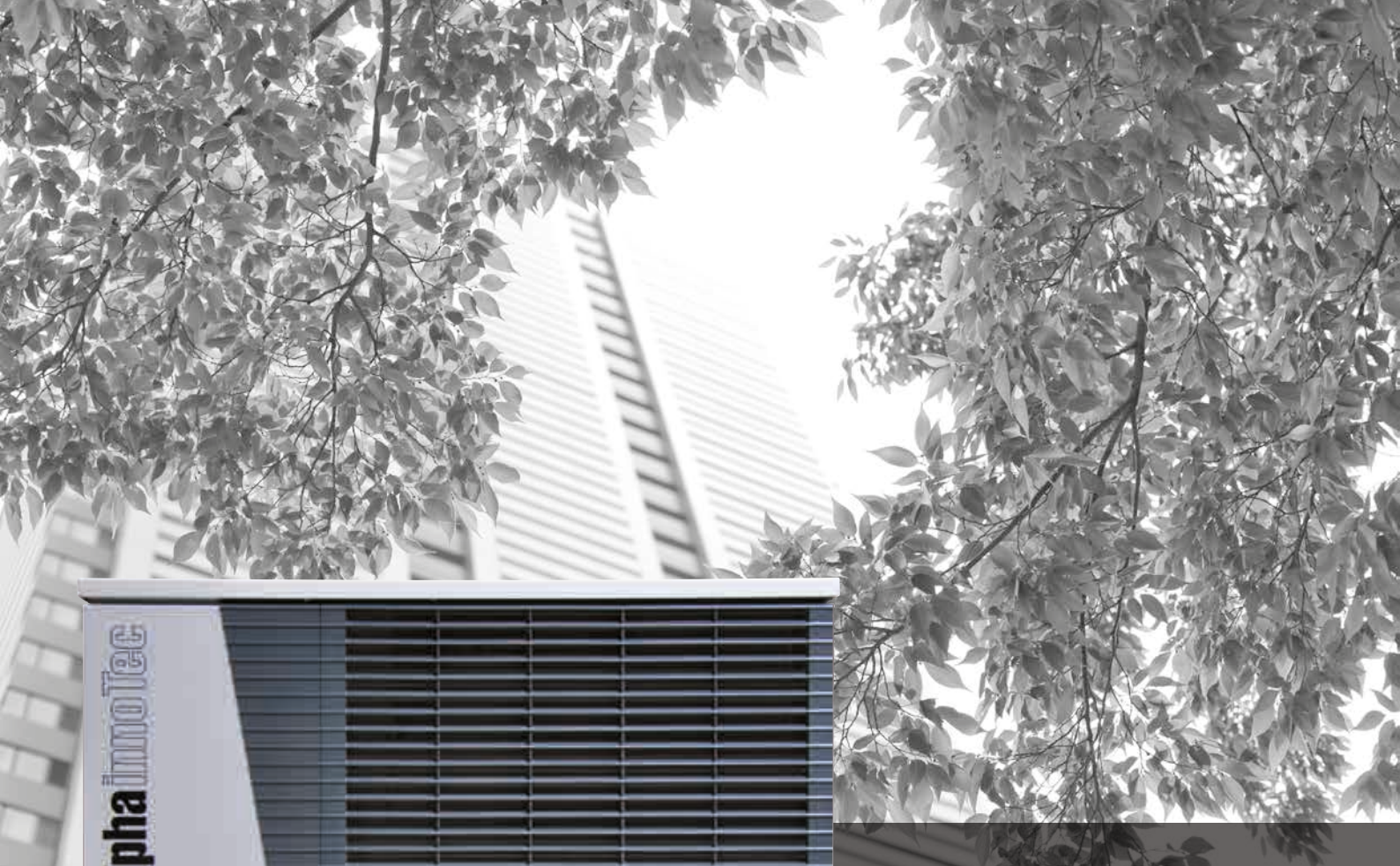


*the better way to heat*



Air/Water Heat Pumps  
Dual / Outdoor Installation

# Operating Manual

LWD 50A • LWD 70A • LWD 90A  
LWD 50A/RX • LWD 70A/RX

83053500KUK – Translation into English of the original German operating manual





## Please read first

This operating manual provides important information on the handling of the unit. It is an integral part of the product and must be stored so that it is accessible in the immediate vicinity of the unit. It must remain available throughout the entire service life of the unit. It must be handed over to subsequent owners or users of the unit.

Read the operating manual before working on or operating the unit. This applies in particular to the chapter on safety. Always follow all instructions completely and without restrictions.

It is possible that this operating manual may contain instructions that seem incomprehensible or unclear. In the event of any questions or if any details are unclear, contact the factory customer service department or the manufacturer's local partner.

Since this operating manual was written for several different models of the unit, always comply with the parameters for the respective model.

This operating manual is intended only for persons assigned to work on or operate the unit. Treat all constituent parts confidentially. The information contained herein is protected by copyright. No part of this manual may be reproduced, transmitted, copied, stored in electronic data systems or translated into another language, either wholly or in part, without the express written permission of the manufacturer.

## Symbols

The following symbols are used in the operating manual. They have the following meaning:



Information for operators.



Information or instructions for qualified technicians.



### **DANGER!**

Indicates a direct impending danger resulting in severe injuries or death.



### **WARNING!**

Indicates a potentially dangerous situation that could result in serious injuries or death.



### **CAUTION!**

Indicates a potentially dangerous situation that could result in medium or slight injuries.



### **ATTENTION**

Indicates a potentially dangerous situation, which could result in property damage.



### **NOTICE.**

Emphasised information.



**Flammable materials**



**Dangerous electrical voltage**



### **ENERGY SAVING TIP**

Indicates suggestions that help to save energy, raw materials and costs.



Reference to other sections of the operating manual.



Reference to other documents of the manufacturer.



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## Intended use

The unit may be used only for the intended purpose. This means - only in combination with the manufacturer's hydraulic module or hydraulic tower "Dual" (not the R variant):

- for heating
- for cooling (RX variants only)
- for domestic water heating

The unit may be operated only within its technical parameters.

 Overview "Technical data/scope of delivery".



### NOTE.

Notify the responsible power supply company of the use of a heat pump or heat pump system.



### ATTENTION

The unit is not suitable for use in IT network systems.



### CAUTION!

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

## Disclaimer

The manufacturer is not liable for losses resulting from any use of the unit which is not its intended use.

The manufacturer's liability also expires:

- if work is carried out on the unit and its components contrary to the instructions in this operating manual.
- if work is improperly carried out on the unit and its components.
- if work is carried out on the unit which is not described in this operating manual, and this work has not been explicitly approved by the manufacturer in writing.
- if the unit or components in the unit have been altered, modified or removed without the explicit written consent of the manufacturer.

## EC conformity

The unit bears the CE mark of conformity.



EC declaration of conformity  
(see manual HMD, HTD).

## Safety

The unit is safe to operate for its intended use. The construction and design of the unit conform to current state of the art standards, all relevant DIN/VDE regulations and all relevant safety regulations.

Every person who performs work on the unit must have read and understood the operating manual prior to starting any work. This also applies if the respective person has already worked with such a unit or a similar unit or has been trained by the manufacturer.

Every person who performs work on the unit must comply with the applicable accident prevention and safety regulations. This applies in particular to the wearing of personal protective equipment.



### DANGER!

**Risk of fatal injury due to electric shock!  
Electrical connections may be installed only by qualified electricians.**

**Before opening the unit, disconnect the system from the power supply and secure it from being switched back on!**



### WARNING!

**Only qualified personnel (trained heating, cooling and refrigerant fitters and electricians) may perform work on the unit and its components.**



### WARNING!

**Observe safety labels on and in the unit.**



### **WARNING!**

**Unit contains flammable refrigerants! If refrigerant leaks an explosion hazard is caused. If this happens:**

- Shut down unit.
- Notify the manufacturer's authorised service centre.
- Keep ignition sources away.



### **ATTENTION**

For safety reasons:

Never disconnect the unit from the power supply, unless the unit is being opened.



### **ATTENTION**

Install the heat pump only outdoors and operate only with outside air as the heat source. Do not restrict or block the air-conducting sides.



Dimensional drawing and installation plan for respective model.



### **WARNING!**

**Never switch on unit if façade parts on the unit are removed.**



### **ATTENTION**

It is not permitted to integrate the heat pump in ventilation systems. The use of the cooled air for cooling purposes is not permitted.



### **ATTENTION**

The ambient air at the place in which the heat pump is installed, as well as the air drawn in as a heat source, must not contain any corrosive constituents!

Constituents (such as ammonia, sulphur, chlorine, salt, sewage gases, flue gases...) can cause damage to the heat pump, which can lead to complete failure / irreparable damage to the heat pump!



### **ATTENTION**

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).



### **NOTE**

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

In addition, a dew-point monitor should be used for cooling.



### **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

## Customer service

For technical assistance, please contact your qualified technician or the manufacturer's local service partner.

For a current list and additional partners of the manufacturer, please visit

DE: [www.alpha-innotec.de](http://www.alpha-innotec.de)

EU: [www.alpha-innotec.com](http://www.alpha-innotec.com)

## Warranty / Guarantee

For warranty and guarantee conditions, please refer to the purchase documents.



### **NOTE.**

Please contact your dealer concerning warranties and guarantees.

## Disposal

When decommissioning the unit, always comply with applicable laws, directives and standards for the recovery, recycling and disposal of materials and components of cooling units.



"Dismantling".



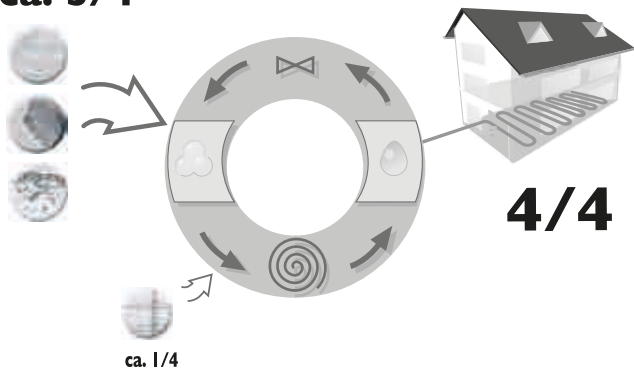
## Operating principle of heat pumps

Heat pumps operate on the same principle as a refrigerator: same technology, only with reversed benefits. The refrigerator extracts heat from foods, which is released into the room through fins on the back.

The heat pump extracts heat from our environment: air, earth or water. The extracted heat is conditioned in the unit and supplied to the heating water. Even when it is extremely cold outside, the heat pump draws enough heat to heat a house.

Example: drawing of a brine/water heat pump with underfloor heating:


ca. 3/4




4/4 = usable energy  
 approx. 3/4 = environmental energy  
 approx. 1/4 = external electrical energy


## Area of utilisation

Taking into consideration the ambient conditions, limits of application and the applicable regulations, every heat pump can be utilised in new or existing heating systems.


 Overview “Technical data / scope of delivery”.

## Heat metering

 Operating manual for the heating and heat pump regulator.

 Hydraulic module (Dual) operating manual.

## Operation

 Hydraulic module (Dual) operating manual.

## Care of the unit


The outer surfaces of the unit can be cleaned with a damp cloth and household cleaning products.

Do not use cleaning or care products that contain abrasives, acids and/or chlorine. Such products would destroy the surfaces and could also damage the technical components of the unit.

## Maintenance of the unit

The cooling circuit of the heat pump requires no regular maintenance.

According to EU regulation (EC) 517/2014, leak inspections and maintenance of a log book are required by law for certain heat pumps!

 Log book for heat pumps, Section “Information on use of the log book”.

The components of the heating circuit and the heat source (valves, expansion vessels, circulating pumps, filters, dirt traps) should be inspected and cleaned as necessary - however, at least once a year - by qualified personnel (heating or cooling system fitters).

The intake and blow-out openings must be inspected for dirt at regular intervals (depending on the installation location) and cleaned, if necessary.

### ! ATTENTION

Regularly check to ensure that the condensate can drain out of the unit unobstructed. To do this, regularly check the condensate tray in the unit and the condensate drain for dirt / blockages and if necessary clean.



Icing of the protective grating

If temperatures fall below freezing and humidity is high at the same time, ice can form on the protective grating. In order to ensure problem-free operation, the ice must be removed at regular intervals.

It is best to arrange a maintenance agreement with a heating installation company. The company will conduct the required maintenance at regular intervals.



### WARNING!

**Do not use any objects, other than those allowed by the manufacturer, to accelerate the thawing process.**



### NOTE.

Any person who works on the refrigerant circuit must have a qualification certificate issued by a body accredited by the industry.

## CLEANING AND FLUSHING OF UNIT COMPONENTS



### CAUTION!

**Unit components may be cleaned and flushed only by customer service personnel authorised by the manufacturer. Use only liquids recommended by the manufacturer.**

**Rinsing of the liquefier with chemical cleaning agents must be followed by neutralisation of residue and intensive flushing with water. Always observe the technical data of the manufacturer of the heat exchanger.**

## Malfunctions

In the event of a fault, you can read out the cause of the fault from the diagnostic program of the heating and heat pump regulator.



Operating manual of the heating and heat pump regulator.



### WARNING!

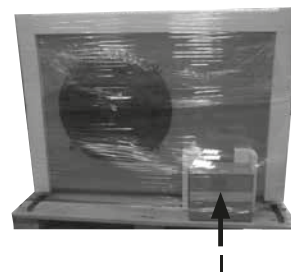
**Only customer service personnel authorised by the manufacturer may carry out service and repair work on the components of the unit.**

## Scope of delivery

LWD 50A(RX), LWD 70A(RX) AND LWD 90A:



1 bus cable, 1 load cable,  
1 control cable.  
Cable connected on heat pump side.



1 additional box:

- 1 condensate pipe socket + 3 fixing screws
- 1 long Torx bit for façade screws



### NOTE.

The outdoor sensor is included with the hydraulic module.

- ① Check the delivery for outwardly visible signs of damage...
- ② Check to make sure that delivery is complete... Any defects or incorrect deliveries must be reported immediately.



Overview "Technical data / scope of delivery".

## FUNCTIONALLY RELEVANT ACCESSORIES



### CAUTION.

Use only original accessories from the manufacturer of the unit.

Hydraulic module (internal part) with heat pump regulator, electric heating element, expansion vessel, heating circulating pump, safety assembly, insulated housing, stopcocks and drain.

The heat pump is not a functional unit until the hydraulic module is installed.

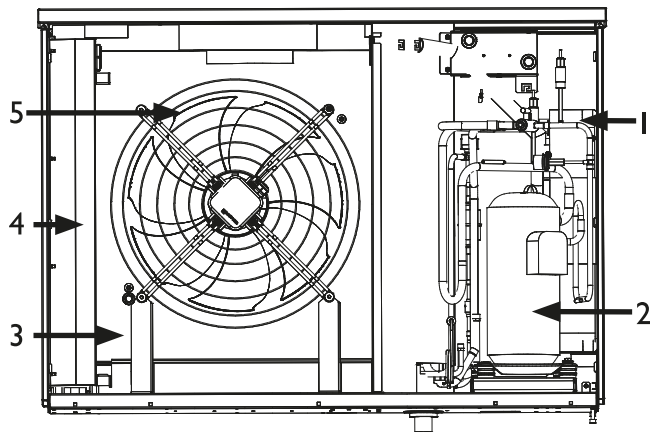


## ADDITIONAL ACCESSORIES

- Wall penetration with vibration insulation
- Wall bracket
- Floor bracket
- Vibration insulation
- buffer storage
- overflow valve
- covering for Wall bracket
- covering for Floor bracket
- hydraulic connecting line

If the cable length of 5m is not long enough for outdoor open field installation, an extension kit (25 m) can be ordered.

## MAIN COMPONENTS



- 1 condenser
- 2 compressor
- 3 evaporator
- 4 switch
- 5 fan

## Installation and assembly

The units can either be installed mounted on the floor or mounted on the wall

The following applies to all work to be done:

**NOTE.**  
Always comply with applicable accident prevention regulations, statutory regulations, ordinances and directives.

**NOTE.**  
Observe the sound levels of the respective model.

Overview “Technical data/scope of delivery”, “Sound” section and “Sound level” overview.

## INSTALLATION LOCATION

**! ATTENTION**  
Install the unit only outside buildings.

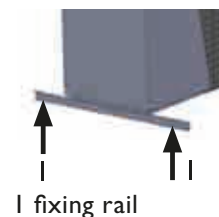
Dimensional drawing, installation plans and protection areas for the respective model.

## TRANSPORT TO INSTALLATION LOCATION

To prevent damage during transport, always transport the unit to final installation location in its original packaging, using a lifting truck, forklift or crane.

**NOTE.**  
The unit is delivered on a pallet with fixing rails. The fixing rails can be used for transport.

**! CAUTION.**  
Always wear protective gloves if using the fixing rail for transport!



**! CAUTION!**  
Several people are required to transport the unit. Do not underestimate the weight of the unit.

Overview “Technical data/scope of delivery”, “General unit data” section.

**! ATTENTION**  
Never use components and hydraulic connections on the unit for transport purposes.

**! ATTENTION**  
Do not tilt the unit more than a maximum of 45° (in any direction).





## SOUND

The noise emission from 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.



### NOTE.

The following sound pressure levels are calculated values. Other constellations, adjoining other buildings or even reflecting surfaces may lead to a level increase. An exact specification of each sound pressure level is possible only through a measurement spot when the heat pump is already installed.

The following sound pressure levels result, depending on the distance and installation variant with directivity factor Q-

<b>LWD 50A</b>																				
Distance in m	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
sound pressure level Q2	49	43	39	37	35	33	32	31	30	29	28	27	27	26	25	25	24	24	23	23
sound pressure level Q4	52	46	42	40	38	36	35	34	33	32	31	30	30	29	28	28	27	27	26	26
sound pressure level Q8	55	49	45	43	41	39	38	37	36	35	34	33	33	32	31	31	30	30	29	29

<b>LWD 50A/RX</b>																				
Distance in m	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
sound pressure level Q2	49	43	39	37	35	33	32	31	30	29	28	27	27	26	25	25	24	24	23	23
sound pressure level Q4	52	46	42	40	38	36	35	34	33	32	31	30	30	29	28	28	27	27	26	26
sound pressure level Q8	55	49	45	43	41	39	38	37	36	35	34	33	33	32	31	31	30	30	29	29

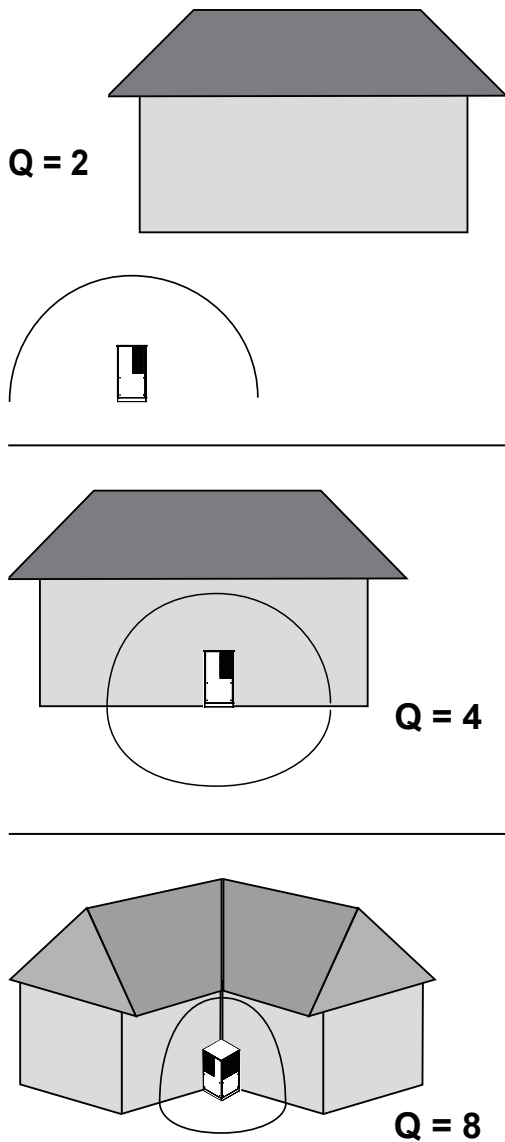
<b>LWD 70A</b>																				
Distance in m	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
sound pressure level Q2	49	43	39	37	35	33	32	31	30	29	28	27	27	26	25	25	24	24	23	23
sound pressure level Q4	52	46	42	40	38	36	35	34	33	32	31	30	30	29	28	28	27	27	26	26
sound pressure level Q8	55	49	45	43	41	39	38	37	36	35	34	33	33	32	31	31	30	30	29	29

<b>LWD 70A/RX</b>																				
Distance in m	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
sound pressure level Q2	49	43	39	37	35	33	32	31	30	29	28	27	27	26	25	25	24	24	23	23
sound pressure level Q4	52	46	42	40	38	36	35	34	33	32	31	30	30	29	28	28	27	27	26	26
sound pressure level Q8	55	49	45	43	41	39	38	37	36	35	34	33	33	32	31	31	30	30	29	29

<b>LWD 90A</b>																				
Distance in m	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
sound pressure level Q2	51	45	41	39	37	35	34	33	32	31	30	29	29	28	27	27	26	26	25	25
sound pressure level Q4	54	48	44	42	40	38	37	36	35	34	33	32	32	31	30	30	29	29	28	28
sound pressure level Q8	57	51	47	45	43	41	40	39	38	37	36	35	35	34	33	33	32	32	31	31



The directivity factor  $Q$  for the different installation variants:

**Q2:** Outdoor installation without sound reflection

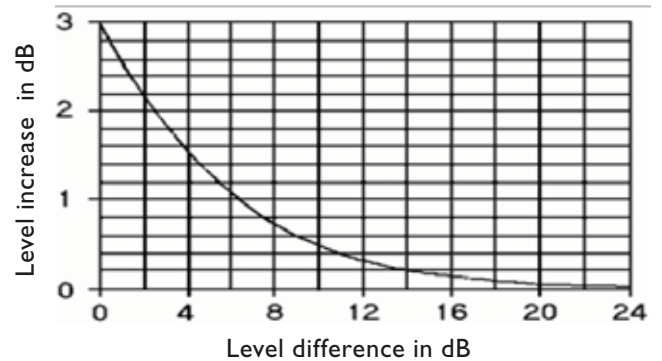
**Q4:** Air outlet/air intake at the wall

**Q8:** Air outlet/air intake at the wall (corner installation less than 3 m, or opposite wall less than 5 m, or roof less than 3 m. There may be a maximum of two walls or roofs, otherwise, an allowance of 3 dB(A) must be added for each additional wall or roof.)

In case of 2 or more units of the same heat pump type, the respective level increase must be added to the corresponding sound pressure level from the following table

Number of n equally loud sound sources	Level increase $\Delta L$ in dB
1	0,0
2	3,0
3	4,8
4	6,0
5	7,0
6	7,8
7	8,5
8	9,0
9	9,5
10	10,0
12	10,8

In case of different, not equally loud units, the level increase is read off the following diagram:



Example: If the level difference between two unequal sound sources is 5 dB, the level increase is an additional 1.2 dB.



## INSTALLATION

### PREPARING THE INSTALLATION, TOGETHER WITH THE WALL PENETRATION

To connect the outdoor unit with the indoor part (hydraulic module), an opening must be provided for the wall penetration (accessory) or a hole must be made to enable the KG pipe  $\varnothing 125$  mm (= accessory Wall penetration) to be installed. If the wall penetration is not yet available, it is possible to work in advance using a standard KG pipe, 1m long DN 125.



#### NOTE.

Always keep to the installation plan for the respective model. Observe minimum spacings and protection areas.



Installation plan and dimensional drawings and protection areas for the respective model.



#### CAUTION.

**In the air outlet area the air temperature is ca. 5K below the ambient temperature. Under certain climatic conditions, therefore, an ice layer can form in the air outlet area. Install the heat pump so that the air blower does not blow in the direction of footpaths.**



#### CAUTION.

**Several people are required to install the unit.**



#### NOTE.

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



#### NOTE.

Always ensure you keep to the specified distance from the wall, from wall openings, windows, light wells and similar.



See "Dimensional drawings and protection areas".



#### NOTE.

If the wall penetration is not used, the LIN bus cable must be laid through a separate conduit, separated from the other cables. The two other cables must also be laid on site using reserve conduits.



#### NOTE.

Always ensure minimum wall area is available. Always keep to the installation plan. Note and keep to minimum spacings.

### INSTALLATION WITH WALL BRACKET



See "Installation instructions wall bracket".



See "Wall penetration installation instructions".



See "Installation plans/minimum spacings/drilling pattern".

The wall bracket is only suitable for solid, load-bearing walls. In the case of wooden stud walls with panelling the floor-mounted bracket should be used to avoid possible structurally-borne sound transfer to the interior rooms

### INSTALLATION ON FLOOR BRACKET

It is possible to install the unit near a wall or in an open space. The heat pump should ideally be installed in a wind-protected position. If this is not possible it is advisable to install it transversely to the main wind direction or air routing with the main wind direction.

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



See "Installation instructions floor bracket".



See "Wall penetration installation instructions".



See "Installation plans/minimum spacings/view of foundation".



#### NOTE.

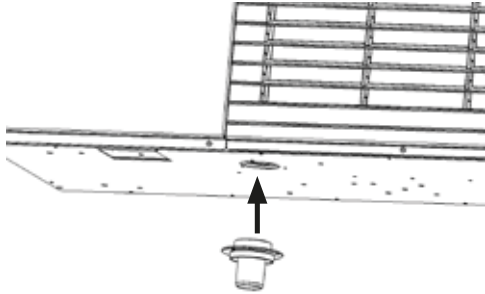
If installing with wall penetration, ensure the correct distance from the wall is maintained.

### CONDENSATE DRAIN

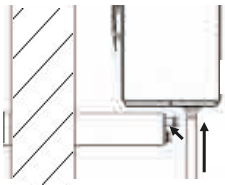
The condensate from the air must be discharged frost-free through a plastic condensate pipe with a minimum diameter of 40 mm. If subsoils are permeable to water, it is sufficient to lay the condensate pipe vertically at least 90 cm into the ground.



Use the screws provided to install the condensate connection socket, included with the unit, to the condensate drain at the underside of the unit.



- ① Outdoors:  
Connect the condensate pipe (wall penetration accessory) to the condensate connection socket.



See “Wall penetration installation instructions”.

The condensate pipe may not be laid alone; it must be inserted into a second pipe suitable for laying in the ground (for example, KG pipe), before it is lowered into the ground!

The connection of both pipes must be sealed. It must be possible to adjust the length. The pipe at the unit must not sit on the ground, but must be able to be moved.

**! ATTENTION**  
Ensure adequate percolation of the discharged condensate into the ground!

- ② To the inside:  
Insert the condensate pipe (wall penetration accessory) through the wall penetration (accessory-use lubricant) and connect to the supplied plastic elbow at the condensate connection socket.

See “Wall penetration installation instructions”.

**i NOTE.**  
If the condensate pipe is not laid to the inside, the openings in the wall penetration at the front and back must be closed off with the plugs supplied.

## CONNECTION TO THE HEATING CIRCUIT

- ① Flush heating circuit thoroughly before connecting the unit to the heating circuit...

**i NOTE.**  
**Contamination and deposits in the heating circuit can cause malfunctions.**

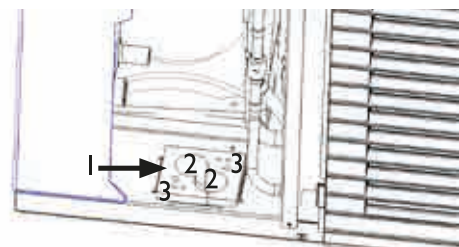
- ② Install shut-off devices for the hot water outflow (forward flow) and hot water inflow (return flow) on the heat pump side.

**! ATTENTION**  
Connect the unit to the heating circuit according to the hydraulic diagram for the respective model.

“Hydraulic connection” instructions.

**i NOTE.**  
Check to make sure that the diameters and lengths of the pipes for the heating circuit (including the pipes laid in the ground between the heat pump and the building!) are adequately dimensioned.

Push the sealing plate supplied into the recess in the housing floor:



- 1 Sealing plate
- 2 Leadthroughs for heating water
- 3 Leadthroughs for electric cables

**! ATTENTION**  
When installing the connections, always secure the connections on the unit against twisting, to prevent damage to the copper pipes inside the unit.

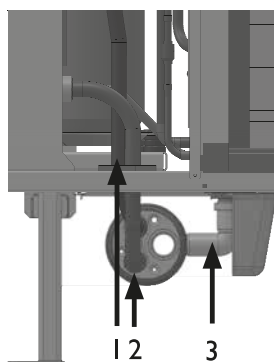
- ③ Connect the unit to the fixed piping of the heating circuit via vibration decouplers (vibration installation - stainless steel corrugated pipes,



accessory). You must install them to prevent the transfer of structural borne sound to the fixed piping.



See “Installation instructions vibration insulation”.



- 1 Connection, heating water outlet (forward flow)
- 2 Connection, heating water inlet (return flow)
- 3 Condensation water pipe

- ④ Vibration insulation (accessory or wall penetration scope of delivery):

Feed the stainless steel corrugated pipes through the seal in the bottom of the housing and screw onto the two pipes in the wall penetration. Install flow line first, then return flow.

### ! CAUTION.

If a wall penetration is not used, then lay the outdoor fixed piping of the heating circuit below the frost limit in the ground.

## Electrical connections

The following applies to all work to be done:



### DANGER!

**Risk of fatal injury due to electric shock!**  
**All electrical connections must be carried out by qualified electricians only.**  
**Before opening the unit, disconnect the system from the power supply and secure it from being switched back on!**



### WARNING!

**During installation and while carrying out electrical work, comply with the relevant EN-, VDE and/or local safety regulations. Comply with technical connection requirements of the responsible power supply company (if required by the latter)!**



### ATTENTION.

Ensure clockwise rotary field of the load power supply (compressor).  
Operation with incorrect rotary direction of the compressor can cause serious, irreparable damage to the compressor.



### ATTENTION.

The power supply for the heat pump must be equipped with a three-phase automatic circuit-breaker with at least 3mm contact spacing to IEC 60947-2.  
Note the level of the tripping current.



Overview “Technical data/scope of delivery”, “Electrics” section.



See “Operating instructions hydraulic module or hydraulic module Dual or hydraulic tower Dual”.



## Pressure relief



See “Operating instructions hydraulic module”, “Safety assembly, expansion vessel” section.

## Overflow valve

Always use an overflow valve for tanks integrated in series to ensure the minimum flow rate of the heating circuit volume flow through the heat pump. The overflow valve must be dimensioned so that the minimum flow rate of the volume flow through the heat pump is ensured when the heating circuit is shut off.

## Buffer tank

The hydraulic connection of the heat pump requires a buffer tank in the heating circuit.

Minimum size 60l.

Only one separating tank integration (vapour diffusion insulated) is allowed for the LWD 50A/RX and LWD 70A/RX.



“Hydraulic connections” documents

## Circulating pumps

### IN THE HYDRAULIC MODULE.



“Hydraulic module or hydraulic module Dual” operating manual.

## Domestic water heating

Water heating with the heat pump requires an additional hot water circuit, parallel to the heating circuit. When installing, make sure that the domestic hot water charge is not fed through the buffer tank of the heating circuit.



“Hydraulic connection” instructions.

## Domestic hot water tank

If the heat pump is to be used for domestic water heating, you must integrate special domestic hot water tanks in the heat pump system. Choose a storage volume so that the required quantity of hot water is available even during a power cut.



### NOTE.

The heat exchanger surface of the domestic hot water tank must be dimensioned so that the heating capacity of the heat pump is transferred with minimum spread.

We offer a variety of domestic hot water tanks for you to choose from. They are optimised for use with your heat pump.



### NOTE.

Integrate the hot-water tank in the heat pump system according to the hydraulic diagram for your system.



“Hydraulic connection” instructions.



## Rinsing, filling and bleeding the system



See “Operating instructions, hydraulic module or hydraulic module Dual”.



### **CAUTION.**

The system must be absolutely free from air before commissioning.

## WATER QUALITY OF THE FILL AND ADDITIONAL WATER IN HOT WATER HEATING SYSTEMS

### ACCORDING TO VDI 2035 PART I AND II

Use of modern, energy-efficient heat pump systems is becoming increasingly widespread. Their ingenious technology enables these systems to achieve very good efficiencies. The decreasing space available for heat generators has led to the development of compact units with increasingly smaller cross-sections and high capacities. This means the complexity of the systems and the material diversity are also increasing, which plays an important role especially in their corrosion behaviour. The heating water not only affects the efficiency of the system, but also the life of the heat generator and the heating components of a system.

The guide values of VDI 2035 Part I and Part II must therefore be complied with as minimum requirements for proper operation of the systems. Our practical experience has shown that the safest and most trouble-free running of the systems is achieved with so-called low-salt operation.

VDI 2035 Part I gives important information and recommendations regarding scaling and its prevention in heating and domestic hot water heating systems.

VDI 2035 Part II primarily deals with the requirements for reducing heating water corrosion in hot water heating systems.

### PRINCIPLES OF PART I AND PART II

The occurrence of scaling and corrosion damage in hot water heating systems is low, if

- proper planning and commissioning is carried out
- the system is closed in corrosion terms
- adequately dimensioned pressurising is integrated
- the guide values for the heating water are complied with
- and regular servicing and maintenance are carried out.

A system log should be kept, in which the relevant planning data is entered (VDI 2035).

### DAMAGE THAT CAN OCCUR IN CASE OF NON-COMPLIANCE

- Malfunctions and the failure of components (e.g. pumps, valves)
- Internal and external leaks (e.g. from heat exchangers)
- Cross-section reduction and blockaging of components (e.g. heat exchanger, pipes, pumps)
- Material fatigue
- Gas bubbles and gas cushion formation (cavitation)
- Negative effect on heat transfer (formation of coatings, deposits) and associated noises (e.g. boiling noises, flow noises)

### LIMESCALE – THE ENERGY KILLER

Filling with untreated drinking water inevitably leads to the precipitation of all calcium as scale. The consequence: limescale deposits form on the heat transfer surfaces of the heating. The efficiency falls and the energy costs rise. A rule of thumb is that 1 millimetre of limescale deposit causes an energy loss of 10%. In extreme cases it can even cause damage to the heat exchangers.

### WATER SOFTENING TO VDI 2035 – PART I

If the water is softened before the heating is filled, in accordance with the VDI 2035 guidelines, no scale can form. This effectively and permanently prevents limescale deposits and the resulting negative effects on the entire heating system.

### CORROSION – AN UNDERESTIMATED PROBLEM

VDI 2035, Part II, deals with the problem of corrosion. Softening the heating water can prove to be insufficient. The pH value can significantly exceed the limit of 10. pH values higher than 11 can set in, which even damage rubber seals. The VDI 2035, Part I guidelines are fulfilled, however, VDI 2035, Part 2 suggests a pH value between 8.2 and maximum 10.

If aluminium materials are used, which is the case in many modern heating systems, a pH value of 8.5 must not be exceeded, because otherwise there is a threat of corrosion – and aluminium is attacked without the presence of oxygen. Therefore, apart from softening the heating fill and additional water, the heating water should also be appropriately conditioned. This is the only way to comply with the VDI 2035 requirements and the recommendations and installation instructions of the heat pump manufacturer.



Part 2 of VDI 2035 also points out the reduction in total salt content (conductivity). The risk of corrosion is far lower if deionised water is used than is the case if the system is operated with salty, i.e. softened water.

Even if the water has been softened beforehand, it contains dissolved, corrosion-promoting salts, which act as electrolytes due to the use of different materials in the heating system and therefore accelerate corrosion processes. This can ultimately result in pitting.

Contamination and deposits in the heating circuit can cause malfunctions

### **RINSE, FILL AND BLEED THE HEATING CIRCUIT AND HOT WATER BUFFER TANK**

To bleed the hot water tank, the heating circuit and hot water circuit must be rinsed simultaneously.

### **ON THE SAFE SIDE WITH LOW-SALT OPERATION**

The problems listed above do not occur at all with low-salt operation, as neither corrosive salts such as sulphates, chlorides and nitrates nor alkalising sodium hydrogen carbonate are in the heating water. The corrosive properties of deionised water are very low and in addition, fur cannot form in the boiler. This is the ideal approach for closed heating circuits, in particular, because low oxygen input into the heating circuit can also be tolerated.

In general, when the system is filled with deionised water, the pH value sets itself within the ideal range due to "self-alkalinisation". If necessary, a pH value of 8.2 can be very easily alkalisied by adding chemicals. In this way, optimum protection of the entire heating system is achieved.

### **MONITORING**

Analytical recording and monitoring of the relevant water values and the added active conditioning substances is of decisive importance. Therefore, they should be monitored regularly using appropriate water test equipment.

- ① Fill and bleed the heating circuit...
- ② In addition, open the bleeding valve on the condenser of the heat pump. Bleed condenser...

## **Insulating the hydraulic connections**

Insulate the piping of the heating circuit and the condensate pipe in the outdoor area so that they are frost-proof, vapour-diffusion tight and UV resistant.



### **NOTE.**

Insulate in accordance with applicable local standards and guidelines.

- ① Check all hydraulic connections for leaks. Perform leak test...
- ② Insulate all connections and pipes of the heat circuit (RX-variants vapour diffusion insulated).





## Commissioning



### WARNING!

The unit may only be started up if the façade / facing panels are closed.



### NOTE.

The commissioning has to be in the heating mode.

- ① Carry out a thorough installation check and work through the general checklist...



Manufacturer's homepage.

By checking the installation you prevent damage to the heat pump system, which could be caused by work carried out improperly.

Check that...

- **clockwise rotary field** of the load power supply (compressor) is ensured.
- The heat pump **installation and assembly** have been carried out according to the requirements of this operating manual.
- the electrical installation work has been completed properly.
- The power supply for the heat pump must be equipped with an all-pole automatic circuit-breaker with at least 3 mm contact spacing to IEC 60947-2.
- The heating circuit is flushed, filled and thoroughly vented.
- All valves and shut-off devices of the heating circuit are open.
- All pipe systems and components of the system are leaktight.

- ② Carefully fill out and sign the completion report for heat pump systems...



Manufacturer's homepage.

- ③ Within Germany and Austria:  
Send completion report for heat pump systems and general checklist to the manufacturer's factory customer service department...

In other countries:

Send completion report for heat pump systems and general checklist to the manufacturer's local partner...

- ④ The heat pump system is commissioned by customer service personnel authorised by the manufacturer. There is a fee for starting up!

## Dismantling



### DANGER!

Risk of fatal injury due to electric shock!  
Electrical connections may be installed only by qualified electricians.

Before opening the unit, disconnect the system from the power supply and secure it from being switched back on!



### WARNING!

Unit contains flammable refrigerants!  
If refrigerant leaks, an explosion hazard is caused. If this happens:

- Shut down unit.
- Notify the manufacturer's authorised service centre.
- Keep ignition sources away.



### WARNING!

Only qualified heating or cooling system technicians are allowed to remove the unit from the system.



### NOTE.

Any person who works on the refrigerant circuit must have a qualification certificate issued by a body accredited by the industry.



### ATTENTION

Recycle or provide for proper disposal of unit components, refrigerants and oil in accordance with the applicable regulations, standards, guidelines and directives.



## WITHDRAWAL FROM SERVICE

It is particularly important that the technician responsible for the withdrawal from service work is familiar with all details of the disposal equipment. We recommend that all refrigerant be recovered.

Before disposing of the drained fluids, take samples of the oil and refrigerant, if the refrigerant is to be treated for reuse.



### NOTE.

It is important for electricity to be available where the work is to be carried out.

- a) Familiarise yourself with the units and their function.
- b) Disconnect the unit to be disposed of from the power supply.
- c) Before starting the disposal procedure, ensure that:
  - mechanical aids required for the transport of refrigerant cylinders are available if necessary;
  - personal protective equipment is available and is properly used;
  - the extraction process is continuously monitored by a competent person;
  - the disposal station and refrigerant cylinders conform to the relevant guidelines and directives.
- d) If possible, carry out a pump-down cycle.
- e) If it is not possible to establish a vacuum, extract through a collection pipe, so that refrigerant can be removed from all parts of the system.
- f) Ensure that the refrigerant cylinder is on the scales before starting the extraction.
- g) Switch on the disposal equipment and continue according to the manufacturer's instructions.
- h) Ensure that recycling cylinders are not overfilled (never more than 80 % of the liquid fill quantity).
- i) Never exceed the allowable operating pressure of the recycling cylinder, not even for a short time.
- j) When the recycling cylinders are properly filled and the process has been completed, ensure that the cylinders and units are immediately removed from the system and all shut-off valves are closed.
- k) Recovered refrigerant cannot be used in other systems until it has been cleaned and examined.

## MARKINGS

Units must be appropriately marked or labelled so that it is clear to all that they have been withdrawn from service and the refrigerant has been removed. This marking must be dated and signed. Ensure that information regarding flammable refrigerant is attached to the units.

## RECOVERY/RECYCLING

If refrigerant is extracted for repair or withdrawal from service purposes, ensure that this is done safely. If coolant is transferred into cylinders, ensure that only suitable refrigerant cylinders are used. Ensure that a sufficient number of refrigerant cylinders are available for the quantity in the system. All refrigerant cylinders used must be intended for the refrigerant to be extracted and marked accordingly (i.e. special recycling cylinders for the recovery and recycling of refrigerant). The refrigerant cylinders must have a safety valve and securely attached shut-off valves and be in a good condition. Empty recycling cylinders are evacuated and should be cooled before the extraction process, if possible. The disposal equipment must be in a good condition and suitable for the recovery of flammable refrigerants. Instructions on the individual recovery procedure steps must be enclosed with the equipment. In addition, calibrated scales must be available and must also be in good condition. Hoses must be equipped with leak-free couplings and be in good condition. Before the disposal equipment is used, check that it is in good condition, that it has been serviced at the specified intervals and that the corresponding electrical devices are sealed to prevent ignition in case of refrigerant leaks. In case of doubt, contact the manufacturer for advice. The recovered refrigerant must be returned to the supplier in a proper recycling cylinder. Do not mix refrigerants in refrigerant cylinders. If compressors or compressor oil is to be disposed of, ensure that they are evacuated with an adequate vacuum to ensure that there is no longer any flammable refrigerant in the oil. Before the compressor is returned to the manufacturer it must be evacuated. This process may only be accelerated by means of electrical heating of the compressor housing. When oil is drained from a system, it must be done with appropriate caution.





# Technical data / scope of delivery

<b>Heat pump type</b>	Brine/water   Air/water   Water/water	• applicable   — not applicable
<b>Installation location</b>	Indoors   Outdoors	• applicable   — not applicable
<b>Conformity</b>		CE
<b>Performance data</b>	Heating capacity/COP at	
	A7/W35 Standard point acc. to EN14511 2 compressors 1 compressor	"kW   ... kW   ..."
	A7/W45 Standard point to EN14511 2 compressors 1 compressor	"kW   ... kW   ..."
	A2/W35 Operating point to EN14511 2 compressors 1 compressor	"kW   ... kW   ..."
	A10/W35 Operating point to EN14511 2 compressors 1 compressor	"kW   ... kW   ..."
	A-7/W35 Operating point to EN14511 2 compressors 1 compressor	"kW   ... kW   ..."
	A-15/W65 2 compressors 1 compressor	"kW   ... kW   ..."
<b>Limits of application</b>	Heating circuit	°C
	Heat source	°C
	additional operating points	°C
<b>Sound</b>	Sound pressure level inside (measured in free field at 1m distance around the machine)	dB(A)
	External sound pressure level (averaged in free field at 1m distance around air connections)	dB(A)
	Sound power inside	dB
	Sound power outside	dB
<b>Heat source</b>	Air volume flow at maximum external pressure	m³/h
	Maximum external pressure	Pa
<b>Heating circuit</b>	Volume flow: minimum flow rate   nominal flow rate A7/W35 EN14511   maximum flow rate	l/h
	Heat pump pressure loss $\Delta p$   volume flow	bar   l/h
	Free compression heat pump $\Delta p$   volume flow	bar   l/h
	Content of buffer tank	l
	3-way valve, heating/hot water	...
<b>General unit data</b>	Dimensions (see dimensional drawing for the specified unit size)	unit size
	Total weight	kg
	Connections Heating circuit	...
	Domestic hot water circuit	...
	Refrigerant Refrigerant type   Quantity	...   kg
	Free cross section, air ducts	mm
	Cross section, condensate water hose / length from unit	mm   m
<b>Electrics</b>	Voltage code   three-phase circuit breaker heat pump **) see hydraulic module	...   A
	Voltage code   circuit breaker control voltage **) see hydraulic module	...   A
	Voltage code   circuit breaker electric heating element **) see hydraulic module	...   A
Heat pump	Effective power consumption in standard point A7/W35 to EN14511: Power consumption   current consumption   $\cos\phi$	kW   A   ...
	Maximum device current within the limits of application	A
	Starting current: direct   with soft starter	A   A
	Protection type	IP
	Output electric heating element 3   2   1-phase	kW   kW   kW
Components	Heating circuit circulating pump at nominal flow rate: max. power consumption   current consumption	kW   A
<b>Safety equipment</b>	Safety assembly heating circuit   Safety assembly heat source	in scope of delivery: • yes — no
<b>Heating and heat pump regulator</b>		Included in scope of delivery: • yes — no
<b>Control and sensor wire</b>		Included in scope of delivery: • yes — no
<b>Power cable to unit</b>		Included in scope of delivery: • yes — no
<b>Electronic soft starter</b>		integrated: • yes — no
<b>Expansion vessels</b>	Heating circuit: Scope of delivery   Volume   Initial pressure	• yes — no       bar
<b>Overflow valve</b>		integrated: • yes — no
<b>Vibration decouplers</b>	Heating circuit	Included in scope of delivery: • yes — no

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\*) depending on component tolerances and flow \*\*) comply with local regulations n.n. = not detectable w.w. = optional  
 1) hot water return flow 2) hot water forward flow



	LWD 50A	LWD 70A	LWD 90A
	—   •   —	—   •   —	—   •   —
	—   •	—   •	—   •
	•	•	•
	—	—	—
	7,1   4,8	8,5   4,3	10,1   4,12
	—	—	—
	6,8   3,8	8,4   3,5	9,9   3,50
	—	—	—
	5,6   3,8	7,7   3,8	9,0   3,60
	—	—	—
	7,5   5,0	10,5   5,1	11,3   4,50
	—	—	—
	4,6   3,2	6,3   3,2	7,5   3,12
	—	—	—
	—	—	—
	20 <sup>1</sup> – 62 <sup>2</sup>	20 <sup>1</sup> – 62 <sup>2</sup>	20 <sup>1</sup> – 60 <sup>2</sup>
	-20 – 35	-20 – 35	-20 – 35
	A> -7 / 70 <sup>2</sup>	A> -7 / 70 <sup>2</sup>	A> -2 / 70 <sup>2</sup>
	—	—	—
	45	45	50
	—	—	—
	57	57	62
	3000	3000	3500
	—	—	—
	900   1200   1500	1200   1600   2000	1600   2000   2500
	0,066   1200	0,055   1600	0,076   2000
	—   —	—   —	—   —
	—	—	—
	—	—	—
	141	146	149
	G1 <sup>4</sup>	G1 <sup>4</sup>	G1 <sup>4</sup>
	—	—	—
	R290   0,95	R290   1,1	R290   1,17
	—	—	—
	—   —		
	—	—	—
	—	—	—
	—	—	—
	1,5   3,2   0,66	2,0   4,1   0,71	2,5   5,0   0,72
	4	5,5	7,0
	—   20	—   22	—   24
	24	24	24
	—   —   —	—   —   —	—   —   —
	—   —	—   —	—   —
	—   —	—   —	—   —
	—	—	—
	•	•	•
	•	•	•
	•	•	•
	—   —   —	—   —   —	—   —   —
	—	—	—
	—	—	—
	81354c	813542c	813549a



# Technical data / scope of delivery

<b>Heat pump type</b>	Brine/water   Air/water   Water/water	• applicable   — not applicable
<b>Installation location</b>	Indoors   Outdoors	• applicable   — not applicable
<b>Conformity</b>		CE
<b>Performance data</b>	Heating capacity/COP heat optimised at	
	A7/W35 Standard point as per EN14511	1 compressor kW   ...
	A7/W45	1 compressor kW   ...
	A2/W35 Operating point as per EN14511	1 compressor kW   ...
	A10/W35 Operating point as per EN14511	1 compressor kW   ...
	A-7/W35 Operating point as per EN14511	1 compressor kW   ...
<b>Performance data</b>	Cooling capacity/EER cool optimised at	
	A27/W18	1 compressor kW   ...
	A27/W7	1 compressor kW   ...
	A35/W18	1 compressor kW   ...
	A35/W7	1 compressor kW   ...
<b>Heating limits of application</b>	heating circuit (water)	°C
	Heat source (air)	°C
	additional operating points	°C
<b>Cooling limits</b>	cooling circuit (water)	°C
	Heat sink (air)	°C
<b>Sound</b>	Sound pressure level outside (averaged in open space at 1 m distance from the machine)	dB(A)
	Sound power level, outside	dB
<b>Heat source</b>	Air volume flow	m³/h
	Maximum external pressure	Pa
<b>Heating circuit</b>	Volume flow: minimum flow rate   nominal flow rate A7/W35 EN14511   maximum flow rate	l/h
	Heat pump pressure loss $\Delta p$   Volume flow	bar   l/h
	Free compression heat pump $\Delta p$   Volume flow	bar   l/h
	Content of buffer tank	l
	3-way valve, heating/hot water	...
<b>General unit data</b>	Dimensions (see dimensional drawing for the specified unit size)	unit size
	Total weight	kg
	Connections Heating circuit	...
	Domestic hot water circuit	...
	Refrigerant Refrigerant type   Quantity	...   kg
	Free cross section, air ducts	mm
	Cross section, condensate water hose / length from unit	mm   m
<b>Electrics</b>	Voltage code   all-pole circuit breaker heat pump **) see hydraulic module	...   A
	Voltage code   all-pole circuit breaker **) see hydraulic module	...   A
	Voltage code   electric heating element circuit breaker **) see hydraulic module	...   A
Heat pump	Effective power consumption in standard point A7/W35 to EN14511: Power consumption   current consumption   $\cos\phi$	kW   A   ...
	Maximum machine current within the use limits	A
	Starting current: direct   with soft starter	A   A
	Degree of protection	IP
	Output, electric heating element 3   2   1 phase	kW   kW   kW
Components	Heating circuit circulating pump at nominal flow rate: max. power consumption   current consumption	kW   A
<b>Safety equipment</b>	Safety component heating circuit   Safety component heat source	Included in scope of delivery: • yes — no
<b>Heating and heat pump controller</b>		Included in scope of delivery: • yes — no
<b>Control and sensor lead</b>		Included in scope of delivery: • yes — no
<b>Power cable to unit</b>		Included in scope of delivery: • yes — no
<b>Electronic soft starter</b>		integrated: • yes — no
<b>Expansion vessels</b>	Heating circuit: Scope of delivery   Volume   Initial pressure	• yes — no     bar
<b>Overflow valve</b>		integrated: • yes — no
<b>Vibration decouplers</b>	Heating circuit	Included in scope of delivery: • yes — no

\*) depending on component tolerances and flow \*\*) comply with local regulations n.n. = not detectable w.w. = optional  
 1) hot water return 2) hot water feed



	LWD 50A/RX	LWD 70A/RX
	—   •   —	—   •   —
	—   •	—   •
	•	•
	6,8   4,56	8,7   4,32
	6,5   3,62	8,8   3,66
	5,4   3,69	7,3   3,68
	7,2   4,80	9,7   4,92
	4,4   3,11	6,0   3,06
	7,9   4,98	11,1   4,59
	5,9   3,78	8,0   3,57
	7,4   3,97	10,1   3,64
	5,1   2,89	7,0   2,74
	20 <sup>1</sup> – 62 <sup>2</sup>	20 <sup>1</sup> – 62 <sup>2</sup>
	-20 – 35	-20 – 35
	A> -7 / 70 <sup>2</sup>	A> -7 / 70 <sup>2</sup>
	7 <sup>2</sup> – 20 <sup>2</sup>	7 <sup>2</sup> – 20 <sup>2</sup>
	15 – 45	15 – 45
	45	45
	57	57
	3000	3000
	—	—
	900   1200   1500	1200   1600   2000
	0,066   1200	0,055   1600
	—   —	—   —
	—	—
	—	—
	—	—
	146	151
	G1 <sup>4</sup>	G1 <sup>4</sup>
	—	—
	R290   2,1	R290   2,2
	—	—
	—   —	—   —
	—	—
	—	—
	1,5   3,2   0,66	2,0   4,1   0,71
	—	5,5
	—   20	—   22
	24	24
	—   —   —	—   —   —
	—   —	—   —
	—   —	—   —
	—	—
	•	•
	•	•
	•	•
	—   —   —	—   —   —
	—	—
	—	—

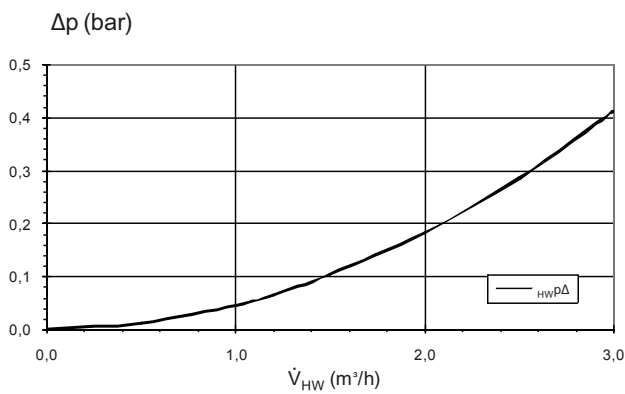
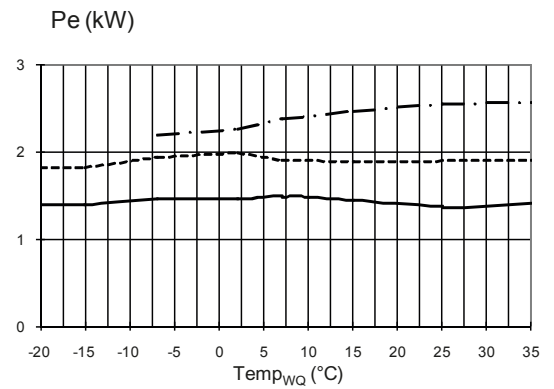
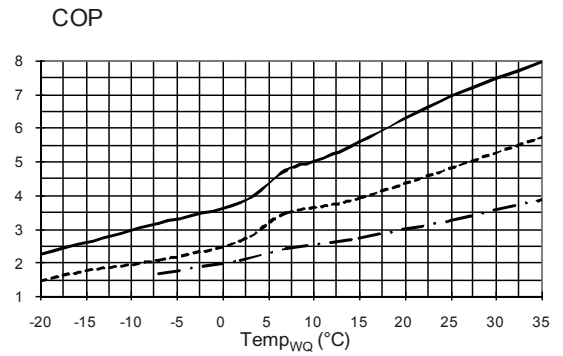
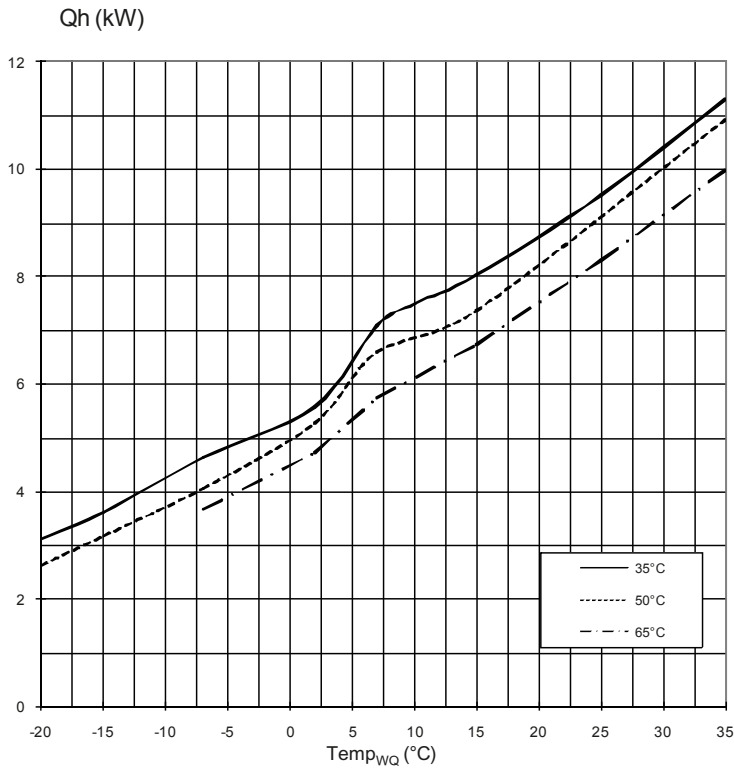
813545a

813546a



# LWD 50A Heating mode

# Performance curves



823165a

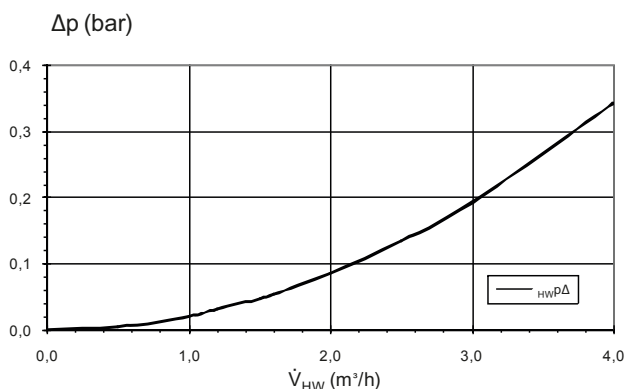
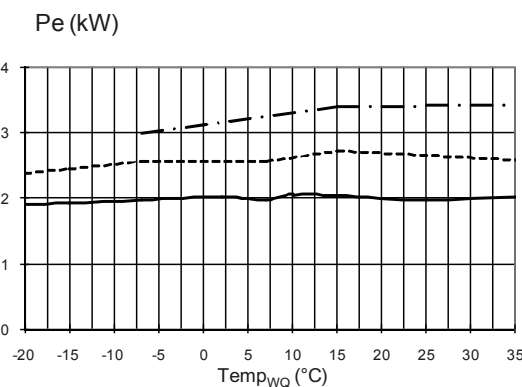
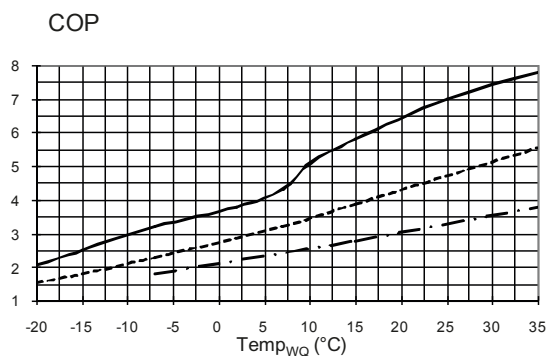
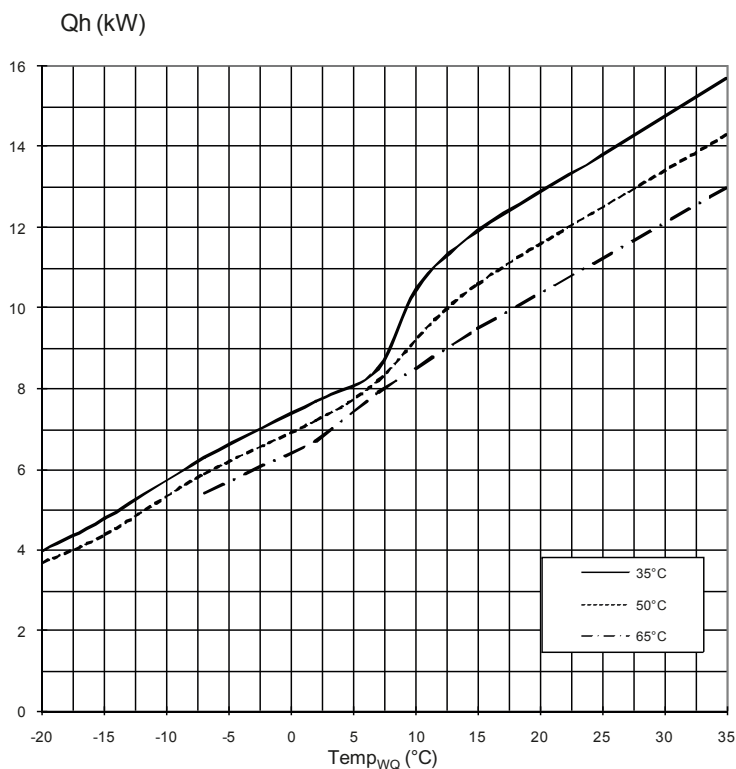
Legend:	UK823129L/170408
$\dot{V}_{HW}$	Volume flow, heating water
Temp <sub>WQ</sub>	Temperature, heat source
Q <sub>h</sub>	Heating capacity
Pe	Power consumption
COP	Coefficient of performance / efficiency rating
$\Delta p_{HW}$	Pressure loss heat pump
VD	Compressor(s)





# Performance curves

# LWD 70A Heating mode



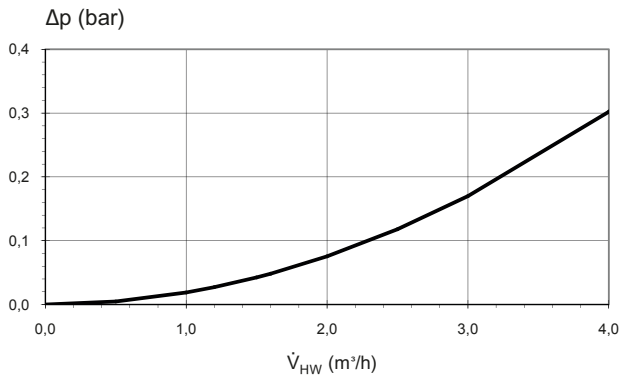
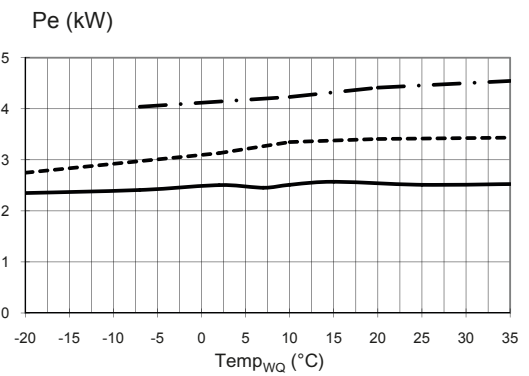
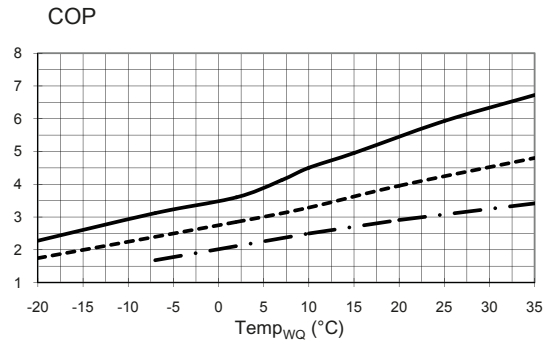
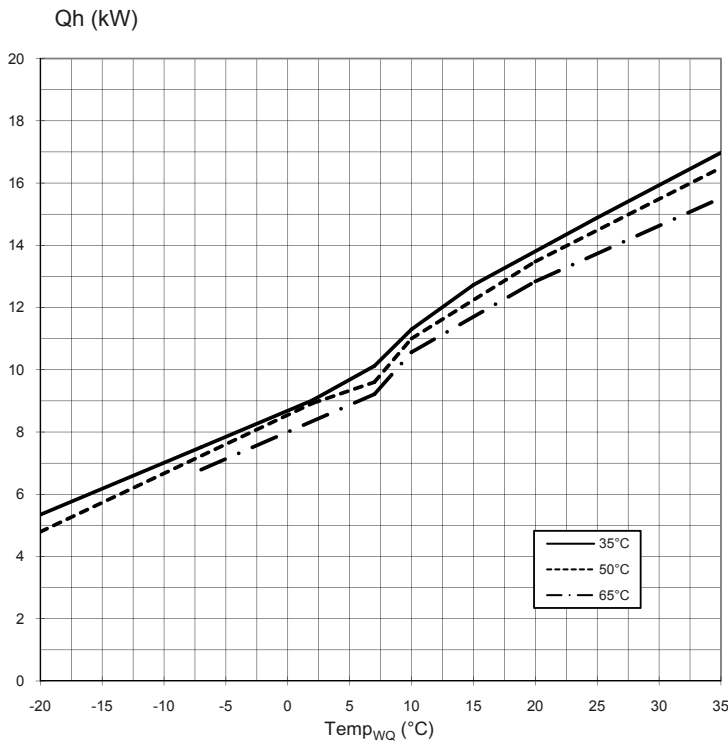
823166a

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



# LWD 90A Heating mode

# Performance curves



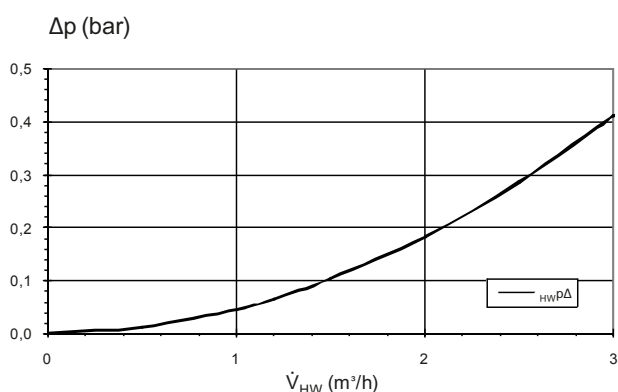
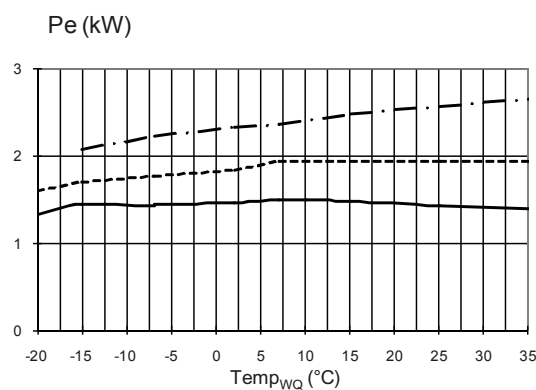
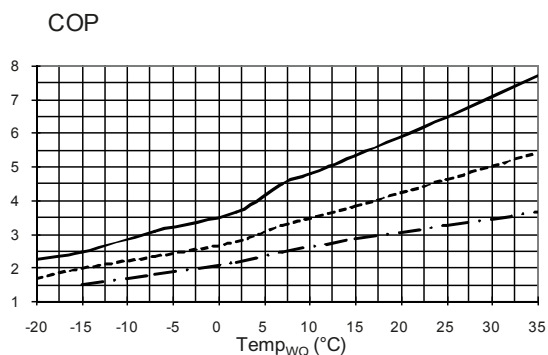
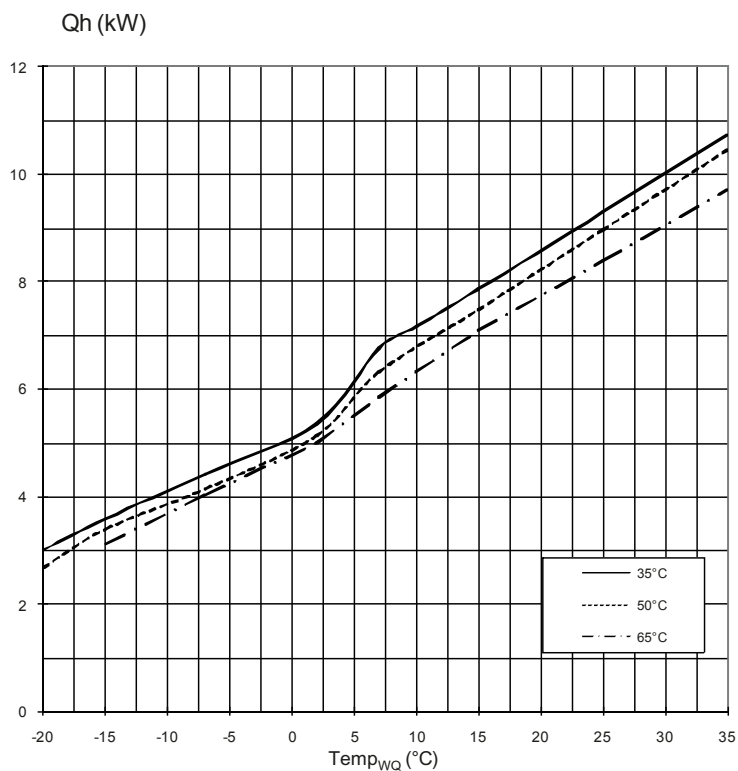
823222

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



# Performance curves

# LWD 50A/RX Heating mode



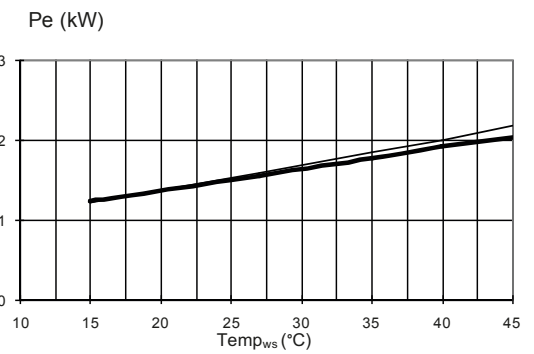
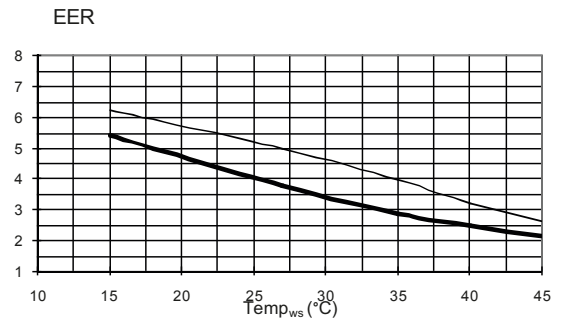
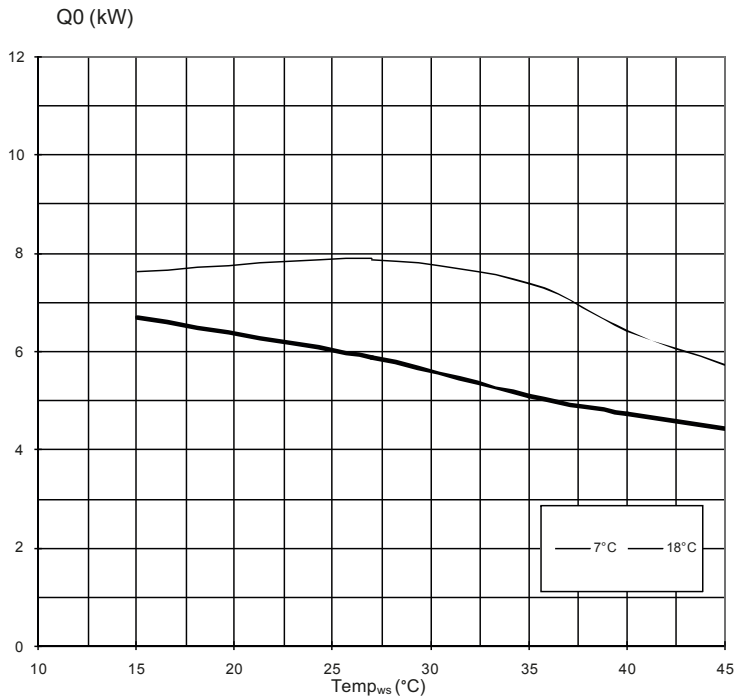
823169

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



# LWD 50A/RX Cooling mode

# Performance curves



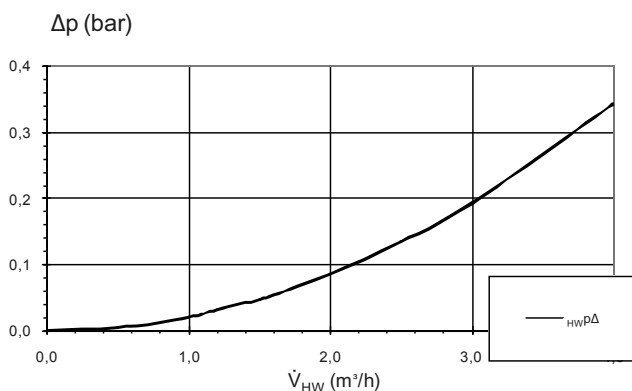
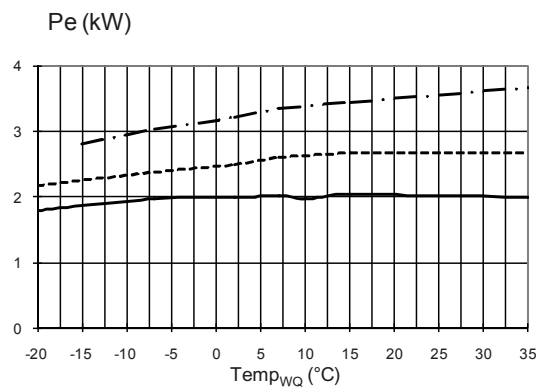
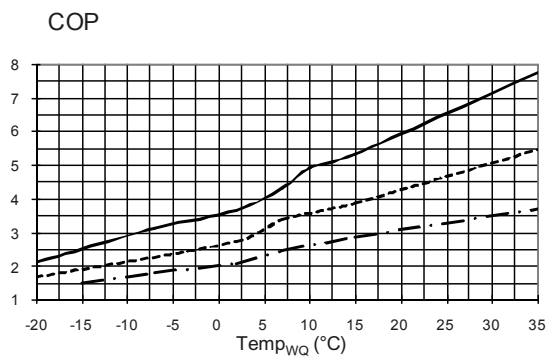
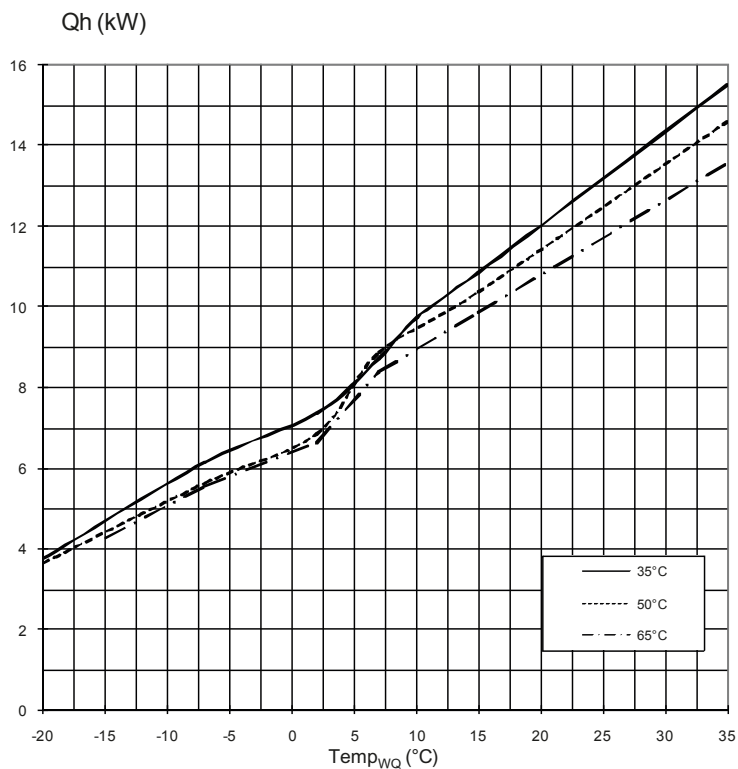
823169

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



# Performance curves

# LWD 70A/RX Heating mode



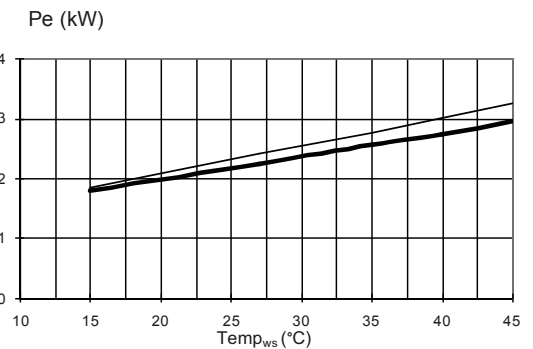
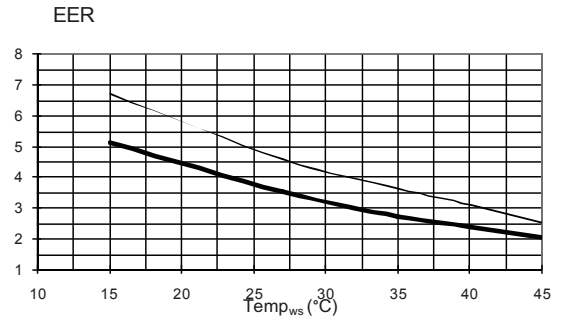
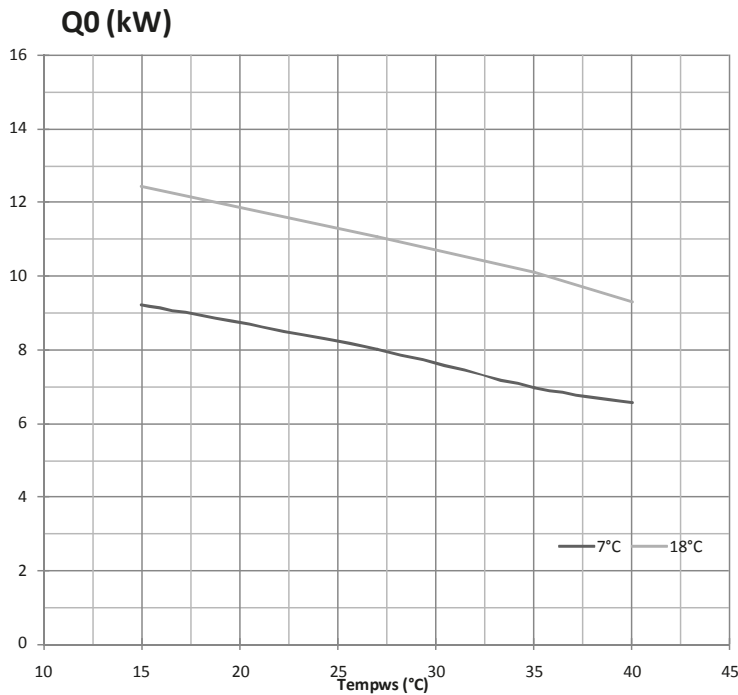
823170

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



# LWD 70A/RX Cooling mode

# Performance curves



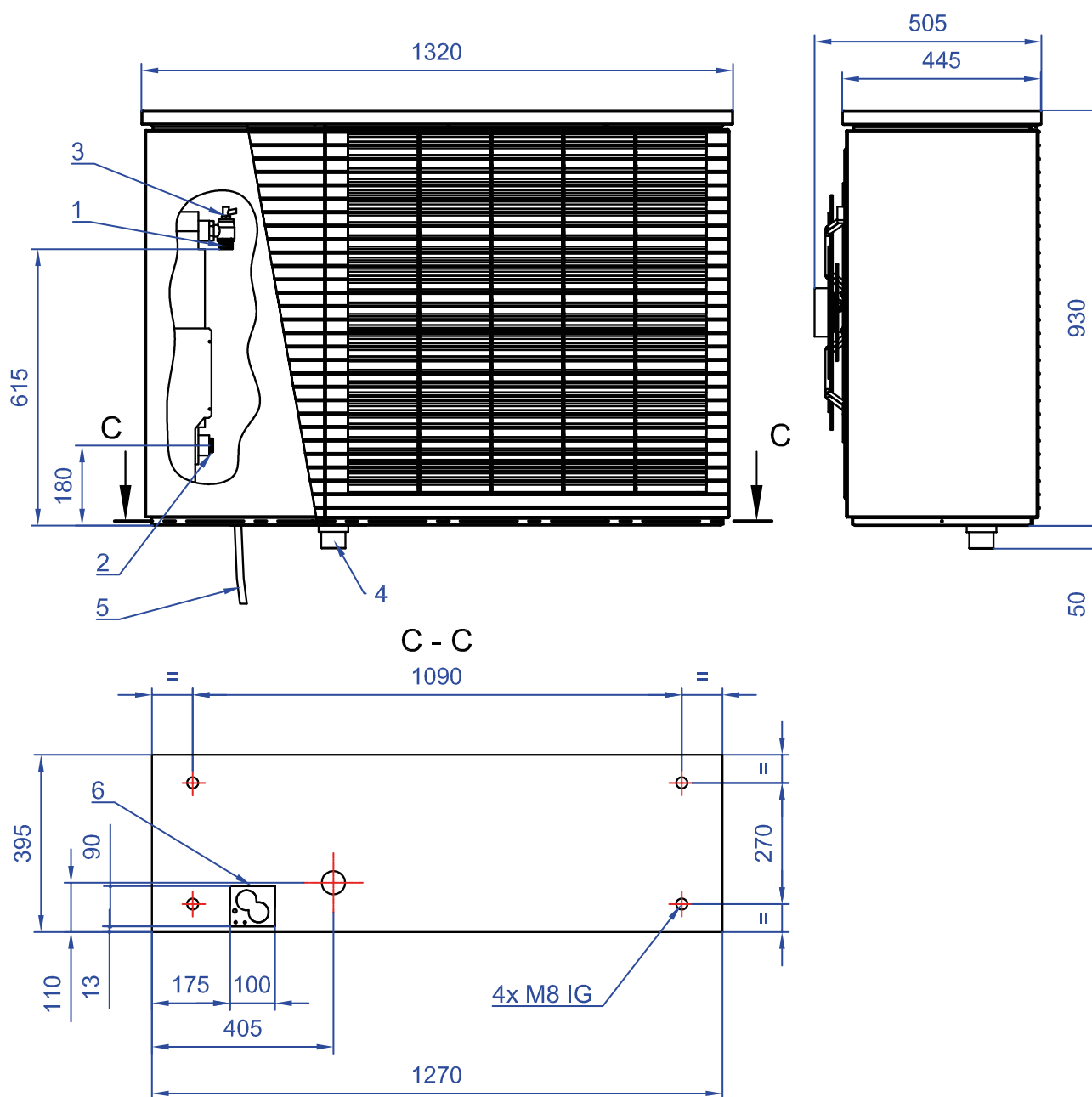
823170

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



# Dimensional drawings

# LWD 50A(RX) – LWD 70A(RX), LWD 90A



DE819392

All dimensions in mm.

- A Front view
- B Side view
- C-C Section (floor slab)

- 1 Heating water flow G1" DIN ISO 228 flat gasket.
- 2 Heating water return flow G1" DIN ISO 228 flat gasket.
- 3 Bleeder
- 4 Connection socket (in extra box) for condensate drain pipe DN40
- 5 Cables for power, control, BUS, length ~ 5m from unit
- 6 Penetration for flow & return and cables (in extra box)



# LWD 50A(RX) – LWD 70A(RX), LWD 90A

## Installation protection areas

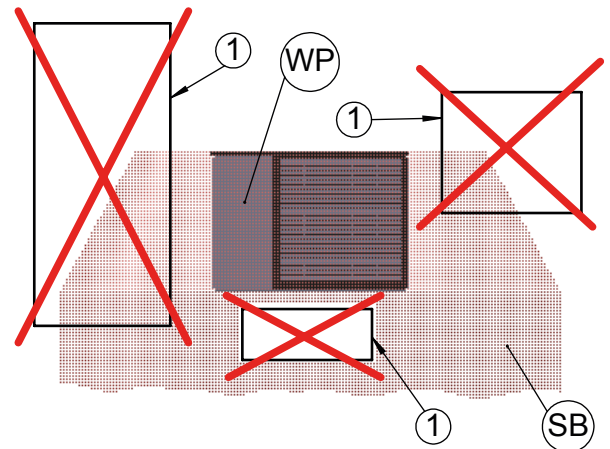
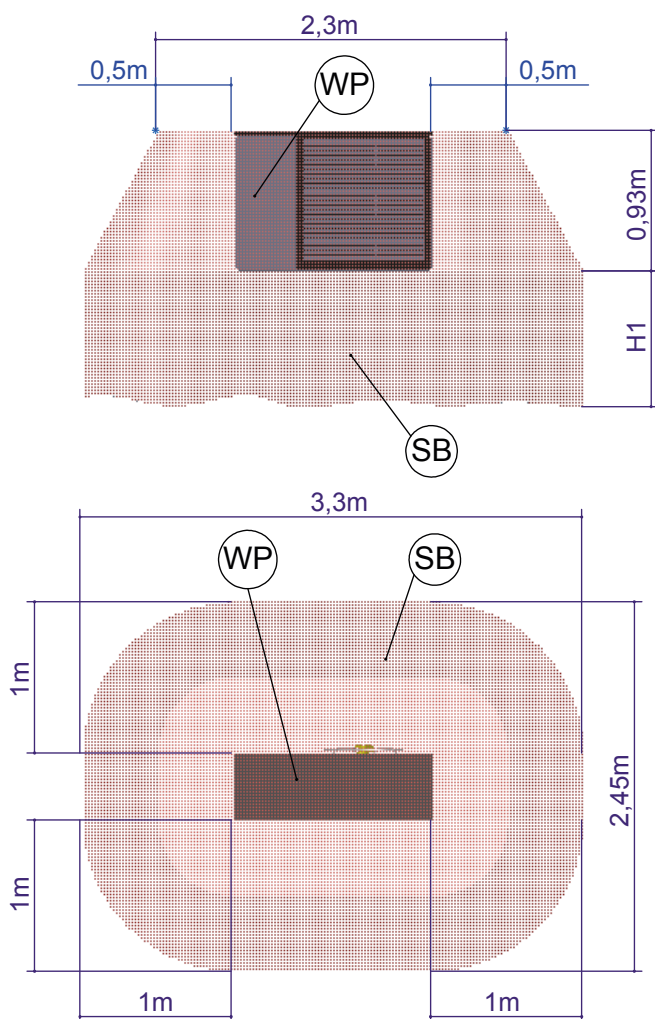


Figure: Safe distances from heat pump  
Legend: DE819401

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

### Installation of heat pump protection area

**Important:** The heat pump may only be installed outdoors!  
The unit must be positioned so that in case of a leak the refrigerant cannot get into the building or put people at risk in any other way.

In the protection area (see figure), which is located between the top edge of the unit and the floor, there must be no ignition sources, windows, doors, ventilation openings, light wells and similar. The protection area may not extend onto adjacent properties or public traffic areas. The wall penetration through the building envelope must be made gas-tight.

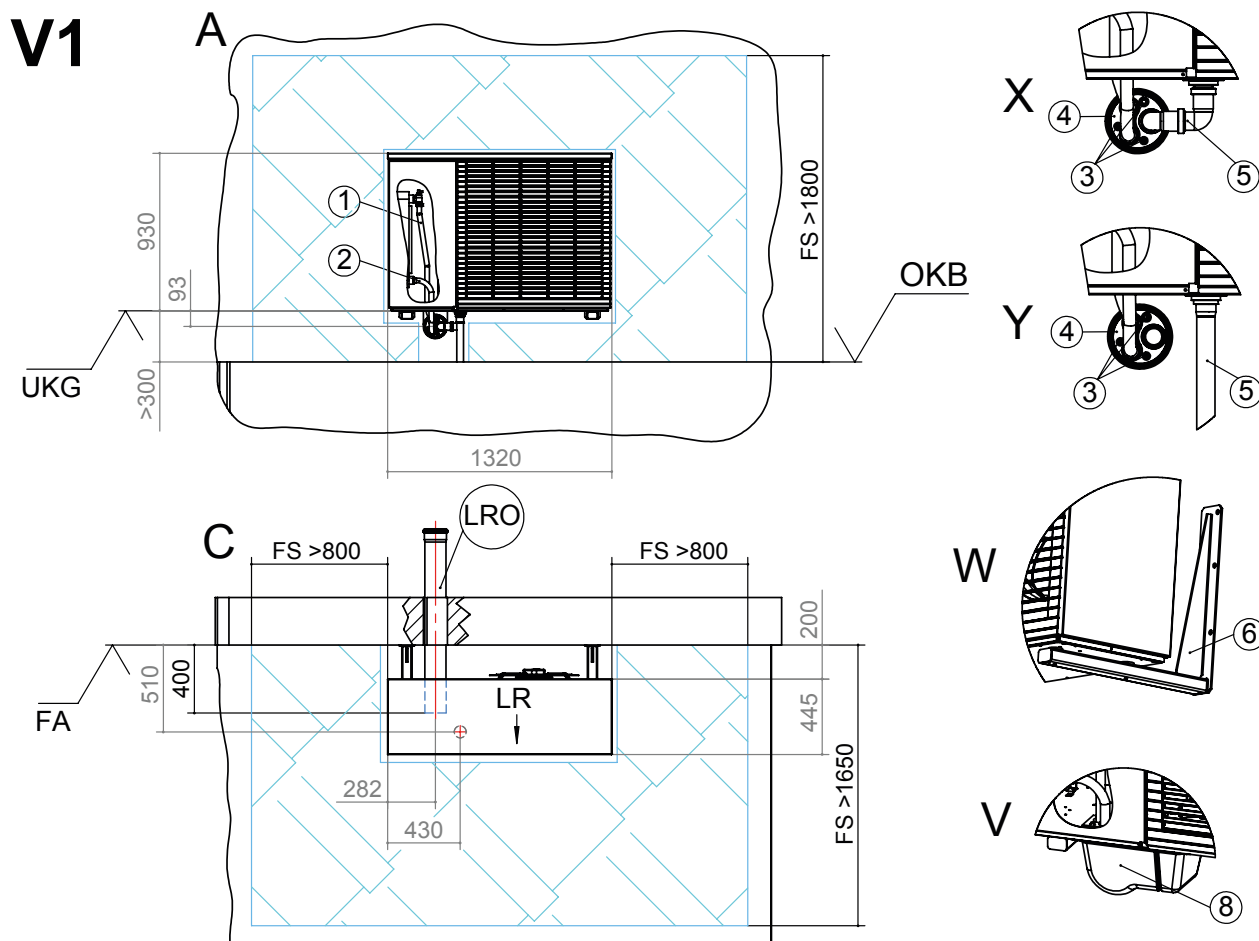




# Wall bracket installation plan

## WALL FEEDTHROUGH

LWD 50A(RX) – LWD 70A(RX),  
LWD 90A



Legend: 819393-1c

We reserve the right to make changes without notice.

All dimensions in mm.

„V1 Variant 1“

- A Front view
- C Plan view
- V Detail view of panelling
- W Detail view of wall mounting
- X Detail view of condensate pipe inside the building
- Y Detail view of condensate pipe outside the building

FA Finished outer façade

UKG Bottom edge of unit

OKB Floor level

LRO Reserve conduit KG DN 125,  $\varnothing$ a 125, shorten on site

LR Air direction

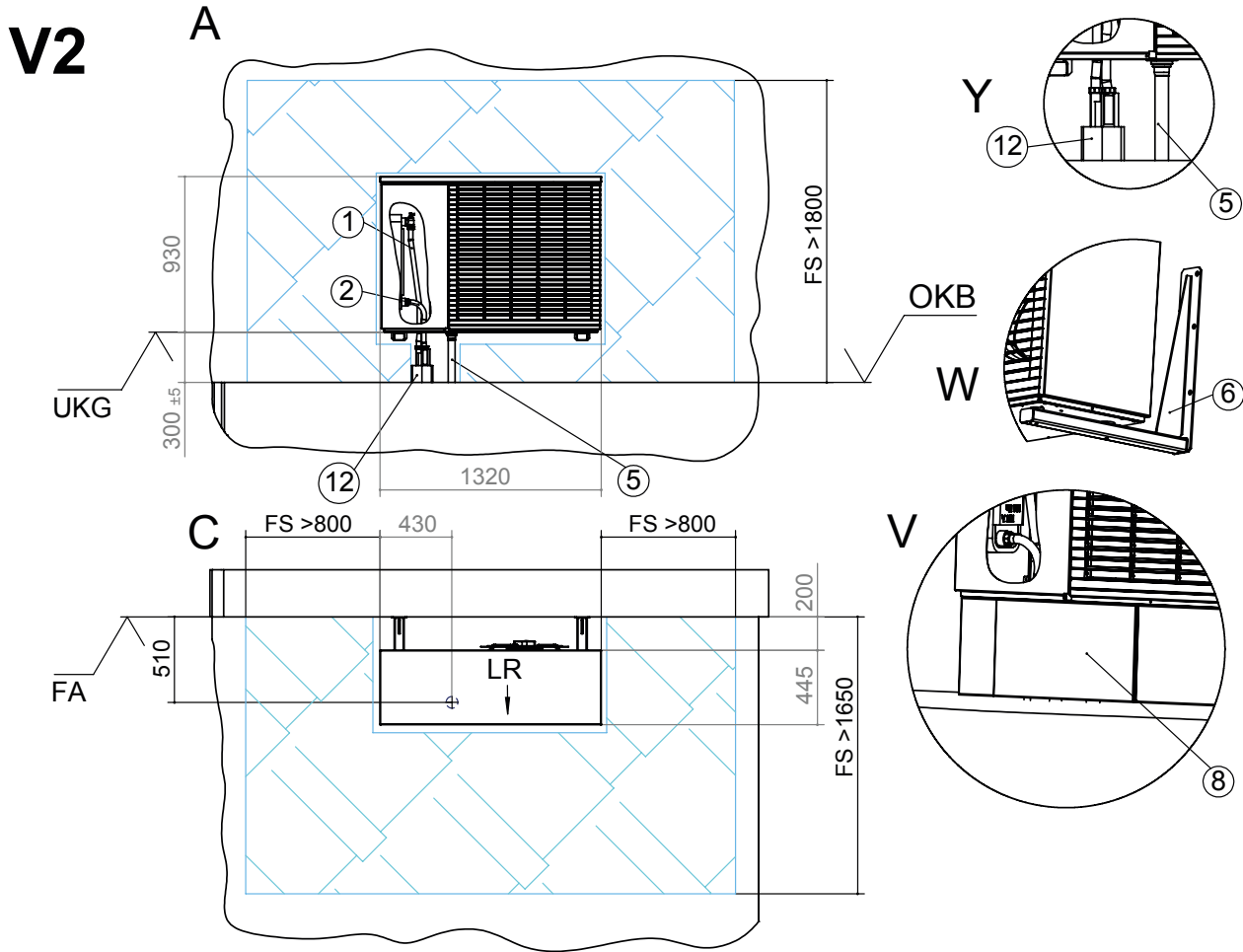
FS Free space for service purposes

- 1 Heating water feed (accessory)
- 2 Heating water return (accessory)
- 3 Cable feedthrough
- 4 Wall feedthrough (accessory)
- 5 Condensate drain / siphon (see operating manual for condensate drain installation instructions)
- 6 Bracket for wall mounting (accessory)
- 8 Wall feedthrough panelling (accessory)



# LWD 50A(RX) – LWD 70A(RX), LWD 90A

## Floor bracket installation plan HYDRAULIC CONNECTION PIPE



Legend: 819393-2c

We reserve the right to make changes without notice.  
All dimensions in mm.

„V2 Variant 2“

- A Front view
- C Plan view
- V Detail view of panelling
- W Detail view of wall mounting
- Y Detail view of condensate pipe outside the building

- FA Finished outer façade
- UKG Bottom edge of unit
- OKB Floor level
- LR Air direction
- FS Free space for service purposes

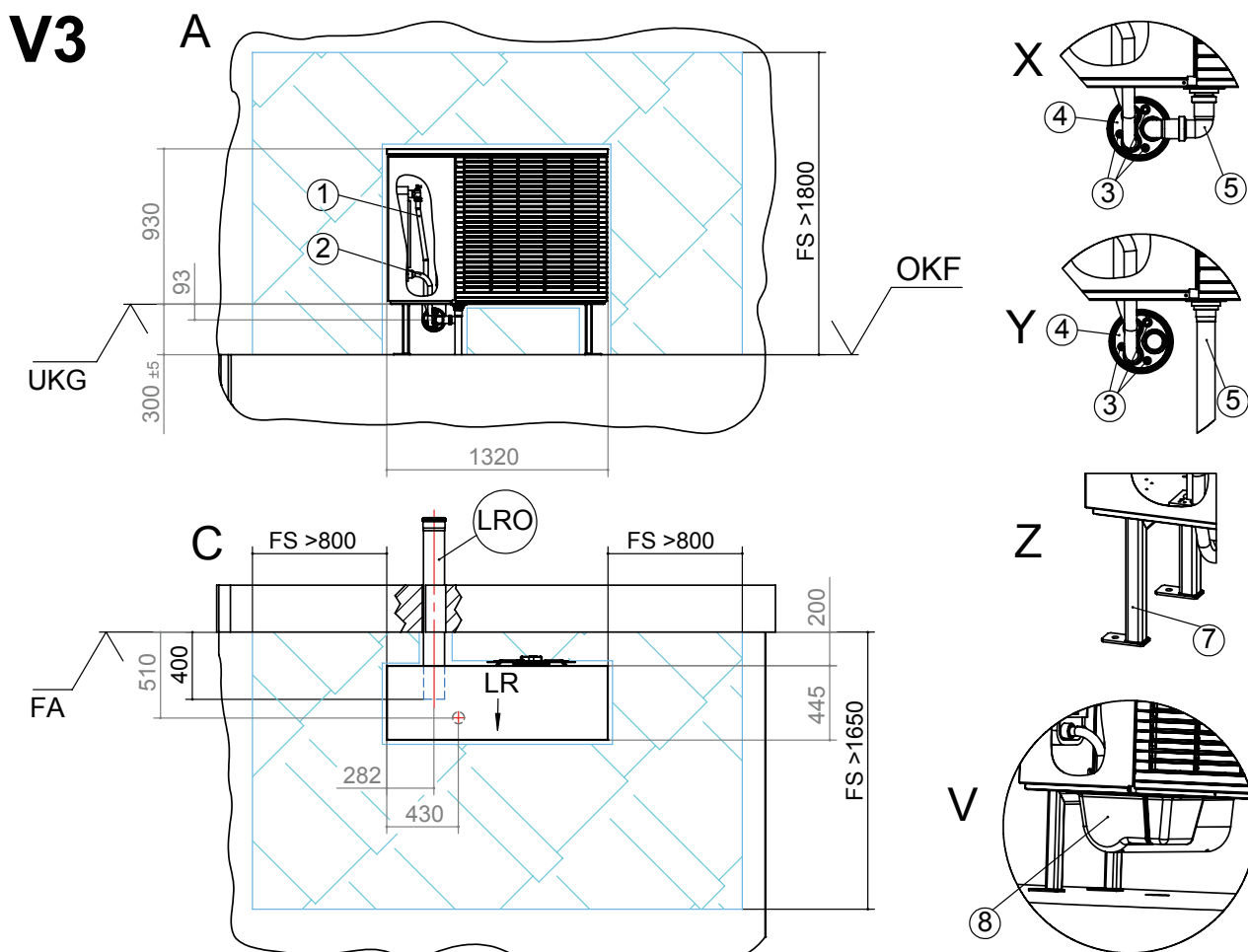
- 1 Heating water feed (accessory)
- 2 Heating water return (accessory)
- 5 Condensate drain / siphon (see operating manual for condensate drain installation instructions)
- 6 Bracket for wall mounting (accessory)
- 8 Wall bracket panelling (accessory)
- 12 Hydraulic connection pipe



# Floor bracket installation plan

## WALL FEEDTHROUGH

LWD 50A(RX) – LWD 70A(RX),  
LWD 90A



Legend: 819393-3c

We reserve the right to make changes without notice.

All dimensions in mm.

„V3 Variant 3“

A Front view

C Plan view

V Detail view of panelling

X Detail view of condensate pipe inside the building

Y Detail view of condensate pipe outside the building

Z Detail view of floor mounting

FA Finished outer façade

UKG Bottom edge of unit

„OKF Top edge of foundation“

LRO Reserve conduit KG DN 125, Øa 125, shorten on site

LR Air direction

FS Free space for service purposes

1 Heating water feed (accessory)

2 Heating water return (accessory)

3 Cable feedthrough

4 Wall feedthrough (accessory)

5 Condensate drain / siphon (see operating manual for condensate drain installation instructions)

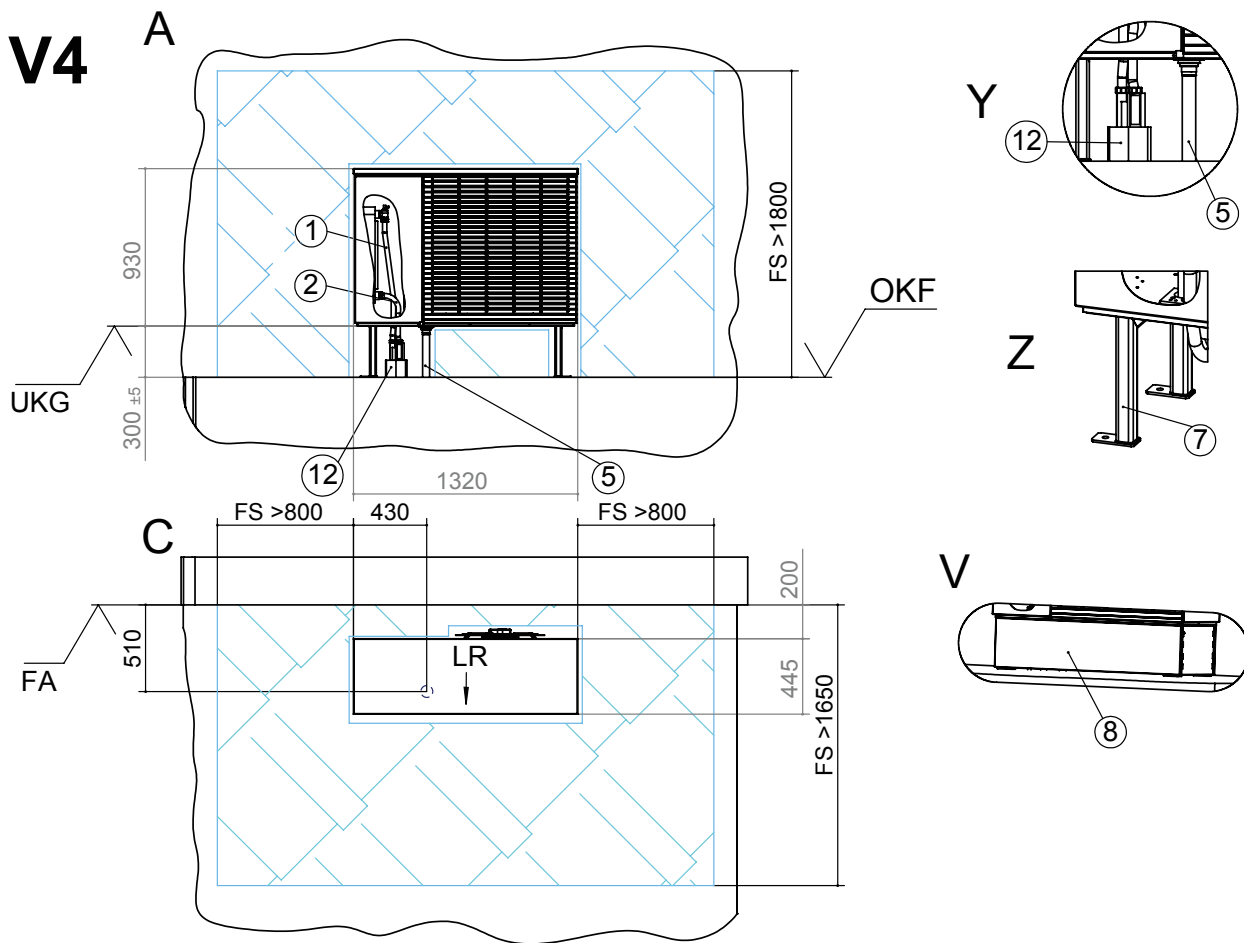
7 Bracket for floor mounting (accessory)

8 Wall feedthrough panelling (accessory)



# LWD 50A(RX) – LWD 70A(RX), LWD 90A

## Floor bracket installation plan HYDRAULIC CONNECTION PIPE



Legend: 819393-4c

We reserve the right to make changes without notice.

All dimensions in mm.

- V4 Variant 4"
- A Front view
- C Plan view
- V Detail view of panelling
- Y Detail view of condensate pipe outside the building
- Z Detail view of floor mounting"

- FA Finished outer façade
- UKG Bottom edge of unit
- OKF Top edge of foundation"
- LR Air direction
- FS Free space for service purposes

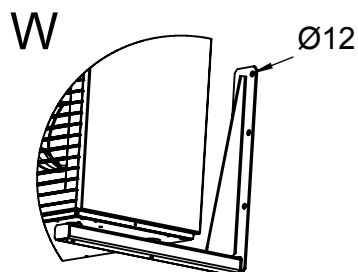
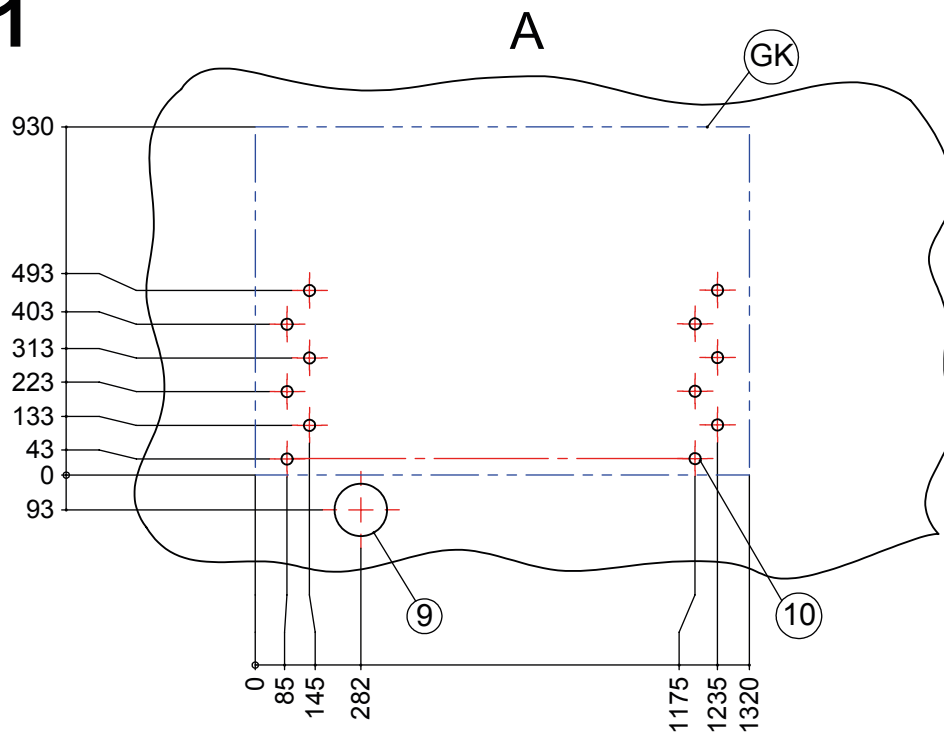
- 1 Heating water feed (accessory)
- 2 Heating water return (accessory)
- 5 Condensate drain / siphon (see operating manual for condensate drain installation instructions)
- 7 Bracket for floor mounting (accessory)
- 8 Floor bracket panelling (accessory)
- 12 Hydraulic connection pipe



# Drilling pattern for wall bracket WALL FEEDTHROUGH

LWD 50A(RX) – LWD 70A(RX),  
LWD 90A

## BB1



Legend: 819393-5c

We reserve the right to make changes without notice.

All dimensions in mm.

BB1 Drilling pattern for wall bracket (accessory) on mounting wall for V1“

A Front view

W Detail view of wall mounting

GK Unit contour

„9 Hole for reserve conduit KG DN125, Øa 125“

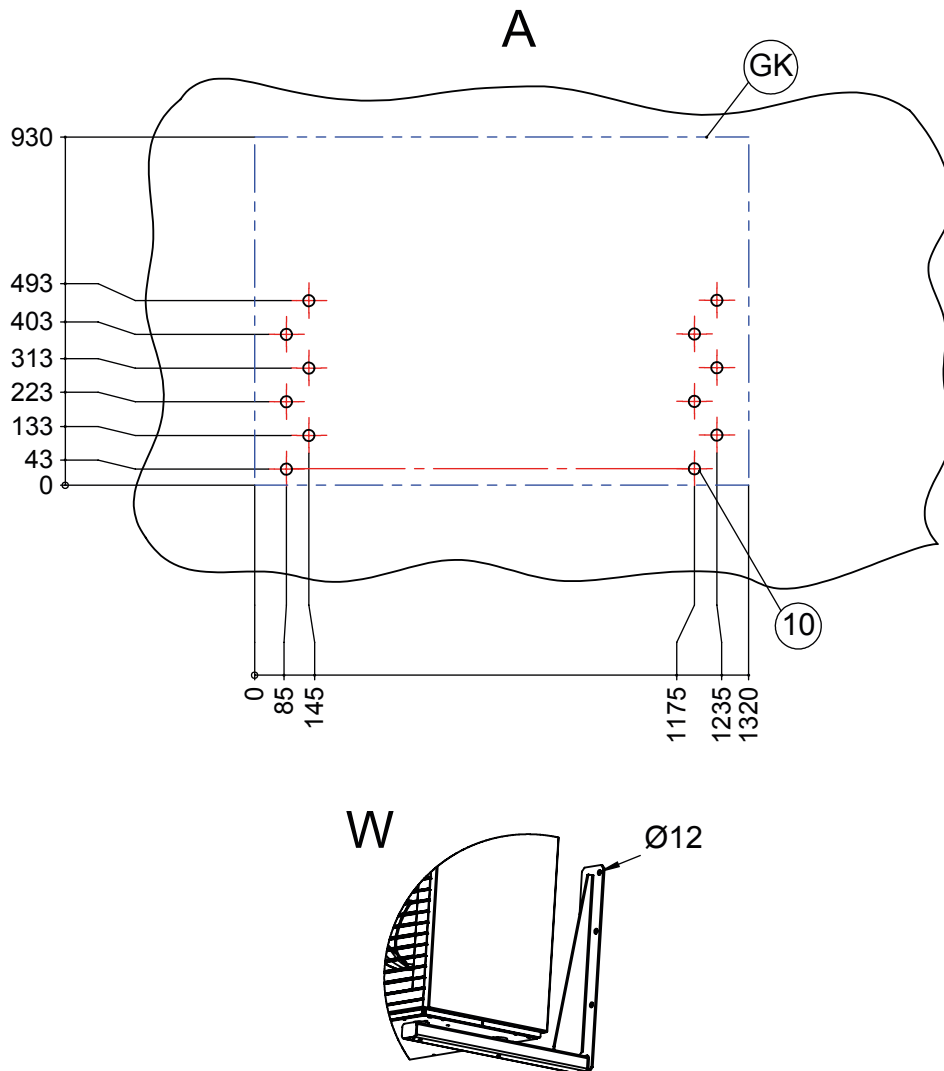
„10 Fixing holes for wall brackets“



LWD 50A(RX) – LWD 70A(RX),  
LWD 90A

Drilling pattern for wall bracket  
HYDRAULIC CONNECTION PIPE

**BB2**



Legend: 819393-6c

We reserve the right to make changes without notice.

All dimensions in mm.

„BB2 Drilling pattern for wall bracket (accessory) on mounting wall for V2“

A Front view

W Detail view of wall mounting

GK Unit contour

„10 Fixing holes for wall brackets“

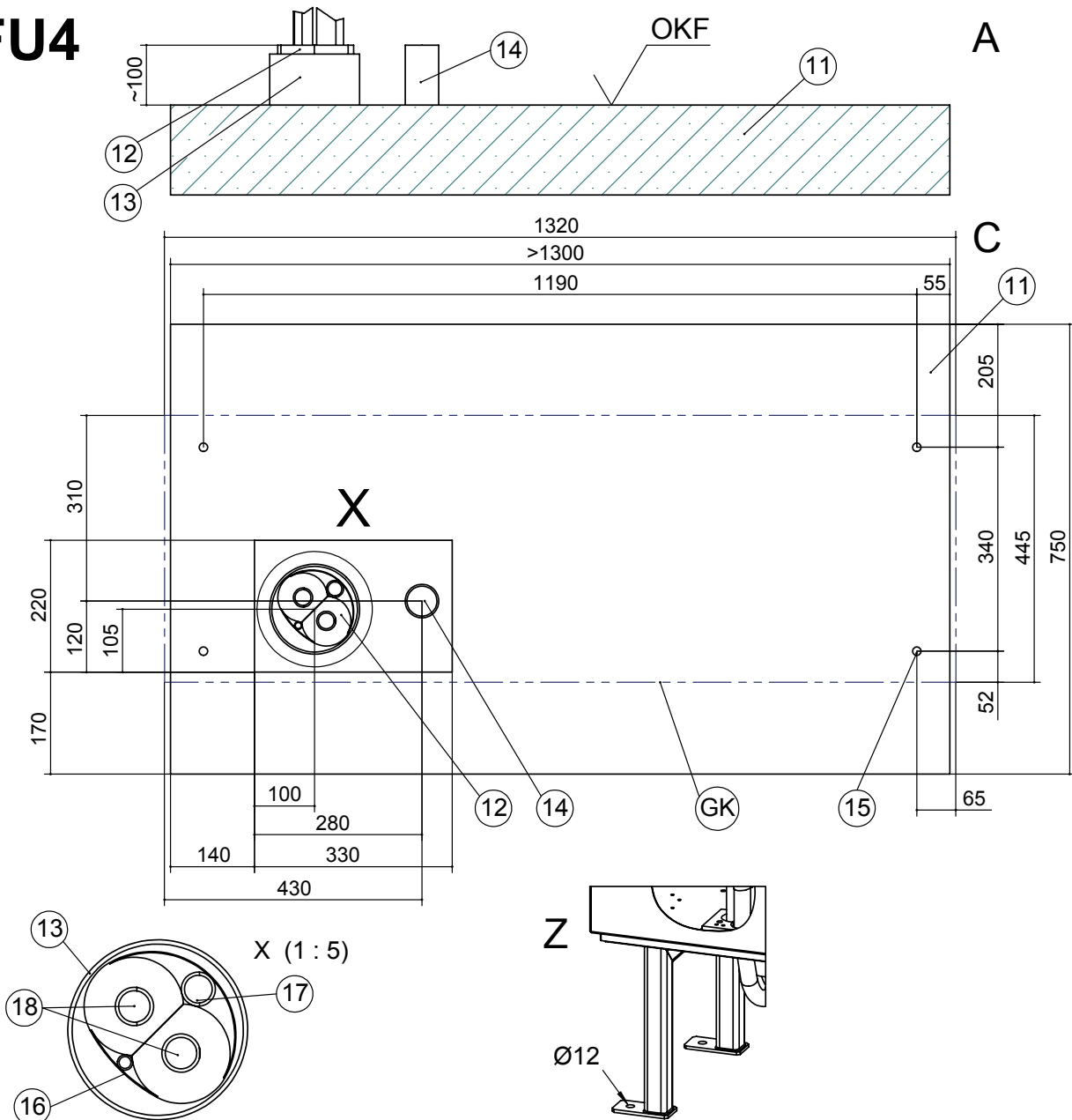




LWD 50A(RX) – LWD 70A(RX),  
LWD 90A

View of foundation V4  
HYDRAULIC CONNECTION PIPE

**FU4**



Legend: 819393-8c

We reserve the right to make changes without notice.

All dimensions in mm.

FU4 View of foundation for V4

A Front view

C Plan view

X Detail view X

11 Foundation

12 Hydraulic connection pipe

13 Reserve conduit DN150 (on site)

14 Condensate drain pipe min. Ø50

Z Detail view of floor mounting"

OKF Top edge of foundation

GK Unit contour

„15 Fixing holes for floor bracket"

16 Reserve conduit for bus cable

17 Reserve conduit for electric cable

18 Heating water feed and return pipe

The foundation must have no structure-borne sound contact with the building.

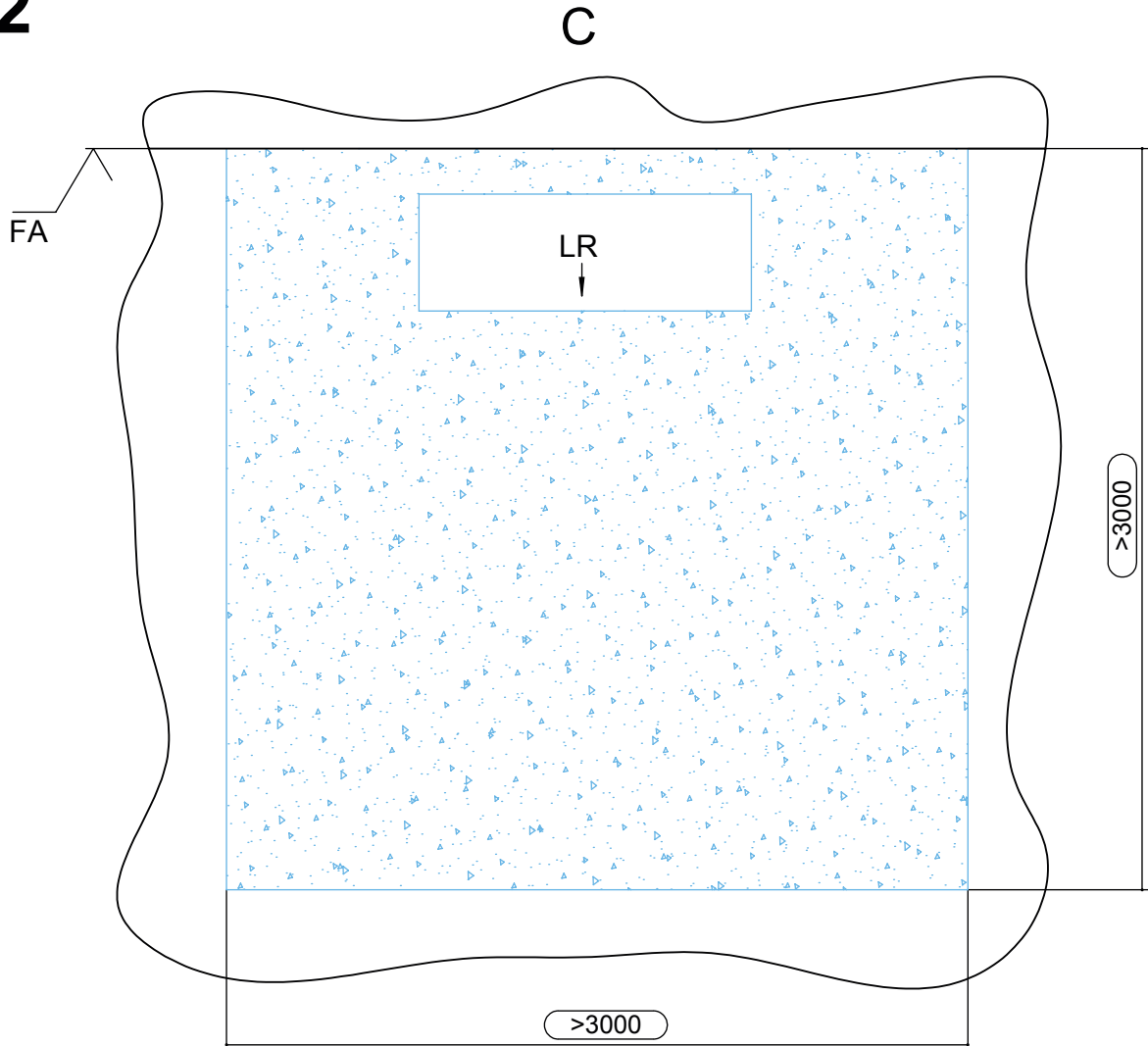




# Minimum clearances

LWD 50A(RX) – LWD 70A(RX),  
LWD 90A

## FW2



Legend: 819393-10c

We reserve the right to make changes without notice.  
All dimensions in mm.

FW2 Functionally necessary minimum spacings

C Plan view

FA Finished outer façade

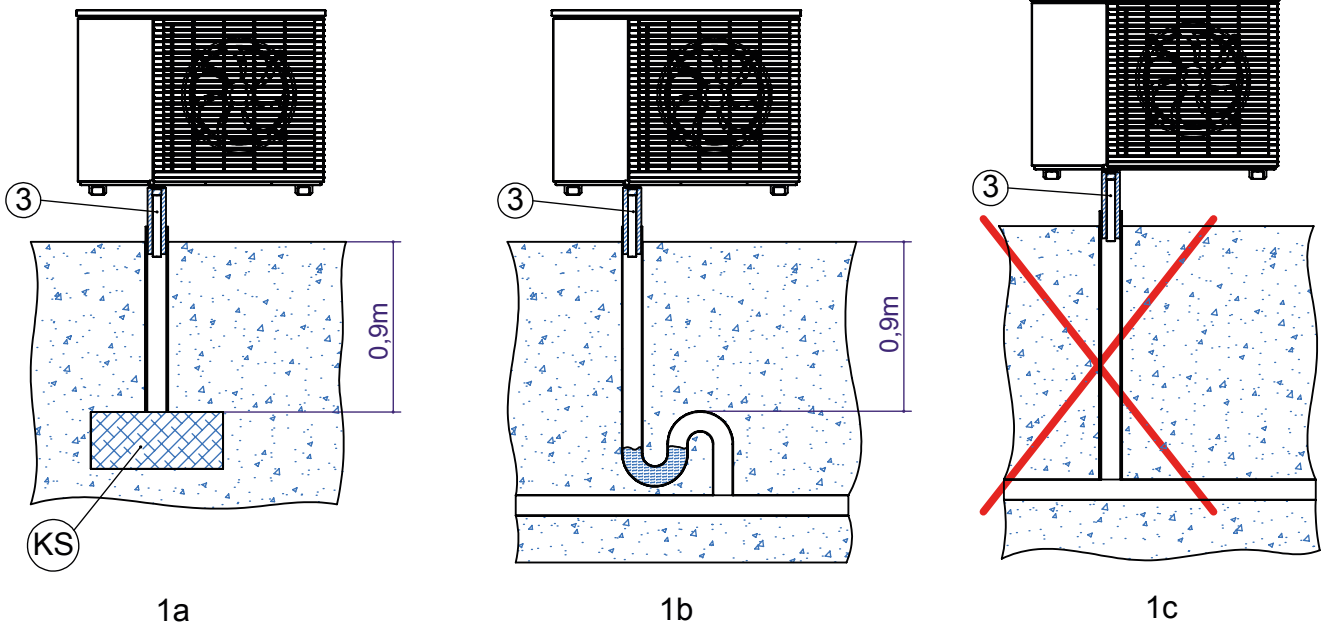
LR Air direction

Minimum clearances



# LWD 50A(RX) – LWD 70A(RX), LWD 90A

## Outside connection of condensate pipe



Legend: 819400-1

Installation instructions for connecting the condensate pipe outside the building

- KS      Gravel layer for absorbing up to 50l condensation water per day as buffer zone for percolating.
- 3        Condensate drain pipe DN 40

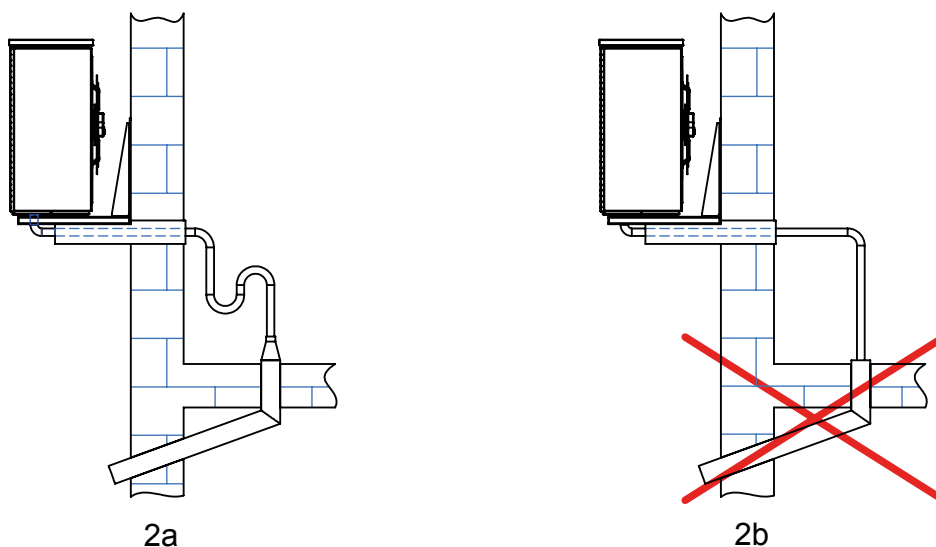
**Important:** If the condensation water is discharged directly into the ground (figure 1a) the condensate drain pipe (3) must be insulated between the ground and the heat pump.

**Important:** If the condensation water is discharged directly into a wastewater or rainwater pipe a syphon must be used (figure 1b).  
A plastic pipe, laid vertically and insulated above the ground, must be used. Further, do not install any non-return valves or similar in the drain pipe.  
The condensate drain pipe must be connected so that the condensate can flow freely into the main pipe. If the condensate is discharged into filter drains or the sewers, ensure the pipes are laid with a gradient.  
In all cases (figure 1a and figure 1b) ensure that the condensation water is discharged in a frost-free zone.



## Inside connection of condensate pipe

LWD 50A(RX) – LWD 70A(RX),  
LWD 90A



Legend: 819400-2

Installation instructions for connecting the condensate pipe inside the building

**Important:** When connecting the condensate pipe inside the building, a syphon must be installed, which is connected gas-tight to the drain pipe (see figure 2a). Do not connect any additional drain pipes to the condensate drain pipe of the heat pump. The drain pipe must be free in the direction of the sewer. I.e. ensure that downstream of the heat pump connection pipe there are no non-return valves or syphons.

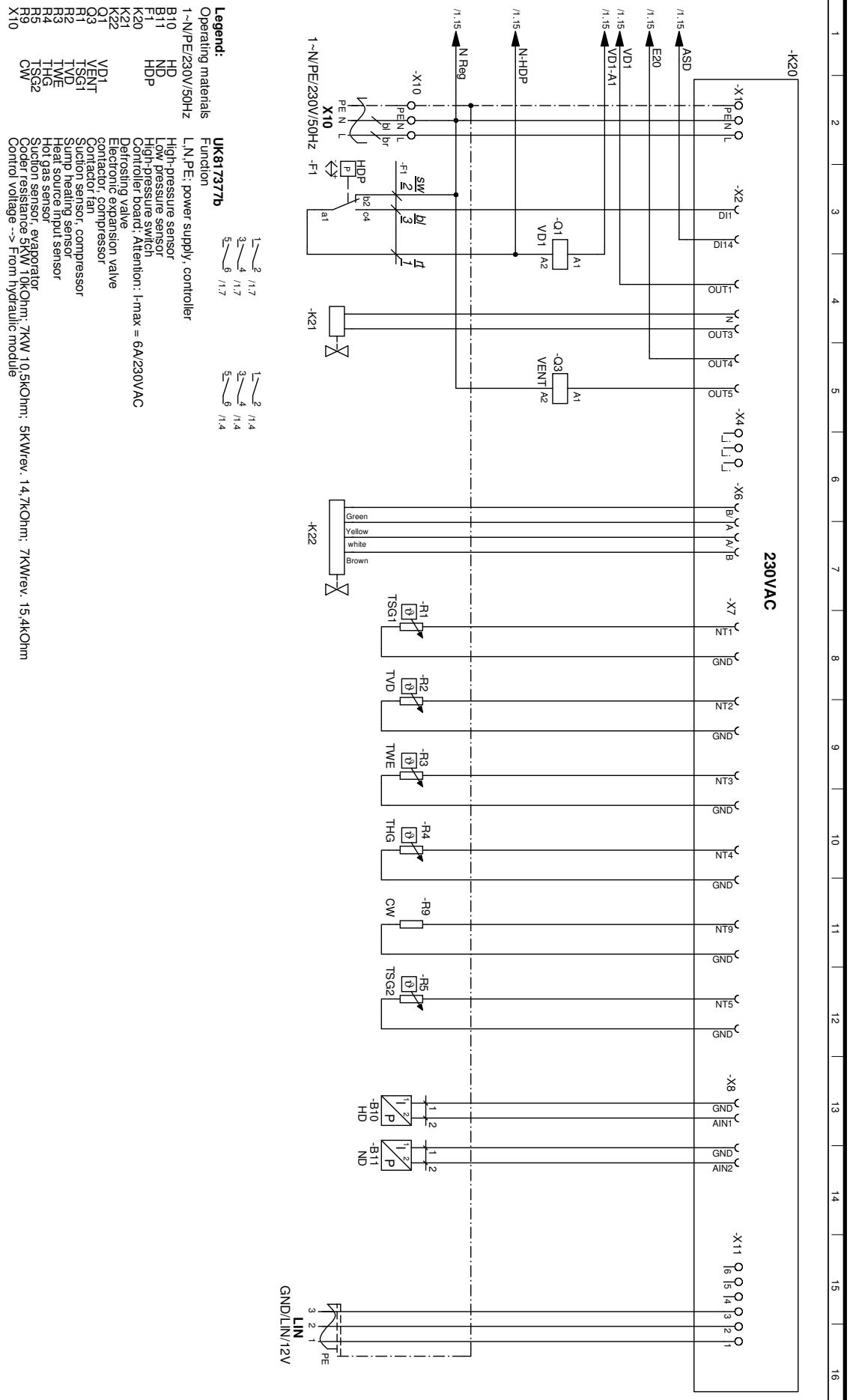
In all cases (figure 2a) it must be ensured that the condensation water is discharged in a frost-free zone





# Circuit diagram 2/2

# LWD 50A(RX) – LWD 70A(RX), LWD 90A







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