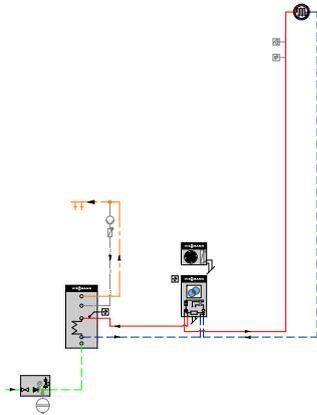


Vitocal 150-A, weather-compensated heat pump control unit E3, DHW heating, internal heating/cooling circuit, active cooling function

Hydraulic diagram



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Main components

- Vitocal 150-A air source heat pump
- Weather-compensated heat pump control unit E3
- Mono mode DHW cylinder
- Heating/cooling circuit 1 (direct)
- Active cooling function

Function description

Information on safeguarding the minimum system volume and minimum flow rate

An integral buffer cylinder and an electronically controlled bypass valve ensure that a sufficient system volume and a minimum circulation volume are available, both in heating and cooling mode.

Central heating by the heat pump

The heat pump starts if the actual temperature captured at the flow temperature sensor in the secondary circuit is lower than the set temperature selected at the heat pump control unit. The heat pump regulates the flow temperature of the heating circuit by modulating the output. The secondary pump transports the heating water to the heating circuit.

DHW heating by heat pump

DHW heating begins if the cylinder temperature falls below the set value. The secondary pump switches on and the internal diverter

valve moves to the "DHW heating" position. The heat pump raises the flow temperature to the value required for DHW heating. If higher cylinder temperatures are to be achieved, cylinder reheating by an additional heat generator or the instantaneous heating water heater must be carried out.

Heating circuit 1 (direct)

The set flow temperature of each heating circuit is determined by the following parameters: Outside temperature, set room temperature, operating mode and heating curve. Operating in weather-compensated mode, the heat generator control unit regulates its temperature to the set flow temperature of the heating circuit without mixer. The maximum temperature in heating circuits can be limited by means of a temperature limiter.

Information on underfloor heating

Underfloor heating circuits must be equipped with a temperature limiter to restrict the maximum temperature.

Active cooling function

The active cooling function is enabled by the heat pump control unit if the value that can be selected for the cooling limit temperature at the heat pump control unit is exceeded at the outside temperature sensor. The heat pump(s) and secondary pump(s) start. If the 3-way diverter valves for "heating/cooling" are present, they will be switched to cooling. Reversing the refrigerant circuit cools the water that is transported into the cooling circuit. The set cooling circuit flow temperature is calculated via the cooling curve set in the heat pump control unit and controlled accordingly

Information on cooling mode

All lines where the coolant temperature can fall below the dew point should be insulated so that they are vapour diffusion-proof. Control of the flow temperature and use of the contact humidistat ensure that no condensation and therefore no damage can occur as a result of excessively low temperatures. Valves on the heating circuit distributor are opened on changeover to cooling function by the floor thermostat or the heating/cooling connection module for the underfloor heating system.

Note

This scheme is a general example without shut-off valves or safety equipment. Refer to the appropriate technical guides when designing specific applications. With regard to the hydraulic connection of heating components, ensure that the required minimum and maximum flow rates are complied with.

Hydraulic conditions for the primary and secondary circuit

Be sure to observe the minimum pipe diameter – see following table.

Product	Type	Pipe Ø, connection lines indoor/outdoor unit	Min. pipe Ø, secondary circuit	
			Underfloor heating	Radiators
Vitocal 150-A	AWO-M-E-AC-AF 151.A10	DN 32	DN 32	DN 20
	AWO-M-E-AC-AF 151.A13			
	AWO-M-E-AC-AF 151.A16			
Vitocal 200-S	AWB-M-E-AC 201.E06	Hot gas line: 12 mm Liquid line: 6 mm	DN 25	-
	AWB-M-E-AC 201.E08	Hot gas line: 16 mm		
	AWB-M-E-AC 201.E10	Liquid line: 6 mm		

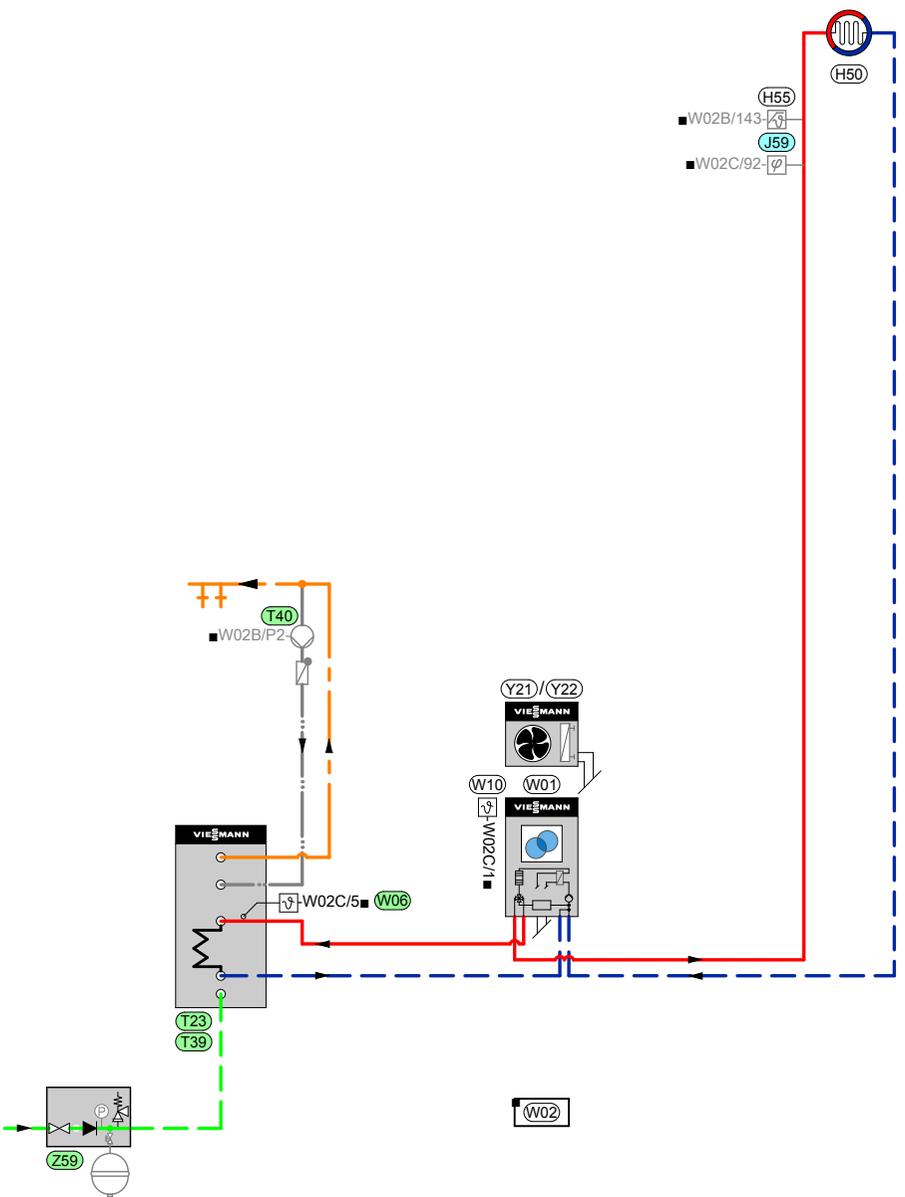
Note

In applications where the heat pump can be temporarily blocked via the power-OFF contact, we recommend using a system example with a sufficiently sized heating water buffer cylinder. Heat is supplied to the building by the heating water buffer cylinder during the power-OFF time.

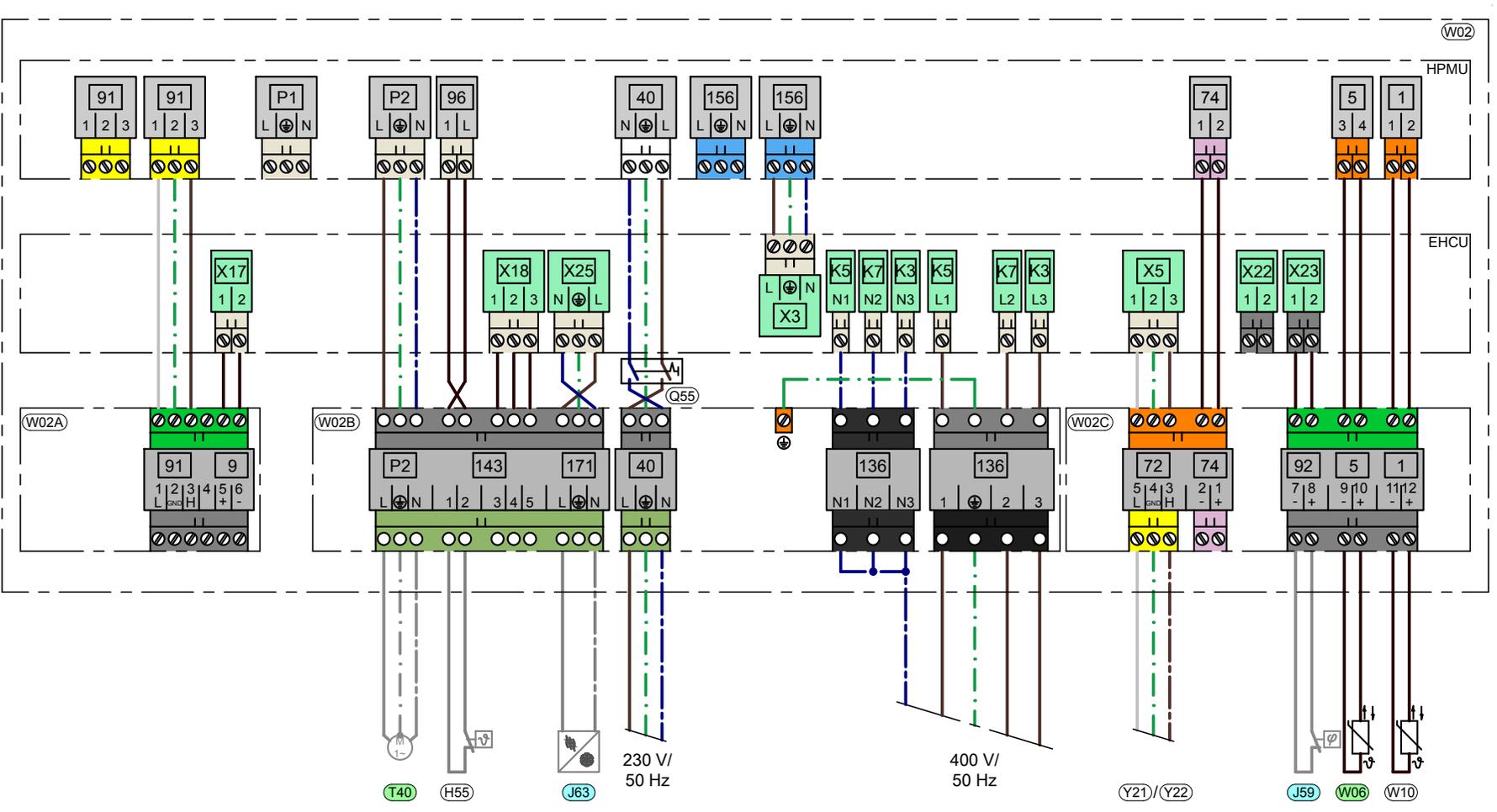
Commissioning menu

System scheme	Setting		Function description
Low loss header/buffer cylinder	Not available		There is no low loss header or heating water buffer cylinder in the system.
Heating/cooling circuit 1	Function	Heating circuit without mixer	One heating circuit without mixer connected.
	Operating mode	Heating	Heating/cooling circuit enabled for room heating only.
		Cooling	Heating/cooling circuit enabled for room cooling only.
		Heating/cooling	Heating/cooling circuit enabled for room heating and room cooling.
	Type	Underfloor heating	<i>Only for cooling:</i> Contact humidistat required. Min. set flow temperature, cooling = 18 °C.
		Radiators	Cooling not possible.
Fan convector		<i>Only for cooling:</i> No contact humidistat required. Min. set flow temperature, cooling = 7 °C.	
DHW	Cylinder with one sensor		System with DHW cylinder with 1 cylinder temperature sensor.
	Cylinder with one sensor and DHW circulation pump		System with DHW cylinder with 1 cylinder temperature sensor and DHW circulation pump.
Extensions	Setting		Function description
Digital input 1	Blocking heating/cooling circuit 1		Shutdown of the heating/cooling circuit by the temperature limiter (as maximum temperature limiter) to protect the underfloor heating.

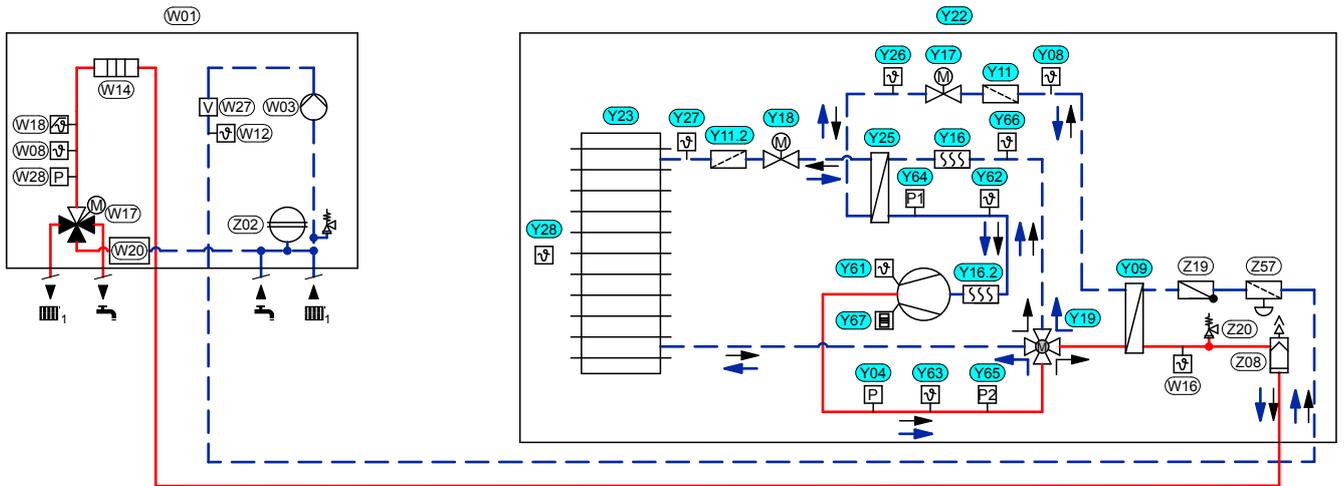
Hydraulic diagram



Wiring diagram



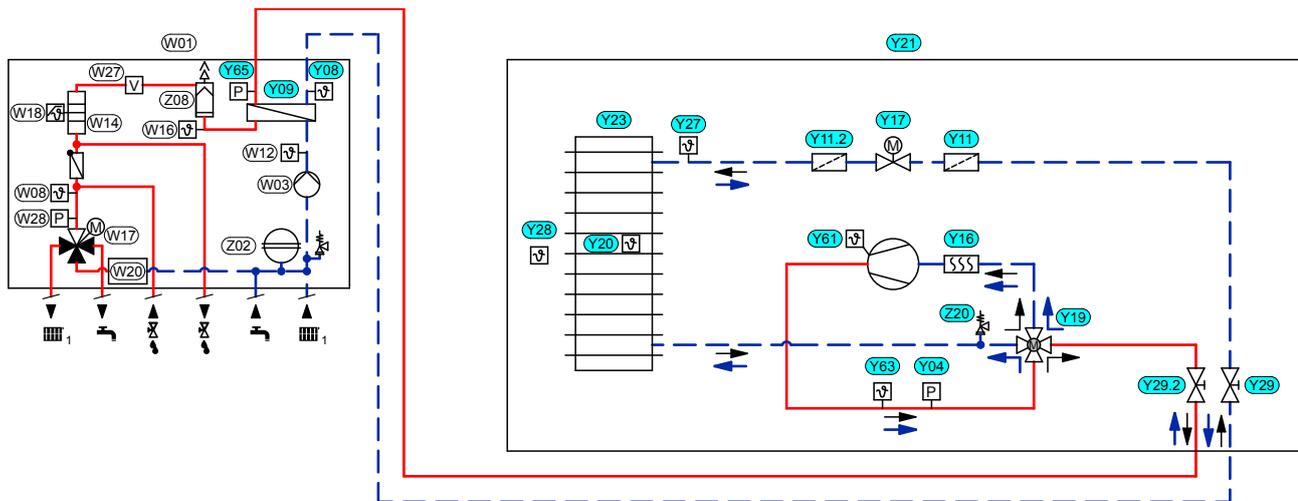
Hydraulic diagram: Vitocal 150-A indoor/outdoor unit



Internal components: Vitocal 150-A indoor/outdoor unit

Pos.	Description	Part no.
(W01) (B)	Indoor unit, Vitocal 150-A heat pump	See Viessmann pricelist
(W03)	Secondary pump	Standard delivery pos. (W01) (B)
(W08)	Flow temperature sensor	Standard delivery pos. (W01) (B)
(W12)	Return temperature sensor	Standard delivery pos. (W01) (B)
(W14)	Instantaneous heating water heater	Standard delivery pos. (W01) (B)
(W16)	Flow temperature sensor (upstream of electric heater)	Standard delivery pos. (W01) (B)
(W17)	4/3-way valve for central heating/DHW heating/bypass	Standard delivery pos. (W01) (B)
(W18)	Safety temperature sensor	Standard delivery pos. (W01) (B)
(W20)	Buffer cylinder (16 l)	Standard delivery pos. (W01) (B)
(W27)	Flow sensor	Standard delivery pos. (W01) (B)
(W28)	Pressure switch	Standard delivery pos. (W01) (B)
(Y04)	Primary circuit pressure switch	Standard delivery pos. (W01) (B)
(Y08)	Return temperature sensor, primary circuit	Standard delivery pos. (W01) (B)
(Y09)	Condenser	Standard delivery pos. (W01) (B)
(Y11) / (Y11.2)	Dirt trap in the refrigerant circuit	Standard delivery pos. (W01) (B)
(Y16) / (Y16.2)	Accumulator	Standard delivery pos. (W01) (B)
(Y17)	Expansion valve 1	Standard delivery pos. (W01) (B)
(Y18)	Expansion valve 2	Standard delivery pos. (W01) (B)
(Y19)	4-way reversing valve	Standard delivery pos. (W01) (B)
(Y22)	Monoblock outdoor unit (with integral condenser)	Standard delivery pos. (W01) (B)
(Y23)	Evaporator	Standard delivery pos. (W01) (B)
(Y25)	Inner heat exchanger	Standard delivery pos. (W01) (B)
(Y26)	Temperature sensor, inlet, inner heat exchanger	Standard delivery pos. (W01) (B)
(Y27)	Temperature sensor, evaporator inlet	Standard delivery pos. (W01) (B)
(Y28)	Temperature sensor, outdoor air inlet	Standard delivery pos. (W01) (B)
(Y61)	Temperature sensor, compressor oil	Standard delivery pos. (W01) (B)
(Y62)	Temperature sensor, compressor inlet	Standard delivery pos. (W01) (B)
(Y63)	Temperature sensor, compressor outlet	Standard delivery pos. (W01) (B)
(Y64)	Pressure sensor, suction gas line	Standard delivery pos. (W01) (B)
(Y65)	Pressure sensor, high pressure line	Standard delivery pos. (W01) (B)
(Y66)	Temperature sensor, suction gas line	Standard delivery pos. (W01) (B)
(Y67)	Oil sump heater	Standard delivery pos. (W01) (B)
(Z02)	Diaphragm expansion vessel (10 l)	Standard delivery pos. (W01) (B)
(Z08)	Air vent valve	Standard delivery pos. (W01) (B)
(Z19)	Check valve	Standard delivery pos. (W01) (B)
(Z20)	Safety valve	Standard delivery pos. (W01) (B)
(Z57)	Dirt trap	Standard delivery pos. (W01) (B)

Hydraulic diagram: Vitocal 200-S indoor/outdoor unit



Internal components: Vitocal 200-S indoor/outdoor unit

Pos.	Description	Part no.
(W01) (A)	Indoor unit, Vitocal 200-S heat pump	See Viessmann pricelist
(W03)	Secondary pump	Standard delivery pos. (W01) (A)
(W08)	Flow temperature sensor	Standard delivery pos. (W01) (A)
(W12)	Return temperature sensor	Standard delivery pos. (W01) (A)
(W14)	Instantaneous heating water heater	Standard delivery pos. (W01) (A)
(W16)	Flow temperature sensor (upstream of electric heater)	Standard delivery pos. (W01) (A)
(W17)	4/3-way valve for central heating/DHW heating/bypass	Standard delivery pos. (W01) (A)
(W18)	Safety temperature sensor	Standard delivery pos. (W01) (A)
(W20)	Buffer cylinder (16 l)	Standard delivery pos. (W01) (A)
(W27)	Flow sensor	Standard delivery pos. (W01) (A)
(W28)	Pressure switch	Standard delivery pos. (W01) (A)
(Y04)	Primary circuit pressure switch	Standard delivery pos. (W01) (A)
(Y08)	Return temperature sensor, primary circuit	Standard delivery pos. (W01) (A)
(Y09)	Condenser	Standard delivery pos. (W01) (A)
(Y11)/(Y11.2)	Dirt trap	Standard delivery pos. (W01) (A)
(Y16)	Accumulator	Standard delivery pos. (W01) (A)
(Y17)	Expansion valve 1	Standard delivery pos. (W01) (A)
(Y19)	4-way reversing valve	Standard delivery pos. (W01) (A)
(Y20)	Temperature sensor, evaporator middle	Standard delivery pos. (W01) (A)
(Y21)	Outdoor unit, split (condenser in indoor unit)	Standard delivery pos. (W01) (A)
(Y23)	Evaporator	Standard delivery pos. (W01) (A)
(Y27)	Temperature sensor, evaporator inlet	Standard delivery pos. (W01) (A)
(Y28)	Temperature sensor, outdoor air inlet	Standard delivery pos. (W01) (A)
(Y29) (Y29.2)	Service valve (for shutting off the split outdoor unit)	Standard delivery pos. (W01) (A)
(Y61)	Temperature sensor, compressor oil	Standard delivery pos. (W01) (A)
(Y63)	Temperature sensor, compressor outlet	Standard delivery pos. (W01) (A)
(Y65)	Pressure sensor, high pressure line	Standard delivery pos. (W01) (A)
(Z02)	Diaphragm expansion vessel (18 l)	Standard delivery pos. (W01) (A)
(Z08)	Air vent valve	Standard delivery pos. (W01) (A)
(Z20)	Safety valve	Standard delivery pos. (W01) (A)

Required products and accessories

Heat generator

Pos.	Description	Part no.
(W01) (A)	Indoor unit, Vitocal 200-S heat pump or	See Viessmann pricelist
(W01) (B)	Indoor unit, Vitocal 150-A heat pump	See Viessmann pricelist
(W02)	Weather-compensated heat pump control unit E3	Standard delivery pos. (W01)
(W02A) (W02C)	Connection sockets: Sensors and BUS connections	Standard delivery pos. (W01)
(W02B)	Junction box: 230 V components and switching contacts	Standard delivery pos. (W01)
(W06)	Cylinder temperature sensor (NTC 10k immersion temperature sensor)	7438702
(W10)	Outside temperature sensor (NTC 10k)	Standard delivery pos. (W02)

4804405_2110_01 (cont.)**Primary source**

Pos.	Description	Part no.
(Y21)	Outdoor unit, split (condenser in indoor unit)	Standard delivery pos. (W01) (A)
(Y22)	Outdoor unit, monoblock (condenser in outdoor unit)	Standard delivery pos. (W01) (B)

DHW heating

Pos.	Description	Part no.
(T23)	Mono mode DHW cylinder	See Viessmann pricelist
(T39)	or	
(T40)	Vitocell 100-W (300 l), type CVWB mono mode DHW cylinder	Z021898
	DHW circulation pump	See Viessmann pricelist

Cooling

Pos.	Description	Part no.
(J59)	Contact humidistat 24 V	7181418
(J63)	Floor thermostat/connection module, individual room control, heating/cooling	See Viessmann pricelist/on site

Heating/cooling circuit 1 (direct)

Pos.	Description	Part no.
(H50)	Heating/cooling circuit 1 (direct)	See Viessmann pricelist
(H55)	Contact thermostat (temperature limiter to restrict the maximum temperature of under-floor heating systems)	ZK04647

Electronics accessories

Pos.	Description	Part no.
(Q55)	ON/OFF switch	Standard delivery pos. (W02)

Hydraulics accessories

Pos.	Description	Part no.
(Z59)	Safety assembly with shut-off valve, non-return valve, safety valve and optional expansion vessel (DHW), pressure gauge	See Viessmann pricelist