The diagrams shown are for purely indicative purposes

and are not valid for installation purposes.

single GAHP-AR for conditioning, coupled to a primary/second-

ary system with 3-pipe hydraulic separator.

1 **PREMISE**

The plumbing and wiring diagrams set out below provide examples of possible Robur unit applications and relevant controls.

2 CONDITIONING GAHP-AR

2.1 DESCRIPTION

The plumbing diagram in Figure 2.1 p. 1 shows the use of a

2.2 HYDRAULIC PLAN

Figure 2.1 Single conditioning GAHP-AR plumbing diagram



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system with 3-pipe hydraulic separator and geothermal probes

with heat exchanger (in order not to convey and glycol-added

water into the ground).

3 HEATING GAHP GS WITH GEOTHERMAL PROBES

3.1 DESCRIPTION

The plumbing diagram in Figure 3.1 *p. 3* shows the use of a single GAHP GS HT for heating, coupled to a primary/secondary

3.2 HYDRAULIC PLAN

Figure 3.1 Single heating GAHP GS plumbing diagram with geothermal probes





Figure 3.2 Single heating GAHP GS/WS wiring diagram



system with 3-pipe hydraulic separator and energy recovery from ground water with heat exchanger (mandatory) with pump

4 HEATING GAHP WS WITH GROUND WATER

4.1 DESCRIPTION

The plumbing diagram in Figure 4.1 *p. 5* shows the use of a single GAHP WS for heating, coupled to a primary/secondary

4.2 HYDRAULIC PLAN

Figure 4.1 Single heating GAHP WS plumbing diagram with ground water



back well.



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4.3 ELECTRICAL WIRING DIAGRAM

Figure 4.2 Single heating GAHP GS/WS wiring diagram



5 HEATING AND DHW GAHP A

5.1 DESCRIPTION

The plumbing diagram in Figure 5.1 *p. 7* shows the use of a single GAHP A for conditioning and DHW production on the base circuit (with any solar integration), coupled to a primary/

secondary system with 3-pipe hydraulic separator. DHW is produced through the base circuit, by diverting hot water towards the DHW tank through diverter valves on the basis of the DHW service request by a thermostat in the DHW tank.

5.2 HYDRAULIC PLAN

Figure 5.1 Single GAHP A heating and DHW base plumbing diagram





5.3 ELECTRICAL WIRING DIAGRAM

Figure 5.2 Single GAHP A heating and DHW base wiring diagram



6 CONDITIONING AND SEPARABLE DHW

6.1 DESCRIPTION

The plumbing diagram in Figure 6.1 *p. 9* shows the use of a pre-assembled RTYR group (consisting of GAHP-AR and AY00-120) for conditioning and separable DHW production, coupled to a primary/secondary system with 3-pipe hydraulic separator. DHW is produced through boiler separation, by diverting hot water towards the DHW tank through diverter valves on the

basis of the DHW service request by the thermostats in the DHW tank, divided by normal DHW request and request for thermal Legionella disinfection.

Pre-heating pump 9, only useful if significant DHW consumption is expected and for systems constantly on for heating, is only turned on if the temperature difference between buffer tank and manifold is sufficient for correct heat exchange, and must be turned off in the summer.

6.2 HYDRAULIC PLAN

Figure 6.1 *Separable DHW plumbing diagram*





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6.3 ELECTRICAL WIRING DIAGRAM

Figure 6.2 Conditioning and separable DHW wiring diagram



CONDITIONING AND SEPARABLE DHW WITH HEAT RECOVERY 7

7.1 DESCRIPTION

The plumbing diagram in Figure 7.1 p. 11 shows the use of a pre-assembled RTRH group (consisting of GAHP-AR, ACF 60-00 HR and AY00-120) for conditioning and separable DHW production with summer heat recovery, coupled to a primary/secondary system with 3-pipe hydraulic separator.

DHW is produced through boiler separation, by diverting hot water towards the DHW tank through diverter valves on the basis of the DHW service request by the thermostats in the DHW tank, divided by normal DHW request and request for thermal Legionella disinfection.

Preheating pump 9, only useful if significant DHW consumption is expected, is only turned on if the temperature difference between buffer tank and manifold is sufficient for correct heat exchange, and must be turned off in the summer.

In the summer the manual selector 15 is switched in order to relay the pre-heating request to the heat recovery exchanger of modules ACF 60-00 HR.

7.2 **HYDRAULIC PLAN**

Figure 7.1 Separable DHW plumbing diagram with heat recovery



- 12

 - 3-way diverter valves for DHW



7.3 ELECTRICAL WIRING DIAGRAM

Figure 7.2 Separable DHW wiring diagram with heat recovery



8 CONDITIONING WITH THIRD PARTY INTEGRATION

8.1 DESCRIPTION

The plumbing diagram in Figure 8.1 *p. 13* shows the use of a preassembled RTAR group (consisting of GAHP-AR) and third

party units (boiler and chiller) for conditioning, coupled to a primary/secondary system with 3-pipe hydraulic separator. Using the RB200 device allows the third party units and secondary circuit temperature to be controlled.

8.2 HYDRAULIC PLAN

Figure 8.1 Conditioning plumbing diagram with third party integration





Figure 8.2 Conditioning wiring diagram with third party integration



HEATING AND BASE AND SEPARABLE DHW WITH THIRD PARTY 9 **INTEGRATION**

9.1 DESCRIPTION

The plumbing diagram in Figure 9.1 p. 15 shows the use of a preassembled RTA group (consisting of GAHP A) and third party units (boilers) for heating and DHW both base and separable, coupled to a primary/secondary system with 3-pipe hydraulic

separator.

Using the RB200 device makes it possible to control the third party units, including the circulating pump of the third party unit on the separable circuit, as well as secondary circuit and separable circuit temperature.

9.2 **HYDRAULIC PLAN**

Figure 9.1 Base and separable heating and DHW plumbing diagram



Ą	Gas connection	2	Pressure gauge	13	Thermostat with adju
3	Heating system	3	Flow regulator valve		DHW pre-heating
2	Secondary circuit control system	4	Water filter	14	DHW pre-heating wa
Notes:		5	Shut-off valve	15	Check valve
	Pump 14 of DHW preheating must be turned	6	Expansion tank	16	3-way mixing valve
	off when the heating system is off, or if the	7	3 bar safety valve	17	Hot circuit water pun
	temperature difference between manifold and	8	Buffer tank (and hydraulic separator)	18	Secondary temperati
	buffer tank is not sufficient for correct heat	9	Third party unit water pump (boiler)	19	Separable temperatu
	exchange on the preheating coil	10	3-way diverter valves for DHW	20	External temperature
System components:		11	DHW accumulation tank	21	DDC panel
Ĺ	Anti-vibration connection	12	Thermostat with adjustable differential for DHW	22	RB200 device

- Anti-vibration connection

- ustable differential for
- ater pump
- np
- ure probes ire probes
- probe (for weather curve)



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9.3 ELECTRICAL WIRING DIAGRAM

Figure 9.2 Base and separable heating and DHW wiring diagram



10 SIMULTANEOUS HEATING/COOLING USE AND DHW BASE AND SEPARABLE WITH THIRD PARTY INTEGRATION

10.1 DESCRIPTION

The plumbing diagram in Figure 10.1 *p. 17* shows the use of a preassembled RTGS/RTWS group (consisting of GAHP GS/WS) and third party units (boilers and chiller) for process applications or however entailing simultaneous use of hot water and chilled water with possibility to produce DHW both base and separable,

coupled to a primary/secondary system with hydraulic separator and common circulating pump on the secondary circuit. Using the RB200 device makes it possible to control the third party units, including the circulating pump of the third party unit on the separable circuit, the temperature of all three circuits (hot, cold, separable) as well as the common secondary circuit circulating pumps.

10.2 HYDRAULIC PLAN



Figure 10.1 Plumbing diagram for simultaneous heating/cooling use and DHW base and separable with third party integration



Figure 10.2 Wiring diagram for simultaneous heating/cooling use and DHW base and separable with third party integration



SERIES HEATING (TYPE P4) AND BASE AND SEPARABLE DHW WITH 11 THIRD PARTY INTEGRATION

11.1 DESCRIPTION

The plumbing diagram in Figure 11.1 p. 19 shows the use of a preassembled RTA group (consisting of GAHP A) and third party units (boilers) for heating and DHW both base and separable, coupled to a series system (type P4, see Section C1.12) with hot loop fitted with common circulating pump controlled by RB200 and 3-pipe hydraulic separator.

Installation in series also entails inserting the GAHP return

probe, should one wish to use the integration and progressive replacement regulation mode (see Section C1.12).

The setpoints are relayed to the RB200 device by the secondary circuit control system through analogue 0-10 V signals. Using the RB200 device makes it possible to control the third party units, including the circulating pump of the third party unit on the separable circuit and the hot loop circulating pump, as well as secondary and separable circuit temperature.

11.2 HYDRAULIC PLAN

Figure 11.1 Base and separable series (P4) heating and DHW plumbing diagram



- Pressure gauge 2



Figure 11.2 Base and separable series (P4) heating and DHW wiring diagram



12 SERIES HEATING (TYPE P5) AND BASE DHW WITH THIRD PARTY INTEGRATION

12.1 DESCRIPTION

The plumbing diagram in Figure 12.1 *p. 21* shows the use of a preassembled RTA group (consisting of GAHP A) and third party units (boilers) for heating and base DHW, coupled to a series system (type P5, see Section C1.12) large 4-pipe heat buffer tank.

Installation in series also entails inserting the GAHP return probe, should one wish to use the integration and progressive replacement regulation mode (see Section C1.12).

Using the RB200 device allows the third party units and secondary temperature to be controlled.

12.2 HYDRAULIC PLAN





ELECTRICAL WIRING DIAGRAM 12.3

Figure 12.2 Base series (P5) heating and DHW wiring diagram



DDC Direct Digital Control

- Н Data signal HIGH