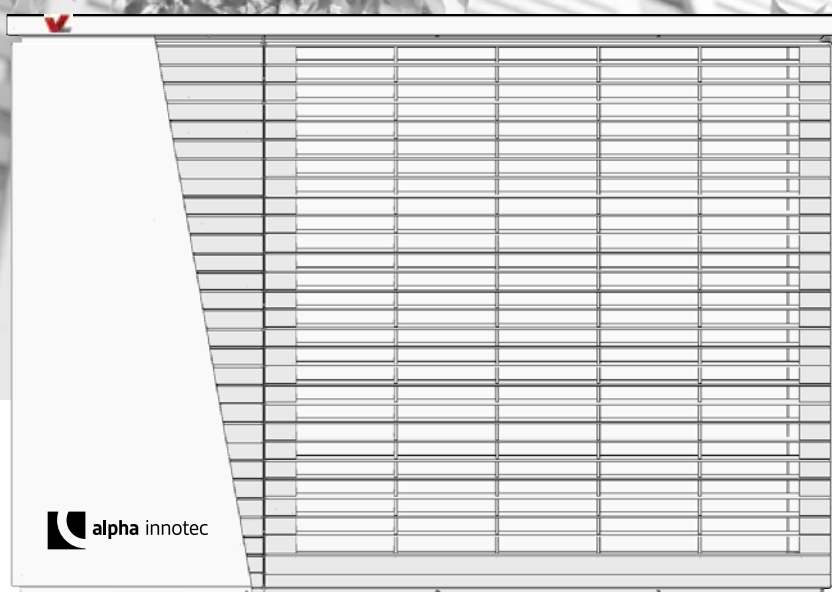
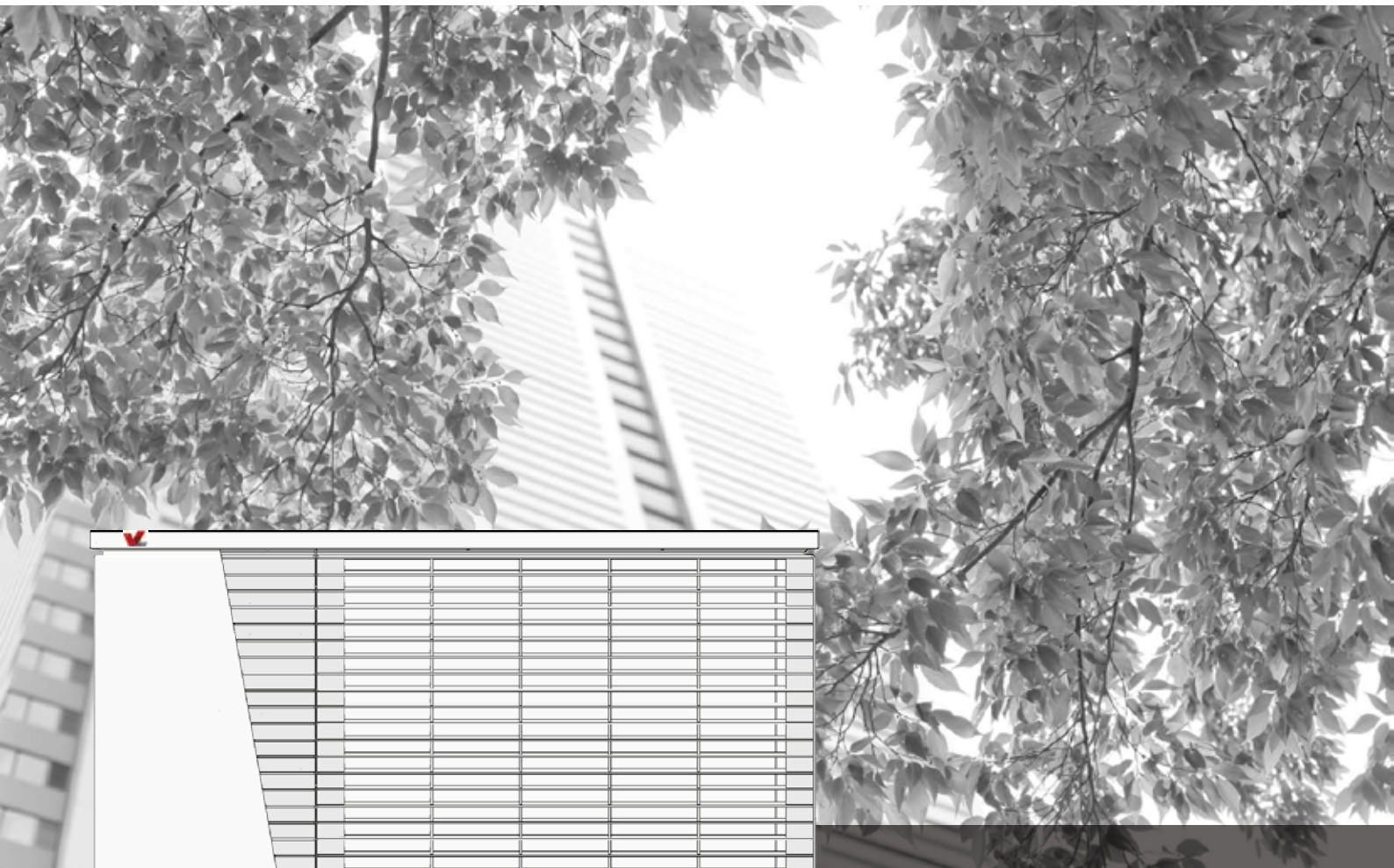


the better way to heat



Air/water heat pumps
Dual/outdoor installation

Operation manual

LWDDV





Table of contents

1	About this operation manual.....	3	10	Setting the overflow valve.....	12
1.1	Validity	3	11	Commissioning.....	13
1.2	Reference documents.....	3	12	Maintenance	14
1.3	Symbols and markings.....	3	12.1	Basic principles.....	14
1.4	Contact.....	4	12.2	Maintenance as required.....	14
2	Safety	4	12.3	Annual maintenance	14
2.1	Proper use.....	4	12.4	Cleaning and flushing the condenser.....	14
2.2	Personnel qualifications.....	4	13	Malfunctions.....	14
2.3	Personal protective equipment.....	4	14	Dismantling and disposal	14
2.4	Residual risks.....	4	14.1	Dismantling.....	14
2.5	Disposal.....	5	14.2	Disposal and recycling.....	14
2.6	Avoid material damage.....	5		Technical data/scope of delivery	15
3	Description	6		Performance curves.....	16
3.1	Condition on delivery:	6		Dimension drawings.....	17
3.2	Design.....	6		Installation protected zones	18
3.3	Function	6		Installation plan	19
4	Operation and care.....	7		Installation plan for wall bracket	20
4.1	Energy and environmentally aware operation	7		Installation plan for floor bracket	21
4.2	Care.....	7		with wall duct	21
5	Delivery, storage, transport and installation	7		Installation plans	22
5.1	Scope of delivery	7		Installation plan for floor bracket	22
5.2	Storage.....	7		with hydraulic connection line	22
5.3	Unpacking and transport.....	8		Drill template for wall bracket	23
5.4	Installation	8		Drill template for wall bracket	24
5.5	Installation with a wall bracket	9		View of foundation for V3	25
5.6	Installation on a floor bracket	9		Hydraulic integration options	26
6	Installation of hydraulic system.....	10		View of foundation for V4	26
6.1	Condensate drain	10		Minimum clearances	27
6.2	Connection to the heating circuit.....	10		External	
6.3	Pressure safety	11		condensate line connection	28
7	Electrical installation.....	11		Internal	
8	Flushing, filling and venting.....	12		condensate line connection	29
8.1	Heating water quality.....	12		Hydraulic integration options	30
8.2	Flushing, filling and venting the heating circuit.....	12		Circuit diagrams	34
9	Insulation of hydraulic connections.....	12		EC Declaration of Conformity	39



1 About this operation manual

This operation manual is an integral part of the device.

- ▶ Before working on or with the device, always read the operation manual carefully and follow it for all activities at all times, especially the warnings and safety instructions.
- ▶ Keep the operation manual at hand at the device and hand it over to the new owner if the device changes hands.
- ▶ If you have any questions or if anything is unclear, ask the local partner of the manufacturer or the factory's customer service.
- ▶ Observe all reference documents.

1.1 Validity

This operation manual refers solely to the device identified by the nameplate (→ "Nameplate" on page 6).


1.2 Reference documents

The following documents contain additional information to this operation manual:




- Heat pump guide, hydraulic integration
- Operation manual for the heating and heat pump controller
- Short description of the heat pump controller
- Operation manual for the extension board (accessory)
- Operation manual for the hydraulic unit

1.3 Symbols and markings

Identification of warnings

Symbol	Meaning
	Safety-relevant information. Warning of physical injuries.
DANGER	Indicates an imminent danger resulting in severe injuries or death.
WARNING	Indicates a potentially dangerous situation, which can result in severe injuries or death.
CAUTION	Indicates a potentially dangerous situation, which can result in moderate or minor injuries.
ATTENTION	Indicates a potentially dangerous situation, which can result in property damage.

Symbols in the document

Symbol	Meaning
	Information for specialists
	Information for the owner
✓	Prerequisite for an action
▶	Single-step instruction for action
1, 2, 3 ...	Numbered step within a multi-step instruction for action. Adhere to the given sequence.
	Additional information, e.g. a note for making work easier, information on standards
→	Reference to further information elsewhere in the operation manual or in another document
•	List



1.4 Contact

Addresses for purchasing accessories, for servicing or for answers to questions about the device and this operation manual can be found on the internet and are kept up-to-date:

- Germany: www.alpha-innotec.de
- EU: www.alpha-innotec.com

2 Safety

Only use the device if it is in perfect technical condition and only use it as intended, safely and aware of the hazards and under full observance of this operation manual.

2.1 Proper use

The device is intended exclusively for the following functions:

- Heating
 - Domestic hot water preparation (optional, with accessories)
 - Proper use includes complying with the operating conditions (→ “Technical data/scope of delivery” on page 15) and the operation manual and observing the reference documents.
- When using the device, observe local regulations: laws, standards and directives.

Any other use of the device shall be considered improper use.

2.2 Personnel qualifications

All instructions and information in this operation manual are intended exclusively for qualified and skilled personnel.

Only qualified and skilled personnel are able to carry out the work on the device safely and correctly. Interference by unqualified personnel can result in fatal injuries and material damage.

- Ensure that personnel are familiar with local regulations, especially those relating to working safely and in awareness of the hazard risks.
- Have work on the electrical and electronic components carried out only by qualified personnel with training in the field of “electrical components”.

- Have any other work on the system carried out by qualified and skilled personnel only, e.g.
- Heating installers
 - Plumbers
 - Refrigeration plant manufacturers (maintenance work)

During the warranty and guarantee period, servicing and repair work may only be carried out by personnel authorised by the manufacturer.

2.3 Personal protective equipment

There is a risk of cutting your hands on sharp edges of the device.

- Wear cut-resistant protective gloves during transport.

2.4 Residual risks

Injuries caused by electric current

Components in the device are live with fatal voltage. Before opening the device casing:

- Disconnect the device from the power supply.
- Protect the device against being switched back on again.
- Residual voltage at the inverter. Wait for 90 seconds before opening the device.

Risk of injury from moving parts

- Only switch on the device when the covers and fan protection grille are fitted.

Injuries and environmental damage due to refrigerant

The device contains flammable, harmful and environmentally dangerous refrigerant. If refrigerant leaks out of the device, there is a risk of explosion:

1. Switch off the device.
2. Notify an authorised after sales service.
3. Keep away from sources of ignition.



2.5 Disposal

Environmentally hazardous media

Improper disposal of environmentally hazardous media (refrigerant) will damage the environment:

- ▶ Collect media safely.
- ▶ Dispose of the media in an environmentally sound manner in accordance with the local regulations.

2.6 Avoid material damage

The ambient air at the heat pump's installation site and the air drawn in as a heat source must not contain any corrosive components!

Constituents such as:

- Ammonia
- Sulphur
- Chlorine
- Salt
- Sewage gases, flue gases

can cause damage to the heat pump, which can even result in the complete failure/total loss of the heat pump.

Decommissioning/draining the heating

If the system/heat pump is decommissioned or drained after already being filled, it must be ensured that the condenser and any heat exchangers have been drained completely in the event of freezing temperatures. Residual water in heat exchangers and condensers can result in damage to the components.

- ▶ Completely drain the system and the condenser, and open vent valves.
- ▶ Blow them clear with compressed air, if required.

Improper action

Requirements for minimum scale and corrosion damage in hot water heating systems:

- Professional planning and commissioning
- Closed system with regard to corrosion
- Integration of an adequately dimensioned pressure maintenance
- Use of demineralized water heating water or VDI 2035 water
- Regular servicing and maintenance

If a system is not planned, commissioned and operated in accordance with the given requirements, there is a risk of the following damage and malfunctions:

- Malfunctions and failure of components, e.g. pumps, valves
 - Internal and external leaks, e.g. at heat exchangers
 - Reduction in cross-section and blockages in components, e.g. heat exchangers, pipes, pumps
 - Material fatigue
 - Gas bubble and gas cushion development (cavitation)
 - Negative effect on heat transfer, e.g. due to formation of deposits, and associated noises, e.g. boiling noises, flow noises
- ▶ Observe the information in this operation manual for all work on and with the device.

Unsuitable quality of the water for filling and replenishing the heating circuit

The efficiency of the system and the service life of the heat generator and the heating components depend decisively on the quality of the heating water.

If the system is filled with untreated drinking water, calcium deposits will form as scale. Limescale deposits accumulate on the heat transfer surfaces of the heating. Efficiency is reduced and energy costs increase. In extreme cases, the heat exchangers will be damaged.

- ▶ Fill the system only with demineralized heating water or VDI 2035 water.

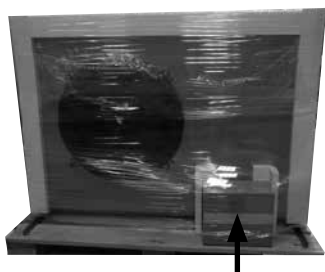


3 Description

3.1 Condition on delivery:

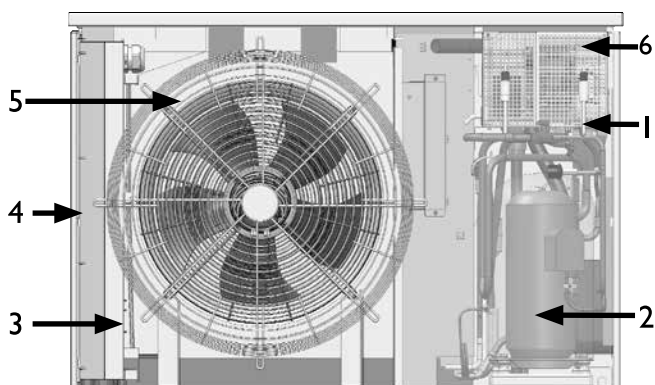


Packaged heat pump.



Separate package:

3.2 Design



- | | |
|--------------|--------------|
| 1 Condenser | 2 Compressor |
| 3 Evaporator | 4 Switch box |
| 5 Fan | 6 Inverter |

Nameplate

The nameplate is attached at the following position on the device:

- On the rear, it contains the following information at the very top:
- Device type, item number
- Serial number

The nameplate also contains an overview of the most important technical data.

Functionally necessary accessories

Only use genuine accessories made by the manufacturer of the device.

- Hydraulic station
- Hydraulic module

Additional accessories

- Wall duct with vibration decoupling
- Wall bracket
- Floor bracket
- Vibration decoupling
- Buffer tank
- Overflow valve
- Cladding for wall bracket
- Cladding for floor bracket
- Hydraulic connection line
- Extension board
- Room control panel

If the cable is not long enough for free field installation, an extension set can be ordered.

3.3 Function

Liquid refrigerant is evaporated (evaporator). The energy for this process is ambient heat coming from the outside air. The gaseous refrigerant is compressed (compressor), which increases the pressure and thus also the temperature. The gaseous refrigerant at high temperature is liquefied (condenser).

In the process, the high temperature is transferred to the heating water and used in the heating circuit. The liquid refrigerant at high pressure and high temperature is expanded (expansion valve). The pressure and temperature drop and the process restarts.

The heated heating water can be used for domestic hot water or for heating the building. The temperatures required and the use are controlled by the heat pump controller. Any required reheating, support in screed drying or increase in the domestic hot water temperature can be carried out using an electric heating element, which is activated by the heat pump controller as required.

The vibration decoupling (accessory) for the hydraulic system prevents structure-borne sound and vibrations from being transferred to the fixed pipes and thus to the building.



4 Operation and care



NOTE

The device is operated via the control panel of the heating and heat pump controller (→ operation manual for the heating and heat pump controller).

4.1 Energy and environmentally aware operation

The generally applicable requirements for energy and environmentally aware operation of a heating system also apply to the use of a heat pump. The most important measures include:

- No unnecessarily high flow temperature
- No unnecessarily high domestic hot water temperature (observe local regulations)
- Do not open windows with a gap/in a tilted position (continuous ventilation), but instead open them wide for a short time (shock ventilation).
- Always ensure that the controller setting is correct

4.2 Care

Wipe off the outside of the device only using a damp cloth or cloth with mild cleaning agent (washing-up liquid, neutral cleaning agent). Do not use any aggressive, abrasive, acid or chlorine-based cleaning agents.

5 Delivery, storage, transport and installation

ATTENTION

Damage to the housing and the device components due to heavy objects.

- ▶ Do not place any objects that are heavier than 30 kg on the device.

5.1 Scope of delivery

- ▶ Check the delivery immediately on receipt for visible signs of damage and for completeness.
- ▶ Notify the supplier of any complaints immediately.

The separate package included contains:

- Documents (operation manuals, ERP data and labels)
- Type stickers
- 1 condensate drain pipe nozzle
- 3 fastening screws
- 1 sealing plate for floor duct
- 1 long torx bit for panel screws
- Load compressor plug for connection to hydraulic unit
- Bus line plug (communication) for connection to hydraulic unit
- Control voltage plug for connection to hydraulic unit
- Logo sticker for hydraulic unit



NOTE

The outdoor sensor is included in the scope of delivery for the hydraulic unit

5.2 Storage

- ▶ If possible, do not unpack the device until immediately before installation.
- ▶ Store the device protected against:
 - Moisture
 - Frost
 - Dust and dirt



5.3 Unpacking and transport

Notes on safe transport

The device is heavy (→ “Technical data/scope of delivery” on page 15). There is a risk of injuries or material damage if the device falls down or overturns.

There is a risk of cutting your hands on sharp edges of the device.

- ▶ Wear cut resistant protective gloves.

The hydraulic connections are not designed for mechanical loads.

- ▶ Do not lift or transport the device by the hydraulic connections.

Transport the device with a pallet truck if possible, or alternatively carry it

- ▶ Do not tilt the heat pump by more than 45°.

Transport with a pallet truck

- ▶ Transport the device to the installation site in packaged form, and secured on a wooden pallet.

Unpacking:

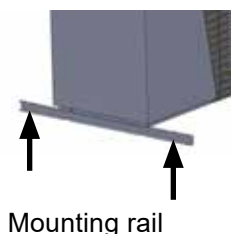
1. Remove plastic films. Make sure that you do not damage the device when doing this.
2. Dispose of the transport and packaging material in an environmentally sound manner and in accordance with local regulations.

Carrying the device



NOTE

The device is delivered on a pallet with mounting rails. The mounting rails can be used for transport.



5.4 Installation

Preparation for installation, together with the wall duct

To connect the outdoor unit to the indoor part (hydraulic unit), there must be a suitable opening for the wall duct (accessory) or an opening has to be cut out in order to insert the Ø125 mm waste water pipe (= wall duct accessory).

If the wall duct is not yet present, you can also use a commercially available waste water pipe, length 1 m, DN 125 in advance.



NOTE

Always comply with the installation plan for the respective device type. Observe the minimum clearances and protected zones.

- Installation plan, dimension drawings and scopes of protection for the respective device type.



CAUTION

In the air outlet area the air temperature is approx. 5 K below the ambient temperature. Under certain climatic conditions, an ice layer can therefore develop in the air outlet area. Install the heat pump so that the air coming from the air outlet opening is not discharged into footpath areas.



NOTE

The surface in the air outlet area of the heat pump must be permeable to water.

If the wall duct is not used, the bus cable must be routed through a separate cable conduit, separated from the other cables.

The other two cables also have to be routed using empty conduits on site.



NOTE

The noise immissions of the heat pumps must be taken into account in the respective installation plans for air/water heat pumps. The respective regional regulations must be complied with.



Installation site requirements

- Only install outdoors
- ✓ Clearance dimensions were complied with
→ “Installation plans”
Noise specifications on page 15
- ✓ Free air intake and blowing air are possible without any air short-circuit.
- ✓ The surface/floor is suitable for installation of the device:
 - Level and horizontal
 - With load-bearing capacity for the device’s weight

5.5 Installation with a wall bracket

- “Wall bracket installation instruction”
- “Wall duct installation instruction”
- “Installation plans/minimum clearances/
drill template”

The wall bracket is only suitable for solid, load-bearing walls. In a timber-frame construction with facing, the floor bracket should be used due to the possible transfer of structurally borne sound to the interior.

5.6 Installation on a floor bracket

The device can be installed near a wall or as a free field installation. Ideally, the heat pump should be installed where it is protected from wind. If this is not possible, we recommend installing it at right angles to the prevailing direction of wind or air ducting in the main wind direction.

Place the device on a load-bearing, firm and horizontal foundation. The foundation must not be connected to the building. Make sure that the foundation is designed for the weight of the heat pump.

- “Floor bracket installation instruction”
- “Wall duct installation instruction”
- “Installation plans/minimum clearances/
view of foundation”



NOTE

When installing with a wall duct, make sure the wall clearance is correct.

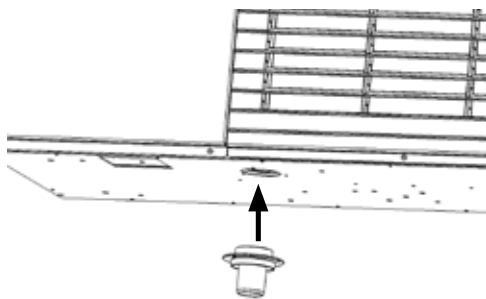


6 Installation of hydraulic system

6.1 Condensate drain

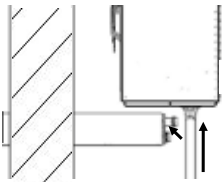
The condensate precipitated from the air must be removed frost-free via a plastic condensate pipe with a minimum diameter of 40 mm. If surfaces are water permeable, it is sufficient for the condensate drain pipe to be routed vertically into the ground to a depth of at least 90 cm.

Install the condensate pipe nozzle on the condensate drain, which is included in the scope of delivery for the device, on the underside of the device using the enclosed screws:



1. Outdoors:

Connect the condensate pipe (wall duct accessory) to the condensate pipe nozzle.



→ "Wall duct installation instruction"

The condensate pipe must not be inserted into the ground on its own, it must first be inserted into a second pipe that is suitable for installation in the ground (such as a waste water pipe).

The connection between the pipes must be sealed. It must be possible to compensate the length. The pipe on the device must not press against the ground, it must be possible to slide it.

Sufficient seepage of the draining condensate into the ground must be ensured.

2. Towards the inside:

Insert the condensate pipe (wall duct accessory) through the wall duct (accessory) (using lubricant) and connect it to the condensate nozzle using the enclosed plastic elbows.

→ "Wall duct installation instruction"

If the condensate pipe is not routed inwards, the front and rear openings in the wall duct have to be sealed with the enclosed plugs.

6.2 Connection to the heating circuit



NOTE

If an existing system is replaced, the old vibration decoupling parts must not be reused.



NOTE

Before connecting to the heating system, the heating circuit must be thoroughly flushed.

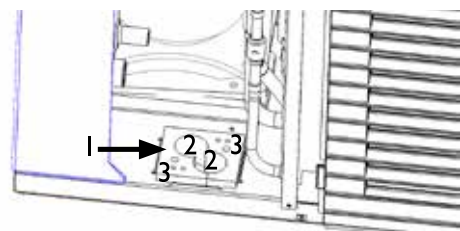
ATTENTION

Damage to the copper pipes due to impermissible load!

- ▶ Secure all connections against twisting.
- ✓ Cross-sections and lengths of the pipes for the heating circuit are adequately dimensioned.
- ✓ The free pressing of the circulation pumps at least results in the minimum throughput required for the device type (→ "Technical data/scope of delivery").
- ✓ The hydraulic system must be equipped with a buffer tank, the required volume of which depends on your device type.
- "Technical data"
- ✓ The lines for the heating are fastened to the wall or ceiling via a fixed point.

1. Insert the vent at the highest point of the heating circuit.

Make sure that the working overpressure (→ "Technical data/scope of delivery" on page 15) is complied with. Attach the enclosed sealing plate into the recess in the housing floor.

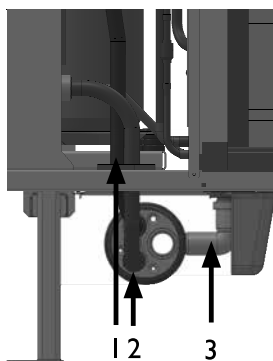


- 1 Sealing plate
- 2 Heating water feed-throughs
- 3 Electric cable feed-throughs



2. Connect the device to the fixed piping of the heating circuit via vibration decoupling (stainless steel corrugated pipes, accessory). You must install them to prevent the transfer of structurally borne sound to the fixed piping.

→ “Vibration decoupling installation instruction”



- 1 Heating water outlet connection (flow)
- 2 Heating water inlet connection (return)
- 3 Condensate drain pipe

3. Vibration decoupling (accessory or wall duct scope of delivery):

Route the stainless steel corrugated pipes through the feed-through in the housing floor and screw them onto the two pipes in the wall duct.

Connect the supply line first, then the return line.

If no wall duct is used, route the fixed piping of the heating circuit outdoors below the frost line.

6.3 Pressure safety

Equip the heating circuit with a safety valve and diaphragm expansion vessel in accordance with local standards and guidelines.

Also install filling and draining devices, shut-off devices and non-return valves in the heating circuit.

7 Electrical installation

Establishing the electrical connections

ATTENTION

Irreparable damage to the compressor due to wrong rotating field!

- Ensure a clockwise rotating field for the compressor's load supply (for 400 V connection only).

Basic information relating to the electrical connection

- Any specifications by the local energy supply company apply to electrical connections.
- Equip the power supply for the heat pump with an all-pole miniature circuit-breaker with at least 3 mm contact spacing (IEC 60947-2).
- If required, residual current circuit breaker type A is sufficient.
- Note the tripping current level (→ “Technical data/scope of delivery” on page 15).
- Comply with the electromagnetic compatibility regulations (EMC regulations).
- Install the control and sensor cables and device supply cable sufficiently far apart (> 100 mm).
- Install unshielded power supply cables and shielded cables (bus cables) sufficiently far apart.
- Do not extend the patch cable or bus cable. Bus cables up to a length of 30 m can be used if the quality of the cable matches that of the original cable.

1. Route the pre-assembled 8 m cable for the heat pump inside the building to the hydraulic unit.
2. Connect the compressor load cable to the hydraulic unit using the 5-pin plug included in the heat pump scope of delivery, “load connection to L1”.

→ See “Terminal diagram/circuit diagram for hydraulic unit”

3. Route the bus cable in a cable conduit up to the building feed-through and from there on to the hydraulic unit.
4. Connect the bus cable (communication) to the hydraulic unit using the plug included in the heat pump scope of delivery.
5. Connect the control voltage to the hydraulic unit using the plug included in the heat pump scope of delivery.

→ See “Terminal diagram/circuit diagram for hydraulic unit”

Maximum line length: 30 m.



8 Flushing, filling and venting

8.1 Heating water quality



NOTE

- Detailed information is also provided in the VDI Guideline 2035 “Vermeidung von Schäden in Warmwasserheizanlagen” (Preventing damage in hot water heating systems).
- Required pH value: 8.2 to 10
- For aluminium materials: pH value: 8.2 to 8.5

- Fill the system only with demineralized heating water or VDI 2035 water (low-salt operation of the system).

Advantages of low-salt operation:

- Low corrosion properties
- No development of scale
- Ideal for closed heating circuits
- Ideal pH value due to self-alkalisation after filling the system
- If necessary, simple alkalisation to a pH value of 8.2 by adding chemicals

8.2 Flushing, filling and venting the heating circuit

- ✓ The outlet pipe of the safety valve is connected.
- Ensure that the response pressure of the safety valve is not exceeded.



NOTE

The venting programme on the controller can also be used to support the flushing and venting process. It is possible to control individual circulation pumps and even the changeover valve via the venting programme. As a result it is not necessary to remove the valve motor.

1. Vent the system at the highest point.
2. Vent the heat pump at the hydraulic connection set.

9 Insulation of hydraulic connections

Insulate hydraulic lines in accordance with the local regulations.

1. Open shut-off devices.
2. Perform a pressure test and check for leaks.
3. Insulate external piping on site.
4. Insulate all connections, fittings and pipes.
5. Insulate the condensate drain in a frost-proof manner.
6. The device must be completely closed on all sides to ensure rodent protection.

10 Setting the overflow valve



NOTE

- The activities in this section are only necessary for integration of the storage tank in series.
 - Complete the work steps quickly, otherwise the maximum return temperature could be exceeded and the heat pump will switch to high-pressure fault.
 - Turn the rotary-push button on the overflow valve to the right to increase the temperature difference (the spread), turn it to the left to reduce it.
- ✓ The system is running in heating mode (ideally in cold condition).

If the storage tank is integrated in series, the IBN – assistant allows you to adjust the overflow valve according to the hydraulic system.



Startup guide

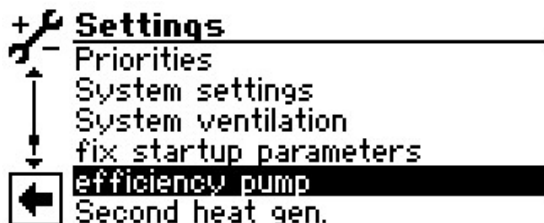
Set bypass valve?





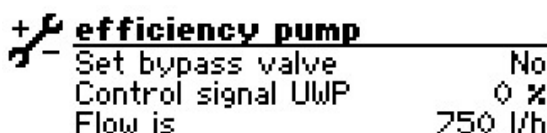
Confirm the IBN – assistant or make the setting via:

Service >> Settings >> Energy efficient circulation pump:

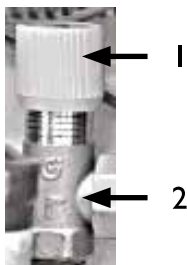


The “Set overflow valve” menu item is set by default to “No”. The overflow valve adjustment function is deactivated.

- The UWP control signal is the indication of the currently required pump capacity as a %
- The actual flow rate is the current flow rate (measuring accuracy +/- 200 l/h)



1. Fully open the overflow valve, close the heating circuits.
2. If the “Set overflow valve” menu item is set from “No” to “Yes”, the circulation pump is activated to 100% – and the pump starts up.
3. If the control signal UWP reaches 100%, close the overflow valve to the extent that the maximum flow rate (see technical data) can be ensured.



Overflow valve (2) rotary-push button (1)

4. If you exit the “Set overflow valve” menu or at the latest after one hour, the circulation pump switches back to standard regulation.
5. Open valves to heating circuit.

11 Commissioning

- ✓ The relevant planning and design data of the system is documented in full.
 - ✓ The relevant energy supply company has been notified of the operation of the heat pump system.
 - ✓ The system is air-free.
 - ✓ Installation check using the rough checklist has been completed successfully.
1. Ensure that the following points are fulfilled completely:
 - Clockwise rotating field is present for the load supply at the compressor (for 400 V connection only).
 - The system is installed and mounted according to this operation manual.
 - The electrical installation has been carried out properly according to this operation manual and the local regulations.
 - The power supply for the heat pump is equipped with an all-pole circuit-breaker with at least 3 mm contact spacing (IEC 60947-2).
 - The tripping current is complied with.
 - The heating circuit has been flushed and vented.
 - All shut-off devices of the heating circuit are open.
 - The pipe systems and components of the system are tight.
 2. Carefully fill in and sign the notice of completion for the heat pump systems.
 3. In Germany and Austria: Send the notice of completion for heat pump systems and rough checklist to the manufacturer’s factory customer service department.
In other countries: Send the notice of completion for heat pump systems and rough checklist to the manufacturer’s local partner.
 4. Arrange for the heat pump system to be commissioned by the manufacturer’s authorised after sales service for a fee.



12 Maintenance



NOTE

We recommend that you conclude a maintenance agreement with your specialist heating company.

12.1 Basic principles

The cooling circuit of the heat pump does not require any regular maintenance.

12.2 Maintenance as required

Annually, more frequently as required:

- Check and clean the components of the heating circuit, e.g. valves, diaphragm expansion vessels, circulation pumps, filters, dirt traps.
- Test the function of the safety valve for the heating circuit.
- Check at regular intervals that the condensate can drain out of the device freely, without obstruction. To this end, check the condensate pan in the device and the evaporator regularly for dirt/clogging and clean as necessary.

12.3 Annual maintenance

- Determine the quality of the heating water by analysis. In the event of deviations from the specifications, take suitable measures without delay.

12.4 Cleaning and flushing the condenser

- Clean and flush the condenser according to the manufacturer's instructions.
- After flushing the condenser with chemical cleaning agent: neutralise any residues and flush the condenser thoroughly with water.

13 Malfunctions

- Read out the cause of the malfunction via the diagnostic programme of the heating and heat pump controller.
- Consult the manufacturer's local partner or the factory's customer service. Have the fault message and device number ready at hand.

14 Dismantling and disposal

14.1 Dismantling

- ✓ The device is disconnected from the power supply and protected against being switched back on again.
- ✓ The installer is qualified to work on the cooling circuit and has the relevant certification.
- ✓ The installer is qualified to handle flammable refrigerant.
- ✓ The disposal equipment is suitable for flammable refrigerants.
- The locally applicable regulations for handling refrigerants are complied with.
- The locally applicable regulations for handling flammable refrigerants are complied with.
- Keep away from sources of ignition.
- Collect all media safely.
- Separate components according to their materials.

14.2 Disposal and recycling

- Dispose of environmentally hazardous media according to the local regulations, e.g. refrigerant, compressor oil etc.
- Ensure the correct recycling or disposal of device components and packaging materials in accordance with the local regulations.



Technical data/scope of delivery

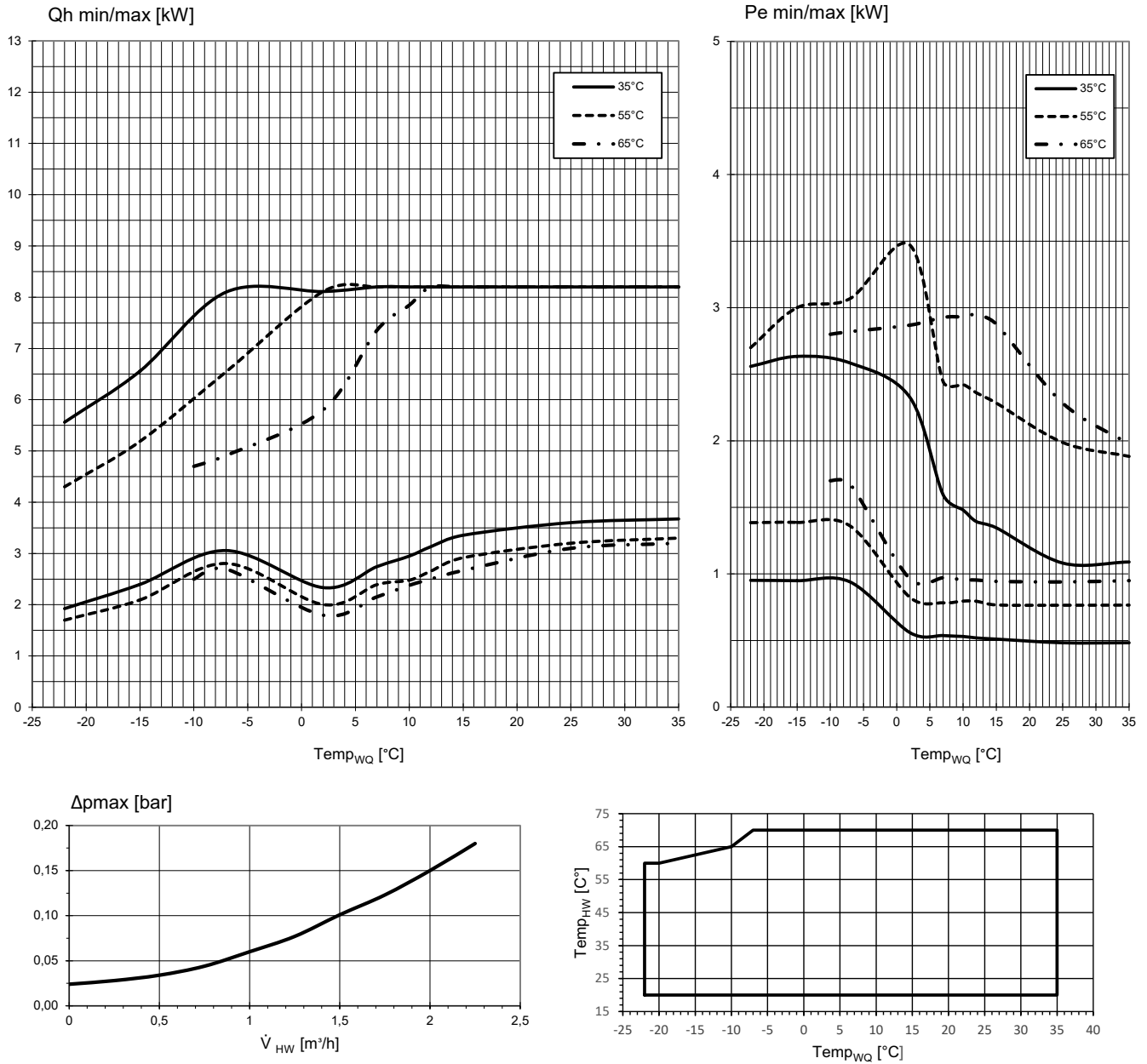
LWDV

Performance data					LWDV 91-1/3	
Heating capacity COP	for A10/W35 acc. to EN14511	Partial load operation	kW COP	3,01 6,03		
	for A7/W35 acc. to EN14511	Partial load operation	kW COP	2,77 5,41		
	for A7/W55 acc. to EN14511	Partial load operation	kW COP	4,23 3,35		
	for A2/W35 acc. to EN14511	Partial load operation	kW COP	5,08 4,61		
	for A-7/W35 acc. to EN14511	Full load operation	kW COP	8,11 3,14		
	for A-7/W55 acc. to EN 14511	Full load operation	kW COP	6,55 2,13		
Heating capacity	for A10/W35	min. max.	kW kW	2,95 8,20		
	for A7/W35	min. max.	kW kW	2,74 8,20		
	for A7/W55	min. max.	kW kW	2,39 8,20		
	for A2/W35	min. max.	kW kW	2,33 8,20		
	for A-7/W35	min. max.	kW kW	3,06 8,11		
	for A-7/W55	min. max.	kW kW	2,80 6,55		
Cooling capacity EER	for A35/W18	Partial load operation	kW EER	- -		
	for A35/W7	Partial load operation	kW EER	- -		
Cooling capacity	for A35/W18	min. max.	kW kW	- -		
	for A35/W7	min. max.	kW kW	- -		
Operating limits						
Heating circuit return min. Heating circuit flow max.		Heating	within heat source min./max.	°C	20 70	
Heat source, heating			min. max.	°C	-22 35	
additional operating points				...	A-10/W65	
Sound						
Sound power level, inside			min. Night max.	dB(A)	- - -	
Sound power level, outside 1)			min. Night max.	dB(A)	49 53 59	
Sound power level acc. to EN12102			inside outside	dB(A)	- 54	
Heat source						
Air flow rate at maximum external pressing Maximum external pressure				m³/h Pa	3500 -	
Heating circuit						
Flow rate (pipe dimensioning) Minimum volume of buffer tank				l/h l	1600 60	
Free pressing Pressure loss Flow rate				bar bar l/h	- 0,07 1150	
Max. allowable operating pressure				bar	3	
Circulation pump control range				min. max.	l/h	
					- -	
General unit data						
Total weight				kg	141,00	
Weight of heat pump module Compact module Fan module				kg kg kg	- - -	
Refrigerant type Refrigerant capacity				... kg	R290 1,05	
Electrics						
Voltage code all-pole fuse protection for heat pump *)**)				... A	1~N/PE/230V/50Hz B16	
Voltage code Control voltage fuse protection **)				... A	1~N/PE/230V/50Hz B16	
Voltage code Electric heating element fuse protection **)				... A	—	
WP*): effect. Power consumption A7/W35 (partial load operation) EN14511 Electric consumption kW A					1,38 2,11 0,8	
WP*): effective power consumption A7/W35 acc. to EN14511: min. max.				kW kW	0,53 1,6	
WP*): Max. machine current Max. power consumption within the operating limits				A kW	16 3,7	
Starting current: direct with soft starter				A A	< 5 —	
Degree of protection				IP	24	
Electric heating element output 3 2 1 phase				kW kW kW	- - -	
Circulation pump power consumption, heating circuit				min. — max.	W	
					- -	
Other unit information						
Safety valve, heating circuit		included in scope of supply: • yes — no			—	
Response pressure of safety valve, heating circuit					bar	
					— —	
Buffer tank		included in scope of supply: • yes — no l			— -	
Heating circuit diaphragm expansion vessel		included in scope of supply: • yes — no			—	
Overflow valve Changeover valve, heating -Domestic hot water		integrated: • yes — no			— —	
Heating circuit vibration decoupling		integrated: • yes — no			—	
Controller		integrated: • yes — no			—	
Heat quantity recording		integrated: • yes — no			—	
*) compressor only, **) note local regulations,					813585a	
1) indoor and outdoor installation. For indoor installation, intake 1.5m air duct,						
Blow-out 1.5m air duct + air duct bend (original accessories)						



Performance curves

LWDV



823296a

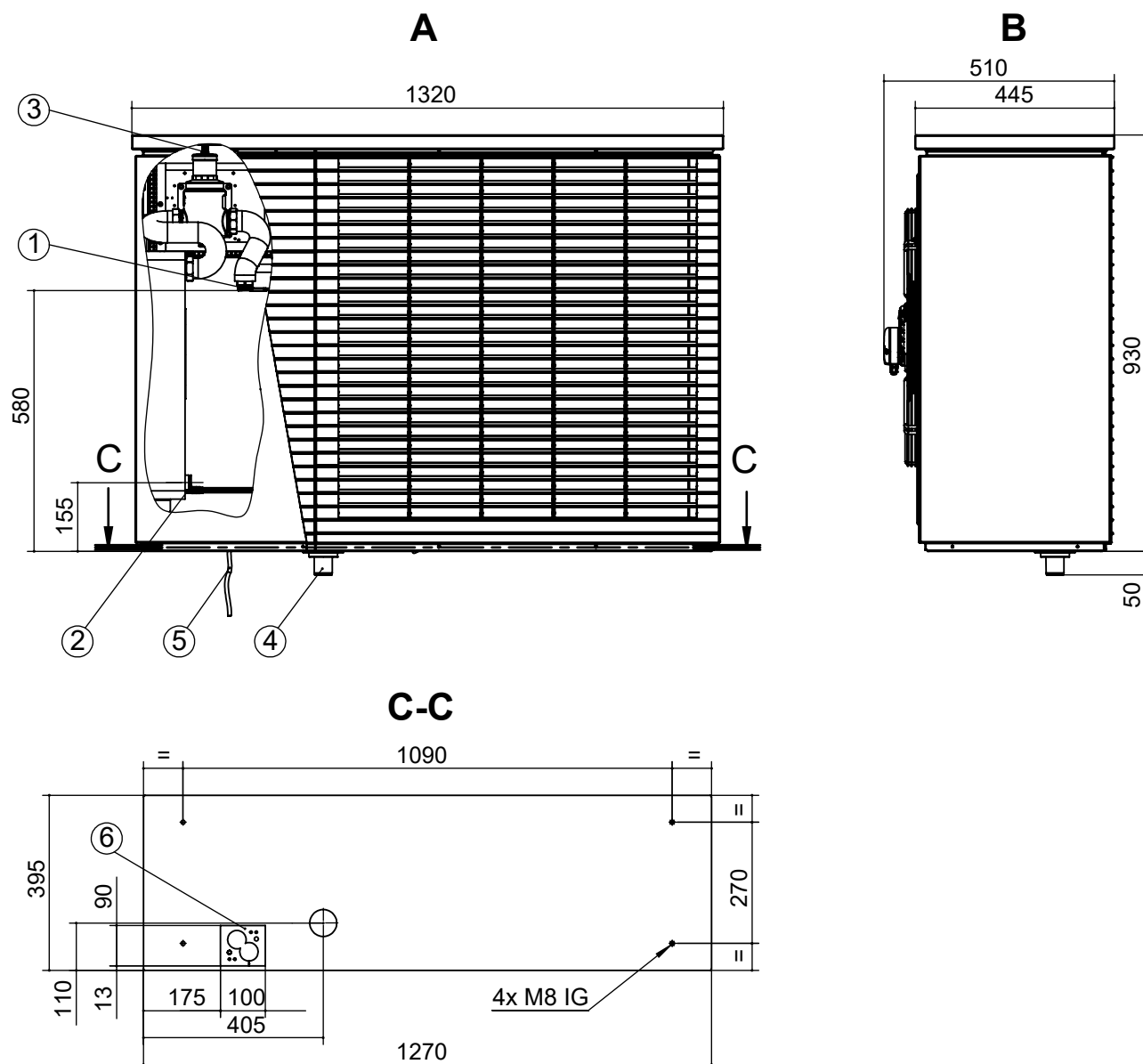
Key:

\dot{V}_{HW}	Heating water flow rate
Temp _{WQ}	Heat source temperature
Temp _{HW}	Heating water temperature
Δpmax	Maximum pressure loss
Qh min/max	Minimum/maximum heating load
Pe min/max	Power consumption



Dimension drawings

LWDV



DE819504

All dimensions in mm.

- A Front view
B Side view
C-C Cross-section (baseplate)

Item	Name	Dim.
1	Heating water outlet (supply)	G 1" external thread
2	Heating water inlet (return)	G 1" external thread
3	Vent	-
4	Nozzle (in separate package) for condensate drain pipe	DN40
5	Cable for power, control, BUS, length ~8 m from device	
6	Feed-through for supply and return and cable (in separate package)	

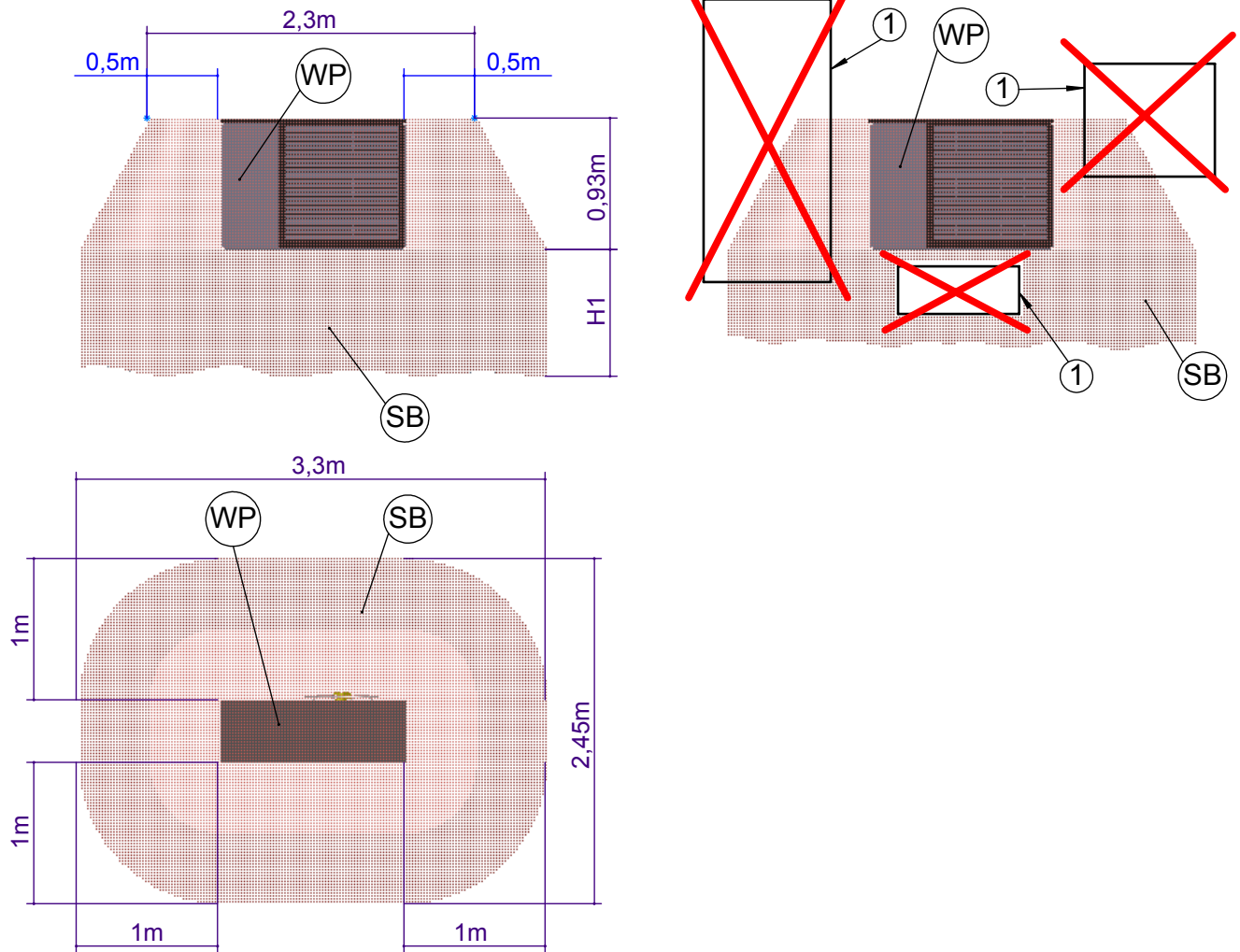


Figure: Safety clearances to the heat pump

Key: DE819401

WP	Heat pump
SB	Protection zone
H1	to the floor
1	Doors, windows, light wells etc. into the building

Installation protection zone for heat pump

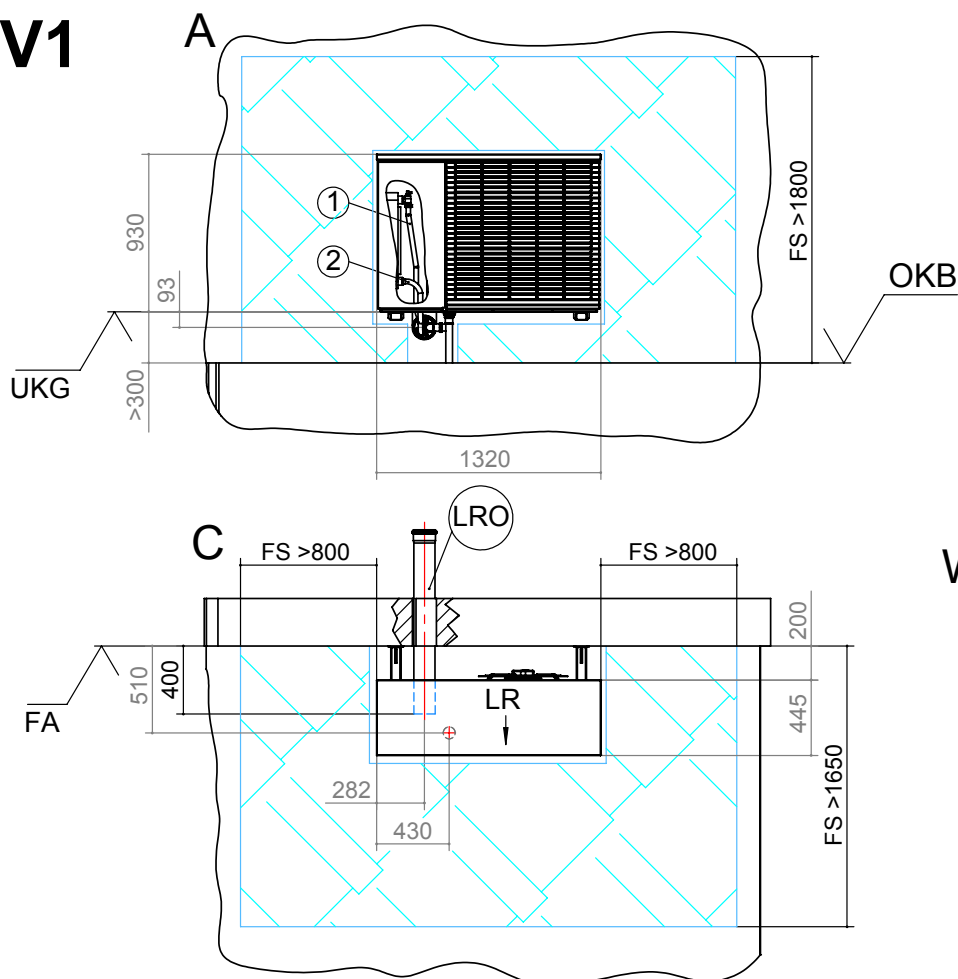
Important: The heat pump must be installed outdoors!
The device should be positioned so that, in the event of a leak, no refrigerant can enter the building or endanger persons in any other way.

In the protection zone (see illustration) between the upper edge of the device and the floor, there must not be any sources of ignition, windows, doors, ventilation openings, light wells or similar. The protection zone must not reach into neighbouring properties or public traffic areas. The wall duct through the building envelope should be designed to be airtight.

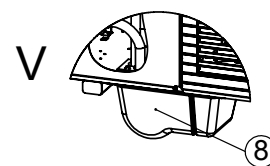
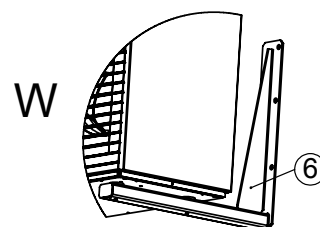
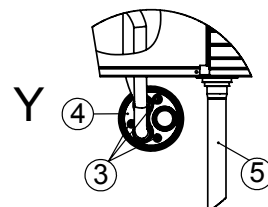
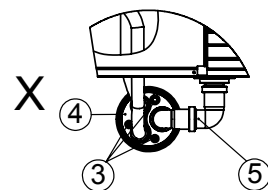


Installation plan

V1



Wall bracket WITH WALL DUCT



Key: 819393-1c

Subject to technical amendments without prior notice.

All dimensions in mm.

- V1 Variant 1
- A Front view
- C Top view
- V Detailed view of cladding
- W Detailed view of wall attachment
- X Detailed view of condensate line inside building
- Y Detailed view of condensate line outside building

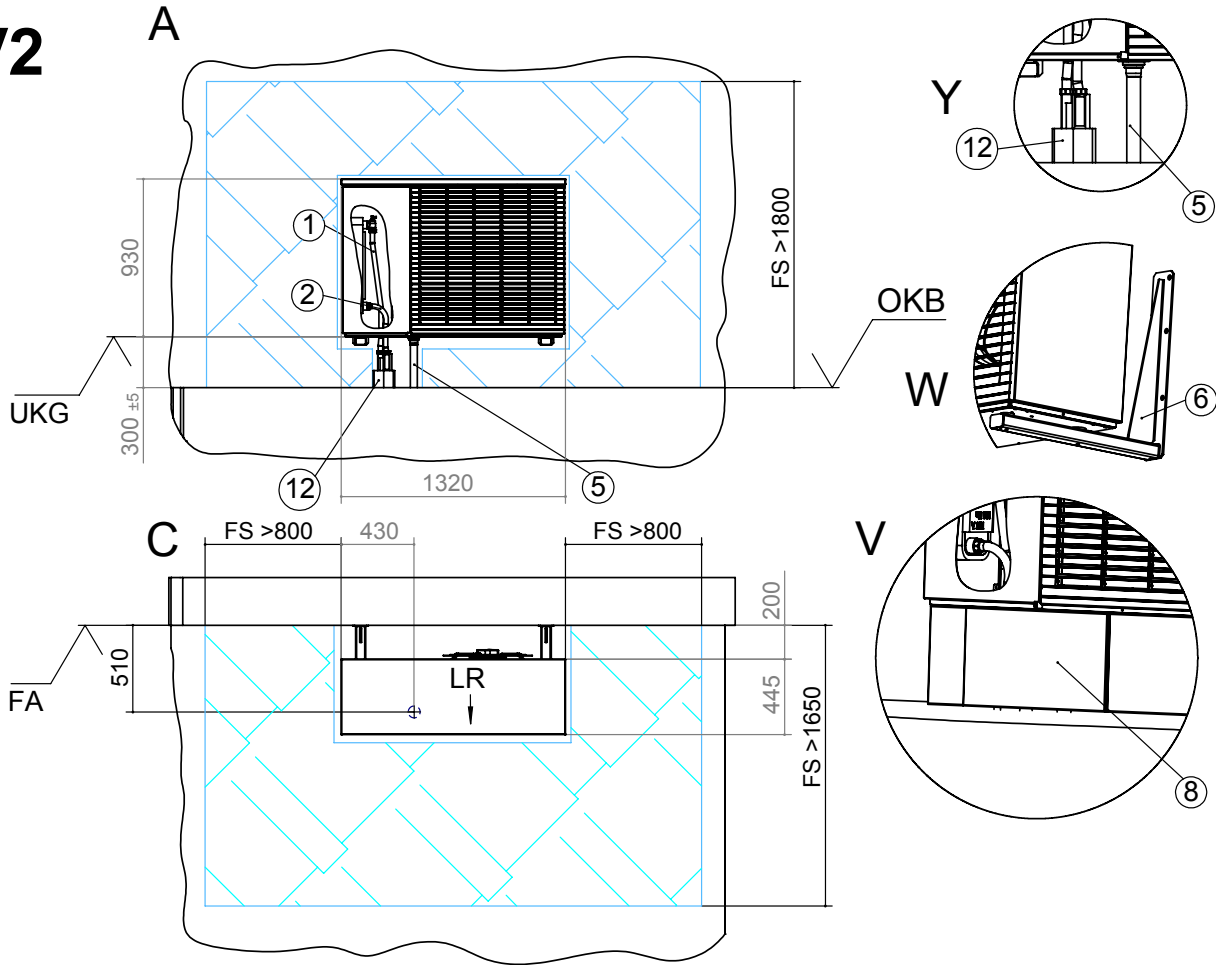
- FA Complete external facade
- UKG Lower edge of device
- OKB Upper edge of ground
- LRO Empty sewer conduit DN 125, Øa 125, shorten on site
- LR Direction of air
- FS Clearance for servicing

- 1 Heating water supply (accessory)
- 2 Heating water return (accessory)
- 3 Cable bushing
- 4 Wall duct (accessory)
- 5 Condensate drain / waste trap (for installation notes on condensate drain, see operation manual)
- 6 Bracket for wall attachment (accessory)
- 8 Cladding of wall duct (accessory)



Installation plan for wall bracket WITH HYDRAULIC CONNECTION LINE

V2



Key: 819393-2c

Subject to technical amendments without prior notice.

All dimensions in mm.

- V2 Variant 2
A Front view
C Top view
V Detailed view of cladding
W Detailed view of wall attachment
Y Detailed view of condensate line outside building

FA Complete external facade

UKG Lower edge of device

OKB Upper edge of ground

LR Direction of air

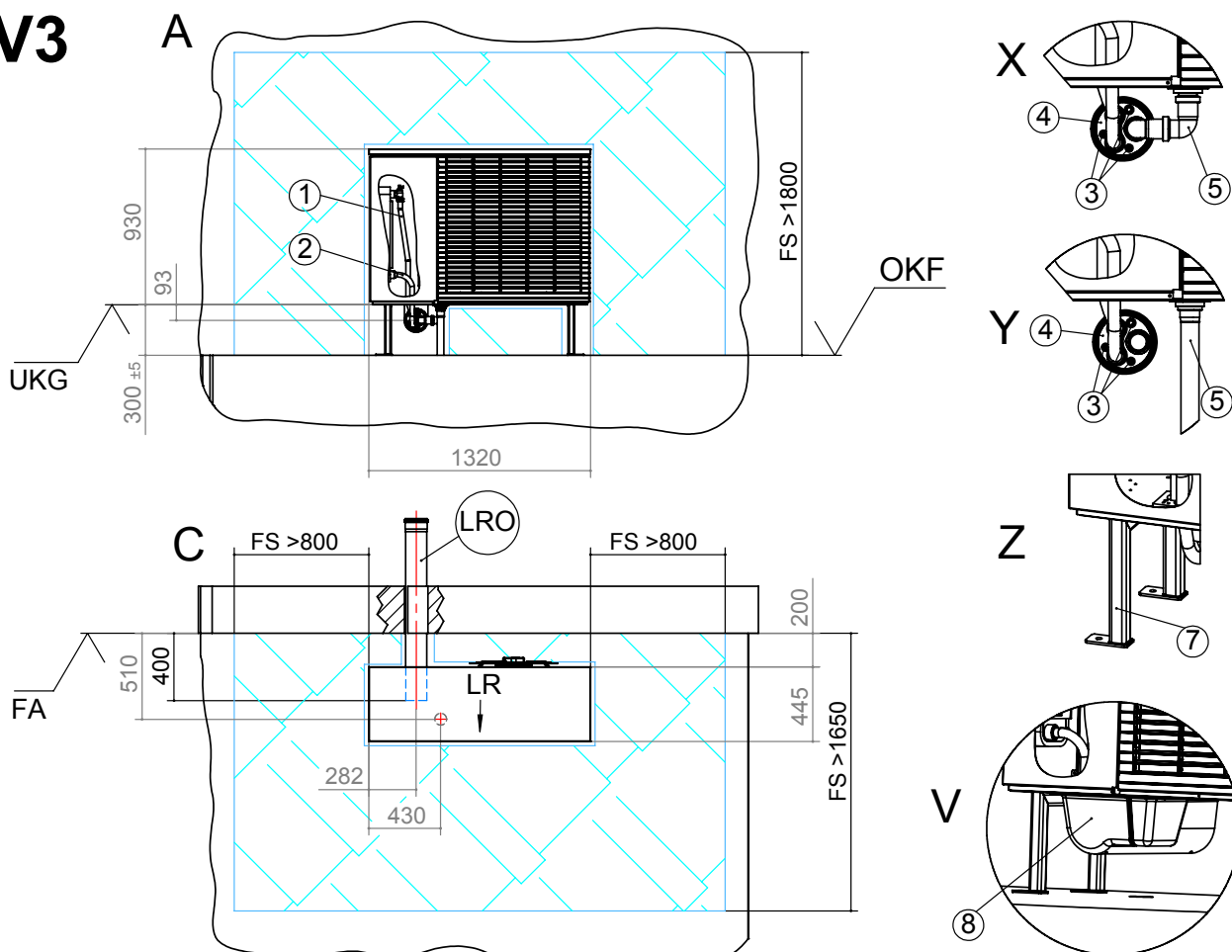
FS Clearance for servicing

- 1 Heating water supply (accessory)
2 Heating water return (accessory)
5 Condensate drain/waste trap (for installation notes on condensate drain, see operation manual)
6 Bracket for wall attachment (accessory)
8 Cladding of wall bracket (accessory)
12 Hydraulic connection line



Installation plan for floor bracket with wall duct

V3



Key: 819393-3c

Subject to technical amendments without prior notice.

All dimensions in mm.

V3 Variant 3

A Front view

C Top view

V Detailed view of cladding

X Detailed view of condensate line inside building

Y Detailed view of condensate line outside building

Z Detailed view of floor attachment

FA Complete external facade

UKG Lower edge of device

OKF Upper edge of foundation

LRO Empty sewer conduit DN 125, Øa 125, shorten on site

LR Direction of air

FS Clearance for servicing

1 Heating water supply (accessory)

2 Heating water return (accessory)

3 Cable bushing

4 Wall duct (accessory)

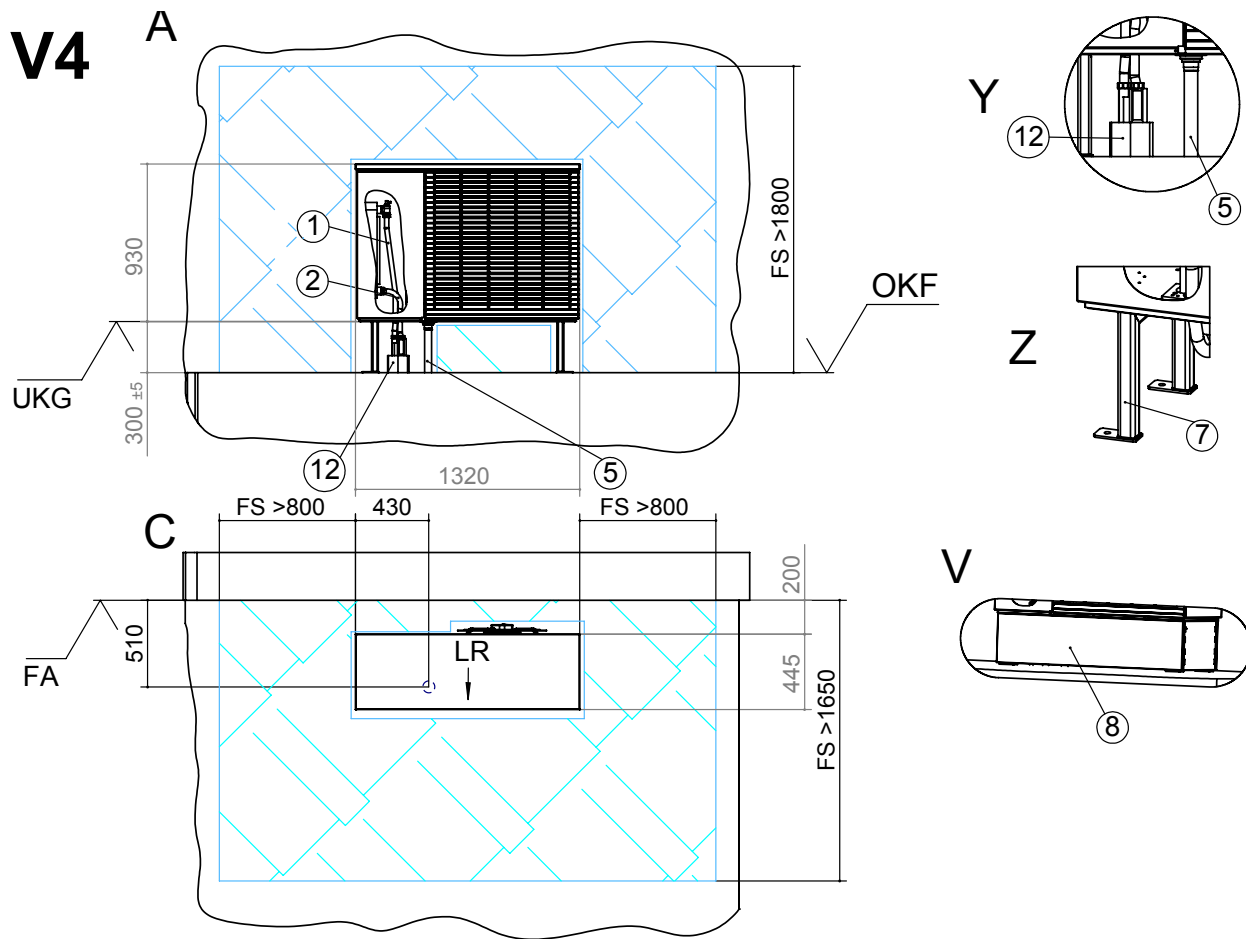
5 Condensate drain/waste trap (for installation notes on condensate drain, see operation manual)

7 Bracket for floor attachment (accessory)

8 Cladding of wall duct (accessory)



Installation plan for floor bracket with hydraulic connection line



Key: 819393-4c

Subject to technical amendments without prior notice.

All dimensions in mm.

- V4 Variant 4
- A Front view
- C Top view
- V Detailed view of cladding
- Y Detailed view of condensate line outside building
- Z Detailed view of floor attachment

FA Complete external facade

UKG Lower edge of device

OKF Upper edge of foundation

LR Direction of air

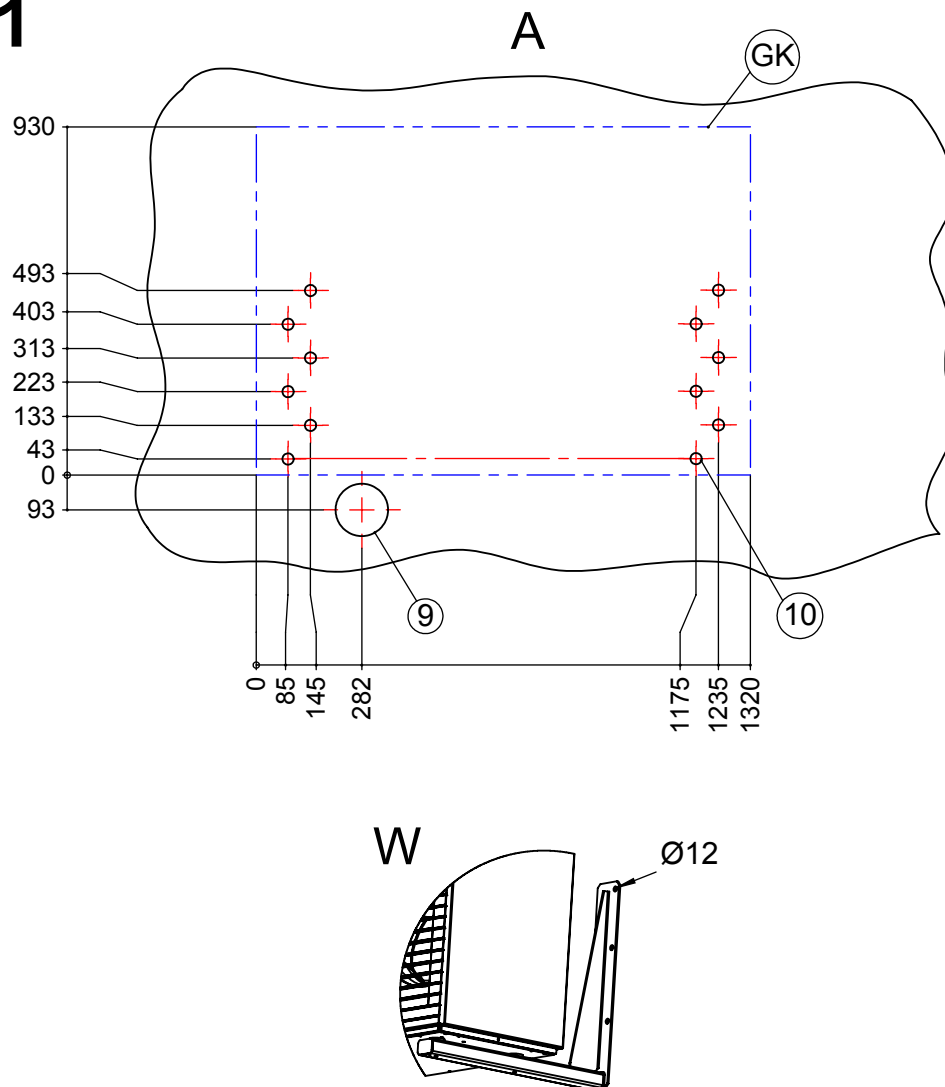
FS Clearance for servicing

- 1 Heating water supply (accessory)
- 2 Heating water return (accessory)
- 5 Condensate drain/waste trap (for installation notes on condensate drain, see operation manual)
- 7 Bracket for floor attachment (accessory)
- 8 Cladding of floor bracket (accessory)
- 12 Hydraulic connection line



Drill template for wall bracket WITH WALL DUCT

BB1



Key: 819393-5c
Subject to technical amendments without prior notice.
All dimensions in mm.

BB1 Drill template for wall bracket (accessory) on mounting wall for V1

A Front view

W Detailed view of wall attachment

GK Device contour

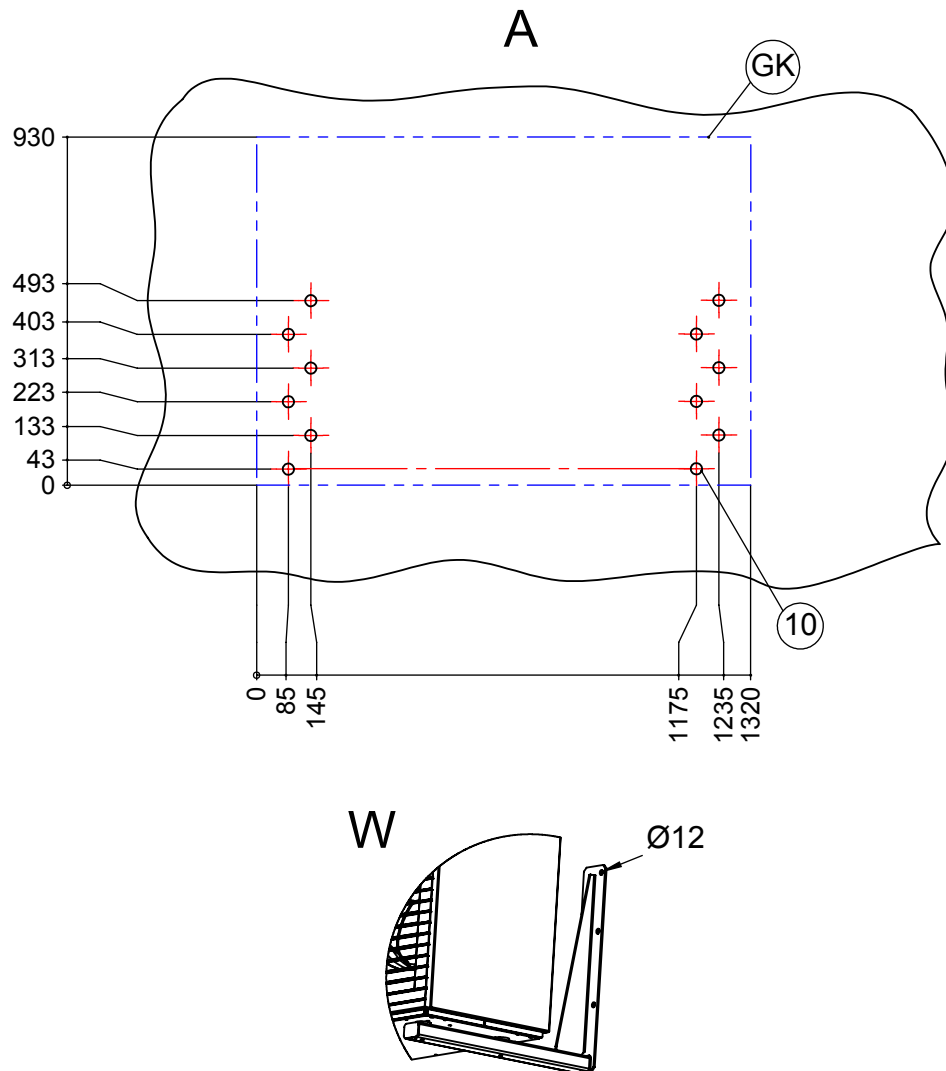
9 Bore for empty sewer conduit DN125, Øa 125

10 Mounting bores for wall brackets



Drill template for wall bracket WITH HYDRAULIC CONNECTION LINE

BB2



Key: 819393-6c
Subject to technical amendments without prior notice.
All dimensions in mm.

BB2 Drill template for wall bracket (accessory) on mounting wall for V2

A Front view

W Detailed view of wall attachment

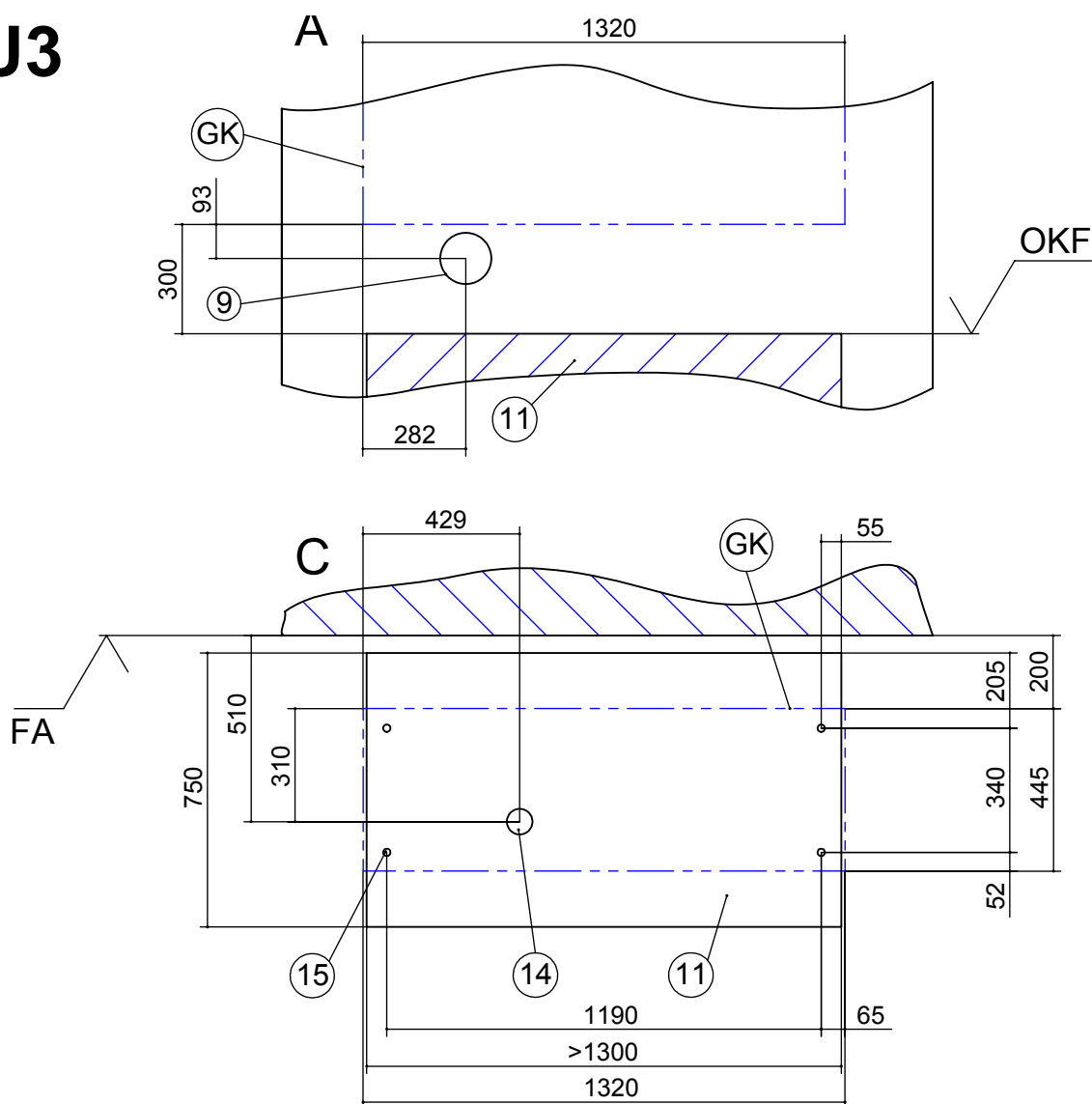
GK Device contour

10 Mounting bores for wall brackets



View of foundation for V3 WITH WALL DUCT

FU3



Key: 819393-7c
Subject to technical amendments without prior notice.
All dimensions in mm.

FU3 View of foundation for V3

A Front view

C Top view

OKF Upper edge of foundation

FA Complete external facade

GK Device contour

9 Bore for empty sewer conduit DN125, Øa 125

11 Foundation

14 Condensate drain pipe min. Ø50

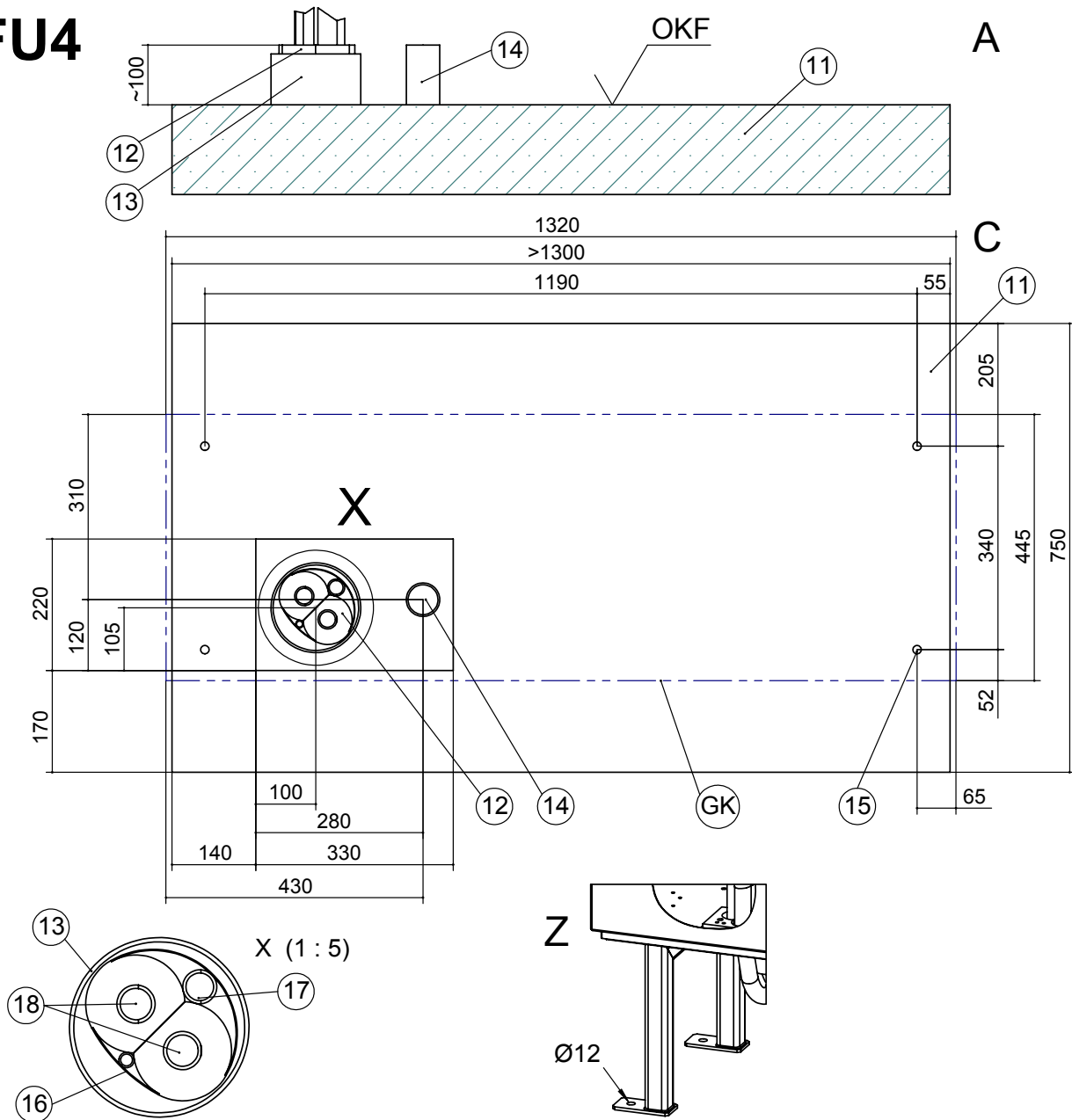
15 Mounting bores for floor bracket

The foundation must not have any structure-borne sound contact with the building.



View of foundation for V4 WITH HYDRAULIC CONNECTION LINE

FU4



Key: 819393-8c

Subject to technical amendments without prior notice.

All dimensions in mm.

FU4 View of foundation for V4

A Front view

C Top view

X Detailed view X

11 Foundation

12 Hydraulic connection line

13 Empty conduit DN150 (on site)

14 Condensate drain pipe min. Ø50

Z Detailed view of floor attachment

OKF Upper edge of foundation

GK Device contour

15 Mounting bores for floor bracket

16 Empty conduit for bus cable

17 Empty conduit for electric cable

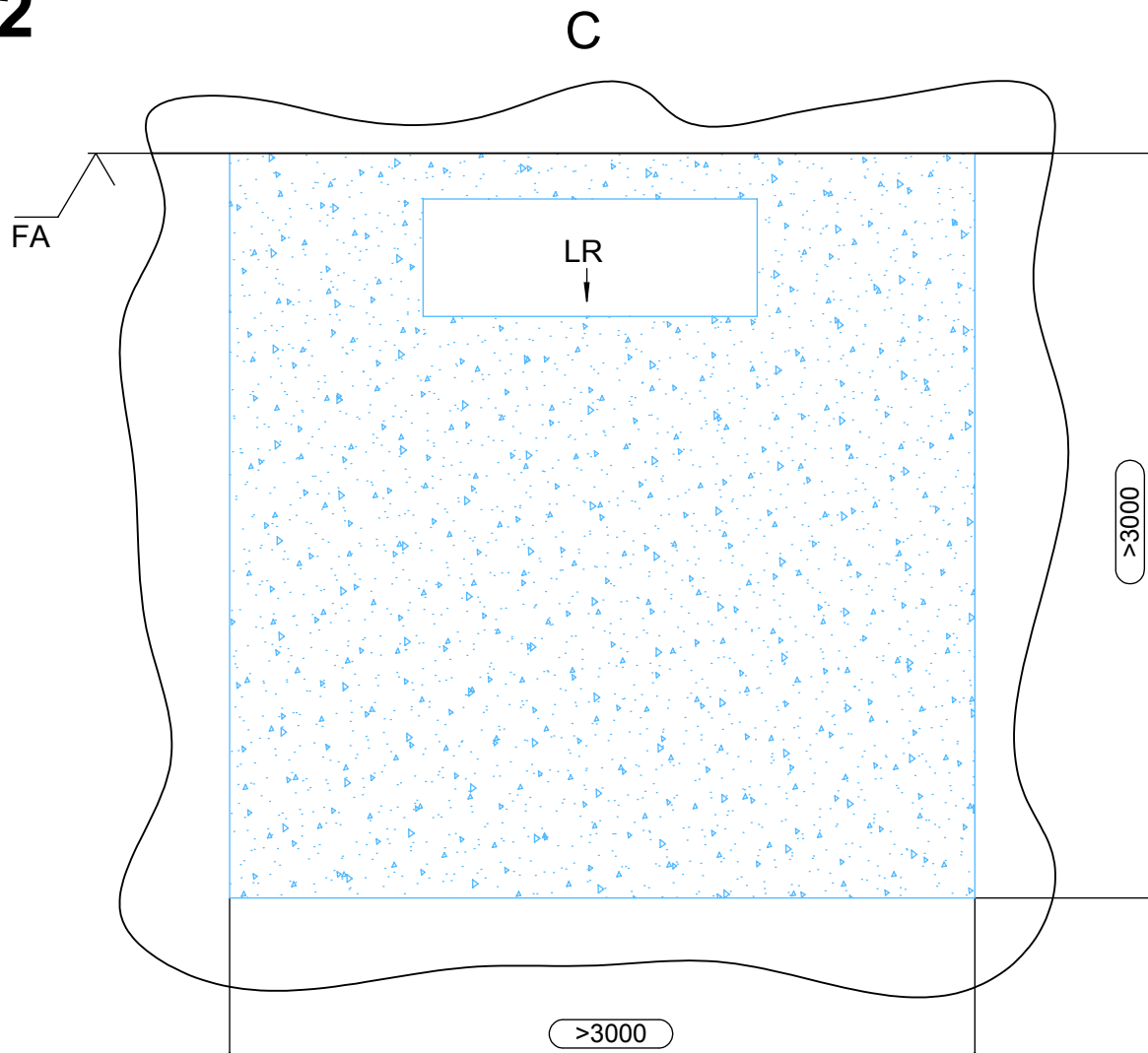
18 Heating water supply and return lines

The foundation must not have any structure-borne sound contact with the building



Minimum clearances

FW2



Key: 819393-10c

Subject to technical amendments without prior notice.
All dimensions in mm.

FW2 Functionally necessary minimum clearances

C Top view

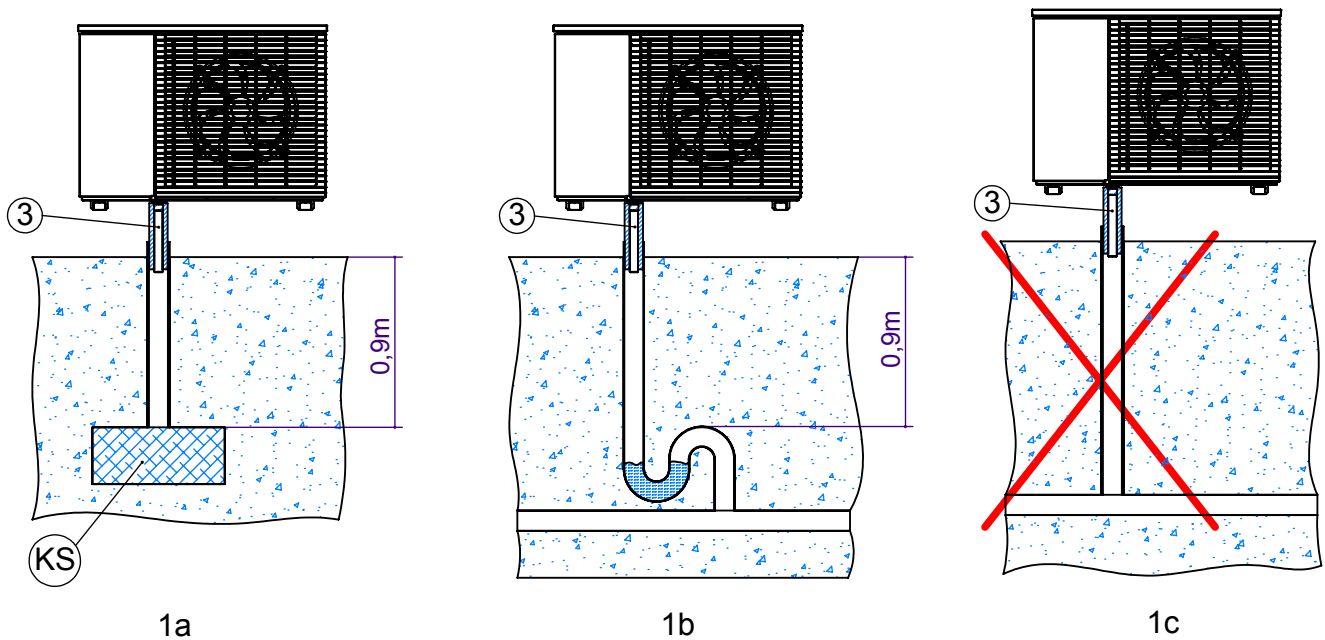
FA Complete external facade

LR Direction of air

> Minimum clearances



External condensate line connection



Key: 819400-1

Installation instructions for connecting the condensate line outside the building

KS Gravel bed for holding up to 50 l condensate per day as buffer zone for seepage.

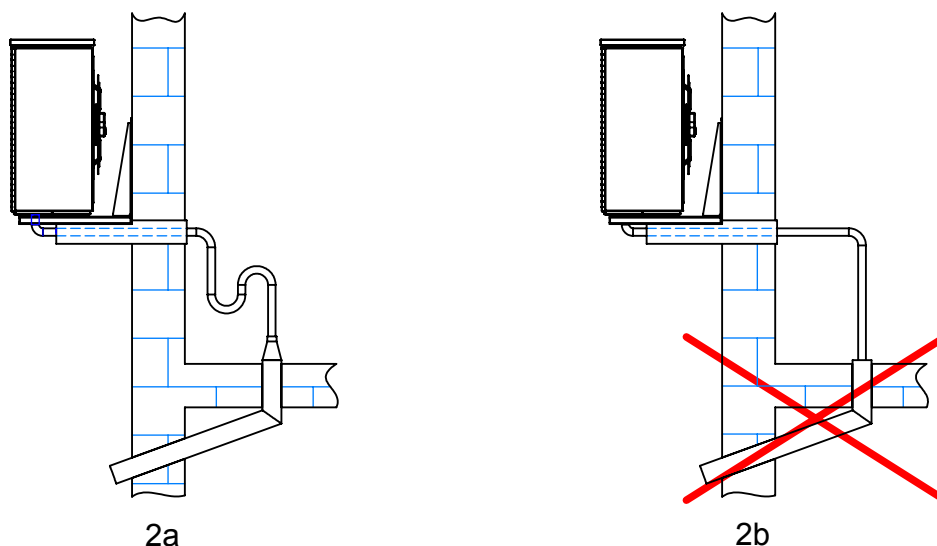
3 Condensate drain pipe DN 40

Important: If the condensate is discharged directly into the ground (figure 1a), the condensate drain pipe (3) must be insulated between the ground and the heat pump.

Important: If the condensate is discharged directly into a sewage or rainwater pipe, a waste trap must be applied (figure 1b). A vertically installed, insulated plastic pipe must be used above the ground. In addition, no non-return valves or similar must be installed in the drain pipe. The condensate drain pipe must be connected in such a way that the condensate drain pipe can flow freely into the main pipe. If the condensate is discharged into drains or the sewage system, ensure installation with a gradient. It must be ensured that the condensate is discharged frost-free in all cases (figure 1a and figure 1b).



Internal condensate line connection



Key: 819400-2

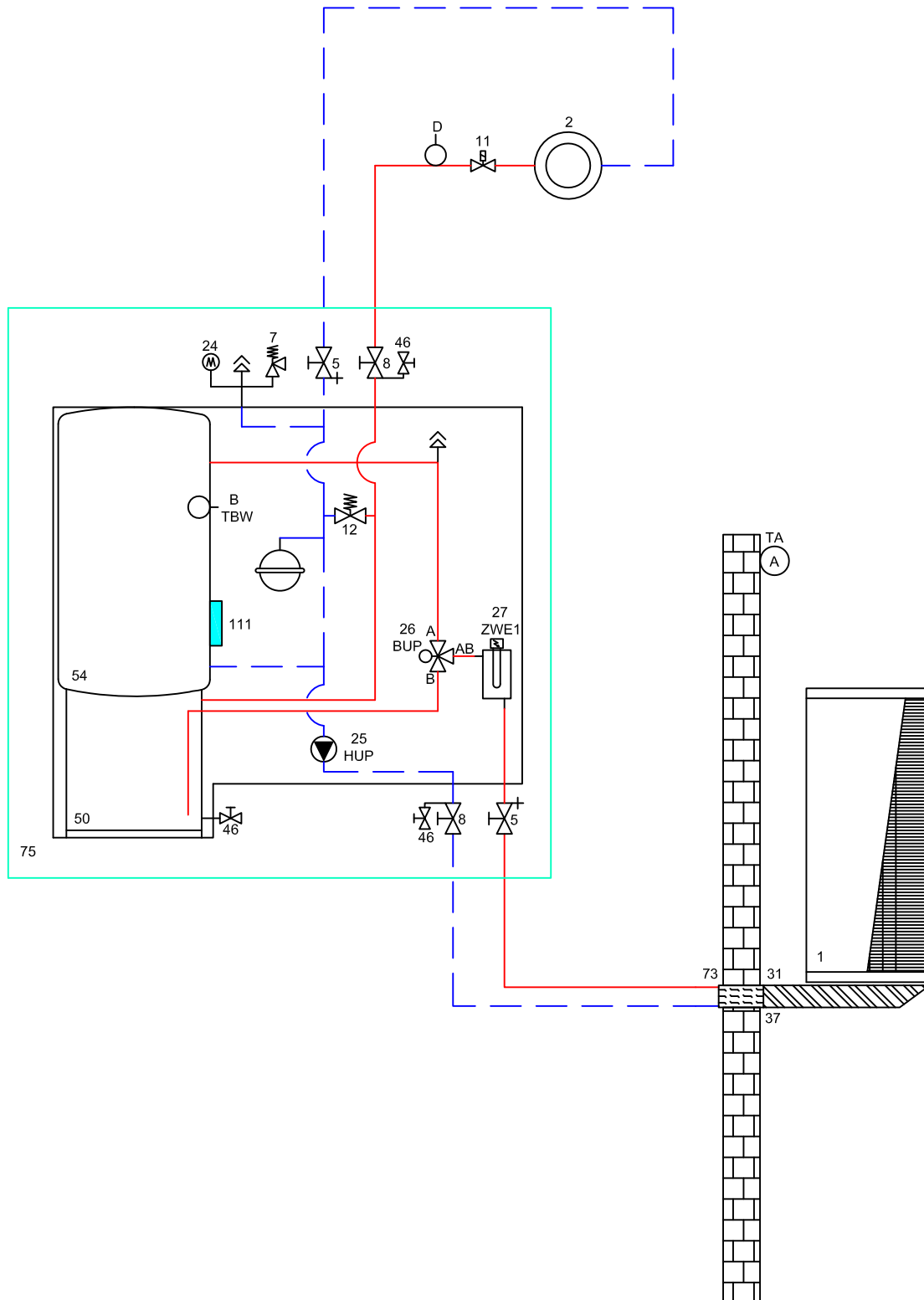
Installation instructions for connecting the condensate line inside the building

Important: If the condensate line is connected inside a building, a waste trap must be installed with an airtight connection to the drain pipe (see figure 2a). No additional drain pipes may be connected to the condensate drain pipe of the heat pump. The drain pipe into the sewage system must be clear, i.e. neither a non-return valve nor a waste trap must be installed downstream of the heat pump's connection cable.

It must be ensured that the condensate is discharged frost-free in all cases (figure 2a).

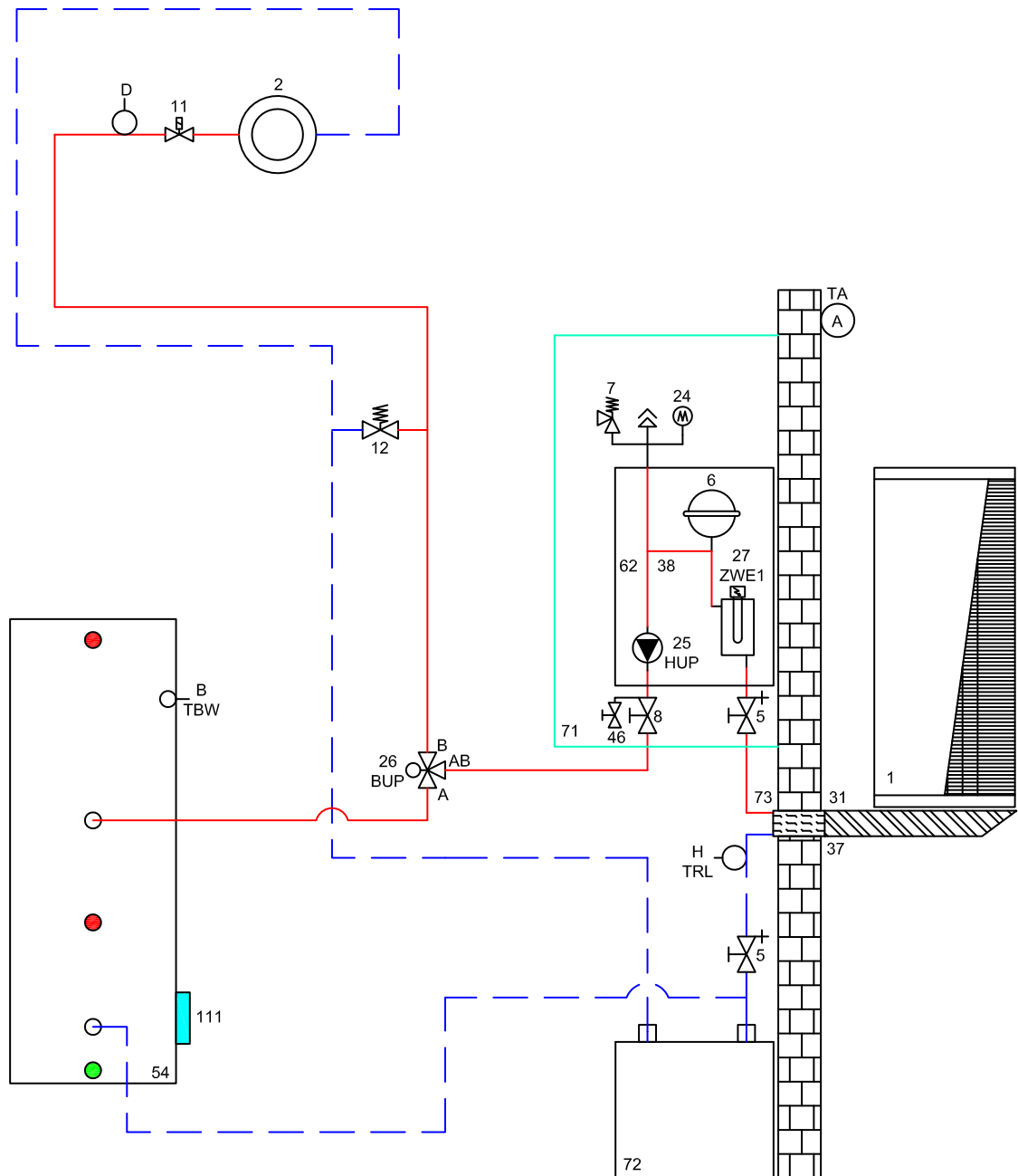


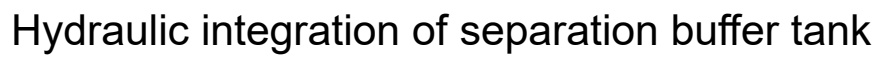
Hydraulic integration with hydraulic station





Hydraulic integration with buffer tank in series and hydraulic module





Hydraulics key

1	Heat pump	51	Separate storage tank	TA/A	Outdoor sensor
2	Underfloor heating / radiators	52	Gas or oil-fired boiler	TBW/B	Domestic hot water sensor
3	Vibration isolator	53	Wood-fired boiler	TB1/C	Flow sensor, mixing circuit 1
4	Unit underlay, Sylomer strips	54	Domestic hot water tank	D	Floor temperature limiter
5	Shut-off valve with drain outlet	55	Brine pressure monitor	TRU/G	Sensor, external return (separate storage tank)
6	Expansion vessel included in scope of supply	56	Swimming pool heat exchanger	STA	Branch control valve
7	Safety valve	57	Ground source heat exchanger	TRL/H	Return sensor (Dual hydraulic module)
8	Shut-off valve	58	Ventilation in the house		
9	Heating circulation pump (HUP)	59	Plate heat exchanger		
10	Check valve	61	Cooling storage tank (???)		
11	Individual room control	65	Compact distributor		
12	Overflow valve	66	Fan coils	79	Motor valve
13	Vapour-tight insulation	67	Solar domestic hot water tank	80	Mixing valve
14	Domestic hot water circulation pump (BUP)	68	Separate solar storage tank	81	Heat pump outdoor unit, split, scope of supply
15	Mixing circuit, three-way mixer (MK1 discharging)	69	Multifunctional storage tank	82	Hydraulic indoor unit, split, scope of supply
16	Expansion vessel on site	71	Dual hydraulic module	83	Circulation pump
18	Heating element, heating (ZWE)	72	Wall-mounted buffer tank	84	Changeover valve
19	Mixing circuit, four-way mixer (MK1 charging)	73	Pipe penetration	113	Connection, additional heat generator
20	Heating element, domestic hot water (ZWE)	74	Ventower	BT1	Outdoor sensor
21	Mixing circuit, circulation pump (FP1)	75	Scope of supply, Dual hydraulic tower	BT2	Flow sensor
23	Feeder, circulation pump (ZUP) (change over Compact unit connecti	76	Drinking water station	BT3	Return sensor
24	Pressure gauge	77	Accessories, water/water booster	BT6	Domestic hot water sensor
25	Heating + domestic hot water circulation pump (HUP)	78	Scope of supply, water/water booster, optional	BT12	Flow sensor, condenser
26	Changeover valve, domestic hot water (BUP)(B = normally open)			BT19	Sensor, electric heating cartridge
27	Heating element, heating + domestic hot water (ZWE)			BT24	Sensor, additional heat generator
28	Brine circulation pump (VBO)				
29	Dirt trap (max. 0.6 mm screen size)				
30	Collection container for brine mixture	100	Room thermostat, cooling accessories, optional		
31	Wall penetration	101	Control on site	15	Mixing circuit, three-way mixer (MK2-3 discharging)
32	Supply pipe	102	Dew point monitor, optional accessories	17	Temperature difference control (SLP)
33	Brine distributor	103	Room thermostat, cooling, included in scope of supply	19	Mixing circuit, four-way mixer (MK2 charging)
34	Horizontal ground collector	104	Heat pump scope of supply	21	Mixing circuit circulation pump (FP2-3)
35	Borehole heat exchanger (vertical collector)	105	Cooling circuit module box, removable	22	Swimming pool circulation pump (SUP)
36	Groundwater well pump	106	Specific glycol mixture	44	Three-way mixer (cooling function MK2)
37	Wall bracket	107	Scalding protection / thermal mixing valve	47	Changeover valve, swimming pool heating (SUP)(B = normally open)
38	Flow switch	108	Solar pump group	60	Changeover valve, cooling mode (B = normally open)
39	Supply well	109	Overflow valve must be closed	62	Heat meter
40	Discharge well	110	Hydraulic tower scope of supply	63	Changeover valve, solar circuit (B = normally open)
41	Flushing fitting, heating circuit	111	Holder for additional heating element	64	Cooling circulation pump
42	Circulation, circulation pump (ZIP)	112	Minimum distance for thermal decoupling of the mixing valve	70	Separate solar station
43	Brine/water heat exchanger (cooling function)			TB2-3/C	Flow sensor, mixing circuit 2-3
44	Three-way mixer (cooling function MK1)			TSS/E	Sensor, temperature difference control (low temperature)
45	Cap valve			TSK/E	Sensor, temperature difference control (high temperature)
46	Fill and drain valve			TEE/F	Sensor, external energy source
48	Domestic hot water charging circulation pump (BLP)				
49	Groundwater flow direction				
50	Buffer tank, heating				

Additional circuit board:

15	Mixing circuit, three-way mixer (MK2-3 discharging)
17	Temperature difference control (SLP)
19	Mixing circuit, four-way mixer (MK2 charging)
21	Mixing circuit circulation pump (FP2-3)
22	Swimming pool circulation pump (SUP)
44	Three-way mixer (cooling function MK2)
47	Changeover valve, swimming pool heating (SUP)(B = normally open)
60	Changeover valve, cooling mode (B = normally open)
62	Heat meter
63	Changeover valve, solar circuit (B = normally open)
64	Cooling circulation pump
70	Separate solar station
TB2-3/C	Flow sensor, mixing circuit 2-3
TSS/E	Sensor, temperature difference control (low temperature)
TSK/E	Sensor, temperature difference control (high temperature)
TEE/F	Sensor, external energy source

Important note!

These hydraulic diagrams are schematic representations and are designed to help you! They do not release you from the need to carry out your own planning & design! Shut-off devices, vent valves and safety measures are not drawn in full in these diagrams! The local country-specific standards, laws and regulations must be followed! The pipes must be dimensioned according to the nominal volume flow rate of the heat pump or the free pressure of the integrated circulation pump! For detailed information and advice please contact the sales partner responsible for your area!



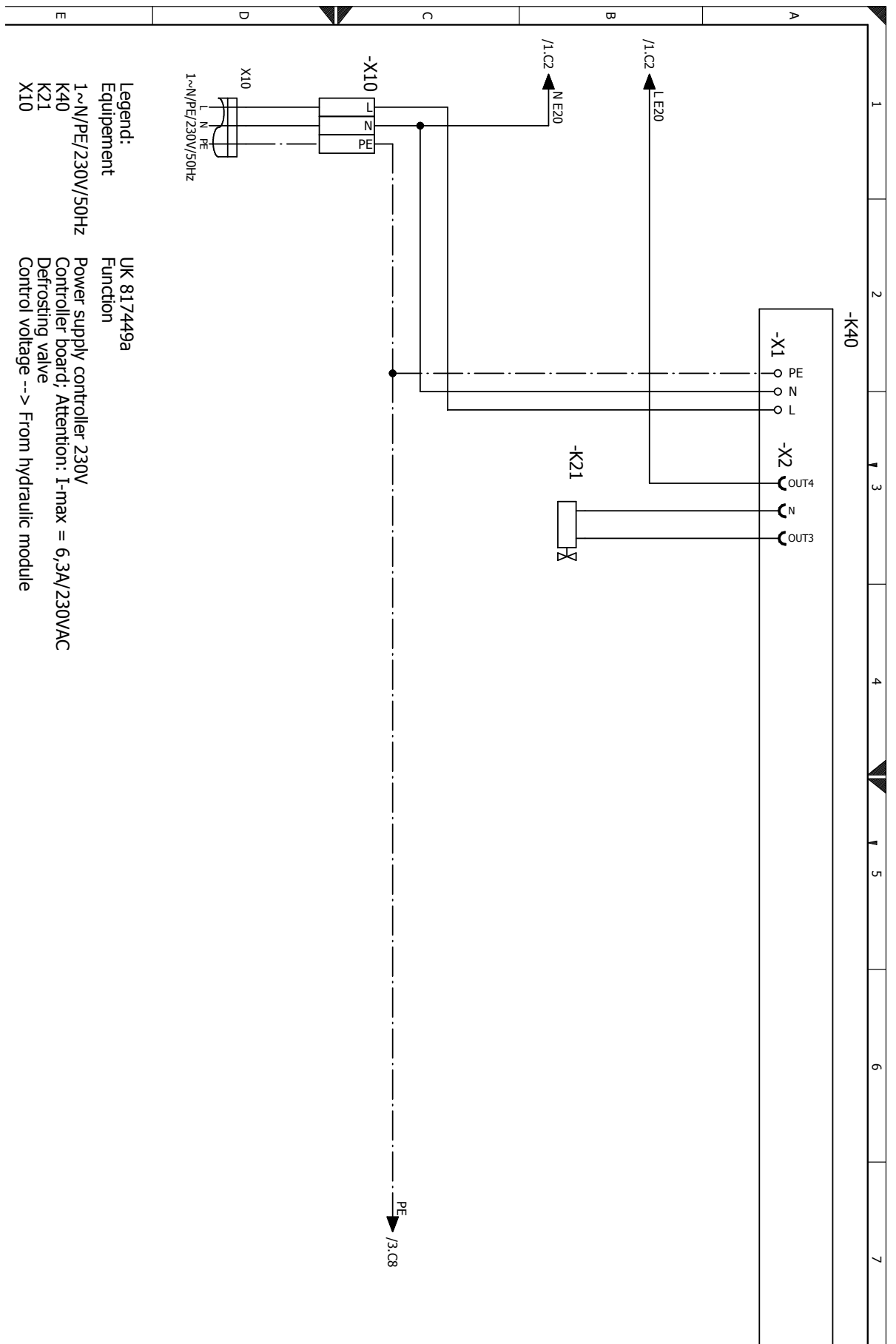


Legend:

Equipment	UK 817449a	Function
1~N/PE/230V/50Hz	L1,N,PE:	Power supply output compressor
C1		capacitor
E20		Sump heating for compressor 1
F1	HDP	High-pressure switch
F2		temperature switch
F3		Fuse
F6		Fuses ventilator
G1	VENT	Fan
M1		Compressor
R20		Line reactors
RF1		Line Filter
T10		inverter
X8		Distribution box power supply



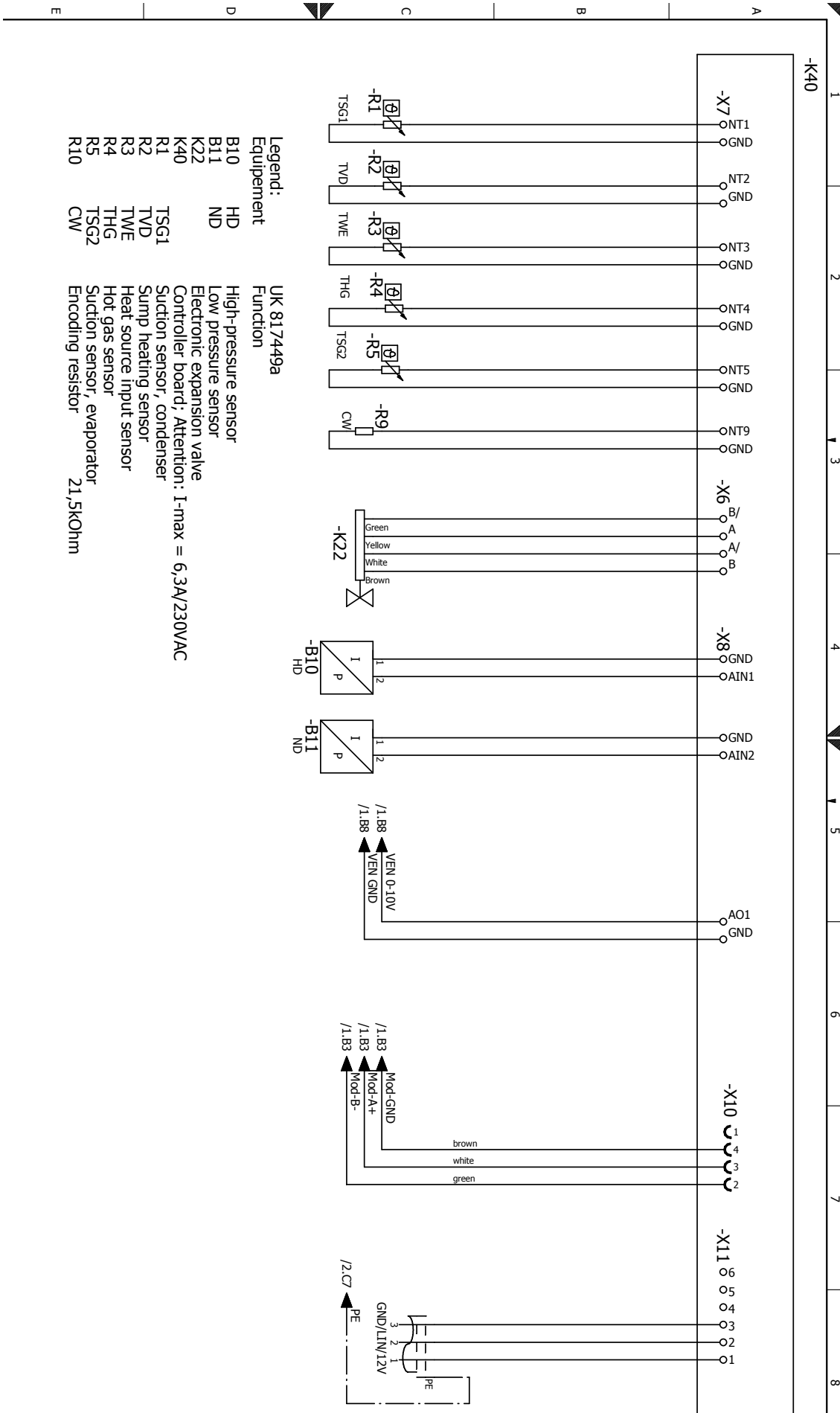
Circuit diagram 2/3





LWDV

Circuit diagram 3/3









EC Declaration of Conformity

EC Declaration of Conformity

in accordance with EC Machinery Directive 2006/42/EC, Annex II A



The signatory

confirms that the device(s) specified in the following in the version placed on the market by us meet(s) the requirements of the harmonised EC directives, EC safety standards and product-specific EC standards.

In the event of any modification of the device(s) not coordinated with us, this declaration will become void.

Designation of the device(s)

Heat pump



Device type	Item number	Art. no. 1	Art. no. 2
LWDV 91-1/3-HDV 9-1/3	100699HDV901	100 699 01	152 065 41
LWDV 91-1/3-HDV 12-3	100699HDV1201	100 699 01	152 065 41
LWDV 91-1/3-HDV 9-1/3	100699HDV901	100 699 01	152 065 41
LWDV 91-1/3-HDV 12-3	100699HDV1201	100 699 01	152 065 41

EC directives

2006/42/EC 813/2013
2014/35/EU
2014/30/EU
2014/68/EU
2011/65/EC

Harmonised EN

EN 378 EN 349
EN 60529 EN 60335-1/-2-40
EN ISO 12100-1/2 EN 55014-1/-2
EN ISO 13857 EN 61000-3-2/-3-3

Pressure equipment assembly

Category: II
Module: A1
Designated body:
TÜV-SÜD
Industrie Service GmbH (no.:0036)

Company:

ait-deutschland GmbH
Industrie Str. 3
93359 Kasendorf
Germany

Place, date: Kasendorf, 23/04/2018

Signature:

Jesper Stannow
Head of Heating Development



ait-deutschland GmbH
Industriestrasse 3
95359 Kasendorf, Germany

E info@alpha-innotec.de
W www.alpha-innotec.de



alpha innotec – an ait-deutschland GmbH brand