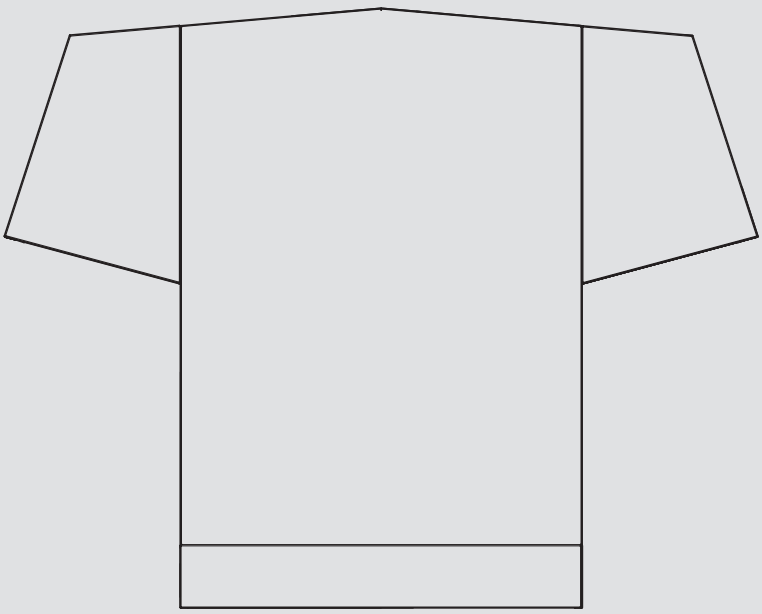
OPERATION AND INSTALLATION

Air | water heat pump

» WPL 34
» WPL 47
» WPL 57



STIEBEL ELTRON

CONTENTS

SPECIAL INFORMATION

- The appliance may be used by children aged 8 and up and persons with reduced physical, sensory or mental capabilities or a lack of experience and know-how, provided that they are supervised or they have been instructed on how to use the appliance safely and have understood the resulting risks. Children must never play with the appliance. Children must never clean the appliance or perform user maintenance unless they are supervised.
- The connection to the power supply must be in the form of a permanent connection. Ensure the appliance can be separated from the power supply by an isolator that disconnects all poles with at least 3 mm contact separation.
- Maintain the minimum clearances to ensure trouble-free operation of the appliance and facilitate maintenance work.
- In dual mode operation, return water from the second heat generator may flow through the heat pump. Please note that the return water temperature may be a maximum of 60 °C.
- Maintenance work, such as checking the electrical safety, must only be carried out by a qualified contractor.
- We recommend an annual inspection (to establish the system's current condition), and maintenance by a qualified contractor if required (to return the system to the desired condition).
- Keep the air discharge and inlet apertures free from snow and leaves.
- Check regularly whether water collects beneath the appliance.
- Once per year, the refrigerant circuit must be tested for leaks in accordance with the EC Directive 517/2014. The tightness test must be documented in the log.
- Never interrupt the power supply, even outside the heating season. The system's active frost protection is not guaranteed if the power supply is interrupted.
- There is no need to shut the system down in summer. The heat pump manager has an automatic summer / winter changeover.

OPERATION

1. General information

The chapters "Special Information" and "Operation" are intended for both the user and qualified contractors.

The chapter "Installation" is intended for qualified contractors.

Note
Read these instructions carefully before using the appliance and retain them for future reference.
Pass on the instructions to a new user if required.

1.1 Safety instructions

1.1.1 Structure of safety instructions

KEYWORD Type of risk
Here, possible consequences are listed that may result from failure to observe the safety instructions.
▶ Steps to prevent the risk are listed.

1.1.2 Symbols, type of risk

Symbol	Type of risk
	Injury
	Electrocution
	Burns (burns, scalding)

1.1.3 Keywords

KEYWORD	Meaning
DANGER	Failure to observe this information will result in serious injury or death.
WARNING	Failure to observe this information may result in serious injury or death.
CAUTION	Failure to observe this information may result in non-serious or minor injury.

1.2 Other symbols in this documentation

Note
General information is identified by the adjacent symbol.
▶ Read these texts carefully.

Symbol	Meaning
	Material losses (appliance damage, consequential losses and environmental pollution)
	Appliance disposal

▶ This symbol indicates that you have to do something. The action you need to take is described step by step.

1.3 Units of measurement

Note
All measurements are given in mm unless stated otherwise.

1.4 Standardised output data

Explanations to determine and interpret the specified standardised output data

1.4.1 Standard: EN 14511

The output data specifically mentioned in text, diagrams and technical datasheets has been determined in line with the test conditions described in the standard shown in the heading of this chapter.

Generally, these standardised test conditions will not fully meet the conditions found at the installation site of the system user. Depending on the chosen test method and the extent to which the selected method deviates from the conditions described in the standard shown in the heading of this chapter, any deviations can have a considerable impact. Further factors that have an influence on the test values are the measuring equipment, the system configuration, the age of the system and the flow rates.

A confirmation of the specified output data can only be obtained if the conditions applicable to the relevant test match those of the standard shown in the heading of this chapter.

2. Safety

2.1 Intended use

This appliance is intended for central heating and DHW heating in domestic applications. It can be used safely by untrained persons. The appliance can also be used in a non-domestic environment, e.g. in a small business, as long as it is used in the same way.

Any other use beyond that described shall be deemed inappropriate. Observation of these instructions and of instructions for any accessories used is also part of the correct use of this appliance.

Observe the application limits (see chapter "Specification / Data table").

Operate the appliance only when fully installed and with all safety equipment fitted.

Protect the appliance from dust and dirt ingress during building work.

WARNING Injury
The appliance may be used by children aged 8 and older and persons with reduced physical, sensory or mental capabilities or a lack of experience and know-how, provided that they are supervised or they have been instructed on how to use the appliance safely and have understood the resulting risks. Children must never play with the appliance. Children must never clean the appliance or perform user maintenance unless they are supervised.

WARNING Injury
▶ **For safety reasons, only operate the appliance with the casing closed.**

3. Appliance description

3.1 Properties

The appliance is an air|water heat pump that operates as a heating heat pump. Heat is extracted from the outdoor air at a low temperature level, and is then transferred to the heating water at a higher temperature. The heating water can be heated up to a flow temperature of 60 °C.

Operational characteristics:

- Suitable for underfloor and radiator heating.
- Heat pump operates most efficiently on a low-temperature heating system.
- Still extracts heat from the outdoor air at - 20 °C outside temperature.

Note
For centralised control of the heating system, you would need the WPM heat pump manager.

Note
The WPL 57 features a silent mode. Silent mode enables the heat pump noise emissions to be reduced.
- Silent program 1 reduces the fan speed.
- Silent program 2 switches the heat pump off. Heating will [then] be provided by the internal or external second heat source. This results in higher electricity bills.

▶ Where required, set silent mode in the heat pump manager.

3.2 Function

Heat is extracted from the outdoor air via the heat exchanger (evaporator) on the air side. The now evaporated refrigerant is compressed with a compressor. This process requires electrical energy. This electrical energy helps to heat the room.

At air temperatures below approx. + 7 °C, the humidity in the air condenses as hoarfrost on the evaporator fins. Any hoarfrost is automatically defrosted. Water created from this defrosting process collects in the defrost pan and is drained off via a hose.

The heat pump automatically reverts to heating mode at the end of the defrost cycle.

Material losses
In dual mode operation, return water from the second heat generator may flow through the heat pump. Please note that the return water temperature may be a maximum of 60 °C.

3.3 Equipment features

- Corrosion-protected, external casing made from galvanised sheet steel plus powder-coated finish.
- Comprises all components and safety equipment required for operation.
- Filled with non-combustible safety refrigerant.

4. Operation

Operation is exclusively controlled via the heat pump manager.

▶ Observe the heat pump manager operating and installation instructions.

5. Maintenance and care

Material losses
Maintenance work, such as checking the electrical safety, must only be carried out by a heating contractor.

We recommend an annual inspection (to establish the system's current condition), and maintenance by a qualified contractor if required (to return the system to the desired condition).

- A damp cloth is sufficient for cleaning all plastic and sheet metal parts. Never use abrasive or corrosive cleaning agents.

Note
Keep the air discharge and intake apertures free from snow and leaves.

- Check regularly whether water collects beneath the appliance.
- In the event of water collecting beneath the appliance, call a qualified contractor to have the condensate drain cleaned out.

Note
Once per year, the refrigerant circuit must be tested for leaks in accordance with the EC Directive 517/2014.
The tightness test must be documented in the log.

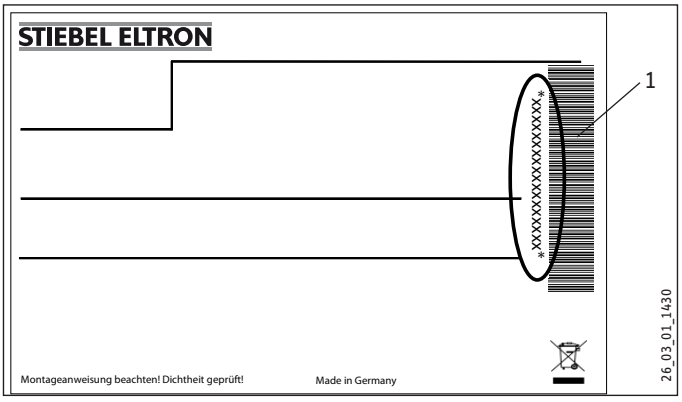
6. Troubleshooting

Fault	Cause	Remedy
There is no hot water or the heating system stays cold.	No power at the appliance.	Check the fuses/MCBs in your fuse box/distribution panel. Replace the fuses/reset the MCBs if required. Notify your qualified contractor if the fuses/MCBs blow/trip again.
Water is leaking from the appliance.	The condensate drain may be blocked.	Clean the condensate drain as described in chapter 'Care and maintenance'.
Condensate is collecting on the outside of the appliance.	The heat pump is drawing heat from the outdoor air to heat the building. This can cause the humidity in the outdoor air to accumulate as dew or frost on the cooled heat pump casing. This is not a defect.	

Note
Even when the condensate is draining away correctly, expect water to drip from the appliance onto the floor.

If you cannot remedy the fault, notify your qualified contractor. To facilitate and speed up your request, provide the number from the type plate (000000-0000-000000). The type plate is located at the front top, on the right or left hand side of the casing.

Example



1 Number on the type plate

INSTALLATION

7. Safety

Only a qualified contractor should carry out installation, commissioning, maintenance and repair of the appliance.

7.1 General safety instructions

We guarantee trouble-free function and operational reliability only if original accessories and spare parts intended for the appliance are used.

7.2 Instructions, standards and regulations

Note
Observe all applicable national and regional regulations and instructions.

8. Appliance description

For outdoor installation the appliance offers additional frost protection of the heating water pipes. The integral frost protection circuit starts the circulation pump in the heat pump circuit automatically at +8 °C condenser temperature, and thereby ensures circulation in all water-filled sections. The heat pump is started automatically no later than when the temperature inside the buffer cylinder drops below +5 °C.

8.1 Standard delivery

The casing components for the appliance are delivered in a separate pack.

8.1.1 Standard appliance

- Logbook
- Type plate
- Condensate drain hose
- Wiring diagram

8.1.2 Casing components

- 2 Covers
- 4 Air deflector hoods
- 1 Front panel
- 1 Back panel
- 4 Side panels
- 4 Plinth trim

8.2 Required accessories

You require the following accessories to operate the heat pump:

- Heat pump manager WPM 3
- Remote control for heating systems FE7
- Buffer cylinder
- Circulation pump UP 30/1-8 PCV

8.3 Further accessories

- Internet Service Gateway ISG
- Mixer module MSMW
- Contact sensor
- Immersion sensor

8.4 System configuration

You will find the accessory drawings and versions in the specific technical guides for your system.

9. Preparations

9.1 Sound emissions

The appliance is louder on the air intake and air discharge sides than on the two enclosed sides. Observe the following information when selecting the installation location.

Note
For details regarding the sound power level, see chapter "Specification / Data table".

- Lawn areas and shrubs help reduce the spread of noise.
- Sound propagation can also be reduced by installing closely spaced palisade fencing around the appliance.

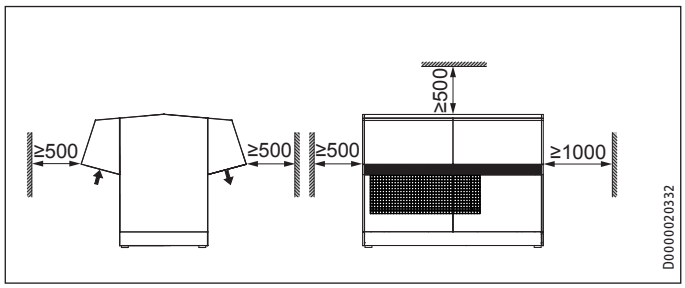
▶ Ensure that the air intake direction is the same as the dominant wind direction. Air should not be drawn in against the wind.

▶ Never direct the air intake or discharge towards noise-sensitive rooms of the house, e.g. bedrooms.

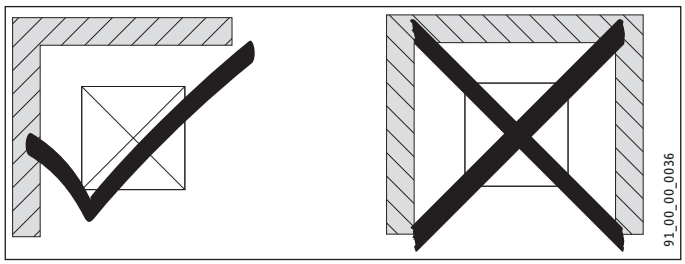
▶ Avoid installation on large, echoing floor areas, e.g. tiled floors.

▶ Avoid installation between reflective building walls. Reflecting building walls can increase the noise level.

9.2 Minimum clearances



▶ Maintain the minimum clearances to ensure trouble-free operation of the appliance and facilitate maintenance work.



▶ Never install the appliance in a recess. Two sides of the appliance must remain exposed.

Material losses
Please note that both the flow of outdoor air into the appliance, and the flow of exhaust air from the appliance must be unimpeded.
If the air intake and discharge of the appliance are obstructed by surrounding objects, this may cause a thermal short-circuit.

▶ Ensure that the appliance is not fully enclosed by objects such as buildings, walls or fences.

▶ If necessary, maintain a greater clearance to the surrounding objects.

Material losses
The air flow rate through the appliance must not fall below the minimum level. If the air flow rate falls below the minimum level, trouble-free operation of the appliance is not guaranteed.

▶ Ensure that the minimum air flow rate is maintained. Observe the details in chapter "Specification / Data table".

WARNING Injury
On the air discharge side, discharged air can result in the formation of ice on footpaths and driveways in winter.

▶ If necessary, maintain a greater clearance to the surrounding objects.

If the air discharge side of the appliance faces a wall of a house, the cool air from the air discharge may cause condensate to form on this wall.

Note
If the air discharge side faces house walls, maintain a minimum clearance of 2 m between the appliance and the building.

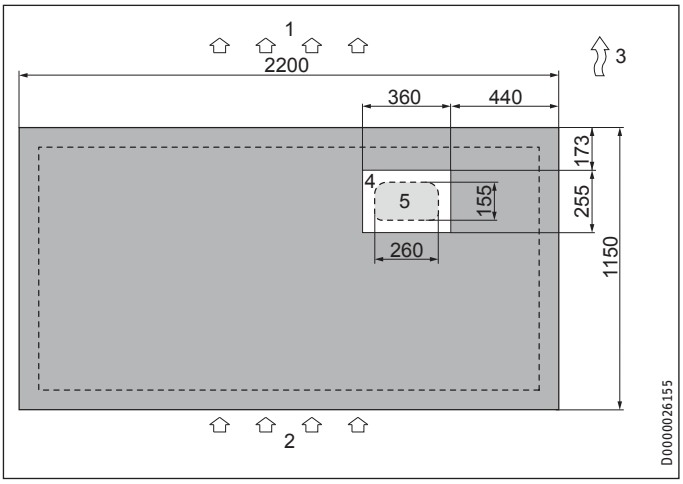
9.3 Substrate

▶ The substrate must be horizontal, level, solid and permanent.

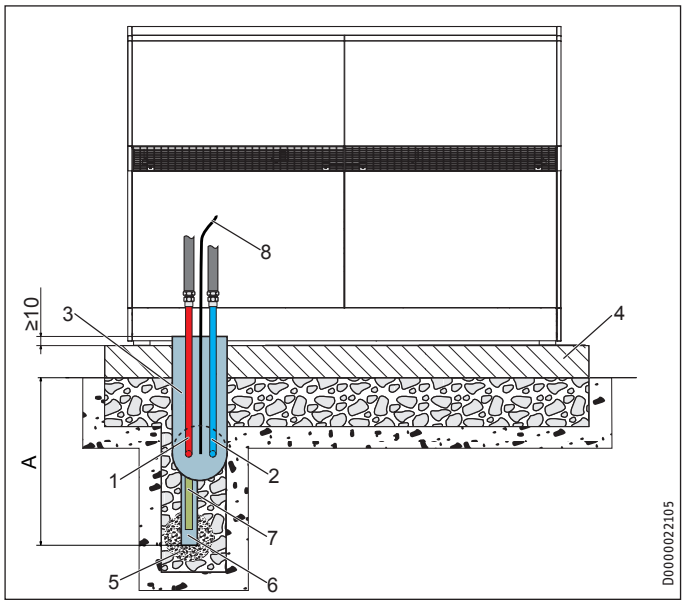
▶ Observe chapter "Sound emissions".

Note
Provide a recess (space) in the substrate to enable water and electrical pipes/cables to be connected from below.

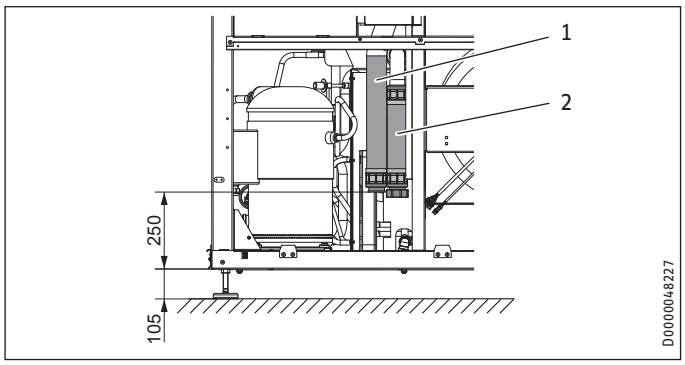
Example: Foundations with recess



1 Air discharge
2 Air intake
3 Main wind direction
4 Supply line outlet
5 Knock-out inside the appliance



A Depth of frost line
1 Heating flow
2 Heating return
3 Conduit for supply lines/cables
4 Foundation
5 Coarse gravel back filling
6 Condensate drain pipe
7 Condensate drain
8 Electrical power cable



1 Heating flow
2 Heating return

- ▶ Protect the flow and return pipes and the electrical cables against damage and moisture with an installation conduit.
- ▶ Protect the flow and return lines against frost with sufficient thermal insulation. The required insulation thickness is described in the Energy Savings Ordinance.
- ▶ Only use weather-resistant cables.

9.4 Heat pump manager WPM

A WPM heat pump manager is required to operate the appliance. This controls the heat pump and regulates the heating system.

9.5 Buffer cylinder

The installation of a buffer cylinder is essential to ensure trouble-free operation of the appliance.

The buffer cylinder provides hydraulic separation of the volume flows in the heat pump circuit and heating circuit, and also serves as an energy source for defrosting.

9.6 Electrical installation

WARNING Electrocution
Carry out all electrical connection and installation work in accordance with national and regional regulations.

WARNING Electrocution
Only use a permanent connection to the power supply. The appliance must be able to be separated from the power supply by an isolator that disconnects all poles with at least 3 mm contact separation. This requirement can be met with contactors, circuit breakers, fuses/ MCBs, etc.

Material losses
The specified voltage must match the mains voltage. Observe the type plate.

In accordance with VDE 0298-4, use the following line cross-sections subject to their fuse protection:

MCB/fuse rating	Assignment	Cable cross-section
B 16 A	Control	1.5 mm²
C 32 A	Compressor	10.0 mm² when routing in a wall.
		6.0 mm² when routing a multi-core line on a wall or in an electrical conduit on a wall.

The electrical specifications are given in the "Data table". You require a J-Y (St) 2x2x0.8 mm² cable for the BUS.

Note
Provide separate fuses for the two power circuits of the appliance and the control unit.

10. Installation

10.1 Transport

▶ Pay attention to the appliance's centre of gravity when transporting the appliance.

The centre of gravity is in the area where the compressor is located.

▶ Protect the appliance against heavy impact during transport.

Where space is restricted, you can also tilt the appliance at an angle to move it.

10.2 Siting

▶ Pay attention to the air discharge direction.

▶ Position the appliance on the prepared substrate.

▶ Level the appliance horizontally by adjusting the feet.

▶ Route the water pipes and electrical cables into the appliance from below through the knock-outs in the base.

Note
Do not fit the casing components until the electrical and hydraulic connections have been made.

10.3 Heating water connection

The heating system to which the heat pump is connected must be installed by a qualified contractor in accordance with the water installation drawings that are part of the technical guides.

▶ Thoroughly flush the pipework before connecting the heat pump.

Debris, such as welding pearls, rust, sand, sealant, etc. can impair the operational reliability of the heat pump.

10.4 Oxygen diffusion

Material losses
Avoid open heating systems and plastic pipes in underfloor heating systems which are permeable to oxygen.

In underfloor heating systems with plastic pipes that are permeable to oxygen and in open vented heating systems, oxygen diffusion may lead to corrosion on the steel components of the heating system (e.g. on the indirect coil of the DHW cylinder, on buffer cylinders, steel heating elements or steel pipes).

Material losses
The products of corrosion (e.g. rusty sludge) can settle in the heating system components and can result in a lower output or fault shutdowns due to reduced cross-sections.

10.5 Filling the heating system

10.5.1 Heating water quality

Carry out a fill water analysis before the system is filled. This may, for example, be requested by the relevant water supply utility.

Material losses
To avoid damage as a result of scaling, it may be necessary to soften or desalinate the fill water. Always observe the fill water limits specified in the "Specification / Data table" chapter.

▶ Recheck these limits 8-12 weeks after commissioning and as part of the annual system maintenance.

Note
With a conductivity >1000 µS/cm, desalination treatment is recommended in order to avoid corrosion.

Note
Suitable appliances for water softening and desalinating, as well as for charging and flushing heating systems, can be obtained via trade suppliers.

Note
If you treat the fill water with inhibitors or additives, the same limits as for desalination apply.

10.5.2 Venting the heating system

▶ Vent the pipework carefully. For this, also activate the air vent valve integrated into the heating flow inside the heat pump.

10.6 Minimum flow rate

The minimum flow rate is set via the temperature differential of the buffer circuit.

Set the buffer charging pump so that the value is equal to or lower than the maximum temperature differential.

The setting is made in heat pump mode. For this, make the following settings first:

▶ Temporarily remove the fuse from the electric emergency/booster heater to isolate the emergency/booster heater from the power supply. Alternatively, switch OFF the second heat generator.

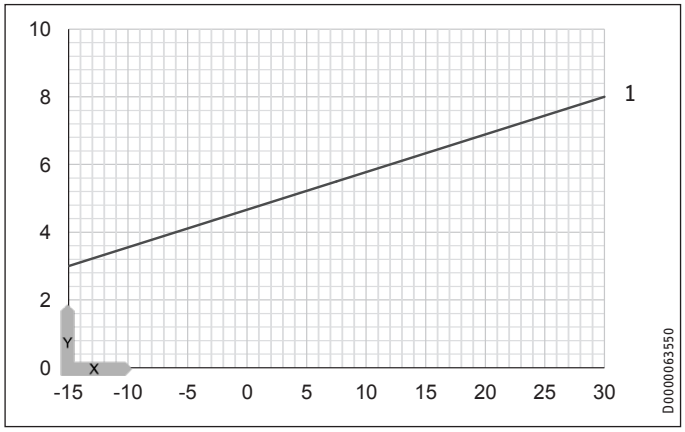
▶ Operate the appliance in heating mode.

10.6.1 Flow rate with buffer cylinder

When using a buffer cylinder, make the following setting: In the menu "SETTINGS / HEATING / STANDARD SETTINGS", set parameter "BUFFER OPERATION" to "ON".

The flow rate can be adjusted using the temperature differential of the buffer circuit. The value must not fall below the minimum flow rate.

Maximum temperature differential on the heating side with buffer cylinder:



1 Nominal flow rate
X Outside temperature [°C]
Y Maximum temperature differential [K]

- ▶ Make the settings at the circulation pump when the temperature differential between the flow and return temperature has stabilised.
- ▶ Compare the resulting temperature differential between the flow and return at the appliance with the diagram “Maximum temperature differential on the heating side with buffer cylinder”.
- ▶ Set the buffer charging pump so that the maximum temperature differential is achieved or undershot.
- ▶ If the appliance will be used for DHW heating, check the setting of the delivery head in DHW mode.
- ▶ If necessary, adjust the delivery head setting for the DHW primary pump.
- ▶ Set the buffer charging pump and the DHW primary pump to Δp constant.

10.7 Condensate drain

A pipe for the condensate drain is fitted at the factory to the defrost pan. The pipe terminates near the aperture on the floor plate. The appliance is supplied with a two meter hose with elbow plug-in fittings for draining the condensate.

- ▶ Secure the hose supplied on the pipe of the defrost pan.

10.8 Second heat source

For dual mode systems, always connect the heat pump into the return of the second heat generator (e.g. oil boiler).

10.9 Safety temperature controller for underfloor heating system STB-FB

Material losses
In case of failure, in order to prevent an excessively high flow temperature in the underfloor heating system, we generally recommend the use of a safety temperature controller to limit the system temperature.

11. Power supply

11.1 General

WARNING Electrocution
Before working on the appliance, isolate it from the power supply at the control panel.

Please observe the heat pump manager operating and installation instructions.

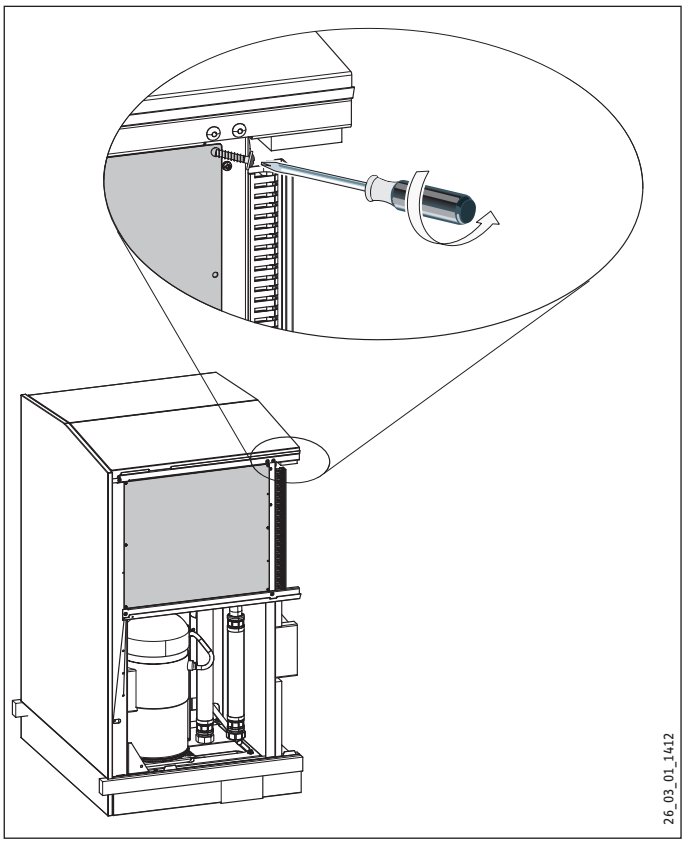
Only qualified electricians must carry out the installation in accordance with these instructions.

Permission to connect the appliance may need to be obtained from your local power supply utility.

11.2 Wiring chamber

The terminal box is located on the air outlet side.

- ▶ Open the junction box as shown:



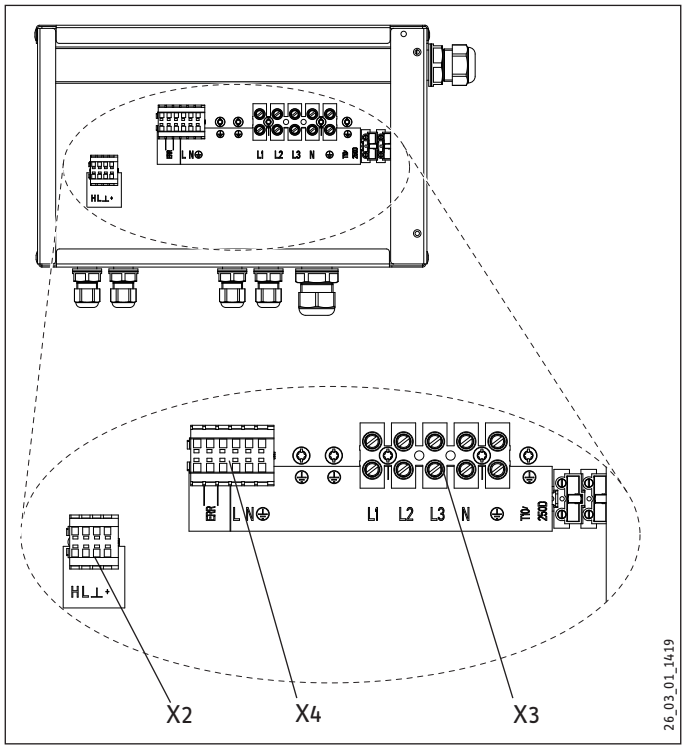
Note
The wiring diagram of the appliance is located behind the cover.

Use appropriate cables in accordance with local regulations for all connections.

- ▶ Route the cables through the knock-out in the floor, through the cable trunking and upwards into the junction box.
- ▶ Route the electrical cables through the cable entries with strain reliefs.
- ▶ Check the function of the strain relief fittings.

▶ Connect the circulation pumps for the heating and buffer cylinder to the heat pump manager in accordance with the engineering documents.

11.3 Electrical connections



X3	Compressor (HP)	
	L1, L2, L3, N, PE	Power supply
X2	Low voltage	
	H	BUS High
	L	BUS Low
	⊥	BUS earth
	+	BUS (is not connected)
X4	Control voltage	
	L, N, PE	Power supply
	ERR	Fault output signal

Note
The compressor in the appliance can only turn in one direction. If the appliance is not connected correctly, the compressor remains in operation for 30 seconds then switches off. The heat pump manager shows the fault message "No output".

▶ In this case, change the direction of the rotating field by swapping two of the phases.

Note
For every appliance fault, the "ERR" output issues a 230 V signal. The output passes the signal onto the external controller.
In the case of temporary faults, the output switches the signal through for a specific time.
In the case of faults that result in a permanent appliance shutdown, the output switches through permanently.

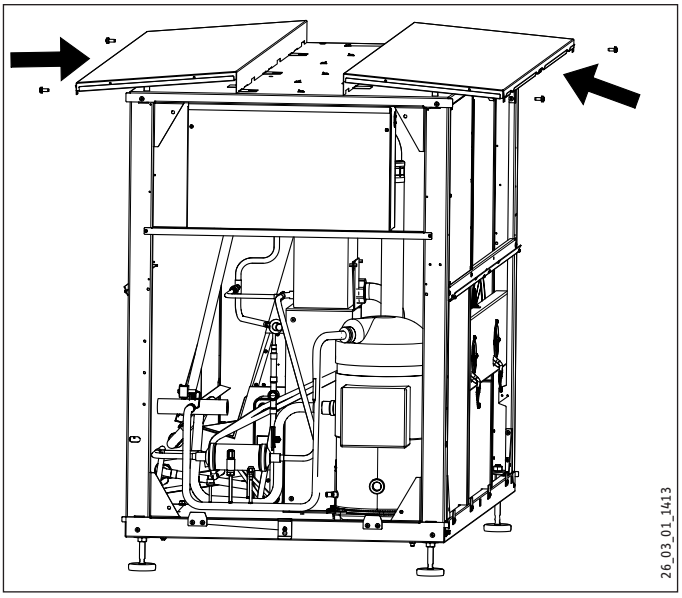
12. Fitting casing components

Four screws are available at the top of the frame to affix the hoods. Eight screws are available to affix the reversing hoods.

▶ Remove the 12 fixing screws from the frame of the standard appliance and retain them.

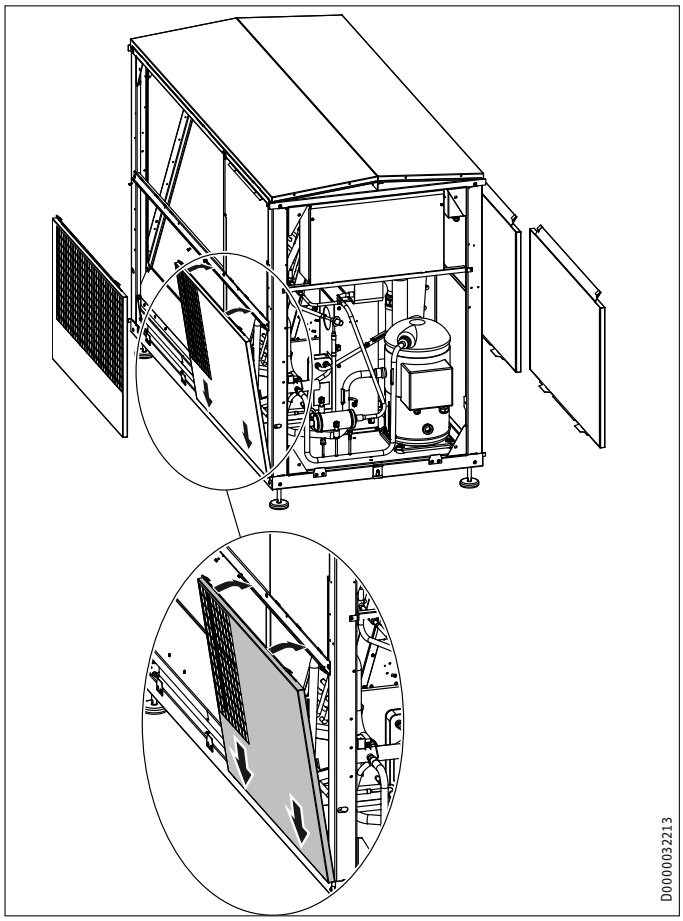
▶ Place the hoods at the front of the appliance and push them to the centre. Ensure that the tabs of the lid click into the guides on the casing.

▶ Secure the hoods with two screws each.

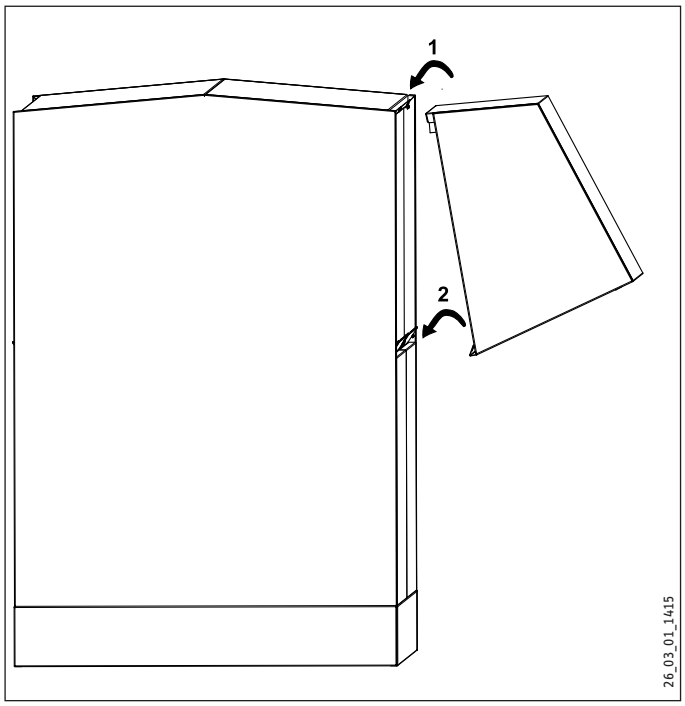


▶ Hook the lower side panels into the mounting brackets on the appliance. Simultaneously insert the tabs fixed to the bottom of the side panels into the slots provided in the appliance frame.

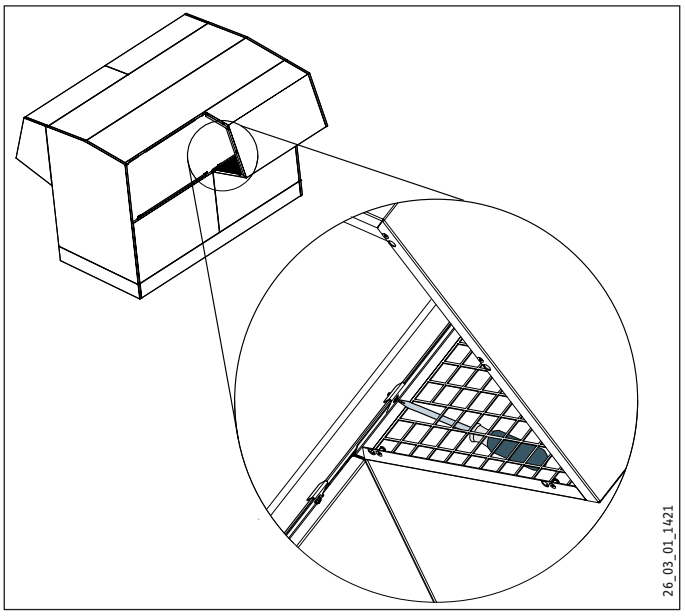
Fitting casing components



▶ Hook the reversing hoods into the mounting brackets at the top and bottom.

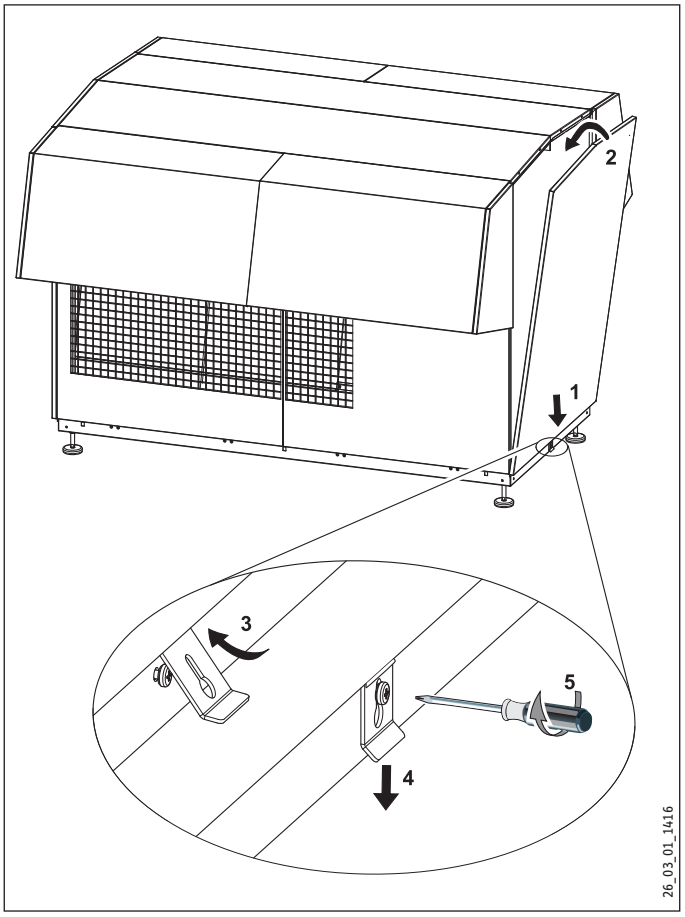


▶ Secure the reversing hoods with two screws each.



▶ Hook the front and back panels into the mounting brackets of the hoods. Simultaneously insert the tabs fixed to the bottom of the panels into the slots provided in the appliance frame.

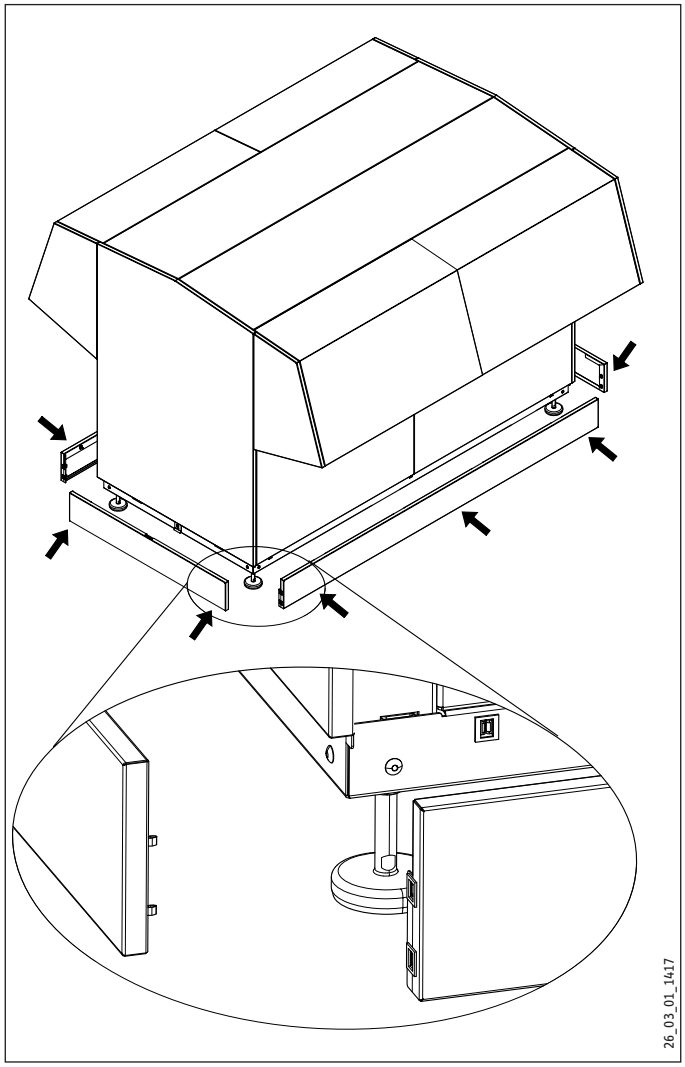
▶ Secure the front and back panels using the mounting tabs provided for this purpose at the bottom of the appliance frame.



▶ Secure the side plinth trims by hooking into the appliance frame.

▶ Secure the front and back plinth trims by hooking into the side plinth trims.

► Affix the type plate supplied at the top of the front or rear casing panel, where it is clearly visible.



13. Commissioning

A WPM heat pump manager is required to operate the appliance. All necessary adjustments prior to and during operation are made on this device.

Only heating contractors may carry out the adjustments on the heat pump manager commissioning list, commission the appliance and instruct the owner in its use.

Commissioning is to be carried out in accordance with these installation instructions and the operating and installation instructions of the heat pump manager. Our customer support can assist with commissioning, which is a chargeable service.

Where this appliance is intended for commercial use, the rules of the relevant Health & Safety at Work Act may be applicable for commissioning. For further details, check your local authorising body.

13.1 Checks before commissioning

► Before commissioning check the points detailed below.

13.1.1 Heating system

- Have you filled the heating system to the correct pressure, and opened the quick-action air vent valve?

13.1.2 Temperature sensor

- Have you correctly connected and positioned the outside temperature sensor and the return sensor?

13.1.3 Power supply

- Have you correctly connected the power supply?

13.2 Initial start-up

13.2.1 Heating curve adjustment

The efficiency of a heat pump decreases as the flow temperature rises. The heating curve should therefore be adjusted with care. Heating curves that are set too high cause the zone valves and thermostatic valves to close, which may lead to the minimum flow rate required for the heating circuit not being achieved.

► Observe the WPM operating and installation instructions.

The following steps will help you to adjust the heating curve correctly:

- Fully open thermostatic or zone valves in a lead room (e.g. living room and bathroom).
  We do not recommend installing thermostatic or zone valves in the lead room. Control the temperature for these rooms via remote control.
- At different outside temperatures (e.g. –10 °C and +10 °C), adjust the heating curve so the required temperature is set in the lead room.

Standard values to begin with:

Parameters	Underfloor heating	Radiator heating system
Heating curve	0.4	0.8
Control response time	5	15
Comfort temperature	20 °C	20 °C

If the room temperature is not high enough in spring and autumn (approx. 10 °C outside temperature), raise the "COMFORT TEMPERATURE" parameter in the heat pump manager menu under "SETTINGS / HEATING / HEATING CIRCUIT".

Note
If no remote control is installed, raising the "COMFORT TEMPERATURE" parameter leads to a parallel offset of the heating curve.

Increase the "HEATING CURVE" parameter, if the room temperature is not high enough when outside temperatures are low.

If you raise the "HEATING CURVE" parameter, adjust the zone valve or thermostatic valve in the lead room to the required temperature when outside temperatures are high.

Note
Never reduce the temperature in the entire building by closing all zone or thermostatic valves, instead use the setback programs.

When everything has been implemented correctly, the system can be heated to its maximum operating temperature and vented once again.

Material losses
With underfloor heating systems, observe the maximum permissible temperature for the system.

13.2.2 Other settings

▶ For operation with and without buffer cylinder, observe chapter "Operation / Menu structure / Menu SETTINGS / STANDARD SETTING / BUFFER OPERATION" in the operating and installation instructions of the WPM.

When using the heat-up program

If you use the heat-up program, make the following settings on the WPM:

▶ Initially set parameter "DUAL MODE TEMP HZG" to 30 °C.

▶ Then set parameter "LOWER APP LIMIT HZG" to 30 °C.

Note
After completing the heat-up process, reset the parameters "DUAL MODE TEMP HZG" and "LOWER APP LIMIT HZG" to their respective standard values or to the respective system values.

13.3 Shutdown

Material losses
Never interrupt the heat pump power supply, even outside the heating season. Otherwise, system frost protection is not guaranteed.
The heat pump manager automatically switches the heat pump to summer or winter mode.

13.3.1 Standby mode

If the appliance is to be taken out of use, set the WPM to standby. This retains the safety functions designed to protect the system (e.g. frost protection).

13.3.2 Power interruption

If the system is permanently isolated from the power supply, please observe the following:

Material losses
If the heat pump and frost protection are completely switched off, drain the system on the water side.

14. Troubleshooting

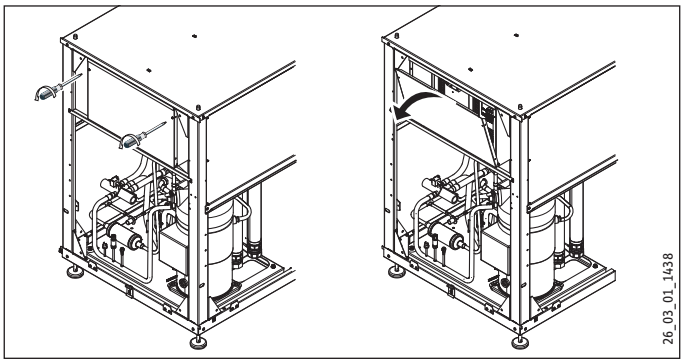
Note
Please observe the heat pump manager operating and installation instructions.

Note
The following inspection instructions may only be carried out by a qualified contractor.

If you cannot locate the fault using the heat pump manager, use the controls on the IWS.

▶ Open the control panel.

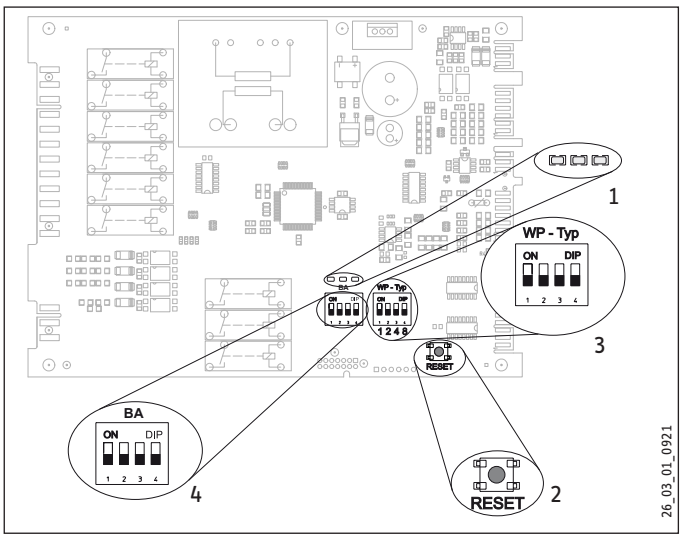
WARNING Electrocution
Before removing the casing components, disconnect all poles from the power supply.



▶ Read the following sections on troubleshooting and carry out the instructions.

14.1 Controls on the IWS

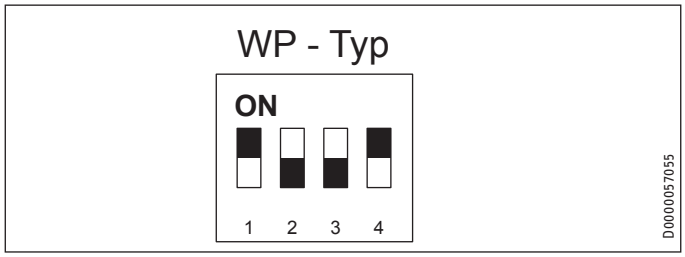
The IWS (integral heat pump controller) helps you to troubleshoot if the fault cannot be identified using the WPM.



1 LEDs
2 Reset button
3 DIP switch (WP-Typ)
4 DIP switch (BA)

14.1.1 Checking the "HP type" DIP switch on the IWS

▶ Check whether the "WP-Typ" DIP switch is set as follows:



14.1.2 Checking the IWS DIP switch "BA"

▶ Check whether the "BA" DIP switch is set as follows:

14.1.3 LED

Red LED

Fault	Cause	Remedy
The appliance shuts down for 12 minutes and then restarts. Red LED flashes.	Heat pump fault.	Check the fault message in the WPM. Find the solution in the WPM instructions (fault list). Perform a reset of the IWS (see WPM instructions).
Appliance stops permanently. Red LED illuminates.	Five faults within two hours.	Check the fault message in the WPM. Find the solution in the WPM instructions (fault list). Perform a reset of the IWS (see WPM instructions).

Green LED centre

The LED flashes during initialisation, and illuminates constantly after the BUS address has been assigned successfully. Only then has communication with the WPM been established.

14.1.4 Reset button

If the IWS was incorrectly initialised, the settings can be reset with this button. For this also observe the chapter "Reinitialising IWS" in the heat pump manager operating and installation instructions.

14.2 Fan noise

The heat pump draws heat from the outdoor air. This causes the outdoor air to cool down. At outside temperatures of 0 °C to 8 °C, the air may be cooled to below freezing point. If under these conditions precipitation occurs in the form of rain or fog, ice may form on the air grille, the fan blades or the airways. If the fan comes into contact with this ice, noise develops.

How to remedy rhythmic scratching or grinding noises:

▶ Check whether the condensate drain is clear of obstructions.

▶ Carry out a manual defrost, repeatedly if required, until the fan runs free again.

▶ At outside temperatures above + 1 °C, switch the appliance off for around 1 hour or switch it over to emergency mode. After this, the ice should have melted.

▶ Check whether the appliance is installed in line with the installation conditions.

▶ If the noises occur frequently, notify customer support.

15. Maintenance

WARNING Electrocution
Prior to maintenance and cleaning work, isolate the appliance from its power supply.

We recommend that you perform an annual inspection (to establish the current condition of the system), and carry out any maintenance as required (to return the system to its original condition).

Cleaning the condensate drain

Environmental conditions may result in the condensate drain becoming blocked. To clean the drain, proceed as follows:

Remove casing panels (see chapter "Installation").

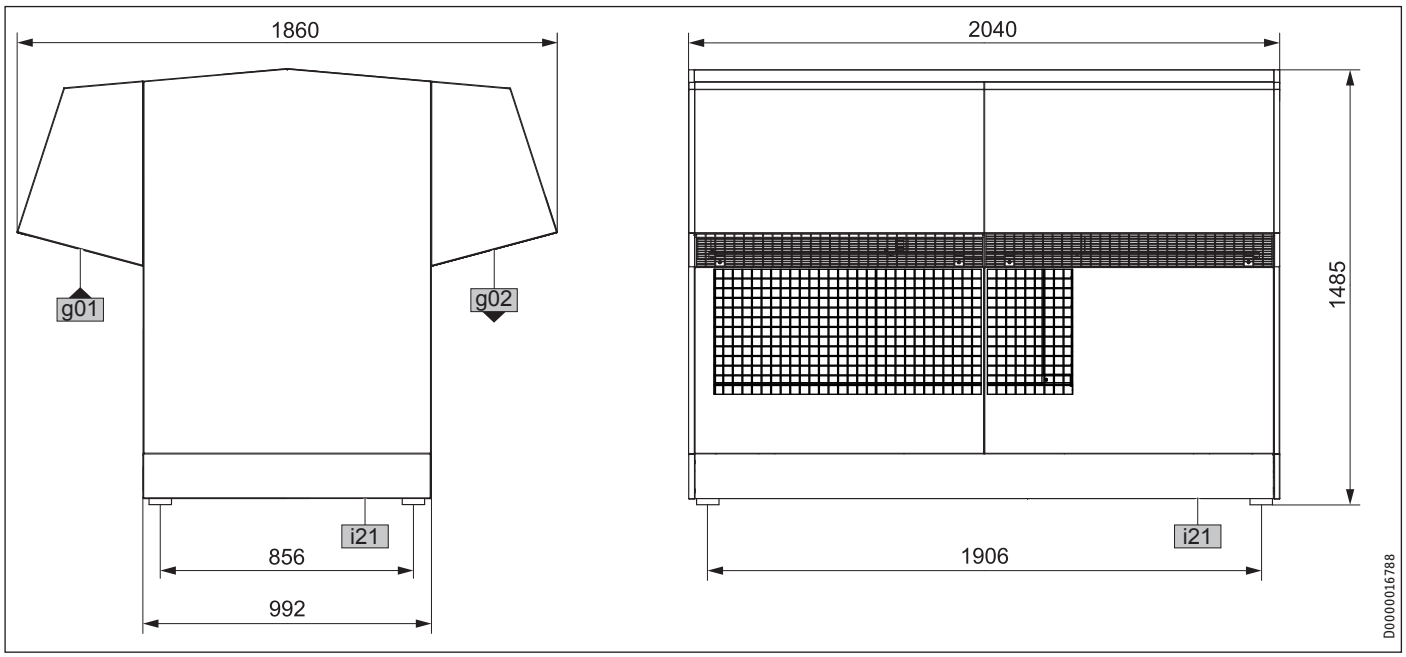
▶ Check the hose and the pipe of the condensate drain.

▶ Remove dirt and blockages immediately.

▶ Refit the casing parts on the appliance (see chapter "Installation").

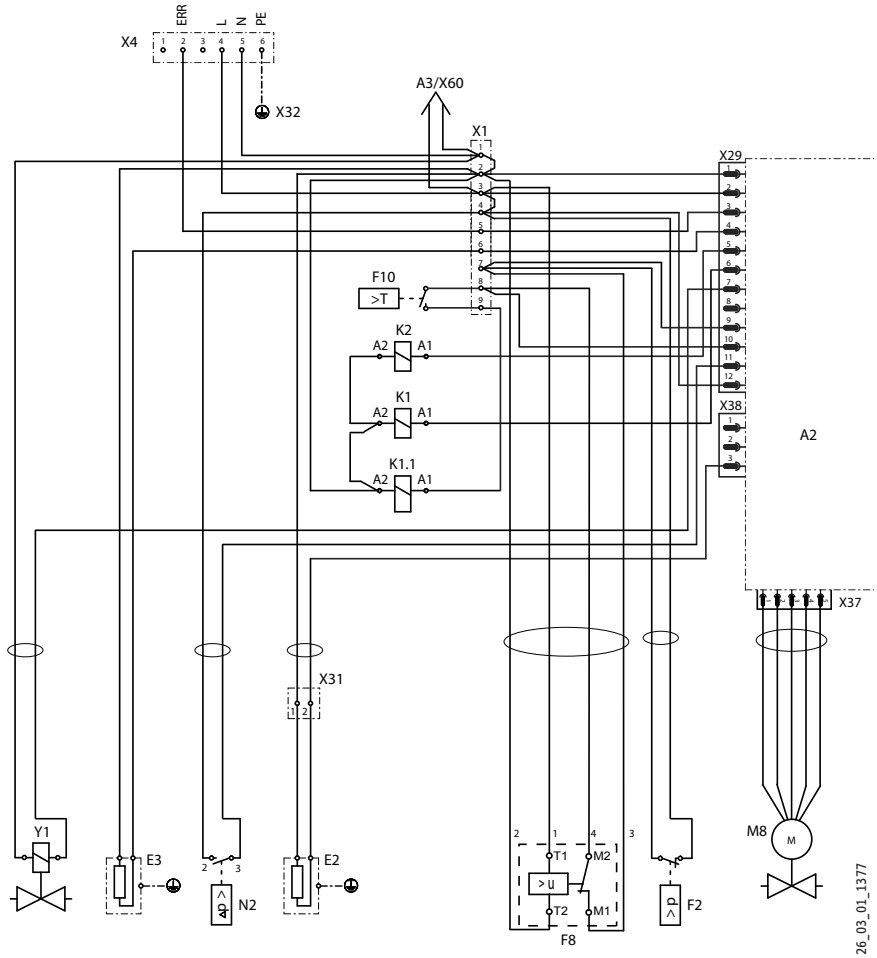
16. Specification

16.1 Dimensions and connections

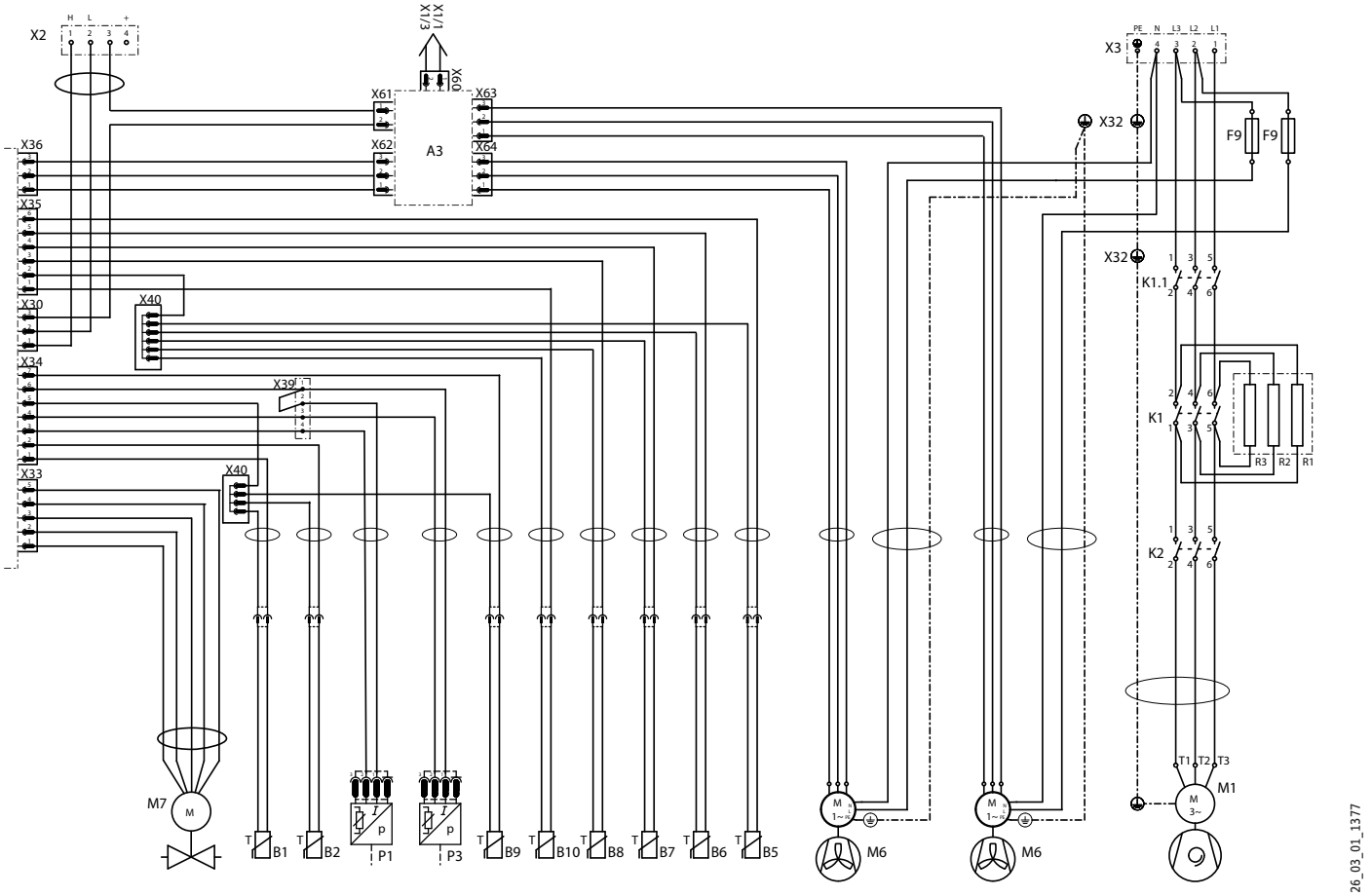


g01	Air intake
g02	Air discharge
i21	Entry supply line

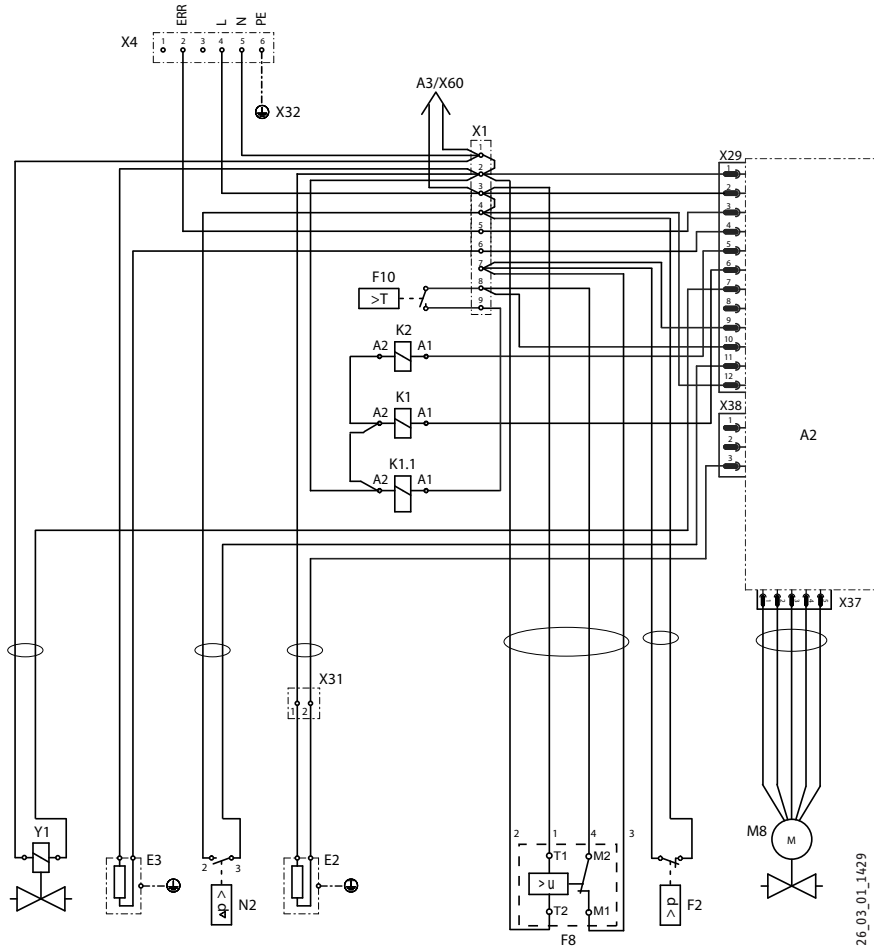
16.2 Wiring diagram WPL 34 | WPL 47



A2 Integral heat pump control unit (IWS)
A3 Fan auxiliary PCB/Expansion valves (ZPLE)
B1 Heat pump flow temperature sensor - KTY
B2 Heat pump return temperature sensor - KTY
B5 Hot gas temperature sensor - KTY
B6 Intake air temperature sensor - PT1000
B7 Compressor intake temperature sensor - PT1000
B8 Evaporator discharge temperature sensor - PT1000
B9 Frost protection temperature sensor - KTY
B10 Injection temperature sensor - PT1000
E2 Oil sump heater
E3 Ribbon heater
F2 High pressure switch
F8 Motor overload relay
F9 Fan fuse
K1 Safety contactor
M1 Compressor motor
M6 Fan motor
M7 Electrical expansion valve stepper motor
M8 Electrical injection valve stepper motor
N2 Defrost differential pressure switch
P1 High pressure sensor
P3 Low pressure sensor
Q1 Softstart contactor
X1 Terminals
X2 Low voltage terminal strip
X3 Mains terminal
X4 Control terminal
X29 12-pin IWS plug - control unit
X30 3-pin IWS plug - BUS
X31 Oil sump heater terminal
X32 Earth support point
X33 5-pin IWS plug - electrical expansion valve
X34 7-pin IWS plug - sensors
X35 6-pin IWS plug - temperature sensors
X36 3-pin IWS plug - fan
X37 5-pin IWS plug - electrical injection valve
X38 3-pin IWS plug - DHC
X39 Pressure sensor terminal
X40 Ground temperature sensor terminal
X60 2-pin ZPLE plug - supply voltage
X61 2-pin ZPLE plug - ground
X62 3-pin ZPLE plug - fan input
X63 3-pin ZPLE plug - fan output
X64 3-pin ZPLE plug - fan output
Y1 Diverter valve


X2
X1/1
X13
X60
X61
X62
X63
X64
A3
X36
X35
X30
X34
X33
X40
X39
X3
X32
F9
K1.1
K1
K2
R3
R2
R1
M7
B1
B2
P1
P3
B9
B10
B8
B7
B6
B5
M6
M1
T1
T2
T3
26_03_01_1377

16.3 Wiring diagram WPL 57



A2 Integral heat pump control unit (IWS)
A3 Fan auxiliary PCB/Expansion valves (ZPLE)
B1 Heat pump flow temperature sensor - KTY
B2 Heat pump return temperature sensor - KTY
B5 Hot gas temperature sensor - KTY
B6 Intake air temperature sensor - PT1000
B7 Compressor intake temperature sensor - PT1000
B8 Evaporator discharge temperature sensor - PT1000
B9 Frost protection temperature sensor - KTY
B10 Injection temperature sensor - PT1000
E2 Oil sump heater
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F9 Fan fuse
K1 Safety contactor
M1 Compressor motor
M6 Fan motor
M7 Electrical expansion valve stepper motor
M8 Electrical injection valve stepper motor
N2 Defrost differential pressure switch
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Q1 Softstart contactor
X1 Terminals
X2 Low voltage terminal strip
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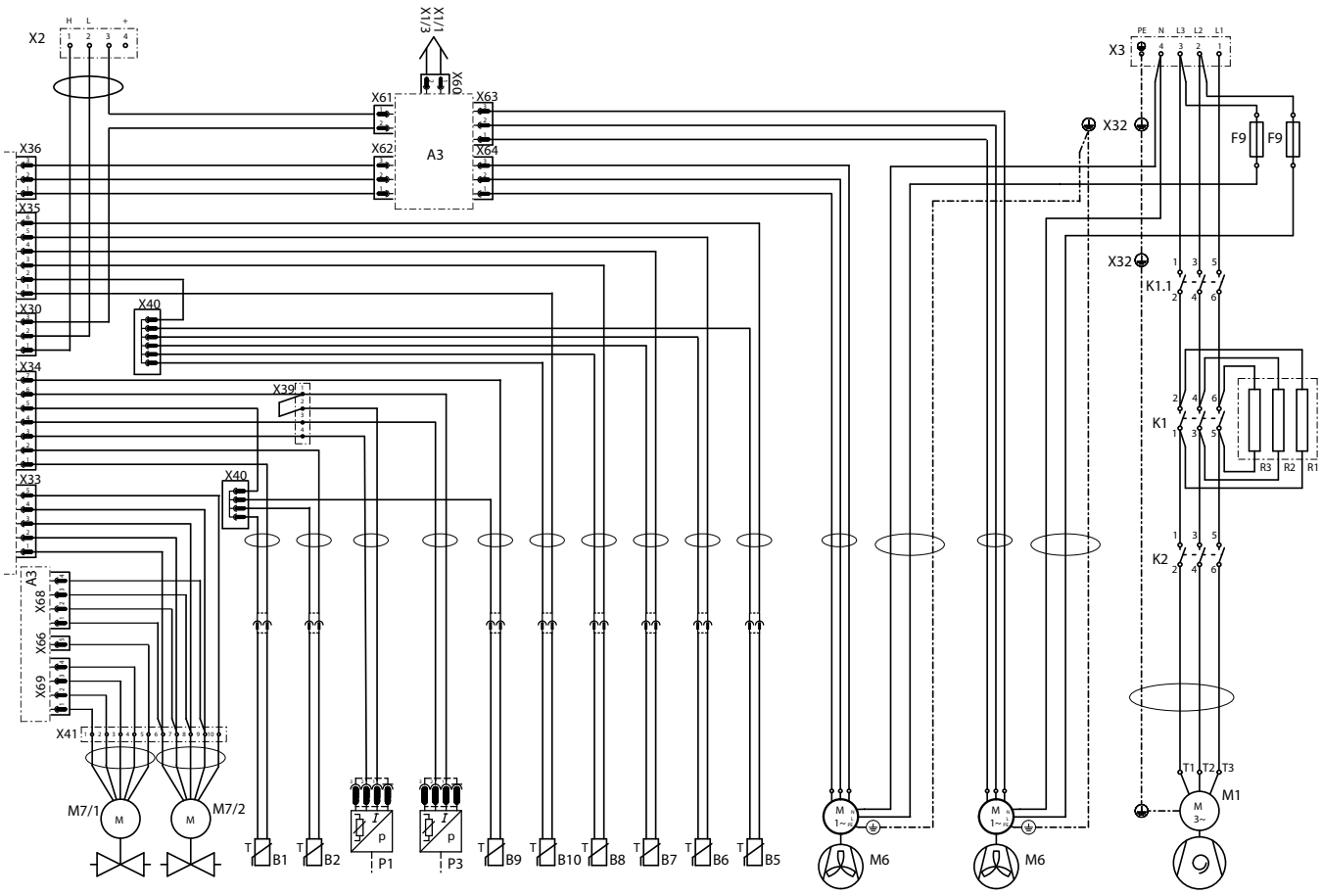
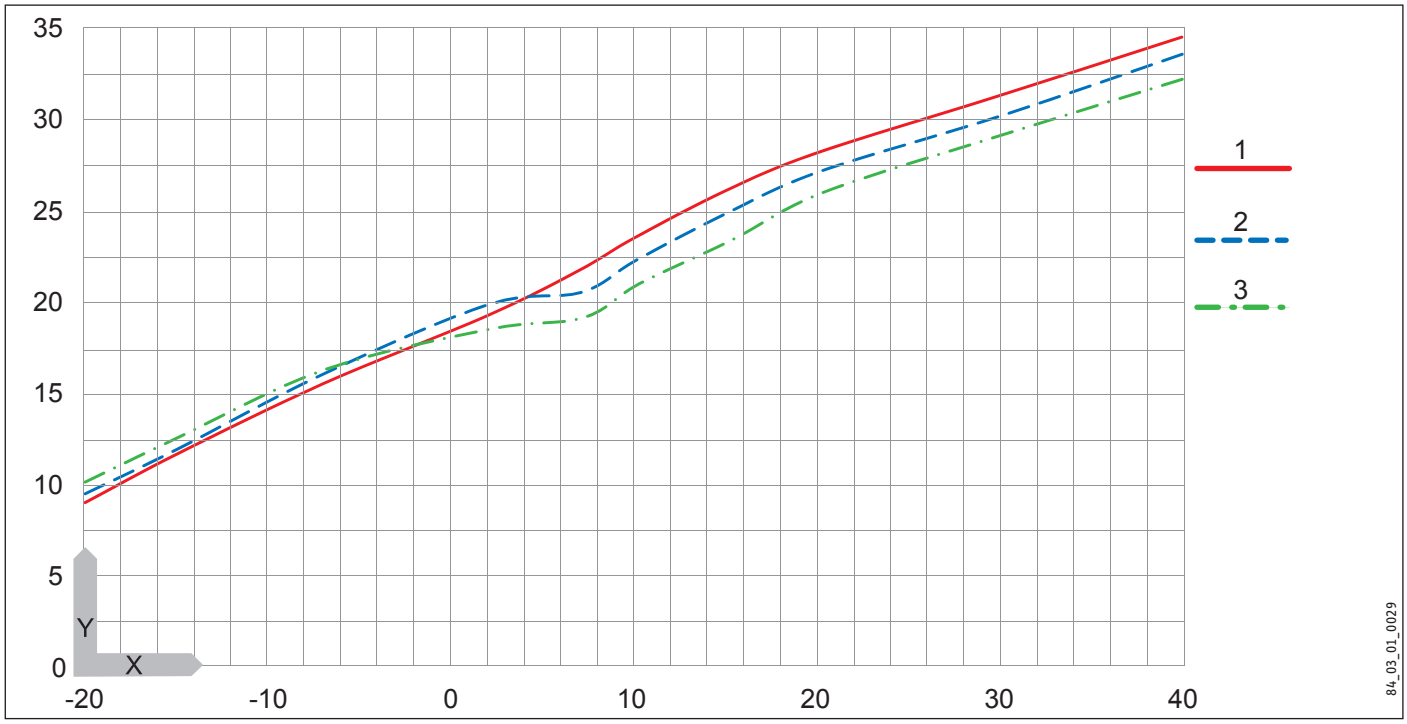
X32 Earth support point
X33 5-pin IWS plug - electrical expansion valve
X34 7-pin IWS plug - sensors
X35 6-pin IWS plug - temperature sensors
X36 3-pin IWS plug - fan
X37 5-pin IWS plug - electrical injection valve
X38 3-pin IWS plug - DHC
X39 Pressure sensor terminal
X40 Ground temperature sensor terminal
X41 Expansion valve terminal
X60 2-pin ZPLE plug - supply voltage
X61 2-pin ZPLE plug - ground
X62 3-pin ZPLE plug - fan input
X63 3-pin ZPLE plug - fan output
X64 3-pin ZPLE plug - fan output
Y1 Diverter valve

Specification



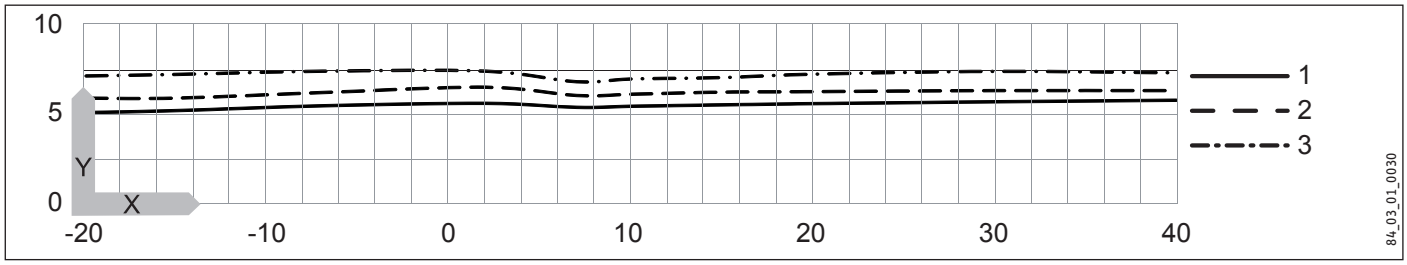
16.4 Output diagrams WPL 34

Heating output



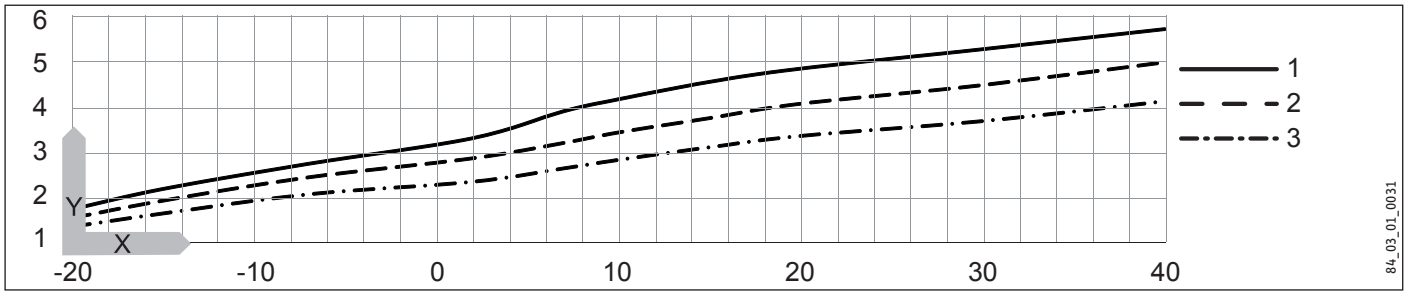
Y Heating output [KW]
X Inlet temperature of the WQA medium [°C]
1 Flow temperature 35 °C
2 Flow temperature 45 °C
3 Flow temperature 55 °C

Power consumption



Y Power consumption [KW]
X Inlet temperature of the WQA medium [°C]
1 Flow temperature 35 °C
2 Flow temperature 45 °C
3 Flow temperature 55 °C

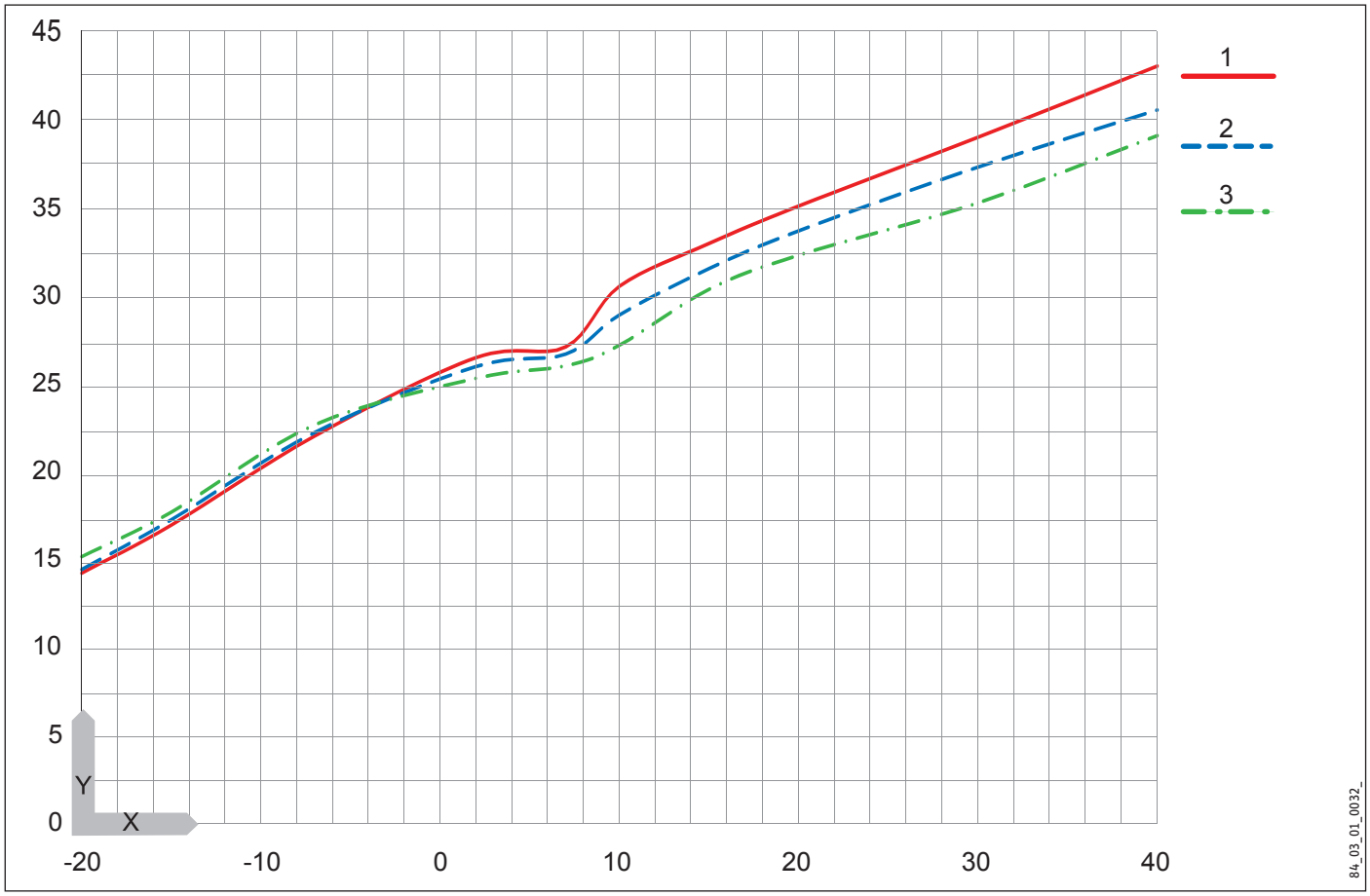
Coefficient of performance (COP)



Y Coefficient of performance ε [-]
X Inlet temperature of the WQA medium [°C]
1 Flow temperature 35 °C
2 Flow temperature 45 °C
3 Flow temperature 55 °C

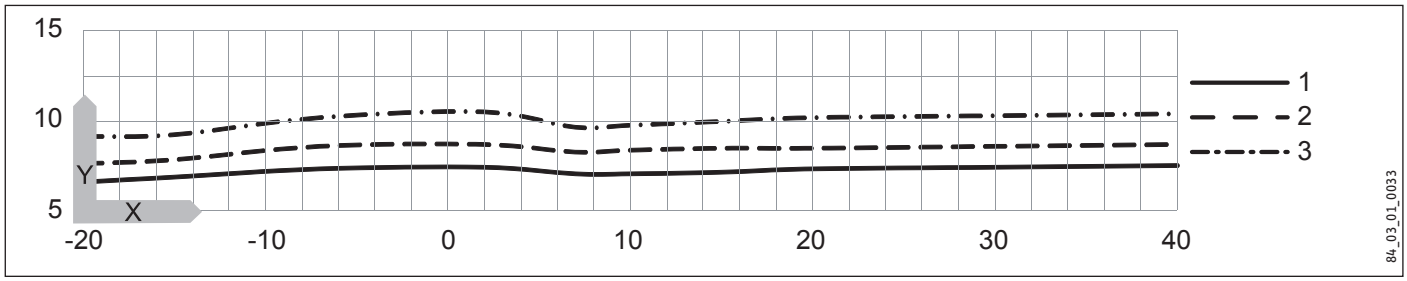
16.5 Output diagrams WPL 47

Heating output



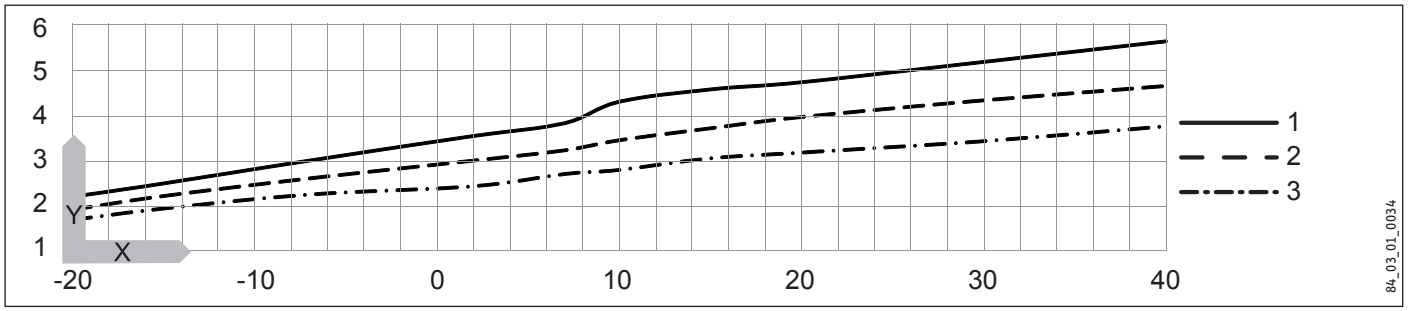
Y Heating output [KW]
X Inlet temperature of the WQA medium [°C]
1 Flow temperature 35 °C
2 Flow temperature 45 °C
3 Flow temperature 55 °C

Power consumption



Y Power consumption [KW]
X Inlet temperature of the WQA medium [°C]
1 Flow temperature 35 °C
2 Flow temperature 45 °C
3 Flow temperature 55 °C

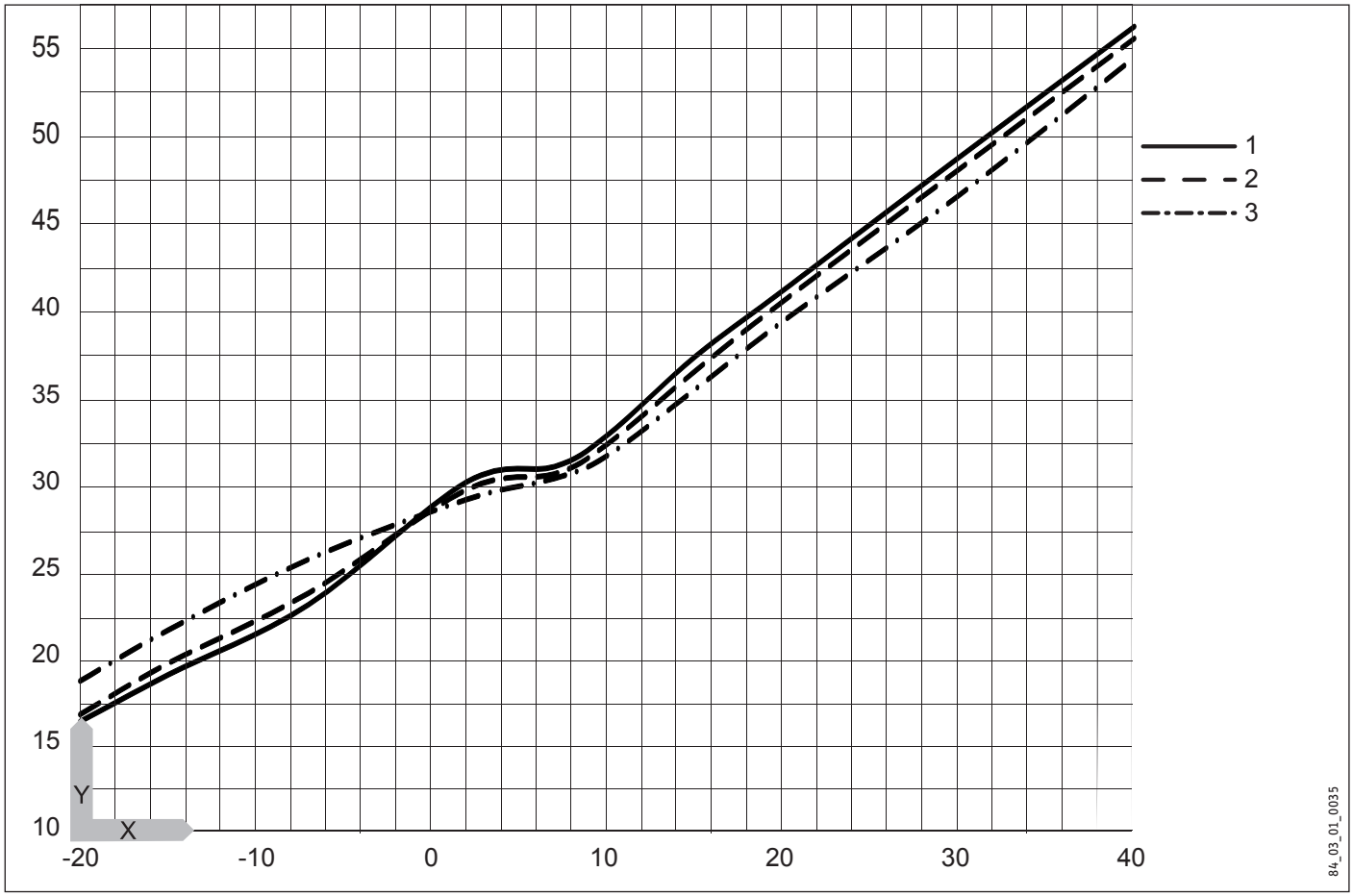
Coefficient of performance (COP)



Y Coefficient of performance ε [-]
X Inlet temperature of the WQA medium [°C]
1 Flow temperature 35 °C
2 Flow temperature 45 °C
3 Flow temperature 55 °C

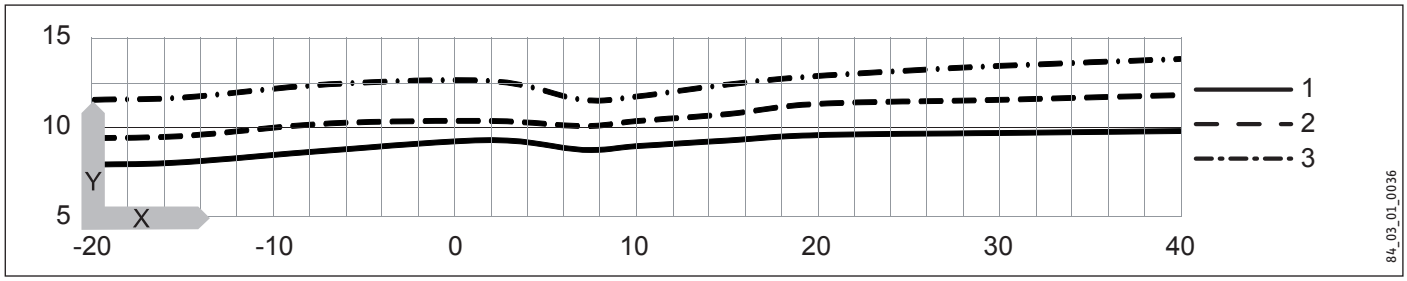
16.6 Output diagrams WPL 57

Heating output



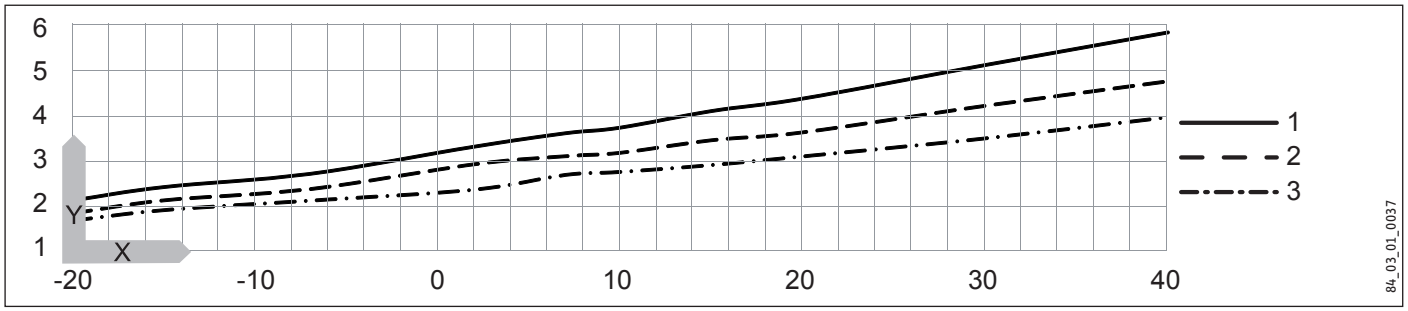
Y Heating output [KW]
X Inlet temperature of the WQA medium [°C]
1 Flow temperature 35 °C
2 Flow temperature 45 °C
3 Flow temperature 55 °C

Power consumption



Y Power consumption [KW]
X Inlet temperature of the WQA medium [°C]
1 Flow temperature 35 °C
2 Flow temperature 45 °C
3 Flow temperature 55 °C

Coefficient of performance (COP)



Y Coefficient of performance ε [-]
X Inlet temperature of the WQA medium [°C]
1 Flow temperature 35 °C
2 Flow temperature 45 °C
3 Flow temperature 55 °C

16.7 Data table

The output data refers to new appliances with clean heat exchangers.

The power consumption of the integral auxiliary drives represents the maximum value and may vary subject to operating point.

The power consumption of the integral auxiliary drives is included in the output details of the appliance (to EN 14511)

		WPL 34	WPL 47	WPL 57
		228835	228836	228837
Heating output				
Heating output at A10/W35 (EN 14511)	kW	23.40	30.50	33.60
Heating output at A7/W35 (EN 14511)	kW	20.16	26.83	31.01
Heating output at A2/W35 (EN 14511)	kW	18.32	24.82	29.81
Heating output at A-7/W35 (EN 14511)	kW	15.22	21.68	24.02
Heating output in silent mode at A-7/W35 max.	kW			22.82
Power consumption				
Power consumption at A10/W35 (EN 14511)	kW			8.7
Power consumption at A7/W35 (EN 14511)	kW	5.54	6.80	8.64
Power consumption at A2/W35 (EN 14511)	kW	5.83	7.24	9.03
Power consumption at A-7/W35 (EN 14511)	kW	5.47	7.10	8.46
Power consumption, fan heating max.	kW	0.65	0.65	0.65
Coefficient of performance				
COP at A10/W35 (EN 14511)				3.9
COP at A7/W35 (EN 14511)		3.64	3.94	3.59
COP at A2/W35 (EN 14511)		3.14	3.43	3.30
COP at A-7/W35 (EN 14511)		2.78	3.05	2.84
Sound data				
Sound power level (EN 12102)	dB(A)	67	67	69
Max. sound power level, silent mode	dB(A)	-	-	67
Sound pressure level at 1 m distance in a free field	dB(A)	59	59	61
Sound pressure level at 5 m distance in a free field	dB(A)	45	45	47
Sound pressure level at 10 m distance in a free field	dB(A)	39	39	41
Application limits				
Max. permissible pressure	MPa	0.3	0.3	0.3
Min. application limit on the heating side	°C	15	15	15
Max. application limit on the heating side	°C	60	60	60
Min. application limit, heat source	°C	-20	-20	-20
Max. application limit, heat source	°C	40	40	40
Water hardness	°dH	≤3	≤3	≤3
pH value (with aluminium compounds)		8.0-8.5	8.0-8.5	8.0-8.5
pH value (without aluminium compounds)		8.0-10.0	8.0-10.0	8.0-10.0
Chloride	mg/l	<30	<30	<30
Conductivity (softening)	µS/cm	<1000	<1000	<1000
Conductivity (desalination)	µS/cm	20-100	20-100	20-100
Oxygen 8-12 weeks after filling (softening)	mg/l	<0.02	<0.02	<0.02
Oxygen 8-12 weeks after filling (desalination)	mg/l	<0.1	<0.1	<0.1
Energy data				
Energy efficiency class		A+/A+	A+/A++	A+/A+
Electrical data				
Max. power consumption	kW	10.8	13.4	15.1
MCB/fuse protection, controller	A	1 x B 16	1 x B 16	1 x B 16
Compressor fuse/MCB	A	3 x C 32	3 x C 32	3 x C 32
Max. mains impedance Zmax	Ω	226	226	226
Phases, controller		1/N/PE	1/N/PE	1/N/PE
Phases, compressor		3/N/PE	3/N/PE	3/N/PE
Rated voltage, controller	V	230	230	230
Rated voltage, compressor	V	400	400	400
Frequency	Hz	50	50	50
Starting current (with/without starting current limiter)	A	64/-	70/-	78/-
Max. operating current	A	20	22	23
Versions				
Condenser material		1.4401/Cu	1.4401/Cu	1.4401/Cu
Refrigerant		R407 C	R407 C	R407 C
Defrost type		Circuit reversal	Circuit reversal	Circuit reversal
IP rating		IP14B	IP14B	IP14B
Refrigerant charge	kg	6.7	7.3	7.5

Specification

		WPL 34	WPL 47	WPL 57
Dimensions				
Height (outdoor installation)	mm	1485	1485	1485
Width (outdoor installation)	mm	1860	1860	1860
Depth (outdoor installation)	mm	2040	2040	2040
Weights				
Weight	kg	480	540	600
Connections				
Connection, heating flow/return		G 2	G 2	G 2
Values				
Pressure differential, heating side	hPa	100	100	100
Min heating flow rate	m³/h	2.5	3	3.5
Heating flow rate (EN 14511) at A7/W35, B0/W35 and 5 K	m³/h	3.75	4.90	5.7
Nominal heating flow rate at A2/W35, B0/W35 and 7 K	m³/h	2.5	3	3.66
Flow rate, heat source side	m³/h	7000	7000	7300

Guarantee

The guarantee conditions of our German companies do not apply to appliances acquired outside of Germany. In countries where our subsidiaries sell our products a guarantee can only be issued by those subsidiaries. Such guarantee is only granted if the subsidiary has issued its own terms of guarantee. No other guarantee will be granted.

We shall not provide any guarantee for appliances acquired in countries where we have no subsidiary to sell our products. This will not affect warranties issued by any importers.

Environment and recycling

We would ask you to help protect the environment. After use, dispose of the various materials in accordance with national regulations.

KYOTO | R407C

This device is filled with refrigerant R407C.

Refrigerant R407C is a CFC greenhouse gas mentioned in the Kyoto protocol with a global greenhouse potential (GWP) = 1653.

Never release refrigerant R407C to atmosphere.

NOTES

Deutschland
STIEBEL ELTRON GmbH & Co. KG
Dr.-Stiebel-Straße 33 | 37603 Holzminden
Tel. 05531 702-0 | Fax 05531 702-480
info@stiebel-eltron.de
www.stiebel-eltron.de

Verkauf Tel. 05531 702-110 | Fax 05531 702-95108 | info-center@stiebel-eltron.de
Kundendienst Tel. 05531 702-111 | Fax 05531 702-95890 | kundendienst@stiebel-eltron.de
Ersatzteilverkauf Tel. 05531 702-120 | Fax 05531 702-95335 | ersatzteile@stiebel-eltron.de

Australia
STIEBEL ELTRON Australia Pty. Ltd.
6 Prohasky Street | Port Melbourne VIC 3207
Tel. 03 9645-1833 | Fax 03 9645-4366
info@stiebel.com.au
www.stiebel.com.au

Austria
STIEBEL ELTRON Ges.m.b.H.
Gewerbegebiet Neubau-Nord
Margaritenstraße 4 A | 4063 Hörsching
Tel. 07221 74600-0 | Fax 07221 74600-42
info@stiebel-eltron.at
www.stiebel-eltron.at

Belgium
STIEBEL ELTRON bvba/sprl
't Hofveld 6 - D1 | 1702 Groot-Bijgaarden
Tel. 02 42322-22 | Fax 02 42322-12
info@stiebel-eltron.be
www.stiebel-eltron.be

China
STIEBEL ELTRON (Guangzhou) Electric Appliance Co., Ltd.
Rm 102, F1, Yingbin-Yihao Mansion, No. 1 Yingbin Road
Panyu District | 511431 Guangzhou
Tel. 020 39162209 | Fax 020 39162203
info@stiebeleltron.cn
www.stiebeleltron.cn

Czech Republic
STIEBEL ELTRON spol. s r.o.
K Hájům 946 | 155 00 Praha 5 - Stodůlky
Tel. 251116-111 | Fax 235512-122
info@stiebel-eltron.cz
www.stiebel-eltron.cz

Finland
STIEBEL ELTRON OY
Kapinakuja 1 | 04600 Mäntsälä
Tel. 020 720-9988
info@stiebel-eltron.fi
www.stiebel-eltron.fi

France
STIEBEL ELTRON SAS
7-9, rue des Selliers
B.P 85107 | 57073 Metz-Cédex 3
Tel. 0387 7438-88 | Fax 0387 7468-26
info@stiebel-eltron.fr
www.stiebel-eltron.fr

Hungary
STIEBEL ELTRON Kft.
Gyár u. 2 | 2040 Budaörs
Tel. 01 250-6055 | Fax 01 368-8097
info@stiebel-eltron.hu
www.stiebel-eltron.hu

Japan
NIHON STIEBEL Co. Ltd.
Kowa Kawasaki Nishiguchi Building 8F
66-2 Horikawa-Cho
Saiwai-Ku | 212-0013 Kawasaki
Tel. 044 540-3200 | Fax 044 540-3210
info@nihonstiebel.co.jp
www.nihonstiebel.co.jp

Netherlands
STIEBEL ELTRON Nederland B.V.
Daviottenweg 36 | 5222 BH 's-Hertogenbosch
Tel. 073 623-0000 | Fax 073 623-1141
info@stiebel-eltron.nl
www.stiebel-eltron.nl

Poland
STIEBEL ELTRON Polska Sp. z O.O.
ul. Działkowa 2 | 02-234 Warszawa
Tel. 022 60920-30 | Fax 022 60920-29
biuro@stiebel-eltron.pl
www.stiebel-eltron.pl

Russia
STIEBEL ELTRON LLC RUSSIA
Urzhumskaya street 4,
building 2 | 129343 Moscow
Tel. 0495 7753889 | Fax 0495 7753887
info@stiebel-eltron.ru
www.stiebel-eltron.ru

Slovakia
TATRAMAT - ohrievače vody s.r.o.
Hlavná 1 | 058 01 Poprad
Tel. 052 7127-125 | Fax 052 7127-148
info@stiebel-eltron.sk
www.stiebel-eltron.sk

Switzerland
STIEBEL ELTRON AG
Industrie West
Gass 8 | 5242 Lupfig
Tel. 056 4640-500 | Fax 056 4640-501
info@stiebel-eltron.ch
www.stiebel-eltron.ch

Thailand
STIEBEL ELTRON Asia Ltd.
469 Moo 2 Tambol Klong-Jik
Amphur Bangpa-In | 13160 Ayutthaya
Tel. 035 220088 | Fax 035 221188
info@stiebeleltronasia.com
www.stiebeleltronasia.com

United Kingdom and Ireland
STIEBEL ELTRON UK Ltd.
Unit 12 Stadium Court
Stadium Road | CH62 3RP Bromborough
Tel. 0151 346-2300 | Fax 0151 334-2913
info@stiebel-eltron.co.uk
www.stiebel-eltron.co.uk

United States of America
STIEBEL ELTRON, Inc.
17 West Street | 01088 West Hatfield MA
Tel. 0413 247-3380 | Fax 0413 247-3369
info@stiebel-eltron-usa.com
www.stiebel-eltron-usa.com

STIEBEL ELTRON

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A 289441-39448-9151
B 289437-39448-9151