-1204 | 5 |
| | Terminal WAGO 2002-1207 | 5 |
| | Terminal WAGO 2010-1204 | 1 |
| | Terminal WAGO 2010-1207 | 1 |

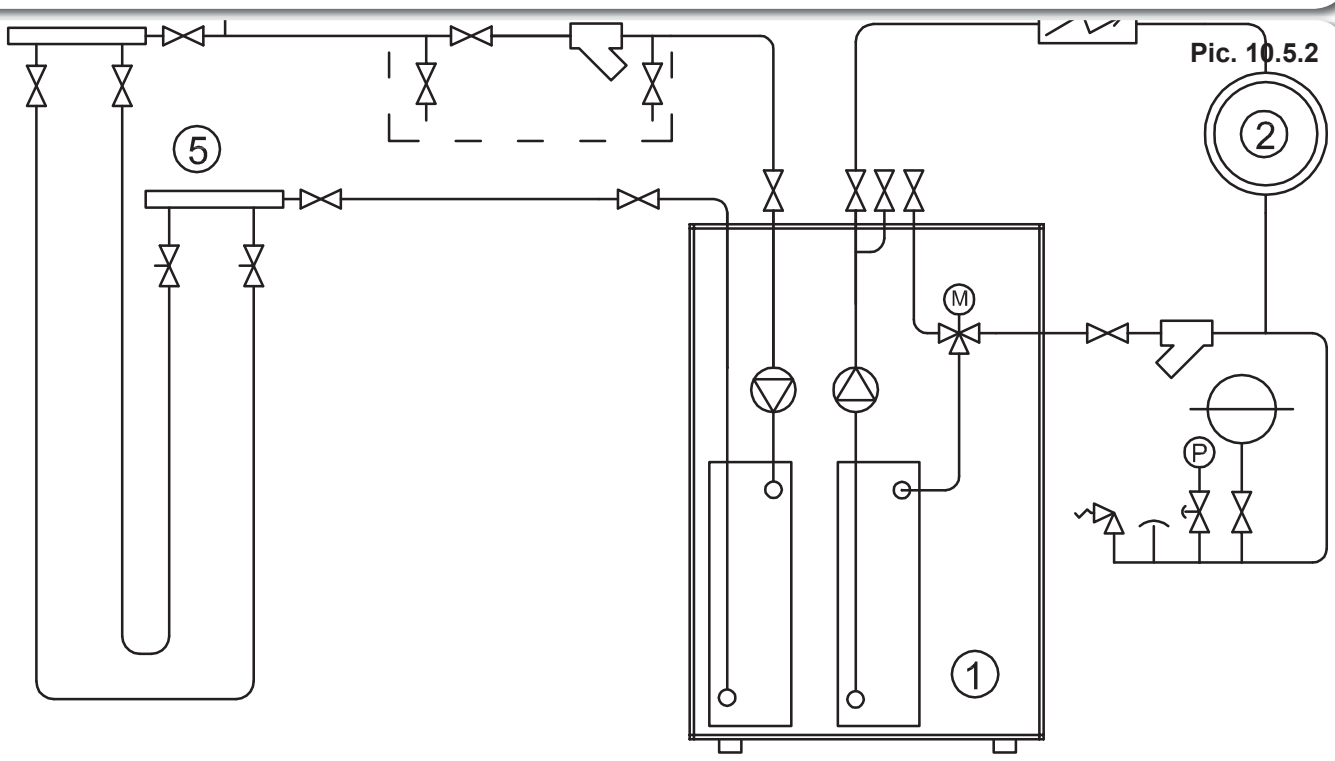
## 10.5. Plumbing Diagram

Pic. 10.5.1



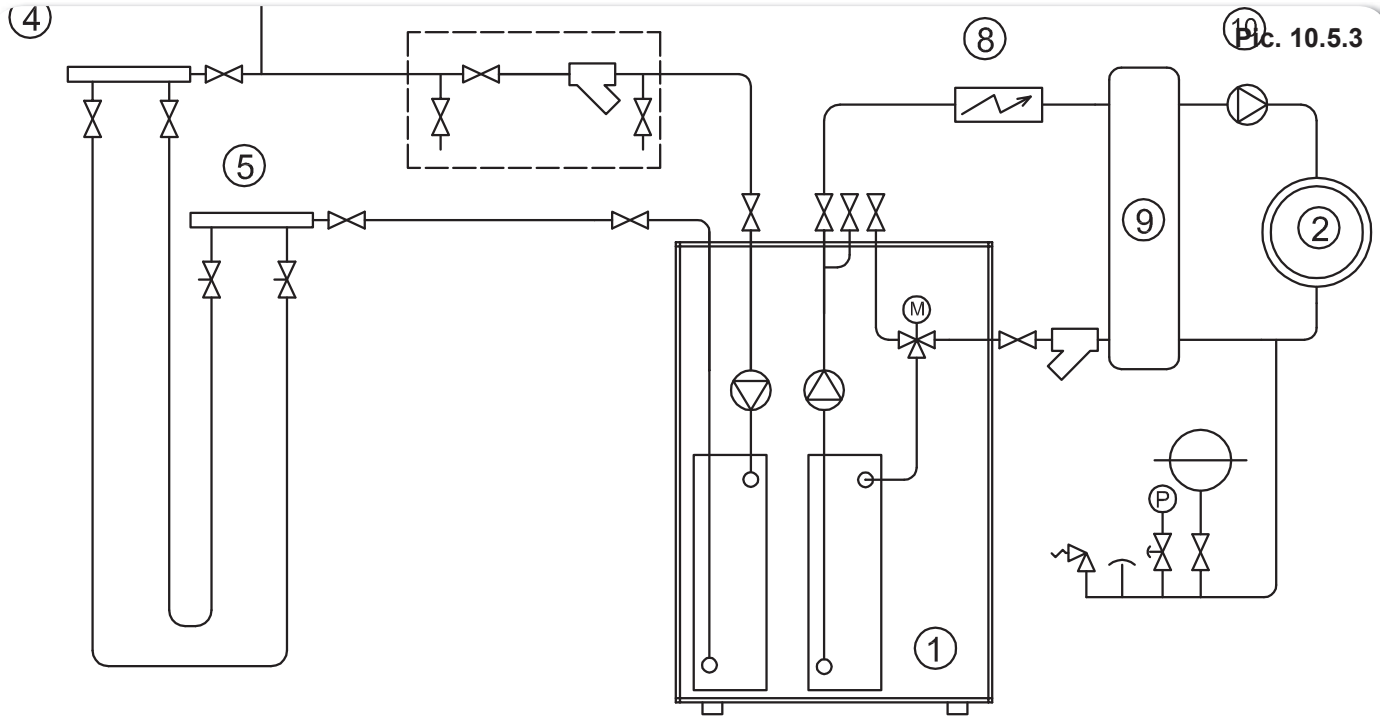

Domestic hot water

Pic. 10.5.2



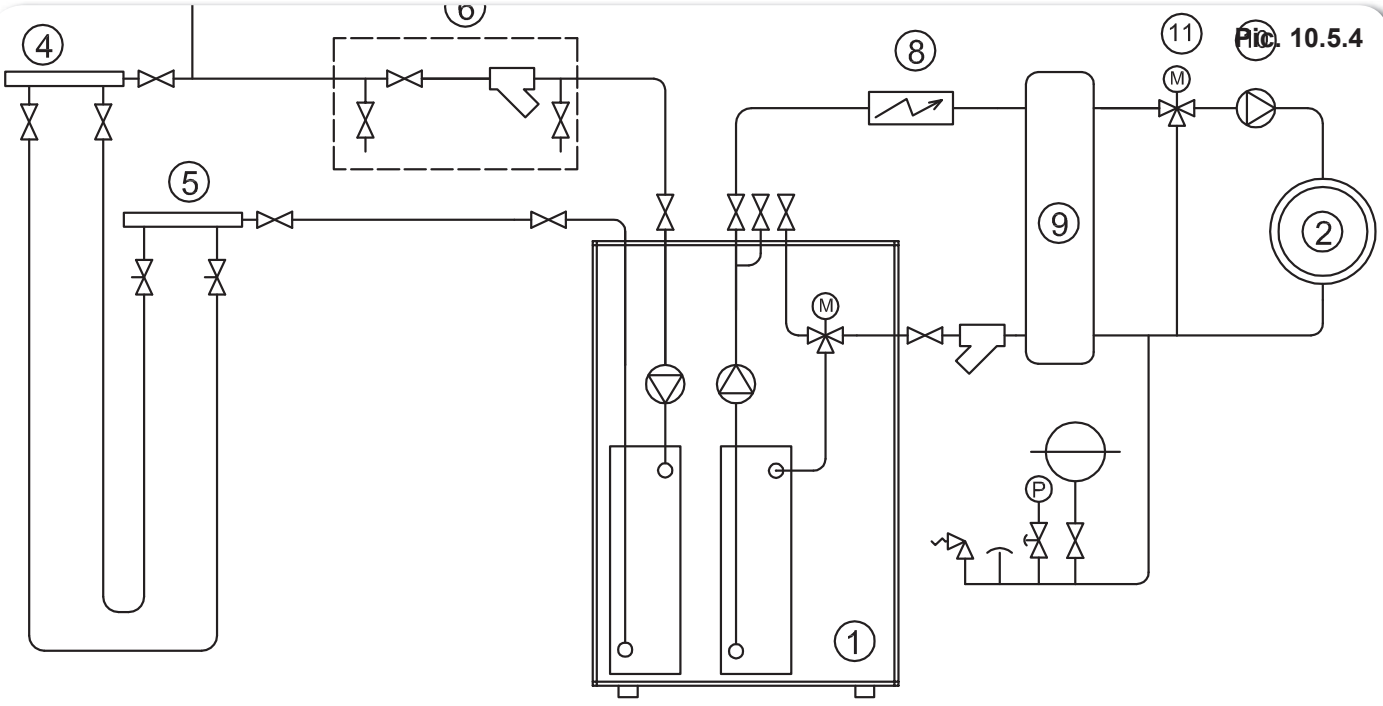

Direct Heating system

Pic. 10.5.3



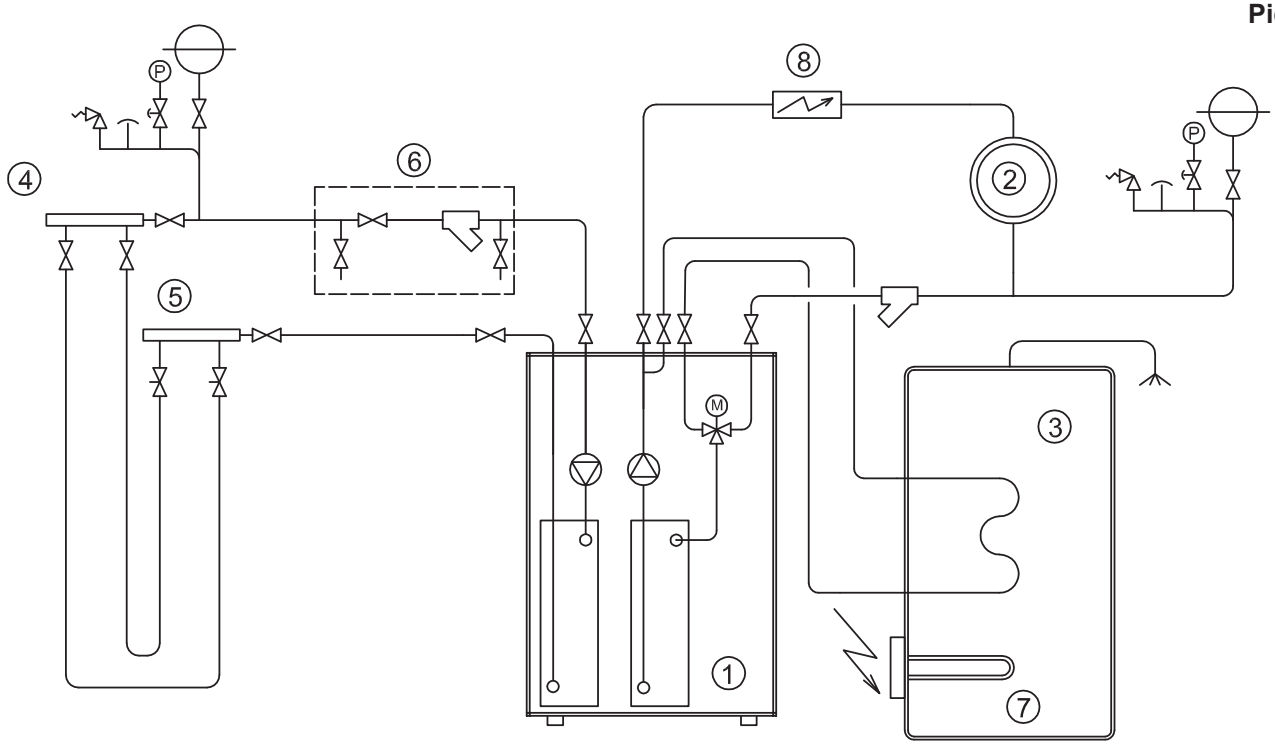

Heating system with buffer tank or hydraulic separator and circulation pump

Pic. 10.5.4



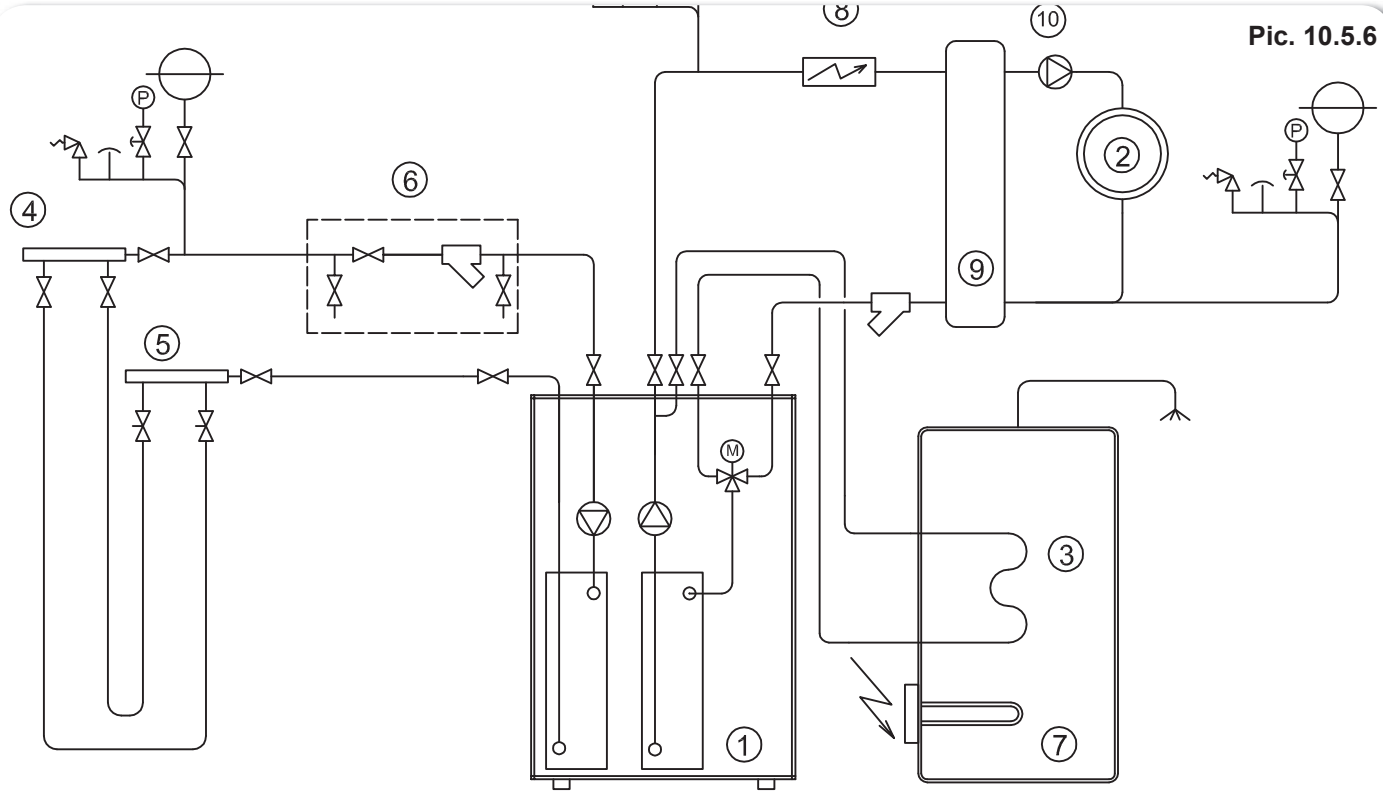

Heating system with buffer tank or hydraulic separator, mixing valve and circulation pump

Pic. 10.5.5



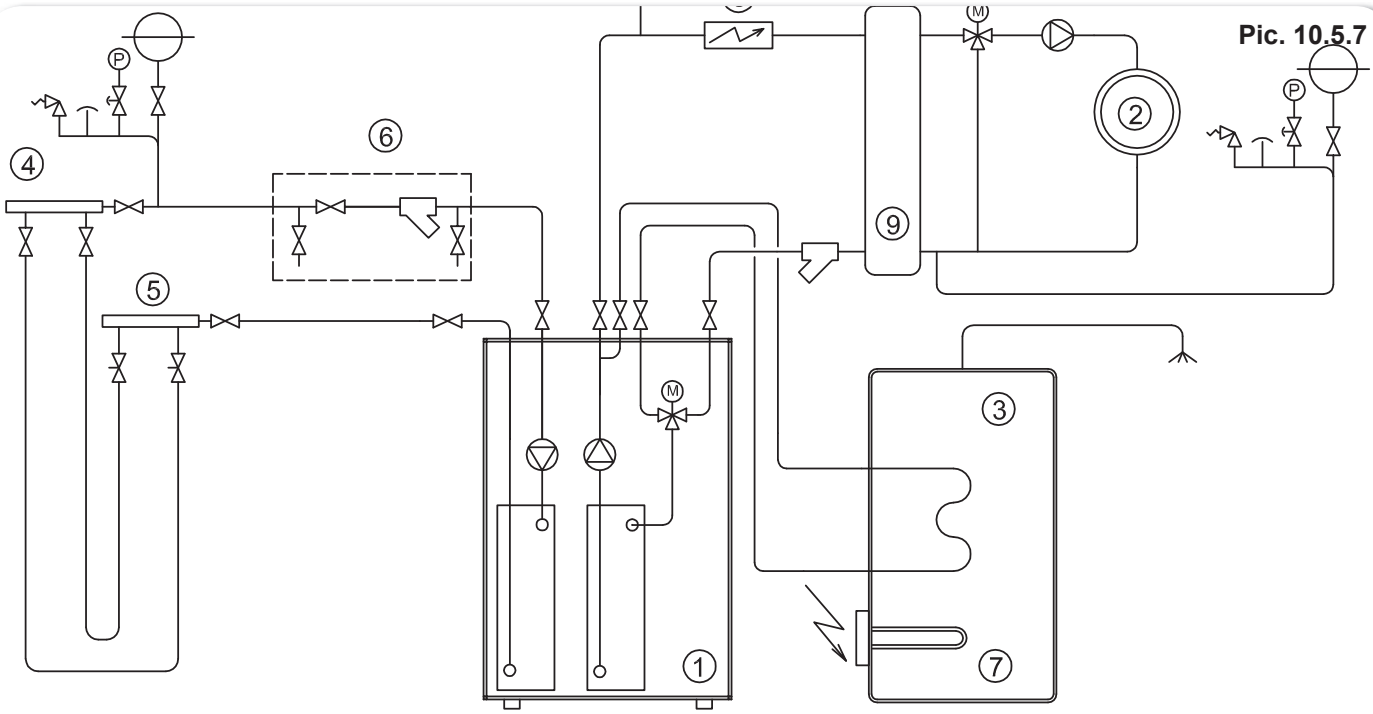

Domestic hot water and Heating systems

Pic. 10.5.6




Domestic hot water and Heating systems with buffer tank or hydraulic separator and circulation pump

Pic. 10.5.7




Domestic hot water and Heating systems with buffer tank or hydraulic separator, mixing valve and circulation pump

## 10.6. Declaration of Conformity

Hereby confirm that the design and construction of the product(s) listed below, in the version(s) placed on the market by us, conform to the relevant requirements of the applicable EC directives.

This declaration becomes invalidated if any modifications are made to the product(s) without our prior authorization.

Designation of the product(s):

Brine-to-water heat pumps for indoor installation SIG 6, SIG 8, SIG 10, SIG 12, SIG 14, SIG 17

EC Directives:
EC Low Voltage Directive (73/23/EEC)
EC EMC Directive (89/336/EEC)

is in compliance with the requirements of a Government Regulation No. 9 / 2002, 17/2003, 18/2003 163/2002 and 312/2005, as amended, is compatible with the following codes and standards:

- EN 60 335-2-40:2002
- EN 60 335-1:2001
- EN 55014-1:2000 + A1: 2001 + A2: 2002
- EN 55014-2:1997 + A1: 2001
- EN 61000-3-2:2000
- EN 61000-3-3:1995 + A1: 2001
- EN 14511-1 to 4:2005

Manufacturer confirms that the characteristics of the product meet the essential requirements of regulation, standards and regulations above and the product is under conditions of intended use and safe measures are taken to ensure conformity with the technical documentation and the basic requirements.

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# Notes