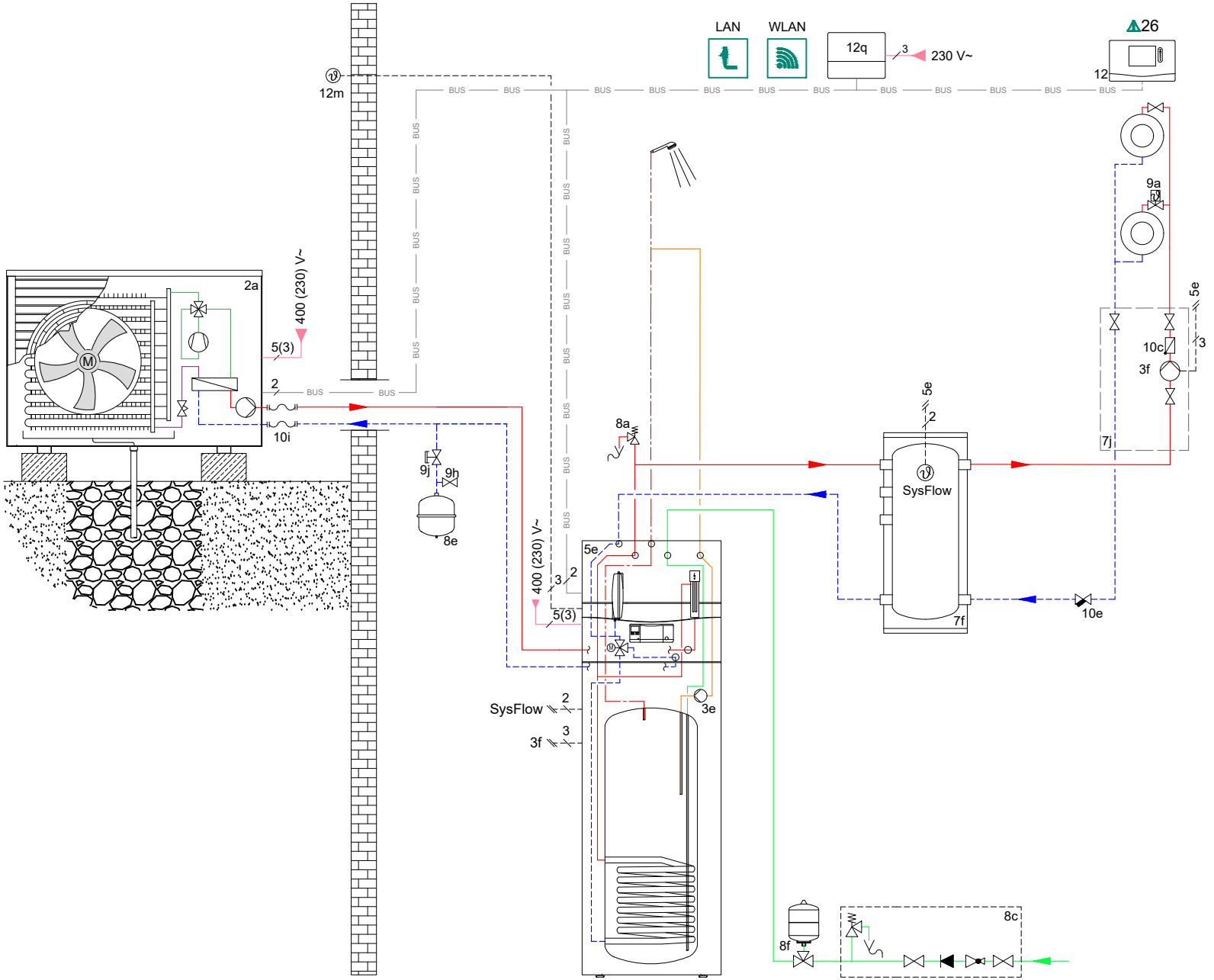
0020284561

22: Electrical supply voltage depending on the installation and appliance: 230 V, 400 V
26: Also compatible with VRC 700.



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This scheme does not include all necessary shut-off and safety devices for a right installation. The applicable national and international laws, regulations, standards and directives must be adhered to! Due to special object-related circumstances or potential differences in the installation environment (e.g. climatic conditions) it is recommended to involve a specialized planning agency.

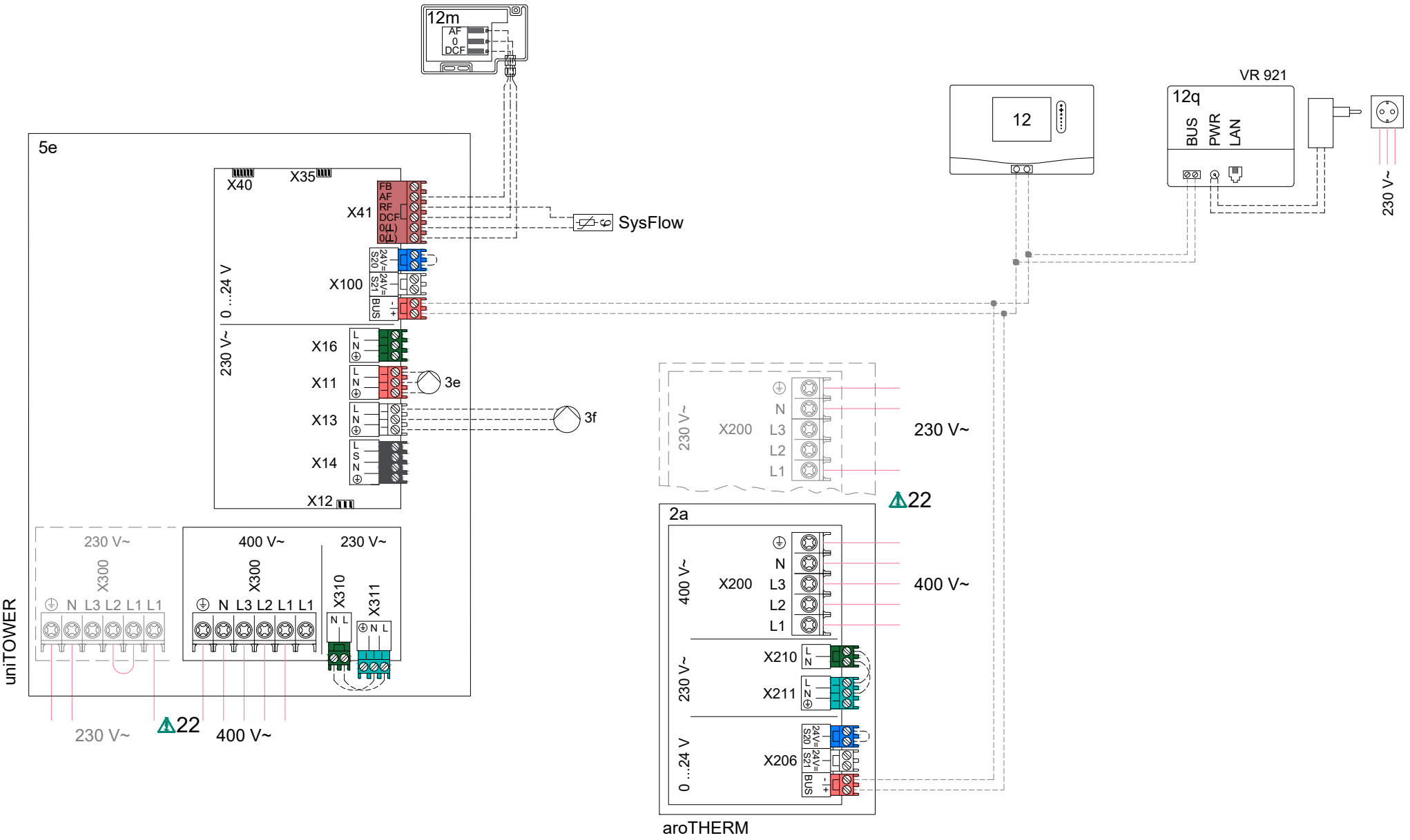
drawn:	CM	date:	20.04.2022	Appliances:	aroTHERM plus VWL < 10 kW uniTOWER plus VIH QW 190/6 E
version no.	10.00	reference to	0020331436	Controls:	VRC720, VR921

Circuits: 1 x direct radiator

Necessary Settings
Heat pump:
- Cooling technology : **No cooling**

Control | Basic system diagram config.:
- Basic system diagram code : **11**

Control | HP control module configuration:
- MO 2 : **Circulation pump**



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Legend

Hydraulic

1	Heat generator
1a	Back-up heater for domestic hot water
1b	Back-up heater for heating
1c	Back-up heater for domestic hot water/heating
1d	Solid fuel boiler with manual feed
2	Heat pump
2a	Air-to-water heat pump
2b	Air-to-brine heat exchanger
2c	Refrigerant-split heat pump outdoor unit
2d	Refrigerant-split heat pump indoor unit
2e	Ground water module
2f	Passive cooling module
3	Heat generator circulation pump
3a	Swimming pool circulation pump
3b	Cooling circuit pump
3c	Cylinder charging pump
3d	Well pump
3e	Circulation pump
3f	Heating pump
3g	Heat source circulation pump
3h	Anti-legionella pump
3i	Pump heat exchanger
4	Buffer cylinder
5	Monovalent domestic hot water cylinder
5a	Bivalent domestic hot water cylinder
5b	Shift-load cylinder
5c	Combi cylinder
5d	Multi-functional buffer cylinder
5e	Hydraulic tower
6	Solar collector (thermal)
7a	Heat pump brine filling unit
7b	Solar pump station
7c	Domestic hot water station
7d	Heat interface unit
7e	Hydraulic block
7f	Decoupler module
7g	Heat recovery module
7h	Heat exchanger module
7i	2-zone module
7j	Pump group
8a	Expansion relief valve
8b	Potable water expansion relief valve
8c	Safety assembly for the potable water connection
8d	Safety assembly for the heat generator
8e	Expansion vessel for heating
8f	Expansion vessel for potable water
8g	Expansion vessel for brine/solar
8h	Solar protection vessel
8i	Thermal safety assembly
9a	Single-room temperature control valve (thermostatic/motorised)
9b	Zone valve
9c	Flow regulator valve
9d	Bypass valve
9e	Diverter valve for potable water
9f	Diverter valve for cooling
9g	Diverter valve
9h	Filling/draining cock
9i	Purging valve
9j	Tamper-proof capped valve
9k	3-port mixing valve
9l	3-port mixing valve - for cooling
9m	Increase in return flow for 3-port mixing valve
9n	Thermostatic mixing valve
9o	Flow meter / Taco setter
9p	Cascade valve
10a	Thermometer
10b	Manometer/pressure gauge
10c	Non-return valve
10d	Air separator
10e	Line strainer with magnetite separator
10f	Solar/brine collecting vessel
10g	Heat exchanger
10h	Low loss header
10i	Flexible connections
11a	Fan coil
11b	Swimming pool
12	System control
12a	Remote control
12b	Heat pump expansion module
12c	2 in 7 multi-functional module
12d	Extension module/wiring centre
12e	Main extension module
12f	Wiring centre
12g	eBus coupler
12h	Solar control
12i	External control
12j	Cut-off relay
12k	Limit thermostat
12l	Cylinder temperature cut-out
12m	Outdoor temperature sensor
12n	Flow switch
12o	eBus power supply unit
12p	Radio receiver unit
12q	Internet gateway
12r	PV control
12s	Modbus interface module
13	Ventilation unit
14a	Supply air outlet
14b	Extract air inlet
14c	Air filter
14d	Supply air heater
14e	Frost protection element
14f	Silencer
14g	Restrictor flap
14h	Weather protection mesh
14i	Extract air box
14j	Air humidifier
14k	Air dehumidifier
14l	Air manifold
14m	Air collector
15	Cylinder ventilation unit

Wiring

BufBt	Bottom temperature sensor of buffer cylinder
BufTopDHW	Top temperature sensor for DHW section of buffer cylinder
BufBtDHW	Bottom temperature sensor for DHW section of buffer cylinder
BufTopCH	Top temperature sensor for heating section of buffer cylinder
BufBtCH	Bottom temperature sensor for heating section of buffer cylinder
C1/C2	Enable cylinder charging/buffer charging
COL	Collector temperature sensor
DEM	External heating demand for the heating circuit
DHW	Cylinder temperature sensor
DHWBt	Bottom cylinder temperature sensor (domestic hot water cylinder)
EVU	Energy supply company switching contact
FS	Heating circuit flow temperature sensor/swimming pool sensor
MA	Multi-function output
ME	Multi-function input
PWM	PWM signal for pump
PV	Photovoltaic inverter interface
RT	Room thermostat
SCA	Cooling signal
SG	Interface to power grid operator
Solar yield	Solar yield sensor
SysFlow	System temperature sensor
TD	Temperature sensor for a DT control system
TEL	Switch contact for remote control
TR	Isolating circuit with switching floor-standing boiler

Components that are used multiple times (x) are numbered consecutively (x1, x2, ..., xn}

- Potable water
- Heating flow
- Solar return
- BUS eBUS connection
- Cooling flow
- Refrigerant – liquid
- Exhaust air
- Domestic hot water
- Heating return
- Electrical wiring
- Brine flow (from source)
- Cooling return
- Extract air
- Supply air
- Domestic hot water circulation
- Solar flow
- 230/400 V power supply
- Brine return (to source)
- Refrigerant – vapour
- Outdoor air

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Confindential: A communication to a third party in any form is not permitted without written consent from Vaillant.

Remarks and Restrictions

Caution! Schematic diagram!

1 Non-binding recommendation! The information below shall never supersede the correct professional design of the system. This system schematic does not include all the shut-off and safety devices necessary for professional assembly. The applicable national and international laws and regulations, standards and directives must be adhered to!

2 Subject to alterations in the schematic diagram! Full and/or partial reproduction of this schematic is subject to prior written approval by Vaillant GmbH.

3 During planning and design, installation and later use of the system, all operating instructions for installation and use created and applicable to the appliance, the accessories and/or all other system components must be adhered to.

4 Vaillant GmbH herewith strictly rules out any liability for claims for damages on whatever legal ground, especially for breach of obligations or delictual obligation, i.e. claims in tort. The aforesaid shall neither apply in cases of statutory liability, wilful intent or gross negligence, nor in case of injury to life, body or health nor in the case of violation of material contractual obligations (cardinal obligations) provided that a contract is concluded with the user of the schematic diagram hereunder. Cardinal obligations are material obligations or duties to be warranted by the contract in accordance with its subject or purpose; furthermore material contractual obligations are such obligations indispensable for the correct performance of such contract in the first place; the customer constantly trusts in and is entitled to trust in the adherence to such obligations. However, liability for claims for damages due to breach of such material contractual obligations shall be limited to the foreseeable damages typical with the respective contract unless such breach is a case of wilful intent or gross negligence or in case of liability due to injury to life, body or health. The aforesaid stipulations shall not entail any change in the burden of proof to the disadvantage of the user of the schematic diagram hereunder.

The following list contains a set of possible remarks and restrictions. For a scheme, only the remarks and restrictions explicitly stated in the header on page 1 applies/apply

⚠1 The system doesn't fulfill the hygienic requirements acc. to EN 806-2:2005 (legionella protection).

⚠2 Legionella protection function to be arranged by boilers with system control.

⚠3 The system fulfills the hygienic requirements acc. to EN 806-2:2005 (legionella protection) only with integrated electric peak heater or with system temperature >/=60°C.

⚠4 The connection of a controlled solar unit is not possible.

⚠5 Mount the sensor of the overheat safety thermostat at an adequate position to avoid tank temperatures above 100°C.

⚠6 The coil size of the DHW tank has to be aligned to the heating output of the heat pump.

⚠7 Heat source options 0020178458: number

⚠8 Min. 35 % of the nominal flow rate through the reference room without single room temperature control valve.

⚠9 Pump with IF-module is necessary.

⚠10 An additional heat generator has to be installed to reach the required domestic hot water temperatures acc. the actual standards and directives.

⚠11 DHW tank loading simultaneously with heating operation is not possible.

⚠12 Inlet flow rate for cylinder loading (DHW and heating) < 1800 l/h.

⚠13 The flow rate of the connected heat generators has to be aligned with the decoupler module.

⚠14 Backup heater CH/DHW must be protected by a self acting overheat thermostat.

⚠15 Max. 4 remote controls can be used.

⚠16 DHW circulation pump has to be installed separately.

⚠17 Optional component

⚠18 The cascade can be configured with 2 to 7 heat generators.

⚠19 The cascade can be configured with 2 to 4 DHW stations.

⚠20 The cascade can be configured with 2 to 4 solar stations.

⚠21 The system can be configured with up to 9 mixed circuits with max. 3 functional modules.

⚠22 Electrical supply voltage depending on the installation and appliance: 230 V, 400 V

⚠23 Heat demand has a higher priority than automatic cooling. Use time programmes to avoid parallel demands

⚠24 Safety equipment for solid fuel boilers has to be planned to avoid tank temperatures above 80°C.

⚠25 RCD - necessary, when demanded by local regulations.

⚠26 Also compatible with VRC 700.

⚠27 Consider the local hygienic requirements for legionella protection.

⚠28 Consider the polarity of the eBUS connection.

⚠29 Use a shielded eBUS cable if the distance is longer than 10m.

⚠30 In the case of external safety components, the bridge must be removed.

⚠31 Consider the max. inlet temperature of the connected boiler.

⚠32 Consider devices for protection against transient overvoltages.

⚠33 VWZ AI compatible with VWL x/6 has to be used

⚠34 For VWS 400/3 S1 and VWS 780/3 S1, pumps and volume flow sensors need to be connected separatley.

⚠35 Use a twisted and shielded Modbus cable for the connection between outdoor and indoor unit

⚠36 The opening pressure of the installed bypass valve has to be aligned to the integrated bypass valve in the hydraulic tower. Minimum system volume has to be respected

⚠37 Compatible from VRC720/2 on

⚠38 If a thermostat shall be used, instead of the DHW temperature sensor; remove the DHW temperature sensor, mount the thermostat, and connect the thermostat on clamp 'CYL'.

⚠39 VWL 45/7.2...65/7.2: Backup heater power limitation not allowed
VWL 85/7.2...105/7.2: Backup heater power limitation not allowed, ensure min. water content (see manuals)

⚠40 Also compatible with VWL xx/6 ≥ 10 kW and height difference between safety valve in outdoor unit and lowest safety valve inside the building of more than 3 m.