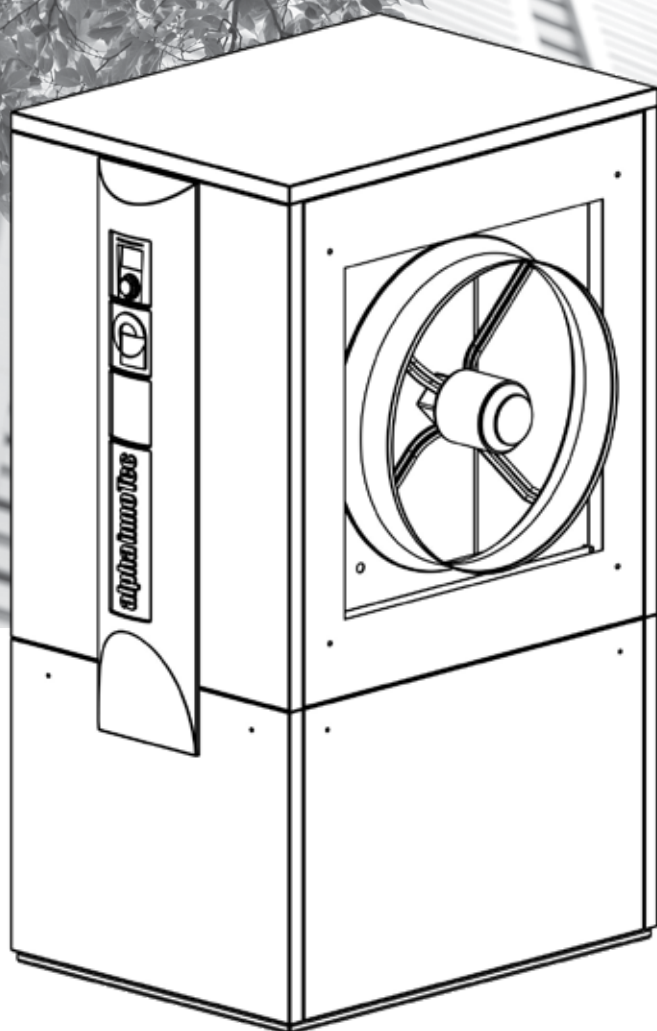


the better way to heat



Air/Water Heat Pumps
Indoor installation

Operating Manual

LW 101 – LW 121

83054300eUK – 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 operators 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 case of questions or uncertainty, contact the factory customer service department or the manufacturer's local service 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 information 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 personnel.



DANGER!

Indicates a **immediate danger of serious 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.



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:

- for heating.
- for heating hot water.

The unit may be operated only within its technical parameters.



Overview "Technical data/scope of delivery".



NOTICE.

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.

Exclusion of liability

The manufacturer will not be liable for damage resulting from unauthorised use of the unit.

The manufacturer's liability will also be voided in the following cases:

- if work is performed on the unit and its components in a manner that does not comply with the terms of this operating manual;
- if work is performed on the unit and its components in an improper manner;
- if work is performed on the unit that is not described in this operating manual, and this work was not expressly approved in writing by the manufacturer;
- if the unit or components in the unit are modified, redesigned or removed without the express written permission of the manufacturer.

EC conformity

The unit bears the CE mark of conformity.



EC declaration of conformity

Safety

The unit is operationally safe when used for the intended purpose. The construction and design of the unit conform to the state of the art, 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 safety gear.



DANGER!

Unit operates using high electric voltage!



DANGER!

Danger 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!



CAUTION!

If using the unit in 3~230V systems, please note that the residual-current circuit breaker (RCCB) used must be AC-DC sensitive.



DANGER!

Only qualified technicians (trained heating, cooling, refrigerant and electrical technicians) may perform work on the unit and its components.



WARNING!

Observe safety labels on and in the unit.



WARNING!

Unit contains refrigerants!

Leaking refrigerant can result in personal injury or material damage. Therefore:

- Shut down unit.
- Notify the manufacturer's authorised service center.



! ATTENTION

For safety reasons:

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

! ATTENTION

Install the heat pump only indoors and operate only with outside air as the heat source. The air ducts must discharge into the open air. Do not restrict or block the air ducts.



Dimensional drawing and installation plan for respective model.



WARNING!

Switch on unit only if air ducts are mounted on the unit.

Take measures on the fan side to prevent injuries from the rotating fan (above-ground air duct discharge: weather grille, below-ground air-channel discharge: rain guard – accessories not included in scope of delivery).

! ATTENTION

The integration of the heat pump in ventilation systems is not permissible. The use of the cooled air for cooling purposes is not permitted.

! ATTENTION

The ambient air in the location where the heating pump is installed and also the intake air which is used as a source of heat must not contain any kind of corrosive components!

Components such as ammonia, sulphur, chlorine, salt, sewer gas, flue gases etc. may cause damage leading to complete failure or even a total write-off of the heating pump!



CAUTION!

In the air outlet area the air temperature is ca. 5 K 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.

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

EU: www.alpha-innotec.com

Warranty / Guarantee

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



NOTICE.

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 colling units.



Dismantling.

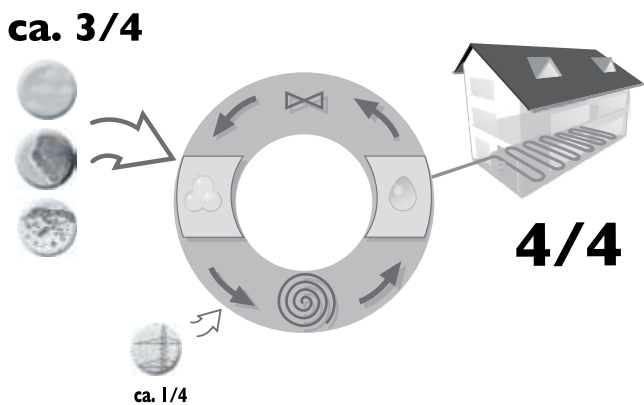


Functioning principle of heat pump system

Heat pumps operate on the principle of a refrigerator: the same technology, only with the opposite effect. 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 ground 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 floor heating:



$\frac{4}{4}$ = usable energy
 ca. $\frac{3}{4}$ = environmental energy
 ca. $\frac{1}{4}$ = external electrical energy

Area of utilisation

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

Overview "Technical data / scope of delivery".

Heat quantity recording

In addition to proof of the unit's efficiency, heating legislation also requires heat quantity recording (referred to as WME in this manual). The WME is mandatory with air/water heat pumps. With brine/ water and water/ water heat pumps, a WME is only required when the feed temperature is $\geq 35^\circ\text{C}$. The WME must record the total warm energy release (heating and hot water) in the building. In heat pumps with heat quantity recording, the analysis is conducted by the regulator. The regulator displays the thermal energy that is exchanged from the heating system in kWh.

Operation

Your decision to purchase a heat pump or a heat pump system is a long-term contribution to protecting the environment through low emissions and reduced primary energy use.

You can operate and control the heat pump system with the control element of the heating and heat pump regulator.



NOTICE.

Make sure that the control settings are correct.



Operating manual of the heating and heat pump regulator.

To ensure that your heat pump or heat pump system operates efficiently and ecologically, the following are especially important:



ENERGY SAVING TIP

Avoid unnecessarily high flow temperatures. A lower flow temperature on the hot water side increases the efficiency of the system.



ENERGY SAVING TIP

When letting in fresh air, do not leave windows open for an extended period, thus saving energy and reducing your heating costs.



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 as well as cleaned as needed - at the very least annually - by a qualified heating or cooling system technician.

It is a good idea to have a maintenance contract with a specialist company. The company will conduct the required maintenance at regular intervals.

! ATTENTION

Check regularly to ensure that the condensate can drain out of the unit unobstructed. To this end, regularly check the condensate pan in the unit and the condensate drain to ensure that they are clean / free from obstructions and clean as needed.

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.

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

Malfunctions

In the event of a malfunction, you can detect the cause of the malfunction via the diagnostic program of the heating and heat pump regulator.



Operating manual of the heating and heat pump regulator.



DANGER!

Service and repair work on the components of the unit may be performed only by customer service personnel authorised by the manufacturer.

Note that no malfunction is displayed if the safety temperature limiter on the electric heating element has been triggered (depending on model).



"Commissioning", "Safety temperature limiter" section.



Scope of delivery

Example of scope of delivery:

View 1:



View 2:



Unit with a completely hermetically enclosed compressor, all safety-related components for monitoring of the cooling circuit, integrated heating and heat pump regulator, sensors mounted in the unit for the monitoring of hot gas, heating water forward flow and return flow temperatures, as well as a hose for condensate discharge (connected to heat pump side)

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

ACCESSORIES NECESSARY FOR OPERATION



ATTENTION

Use only original accessories from the manufacturer of the unit.

Air ducts (with air duct accessories) must be ordered separately.

Installation and assembly

Observe the following when performing all work:



NOTICE.

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



WARNING!

The heat pump or heat pump system may be installed and assembled only by a qualified technician!



NOTICE.

Observe the sound levels of the respective model.



Overview "Technical data/scope of delivery", "Sound" section.



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.

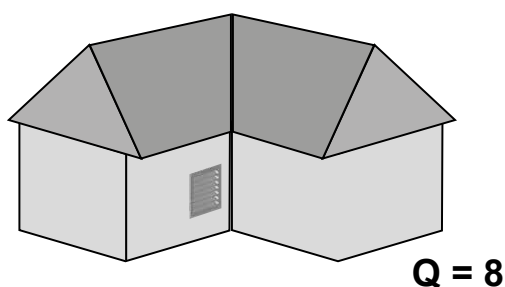
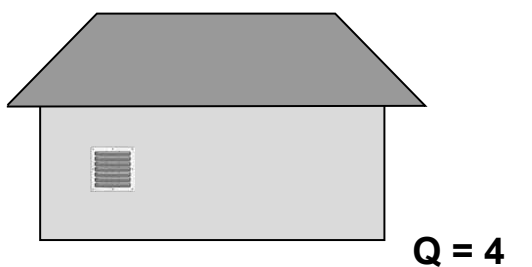
The following sound pressure levels are calculated values. Other constellations, adjoining other buildings or even reflecting surfaces may lead to a level increase. An exact specification of each sound pressure level is possible only through a measurement spot when the heat pump is already installed.

The following sound pressure levels result, depending on the distance and installation variant with directivity factor Q (see sketches):

LW 101	Distance from the heat pump in m																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Directivity factor	Sound pressure level at max. heating output in dB(A)																			
Q																				
2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	50	44	40,5	38	36	34,4	33,1	31,9	30,9	30	29,2	28,4	27,7	27,1	26,5	25,9	25,4	24,9	24,4	24
8	53	47	43,5	41	39	37,4	36,1	34,9	33,9	33	32,2	31,4	30,7	30,1	29,5	28,9	28,4	27,9	27,4	27

LW 121	Distance from the heat pump in m																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Directivity factor	Sound pressure level at max. heating output in dB(A)																			
Q																				
2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	50	44	40,5	38	36	34,4	33,1	31,9	30,9	30	29,2	28,4	27,7	27,1	26,5	25,9	25,4	24,9	24,4	24
8	53	47	43,5	41	39	37,4	36,1	34,9	33,9	33	32,2	31,4	30,7	30,1	29,5	28,9	28,4	27,9	27,4	27

The directivity factor Q for the different installation variants:

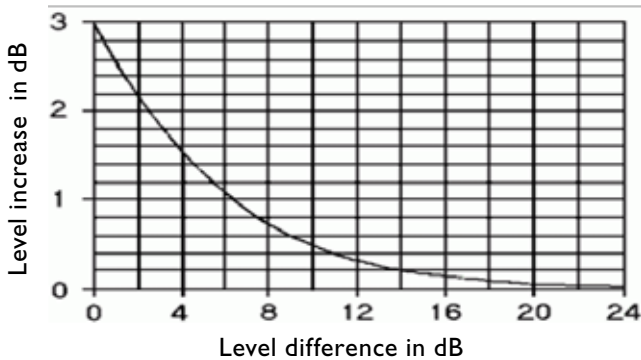


In case of 2 or more units of the same heat pump type, the respective level increase must be added to the corresponding sound pressure level from the following table

Number of n equally loud sound sources	Level increase ΔL 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 LOCATION

! ATTENTION
Install the unit only indoors.

The installation area must be frost-free and dry. It must meet the requirements of DIN EN 378. It must also fulfill applicable local regulations.

Dimensional drawing and installation plan for 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.

If it is not possible to transport the unit to the final installation location using a lifting truck, you can also transport the heat pump using a hand truck or with pipes.

! DANGER!
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.



DANGER!
Unit is not fastened to the wooden pallet.
Danger of tipping over during transport!
This can result in personal injury and damage to the unit.
- Take suitable precautionary measures to eliminate the danger of tipping.



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



! ATTENTION
Do not damage the hydraulic connections under any circumstances.

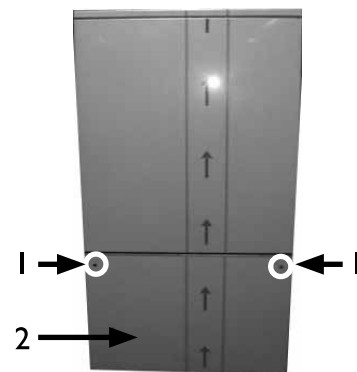


! ATTENTION
Do not tilt the unit more than a maximum of 45° (in any direction).

LIFTING THE UNIT WITH PIPES

The units can be lifted with $\frac{3}{4}$ " and/or 1" pipes (provided by customer) that are suitable for the weight of the respective unit. Special holes are provided in the frame for this purpose.

① Remove lower facing panels on the switch cabinet side (= operator side) of the unit. To do so, loosen quick-release screws. Turn counter-clockwise 90°...



- 1 Quick-release screws
- 2 Lower facing panel

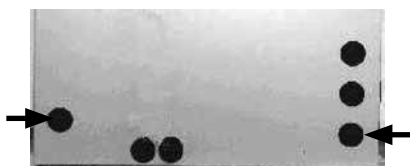




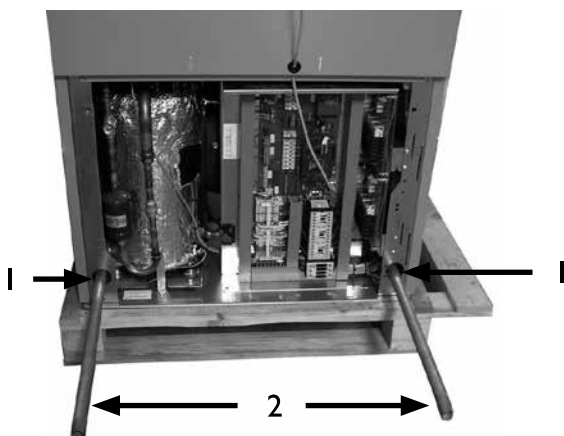
- ② Pull lower facing panel upwards and outwards, detach and set securely to the side...



- ③ On the back of the unit, remove the sealing grommet...



- ④ Insert the pipes through the holes in the frame on the switch cabinet side (= operator side)...



- 1 Holes in the frame
2 Inserted pipes

Make sure that pipes do not damage cable assemblies and components in the unit. Guide pipes carefully past cable assemblies and components in the unit...

- ⑤ Guide pipes through the marked openings on the back side of the unit...



- ⑥ Lift the unit on the pipes with at least four people and carry it to its final installation location...

NOTICE.
Carry the unit horizontally and secure it against slipping.

- ⑦ Put the unit in its final installation location. Make sure that the frame of the unit is in full contact with the underlying surface...

- ⑧ Remove the pipes and re-place the sealing grommets on the back side of the unit...

- ⑨ If the electrical connections will not be carried out directly thereafter, mount the lower facing panel on the operating side.

INSTALLATION

Set the unit on a stable, solid and level, preferably sound-insulated surface. Make sure that the foundation is designed for the weight of the heat pump.

! ATTENTION
In the air outlet area the air temperature is ca. 5 K 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.

! DANGER!
Several people are required to install the unit.

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

! NOTICE.
Always observe the installation plan for the respective model. Note the size and minimum clearances.

Installation plan for respective model.


Set up the unit so that the switch cabinet side (= operating side) is accessible at all times.



MOUNTING THE AIR DUCTS

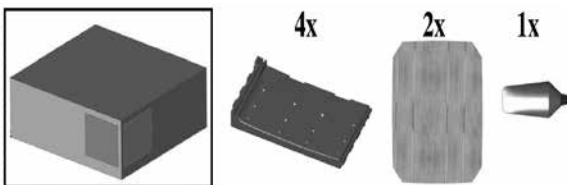
! ATTENTION

Use only original accessories or air ducts recommended by the manufacturer (fibreglass lightweight concrete ducts).
Mount air ducts only according to the installation plan for the respective unit.

 Installation plan for respective model.

WALL DUCT(S) ASSEMBLY

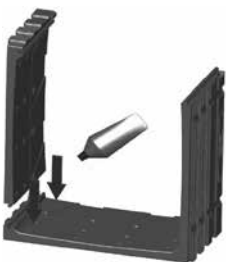
- ① Remove the parts necessary for the assembly of the wall duct(s) from their respective boxes...



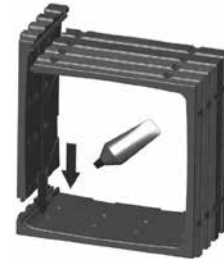
- ② Next, interlock the 2 pieces of the wall duct(s) that belong together, as illustrated in the following drawing. Use the lubricant supplied upon delivery to help in this process...



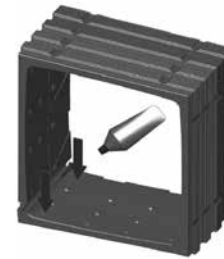
- ③ Affix an additional part as illustrated...



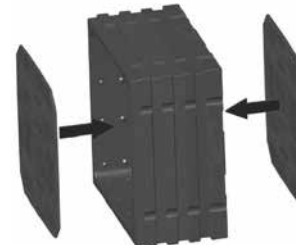
- ④ Rotate the already-interlocked parts 90° and affix the final piece at the bottom...



- ⑤ Rotate the already-interlocked parts by 90° once again and set up the final connection...



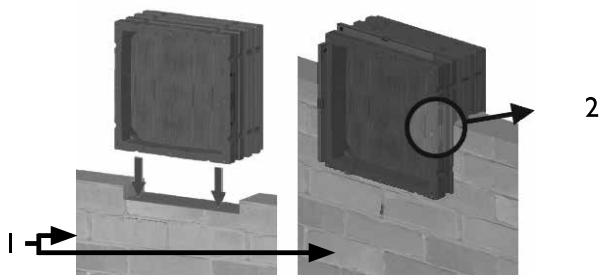
- ⑥ Stabilise the wall duct from the inside using the chipboard included with delivery...





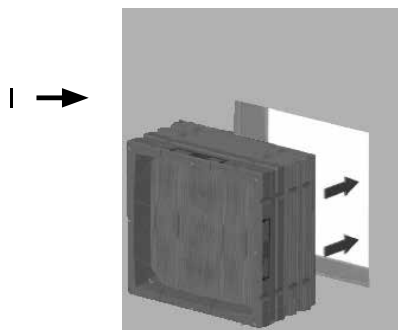
- ⑦ Install the wall duct in the masonry **from the house exterior**. This can either be done during the construction phase (by means of sealing)...

NOTICE.
Mount the wall ducts 1 cm above the finished outer facade.



- 1 Masonry of the house exterior
2 Insert the wall duct in the masonry (1 cm above the finished outer facade)

or retrofit (using foam in the masonry):

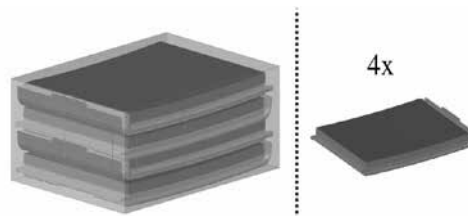


- 1 Finished outer facade

NOTICE.
Wall ducts fix wall openings, help avoid cold air transmission in the masonry as well as assist in the assembly of weather / rain guards and wire mesh grilles

AIR DUCTS ASSEMBLY

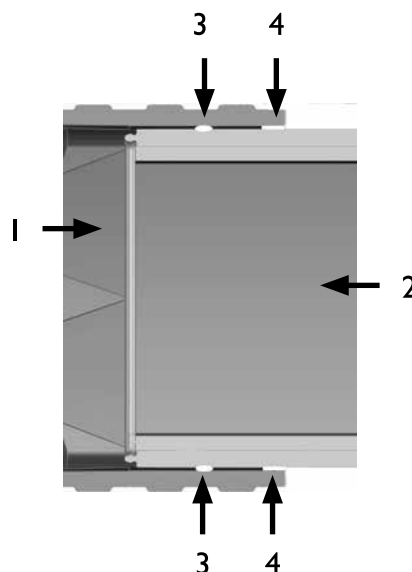
- ① Remove the parts necessary for the assembly of the air duct(s) from their respective boxes...



- ② The interlocking of the air ducts is carried out as described in the section ② – ⑤ entitled "Wall duct(s) assembly".

SECURING THE AIR DUCT INTO THE WALL DUCT

- ① Pull the roll seal included with delivery over the end of the air duct...
② Push this end of the air duct into the wall duct.



- 1 Wall duct
2 Air duct
3 Roll seal
4 Bentonite waterproofing tape (apply only after assembling the unit's connection fastener)

NOTICE.
After the other end of the air duct has been secured to the heat pump, close the opening between the wall duct and the air duct using the bentonite waterstop tape included with delivery.



SECURING THE AIR DUCT ON THE HEAT PUMP

- ① Clip on the assembly rail and secure it using special screws to the spots on the air duct designated as the air intake side...
- ② Stick the adapter base included with delivery on the edge of the air duct...
- ③ Position the air duct on the respective opening of the air intake side...
- ④ Hook the tension springs included with delivery into the holes provided for them on the air intake side of heat pump 4...
- ⑤ Hook the tension springs into the assembly tail that has been screwed on to the air duct...
- ⑥ Secure a protective cap over the assembly rail...



- ⑦ Repeat ① – ⑥ the process on the air output side.



NOTICE.

Don't forget:

After the air ducts have been secured to the heat pump, close the opening between the wall duct and the air duct using the bentonite water-stop tape included with delivery.

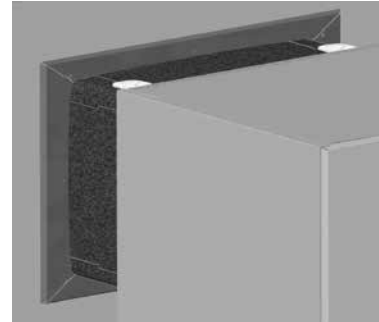


NOTICE.

Secure the air ducts to the cover using appropriate measures.

SCREEN FRAME ASSEMBLY

Screw the screen frame to the wall ducts on both the air intake and output sides.

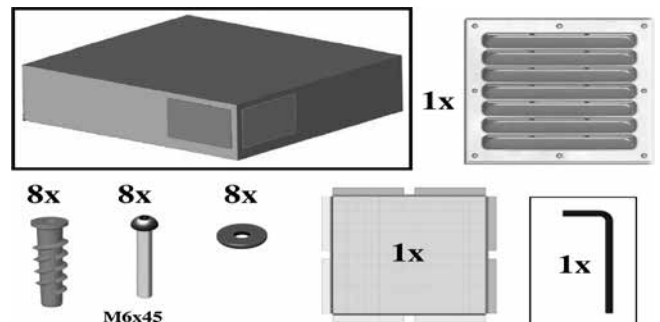


NOTICE.

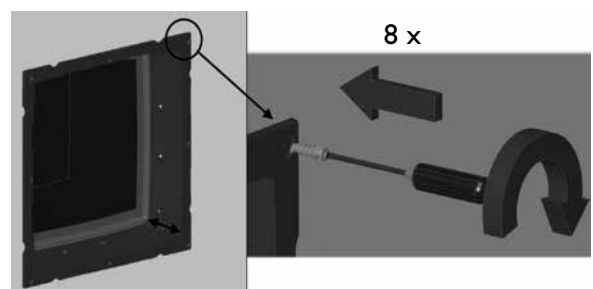
The screen frame has no function, it is included solely to provide an optically attractive transition to the wall duct.

WIRE MESH GRILLE AND WEATHER / RAIN GUARDS ASSEMBLY

- ① Remove the wire mesh grille and the weather / rain guards as well as the assembly frame and fastening material from their respective boxes...

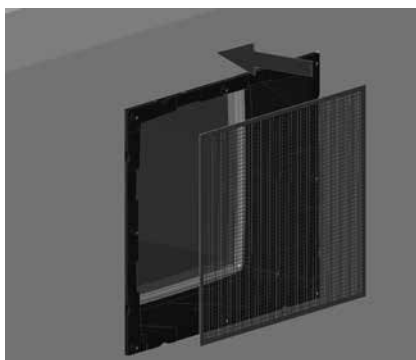


- ② From the outside of the house inwards, insert the assembly frame into the wall duct on the air intake side and secure with screws...

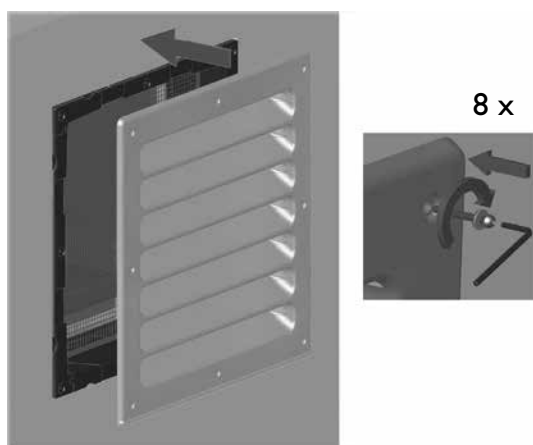




- ③ Position the wire mesh grille in the assembly frame...



- ④ Set the weather / rain guards on the assembly frame in the wall duct and screw down...



NOTICE.

If the wall duct is positioned above ground level, attach the weather guard.
If the wall duct is positioned in a light well (below ground level), attach the rain guard.

- ⑤ Repeat ② – ④ the process on the air output side.

INSTALLATION / CONNECTION TO HEATING CIRCUIT



ATTENTION

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



“Hydraulic connection” instructions.



NOTICE.

Check to make sure that the diameters and lengths of the pipes for the heating circuit are sufficiently dimensioned.



NOTICE.

Circulating pumps must be multi-stage. They must be able to deliver at least the minimum hot water flow rate required for your model.



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



ATTENTION

The hydraulic system must be equipped with a buffer tank, the required volume of which depends on the model of your unit.



Overview “Technical data/scope of delivery”, “heating circuit, buffer tank” section.



ATTENTION

When installing the connections, always secure the connections on the unit from twisting, in order to prevent damage to the copper pipes in the interior of the unit.



① Rinse heating circuit thoroughly prior to connecting the unit to the heating circuit...



NOTICE.

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.



NOTICE.

During installation of the shut-off devices, the liquefier of the heat pump can be flushed, if necessary.

- ③ Connect the unit to the pipes of the heating circuit via vibration decouplers. They must be installed in order to prevent damage from vibrations to the pipes.



NOTICE.

Vibration decouplers are available as accessories.

The connections for the heating water outflow (forward flow) and the hot water inflow *(return flow) are marked accordingly.



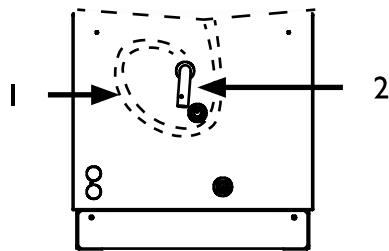
For positioning of the connections, reference the dimensional drawing for the respective model.

CONDENSATE DISCHARGE

The condensation water that accumulated from the air must be drained via the pre-mounted hose in the unit for condensate discharge. To do so, connect the hose for condensate discharge with a water drain.



For positioning of the connection for condensate discharge, see dimensional drawings for the respective model.



- 1 Hose for condensate discharge in interior of unit
- 2 Connection for the condensate discharge on the outside of the unit



ATTENTION

Guide the pre-mounted hose in the unit for condensate discharge in the interior of the unit as a siphon, as shown in the illustration.

Discharge of the condensate into the sewage system is permitted only via a funnel siphon, which must be accessible at all times.

Pressure relief

Equip the heating circuit in accordance with local standards and directives with a safety valve and an expansion tank.

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

Overflow valve

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.



“Set the overflow valve”, page 23

Buffer tank

The hydraulic connection of the heat pump requires a buffer tank in the heating circuit. It ensures a minimum operating time of the heat pump when the heating circuit valves are closed. The required volume of the buffer tank is calculated based on the following formula:

$$V_{\text{Buffer tank}} = \frac{\text{minimum flow rate of heat circuit volume flow / hour}}{10}$$



For the minimum flow rate of the heat circuit volume flow, see overview “Technical data/Scope of delivery”, “Heating circuit” section.

In mono-energetic air/water systems, integrate the buffer tank in the heating water outflow (forward flow) before the overflow valve.



Circulating pumps

! ATTENTION

Always note the model.
Do not use regulated circulating pumps.
Circulating pumps and domestic hot water circulation pumps must be multi-stage pumps.

Water heating

Water heating with the heat pump requires an additional hot water circuit, parallel to the heating circuit. Make sure that the heating water charge is not channelled through the buffer tank of the heating circuit.



"Hydraulic connection" instructions.

Hot-water tank

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

i NOTICE.

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

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

i NOTICE.

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



"Hydraulic connection" instructions.

Electrical connections

Observe the following when performing all work:



DANGER!

Danger 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!



DANGER!

Observe the relevant EN-, VDE and/or applicable local safety regulations during installation and during all electrical work.

Comply with any technical connection requirements laid down by the responsible power supply company!



NOTICE.

All live wires must be stripped before they are installed in the cable duct of the switch cabinets!

POWER CONNECTION

① If the unit is closed, open the facing panels on the operating side...



"Installation".

② Open electrical switch cabinet of unit...



Example of open electrical switch cabinet...



- ③ Lead 230V power cable, power cable for circulating pumps and cable for external temperature sensor through the rubber sockets on the facing panel in the unit...

③.①

Cut out the rubber sockets on the facing panel...

- For positioning of the rubber sockets for inserting the wires, see "dimensional drawing" for the respective model.

③.②

Insert the cables through the rubber sockets in the unit...

The wires inside the unit are guided in a closed wire duct to the terminals on the switch plate.

- ④ Install electric connections according to the terminal diagram that applies to your model...

- Terminal diagram for respective model.

! ATTENTION

Ensure clockwise rotary field of the load power supply (compressor).
– An incorrect rotary field of the compressor during operation can cause serious, irreparable damage to the compressor.

! ATTENTION

Make sure to equip the power supply of the heat pump with a 3-pole automatic cut-out with at least 3 mm contact gap.
Note the level of the release current.

- Overview "Technical data/scope of delivery", "Electric" section.

! ATTENTION

If using the unit in 3~230V systems, please note that the residual-current circuit breaker (RCCB) used must be AC-DC sensitive.

i ATTENTION

Factory setting for the electric heating element in units with integrated electric heating elements is 6 kW (9 kW). It can be changed at contactor Q5 (Q6) for 2 (3) or 4 kW (6kW).

- For further information, see the adhesive label on the electric heating element.

i NOTICE.

Using a suitable network cable, the control element of the heat and heat pump regulator can be connected with a computer or a network allowing the heating and heat pump regulator to be controlled from there.

If such a connection is desired, lay a category 6 screened network cable with RJ-45 plug through the unit parallel to the heating and heat pump regulator control cable already present when making the connections, and lead it through the front panel of the unit.

- ⑤ Close electrical switch cabinet of unit....

- ⑥ Attach the lower facing panels.

Flushing, filling and bleeding the system

! ATTENTION

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. Alpha InnoTec ensures continuous technological advances, but all these technical refinements require the system to be operated with correctly filled heating water. 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 alkalis 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



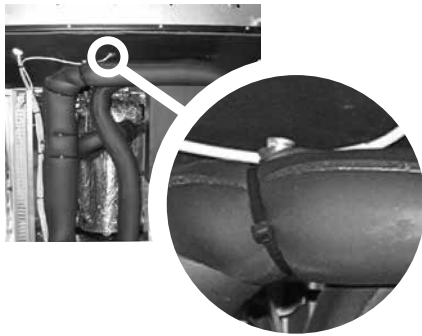
ideal approach for closed heating circuits, in particular, because low oxygen input into the heating circuit can also be tolerated.

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 Flush, fill and bleed the heating circuit...
- ② In addition, bleed the condenser of the heat pump...
 - ②.①
Open the lower facing panel...
 - ②.②
Open the bleed valve...



- ③ Following bleeding, close the lower facing panel.

Insulating the hydraulic connections

Insulate the vibration decouplers and the pipes of the heating circuit.

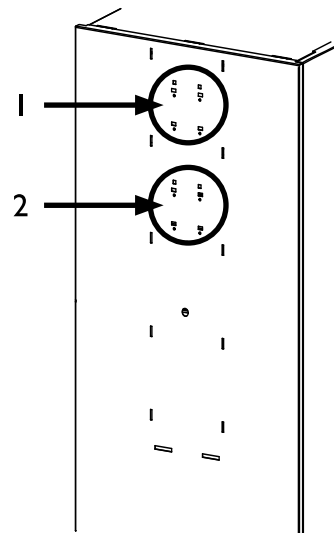


NOTICE.

Insulate in accordance with applicable local standards and directives.

Installation of the control element

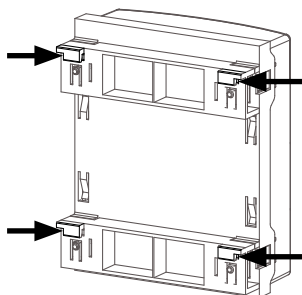
Situated at different heights in the front panel of the unit are four-pin sockets for fastening the control element:



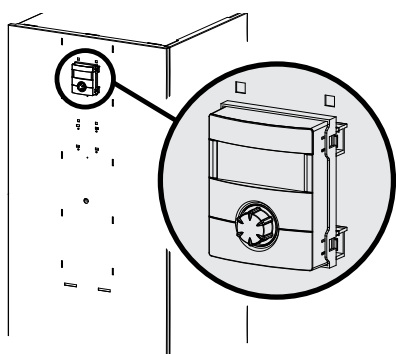
- 1 four upper recesses
- 2 four lower recesses



Four hooks are located on the back side of the control element and can be used to hang the control element on the front facade of the unit:

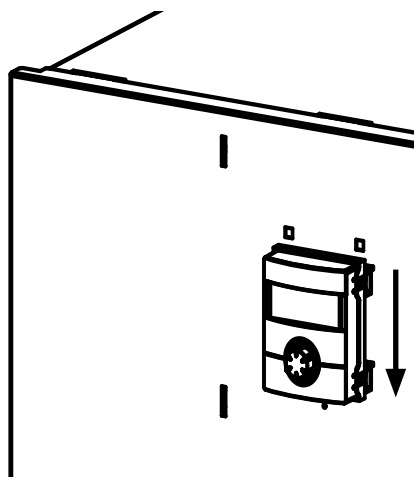


- ① Hang the control element's hooks on the recesses of the front facade (either in the upper or lower recesses)...

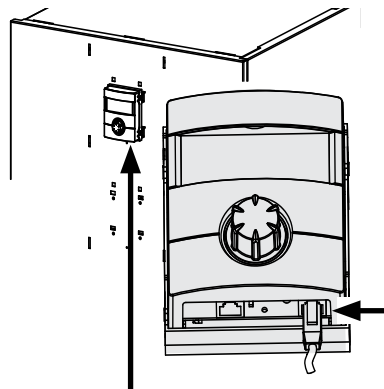


Example:
Control element in upper recesses

- ② Push the control element down until it locks into position...



- ③ Stick the heating and heat pump regulator's control cable into the **right** bushing on the bottom of the control element...



NOTICE.

A connection to a computer or a network can be installed via the left bushing on the bottom of the control element, allowing the heating and heat pump regulator to be controlled remotely. One pre-condition is that a screened network cable (category 6) be installed through the unit when installing the unit.



Operating manual for the heating and heat pump regulator, version "Qualified technician", "Web server" section.

If this network cable is available, insert the network cable's RJ-45 plug into the left bushing of the control element.



NOTICE.

The network cable can be exchanged at any time. In order to be able to connect it, the screen must first be removed.



Installation and removal of the screen

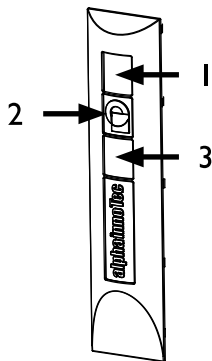
INSTALLING THE SCREEN



NOTICE.

The screen is provided at the time of delivery so that the control element may be inserted in the upper recesses of the front facade.

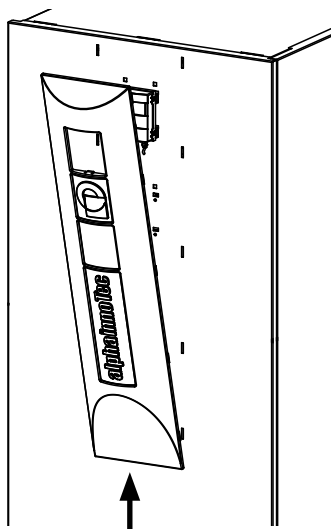
If the control element has been inserted in the lower recesses of the front facade, you must first remove the screen's temporary cover and then reinsert it above the logo.



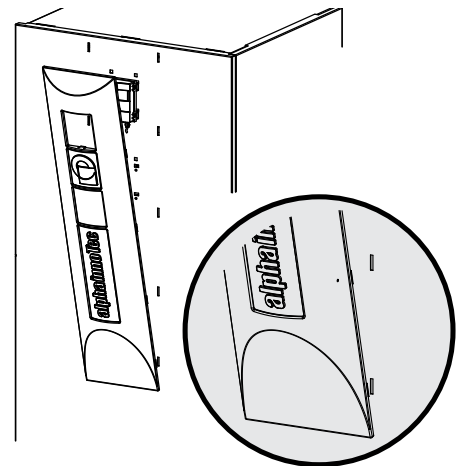
Screen at time of delivery:

- 1 recess for control element
- 2 logo
- 3 temporary cover

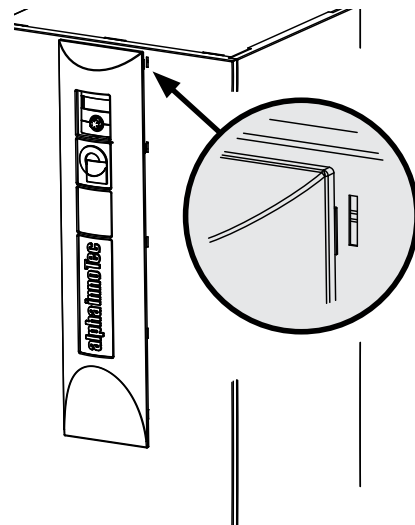
- ① First, insert the screen **below**, in the provided slots on the front of the facade...



- ② Beginning first on one side and moving upwards, lock the screen's snap-in lugs in place **in the slots** provided on the front of the facade...



- ③ **Next, on the opposite side, moving upwards,** lock the screen's snap-in lugs **in place** in the slots provided on the front of the facade...
- ④ Finally, press the screen's upper snap-in lugs into the slots provided on the front of the facade.



REMOVING THE SCREEN

In order to remove the screen, the snap-in lugs must **first be loosened by pressing one side completely toward the middle of the screen.** Thereafter, remove the snap-in lugs from the opposite side.



Set the overflow valve

REMARQUE

The activities in this section are only necessary for in-line tank integration.

Complete the worksteps quickly, otherwise the maximum return temperature can be exceeded and the heat pump switches to high-pressure fault.

Turn the adjusting knob at the overflow valve to the right to increase the temperature difference (the temperature drop), turn it to the left to reduce it.

System is running in heating mode (ideally in cold condition).

- ① In case of low heating curve: Set the system to "Forced heating"...

Operating manual of the heating and heat pump controller.

- ② Shut off valves to the heating circuit...

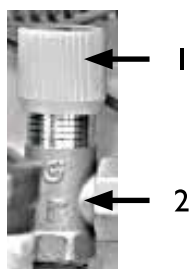
- ③ Ensure that the total flow is routed via the overflow valve...

- ④ Read out the flow and return temperature at the heating and heat pump controller...

Operating manual of the heating and heat pump controller.

- ⑤ Turn the adjusting knob (1) of the overflow valve (2) until the temperature drop between the flow and return temperature is set as follows:

External temperature	Recommended settings
-10 °C	4 K
0 °C	5 K
10 °C	8 K
20 °C	9 K
30 °C	10 K



- ⑥ Open valves to heating circuit...

- ⑦ Reset the heating and heat pump controller.

Commissioning



DANGER!

The unit may be commissioned only with the air ducts and weather grille or rain guard installed and with the covers 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...

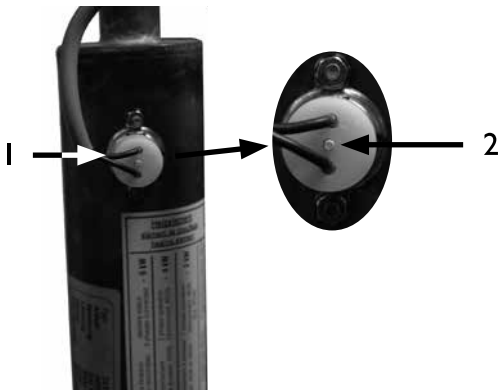
In other countries:

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!

SAFETY TEMPERATURE LIMITER

A safety temperature limiter is built into the electric heating element (depending on model). In the event of a malfunction in the heat pump or air in the system, check whether the reset button of the safety temperature limiter has tripped. If this is the case, push in the button.



- 1 Safety temperature button on electric heating element
- 2 Reset button

Dismantling



DANGER!

Danger 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!



DANGER!

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



DANGER!

Only qualified cooling system technicians are allowed to dismantle the unit and its components.



ATTENTION

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

REMOVAL OF THE BUFFER BATTERY



ATTENTION

Before scrapping the heating and heat pump regulator, remove the buffer battery on the processor board. The battery can be removed using a screwdriver. Dispose of battery and electronic components in keeping with environmental considerations.





Technical data / scope of delivery

Heat pump type	Brine/water Air/water Water/water	• applicable — not applicable
Installation location	Indoors Outdoors	• applicable — not applicable
Conformity		CE
Performance data	Heating capacity/COP at	
	A7/W35 Standard point acc. to EN14511	2 Compressors 1 Compressor
	A7/W45 Standard point acc. to EN14511	2 Compressors 1 Compressor
	A2/W35 Operating point according to EN14511	2 Compressors 1 Compressor
	A10/W35 Operating point according to EN14511	2 Compressors 1 Compressor
	A-7/W35 Operating point according to EN14511	2 Compressors 1 Compressor
	A-15/W65	2 Compressors 1 Compressor
		kW ... kW ... kW ... kW ... kW ... kW ... kW ...
Limits of application	Heating circuit	°C
	Heat source	°C
	Additional operating points	°C
Sound	Internal sound pressure level (open air test field, distance of 1m around the engine, average)	dB(A)
	External sound pressure level (open air test field, distance of 1m around the air supplies, average) (2x 1m original straight air duct)	dB(A)
	Sound inside	dB(A)
	Sound outside	dB(A)
Heat source	Air volume flow at maximum external compression	m³/h
	Maximum external pressure	Pa
Heating circuit	Volume flow: minimum flow rate nominal flow rate A7/W35 EN14511 maximum flow rate	l/h
	Pressure loss heat pump Δp volume flow	bar l/h
	Free compression heat pump Δp volume flow	bar l/h
	Content of buffer tank	l
	3-way valve, heating/hot water	...
General unit data	Dimensions (see dimensional drawing for the specified unit size)	unit size
	Total weight	kg
	Connections Heating circuit	...
	Heat source	...
	Refrigerant Refrigerant type Quantity	... kg
	Free cross section, air channels	mm
	Cross section, condensate water / length from unit	mm m
Electric	Voltage code all-pole circuit breaker heat pump **)	... A
	Voltage code circuit breaker control voltage **)	... A
	Voltage code circuit breaker electric heating element **)	... A
Heat Pump	Effective power consumption in standard point A7/W35 according to EN14511: Power consumption current consumption cos ϕ	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	Circulating pump heating circuit at nominal flow rate: Power consumption current consumption	kW A
Safety equipment	Safety component heating circuit Safety component heat source	Includ. in sc. of del.: • yes — no
Heating and heat pump regulator		Includ. in scope of delivery: • yes — no
Control and sensor wire		Includ. in scope of delivery: • yes — no
Power cable to unit		Includ. in scope of delivery: • yes — no
Electronic soft starter		integrated: • yes — no
Expansion vessels	Heat source: Scope of delivery Volume Initial pressure	• yes — no bar
Overflow valve		integrated: • yes — no
Vibration decouplers	Heating circuit heat source	Included in scope of delivery: • yes — no

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*) depending on components tolerances and flow **) comply with local regulations n.n. = not detectable w.w. = to choice
 1) hot water return 2) hot water flow

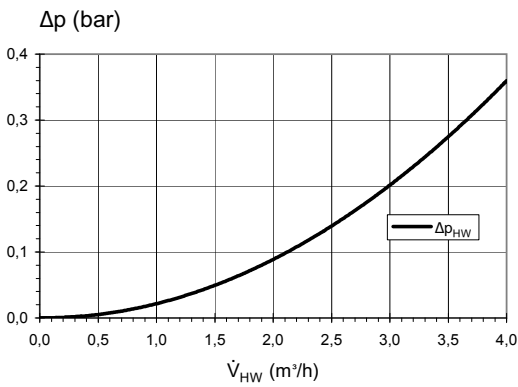
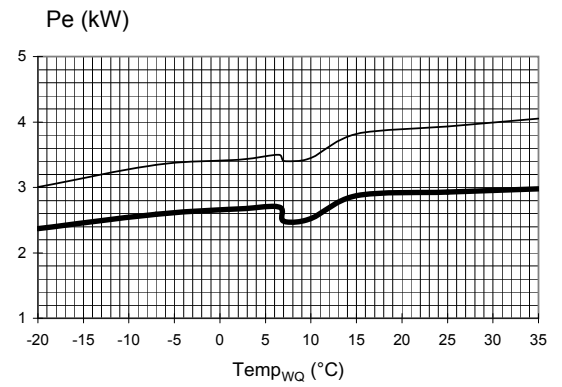
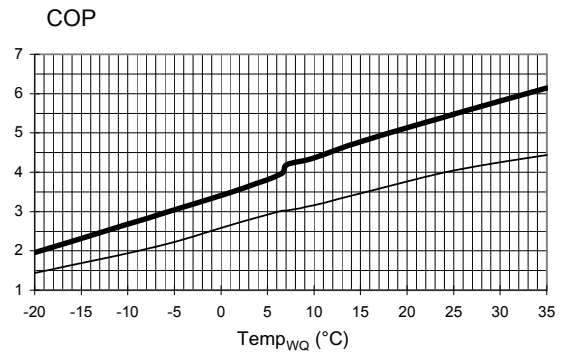
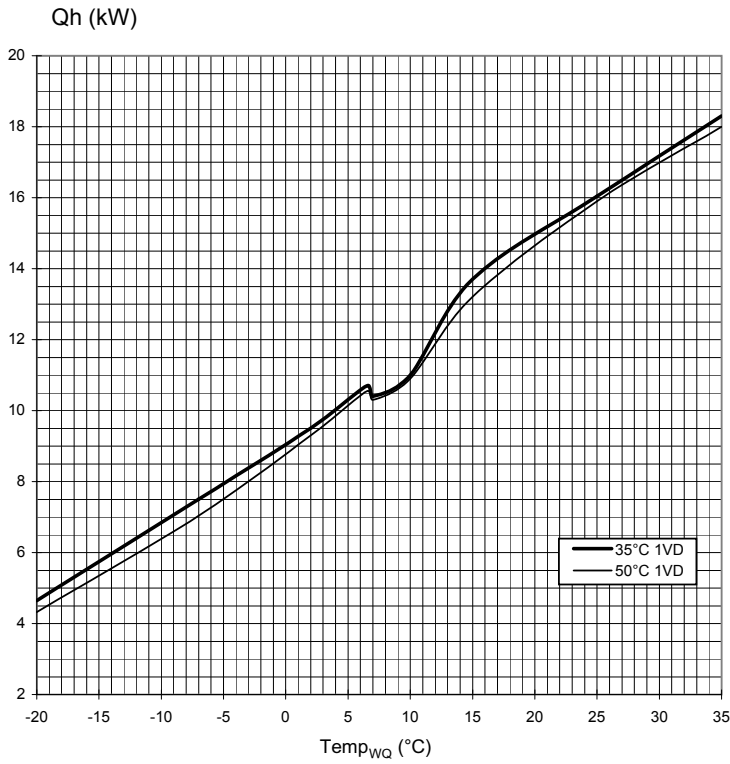


	LW 101	LW 121
	— • —	— • —
	• —	• —
	•	•
	—	—
	10,3 4,2	12,8 4,2
	—	—
	10,1 3,5	12,7 3,5
	—	—
	9,5 3,7	11,8 3,7
	—	—
	11,1 4,4	12,8 4,4
	—	—
	7,5 2,9	9,1 2,9
	—	—
	—	—
	20 ¹ – 50 ²	20 ¹ – 50 ²
	-20 – 35	-20 – 35
	A> -7 / 60 ²	A> -7 / 60 ²
	50	50
	50	50
	—	—
	55	55
	4000	4000
	25	25
	1500 2000 2500	1650 2500 3100
	0,09 2000	0,09 2500
	— —	— —
	—	—
	—	—
	2	3
	260	280
	G1"AG	G1"AG
	—	—
	R407C 4,8	R407C 5,8
	570 x 570	570 x 570
	30 1	30 1
	3~/N/PE/400V/50Hz C10	3~/N/PE/400V/50Hz C16
	1~/N/PE/230V/50Hz B10	1~/N/PE/230V/50Hz B10
	3~/N/PE/400V/50Hz B16	3~/N/PE/400V/50Hz B16
	2,6 5,4 0,7	3,1 6,4 0,7
	9,2	11,5
	51,5 19	64 23
	20	20
	9 6 3	9 6 3
	— —	— —
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	813520d	813521d



LW 101

Performance curves



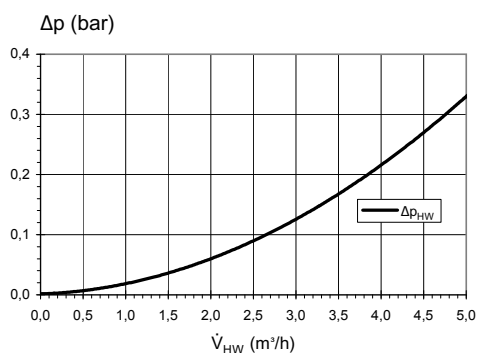
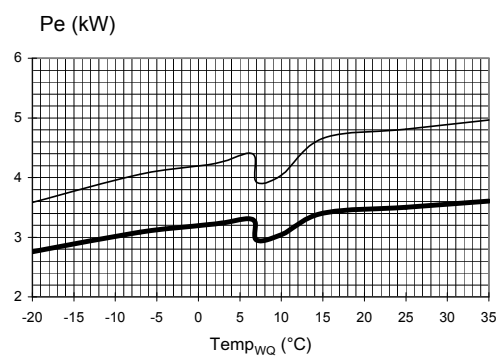
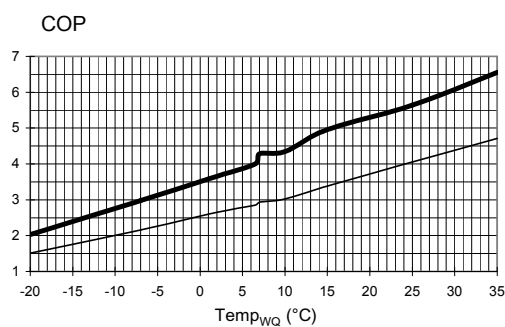
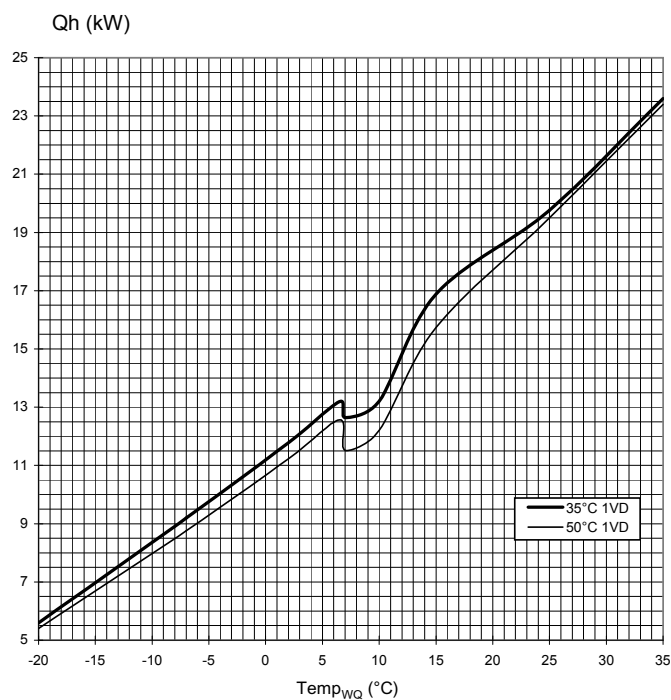
823152

Legend:	UK823129L/170408
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

LW 121



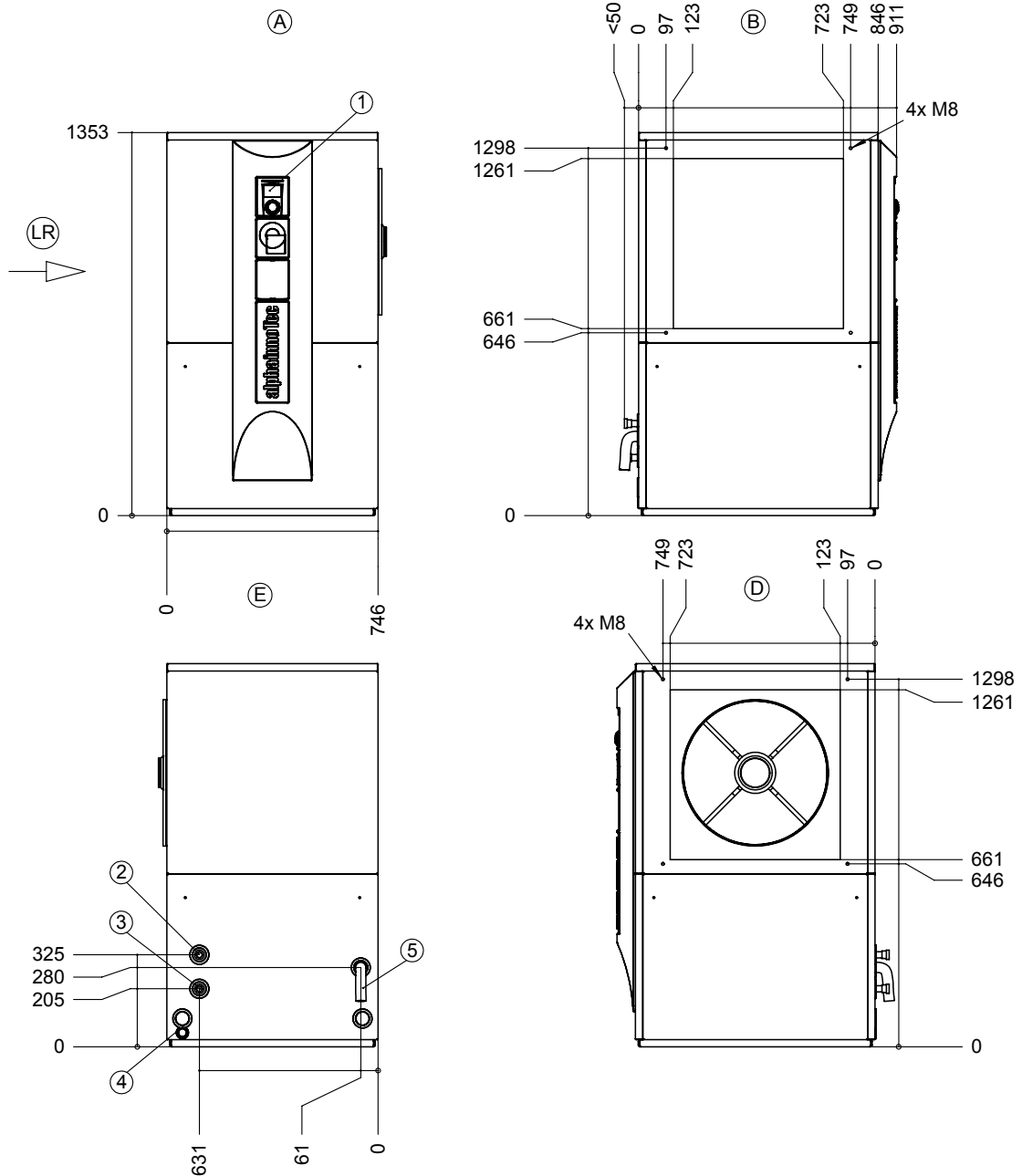
823153

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
Δp_{HW}	Pressure loss heat pump
VD	Compressor(s)



LW 101

Dimensional drawings



Legend: UK819352a
All dimensions in mm.

- A Front view
- B Side view from left
- D Side view from right
- E Rear view
- LR Air direction

Item	Designation
1	Control panel
2	Hot water outlet (flow)
3	Hot water inlet (return)
4	Bushings for electrical / sensor cables
5	Condensate hose \varnothing i 30

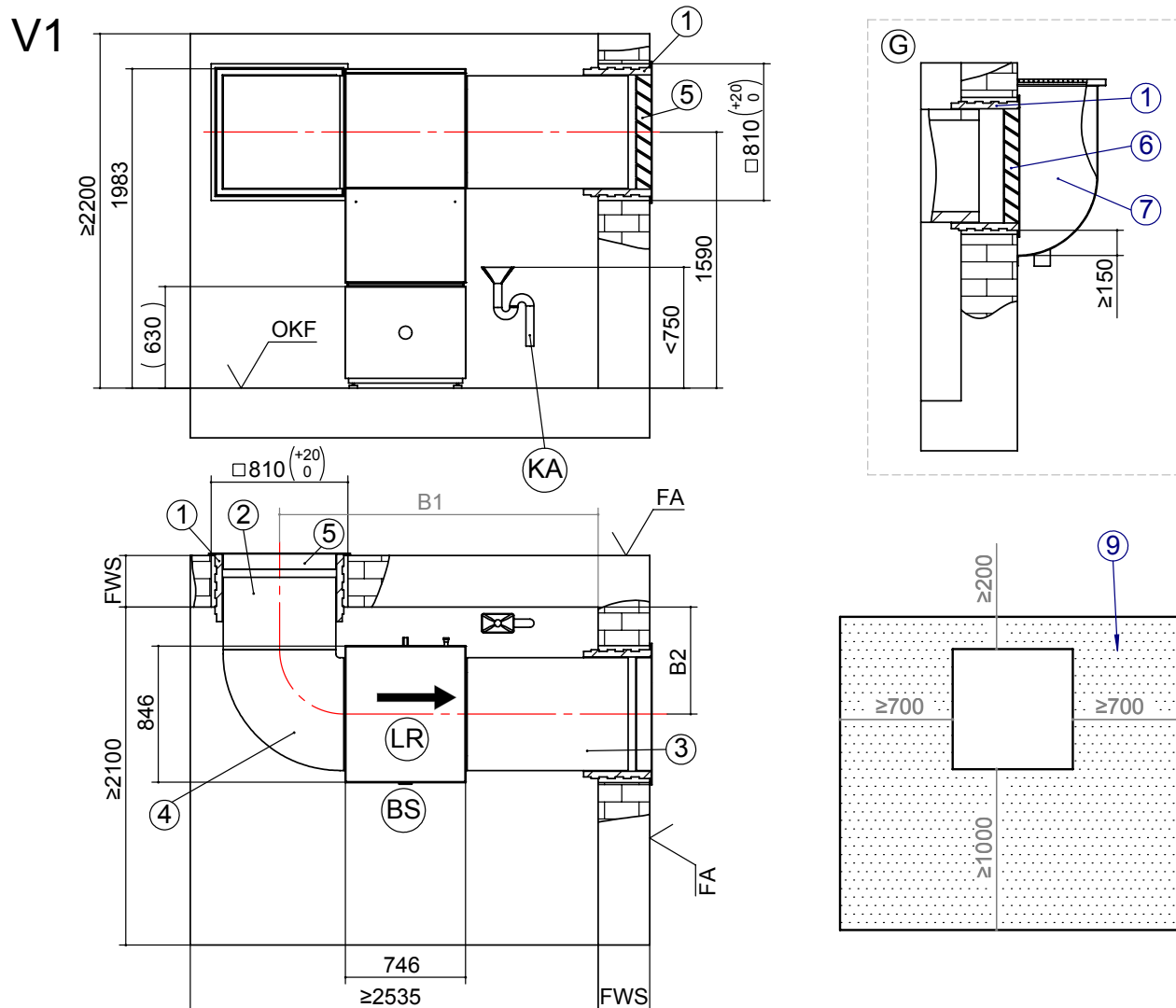
G 1" DIN ISO 228
G 1" DIN ISO 228

Length from device 1m



Installation plan Version 1

LW 101



Legend: UK819345a-1

All dimensions in mm.

Item	Designation	Dim.
B1	With finished wall thickness 240 to 320	2060
	With finished wall thickness 320 to 400	1980
B2	With finished wall thickness 240 to 320	755
	With finished wall thickness 320 to 400	665

Item Designation

V1	Version 1
OKF	Top edge of finished floor
FA	Finished outer façade
LR	Air direction
BS	Operator side
FWS	Finished wall thickness
KA	Condensate discharge
G	Section installation in light well

1	Accessory: wall duct 800x800x420
2	Accessory air duct 700x700x450
3	Accessory: air duct 700x700x1000
4	Accessory: air duct bend 700x700x750
5	Installation above ground level Accessory: weather guard 845x850
6	Installation in light well Accessory: rain guard 845x850
7	provided by customer: light well with water drain min. exposed cross section 0,6m ²
9	Minimum clearance for service purposes If the distances were to be reduced to the minimum dimension, the air ducts must be made shorter. This leads to a significant increase in the sound intensity level!

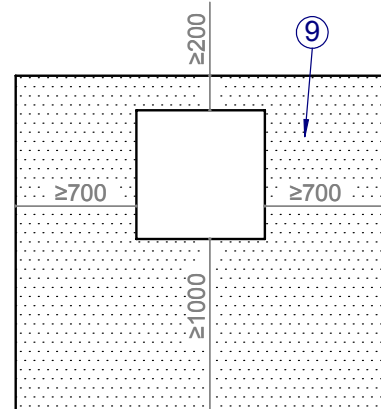
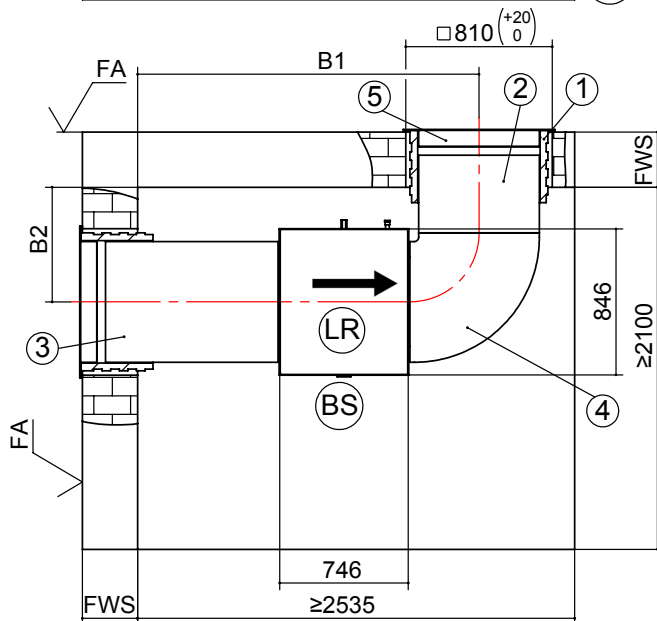
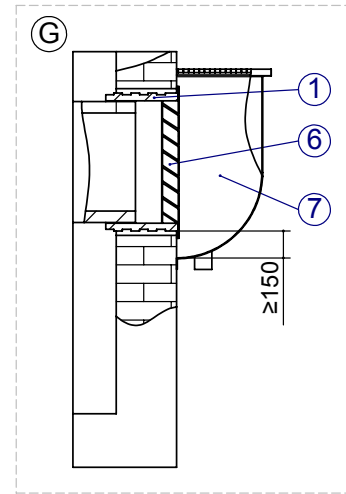
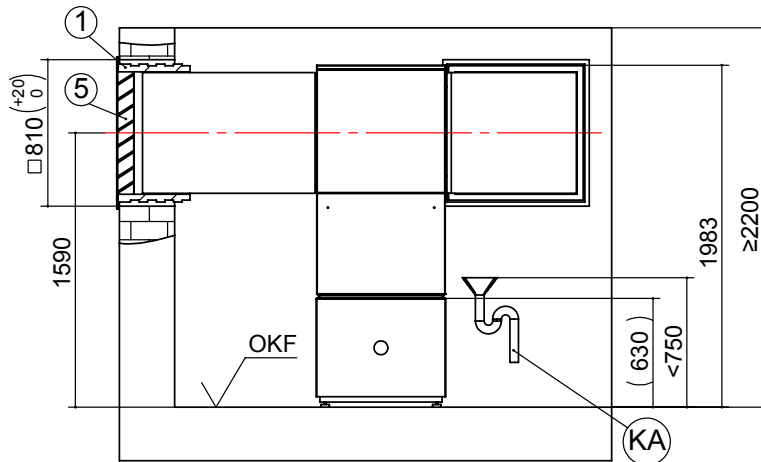
Tilting dimension of heat pumps (without tank) ≈1540
 Notice: If the lower buffer tank is replaced with an additional buffer tank, a sun of 630 must be taken from all of the height coordinates.



LW 101

Installation plan Version 2

V2



Legend: UK819345a-2

All dimensions in mm.

Item	Designation	Dim.
B1	With finished wall thickness 240 to 320	2060
	With finished wall thickness 320 to 400	1980
B2	With finished wall thickness 240 to 320	745
	With finished wall thickness 320 to 400	665

V2	Version 2
OKF	Top edge of finished floor
FA	Finished outer façade
LR	Air direction
BS	Operator side
FWS	Finished wall thickness
KA	Condensate discharge
G	Section installation in light well

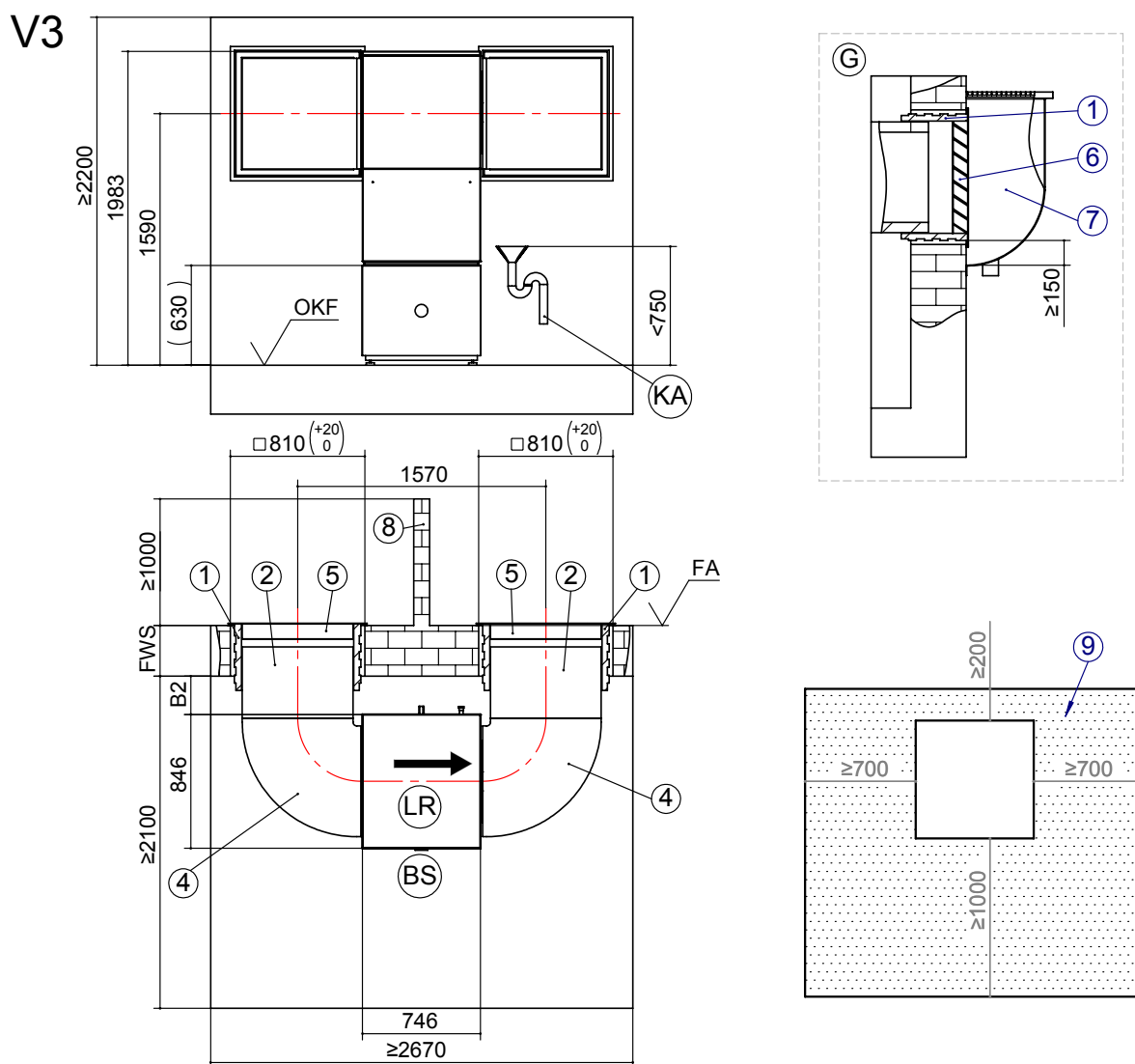
Item	Designation
1	Accessory: wall duct 800x800x420
2	Accessory air duct 700x700x450
3	Accessory: air duct 700x700x1000
4	Accessory: air duct bend 700x700x750
5	Installation above ground level Accessory: weather guard 845x850
6	Installation in light well Accessory: rain guard 845x850
7	provided by customer: light well with water drain min. exposed cross section 0,6m ²
9	Minimum clearance for service purposes If the distances were to be reduced to the minimum dimension, the air ducts must be made shorter. This leads to a significant increase in the sound intensity level!

Tilting dimension of heat pumps (without tank) ≈1540
 Notice: If the lower buffer tank is replaced with an additional buffer tank, a sun of 630 must be taken from all of the height coordinates.



Installation plan Version 3

LW 101



Legend: UK819345a-3

Item	Designation	Dim.
B2	With finished wall thickness 240 to 320	320
	With finished wall thickness 320 to 400	240
V3	Version 3	
OKF	Top edge of finished floor	
FA	Finished outer façade	
LR	Air direction	
BS	Operator side	
FWS	Finished wall thickness	
KA	Condensate discharge	
G	Section installation in light well	

All dimensions in mm.

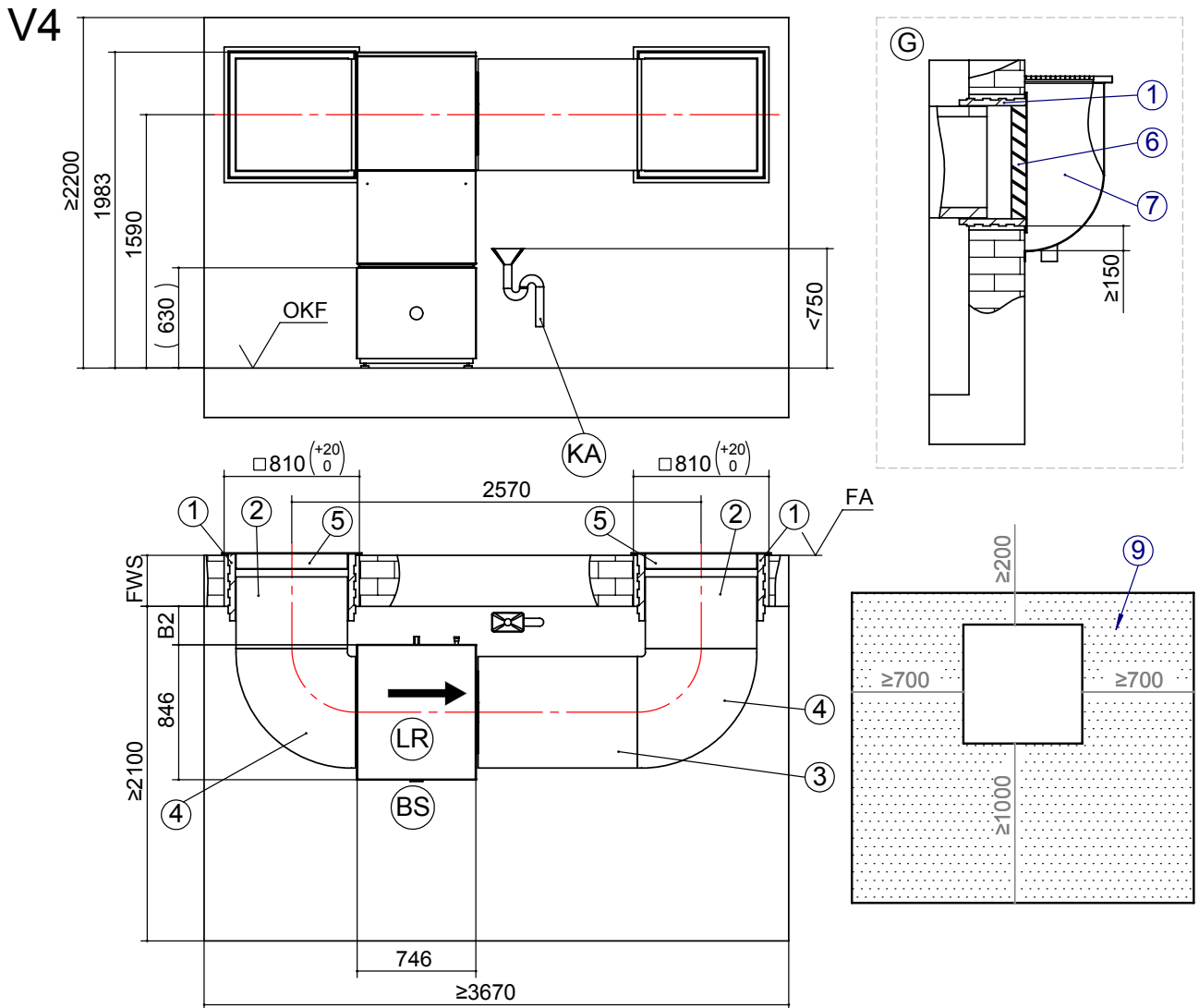
Item	Designation
1	Accessory: wall duct 800x800x420
2	Accessory air duct 700x700x450
4	Accessory: air duct bend 700x700x750
5	Installation above ground level Accessory: weather guard 845x850
6	Installation in light well Accessory: rain guard 845x850
7	provided by customer: light well with water drain min. exposed cross section 0,6m ²
8	Ventilation separation: Depth: ≥ 1000 Height by light well installation ≥ 1000 Height by installation above ground level: ≥ 1000, 300 above weather guard
9	Minimum clearance for service purposes If the distances were to be reduced to the minimum dimension, the air ducts must be made shorter. This leads to a significant increase in the sound intensity level!

Tilting dimension of heat pumps (without tank) ≈1540
 Notice: If the lower buffer tank is replaced with an additional buffer tank, a sun of 630 must be taken from all of the height coordinates.



LW 101

Installation plan Version 4



Legend: UK819345a-4

All dimensions in mm.

Item	Designation	Dim.
B2	With finished wall thickness 240 to 320	320
	With finished wall thickness 320 to 400	240
V4	Version 4	
OKF	Top edge of finished floor	
FA	Finished outer façade	
LR	Air direction	
BS	Operator side	
FWS	Finished wall thickness	
KA	Condensate discharge	
G	Section installation in light well	

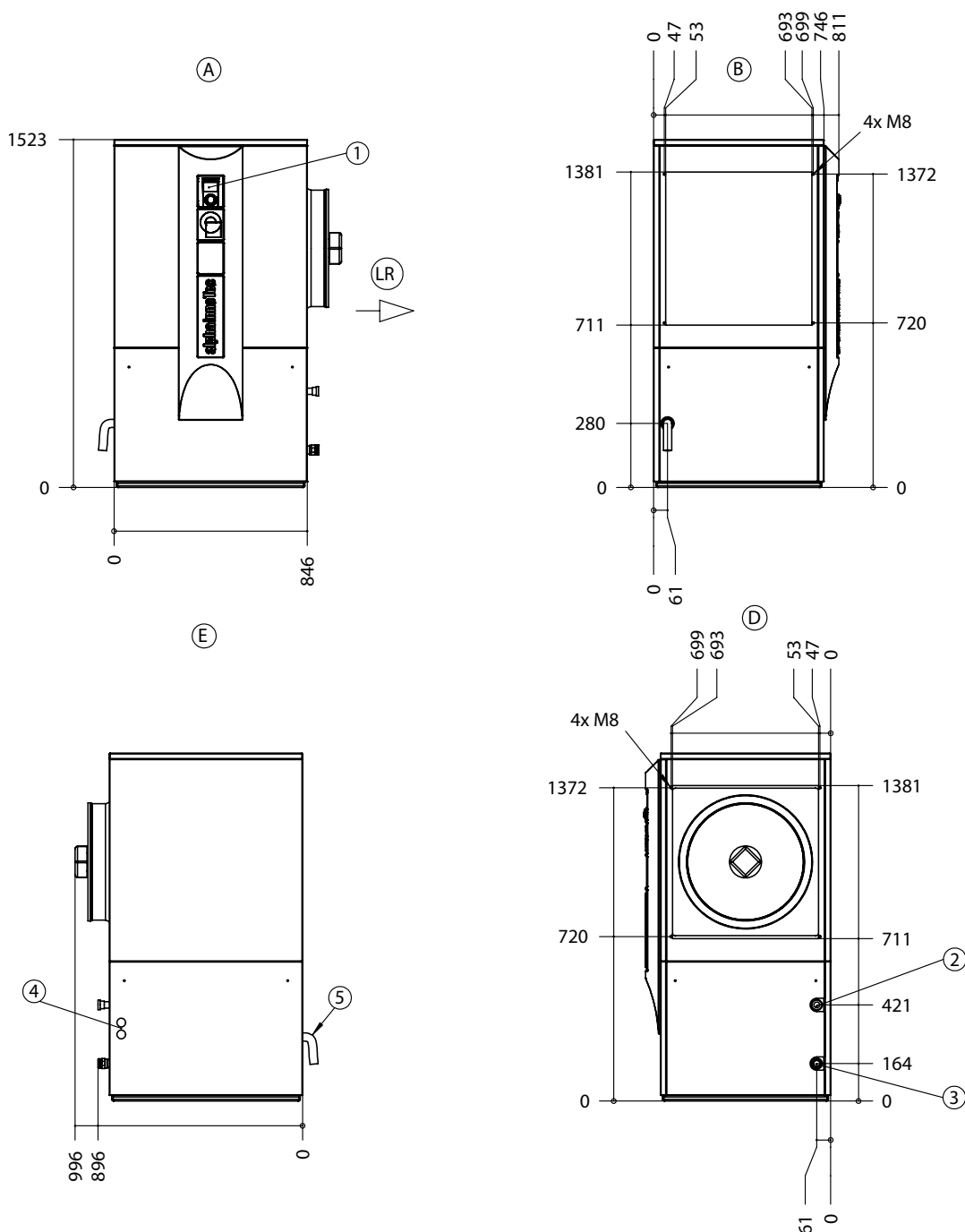
Item	Designation
1	Accessory: wall duct 800x800x420
2	Accessory air duct 700x700x450
4	Accessory: air duct bend 700x700x750
5	Installation above ground level Accessory: weather guard 845x850
6	Installation in light well Accessory: rain guard 845x850
7	provided by customer: light well with water drain min. exposed cross section 0,6m ²
9	Minimum clearance for service purposes If the distances were to be reduced to the minimum dimension, the air ducts must be made shorter. This leads to a significant increase in the sound intensity level!

Tilting dimension of heat pumps (without tank) ≈1540
 Notice: If the lower buffer tank is replaced with an additional buffer tank, a sun of 630 must be taken from all of the height coordinates.



Dimensional drawings

LW 121



Legend: UK819354
 All dimensions in mm.

- A Front view
- B Side view from left
- D Side view from right
- E Rear view
- LR Air direction

- | Item | Designation |
|------|---|
| 1 | Control panel |
| 2 | Hot water outlet (flow) |
| 3 | Hot water inlet (return) |
| 4 | Bushings for electrical / sensor cables |
| 5 | Condensate hose \varnothing i 30 |

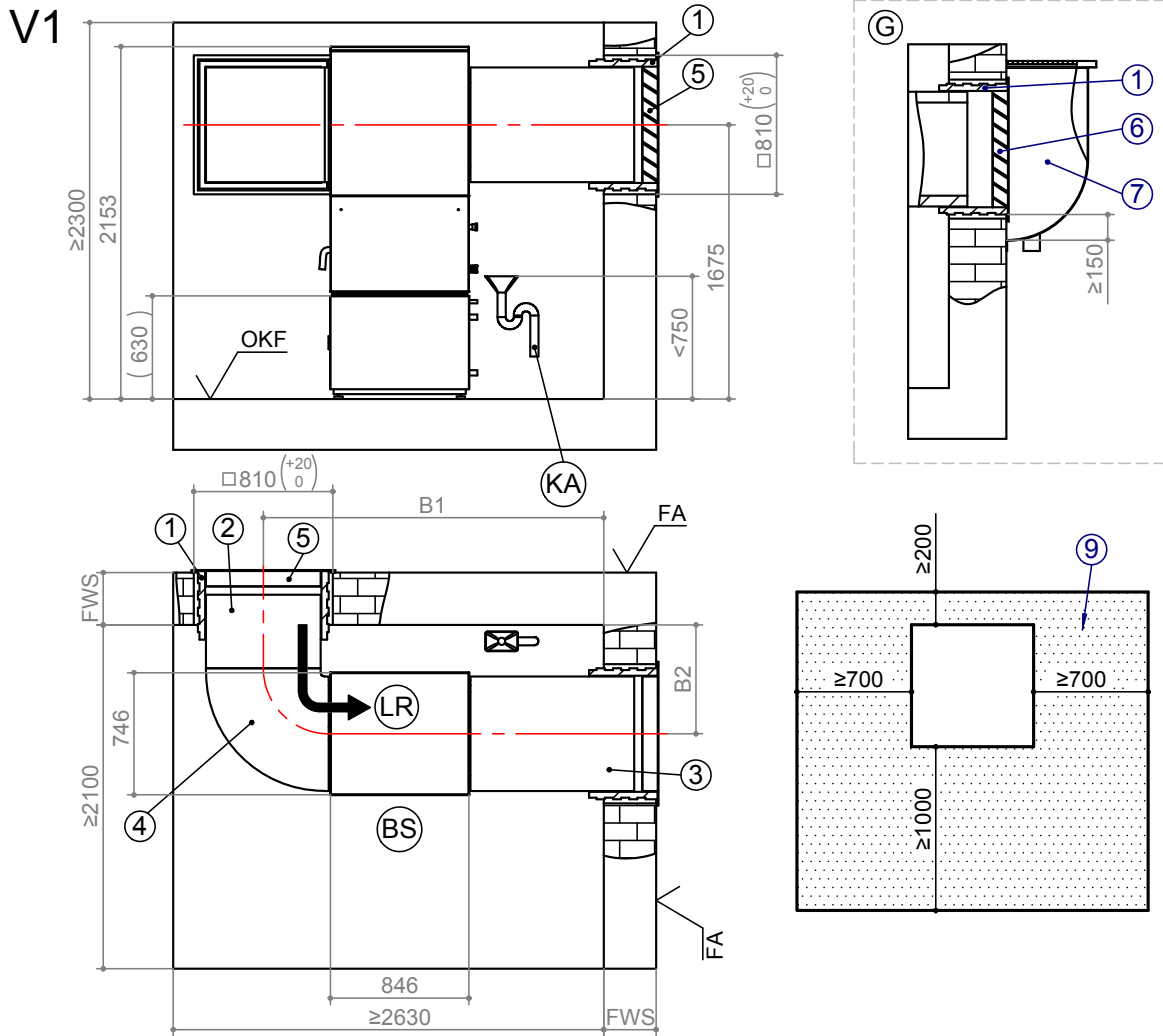
G 1" DIN ISO 228
 G 1" DIN ISO 228

Length from device 1m



LW 121

Installation plan Version 1



Legend: UK819346-1

All dimensions in mm.

Item	Designation	Dim.
B1	With finished wall thickness 240 to 320	2160
	With finished wall thickness 320 to 400	2080
B2	With finished wall thickness 240 to 320	745
	With finished wall thickness 320 to 400	665

V1	Version 1
OKF	Top edge of finished floor
FA	Finished outer façade
LR	Air direction
BS	Operator side
FWS	Finished wall thickness
KA	Condensate discharge
G	Section installation in light well

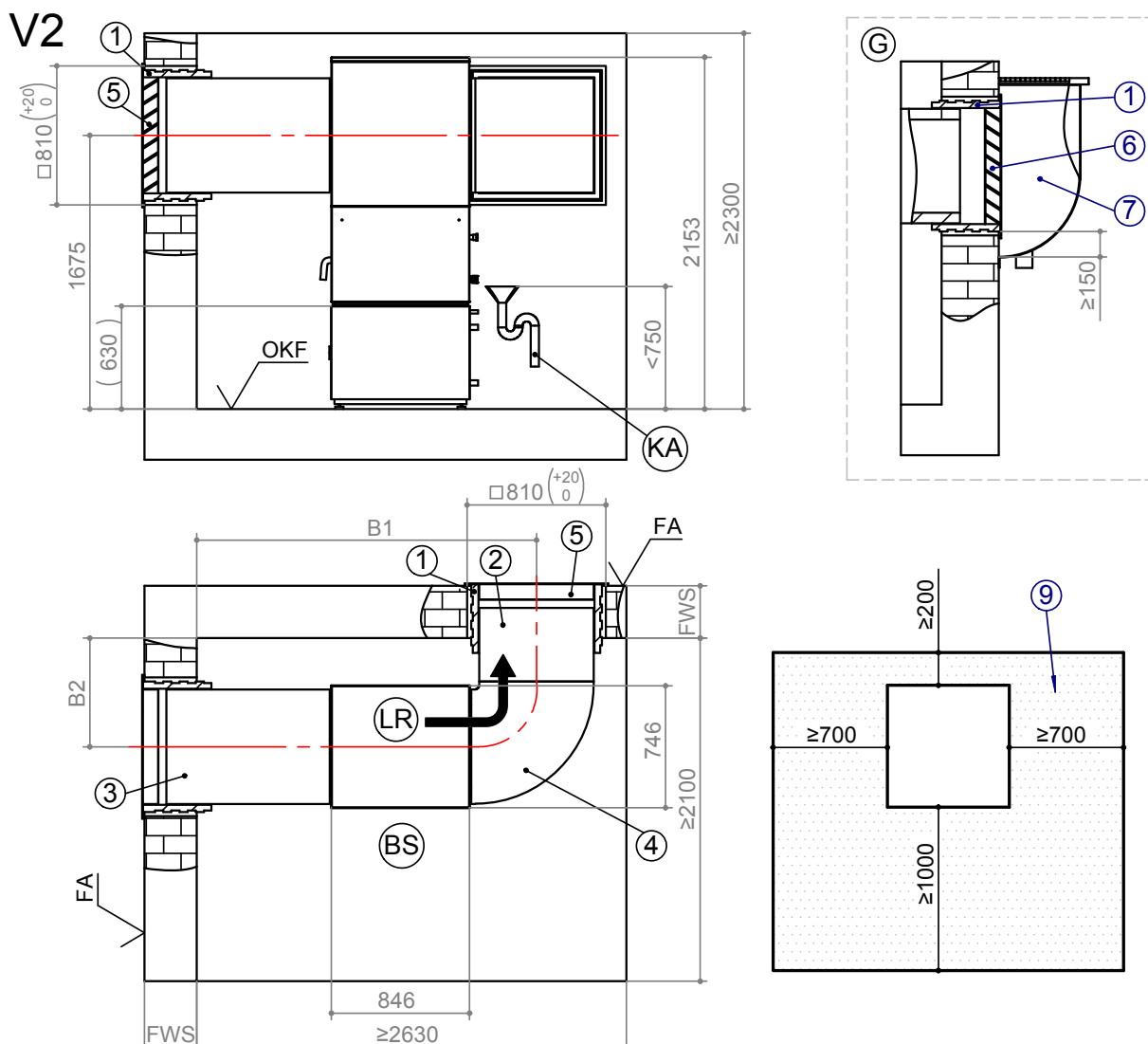
Item	Designation
1	Accessory: wall duct 800x800x420
2	Accessory air duct 700x700x450
3	Accessory: air duct 700x700x1000
4	Accessory: air duct bend 700x700x750
5	Installation above ground level Accessory: weather guard 845x850
6	Installation in light well Accessory: rain guard 845x850
7	provided by customer: light well with water drain min. exposed cross section 0,6m ²
9	Minimum clearance for service purposes If the distances were to be reduced to the minimum dimension, the air ducts must be made shorter. This leads to a significant increase in the sound intensity level!

Tilting dimension of heat pumps (without tank) ≈1540
 Notice: If the lower buffer tank is replaced with an additional buffer tank, a sun of 630 must be taken from all of the height coordinates.



Installation plan Version 2

LW 121



Legend: UK819346-2

All dimensions in mm.

Item	Designation	Dim.
B1	With finished wall thickness 240 to 320	2160
	With finished wall thickness 320 to 400	2080
B2	With finished wall thickness 240 to 320	745
	With finished wall thickness 320 to 400	665

Item Designation

- 1 Accessory: wall duct 800x800x420
- 2 Accessory air duct 700x700x450
- 3 Accessory: air duct 700x700x1000
- 4 Accessory: air duct bend 700x700x750
- 5 Installation above ground level
Accessory: weather guard 845x850
- 6 Installation in light well
Accessory: rain guard 845x850
- 7 provided by customer: light well with water drain min. exposed cross section 0,6m²
- 9 Minimum clearance for service purposes
If the distances were to be reduced to the minimum dimension, the air ducts must be made shorter. This leads to a significant increase in the sound intensity level!

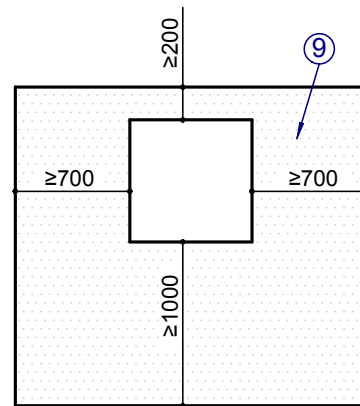
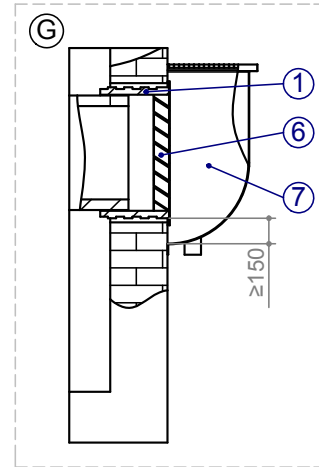
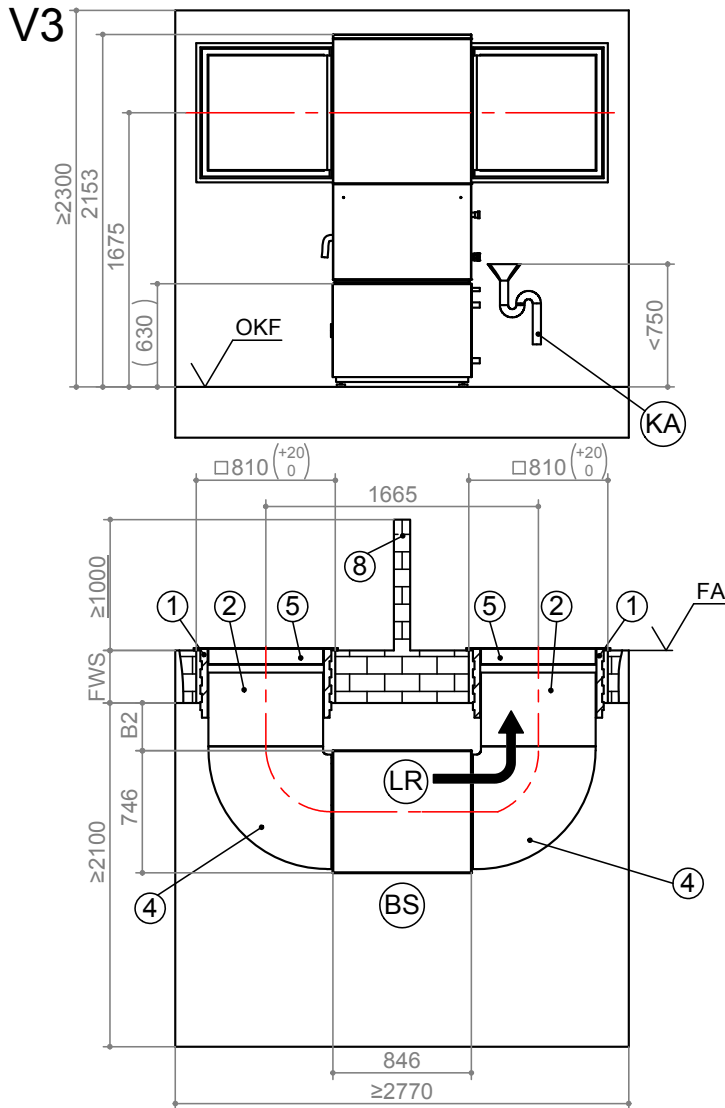
V2	Version 2
OKF	Top edge of finished floor
FA	Finished outer façade
LR	Air direction
BS	Operator side
FWS	Finished wall thickness
KA	Condensate discharge
G	Section installation in light well

Tilting dimension of heat pumps (without tank) ≈1540
 Notice: If the lower buffer tank is replaced with an additional buffer tank, a sun of 630 must be taken from all of the height coordinates.



LW 121

Installation plan Version 3



Legend: UK819346-3

All dimensions in mm.

Item	Designation	Dim.
B2	With finished wall thickness 240 to 320	370
	With finished wall thickness 320 to 400	290
V3	Version 3	
OKF	Top edge of finished floor	
FA	Finished outer façade	
LR	Air direction	
BS	Operator side	
FWS	Finished wall thickness	
KA	Condensate discharge	
G	Section installation in light well	

Item Designation

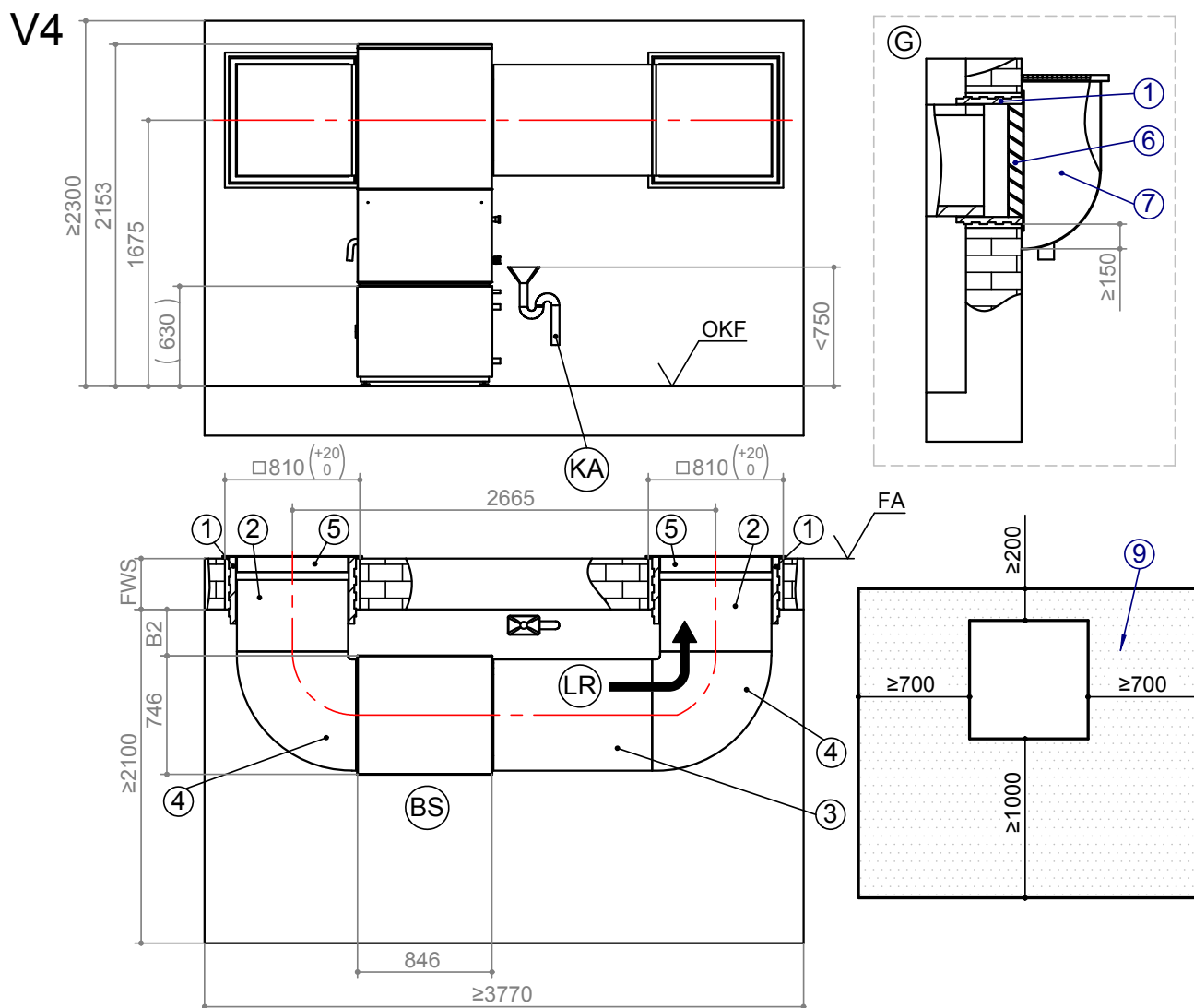
- 1 Accessory: wall duct 800x800x420
- 2 Accessory air duct 700x700x450
- 4 Accessory: air duct bend 700x700x750
- 5 Installation above ground level
Accessory: weather guard 845x850
- 6 installation in light well
Accessory: rain guard 845x850
- 7 provided by customer: light well with water drain min. exposed cross section 0,6m²
- 8 Ventilation separation:
Depth: ≥ 1000
Height by light well installation ≥ 1000
Height by installation above ground level: ≥ 1500, 300 above weather guard
- 9 Minimum clearance for service purposes
If the distances were to be reduced to the minimum dimension, the air ducts must be made shorter. This leads to a significant increase in the sound intensity level!

Tilting dimension of heat pumps (without tank) ≈1540
 Notice: If the lower buffer tank is replaced with an additional buffer tank, a sun of 630 must be taken from all of the height coordinates.



Installation plan Version 4

LW 121



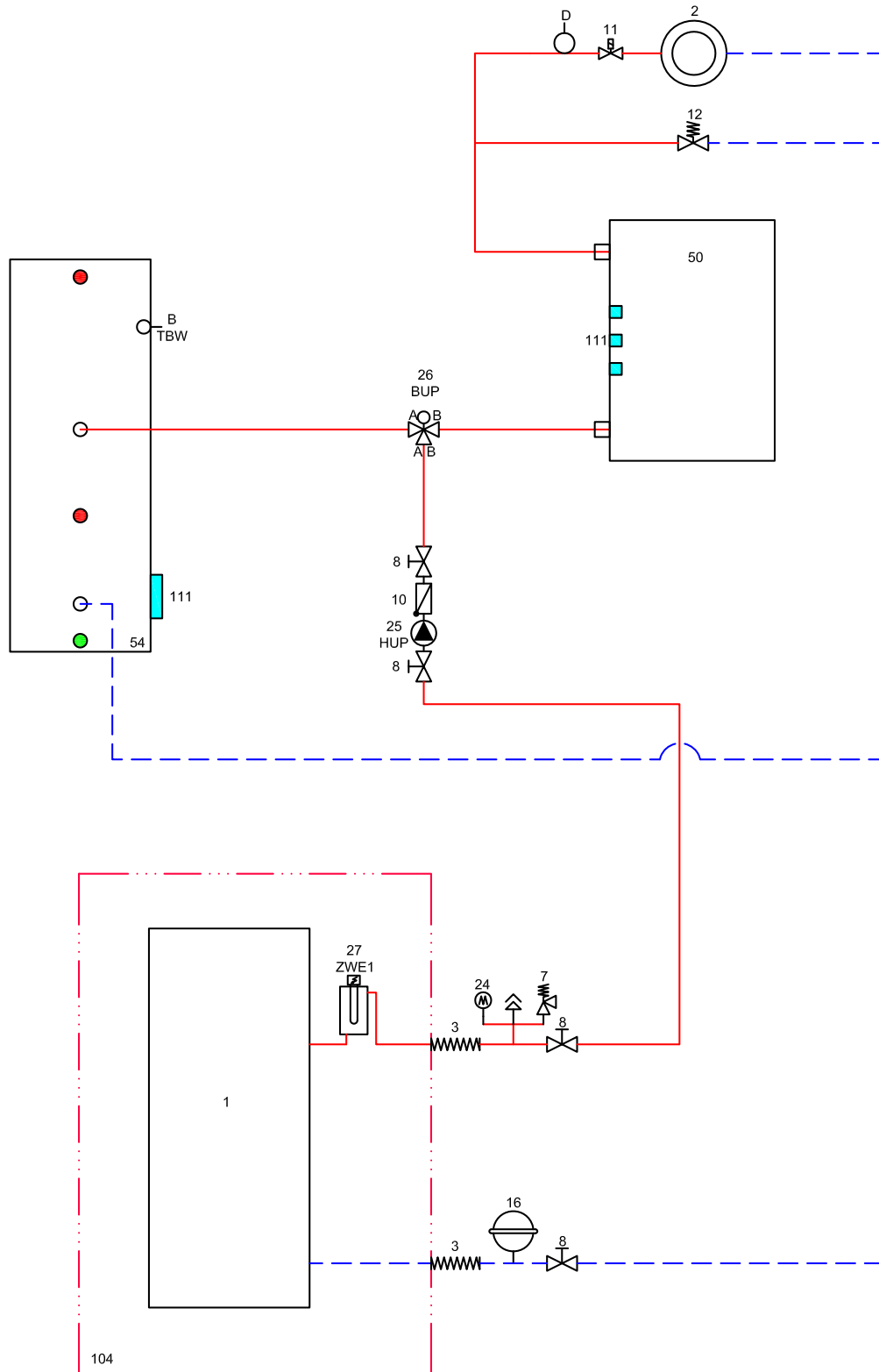
Legend: UK819346-4

All dimensions in mm.

Item	Designation	Dim.
B2	With finished wall thickness 240 to 320	370
	With finished wall thickness 320 to 400	290
V4	Version 4	
OKF	Top edge of finished floor	
FA	Finished outer façade	
LR	Air direction	
BS	Operator side	
FWS	Finished wall thickness	
KA	Condensate discharge	
G	Section installation in light well	

Item	Designation
1	Accessory: wall duct 800x800x420
2	Accessory air duct 700x700x450
4	Accessory: air duct bend 700x700x750
5	Installation above ground level Accessory: weather guard 845x850
6	installation in light well Accessory: rain guard 845x850
7	provided by customer: light well with water drain min. exposed cross section 0,6m ²
9	Minimum clearance for service purposes If the distances were to be reduced to the minimum dimension, the air ducts must be made shorter. This leads to a significant increase in the sound intensity level!

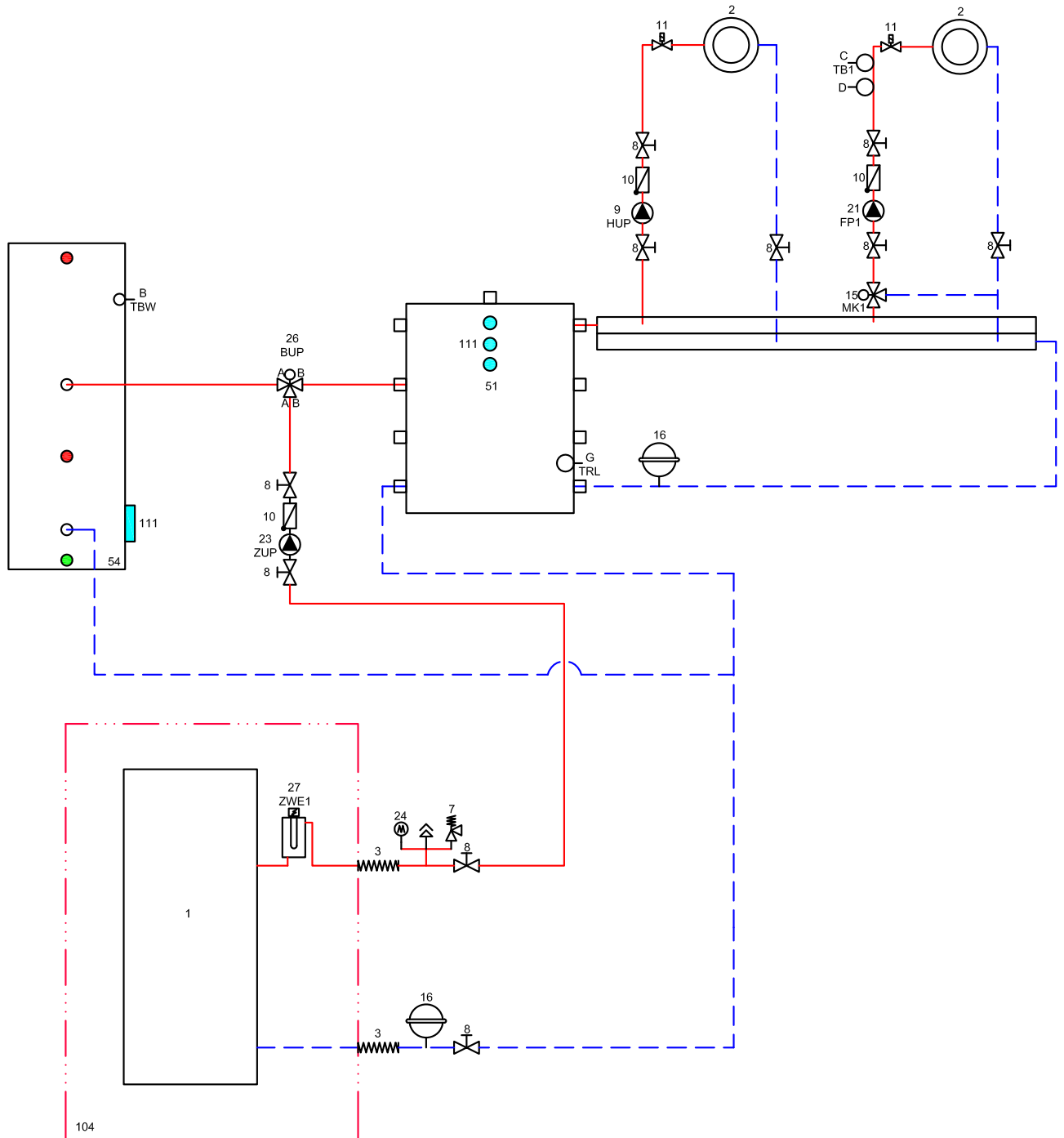
Tilting dimension of heat pumps (without tank) ≈1540
 Notice: If the lower buffer tank is replaced with an additional buffer tank, a sun of 630 must be taken from all of the height coordinates.





Separate buffer tank

LW 101 – LW 121



**Legend hydraulic diagramm**

1	Heat pump	51	Separation tank	TAVA	External sensor
2	Underfloor heating / radiators	52	Gas- or oil-boiler	TBW/B	Domestic hot water sensor
3	Vibration isolation	53	Wood boiler	TB1/C	Feedwater sensor mixer circuits 1
4	Sylomer strip machine underlay	54	Hot water cylinder	D	Floor temperature limiter
5	Closure and drainage	55	Brine pressure switch	TRL/G	Sensor external return
6	Expansion vessel packing list	56	Swimming pool heat exchanger	STA	Line pressure regulator valve
7	Safety valve	57	Geothermal heat exchanger	TRL/H	Sensor return (hydraulic module, dual)
8	Closure	58	Ventilation system	79	Motor valve
9	Heating circulation pump	59	Plate heat exchanger	80	Mixing valve
10	Non return valve/ one way valve	61	Cooling cylinder	81	Split heat pump outdoor unit
11	Individual room regulation	65	Compact distributor	82	Split heat pump indoor unit
12	Overflow valve	66	Fancoils	83	Circulation pump
13	Steamtight insulation	67	Solar/ service water cylinder	84	Switching valve
14	Service water circulation pump	68	Solar/ service water cylinder	113	Connection 2nd heat generator
15	Mixer circuit three-way mixer (MK1 discharge)	69	Multifunction tank	BT1	Outdoor temperature sensor
16	Expansion vessel supplied by customer	71	Dual hydraulic module	BT2	Flow temperature sensor
18	Heating rod (heating)	72	Buffer tank wall mounted	BT3	Return temperature sensor
19	Mixer circuit four-way mixer (MK1 charge)	73	Pipe lead-in	BT6	Domestic hot water temperature sensor
20	Heating rod (SW)	74	Ventower	BT12	Flow temperature liquefier
21	Mixer circuit circulation pump (FP1)	75	Scope of delivery, hydraulic tower, dual	BT19	Temperature sensor immersion heater
23	Feed circulating pump (reconnect the integrated circulating pump in the heat pump)	76	Fresh water station	BT24	Temperature sensor 2nd heat generator
24	Manifold	77	Scope of supply water/water booster		
25	Heating circulation pump	78	Accessories water/water booster optional		
26	Switching valve (heating/service water)(B = normally open)				
27	Heating element				
28	Brine circulation pump	100	Room thermostat for cooling (optional)	15	Mixer circuit three-way mixer (MK2-3 discharge)
29	Dirt-trap 0.6 mm mesh	101	Controls supplied by customer	17	Temperature difference regulator
30	Spill-tray for brine mix	102	Dew-point monitor (optional)	19	Mixer circuit four-way mixer (MK2 charge)
31	Wall breakthrough	103	Room thermostat for reference space in packing list	21	Mixer circuit circulation pump (FP2-3)
32	Inlet pipe	104	Supply heat pump	22	Swimming pool circulating pump
33	Brine manifold	105	Cooling circuit module box removeable for installation	44	Three-way mixer valve (cooling function MK2)
34	Ground collector	106	Specific glycole mixture	47	Changeover valve swimming bath preparation(B = normally open)
35	Ground slinkies	107	Scald protection / thermostatic mixer valve	60	Changeover valve cooling operation(B = normally open)
36	Groundwater spring pump	108	Solar pump assembly	62	Heat meter (optional)
37	Wall bracket	109	Overflow valve must be closed	63	Changeover valve solar circuit(B = normally open)
38	Flow switch	110	Packing list hydraulic tower	64	Cooling circulation pump
39	Suction well	111	Mounting for additional heating element	70	Solar separation module
40	Inverted well	112	Minimum distance to thermal decoupling of the mixing valve	TB2-3/C	Feedwater sensor mixer circuits 2-3
41	Rinse fitting heating circuit			TSS/E	Sensor, temperature difference control (low temperature)
42	Circulation pump			TSK/E	Sensor, temperature difference control (high temperature)
43	Brine / Water heat exchanger (cooling function)			TEE/F	Sensor external energy source
44	Three-way mixer valve (cooling function MK1)				
45	Cap valve				
46	Filler and drainage valve				
48	Domestic hot water charging pump				
49	Direction of groundwater flow				
50	Buffer storage				

Comfort board:

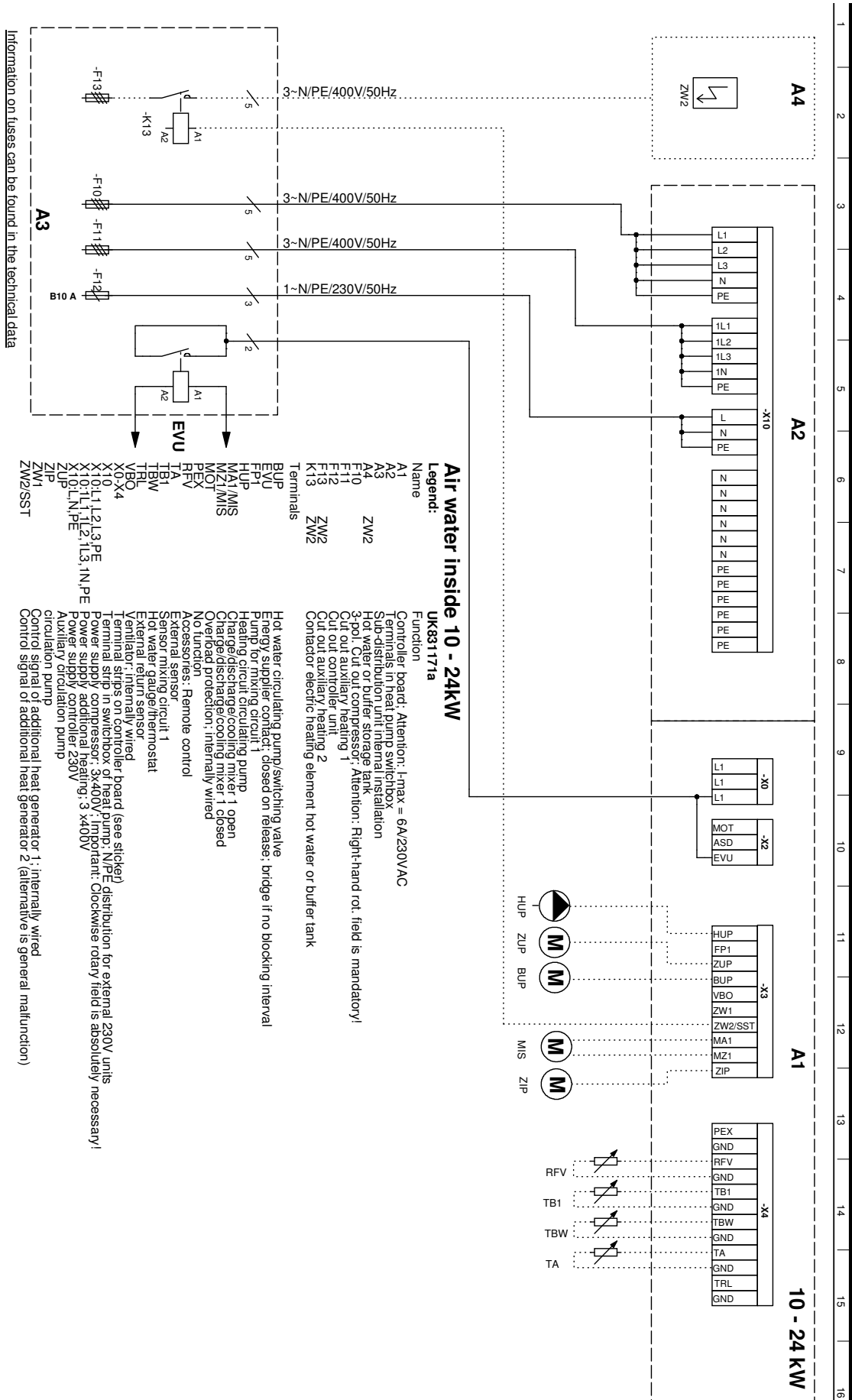
15	Mixer circuit three-way mixer (MK2-3 discharge)
17	Temperature difference regulator
19	Mixer circuit four-way mixer (MK2 charge)
21	Mixer circuit circulation pump (FP2-3)
22	Swimming pool circulating pump
44	Three-way mixer valve (cooling function MK2)
47	Changeover valve swimming bath preparation(B = normally open)
60	Changeover valve cooling operation(B = normally open)
62	Heat meter (optional)
63	Changeover valve solar circuit(B = normally open)
64	Cooling circulation pump
70	Solar separation module
TB2-3/C	Feedwater sensor mixer circuits 2-3
TSS/E	Sensor, temperature difference control (low temperature)
TSK/E	Sensor, temperature difference control (high temperature)
TEE/F	Sensor external energy source

Important notice!

These hydraulic diagrams are schematic representations and are for assistance only. They do not relieve of the obligation to carry out appropriate planning! They do not include all necessary shut-off valves, ventilator fittings or safety devices. These must be incorporated in accordance with the standards and regulations applicable to the respective installation. All country-specific standards, laws and regulations must be observed! The tubes have to be dimensioned according to the nominal volume flow of the heat pump resp. the free pressing of the integrated circulating pump. For detailed information and advice please contact our local sales partner!



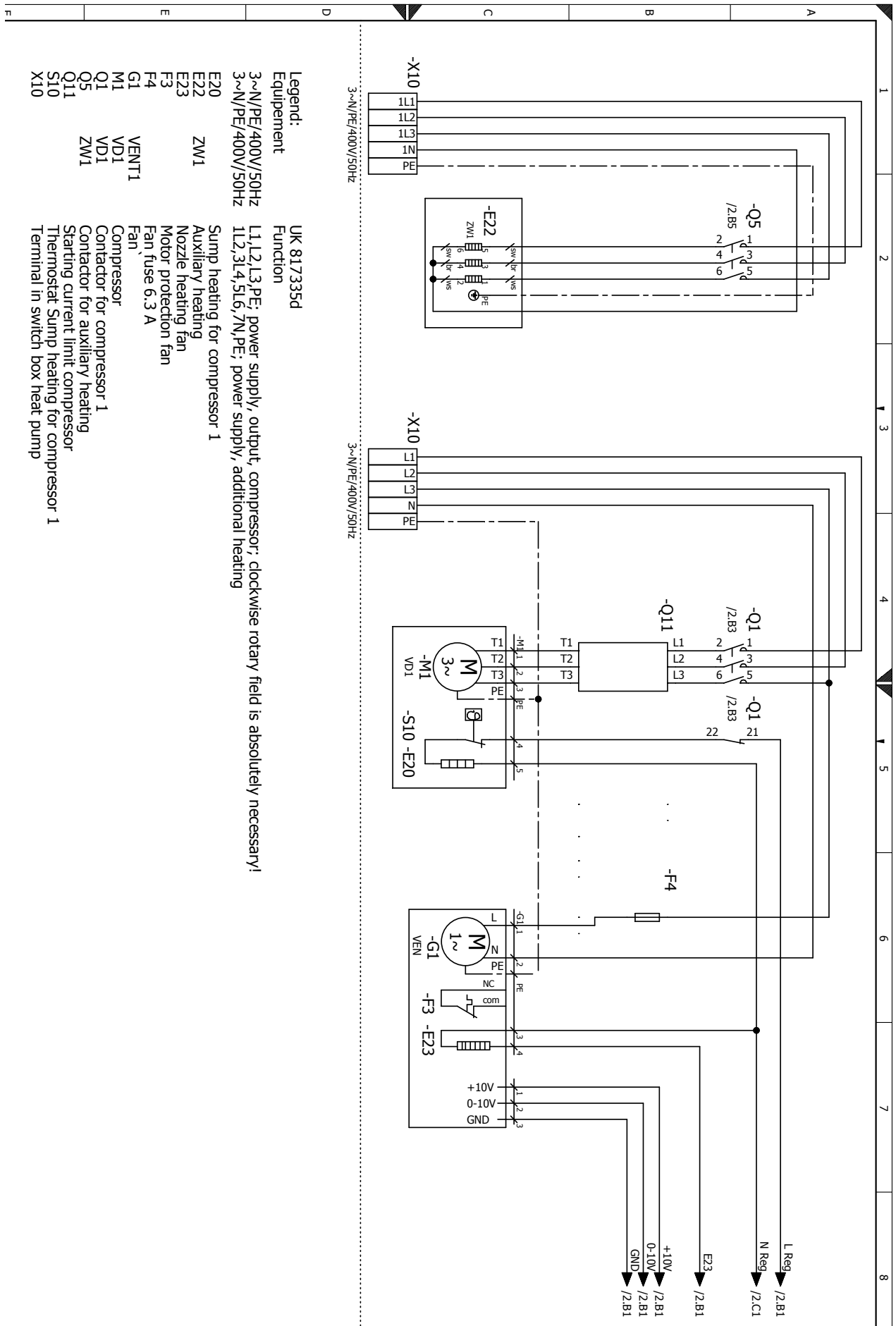
Terminal diagram





LW 101 – LW 121

Circuit diagram 1/3

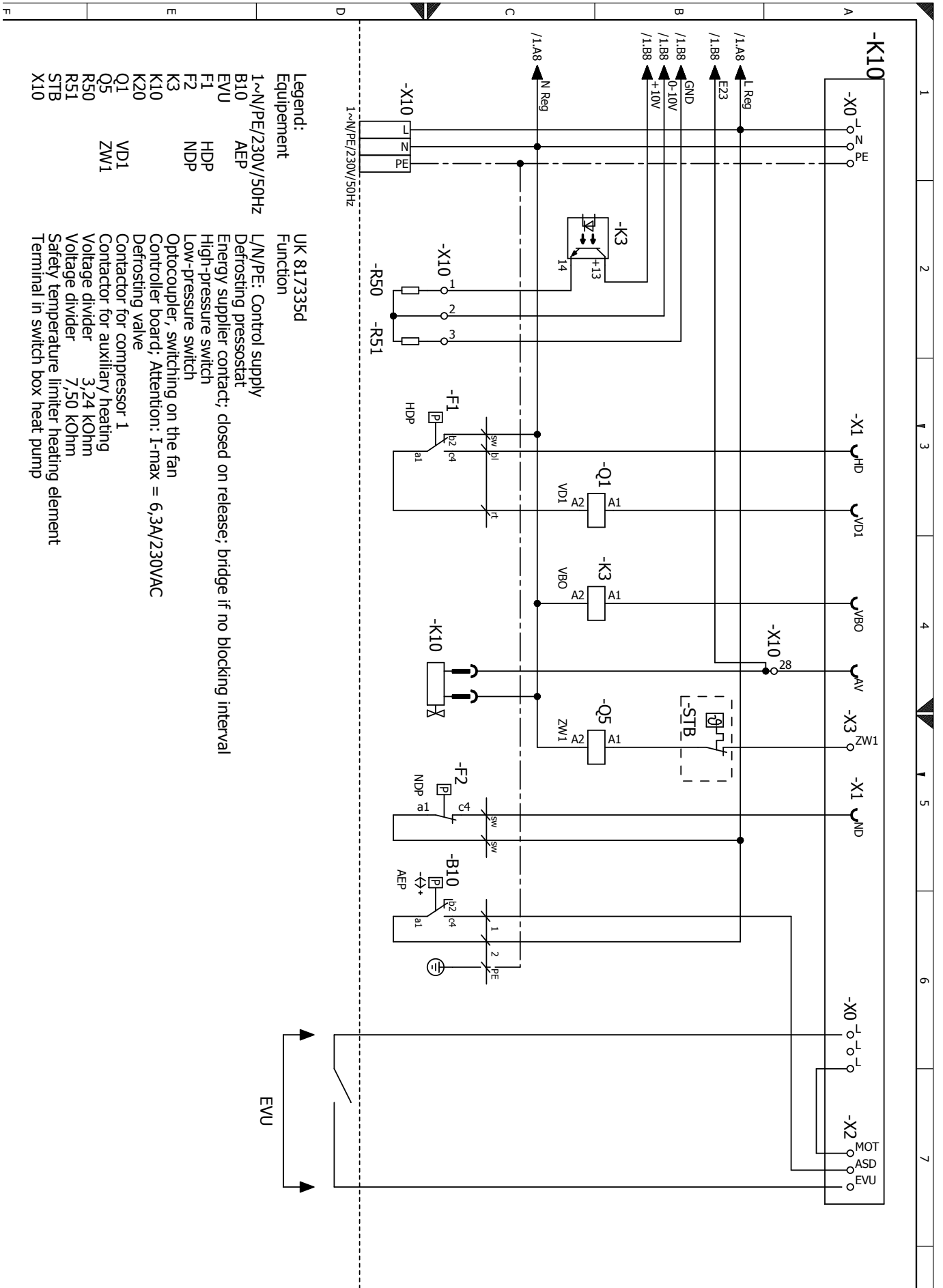


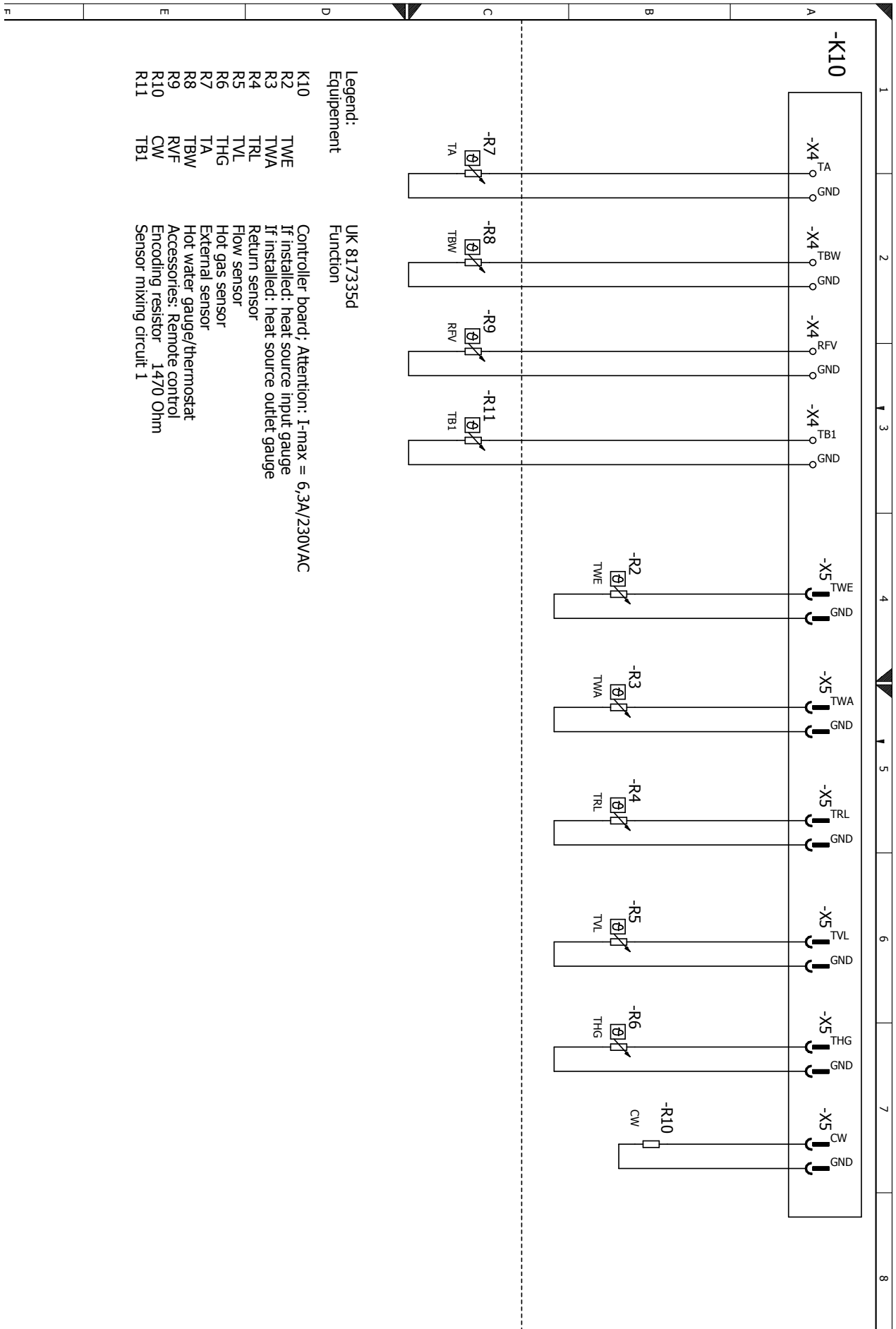
- Legend:**
- | | |
|------------------|--|
| Equipment | UK 817335d |
| Function | |
| 3~N/PE/400V/50Hz | L1,L2,L3,PE; power supply, output, compressor; clockwise rotary field is absolutely necessary! |
| 3~N/PE/400V/50Hz | IL2,3L4,5L6,7N,PE; power supply, additional heating |
| E20 | Sump heating for compressor 1 |
| E22 | Auxiliary heating |
| E23 | Nozzle heating fan |
| F3 | Motor protection fan |
| F4 | Fan fuse 6.3 A |
| G1 | Fan |
| M1 | Compressor |
| Q1 | Contactor for compressor 1 |
| Q5 | Contactor for auxiliary heating |
| Q11 | Starting current limit compressor |
| S10 | Thermostat Sump heating for compressor 1 |
| X10 | Terminal in switch box heat pump |



LW 101 – LW 121

Circuit diagram 2/3





Legend:
Equipment

UK 817335d
Function

- K10 K10
 - R2 TWE
 - R3 TWA
 - R4 TRL
 - R5 TVL
 - R6 THG
 - R7 TA
 - R8 TBW
 - R9 RVF
 - R10 CW
 - R11 TB1
- Controller board: Attention: I-max = 6,3A/230VAC
 If installed: heat source input gauge
 If installed: heat source outlet gauge
 Return sensor
 Flow sensor
 Hot gas sensor
 External sensor
 Hot water gauge/thermostat
 Accessories: Remote control
 Encoding resistor 1470 Ohm
 Sensor mixing circuit 1



EC Declaration of Conformity in accordance with the EC Machinery Directive 2006/42/EC, Annex II A



The undersigned confirms that the following designated device(s) as designed and marketed by us fulfill the standardized EC directives, the EC safety standards and the product-specific EC standards. In the event of modification of the device(s) without our approval, this declaration shall become invalid.

Designation of the device(s)

Heat Pump



Unit model	Number	Unit model	Number
LW 71A	100 540	LW 101	100 530
LW 81A	100 541	LW 121	100 531
LW 101A	100 542	LW 140	100 532
LW 121A	100 543	LW 140L	100 533
LW 140A	100 544	LW 180	100 534
LW 180A	100 545	LW 180L	100 535
LW 251A *	100 546	LW 251 *	100 536
LW 310A *	100 547	LW 251L *	100 537
LW 100H-A	100 587	LW 310 *	100 538
LW 180H-A	100 589	LW 310L *	100 539
LW 100H	100 586	LW 380/1 *	100 474
LW 180H	100 588	LW 380L/1 *	100 475
LW 160H-A/V	100 625	LW 160H/V	100 623
LW 160HL/V	100 624		

EC Directives

2006/42/EG 2009/125/EG
2006/95/EG 2010/30/EU
2004/108/EG
*97/23/EG
2011/65/EG

* Pressure equipment component

Category II
Module A1
Designated position:
TÜV-SÜD
Industrie Service GmbH (Nr.:0036)

Standardized EN

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

Company:

ait-deutschland GmbH
Industrie Str. 3
93359 Kasendorf
Germany

Place, date: Kasendorf, 14.12.2015

Signature:

Jesper Stannow
Head of Heating Development

UK818154e



ait-deutschland GmbH
Industriestraße 3
D-95359 Kasendorf

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W www.alpha-innotec.de



alpha innotec – an ait-deutschland GmbH brand