Aeroheat
Aeroheat Livera CL

AH CL 5a
AH CL 8a

Technical documentation

Item no. D3785, version: e

AC Cooling Heating

Table of contents

AH CL 5a, AH CL 8a, air/water

Heat pump type	AH CL 5a	AH CL 8a
Installation	outdoor	outdoor
Controller Aeroplus 2.1	not integrated	not integrated
EHPA certificate	CH-HP-01362	

Performance data				
Heating capacity | COP				
for A10/W35 acc. to DIN EN 14511-x	Partial load operation	kW | COP	2,16 | 5,09	3,07 | 5,25
for A7/W35 acc. to DIN EN 14511-x	Partial load operation	kW | COP	2,12 | 4,98	3,14 | 5,24
for A7/W55 acc. to DIN EN 14511-x	Partial load operation	kW | COP	1,82 | 2,79	2,72 | 3,05
for A2/W35 acc. to DIN EN 14511-x	Partial load operation	kW | COP	3,28 | 4,12	4,61 | 4,20
for A–7/W35 acc. to DIN EN 14511-x	Full load operation	kW | COP	5,41 | 3,08	7,33 | 3,00
for A–7/W55 acc. to DIN EN 14511-x	Full load operation	kW | COP	4,67 | 2,06	6,87 | 2,30
Heating capacity				
for A10/W35	min. | max.	kW | kW	2,16 | 5,50	3,07 | 8,00
for A7/W35	min. | max.	kW | kW	2,12 | 5,50	3,14 | 8,00
for A7/W55	min. | max.	kW | kW	1,82 | 5,50	2,72 | 8,00
for A2/W35	min. | max.	kW | kW	1,82 | 5,50	2,73 | 8,00
for A–7/W35	min. | max.	kW | kW	1,16 | 5,41	1,93 | 7,33
for A–7/W55	min. | max.	kW | kW	1,14 | 4,67	1,51 | 6,87
Cooling capacity | EER				
for A35/W18	Partial load operation	kW | EER	3,75 | 4,20	5,39 | 4,26
for A35/W7	Partial load operation	kW | EER	– | –	– | –
Cooling capacity				
for A35/W18	min. | max.	kW | kW	2,15 | 5,50	2,59 | 8,00
for A35/W7	min. | max.	kW | kW	– | –	– | –

Operating limits				
Heating capacity domestic hot water preparation		kW	5.5	8
Heating circuit return min. | Heating circuit flow max. heating	within heat source min. / max.	°C	20 | 60	20 | 60
Heat source, heating	min. | max.	°C	–22 | +35	–22 | +35
Additional operating points		…	A–7/W70	A–7/W70

Energy class / Performance data[2)]			
Energy efficiency class 35 °C | 55 °C		A+++ | A++	A+++ | A++
Rated thermal output P_{rated} 35 °C | 55 °C	kW	6 | 6	9 | 8
Energy Efficiency Heating η_s 35 °C | 55 °C	%	187 | 142	185 | 146
SCOP (according to EN 14825) 35 °C | 55 °C		4,75 | 3,63	4,69 | 3,74

Sound					
Sound power level inside		min. | night | max.	dB(A)	– | – | –	– | – | –
Sound power level outside[1)]	combined	min. | night | max.	dB(A)	45 | 51 | 59	46 | 53 | 59
Sound power level outside[1)]	air inlet	min. | night | max.	dB(A)	– | – | –	– | – | –
Sound power level outside[1)]	air outlet	min. | night | max.	dB(A)	– | – | –	– | – | –
Sound power level acc. to DIN EN 12102-1		inside | outside	dB(A)	– | 45	– | 46
Tonality | Low-frequency			dB(A)	no | no	no | no

Heat source			
Air flow rate at maximum external pressing | Maximum external pressure	m³/h | Pa	3500 | –	3500 | –

Heating circuit				
Flow rate (pipe dimensioning) I Min. volume buffer tank in series I Min. volume separation buffer tank		l/h | l | l	1200 | 60 | 60	1400 | 60 | 60
Free pressing | Pressure loss | Flow rate		bar | bar | l/h	– | 0,23 | 1200	– | 0,12 | 1200
Max. allowable operating pressure		bar	3	3
Circulation pump control range	min. | max.	l/h	–	–

AH CL 5a, AH CL 8a, air/water

Heat pump type	AH CL 5a	AH CL 8a
Installation	outdoor	outdoor
Controller Aeroplus 2.1	not integrated	not integrated
EHPA certificate	CH-HP-01362	

General unit data				
Dimensions	D × W × H	mm	510 × 1320 × 930	
Total weight		kg	122	133
Max. allowable operating pressure refrigerating circuit	high pressure I low pressure	MPa (g) I MPa (g)	3,15 I 2,8	3,15 I 2,8
Refrigerant type I Refrigerant capacity		… I kg	R-290 I 1.0	R-290 I 1.3
GWP I CO_2-e		… I t	3 I 0.0	3 I 0.0

Electrics				
Voltage code I all-pole fuse protection for heat pump*) **)		… I A	1~N/PE/230V/50Hz I B16	1~N/PE/230V/50Hz I B16
Voltage code I Control voltage fuse protection**)		… I A	1~N/PE/230V/50Hz I B10	1~N/PE/230V/50Hz I B10
HP*): effect. power consumption A7/W35 (partial load operation) DIN EN 14511-x I Electric consumption I cosφ		kW I A I …	0,77 I 1,19 I 0,95	0,58 I 0,89 I 0,95
HP*): effective power consumption A7/W35 acc. to DIN EN 14511-x: min. I max.		kW I kW	0,43 I 1,10	0,58 I 1,76
HP*): max. machine current I max. power consumption within the operating limits		A I kW	14 I 3,5	14 I 3,5
Starting current: direct I with soft starter		A I A	< 5 I –	< 5 I –
Degree of protection		IP	24	24
Zmax		Ω	0,26	0,26
Residual current circuit breaker	if required	type	B	B

Other unit information				
Safety valve heating circuit I Response pressure	included in scope of supply: I bar		no I no	no I no
Buffer tank I Volume	included in scope of supply: I l		no I no	no I no
Heating circuit expansion vessel I Volume I Prepressure	included in scope of supply: I l I bar		no I no	no I no
Overflow valve I Changeover valve, heating - domestic hot water	integrated:		no	no
Heating circuit vibration decoupling	incl. in scope of supply or integrated:		yes	yes
Controller I Heat quantity recording I Extension board	incl. in scope of supply or integrated:		no I yes I no	no I yes I no

*) compressor only
**)note local regulations
1) indoor and outdoor installation
2) energy class for climate range medium / space heating

CL Hydraulic module Livera 6 and 9

Heat pump controller Aeroplus 2.1	**CL HM 6, CL HM 9**
Accessories for heat pump type	**AH CL 5a, AH CL 8a**

Installation location			**CL HM 6**	**CL HM 9**
Room temperature	min. | max.	°C	5 | 35	5 | 35
Relative humidity maximum (non-condensing)		%	60	60

Sound				
Sound pressure level at 1 m distance	inside	dB(A)	36	36
Sound power level	inside	dB(A)	44	44

Heating circuit			
Flow rate: minimum | maximum (see heat pump for pipe dimensioning)	l/h | l/h	500 | 2500	500 | 2500
Free pressing | Pressure loss | Flow rate	bar | bar | l/h	0,72 | – | 1200	0,72 | – | 1200
Max. allowable operating pressure	bar	3	3
Circulation pump control range	min. | max. l/h	500 | 2500	500 | 2500

General unit data			
Total weight	kg	25	40
Weight of individual components	kg | kg | kg	– | – | –	– | – | –
Dimensions (depth x width x height)	mm	330 x 550 x 695	365 x 610 x 725

Electrics				
Voltage code | all-pole fuse protection for heat pump*) **)	1 phase	… | A	1~N/PE/230V/50Hz | B16	1~N/PE/230V/50Hz | B16
Voltage code | all-pole fuse protection for heat pump*) **)	3 phases	… | A	– | –	– | –
Voltage code | Control voltage fuse protection**)		… | A	1~N/PE/230V/50Hz | B10	1~N/PE/230V/50Hz | B10
Voltage code | Electric heating element fuse protection**)	1 phase	… | A	1~N/PE/230V/50Hz | B32	1~N/PE/230V/50Hz | B40
Voltage code | Electric heating element fuse protection**)	3 phases	… | A	3~N/PE/400V/50Hz | B16	3~N/PE/400V/50Hz | B16
Degree of protection		IP	10B	10B
Zmax		Ω	–	–
Residual current circuit breaker	if required	type	B	B
Electric heating element output	3 | 2 | 1 phase	kW | kW | kW	6 | 4 | 2	9 | 6 | 3
Circulation pump power consumption, heating circuit	min. | max.	W	2 | 74	2 | 74

Other unit information			
Safety valve Heating circuit | Response pressure	incl. in scope of supply | bar	yes | 3	yes | 3
Buffer tank | Volume	incl. in scope of supply | l	no | no	no | no
Diaphragm expansion vessel Heating circuit | Volume | Prepressure	incl. in scope of supply | l | bar	yes | 12 | 1.5	yes | 12 | 1.5
Overflow valve | Changeover valve, heating - domestic hot water	integrated	no | no	no | no
Vibration decoupling, Heating circuit | Heat source	incl. in scope of supply or integrated	no	no
Controller | Heat quantity recording | Extension board	incl. in scope of supply or integrated	yes | yes | no	yes | yes | no

*) compressor only
**) note local regulations

CL Hydraulic tower Livera 9

Heat pump controller Aeroplus 2.1	**CL Hydraulic tower Livera 9**
Heat pump type	**AH CL 5a, AH CL 8a**
Accessories for heat pump type	**CL HT 9**

Installation location			
Room temperature	min. | max.	°C	5 | 35
Relative humidity maximum (non-condensing)		%	60

Sound			
Sound pressure level at 1 m distance	inside	dB(A)	36
Sound power level	inside	dB(A)	44

Heating circuit			
Flow rate: minimum | maximum (see heat pump for pipe dimensioning)		l/h | l/h	500 | 2600
Free pressing | Pressure loss | Flow rate		bar | bar | l/h	0,68 | – | 1200
Max. allowable operating pressure		bar	3
Circulation pump control range	min. | max.	l/h	500 | 2600

General unit data			
Total weight		kg	220
Weight of individual components		kg | kg | kg	– | – | –
Dimensions (depth x width x height)		mm	1021 x 700 x 1831

Domestic hot water tank			
Net volume		l	279
Magnesium sacrificial anode	Impressed current | Magnesium		no | yes
Domestic hot water temperature, heating pump mode | Electric heating element		up to °C | up to °C	60 | 65
Mixed water quantity according to ErP: 2009/125/EC (at 40 °C, draw-off of 10 l/min)		l	400
Standing loss according to ErP: 2009/125/EC (at 65 °C)		W	66
Operating pressure | Max. pressure | Test pressure		bar | bar | bar	6 | 10 | 13

Electrics			
Voltage code | all-pole fuse protection for heat pump*) **)	1 phase	… | A	1~N/PE/230V/50Hz | B16
Voltage code | all-pole fuse protection for heat pump*) **)	3 phases	… | A	– | –
Voltage code | Control voltage fuse protection**)		… | A	1~N/PE/230V/50Hz | B10
Voltage code | Electric heating element fuse protection**)	1 phase	… | A	1~N/PE/230V/50Hz | B40
Voltage code | Electric heating element fuse protection**)	3 phases	… | A	3~N/PE/400V/50Hz | B16
Degree of protection		IP	10B
Zmax		Ω	–
Residual current circuit breaker	if required	type	B
Electric heating element output	3 | 2 | 1 phase	kW | kW | kW	9 | 6 | 3
Circulation pump power consumption, heating circuit	min. | max.	W	2 | 74

Other unit information		
Safety valve Heating circuit | Response pressure	incl. in scope of supply | bar	yes | 3
Buffer tank | Volume	incl. in scope of supply | l	yes | 83
Diaphragm expansion vessel Heating circuit | Volume | Prepressure	incl. in scope of supply | l | bar	yes | 12 | 1.5
Overflow valve | Changeover valve, heating - domestic hot water	integrated	yes | yes
Vibration decoupling, heating circuit | Heat source	incl. in scope of supply or integrated	no
Controller | Heat quantity recording | Extension board	incl. in scope of supply or integrated	yes | yes | no

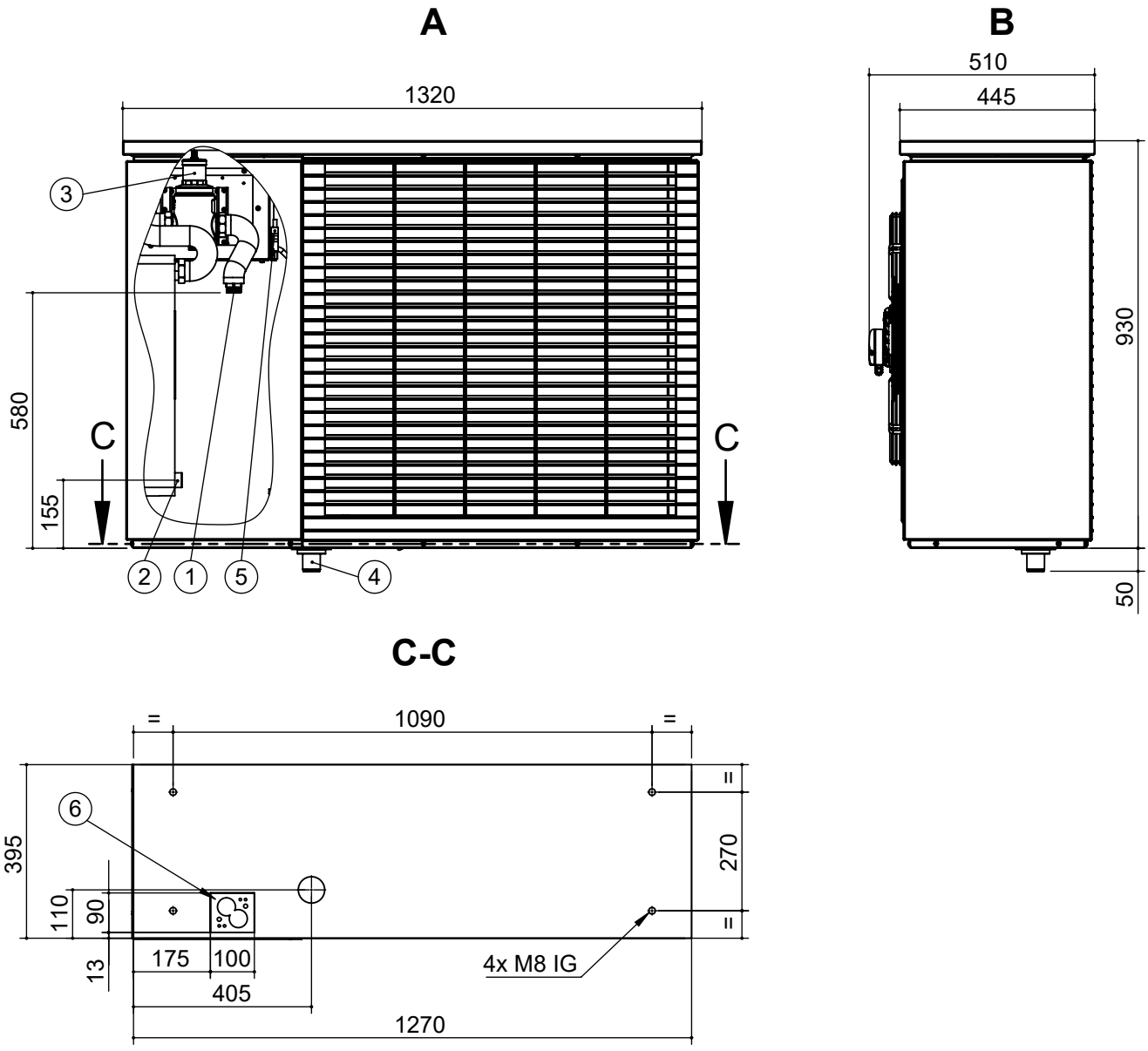
*) compressor only
**) note local regulations

CL wall-mounted controller Livera 1

Aeroplus 2.1 heat pump controller			CL WR 1
Accessories for heat pump type			**AH CL 5a, AH CL 8a**
Installation location			
Room temperature	min. | max.	°C	5 | 35
Relative humidity maximum (non-condensing)		%	60
Sound			
Sound pressure level at 1 m distance	inside	dB(A)	–
Sound power level	inside	dB(A)	–
Heating circuit			
Flow rate: minimum | maximum (see heat pump for pipe dimensioning)		l/h | l/h	500 | 2500
Free pressing | Pressure loss | Flow rate		bar | bar | l/h	0,75 | – | 1200
Volume flow: minimum | nominal analogous to A7W35 (partial load operation) | maximum		l/h	500 | 1200 | 2500
Max. allowable operating pressure		bar	3
Circulation pump control range	min. | max.	l/h	500 | 2500
General unit data			
Total weight		kg	5,3
Weight of individual components		kg | kg | kg	– | – | –
Dimensions (depth x width x height)		mm	158 x 330 x 534
Electrics			
Voltage code | all-pole fuse protection for heat pump*) **)	1 phase	… | A	1~N/PE/230V/50Hz | B16
Voltage code | all-pole fuse protection for heat pump*) **)	3 phases	… | A	–
Voltage code | Control voltage fuse protection**)		… | A	1~N/PE/230V/50Hz | B10
Voltage code | Electric heating element fuse protection**)	1 phase	… | A	– | –
Voltage code | Electric heating element fuse protection**)	3 phases	… | A	– | –
Degree of protection		IP	10B
Zmax		Ω	–
Residual current circuit breaker	if required	type	B
Electric heating element output	3 | 2 | 1 phase	kW | kW | kW	– | – | –
Circulation pump power consumption, heating circuit	min. | max.	W	2 | 74
Other unit information			
Safety valve Heating circuit | Response pressure		incl. in scope of supply | bar	no | no
Buffer tank | Volume		incl. in scope of supply | l	no | no
Diaphragm expansion vessel Heating circuit | Volume | Prepressure		incl. in scope of supply | l | bar	no | no | no
Overflow valve | Changeover valve, heating - domestic hot water		integrated	no | no
Vibration decoupling, heating circuit | Heat source		incl. in scope of supply or integrated	no
Controller | Heat quantity recording | Extension board		incl. in scope of supply or integrated	yes | yes | no

*) compressor only
**) note local regulations

AH CL 5a, AH CL 8a, air/water



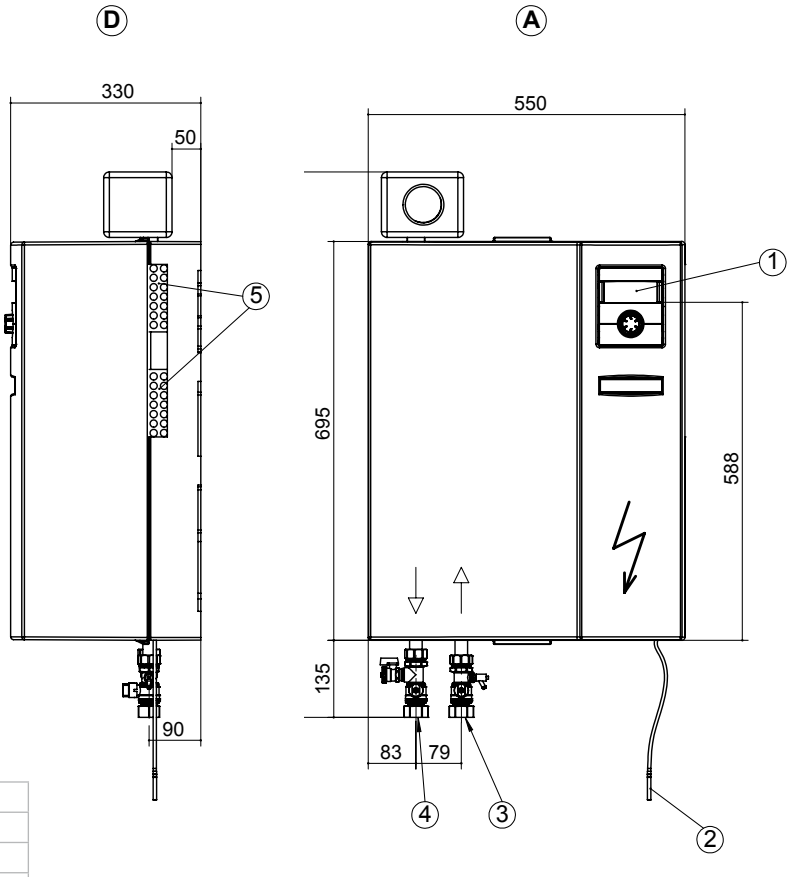
Keys
All dimensions in mm.

Pos.	Name	Dim.
A	Front view	–
B	Side view from left	–
C-C	Section (floor slab)	–

1	Heating water outlet (supply)	G1" external thread
2	Heating water inlet (return)	G1" external thread
3	Microbubble separator with bleeder	–
4	Connection socket (in extra box) for condensate drain pipe	DN40
5	Electrical connection (plug-in connections)	–
6	Penetration for flow & return and cables (in extra box)	–

Aeroheat Livera CL

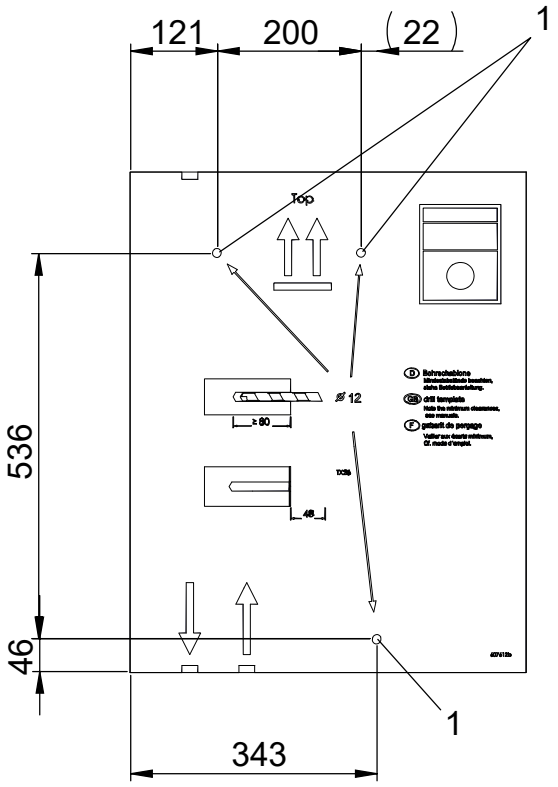
CL HM 6



Keys
All dimensions in mm.

Pos.	Name
A	Front view
D	Side view from right
1	Control panel
2	Return flow sensor approx. 5.5 m from unit
3	Heating water inlet (supply) Rp 1" internal thread
4	Heating water outlet (supply) Rp 1" internal thread
5	Penetrations for electric/sensor cables
The hydraulic module is installed in the heating flow!	

Drill pattern

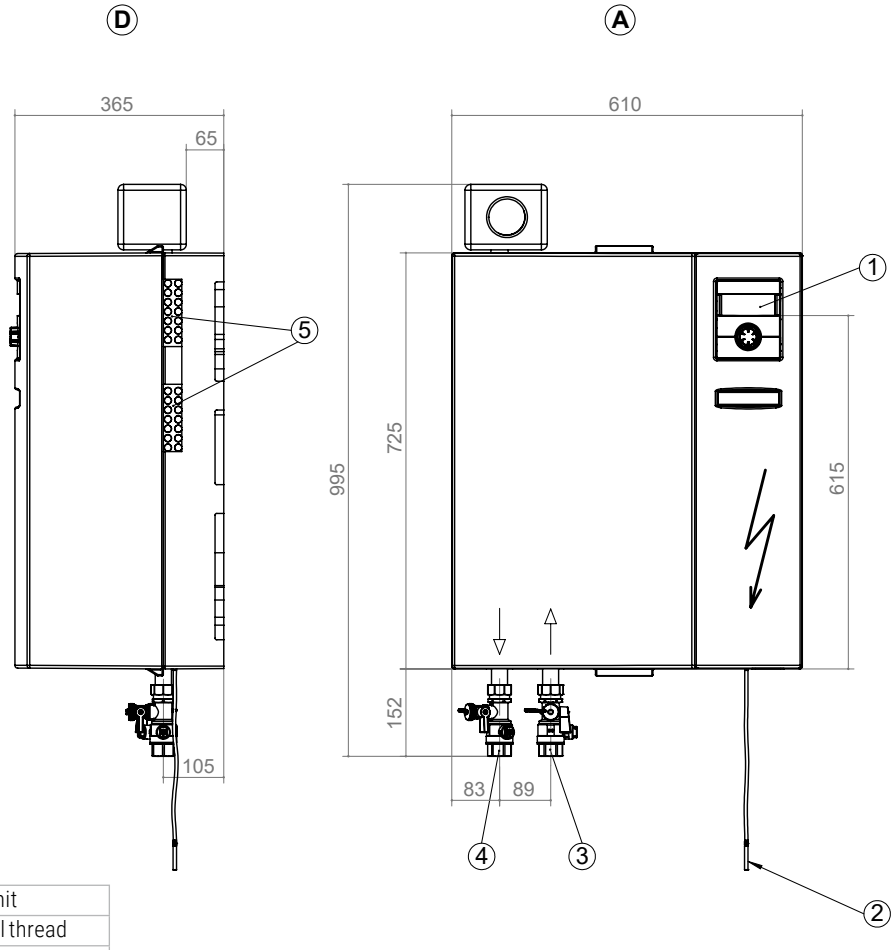


Keys
All dimensions in mm.

Pos.	Name
1	Drill hole Ø12 for plug (incl. accessory package)

Aeroheat Livera CL

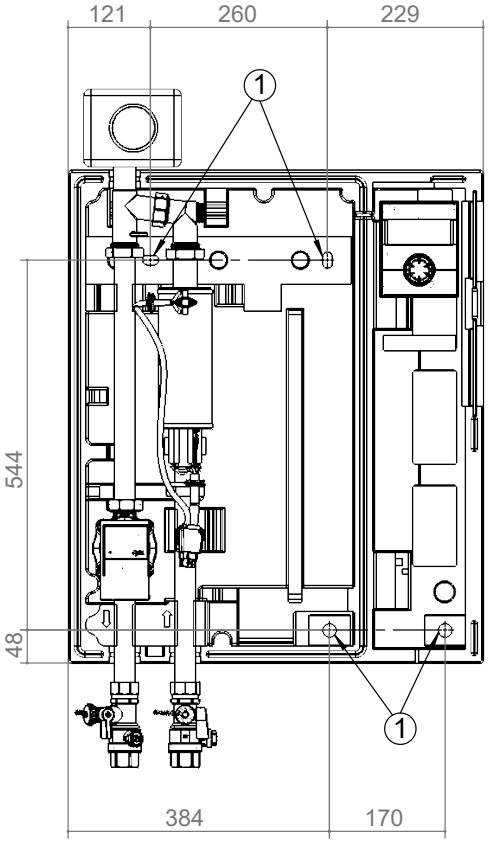
CL HM 9



Keys
All dimensions in mm.

Pos.	Name
A	Front view
D	Side view from right
1	Control panel
2	Return flow sensor approx. 5.5 m from unit
3	Heating water inlet (supply) Rp 1" internal thread
4	Heating water outlet (supply) Rp 1" internal thread
5	Penetrations for electric/sensor cables
The hydraulic module is installed in the heating flow!	

Drill pattern

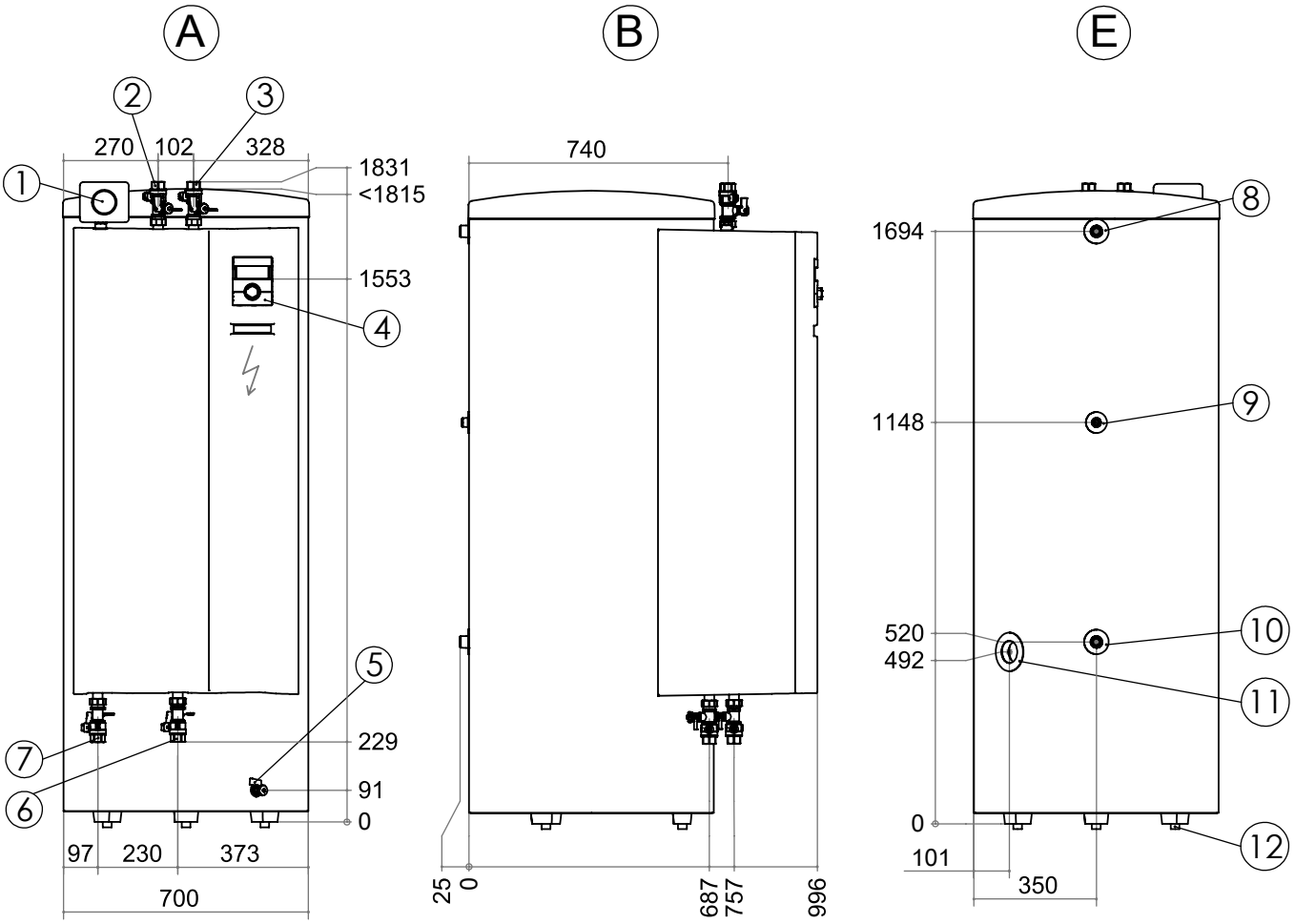


Keys
All dimensions in mm. Spacing for drill pattern.

Pos.	Name
1	Drill hole Ø12 for plug (incl. accessory package)

Dimension drawings
Aeroheat Livera CL

CL HT 9

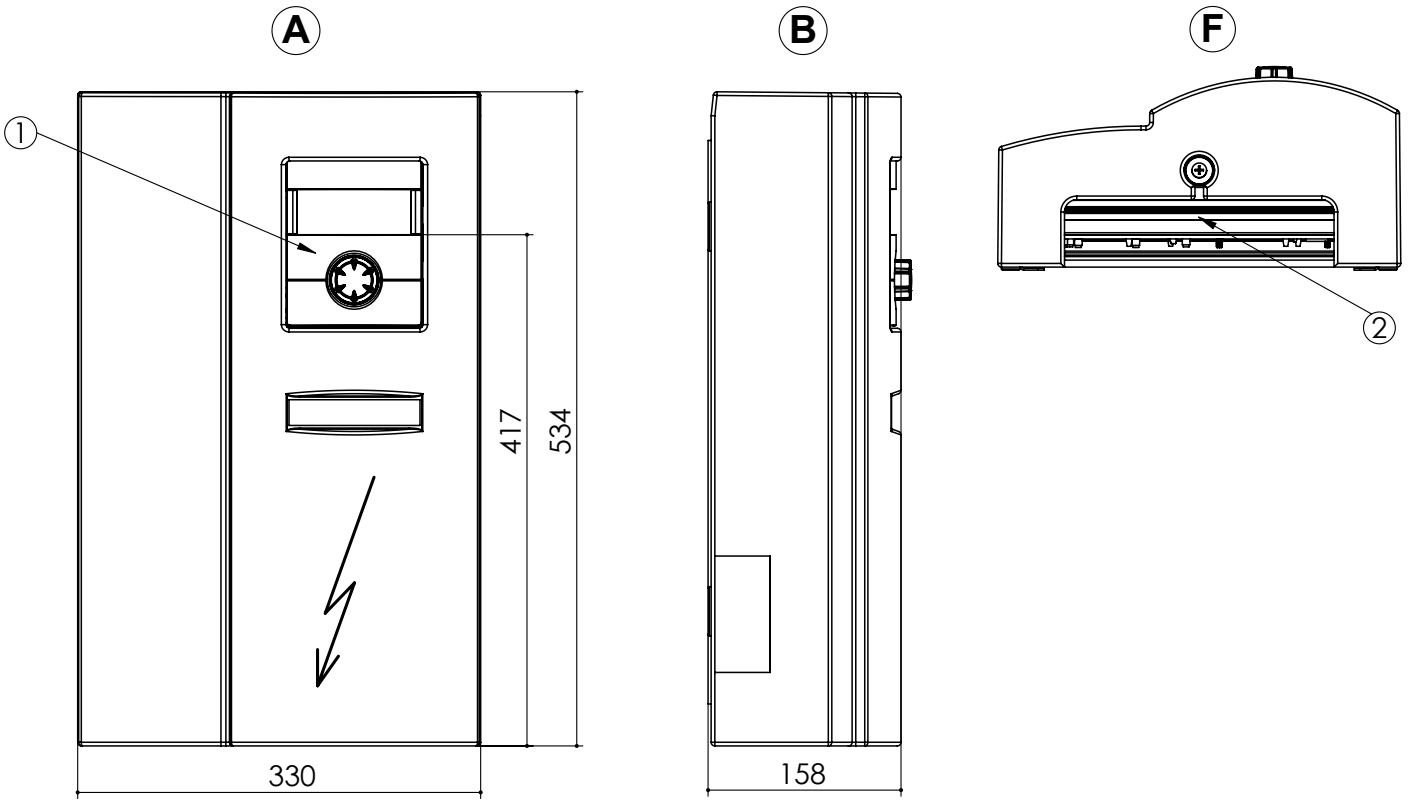


Keys
All dimensions in mm.

Pos.	Name	Dim.
A	Front view	
B	Side view from left	
E	Rear view	
1	Safety module	
2	Heating water inlet (return)	Rp 1" internal thread
3	Heating water outlet (flow)	Rp 1" internal thread
4	Control panel	
5	Emptying, buffer tank	Rp 1/2" internal thread
6	Hot water inlet (from heat pump)	Rp 1" internal thread
7	Hot water outlet (to heat pump)	Rp 1" internal thread
8	Domestic hot water	R 1" external thread
9	Circulation pump	R 3/4" external thread
10	Cold water	R 1" external thread
11	Penetrations for electric/sensor cables	
12	Adjusting foot M12 (3×) variable height, additional 15-30 mm	

Aeroheat Livera CL

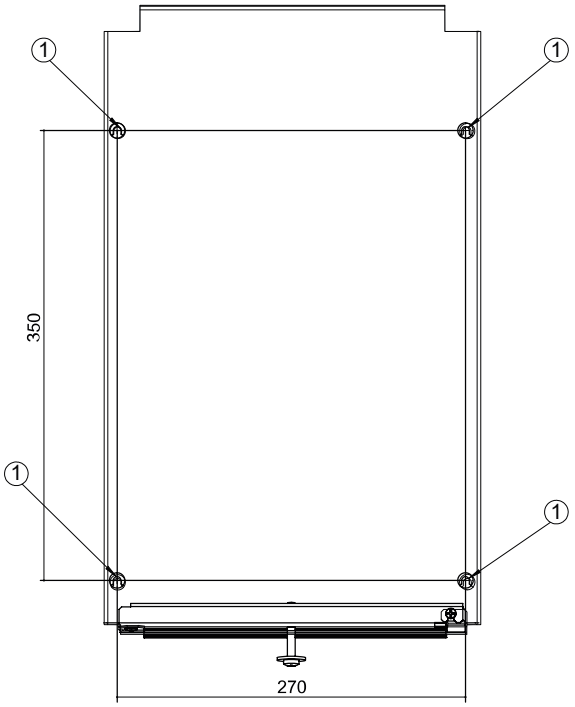
CL WR 1



Keys
All dimensions in mm.

Pos.	Name
A	Front view
B	Side view from left
F	View from below
1	Control panel
2	Feed-through for electric/sensor cables

Drill pattern

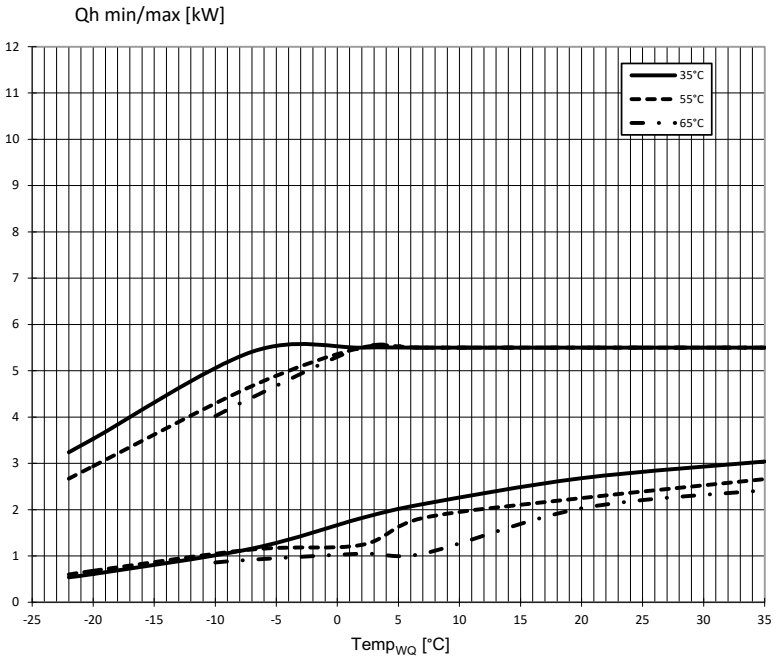


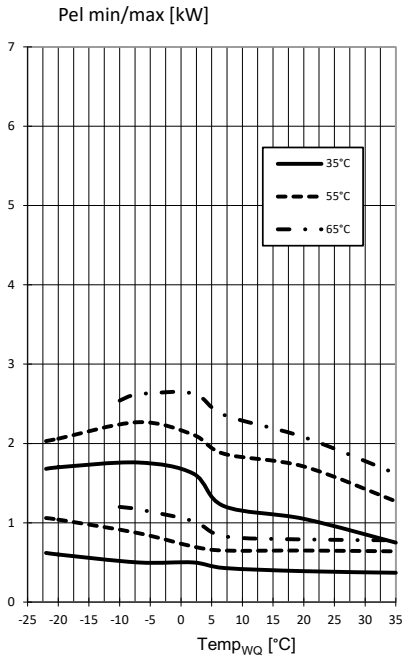
Keys
All dimensions in mm. Spacing for drill pattern.

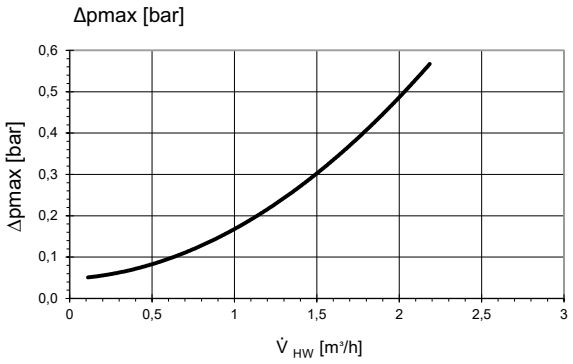
Pos.	Name
1	Hole Ø6, for wall/floor plugs (accompanying package)

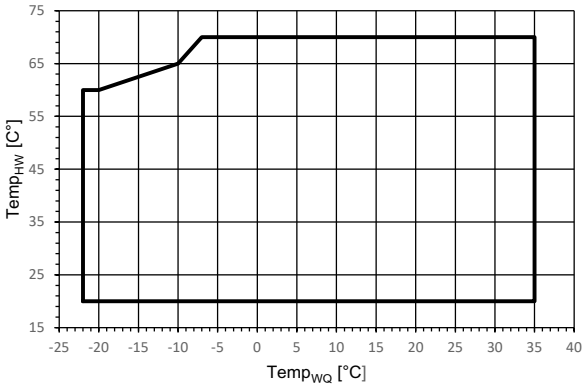
Power curves
Aeroheat Livera CL

AH CL 5a Heating mode









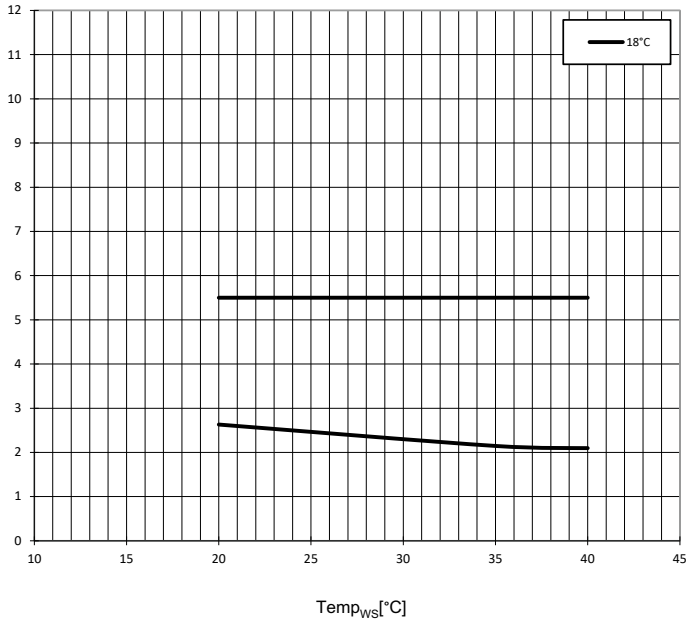
Keys

$\dot{V}_{HW}$	Volume flow heating water
Temp$_{HW}$	Temperature heating water
Temp$_{WQ}$	Temperature heat source
Qh min/max	minimum / maximum heating capacity
Pel min/max	minimum / maximum power consumption
Δpmax	maximum power loss

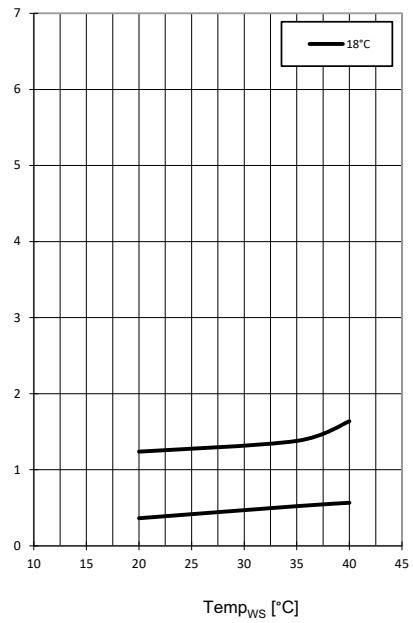
Power curves
Aeroheat Livera CL

AH CL 5a Cooling mode

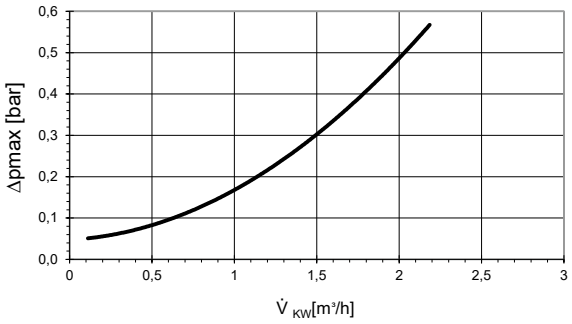
Q0 min/max [kW]

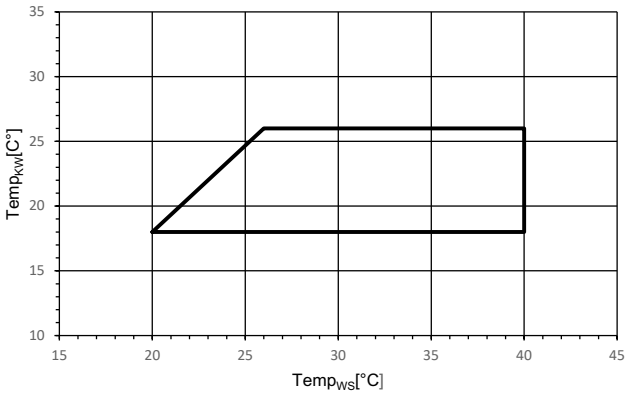


Pel min/max [kW]



Δpmax [bar]



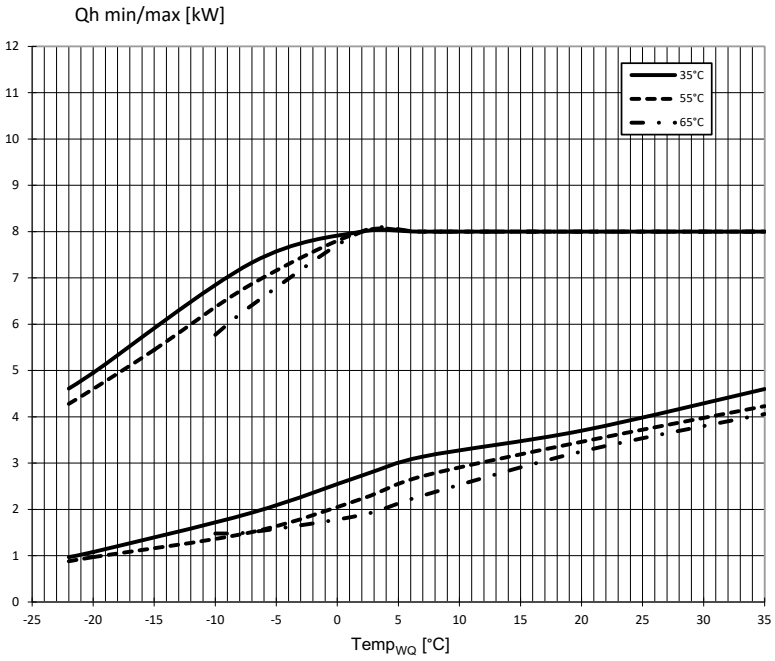


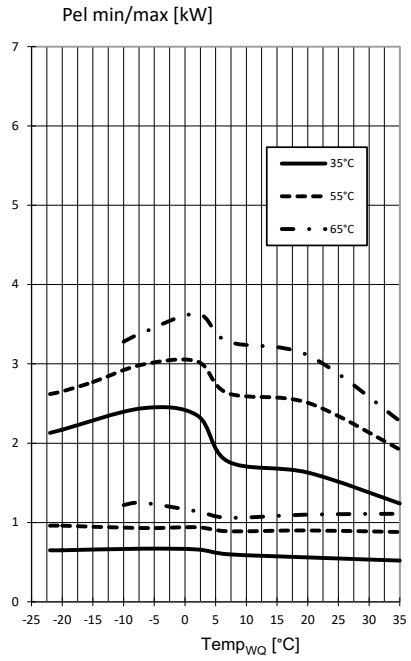
Keys

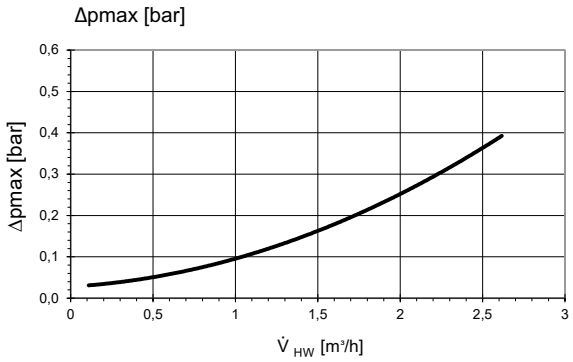
$\dot{V}_{KW}$	Volume flow cooling water
Temp$_{KW}$	Temperature cooling water
Temp$_{WS}$	Temperature heat sink
Q0 min/max	minimum / maximum cooling capacity
Pel min/max	minimum / maximum power consumption
Δpmax	maximum power loss

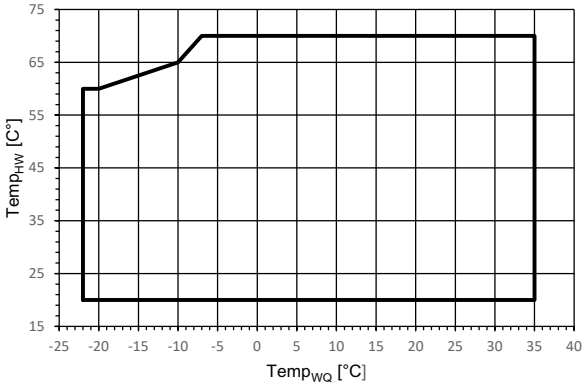
Power curves
Aeroheat Livera CL

AH CL 8a Heating mode









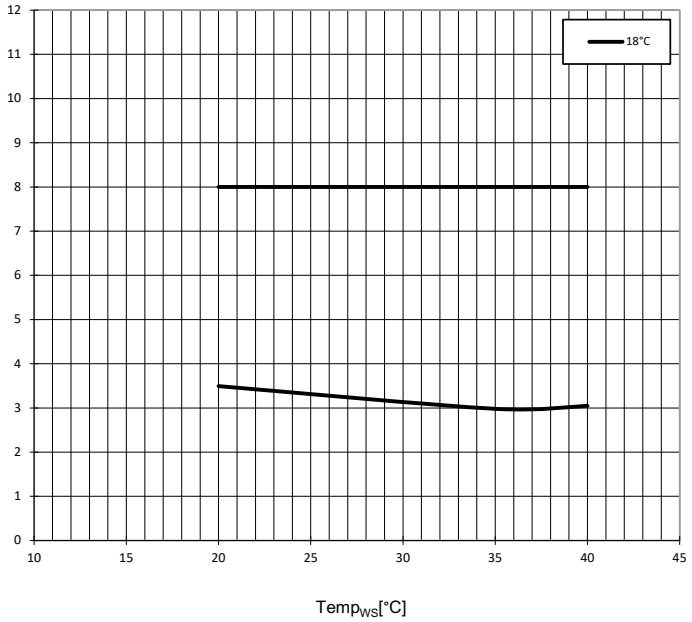
Keys

$\dot{V}_{HW}$	Volume flow heating water
Temp$_{HW}$	Temperature heating water
Temp$_{WQ}$	Temperature heat source
Qh min/max	minimum / maximum heating capacity
Pel min/max	minimum / maximum power consumption
Δpmax	maximum power loss

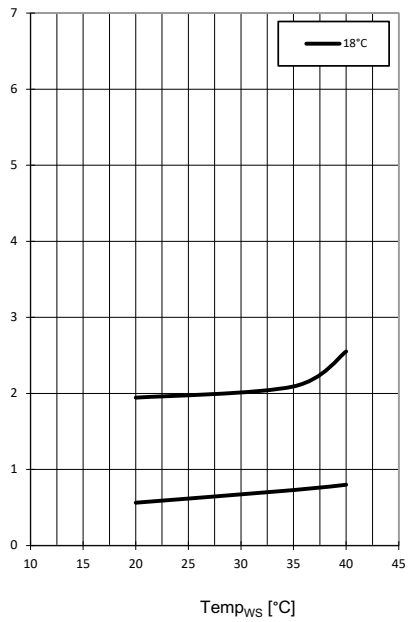
Power curves
Aeroheat Livera CL

AH CL 8a Cooling mode

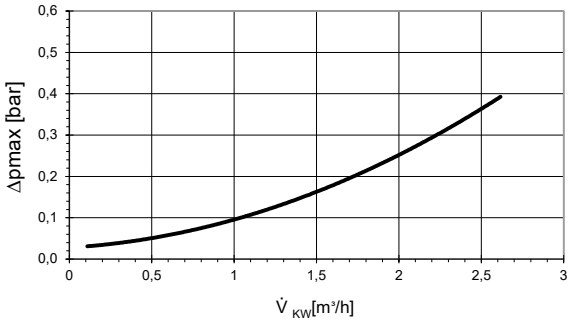
Q0 min/max [kW]

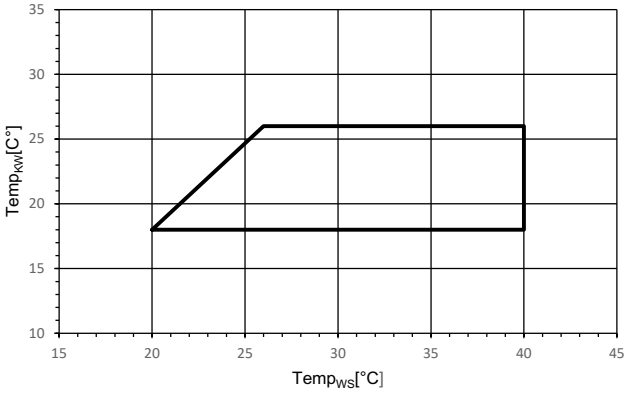


Pel min/max [kW]



Δpmax [bar]



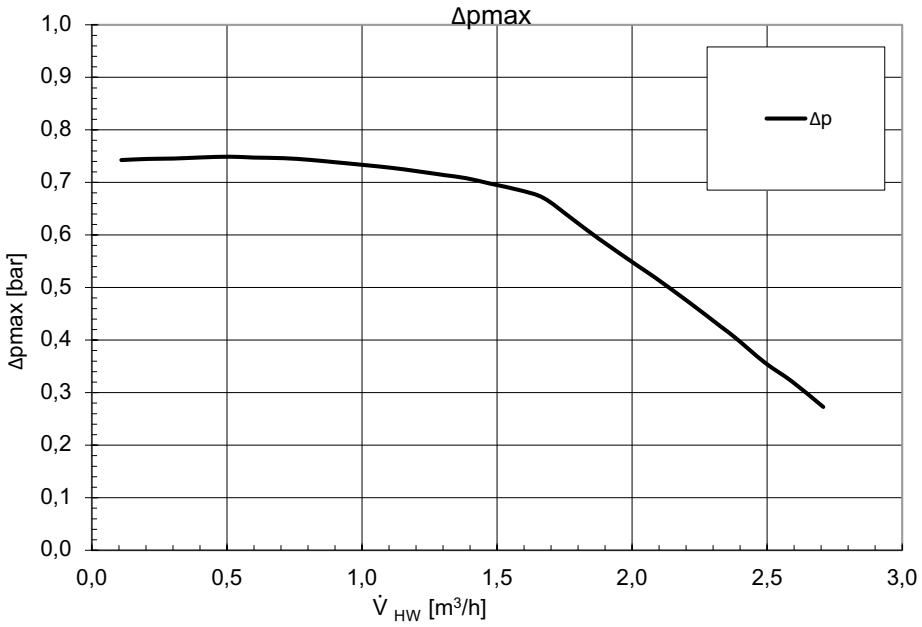


Keys

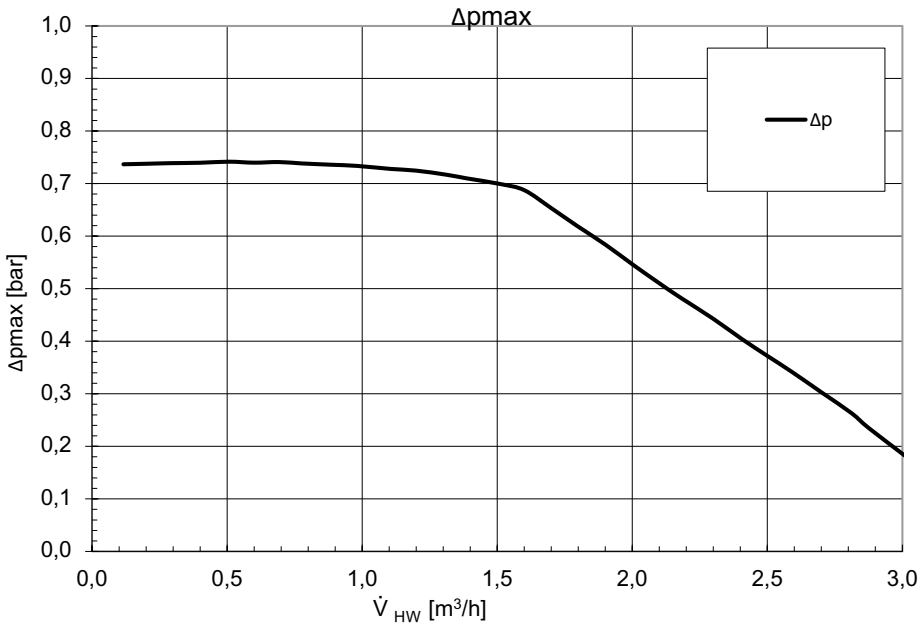
$\dot{V}_{KW}$	Volume flow cooling water
$Temp_{KW}$	Temperature cooling water
$Temp_{WS}$	Temperature heat sink
Q0 min/max	minimum / maximum cooling capacity
Pel min/max	minimum / maximum power consumption
Δpmax	maximum power loss

Power curves
Aeroheat Livera CL

Free pressing CL HM 6



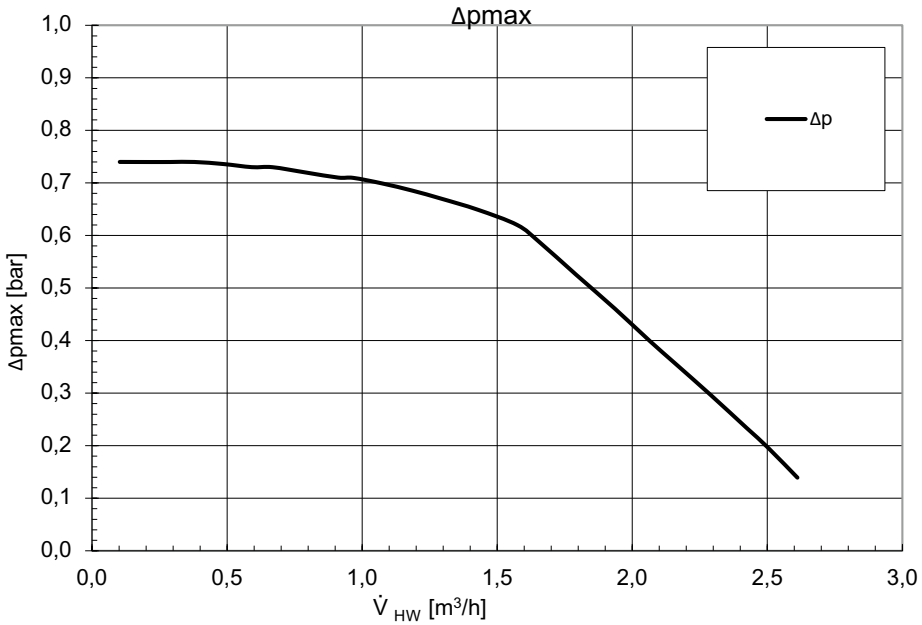
Free pressing CL HM 9



Keys

$\dot{V}_{HW}$	Volumetric flow of hot water
Δpmax	Maximum free pressing

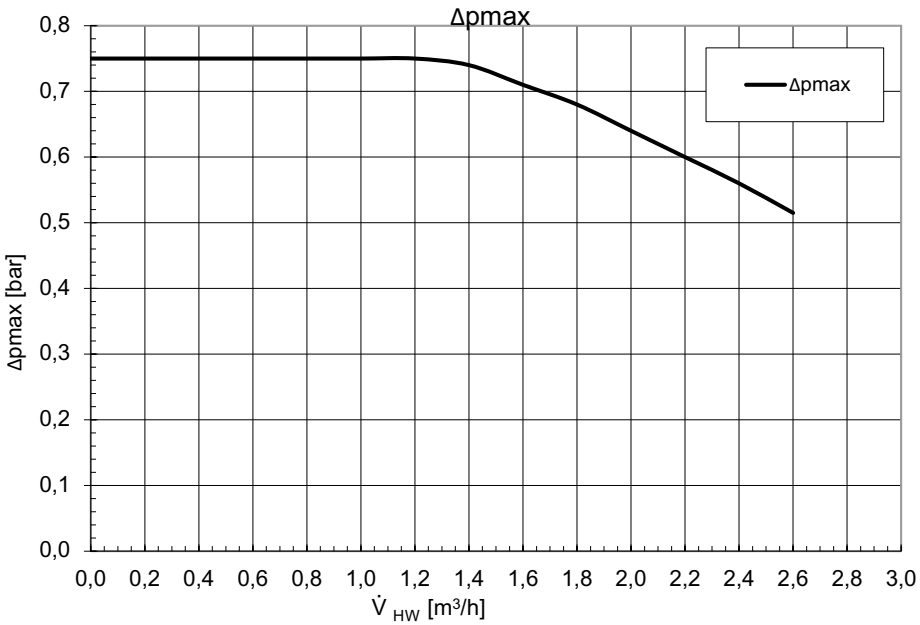
Free pressing CL HT 9



Keys

$\dot{V}_{HW}$	Volumetric flow of hot water
Δpmax	Maximum free pressing

Free pressing CL WR 1



Keys

$\dot{V}_{HW}$	Hot water flow rate
Δpmax	Maximum free pressing

Function description

Heat pump
The heat pump is put into operation via the outdoor sensor TA. Depending on the hydraulic integration, this works on a buffer tank or directly into the heating circuit. The heat pump is switched on and off by the TRL sensor depending on the heat demand and outside temperature.

In order to prevent the heat pump from oscillating, a restart delay is installed. In direct heating mode (e.g. underfloor heating), the HUP condenser pump is in operation during the entire heating period.

Hot water load
Drinking water is charged to the respective set point according to a time program. The temperature sensor TBW is used to enable charging and switch over the changeover valve BUP. The electrical insert ZW2 in the DHW storage tank is enabled by the customer.

An external heat exchanger is used for DHW cylinders without an internal register. The intermediate circuit pump BUP is controlled parallel to the deflection valve.

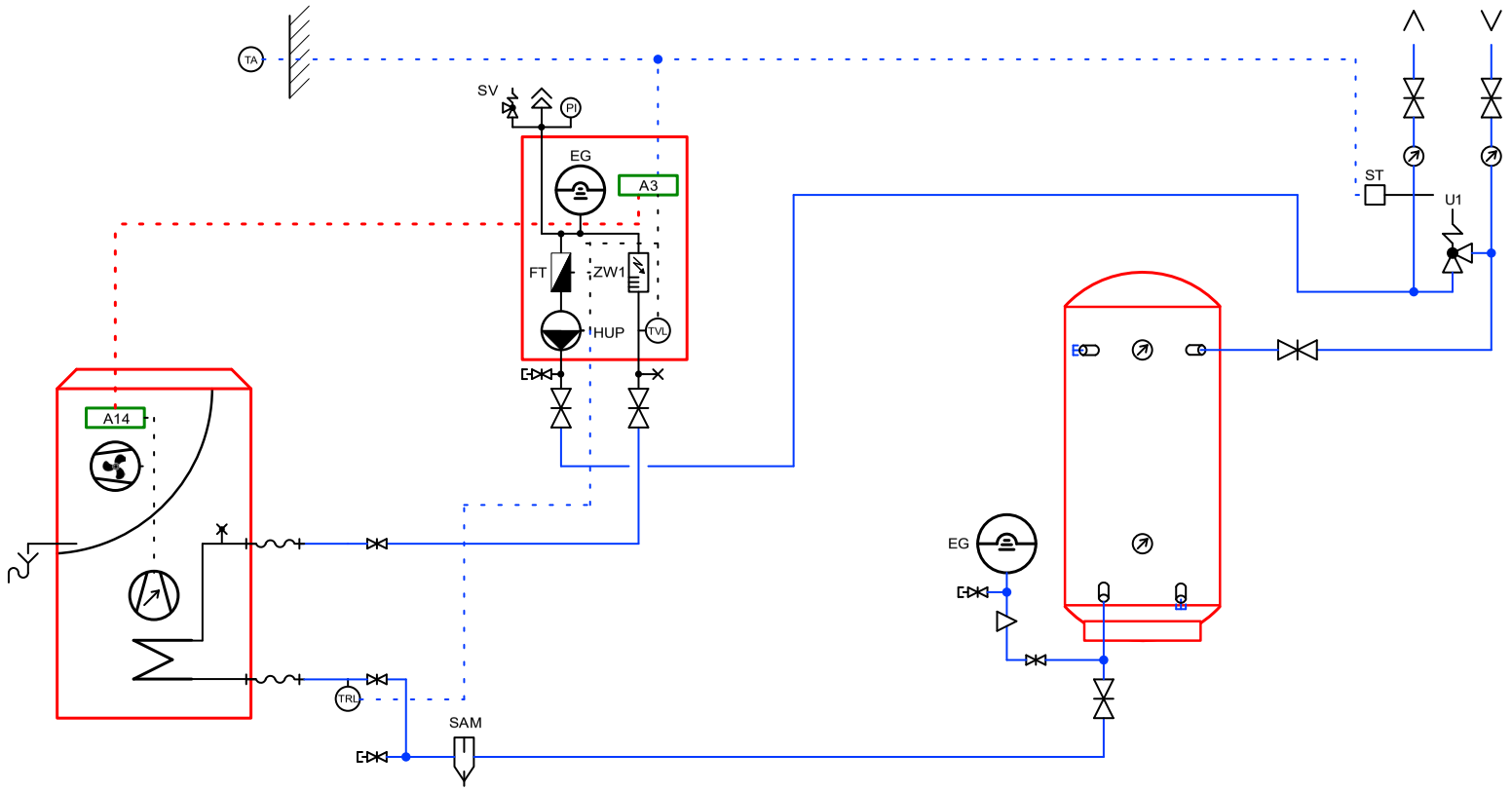
Buffer storage
If a buffer tank is used in the hydraulic system, the generator side and the consumer side are decoupled. The accumulator is used to bridge generator locks. The setpoint of the accumulator is calculated by the maximum demand of the consumer groups.

Discharge control
The setpoint for the heating flow is calculated with the current outdoor temperature and the set heating characteristic. The discharge control adjusts the flow temperature TB1 with the mixing valve M1 to this setpoint. The discharge pump HUP is in operation during the entire heating period.

Active cooling
During active cooling, a cooling generator is put into operation. When cooling is required, the internal cooling circuit is switched from heating to cooling mode.

The heat pump controller runs a cooling line over the outside temperature TA, which is controlled by the mixer M1 and the flow temperature TB1. A dew point monitor TW is absolutely necessary. If room thermostat valves are available, they must be switchable for cooling and heating operation.

Due to cooling with low flow temperatures, condensation can be expected to form on the heat distribution system as a result of the temperature falling below the dew point. If the heat distribution system is not designed for these operating conditions, this must be safeguarded by appropriate safety devices, e.g. dew point monitors.



Legend

A3	Heat pump controller
A14	Electrical control box
EG	Expansion vessel
FT	Flow rate sensor
HUP	Heating circulation pump
PI	Pressure gauge
SAM	Dirt separator with magnet
ST	Safety thermostat
SV	Safety valve
TA	External sensor
TRL	Return flow temperature sensor heat pump
TVL	Flow temperature sensor heat pump
U1	Overflow valve
ZW1	Emergency heater

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				DESIGNER	FUP
				Proved	JRE
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AH_CL_HM_07.01.10

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- Installation of additional components as per local regulations and conditions.
- This presentation is used as planning aid for the concerned installer.

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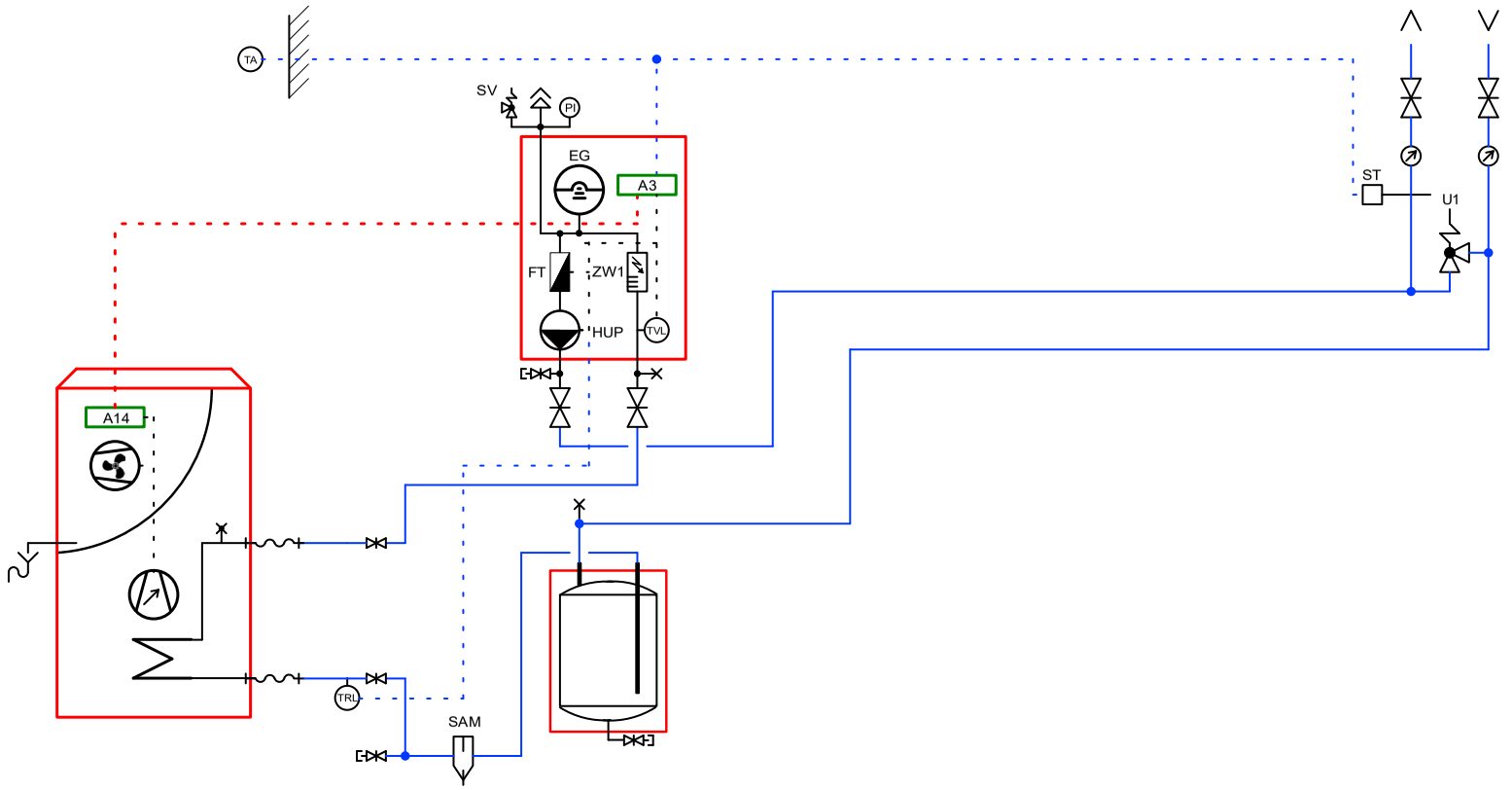

Legend

A3 Heat pump controller
A14 Electrical control box
EG Expansion vessel
FT Flow rate sensor
HUP Heating circulation pump
PI Pressure gauge
SAM Dirt separator with magnet
ST Safety thermostat
SV Safety valve
TA External sensor

TRL Return flow temperature sensor heat pump
TVL Flow temperature sensor heat pump
U1 Overflow valve
ZW1 Emergency heater

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AH_CL_HM_07.01.10_UP

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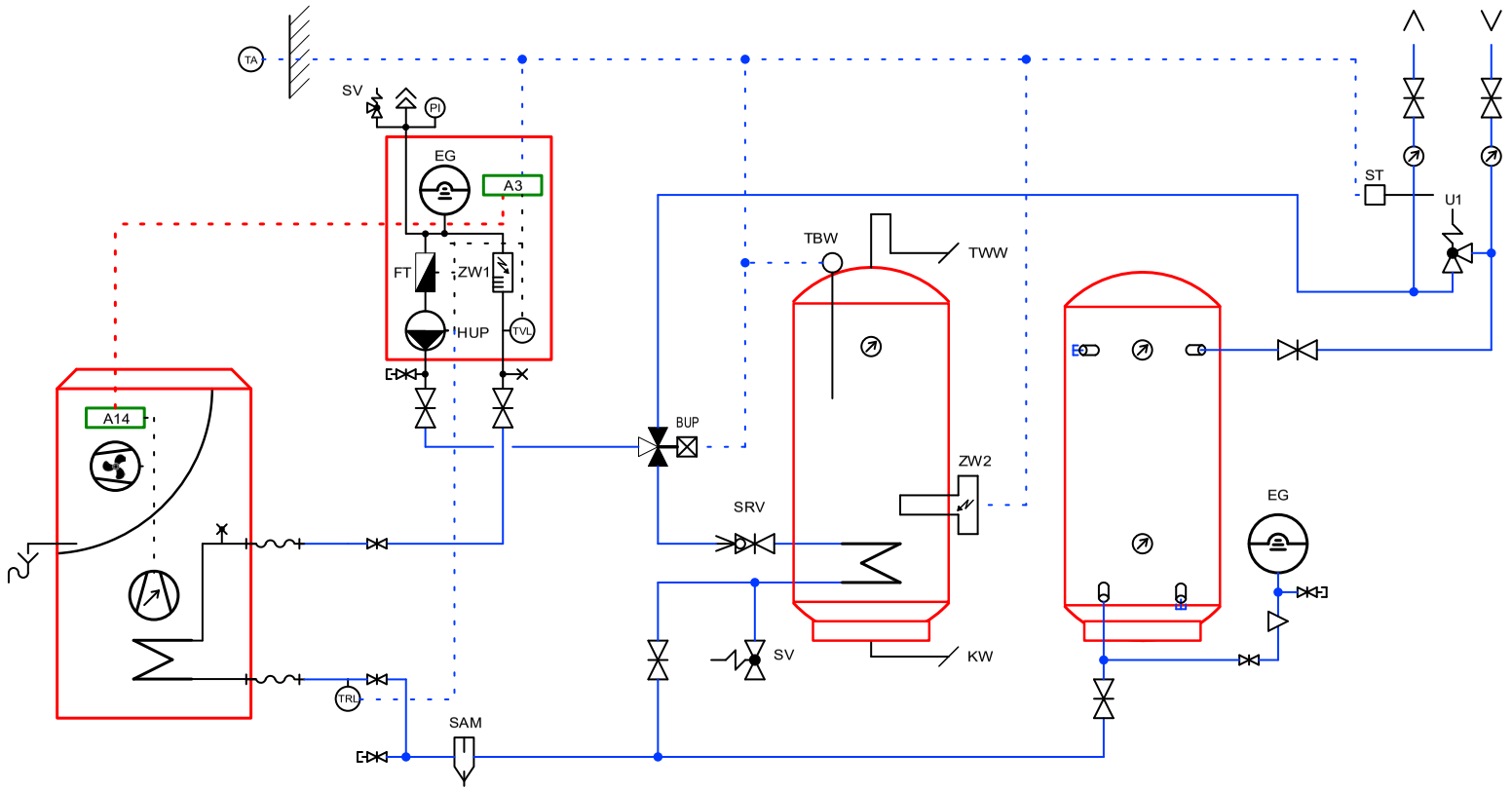

Legend

A3	Heat pump controller
A14	Electrical control box
BUP	Diverting valve for domestic hot water
EG	Expansion vessel
FT	Flow rate sensor
HUP	Heating circulation pump
KW	Cold water
PI	Pressure gauge
SAM	Dirt separator with magnet
SRV	Balancing valve
ST	Safety thermostat
SV	Safety valve
TA	External sensor
TRL	Return flow temperature sensor heat pump
TVL	Flow temperature sensor heat pump
TWW	Domestic hot water
U1	Overflow valve
ZW1	Emergency heater
ZW2	Electric heating DHW (on-site activation)

RESPONSIBLE	CHANGE	DATE	DESIGNER		
				DATE	01/2024
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				Proved	JRE
				Standard	SIA 410

AH_CL_HM_07.21.10

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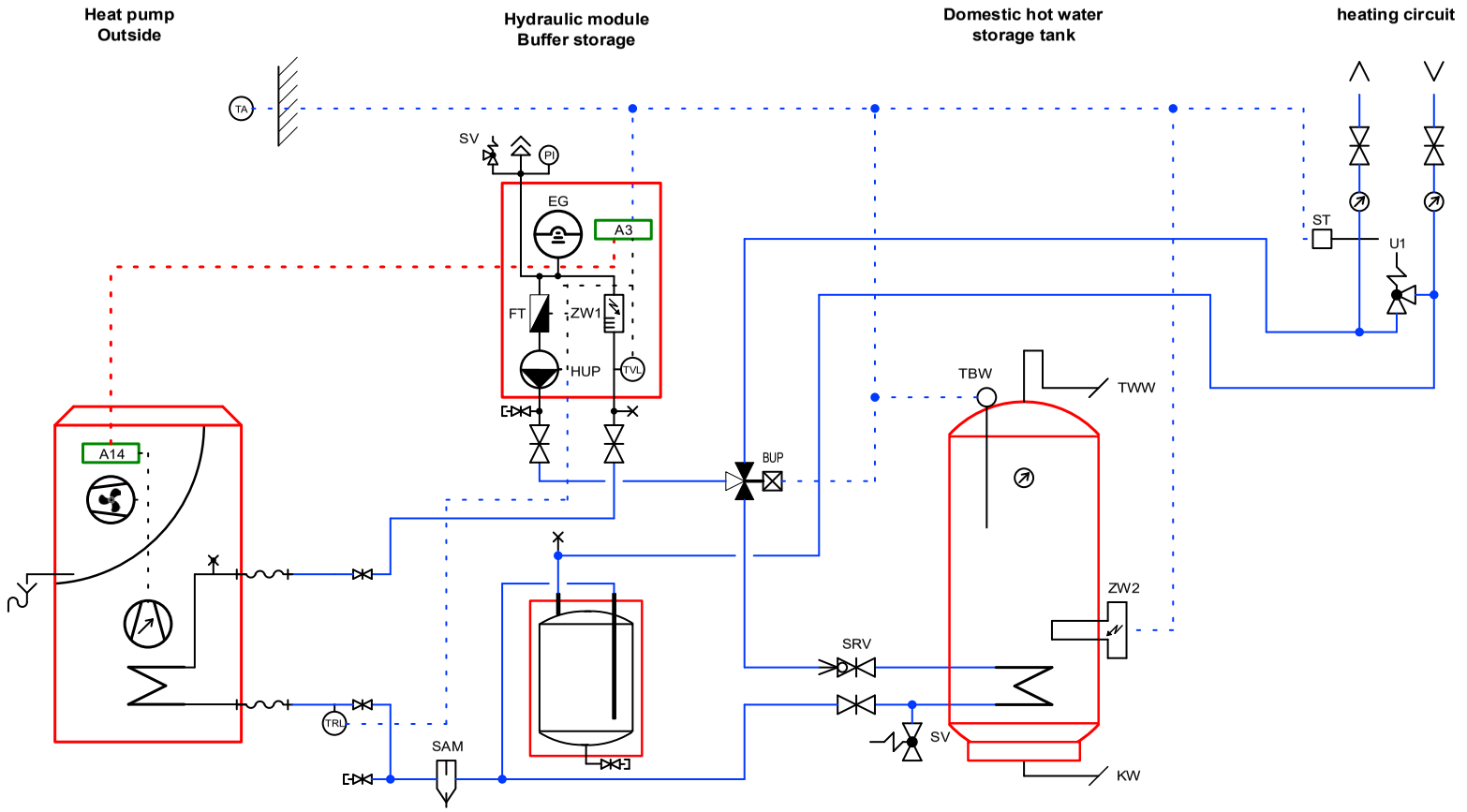

Legend

A3	Heat pump controller
A14	Electrical control box
BUP	Diverting valve for domestic hot water
EG	Expansion vessel
FT	Flow rate sensor
HUP	Heating circulation pump
KW	Cold water
PI	Pressure gauge
SAM	Dirt separator with magnet
SRV	Balancing valve
ST	Safety thermostat
SV	Safety valve
TA	External sensor
TRL	Return flow temperature sensor heat pump
TVL	Flow temperature sensor heat pump
TWW	Domestic hot water
U1	Overflow valve
ZW1	Emergency heater
ZW2	Electric heating DHW (on-site activation)

RESPONSIBLE	CHANGE	DATE	DESIGNER		
				DATE	01/2024
				DESIGNER	FUP
				Proved	JRE
				Standard	SIA 410

AH_CL_HM_07.21.10_UP

Subject to technical changes.

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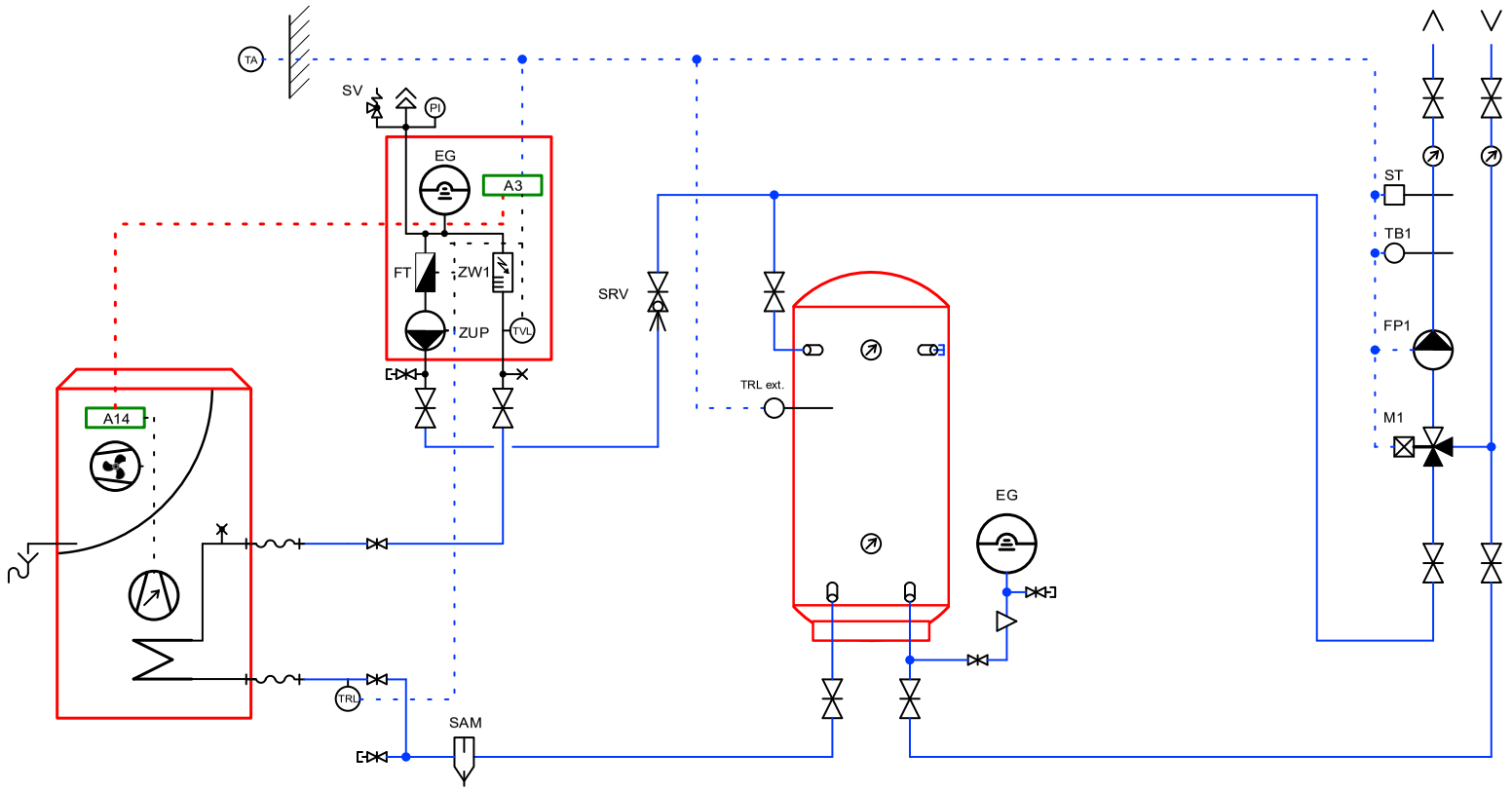

Legend

A3	Heat pump controller
A14	Electrical control box
EG	Expansion vessel
FP1	Pump for mixing circuit 1
FT	Flow rate sensor
M1	Heating circuit mixer 1
PI	Pressure gauge
SAM	Dirt separator with magnet
SRV	Balancing valve
ST	Safety thermostat
SV	Safety valve
TA	External sensor
TB1	Flow temp. sensor heating circuit 1
TRL	Return flow temperature sensor heat pump
TRLext.	External return sensor (buffer storage)
TVL	Flow temperature sensor heat pump
ZUP	Charge circuit pump
ZW1	Emergency heater

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				DESIGNER	FUP
				Proved	JRE
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AH_CL_HM_08.00.10

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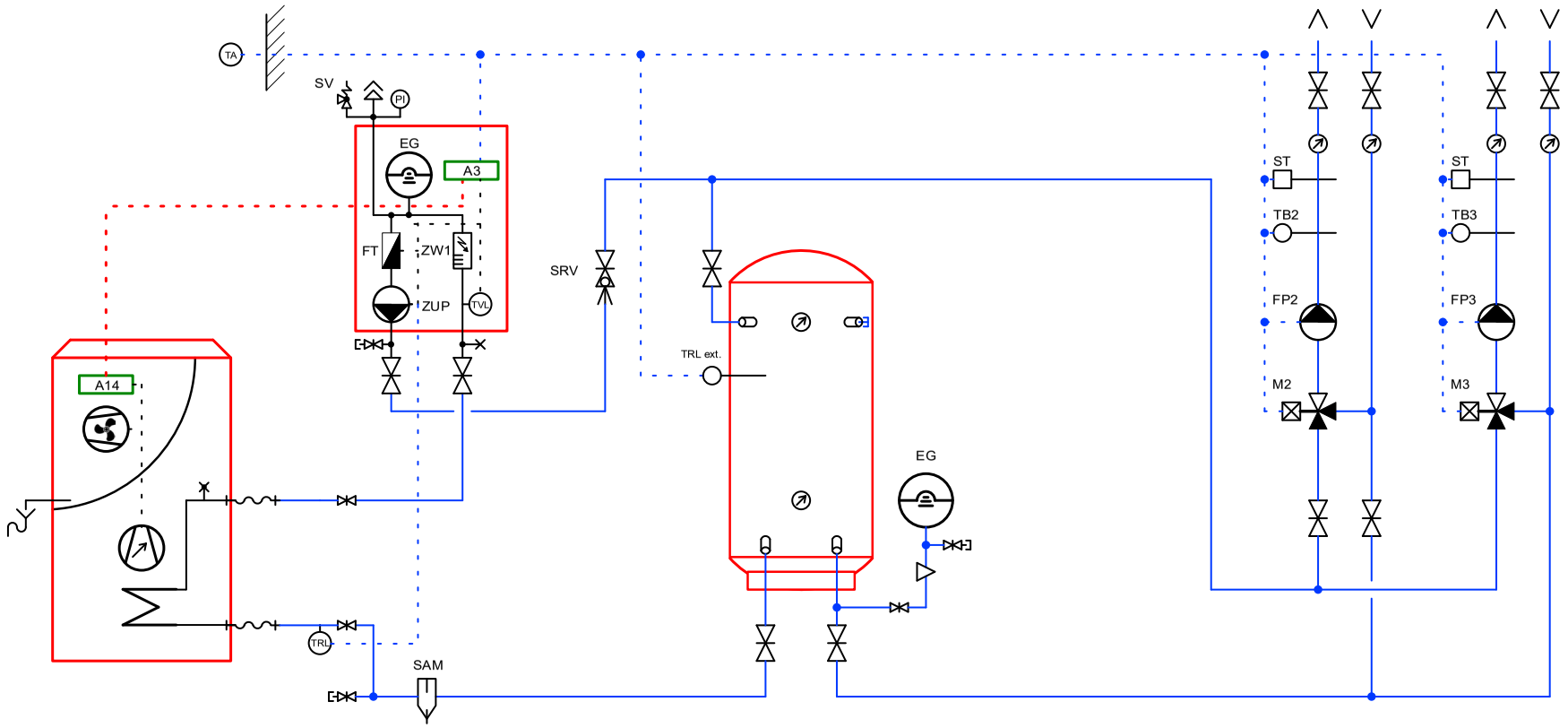

Legend

A3	Heat pump controller
A14	Electrical control box
EG	Expansion vessel
FP2	Pump for mixing circuit 2
FP3	Pump for mixing circuit 3
FT	Flow rate sensor
M2	Heating circuit mixer 2
M3	Heating circuit mixer 2
PI	Pressure gauge
SAM	Dirt separator with magnet
SRV	Balancing valve
ST	Safety thermostat
SV	Safety valve
TA	External sensor
TB2	Flow temp. sensor heating circuit 2
TB3	Flow temp. sensor heating circuit 3
TRL	Return flow temperature sensor heat pump
TRLext.	External return sensor (buffer storage)
TVL	Flow temperature sensor heat pump
ZUP	Charge circuit pump
ZW1	Emergency heater

Required accessories:
Extension board 2.1

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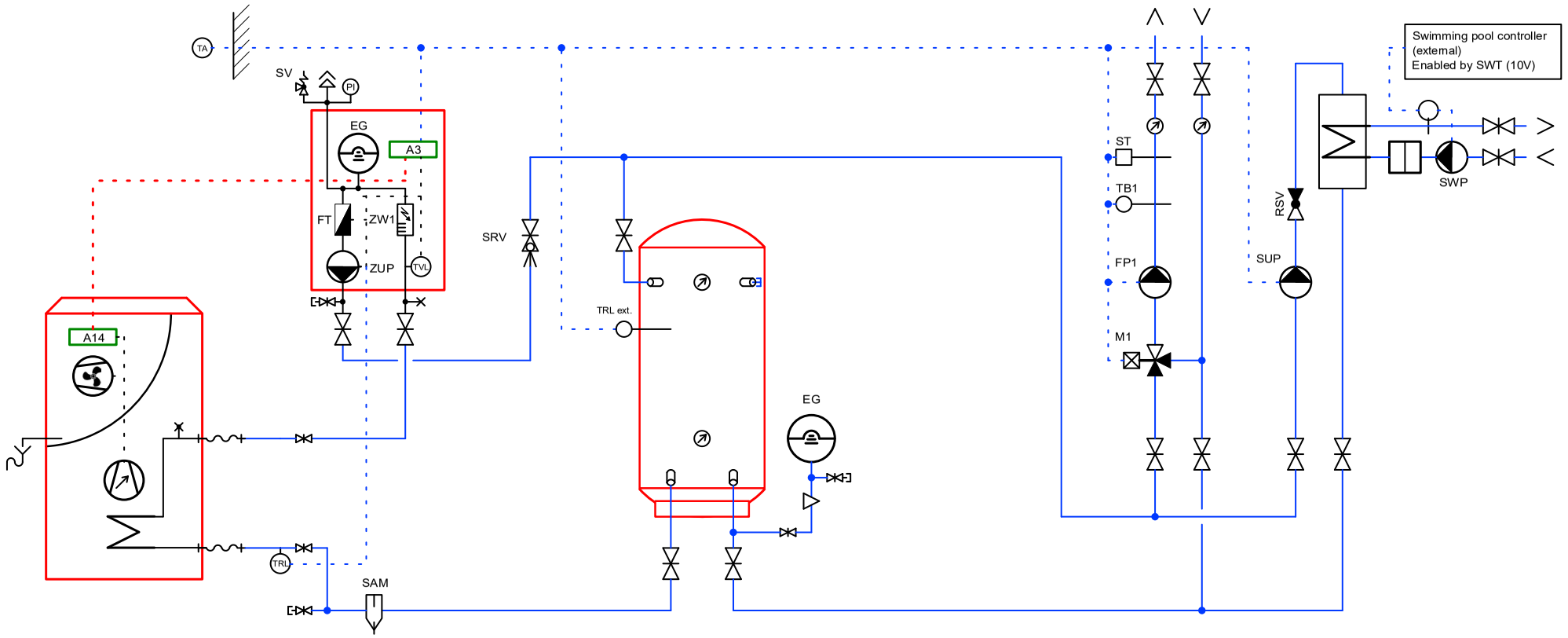

Legend

A3	Heat pump controller
A14	Electrical control box
EG	Expansion vessel
FP1	Pump for mixing circuit 1
FT	Flow rate sensor
M1	Heating circuit mixer 1
PI	Pressure gauge
RSV	Non-return valve
SAM	Dirt separator with magnet
SRV	Balancing valve
ST	Safety thermostat
SUP	Swimming pool, circulating pump
SV	Safety valve
SWP	Swimming pool pump (controlled externally)
SWT	Heat pump requirement
TA	External sensor
TB1	Flow temp. sensor heating circuit 1
TRL	Return flow temperature sensor heat pump
TRLext.	External return sensor (buffer storage)
TVL	Flow temperature sensor heat pump
ZUP	Charge circuit pump
ZW1	Emergency heater

Required accessories:
Extension board 2.1

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				DESIGNER	FUP
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Subject to technical changes.

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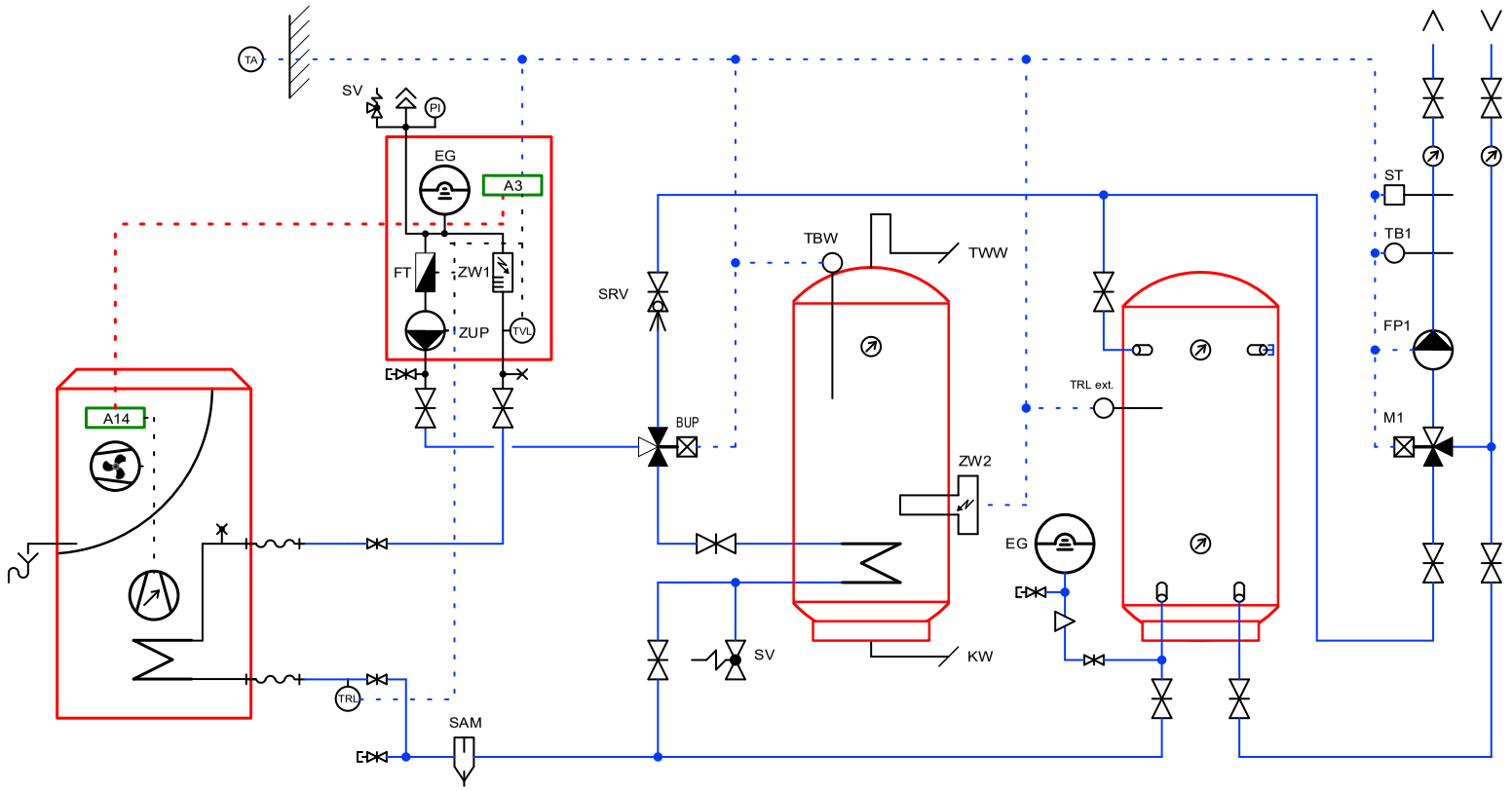

Legend

A3	Heat pump controller
A14	Electrical control box
BUP	Diverting valve for domestic hot water
EG	Expansion vessel
FP1	Pump for mixing circuit 1
FT	Flow rate sensor
KW	Cold water
M1	Heating circuit mixer 1
PI	Pressure gauge
SAM	Dirt separator with magnet
SRV	Balancing valve
ST	Safety thermostat
SV	Safety valve
TA	External sensor
TB1	Flow temp. sensor heating circuit 1
TBW	Domestic hot water temperature sensor
TRL	Return flow temperature sensor heat pump
TRLext.	External return sensor (buffer storage)
TVL	Flow temperature sensor heat pump
TWW	Domestic hot water
ZUP	Charge circuit pump
ZW1	Emergenc
ZW2	Electric heating DHW (on-site activation)

				DATE	01/2024
				DESIGNER	FUP
				Proved	JRE
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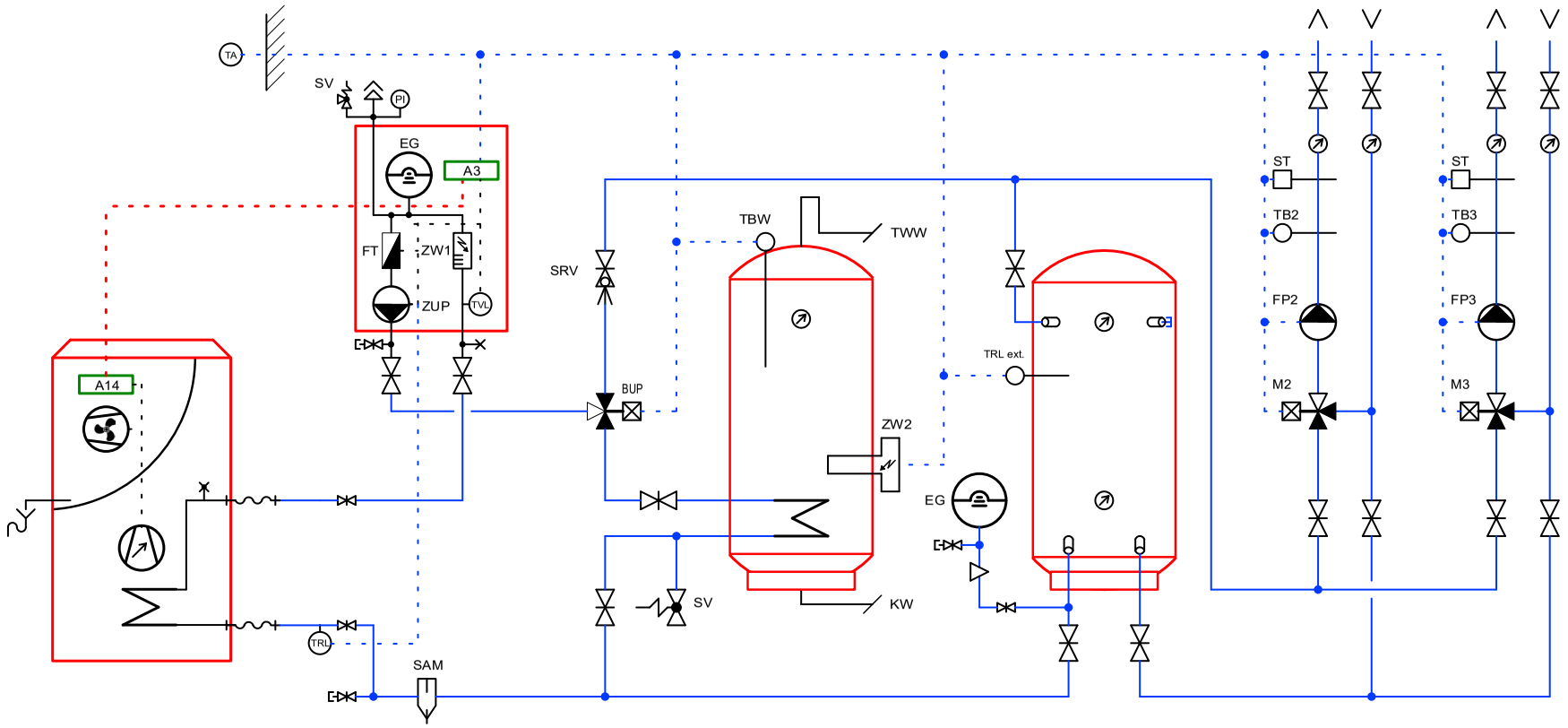

Legend

A3	Heat pump controller
A14	Electrical control box
BUP	Diverting valve for domestic hot water
EG	Expansion vessel
FP2	Pump for mixing circuit 2
FP3	Pump for mixing circuit 3
FT	Flow rate sensor
KW	Cold water
M2	Heating circuit mixer 2
M3	Heating circuit mixer 3
PI	Pressure gauge
SAM	Dirt separator with magnet
SRV	Balancing valve
ST	Safety thermostat
SV	Safety valve
TA	External sensor
TB2	Flow temp. sensor heating circuit 2
TB3	Flow temp. sensor heating circuit 3
TBW	Domestic hot water temperature sensor
TRL	Return flow temperature sensor heat pump
TRLext.	External return sensor (buffer storage)
TVL	Flow temperature sensor heat pump
TWW	Domestic hot water
ZUP	Charge circuit pump
ZW1	Emergenc
ZW2	Electric heating DHW (on-site activation)

Required accessories:
Extension board 2.1

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AH_CL_HM_08.20.10_E2

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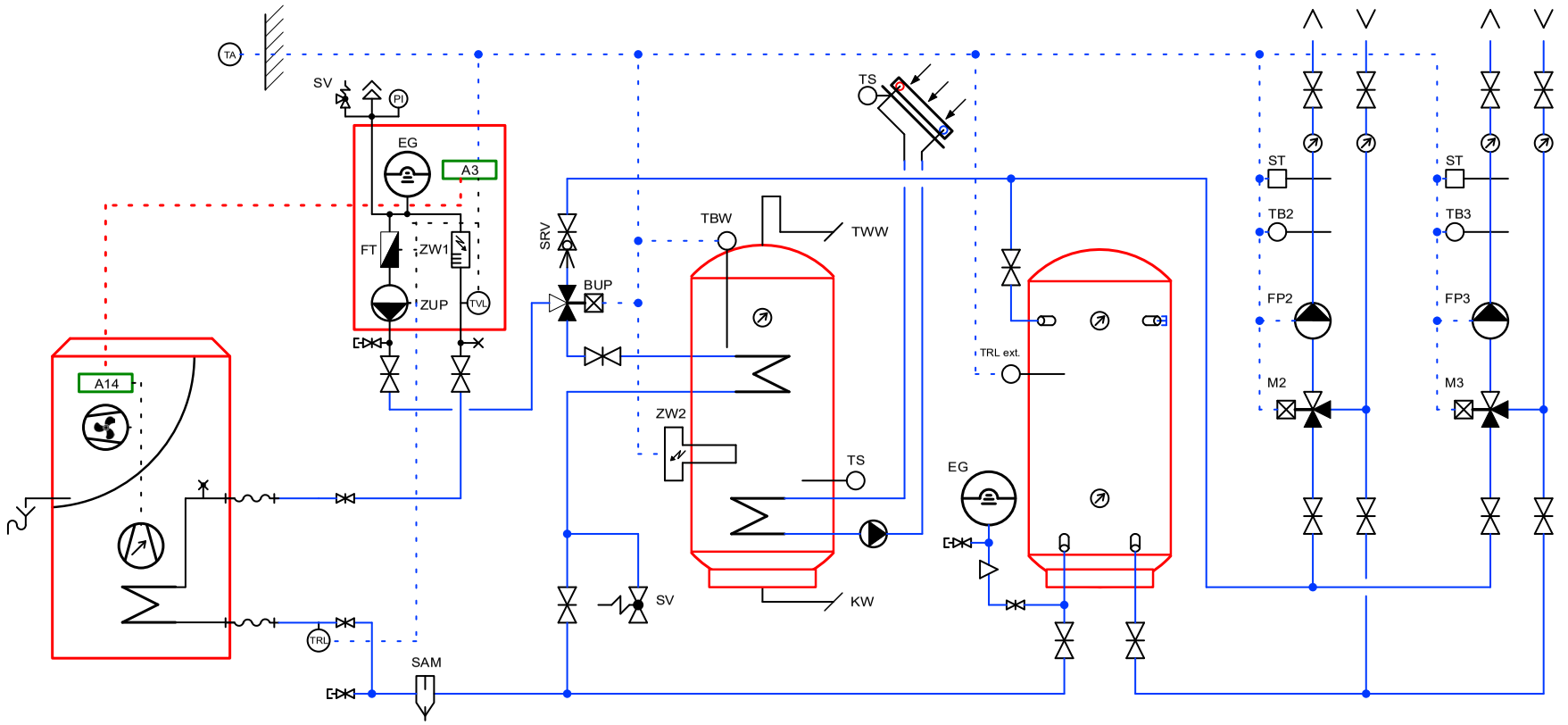
Heat pump Outside | Hydraulic module | Charging circuit DHW/heater | Domestic hot water storage tank | Solar system | Buffer storage | Heating circuit 2 | Heating circuit 3



Legend

A3	Heat pump controller
A14	Electrical control box
BUP	Diverting valve for domestic hot water
EG	Expansion vessel
FP2	Pump for mixing circuit 2
FP3	Pump for mixing circuit 3
FT	Flow rate sensor
KW	Cold water
M2	Heating circuit mixer 2
M3	Heating circuit mixer 3
PI	Pressure gauge
SAM	Dirt separator with magnet
SRV	Balancing valve
ST	Safety thermostat
SV	Safety valve
TA	External sensor
TB2	Flow temp. sensor heating circuit 2
TB3	Flow temp. sensor heating circuit 3
TBW	Domestic hot water temperature sensor
TRL	Return flow temperature sensor heat pump
TRLext.	External return sensor (buffer storage)
TS	Solar sensor
TVL	Flow temperature sensor heat pump
TWW	Domestic hot water
ZUP	Charge circuit pump
ZW1	Emergency heater
ZW2	Electric heating DHW (on-site activation)

Required accessories:
Extension board 2.1

Solar system on-site, independent of control

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				Proved	JRE	Subject to technical changes.			NAME OF DRAWING	AH_Livera_HM	Project Manager PM
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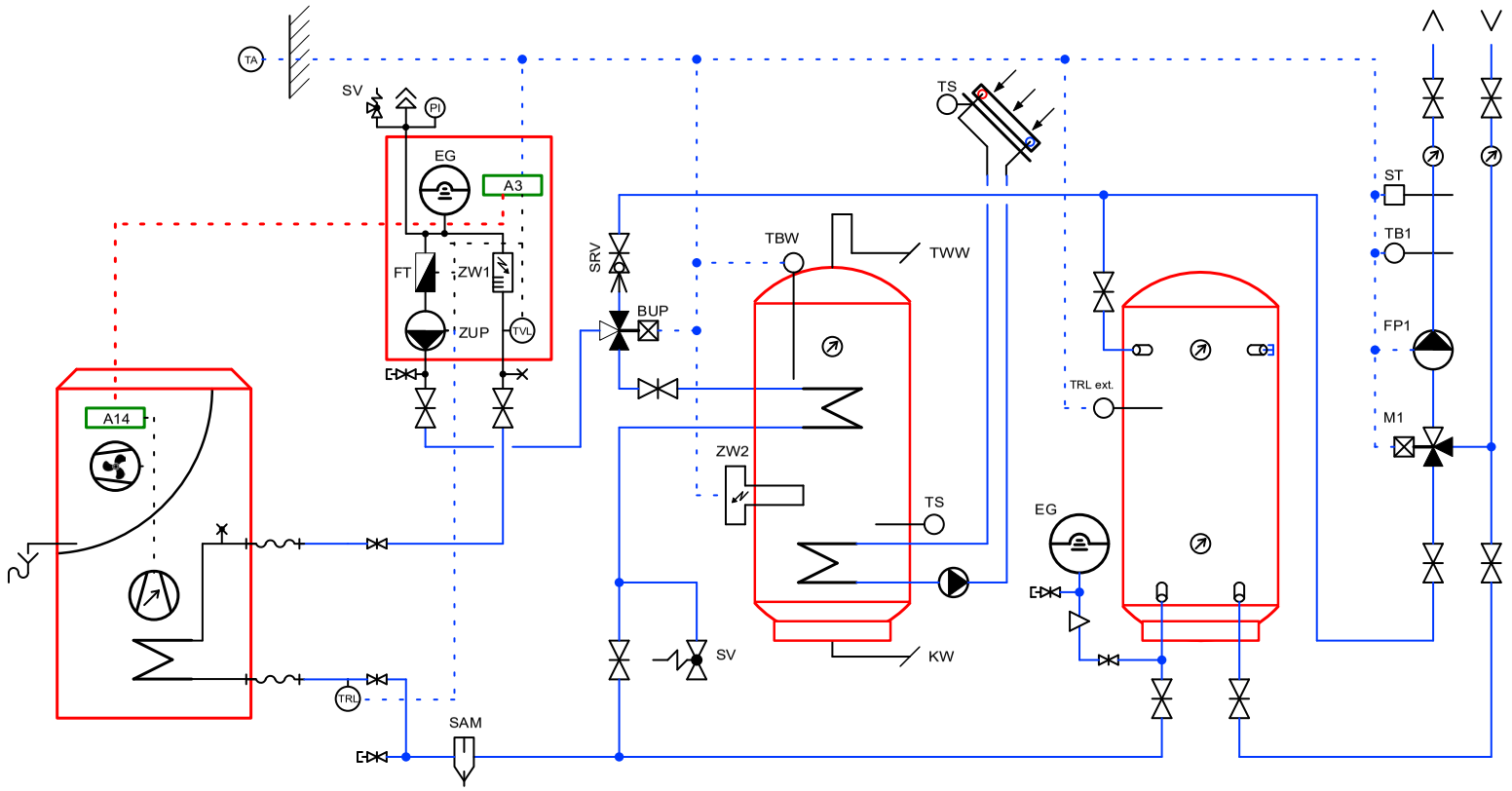

Legend

A3	Heat pump controller
A14	Electrical control box
BUP	Diverting valve for domestic hot water
EG	Expansion vessel
FP1	Pump for mixing circuit 1
FT	Flow rate sensor
KW	Cold water
M1	Heating circuit mixer 1
PI	Pressure gauge
SAM	Dirt separator with magnet
SRV	Balancing valve
ST	Safety thermostat
SV	Safety valve
TA	External sensor
TB1	Flow temp. sensor heating circuit 1
TBW	Domestic hot water temperature sensor
TRL	Return flow temperature sensor heat pump
TRLext.	External return sensor (buffer storage)
TS	Solar sensor
TVL	Flow temperature sensor heat pump
TWW	Domestic hot water
ZUP	Charge circuit pump
ZW1	Emergency heater
ZW2	Electric heating DHW (on-site activation)

Solar system on-site, independent of control

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AH_CL_HM_08.20.10_E3

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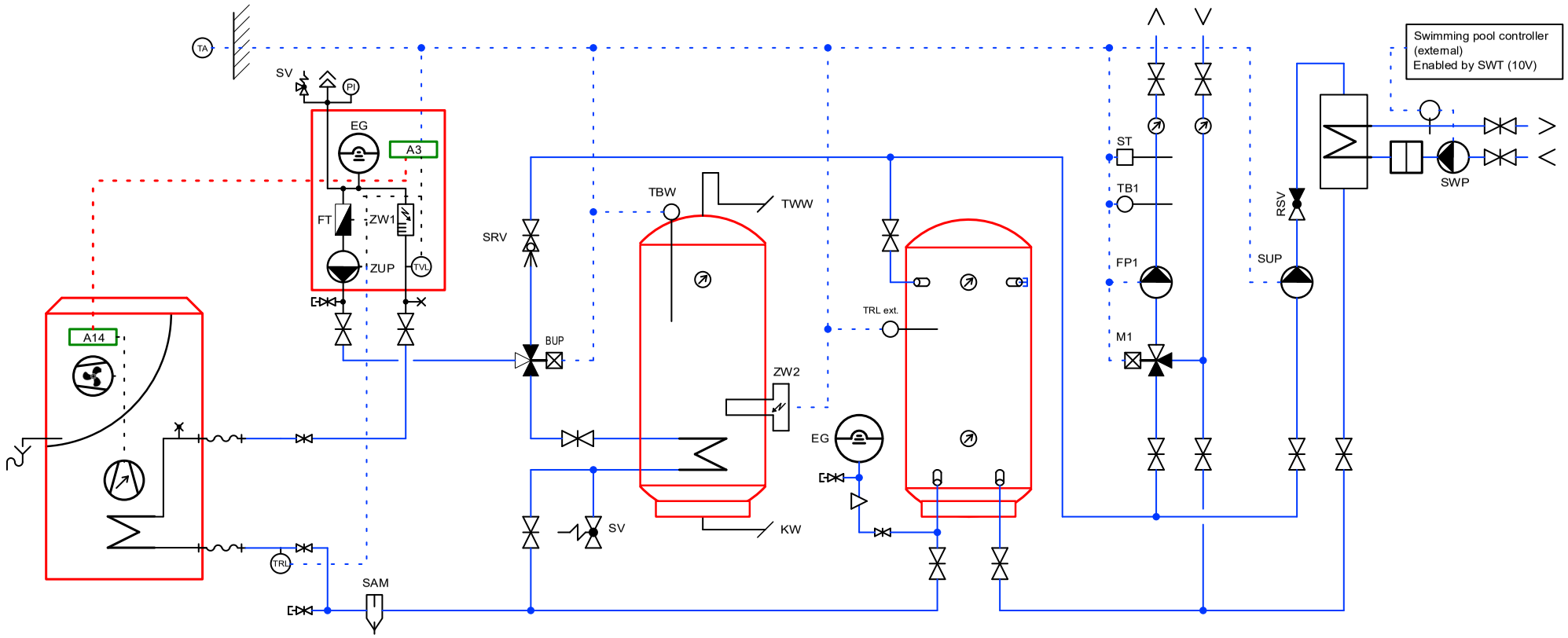

Legend

A3	Heat pump controller
A14	Electrical control box
BUP	Diverting valve for domestic hot water
EG	Expansion vessel
FP1	Pump for mixing circuit 1
FT	Flow rate sensor
KW	Cold water
M1	Heating circuit mixer 1
PI	Pressure gauge
RSV	Non-return valve
SAM	Dirt separator with magnet
ST	Safety thermostat
SUP	Swimming pool, circulating pump
SV	Safety valve
SWP	Swimming pool pump (controlled externally)
SWT	Heat pump requirement
TA	External sensor
TB1	Flow temp. sensor heating circuit 1
TBW	Domestic hot water temperature sensor
TRL	Return flow temperature sensor heat pump
TRLext.	External return sensor (buffer storage)
TVL	Flow temperature sensor heat pump
TWW	Domestic hot water
ZUP	Charge circuit pump
ZW1	Emergency heater
ZW2	Electric heating DHW (on-site activation)

Required accessories:
Extension board 2.1

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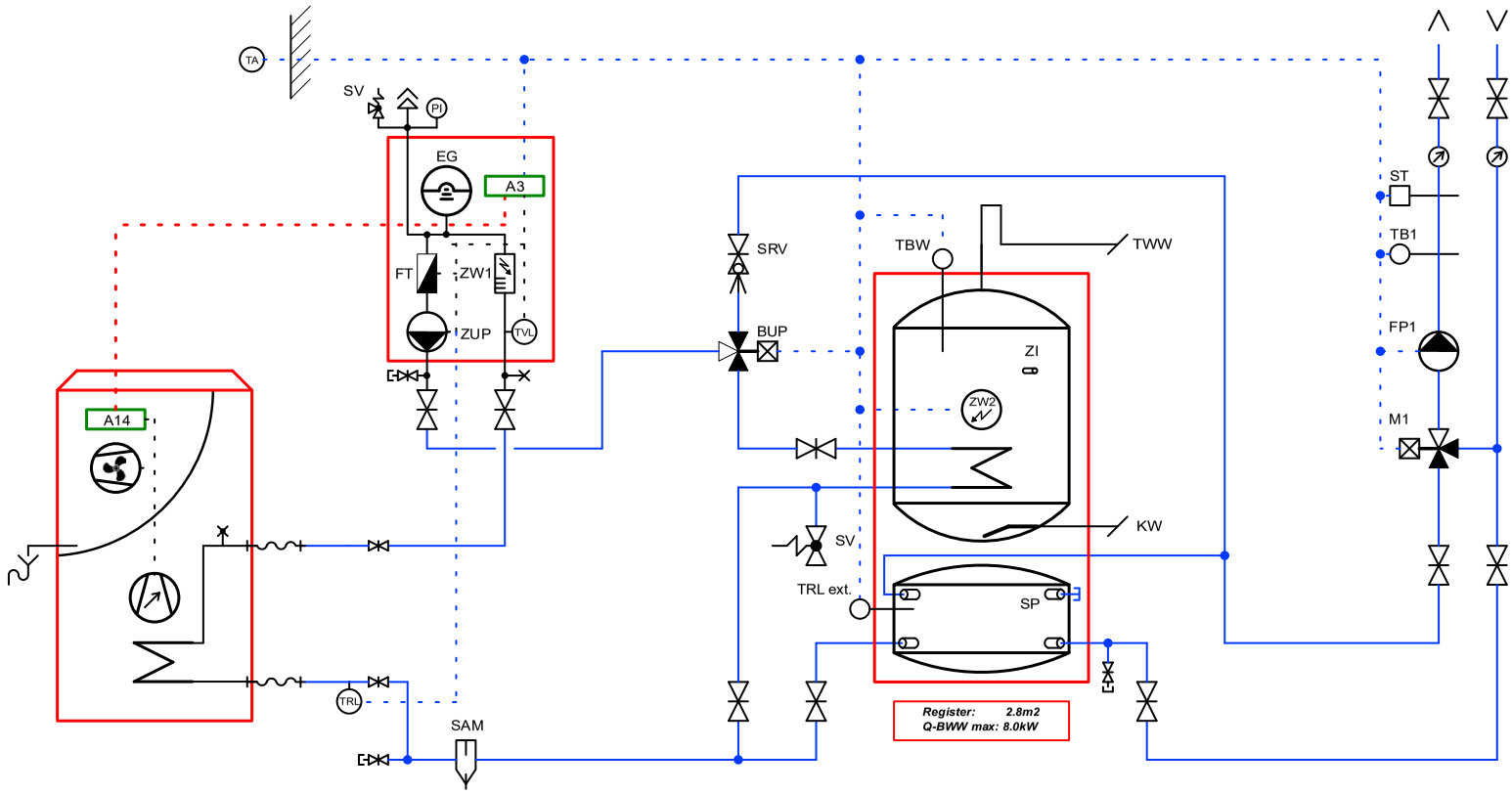

Legend

A3	Heat pump controller
A14	Electrical control box
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EG	Expansion vessel
FP1	Pump for mixing circuit 1
FT	Flow rate sensor
KW	Cold water
M1	Heating circuit mixer 1
PI	Pressure gauge
SAM	Dirt separator with magnet
SP	Internal buffer storage
SRV	Balancing valve
ST	Safety thermostat
SV	Safety valve
TA	External sensor
TB1	Flow temp. sensor heating circuit 1
TBW	Domestic hot water temperature sensor
TRL	Return flow temperature sensor heat pump
TRLext.	External return sensor (buffer storage)
TVL	Flow temperature sensor heat pump
TWW	Domestic hot water
ZI	Connection circulation DHW
ZUP	Charge circuit pump
ZW1	Emergency heater
ZW2	Electric heating DHW (on-site activation)

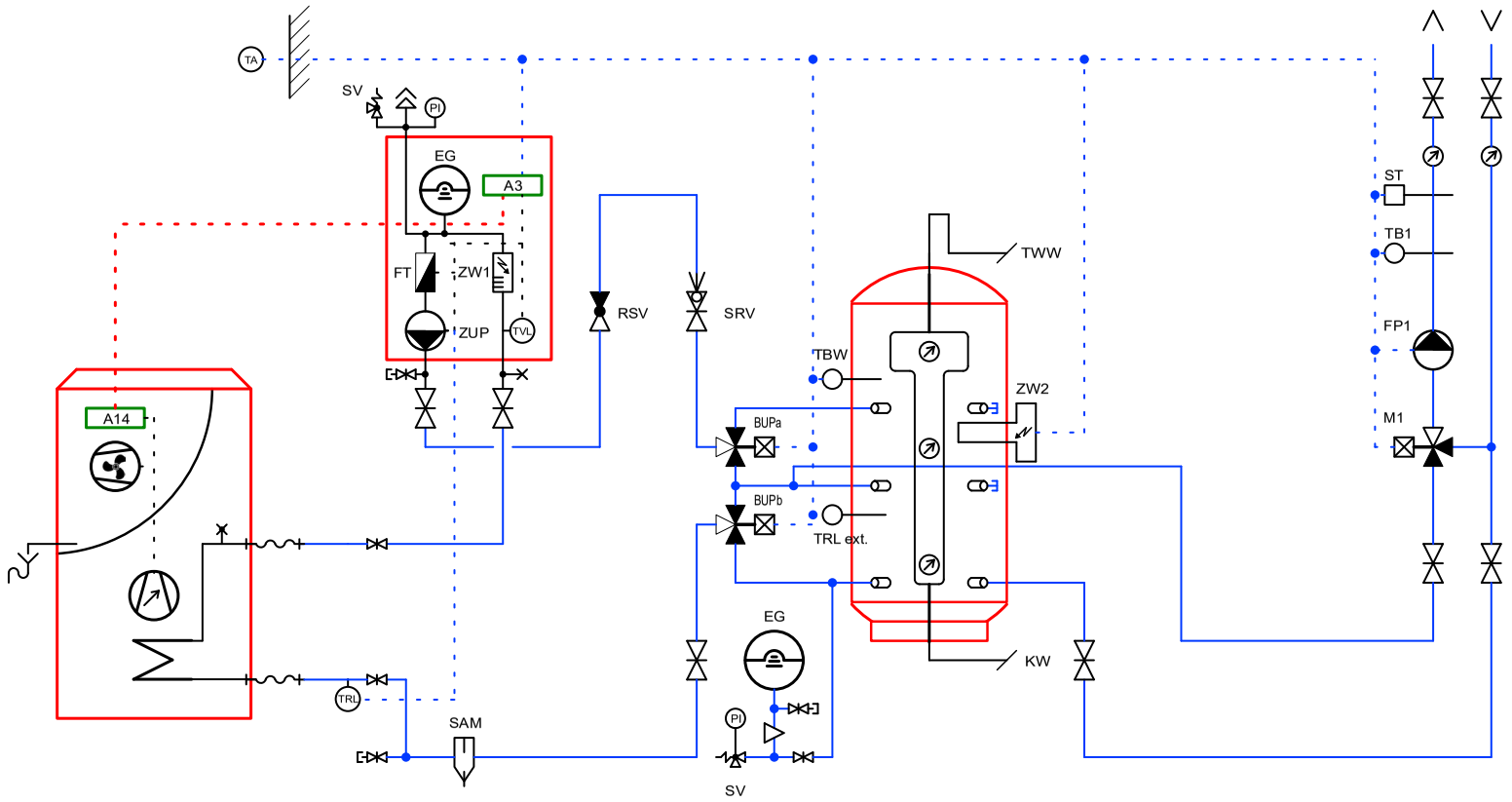
				DATE	01/2024
				DESIGNER	FUP
				Proved	JRE
RESPONSIBLE	CHANGE	DATE	DESIGNER	Standard	SIA 410

AH_CL_HM_08.20.10_E46

Subject to technical changes.

- Installation of additional components as per local regulations and conditions.
- This presentation is used as planning aid for the concerned installer.

PROJECTproject	-	plant / function / page
NAME OF DRAWING	AH_Livera_HM	Project Manager: PM
		No. pgs.



Legend

A3	Heat pump controller
A14	Electrical control box
BUP	Diverting valve for domestic hot water / a + b
EG	Expansion vessel
FP1	Pump for mixing circuit 1
FT	Flow rate sensor
KW	Cold water
M1	Heating circuit mixer 1
PI	Pressure gauge
RSV	Non-return valve
SAM	Dirt separator with magnet
SRV	Balancing valve
ST	Safety thermostat
SV	Safety valve
TA	External sensor
TB1	Flow temp. sensor heating circuit 1
TBW	Domestic hot water temperature sensor
TRL	Return flow temperature sensor heat pump
TRLext.	External return sensor (buffer storage)
TVL	Flow temperature sensor heat pump
TWW	Domestic hot water
ZUP	Charge circuit pump
ZW1	Emergency heater
ZW2	Electric heating DHW (on-site activation)

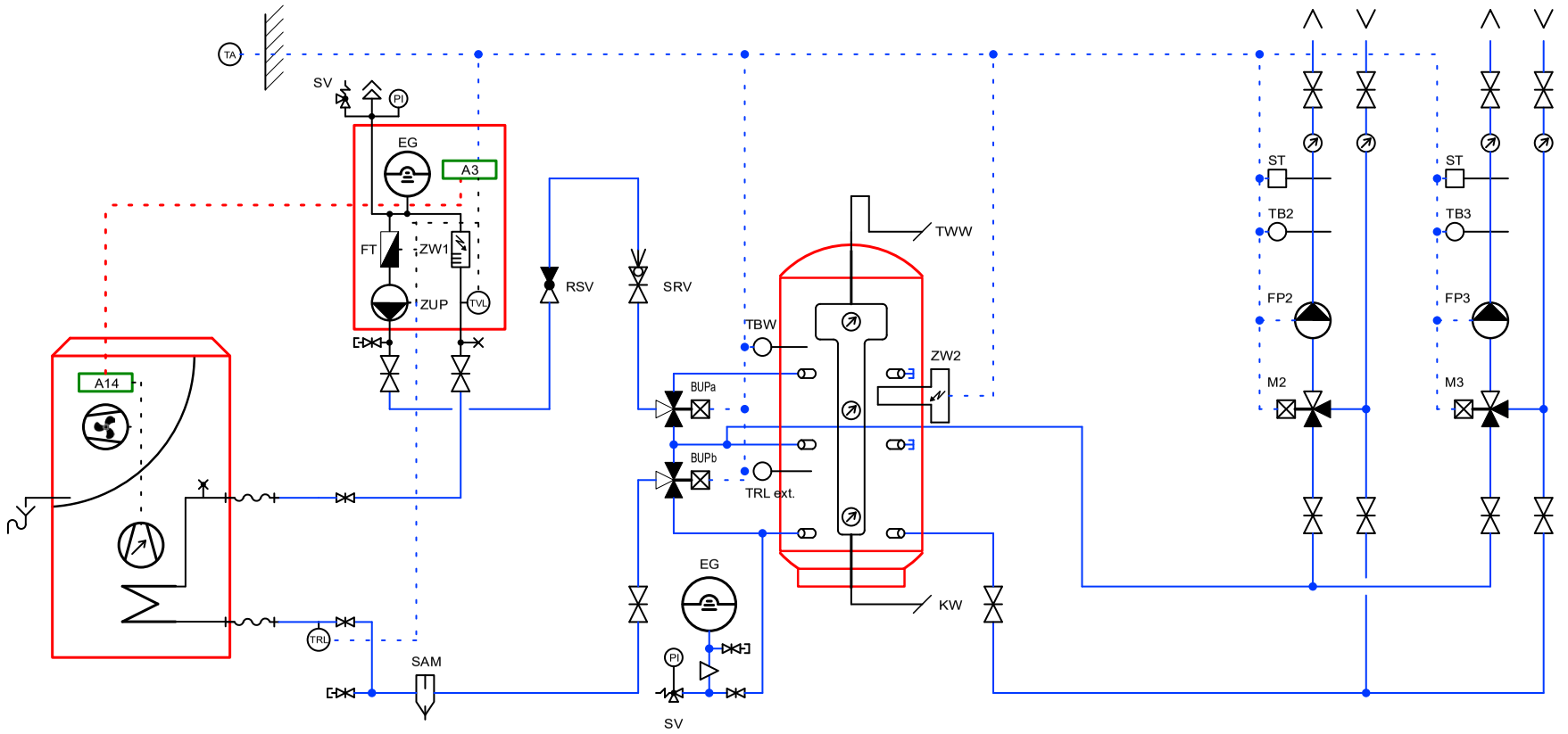
				DATE	01/2024
				DESIGNER	FUP
				Proved	JRE
RESPONSIBLE	CHANGE	DATE	DESIGNER	Standard	SIA 410

AH_CL_HM_08.30.10

Subject to technical changes.

- Installation of additional components as per local regulations and conditions.
- This presentation is used as planning aid for the concerned installer.

PROJECTproject	-	plant / function / page
NAME OF DRAWING	AH_Livera_HM	Project Manager: PM; No. pgs.

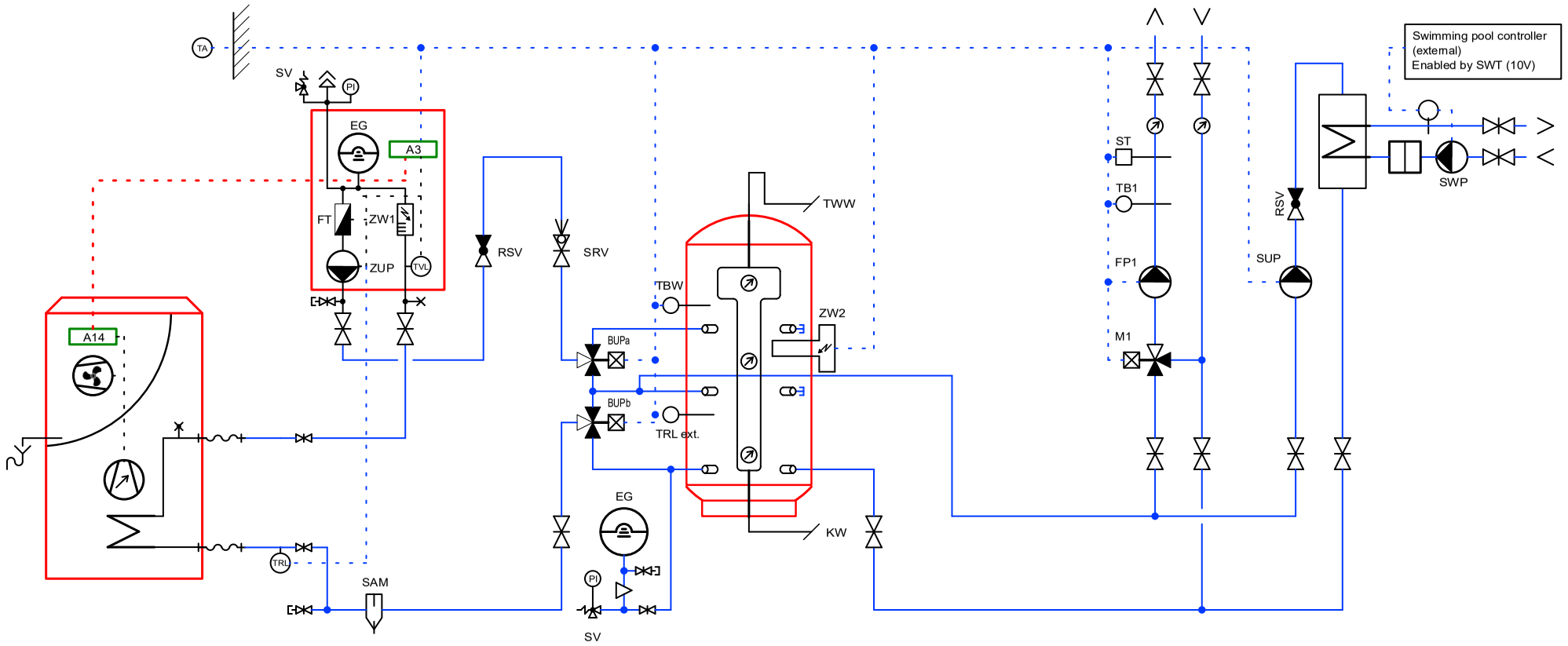


Legend

A3	Heat pump controller
A14	Electrical control box
BUP	Diverting valve for domestic hot water / a + b
EG	Expansion vessel
FP2	Pump for mixing circuit 2
FP3	Pump for mixing circuit 3
FT	Flow rate sensor
KW	Cold water
M2	Heating circuit mixer 2
M3	Heating circuit mixer 3
PI	Pressure gauge
RSV	Non-return valve
SAM	Dirt separator with magnet
SRV	Balancing valve
ST	Safety thermostat
SV	Safety valve
TA	External sensor
TB2	Flow temp. sensor heating circuit 2
TB3	Flow temp. sensor heating circuit 3
TBW	Domestic hot water temperature sensor
TRL	Return flow temperature sensor heat pump
TRLext.	External return sensor (buffer storage)
TVL	Flow temperature sensor heat pump
TWW	Domestic hot water
ZUP	Charge circuit pump
ZW1	Emergency heater
ZW2	Electric heating DHW (on-site activation)

Required accessories:
Extension board 2.1

				DATE	01/2024	AH_CL_HM_08.30.10_E2		• Installation of additional components as per local regulations and conditions. • This presentation is used as planning aid for the concerned installer.	PROJECTproject -	plant / function / page
				DESIGNER	FUP				NAME OF DRAWING AH_Livera_HM	Project Manager PM
				Proved	JRE	Subject to technical changes.				No. pgs.
RESPONSIBLE	CHANGE	DATE	DESIGNER	Standard	SIA 410					



Legend

A3	Heat pump controller
A14	Electrical control box
BUP	Diverting valve for domestic hot water / a + b
EG	Expansion vessel
FP1	Pump for mixing circuit 1
FT	Flow rate sensor
KW	Cold water
M1	Heating circuit mixer 1
PI	Pressure gauge
RSV	Non-return valve
SAM	Dirt separator with magnet
SRV	Balancing valve
ST	Safety thermostat
SUP	Swimming pool, circulating pump
SV	Safety valve
SWP	Swimming pool pump (controlled externally)
SWT	Heat pump requirement
TA	External sensor
TB1	Flow temp. sensor heating circuit 1
TBW	Domestic hot water temperature sensor
TRL	Return flow temperature sensor heat pump
TRLext.	External return sensor (buffer storage)
TVL	Flow temperature sensor heat pump
TWW	Domestic hot water
ZUP	Charge circuit pump
ZW1	Emergency heater
ZW2	Electric heating DHW (on-site activation)

Required accessories:
Extension board 2.1

				DATE	01/2024
				DESIGNER	FUP
				Proved	JRE
RESPONSIBLE	CHANGE	DATE	DESIGNER	Standard	SIA 410

AH_CL_HM_08.30.10_E4

Subject to technical changes.

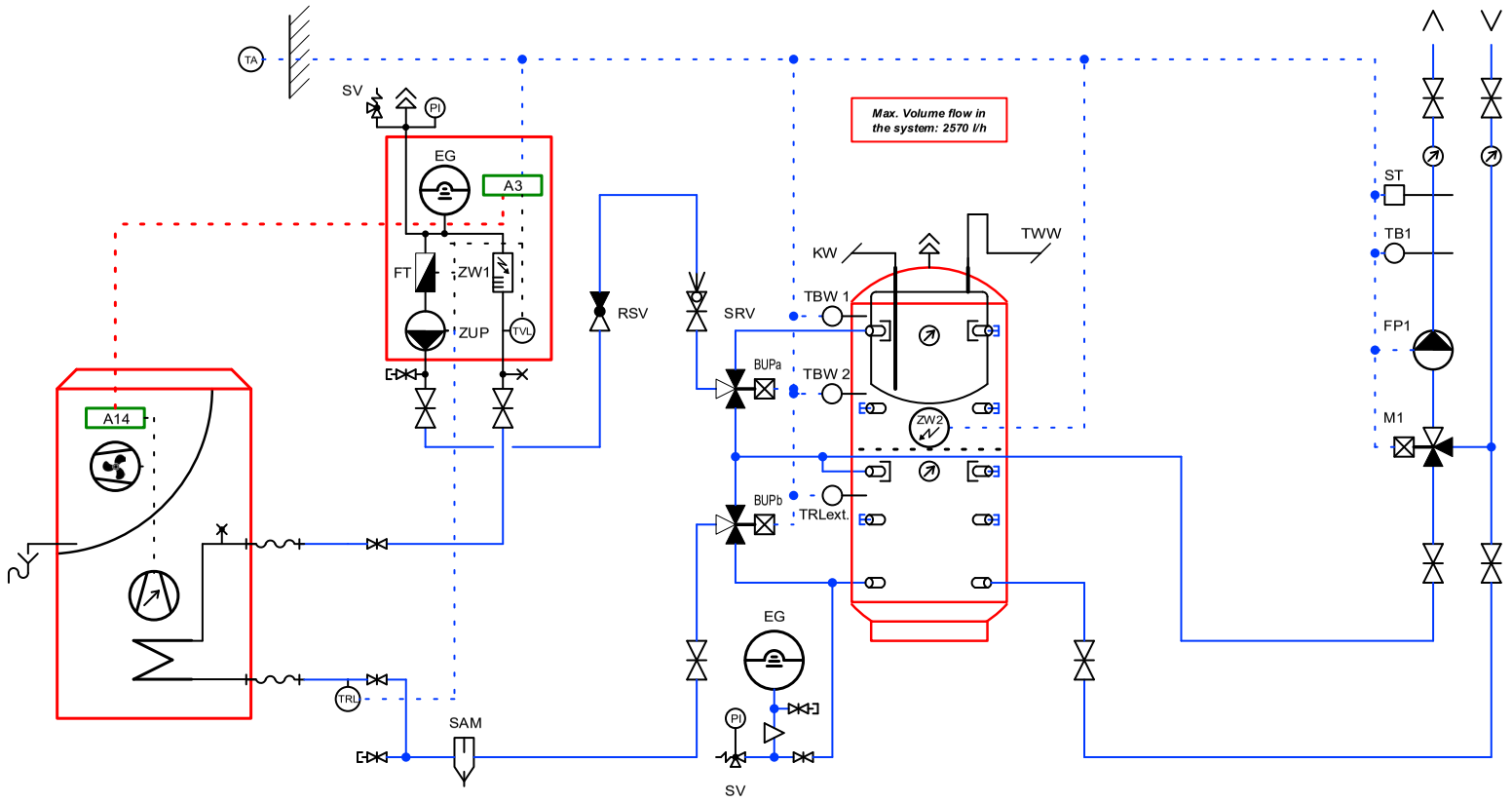
- Installation of additional components as per local regulations and conditions.
- This presentation is used as planning aid for the concerned installer.

PROJECTproject -

NAME OF DRAWING AH_Livera_HM

plant	function	page
Project Manager PM		No. pgs.

Heat pump Outside | Hydraulic module | Charging circuit combination storage | Combination storage | Heating circuit 1



Legend

A3	Heat pump controller
A14	Electrical control box
BUP	Diverting valve for domestic hot water / a + b
EG	Expansion vessel
FP1	Pump for mixing circuit 1
FT	Flow rate sensor
KW	Cold water
M1	Heating circuit mixer 1
PI	Pressure gauge
RSV	Non-return valve
SAM	Dirt separator with magnet
SRV	Balancing valve
ST	Safety thermostat
SV	Safety valve
TA	External sensor
TB1	Flow temp. sensor heating circuit 1
TBW 1	Domestic hot water temperature sensor 1
TBW 2	Domestic hot water temperature sensor 2 (Option)
TRL	Return flow temperature sensor heat pump
TRLext.	External return sensor (buffer storage)
TVL	Flow temperature sensor heat pump
TWW	Domestic hot water
ZUP	Charge circuit pump
ZW1	Emergency heater
ZW2	Electric heating DHW (on-site activation)

				DATE	01/2024
				DESIGNER	FUP
				Proved	JRE
RESPONSIBLE	CHANGE	DATE	DESIGNER	Standard	SIA 410

AH_CL_HM_08.30.10_E43

Subject to technical changes.

- Installation of additional components as per local regulations and conditions.
- This presentation is used as planning aid for the concerned installer.

PROJECTproject: -

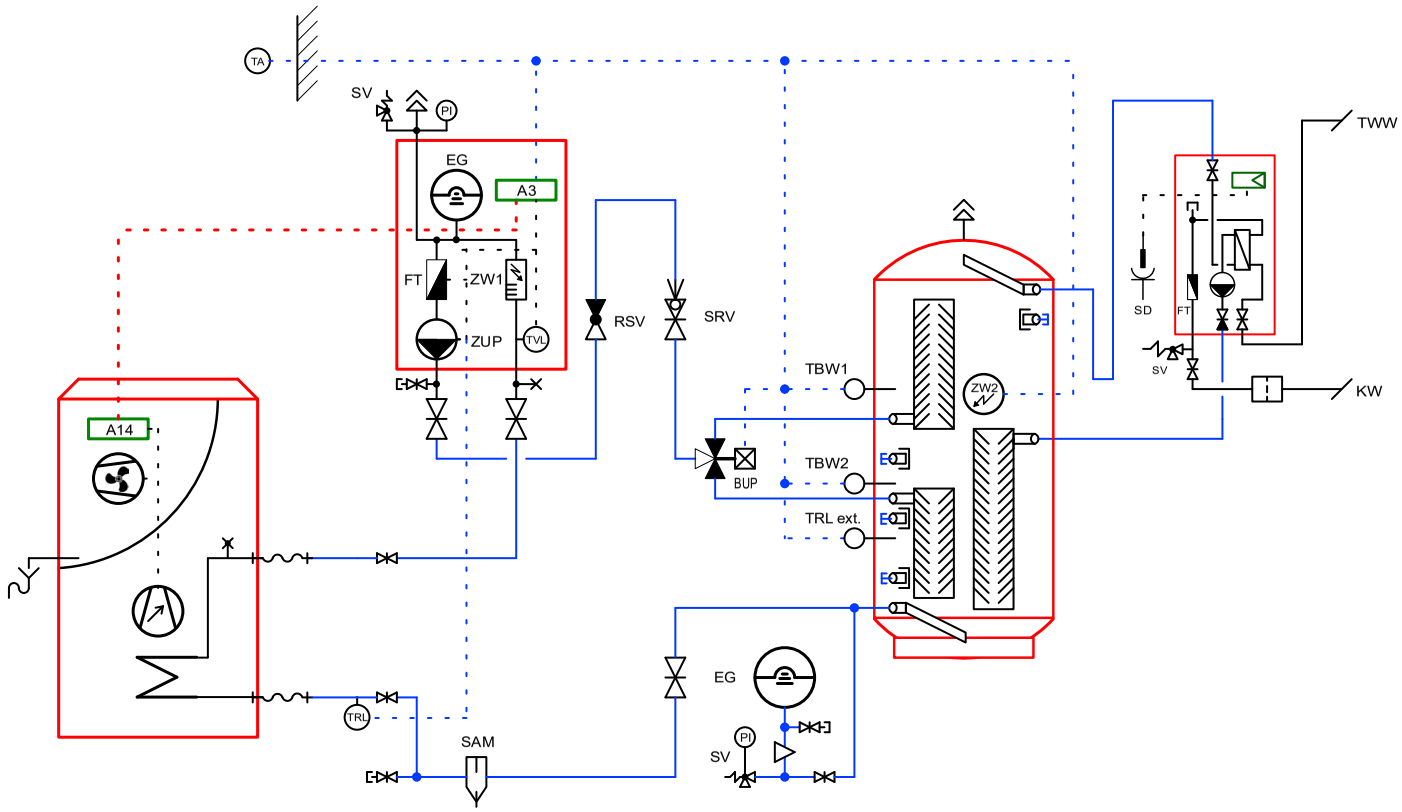
NAME OF DRAWING: AH_Livera_HM

plant | function | page

Project Manager: PM

No. pgs.

Heat pump Outside | Hydraulic module | Charging circuit energy storage | Energy storage | Fresh water module



Legend

A3	Heat pump controller
A14	Electrical control box
BUP	Diverting valve for domestic hot water
EG	Expansion vessel
FT	Flow rate sensor
KW	Cold water
PI	Pressure gauge
RSV	Non-return valve
SAM	Dirt separator with magnet
SD	power socket 230V (external)
SRV	Balancing valve
SV	Safety valve
TA	External sensor
TBW1	Domestic hot water temp. sensor above
TBW2	Domestic hot water temp. sensor bottom
TRL	Return flow temperature sensor heat pump
TRLext.	External return sensor (buffer storage)
TVL	Flow temperature sensor heat pump
TWW	Domestic hot water
ZUP	Charge circuit pump
ZW1	Emergency heater
ZW2	Electric heating DHW (on-site activation)

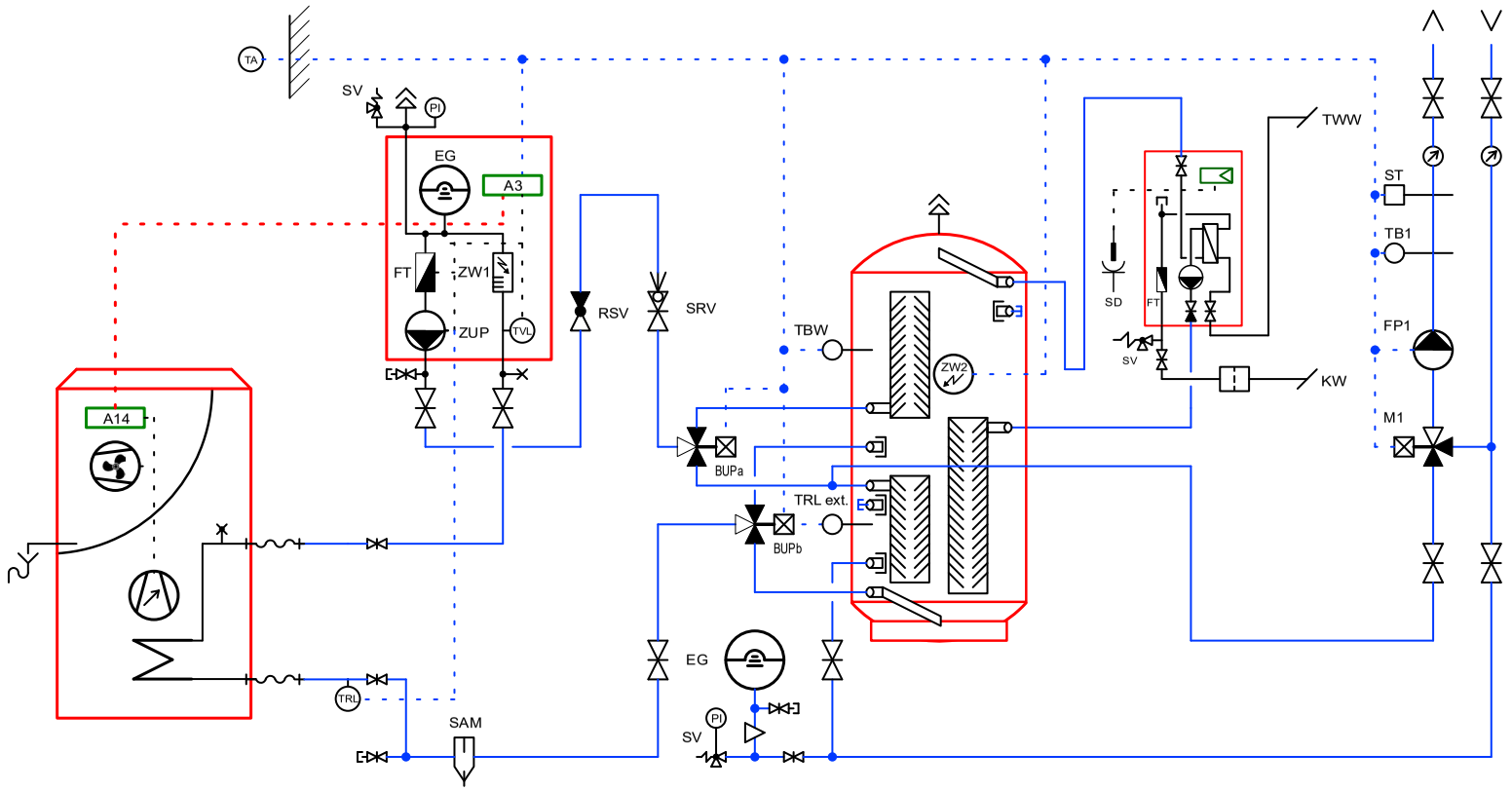
				DATE	01/2024
				DESIGNER	FUP
				Proved	JRE
RESPONSIBLE	CHANGE	DATE	DESIGNER	Standard	SIA 410

AH_CL_HM_08.30.00_E45

Subject to technical changes.

- Installation of additional components as per local regulations and conditions.
- This presentation is used as planning aid for the concerned installer.

PROJECTproject	-	plant / function / page
NAME OF DRAWING	AH_Livera_HM	Project Manager: PM; No. pgs.



Legend

A3	Heat pump controller
A14	Electrical control box
BUP	Diverting valve for domestic hot water / a + b
EG	Expansion vessel
FP1	Pump for mixing circuit 1
FT	Flow rate sensor
KW	Cold water
M1	Heating circuit mixer 1
PI	Pressure gauge
RSV	Non-return valve
SAM	Dirt separator with magnet
SD	power socket 230V (external)
SRV	Balancing valve
ST	Safety thermostat
SV	Safety valve
TA	External sensor
TB1	Flow temp. sensor heating circuit 1
TBW	Domestic hot water temperature sensor
TRL	Return flow temperature sensor heat pump
TRLext.	External return sensor (buffer storage)
TVL	Flow temperature sensor heat pump
TWW	Domestic hot water
ZUP	Charge circuit pump
ZW1	Emergency heater
ZW2	Electric heating DHW (on-site activation)

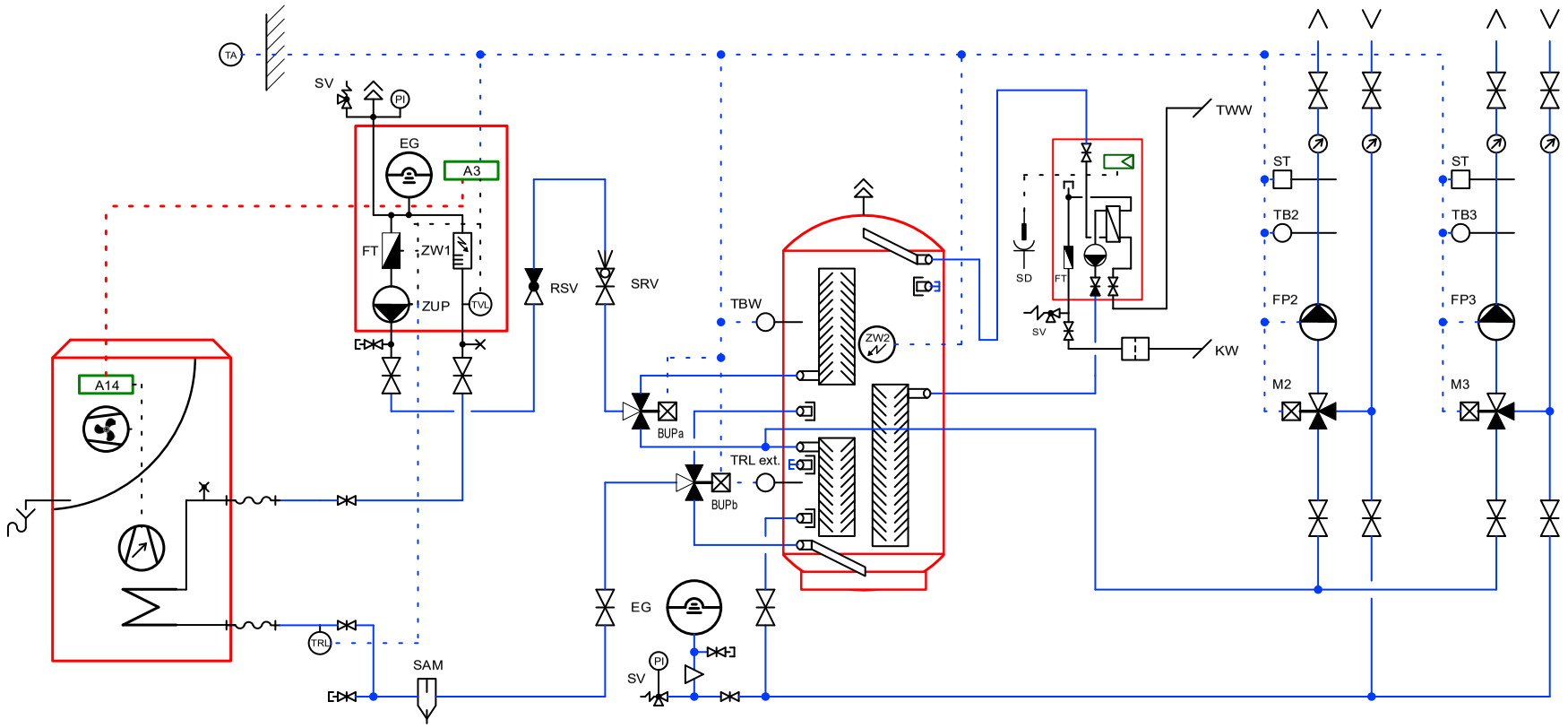
				DATE	01/2024
				DESIGNER	FUP
				Proved	JRE
RESPONSIBLE	CHANGE	DATE	DESIGNER	Standard	SIA 410

AH_CL_HM_08.30.10_E45

Subject to technical changes.

- Installation of additional components as per local regulations and conditions.
- This presentation is used as planning aid for the concerned installer.

PROJECTproject	-	plant / function / page
NAME OF DRAWING	AH_Livera_HM	Project Manager: PM; No. pgs.

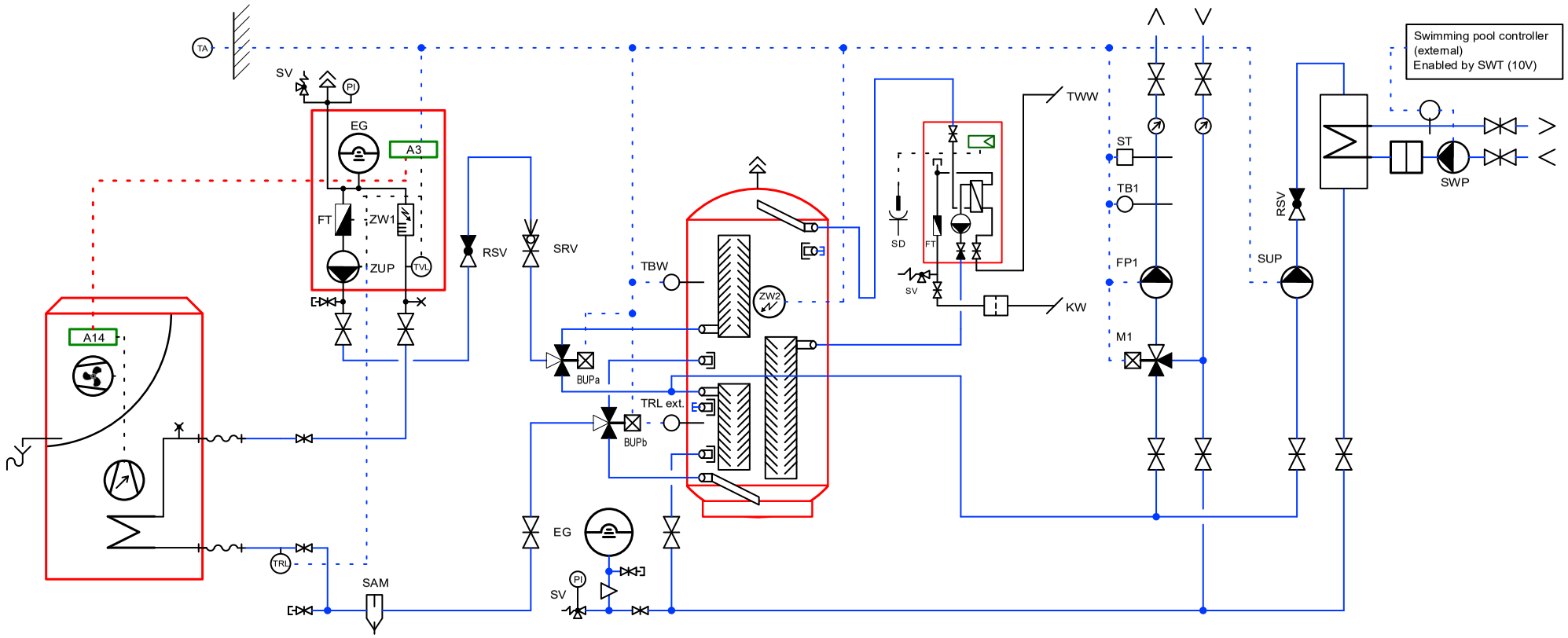


Legend

A3	Heat pump controller
A14	Electrical control box
BUP	Diverting valve for domestic hot water / a + b
EG	Expansion vessel
FP2	Pump for mixing circuit 2
FP3	Pump for mixing circuit 3
FT	Flow rate sensor
KW	Cold water
M2	Heating circuit mixer 2
M3	Heating circuit mixer 3
PI	Pressure gauge
RSV	Non-return valve
SAM	Dirt separator with magnet
SD	power socket 230V (external)
SRV	Balancing valve
ST	Safety thermostat
SV	Safety valve
TA	External sensor
TB2	Flow temp. sensor heating circuit 2
TB3	Flow temp. sensor heating circuit 3
TBW	Domestic hot water temperature sensor
TRL	Return flow temperature sensor heat pump
TRLext.	External return sensor (buffer storage)
TVL	Flow temperature sensor heat pump
TWW	Domestic hot water
ZUP	Charge circuit pump
ZW1	Emergency heater
ZW2	Electric heating DHW (on-site activation)

Required accessories:
Extension board 2.1

				DATE	01/2024	AH_CL_HM_08.30.10_E45_E2		• Installation of additional components as per local regulations and conditions. • This presentation is used as planning aid for the concerned installer.	PROJECTproject -
				DESIGNER	FUP				plant / function / page
				Proved	JRE	Subject to technical changes.			NAME OF DRAWING AH_Livera_HM
RESPONSIBLE	CHANGE	DATE	DESIGNER	Standard	SIA 410				Project Manager PM / No. pgs.



Legend

A3	Heat pump controller
A14	Electrical control box
BUP	Diverting valve for domestic hot water / a + b
EG	Expansion vessel
FP1	Pump for mixing circuit 1
FT	Flow rate sensor
KW	Cold water
M1	Heating circuit mixer 1
PI	Pressure gauge
RSV	Non-return valve
SAM	Dirt separator with magnet
SD	power socket 230V (external)
SRV	Balancing valve
ST	Safety thermostat
SUP	Swimming pool, circulating pump
SV	Safety valve
SWP	Swimming pool pump (controlled externally)
SWT	Heat pump requirement
TA	External sensor
TB1	Flow temp. sensor heating circuit 1
TBW	Domestic hot water temperature sensor
TRL	Return flow temperature sensor heat pump
TRLext.	External return sensor (buffer storage)
TVL	Flow temperature sensor heat pump
TWW	Domestic hot water
ZUP	Charge circuit pump
ZW1	Emergency heater
ZW2	Electric heating DHW (on-site activation)

Required accessories:
Extension board 2.1

				DATE	01/2024
				DESIGNER	FUP
				Proved	JRE
RESPONSIBLE	CHANGE	DATE	DESIGNER	Standard	SIA 410

AH_CL_HM_08.30.10_E45_E4

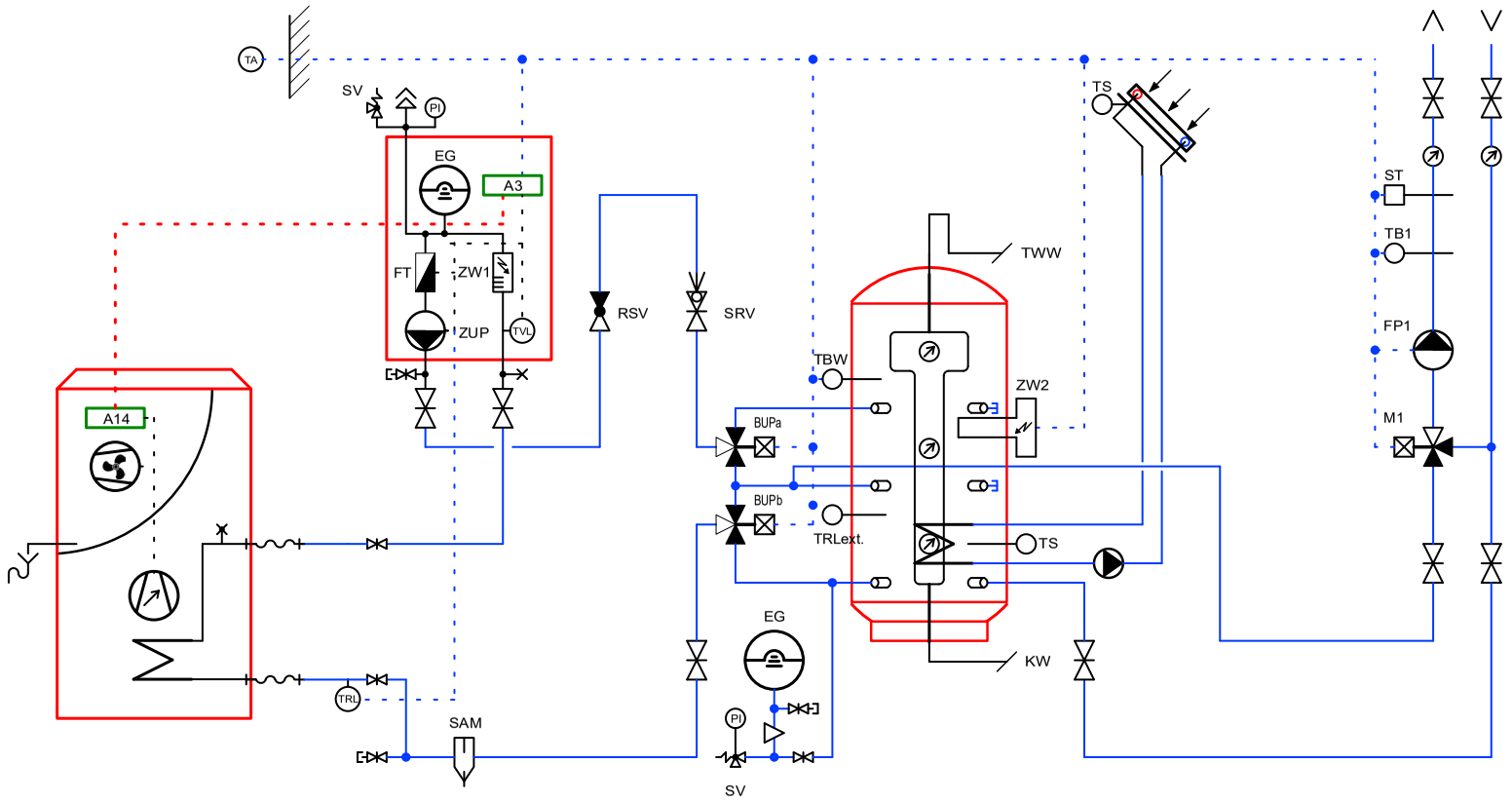
Subject to technical changes.

- Installation of additional components as per local regulations and conditions.
- This presentation is used as planning aid for the concerned installer.

PROJECTproject: -
NAME OF DRAWING: AH_Livera_HM

plant	function	page
Project Manager: PM		No. pgs.

Heat pump Outside | Hydraulic module | Charging circuit combination storage | Combination storage | Solar system | Heating circuit 1

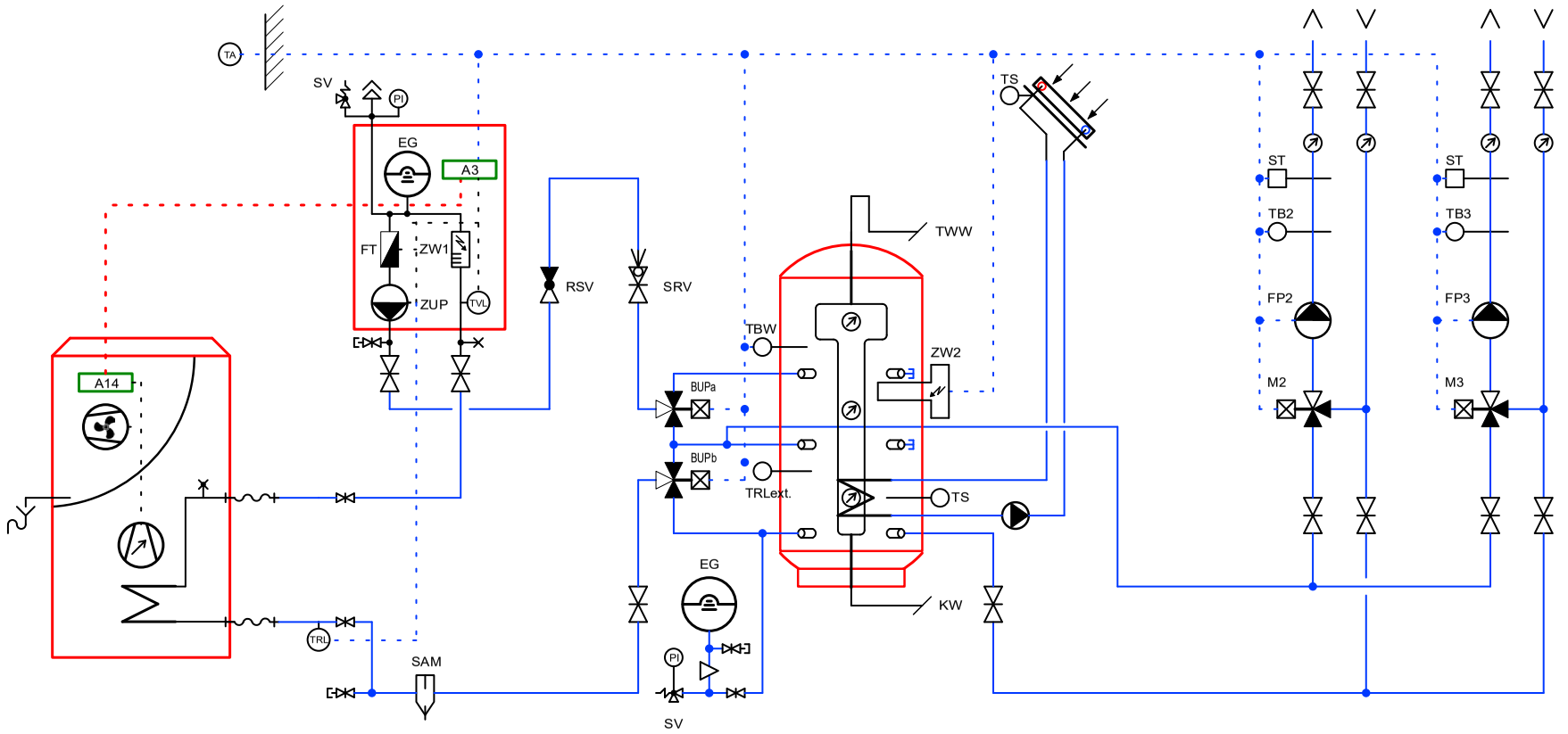


Legend

A3	Heat pump controller
A14	Electrical control box
BUP	Diverting valve for domestic hot water / a + b
EG	Expansion vessel
FP1	Pump for mixing circuit 1
FT	Flow rate sensor
KW	Cold water
M1	Heating circuit mixer 1
PI	Pressure gauge
RSV	Non-return valve
SAM	Dirt separator with magnet
SRV	Balancing valve
ST	Safety thermostat
SV	Safety valve
TA	External sensor
TB1	Flow temp. sensor heating circuit 1
TBW	Domestic hot water temperature sensor
TRL	Return flow temperature sensor heat pump
TRLext.	External return sensor (buffer storage)
TS	Solar sensor
TVL	Flow temperature sensor heat pump
TWW	Domestic hot water
ZUP	Charge circuit pump
ZW1	Emergency heater
ZW2	Electric heating DHW (on-site activation)

Solar system on-site, independent of control

				DATE	01/2024	AH_CL_HM_08.40.10		• Installation of additional components as per local regulations and conditions. • This presentation is used as planning aid for the concerned installer.	PROJECTproject -	plant / function / page
				DESIGNER	FUP				NAME OF DRAWING AH_Livera_HM	Project Manager PM
				Proved	JRE	Subject to technical changes.				No. pgs.
RESPONSIBLE	CHANGE	DATE	DESIGNER	Standard	SIA 410					



Legend

A3	Heat pump controller
A14	Electrical control box
BUP	Diverting valve for domestic hot water / a + b
EG	Expansion vessel
FP2	Pump for mixing circuit 2
FP3	Pump for mixing circuit 3
FT	Flow rate sensor
KW	Cold water
M2	Heating circuit mixer 2
M3	Heating circuit mixer 3
PI	Pressure gauge
RSV	Non-return valve
SAM	Dirt separator with magnet
SRV	Balancing valve
ST	Safety thermostat
SV	Safety valve
TA	External sensor
TB2	Flow temp. sensor heating circuit 2
TB3	Flow temp. sensor heating circuit 3
TBW	Domestic hot water temperature sensor
TRL	Return flow temperature sensor heat pump
TRLext.	External return sensor (buffer storage)
TS	Solar sensor
TVL	Flow temperature sensor heat pump
TWW	Domestic hot water
ZUP	Charge circuit pump
ZW1	Emergency heater
ZW2	Electric heating DHW (on-site activation)

Solar system on-site, independent of control

Required accessories:
Extension board 2.1

				DATE	01/2024
				DESIGNER	FUP
				Proved	JRE
RESPONSIBLE	CHANGE	DATE	DESIGNER	Standard	SIA 410

AH_CL_HM_08.40.10_E2

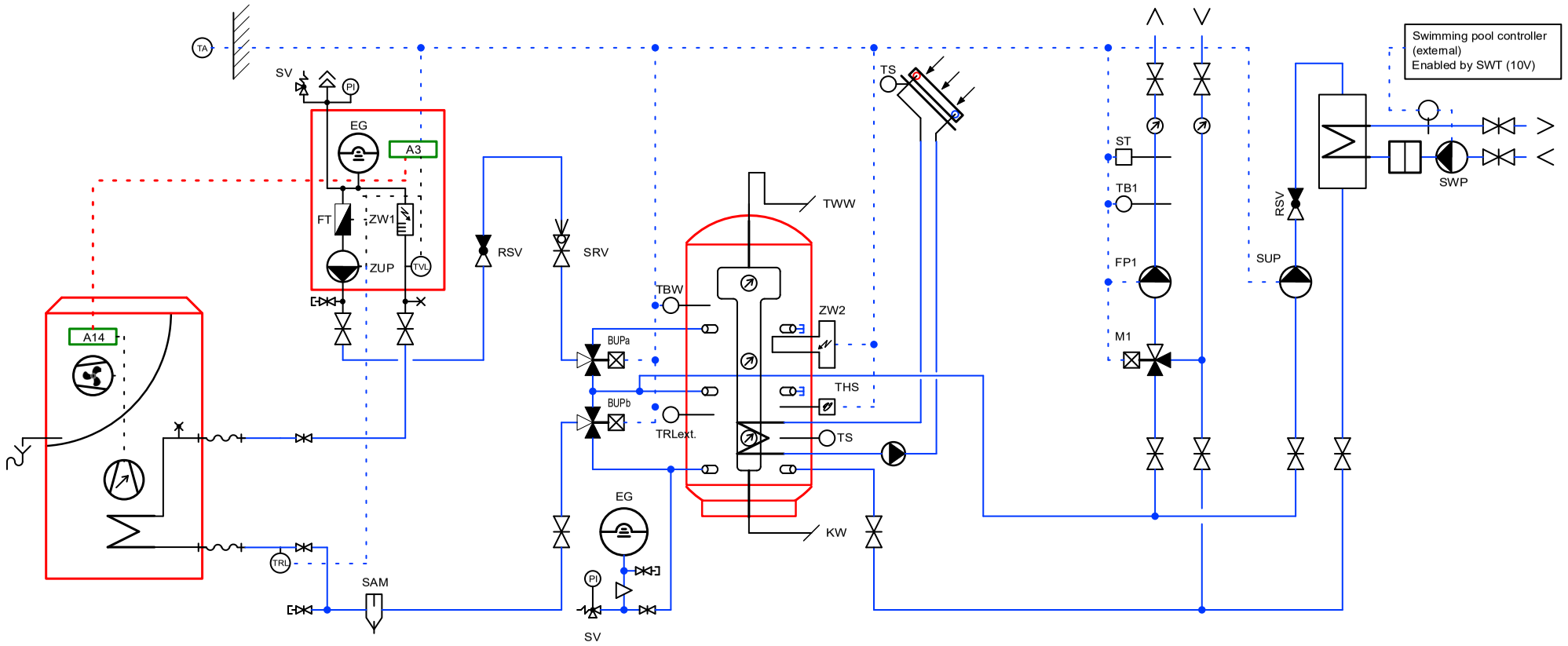
Subject to technical changes.

- Installation of additional components as per local regulations and conditions.
- This presentation is used as planning aid for the concerned installer.

PROJECTproject: -

NAME OF DRAWING: AH_Livera_HM

plant	function	page
Project Manager: PM		No. pgs.



Legend

A3	Heat pump controller
A14	Electrical control box
BUP	Diverting valve for domestic hot water / a + b
EG	Expansion vessel
FP1	Pump for mixing circuit 1
FT	Flow rate sensor
KW	Cold water
M1	Heating circuit mixer 1
PI	Pressure gauge
RSV	Non-return valve
SAM	Dirt separator with magnet
SRV	Balancing valve
ST	Safety thermostat
SUP	Swimming pool, circulating pump
SV	Safety valve
SWP	Swimming pool pump (controlled externally)
SWT	Heat pump requirement
TA	External sensor
TB1	Flow temp. sensor heating circuit 1
TBW	Domestic hot water temperature sensor
THS	Thermostat charge limit pool
TRL	Return flow temperature sensor heat pump
TRLext.	External return sensor (buffer storage)
TS	Solar sensor
TVL	Flow temperature sensor heat pump
TWW	Domestic hot water
ZUP	Charge circuit pump
ZW1	Emergency heater
ZW2	Electric heating DHW (on-site activation)

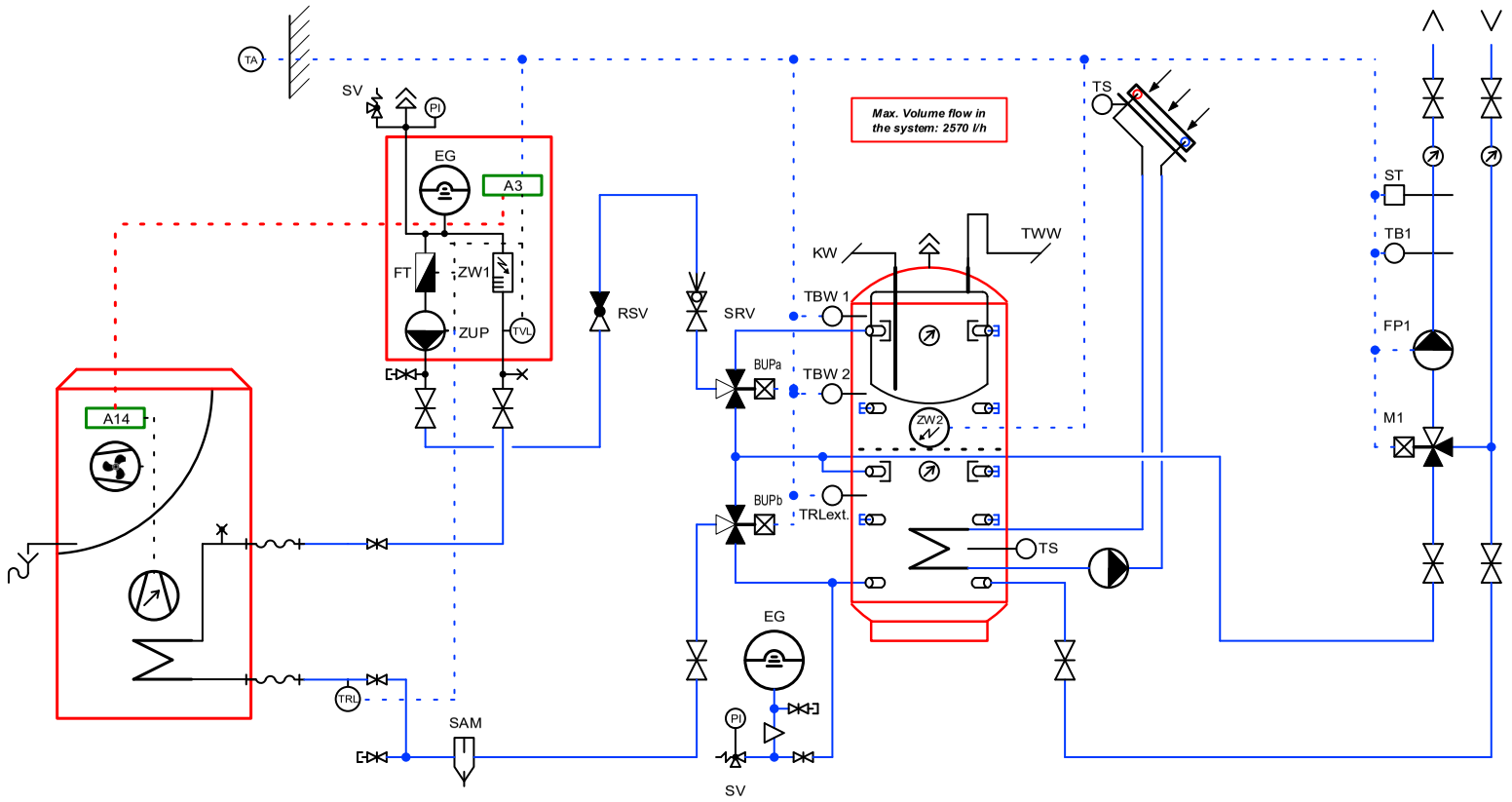
Required accessories:
Extension board 2.1

Solar system on-site, independent of control

				DATE	01/2024	AH_CL_HM_08.40.10_E4	• Installation of additional components as per local regulations and conditions. • This presentation is used as planning aid for the concerned installer.
				DESIGNER	FUP		
				Proved	JRE	Subject to technical changes.	
RESPONSIBLE	CHANGE	DATE	DESIGNER	Standard	SIA 410		

PROJECTproject	-	plant / function / page
NAME OF DRAWING	AH_Livera_HM	Project Manager: PM
		No. pgs.

Heat pump Outside | Hydraulic module | Charging circuit combination storage | Combination storage | Solar system | Heating circuit 1



Legend

A3	Heat pump controller
A14	Electrical control box
BUP	Diverting valve for domestic hot water / a + b
EG	Expansion vessel
FP1	Pump for mixing circuit 1
FT	Flow rate sensor
KW	Cold water
M1	Heating circuit mixer 1
PI	Pressure gauge
RSV	Non-return valve
SAM	Dirt separator with magnet
SRV	Balancing valve
ST	Safety thermostat
SV	Safety valve
TA	External sensor
TB1	Flow temp. sensor heating circuit 1
TBW 1	Domestic hot water temperature sensor 1
TBW 2	Domestic hot water temperature sensor 2 (Option)
TRL	Return flow temperature sensor heat pump
TRLext.	External return sensor (buffer storage)
TS	Solar sensor
TVL	Flow temperature sensor heat pump
TWW	Domestic hot water
ZUP	Charge circuit pump
ZW1	Emergency heater
ZW2	Electric heating DHW (on-site activation)

Solar system on-site, independent of control

				DATE	01/2024
				DESIGNER	FUP
				Proved	JRE
RESPONSIBLE	CHANGE	DATE	DESIGNER	Standard	SIA 410

AH_CL_HM_08.40.10_E43

Subject to technical changes.

- Installation of additional components as per local regulations and conditions.
- This presentation is used as planning aid for the concerned installer.

PROJECTproject -

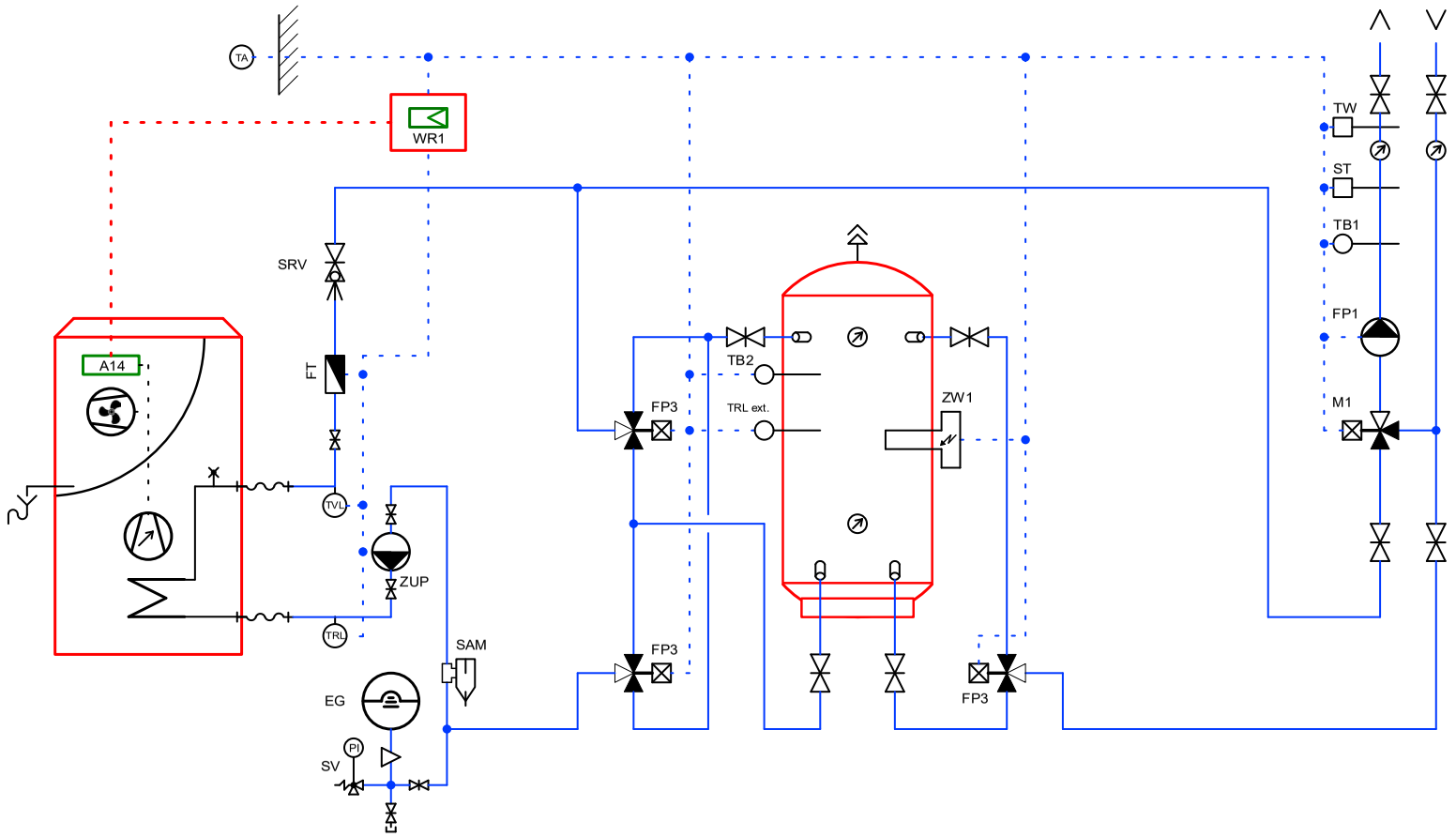
NAME OF DRAWING AH_Livera_HM

plant | function | page

Project Manager PM

No. pgs.

Heat pump Outside | Wall controller | Charging circuit heater / Cooling | Buffer storage Heating / Cooling | Heating circuit 1 / Cooling circuit



Legend

A14	Electrical control box
EG	Expansion vessel
FP1	Pump for mixing circuit 1
FP3	Deflection valve cooling
FT	Flow rate sensor
M1	Heating circuit mixer 1
PI	Pressure gauge
SAM	Dirt separator with magnet
SRV	Balancing valve
ST	Safety thermostat
SV	Safety valve
TA	External sensor
TB1	Flow temp. sensor heating circuit 1
TB2	Cool storage sensor
TRL	Return flow temperature sensor heat pump
TRLext.	External return sensor (buffer storage)
TVL	Flow temperature sensor heat pump
TW	Dew point monitor
WR1	Wall controller
ZUP	Charge circuit pump
ZW1	Emergency heater

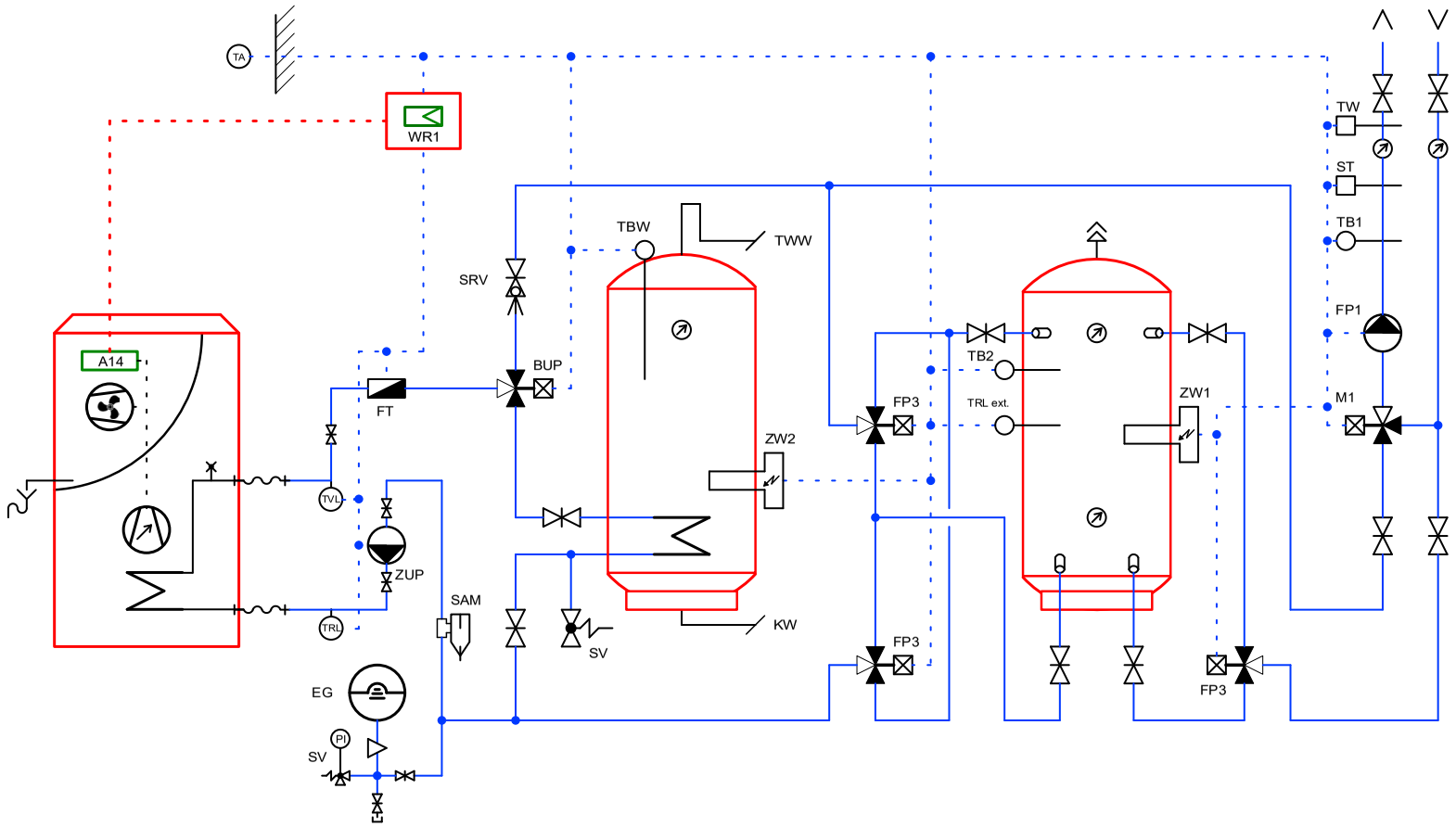
RESPONSIBLE	CHANGE	DATE	DESIGNER		
				DATE	12/2023
				DESIGNER	FUP
				Proved	JRE
				Standard	SIA 410

AH_CL_WR1_08.00.10_E61

Subject to technical changes.

- Installation of additional components as per local regulations and conditions.
- This presentation is used as planning aid for the concerned installer.

PROJECTproject	-	plant	function	page
NAME OF DRAWING	AH_Livera_WR1	Project Manager	PM	No. pgs.



Legend

A14	Electrical control box
BUP	Diverting valve for domestic hot water
EG	Expansion vessel
FP1	Pump for mixing circuit 1
FP3	Deflection valve cooling
FT	Flow rate sensor
KW	Cold water
M1	Heating circuit mixer 1
PI	Pressure gauge
SAM	Dirt separator with magnet
SRV	Balancing valve
ST	Safety thermostat
SV	Safety valve
TA	External sensor
TB1	Flow temp. sensor heating circuit 1
TB2	Cool storage sensor
TBW	Domestic hot water temperature sensor
TRL	Return flow temperature sensor heat pump
TRLext.	External return sensor (buffer storage)
TVL	Flow temperature sensor heat pump
TW	Dew point monitor
TWW	Domestic hot water
WR1	Wall controller
ZUP	Charge circuit pump
ZW1	Emergency heater
ZW2	Electric heating DHW (on-site activation)

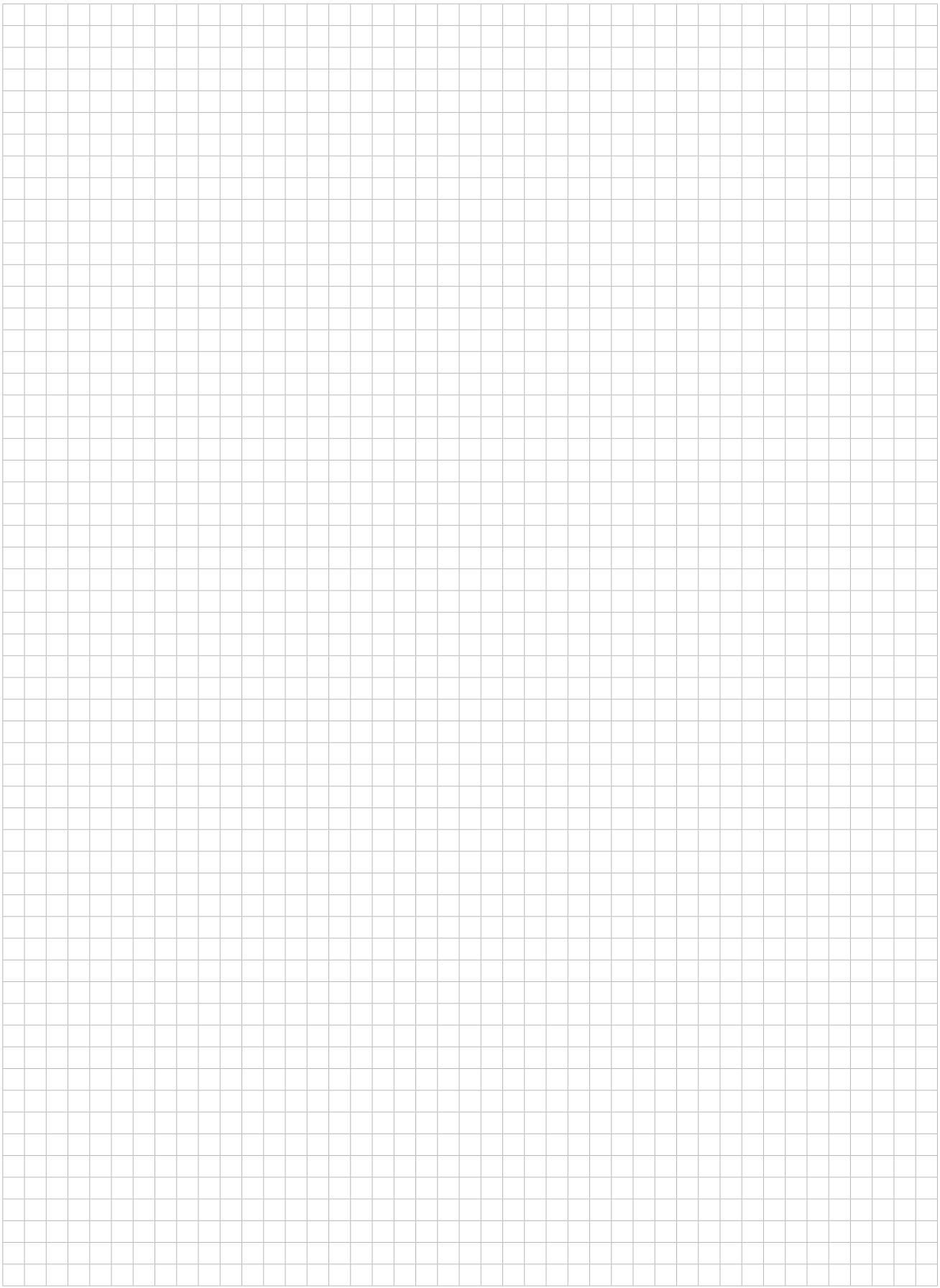
				DATE	12/2023
				DESIGNER	FUP
				Proved	JRE
RESPONSIBLE	CHANGE	DATE	DESIGNER	Standard	SIA 410

AH_CL_WR1_08.20.10_E61

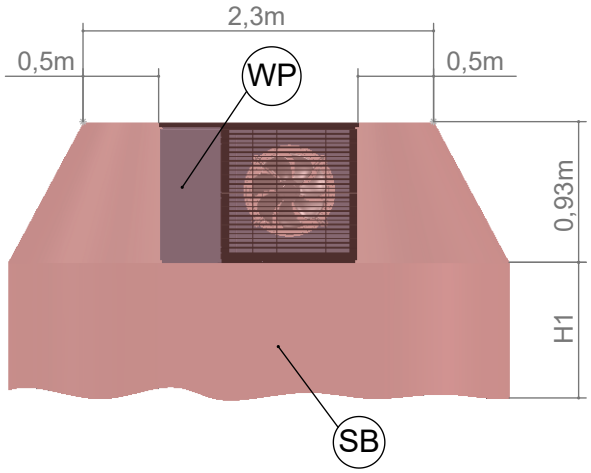
Subject to technical changes.

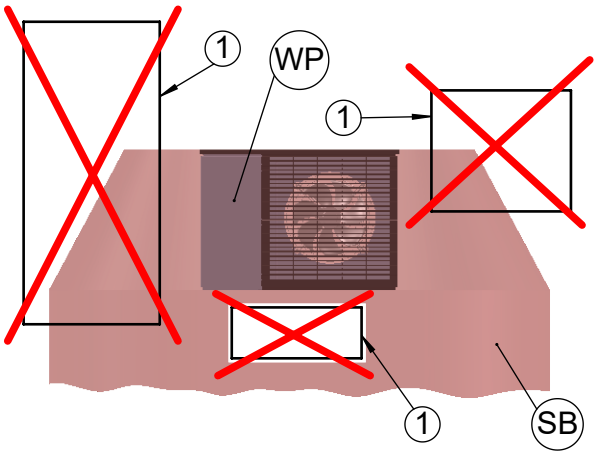
- Installation of additional components as per local regulations and conditions.
- This presentation is used as planning aid for the concerned installer.

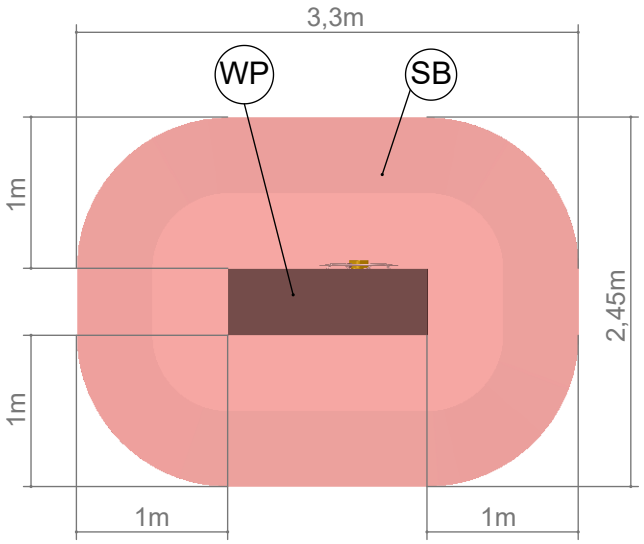
PROJECTproject	-	plant / function / page
NAME OF DRAWING	AH_Livera_WR1	Project Manager: PM; No. pgs.



Protection zones / safety distances







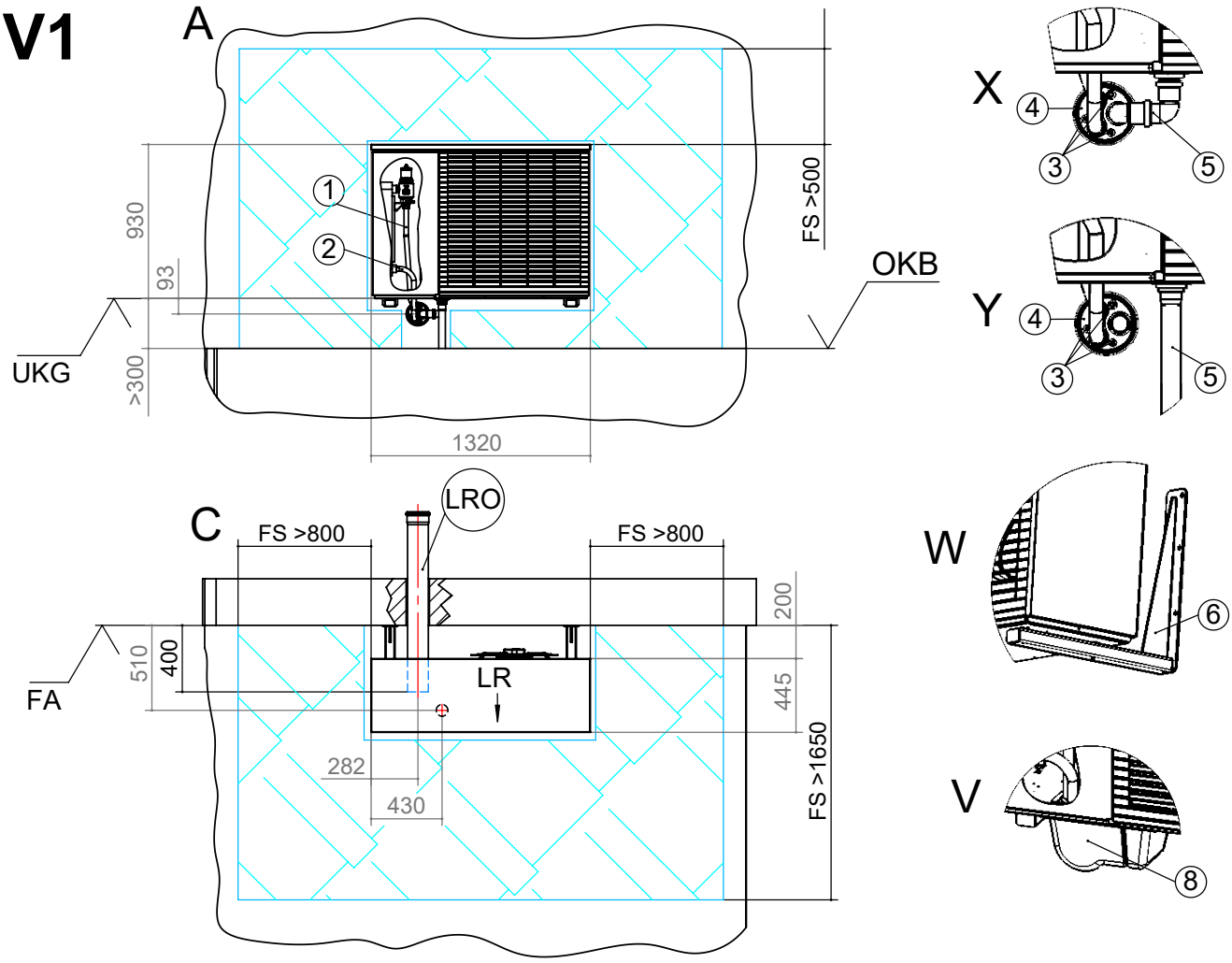
Keys

Pos.	Name
WP	Heat pump
SB	Protection zone
H1	to the floor
1	Doors, windows, light wells etc. into the building

Important: The heat pump must only be installed outdoors! The heat pump must not be set up in depressions or in places where refrigerant can accumulate in the event of a leak.
The heat pump must be positioned so that, in the event of a leak, no refrigerant can enter the building or endanger persons in any other way.

In the protection zone between the upper edge of the device and the floor, there must not be any sources of ignition, windows, doors, ventilation openings, light wells or similar.
The protection zone must not reach into neighbouring properties or public traffic areas.
The wall duct through the building envelope must be designed to be gas-tight.

Wall bracket with wall duct V1

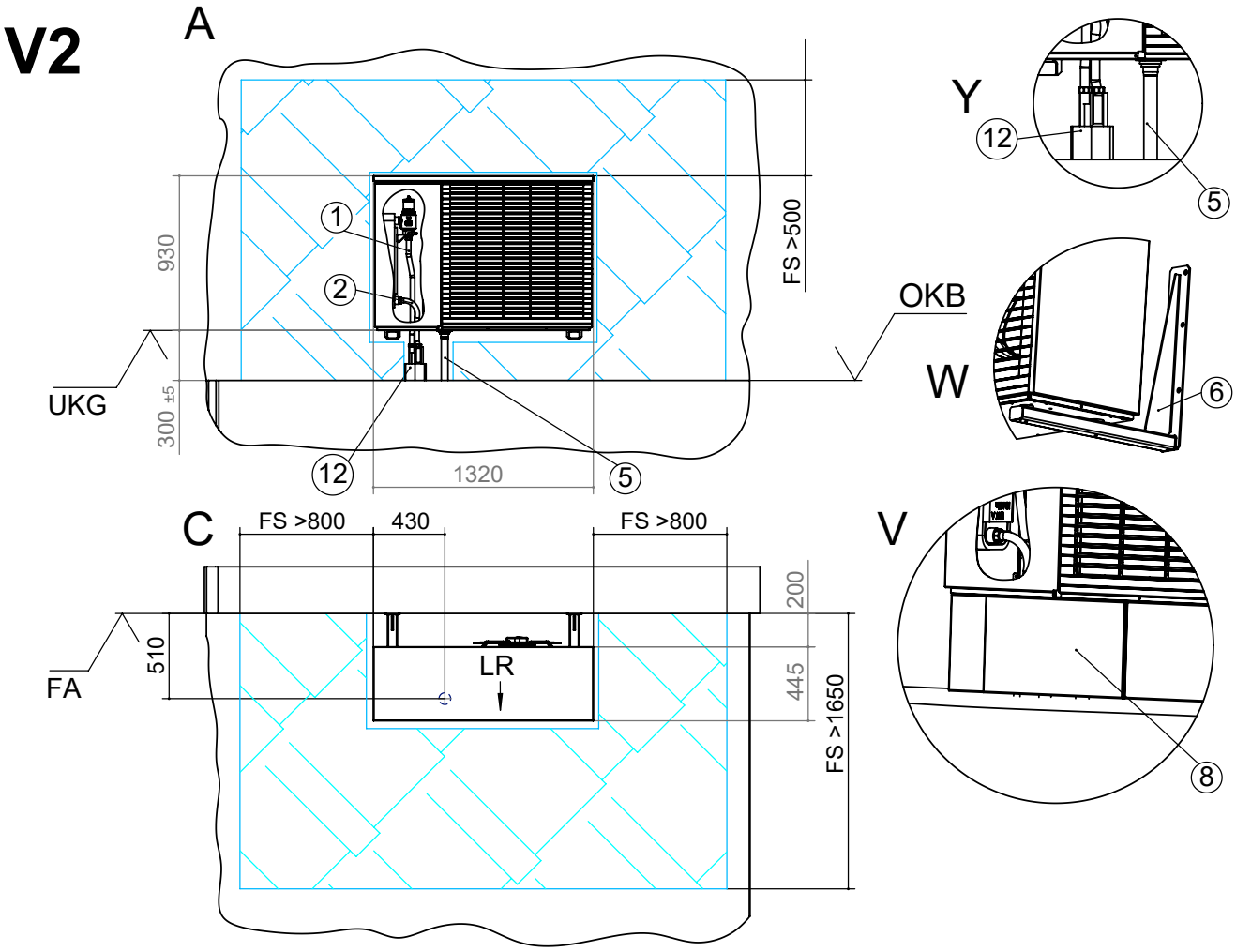


Keys
All dimensions in mm.

Pos.	Name
V1	Variant 1
A	Front view
C	Top view
V	Detailed view of cladding
W	Detailed view of wall attachment
X	Detailed view of condensate line inside building
Y	Detailed view of condensate line outside building
FA	Complete external facade
UKG	Lower edge of device
OKB	Upper edge of ground
LRO	Empty sewer conduit DN 125, Øa 125 (shorten on site)
LR	Direction of air
FS	Clearance for servicing

Pos.	Name
1	Heating water supply (accessory)
2	Heating water return (accessory)
3	Cable bushing
4	Wall duct (accessory)
5	Condensate drain / waste trap
6	Bracket for wall attachment (accessory)
8	Cladding of wall duct (accessory)

Wall bracket with hydraulic connection line V2

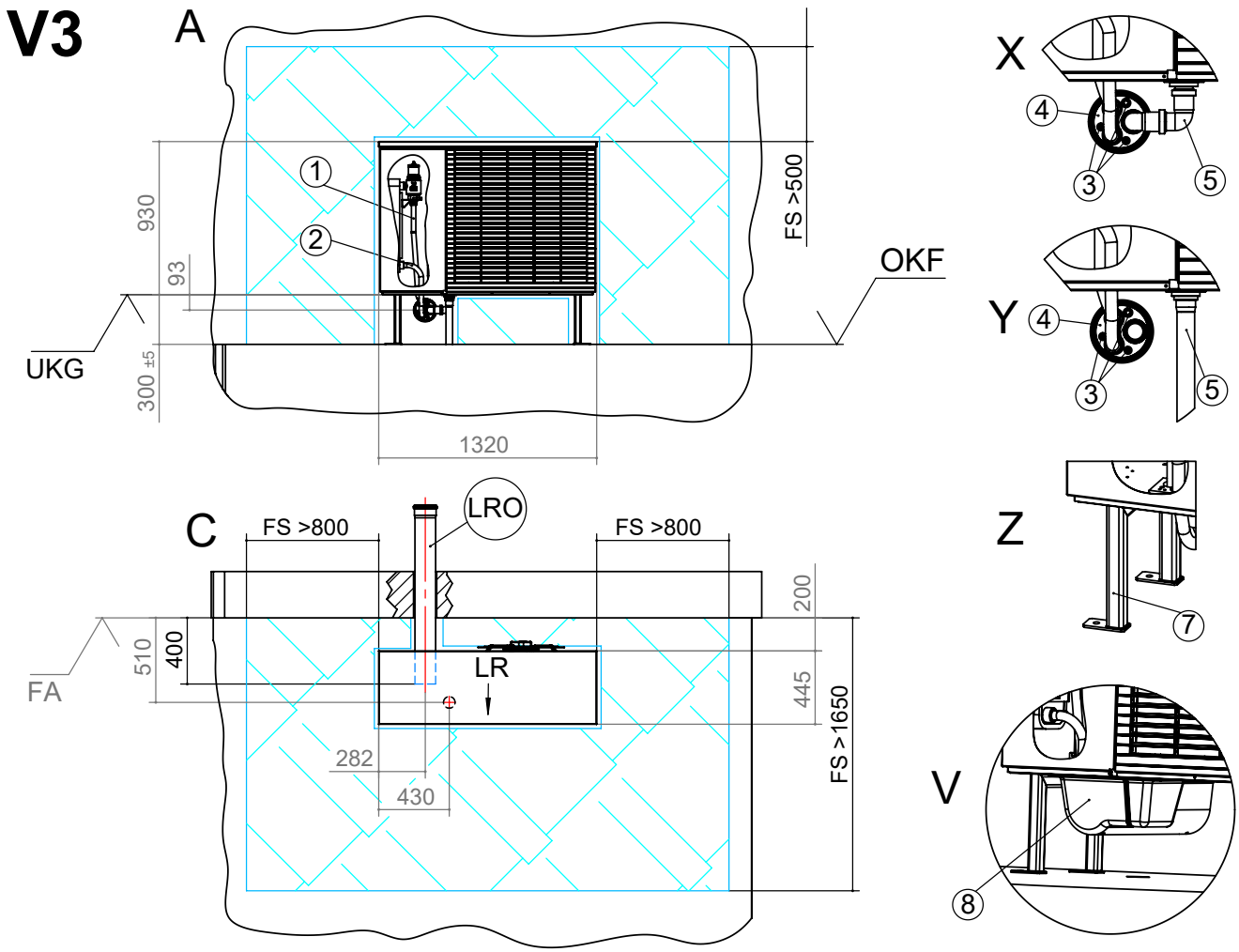


Keys
All dimensions in mm.

Pos.	Name
V2	Variant 2
A	Front view
C	Top view
V	Detailed view of cladding
W	Detailed view of wall attachment
Y	Detailed view of condensate line outside building
FA	Complete external facade
UKG	Lower edge of device
OKB	Upper edge of ground
LR	Direction of air
FS	Clearance for servicing

Pos.	Name
1	Heating water supply (accessory)
2	Heating water return (accessory)
5	Condensate drain/waste trap
6	Bracket for wall attachment (accessory)
8	Cladding of wall duct (accessory)
12	Hydraulic connection line

Floor bracket with wall duct V3

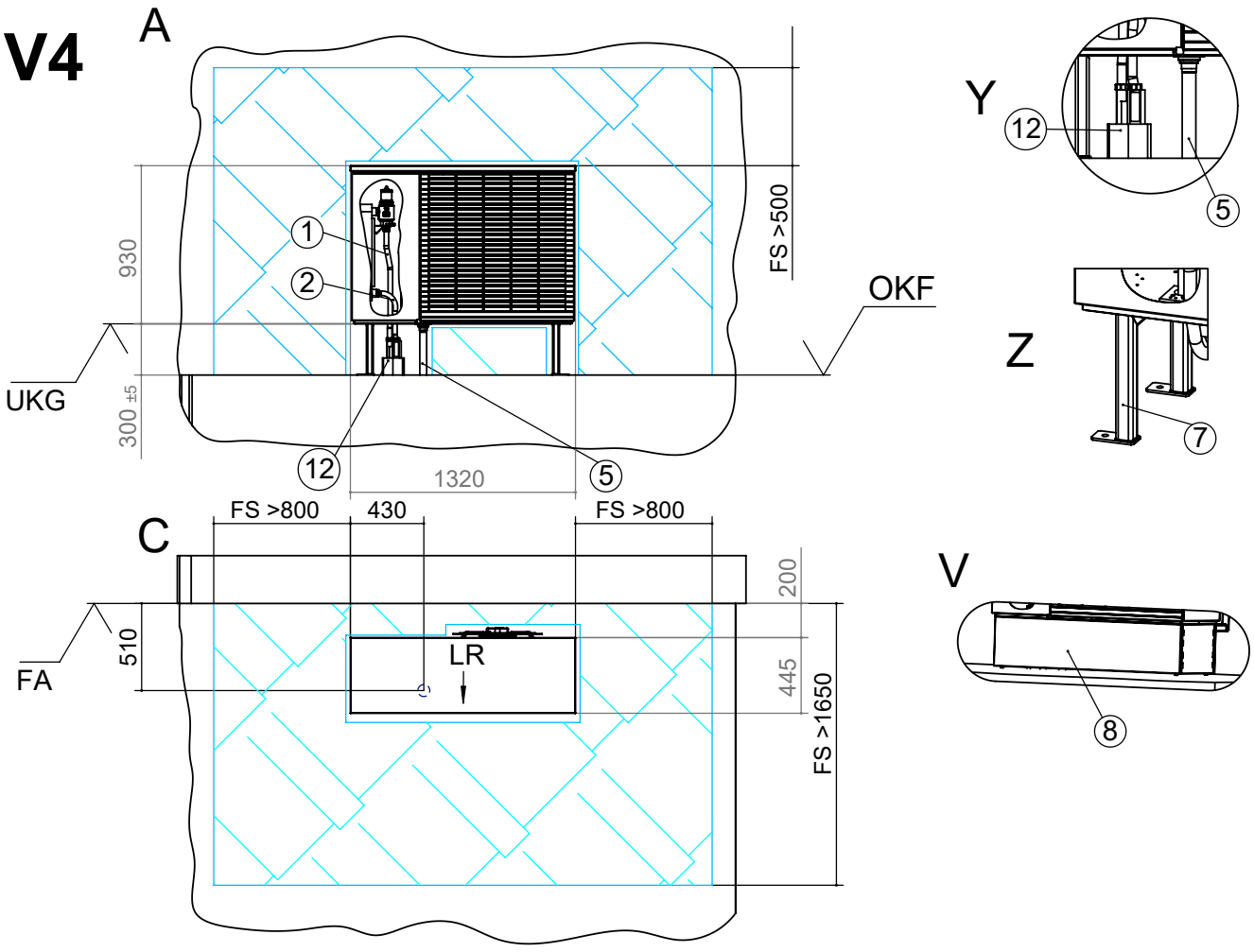


Keys
All dimensions in mm.

Pos.	Name
V3	Variant 3
A	Front view
C	Top view
V	Detailed view of cladding
X	Detailed view of condensate line inside building
Y	Detailed view of condensate line outside building
Z	Detailed view of floor attachment
FA	Complete external facade
UKG	Lower edge of device
OKF	Upper edge of foundation
LRO	Empty sewer conduit DN 125, Øa 125 (shorten on site)
LR	Direction of air
FS	Clearance for servicing

Pos.	Name
1	Heating water supply (accessory)
2	Heating water return (accessory)
3	Cable bushing
4	Wall duct (accessory)
5	Condensate drain/waste trap
7	Bracket for floor attachment (accessory)
8	Cladding of wall duct (accessory)

Floor bracket with hydraulic connection line V4

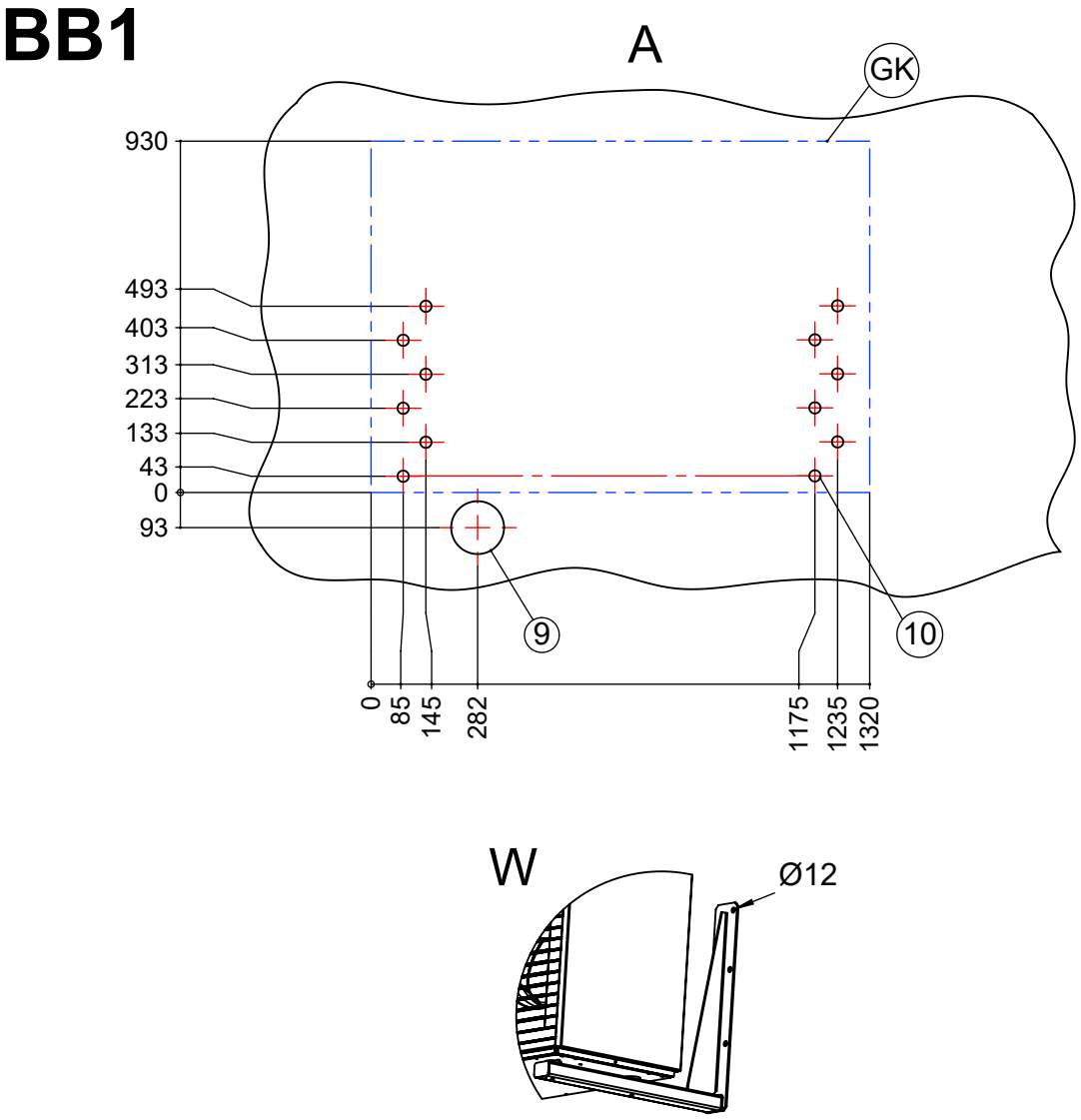


Keys
All dimensions in mm.

Pos.	Name
V4	Variant 4
A	Front view
C	Top view
V	Detailed view of cladding
Y	Detailed view of condensate line outside building
Z	Detailed view of floor attachment
FA	Complete external facade
UKG	Lower edge of device
OKF	Upper edge of foundation
LR	Direction of air
FS	Clearance for servicing

Pos.	Name
1	Heating water supply (accessory)
2	Heating water return (accessory)
5	Condensate drain/waste trap
7	Bracket for floor attachment (accessory)
8	Cladding of floor bracket (accessory)
12	Hydraulic connection line

Drill template for wall bracket with wall duct BB1

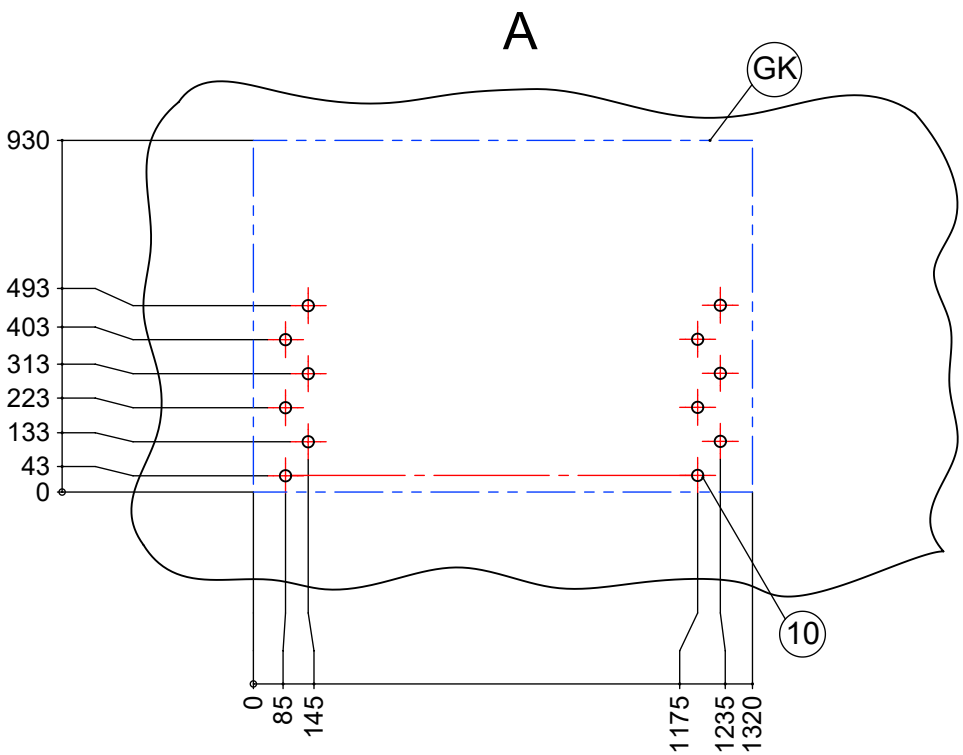


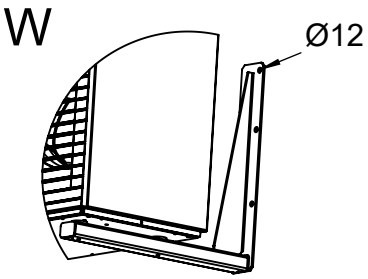
Keys
All dimensions in mm.

Pos.	Name
BB1	Drill template for wall bracket (accessory) on mounting wall for V1
A	Front view
W	Detailed view of wall attachment
GK	Device contour
9	Bore for empty sewer conduit KG DN125, Øa 125
10	Mounting bores for wall brackets

Drill template for wall bracket with hydraulic connection line BB2

BB2



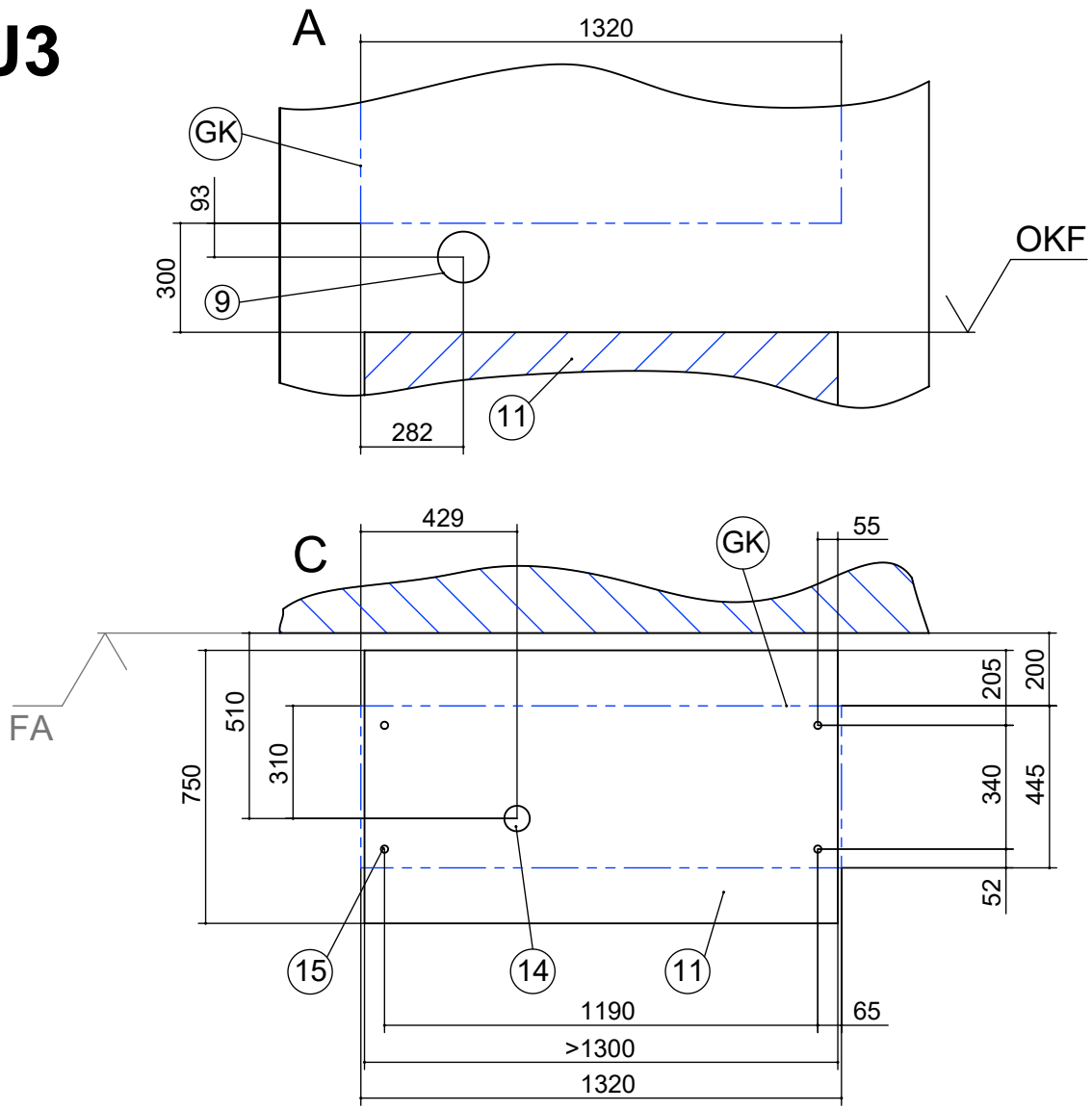


Keys
All dimensions in mm.

Pos.	Name
BB2	Drill template for wall bracket (accessory) on mounting wall for V2
A	Front view
W	Detailed view of wall attachment
GK	Device contour
10	Mounting bores for wall brackets

Foundation for V3 with wall duct FU3

FU3



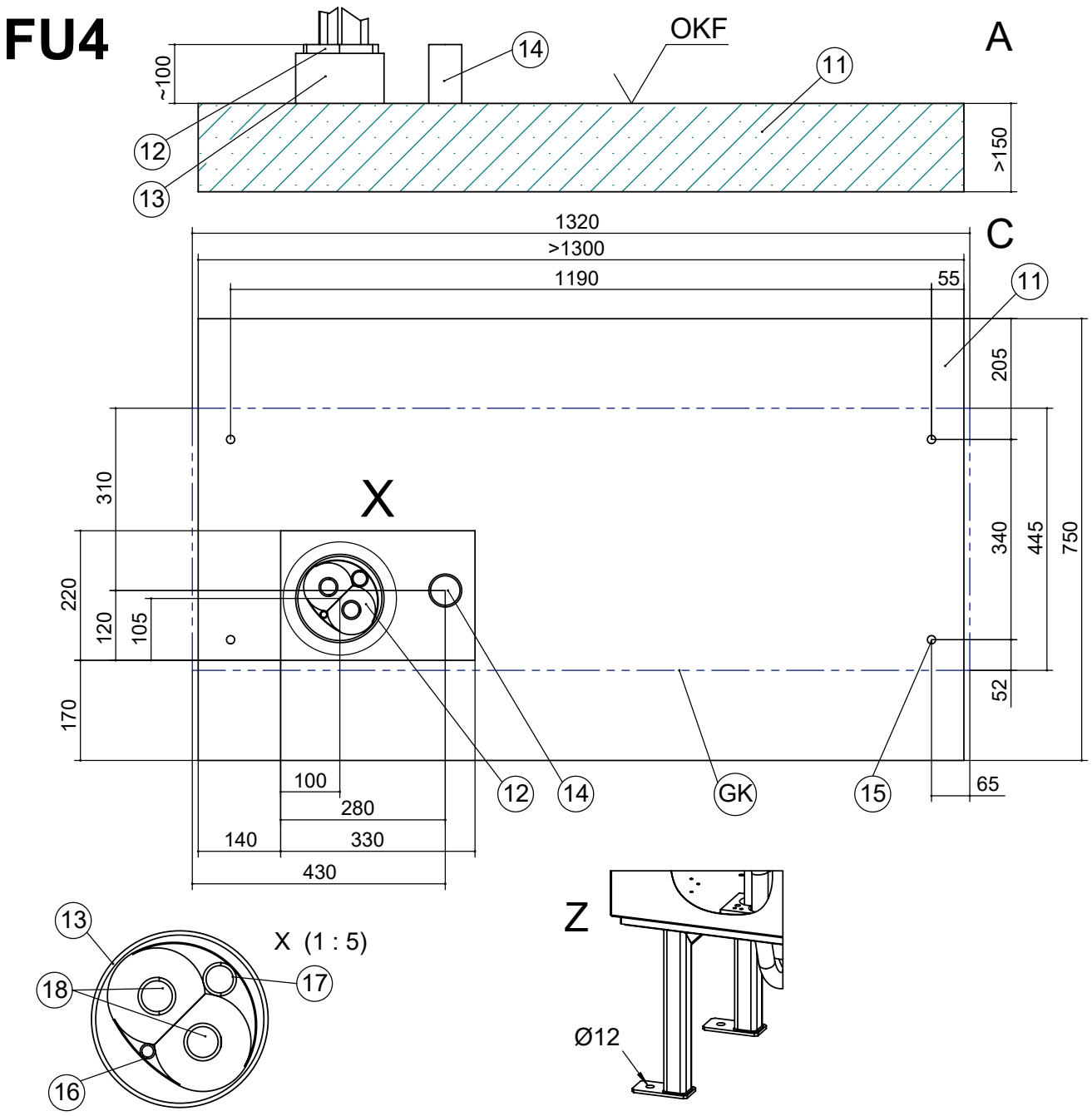
Keys
All dimensions in mm.

Pos.	Name
FU3	View of foundation for V3
A	Front view
C	Top view
FA	Complete external facade
OKF	Upper edge of foundation
GK	Device contour

Pos.	Name
9	Bore for empty sewer conduit KG DN125, Ø a 125
11	Foundation
14	Condensate drain pipe ≥ Ø 50
15	Mounting bores for floor bracket

The foundation must not have any structure-borne sound contact with the building.

Foundation for V4 with hydraulic connection line FU4



Keys
All dimensions in mm.

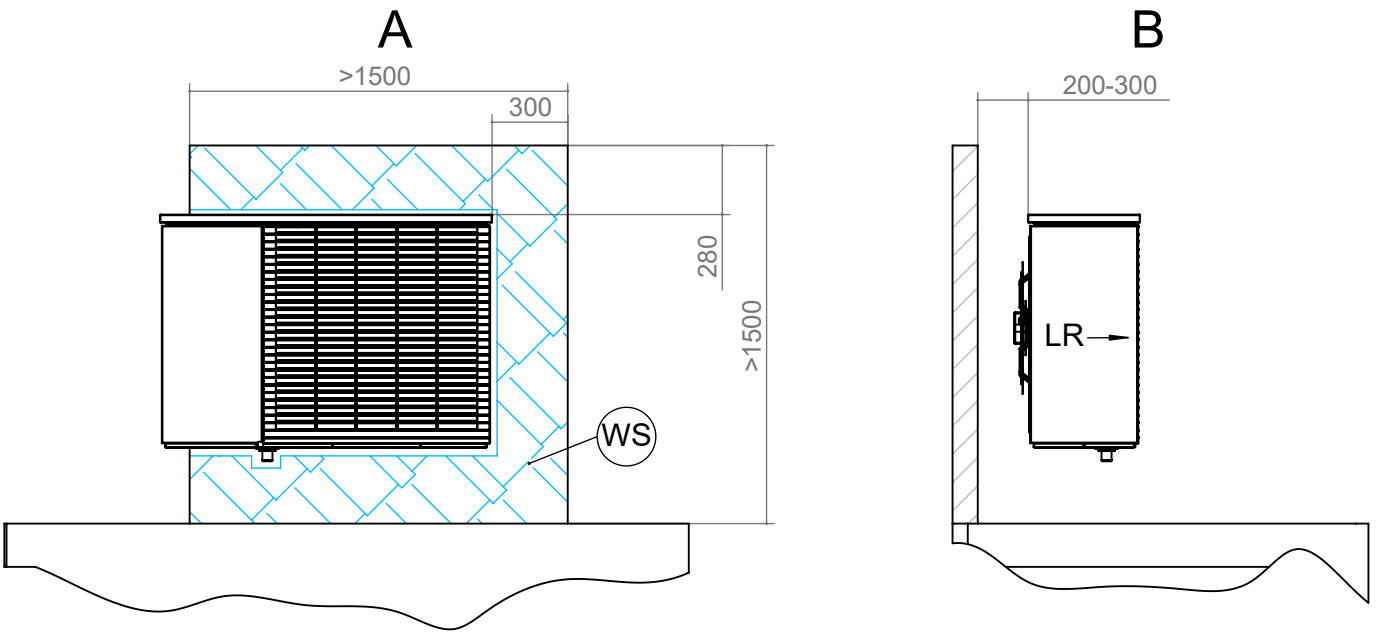
Pos.	Name
FU4	View of foundation for V4
A	Front view
C	Top view
X	Detailed view X
Z	Detailed view of floor attachment
OKF	Upper edge of foundation
GK	Device contour

Pos.	Name
11	Foundation
12	Hydraulic connection line
13	Empty conduit DN 150 (on site)
14	Condensate drain pipe ≥ Ø 50
15	Mounting bores for floor bracket
16	Empty conduit for bus cable (Ø inside: 9.80)
17	Empty conduit for electric cable (Ø inside: 23.10)
18	Heating water supply and return lines (Ø inside: 26.20)

The foundation must not have any structure-borne sound contact with the building.

Open field installation

FW1

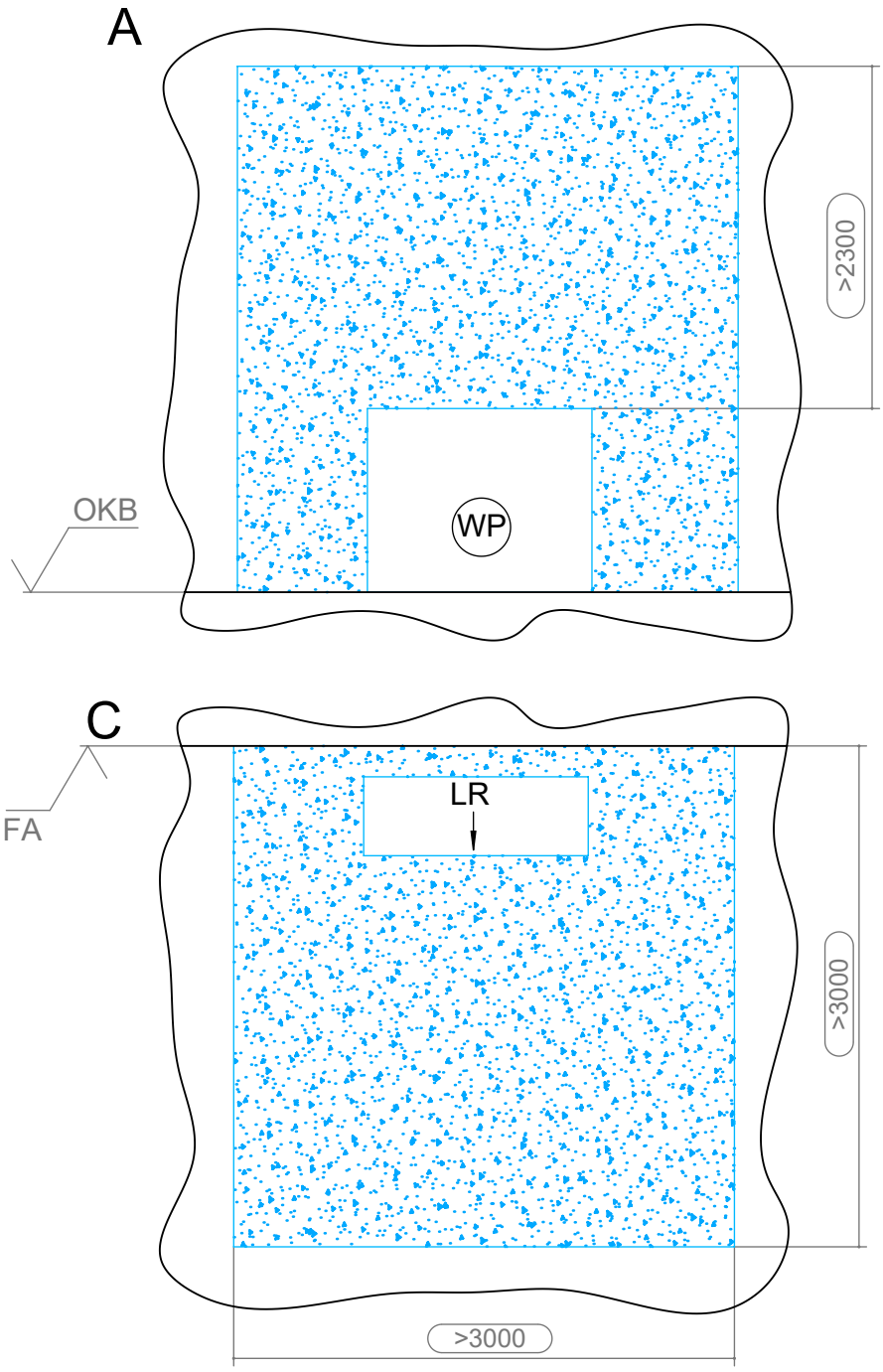


Keys
All dimensions in mm.

Pos.	Name
FW1	Outdoor installation in open field only allowed with wind protection!
A	Front view
B	Side view from left
WS	Wind protection, functionally relevant area for heat pump
LR	Air direction

Minimum clearances

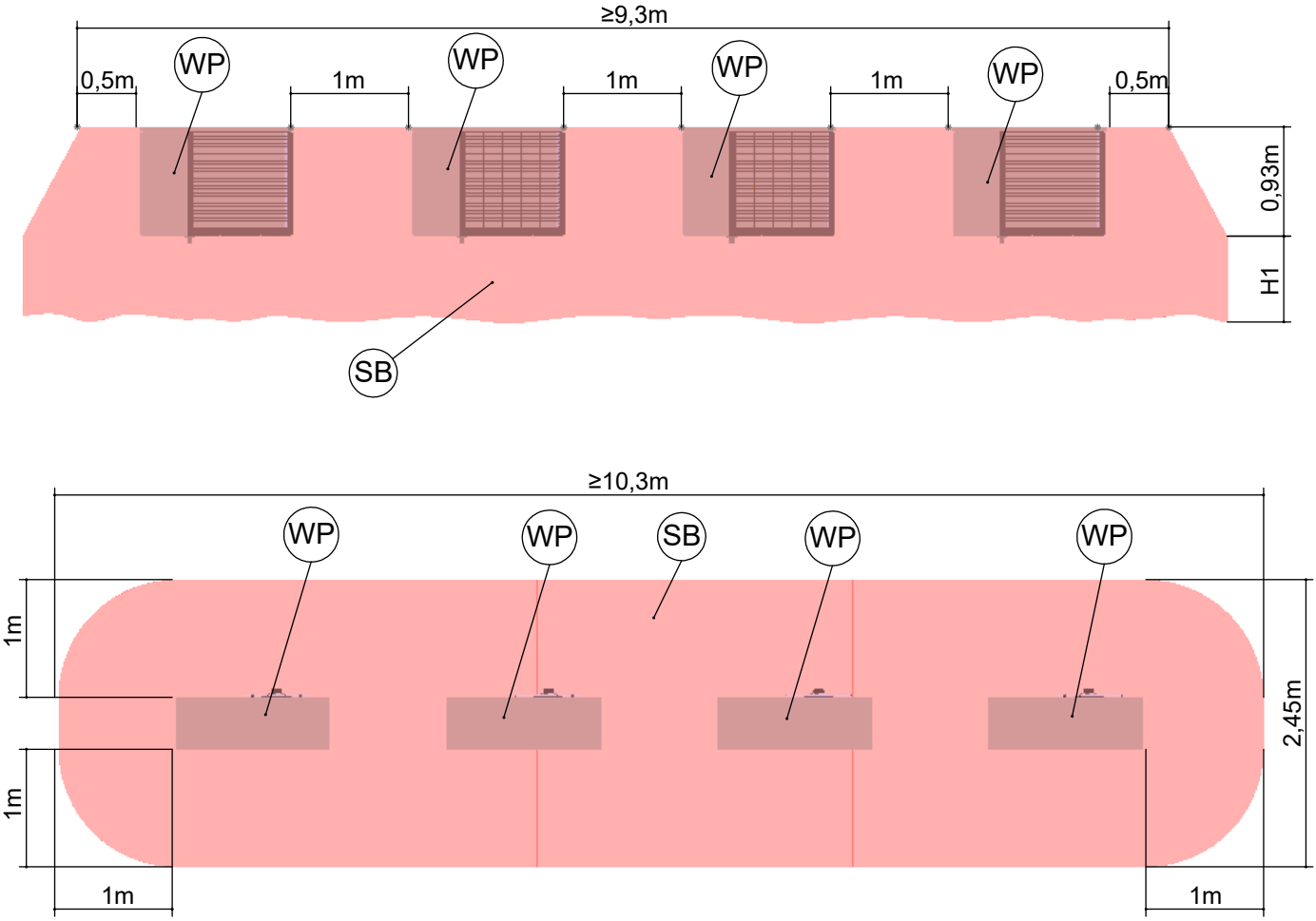
FW2



Keys
All dimensions in mm.

Pos.	Name
FW2	Functionally necessary minimum clearances
A	Front view
C	Top view
FA	Complete external facade
LR	Direction of air
OKB	Upper edge of ground
WP	Heat pump
>	Minimum clearances

Protection zones / safety distances for parallel mode



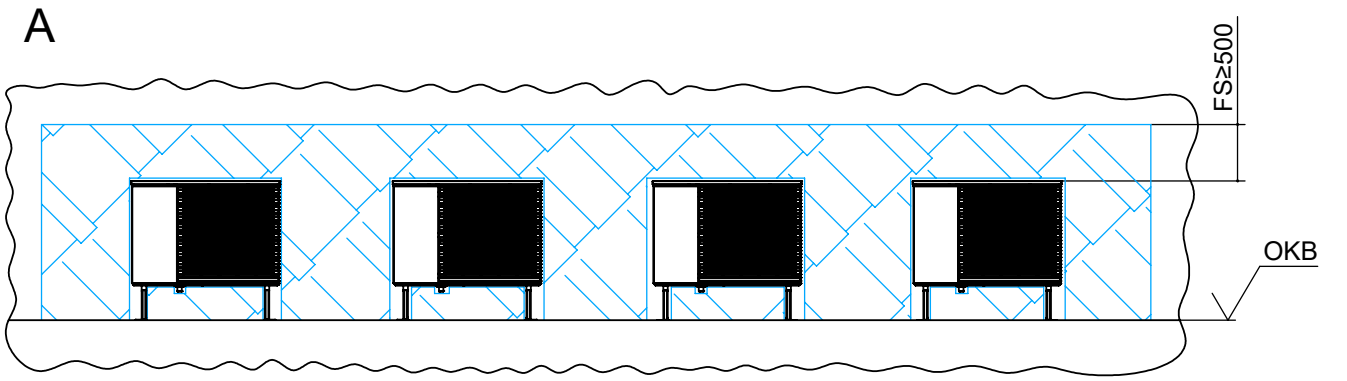
Keys

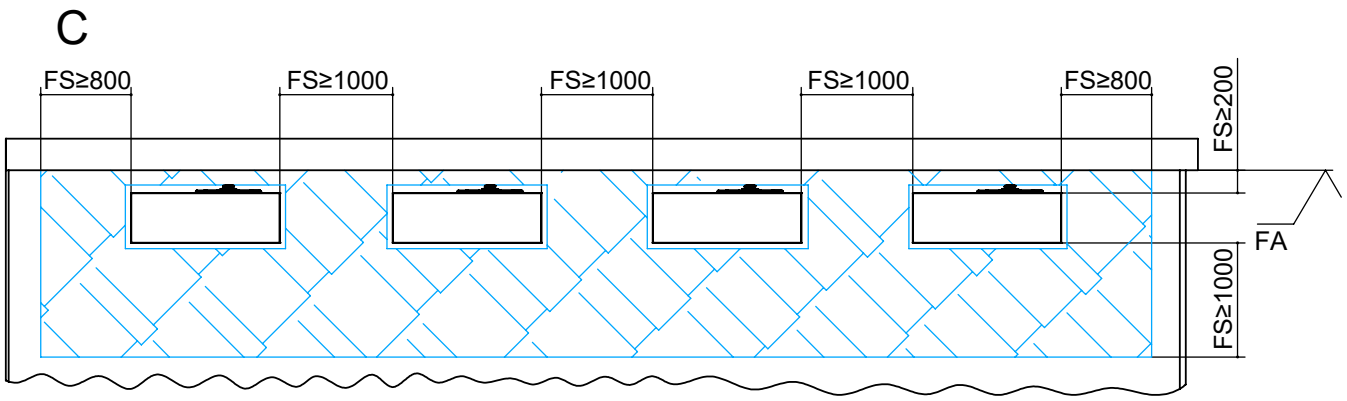
Pos.	Name
H1	to the floor
SB	Protection zone
WP	Heat pump

Important: The heat pumps must only be installed outdoors! The heat pumps must not be set up in depressions or in places where refrigerant can accumulate in the event of a leak.
The heat pumps must be positioned so that, in the event of a leak, no refrigerant can enter the building or endanger persons in any other way.

In the protection zone between the upper edge of the device and the floor, there must not be any sources of ignition, windows, doors, ventilation openings, light wells or similar.
The protection zone must not reach into neighbouring properties or public traffic areas.
The wall duct through the building envelope must be designed to be gas-tight.

Clearance for servicing for parallel mode



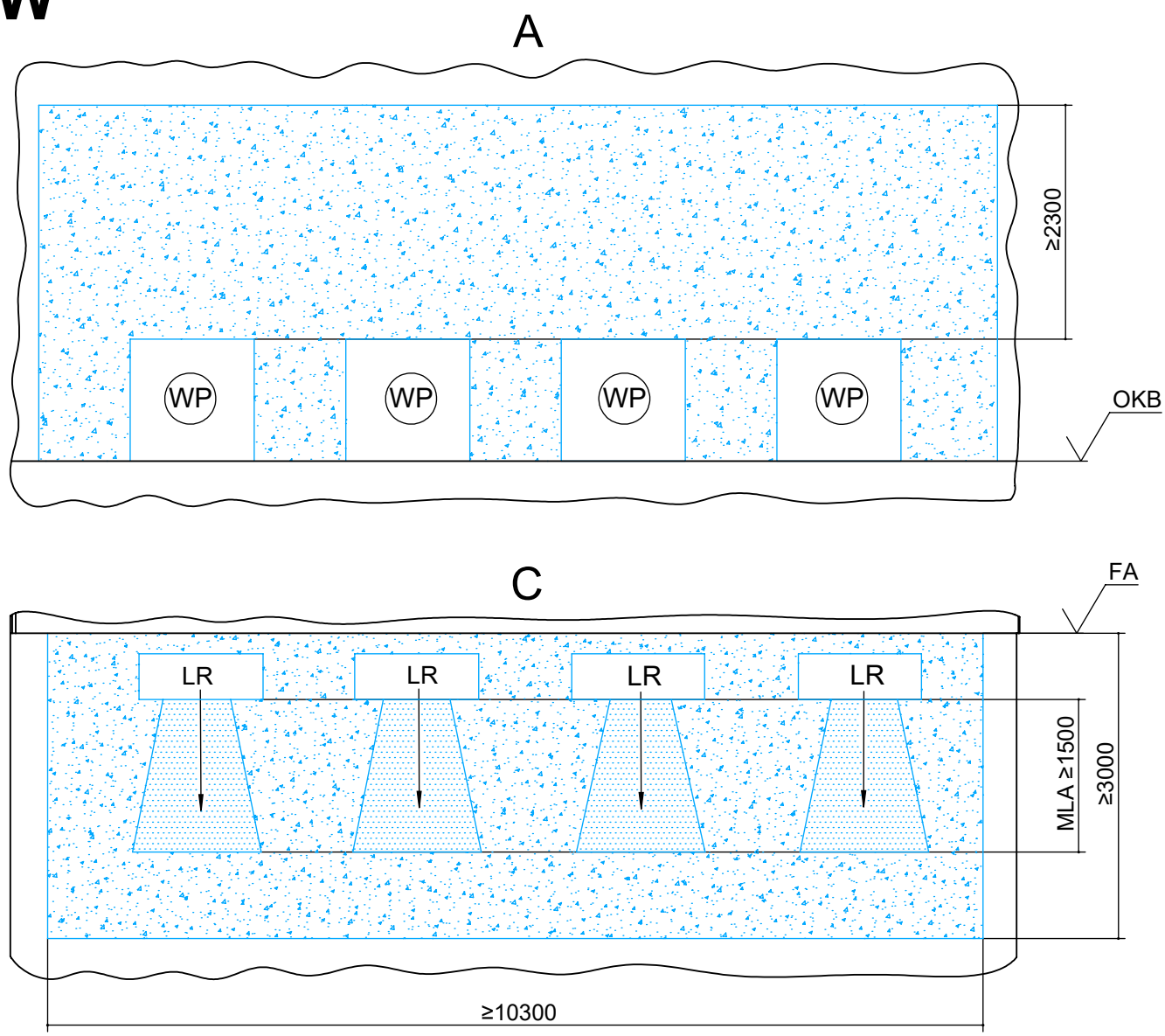


Keys
All dimensions in mm.

Pos.	Name
A	Front view
C	Top view
FA	Complete external facade
FS	Clearance for servicing
LR	Direction of air
OKB	Upper edge of ground

Minimum clearances for parallel mode

FW



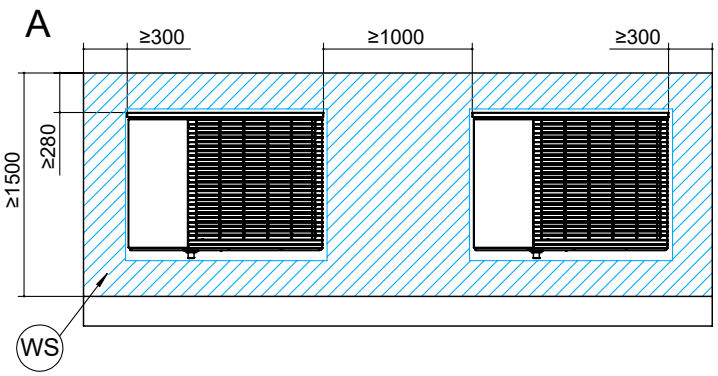
Keys
All dimensions in mm.

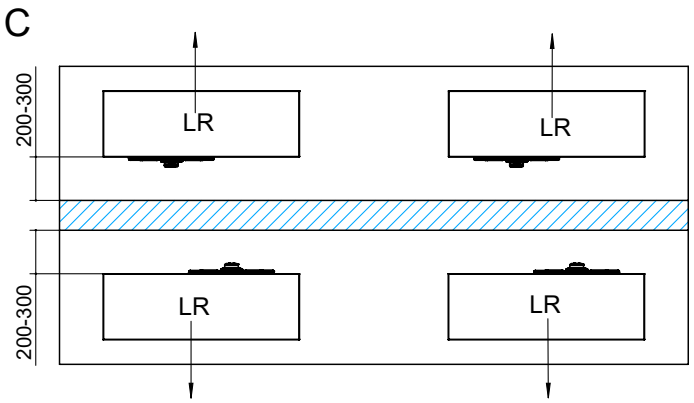
Pos.	Name
FW	Functionally necessary minimum clearances
A	Front view
C	Top view
FA	Complete external facade
LR	Direction of air
MLA	Distance air discharge at air outlet
OKB	Upper edge of ground
WP	Heat pump
>	Minimum clearances

Important
The air directions of the heat pumps must not cross.

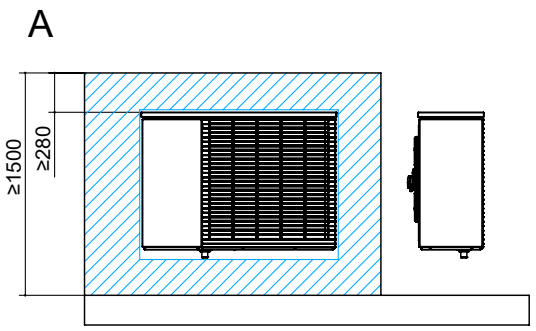
Installation variants for parallel mode

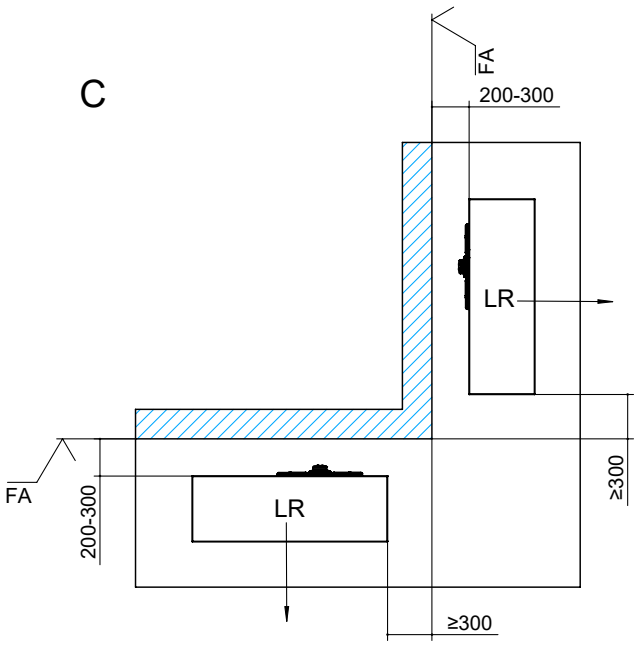
AV1





AV2





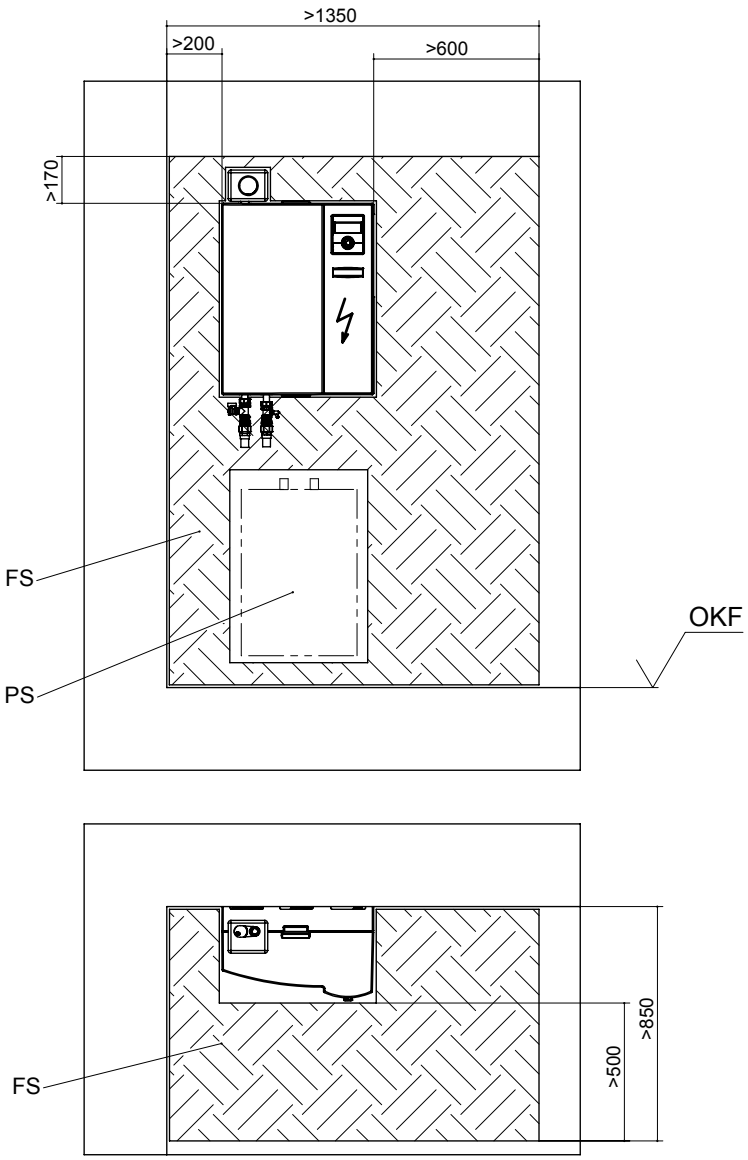
Keys
All dimensions in mm.

Pos.	Name
AV 1	Installation variant 1
AV 2	Installation variant 2
A	Front view
C	Top view
FA	Complete external facade
LR	Direction of air
WS	Wind protection, functionally relevant area for heat pump

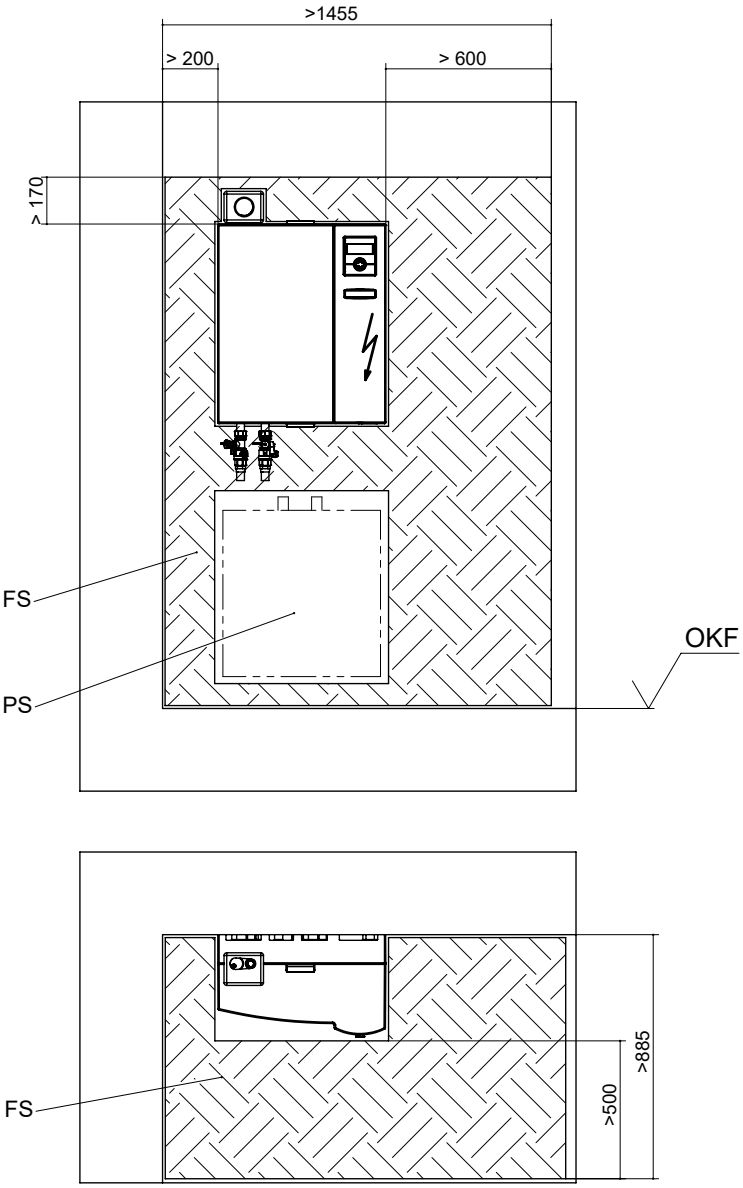
The installation must be chosen in such a way that
- a sufficient air supply is guaranteed
- the air flows do not cross
- recirculation is avoided

Installation plan
Aeroheat Livera CL

Installation plan CL HM 6



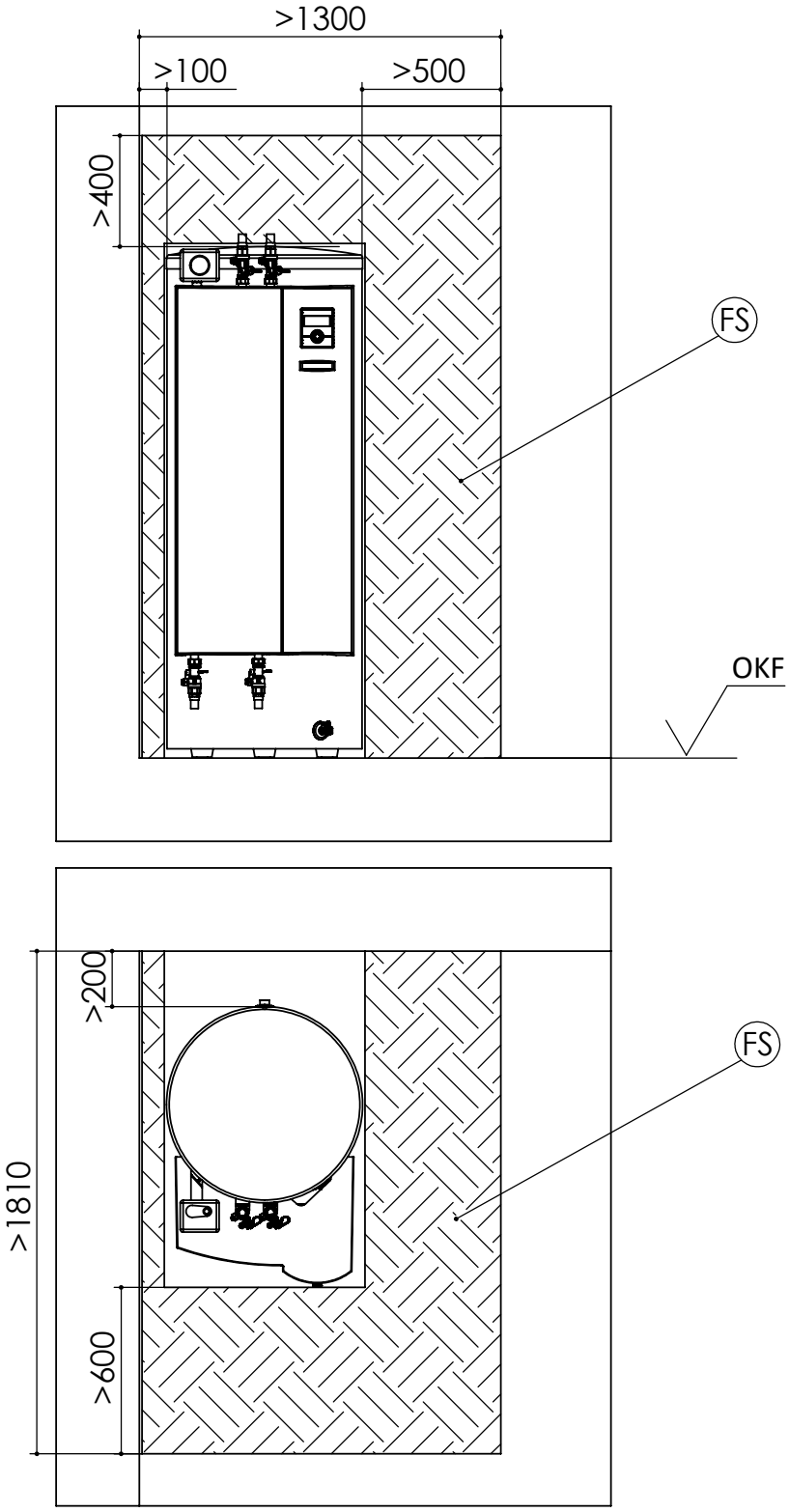
Installation plan CL HM 9



Keys
All dimensions in mm.

Pos.	Name
FS	Free space for service purposes
OKF	Top edge of finished floor
PS	Free space for wall-hanging buffer tank possible

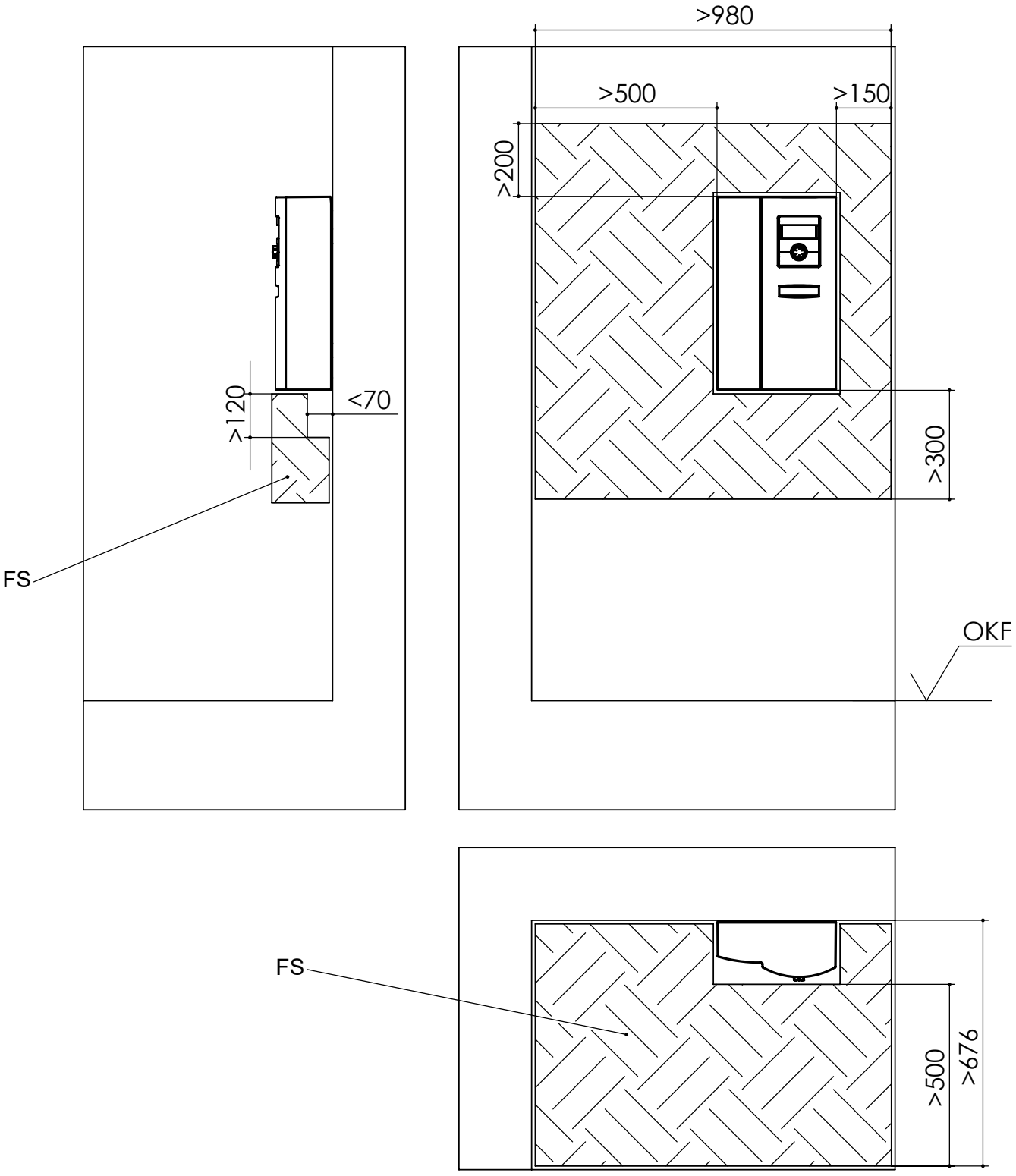
Installation plan CL HT 9



Keys
All dimensions in mm.

Pos.	Name
FS	Free space for service purposes
OKF	Top edge of finished floor

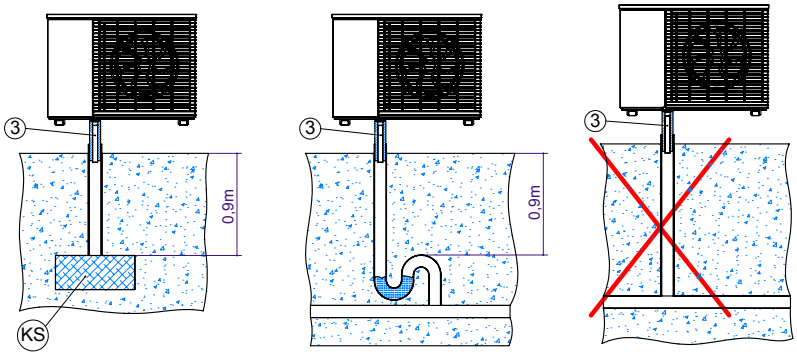
Installation plan CL WR 1



Keys
All dimensions in mm.

Pos.	Name
FS	Free space for service purposes
OKF	Top edge of the finished floor

External condensate line connection



Keys

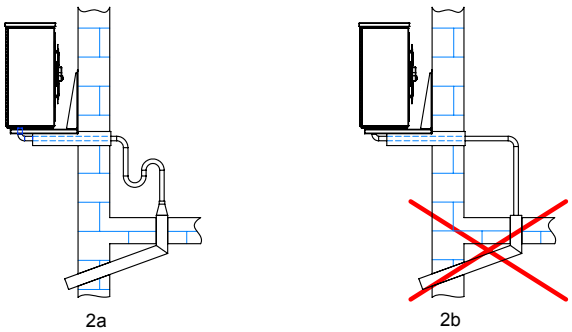
Pos.	Name
KS	Gravel bed for holding up to 50 l condensate per day as buffer zone for seepage
3	Condensate drain pipe DN 40 (on site)

Important: If the condensate is discharged directly into the ground (figure 1a), the condensate drain pipe ③ must be insulated between the ground and the heat pump.

Important: If the condensate is discharged directly into a sewage or rainwater pipe, a waste trap must be applied (figure 1b). A vertically installed, insulated plastic pipe must be used above the ground. In addition, no non-return valves or similar must be installed in the drain pipe. The condensate drain pipe must be connected in such a way that the condensate drain pipe can flow freely into the main pipe. If the condensate is discharged into drains or the sewage system, ensure installation with a gradient.

It must be ensured that the condensate is discharged frost-free in all cases (figure 1a and figure 1b).

Internal condensate line connection



Keys

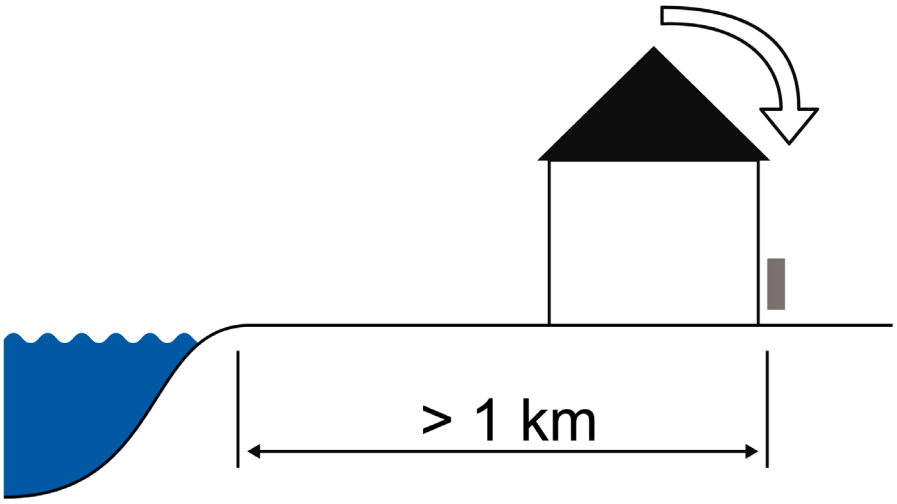
Important: If the condensate line is connected inside a building, a waste trap must be installed with an airtight connection to the drain pipe (see figure 2a).
No additional drain pipes may be connected to the condensate drain pipe of the heat pump. The drain pipe into the sewage system must be clear, i.e. neither a non-return valve nor a waste trap must be installed downstream of the heat pump's connection cable.

It must be ensured that the condensate is discharged frost-free in all cases (figure 2a).

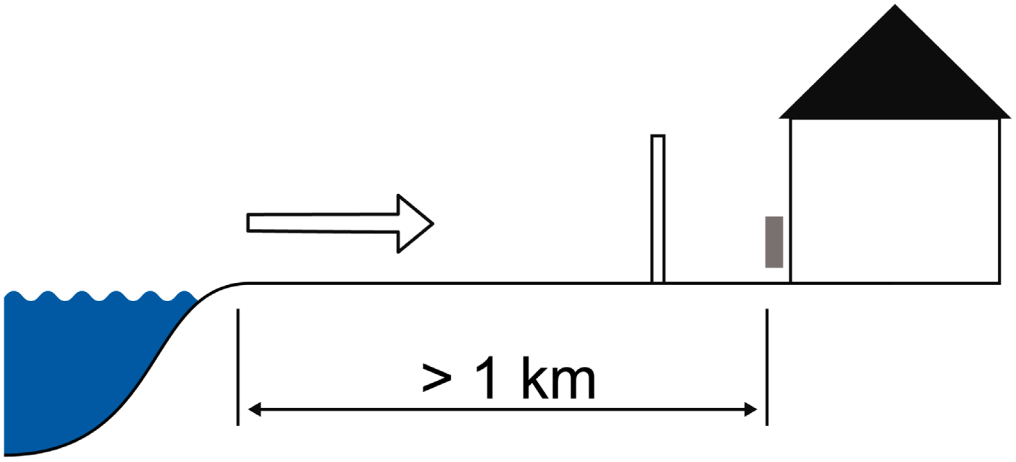
Coastal installation

IMPORTANT
The minimum distances necessary for correct and safe operation as well as any service work must be observed.

- **facing away from the coast / prevailing wind direction**
  - in a sheltered area near a wall
  - not in open areas
  - not in sandy surroundings (to avoid the influx of sand)



- **on the seaward side**
  - in an area near a wall
  - an impermeable windbreak resistant to onshore winds is installed
  - Height and width of the windbreak ≥ 150 % of the device dimensions
  - not in sandy surroundings (to avoid the influx of sand)

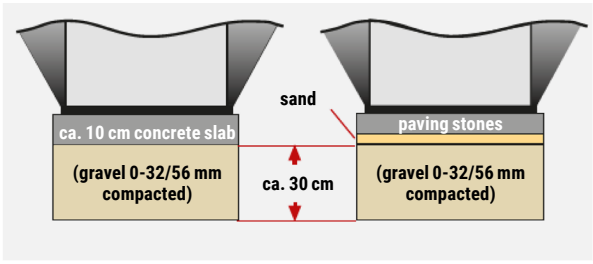


Ground

- The heat pump must be standing on a permanently fixed even and level surface. Installation on a cast concrete slab or on paving stones that are laid on a frost protection layer is recommended.
- The heat pump must be placed completely and level on the base.
- To avoid sound bridges, the heat pump base must be attached over the whole contour.
- The ground of the installation place must be permanentely fixed.

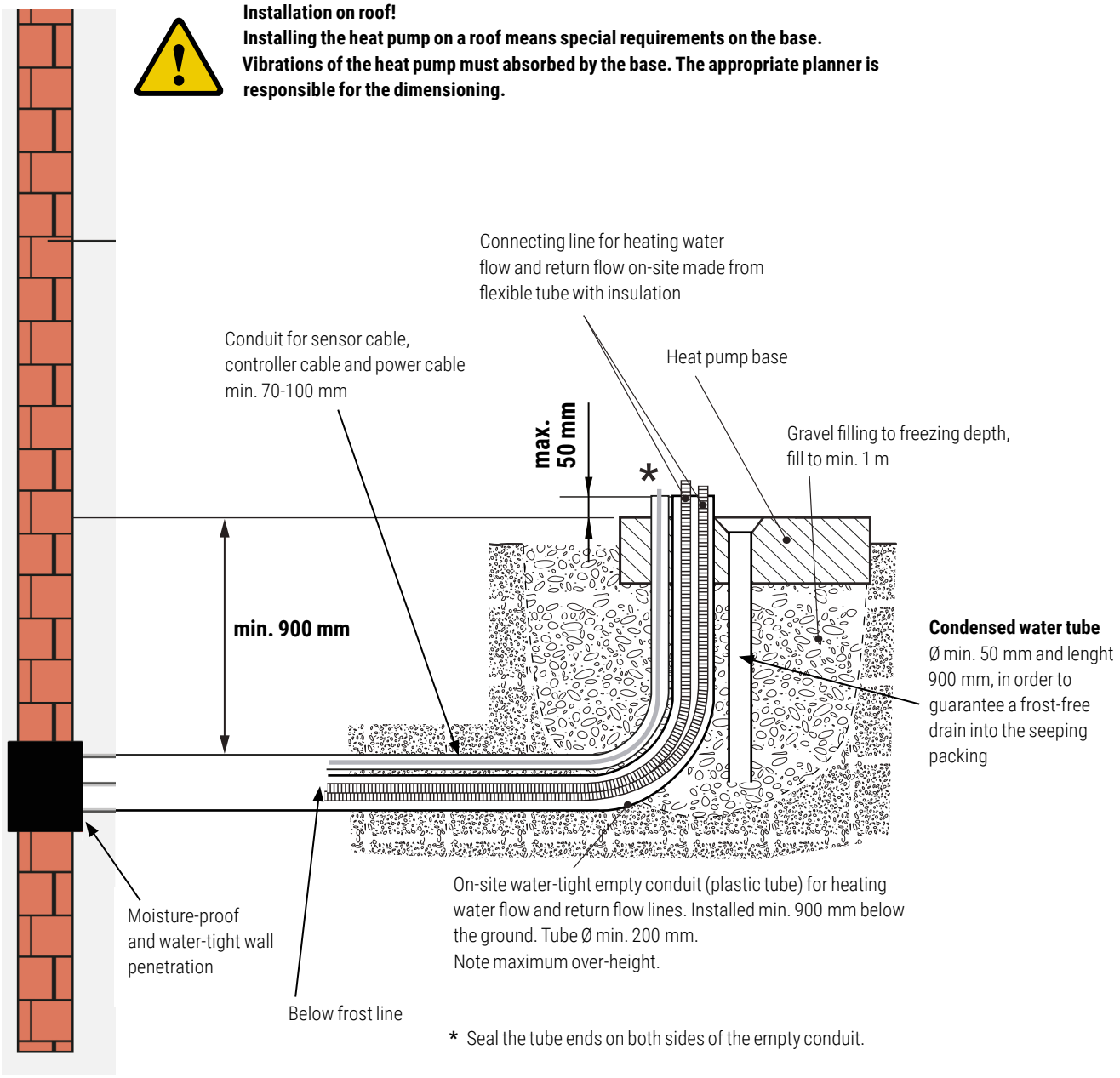
Base
Cast concrete slab

Base
Paving stones



Attention! The paving stones must be suitable for the weight of the respective unit.

Installation on roof!
Installing the heat pump on a roof means special requirements on the base. Vibrations of the heat pump must absorbed by the base. The appropriate planner is responsible for the dimensioning.



* Seal the tube ends on both sides of the empty conduit.

Sound Aeroheat heat pumps

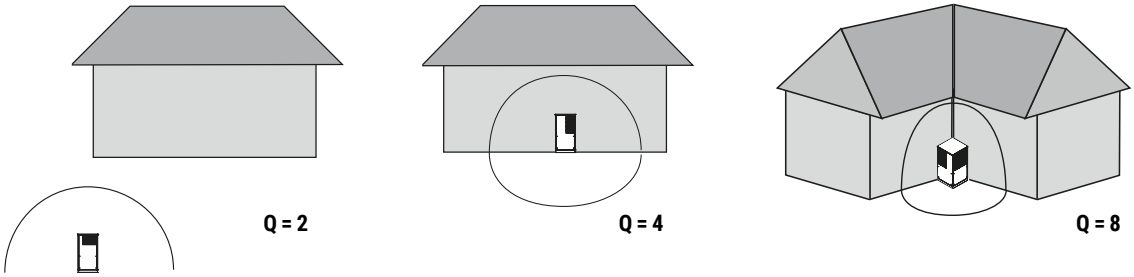
All CTA heat pumps are dimensioned for an exceptionally low noise operation. Despite this, the installation location of the heat pumps and the distance to neighbouring buildings must be selected in such a manner that individual perceptions are considered.
With regard to noise pollution, the following points should be observed:

- Installing the heat pumps directly on or underneath windows should be avoided.
- Installation in niches, corners of walls or between two walls has an effect of increasing the noise level by reflection and is therefore not recommended.
- Free spaces around the heat pump base leads to sound bridges with an increase in the sound level.
- Do not install the heat pump directly on neighbouring buildings.

Note
Other constellations, adjoining other buildings or even reflecting surfaces may lead to a level increase. An exact specification of each sound pressure level is possible only through a measurement spot when the heat pumps is already installed.

The sound pressure levels for the respective installation situation can be calculated using the Cercle Bruit Switzerland form «Lärmschutz-nachweis für Luft/Wasser-Wärmepumpen» (noise protection certificate for air/water heat pumps).

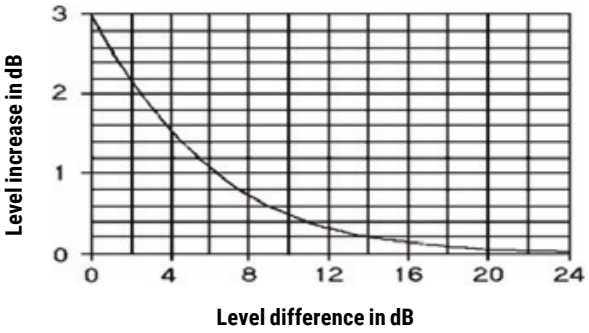
The directivity factor Q for the different installation variants:



In case of 2 or more units of the same heat pump type, the respective level increase must be added to the corresponding sound pressure level from the following table:

Number of n equally loud sound sources	Level increase Δ L in dB
1	0.0
2	3.0
3	4.8
4	6.0
5	7.0
6	7.8
7	8.5
8	9.0
9	9.5
10	10.0
12	10.8

In case of different, not equally loud units, the level increase is read off the following diagram:



Example: If the level difference between two unequal sound sources is 5 dB, the level increase is an additional 1,2 dB.

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