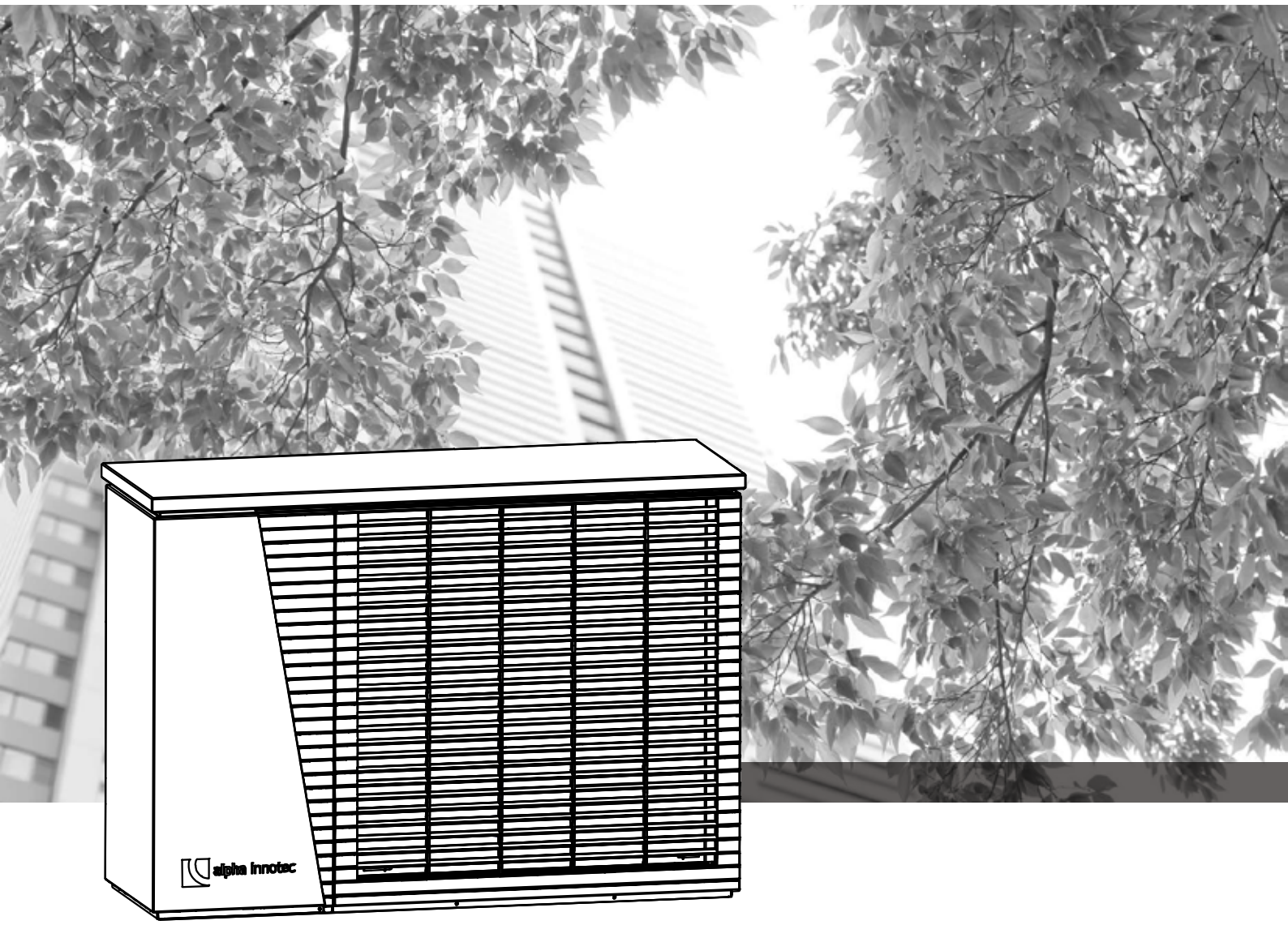
the better way to heat

alpha innotec



Air/Water Heat Pumps
Dual / outdoor installation

Operating Manual
LWD – series

UK

83053500oUK

Table of contents

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", 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
- Repair and service instructions for heat pumps with flammable (primary) refrigerant

1.3 Symbols and markings

Identification of warnings

Symbol	Meaning
	Safety-relevant information. Warning of physical injuries.
	Safety-relevant information. Warning of physical injuries. Flammable materials / flammable (primary) refrigerant
	Safety-relevant information. Warning of physical injuries. Flammable materials / flammable (primary) refrigerant
	Safety-relevant information. Warning of physical injuries. Danger of fatal injury due to electric current.
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.
IMPORTANT	Indicates a potentially dangerous situation, which can result in material damage.

Symbols in the document

Symbol	Meaning
	Information for specialist
	Information for operator
✓	Prerequisite for an action
▶	Procedural instructions: Single-step instruction for action
1., 2., 3., …	Procedural instructions: 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 operating manual or in another document
•	List
	Secure connections against twisting

1.4 Contact

Addresses for purchasing accessories, for service cases or for answers to questions about the device and this operating 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 designed for domestic use and intended exclusively for the following functions:

- Heating
- Domestic hot water preparation (optional, with accessories)
- Cooling (reversible devices only)

► Proper use includes complying with the operating conditions (→ “Technical data / scope of supply”, from page 17) 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

The operating manuals supplied with the product are intended for all users of the product.

The operation of the product via the heating and heat pump control and work on the product which is intended for end customers / operators is suitable for all age groups of persons who are able to understand the activities and the resulting consequences and can carry out the necessary activities.

Children and adults who are not experienced in handling the product and do not understand the necessary activities and the resulting consequences must be instructed and, if necessary, supervised by persons experienced in handling the product and who are responsible for safety.

Children must not play with the product.

The product may only be opened by qualified personnel.

All procedural instructions in this operating manual are solely directed at qualified specialist personnel.

Only qualified, skilled personnel is able to carry out the work on the unit safety and correctly. Interference by unqualified personnel can cause life-threatening injuries and damage to property.

► Ensure that the personnel is familiar with the local regulations, especially those on safe and hazard-aware working.

► Ensure that the personnel are qualified to handle flammable (primary) refrigerant.

- Work on the refrigerating circuit may only be carried out by qualified personnel with appropriate qualifications for refrigeration system installation.
- Work on the electrics and electronics may only be carried out by electrical technicians.
- Any other work on the system may only be carried out by qualified personnel (heating installer, plumbing installer).

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

During transport and work on the unit, there is a risk of cuts due to the sharp edges of the unit.

► Wear cut-resistant protective gloves.

During transport and work on the unit, there is a risk of foot injuries.

► Wear safety shoes.

When working on liquid-conveying lines, there is a risk of injury to the eyes due to leakage of liquids.

► Wear safety goggles.

2.4 Residual risks

Injuries caused by electric current

Components in the device are live with fatal voltage. Before working on the unit:

► Disconnect the device from the power supply.

► Protect the device against being switched back on again.

Existing earthing connections within housings or on mounting plates must not be altered. If this should nevertheless be necessary in the course of repair or assembly work:

► Restore earthing connections to their original condition after completion of the work.

Injuries caused by moving parts

► Only switch on the unit once outer panels and fan protection grille have been fitted.

Injuries caused by high temperatures

► Before working on the unit, let it cool down.

Safety instructions and warning symbols

► Observe the safety instructions and warning symbols on the packaging and on and in the unit.

Injuries and environmental damage due to refrigerant

WARNING
The unit contains flammable (primary) refrigerant that is hazardous to health and the environment. If (primary) refrigerant leaks from the unit, there is a risk of an explosion.

Proceed as follows if refrigerant leaks from the unit due to a leak:

1. Switch off unit.
2. Ensure that all unauthorised persons leave the danger area immediately.
3. Remove possible ignition sources from the danger area and keep them away from the danger area.
4. Block access to the danger area for unauthorised persons.
5. Notify authorised after sales service.

If damage is visible on the outside of the unit, proceed as follows:

1. Switch off unit.
2. Notify authorised after sales service.

2.5 Disposal

Environmentally hazardous substances

Improper disposal of environmentally hazardous substances (e.g. refrigerant, compressor oil) damages the environment:

► Collect substances safely.

► Dispose of the substances in an environmentally-friendly manner according to the local regulations.

2.6 Avoid damage to property

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.

Reversible devices

If the heating surfaces are used for heating and cooling, the control valves must be suitable for heating and cooling.

By cooling with low flow temperatures, condensate can be expected to form on the heat distribution system as the temperature falls below the dew point. If the heat distribution system is not designed for these operating conditions, it must be protected by appropriate safety devices, e.g. dew point monitor (purchasable accessory).

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 demineralised heating water (VE water) or water corresponding to the VDI 2035 norm
- 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.

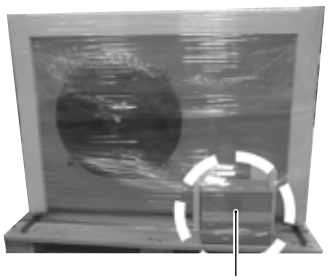
If the system is filled with untreated drinking water, calcium and magnesium precipitate as mineral scale. Limescale deposits accumulate on the heat transfer surfaces of the heating. Efficiency is reduced and energy costs increase. In extreme cases, the heat exchangers will be damaged.

► Fill the system with deionised heating water (VE water) or with water corresponding to the VDI 2035 norm only (low-salt operation of the system).

3 Description

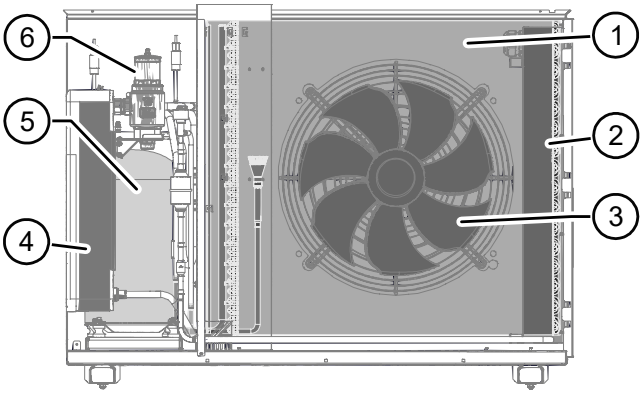
3.1 Condition on delivery

Packaged heat pump.



Separate package

3.2 Design



1 Evaporator	4 Compressor
2 Switch box	5 Condenser
3 Fan	6 Microbubble separator

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.

3.3 Functionally necessary accessories

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

- Hydraulic station or
- Hydraulic module

3.4 Additional accessories

The following accessories are available via the manufacturer's local partner:

- Wall duct or hydraulic connection line (each with vibration decouplings)
- Wall bracket
- Floor bracket
- Vibration decouplings
- Air / magnetic sludge separator
- Buffer tank
- Overflow valve
- Cladding for wall bracket
- Cladding for floor bracket
- Extension board
- Room control panel for controlling the main functions at the living quarters
- Cable extension kit

For reversible devices:

- Room thermostat for switching the cooling function
- Dew point monitor for protecting a system with cooling function at low flow temperatures

3.5 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.

Cooling

The cooling function is only available on reversible devices. The following options are possible for the cooling function (→ operating manual of the heating and heat pump controller):

- Active cooling
  Cooling down to a minimum flow temperature of 18 °C possible in combination with hydraulic module or hydraulic station.

  Cooling below 18 °C is only possible in the case of hydraulic integration with separation buffer tank
- The cooling function is controlled via the heating and heat pump controller
- Switching over between heating and cooling mode

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
- 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

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

► Do not place any objects on the device.

5.1 Scope of supply

► 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 Shut-off device with dirt trap
- 1 Condensate drain pipe nozzle
- 3 Fastening screws
- 1 Dealing plate for floor duct
- 1 Long torx bit for panel screws
- Logo sticker for hydraulic unit

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

5.2 Storage

WARNING
The unit may only be stored in rooms that do not contain ignition sources. Do not drill or torch!

► 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 supply”, from page 17). There is a risk of injuries or material damage if the device falls down or overturns.

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

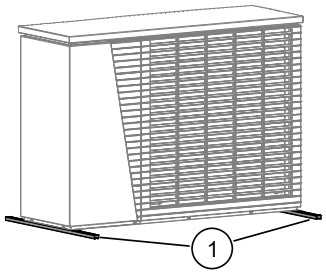
► Transport the device to the installation site in packaged form, and secured on a wooden pallet.

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 (①). 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 unit (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
Place the unit in a position where no masses of water, snow or ice can fall onto the unit from building roofs and/or via blocked gutter.

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.

→ “Minimum clearances”, page 38

✓ Free air intake and blowing air are possible without any air short-circuit.

✓ The surface is suitable for installation of the unit:

- The foundation is level and horizontal
- The surface and the foundation have a load-bearing capacity sufficient for the unit’s weight

✓ Ground surface in the air outlet area of the heat pump is permeable to water

5.5 Installation with a wall bracket

→ Wall bracket installation instruction
→ Wall duct installation instruction
or
→ Hydraulic connection line installation instruction
→ “Wall bracket installation plan“, from page 29
→ “Minimum clearances”, page 38
→ “Drill template for wall bracket“, from page 33

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.

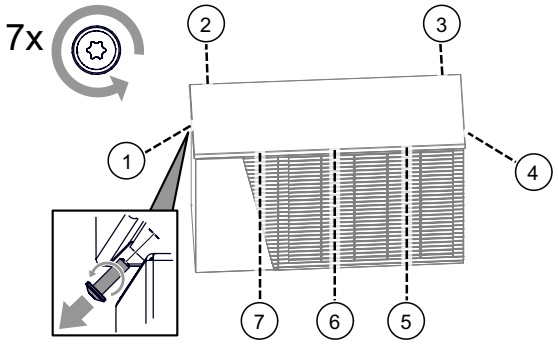
The foundation must not be connected to the building Make sure that the foundation is designed for the weight of the heat pump.

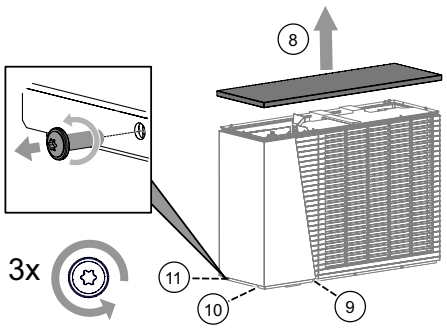
→ Floor bracket installation instruction
→ Wall duct installation instruction
or
→ Hydraulic connection line installation instruction
→ “Floor bracket installation plan“, from page 31
→ “Minimum clearances”, page 38
→ “Foundation“, from page 35

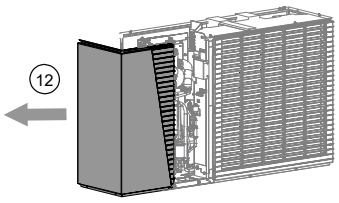
NOTE
When installing with a wall duct, make sure the wall clearance is correct.

5.7 Opening and closing the device

► Remove the cover and the side facade of the device.







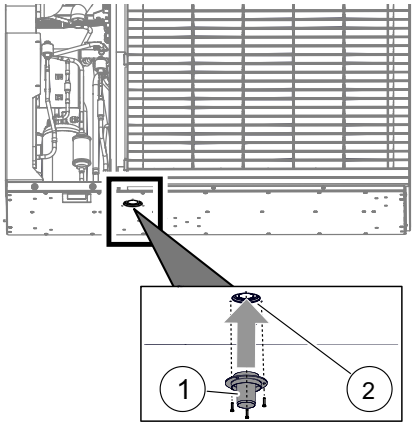
► Close the device in reverse order.

6 Installation of hydraulic system

6.1 Condensate drain

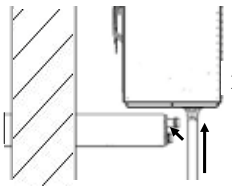
The condensate precipitated from the air must be removed frost-free via a plastic condensate pipe with a minimum diameter of 40 mm. If surfaces are water permeable, it is sufficient for the condensate drain pipe to be routed vertically into the ground to a depth of at least 90 cm.

► Install the condensate pipe nozzle (①) on the condensate drain (②), which is included in the scope of delivery for the device, on the underside of the device using the enclosed screws.



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.

→ “External condensate line connection“, page 39

Towards the inside of the building

► 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.

→ “Internal condensate line connection“, page 39

6.2 Connection to the heating circuit

IMPORTANT
Avoid open heating systems and / or heating systems that are not oxygen diffusion-tight.
If this is not possible, a system separation must be installed.

Depending on the dimensioning of the heat exchanger and the additionally required circulation pump, the system separation worsens the energy efficiency of the system.

IMPORTANT
Dirt and deposits in the (existing) hydraulic system can cause damage to the heat pump.

► Ensure that a air / magnetic sludge separator is installed in the heating circuit.

► Rinse the hydraulic system thoroughly prior to establishing the hydraulic connection of the heat pump.

IMPORTANT
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 in the heating circuit at least results in the minimum throughput required for the device type (→ “Technical data / scope of supply”, from page 17).

✓ The hydraulic system must be equipped with a buffer tank, the required volume of which depends on your device type.
Only one separating tank integration (vapour diffusion insulated) is allowed for the LWD 50A/RX and LWD 70A/RX.

→ “Technical data / scope of supply”, from page 17

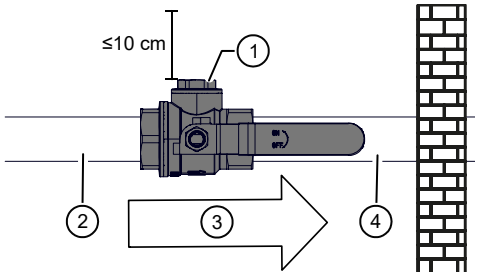
✓ The lines for the heating are fastened to the wall or ceiling via a fixed point.

► Make sure that the working overpressure (→ “Technical data / scope of supply”, from page 17) is complied with.

1. Install the shut-off device with dirt trap inside the building as close as possible to the transition to the outdoors.

1.1. Observe the flow direction of the shut-off device with dirt trap.

1.2. If possible, position the cleaning cap (①) of the shut-off device with dirt trap at the top.



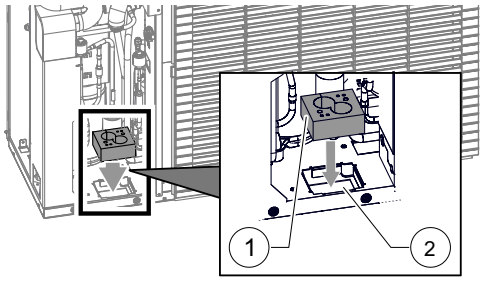
1 Cleaning cap
2 Hydraulik pipe coming from the heating water outlet of the hydraulic unit
3 Heating water flow direction
4 Hydraulik pipe leading to the heating water inlet of the heat pump

1.3. Attach the hydraulic pipes to the right and left of the shut-off device with dirt trap via a fixed point to the wall or ceiling at a maximum distance of 20 cm from the shut-off device.

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

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

4. Attach the enclosed sealing plate (①) into the recess (②) in the floor of the device.

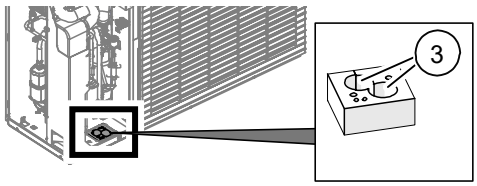


5. Connect the device to the fixed piping of the heating circuit via vibration decouplings (accessory or included in the scope of delivery of the wall duct or hydraulic connection line). You must install them to prevent the transfer of structurally borne sound to the fixed piping.

NOTE
If an existing system is being replaced, the old vibration decoupling may not be reused.

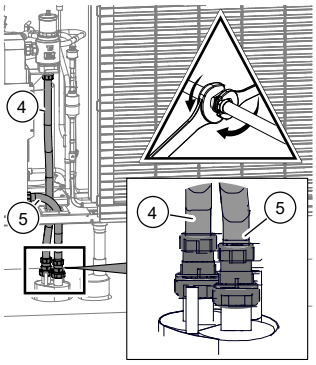
→ Vibration decoupling installation instruction

5.1. Route the vibration decouplings through the feed-through (③) in the sealing plate.



5.2. Screw the vibration decouplings onto the two pipes in the wall duct or hydraulic connection line. Connect the flow line (④) first, then the return line (⑤).

Example: hydraulic connection line



4 Heating water outlet (flow)
5 Heating water inlet (return)

6. If no further connection work is carried out afterwards, mount the side facade and cover of the device.

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

7.1 Establishing the electrical connections

IMPORTANT
Irreparable damage to the compressor due to wrong rotating field (only applies to units with 400V connection).

► Ensure a clockwise rotating field for the compressor's load supply.

Basic information relating to the electrical connection

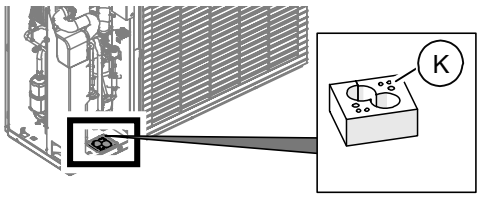
- Any specifications by the local energy supply company apply to electrical connections
- Equip the power supply for the heat pump with an all-pole miniature circuit-breaker with at least 3 mm contact spacing (IEC 60947-2)
- Note the tripping current level (→ "Technical data / scope of supply", from page 17)
- Comply with the electromagnetic compatibility regulations (EMC regulations)
- Comply with current EMC requirements for household appliances
- Install unshielded power supply cables and shielded cables (bus cables) sufficiently far apart (> 100 mm)
- Maximum line length: 30m.
  Permissible type of bus cable:
  3 x 0,5 mm², Standard shielded ÖLFLEX

Pull in the cables and conductors and create the connections

1. If the device is closed, open the device.

→ "5.7 Opening and closing the device", page 10

2. Route the pre-assembled cables out of the device through the cable feed-throughs (Ⓚ) in the sealing plate



3. Close the device.
4. Route the cables in cable conduits to the hydraulic unit inside the building.

NOTE
If the length of the pre-assembled cables (8 m each) is not sufficient, use the cable extension kit (accessory).

5. Mount the cables on the hydraulic unit.

→ Operating manual “Hydraulic unit“

8 Flushing, filling and venting

8.1 Heating water quality

NOTE
For detailed information refer, among other things, to the VDI Guidelines 2035 “Vermeidung von Schäden in Warmwasserheizanlagen” (preventing damage in hot water heating systems).

1. Ensure that the ph-value of the heating water is between 8.2 – 10, for aluminium materials between 8.2 – 9.
   Ideally, the pH value should already be in the required range after filling. After 6 weeks at the latest, it must have adjusted to the required range.
2. Ensure that the electrical conductivity is < 100 µS/cm.

NOTE
If the required water quality is not achieved, consult a company specialising in the treatment of heating water.

3. Fill the system with deionised heating water (VE water) or with water corresponding to the VDI 2035 norm only (low-salt operation of the system).
   Advantages of low-salt operation:
   - Low corrosion-promoting properties
   - No formation of mineral scale
   - Ideal for closed heating circuits
4. Keep a system log for hot water heating systems in which relevant planning data and the water quality are entered (VDI 2035).

Antifreeze in the heating circuit

It is not permitted to fill an antifreeze or a water/antifreeze mixture into the heating circuit.
The heat pump have safety devices that prevent the water from freezing, even when the heating is switched off. A prerequisite is that the heat pump remains switched on and is not disconnected from the mains. Should there be a risk of frost, the circulation pumps are activated.

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.

IMPORTANT
Flush the heating circuit only in its flow direction.

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.

→ “12.2 Maintenance after commissioning“, page 15

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 (for reversible devices vapour diffusion insulated).
6. Close the device on all sides to ensure rodent protection.

10 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).

11 Commissioning

CAUTION
Prior to commissioning the unit, the facing panels must be closed and the fan protection grille must be mounted.

✓ 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

✓ Clockwise rotating load infeed field is present at the compressor (only applies to units with 400V connection)

✓ 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

1. Carefully fill in and sign the notice of completion for the heat pump systems.
2. In Germany: 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.
3. Arrange for the heat pump system to be commissioned by the manufacturer's authorised after sales service for a fee.

→ "12.2 Maintenance after commissioning", page 15

12 Maintenance

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

NOTE
Water accumulations resulting from extreme weather conditions, or from condensation in, on and under the unit which do not flow away via the condensate discharge are normal and do not constitute a heat-pump malfunction or defect.

12.1 Basic principles

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

Local regulations require, among other things, leak checks beforehand and/or for a logbook to be kept for certain heat pumps.

► Ensure compliance with local regulations with regard to the specific heat pump system.

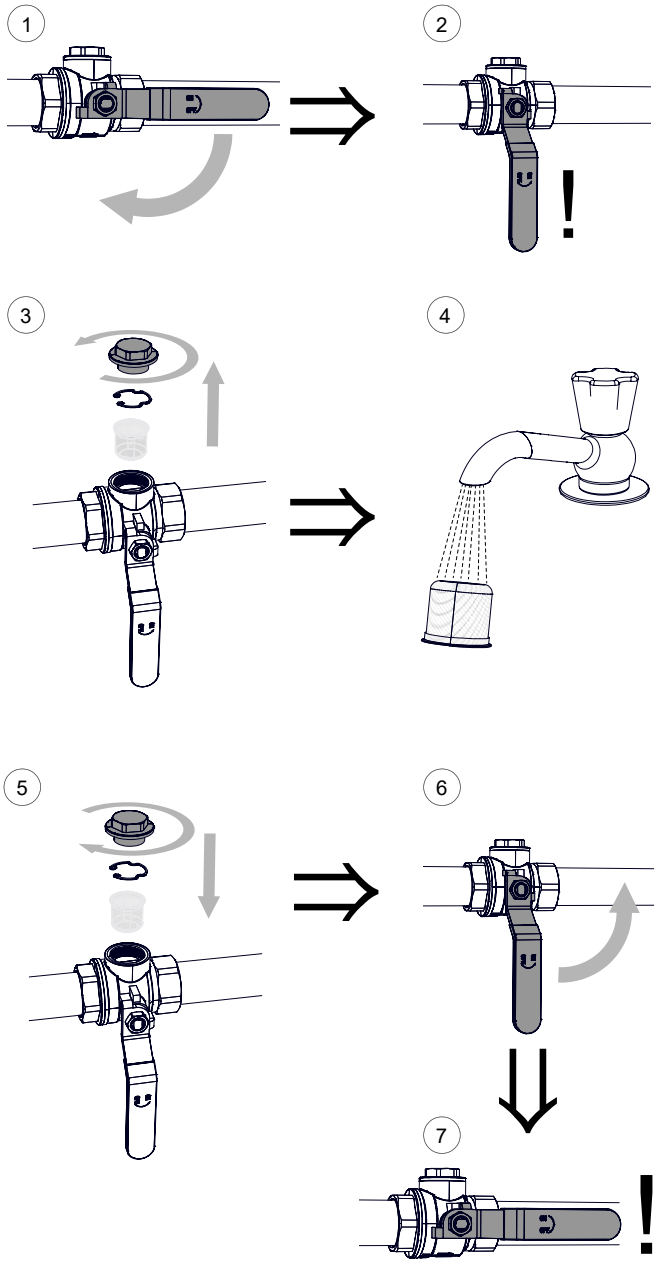
12.2 Maintenance after commissioning

Immediately after commissioning, check all installed dirt traps for dirt and clean them if necessary.

► Switch off the system while the check and cleaning is being carried out.

Next checking and cleaning at the latest 2 weeks after commissioning.

Cleaning the shut-off device with dirt trap



12.3 Maintenance 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
- Always regularly control for unimpeded air infeed accordingly. Constrictions or even blockages which, for example occur
  - when applying house insulation with polystyrene balls
  - through packaging material (foils, films, cartons etc.)
  - through foliage, snow, icing or similar weather-related deposits
  - through vegetation (bushes, tall grass etc.)
  - through air shaft covers (fly protection screens etc.)

  and which must be prevented and/or removed immediately
- 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 regularly for dirt/clogging and clean as necessary. Also check the evaporator from all sides and clean if necessary.

NOTE
Icing on air infeed and outfeed openings is weather-related and normal. Do not remove icing thermally.

► Wear protective gloves and carefully remove the icing with your hands.

12.4 Cleaning and flushing the condenser

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

12.5 Annual maintenance

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

► Check all installed dirt traps for dirt and clean them if necessary.

13 Malfunctions

1. Read out the cause of the malfunction via the diagnostic programme of the heating and heat pump controller.

NOTE
In the event of a high pressure or flow fault, check the dirt trap of the shut-off device included in the scope of supply and installed on site for dirt and clean if necessary.

2. 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 disposal equipment is suitable for flammable refrigerants.

✓ The locally applicable regulations for handling flammable refrigerants are complied with.

► Keep away from sources of ignition.

► Collect all substances safely.

► Separate components according to their materials.

14.2 Disposal and recycling

► Dispose of environmentally hazardous substances (e.g. refrigerant, compressor oil) according to the local regulations.

► Ensure the correct recycling or disposal of device components and packaging materials in accordance with the local regulations.

Performance data	Values in brackets: (1 Compressor)		**LWD 50A**	**LWD 70A**
Heating capacity | COP	for A7/W35 acc. to DIN EN 14511-x	kW | COP	7.10 | 4.80	8.50 | 4.30
	for A7/W45 acc. to DIN EN 14511-x	kW | COP	6.80 | 3.80	8.40 | 3.50
	for A2/W35 acc. to DIN EN 14511-x	kW | COP	5.60 | 3.80	7.70 | 3.80
	for A10/W35 acc. to DIN EN 14511-x	kW | COP	7.50 | 5.00	10.50 | 5.10
	for A-7/W35 acc. to DIN EN 14511-x	kW | COP	4.60 | 3.20	6.30 | 3.20
	for A-15/W65 acc. to DIN EN 14511-x	kW | COP	– | –	– | –
	for A-7/W55 acc. to DIN EN 14511-x	kW | COP	– | –	– | –
Cooling capacity | EER	for A35/W18	kW | EER	– | –	– | –
	for A35/W7	kW | EER	– | –	– | –
Operating limits				
Heating circuit return min. | Heating circuit flow max. Heating	within heat source min./max.	°C	20 | 62	20 | 62
Heating circuit return min. | Heating circuit flow max. Cooling	within heat source min./max.	°C	– | –	– | –
Heat source heating	min. I max.	°C	-20 | 35	-20 | 35
Heat source cooling	min. I max.	°C	– | –	– | –
Additional operating points		…	A>-7/W70	A>-7/W70
Installation location (only valid for indoor installation)				
Room temperature	min. I max.	°C	– | –	– | –
Relative humidity maximum (non-condensing)		%	–	–
Sound				
Sound pressure level at 1 m distance from edge of unit inside	min. | Night | max.	dB(A)	– | – | –	– | – | –
Sound pressure level at 1 m distance from edge of unit outside	min. | Night | max.	dB(A)	– | – | 45	– | – | 45
Sound power level inside	min. | Night | max.	dB(A)	– | – | –	– | – | –
Sound power level outside [1)]	min. | Night | max.	dB(A)	– | – | 57	– | – | 57
Sound power level acc. to DIN EN 12102-1	inside | outside	dB(A)	– | 57	– | 57
Tonality | Low-frequency		dB(A) | • yes – no	– | –	– | –
Heat source				
Air flow rate at maximum external pressing | Maximum external pressure		m³/h | Pa	3000 | –	3000 | –
Heating circuit				
Flow rate (pipe dimensioning) I Min. volume buffer tank in series I Min. volume separation buffer tank		l/h | l | l	– | – | –	– | – | –
Free pressing | Pressure loss | Flow rate		bar | bar | l/h	– | 0.066 | 1200	– | 0.055 | 1600
Max. allowable operating pressure		bar	3	3
Circulation pump control range	min. I max.	l/h	– | –	– | –
Hot gas use				
Flow rate (pipe dimensioning)		l/h	–	–
Free pressing | Pressure loss | Flow rate		bar | bar | l/h	– | – | –	– | – | –
General unit data				
Data of the standards according to version		EN14511-x I DIN EN 12102-1	2013 I 2017	2013 I 2017
Total weight		kg	141	146
Weight of individual components		kg | kg | kg	– | – | –	– | – | –
Max. allowable operating pressure refrigerating circuit	high pressure I low pressure	MPa (g) | MPa (g)	3.15 | 3.15	3.15 | 3.15
Refrigerant type | Refrigerant capacity		… | kg	R290 | 0.95	R290 | 1.10
Electrics				
Voltage code | all-pole fuse protection for heat pump *)**)		… | A	– | –	– | –
Voltage code | all-pole fuse protection for heat pump *) + electric heating element **)		… | A	– | –	– | –
Voltage code | Control voltage fuse protection **)		… | A	– | –	– | –
Voltage code | Electric heating element fuse protection **)		… | A	– | –	– | –
HP*): effect. power consumption A7/W35 DIN EN 14511-x I Electric consumption I cosφ		kW | A | …	1.50 | 3.20 | 0.66	2.00 | 4.10 | 0.71
HP*): max. machine current I max. power consumption within the operating limits		A | kW	4.0 | –	5.5 | –
Starting current: direct | with soft starter		A | A	– | 20	– | 22
Degree of protection		IP	24	24
Zmax		Ω	–	–
Residual current circuit breaker	if required	type	–	–
Electric heating element output	3 | 2 | 1 phase	kW | kW | kW	– | – | –	– | – | –
Circulation pump power consumption, heating circuit	min. I max.	W	– | –	– | –
Other unit information				
Safety valve heating circuit | Response pressure	included in scope of supply: • yes – no	bar	– | –	– | –
Buffer tank | Volume	included in scope of supply: • yes – no	l	– | –	– | –
Heating circuit expansion vessel | Volume | Prepressure	incl. in scope of supply: • yes – no	l | bar	– | – | –	– | – | –
Overflow valve | Changeover valve, heating - domestic hot water	integrated: • yes – no		– | –	– | –
Heating circuit vibration decoupling	incl. in scope of supply or integrated: • yes – no		–	–
Controller I Heat quantity recording I Extension board	incl. in scope of supply or integrated: • yes – no		– | – | –	– | – | –
			813541d	813542d

*) compressor only, **) note local regulations 1) Indoor and outdoor installation

The performance data and the operating limits apply to clean heat exchangers I Index: n

Performance data	Values in brackets: (1 Compressor)		**LWD 90A**
Heating capacity | COP	for A7/W35 acc. to DIN EN 14511-x	kW | COP	10.10 | 4.12
	for A7/W45 acc. to DIN EN 14511-x	kW | COP	9.90 | 3.50
	for A2/W35 acc. to DIN EN 14511-x	kW | COP	9.00 | 3.60
	for A10/W35 acc. to DIN EN 14511-x	kW | COP	11.30 | 4.50
	for A-7/W35 acc. to DIN EN 14511-x	kW | COP	7.50 | 3.12
	for A-15/W65 acc. to DIN EN 14511-x	kW | COP	– | –
	for A-7/W55 acc. to DIN EN 14511-x	kW | COP	– | –
Cooling capacity | EER	for A35/W18	kW | EER	– | –
	for A35/W7	kW | EER	– | –
Operating limits			
Heating circuit return min. | Heating circuit flow max. Heating	within heat source min./max.	°C	20 | 60
Heating circuit return min. | Heating circuit flow max. Cooling	within heat source min./max.	°C	– | –
Heat source heating	min. I max.	°C	-20 | 35
Heat source cooling	min. I max.	°C	– | –
Additional operating points		…	A>-7/W70
Installation location (only valid for indoor installation)			
Room temperature	min. I max.	°C	– | –
Relative humidity maximum (non-condensing)		%	–
Sound			
Sound pressure level at 1 m distance from edge of unit inside	min. | Night | max.	dB(A)	– | – | –
Sound pressure level at 1 m distance from edge of unit outside	min. | Night | max.	dB(A)	– | – | 50
Sound power level inside	min. | Night | max.	dB(A)	– | – | –
Sound power level outside [1)]	min. | Night | max.	dB(A)	– | – | 62
Sound power level acc. to DIN EN 12102-1	inside | outside	dB(A)	– | 62
Tonality | Low-frequency		dB(A) | • yes – no	– | –
Heat source			
Air flow rate at maximum external pressing | Maximum external pressure		m³/h | Pa	3500 | –
Heating circuit			
Flow rate (pipe dimensioning) I Min. volume buffer tank in series I Min. volume separation buffer tank		l/h | l | l	– | – | –
Free pressing | Pressure loss | Flow rate		bar | bar | l/h	– | 0.076 | 2000
Max. allowable operating pressure		bar	3
Circulation pump control range	min. I max.	l/h	– | –
Hot gas use			
Flow rate (pipe dimensioning)		l/h	–
Free pressing | Pressure loss | Flow rate		bar | bar | l/h	– | – | –
General unit data			
Data of the standards according to version		EN14511-x I DIN EN 12102-1	2013 I 2017
Total weight		kg	149
Weight of individual components		kg | kg | kg	– | – | –
Max. allowable operating pressure refrigerating circuit	high pressure I low pressure	MPa (g) | MPa (g)	3.15 | 3.15
Refrigerant type | Refrigerant capacity		… | kg	R290 | 1.17
Electrics			
Voltage code | all-pole fuse protection for heat pump *)**)		… | A	– | –
Voltage code | all-pole fuse protection for heat pump *) + electric heating element **)		… | A	– | –
Voltage code | Control voltage fuse protection **)		… | A	– | –
Voltage code | Electric heating element fuse protection **)		… | A	– | –
HP*): effect. power consumption A7/W35 DIN EN 14511-x I Electric consumption I cosφ		kW | A | …	2.50 | 5.00 | 0.72
HP*): max. machine current I max. power consumption within the operating limits		A | kW	7.0 | –
Starting current: direct | with soft starter		A | A	– | 24
Degree of protection		IP	24
Zmax		Ω	–
Residual current circuit breaker	if required	type	–
Electric heating element output	3 | 2 | 1 phase	kW | kW | kW	– | – | –
Circulation pump power consumption, heating circuit	min. I max.	W	– | –
Other unit information			
Safety valve heating circuit | Response pressure	included in scope of supply: • yes – no	bar	– | –
Buffer tank | Volume	included in scope of supply: • yes – no	l	– | –
Heating circuit expansion vessel | Volume | Prepressure	incl. in scope of supply: • yes – no	l | bar	– | – | –
Overflow valve | Changeover valve, heating - domestic hot water	integrated: • yes – no		– | –
Heating circuit vibration decoupling	incl. in scope of supply or integrated: • yes – no		–
Controller I Heat quantity recording I Extension board	incl. in scope of supply or integrated: • yes – no		– | – | –

*) compressor only, **) note local regulations 1) Indoor and outdoor installation 813549b

The performance data and the operating limits apply to clean heat exchangers I Index: n

Performance data	Values in brackets: (1 Compressor)		**LWD 50A/RX**	**LWD 70A/RX**
Heating capacity | COP	for A7/W35 acc. to DIN EN 14511-x	kW | COP	6.80 | 4.56	8.70 | 4.32
	for A7/W45 acc. to DIN EN 14511-x	kW | COP	6.50 | 3.62	8.80 | 3.66
	for A2/W35 acc. to DIN EN 14511-x	kW | COP	5.40 | 3.69	7.30 | 3.68
	for A10/W35 acc. to DIN EN 14511-x	kW | COP	7.20 | 4.80	9.70 | 4.92
	for A-7/W35 acc. to DIN EN 14511-x	kW | COP	4.40 | 3.11	6.00 | 3.06
	for A-15/W65 acc. to DIN EN 14511-x	kW | COP	– | –	– | –
	for A-7/W55 acc. to DIN EN 14511-x	kW | COP	– | –	– | –
Cooling capacity | EER	for A35/W18	kW | EER	7.40 | 3.97	10.10 | 3.64
	for A35/W7	kW | EER	5.10 | 2.89	7.00 | 2.74
Operating limits				
Heating circuit return min. | Heating circuit flow max. Heating	within heat source min./max.	°C	20 | 62	20 | 62
Heating circuit return min. | Heating circuit flow max. Cooling	within heat source min./max.	°C	7 | 20	7 | 20
Heat source heating	min. I max.	°C	-20 | 35	-20 | 35
Heat source cooling	min. I max.	°C	15 | 45	15 | 45
Additional operating points		…	A>-7/W70	A>-7/W70
Installation location (only valid for indoor installation)				
Room temperature	min. I max.	°C	– | –	– | –
Relative humidity maximum (non-condensing)		%	–	–
Sound				
Sound pressure level at 1 m distance from edge of unit inside	min. | Night | max.	dB(A)	– | – | –	– | – | –
Sound pressure level at 1 m distance from edge of unit outside	min. | Night | max.	dB(A)	– | – | 45	– | – | 45
Sound power level inside	min. | Night | max.	dB(A)	– | – | –	– | – | –
Sound power level outside [1)]	min. | Night | max.	dB(A)	– | – | 57	– | – | 57
Sound power level acc. to DIN EN 12102-1	inside | outside	dB(A)	– | 57	– | 57
Tonality | Low-frequency		dB(A) | • yes – no	– | –	– | –
Heat source				
Air flow rate at maximum external pressing | Maximum external pressure		m³/h | Pa	3000 | –	3000 | –
Heating circuit				
Flow rate (pipe dimensioning) I Min. volume buffer tank in series I Min. volume separation buffer tank		l/h | l | l	– | – | –	– | – | –
Free pressing | Pressure loss | Flow rate		bar | bar | l/h	– | 0.066 | 1200	– | 0.055 | 1600
Max. allowable operating pressure		bar	3	3
Circulation pump control range	min. I max.	l/h	– | –	– | –
Hot gas use				
Flow rate (pipe dimensioning)		l/h	–	–
Free pressing | Pressure loss | Flow rate		bar | bar | l/h	– | – | –	– | – | –
General unit data				
Data of the standards according to version		EN14511-x I DIN EN 12102-1	2013 I 2017	2013 I 2017
Total weight		kg	146	151
Weight of individual components		kg | kg | kg	– | – | –	– | – | –
Max. allowable operating pressure refrigerating circuit	high pressure I low pressure	MPa (g) | MPa (g)	3.15 | 3.15	3.15 | 3.15
Refrigerant type | Refrigerant capacity		… | kg	R290 | 2.10	R290 | 2.20
Electrics				
Voltage code | all-pole fuse protection for heat pump *)**)		… | A	– | –	– | –
Voltage code | all-pole fuse protection for heat pump *) + electric heating element **)		… | A	– | –	– | –
Voltage code | Control voltage fuse protection **)		… | A	– | –	– | –
Voltage code | Electric heating element fuse protection **)		… | A	– | –	– | –
HP*): effect. power consumption A7/W35 DIN EN 14511-x I Electric consumption I cosφ		kW | A | …	1.50 | 3.20 | 0.66	2.00 | 4.10 | 0.71
HP*): max. machine current I max. power consumption within the operating limits		A | kW	4.0 | –	5.5 | –
Starting current: direct | with soft starter		A | A	– | 20	– | 22
Degree of protection		IP	24	24
Zmax		Ω	–	–
Residual current circuit breaker	if required	type	–	–
Electric heating element output	3 | 2 | 1 phase	kW | kW | kW	– | – | –	– | – | –
Circulation pump power consumption, heating circuit	min. I max.	W	– | –	– | –
Other unit information				
Safety valve heating circuit | Response pressure	included in scope of supply: • yes – no	bar	– | –	– | –
Buffer tank | Volume	included in scope of supply: • yes – no	l	– | –	– | –
Heating circuit expansion vessel | Volume | Prepressure	incl. in scope of supply: • yes – no	l | bar	– | – | –	– | – | –
Overflow valve | Changeover valve, heating - domestic hot water	integrated: • yes – no		– | –	– | –
Heating circuit vibration decoupling	incl. in scope of supply or integrated: • yes – no		–	–
Controller I Heat quantity recording I Extension board	incl. in scope of supply or integrated: • yes – no		– | – | –	– | – | –
			813545b	813546b

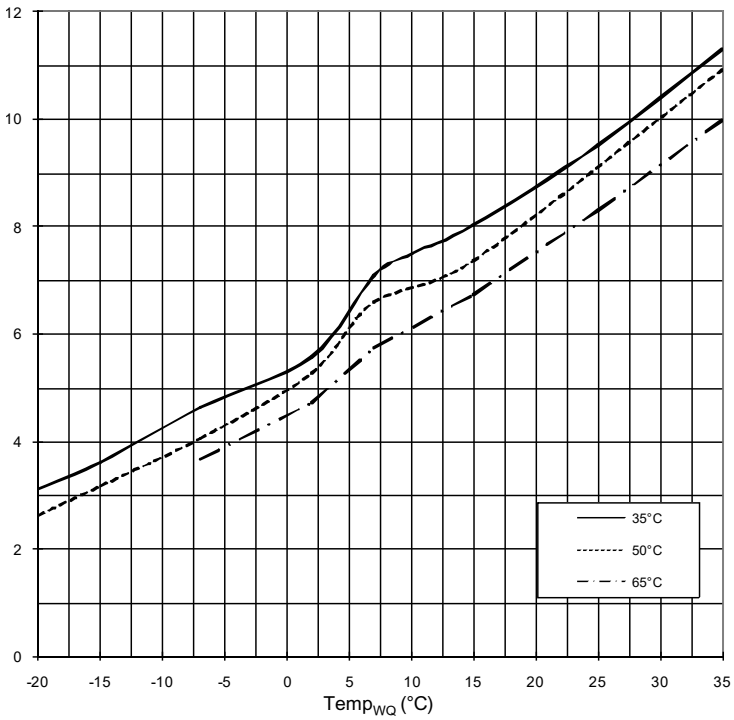
*) compressor only, **) note local regulations 1) Indoor and outdoor installation

The performance data and the operating limits apply to clean heat exchangers I Index: n

Performance curves

LWD 50A Heating mode

Qh (kW)



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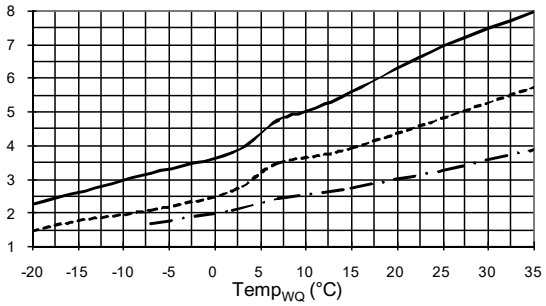
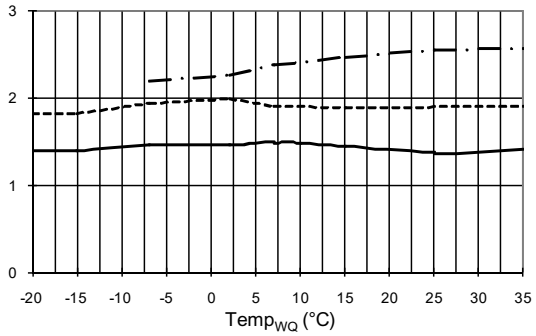
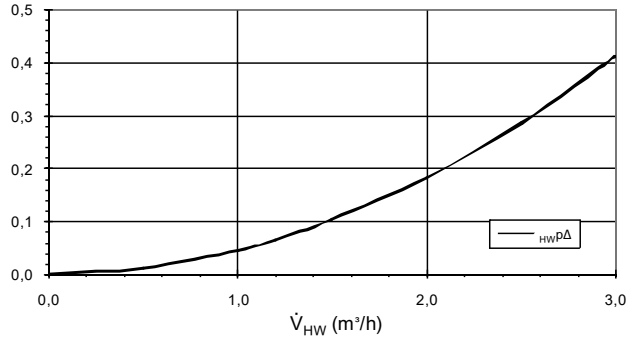


Pe (kW)



Δp (bar)



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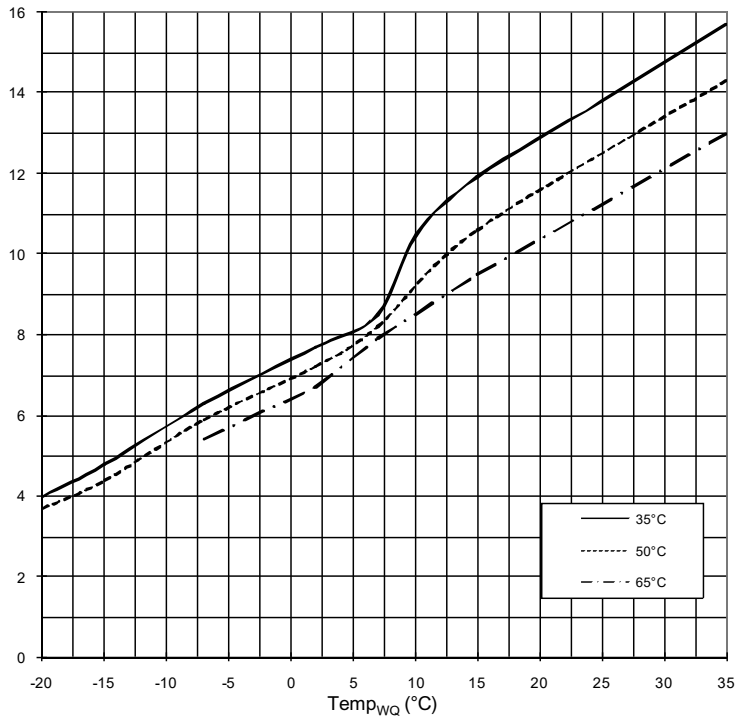
Keys:	UK823134L/190313
$\dot{V}_{KW}$	Volume flow cooling water
Temp$_{WS}$	Heat sink temperature
Q0	Cooling capacity
Pe	Power consumption
EER	Energy efficiency ratio / cooling capacity rate
Δp_{HW}	Pressure loss heat pump
VD	Compressor(s)

Qh (kW)



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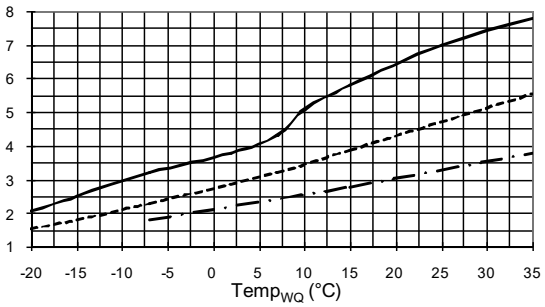
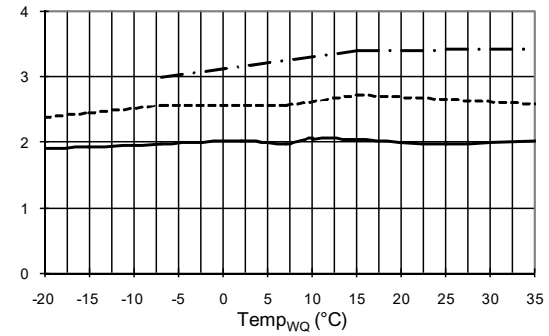
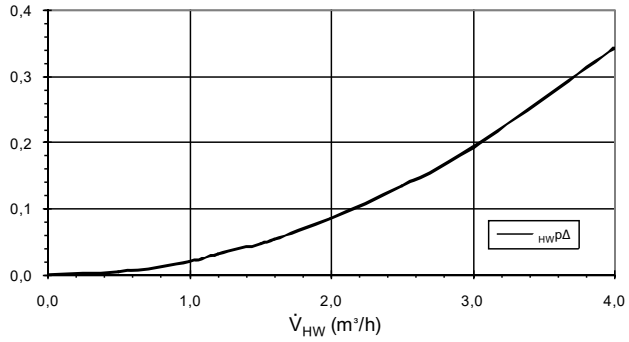


Pe (kW)



Δp (bar)



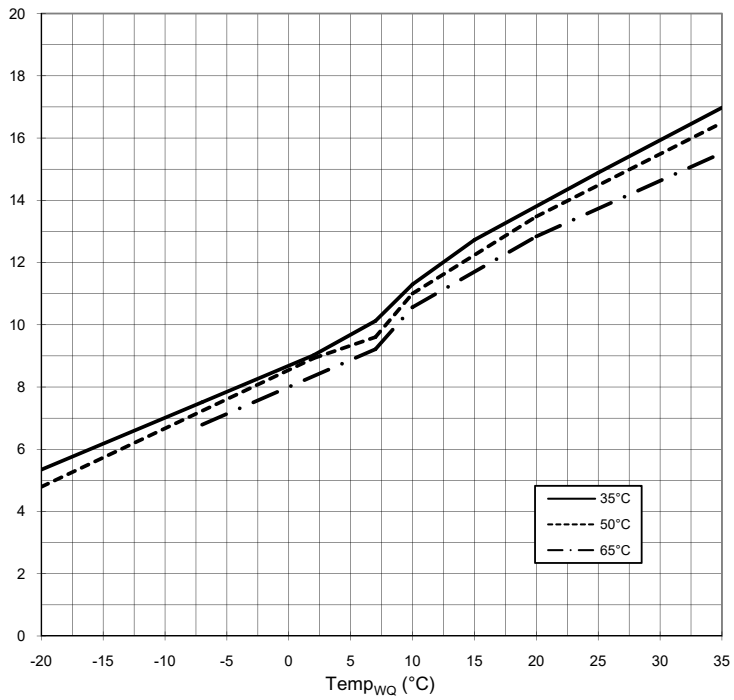
823166a

Keys:	UK823129L/170408
$\dot{V}_{HW}$	Volume flow, heating water
$Temp_{WQ}$	Temperature, heat source
Qh	Heating capacity
Pe	Power consumption
COP	Coefficient of performance / efficiency rating
Δp_{HW}	Pressure loss heat pump
VD	Compressor(s)

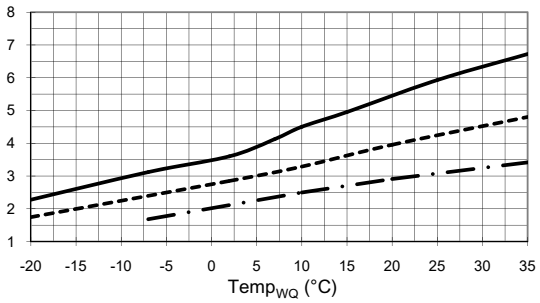
Performance curves

LWD 90A Heating mode

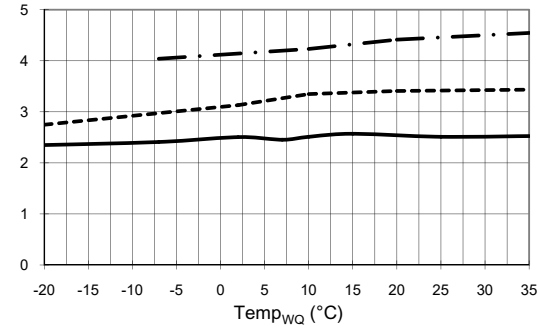
Qh (kW)



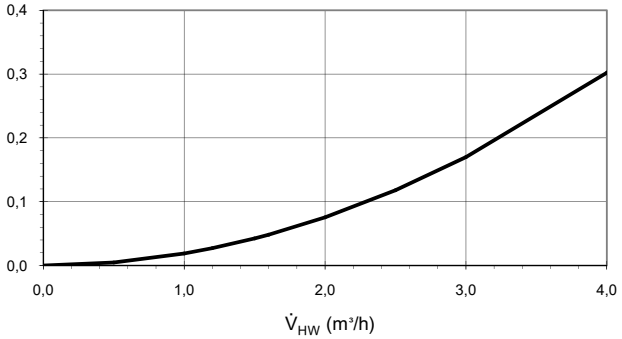
COP



Pe (kW)



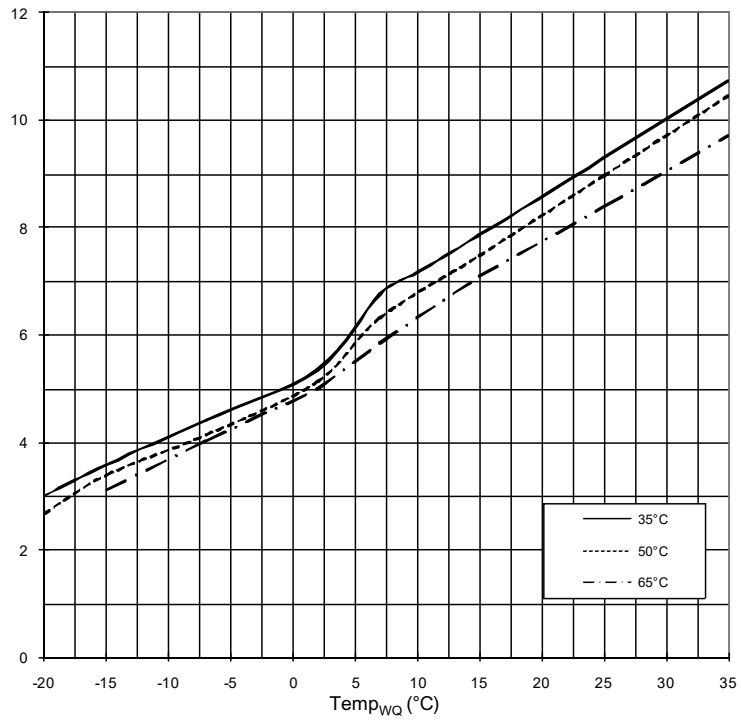
Δp (bar)



823222

Keys:	UK823134L/190313
$\dot{V}_{KW}$	Volume flow cooling water
Temp$_{WS}$	Heat sink temperature
Q0	Cooling capacity
Pe	Power consumption
EER	Energy efficiency ratio / cooling capacity rate
Δp_{HW}	Pressure loss heat pump
VD	Compressor(s)

Qh (kW)



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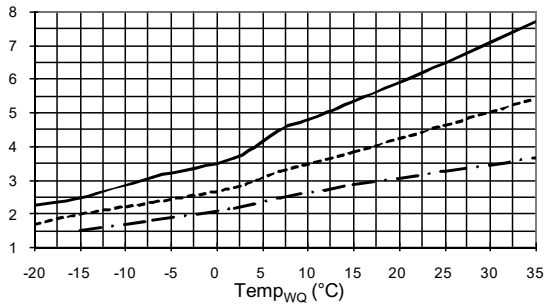
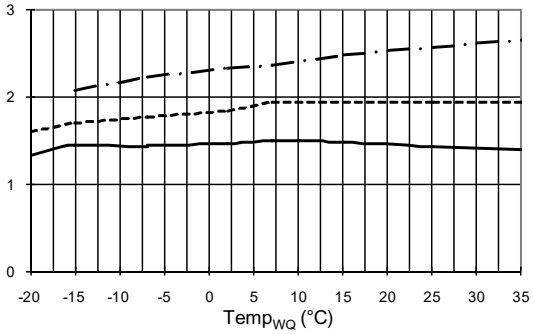
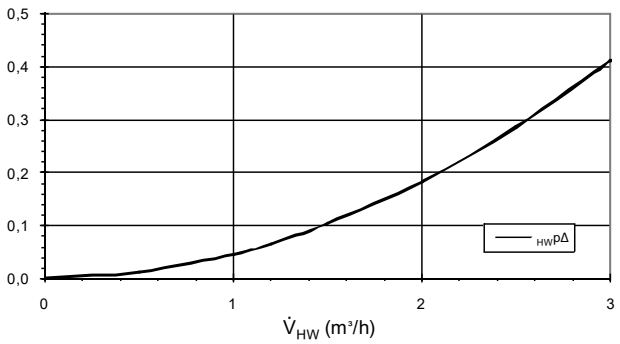


Pe (kW)



Δp (bar)

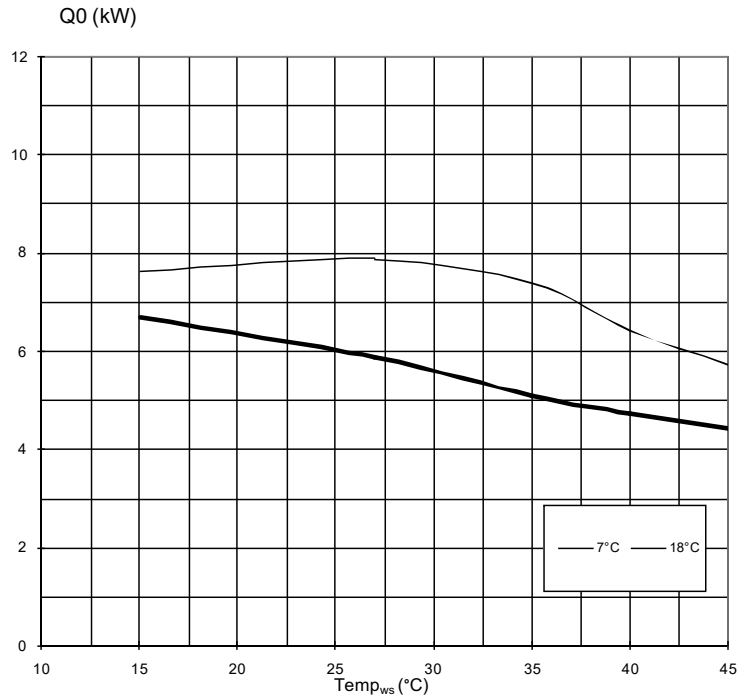


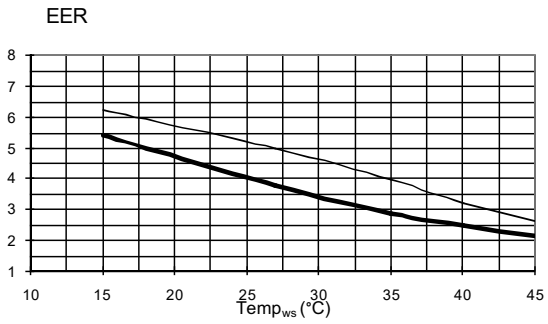
823169

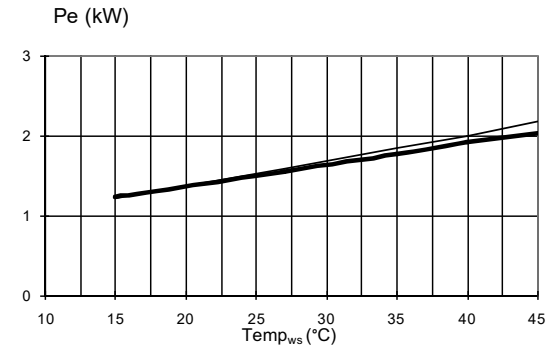
Keys:	UK823129L/170408
$\dot{V}_{HW}$	Volume flow, heating water
$Temp_{WQ}$	Temperature, heat source
Qh	Heating capacity
Pe	Power consumption
COP	Coefficient of performance / efficiency rating
Δp_{HW}	Pressure loss heat pump
VD	Compressor(s)

Performance curves

LWD 50A/RX Cooling mode



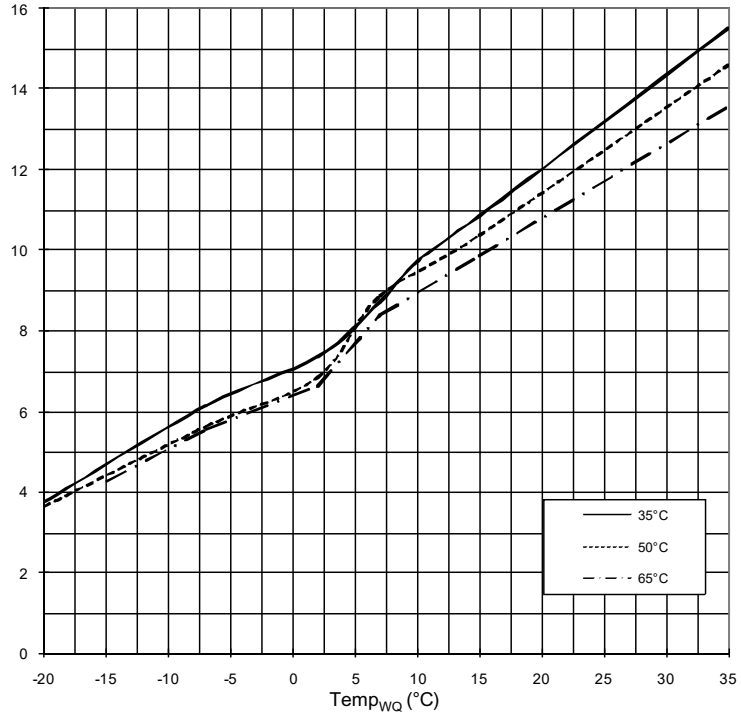




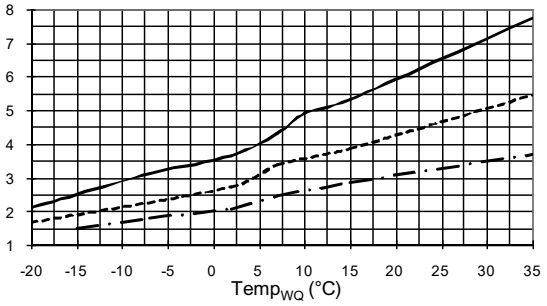
823169

Keys:	UK823134L/190313
$\dot{V}_{KW}$	Volume flow cooling water
$Temp_{WS}$	Heat sink temperature
Q0	Cooling capacity
Pe	Power consumption
EER	Energy efficiency ratio / cooling capacity rate
Δp_{HW}	Pressure loss heat pump
VD	Compressor(s)

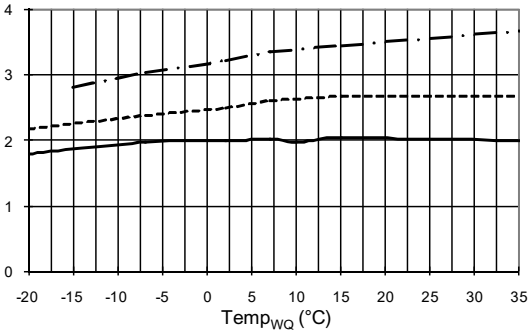
Qh (kW)



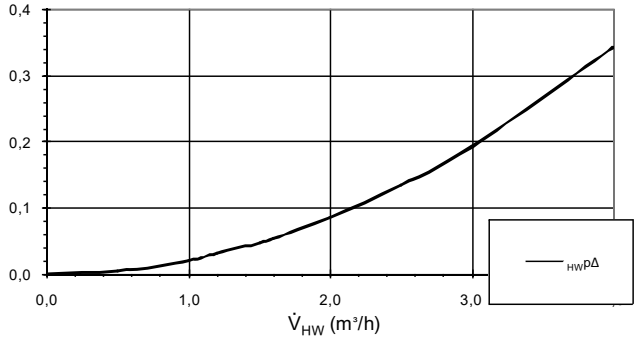
COP



Pe (kW)



Δp (bar)

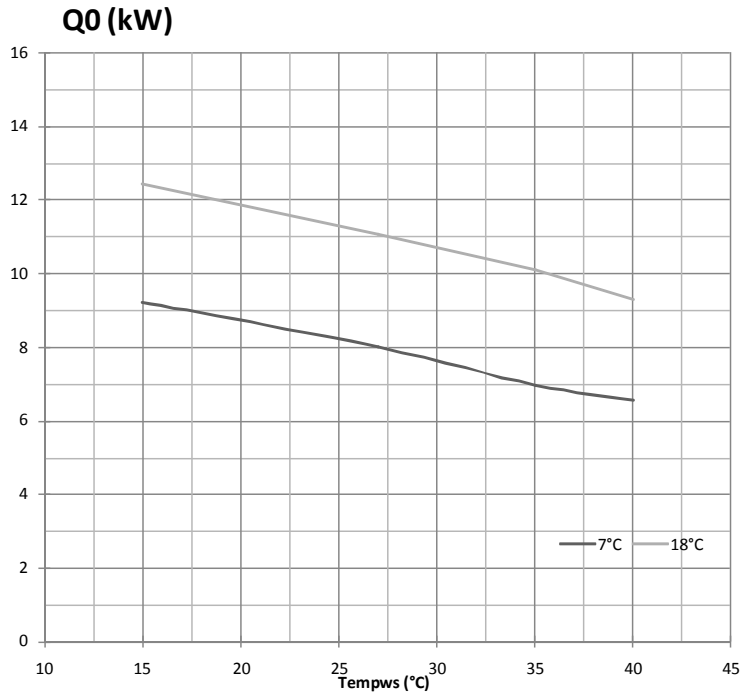


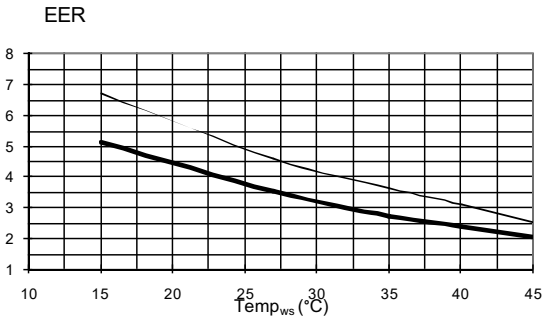
823170

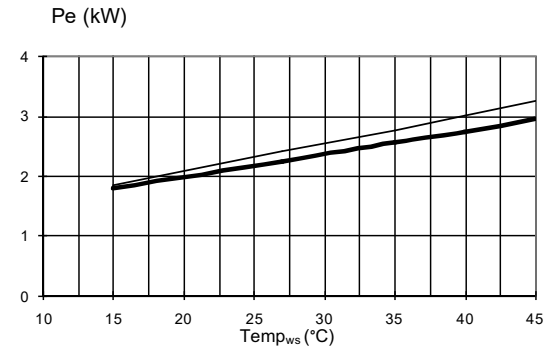
Keys:	UK823129L/170408
$\dot{V}_{HW}$	Volume flow, heating water
Temp$_{WQ}$	Temperature, heat source
Qh	Heating capacity
Pe	Power consumption
COP	Coefficient of performance / efficiency rating
Δp_{HW}	Pressure loss heat pump
VD	Compressor(s)

Performance curves

LWD 70A/RX Cooling mode

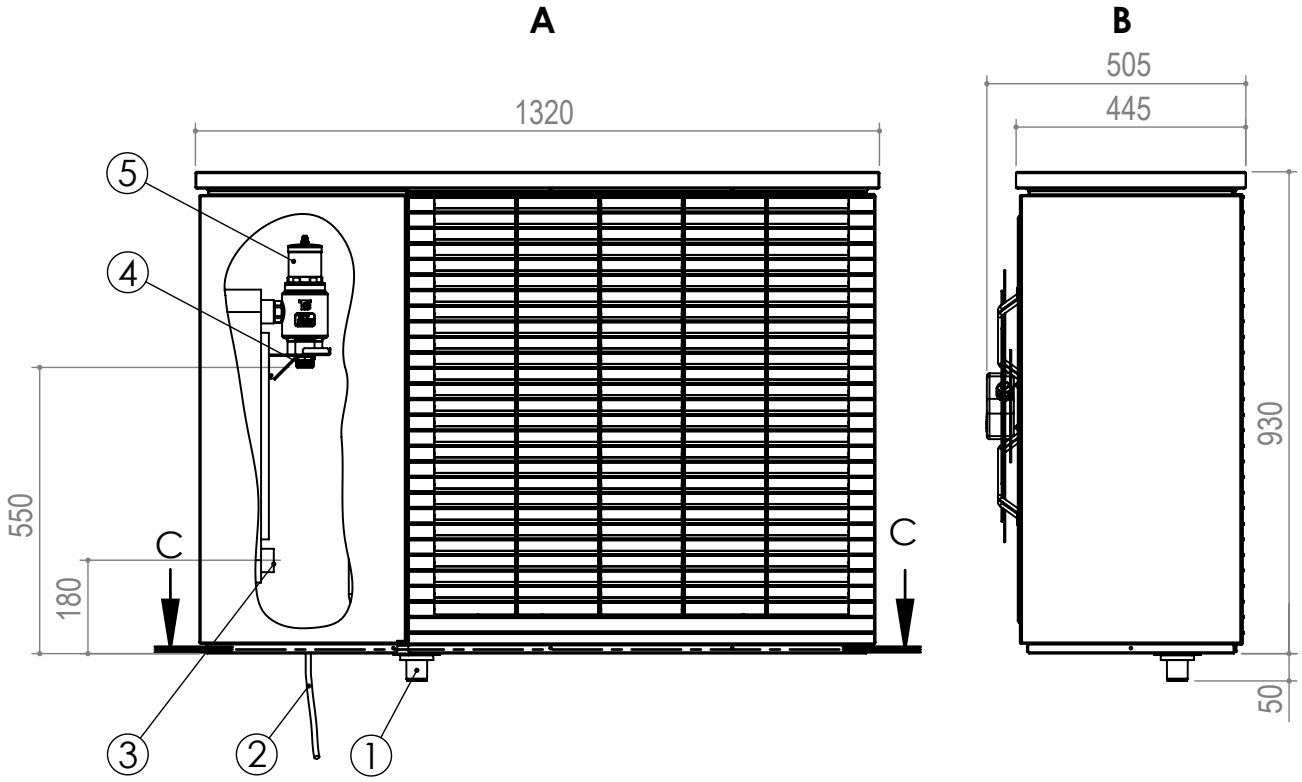


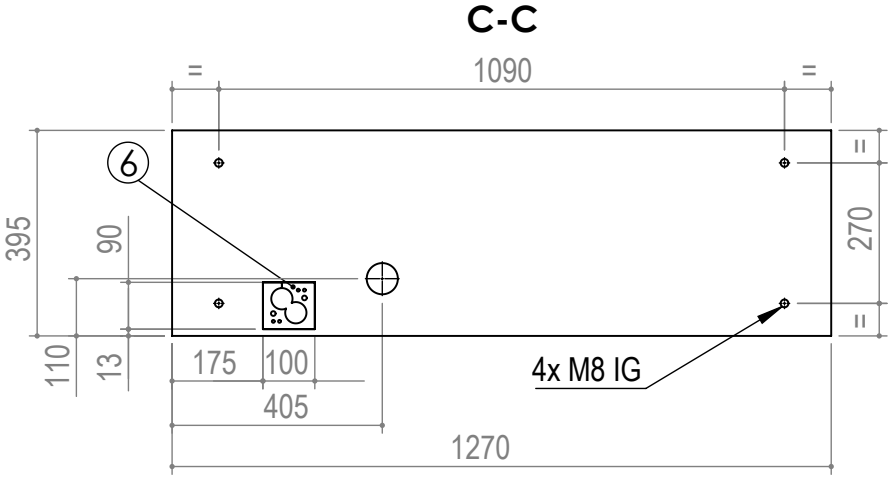




823170

Keys:	UK823134L/190313
$\dot{V}_{KW}$	Volume flow cooling water
$Temp_{WS}$	Heat sink temperature
Q0	Cooling capacity
Pe	Power consumption
EER	Energy efficiency ratio / cooling capacity rate
Δp_{HW}	Pressure loss heat pump
VD	Compressor(s)

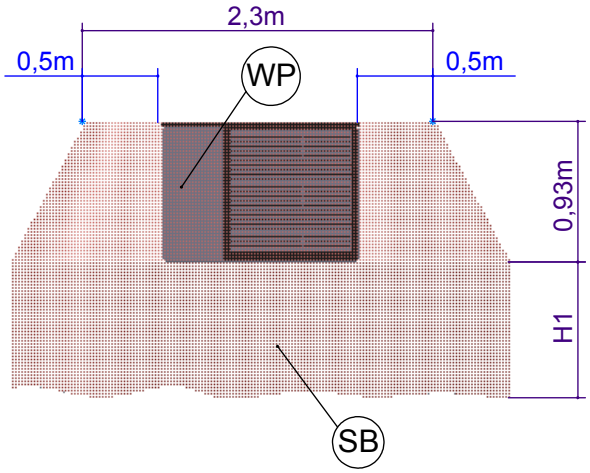


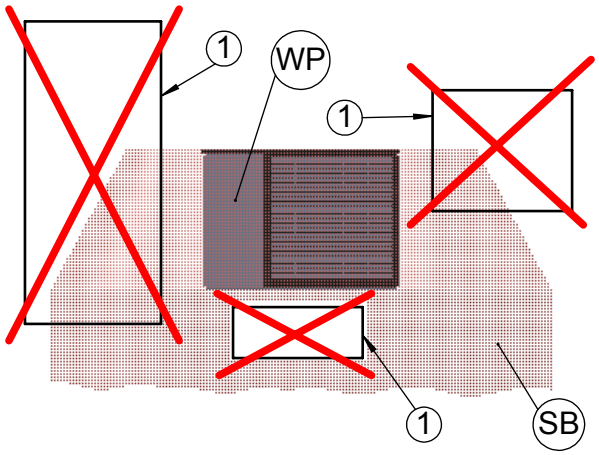


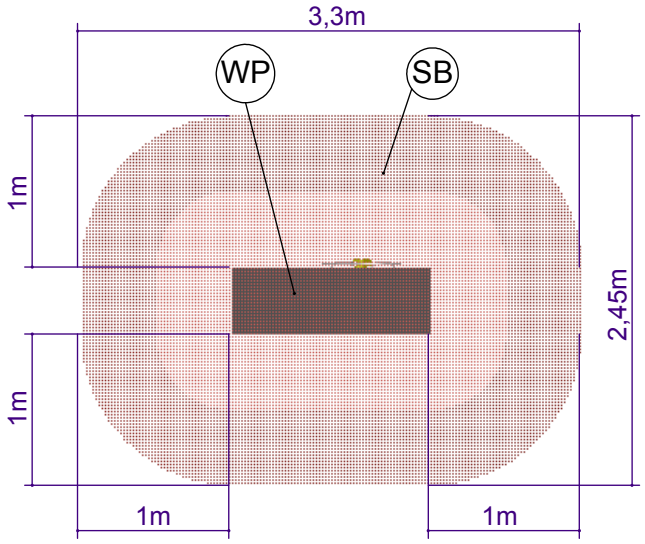
Keys: UK819392b

All dimensions in mm.

Pos.	Name	Dim.
A	Front view	–
B	Side view from left	–
C-C	Section (floor slab)	–
1	Connection socket (in extra box) for condensate drain pipe	DN40
2	Cables for power, control, BUS	Length ~ 8m from device
3	Heating water inlet (return)	G1" external thread
4	Heating water outlet (supply)	G1" external thread
5	Microbubble separator with bleeder	–
6	Penetration for flow & return and cables (in extra box)	–





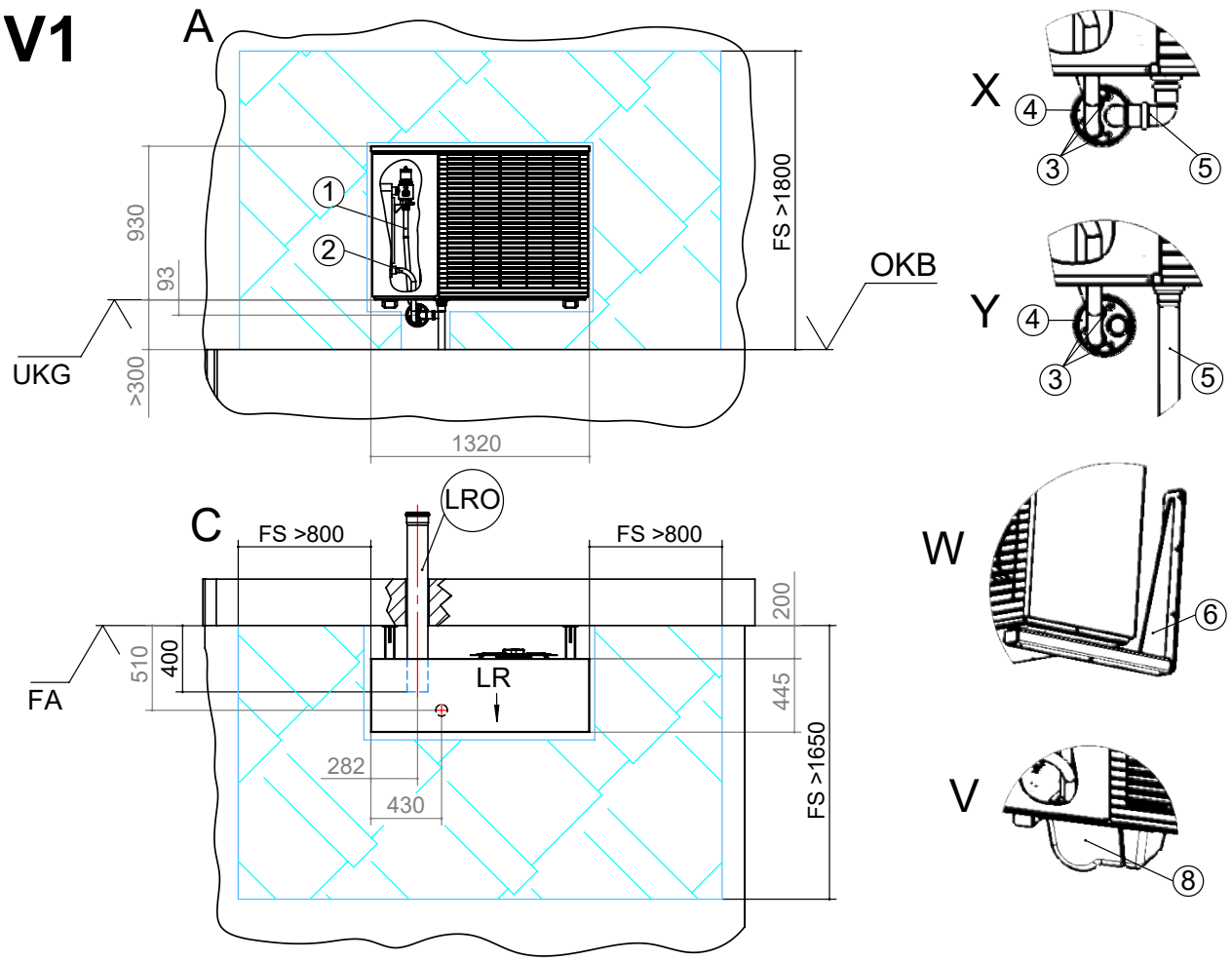


Keys: UK819401

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

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.



Keys: UK819393-1e

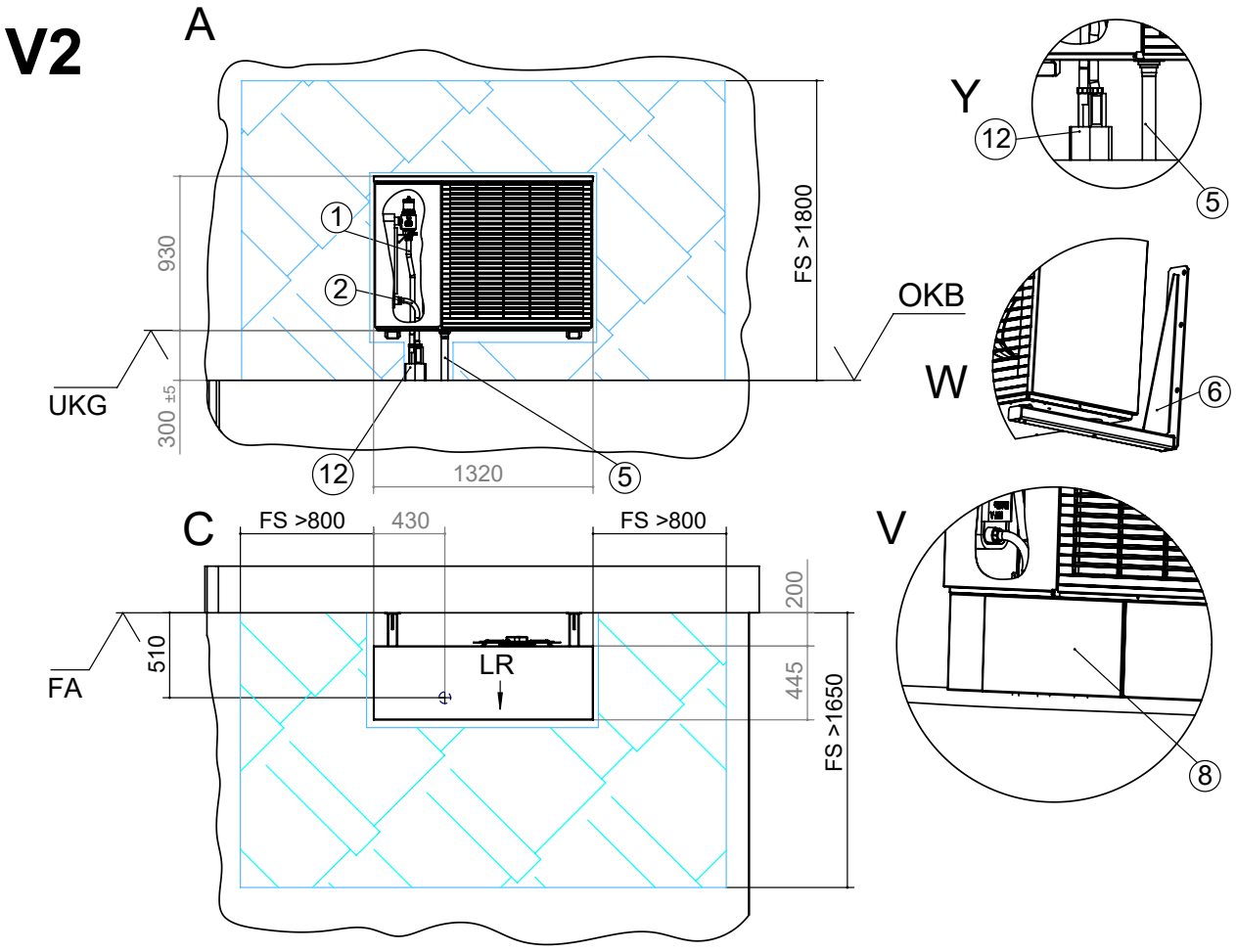
All dimensions in mm.

Pos.	Name
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

Pos.	Name
1	Heating water supply (accessory)
2	Heating water return (accessory)
3	Cable bushing
4	Wall duct (accessory)
5	Condensate drain / waste trap
6	Bracket for wall attachment (accessory)
8	Cladding of wall duct (accessory)

Wall bracket
with hydraulic connection line

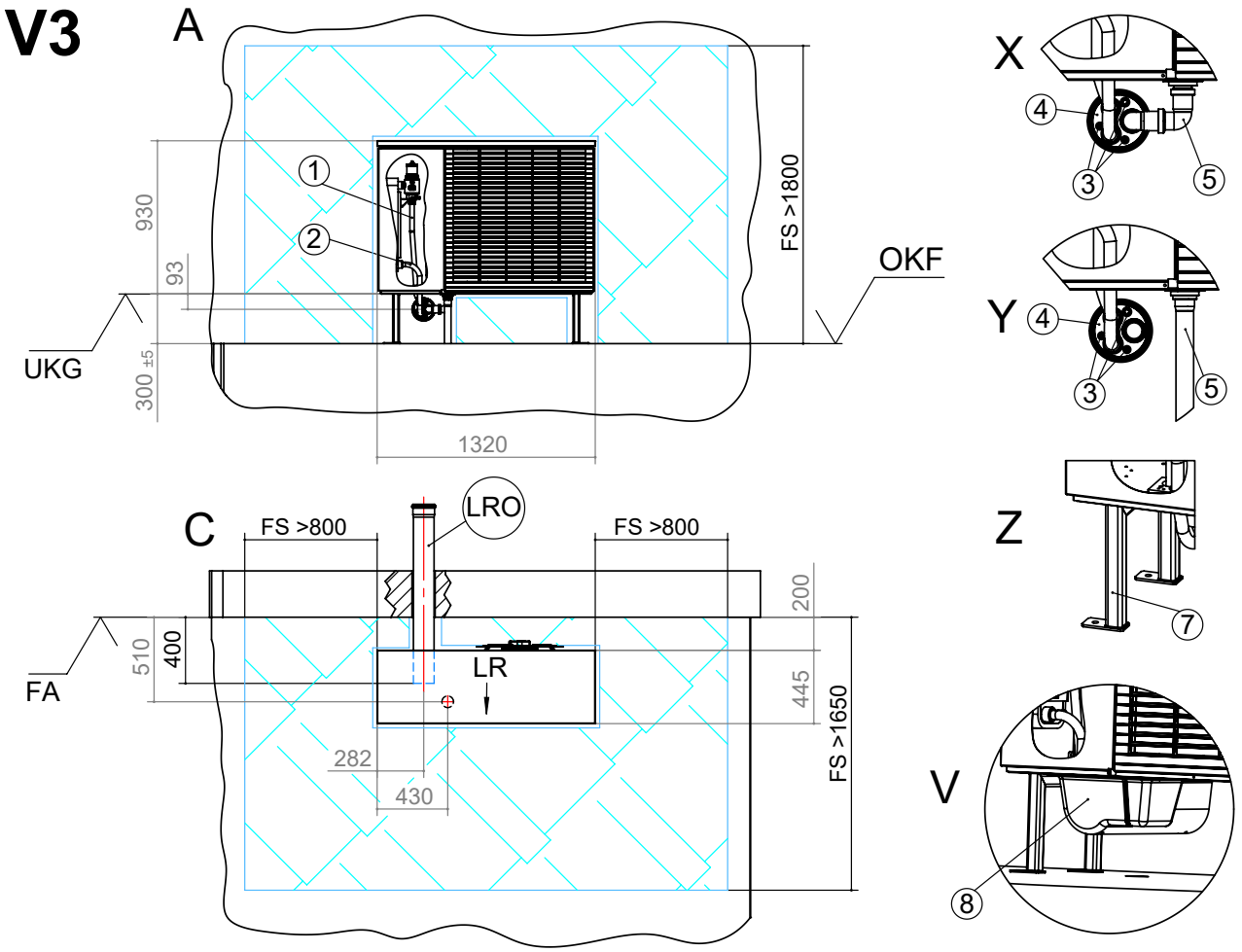
LWD …



Keys: UK819393-2e
All dimensions in mm.

Pos.	Name
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

Pos.	Name
1	Heating water supply (accessory)
2	Heating water return (accessory)
5	Condensate drain/waste trap
6	Bracket for wall attachment (accessory)
8	Cladding of wall duct (accessory)
12	Hydraulic connection line



Keys: UK819393-3e

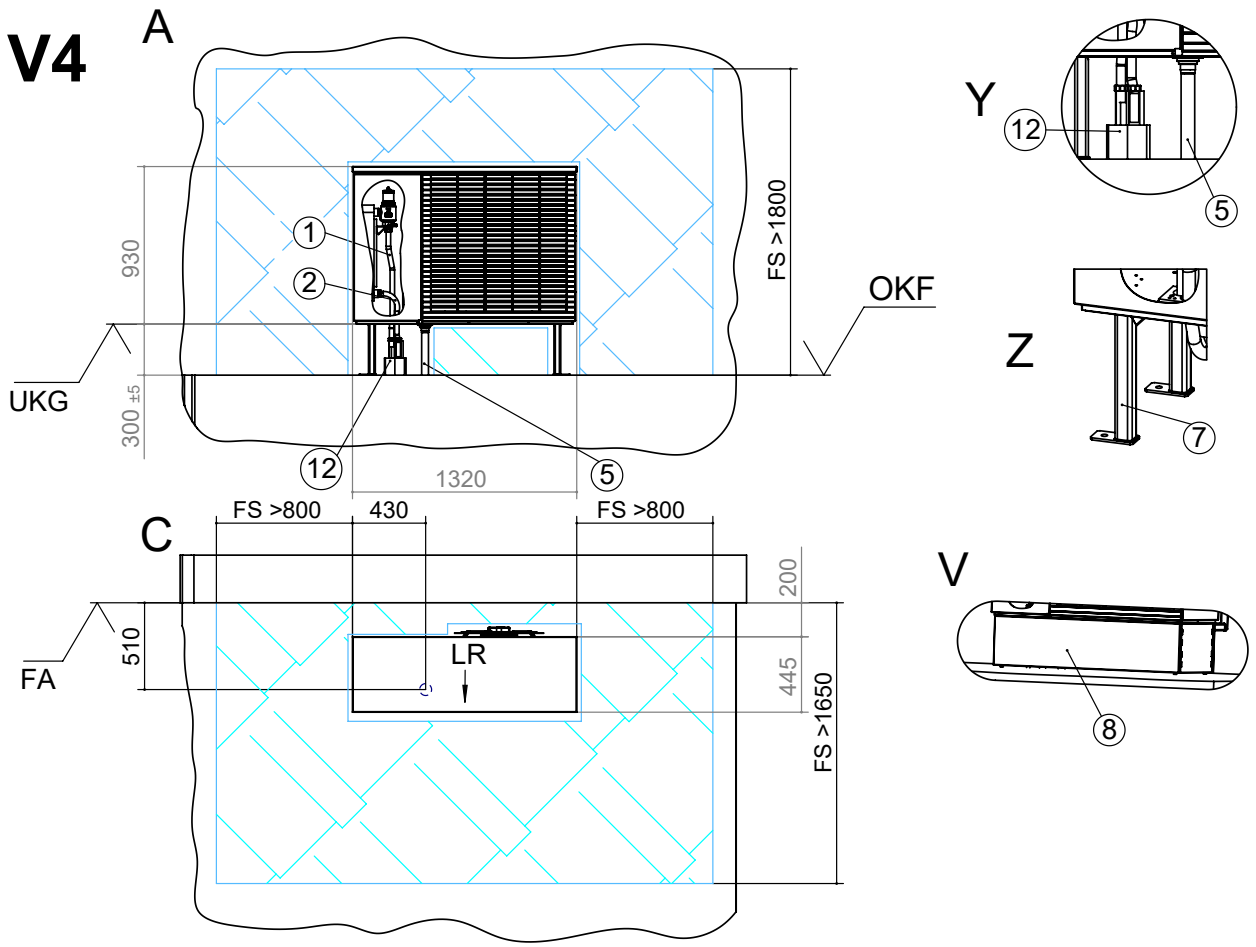
All dimensions in mm.

Pos.	Name
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

Pos.	Name
1	Heating water supply (accessory)
2	Heating water return (accessory)
3	Cable bushing
4	Wall duct (accessory)
5	Condensate drain/waste trap
7	Bracket for floor attachment (accessory)
8	Cladding of wall duct (accessory)

Floor bracket
with hydraulic connection line

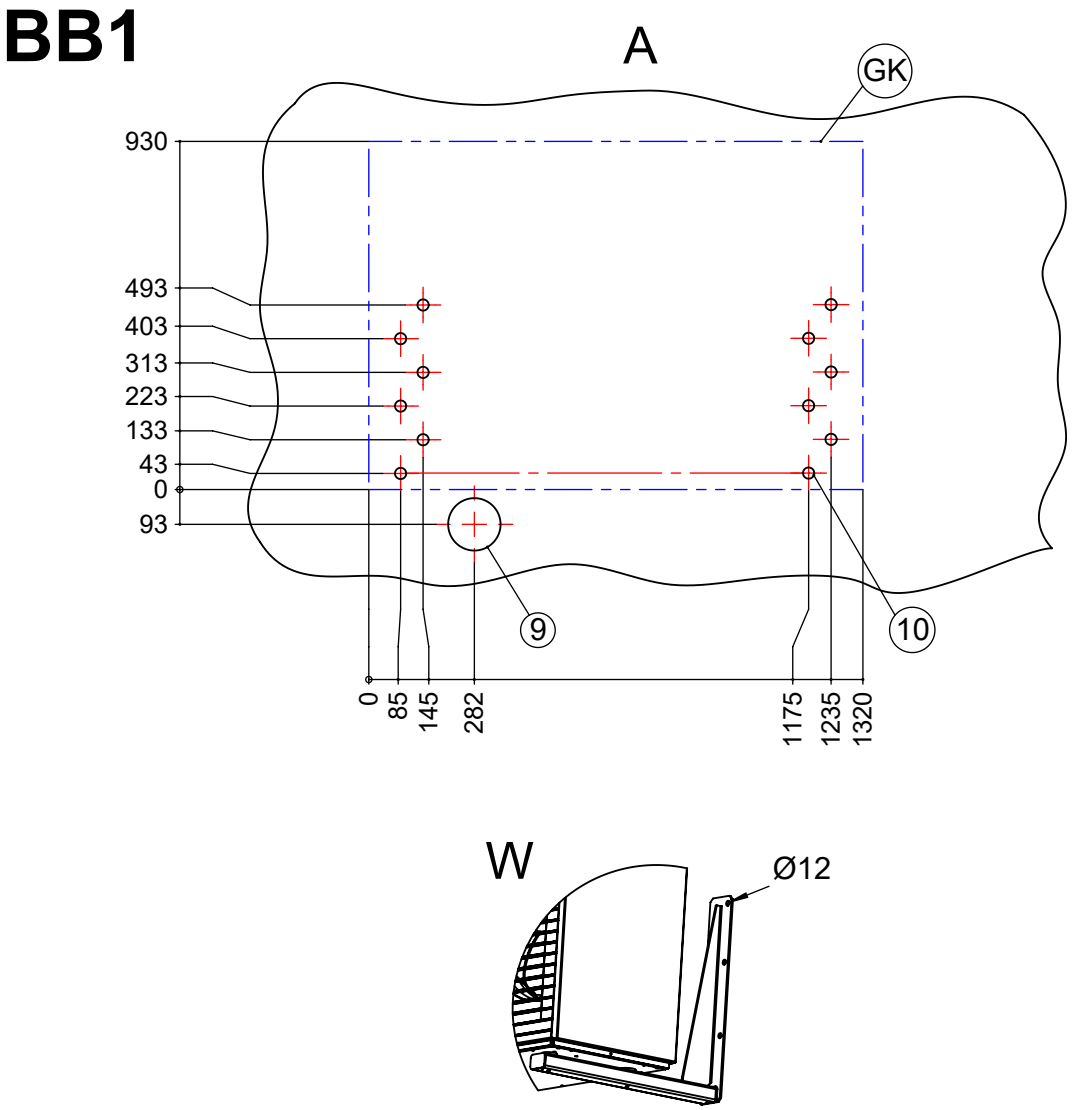
LWD …



Keys: UK819393-4e
All dimensions in mm.

Pos.	Name
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

Pos.	Name
1	Heating water supply (accessory)
2	Heating water return (accessory)
5	Condensate drain/waste trap
7	Bracket for floor attachment (accessory)
8	Cladding of floor bracket (accessory)
12	Hydraulic connection line

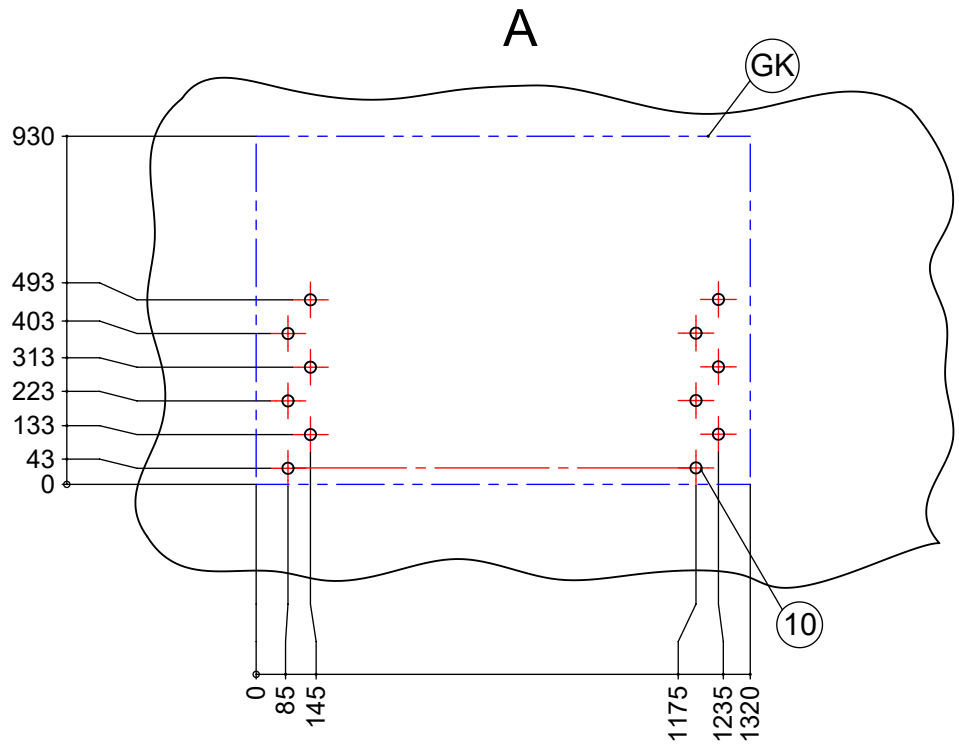


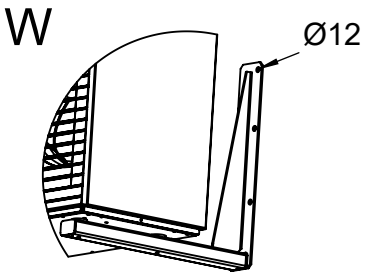
Keys: UK819393-5e
All dimensions in mm.

Pos.	Name
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 KG DN125, Øa 125
10	Mounting bores for wall brackets

Drill template for wall bracket with hydraulic connection line

BB2



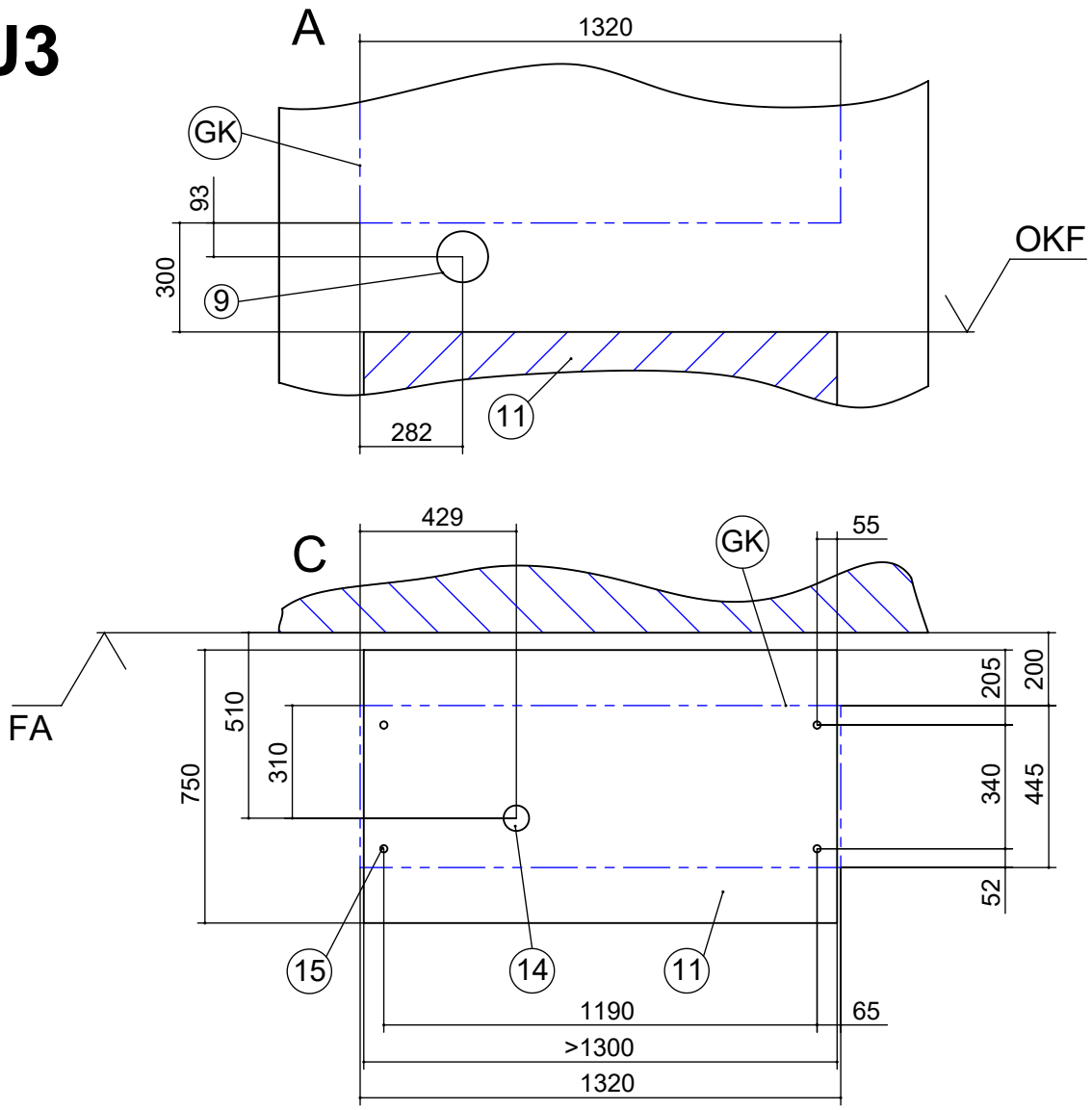


Keys: UK819393-6e

All dimensions in mm.

Pos.	Name
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

FU3



Keys: UK819393-7e

All dimensions in mm.

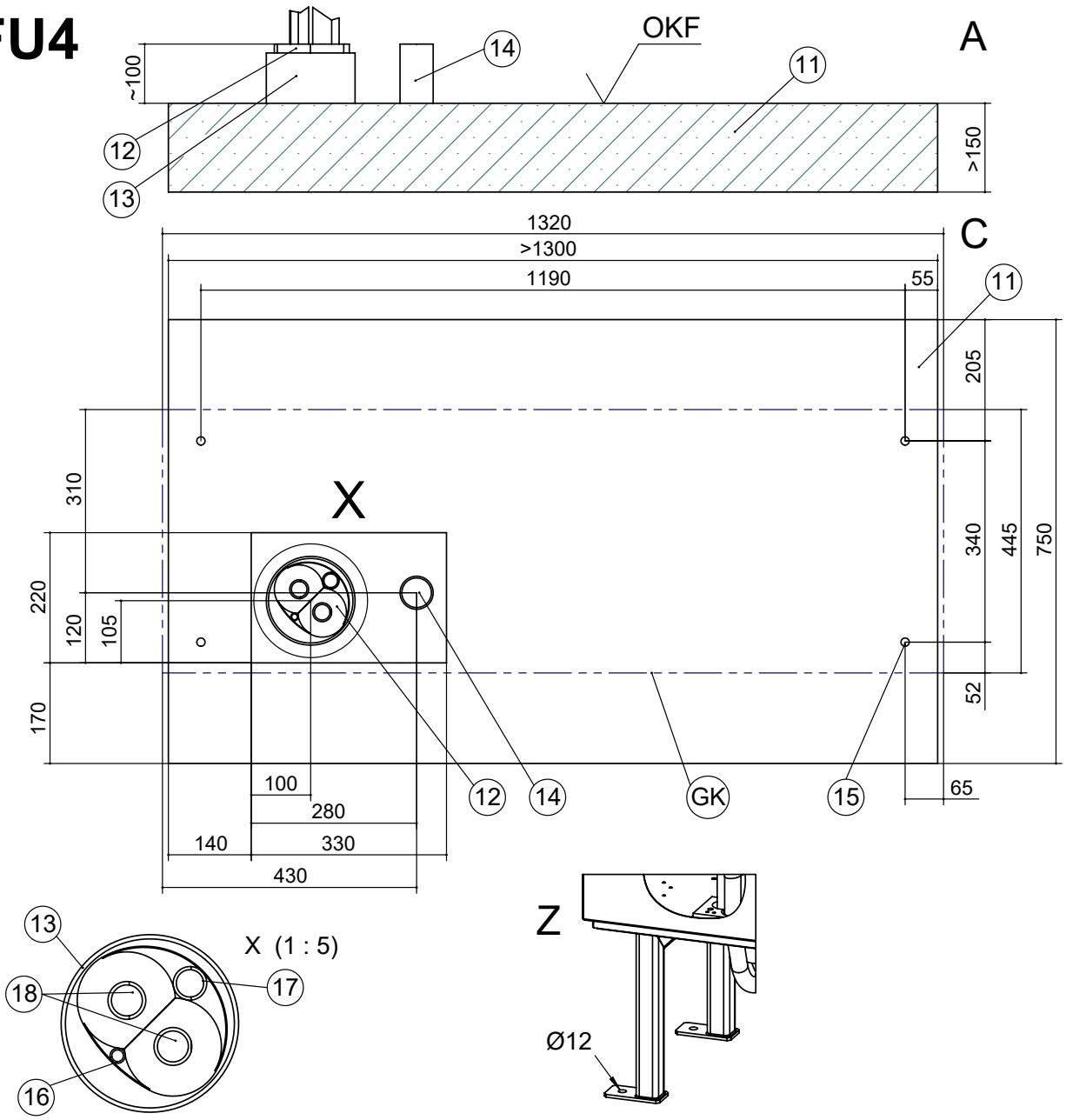
Pos.	Name
FU3	View of foundation for V3
A	Front view
C	Top view
FA	Complete external facade
OKF	Upper edge of foundation
GK	Device contour

Pos.	Name
9	Bore for empty sewer conduit KG DN125, Ø a 125
11	Foundation
14	Condensate drain pipe ≥ Ø 50
15	Mounting bores for floor bracket

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

Foundation for V4
with hydraulic connection line

FU4



Keys: UK819393-8e

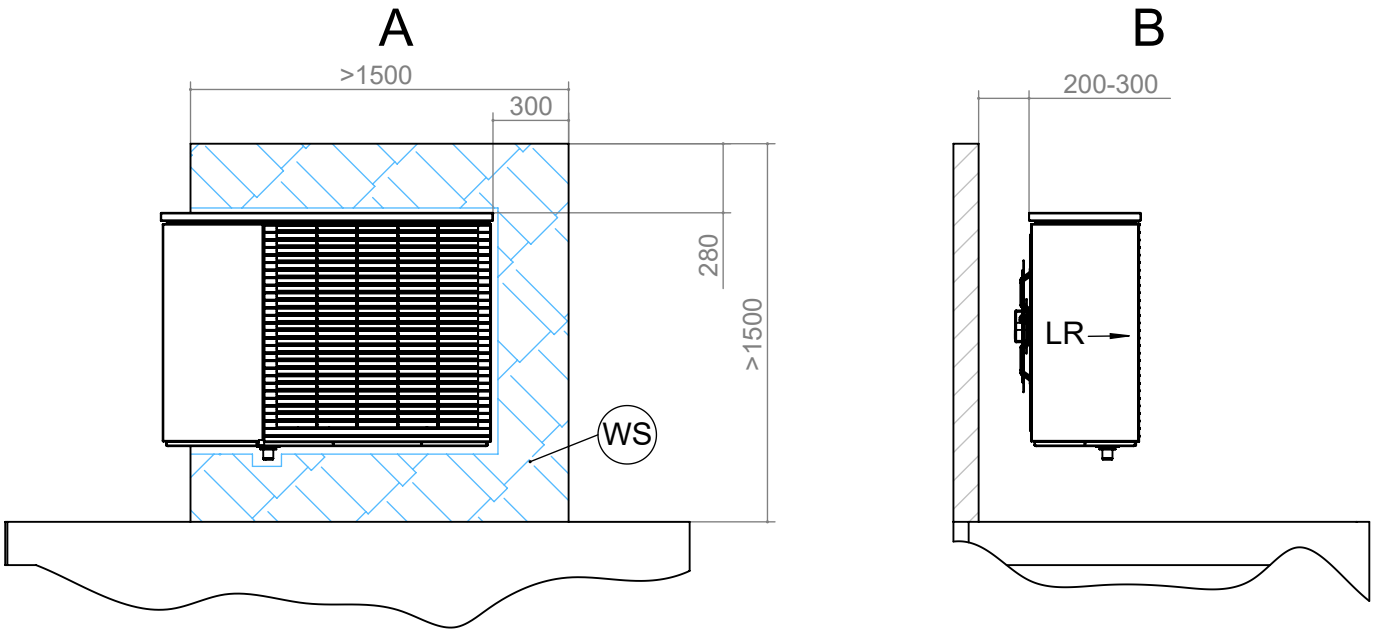
All dimensions in mm.

Pos.	Name
FU4	View of foundation for V4
A	Front view
C	Top view
X	Detailed view X
Z	Detailed view of floor attachment
OKF	Upper edge of foundation
GK	Device contour

Pos.	Name
11	Foundation
12	Hydraulic connection line
13	Empty conduit DN 150 (on site)
14	Condensate drain pipe ≥ Ø 50
15	Mounting bores for floor bracket
16	Empty conduit for bus cable (Ø inside: 9.80)
17	Empty conduit for electric cable (Ø inside: 23.10)
18	Heating water supply and return lines (Ø inside: 26.20)

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

FW1

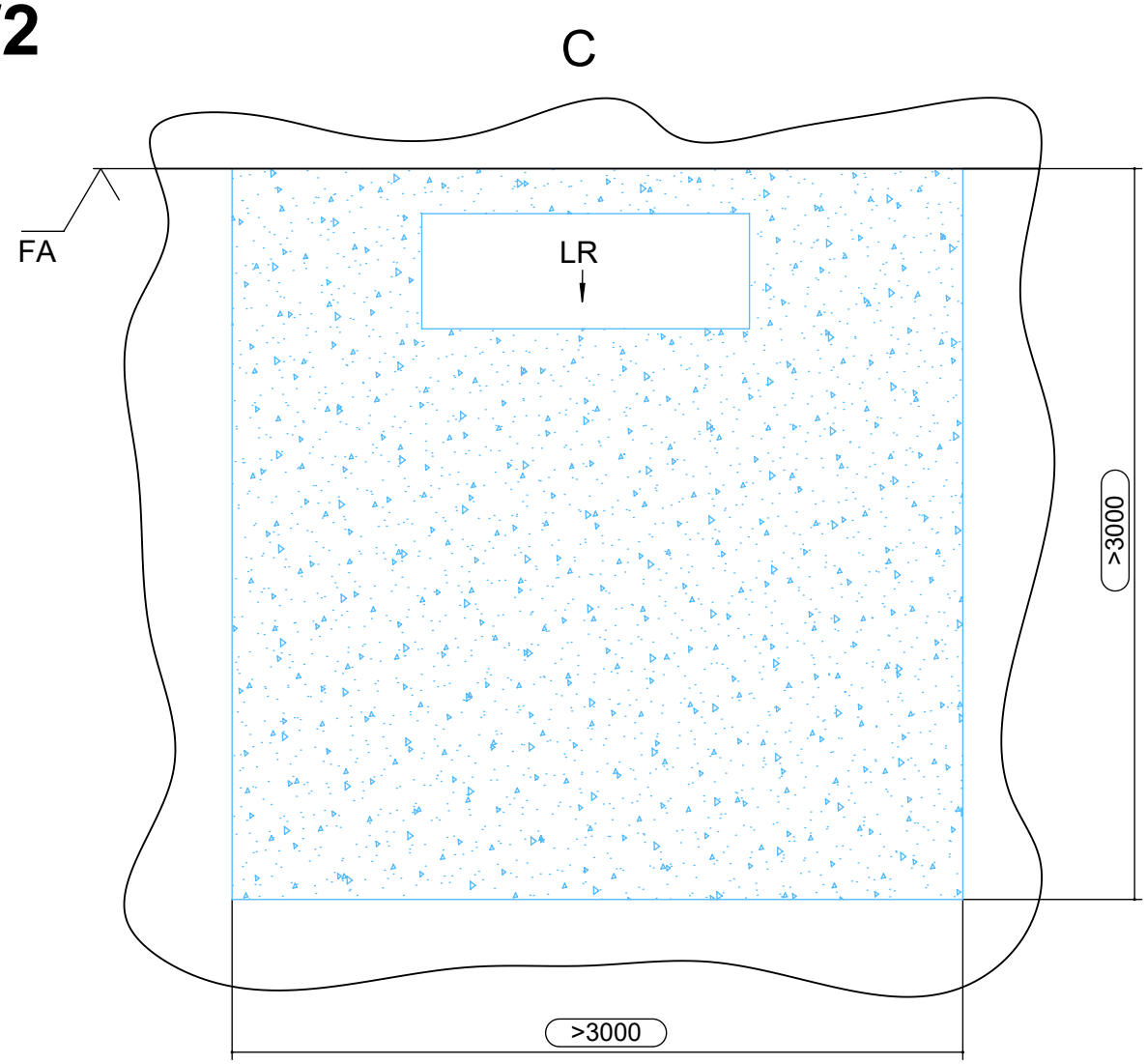


Keys: UK819393-9e

All dimensions in mm.

Pos.	Name
FW1	Outdoor installation in open field only allowed with wind protection!
A	Front view
B	Side view from left
WS	Wind protection, functionally relevant area for heat pump
LR	Air direction

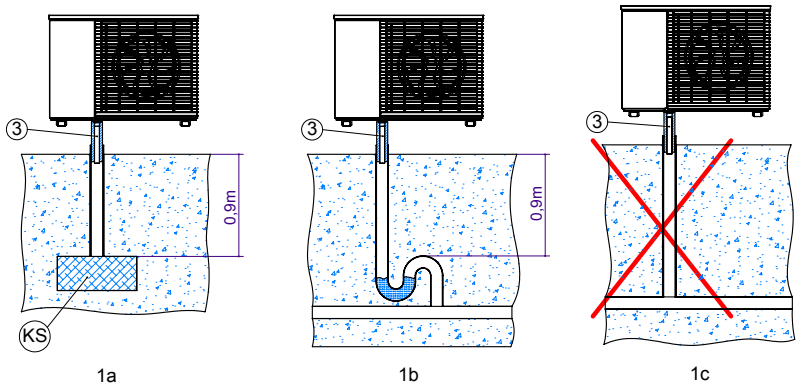
FW2



Keys: UK819393-10e
All dimensions in mm.

Pos.	Name
FW2	Functionally necessary minimum clearances
C	Top view
FA	Complete external facade
LR	Direction of air
>	Minimum clearances

External condensate line connection



1a 1b 1c

Keys: UK819400-1

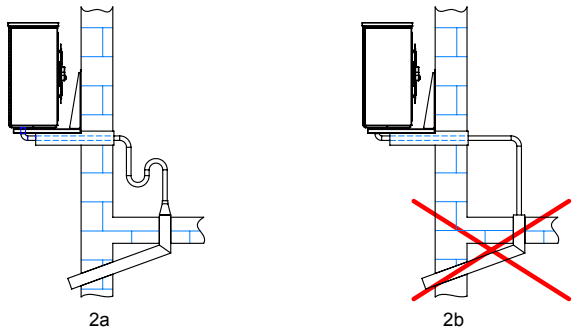
Pos.	Name
KS	Gravel bed for holding up to 50 l condensate per day as buffer zone for seepage
3	Condensate drain pipe DN 40 (on site)

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



2a 2b

Keys: UK819400-2

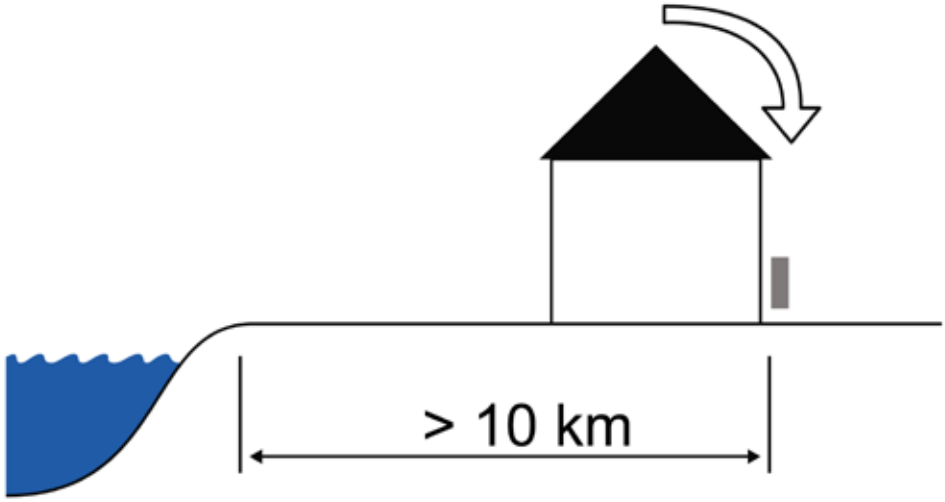
Important: If the condensate line is connected inside a building, a waste trap must be installed with an airtight connection to the drain pipe (see figure 2a).
No additional drain pipes may be connected to the condensate drain pipe of the heat pump. The drain pipe into the sewage system must be clear, 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).

IMPORTANT
The minimum distances necessary for correct and safe operation as well as any service work must be observed.

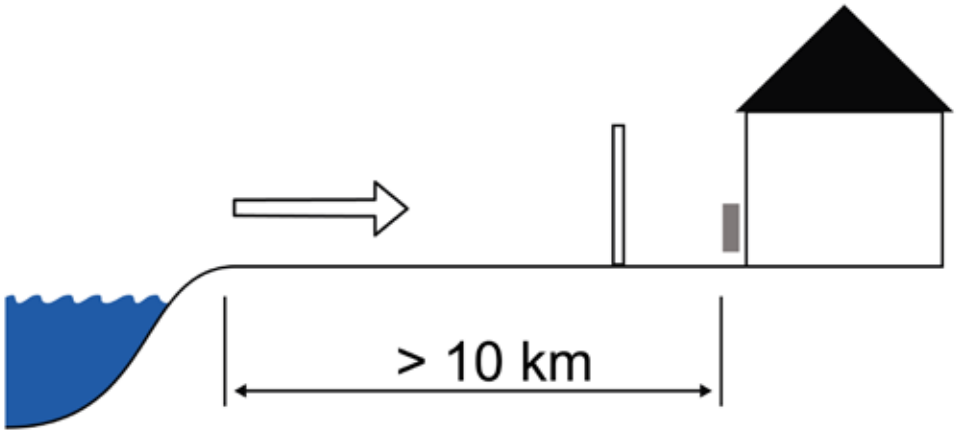
- facing away from the coast / prevailing wind direction

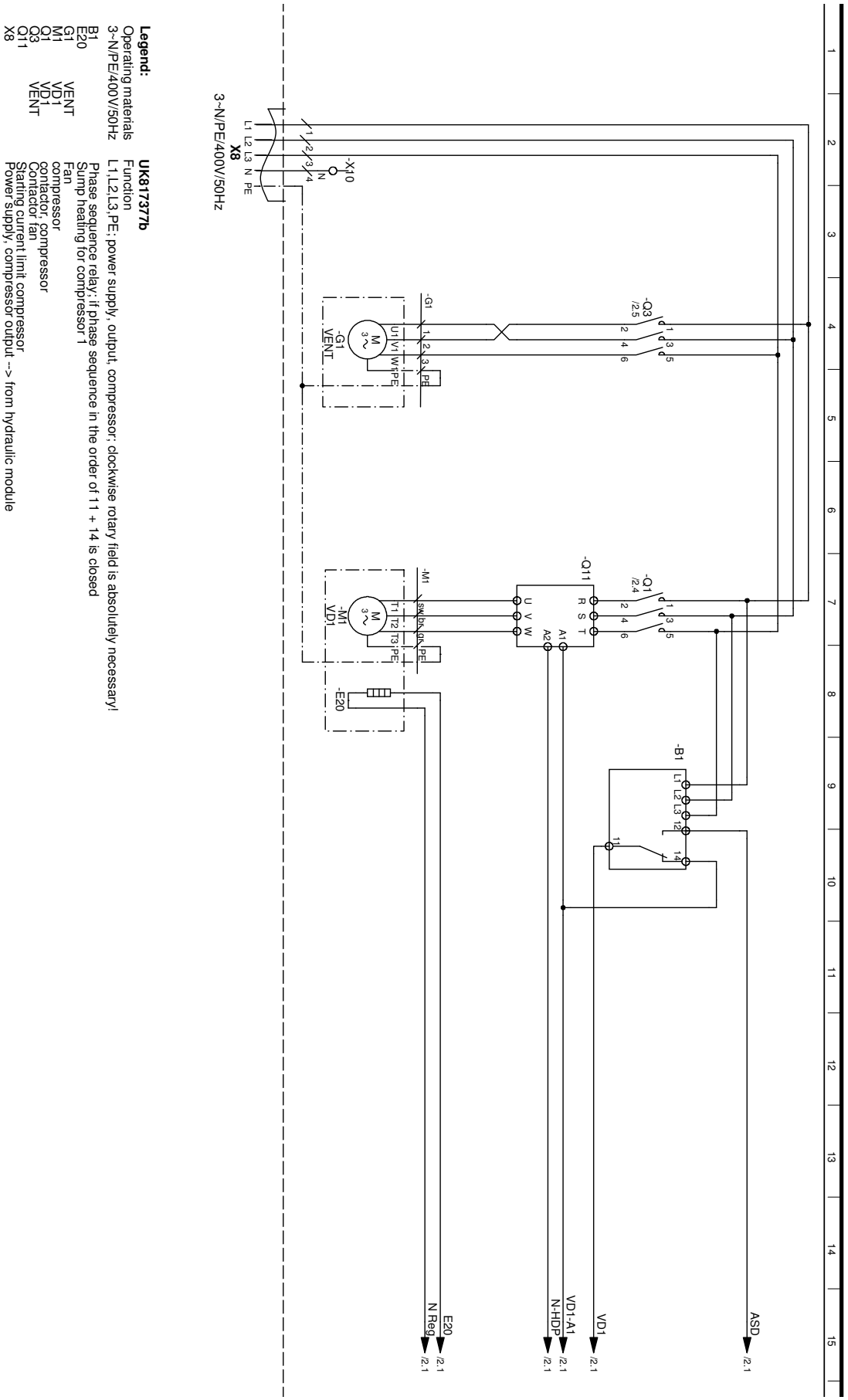
✓ in a sheltered area near a wall
✓ not in open areas
✓ not in sandy surroundings (to avoid the influx of sand)



- on the seaward side

✓ in an area near a wall
✓ an impermeable windbreak resistant to onshore winds is installed
✓ Height and width of the windbreak ≥ 150 % of the device dimensions
✓ not in sandy surroundings (to avoid the influx of sand)




Legend:
Operating materials
3~N/PE/400V/50Hz
B1
E20
G1
M1
Q1
Q3
Q11
X8
VENT
VD1
VD1
VENT
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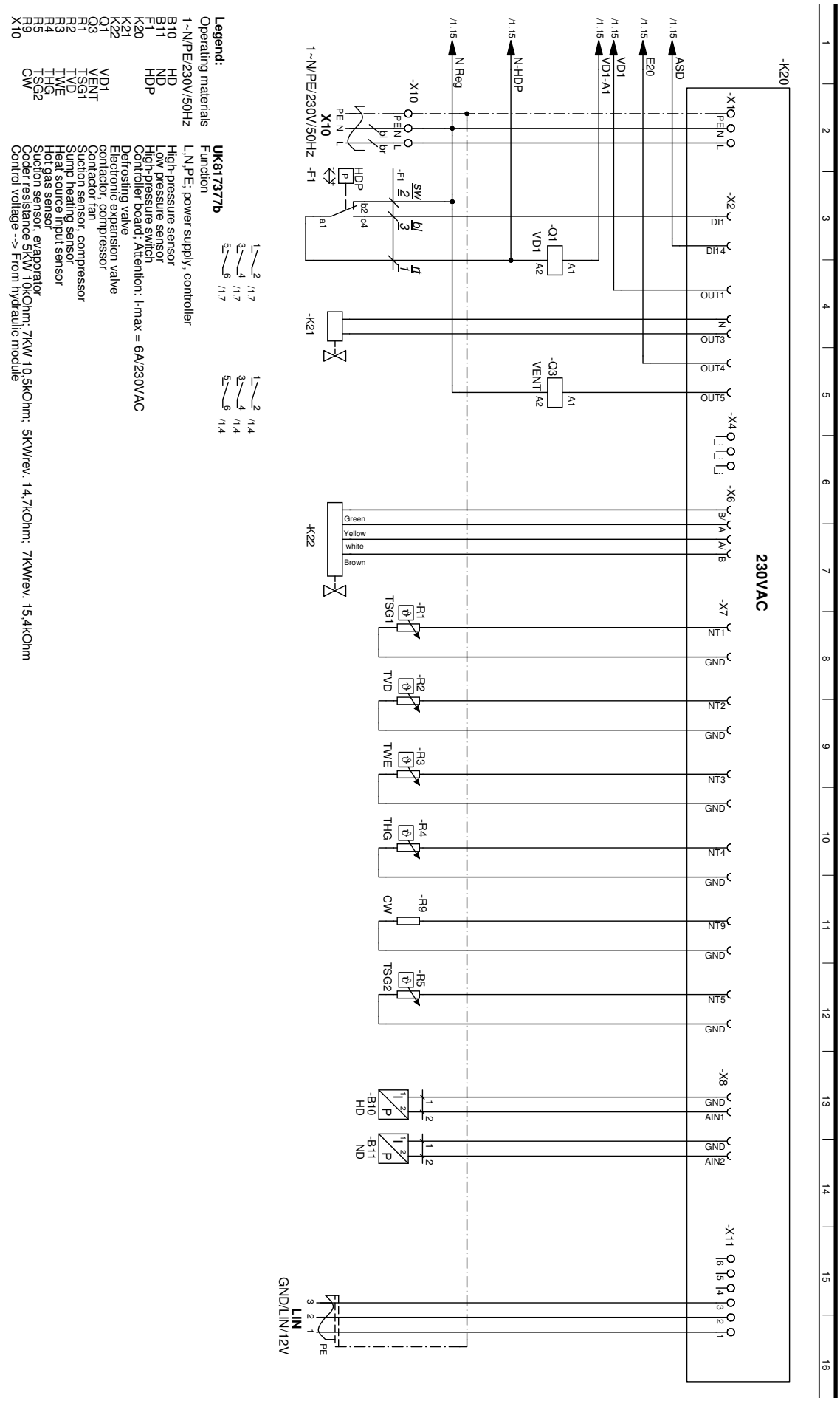
Function
L1,L2,L3,PE; power supply, output, compressor; clockwise rotary field is absolutely necessary!
Phase sequence relay; if phase sequence in the order of 11 + 14 is closed
Sump heating for compressor 1
Fan
compressor
contactor, compressor
Contactor fan
Starting current limit compressor
Power supply, compressor output --> from hydraulic module
3~N/PE/400V/50Hz
X8
L1 L2 L3 N PE
-X10
-G1
VENT
-Q3
/2.5
-M1
VD1
-E20
-Q11
-Q1
/2.4
-B1
E20
N Reg
/2.1
VD1-A1
N-HDP
VD1
ASD



Legend:

Operating materials	Function
1~N/PE/230V/50Hz	L,N,PE; power supply, controller
B10	High-pressure sensor
B11	Low pressure sensor
F1	High-pressure switch
K20	Controller board; Attention: I-max = 6A/230VAC
K21	Defrosting valve
K22	Electronic expansion valve
Q1	contactor, compressor
Q3	Contactor fan
R1	Suction sensor, compressor
R2	Sump heating sensor
R3	Heat source input sensor
R4	Hot gas sensor
R5	Suction sensor, evaporator
R9	Coder resistance 5KW 10kOhm; 7KW 10,5kOhm; 5KWrev. 14,7kOhm; 7KWrev. 15,4kOhm
X10	Control voltage --> From hydraulic module

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