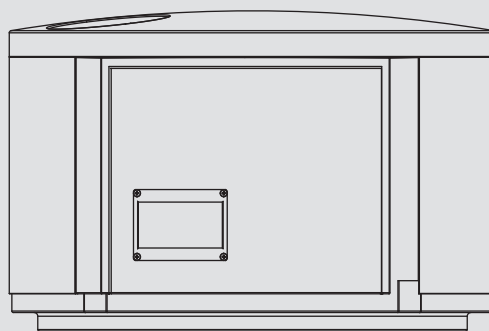


OPERATION AND INSTALLATION

DHW heat pump in a split design

» WWS 20



STIEBEL ELTRON

SPECIAL INFORMATION

OPERATION

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GUARANTEE

ENVIRONMENT AND RECYCLING

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.
- Observe all applicable national and regional regulations and instructions during installation.
- The appliance is not approved for outdoor installation.
- Observe the minimum clearances (see chapter "Installation / Preparations / Siting the appliance").
- Observe the requirements concerning the installation room (see chapter "Installation / Preparations / Installation site").
- In the case of a permanent connection, 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. Contactors, mains isolators or fuses can be used for this.
- Observe the safety measures to prevent contact with dangerous 'live' currents.
- Observe the MCB/fuse protection required for the appliance (see chapter "Specification / Data table").
- In the event of damage to the power cable this must always be replaced by a qualified contractor authorised by the manufacturer, using original spare parts.
- The appliance is pressurised. During the heat-up process, expansion water will drip from the safety valve.
- Install a type-tested safety valve in the cold water supply line.

- The maximum pressure in the cold water supply line must be at least 20 % below the response pressure of the safety valve. If the maximum pressure in the cold water supply line is higher, install a pressure reducing valve.
- Size the drain so that water can drain off unimpeded when the safety valve is fully opened.
- Fit the discharge pipe of the safety valve with a constant downward slope and in a room free from the risk of frost.
- The safety valve discharge aperture must remain open to atmosphere.

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 any new user where appropriate.

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)

OPERATION

Safety

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 Information on the appliance

Symbol	Meaning
	Never cover the appliance

1.4 Units of measurement



Note

All measurements are given in mm unless stated otherwise.

2. Safety

2.1 Intended use

The appliance is intended for DHW heating within the application limits detailed in chapter "Specification / Data table".

This appliance is intended for domestic use. 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.

2.2 Incorrect use

The following are not permitted:

- Heating liquids other than DHW
- Operating the appliance with an empty DHW cylinder
- Operating the appliance outside the application limits (see chapter "Specification")
- Interrupting the power supply

2.3 General safety instructions

Only qualified contractors should carry out the electrical work and installation of this appliance. Qualified contractors are responsible for adherence to all applicable regulations.

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



WARNING Injury

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.



WARNING Electrocutation

Contact with live components presents a threat to life. Damage to the insulation or to individual components may result in a threat to life.

► If there is damage to the insulation, switch off the power supply and arrange a repair.
All work on the electrical installation must be carried out by a qualified contractor.



WARNING Burns

The water in the DHW cylinder can be heated to temperatures in excess of 60 °C. There is a risk of scalding at outlet temperatures in excess of 43 °C.

► Ensure you do not come into contact with the water when discharged.



WARNING Burns

Touching hot components can lead to burns.

When working on hot components, always wear protective working clothing and safety gloves.

The pipework connected to the DHW outlet of the appliance can reach temperatures in excess of 60 °C.



WARNING BURNS

The appliance is filled with refrigerant at the factory. In the event of refrigerant escaping due to a leak, avoid coming into contact with the refrigerant or inhaling the released vapours. Ventilate the rooms affected.



CAUTION Injury

Never place any objects on top of the appliance. If objects are left on the appliance, noise emissions may increase due to resulting vibrations, and the objects could fall and cause injury.

**Material losses**

If you disconnect the appliance from the power supply, the operating status of the primary pump can no longer be guaranteed.

- Never interrupt the power supply to the appliance.

**Material losses**

Never cover the appliance. Covering the air intake or air discharge leads to a reduced air supply. If the air supply is restricted, the operational reliability of the appliance cannot be guaranteed.

**Material losses**

Only operate the appliance when the DHW cylinder has been filled.

**Material losses**

Keep the appliance installation site and the air draw-off point free from air contaminated with oil or salt and from explosive or corrosive substances (e.g. chlorine, sulphur, ammonia).

**Note**

When the intake air temperature drops, the appliance output is reduced and the heat-up time is extended.

The appliance is designed for indoor installation. It can be installed as a recirculation air appliance and thus use the existing waste heat from other heat sources in the installation room (e.g. washing machine, freezer). Alternatively the appliance allows you to connect an air duct to route the supply air from another room or to remove the exhaust air from the installation room. For times when there is no DHW demand (compressor inactive), the fan speed can be set separately.

**Note**

In heat pump mode (compressor active), the fan always operates at a fixed rated speed set at the factory (see chapter "Specification / Data table"), irrespective of the fan speed set for operating without a compressor.

The appliance also extracts moisture from the ambient air, which turns into condensate. The condensate is removed from the appliance via the condensate drain.

The appliance features an electronic control unit with LCD for setting functions and operating modes.

Depending on which hydraulic cylinder connection is selected, an immersion heater can be connected to the appliance control unit and controlled from there.

External signal transmitters can be integrated via the built-in switching input, for example a photovoltaic system to increase the percentage of on-site power or an off-peak tariff signal.

Heat pump operating principle

A closed circuit within the appliance contains refrigerant (see chapter "Specification / Data table"). This refrigerant evaporates at low temperatures.

In the evaporator, which extracts heat from the air drawn in, the refrigerant changes from a liquid into a gaseous state. A compressor draws in the gaseous refrigerant and compresses it. This increase in pressure raises the refrigerant temperature.

That requires electrical energy. The energy (motor heat) is not lost, but reaches the downstream condenser together with the compressed refrigerant (plate heat exchanger). There, the refrigerant indirectly transfers heat to the passing DHW. An expansion valve then reduces the still prevalent pressure and the cycle starts again.

The appliance is fitted with a DHW primary pump at the factory.

**Material losses**

The internal primary pump should be started periodically (every 20 hours for 3 seconds) to prevent it seizing up.

- Never interrupt the power supply to the appliance.
- To switch off the appliance (standby mode), keep the power button pressed for approx. 2 seconds.

2.4 Test symbols

See type plate. The type plate is located on the side of the appliance.

3. Appliance description

The appliance is a fully wired DHW heat pump in a hydraulic split design. When combined with an externally connected DHW cylinder, the appliance supplies DHW heating from several draw-off points using renewable energy. Subject to the power supply and user draw-off behaviour, the DHW cylinder is heated automatically to the selected set temperature.

The appliance extracts heat from the ambient air at the air draw-off point. This heat is used to heat up the water in the DHW cylinder with added electric power. The amount of electric energy and time required to heat up the DHW depend on the temperature of the air drawn in.

**Note**

As the heat is drawn off from the supply air, the appliance operates with a defined cooling capacity on the exhaust air stream. In recirculation air mode, this can then cause a temporary cooling of the installation room.

- When selecting the type and size of installation room, ensure that energy use is compensated over a period of 24 hours and the lower application limit of the appliance is not undershot. Please also observe the following factors:
 - Expected appliance runtime per day
 - The resulting cooling energy
 - Existing heat sources in the installation room (e.g. freezer, tumble dryer, central heating)
 - Heat flux from adjoining rooms

3.1 Heating the DHW cylinder

A temperature sensor captures the amount of heat in the DHW cylinder. The water in the DHW cylinder is heated up if the amount of heat is lower than that required to achieve the set temperature.

3.2 Appliance operation outside the application limits

3.2.1 Ambient temperatures below the application limit

At temperatures below the lower application limit, hoar frost may form on the evaporator depending on the air humidity and water temperature.

Temperature sensor F3 captures and monitors the evaporator temperature. If the evaporator temperature falls below 0 °C for longer than 120 minutes, the evaporator will defrost. This defrosting raises the evaporator temperature again.

Defrosting is registered as successful if the evaporator temperature rises to >6 °C within 20 minutes. If defrosting is unsuccessful, two more attempts will be made. If these attempts are still unsuccessful, the heat pump will be switched off and the error message Er47 will appear on the display.

- To guarantee fault-free operation of the appliance, make sure you operate the appliance within its application limits (see chapter "Specification / Data table").



Note

Heat-up times are longer while the evaporator is defrosting.

3.2.2 Ambient temperatures above the application limit

The safety equipment switches the appliance off if the upper application limit is exceeded. Following a cooling time of several minutes the appliance is switched back on automatically. The appliance is switched off again if the intake air temperature rises back above the permissible temperature value.

- To guarantee fault-free operation of the appliance, make sure you operate the appliance within its application limits (see chapter "Specification / Data table").

3.3 Frost protection (air as heat source)

If the intake air temperature is too low, the error message Er57 will appear on the display.

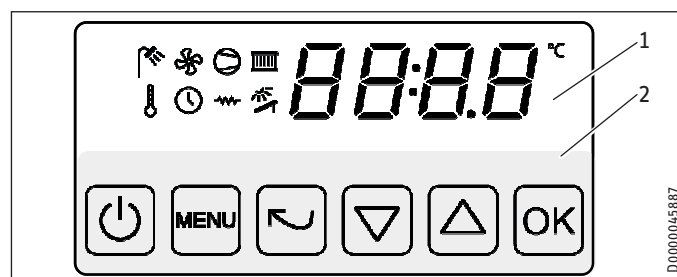
If an immersion heater is installed in the DHW cylinder, it can continue DHW heating while the fault remains. This requires heat pump mode to be disabled.

3.4 Display and control elements

The appliance is equipped with an integral digital controller. You can use the controller display and control elements to call up and set the appliance data.

3.4.1 Display

The display consists of a display and programming unit.



- 1 Display unit
- 2 Programming unit

Buttons

Button	Designation	Description
	Power button	Put the appliance into standby mode or restart it
	Menu button	Calling up the controller menu
	Back button	Return to the previous menu
	Down button	Scroll through the menu, adjust values, display the set DHW value
	Up button	Scroll through the menu, adjust values, display the optional temperature sensor in the DHW cylinder (only when display sensor F2 is connected)
	OK button	Save settings, select submenus, acknowledge error messages

Symbols

Symbol	Meaning	bright	dimmed	flashes
	DHW heating	DHW heating active	DHW heating according to time program	Pasteurisation function active
	Fan mode	Fan mode active	Fan mode switched off	-
	Compressor	Compressor active	Compressor switched off	Maintenance (every 2500 hours run)
	Setting the temperature	Setting the temperature	-	-
	Setting the time	Setting the time	-	Time needs re-setting
	Immersion heater	Immersion heater active	Immersion heater switched off	-

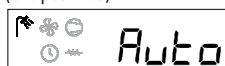
4. Menu structure

Standard display (chapter 4.2)



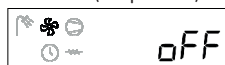
MENU

DHW heating (chapter 4.3)



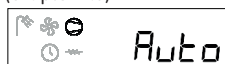
▲

Fan mode (chapter 4.4)



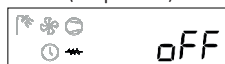
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Heat pump mode selection (chapter 4.5)



▲

Immersion heater mode selection (chapter 4.7)



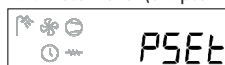
▲

Time (chapter 4.8)

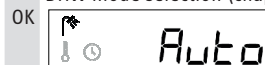


▲

Parameter level (chapter 4.9)



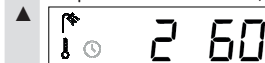
DHW mode selection (chapter 4.3.1)



Set DHW value (chapter 4.3.2)



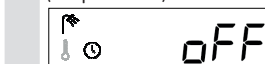
Set pasteurisation value (chapter 4.3.3)



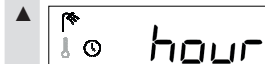
DHW start time (chapter 4.3.1)



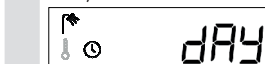
DHW stop time (chapter 4.3.1)



Pasteurisation function start time (chapter 4.3.3)



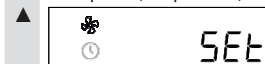
Pasteurisation function time interval (chapter 4.3.3)



Fan mode selection (chapter 4.4)



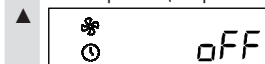
Fan speed (chapter 4.4)



Fan start time (chapter 4.4)



Fan stop time (chapter 4.4)



→

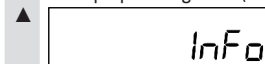
→

→

Parameter setting (chapter 4.9.1)



Call up operating data (chapter 4.9.2)



Enter password



Auto* = Automatic mode
Fast = Quick heat-up

0...60
(52*)

0...60*

00:00...23:59

00:00...23:59*

00:00...23:59

0*...14
(0 = Pasteurisation function disabled)

off* = Fan switched off
on = Continuous mode
Auto = Automatic mode

1...9*

00:00...23:59

00:00...23:59*

off = Compressor switched off
Auto* = Automatic mode
dEfr = Manual defrosting

off* = Immersion heater switched off
Auto = Automatic mode

00:00...23:59

MENU = Menu button

OK = OK button

▲ = Up button

▼ = Down button

* = Factory setting

- Press the Back button to go from one menu level to the higher menu level.

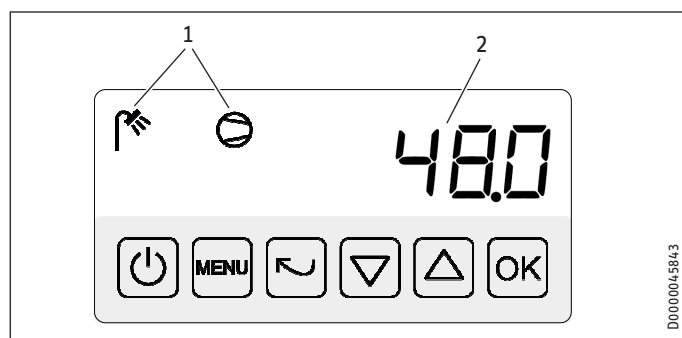
4.1 Switching on heat pump

- Keep the power button pressed for 2 seconds.

The standard display appears.

4.2 Standard display

When you are not navigating through the menu structure, the standard display will be shown. The standard display shows the actual temperature inside the DHW cylinder (control sensor F1) and the current operating state of the appliance.



- 1 Operating state
- 2 Temperature inside the DHW cylinder

Note While you are in the standard display, the Up and Down buttons function like short-cut buttons to call up the current set DHW value and, if display sensor F2 is connected, the current actual temperature in the DHW cylinder.

4.3 DHW heating

The water in the DHW cylinder is heated up if:

- There is a current demand for domestic hot water
- DHW heating is not blocked by the time program

There is a current demand for domestic hot water when the water temperature in the DHW cylinder is 5 K lower than the selected set DHW value.

4.3.1 DHW mode selection

The appliance features two different operating modes for DHW heating:

- Automatic mode
- Quick heat-up

In automatic mode, DHW heating is controlled via an individually adjustable time program. The DHW is heated using all the heat sources which are enabled for automatic mode (see chapter "Parameter level / Parameter setting").

In quick heat-up mode, the water is heated immediately to the selected set DHW value, irrespective of automatic mode. Once the selected set DHW value has been reached, the appliance switches back to automatic mode.

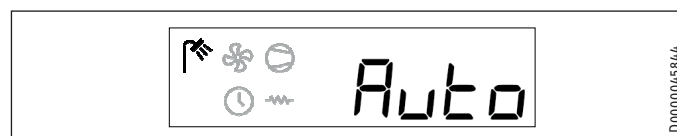
Note Automatic mode is the default factory setting.

DHW heating mode setting

You are in the standard display.

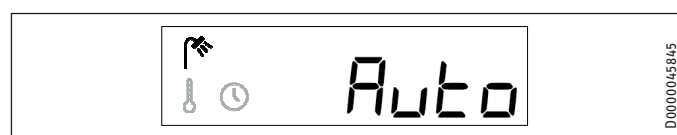
- Press the Menu button.

The DHW heating submenu appears.



- Press the OK button.

The DHW mode selection submenu appears.



- Press the OK button.

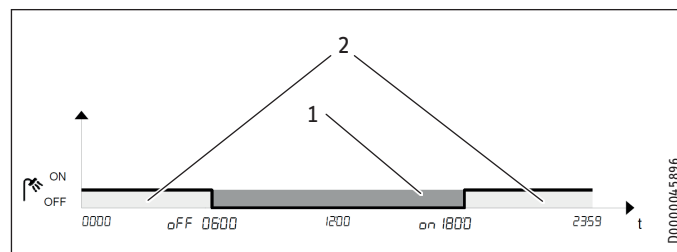
The operating mode flashes.

- Set the required operating mode using the Up/Down buttons.
- Confirm your entry with the OK button.
- Keep pressing the Back button to return to the standard display.

Automatic mode time program setting

Symbol	Parameter	Description
	on	DHW start time: The time when DHW heating is enabled (factory setting = 00:00)
	off	DHW stop time: The time when DHW heating is blocked (factory setting = 23:59)

Example: DHW heating is blocked between 06:00-18:00



- 1 DHW heating enabled
- 2 DHW heating blocked

Quick heat-up activation and setting

Symbol	Parameter	Description
	FAST	Once-only quick heat-up starts as soon as "FAST" is set.
PSEt L Set	b03	Select the heat source for quick heat-up 0 = Heat pump only (factory setting) 1 = Heat pump and immersion heater

OPERATION

Menu structure

4.3.2 DHW value setting

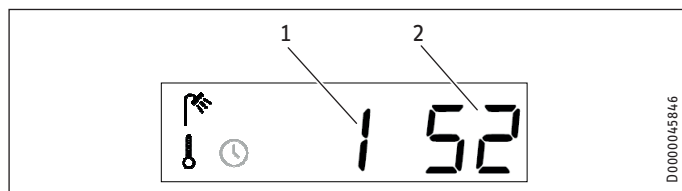
You are in the standard display.

- Press the Menu button.

The DHW heating submenu appears.

- Press the Up button.

The set DHW value submenu appears.



1 Set DHW value display (set value 1)

2 Current set DHW value

- Press the OK button to confirm your selection.

The set DHW value flashes.

- Set the required DHW value using the Up/Down buttons.
- Confirm your entry with the OK button.
- Keep pressing the Back button to return to the standard display.

4.3.3 Pasteurisation function

The pasteurisation function is used to meet hygiene requirements. It is implemented using the heat pump and other active heat sources. The DHW cylinder is heated periodically to the set pasteurisation value (set value 2).

Symbol	Parameter	Description
	2 60	Set pasteurisation value: Set temperature in the DHW cylinder for the pasteurisation function (factory setting = 60 °C)
	hour	Pasteurisation function start time (factory setting = 00:00)
	day	Pasteurisation function time interval: The time interval during which the pasteurisation function is periodically implemented (factory setting = 0)
PSEt L SET	b02	Maximum pasteurisation function heat-up time: If the set pasteurisation value is not achieved within the time set here, the heat-up process is terminated (see chapter "Parameter level / Parameter setting"). (factory setting = 4.0 h)



Note

The pasteurisation function may be influenced by the DHW heating time program.

- Set the pasteurisation function start time in the period where DHW heating is enabled.



Note

If the power supply has been interrupted, e.g. following a power failure, the selected heat-up time can be extended up to 6 hours.

4.4 Fan mode

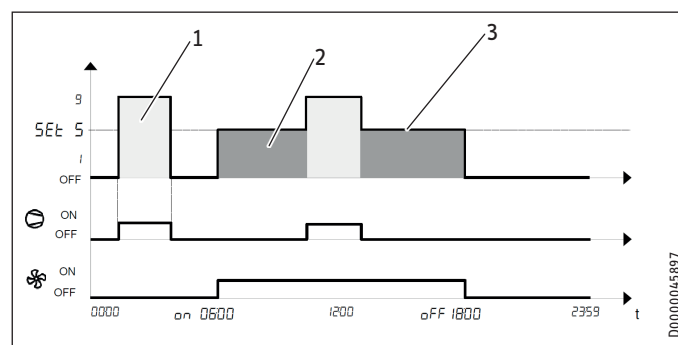
The fan can be switched on irrespective of the heat pump mode. For this fan mode, you can set the fan speed and a time program. Alternatively, the fan can be switched on and off via an external switching input.

Fan mode setting

Symbol	Parameter	Description
	Auto	Fan mode selection oFF = Fan switched off (factory setting) on = Fan operating at rated speed, compressor active Auto = Automatic mode (fan operating via separate time program)
	SEt	Fan speed (automatic mode) Stage* 0 1 2 3 4 5 6 7 8 9 % 0 45 60 71 81 89 94 98 99 100 (factory setting = 9)
	on	Fan start time (automatic mode) (factory setting = 00:00)
	oFF	Fan stop time (automatic mode) (factory setting = 23:59)
PSEt L SET	A04	Function of switching input E3 0 = No function (factory setting) 3 = External fan control: K3 open = Fan switched off, no DHW demand K3 closed = Fan operates at set speed

* The fan stage data is based on a freely blowing appliance with no external air routing lines.

Example switching diagram:

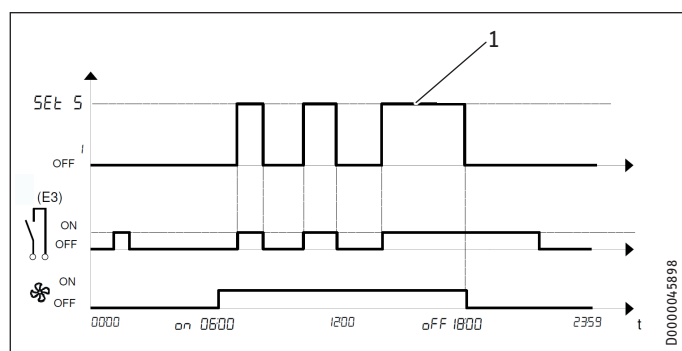


- 1 Compressor active (light grey)
Fan operating at rated speed
- 2 Compressor switched off (dark grey)
Fan in automatic mode, independently of compressor
- 3 Fan stage curve

4.4.1 External fan control

Alternatively, the fan can be switched on and off from an external control unit via switching input E3 (see chapter "Junction box"). To do this, fan mode selection must be set to "Auto". The time program for fan mode takes priority over the external fan control, so switching input E3 is active only while fan mode is enabled.

Example switching diagram:



1 Fan speed curve

4.5 Heat pump mode selection

Symbol	Parameter	Description
	Auto	Heat pump mode selection oFF = Compressor switched off Auto = Automatic mode (according to the period DHW heating is enabled) defr = Manual defrosting of the compressor (factory setting = Auto)



Note

When the heat pump compressor is switched off, the fan operates in automatic mode. The heat pump does not provide any DHW heating.



Note

The heat pump is set to automatic mode at the factory.

4.6 Operation with external signal transmitter

You can switch off the heat pump or set it to a higher set value using floating switching inputs E2 and E3 (see chapter "Junction box").

You can configure E2 and E3 via the "Parameter setting" submenu as follows:

Symbol	Parameter	Description
PSEt L Set	A03	Function of switching input E2 0 = No function (factory setting) 1 = Power supply utility shutdown: K2 open = Heat pump (and immersion heater) switched off K2 closed = Heat pump is running
	A04	Function of switching input E3 0 = No function (factory setting) 1 = Power supply utility shutdown: K2 open = Heat pump (and immersion heater) switched off K2 closed = Heat pump is running 2 = Smart Grid function: K3 open = DHW set value is delivered K3 closed = Pasteurisation set value is delivered



Note

The compressor has a minimum idle time of 20 minutes.



Note

An external shutdown takes priority over increasing the set value.

4.6.1 Power supply utility shutdown



Note

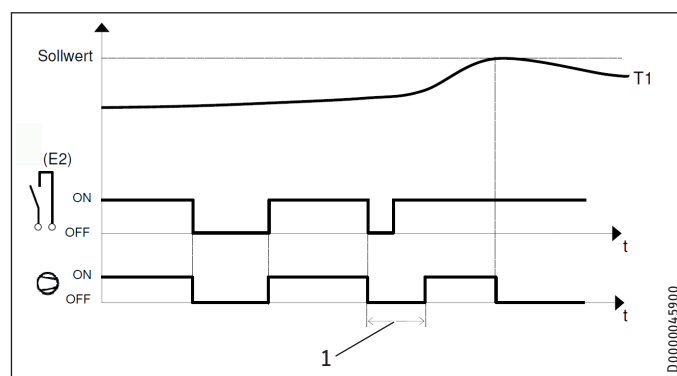
Shutting down the heat pump power supply utility has no effect on ventilation.

The heat pump shuts down automatically when:

- Switching input E2 is open
- The set value for DHW temperature has been reached

The display shows the word StOP.

Example switching diagram:



T1 Temperature in the DHW cylinder (sensor F1)

1 Minimum compressor idle time (20 min)

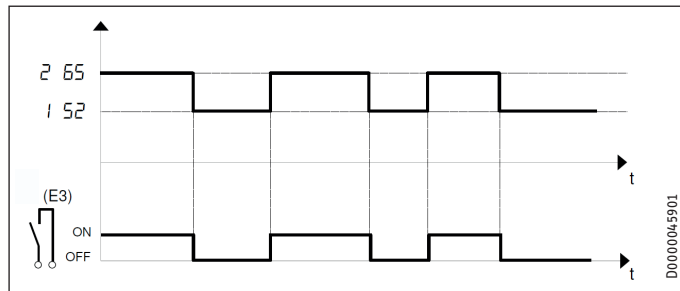
OPERATION

Menu structure

4.6.2 Set value increase

If you have your own photovoltaic system, you can increase the delivered set value via switching input E3 when you have a low electricity tariff. This will then deliver the pasteurisation set value (2) instead of the DHW set value (1).

Example switching diagram:



Note

The relay in the inverter must meet the following requirements:

- Potential-free relay (240 V AC / 24 V DC, 1 A) with N/O contact
- Adherence to safety regulations and standards for safety extra low voltage
- The switching output must be programmed so that the relay closes or opens if certain limits are exceeded or undershot (inverter output level).

If necessary, check with the inverter manufacturer whether the product meets the stated criteria.

4.7 Immersion heater

When there is an increased demand for hot water or quick heat-up, you can also install an immersion heater in your DHW cylinder, depending on your hydraulic connection.



Note

However, you cannot install an immersion heater if you heat your DHW cylinder via an inlet pipe (see chapter "Connection to the DHW cylinder").

The immersion heater controls the temperature in the DHW cylinder to the DHW set value, independently of the heat pump or any other heat sources.

During the pasteurisation function, the immersion heater controls the pasteurisation set value.

Immersion heater configuration



Note

The immersion heater is not registered by the control unit and not visible in the menu structure until you set "Parameter A01 = 3".

Symbol	Parameter	Description
PSEt L SEt	A01	Registering the immersion heater 0 = Not installed (factory setting) 3 = Immersion heater installed in the DHW cylinder
~	Auto	Immersion heater mode selection oFF = Immersion heater switched off (factory setting) Auto = Automatic mode (according to the period DHW heating is enabled)
PSEt L SEt	E01	Immersion heater start temperature (factory setting = 0.0 °C)
	E02	Immersion heater stop temperature (temperature differential to DHW set value) (factory setting = 0.0 K)
	b03	Select the heat source for quick heat-up 0 = Heat pump only (factory setting) 1 = Heat pump and immersion heater



Note

At outputs up to 2 kW, the immersion heater can be connected directly to the junction box. An external contactor is required for outputs above 2 kW.

- The immersion heater should only be installed in the DHW cylinder by a qualified contractor.

4.8 Setting the time

To select the current time, proceed as follows:

- Press the Menu button.

The DHW heating menu appears.

- Press the Up button until you reach the time setting menu.

The current time is displayed.

- Press the OK button.

The hour display flashes.

- Set the current hour using the Up/Down buttons.
- Press the OK button.

The minute display flashes.

- Set the current minute using the Up/Down buttons.
- Confirm your selection with the OK button.



Note

- You will need to set the time again following a long power interruption.

4.9 Parameter level

4.9.1 Setting parameters

Parameter	Description
A01	Configuring the immersion heater 0 = Not installed (factory setting) 3 = Immersion heater installed in the DHW cylinder
A02	Configuring contact F1 1 = Control sensor in DHW cylinder (factory setting) 0 = Switching input for external heat demand
A03	Function of switching input E2 0 = No function (factory setting) 1 = Power supply utility shutdown: K2 open = Heat pump (and immersion heater) switched off K2 closed = Heat pump is running
A04	Function of switching input E3 0 = No function (factory setting) 1 = Power supply utility shutdown: K2 open = Heat pump (and immersion heater) switched off K2 closed = Heat pump is running 2 = Smart Grid function: K3 open = DHW set value is delivered K3 closed = Pasteurisation set value is delivered 3 = External fan control: K3 open = Fan switched off, no DHW demand K3 closed = Fan operates at set speed
b01	DHW set value following defrost error (error code Er47) Immersion heater takes over DHW heating 5...60 (factory setting = 38 °C)
b02	Maximum pasteurisation function heat-up time 1...8 (factory setting = 4.0 hours)
b03	Select the heat source for quick heat-up 0 = Heat pump only (factory setting) 1 = Heat pump and immersion heater
E01	Immersion heater start temperature 0...60 (factory setting = 0.0 °C)
E02	Immersion heater stop temperature (temperature differential to DHW set value) 0...30 (factory setting = 0.0 K)

4.9.2 Calling up operating data

To call up the operating data for your heat pump, proceed as follows:

- Navigate to the "Call up operating data" menu level (see chapter "Menu structure").
- Press the OK button.

You are given the option to call up the program version.

- To call up the program version, press the OK button. To navigate instead to the operating data, press the Up/Down buttons.
- You can call up the following operating data:

Parameter	Description
Pros	Program version
d01	Actual value sensor F1
d02	Actual value sensor F2
d03	Actual value sensor F3
d04	Actual value sensor F4
d11	Compressor hours run (0 - 9999)
d12	Compressor hours run (10.000+)
d13	Immersion heater hours run (0 - 9999)
d14	Immersion heater hours run (10.000+)

5. Cleaning, care and maintenance



WARNING Electrocutation

- Only clean the exterior of the appliance.
- Never open the appliance.
- Do not insert objects through the grille into the interior of the appliance.
- Never spray the appliance with water.
- Never spray water into the appliance.



WARNING Injury

Maintenance work, such as checking electrical safety, must only be carried out by a qualified contractor.

- Use a damp cloth to clean the casing sections. Never use abrasive or corrosive cleaning agents.
- Clean the air intake and discharge apertures every six months. Cobwebs or other kinds of contamination can restrict the air supply to the appliance.
- Have the safety assembly and the evaporator checked regularly by a qualified contractor.
- Check that the condensate drain is clear and remove any dirt.

6. Troubleshooting

Problem	Cause	Remedy
DHW temperature too low	Water consumption too high	Reduce consumption or switch on immersion heater
	DHW value set too low	DHW value checking
	Actual value F1 incorrect	Checking sensor F1
	Intake air temperature too low (heating output too low)	Switching on immersion heater
	Circulation pump in continuous mode	Check time switch, test temperature controller and non-return valve
	Non-return valve blocked	Clear non-return valve by tapping gently
	Heating slider open	Closing heating slider
	Defrosting active	Wait 20 minutes
Compressor running, fan not running	Start capacitor faulty	Customer support notification
	Winding damage	Customer support notification
Compressor and fan running without heating the domestic hot water	No air flow, evaporator contaminated	Cleaning evaporator with water
	Evaporator iced up	Defrosting evaporator
	Air lines blocked	Cleaning air lines
	Refrigerant shortage	Customer support notification
	Expansion valve does not open	Customer support notification
Compressor not running, fan running	Flow direction faulty	Customer support notification
	Compressor faulty	Customer support notification
Constant water discharge	Safety valve does not close	Vent or replace
	Cylinder faulty	Closing supply line
	Cylinder dripping	Check seals, retighten if necessary
Water discharges only when appliance is operating	Condensate	

OPERATION

Troubleshooting

	Condensate drain blocked	Cleaning the condensate drain
Smell	No siphon installed in condensate drain	Siphon installation
	Water in the siphon	Filling with water
Noise	Gurgling noise	Water level in siphon too low, fill with water
	Splashing noise	Condensate drain blocked, clean
Nothing on the display	Power supply interrupted	Checking power supply
Immersion heater switched on, but not heating	Superheating	Safety thermostat acknowledgement
	Electrical connection faulty	Qualified contractor to replace the electrical connection
Er36 High pressure shutdown	Actual value F1 incorrect	Qualified contractor to check sensor F1
	DHW cylinder not full	DHW cylinder filling
	Refrigerant circuit	Customer support notification
	Sludge or scale blocking condenser	Clean condenser, replace if necessary
	Flow rate too low	Check external pressure drops and compare with a reliable pressure drop (see chapter "Specification")
	Air in the system	Check whether the system has been vented (see chapter "Commissioning / Filling the DHW cylinder")
	Circulation pump is jammed	Unjamming circulation pump
Er47 Defrost error	Intake air temperature too low	Set heat pump to "OFF" and heat domestic hot water temporarily with immersion heater
Er57 Frost protection heat source	Intake air temperature too low	Set heat pump to "oFF" and heat domestic hot water temporarily with immersion heater, Install ventilation flaps
HP symbol flashes	Time interval for testing the protective anodes has expired (approx. 1.5-2 years)	Test protective anodes and replace if necessary, qualified contractor to reset the timer

Messages on the display

Code	Meaning	Remedy
E1H	Sensor F1 faulty, lead break	Sensor checking
E1L	Sensor F1 faulty, short circuit	Sensor checking
E2H	Sensor F2 faulty, lead break	Sensor checking
E2L	Sensor F2 faulty, short circuit	Sensor checking
E3H	Sensor F3 faulty, lead break	Sensor checking
E3L	Sensor F3 faulty, short circuit	Sensor checking
E4H	Sensor F4 faulty, lead break	Sensor checking
E4L	Sensor F4 faulty, short circuit	Sensor checking
EP	Error in parameter memory	Appliance disconnection from power supply then reconnection
Er36	High pressure shutdown	Acknowledge error with OK
Er47	Defrost error	Acknowledge error with OK
Er57	Frost protection heat source	Error is acknowledged automatically
FroS	Frost protection DHW cylinder	Start immersion heater, if installed Error is acknowledged automatically once the fault has been remedied
StOP	Power supply utility active	See chapter "Operation with external"
Cr id	Set value increase active	signal transmitter"

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).

Sensor values

All the control unit temperature sensors have the same characteristics: PTC, type KTY81-121.

Temperature °C	Resistance [Ohm]	Maximum deviation [±/°C]
-10	739.9	2.1
-9	739.9	2.1
-8	753.0	2.0
-7	759.5	2.0
-6	766.2	2.0
-5	772.8	2.0
-4	779.5	2.0
-3	786.3	1.9
-2	793.1	1.9
-1	799.9	1.9
0	806.7	1.9
1	813.6	1.8
2	820.5	1.8
3	827.5	1.8
4	834.5	1.8
5	841.5	1.8
6	848.6	1.7
7	855.7	1.7
8	862.8	1.7
9	870.0	1.7
10	877.2	1.6
11	884.5	1.6
12	891.8	1.6
13	899.1	1.6
14	906.5	1.5
15	913.9	1.5
16	921.3	1.5
17	928.8	1.5
18	936.3	1.5
19	943.9	1.4
20	951.5	1.4
21	959.1	1.4
22	966.8	1.4
23	974.5	1.3
24	982.2	1.3
25	990.0	1.3
26	997.8	1.3
27	1005.7	1.4
28	1013.6	1.4
29	1021.5	1.4
30	1029.4	1.4
31	1037.4	1.5
32	1045.5	1.5
33	1053.5	1.5
34	1061.7	1.6
35	1069.8	1.6
36	1078.0	1.6
37	1086.2	1.6
38	1094.5	1.7
39	1102.8	1.7
40	1111.1	1.7
41	1119.5	1.8
42	1127.9	1.8
43	1136.3	1.8
44	1144.8	1.9
45	1153.3	1.9
46	1161.9	1.9
47	1170.5	1.9
48	1179.1	2.0
49	1187.8	2.0
50	1196.5	2.0

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.

Take note of the appliance type plate and chapter "Specification".

8. Appliance description

The appliance is a DHW heat pump in a hydraulic split design. It can be connected in various ways with an external DHW cylinder (see chapters "Water connection / Connection to the DHW cylinder" and "Specification / Hydraulic connection diagram").



Note

The appliance is suitable for DHW cylinders up to 500 l capacity.

- The application for 500 l DHW cylinders must be checked in advance by the system installer.

The heat pump has been designed to provide enough domestic hot water for a household of 5 people. The maximum volume of DHW cylinders that can be connected is therefore limited by the thermal output of the appliance and the expected maximum heat-up times.

- When installing the appliance, check whether any installed DHW cylinders are large enough to meet the short-term DHW demand.

The thermal output of the heat pump depends on heat source temperature (supply air) and set DHW value.

- To calculate the appliance output at different intake temperatures and the corresponding heat-up times, please use the output diagram in the chapter "Specification / Heating output").
- Observe the minimum volume of the installation room and the heat-up time during normal domestic use when combined with a 300 l cylinder (see chapter "Specification / Data table").

- In recirculation air mode, when selecting the type and size of installation room, ensure that energy use is compensated over a period of 24 hours and the lower application limit of the appliance is not undershot.

Please also observe the following factors: Expected runtime per day, the resulting cooling energy, existing heat sources in the installation room (e.g. freezer, tumble dryer, central heating), heat flux from adjoining rooms.

8.1 Standard delivery

The following are delivered with the appliance:

- 1 wall mounting bracket with 4 anti-vibration mounts
- 1 temperature sensor
- 1 sensor well for temperature sensor
- 1 set of operating and installation instructions

8.2 Accessories

8.2.1 Required accessories

- Compatible DHW cylinder (see chapter "Connection to the DHW cylinder")
- Cold water safety assembly

8.2.2 Further accessories



Note

Different accessories will be required depending on your hydraulic connection.

- Inlet connector set, part number 072997
- Immersion heater
- Ventilation accessories

8.3 Incorrect use

The following are not permitted:

- Operating the appliance when the casing is open
- Filling the appliance with a refrigerant other than the one detailed in chapter "Specification / Data table"

Observe the list of requirements regarding the installation room and non-permissible installation sites (see chapter "Installation site").

9. Preparations

9.1 Transport



CAUTION Injury

- ▶ Take note of the weight of the appliance.
- ▶ Use suitable transport aids (e.g. a sack truck) and enough personnel for transportation.



Material losses

The appliance casing is not designed to withstand strong forces. Incorrect handling can lead to material losses of considerable extent.

- ▶ Observe the information on the packaging.
- ▶ Only remove the packaging shortly before the installation.

- Store and transport the appliance in its packaging.
- You may transport the appliance carefully over short distances at an angle of up to 45°.
- During storage and transport, the ambient temperature should be between -20 °C and +45 °C.

Vehicular transport



Material losses

The appliance must be stored and transported according to the instructions on the packaging.

9.2 Storage

If it is necessary to store the appliance for a prolonged period before installation, observe the following information:

- Leave the appliance in its packaging during storage.
- Only store the appliance in a vertical position.
- Store the appliance in a location that is dry and largely dust-free.
- Protect the appliance from coming into contact with corrosive substances.
- Ensure the appliance is not subjected to shocks or vibrations.

9.3 Installation site

The appliance is not approved for outdoor installation.

Further requirements regarding the installation room and appliance positioning, to prevent appliance damage:

- The installation site must be free from flammable, highly combustible gases and substances, as well as high levels of dust.
- The installation room must be dry and free from the risk of frost.
- The intake temperature of the appliance must be within the permissible application limits (see chapter "Specification / Data table").
- The appliance must be installed on a even, horizontal surface. If the appliance is not horizontally level, there may be a risk of appliance damage.

- Ensure the appliance is not subjected to shocks or vibrations. Use the anti-vibration mounts supplied.
- Observe the safety clearances and protection zones.
- Always leave sufficient space to provide access for installation, maintenance and cleaning. The required minimum clearances must be maintained (see chapter "Minimum clearances").
- Ensure the operation of other equipment in the installation room is not impaired.
- Lighting equipment and pipes must not be installed above the appliance.
- To keep the duct lengths to the draw-off points as short as possible, we recommend installing the connected DHW cylinder close to the kitchen or bathroom.
- To prevent adverse effects from operating noise, never install the appliance close to bedrooms.
- Observe the minimum volume of the installation room and the heat-up time during normal domestic use (see chapter "Specification / Data table").
- In recirculation air mode, when selecting the type and size of installation room, ensure that energy use is compensated over a period of 24 hours and the lower application limit of the appliance is not undershot.
Please also observe the following factors: Expected runtime per day, the resulting cooling energy, existing heat sources in the installation room (e.g. freezer, tumble dryer, central heating), heat flux from adjoining rooms.

The following installation sites and air draw-off points are not permissible, as there may be a risk of appliance damage:

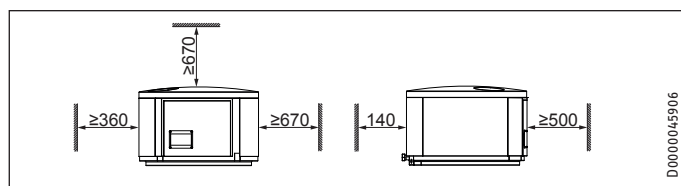
- Places where the air contains ammonia (e.g. sewage works, animal sheds)
- Locations where the air is contaminated with oil or grease
- Generally places with a loaded or aggressive atmosphere (e.g. cement or flour dust, hairspray (e.g. hairdressing salon))
- Saline environments (e.g. in areas < 2-5 km from the coast, depending on main wind direction)
- Locations where the air contains chlorine or chloride (e.g. swimming pools, salt works)
- Environments with thermal water
- Areas in proximity to high frequency machines (inverters for large motors, radar)
- ▶ Also check in the wider environment around the planned installation site for anything which may have adverse effects on the installation site or the air supply.



Note

You can improve the efficiency of the appliance by utilising the waste heat from other appliances to heat the DHW cylinder, e.g. boilers, tumble dryers or freezers.

9.3.1 Minimum clearances



- Maintain the minimum clearances.

9.4 Heat source (air draw-off point)

- The air draw-off point must be free from flammable, highly combustible gases and substances, as well as high levels of dust.
- The intake air must not contain aggressive materials such as chlorine, ammonia or sulphur.
- There should be a high average air temperature at the air draw-off point.
- When selecting the air draw-off point, always factor in the required air volume and air flow rate (see chapter "Specification / Data table").
- If using ventilation accessories, the connection ducts must have a minimum diameter of 160 mm.
- The total length of the supply air and extract air ducts must not exceed 20 m. A maximum of three right-angled bends may be installed. For each additional bend installed, the total duct length must be reduced by 1 m.
- Always use profiles with lip seals when connecting an air duct.
- Install the air ducts in straight lines. Avoid installing ducts along sharp edges or around tight corners.
- Install the air ducts horizontally and sloping slightly to the intake and discharge apertures. You may also install an evaporation bag.
- Insulate the air duct and all connections in line with insulation standards if used for waste heat or outside air to prevent condensation on these components.



Material losses

If the air duct and its connections are not insulated, condensate may form on the air duct depending on the appliance operating mode. Condensate can damage the appliance. Dripping condensate can damage furniture or floor coverings.

- Insulate the air duct, including the air connector to the appliance, so that it is vapour diffusion-proof.

10. Installation



WARNING Injury

Incorrect installation can lead to serious injury or material losses.

- Before any work, ensure sufficient clearances for the installation.
- Handle sharp-edged components carefully.



Note

The low weight of the appliance means that it can be mounted on a wall.

- If mounting the appliance on a wall, only use the supplied wall mounting bracket with anti-vibration mounts.

10.1 Wall mounting bracket installation



Material losses

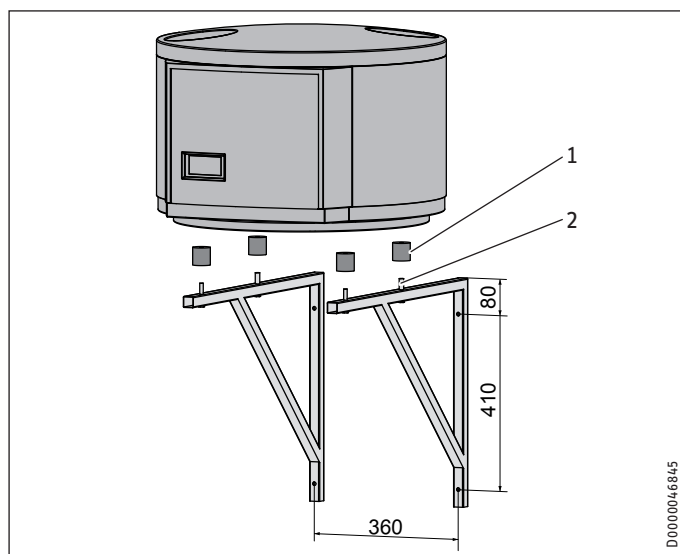
The appliance must be positioned horizontally to prevent damage.

- When assembling the wall mounting bracket, ensure that the rail supports are aligned horizontally.

- Ensure that the wall structure is able to bear the weight force exerted by the heat pump plus wall mounting bracket.
- Select suitable screws and rawl plugs to secure the wall mounting bracket on the wall.
- Mark out the positions of the holes to be drilled on the wall. To do this, hold the rail supports against the wall at the required installation height.
- Ensure that no electrical cables are damaged through drilling the holes.
- Drill the holes and insert rawl plugs.
- Secure the rail supports to the wall using the screws provided.
- Ensure that the wall mounting bracket is flush with the wall.
- Check that the rail supports are horizontally and vertically level, using a spirit level.
- Level the rail supports by undoing and tightening the screws.
- Tighten all screws.

INSTALLATION

Installation



- 1 Anti-vibration mount
 - 2 Support points for anti-vibration mounts
- Fit the anti-vibration mounts onto the appliance support points provided on the wall mounting bracket rails.



Material losses

Have a qualified contractor check the installation to ensure that the appliance is permanently and securely installed.

10.2 Siting the appliance



Material losses

The appliance must be positioned horizontally to prevent damage.

- Position the appliance on a horizontal and even substrate.
- When fixing to a wall mounting bracket, ensure that the rail supports are aligned horizontally.



Material losses

Take note of the appliance's weight and centre of gravity.

- Position the appliance in the final installation site.
- When fixing to a wall mounting bracket, the depressions on the device underside must be positioned on the anti-vibration mounts on the bracket.
- Attach the fully wired junction box underneath the appliance between the wall mounting brackets.

10.3 Water connection



Material losses

Carry out all water connection and installation work in accordance with regulations.



Material losses

The water must be treated, as appropriate to the temperature and hardness of the water. The appliance must be descaled regularly as required.

- Observe the details specified in the chapter "Installation / Descaling the appliance".



Note

Generally, heat pumps should always have flexible connections. Aim to avoid the transmission of structure-borne sound when installing pipes.

The following material combinations are approved for metal pipework installations:

Cold water inlet	DHW outlet
Copper pipe	Copper pipe
Steel pipe	Steel pipe or copper pipe

- Thoroughly flush the pipework before connecting the appliance. Foreign bodies, such as welding pearls, rust, sand or sealant can impair the operational reliability of the appliance.

Safety valve

The appliance has been designed to connect to a closed DHW cylinder. Provide the appliance with a pressure relief valve.

- Install a type-tested safety valve in the cold water supply line. The response pressure of the safety valve must be below or equal to the permissible operating pressure of the DHW cylinder.

The safety valve protects the appliance against unacceptable excess pressure. The diameter of the cold water supply line must be no greater than the diameter of the safety valve.

- Ensure that the expansion water escaping from the safety valve can drip into a drain, e.g. a tank or funnel.
- Ensure the drain cannot be shut off.
- Size the drain so that water can drain off unimpeded when the safety valve is fully opened.
- Ensure that the discharge pipe of the safety valve is open to atmosphere.
- Fit the discharge pipe of the safety valve with a constant downward slope and in a room free from the risk of frost.

Pressure reducing valve

The maximum pressure in the cold water supply line must be at least 20 % below the response pressure of the safety valve. If the maximum pressure in the cold water supply line is higher, install a pressure reducing valve.

Drain valve

- Install a suitable drain valve at the lowest point in the cold water inlet line.

Thermal insulation

- Insulate the DHW line against heat loss in accordance with locally applicable regulations.

INSTALLATION

Installation

DHW circulation

The heat losses incurred in the DHW circulation line and the electrical power consumption of the DHW circulation pump reduce the efficiency of the system. The cooled water in the DHW circulation line mixes with the cylinder content. Avoid installing a DHW circulation line. Where that is not possible, the DHW circulation pump must be controlled thermally or by time switch.

Gravity brake

To prevent thermal DHW circulation, you should install a gravity brake between the appliance and the DHW cylinder, depending on your hydraulic connection (see chapter "Connection to the DHW cylinder").

Water treatment and application limits

Depending on water temperature and hardness, the following water treatments should be carried out according to DIN 1988-200:2012-05:

dH [°]	DHW temperature < 60 °C	DHW temperature > 60 °C
0-8.4 (soft)	No water treatment necessary	Periodic descaling recommended (see chapter "Descaling the appliance")
8.4-14 (medium)	No water treatment necessary	Periodic descaling necessary (see chapter "Descaling the appliance")
14-21 (hard)	Periodic descaling necessary (see chapter "Descaling the appliance")	Softening
>21	Softening	Use is not recommended Reduce the DHW temperature

Where water quality fluctuates significantly and the DHW temperatures are high (> 60 °C), we recommend annual inspection by a qualified contractor.

Water constituent	Concentration (mg/L or ppm)	Time limits Investigation time following sampling
Alkalinity (HCO ₃ ⁻)	< 70 70-300 > 300	0 + 0 within 24 h
Sulphate ^[1] (SO ₄ ²⁻)	< 100 < 200 > 200	+ 0 - No limit
HCO ₃ ⁻ /SO ₄ ²⁻	> 1.0 < 1.0	+ - No limit
Electrical conductivity	< 10 µS/cm 10-500 µS/cm > 500 µS/cm	0 + 0 No limit
pH ^[2]	< 7.0 7.0-9.0 > 9.0	0 + 0 within 24 h
Ammonium (NH ₄ ⁺)	< 2 2-20 > 20	+ 0 - within 24 h
Chloride (Cl)	< 100 100-200 > 200	+ 0 - No limit
Free chlorine (Cl ₂)	<1 1-5 >5	+ 0 - within 5 h
Hydrogen sulphide (H ₂ S)	< 0.05 > 0.05	+ - No limit
Free (aggressive) carbon dioxide (CO ₂)	< 5 5-20 > 20	+ 0 - No limit

Total hardness (°dH)	4-14	No limit (see chapter "Water treatment")
Nitrate ^[1]	< 100 > 200	+ 0 No limit
Iron ^[3] (Fe)	< 0.2 > 0.2	+ 0 No limit
Aluminium (Al)	< 0.2 > 0.2	+ 0 No limit
Manganese ^[3] (Mn)	< 0.1 > 0.1	+ 0 No limit

+ Resistance under normal conditions

0 Corrosion may occur, especially if other factors are rated as 0

- Use is not recommended

[1] Sulphates and nitrates act as inhibitors of pitting corrosion caused by chloride in pH-neutral environments

[2] Generally, a low pH value (below 6) increases the risk of corrosion. A high pH value (above 7.5) reduces the risk of corrosion.

[3] Fe₃⁺ and Mn₄⁺ are strong oxidising agents and can increase the risk of local corrosion in stainless steel.

SiO₂ above 150 ppm increases the risk of scale build-up



Material losses

To prevent damage to the plate heat exchanger, ensure that the water is free from contamination (e.g. sludge, sediment).

► If necessary, install a filter in the cold water supply line.

10.3.1 Connection to the DHW cylinder

You have various options for connecting the appliance to your DHW cylinder.



Note

Observe the information and limitations in the chapter "Specification / Hydraulic connection diagram".



Note

To determine the maximum length of the connection line between the appliance and DHW cylinder, it may be necessary to subtract higher pressure drop values from the residual head of the internal circulation pump, subject to the type of hydraulic connections employed.

Heating the DHW cylinder via the inlet pipe

- The DHW cylinder must have a G1 hot water connector with a male thread at top centre.
- The inlet pipe must protrude down to the lower third of the DHW cylinder.
- Installing the inlet pipe cannot be influenced by any integral indirect coils or threaded immersion heaters.
- To prevent thermal DHW circulation, you should install a gravity brake between the appliance and the DHW cylinder.
- Pressure drop from the pipework and inlet pipe must not exceed the residual head of the appliance circulation pump (pressure drop from inlet pipe = approx. 16 hPa).

- The minimum distance from the DHW connector to the ceiling of the installation room must be at least 65 cm. Otherwise the cylinder must be tipped in order to insert the inlet pipe.

Heating the DHW cylinder via inlet connectors on the sides

- The connection to the appliance must be on the side about half way up the DHW cylinder.
- To prevent thermal DHW circulation, you should install a gravity brake between the appliance and the DHW cylinder.
- Pressure drops from the pipework must not exceed the residual head of the appliance circulation pump.

Heating the DHW cylinder via the integral smooth tube indirect coil

- To comply with heating system regulations, the appliance and DHW cylinder must be connected with a diaphragm expansion vessel and a safety valve.
- The indirect coil must have a transfer area of min. 1.2 m².
- The thermal output of the appliance must be able to be transferred via the indirect coil with a temperature differential (flow/return) of 5 K.
- Pressure drops from the pipework and smooth tube indirect coil must not exceed the residual head of the appliance circulation pump.
- The integral circulation pump is set at the factory to stage 2 with the corresponding available residual head and the accompanying rated output data (see chapter "Specification / Data table").
The circulation pump is located under the appliance casing and can be set to max. stage 3 (residual head 1.5 m).
For information on how to open the appliance casing, see the chapter "Installation / Maintenance and cleaning".

10.4 Condensate drain

Cooling the intake air in the evaporator separates the condensate. Depending on the volume and humidity of the intake air, up to 0.3 l/h of condensate may form.

- Route the condensate drain away from the heat pump along the rear of the appliance.
- Make sure that the condensate can drain off freely.
- Use a suitable condensate pump if there is insufficient fall. Observe the building characteristics.



Material losses

Do not permanently connect the condensate drain to the drainage system.

Ammonia vapours rising from the drains can damage the heat exchanger fins as well as other components.

- Install a funnel with a stench trap on the condensate drain.

10.5 Power supply



WARNING Electrocutation

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



WARNING Electrocutation

If the appliance is permanently connected to the power supply, ensure that the appliance can be separated from the power supply by an isolator that disconnects all poles with at least 3 mm contact separation. Contactors, mains isolators or fuses can be used for this.



WARNING Electrocutation

- Observe the safety measures to prevent contact with dangerous 'live' currents.



WARNING Electrocutation

Coming into contact with 'live' components presents a threat to life. Disconnect the appliance from the power supply before carrying out work on the control panel. Prevent the power supply from being switched on while you are working on the system.



WARNING Electrocutation

Insufficient earthing can lead to electrocution. Ensure the appliance is earthed according to locally applicable requirements.



WARNING Electrocutation

In the event of damage to the power cable this must always be replaced by a qualified contractor authorised by the manufacturer, using original spare parts.



Material losses

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



Material losses

Never connect the appliance to the power supply before the DHW cylinder is filled.

10.5.1 Power supply

The appliance is delivered with a power cable with a standard plug.

INSTALLATION

Commissioning

10.5.2 Junction box

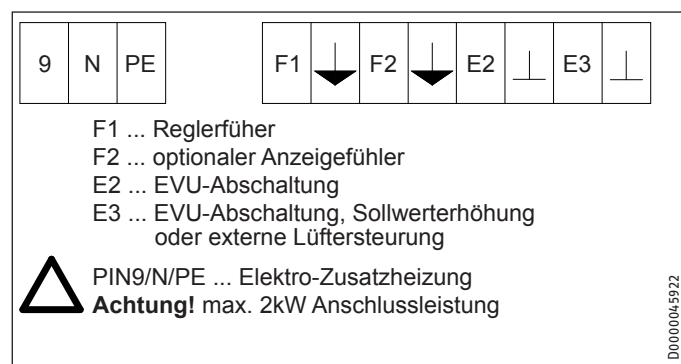


Material losses

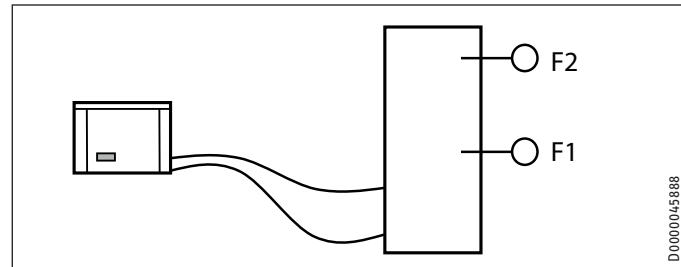
Applying voltage to the switching inputs at the junction box could destroy the contacts.

- ▶ Never apply any voltage to the switching inputs.
- ▶ Always use floating contacts.

A junction box is permanently wired to the back of the appliance to enable you to connect optional inputs and outputs or an immersion heater. You can find the connection diagram inside the cover of the junction box.



10.6 Temperature sensor



Contact	Description
F1	DHW cylinder middle Control sensor for heat pump and immersion heater, Standard display sensor to show actual temperature inside the DHW cylinder
F2 (optional)	Optional display sensor to show actual temperature inside the top of the DHW cylinder Activate by pressing the Up button while in standard display

10.6.1 Contact F1

Contact F1 as control sensor input

- ▶ Connect the DHW cylinder temperature sensor supplied at the factory to contact F1.

Contact F1 as external switching input



Material losses

Applying voltage could destroy contact F1.

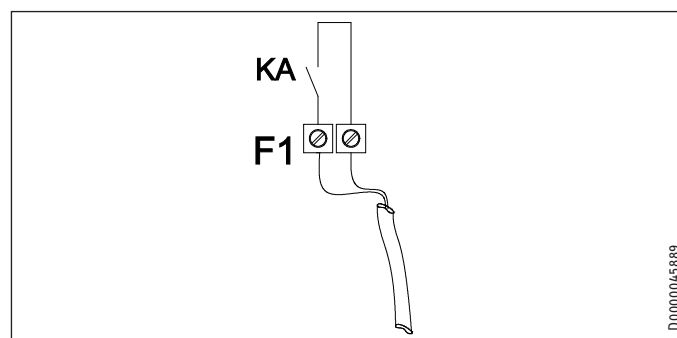
- ▶ Never apply any voltage to contact F1.
- ▶ Always use floating contacts.

Contact F1 can be configured as a switching input which allows an external DHW demand.

Contact F1 then loses its measuring capability. This makes it impossible to control temperature via a heat pump control unit.

Depending on your settings, only the heat pump or all the enabled heat sources will become active.

Example: Contact closed = DHW demand



Contact F1 configuration

Symbol	Parameter	Description
PSEt	A02	Configuration of contact F1
LSEt		1 = Control sensor in DHW cylinder 0 = Switching input for external heat demand

11. Commissioning

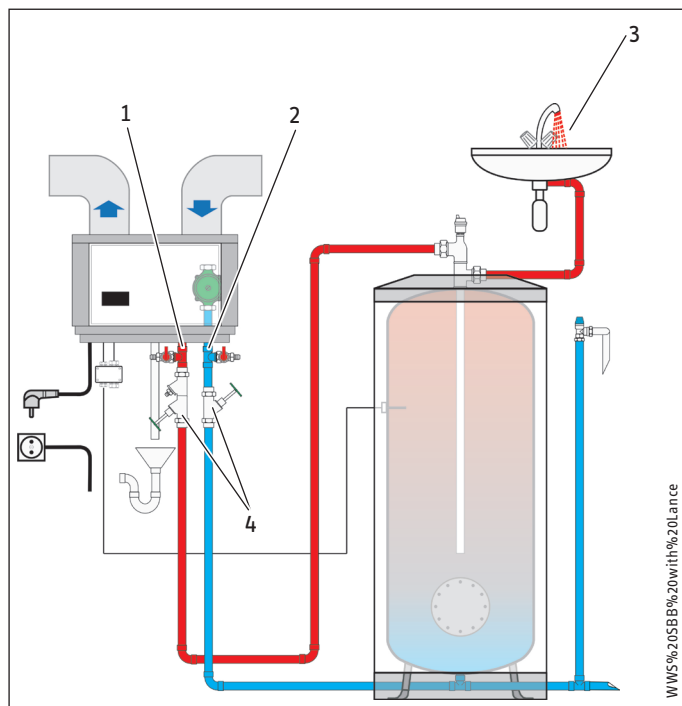
11.1 Initial start-up



Material losses

Never connect the appliance to the power supply before the DHW cylinder is filled.

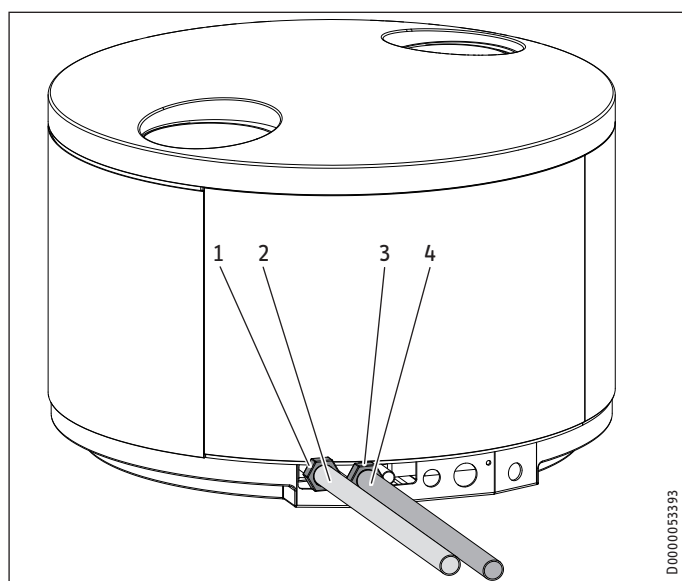
11.1.1 Filling the DHW cylinder



- 1 DHW outlet
- 2 Cold water inlet
- 3 Hot water draw-off point
- 4 Shut-off valves

- ▶ Open the shut-off valves and hot water draw-off point.
- ▶ Fill the DHW cylinder.
- ▶ Close the shut-off valve downstream of the DHW outlet of the appliance.

11.1.2 System venting



- 1 Fitting on the cold water inlet
- 2 Cold water inlet
- 3 Fitting on the DHW outlet
- 4 DHW outlet

- ▶ Leave the fitting on the DHW outlet open long enough for the water to drain off free of bubbles.
- ▶ Open the shut-off valve downstream of the DHW outlet of the appliance.



Note

Failure to observe the above procedure means that the appliance cannot be guaranteed to run smoothly due to air in the system.



Note

Observe the information in the operating and installation instructions for the DHW cylinder.

11.1.3 Settings / function check

- ▶ To check the function, select the maximum set temperature.

Following completion of the function check, reduce the set temperature for a more energy-conscious appliance operation.

Establish the customer's comfort requirements and select the appropriate set temperature. For information regarding DHW demand, consult VDI guideline 2067.

11.1.4 Appliance handover

- ▶ Explain the appliance function to users and familiarise them with its operation.
- ▶ Make the user aware of potential dangers, especially the risk of scalding.
- ▶ Make users aware of critical environmental factors and requirements concerning the installation site.
- ▶ Inform users that water may drip from the safety valve during the heat-up process.
- ▶ Hand over these operating and installation instructions to users for safe-keeping.

11.2 Recommissioning

If the appliance is switched off due to an interruption to the power supply, no specific measures for restarting are required once the power supply has been restored. The appliance has saved the parameters most recently set and continues operating with these.



Note

- ▶ Following a prolonged interruption to the power supply, you must reset the time and the time program for automatic mode.

12. Shutdown



Material losses

The internal primary pump should be started periodically (every 20 hours for 3 seconds) to prevent it seizing up.

- ▶ Never interrupt the power supply to the appliance.
- ▶ To switch off the appliance (standby mode), keep the power button pressed for approx. 2 seconds.

- ▶ To switch the appliance into standby mode, keep the power button pressed for approx. 2 seconds.

The appliance can only be switched off by interrupting the power supply.

- ▶ Pull the mains plug from the socket or disconnect the appliance from the mains at the MCB/fuse in the fuse box.

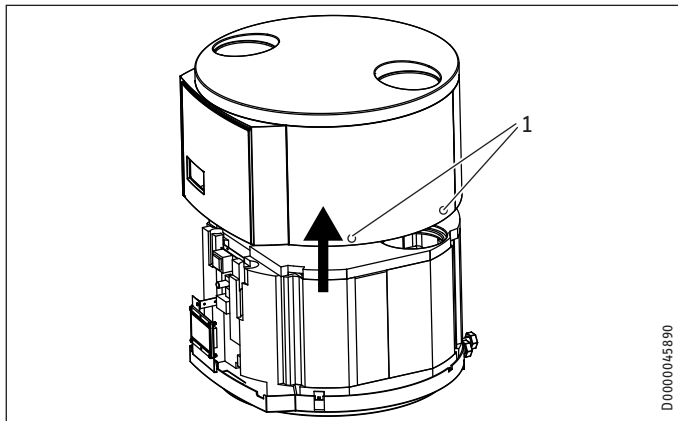
13. Maintenance and cleaning



WARNING Electrocutation

Disconnect the power supply before carrying out any work on the appliance.

13.1 Removing the casing



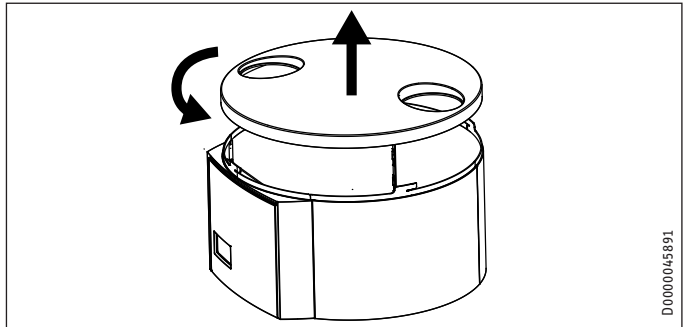
1 Fixing screws on casing ring

- ▶ Undo the four fixing screws on the casing ring.
- ▶ Hold the control fascia and pull the casing forwards slightly so that you can push it over the controller.
- ▶ Push the casing upwards.
- ▶ Lift the casing upwards.
- ▶ Refit the casing after completing your work.

13.2 Removing casing components separately

If you do not have enough space to remove the entire casing from the top, you can remove the appliance cover and casing ring separately.

Appliance cover removal



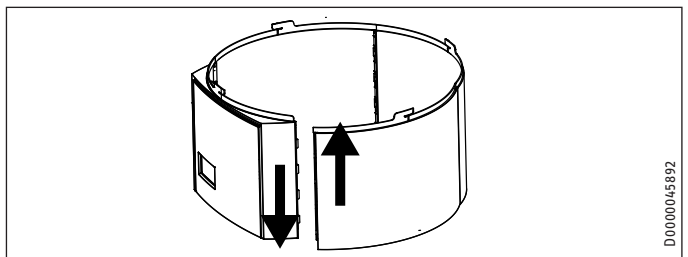
- ▶ Turn the appliance cover anti-clockwise.
- ▶ Lift the appliance cover upwards.
- ▶ Refit the appliance cover after completing your work.



Note

When fitting the appliance cover, make sure that the air intake and discharge apertures are positioned correctly.

Removing the casing ring



- ▶ Split the casing ring by moving the individual components together along the joint.
- ▶ Remove the casing ring.
- ▶ Refit the casing ring after completing the work.

13.3 Cleaning the evaporator



WARNING Injury

The evaporator consists of numerous sharp-edged fins. Take care when cleaning the evaporator. Wear protective clothing, especially protective gloves.

To maintain a consistently high appliance output, check the evaporator of the appliance regularly for contamination, and clean as necessary.

- ▶ Remove the appliance casing (see chapter "Removing the casing").
- ▶ Carefully clean the evaporator fins. Only use water and a soft brush for this. Never use acidic or alkaline cleaning agents.

13.4 Water treatment

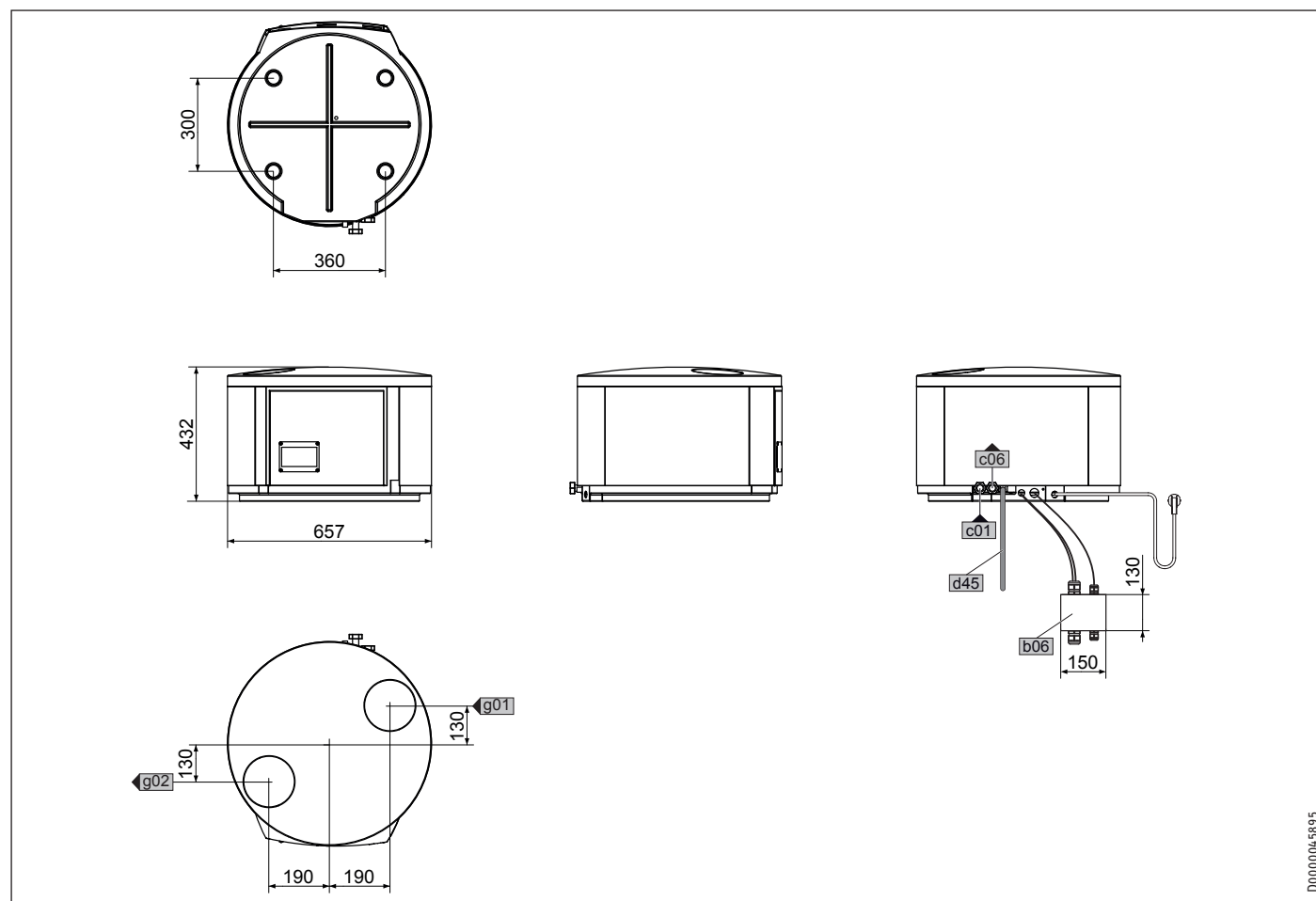
Depending on water temperature and hardness, according to DIN 1988-7: 2004-12, the following water treatments should be carried out:

dH [°]	DHW temperature < 60 °C	DHW temperature > 60 °C
0-14	None	Periodic descaling necessary (see chapter "Descaling the appliance")
14-21	Periodic descaling necessary (see chapter "Descaling the appliance")	Softening
>21	Softening	Use is not recommended Reduce the DHW temperature

Where water quality fluctuates significantly and the DHW temperatures are high (> 60 °C), we recommend annual inspection by a qualified contractor.

14. Specification

14.1 Dimensions and connections



				WWS 20
c01	Cold water inlet	Male thread		G 3/4
c06	DHW outlet	Male thread		G 3/4
d45	Condensate drain	Diameter	mm	20
b06	Junction box			
g01	Air intake	Nominal diameter		DN 160
g02	Air discharge	Nominal diameter		DN 160

13.5 Descaling the appliance



Material losses

Always use standard cleaning agents approved for use with DHW cylinders to descale the appliance.

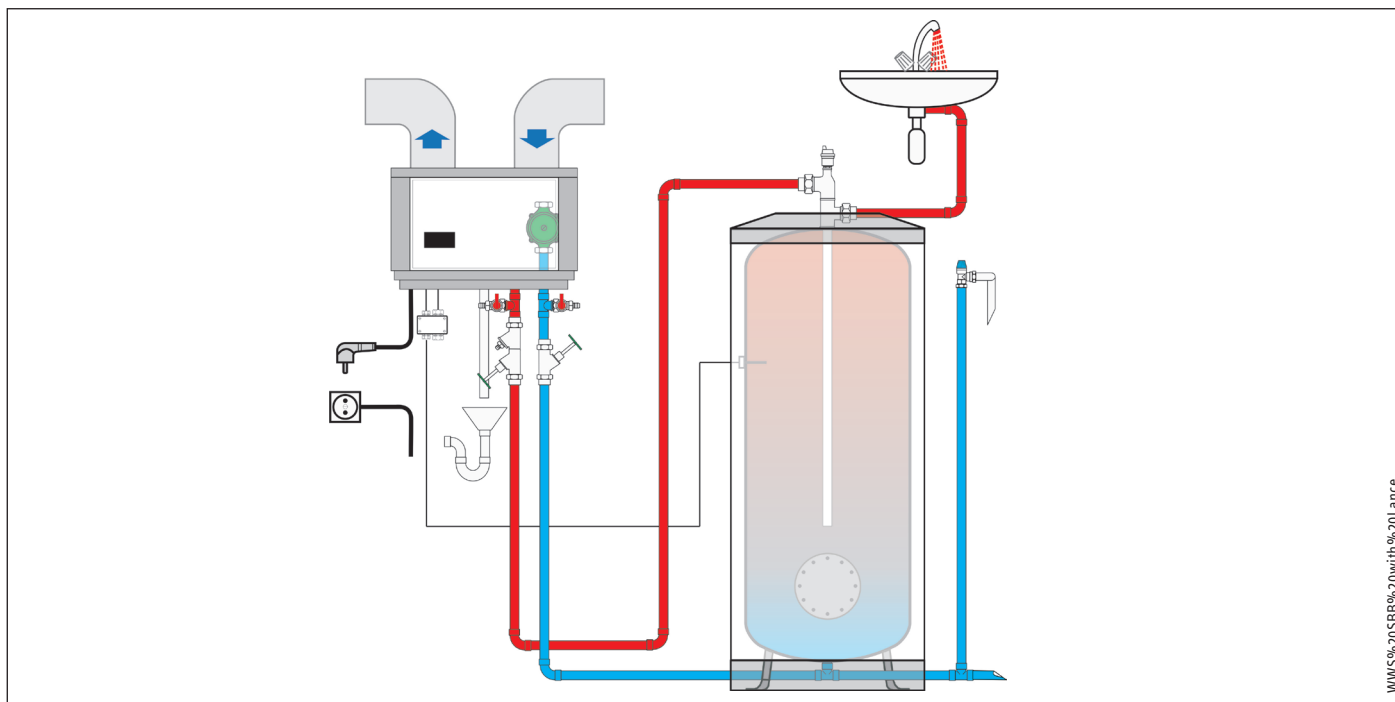
To descale the appliance, proceed as follows:

- ▶ Reduce pressure in the DHW cylinder by drawing off water.
- ▶ Isolate the DHW cylinder from the heating system.
- ▶ Connect a flush tap to the appliance.
- ▶ Descal the primary pump and plate heat exchanger.
- ▶ Reconnect the heating system to the DHW cylinder.
- ▶ Refill the DHW cylinder (see chapter "Commissioning / Filling the DHW cylinder").

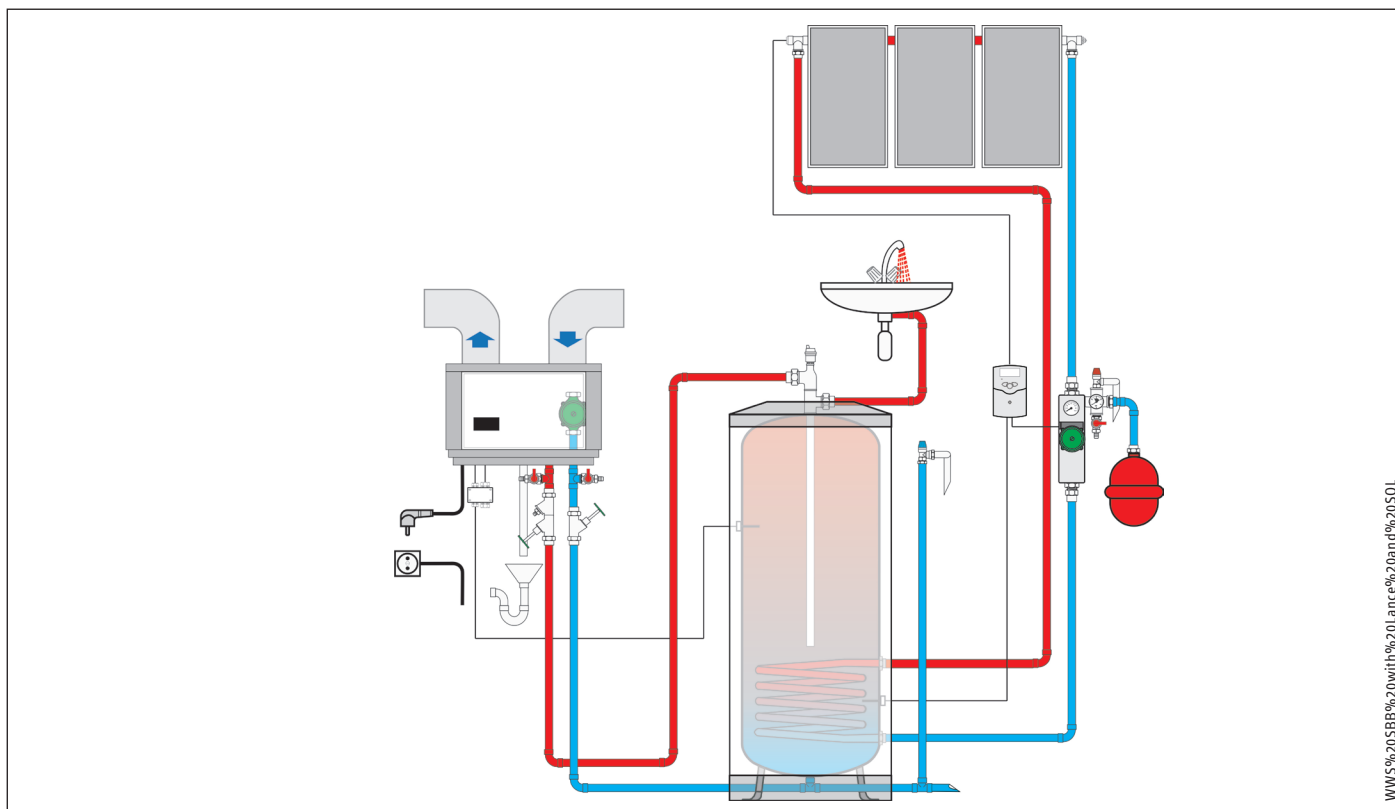
14.2 Hydraulic connection diagram

 **Note**
Observe the information and limitations for the relevant connection types (see chapter "Water connection / Connection to the DHW cylinder").

Heating the DHW cylinder via the inlet pipe

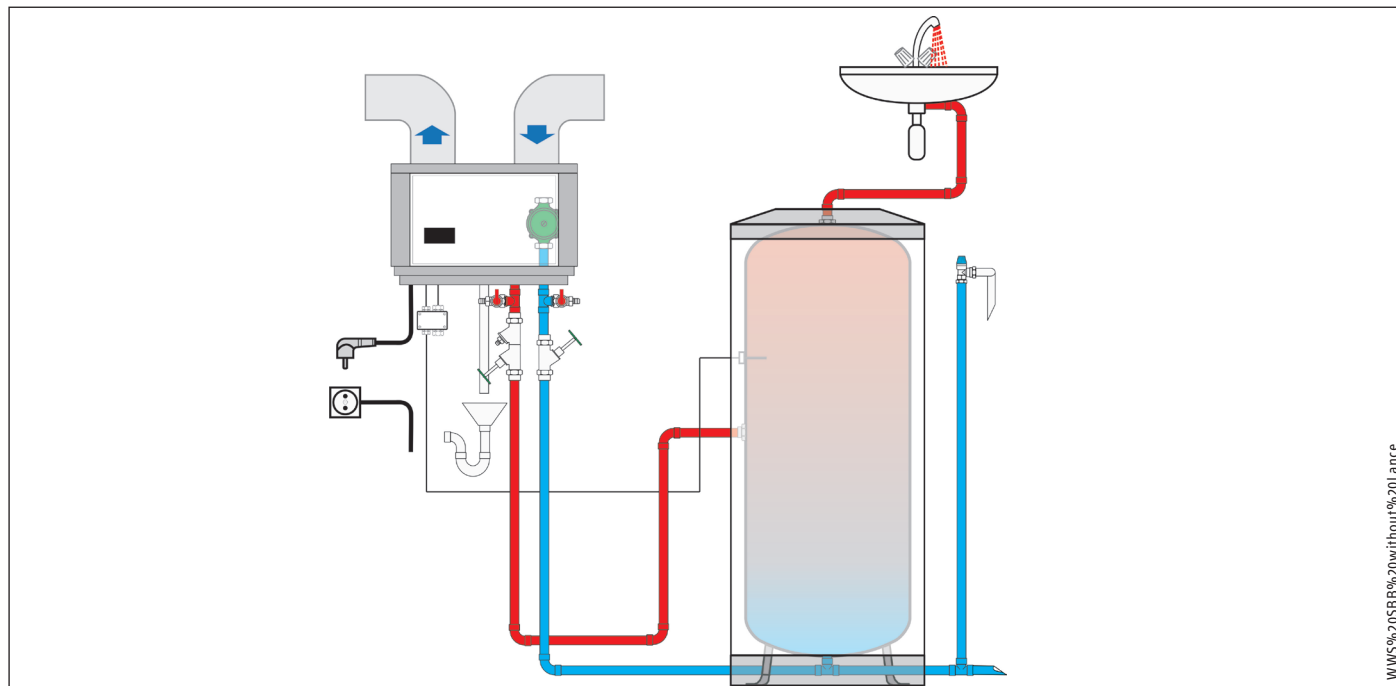


Example: Heating the DHW cylinder via the inlet pipe in combination with solar thermal

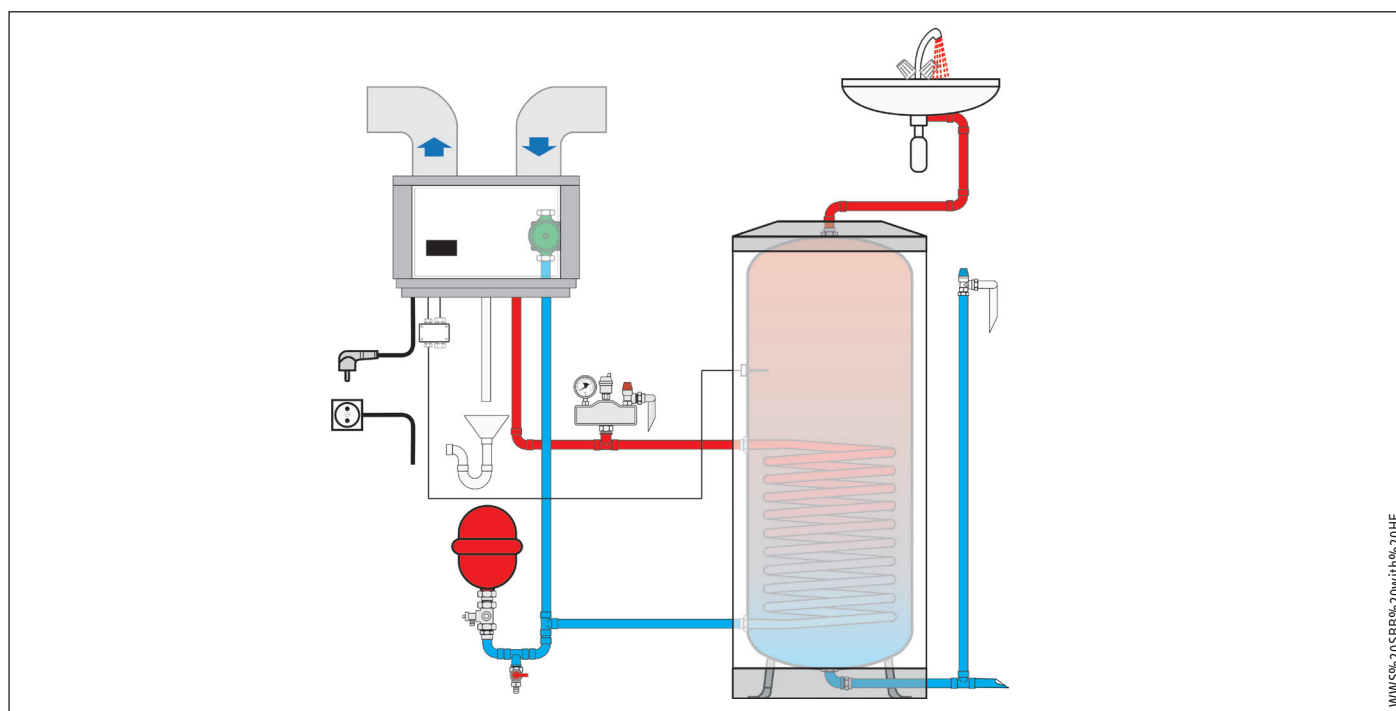


INSTALLATION Specification

Heating the DHW cylinder via inlet connectors on the sides



Heating the DHW cylinder via the integral smooth tube indirect coil



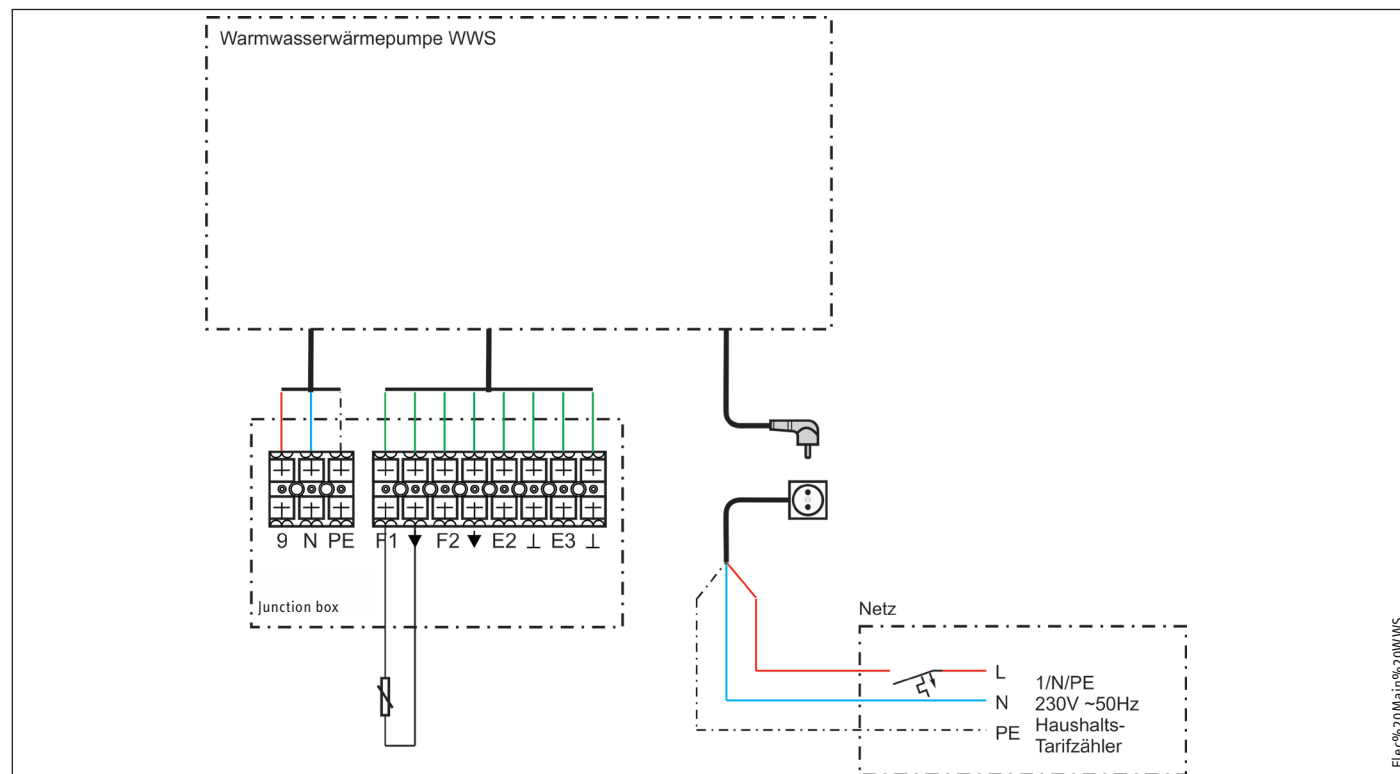
14.3 Wiring diagrams



Material losses

Applying voltage to the switching inputs at the junction box could destroy the contacts.

- ▶ Never apply any voltage to the switching inputs.
- ▶ Always use floating contacts.

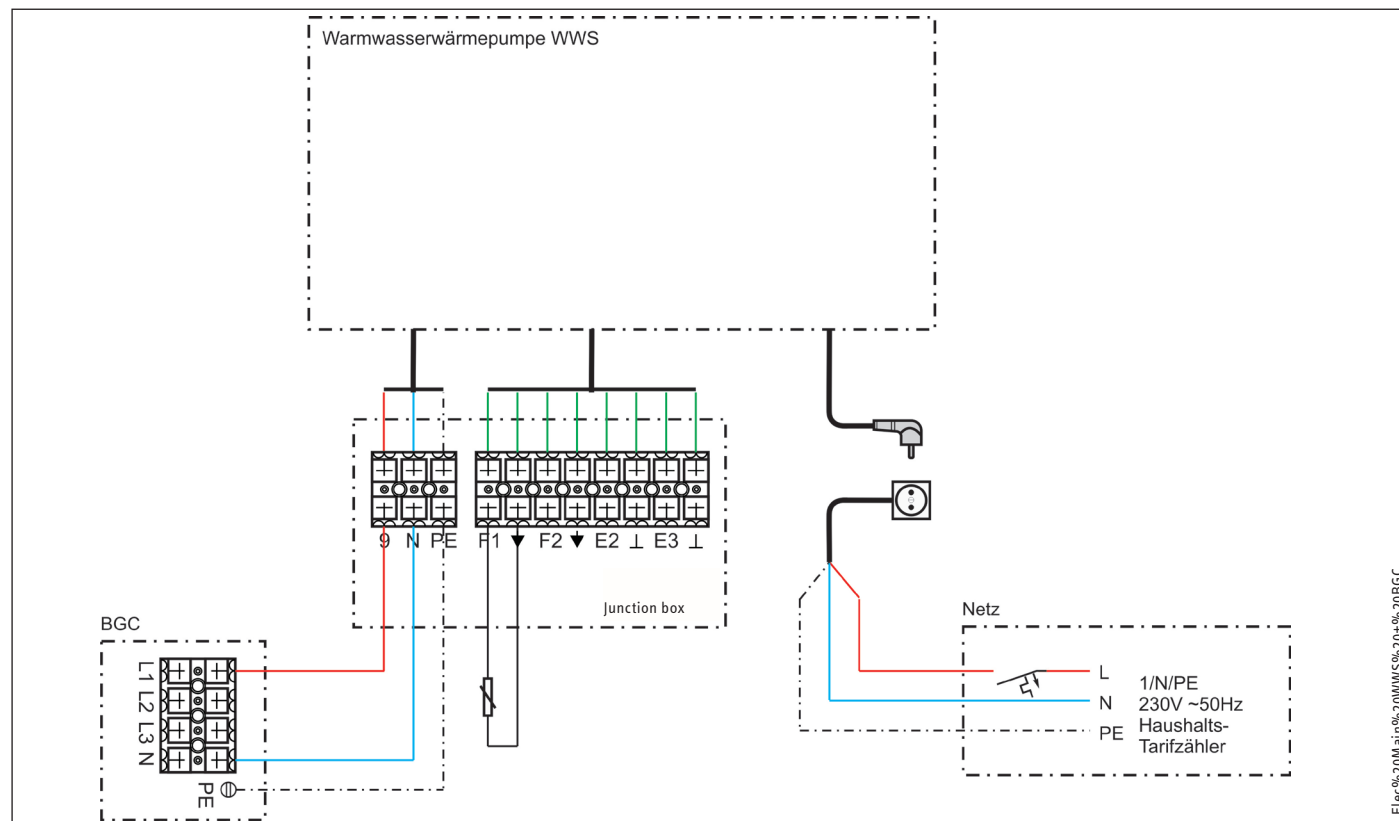


- F1 Switching input for control sensor
- F2 Switching input for display sensor (optional)
- E2 Switching input for power supply utility shutdown (optional)
- E3 Switching input for power supply utility shutdown, set value increase or external fan control (optional)

Elektronik 20 Main 20 WWS

INSTALLATION Specification

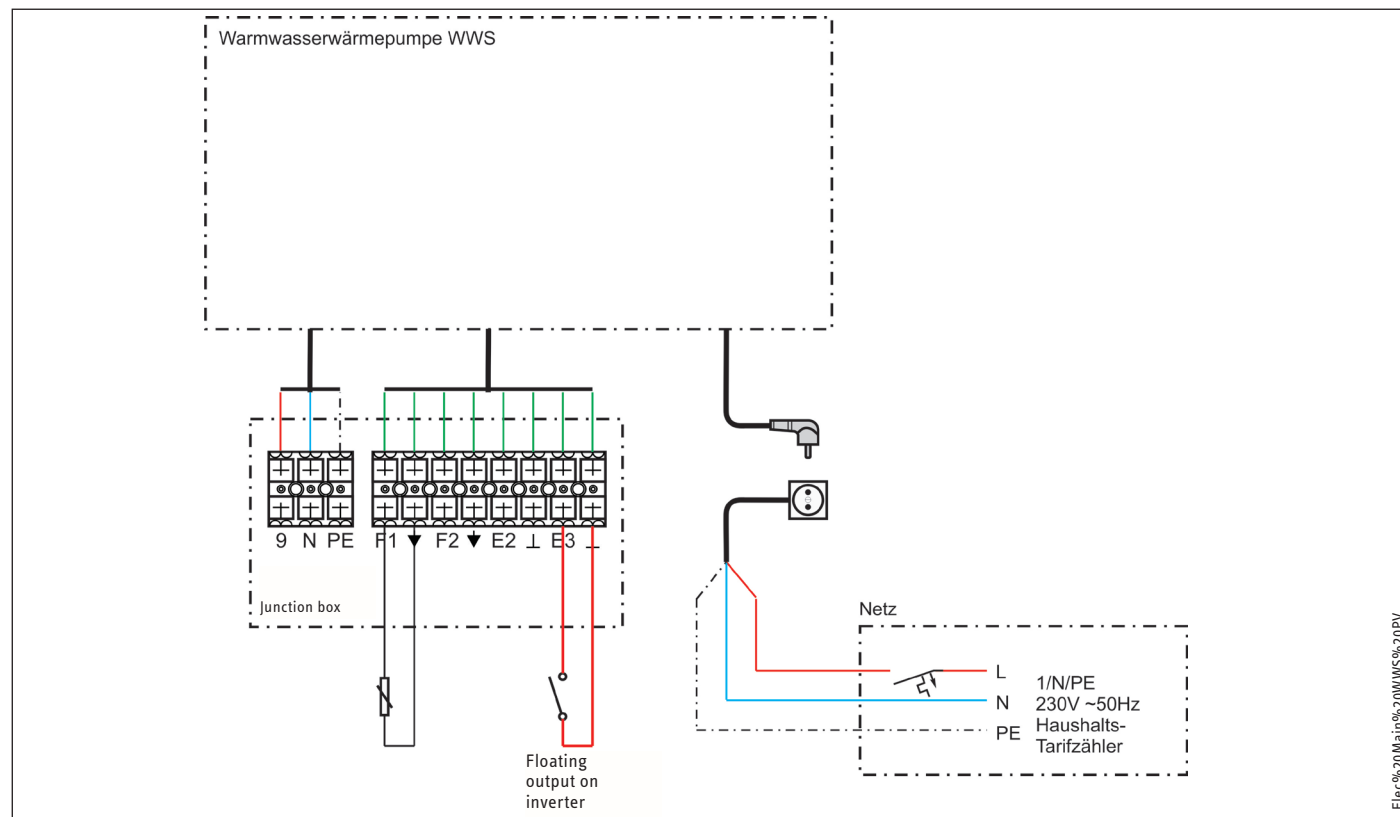
Example: Immersion heater in DHW cylinder



- F1 Switching input for control sensor
- F2 Switching input for display sensor (optional)
- E2 Switching input for power supply utility shutdown (optional)
- E3 Switching input for power supply utility shutdown, set value increase or external fan control (optional)

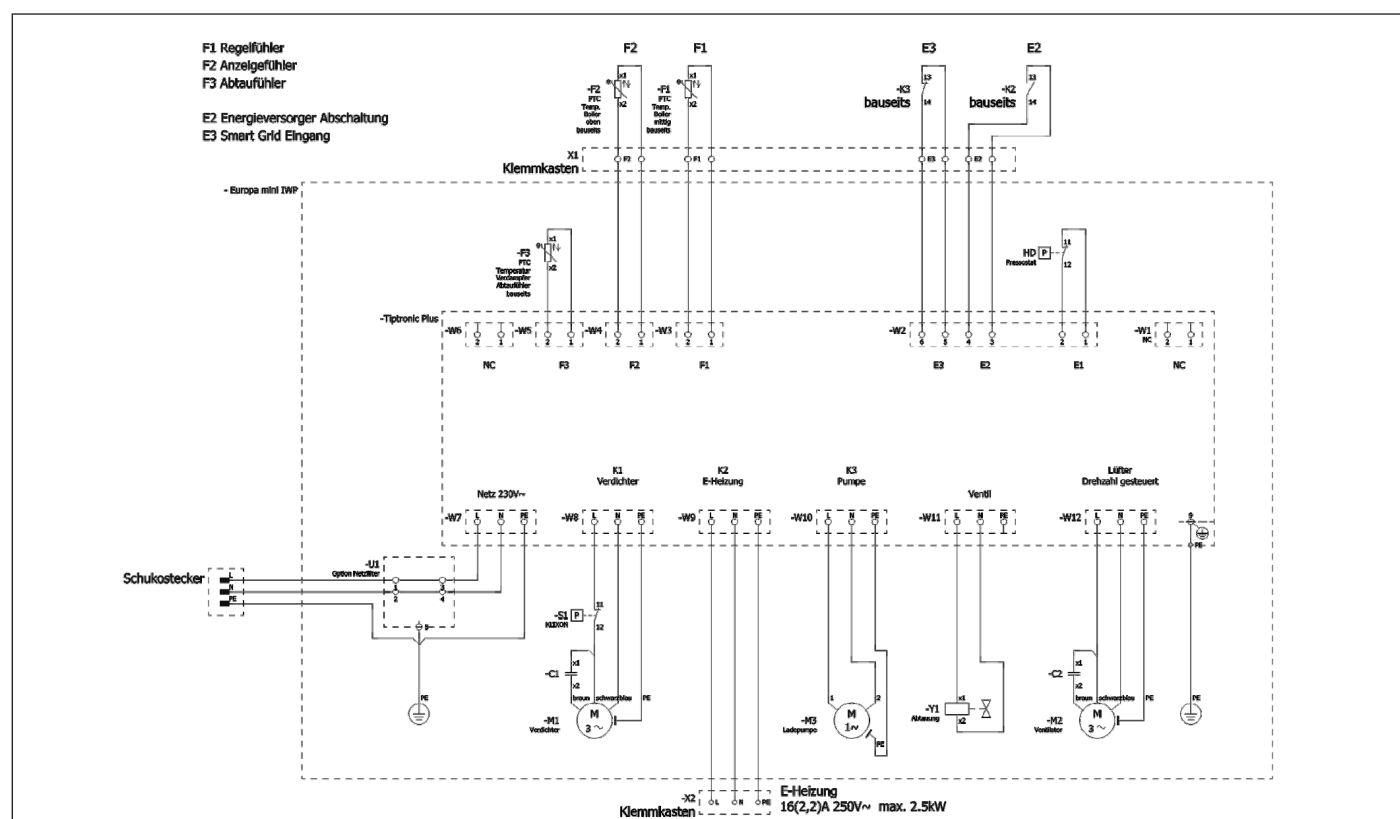
INSTALLATION Specification

Example: Connecting to photovoltaic system

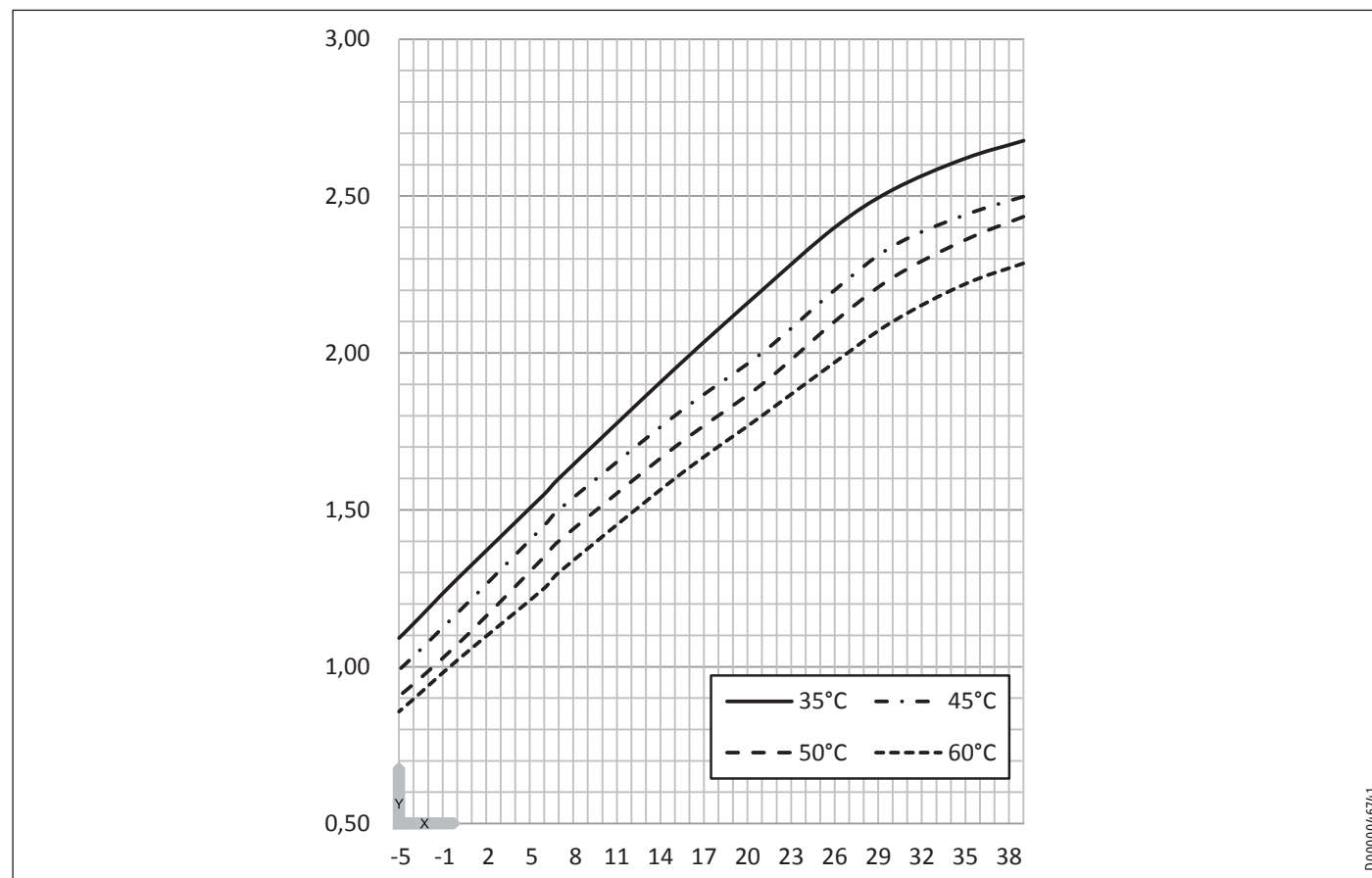


Elec%20Main%20WWS%20PV

- F1 Switching input for control sensor
- F2 Switching input for display sensor (optional)
- E2 Switching input for power supply utility shutdown (optional)
- E3 Switching input for power supply utility shutdown, set value increase or external fan control (optional)



14.4 Heating output



X Air temperature [°C]
Y Heating output [kW]

INSTALLATION

Specification

14.5 Data table

		WWS 20
		233898
Application limits		
Max. DHW temperature with heat pump only	°C	60
Max. permissible temperature, DHW	°C	60
Min./max. application limits, heat source	°C	-5/+40
Minimum installation room volume (recirculation air mode, general domestic use)	m ³	20
Maximum permissible operating pressure, cold water/DHW	MPa	1
Output data		
Heating output A15/W15-55	kW	1.9
Cooling capacity at A15/W15-55	kW	1.5
Heat-up time A15/W15-55 (approx. 300 l)	h	9
Power consumption at A15/W15-55	kW	0.5
COP at A15/W15-55 (EN 255-3)		3.8
Maximum permissible power consumption of optional electric heater rod	kW	2.0
Electrical data		
Power supply		1/N ~ 230 V 50 Hz
Operating current heating	A	2.93
Max. starting current	A	18
MCB/fuse rating	A	C16
Sound data		
Sound power level without air duct	dB(A)	57
Versions		
IP rating		IP2X
Refrigerant		R134a
Refrigerant charge	kg	0.61
Power cable length approx.	mm	1600
Hydraulic data		
Type internal primary pump		2RS12/2-3 Ku
Max. residual head internal primary pump	m	1.1
Water flow rate	m ³ /h	0.4
Inlet pipe pressure drop	hPa	16
Dimensions		
Height	mm	432
Width	mm	657
Depth	mm	657
Weights		
Weight	kg	45
Connections		
Heat pump connection		G 3/4
Condensate connection	mm	22
Air duct connector, top	mm	160
In the case of hydraulic action via inlet pipe: DHW connector, cylinder min.		G 1
In the case of hydraulic connection via side inlet connectors: Inlet connector, cylinder min.		G 1
In the case of hydraulic connection via smooth tube indirect coil: Heat transfer surface area (per WWS 20), cylinder min.	m ²	1.4
Values		
Air flow rate, free-blowing	m ³ /h	510
Available external pressure, ventilation	Pa	80
Max air duct length 160 mm (including 3 x 90° bends)	m	20
Reduction max. air duct length per additional 90° bend	m	2.5

The output data refers to new appliances in factory setting with clean indirect coils and no connected air ducts.

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 | R134a

This device is filled with refrigerant R134a.

Refrigerant R134a is a CFC greenhouse gas mentioned in the Kyoto protocol with a global greenhouse potential (GWP) = 1300.

Never release refrigerant R134a to atmosphere.

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STIEBEL ELTRON



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Stand 9046