

# Installation and service instructions for contractors

**VIESSMANN**

## **Vitocal 200-G**

**Type BWC 201.A06 to A17**, 6 to 17 kW

Brine/water heat pump with electric drive, 400 V~

**Type BWC-M 201.A06 to A10**, 6 to 10 kW

Brine/water heat pump with electric drive, 230 V~



## **VITOCAL 200-G**



## Safety instructions

### Safety instructions



Please follow these safety instructions closely to prevent accidents and material losses.

#### Safety instructions explained



##### **Danger**

This symbol warns against the risk of injury.



##### **Please note**

This symbol warns against the risk of material losses and environmental pollution.

##### **Note**

Details identified by the word "Note" contain additional information.

#### Target group

These instructions are exclusively intended for authorised contractors.

- Work on the refrigerant circuit may only be carried out by authorised refrigeration engineers.
- Work on electrical equipment must only be carried out by a qualified electrician.
- The system must be commissioned by the system installer or a qualified person authorised by the installer.

#### Regulations to be observed

- National installation regulations
- Statutory regulations for the prevention of accidents
- Statutory regulations for the protection of the environment
- Codes of Practice of the relevant trade associations
- All relevant safety regulations as defined by DIN, EN, DVGW, VDE and locally applicable standards
  - Ⓐ ÖNORM, EN and ÖVE
  - Ⓒ SEV, SUVA, SVTI, SWKI and SVGW

#### Safety instructions for working on the system

##### Working on the system

- Isolate the system from the power supply, e.g. by removing the separate fuse or by means of a mains isolator, and check that it is no longer live.

##### **Note**

*In addition to the control circuit there may be several power circuits.*



##### **Danger**

Contact with live components can result in severe injuries. Some components on PCBs remain live even after the power supply has been switched off.

Prior to removing covers from the appliances, wait at least 4 minutes until the voltage has completely dropped out.

- Safeguard the system against reconnection.
- Wear suitable personal protective equipment when carrying out any work.



##### **Danger**

Hot surfaces and fluids can lead to burns or scalding.

- Before maintenance and service work, switch OFF the appliance and let it cool down.
- Never touch hot surfaces on the appliance, fittings or pipework.



##### **Please note**

Electronic assemblies can be damaged by electrostatic discharge.

Prior to commencing work, touch earthed objects such as heating or water pipes to discharge static loads.

##### Repair work



##### **Please note**

Repairing components that fulfil a safety function can compromise the safe operation of the system.

Replace faulty components only with genuine Viessmann spare parts.

**Safety instructions** (cont.)**Auxiliary components, spare and wearing parts****Please note**

Spare and wearing parts that have not been tested together with the system can compromise its function. Installing non-authorized components and making non-approved modifications or conversions can compromise safety and may invalidate our warranty.

For replacements, use only original spare parts supplied or approved by Viessmann.

**Safety instructions for operating the system****What to do if water escapes from the appliance****Danger**

If water escapes from the appliance there is a risk of electrocution.  
Switch OFF the heating system at the external isolator (e.g. fuse box, domestic distribution board).

**Danger**

If water escapes from the appliance there is a risk of scalding.  
Never touch hot heating water.

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## Disposal of packaging










Please dispose of packaging waste in line with statutory regulations.

**DE:** Use the disposal system organised by Viessmann.







**AT:** Use the ARA statutory disposal system (Altstoff Recycling Austria AG, licence number 5766).

**CH:** Packaging waste is disposed of by the HVAC contractor.

## Symbols

Symbol	Meaning
	Reference to other document containing further information
	Step in a diagram: The numbers correspond to the order in which the steps are carried out.
	Warning of material losses and environmental pollution
	Live electrical area
	Pay particular attention.
	<ul style="list-style-type: none"> <li>▪ Component must audibly click into place.</li> <li>or</li> <li>▪ Acoustic signal</li> </ul>
	<ul style="list-style-type: none"> <li>▪ Fit new component.</li> <li>or</li> <li>▪ In conjunction with a tool: Clean the surface.</li> </ul>
	Dispose of component correctly.
	Dispose of component at a suitable collection point. Do <b>not</b> dispose of component in domestic waste.

The steps in connection with commissioning, inspection and maintenance are found in the "Commissioning, inspection and maintenance" section and identified as follows:

Symbol	Meaning
	Steps required during commissioning
	Not required during commissioning
	Steps required during inspection
	Not required during inspection
	Steps required during maintenance
	Not required during maintenance

## Intended use

The appliance is only intended to be installed and operated in sealed unvented heating systems that comply with EN 12828, with due attention paid to the associated installation, service and operating instructions.

Depending on the version, the appliance can only be used for the following purposes:

- Central heating
- Central cooling
- DHW heating

## Intended use (cont.)

The range of functions can be extended with additional components and accessories.

Intended use presupposes that a fixed installation in conjunction with permissible, system-specific components has been carried out.

Commercial or industrial usage for a purpose other than central heating/cooling or DHW heating shall be deemed inappropriate.

Incorrect usage or operation of the appliance (e.g. the appliance being opened by the system user) is prohibited and will result in an exclusion of liability. Incorrect usage also occurs if the components in the heating system are modified from their intended function.

### Note

*The appliance is intended exclusively for domestic or semi-domestic use, i.e. even users who have not had any instruction are able to operate the appliance safely.*

## Product information

### Structure

The Vitocal 200-G is a brine/water heat pump for central heating, central cooling and DHW heating in mono mode or mono energetic systems.

The refrigerant circuit is equipped with a thermostatic expansion valve.

An instantaneous heating water heater (accessories) can additionally be fitted into the heat pump to support central heating and DHW heating.

### Hydraulics

The heat pump includes high efficiency circulation pumps for the primary and secondary circuit, as well as a high efficiency circulation pump for DHW heating.

### Central heating

The heat pump can supply up to 2 heating circuits, 1 heating circuit without and 1 heating circuit with mixer: The mixer extension kit (accessories) is required to control the mixer.

### Room cooling

Rooms can be cooled either via 1 heating/cooling circuit or 1 separate cooling circuit. Hydraulic accessories are required for this, e.g. NC-Box with mixer.

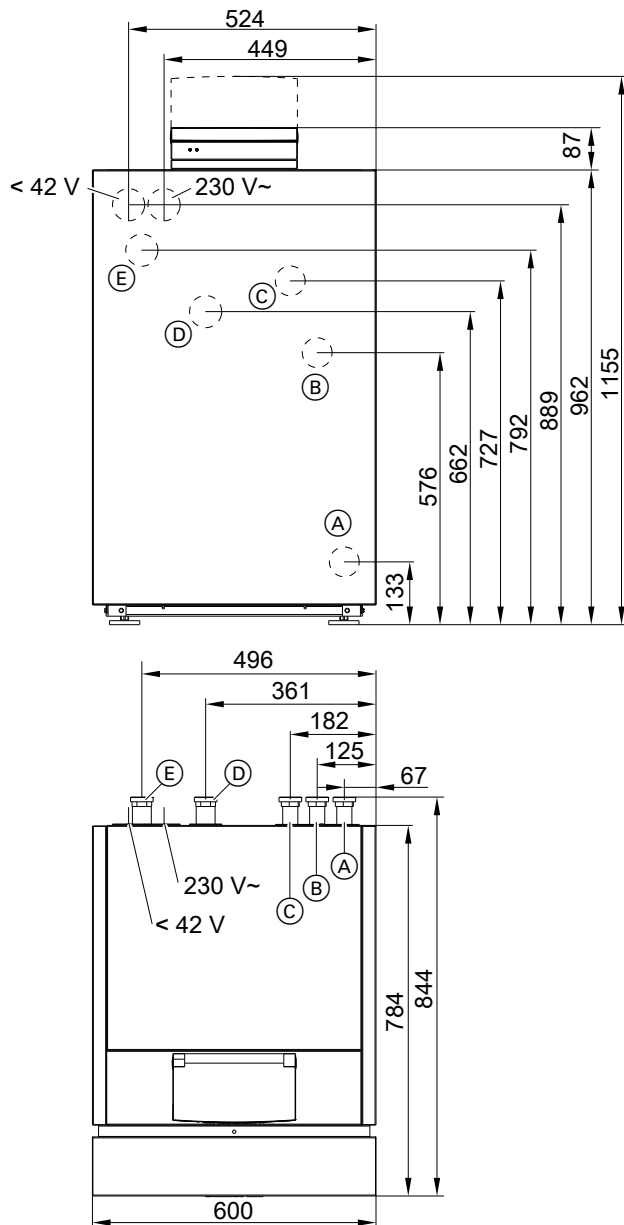
### Heat pump control unit

The entire system is monitored and controlled by the integral Vitotronic 200 heat pump control unit, type WO1C.

### System examples

Available system examples: See [www.viessmann-schemes.com](http://www.viessmann-schemes.com).

## Requirements for on-site connections



(A)	▲ ■+	Heating water return and DHW cylinder re- turn
(B)	▼ ■	DHW cylinder flow (heating water side)
(C)	▼ ■	Heating water flow
(D)	■ ▲	Primary circuit flow (heat pump brine inlet)
(E)	■ ▼	Primary circuit return (heat pump brine out- let)

Fig. 1

## Siting and transport requirements

### Transport

**!** **Please note**  
Impacts, compression and tensile loads can cause damage to the outside panels of the appliance.  
**Never** put weight on the top, front or side panels of the appliance.

**!** **Please note**  
Tilting the compressor at a steep angle inside the heat pump can result in appliance damage.  
Max. tilting angle: 45° for a very short time



**Siting and transport requirements** (cont.)

**Installation room requirements**



**Please note**

Unfavourable ambient conditions can lead to malfunctions and appliance damage.

The installation room must be dry and free from the risk of frost:

- Ensure ambient temperatures between 0 and 35 °C.
- Max. 70 % relative humidity (corresponds to an absolute humidity of approx. 25 g water vapour/kg dry air)



**Danger**

Dust, gases and vapours can be damaging to health and trigger explosions. Avoid dust, gases and vapours in the installation room.



**Please note**

Overloading the floor can result in damage to the building structure. Observe the permissible floor load. Take the total weight of the appliance into account.

**Total weight**

Vitocal 200-G	Type		Weight in kg
<b>230 V appliances</b>	BWC-M	201.A06	115
		201.A08	119
		201.A10	131
<b>400 V appliances</b>	BWC	201.A06	113
		201.A08	117
		201.A10	129
		201.A13	135
		201.A17	148

To prevent the transmission of structure-borne noise, never site the appliance above ceilings with wooden joists, e.g. in the attic.

**Minimum room volume (to EN 378)**

Vitocal 200-G	Type		Refrigerant charge in kg	Minimum room volume in m <sup>3</sup>
<b>230 V appliances</b>	BWC-M	201.A06	1.20	2.73
		201.A08	1.45	3.30
		201.A10	1.70	3.86
<b>400 V appliances</b>	BWC	201.A06	1.20	2.73
		201.A08	1.45	3.30
		201.A10	1.70	3.86
		201.A13	2.20	5.00
		201.A17	2.90	6.59

**Minimum clearances**

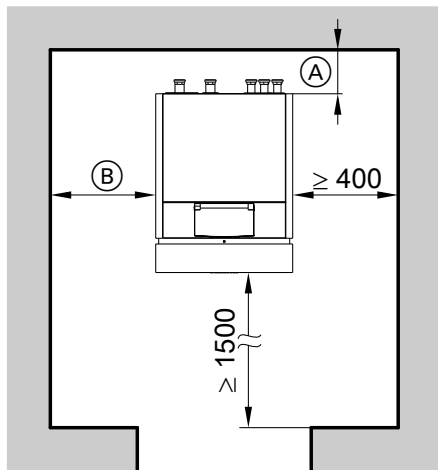


Fig. 2

- Ⓐ Dimension subject to on-site installation and site conditions
- Ⓑ  $\geq 100$  mm

**Note**

- Observe clearances for installation and maintenance.
- Additional strain relief clamps are required for the power cables if the clearance behind the heat pump is more than 80 mm.

## Siting the heat pump

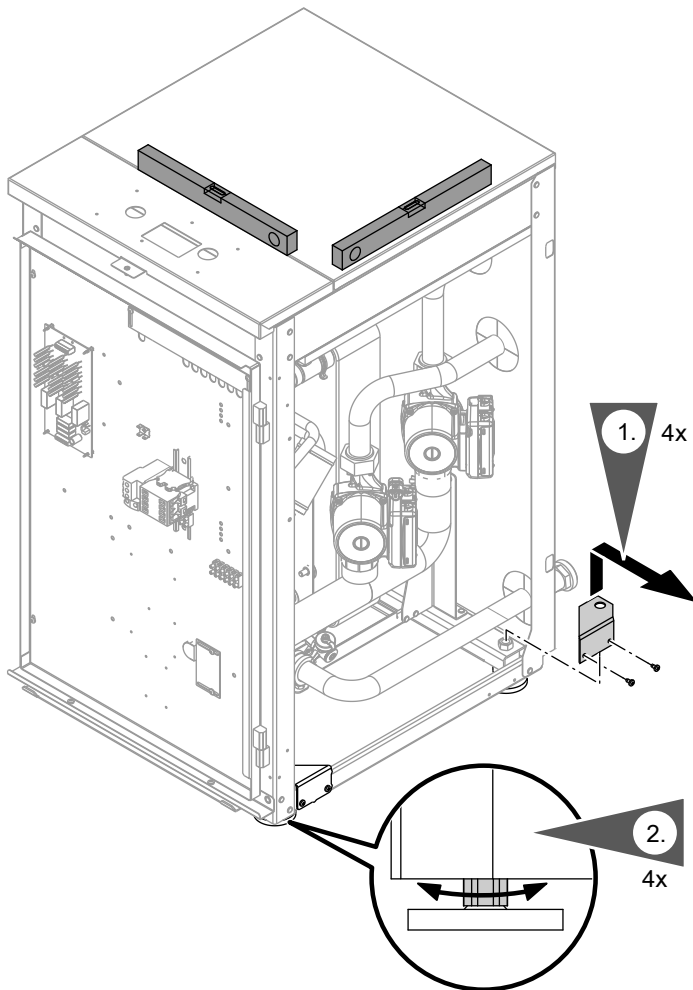


Fig. 3

1. Position the heat pump according to the details on page 9.
2. Align the appliance horizontally.

**Please note**

Operating the appliance without first removing the transport brackets may cause vibrations and excessive noise.  
Remove the transport brackets.

**Note**

If the adjustable feet are used to compensate for an uneven floor (max. 10 mm), the pressure load on the feet must be distributed evenly.

## Removing the top panel

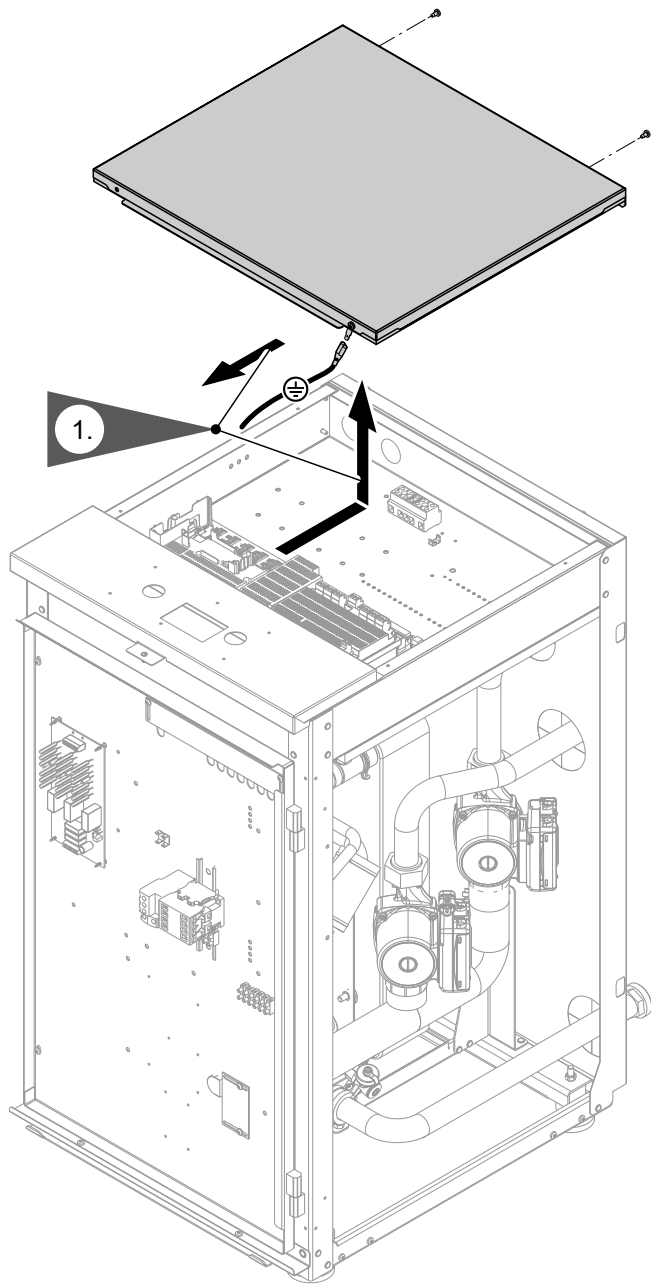


Fig. 4

## Making the hydraulic connections

For arrangement of hydraulic connections: See page 8.

### Connecting the primary circuit

- !** **Please note**  
The heat transfer medium can cause corrosion damage to on-site lines and components. The components and lines used must be resistant to the heat transfer medium. Never use zinc-plated/galvanised pipes.

## Making the hydraulic connections (cont.)

1. Equip the primary circuit with an expansion vessel and safety valve (to DIN 4757).

### Note

- *The expansion vessel must be approved to DIN 4807. The diaphragms of the expansion vessel and safety valve must be suitable for the heat transfer medium.*
- *The blow-down and drain pipes should terminate in a container. This container must be able to hold the maximum possible expansion volume of the heat transfer medium.*

2. Ensure adequate thermal and anti-vibration insulation where pipes penetrate walls.
3. Connect primary pipes to heat pump.



### Please note

Mechanically loaded hydraulic connections lead to leaks, vibration and appliance damage. Connect on-site lines so that they are free of load and torque stress.



### Please note

Leaking hydraulic connections lead to appliance damage. Ensure the diaphragm grommets at the hose outlets are seated correctly. Seal hose outlets with sealing tape if necessary.

4. Insulate pipes inside the building to prevent heat and vapour diffusion.

5. Charge the primary circuit with Viessmann heat transfer medium and vent.

### Note

*Ensure frost protection down to  $-19\text{ }^{\circ}\text{C}$ . Viessmann heat transfer medium is a ready-mixed ethylene glycol-based medium. It contains inhibitors for corrosion protection. The heat transfer medium can be used at temperatures down to  $-19\text{ }^{\circ}\text{C}$ .*

### Note

*Position of diaphragm grommets for hoses: See page 34.*

## Connecting the secondary circuit

1. Equip the secondary circuit on site with an expansion vessel and safety assembly (to DIN 4757). Fit the safety assembly to the on-site line in the heating water return.

2. Connect the secondary lines to the heat pump ( $\varnothing \geq 28\text{ mm}$ ).



### Please note

Mechanically loaded hydraulic connections lead to leaks, vibrations and appliance damage. Connect on-site lines so that they are free of load and torque stress.



### Please note

Leaking hydraulic connections lead to appliance damage. Ensure the diaphragm grommets at the hose outlets are seated correctly. Seal hose outlets with sealing tape if necessary.

3. Fill and vent secondary circuit.

4. Thermally insulate pipes inside the building.

### Note

- *Position of diaphragm grommets for hoses: See page 34.*
- *In underfloor heating circuits, install a temperature limiter on site to restrict the maximum temperature of the underfloor heating system.*
- *Ensure the minimum flow rate, e.g. by means of an overflow valve: See "Specification" on page 93.*

## Electrical connections

### Preparing the electrical connections

#### Cables

- For cable lengths and cable cross-sections, see the following tables.
- For accessories:  
Cables with the required number of cores for external connections.  
Prepare an on-site distribution box.



#### Danger

Damaged wiring insulation wiring can lead to serious injury from electrical current and result in appliance damage.  
Route cables so that they cannot touch very hot, vibrating or sharp-edged components.



#### Danger

Incorrect wiring can lead to serious injury from electrical current and result in appliance damage.

Take the following measures to prevent drifting of wires into the adjacent voltage area:

- Route LV leads < 42 V separately from cables > 42 V/230 V~/400 V~ and secure with cable ties.
- Only strip the minimum of insulation from cables as close as possible to the terminals and bundle tightly to the corresponding terminals.
- If 2 components are connected to the same terminal, press both cores together in a **single** wire ferrule.

### Required cable lengths in the heat pump plus distance to wall

Heat pump control unit power supply 230 V~	1.0 m
Compressor power supply 400 V~/230 V~	1.0 m
Additional connecting cables	1.0 m

### Recommended power cables

#### Compressor power supply

Vitocal 200-G	Type	Cable	Max. cable length
230 V appliances	BWC-M	201.A06	3 x 4.0 mm <sup>2</sup>
		201.A08	3 x 4.0 mm <sup>2</sup>
		201.A10	3 x 4.0 mm <sup>2</sup>
400 V appliances	BWC	201.A06	5 x 2.5 mm <sup>2</sup>
		201.A08	5 x 2.5 mm <sup>2</sup>
		201.A10	5 x 2.5 mm <sup>2</sup>
		201.A13	5 x 2.5 mm <sup>2</sup>
		201.A17	5 x 2.5 mm <sup>2</sup>

#### Further power supplies

Power supply	Cable	Max. cable length
Heat pump control unit 230 V~	■ Without power-OFF	3 x 1.5 mm <sup>2</sup>
	■ With power-OFF	5 x 1.5 mm <sup>2</sup>
Instantaneous heating water heater	■ 230 V~	7 x 2.5 mm <sup>2</sup>
	■ 400 V~	5 x 2.5 mm <sup>2</sup>

Electrical connections (cont.)

Installing the programming unit

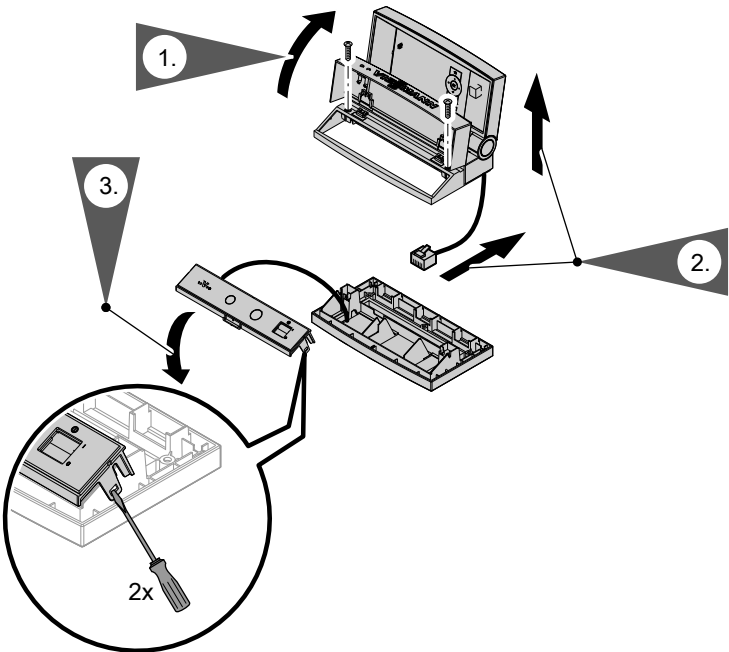


Fig. 5

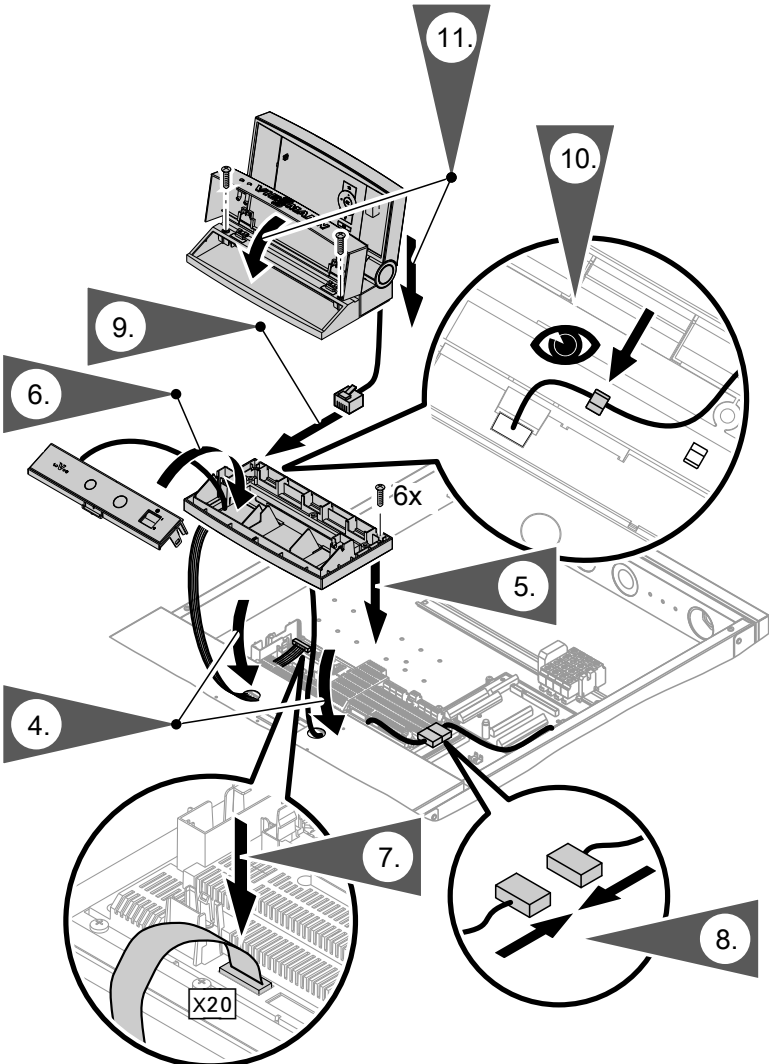


Fig. 6

5546220

**Routing cables to the wiring chamber**

When routing the on-site connecting cables, observe the location of the cable entries leading into the appliance through the back panel: See page 8.

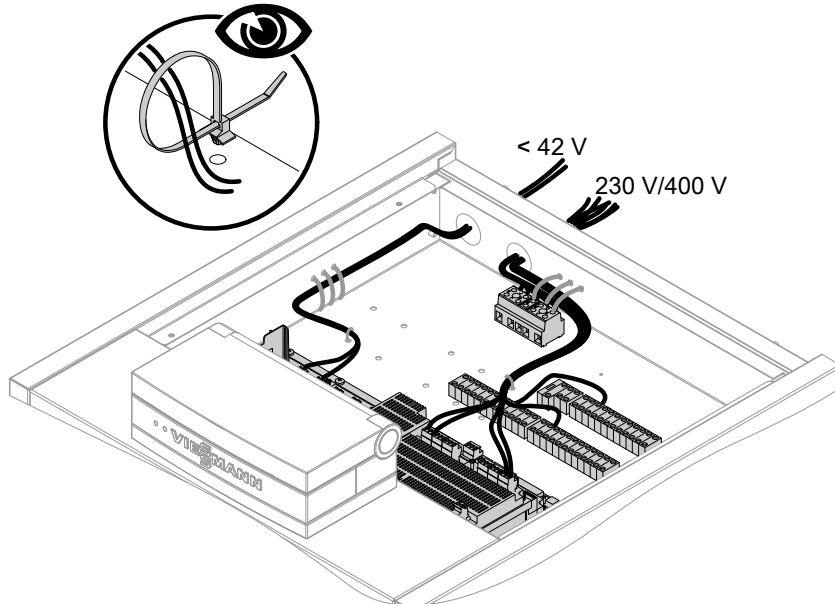


Fig. 7

1. Route LV leads through the "< 42 V" opening into the wiring chamber of the heat pump control unit. Provide strain relief using the cable ties supplied.
2. Route 230 V cables and the compressor power cable through the "230 V~/400 V~" opening into the wiring chamber of the heat pump control unit. Provide strain relief using the cable ties supplied. For power supply, see from page 26.

**Note**

Route LV leads and 230 V/400 V cables as far apart as possible.



**Electrical connections (cont.)**

**Overview of the electrical connections in the heat pump control unit**

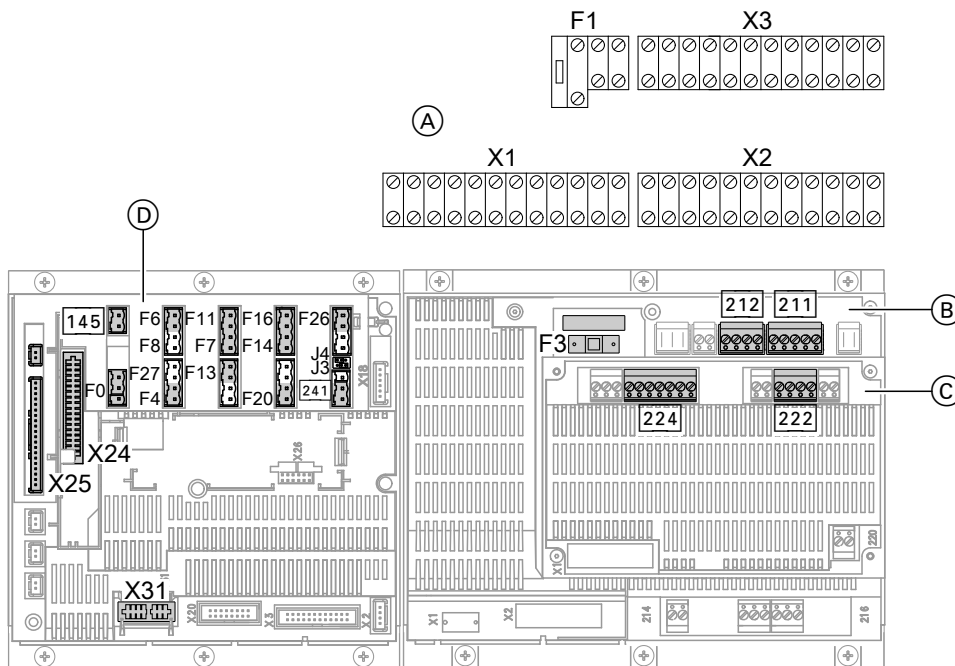


Fig. 8

- (A) Luster terminals: See page 22.  
F1 Fuse 6.3 A (slow)
- (B) Main PCB: See page 17.  
F3 Fuse 6.3 A (slow)
- (C) Expansion PCB on main PCB: See page 20.
- (D) Controller and sensor PCB: See page 24.

**Main PCB (230 V~ components)**





**Information regarding connection values**

- The specified output is the recommended connected load.
- The total output of all components connected directly to the heat pump control unit (e.g. pumps, valves, message facilities, contactors) must not exceed 1000 W.  
If the total output is  $\leq 1000$  W, the individual rating of a component (e.g. pump, valve, message facility, contactor) can be greater than specified. However, the breaking capacity of the corresponding relay must not be exceeded.
- The specified current indicates the max. switching current of the switching contact. Observe total current 5 A.
- Safety LV is unsuitable for controlling external heat generators.


Set the required parameters during commissioning:  
See page 39 onwards.

**Electrical connections** (cont.)

**Plug** 211


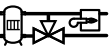
Clamps	Function	Explanation
211.2  	Secondary pump	<ul style="list-style-type: none"> <li>▪ In systems without a heating water buffer cylinder, no other heating circuit pump is required: See terminal 212.2.</li> <li>▪ Connect a temperature limiter to restrict the maximum temperature for underfloor heating circuits (if installed) in series.</li> </ul> <p>Connection values</p> <ul style="list-style-type: none"> <li>▪ Output: 140 W</li> <li>▪ Voltage: 230 V~</li> <li>▪ Max. switching current: 4(2) A</li> </ul> <p><b>Note</b> <i>The secondary pump is connected at the factory.</i></p>
211.3  	Control of instantaneous heating water heater, stage 1	<p>Connection values</p> <ul style="list-style-type: none"> <li>▪ Output: 10 W</li> <li>▪ Voltage: 230 V~</li> <li>▪ Max. switching current: 4(2) A</li> </ul>
211.4  	<ul style="list-style-type: none"> <li>▪ Circulation pump for cylinder heating</li> <li>▪ Cylinder loading pump</li> <li>▪ 2-way shut-off valve</li> </ul>	<p>Connection values</p> <ul style="list-style-type: none"> <li>▪ Output: 130 W</li> <li>▪ Voltage: 230 V~</li> <li>▪ Max. switching current: 4(2) A</li> </ul> <p><b>Note</b> <i>The circulation pump for cylinder heating is connected at the factory.</i></p>
211.5  	Control of natural cooling function	NC-Box or on-site components for natural cooling  <p>Connection values</p> <ul style="list-style-type: none"> <li>▪ Output: 10 W</li> <li>▪ Voltage: 230 V~</li> <li>▪ Max. switching current: 4(2) A</li> </ul>

**Plug** 212

Clamps	Function	Explanation
212.2  	Heating circuit pump for heating circuit without mixer A1/HC1	<ul style="list-style-type: none"> <li>▪ This pump is connected in addition to the secondary pump if a heating water buffer cylinder is installed.</li> <li>▪ Connect the temperature limiter to restrict the maximum temperature for underfloor heating systems (if installed) in series.</li> </ul> <p>Connection values</p> <ul style="list-style-type: none"> <li>▪ Output: 100 W</li> <li>▪ Voltage: 230 V~</li> <li>▪ Max. switching current: 4(2) A</li> </ul>

**Electrical connections** (cont.)

**Plug** 212

Clamps	Function	Explanation
212.3 	DHW circulation pump	Connection values <ul style="list-style-type: none"> <li>▪ Output: 50 W</li> <li>▪ Voltage: 230 V~</li> <li>▪ Max. switching current: 4(2) A</li> </ul>
212.4 	3-way diverter valve for heating water buffer cylinder bypass or heat pump in the case of dual alternative mode	Connection values <ul style="list-style-type: none"> <li>▪ Output: 130 W</li> <li>▪ Voltage: 230 V~</li> <li>▪ Max. switching current: 4(2) A</li> </ul>

**Connecting a temperature limiter as a maximum temperature limiter for underfloor heating**

General connection of a temperature limiter (B)

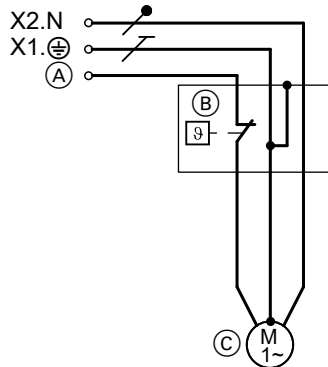


Fig. 9

Connecting the temperature limiter, part no. 7151728, 7151729 (B)

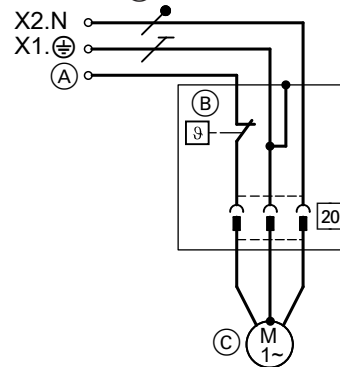


Fig. 10

Heating circuit without mixer A1/HC1	Connection (A) to control unit	Circulation pump (C)
▪ Without heating water buffer cylinder	211.2	Secondary pump
▪ With heating water buffer cylinder	212.2	Heating circuit pump A1/HC1

Connecting the temperature limiter, part no. 7151728, 7151729 (B) to the mixer extension kit

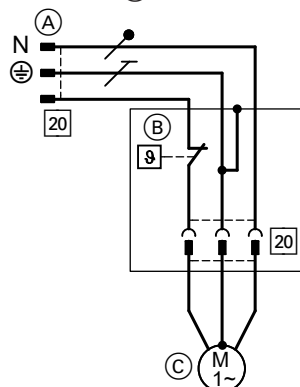




Fig. 11





- (A) Connect plug 20 to the mixer extension kit.
- (B) Temperature limiter
- (C) Heating circuit pump for heating circuit with mixer

**Electrical connections** (cont.)

**Plug** 214

Clamps	Function	Explanation
214.1  M2	External hook-up, heating/cooling circuits: Central heating demand, heating circuit M2/HC2	230 V~ digital input: <ul style="list-style-type: none"> <li>▪ 230 V~: Central heating demand for heating circuit M2/HC2 active</li> <li>▪ 0 V: No demand</li> <li>▪ Breaking capacity 230 V, 0.15 A</li> </ul>
214.2  M2	External hook-up, heating/cooling circuits: Central cooling demand, heating circuit M2/HC2	230 V~ digital input: <ul style="list-style-type: none"> <li>▪ 230 V~: Central cooling demand for heating circuit M2/HC2 active</li> <li>▪ 0 V: No demand</li> <li>▪ Breaking capacity 230 V, 0.15 A</li> </ul>

**Plug** 216

Clamps	Function	Explanation
216.1  A1  SG 	External hook-up, heating/cooling circuits: Central heating demand, heating circuit A1/HC1 <b>or</b> Smart Grid: Floating contact 1	230 V~ digital input: <ul style="list-style-type: none"> <li>▪ 230 V~: Central heating demand for heating circuit A1/HC1 active</li> <li>▪ 0 V: No demand</li> <li>▪ Breaking capacity 230 V, 2 mA</li> </ul> 230 V~ digital input: <ul style="list-style-type: none"> <li>▪ 230 V~: Contact active</li> <li>▪ 0 V: Contact not active</li> <li>▪ Breaking capacity 230 V, 2 mA</li> </ul>
216.2  A1	External hook-up, heating/cooling circuits: Room cooling demand, heating circuit A1/HC1	230 V~ digital input: <ul style="list-style-type: none"> <li>▪ 230 V~: Room cooling demand for heating circuit A1/HC1 active</li> <li>▪ 0 V: No demand</li> <li>▪ Breaking capacity 230 V, 0.15 A</li> </ul>
216.4 SG 	Smart Grid: Floating contact 2	230 V~ digital input: <ul style="list-style-type: none"> <li>▪ 230 V~: Contact active</li> <li>▪ 0 V: Contact not active</li> <li>▪ Breaking capacity 230 V, 2 mA</li> </ul>

**Expansion PCB on main PCB (230 V~ components)**






**Information regarding the connection values**

- The specified output is the recommended connected load.
- The total output of all components connected directly to the heat pump control unit (e.g. pumps, valves, message facilities, contactors) must not exceed 1000 W.  
If the total output is < 1000 W, the individual rating of a component (e.g. pump, valve, message facility, contactor) can be greater than specified. However, the breaking capacity of the corresponding relay must not be exceeded.
- The stated current indicates the max. switching current of the switching contact (observe the total current of 5 A).
- Controls for external heat source and central fault messages are unsuitable for safety LV.

Set the required parameters during commissioning:  
See page 39 onwards.

**Electrical connections** (cont.)

**Plug** 222

Clamps	Function	Explanation
222.1  	Mixer motor control for external heat generator Signal mixer CLOSE	Connection values: <ul style="list-style-type: none"> <li>Output: 10 W</li> <li>Voltage: 230 V~</li> <li>Max. switching current: 0.2(0.1) A</li> </ul>
222.2  	Control of mixer motor for external heat generator Signal mixer OPEN	Connection values: <ul style="list-style-type: none"> <li>Output: 10 W</li> <li>Voltage: 230 V~</li> <li>Max. switching current: 0.2(0.1) A</li> </ul>
222.3 222.4 	Control of external heat generators and 1 high limit safety cut-out each (on site, max. 70 °C), to switch off or switch between the following components:  Central heating: <ul style="list-style-type: none"> <li>Secondary pump, heat pump</li> <li>External heat generator</li> </ul> DHW reheating: <ul style="list-style-type: none"> <li>Circulation pump for cylinder heating</li> </ul>	Floating contact  Connection values (contact load): <ul style="list-style-type: none"> <li>Voltage: 230 V~ (not suitable for safety LV)</li> <li>Max. switching current: 4(2) A</li> </ul> Connections for high limit safety cut-outs for central heating: <ul style="list-style-type: none"> <li>In series to the secondary pump (terminal 211.2 on the main PCB)</li> <li>In series for controlling the external heat generator (terminal 222.3)</li> </ul> Connections for high limit safety cut-outs for DHW reheating: <ul style="list-style-type: none"> <li>In series to the circulation pump for cylinder heating (terminal 211.4 on the main PCB)</li> </ul>

Installation

**High limit safety cut-out for heat pump in conjunction with an external heat source**

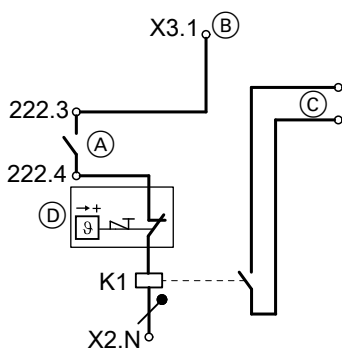


Fig. 12

- (A) Terminals on extension PCB
- (B) Move jumper from X3.1 to 222.3
- (C) Connection on the external heat source at terminals for external demand
- (D) High limit safety cut-out (max. 70 °C) as heat pump protection
- K1 Relay; sizing in accordance with the external heat source; observe safety instructions

**Electrical connections** (cont.)

**Plug** 224

Clamps	Function	Explanation
224.4	Control of instantaneous heating water heater, stage 2	Connection values <ul style="list-style-type: none"> <li>▪ Output: 10 W</li> <li>▪ Voltage: 230 V~</li> <li>▪ Max. switching current: 4(2) A</li> </ul>
224.7	Circulation pump for DHW reheating or Control of immersion heater	Connection values <ul style="list-style-type: none"> <li>▪ Output: 100 W</li> <li>▪ Voltage: 230 V~</li> <li>▪ Max. switching current: 4(2) A</li> </ul>

**Immersion heater EHE 400 V~**

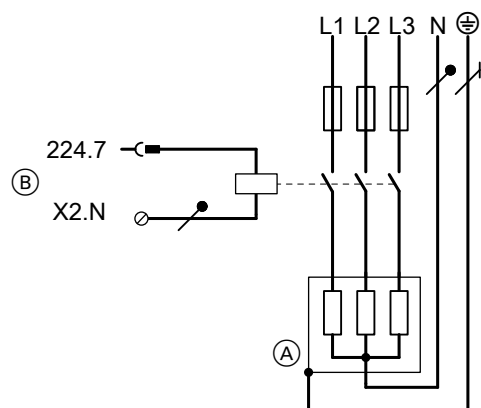


Fig. 13

- (A) Immersion heater EHE, power supply 3/N/PE 400 V/50 Hz
- (B) Terminals of the heat pump control unit

**Immersion heater 230 V~ (on site)**

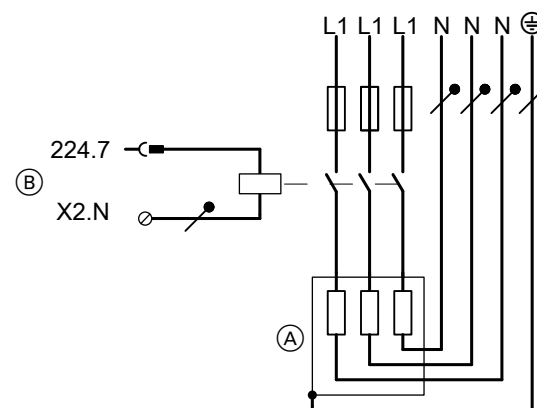


Fig. 14



- (A) Immersion heater, power supply 1/N/PE 230 V/50 Hz
- (B) Terminals of the heat pump control unit

**Luster terminals (signal and safety connections)**

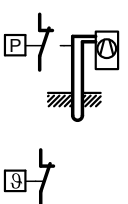
Set the required parameters during commissioning:  
See page 39 onwards.

Clamps	Function	Explanation
F1	Fuse 6.3 A (slow)	<b>Note</b> Observe the total load 1000 W of all connected components.
X1	Earth conductor X1.⊕	Terminals for earth conductors of <b>all</b> associated system components
X2	Neutral conductor X2.N	Terminals for neutral conductors of <b>all</b> associated system components

## Electrical connections (cont.)







Clamps	Function	Explanation
X3	<ul style="list-style-type: none"> <li>Terminals for control unit "L1" and auxiliary components</li> <li>Switched phase L1: X3.1</li> </ul>	Terminals for signal and safety connections  Switched phase L1: <ul style="list-style-type: none"> <li>Switched phase can be used for on-site system components.</li> <li>Observe the total load 1000 W of all connected components.</li> </ul>
X3.1	Switched phase	
X3.2 X3.14 	"External blocking" signal: External blocking of compressor and pumps, mixer in control mode or CLOSE	Requires floating contact: <ul style="list-style-type: none"> <li>Closed: Blocking enabled</li> <li>Open: No blocking</li> <li>Breaking capacity 230 V~, 2 mA</li> </ul> <p><b>Note</b>  <i>These and further external functions (e.g. provision of external set values) can alternatively be connected via the external EA1 extension.            See "EA1 extension" installation instructions</i></p>
X3.3 X3.4	Jumper	<b>Never remove!</b>
X3.6 X3.7 	Power-OFF	Requires floating contact: <ul style="list-style-type: none"> <li>Closed: No blocking (safety chain continuous)</li> <li>Open: Blocking enabled</li> <li>Breaking capacity 230 V~, 0.15 A</li> </ul> <p><b>Note</b></p> <ul style="list-style-type: none"> <li>No parameters need to be set</li> <li><b>No jumper should be installed if a power-OFF contact is connected.</b></li> <li>The compressor is "forced" off as soon as the contact opens.</li> <li>The power-OFF signal switches off the power supply to the relevant component, subject to the power supply utility.</li> <li>For the instantaneous heating water heater, the stages to be switched off can be selected ("<b>Output for instant. heating water heater at power-OFF 790A</b>").</li> <li>The power supply for the heat pump control unit (3 x 1.5 mm<sup>2</sup>) and the cable for the power-OFF signal can be combined in a single 5-core cable.</li> </ul> <p><b>In connection with Smart Grid:</b>            Do <b>not</b> connect the power-OFF signal.            Do <b>not</b> remove jumper.</p>

**Electrical connections** (cont.)

Clamps	Function	Explanation
X3.8 X3.9 	Primary circuit pressure switch <b>and/or</b>  Frost stat <b>or</b> Jumper	Requires floating contact: <ul style="list-style-type: none"> <li>▪ Closed: Safety chain has continuity</li> <li>▪ Open: Safety chain interrupted; heat pump shut down</li> <li>▪ Breaking capacity 230 V~, 0.15 A</li> </ul> <ul style="list-style-type: none"> <li>▪ Connected in series if 2 safety components are installed</li> <li>▪ <b>Insert jumper if no safety components are installed.</b></li> </ul>

**Controller and sensor PCB (sensors)**

Set the required parameters during commissioning:  
See page 39 onwards.

Plug	Sensor/component	Type
F0.1/F0.2	Outside temperature sensor	NTC 10 kΩ
F0.2/F0.3	Radio clock receiver (on site)	DCF
F4	Buffer temperature sensor	NTC 10 kΩ
F6 (X25.5/X25.6)	Cylinder temperature sensor, top	NTC 10 kΩ
F7 (X25.7/X25.8)	Cylinder temperature sensor, bottom	NTC 10 kΩ
F11	Contact humidistat 24 V=  <b>Note</b> <i>If the contact humidistat of the NC-Box is used when cooling, <b>set jumper</b>, otherwise the heat pump will not start (message "<b>CA Protectn device primary</b>").</i>	—
F13	Flow temperature sensor, system (downstream of the heating water buffer cylinder and external heat generator)	NTC 10 kΩ
F14	Flow temperature sensor, cooling circuit: Heating circuit without mixer A1/HC1 or separate cooling circuit SKK	NTC 10 kΩ
F16	Room temperature sensor, cooling circuit <ul style="list-style-type: none"> <li>▪ Required for separate cooling circuit SKK</li> <li>▪ Recommended for heating/cooling circuit without mixer A1/HC1</li> </ul>	NTC 10 kΩ
F20	Boiler water temperature sensor, external heat generator	NTC 10 kΩ
	KM-BUS (wires interchangeable) Use the KM-BUS distributor (accessories) if several devices are connected.  KM-BUS subscribers (examples): <ul style="list-style-type: none"> <li>▪ Extension kit, mixer for heating circuit M2/HC2</li> <li>▪ Remote control: Set the heating circuit allocation on the remote control.</li> <li>▪ EA1 extension, AM1 extension</li> </ul>	—
	Modbus 2 (wires <b>not</b> interchangeable) Connection for photovoltaic system energy meter	—
J3	Jumper for terminator, Modbus 2 <ul style="list-style-type: none"> <li>▪  Terminator active (delivered condition)</li> <li>▪  Terminator not active</li> </ul>	—
J4	Jumper for setting master/slave, Modbus 2 <ul style="list-style-type: none"> <li>▪  Heat pump control unit is slave.</li> <li>▪  Heat pump controller is master (delivered condition).</li> </ul>	—



**Electrical connections** (cont.)

Plug	Sensor/component	Type
X18	Modbus 1 Viessmann appliances, e.g. ventilation unit Vitovent 300-F  <b>Note</b> <i>If further Viessmann appliances are to be connected to Modbus 1, plug in the Modbus distributor (accessories): See "Modbus distributor" installation instructions.</i>	—
X24	Connection, LON communication module (accessories): See installation instructions "LON communication module".	—
X31	Slot for coding card	—

**Note**

**Flow temperature sensor for heating circuit with mixer M2/HC2:** The flow temperature sensor for one heating circuit with mixer M2/HC2 is connected to the mixer extension kit (accessories).

**Swimming pool heating**

**Note**

- Swimming pool heating is controlled via EA1 extension with KM-BUS.
- Make connections to EA1 extension **only** in accordance with Fig. 15.
- A filter circuit pump **cannot** be controlled via the heat pump control unit.

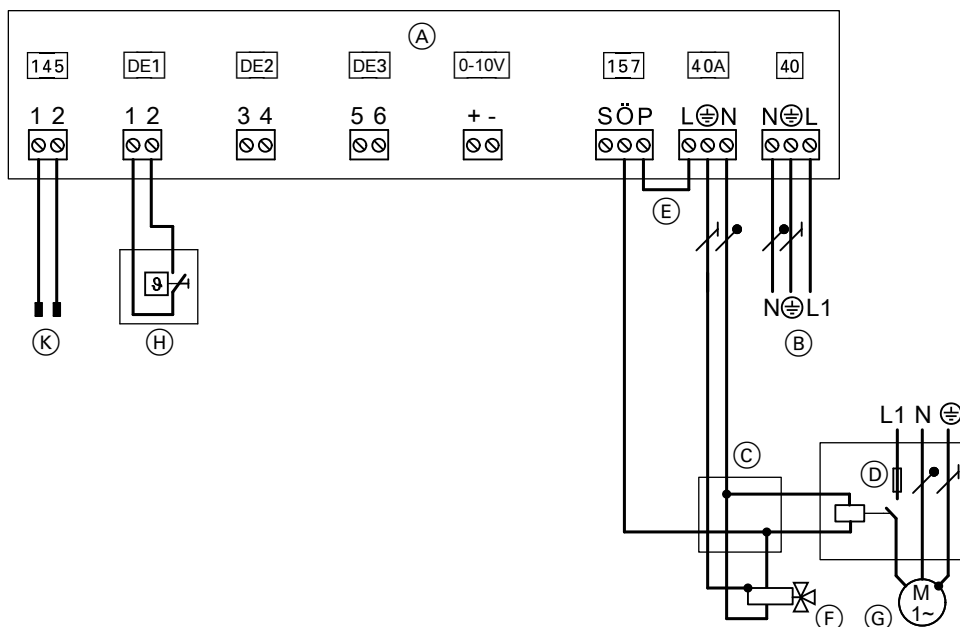



Fig. 15

- (A) EA1 extension
- (B) Power supply 1/N/PE 230 V/50 Hz
- (C) Junction box (on site)
- (D) Fuses and contactor for circulation pump for swimming pool heating (accessories)
- (E) Jumper
- (F) 3-way diverter valve for "Swimming pool" (zero volt: heating the heating water buffer cylinder)
- (G) Circulation pump for swimming pool heating (accessories)
- (H) Temperature controller for swimming pool temperature control (floating contact: 230 V~, 0.1 A, accessories)
- (K) KM-BUS connection to the controller and sensor PCB

## Power supply

### Isolators for non-earthed conductors

- Install an isolator in the power cable to provide omnipolar separation from the mains for all active conductors, corresponding to overvoltage category III (3 mm) for full isolation. This isolator must be fitted in the permanent electrical installation in line with installation requirements, e.g. mains isolator or upstream circuit breaker.
- We additionally recommend installing an AC/DC-sensitive RCD (RCD class B ) for DC (fault) currents that can occur with energy efficient equipment.
- Residual current devices to DIN VDE 0100-530 selecting and sizing.



#### Danger

Incorrect electrical installations can lead to serious injury from electrical current and result in appliance damage.

Connect the power supply and implement all safety measures (e.g. RCD circuit) in accordance with the following regulations:

- IEC 60364-4-41
- VDE regulations
- Technical connection requirements specified by the local power supply utility



#### Danger

The absence of system component earthing can lead to serious injury from electrical current and component damage in the event of an electrical fault.

The appliance and pipework must be connected to the equipotential bonding of the building.



#### Danger

Incorrect core assignment can lead to serious injury from electrical current and result in appliance damage.

Never interchange cores "L" and "N".

- Consult your power supply utility, which may offer different supply tariffs for the main power circuits. Observe the technical connection requirements of the power supply utility.
- If the compressor and/or instantaneous heating water heater (if installed) are operated at an economy tariff (power-OFF), provide an additional cable (e.g. 3 x 1.5 mm<sup>2</sup>) for the power-OFF signal from the distribution board (meter box) to the heat pump control unit.

**or**

Combine the cable for the power-OFF signal and for the heat pump control unit power supply (3 x 1.5 mm<sup>2</sup>) in a single 5-core cable.

- The assignment of the power-OFF (for compressor and/or instantaneous heating water heater) occurs via the type of connection and via parameter settings in the heat pump control unit.  
In Germany, the power supply can be cut for a maximum of 3 x 2 hours per day (24 h).
- The **heat pump control unit/PCB** must be supplied **without** power-OFF. Tariffs subject to possible shut-down must not be used here.
- When using power generated on site (use of power generated by the PV system to meet own requirements):  
During the power-OFF period, it is **not** possible to operate the compressor with power generated on site.
- Protect the power cable for the heat pump control unit with an MCB/fuse of max. 16 A.
- For accessories and external components that will not be connected to the heat pump control unit, provide the power supply via the same MCB/fuse, or at least on the same phase, as the heat pump control unit.  
Connection to the same MCB/fuse provides additional safety when the power is switched off. Observe the power consumption of the connected consumers.
- If the power supply to the appliance is connected with a flexible cable, ensure that the live conductors are pulled taut before the earth conductor in the event of strain relief failure. The length of the earth conductor wire will depend on the design.

### Information regarding the compressor power supply

- **! Please note**  
Incorrect phase sequence can cause damage to the appliance.  
Make the compressor power supply **only** in the phase sequence specified (see terminals) with a **clockwise** rotating field.
- Characteristics of the compressor power MCBs: See "Specification".

**Power supply (cont.)**

**Heat pump control unit power supply 230 V~**

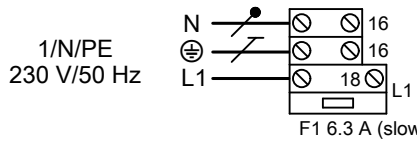


Fig. 16

**Note**

This supply must **never** be blocked.

- Max. fuse rating 16 A
- Standard tariff: No economy tariff with power-OFF possible for the heat pump control unit
- Recommended power cable:  
3 x 1.5 mm<sup>2</sup>
- Recommended power cable with power-OFF for compressor/instantaneous heating water heater:  
5 x 1.5 mm<sup>2</sup>

**Compressor power supply 230 V~: Type BWC-M 201.A**

- Economy tariff and power-OFF can be used
- No parameters need to be set when using economy tariff with power-OFF. The compressor is shut down during the power-OFF time.



Fig. 17

Vitocal 200-G	Type	Recommended power cable		Fuse protection	
		Cable	Max. cable length		
230 V appliances	BWC-M	201.A06	3 x 4.0 mm <sup>2</sup>	40 m	B20A, 1-pole
		201.A08	3 x 4.0 mm <sup>2</sup>	32 m	B20A, 1-pole
		201.A10	3 x 4.0 mm <sup>2</sup>	26 m	B25A, 1-pole

**Compressor power supply 400 V~: Type BWC 201.A**

- Economy tariff and power-OFF can be used
- No parameters need to be set when using economy tariff with power-OFF. The compressor is shut down during the power-OFF time.

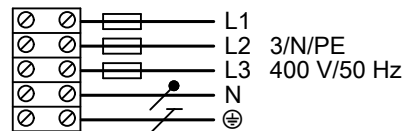


Fig. 18

- ! Please note**  
 Incorrect phase sequence can cause damage to the appliance.  
 Make the compressor power supply **only** in the phase sequence specified (see terminals) with a **clockwise** rotating field.

Vitocal 200-G	Type	Recommended power cable		Fuse protection	
		Cable	Max. cable length		
400 V appliances	BWC	201.A06	5 x 2.5 mm <sup>2</sup>	50 m	C16A, 3-pole
		201.A08	5 x 2.5 mm <sup>2</sup>	50 m	B16A, 3-pole
		201.A10	5 x 2.5 mm <sup>2</sup>	50 m	B16A, 3-pole
		201.A13	5 x 2.5 mm <sup>2</sup>	50 m	B16A, 3-pole
		201.A17	5 x 2.5 mm <sup>2</sup>	50 m	B20A, 3-pole

**Power supply with power-OFF: Without on-site load disconnect**

The power-OFF signal is connected directly to the heat pump control unit. When power-OFF is enabled, the compressor is "forced" off.

Parameter "**Output for instant. heating water heater at power-OFF 790A**" determines whether and at what stage the instantaneous heating water heater (accessories) stays operational.

**Note**

Observe the technical connection requirements of the relevant power supply utility.

**400 V appliances: Type BWC 201.A**

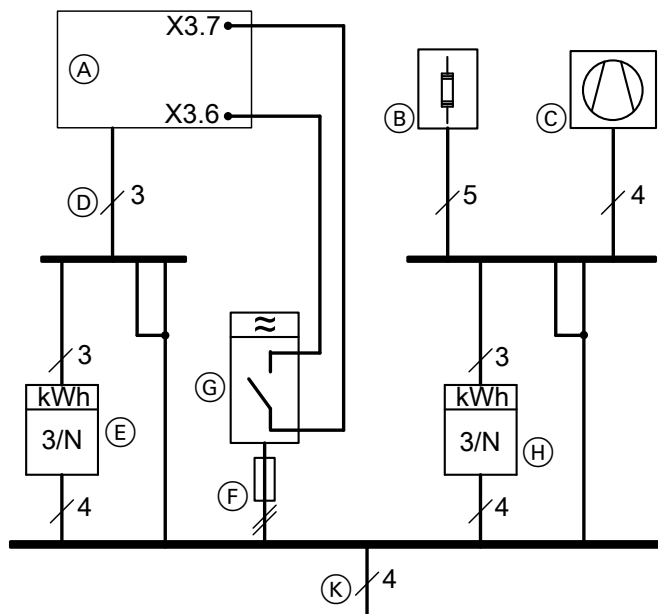


Fig. 19 Diagram excluding fuses and RCDs

- (A) Heat pump control unit
- (B) Instantaneous heating water heater (accessories)
- (C) Compressor
- (D) Heat pump control unit power supply
- (E) Premium tariff meter
- (F) Ripple control receiver backup fuse
- (G) Ripple control receiver (contact open: Power-OFF enabled) TNC system feed
- (H) Economy tariff meter
- (K) Feed: TNC system

**230 V appliances: Type BWC-M 201.A**

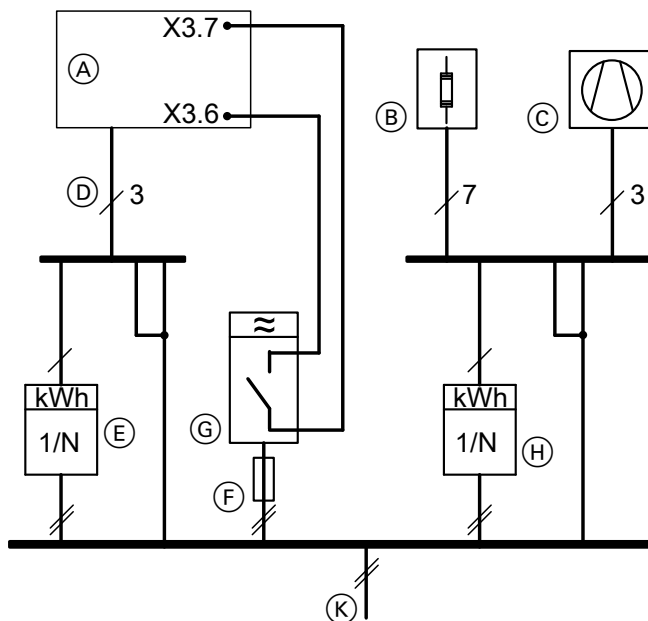


Fig. 20 Diagram excluding fuses and RCDs

- (A) Heat pump control unit
- (B) Instantaneous heating water heater (accessories)
- (C) Compressor
- (D) Heat pump control unit power supply
- (E) Premium tariff meter
- (F) Ripple control receiver backup fuse
- (G) Ripple control receiver (contact open: Power-OFF enabled) TNC system feed
- (H) Economy tariff meter
- (K) Feed: TNC system

**Power supply with power-OFF: With on-site load disconnect**

The power-OFF signal is connected to the on-site contactor of the economy tariff power supply and to the heat pump control unit. When power-OFF is enabled, the compressor **and** the instantaneous heating water heater (accessories) are "forced" off.

**Note**

Observe the technical connection requirements of the relevant power supply utility.

**Power supply (cont.)**

**400 V appliances: Type BWC 201.A**

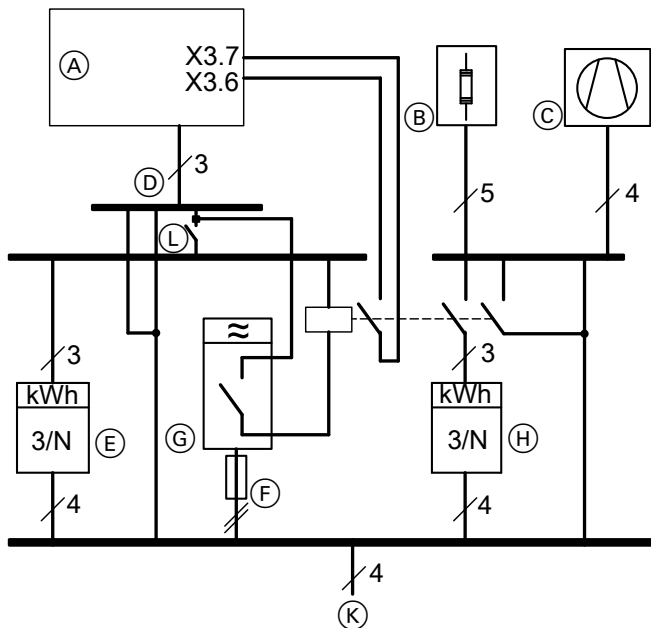


Fig. 21 Diagram excluding fuses and RCDs

- (A) Heat pump control unit
- (B) Instantaneous heating water heater (accessories)
- (C) Compressor
- (D) Heat pump control unit power supply
- (E) Premium tariff meter
- (F) Backup fuse, ripple control receiver
- (G) Ripple control receiver (contact open: Power-OFF enabled) with backup fuse
- (H) Economy tariff meter
- (K) Feed: TNC system
- (L) Mains isolator

**230 V appliances: Type BWC-M 201.A**

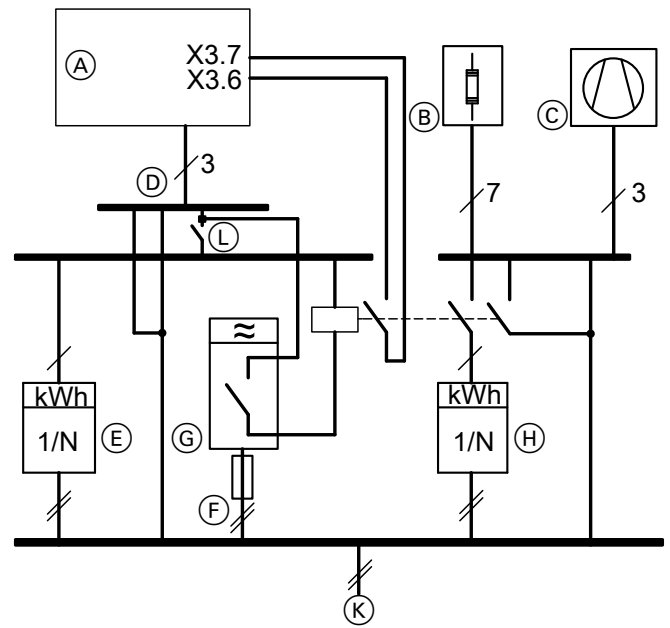


Fig. 22 Diagram excluding fuses and RCDs

- (A) Heat pump control unit
- (B) Instantaneous heating water heater (accessories)
- (C) Compressor
- (D) Heat pump control unit power supply
- (E) Premium tariff meter
- (F) Backup fuse, ripple control receiver
- (G) Ripple control receiver (contact open: Power-OFF enabled) with backup fuse
- (H) Economy tariff meter
- (K) Feed: TNC system
- (L) Mains isolator

**Mains power supply in conjunction with on-site power consumption**

Without power-OFF

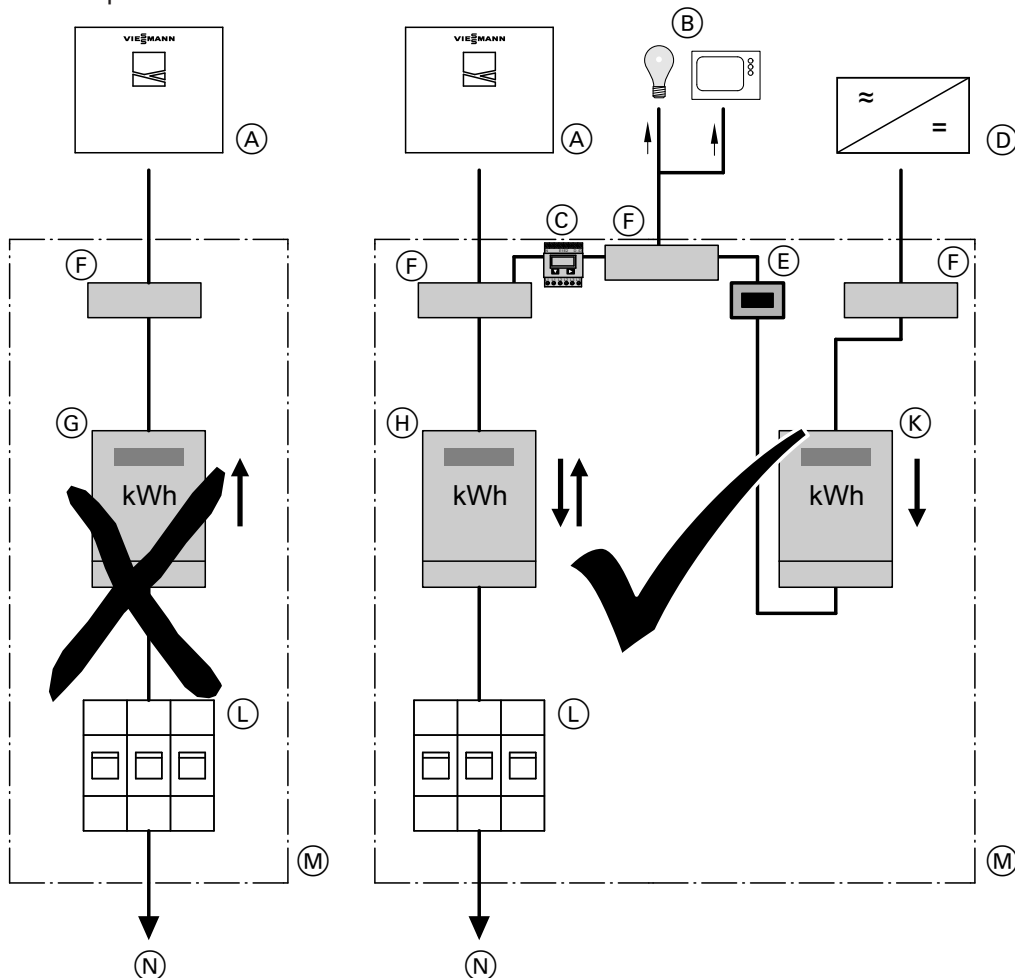


Fig. 23

- (A) Heat pump
- (B) Additional consumers (of power generated on site) in the household
- (C) Electricity meter
- (D) Inverter
- (E) Isolator for the PV system
- (F) Terminal
- (G) Double-tariff meter (for special tariff for heat pump) **Not permissible in conjunction with PV systems for on-site power consumption**
- (H) Bi-directional meter (for PV systems to consume power on site):  
Energy taken from power supply utility and energy fed into power supply utility
- (K) Meter with reverse block:  
For energy generated by PV system
- (L) Isolator for the domestic power supply connection (distribution panel)
- (M) Distribution panel
- (N) Domestic distribution box

**Smart Grid**

The Smart Grid functions are switched via the two PSU floating contacts.

- Connection options for the two floating contacts:
- To EA1 extension as shown in Fig. 24
  - To the heat pump control unit as shown in Fig. 25

**Power supply (cont.)**

**Connection to EA1 extension**

Condition: "Enable Smart Grid 7E80" must be at "1".

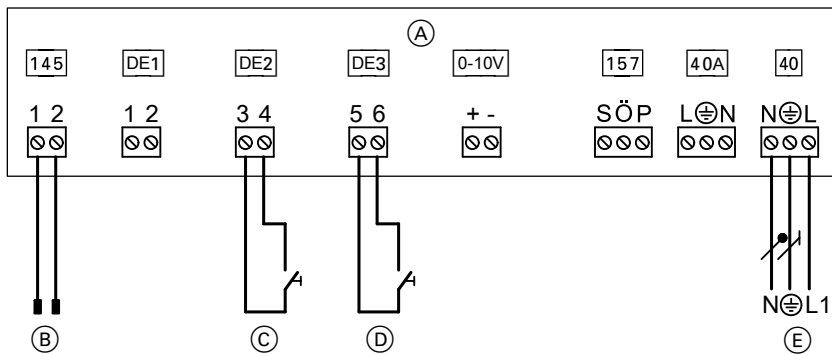


Fig. 24

- (A) EA1 extension
- (B) Connection to controller and sensor PCB
- (C) Floating N/O contact 1: The agreement of the power supply utility may be required

- (D) Floating N/O contact 2: The agreement of the power supply utility may be required
- (E) Power supply 1/N/PE 230 V/50 Hz

**Note**

- If Smart Grid is enabled ("Enable Smart Grid 7E80" set to "1"), both inputs DE2 and DE3 **cannot** be used for signals "External demand" or "External blocking".
- The power-OFF function is integral to Smart Grid. Therefore do **not** connect the power-OFF signal to terminals X3.6 and X3.7. Do **not** remove jumper.

**Note**

- If Smart Grid is connected to the two digital inputs on main PCB ("Enable Smart Grid 7E80" set to "4"), the external hook-up for the heating/cooling circuits must not be switched on ("Remote control 2003" set to "2"). Otherwise the Smart Grid will not be active.
- The power-OFF function is integral to Smart Grid. In this case, therefore, the power-OFF signal must **not** be connected to connections X3.6 and X3.7.

**Connection to heat pump control unit**

Condition: "Enable Smart Grid 7E80" must be at "4".

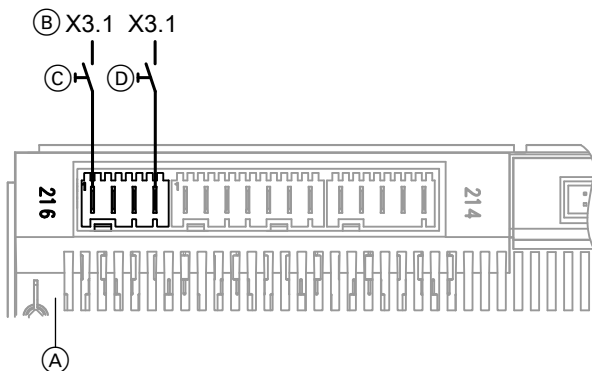


Fig. 25

- (A) Main PCB
- (B) Connection X3.1 (L') on the luster terminals
- (C) Floating contact 1: The agreement of the power supply utility may be required
- (D) Floating contact 2: The agreement of the power supply utility may be required

**Phase monitor (if installed)**

- The phase monitor monitors the compressor power supply.
- If the internal tolerance range is exceeded or undershot, the phase monitor interrupts the safety chain via a floating contact. The compressor switches off.
- The phase monitor automatically re-enables the compressor power supply if the values return to within the specified tolerance range. **No** reset required.

**Note**

*If the phase monitor has responded, check the power supply and remove the cause of the fault.*

**Version 1**

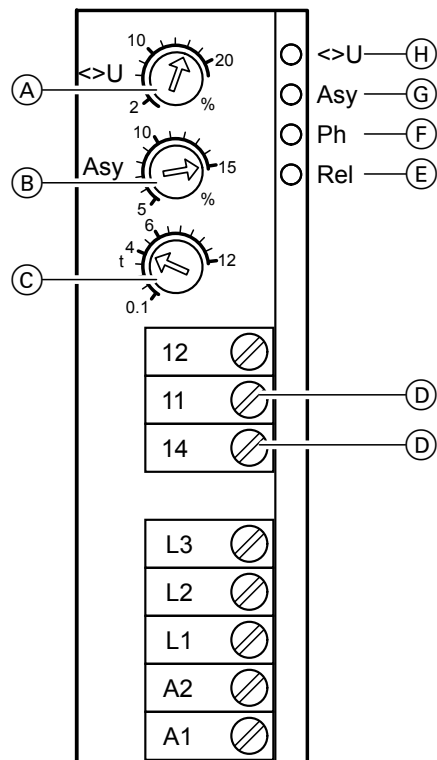


Fig. 26

- (A) Over/undervoltage in %
- (B) Phase asymmetry in %
- (C) Switching delay in s
- (D) Contact used in safety chain (N/O contact)
- (E) ON/OFF indicator ("Rel")
- (F) Fault indicator, phase failure/phase sequence "Ph"
- (G) Fault indicator, asymmetry "Asy"
- (H) Fault indicator, over/undervoltage " $\langle \rangle U$ "

LEDs explained in Fig. 26

- "Rel" illuminates green: All voltages and the rotating field (clockwise) are OK.
- "Ph" illuminates red: Relay has responded. Rotating field is anti-clockwise.
- All LEDs off: One or more phases have dropped out.
- " $\langle \rangle U$ " illuminates red: Incorrect voltage on one or more phases
- "Asy" illuminates red: Asymmetry on one or more phases

**Version 2**

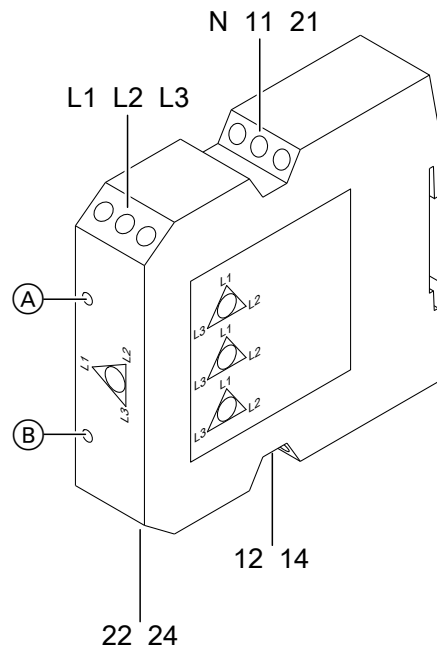


Fig. 27

LEDs explained in Fig. 27

- (A) Voltage "U":
  - Illuminates green if voltage is present.
- (B) Relay "R":
  - Illuminates yellow if the phase sequence is correct.
  - Does not illuminate if the phase sequence is incorrect.



**Power supply (cont.)**

**Version 3**

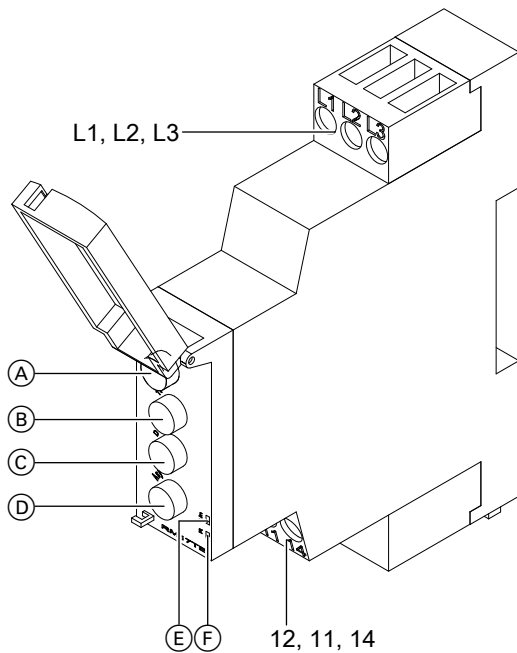


Fig. 28

- (A) Voltage range
- (B) Delay in s "Tt"
- (C) Over/undervoltage in % "ΔU"
- (D) Phase asymmetry in % "Asy"

LEDs explained in Fig. 28

- (E) Voltage "Un":
  - Illuminates green if voltage is present.
- (F) Relay "R":
  - Illuminates yellow if the phase sequence is correct.
  - Does not illuminate if the phase sequence is incorrect.
  - Flashes yellow during delay "Tt".

**Make connections at terminals X3.8/X3.9**

**After** connecting the power supply, one of the following components **must** be connected at terminals X3.8 and X3.9:

- Primary circuit pressure switch and/or frost stat  
or
- jumper supplied

**Closing the heat pump**

- !** **Please note**  
Leaking hydraulic connections lead to appliance damage.
  - Check for leaks in the internal and on-site hydraulic connections.
  - In the event of leaks, switch off the appliance immediately. Drain off liquid via the drain valve. Check the seating of seal rings. **Always** replace displaced seal rings.

- !** **Please note**  
If a casing door is not securely closed this can lead to damage from condensation, vibrations and excessive noise. Seal the casing door so it is soundproof and diffusion-proof.

- ⚠** **Danger**  
The absence of system component earthing can lead to serious injury from electrical current and component damage in the event of an electrical fault.  
**Always** remake all earth connections. The appliance and pipework must be connected to the equipotential bonding of the building.

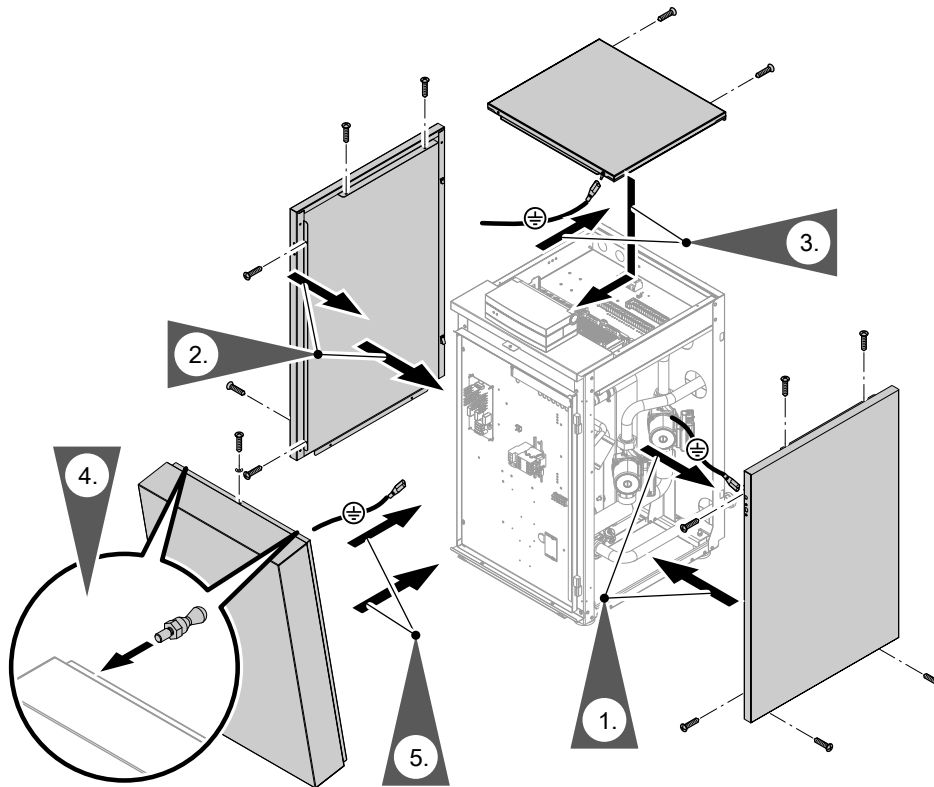


Fig. 29

### Checking the diaphragm grommets

- !** **Please note**
- If the casing is not securely closed, this can lead to damage from condensation, vibrations and excessive noise.
    - Seal the appliance so it is soundproof and diffusion-proof.
    - Ensure the diaphragm grommets at the hose outlets are seated correctly. Seal hose outlets with sealing tape if necessary.

## Checking the diaphragm grommets (cont.)

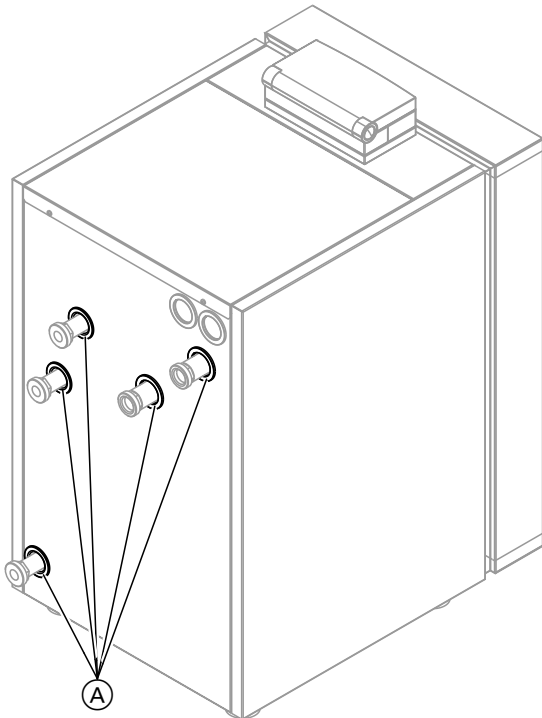


Fig. 30

Ⓐ Diaphragm grommets





## Opening the heat pump



### Danger

Contact with live components can lead to serious injury from electric current.

- **Never touch** the wiring chambers (for heat pump control unit and power supplies, see page 17).
- When working on the appliance, isolate the system from the power supply, e.g. at a separate MCB/fuse or a mains isolator. Check that it is no longer live. Safeguard against reconnection.



### Danger

The absence of component earthing can result in serious injury from electrical current and in component damage in the event of an electrical fault.

All earth connectors **must** be reconnected.



### Please note

Commissioning immediately after installation can lead to appliance damage.

Wait **at least 30 min** between installing and commissioning the appliance.

1. Remove front panel in reverse order: See page 34.
2. When work is complete, close the heat pump: See page 34.



### Commissioning the appliance

"Vitotronic 200" operating instructions



## Compiling reports

Enter all readings taken during commissioning (described below) in the reports on page 82 onwards.



## Checking the refrigerant circuit for leaks



### Danger

The refrigerant is a non-poisonous gas that displaces air. Unregulated escape of refrigerant in enclosed spaces can lead to breathing difficulties and suffocation.

- Ensure adequate ventilation in enclosed spaces.
- Always observe regulations and guidelines on handling this type of refrigerant.



### Danger

Direct contact with refrigerant can be harmful to skin.

Wear safety goggles and protective gloves when working on the refrigerant circuit.



### Please note

Refrigerant can escape when working on the refrigerant circuit.

Work on the refrigerant circuit must **only** be carried out by a certified contractor (in accordance with EC 842/2006 and 303/2008).

Check the floor area, valves and all visible solder joints for traces of oil.

### Note

*Traces of oil indicate a leak in the refrigerant circuit. Have your heat pump checked over by a refrigeration engineer.*



## Filling and venting the primary side

**! Please note**  
 Commissioning when the primary circuit is empty causes appliance damage. Charge and vent the primary circuit before connecting the power supply.

1. Check the pre-charge pressure of the expansion vessel.
2. Charge the primary circuit with Viessmann heat transfer medium and vent.

### Note

Ensure frost protection down to  $-19\text{ }^{\circ}\text{C}$ .  
 Viessmann heat transfer medium is a ready-mixed ethylene glycol-based medium. It contains inhibitors for corrosion protection. The heat transfer medium can be used at temperatures down to  $-19\text{ }^{\circ}\text{C}$ .

3. Check the connections for possible leaks. Replace faulty or displaced gaskets.



## Filling and venting the secondary side

Unsuitable fill and top-up water increases the level of deposits and corrosion. This can lead to system damage.

Observe VDI 2035 regarding quality and amount of heating water, including fill and top-up water.

**! Please note**  
 Escaping liquids can lead to electrical defects. Protect electrical components of the heat pump from escaping liquids.

### Note

**Before** filling the system, observe VDI 2035 sheet 1.

1. Open any on-site non-return valves if installed.
2. Check the pre-charge pressure of the expansion vessel.

- Flush the heating system thoroughly before filling.
- Only fill with water of potable quality.
- If the fill and top-up water has a water hardness greater than  $16.8\text{ }^{\circ}\text{dH}$  ( $3.0\text{ mol/m}^3$ ), it must be softened, e.g. using the small softening system for heating water: See the Vitoset pricelist.

3. Fill (flush) and vent the secondary circuit.

### Note

Type BWC is supplied with integral non-return valves. The secondary circuit only permits one direction of flow.

**! Please note**  
 Leaking hydraulic connections lead to appliance damage.

- Check the internal and on-site hydraulic connections for leaks.
- In the event of leaks, switch OFF the appliance immediately. Drain off liquid via the drain valve. Check the seating of seal rings. **Always** replace displaced seal rings.

4. Check system pressure. Top up with water if required.
  - Minimum system pressure:  $0.8\text{ bar}$  ( $80\text{ kPa}$ )
  - Permiss. operating pressure:  $2.5\text{ bar}$  ( $250\text{ kPa}$ )



## Checking the expansion vessels and primary circuit/heating circuit pressure



**Observe engineering information.**  
Technical guides for heat pumps



## Checking the electrical connections for firm seating



## Commissioning the system

Commissioning (configuration, parameter settings and function check) can be carried out with or without the commissioning wizard (see following chapter and service instructions for the heat pump control unit).

### Note

*The type and extent of the parameters depend on the appliance type, on the selected system scheme and the accessories employed.*

## Commissioning with the commissioning assistant

The commissioning assistant automatically guides you through all the menus where settings have to be made. For this, "Coding level 1" is automatically active.



### Please note

Incorrect operation at "Coding level 1" may result in damage to the appliance and the heating system.


Observe the service instructions for the "Vitotronic 200", otherwise the appliance warranty will be void.

Switch ON the ON/OFF switch on the control unit.

- The prompt "**Start commissioning?**" appears **automatically** on commissioning.

### Note

*The commissioning assistant can also be started manually:*

*To do this, press and hold  when switching on the control unit (progress bar visible).*

- When the unit is first commissioned, the display is in German.

Sprache	
Deutsch	DE <input checked="" type="checkbox"/>
Bulgarski	BG <input type="checkbox"/>
Cesky	CZ <input type="checkbox"/>
Dansk	DK <input type="checkbox"/>
Wählen mit 	

Fig. 31

- Manually switching some appliance components during commissioning enables the control unit to display messages. These messages are not appliance faults.

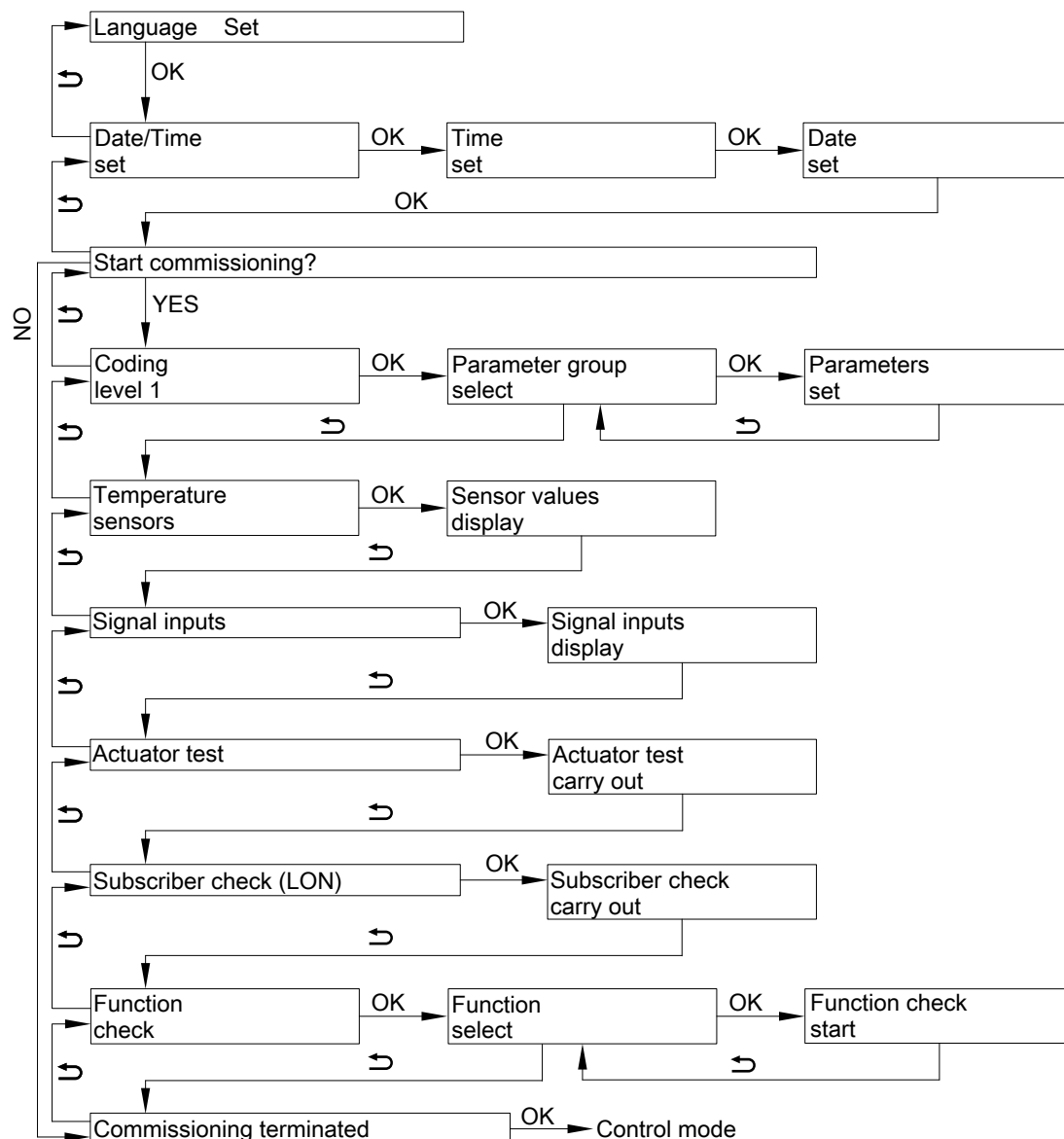


Fig. 32

## Commissioning without the commissioning assistant

### Activating the service menu

The service menu can be activated from any other menu.  
Press and hold **OK** + **≡** simultaneously for approx. 4 s.

### Deactivating the service menu

The service menu remains active until it is disabled with **"Terminate service?"**, or if no key is pressed for 30 min.

### Setting parameters using "System scheme 7000" as an example

To set a parameter, first select the parameter group and then the parameter.

### Service menu:

1. Press and hold **OK** + **≡** simultaneously for approx. 4 s.
2. Select **"Coding level 1"**.
3. Select parameter group: **"System definition"**
4. Select parameter: **"System scheme 7000"**
5. Set a system scheme: e.g. **"6"**

Alternatively, if the service menu was already active:

### Extended menu:

1. **≡**





## Commissioning the system (cont.)

2. "Service"
3. Select "Coding level 1".
4. Select parameter group: "System definition"
5. Select parameter: "System scheme 7000"
6. Set a system scheme: e.g. "6"

### Required parameters for components connected on site

Parameters may need to be set subject to the appliance type, the selected system scheme and the accessories used.

Overview of required parameters: See the following chapter.



**Detailed explanations of parameters**  
"Vitotronic 200" service instructions

### System scheme

#### Overview of all possible system schemes

Component	System scheme							
	0	1	2	3	4	5	6	11
<b>Heating circuit</b>								
A1/HC1	—	X	X	—	—	X	X	—
M2/HC2	—	—	—	X	X	X	X	—
<b>DHW cylinders</b>	X	—	X	—	X	—	X	—
<b>Immersion heater:</b> See page 45.	○	—	○	—	○	—	○	—
<b>Heating water buffer cylinders</b>	—	○	○	X	X	X	X	—
<b>External heat generator:</b> See page 44.	○	○ <sup>*1</sup>	○ <sup>*1</sup>	○	○	○	○	—
<b>Instantaneous heating water heater:</b> See page 44.	○	○	○	○	○	○	○	○
<b>Swimming pool:</b> See page 45.	—	○	○	○	○	○	○	—
<b>Solar thermal system:</b> See page 44.	○	—	○	—	○	—	○	—
<b>Cooling:</b> See page 44.								
A1/HC1	—	○	○	—	—	○	○	—
M2/HC2	—	—	—	○	○	○	○	—
Separate cooling circuit SKK	○	○	○	○	○	○	○	—
<b>Vitofriocal ice store system:</b> See page 45.	○	○	○	○	○	○	○	○
<b>Energy meter, 3-phase:</b> See page 48.	○	○	○	○	○	○	○	—
<b>Ventilation unit:</b> See page 45.	○	○	○	○	○	○	○	—

- X Component is selected.  
○ Component may be added.

For detailed information on system examples: See [www.viessmann-schemes.com](http://www.viessmann-schemes.com).

<sup>\*1</sup> Only in conjunction with a heating water buffer cylinder.



## Pumps and other components

## Heating circuit pump

Parameter	Setting
<b>"System definition" →</b>	
"System scheme 7000"	<ul style="list-style-type: none"> <li>▪ With heating circuit A1/HC1 without mixer</li> <li><b>Or</b></li> <li>▪ With heating circuit M2/HC2 with mixer</li> </ul>

## DHW circulation pump

Parameter	Setting
<b>Extended menu →</b>	
"Time program DHW circulation"	Set a time program.

## Extension kit, mixer for heating circuit M2/HC2

Parameter	Setting
<b>"System definition" →</b>	
"System scheme 7000"	With heating circuit M2/HC2  <b>Note</b> <i>Set rotary switch S1 in the extension kit to "2". See "Mixer extension kit" installation instructions.</i>

## Circulation pump for cylinder heating

Parameter	Setting
<b>"System definition" →</b>	
"System scheme 7000"	With DHW heating

## Circulation pump for DHW reheating

Parameter	Setting
<b>"External heat source" →</b>	
"Enable external heat source 7B00"	"1"
"Enable external heat source for DHW heating 7B0D"	"1"

## Remote control for heating/cooling circuit or Vitocomfort 200

Parameter	Setting
<b>"Heating circuit 1"/"Heating circuit 2"/"Heating circuit 3" →</b>	
"Remote control 2003" Or "Remote control 3003"	"1"  <b>Note</b> <i>To assign a heating circuit, set the code at the remote control: See "Vitolrol" installation instructions.</i>

## Vitocom 100, type GSM2

Parameter	Setting
<b>"System definition" →</b>	
"Vitocom 100 7017"	"1"



## Commissioning the system (cont.)

### External extension

Parameter	Setting
<b>"System definition" →</b>	
"External extension 7010"	"1" EA1 extension "2" AM1 extension "3" EA1 and AM1 extensions  <b>Note</b> <i>For parameters for external functions, see the following table.</i>

### Parameters for external functions

#### External demand

Parameter	Setting
If applicable <b>"Internal hydraulics" →</b>	
"Flow temperature for external demand 730C"	Set flow temperature for external demand

#### External starting of the compressor; mixer in control mode or OPEN

Parameter	Setting
<b>"System definition" →</b>	
"Effect of external demand on heat pump/heating circuits 7014"	"0" to "7" (Observe parameter "Flow temperature for external demand 730C")

#### External changeover of the operating status of various system components

Parameter	Setting
<b>"System definition" →</b>	
"System components for external changeover 7011"	"0" to "127"
"Operating status for external changeover 7012"	"0" to "3"
"Duration of external changeover 7013"	"0" to "12"

#### External blocking of compressor and pumps

Parameter	Setting
<b>"System definition" →</b>	
"Effect of external blocking on pumps/compressor 701A"	"0" to "31"

#### External blocking of the compressor; mixer in control mode or CLOSED

Parameter	Setting
<b>"System definition" →</b>	
"Effect of ext. blocking on heat pump/heating circuits 7015"	"0" to "8"
"Effect of external blocking on pumps/compressor 701A"	"0" to "31"

#### External hook-up for heating/cooling circuits

Parameter	Setting
<b>"Heating circuit 1"/"Heating circuit 2"/"Heating circuit 3" →</b>	
"Remote control 2003" Or "Remote control 3003"	"2"



## Cooling function parameters

Parameter	Setting
<b>"Cooling" →</b>	
"Cooling function 7100"	"1" Natural cooling with NC-Box <b>without</b> mixer (accessories) "2" Natural cooling with NC-Box <b>with</b> mixer (accessories)
"Cooling circuit 7101"	"1" Heating circuit A1/HC1 "2" Heating circuit M2/HC2 "3" Do not adjust. "4" Separate cooling circuit SKK

## Room temperature sensor for separate cooling circuit

Parameter	Setting
<b>"Cooling" →</b>	
"Ranking room temp sensor separate cooling circuit 7106"	"0" Connection F16 "1" Heating circuit A1/HC1 "2" Heating circuit M2/HC2 "3" Do not adjust. "4" Do not adjust.

## Parameters for solar DHW heating

Parameters in conjunction with solar control module type SM1	Setting
<b>"Solar" →</b>	
"Type solar control unit 7A00"	"3"
Parameter C0xx	See installation and service instructions for "Solar control module, type SM1".

## Parameters for instantaneous heating water heater

Parameter	Setting
<b>"Electr booster heater" →</b>	
"Enable instantaneous heating water heater 7900"	"1"
"Output for instant. heating water heater at power-OFF 790A"	"1" 3 kW "2" 6 kW "3" 9 kW

## Enable instantaneous heating water heater for DHW heating

Parameter	Setting
<b>"DHW" →</b>	
"Enable electric heaters for DHW heating 6015"	"1"

## Parameters for external heat generators

Parameter	Setting
<b>"External heat source" →</b>	
"Enable external heat source 7B00"	"1"



## Commissioning the system (cont.)

### Enable external heat source for DHW heating

Parameter	Setting
<b>"External heat source" →</b>	
"Enable external heat source for DHW heating 7B0D"	"1"

### Parameters for immersion heater

Parameters	Setting
<b>"DHW" →</b>	
"Enable electric heaters for DHW heating 6015"	"1"
"Enable booster heaters for DHW heating 6014"	"1"

### Parameters for swimming pool water heating

Parameter	Setting
<b>"System definition" →</b>	
"External extension 7010"	"1" or "3"
"Swimming pool 7008"	"1"

### Parameters for ice store system

Parameter	Setting
<b>"System definition" →</b>	
"Select primary source 7030"	"1"
"External extension 7010"	"2"

Parameter	Setting
<b>"Solar" →</b>	
"Type solar control unit 7A00"	"2"

### Possibly set additional parameters.

Parameter	Setting
<b>"System definition" →</b>	
"Start hysteresis solar air absorber 7031"	"0" to "500" ( $\pm$ 0 to 50 K)
"Min. runtime to suppress summer mode 7035"	"0" to "1440" min
"Last calendar week for summer mode 7036"	Calendar week "1" to "53"

### Parameters for ventilation with Vitovent 200-C


Parameter	Setting
<b>"Ventilation" →</b>	
"Vitovent enable 7D00"	"2" Vitovent 200-C



**Further enabling for Vitovent 200-C if necessary**

Parameter	Setting
<b>"Ventilation" →</b>	
"Enable preheater bank electric 7D01"	"0" Defrosting without preheating coil ("Strategy, passive frost protection 7D2C") "1" Frost protection with preheating coil; defrosting via bypass "2" Frost protection with preheating coil; comfort function
"Strategy, passive frost protection 7D2C"	"0" Fans OFF "1" Defrosting via bypass "2" Supply air fan OFF
"Type of heat exchanger 7D2E"	"0" Countercurrent heat exchanger "1" Enthalpy heat exchanger
"Installation position 7D2F"	"0" Ceiling mounting "1" Wall mounting
"Function, external 230 V input, ventilation 7D3A"	"1" External switch (bathroom switch) enabled

**Adjust values for Vitovent 200-C if necessary**

Parameter	Setting
<b>"Ventilation" →</b>	
"Set room temperature 7D08"	"100" to "300" ( $\pm 10$ to 30 °C)
"Flow rate reduced ventilation 7D0A"	Subject to sizing  Ventilation unit service instructions
"Flow rate nominal ventilation 7D0B"	
"Flow rate intensive ventilation 7D0C"	


**Parameters for ventilation with Vitovent 200-W/300-C/300-W**

Parameter	Setting
<b>"Ventilation" →</b>	
"Vitovent enable 7D00"	"3" Vitovent 200-W or Vitovent 300-C or Vitovent 300-W



## Commissioning the system (cont.)

### Adjust values for Vitovent 200-W/300-C/300-W if necessary

Parameter	Setting
<b>"Ventilation" →</b>	
"Set room temperature C108"	Max. 4 K higher or lower than <b>"Standard room temperature 2000"</b> (adjustment value: $1 \pm 0.1$ °C)
"Background ventilation C109"	Subject to sizing
"Reduced ventilation C10A"	 Ventilation unit service instructions
"Standard ventilation C10B"	
"Intensive ventilation C10C"	
"Background ventilation, second fan duct C189" (Vitovent 200-W only)	
"Reduced ventilation, second fan duct C18A" (Vitovent 200-W only)	
"Standard ventilation, second fan duct C18B" (Vitovent 200-W only)	
"Intensive ventilation, second fan duct C18C" (Vitovent 200-W only)	


### Parameters for ventilation with Vitovent 300-F

Parameter	Setting
<b>"Ventilation" →</b>	
"Vitovent enable 7D00"	"1" Vitovent 300-F

### Further enabling for Vitovent 300-F if necessary

Parameter	Setting
<b>"Ventilation" →</b>	
"Enable preheater bank electric 7D01"	"1"
"Enable reheater bank hydraulic 7D02"	"1"
"Enable humidity sensor 7D05"	"1"
"Enable CO2 sensor 7D06"	"1"
"Type of heat exchanger 7D2E"	"0" Countercurrent heat exchanger "1" Enthalpy heat exchanger

### Adjust values for Vitovent 300-F if necessary

Parameter	Setting
<b>"Ventilation" →</b>	
"Set room temperature 7D08"	"100" to "300" ( $\pm 10$ to 30 °C)
"Flow rate reduced ventilation 7D0A"	 Ventilation unit service instructions
"Flow rate nominal ventilation 7D0B"	
"Flow rate intensive ventilation 7D0C"	



## Parameters for utilisation of power generated on site

Parameter	Setting
<b>"Photovoltaics" →</b>	
"Enable own energy consumption PV 7E00"	"1"
"Threshold for electrical power 7E04"	"0" to "300" ( $\hat{=}$ 0 to 30 kW)

## Enable required functions for utilisation of power generated on site

Parameter	Setting
<b>"Photovoltaics" →</b>	
"Enable own energy consumption for set DHW temperature 2 7E10"	"1"
"Enable own energy consumption for DHW heating 7E11"	"1"
"Enable own energy consumption for heating water buffer cyl. 7E12"	"1"
"Enable own energy consumption for heating 7E13"	"1"
"Enable own energy consumption for cooling 7E15"	"1"
"Enable own energy consumption for coolant buffer cylinder 7E16"	"1"

## Specify the temperature differential to the selected set value for the chosen function

Parameter	Setting
<b>"Photovoltaics" →</b>	
"Raise set DHW cylinder temperature PV 7E21"	"0" to "500" ( $\hat{=}$ 0 to 50 K)
"Raise set heating water buffer cylinder temp PV 7E22"	"0" to "400" ( $\hat{=}$ 0 to 40 K)
"Raise set room temperature PV 7E23"	"0" to "100" ( $\hat{=}$ 0 to 10 K)
"Reduce set room temperature PV 7E25"	"0" to "100" ( $\hat{=}$ 0 to 10 K)
"Reduce set coolant buffer cylinder temperature PV 7E26"	"0" to "100" ( $\hat{=}$ 0 to 10 K)

## Parameters for Smart Grid

Parameter	Setting
<b>"Smart Grid" →</b>	
"Enable Smart Grid 7E80"	"1" Connection to EA1 extension "4" Connection to heat pump control unit
"Smart Grid Enable elec heat 7E82"	"1" Stage 1 "2" Stage 2 "3" Stage 3

## Specify the temperature differential to the selected set value for the chosen function

Parameter	Setting
<b>"Smart Grid" →</b>	
"Smart Grid set value increase for DHW heating 7E91"	"0" to "500" ( $\hat{=}$ 0 to 50 K)
"Smart Grid set value increase for htg wtr buff 7E92"	"0" to "400" ( $\hat{=}$ 0 to 40 K)
"Smart Grid set value increase for centr htg 7E93"	"0" to "100" ( $\hat{=}$ 0 to 10 K)
"Smart Grid set value decrease for room t cool 7E95"	"0" to "100" ( $\hat{=}$ 0 to 10 K)





## Closing the heat pump

See page 34.



## Checking the heat pump for noise

Checking the appliance for unusual noises, e.g. operating noise of compressor and pumps. Venting again if required.




## Checking the system function

- Check the function of all system components: See **"Function check"**.
- Call up temperatures at the heat pump control unit.

### "Function check" at the heat pump control unit


#### 1. Service menu:

Press **OK** +  simultaneously and hold for approx. 4 s.

#### 2. "Service functions"

#### 3. "Function check"

4. Start the required function, e.g. **"DHW"**. Only those functions are shown that correspond to the actual system equipment level. During the function check, the system overview is displayed.

5. Terminate function with .



#### Overview of functions

"Vitotronic 200" service instructions



## Instructing the system user

The system installer should hand the operating instructions to the system user and instruct the user in operating the system. This also includes all components added as accessories, such as remote controls.

Equipment and functions of the heating system must be entered in the form in the appendix to the operating instructions.

The system installer should also provide information on the required maintenance.

Overview of wiring chamber

Type BWC 201.A (400 V appliances)

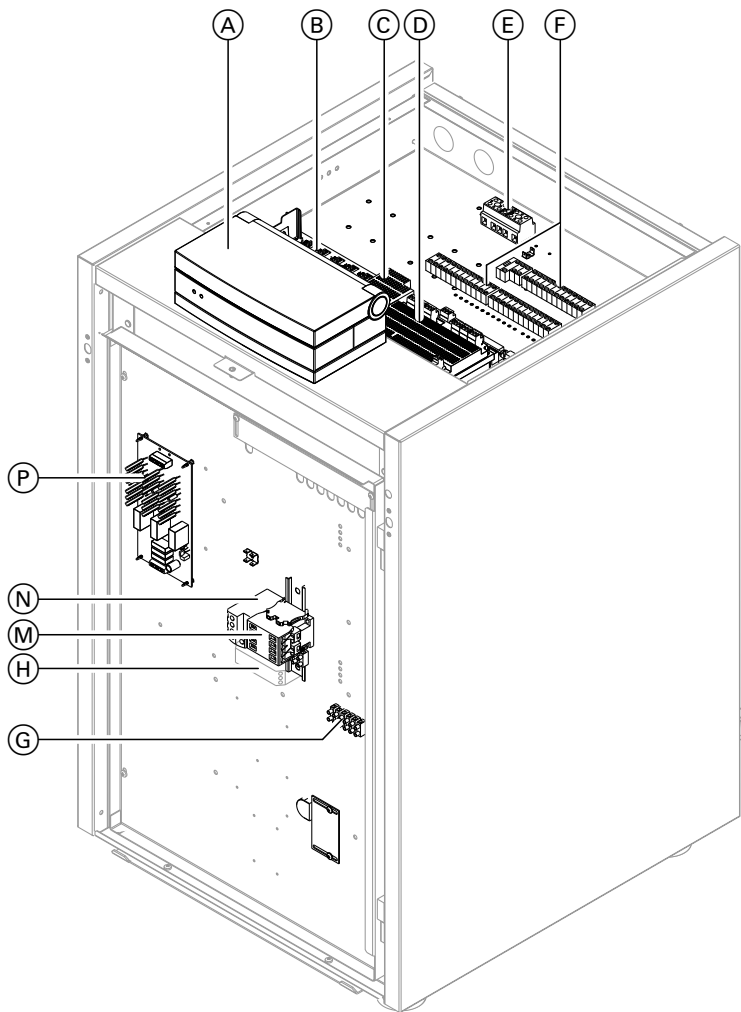


Fig. 33

- |                                 |  |
|---------------------------------|--|
| Ⓐ Programming unit              | Ⓔ Terminals for phase monitor                  |
| Ⓑ Controller and sensor PCB     | Ⓕ Phase monitor (accessory for type BWC 201.B) |
| Ⓒ Main PCB                      | Ⓖ Compressor contactor                         |
| Ⓓ Expansion PCB on the main PCB | Ⓗ Thermal relay                                |
| Ⓔ Compressor mains terminals    | Ⓟ Full wave soft starter                       |
| Ⓕ Luster terminals              |  |

## Overview of wiring chamber (cont.)

### Type BWC-M 201.A (230 V appliances)

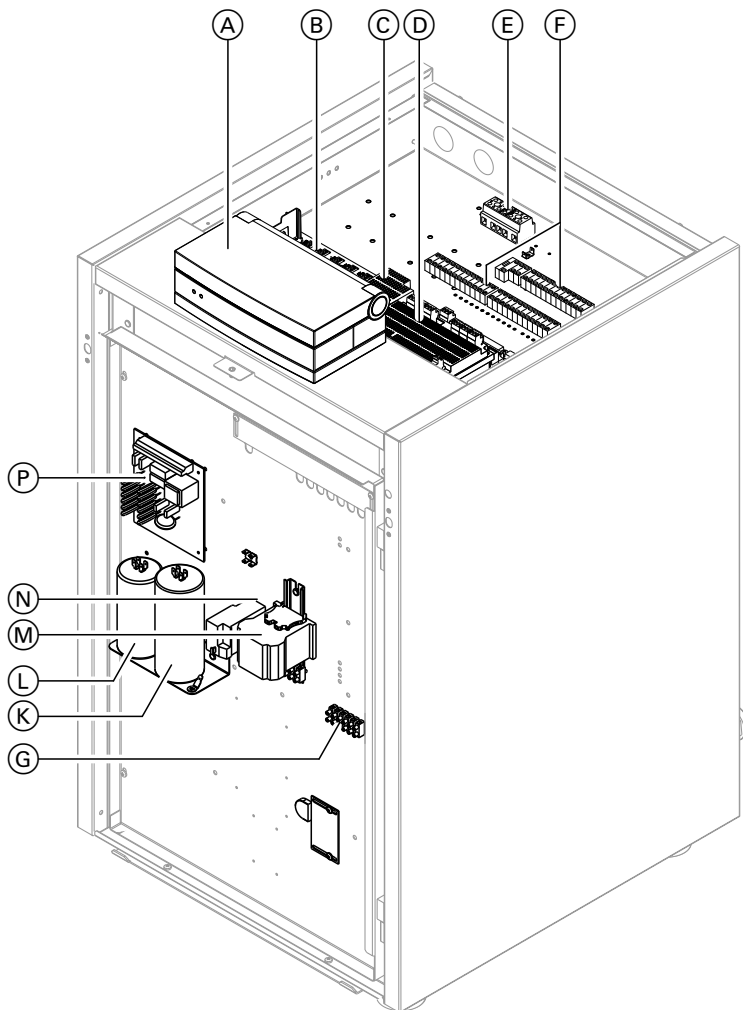


Fig. 34

- |                                   |                                 |
|-----------------------------------|---------------------------------|
| (A) Programming unit              | (G) Terminals for phase monitor |
| (B) Controller and sensor PCB     | (K) Start capacitor             |
| (C) Main PCB                      | (L) Run capacitor               |
| (D) Expansion PCB on the main PCB | (M) Compressor contactor        |
| (E) Compressor mains terminals    | (N) Thermal relay               |
| (F) Luster terminals              | (P) Full wave soft starter      |

Opening the casing door

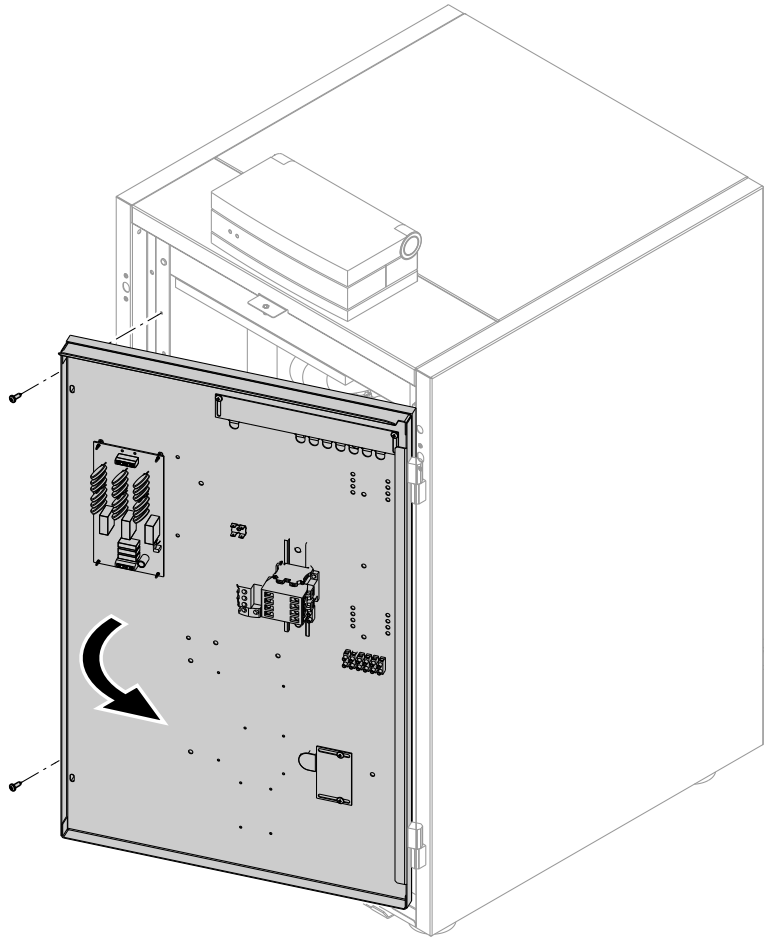


Fig. 35

Overview of internal components

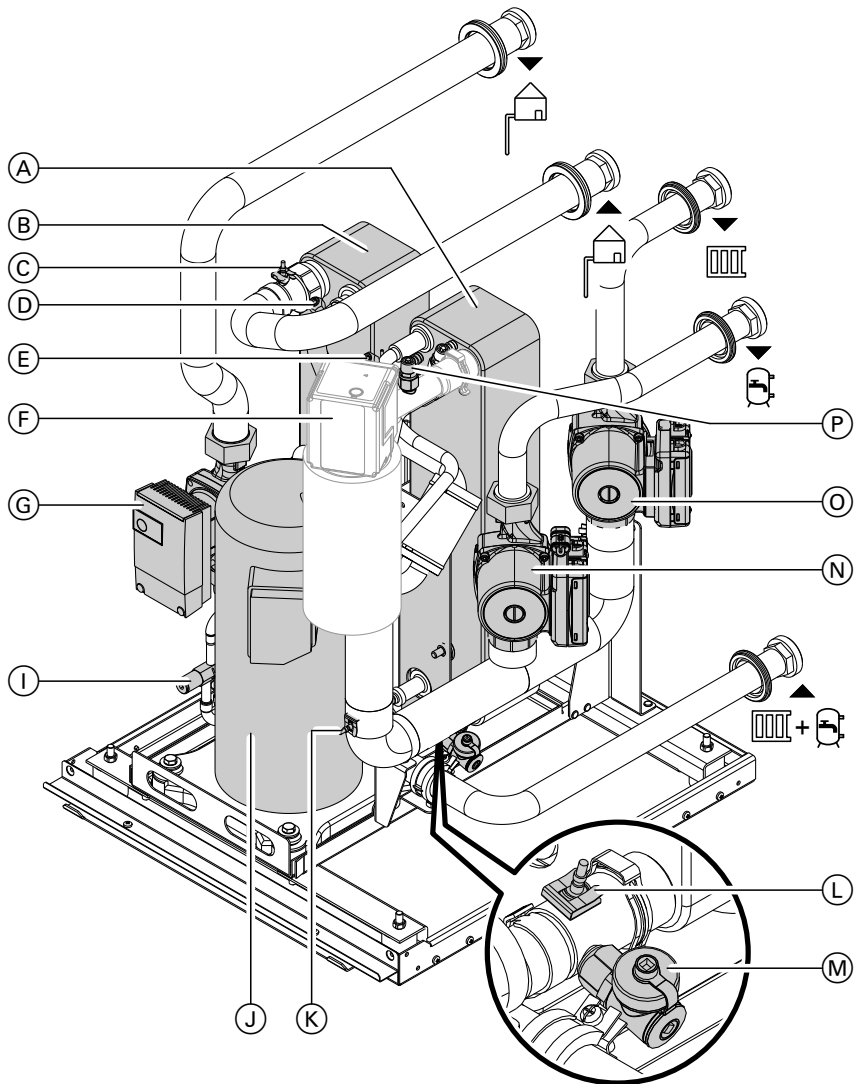


Fig. 36

▼	Heating water flow
▣	
▼	DHW cylinder flow (on the heating water side)
⊗	
▲	Heating water return and DHW cylinder return
▣+⊗	
▼	Primary circuit return (heat pump brine outlet)
⊗	
▲	Primary circuit flow (heat pump brine inlet)
⊗	

- (A) Condenser
- (B) Evaporator

- (C) Flow temperature sensor, primary circuit (heat pump brine inlet)
- (D) Low pressure Schrader valve
- (E) High pressure Schrader valve
- (F) Instantaneous heating water heater (accessories)
- (G) Primary pump
- (I) Thermostatic expansion valve TEV
- (J) Compressor
- (K) Secondary circuit flow temperature sensor
- (L) Return temperature sensor, secondary circuit
- (M) Drain valve, secondary side
- (N) Circulation pump for cylinder heating
- (O) Secondary pump
- (P) Air vent valve, secondary side

**Overview of internal components (cont.)**

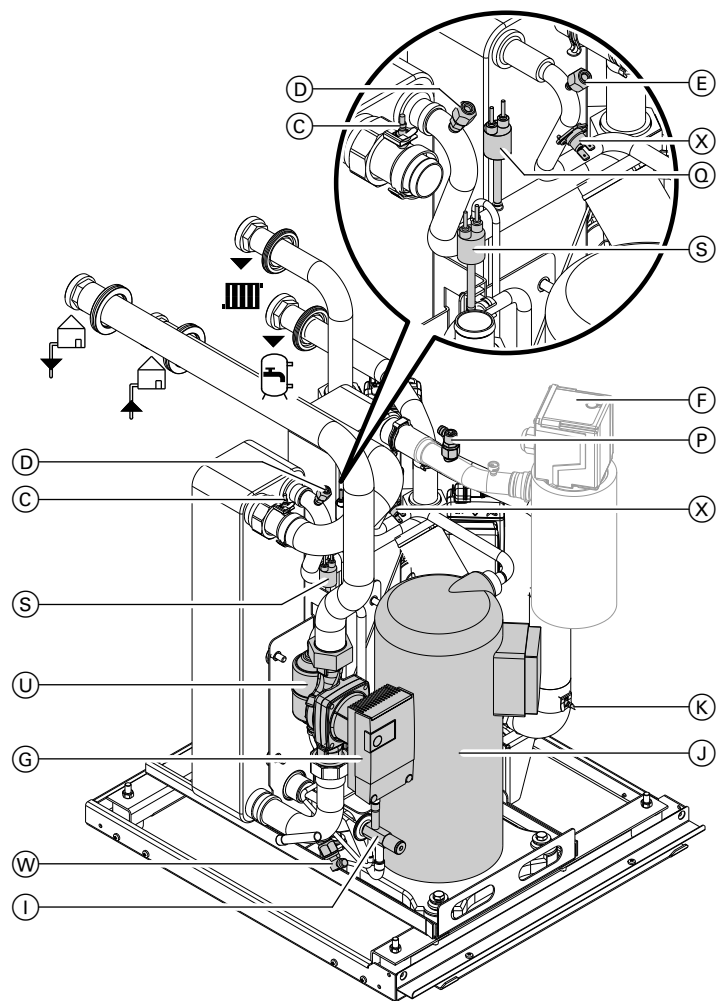


Fig. 37

▼	Heating water flow
▤	DHW cylinder flow (on the heating water side)
▲	Heating water return and DHW cylinder return
▼	Primary circuit return (heat pump brine outlet)
▲	Primary circuit flow (heat pump brine inlet)

- Ⓒ Flow temperature sensor, primary circuit (heat pump brine inlet)
- Ⓓ Low pressure Schrader valve

- Ⓔ High pressure Schrader valve
- Ⓕ Instantaneous heating water heater (accessories)
- Ⓖ Primary pump
- Ⓗ Thermostatic expansion valve TEV
- Ⓙ Compressor
- Ⓚ Secondary circuit flow temperature sensor
- Ⓛ Air vent valve, secondary side
- Ⓝ Low pressure switch
- Ⓞ Safety high pressure switch
- Ⓤ Filter dryer
- Ⓦ Drain valve, primary side
- Ⓧ Hot gas temperature limiter (Klixon)

**Draining the heat pump on the primary/secondary side**

1. Shut off the connection to the heating network.
2. Drain the heat pump at the primary/secondary side drain valve: See page 53.

## Checking the sensors

For sensor connections to the controller and sensor PCB: See page 17.

For the position of the sensors in the heat pump: See diagram on page 53.

Sensor	Test element
<ul style="list-style-type: none"> <li>▪ Outside temperature sensor (F0)</li> <li>▪ Buffer temperature sensor (F4)</li> <li>▪ Cylinder temperature sensor, top (F6)</li> <li>▪ Cylinder temperature sensor, bottom (F7)</li> <li>▪ System flow temperature sensor (F13)</li> <li>▪ Flow temperature sensor, cooling circuit (heating circuit without mixer A1/HC1 or separate cooling circuit SKK) (F14)</li> <li>▪ Room temperature sensor, cooling circuit (F16)</li> <li>▪ Boiler water temperature sensor, external heat generator (F20)</li> <li>▪ Room temperature sensors for heating circuits</li> </ul>	NTC 10 k $\Omega$
<ul style="list-style-type: none"> <li>▪ Flow temperature sensor, primary circuit (F2)</li> <li>▪ Return temperature sensor, primary circuit (F3)</li> <li>▪ Secondary circuit flow temperature sensor (F8)</li> <li>▪ Secondary circuit return temperature sensor (F9)</li> <li>▪ Sensors in the refrigerant circuit</li> </ul>	Pt500A (PTC)

## Checking the sensors (cont.)

### Viessmann NTC 10 k $\Omega$ (blue marking)

$\vartheta / ^\circ\text{C}$	R / k $\Omega$	$\vartheta / ^\circ\text{C}$	R / k $\Omega$	$\vartheta / ^\circ\text{C}$	R / k $\Omega$	$\vartheta / ^\circ\text{C}$	R / k $\Omega$	$\vartheta / ^\circ\text{C}$	R / k $\Omega$	$\vartheta / ^\circ\text{C}$	R / k $\Omega$
-40	336.500	-8	49.647	24	10.449	56	2.878	88	0.976	120	0.389
-39	314.870	-7	47.055	25	10.000	57	2.774	89	0.946	121	0.379
-38	294.780	-6	44.614	26	9.572	58	2.675	90	0.918	122	0.369
-37	276.100	-5	42.315	27	9.165	59	2.579	91	0.890	123	0.360
-36	258.740	-4	40.149	28	8.777	60	2.488	92	0.863	124	0.351
-35	242.590	-3	38.107	29	8.408	61	2.400	93	0.838	125	0.342
-34	227.550	-2	36.181	30	8.057	62	2.316	94	0.813	126	0.333
-33	213.550	-1	34.364	31	7.722	63	2.235	95	0.789	127	0.325
-32	200.510	0	32.650	32	7.402	64	2.158	96	0.765	128	0.317
-31	188.340	1	31.027	33	7.098	65	2.083	97	0.743	129	0.309
-30	177.000	2	29.495	34	6.808	66	2.011	98	0.721	130	0.301
-29	166.350	3	28.048	35	6.531	67	1.943	99	0.700	131	0.293
-28	156.410	4	26.680	36	6.267	68	1.877	100	0.680	132	0.286
-27	147.140	5	25.388	37	6.016	69	1.813	101	0.661	133	0.279
-26	138.470	6	24.165	38	5.775	70	1.752	102	0.642	134	0.272
-25	130.370	7	23.009	39	5.546	71	1.694	103	0.623	135	0.265
-24	122.800	8	21.916	40	5.327	72	1.637	104	0.606	136	0.259
-23	115.720	9	20.880	41	5.117	73	1.583	105	0.589	137	0.253
-22	109.090	10	19.900	42	4.917	74	1.531	106	0.572	138	0.247
-21	102.880	11	18.969	43	4.726	75	1.481	107	0.556	139	0.241
-20	97.070	12	18.087	44	4.543	76	1.433	108	0.541	140	0.235
-19	91.600	13	17.251	45	4.369	77	1.387	109	0.526	141	0.229
-18	86.474	14	16.459	46	4.202	78	1.342	110	0.511	142	0.224
-17	81.668	15	15.708	47	4.042	79	1.299	111	0.497	143	0.219
-16	77.160	16	14.995	48	3.889	80	1.258	112	0.484	144	0.213
-15	72.929	17	14.319	49	3.743	81	1.218	113	0.471	145	0.208
-14	68.958	18	13.678	50	3.603	82	1.180	114	0.458	146	0.204
-13	65.227	19	13.069	51	3.469	83	1.143	115	0.445	147	0.199
-12	61.722	20	12.490	52	3.340	84	1.107	116	0.434	148	0.194
-11	58.428	21	11.940	53	3.217	85	1.072	117	0.422	149	0.190
-10	55.330	22	11.418	54	3.099	86	1.039	118	0.411	150	0.185
-9	52.402	23	10.921	55	2.986	87	1.007	119	0.400		



## Checking the sensors (cont.)

### Viessmann Pt500A (green marking)

$\vartheta / ^\circ\text{C}$	R / $\Omega$	$\vartheta / ^\circ\text{C}$	R / $\Omega$	$\vartheta / ^\circ\text{C}$	R / $\Omega$	$\vartheta / ^\circ\text{C}$	R / $\Omega$	$\vartheta / ^\circ\text{C}$	R / $\Omega$	$\vartheta / ^\circ\text{C}$	R / $\Omega$
-30	441.1	1	502.0	32	562.3	63	623.9	94	681.2	125	739.8
-29	443.1	2	503.9	33	564.2	64	622.0	95	683.1	126	741.7
-28	445.1	3	505.9	34	566.1	65	625.8	96	685.0	127	743.5
-27	447.0	4	507.8	35	568.1	66	627.7	97	686.9	128	745.4
-26	449.0	5	509.8	36	570.0	67	629.7	98	688.8	129	747.3
-25	451.0	6	511.7	37	571.9	68	631.6	99	690.7	130	749.2
-24	453.0	7	513.7	38	573.9	69	633.5	100	692.6	131	751.1
-23	454.9	8	515.6	39	575.8	70	635.4	101	694.4	132	752.9
-22	456.9	9	517.6	40	577.7	71	637.3	102	696.3	133	754.8
-21	458.9	10	519.5	41	579.7	72	639.2	103	698.2	134	756.7
-20	460.8	11	521.5	42	581.6	73	641.1	104	700.1	135	758.6
-19	462.8	12	523.4	43	583.5	74	643.1	105	702.0	136	760.4
-18	464.8	13	525.4	44	585.4	75	645.0	106	703.9	137	762.3
-17	466.7	14	527.3	45	587.4	76	646.9	107	705.8	138	764.2
-16	468.7	15	529.3	46	589.3	77	648.8	108	707.7	139	766.1
-15	470.6	16	531.2	47	591.2	78	650.7	109	709.6	140	767.9
-14	472.6	17	533.2	48	593.2	79	652.6	110	711.5	141	769.8
-13	474.6	18	535.1	49	595.1	80	654.5	111	713.4	142	771.7
-12	476.5	19	537.0	50	597.0	81	656.4	112	715.3	143	773.6
-11	478.5	20	539.0	51	598.9	82	658.3	113	717.2	144	775.4
-10	480.5	21	540.9	52	600.9	83	660.2	114	719.0	145	777.3
-9	482.4	22	542.9	53	602.8	84	662.1	115	720.9	146	779.2
-8	484.4	23	544.8	54	604.7	85	664.0	116	722.8	147	781.0
-7	486.3	24	546.8	55	606.6	86	665.9	117	724.7	148	782.9
-6	488.3	25	548.7	56	608.6	87	667.9	118	726.6	149	784.8
-5	490.2	26	550.6	57	610.5	88	669.8	119	728.5	150	786.7
-4	492.2	27	552.6	58	612.4	89	671.7	120	730.4	151	788.5
-3	494.2	28	554.5	59	614.0	90	673.6	121	732.2	152	790.4
-2	496.1	29	556.5	60	616.2	91	675.5	122	734.1	153	792.3
-1	498.1	30	558.4	61	618.2	92	677.4	123	736.0	154	794.1
0	500.0	31	560.3	62	620.1	93	679.3	124	737.9	155	796.0

## Checking the fuses

Fuse location: See page 17.

- Fuse F1 is located on the mains terminal of the heat pump control unit.
- Fuse F3 is located on the main PCB.

Fuses F1 and F3:

- 6.3 A (slow), 250 V~
- Max. power loss  $\leq 2.5$  W

1. Switch OFF the power supply.

2. Opening the wiring chamber.

3. Check fuses. Replace if necessary.



### Danger

Incorrect or improperly fitted fuses can lead to an increased risk of fire.

- Insert fuses without using any force. Position fuses correctly.
- Only use structurally identical types with the specified response characteristics.

### Checking the fuses (cont.)



#### **Danger**

Removing the fuse does **not switch the power circuit to zero volt**. Contact with 'live' components can lead to serious injury from electric current.

Before working on the equipment, always ensure that **the power circuit is also at zero volt**.

### Appliance is too noisy

Possible causes:

- Transport brackets have not been removed: See page 11.
- Hose outlets in diaphragm grommets are leaking: See page 34.
- Casing door not closed tight: See page 52.

### Condensation and moisture in the heat pump module

Possible causes:

- Hose outlets in diaphragm grommets are leaking: See page 34.
- Casing door not closed tight: See page 52.
- Outer panels not diffusion-proof

## Overview of the assemblies

The following details are required when ordering parts:

- Serial no. (see type plate (A))
- Assembly (from this parts list)
- Position number of the individual part within the assembly (from this parts list)

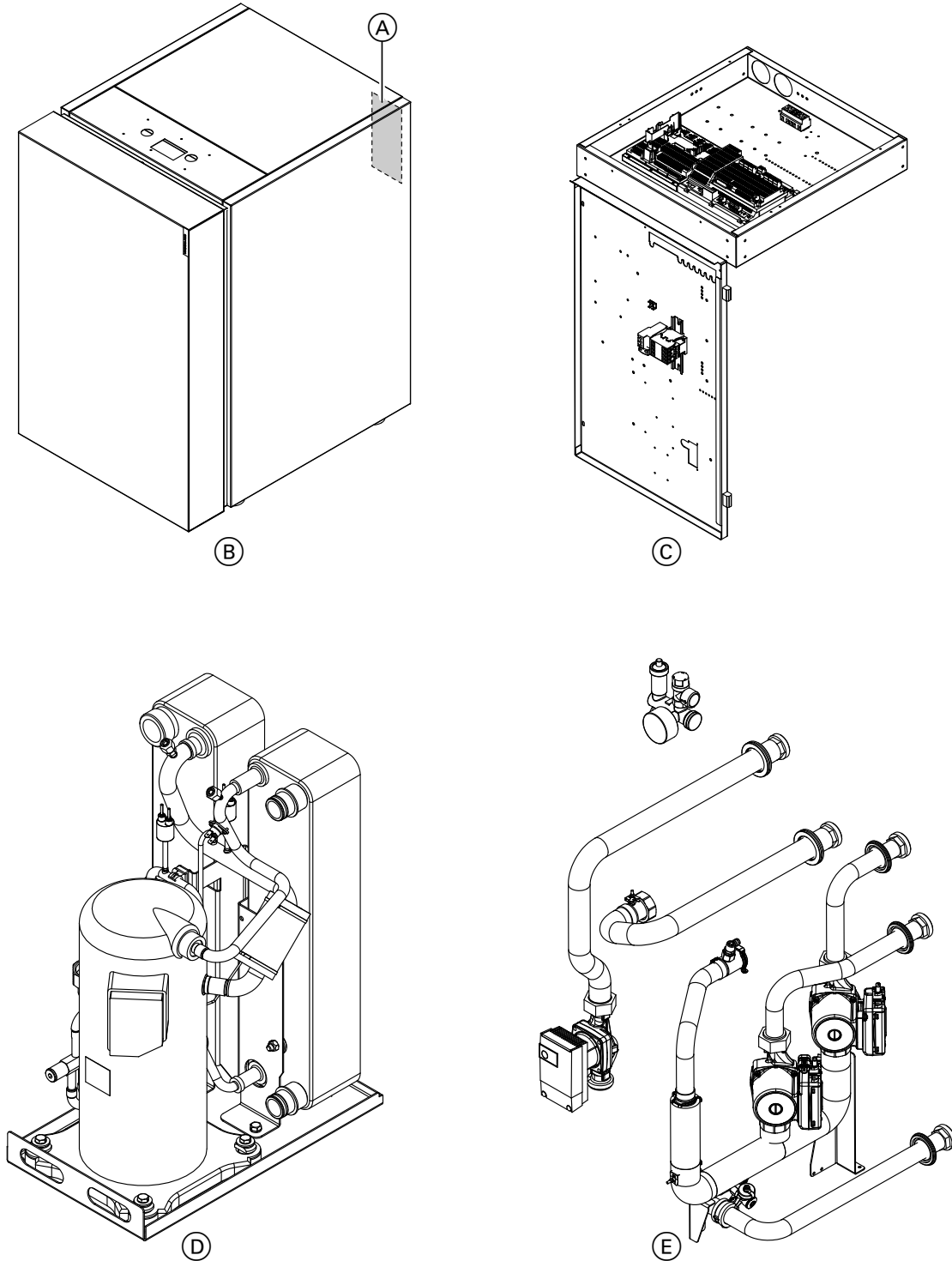


Fig. 38

- (A) Type plate
- (B) Casing assembly
- (C) Electrical equipment assembly

- (D) Heat pump module assembly
- (E) Hydraulic assembly

Parts lists, type BWC 201.A (400 V appliances)

**Parts not shown, type BWC 201.A (400 V appliances)**

<b>Pos.</b>	<b>Part</b>
0005	Small parts, casing
0006	Touch-up paint stick, Vitosilver
0007	Touch-up spray paint, Vitosilver
0008	Installation and service instructions
0009	Operating instructions for Vitotronic 200, type WO1C
0010	Service instructions for Vitotronic 200, type WO1C

**Parts not shown, type BWC 201.A (400 V appliances)** (cont.)

**Casing, type BWC 201.A (400 V appliances)**

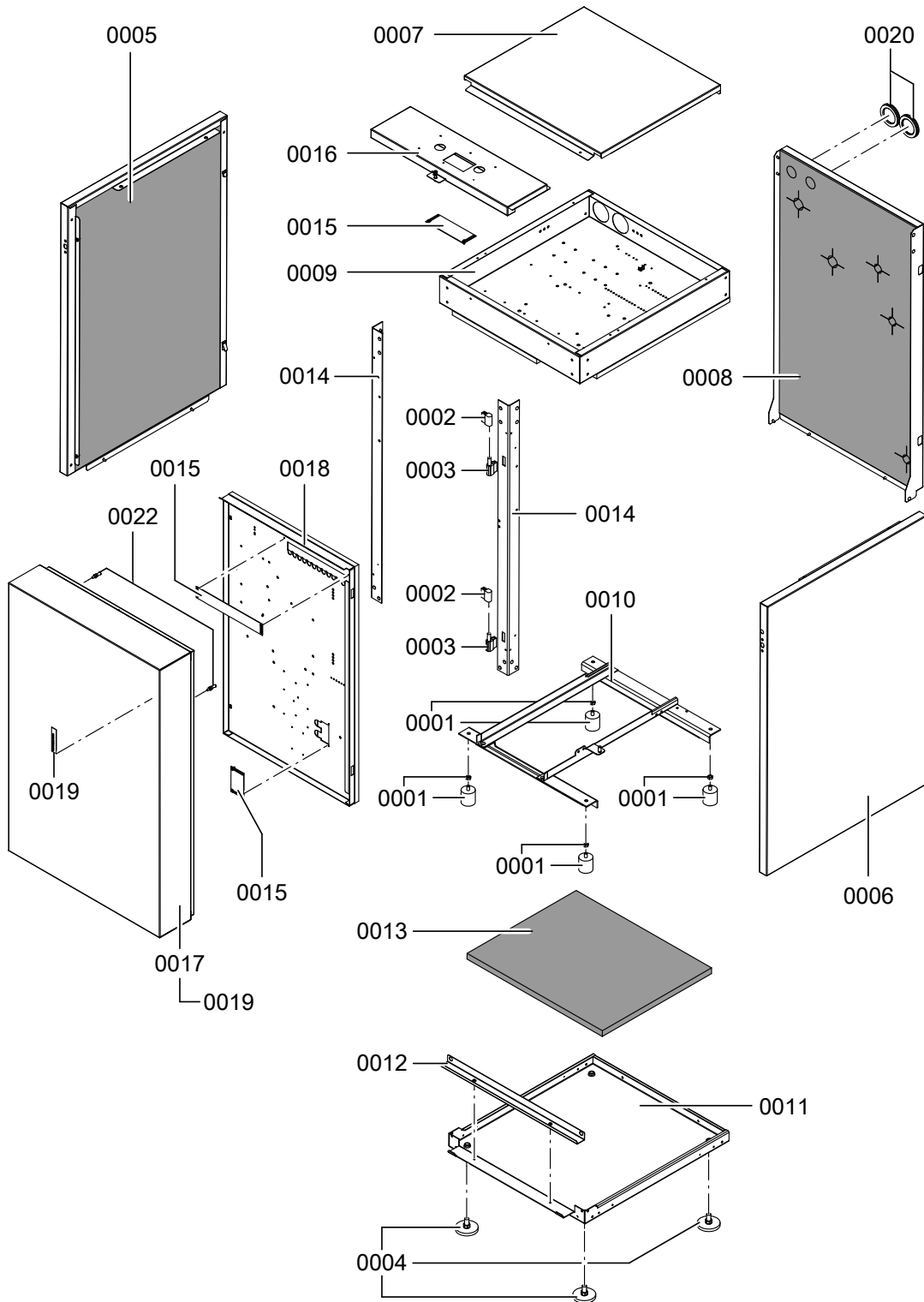


Fig. 39

**Casing, type BWC 201.A (400 V appliances)** (cont.)

<b>Pos.</b>	<b>Part</b>
0001	Rubber buffer
0002	Hinge, upper part
0003	Hinge, lower part
0004	Adjustable foot with foot cap
0005	Side panel, left
0006	Side panel, right
0007	Top panel, back
0008	Back panel
0009	Control unit panel
0010	Anti-vibration mount
0011	Base plate
0012	Lower panel
0013	Floor mat
0014	Rail
0015	Cable covers (set)
0016	Top panel, front
0017	Front panel
0018	Shield
0019	Vitocal 200 logo
0020	Diaphragm grommet
0022	Location stud M5

**Electrical equipment, type BWC 201.A (400 V appliances)**

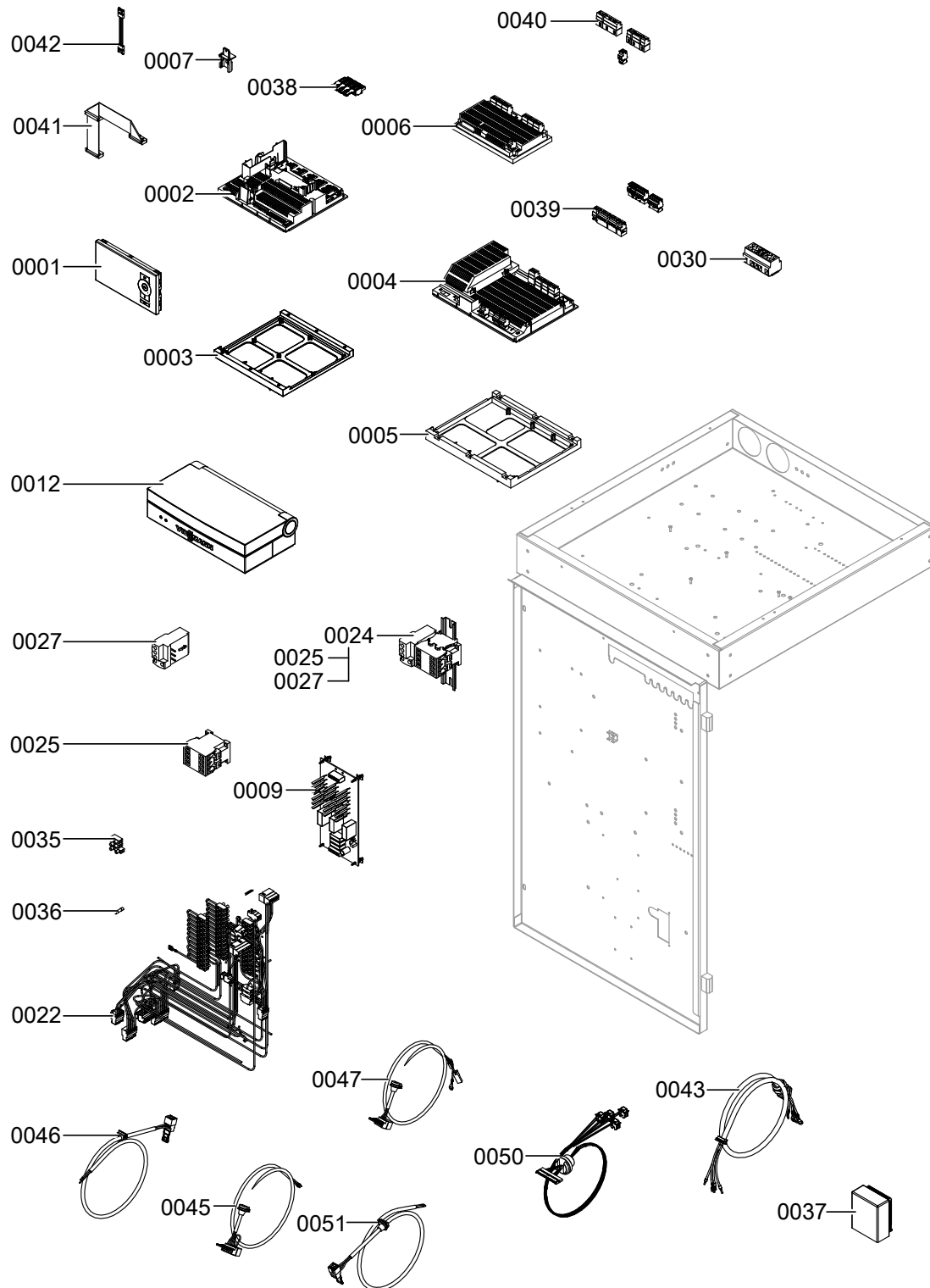


Fig. 40



**Electrical equipment, type BWC 201.A (400 V ... (cont.)**

Pos.	Part
0001	Programming unit, Vitotronic 200 heat pump control unit
0002	Controller and sensor PCB with cover (CU401)
0003	Base support, controller and sensor PCB (CU401)
0004	Main PCB with cover (MB761)
0005	Base support, main PCB (MB761)
0006	Expansion PCB with cover (SA135)
0007	Coding card
0009	Full wave soft starter (not for type BWC 201.A06 6 kW)
0012	Casing, programming unit
0022	Cable harness 230 V~
0024	Compressor switching module
0025	Contactator, 3-pole 230 V~
0027	Thermal relay
0030	Mains terminal, 5-pole
0035	Spring clip
0036	Fuses 6.3 A (slow) (5 pce)
0037	Outside temperature sensor NTC 10 kΩ
0038	Mating plug for controller and sensor PCB (set)
0039	Mating plug for main PCB (set)
0040	Mating plug for expansion PCB (set)
0041	Ribbon cable 24 x 0.09 mm
0042	4-pole connecting cable, length 85 mm
0043	Connecting cable, compressor
0045	Connecting cable, primary pump
0046	Connecting cable, secondary pump
0047	Connecting cable, circulation pump for cylinder heating
0050	Cable harness, low voltage (X5)
0051	Connecting cable, thermal circuit breaker (Klixon)

Heat pump module, type BWC 201.A (400 V appliances)

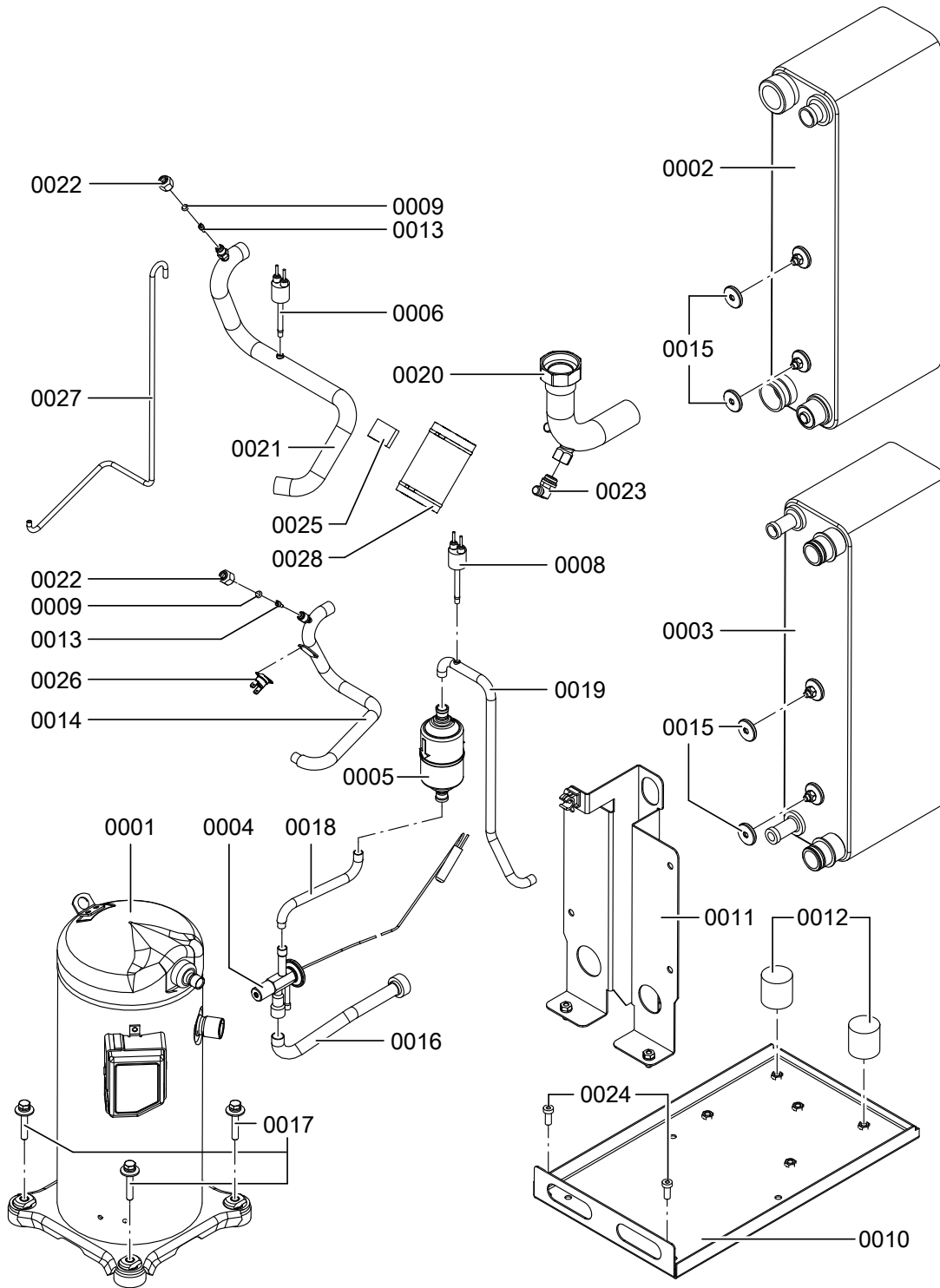


Fig. 41

**Heat pump module, type BWC 201.A (400 V appliances) (cont.)**

<b>Pos.</b>	<b>Part</b>
0001	Compressor
0002	Evaporator
0003	Condenser
0004	Thermostatic expansion valve
0005	Filter dryer
0006	Low pressure switch
0008	Safety high pressure switch
0009	Sealing cap
0010	Cooling panel
0011	Heat exchanger bracket
0012	Rubber buffer
0013	Schrader valve
0014	Hot gas line
0015	Spacers (4 pce)
0016	Pipe, thermostatic expansion valve — evaporator
0017	Fixing screws, compressor
0018	Pipe, filter dryer — thermostatic expansion valve
0019	Line, condenser — filter dryer
0020	Primary circuit flow line
0021	Suction gas line
0022	Union nut, Schrader valve
0023	Air vent valve G $\frac{3}{8}$
0024	Cheese head screws M8 (2 pce)
0025	Retainer, temperature sensor
0026	Thermal circuit breaker (Klixon)
0027	Pressure compensation line
0028	Thermal insulation, temperature sensor

Hydraulics, type BWC 201.A (400 V appliances)

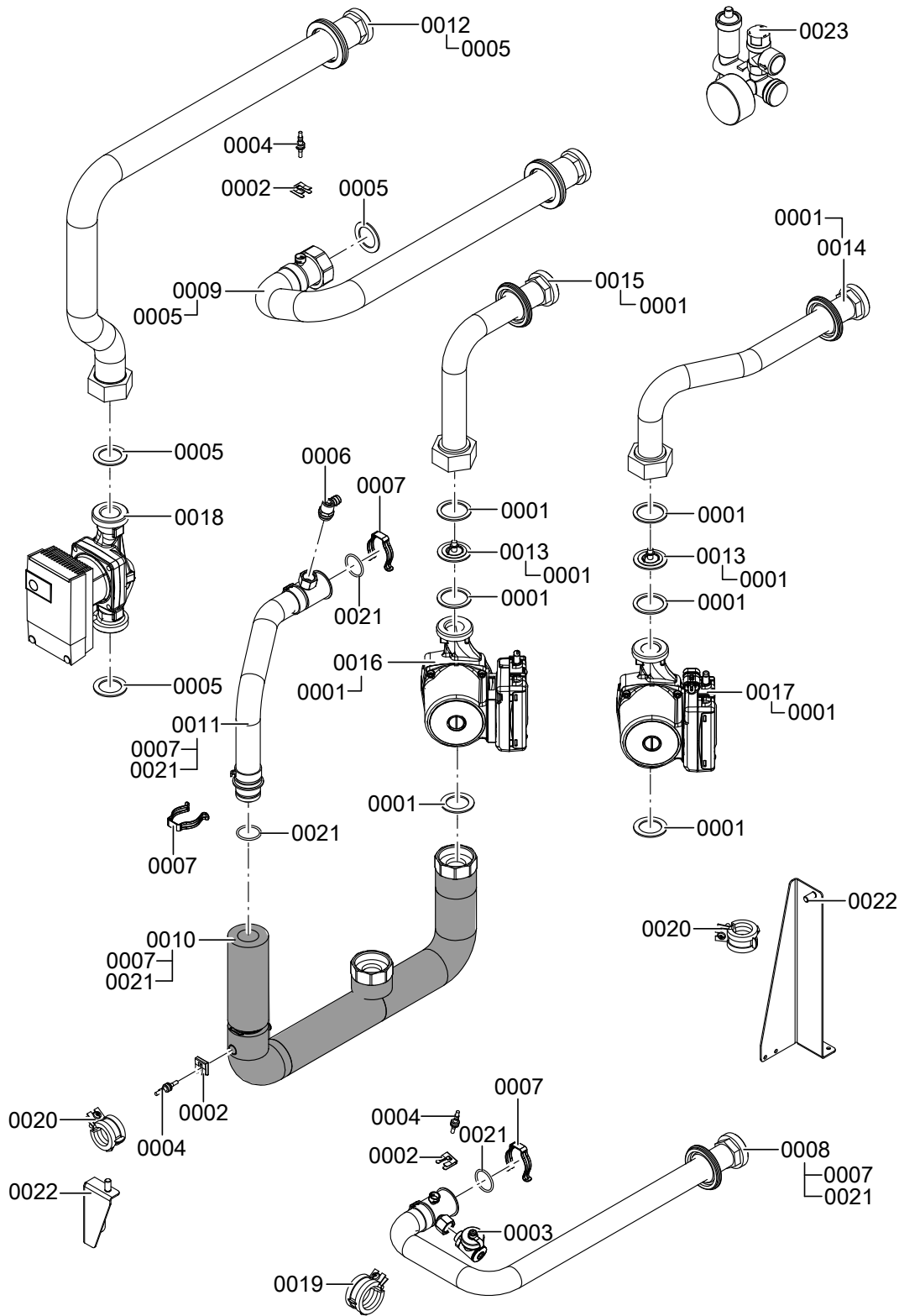


Fig. 42

Components

**Hydraulics, type BWC 201.A (400 V appliances) (cont.)**

<b>Pos.</b>	<b>Part</b>
0001	Gasket A 35 x 45 x 2.0 mm
0002	Spring clip for temperature sensor
0003	Air vent valve G $\frac{3}{8}$
0004	Temperature sensor Pt500A
0005	Gasket A 30 x 44 x 2.0 mm
0006	Drain & fill valve G $\frac{3}{8}$
0007	Spring clip D28
0008	Secondary circuit return hose
0009	Primary circuit flow hose
0010	Cable
0011	Secondary circuit flow hose
0012	Primary circuit return hose
0013	Check valve G $1\frac{1}{2}$
0014	Flow hose, DHW cylinder
0015	Flow hose, heating circuit
0016	High efficiency circulation pump (secondary pump)
0017	High efficiency circulation pump (circulation pump for cylinder heating)
0018	High efficiency circulation pump (primary pump)
0019	Threaded pipe clip $\varnothing$ 31 to 35 mm, M8, with EPDM lining
0020	Threaded pipe clip $\varnothing$ 26 to 28 mm, M8, with EPDM lining
0021	O-ring 28.0 x 2.5 mm
0022	Retaining bracket
0023	Safety assembly



## Overview of the assemblies

The following details are required when ordering parts:

- Serial no. (see type plate (A))
- Assembly (from this parts list)
- Position number of the individual part within the assembly (from this parts list)

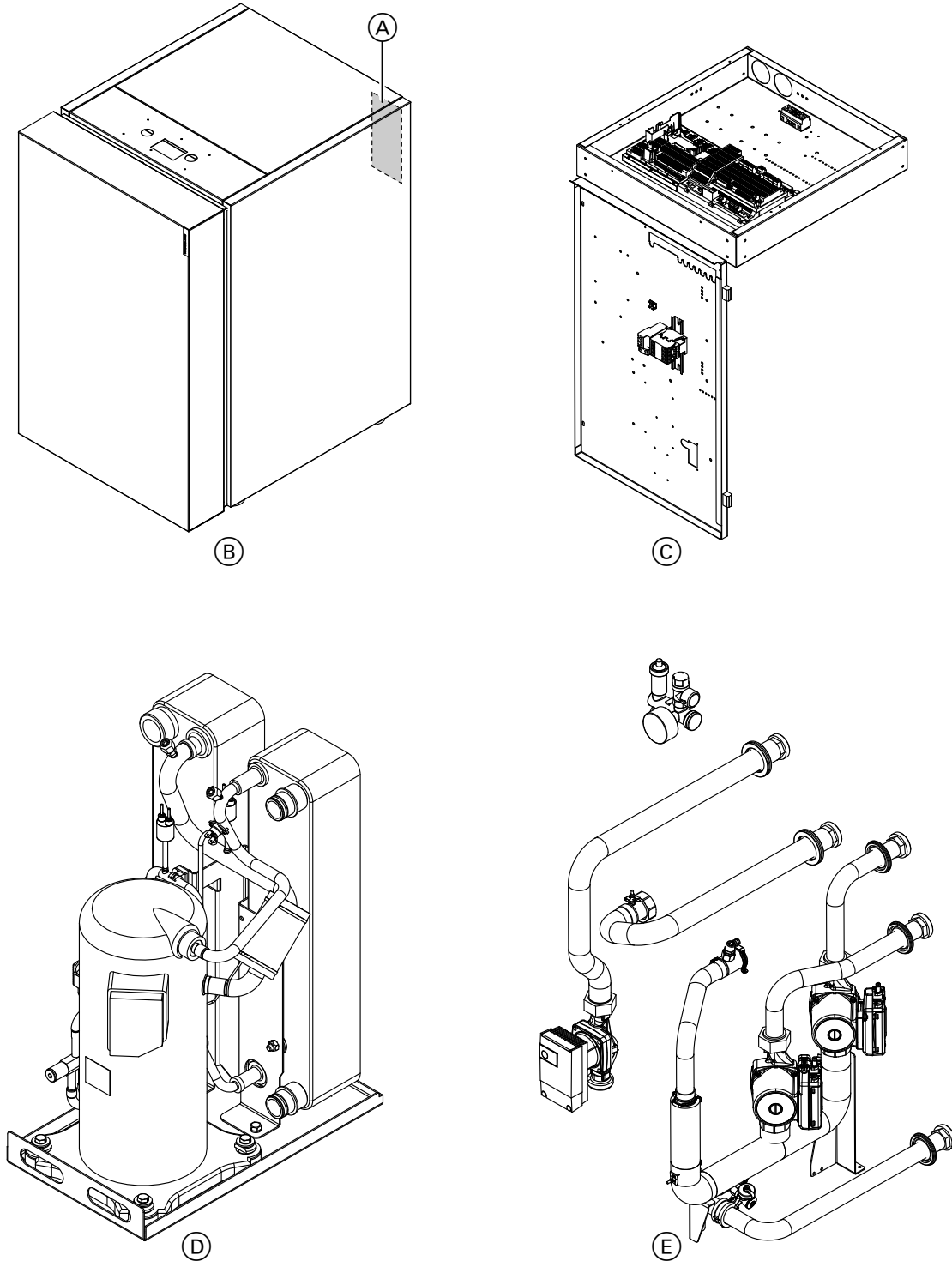


Fig. 43

- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li>(A) Type plate</li> <li>(B) Casing assembly</li> <li>(C) Electrical equipment assembly</li> </ul> | <ul style="list-style-type: none"> <li>(D) Heat pump module assembly</li> <li>(E) Hydraulic assembly</li> </ul> |
|--|---|

Parts lists, type BWC-M 201.A (230 V appliances)

**Parts not shown, type BWC-M 201.A (230 V appliances)**

<b>Pos.</b>	<b>Part</b>
0005	Small parts, casing
0006	Touch-up paint stick, Vitosilver
0007	Touch-up spray paint, Vitosilver
0008	Installation and service instructions
0009	Operating instructions for Vitotronic 200, type WO1C
0010	Service instructions for Vitotronic 200, type WO1C



**Parts not shown, type BWC-M 201.A (230 V appliances) (cont.)**

**Casing, type BWC-M 201.A (230 V appliances)**

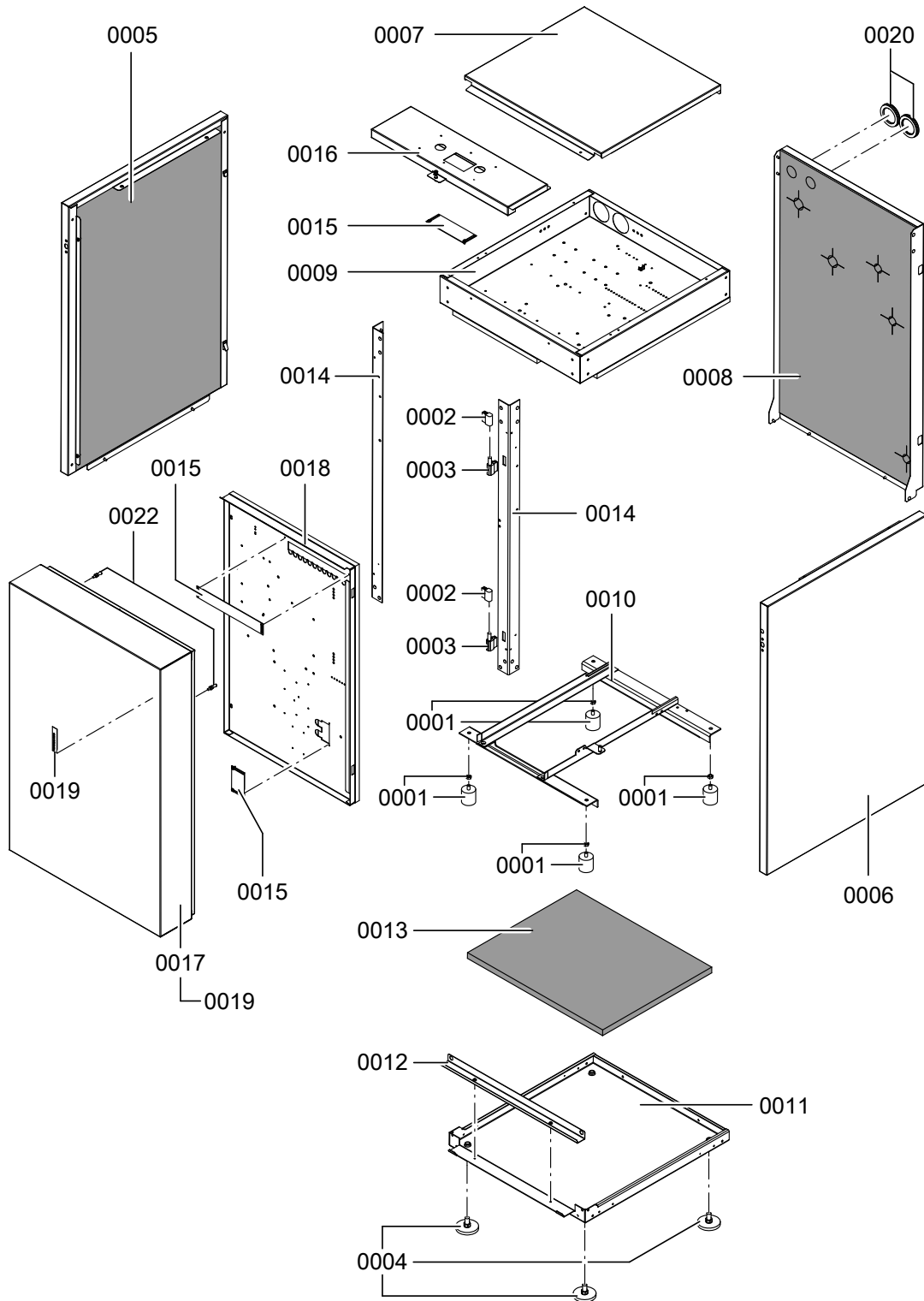


Fig. 44

**Casing, type BWC-M 201.A (230 V appliances)** (cont.)

<b>Pos.</b>	<b>Part</b>
0001	Rubber buffer
0002	Hinge, upper part
0003	Hinge, lower part
0004	Adjustable foot with foot cap
0005	Side panel, left
0006	Side panel, right
0007	Top panel, back
0008	Back panel
0009	Control unit panel
0010	Anti-vibration mount
0011	Base plate
0012	Lower panel
0013	Floor mat
0014	Rail
0015	Cable covers (set)
0016	Top panel, front
0017	Front panel
0018	Shield
0019	Vitocal 200 logo
0020	Diaphragm grommet
0022	Location stud M5

**Electrical equipment, type BWC-M 201.A (230 V appliances)**

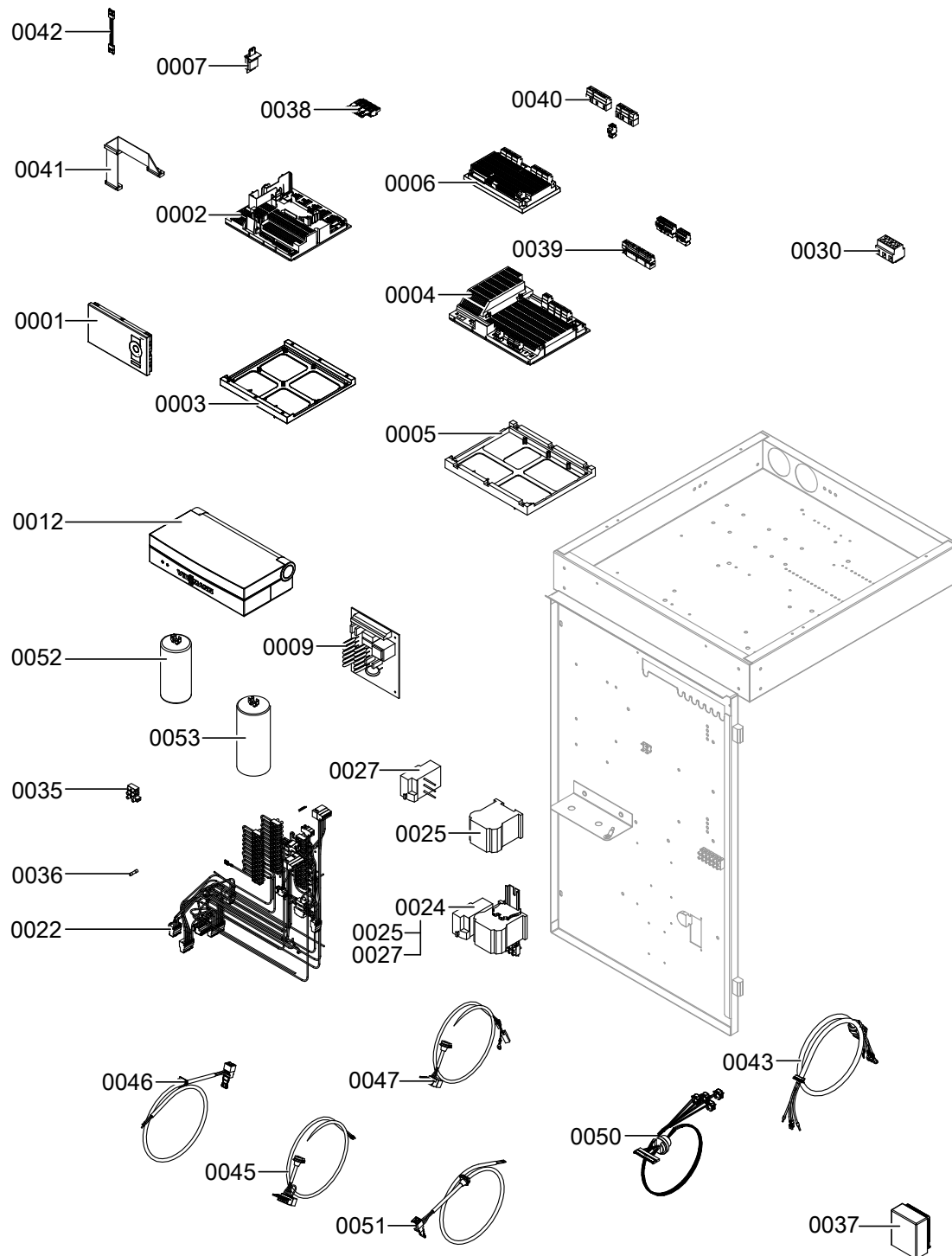


Fig. 45

**Electrical equipment, type BWC-M 201.A (230 V ... (cont.)**

Pos.	Part
0001	Programming unit, Vitotronic 200 heat pump control unit
0002	Controller and sensor PCB with cover (CU401)
0003	Base support, controller and sensor PCB (CU401)
0004	Main PCB with cover (MB761)
0005	Base support, main PCB (MB761)
0006	Expansion PCB with cover (SA135)
0007	Coding card
0009	Full wave soft starter
0012	Casing, programming unit
0022	Cable harness 230 V~
0024	Compressor switching module
0025	Contactator, 3-pole 230 V~
0027	Thermal relay
0030	Mains terminal, 3-pole
0035	Spring clip
0036	Fuses 6.3 A (slow) (5 pce)
0037	Outside temperature sensor NTC 10 k $\Omega$
0038	Mating plug for controller and sensor PCB (set)
0039	Mating plug for main PCB (set)
0040	Mating plug for expansion PCB (set)
0041	Ribbon cable 24 x 0.09 mm
0042	4-pole connecting cable, length 85 mm
0043	Connecting cable, compressor
0045	Connecting cable, primary pump
0046	Connecting cable, secondary pump
0047	Connecting cable, circulation pump for cylinder heating
0050	Cable harness, low voltage (X5)
0051	Connecting cable, thermal circuit breaker (Klixon)
0052	Run capacitor
0053	Start capacitor

**Heat pump module, type BWC-M 201.A (230 V appliances)**

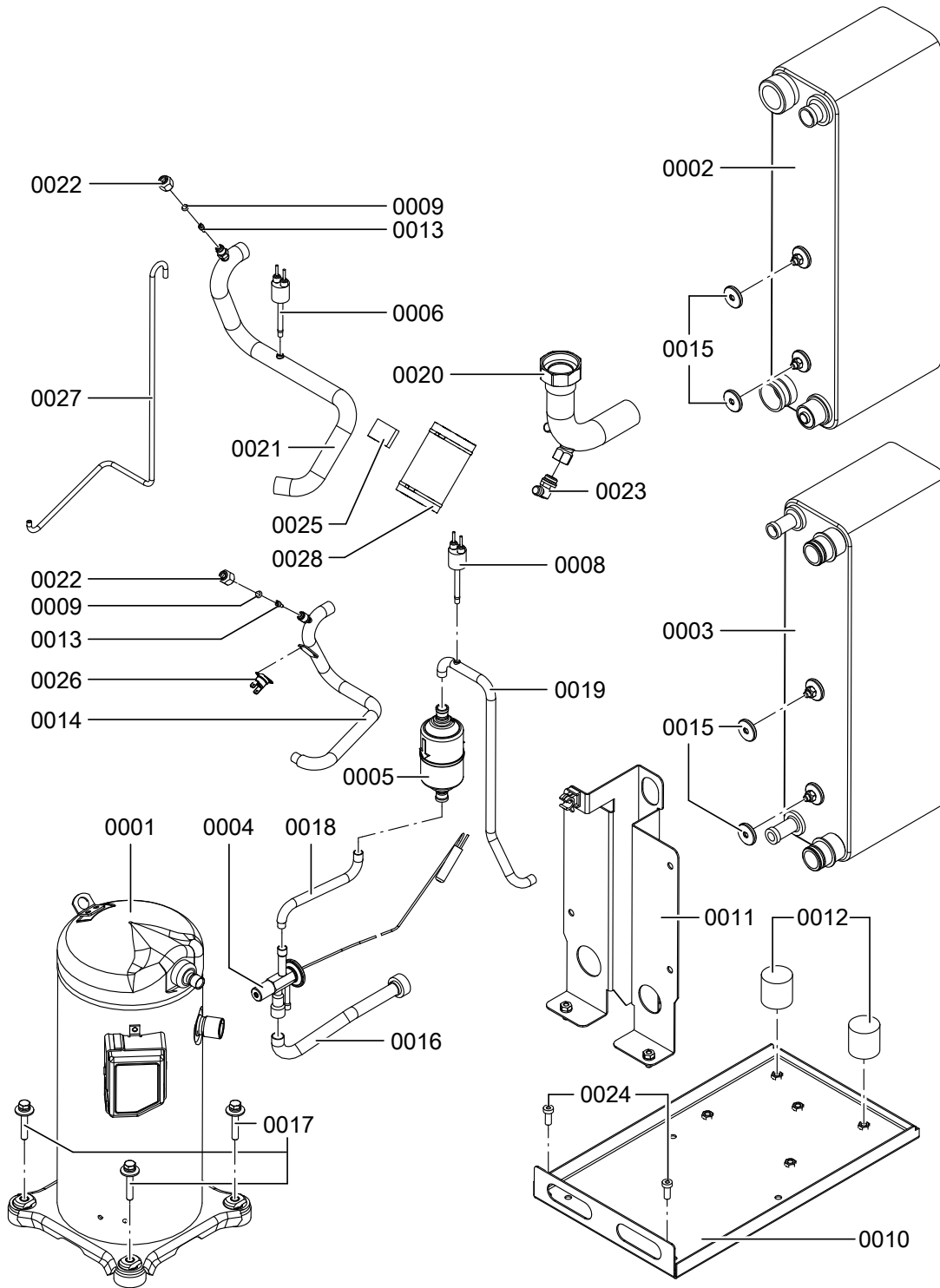


Fig. 46

**Heat pump module, type BWC-M 201.A (230 V appliances) (cont.)**

<b>Pos.</b>	<b>Part</b>
0001	Compressor
0002	Evaporator
0003	Condenser
0004	Thermostatic expansion valve
0005	Filter dryer
0006	Low pressure switch
0008	Safety high pressure switch
0009	Sealing cap
0010	Cooling panel
0011	Heat exchanger bracket
0012	Rubber buffer
0013	Schrader valve
0014	Hot gas line
0015	Spacers (4 pce)
0016	Pipe, thermostatic expansion valve — evaporator
0017	Fixing screws, compressor
0018	Pipe, filter dryer — thermostatic expansion valve
0019	Line, condenser — filter dryer
0020	Primary circuit flow line
0021	Suction gas line
0022	Union nut, Schrader valve
0023	Air vent valve G $\frac{3}{8}$
0024	Cheese head screws M8 (2 pce)
0025	Retainer, temperature sensor
0026	Thermal circuit breaker (Klixon)
0027	Pressure compensation line
0028	Thermal insulation, temperature sensor

**Hydraulics, type BWC-M 201.A (230 V appliances)**

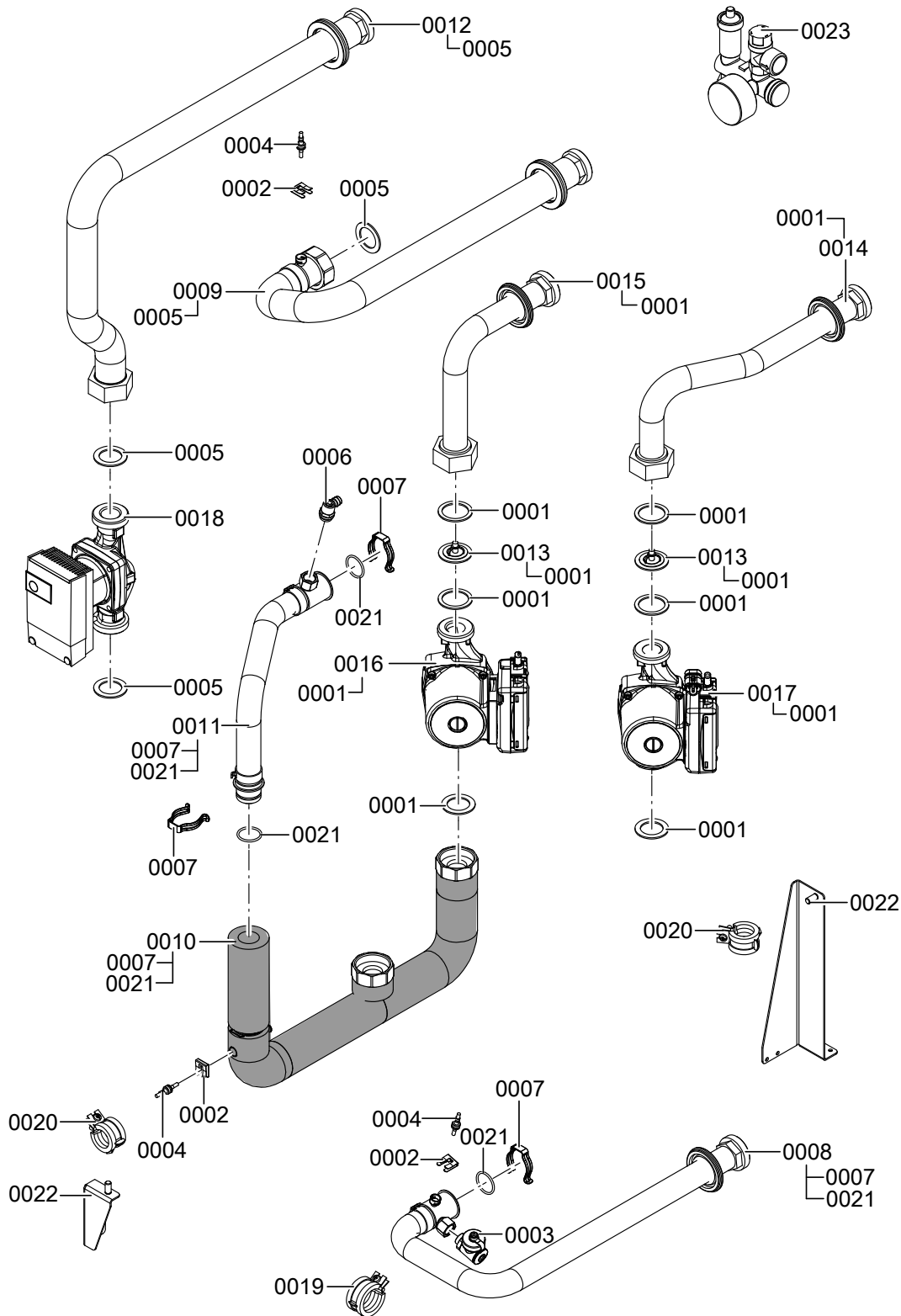


Fig. 47



**Hydraulics, type BWC-M 201.A (230 V appliances)** (cont.)

<b>Pos.</b>	<b>Part</b>
0001	Gasket A 35 x 45 x 2.0 mm
0002	Spring clip for temperature sensor
0003	Air vent valve G $\frac{3}{8}$
0004	Temperature sensor Pt500A
0005	Gasket A 30 x 44 x 2.0 mm
0006	Drain & fill valve G $\frac{3}{8}$
0007	Spring clip D28
0008	Secondary circuit return hose
0009	Primary circuit flow hose
0010	Cable
0011	Secondary circuit flow hose
0012	Primary circuit return hose
0013	Check valve G $1\frac{1}{2}$
0014	Flow hose, DHW cylinder
0015	Flow hose, heating circuit
0016	High efficiency circulation pump (secondary pump)
0017	High efficiency circulation pump (circulation pump for cylinder heating)
0018	High efficiency circulation pump (primary pump)
0019	Threaded pipe clip $\varnothing$ 31 to 35 mm, M8, with EPDM lining
0020	Threaded pipe clip $\varnothing$ 26 to 28 mm, M8, with EPDM lining
0021	O-ring 28.0 x 2.5 mm
0022	Retaining bracket
0023	Safety assembly

## Hydraulic parameters report

Setting and test values	Setpoint	Commissioning	Maintenance/Service
<b>Frost protection</b> (brine medium) °C	-19		
<b>Testing the external heating circuit pumps</b>			
Circulation pump type			
Circulation pump stage			
Overflow valve setting			
<b>Commissioning, primary circuit</b>			
Primary circuit flow temperature ("Diagnosis" → "System overview") °C			
Primary circuit return temperature ("Diagnosis" → "System overview") °C			
Temperature differential (primary circuit flow/return) ΔT:			
<ul style="list-style-type: none"> <li>▪ If secondary circuit flow temperature = 35 °C primary circuit flow temperature = 10 °C</li> </ul>	K	3 to 5	
<ul style="list-style-type: none"> <li>▪ If secondary circuit flow temperature = 35 °C primary circuit flow temperature = 0 °C</li> </ul>	K	2 to 4	
<b>Testing the mixer, heat pump and cylinder heating</b>			
Checked under the following conditions:			
Room temperature °C			
Outside temperature °C			
Temperature "Cylinder temp. top" constant?	Yes (±1 K)		
Secondary circuit flow temperature °C	Rising	From	Open
Temperature differential ΔT "Flow temp. secondary" / "Return temp. sec."	K	6 to 8	

## Control parameter report



### Parameter description

"Vitotronic 200" service instructions

### System definition

Parameter	Code	Delivered condition	Commissioning	Maintenance/service
System scheme: See page 41.	7000	2		
Interval for long term average outside temperature	7002	180 min		
Temperature differential for calculating the heating limit	7003	40 (± 4 K)		
Temperature differential for calculating the cooling limit	7004	40 (± 4 K)		
Swimming pool	7008	0		
Output lag heat pump	700B	0		
Runtime balance cascade	700D	Do not adjust.		

**Control parameter report** (cont.)

Parameter	Code	Delivered condition	Commissioning	Maintenance/service
Temperature range input 0...10 V, cooling mode	700E	500 ( $\pm$ 50 °C)		
External extension	7010	0		
System components for external change-over	7011	0		
Operating status for external changeover	7012	2		
Duration of external changeover	7013	8 h		
Effect of external demand on heat pump/heating circuits	7014	4		
Effect of ext. blocking on heat pump/heating circuits	7015	4		
Vitocom 100 (type GSM/GSM2 only)	7017	0		
Temperature range input 0..10 V	7018	1000		
Priority external demand	7019	0		
Effect of external blocking on pumps/compressor	701A	0		
Common flow temperature sensor system	701B	0		
Operating status after message A9, C9	701C	0		
Effect of OM changeover to ventilation	701F	3		
Select primary source	7030	0		
Start hysteresis solar air absorber	7031	20 ( $\pm$ 2 K)		
Minimum temp. for solar absorber primary source	7033	-500 ( $\pm$ -50 °C)		
Min. runtime to suppress summer mode	7035	60 min		
Last calendar week for summer mode	7036	35		
Absorber circuit monitoring	7037	0		
Temperature sensor for dual mode operation	7038	0		
Holiday program effect	7050	384		

**Compressor**

Parameter	Code	Delivered condition	Commissioning	Maintenance/service
Enable compressor	5000	1		
Enable use of compressor stage	5012	15		
Output compressor stage	5030	Rated heating output according to type plate		

**Control parameter report** (cont.)**External heat generator**

Parameter	Code	Delivered condition	Commissioning	Maintenance/service
"Enable external heat source"	7B00	0		
"Priority ext. heat source/instant. heating water heater"	7B01	1		
"Dual mode temperature external heat source"	7B02	100 ( $\pm$ 10 °C)		
"Start threshold external heat source"	7B03	300 ( $\pm$ 30 min)		
"Start delay external heat source"	7B04	30 min		
"Min. flow temperature mixer external heat source ON"	7B05	0		
"Min. runtime external heat source"	7B06	20 min		
"Run-on time external heat source"	7B07	10 min		
"Max. excess flow temp external heat source"	7B0B	0		
"Enable external heat gen. for central heating"	7B0C	1		
"Enable external heat source for DHW heating"	7B0D	0		
"Dual mode heat pump operation"	7B0E	1		
"Shutdown limit, heat pump dual mode"	7B0F	-500 ( $\pm$ -50 °C)		
"Enable min. temp. maintenance for ext. HS"	7B10	0		
"Enable boiler water temperature sensor"	7B11	1		

**Control parameter report** (cont.)**DHW**

Parameter	Code	Delivered condition	Commissioning	Maintenance/service
Set DHW temperature	6000	500 ( $\pm$ 50 °C)		
Min. DHW temperature	6005	100 ( $\pm$ 10 °C)		
Max. DHW temperature	6006	600 ( $\pm$ 60 °C)		
Hysteresis DHW temperature heat pump	6007	50 ( $\pm$ 5 K)		
Hysteresis DHW temperature booster heater	6008	100 ( $\pm$ 10 K)		
Start optimisation for DHW heating	6009	0		
Stop optimisation for DHW heating	600A	0		
Set DHW temperature 2	600C	600 ( $\pm$ 60 °C)		
Temperature rise per hour for DHW heating	600D	30 K/h		
Temperature sensor at bottom of DHW cylinder	600E	0		
Max. runtime DHW heating in heating mode	6011	240 min		
Max. interruption of DHW heating for central heating	6012	90 min		
Enable booster heaters for DHW heating	6014	0		
Enable electric heaters for DHW heating	6015	0		
Priority DHW heating with combi cylinder	6016	0		
Start attempts for DHW after high pressure shutdown	6017	1		
Shutdown hysteresis inst. heating water heater	601E	10 ( $\pm$ 1 K)		
Enable elec. heating/ext. HS for reheating only	6040	0		

**Solar**

Parameter	Code	Delivered condition	Commissioning	Maintenance/Service
<b>"Type solar control unit"</b>	7A00	0		
Parameters for solar control module, type SM1	C0xx	These parameters will only be displayed if the solar control module, type SM1, is connected to the heat pump and <b>"Type solar control unit"</b> is set to <b>"3"</b> . For a description of the parameters, see installation and service instructions for "solar control module, type SM1".		

**Control parameter report** (cont.)**Electric booster heater**

Parameter	Code	Delivered condition	Commissioning	Maintenance/service
Enable instantaneous heating water heater	7900	0		
Enable electric heaters for DHW heating	7901	Do not adjust.		
Enable instant. heating water heater for central heating	7902	1		
Start delay instantaneous heating water heater	7905	30 min		
Max. output instantaneous heating water heater	7907	3		
Output for instant. heating water heater at power-OFF	790A	0		
Dual mode temp instant. heating water heater	790B	500 ( $\pm$ 50 °C)		

**Internal hydraulics**

Parameter	Code	Delivered condition	Commissioning	Maintenance/service
Heat pump for drying a building	7300	0		
Time program for screed drying	7303	0		
Set flow temperature external demand, cooling	730A	Do not adjust.		
Set flow temperature external demand	730C	500 ( $\pm$ 50 °C)		
Start threshold	730E	300 ( $\pm$ 30 K·min)		
Cycle rate heating circuit pumps	7319	0		
Rated output secondary pump (PWM)	7343	85 %		
Rated output heating circuit pump HC2	734A	Do not adjust.		
Secondary circuit pump type	735A	0		
Starting time high efficiency circulation pump	7365	5 s		
Screed program start day	7378	1		
Screed program end day	7379	31		

**Primary source**

Parameter	Code	Delivered condition	Commissioning	Maintenance/service
Start performance primary source	7414	50 %		
Primary circuit pump type	745A	Do not adjust.		
Min. primary circuit inlet temperature in operation	7470	Do not adjust.		
Response delay, probe protection	7471	Do not adjust.		

**Control parameter report** (cont.)**Heating water buffer cylinder**

Parameters	Code	Delivered condition	Commissioning	Maintenance/ service
"Enable buffer cylinder/low loss header"	7200	0		
"Temp in operating status fixed value for buffer cyl"	7202	500 ( $\pm$ 50 °C)		
"Hysteresis temperature heating buffer cylinder"	7203	50 ( $\pm$ 5 K)		
"Max. temperature buffer cylinder"	7204	600 ( $\pm$ 60 °C)		
Stop optimisation heating buffer cylinder	7205	0		
"Temp. limit op. status fixed value for buffer cylinder"	7208	500 ( $\pm$ 50 °C)		
Stop hysteresis, heating water buffer cylinder	7209	0 ( $\pm$ 0 K)		
Operating mode, fixed value only for heat demand	720A	0		

**Heating circuit 1**

Parameter	Code	Delivered condition	Commissioning	Maintenance/ Service
"Standard room temperature"	2000	200 ( $\pm$ 20 °C)		
"Reduced room temperature"	2001	160 ( $\pm$ 16 °C)		
"Remote control"	2003	0		
Room temperature control	2005	0		
"Heating curve level"	2006	0 ( $\pm$ 0 K)		
"Heating curve slope"	2007	6 ( $\pm$ 0.6)		
"Influence room temperature hook-up"	200 A	10		
"Room temperature hook-up"	200 B	0		
"Max. flow temperature heating circuit"	200E	400 ( $\pm$ 40 °C)		
Runtime mixer heating circ	2015	Do not adjust.		
"Room temperature in party mode"	2022	200 ( $\pm$ 20 °C)		

**Heating circuit 2**

Parameter	Code	Delivered condition	Commissioning	Maintenance/ Service
"Standard room temperature"	3000	200 ( $\pm$ 20 °C)		
"Reduced room temperature"	3001	160 ( $\pm$ 16 °C)		
"Remote control"	3003	0		
Room temperature control	3005	0		
"Heating curve level"	3006	0 ( $\pm$ 0 K)		
"Heating curve slope"	3007	6 ( $\pm$ 0.6)		
"Influence room temperature hook-up"	300 A	10		
"Room temperature hook-up"	300 B	0		
"Max. flow temperature heating circuit"	300E	400 ( $\pm$ 40 °C)		
Runtime mixer heating circ	3015	Do not adjust.		
"Room temperature in party mode"	3022	200 ( $\pm$ 20 °C)		

**Control parameter report** (cont.)**Cooling**

Parameter	Code	Delivered condition	Commissioning	Maintenance/Service
"Cooling function"	7100	0		
"Cooling circuit"	7101	1		
"Set room temperature separate cooling circuit"	7102	200 ( $\pm$ 20 °C)		
"Min. flow temperature cooling"	7103	200 ( $\pm$ 20 °C)		
"Influence room temperature hook-up cooling circuit"	7104	0		
Room temperature control cooling circuit	7105	1		
"Ranking room temp sensor separate cooling circuit"	7106	0		
Hysteresis room temp cooling circuit	7107	10 ( $\pm$ 1 K)		
Enable flow temperature sensor cooling circuit	7109	1		
"Cooling curve level"	7110	0 ( $\pm$ 0 K)		
"Cooling curve slope"	7111	12 ( $\pm$ 1.2)		
"Remote control cooling circ"	7116	0		
Dew point monitor	7117	1		
"Enable active cooling"	71FE	0		

**Ventilation: Vitovent 200-C and Vitovent 300-F**

Parameter	Code	Delivered condition	Commissioning	Maintenance/service
Vitovent enable	7D00	0		
Enable preheater bank electric	7D01	0		
Enable reheater bank hydraulic	7D02	0		
Enable humidity sensor	7D05	0		
Enable CO2 sensor	7D06	0		
Set room temperature	7D08	200 ( $\pm$ 20 °C)		
Flow rate reduced ventilation	7D0A	<ul style="list-style-type: none"> <li>▪ Vitovent 200-C: 75 m<sup>3</sup>/h</li> <li>▪ Vitovent 300-F: 120 m<sup>3</sup>/h</li> </ul>		
Flow rate nominal ventilation	7D0B	<ul style="list-style-type: none"> <li>▪ Vitovent 200-C: 115 m<sup>3</sup>/h</li> <li>▪ Vitovent 300-F: 170 m<sup>3</sup>/h</li> </ul>		
Flow rate intensive ventilation	7D0C	<ul style="list-style-type: none"> <li>▪ Vitovent 200-C: 155 m<sup>3</sup>/h</li> <li>▪ Vitovent 300-F: 215 m<sup>3</sup>/h</li> </ul>		
Min. supply air temperature for bypass	7D0F	160 ( $\pm$ 16 °C)		
CO2 value for raising the flow rate	7D18	800 ppm		
Humidity value for raising the flow rate	7D19	65 %		
Interval time frost protection ventilation	7D1A	15 min		
Intensive ventilation duration	7D1B	120 min		
Actual source room temperature	7D1D	1		
Heating circuit for blocking bypass damper	7D21	7		



**Control parameter report** (cont.)

Parameter	Code	Delivered condition	Commissioning	Maintenance/service
Control voltage matching	7D27	0 ( $\pm$ 0 V)		
Fan for control voltage matching	7D28	0		
Strategy, passive frost protection	7D2C	0		
Type of heat exchanger	7D2E	0		
Installation position	7D2F	0		
Function, external 230 V input, ventilation	7D3A	0		
Duration, bathroom vent.	7D3B	30 min		
Starting block, ventilation periods part 1	7D5E	0		
Starting block, ventilation periods part 2	7D5F	0		
Control voltage matching, supply air fan	7D71	0 V		
Control voltage matching, exhaust air fan	7D72	0 V		
Sensor matching, outdoor air temperature	7D75	0 K		
Sensor matching, outdoor air temp after pre-heating coil	7D76	0 K		
Sensor matching, supply air temperature	7D77	0 K		
Sensor matching, extract air temperature	7D79	0 K		

**Ventilation: Vitovent 200-W, Vitovent 300-C and Vitovent 300-W**

Parameter	Code	Delivered condition	Commissioning	Maintenance/service
Vitovent enable	7D00	0		
Heating circuit for blocking bypass damper	7D21	7		
Preheater coil	C101	1		
Reheater coil	C102	0		
Humidity sensor	C105	0		
Set CO2 value	C106	0		
Set room temperature	C108	22 ( $\pm$ 2 °C)		
Background ventilation	C109	<ul style="list-style-type: none"> <li>▪ Vitovent 200-W: 15 %</li> <li>▪ Vitovent 300-C: 30 m<sup>3</sup>/h</li> <li>▪ Vitovent 300-W: 50 m<sup>3</sup>/h</li> </ul>		
Reduced ventilation	C10A	<ul style="list-style-type: none"> <li>▪ Vitovent 200-W: 25 %</li> <li>▪ Vitovent 300-C: 75 m<sup>3</sup>/h</li> <li>▪ Vitovent 300-W: 100 m<sup>3</sup>/h</li> </ul>		
Standard ventilation	C10B	<ul style="list-style-type: none"> <li>▪ Vitovent 200-W: 50 %</li> <li>▪ Vitovent 300-C: 100 m<sup>3</sup>/h</li> <li>▪ Vitovent 300-W: 150 m<sup>3</sup>/h</li> </ul>		

**Control parameter report** (cont.)

Parameter	Code	Delivered condition	Commissioning	Maintenance/service
Intensive ventilation	C10C	<ul style="list-style-type: none"> <li>▪ Vitovent 200-W: 75 %</li> <li>▪ Vitovent 300-C: 125 m<sup>3</sup>/h</li> <li>▪ Vitovent 300-W: 225 m<sup>3</sup>/h</li> </ul>		
Background ventilation, second fan duct	C189	15 %		
Reduced ventilation, second fan duct	C18A	25 %		
Standard ventilation, second fan duct	C18B	50 %		
Intensive ventilation, second fan duct	C18C	75 %		
Bypass mode	C1A0	0		
Central heating and heat recovery	C1A1	0		
Imbalance permitted	C1A2	1		
Specified imbalance	C1A3	0		
Set reheater coil temperature	C1A4	210 ( $\pm$ 21 °C)		
Humidity sensor sensitivity	C1A6	0		
Min. temperature, geothermal heat exchanger	C1AA	50 ( $\pm$ 5 °C)		
Max. temperature, geothermal heat exchanger	C1AB	250 ( $\pm$ 25 °C)		
Function, input 1	C1B0	0		
Min. voltage, input 1	C1B1	0 (10 $\pm$ 1 V)		
Min. voltage, input 2	C1C1	0 (10 $\pm$ 1 V)		
Flow rate correction	C1C7	100		

**Note**

The factory settings of parameters C101 to C1C7 depend on the ventilation unit and may differ from the values specified here. The factory setting is displayed in the service menu for each parameter with "**Del con ...**": "▼" See "Vitotronic 200 service instructions".

**Photovoltaics**

Parameter	Code	Factory setting	Commissioning	Maintenance/service
"Enable own energy consumption PV"	7E00	0		
"Prop. of external current"	7E02	10 ( $\pm$ 10 %)		
"Threshold for electrical power"	7E04	0 ( $\pm$ 0 W)		
"Enable own energy consumptn for set DHW temperature 2"	7E10	0		
"Enable own energy consumption for DHW heating"	7E11	0		
"Enable own energy consumptn for heating water buffer cyl."	7E12	0		
"Enable own energy consumption for heating"	7E13	0		
"Enable own energy consumption for cooling"	7E15	0		

**Control parameter report** (cont.)

Parameter	Code	Factory setting	Commissioning	Maintenance/ service
"Raise set DHW cylinder temperature PV"	7E21	0 ( $\pm$ 0 K)		
"Raise set heating water buffer cylinder temp PV"	7E22	0 ( $\pm$ 0 K)		
"Raise set room temperature PV"	7E23	0 ( $\pm$ 0 K)		
"Reduce set room temperature PV"	7E25	0 ( $\pm$ 0 K)		

**Smart Grid**

Parameter	Code	Delivered condition	Commissioning	Maintenance/ Service
"Enable Smart Grid"	7E80	0		
"Smart Grid Enable elec heat"	7E82	0		
"Smart Grid set value increase for DHW heating"	7E91	0 ( $\pm$ 0 K)		
"Smart Grid set value increase for htg wtr buff"	7E92	0 ( $\pm$ 0 K)		
"Smart Grid set value increase for centr htg"	7E93	0 ( $\pm$ 0 K)		
"Smart Grid set value decrease for room t cool"	7E95	0 ( $\pm$ 0 K)		

**Time**

Parameter	Code	Delivered condition	Commissioning	Maintenance/ Service
"Automatic changeover summertime - wintertime"	7C00	1		
"Start summertime - month"	7C01	3		
"Start summertime - week"	7C02	5		
"Start summertime - day"	7C03	7		
"Start wintertime - month"	7C04	10		
"Start wintertime - week"	7C05	5		
"Start wintertime - day"	7C06	7		

**Communication**

Parameter	Code	Delivered condition	Commissioning	Maintenance/ Service
"Number of heat pump in cascade"	7707	1		
"Enable LON communication module"	7710	0		
"LON subscriber number"	7777	1		
"LON fault manager"	7779	0		
"LON system number"	7798	1		
"Interval for data transfer via LON"	779C	20 min		
"Source outside temperature"	77FC	0		
"Send outside temperature"	77FD	0		
"Source time"	77FE	0		
"Send time"	77FF	0		

**Control parameter report** (cont.)**Control**

<b>Parameter</b>	<b>Code</b>	<b>Delivered condition</b>	<b>Commissioning</b>	<b>Maintenance/service</b>
"Lock out controls"	8800	0		
"Level enable, time program quieter operation"	8801	0		
"User level for display, energy stmt"	8811	1		

## Specification

## 400 V appliances

BWC type		201.A06	201.A08	201.A10	201.A13	201.A17
<b>Performance data to EN 14511</b> (B0/W35, 5 K spread)						
Rated heating output	kW	5.64	7.63	9.74	12.95	17.20
Cooling capacity	kW	4.37	6.01	7.69	10.30	13.66
Power consumption	kW	1.27	1.74	2.21	2.85	3.81
Coefficient of performance (COP)		4.46	4.40	4.41	4.54	4.52
<b>Brine (primary circuit)</b>						
Capacity	l	1.1	1.4	1.9	2.4	3.7
Minimum flow rate	l/h	820	1100	1420	1900	2520
Residual head (at minimum flow rate)	mbar	640	640	640	780	740
	kPa	64	64	64	78	74
Max. flow temperature	°C	25	25	25	25	25
Min. flow temperature	°C	-5	-5	-5	-5	-5
<b>Heating water (secondary circuit)</b>						
Capacity	l	1.1	1.4	1.9	2.4	3.7
Nominal flow rate	l/h	990	1310	1670	2240	2960
Residual head (at nominal flow rate)	mbar	550	530	510	340	90
	kPa	55	53	51	34	9
Minimum flow rate	l/h	520	660	850	1100	1500
Residual head (at minimum flow rate)	mbar	630	600	580	600	545
	kPa	63	60	58	60	54.5
Max. flow temperature	°C	60	60	60	60	60
<b>Electrical values, heat pump</b>						
Rated voltage, compressor		3/N/PE 400 V/50 Hz				
Rated current, compressor	A	5.5	6.0	8.0	10.0	15.0
Cos φ		0.9	0.9	0.9	0.9	0.9
Starting current, compressor (with starting current limiter, not for type BWC 201.A06)	A	25.0	14.0	20.0	22.0	25.0
Starting current, compressor with stal- led armature	A	26.0	35.0	48.0	64.0	75.0
Compressor MCB/fuse protection	A	C16A 3-pole	B16A 3-pole	B16A 3-pole	B16A 3-pole	B20A 3-pole
Power consumption:						
▪ Primary pump	W	10 to 55	10 to 55	10 to 55	10 to 130	10 to 130
▪ Energy efficiency index EEI of pri- mary pump		≤ 0.21	≤ 0.21	≤ 0.21	≤ 0.23	≤ 0.23
▪ Secondary pump	W	10 to 55	10 to 55	10 to 55	10 to 55	10 to 55
▪ Energy efficiency index EEI of sec- ondary pump		≤ 0.23	≤ 0.23	≤ 0.23	≤ 0.23	≤ 0.23
▪ Circulation pump for cylinder heating	W	62 to 132	62 to 132	62 to 132	62 to 132	62 to 132
▪ Energy efficiency index EEI of circu- lation pump for cylinder heating		≤ 0.23	≤ 0.23	≤ 0.23	≤ 0.23	≤ 0.23
Protection class		I	I	I	I	I

## Specification

### Specification (cont.)

<b>BWC type</b>		<b>201.A06</b>	<b>201.A08</b>	<b>201.A10</b>	<b>201.A13</b>	<b>201.A17</b>
<b>Electrical values, control unit</b>						
Rated voltage		1/N/PE 230 V/50 Hz				
Fuse rating		B16A				
Fuses		2 x 6.3 A H (slow)/250 V				
Max. power consumption	W	1000	1000	1000	1000	1000
Power consumption in operation	W	5	5	5	5	5
<b>Refrigerant circuit</b>						
Refrigerant		R410A	R410A	R410A	R410A	R410A
▪ Refrigerant charge	kg	1.2	1.45	1.7	2.2	2.9
▪ Global warming potential (GWP)		2088	2088	2088	2088	2088
▪ CO <sub>2</sub> equivalent	t	2.5	3.0	3.6	4.6	6.1
Compressor	Type	Hermetically sealed scroll				
Oil in compressor	Type	Emkarate RL32 3MAF				
Quantity of oil in compressor	l	0.7	0.7	1.2	1.2	1.8
<b>Permiss. operating pressure</b>						
Primary circuit	bar	3	3	3	3	3
	MPa	0.3	0.3	0.3	0.3	0.3
Secondary circuit	bar	3	3	3	3	3
	MPa	0.3	0.3	0.3	0.3	0.3
<b>Dimensions</b>						
Total length	mm	844	844	844	844	844
Total width	mm	600	600	600	600	600
Total height (programming unit pivoted up)	mm	1155	1155	1155	1155	1155
<b>Weight</b>	kg	113	117	129	135	148
<b>Connections (male thread)</b>						
Primary circuit flow/return	G	1½	1½	1½	1½	1½
Secondary circuit flow/return	G	1½	1½	1½	1½	1½
<b>Sound power level</b> (tested with reference to EN 12102/EN ISO 9614-2)						
Weighted total sound power level at B0±3 K/W35±5 K						
▪ At rated heating output	dB(A)	43	44	44	44	45
<b>Energy efficiency class</b> to EU Regulation no. 813/2013						
Heating, average climatic conditions						
▪ Low temperature applications (W35)		A <sup>++</sup>	A <sup>++</sup>	A <sup>++</sup>	A <sup>++</sup>	A <sup>++</sup>
▪ Medium temperature applications (W55)		A <sup>++</sup>	A <sup>++</sup>	A <sup>++</sup>	A <sup>++</sup>	A <sup>++</sup>

## Specification (cont.)

<b>BWC type</b>		<b>201.A06</b>	<b>201.A08</b>	<b>201.A10</b>	<b>201.A13</b>	<b>201.A17</b>
<b>Performance data</b> as per EU Regulation no. 813/2013 (average climatic conditions)						
Low temperature applications (W35)						
▪ Energy efficiency $\eta_s$	%	185	190	189	197	192
▪ Rated heating output $P_{rated}$	kW	7	9	11	15	20
▪ Seasonal coefficient of performance (SCOP)		4.83	4.95	4.91	5.13	5.01
Medium temperature applications (W55)						
▪ Energy efficiency $\eta_s$	%	125	126	131	131	135
▪ Rated heating output $P_{rated}$	kW	6	8	10	14	18
▪ Seasonal coefficient of performance (SCOP)		3.33	3.36	3.46	3.48	3.56

**230 V appliances**

<b>Type BWC-M</b>		<b>201.A06</b>	<b>201.A08</b>	<b>201.A10</b>
<b>Performance data</b> to EN 14511 (B0/W35, 5 K spread)				
Rated heating output	kW	5.61	7.54	9.70
Cooling capacity	kW	4.35	5.94	7.61
Power consumption	kW	1.36	1.72	2.25
Coefficient of performance (COP)		4.13	4.39	4.31
<b>Brine</b> (primary circuit)				
Capacity	l	1.1	1.4	1.9
Minimum flow rate	l/h	820	1100	1420
Residual head (at minimum flow rate)	mbar	640	640	640
	kPa	64	64	64
Max. flow temperature	°C	25	25	25
Min. flow temperature	°C	-5	-5	-5
<b>Heating water</b> (secondary circuit)				
Capacity	l	1.1	1.4	1.9
Nominal flow rate	l/h	990	1310	1670
Residual head (at nominal flow rate)	mbar	550	530	510
	kPa	55	53	51
Minimum flow rate	l/h	520	660	850
Residual head (at minimum flow rate)	mbar	630	600	580
	kPa	63	60	58
Max. flow temperature	°C	60	60	60

## Specification

### Specification (cont.)

Type BWC-M		201.A06	201.A08	201.A10
<b>Electrical values, heat pump</b>				
Rated voltage, compressor		1/N/PE 230 V/50 Hz		
Rated current, compressor	A	16.0	17.1	23.0
Cos φ		0.9	0.9	0.9
Starting current, compressor (with starting current limiter, not for type BWC 201.A06)	A	< 45	< 45	< 45
Starting current, compressor with stal- led armature	A	58.0	67.0	97.0
Compressor MCB/fuse protection	A	B20A 1-pole	B20A 1-pole	B25A 1-pole
Power consumption:				
▪ Primary pump	W	10 to 55	10 to 55	10 to 55
▪ Energy efficiency index EEI of pri- mary pump		≤ 0.21	≤ 0.21	≤ 0.21
▪ Secondary pump	W	10 to 55	10 to 55	10 to 55
▪ Energy efficiency index EEI of secon- dary pump		≤ 0.23	≤ 0.23	≤ 0.23
▪ Circulation pump for cylinder heating	W	62 to 132	62 to 132	62 to 132
▪ Energy efficiency index EEI of circula- tion pump for cylinder heating		≤ 0.23	≤ 0.23	≤ 0.23
Protection class		I	I	I
<b>Electrical values, control unit</b>				
Rated voltage		1/N/PE 230 V/50 Hz		
Fuse rating		B16A		
Fuses		2 x 6.3 A H (slow)/250 V		
Max. power consumption	W	1000	1000	1000
Power consumption in operation	W	5	5	5
<b>Refrigerant circuit</b>				
Refrigerant		R410A	R410A	R410A
▪ Refrigerant charge	kg	1.2	1.45	1.7
▪ Global warming potential (GWP)		2088	2088	2088
▪ CO <sub>2</sub> equivalent	t	2.5	3.0	3.6
Compressor	Type	Hermetically sealed scroll		
Oil in compressor	Type	Emkarate RL32 3MAF		
Quantity of oil in compressor	l	0.7	0.7	1.2
<b>Permiss. operating pressure</b>				
Primary circuit	bar	3	3	3
	MPa	0.3	0.3	0.3
Secondary circuit	bar	3	3	3
	MPa	0.3	0.3	0.3
<b>Dimensions</b>				
Total length	mm	844	844	844
Total width	mm	600	600	600
Total height (programming unit pivoted up)	mm	1155	1155	1155



## Specification (cont.)

Type BWC-M		201.A06	201.A08	201.A10
<b>Weight</b>	kg	115	119	131
<b>Connections</b> (male thread)				
Primary circuit flow/return	G	1½	1½	1½
Secondary circuit flow/return	G	1½	1½	1½
<b>Sound power level</b> (tested with reference to EN 12102/EN ISO 9614-2) Weighted total sound power level at $B_{0\pm 3 K}/W_{35\pm 5 K}$				
▪ At rated heating output	dB(A)	43	44	44
<b>Energy efficiency class</b> to EU Regulation no. 813/2013 Heating, average climatic conditions				
▪ Low temperature applications (W35)		A <sup>++</sup>	A <sup>++</sup>	A <sup>++</sup>
▪ Medium temperature applications (W55)		A <sup>++</sup>	A <sup>++</sup>	A <sup>++</sup>
<b>Performance data</b> as per EU Regulation no. 813/2013 (average climatic conditions)				
Low temperature applications (W35)				
▪ Energy efficiency $\eta_s$	%	180	194	188
▪ Rated heating output $P_{rated}$	kW	6	9	11
▪ Seasonal coefficient of performance (SCOP)		4.70	5.04	4.91
Medium temperature applications (W55)				
▪ Energy efficiency $\eta_s$	%	118	122	123
▪ Rated heating output $P_{rated}$	kW	6	8	10
▪ Seasonal coefficient of performance (SCOP)		3.14	3.24	3.27

## Commissioning order

Fax the following request, together with the enclosed system scheme, to your local Viessmann sales office. A competent employee must be present when the system is commissioned.

**System details:**

Client \_\_\_\_\_

System location \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Please tick these check points:**

- Hydraulic scheme for heating system included
- Heating circuits fully installed and filled
- Electrical installation completed
- Hydraulic lines fully thermally insulated
- All windows and external doors sealed
- Components for cooling mode fully installed (optional)
- Components for ventilation fully installed (optional)
- Components for PV system fully installed (optional)

**Preferred appointment:**

1. Date \_\_\_\_\_  
Time \_\_\_\_\_

2. Date \_\_\_\_\_  
Time \_\_\_\_\_

The work that is requested to be carried out by Viessmann will be billed in accordance with the latest Viessmann pricelist.

Place / Date \_\_\_\_\_

Signature \_\_\_\_\_

## Final decommissioning and disposal

Viessmann products can be recycled. Components and substances from the system are not part of ordinary household waste.

For decommissioning the system, isolate the system from the power supply and allow components to cool down where appropriate. All components must be disposed of correctly.

## Declaration of conformity

We, Viessmann Werke GmbH & Co. KG, D-35107 Allendorf, declare as sole responsible body that the named product complies with the European directives and supplementary national requirements in terms of its design and operational characteristics.

Conformity has been verified with the CE designation. Using the serial number, the full Declaration of Conformity can be found on the following website:

**[www.viessmann.co.uk/eu-conformity](http://www.viessmann.co.uk/eu-conformity)**

The **product characteristics** determined as system values for the product **Vitocal 200-G** (see technical guide) can be utilised to assess the energy consumption of heating and ventilation systems to DIN V 4701-10 specified by the EnEV [Germany].

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