



Water-to-water high temperature heat pumps



Designed to *replace a conventional boiler* and *produce domestic hot water*



AGEO CALEO

Heating capacity : 16 to 25 kW



Heating



Hydraulic module



USE

CIAT is adding to its product range in the domestic heating market. Now, houses fitted with radiators can benefit from geothermal technology thanks to AGEO CALEO. Designed to operate with a temperature differential of 15 to 20°C on the radiator circuit, this new water-to-water heat pump is an excellent replacement for the traditional boiler (starting water temperature: 65°C), thus providing for all your needs in terms of heating and Domestic Hot Water (optional).

This water-to-water heat pump is available in heating only mode. It integrates all the hydraulic components, including sensors and transmitters. Installed indoors and protected from adverse weather conditions, in a utility room or garage, the equipment is delivered ready to work (tests and settings performed at the plant).

RANGE

The AGEO CALEO range uses inexhaustible heat sources present in water or the ground and offers exceptional performance in comparison with traditional heating systems. There are four models and three power levels (from 16 to 25 kW) which provide economic and long-lasting solutions for home renovation.

Specially designed to be connected to a network of radiators, they produce hot water at 65°C. An electronic regulator controls all the settings for using the heat pump and controls the water outlet temperature in accordance with the outside temperature.

Thanks to the SANI 300L option, the user has a 300-litre capacity of domestic hot water produced at a cost five times lower than that generated by a direct electric system.

DESCRIPTION

Packaged unit protected in a coated, corrosion-resistant galvanised steel casing and ABS front panel. The internal self-supporting chassis is dissociated from the casing by anti-vibration mounts.

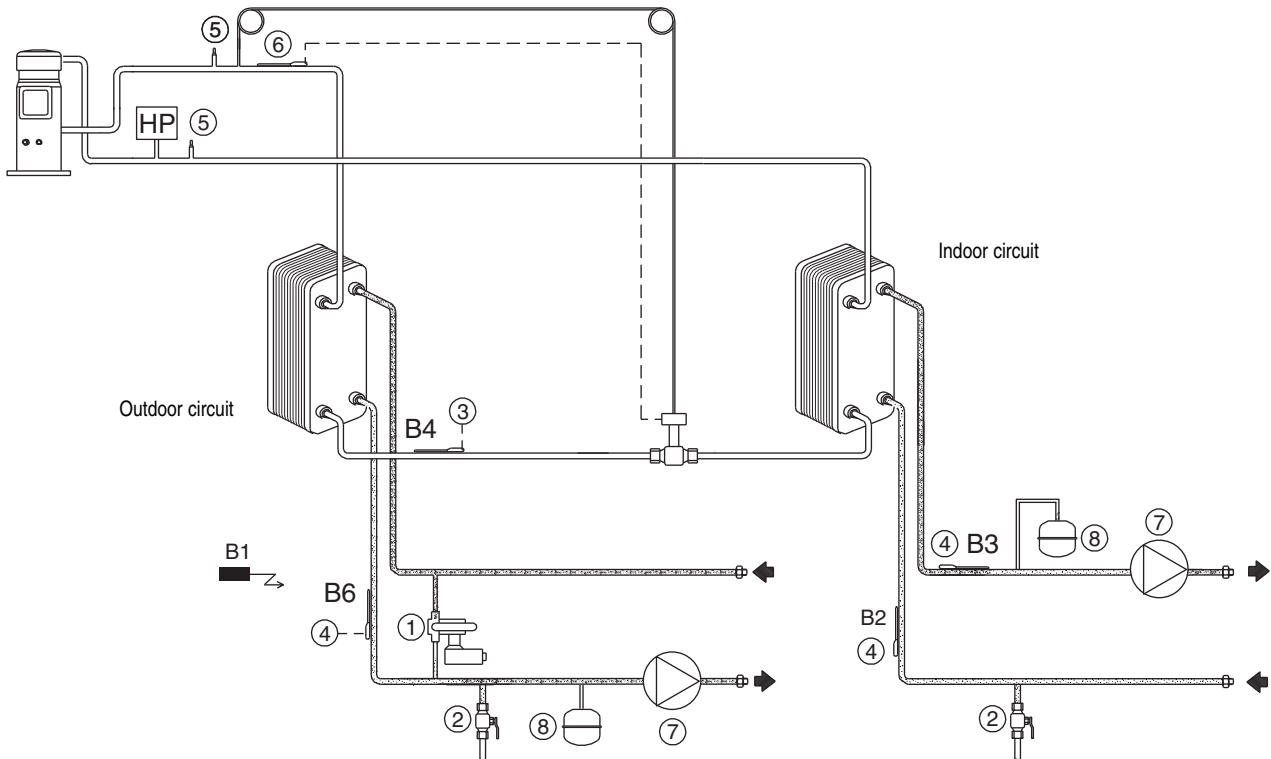
- Standard equipment:
 - Scroll compressor
 - Water-to-refrigerant brazed plate heat exchangers
 - Hydraulic module on both exchangers, with accelerator pump and expansion vessel.
 - Microconnect microprocessor-controlled control unit with two-wire remote control.

Ageo 2 water-to-water reversible heat pumps meet the following directives:

- Low voltage (2006/95/CE)
- CEM (2004/108/CE)
- DEP (97/23/CE):

category 1: models 50 to 80

SCHEMATIC DIAGRAM OF REFRIGERATION CIRCUIT AND HYDRAULIC MODULE



SENSORS

- B1 Outdoor air sensor
- B2 Water return sensor
- B3 Water outlet sensor
- B6 Water outlet sensor
- B4 Outdoor exchanger freon sensor

- ① Differential pressure switch
- ② Drain valve
- ③ Frost protection sensor
- ④ Control sensor

- ⑤ Schröder valve
- ⑥ Expansion bulb
- ⑦ Accelerator pump
- ⑧ Expansion vessel

WATER FLOW RATES

IMPORTANT

Minimum flows in the outdoor circuit: these flows must be adhered to. If not, the exchanger could be damaged by frost. CIAT cannot be held responsible for frost resulting from flows lower than the minimum flows given below.

Minimum flows in the indoor circuit: these flows must be adhered to. If not, the group may cut out at high pressure. If an electrical backup is installed, it may cut out as a safety measure.

Nominal flows: these flows should be used for all the installation's hydraulics.

For optimum and continuous operation, the nominal flow is recommended

		AGEO CALEO		
		50(H)T	65T	80T
INDOOR EXCHANGER	Minimum flow rate (m ³ /h)	0.49	0.61	0.77
	Nominal flow rate (m ³ /h)	0.65	0.82	1.02
OUTDOOR EXCHANGER	Minimum flow rate (m ³ /h)	1.95	2.48	3.00
	Nominal flow rate (m ³ /h)	2.72	3.34	4.00



Water-to-water high temperature heat pumps

QUICK SELECTION GUIDE

AGEO CALEO	50H	50HT	65HT	80HT
Number of circuits	1			
Heating capacity (1)	16.6	17.4	20.6	25.2
Compressor power input(1)	3.2	3.5	4.1	5.0
C.O.P.	5.1	5.0	5.0	5.0
Sound power level - dBA	56	56	58	58

(1) Heating capacities given for hot water at 25/45°C and an evaporator temperature of 10°C

COMPOSITION

■ 1 hermetic compressor

- Rotary scroll compressor with 2 scrolls (one fixed, one orbiting).
- Built-in electric motor cooled by suction gas.
- Internal motor protected by winding sensors.
- Self-supporting, noise-damping frame.

■ 2 brazed-plate heat exchangers

- AISI 316 stainless steel plates.
- High-performance, optimised plate patterns.
- Thermal insulation.

■ Standard accessories

- Biflow expansion valve.
- Anti-vibration supports mounted on the casing.

■ Electrical panel

- Meets EN 60335-1 and EN 60335-2-40.
- Front panel with built-in display.
- Remote-control terminal.
- Outdoor temperature sensor.
- Remote-control circuit protection.
- Compressor motor contactor.
- Main earth connection.
- Reduction of starting current (Single-phase).

■ Electronic control unit with Microconnect microprocessor:

- Hot water temperature control via a water law based on the outdoor temperature, with room temperature compensation.
- Self-adjusting control during compressor short cycles, increase in stage differential.
- Boiler-heat pump switchover mode: switchover managed automatically by the control system via a setting that can be adjusted based on the outdoor temperature.

Exchanger water outlet temperatures displayed on front panel.

- Operating settings check
- Temperatures displayed on control terminal
 - Room temperature or water setpoint in terminal unit mode
- Control of operating parameters
- Remote-control terminal with voltage-free two-wire connection.

ON/OFF input control (2 inputs, automatic/load shedding, heating/absence)

- short-cycle protection (3 mm)
- low-temperature start-up (temperature, indoor water circuit subordinate in 5°C) accelerator pump speed adjusted to water start temperature.

■ Safety and control devices

- High-pressure safety switch with automatic reset.
- Frost sensor on external exchanger.
- Chilled hot water start (on indoor exchanger).

■ 2 built-in hydraulic modules (loop and transmitter sides) with the following accessories:

- 1 expansion vessel.
- 1 drain.
- 1 multi-speed accelerator pump (3 speeds, 2 of which are usable on some models) with shut-off valves and insulation jacket.
- Water differential pressure switch on sensor only;

■ Options (for installation on site)

- Connection sleeves.
- Screen filter with shut-off valves.
- Charging kit.
- Start-up kit (models 50 to 80) - tri-phase only.
- Compressor noise insulation kit.
- Single-phase or three-phase loop heater
- Pressure gauge valve kit



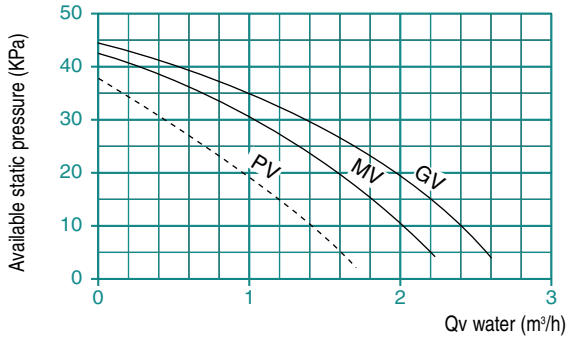
Water-to-water high temperature heat pumps

AGEO CALEO

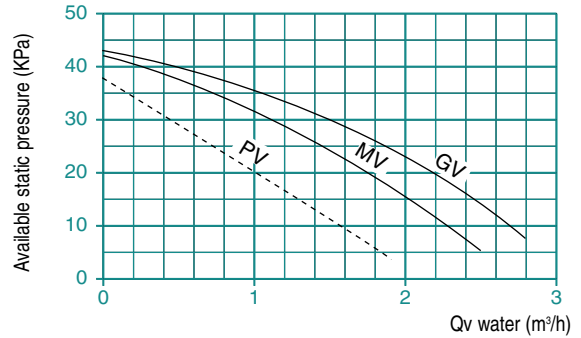
AVAILABLE PRESSURE IN THE INDOOR AND OUTDOOR CIRCUIT

Indoor circuit

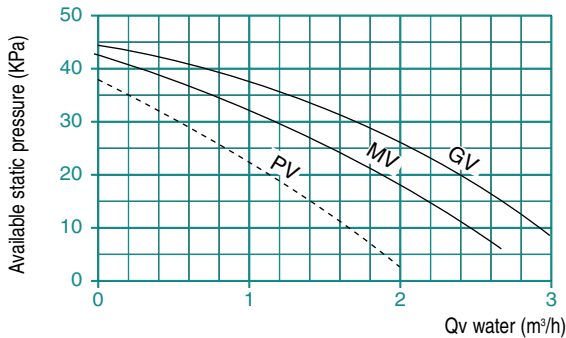
AGEO CALEO - 50H(T)



AGEO CALEO - 65HT



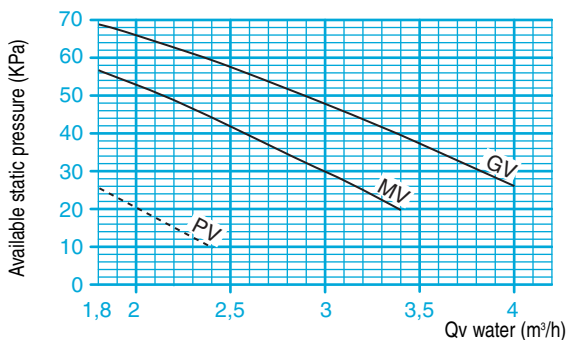
AGEO CALEO - 80HT



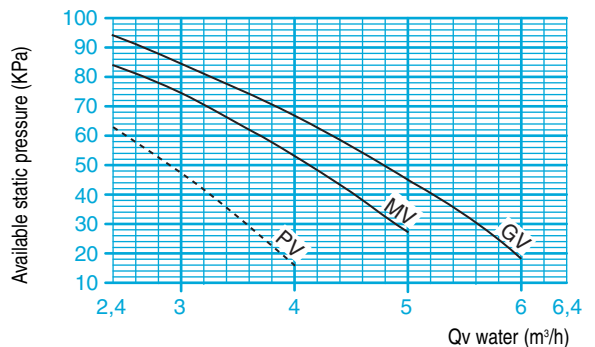
The available pressure curves are given for pure water. If 40% monopropylene glycol is to be used, reduce the available pressures by 5 kPa.

Outdoor circuit

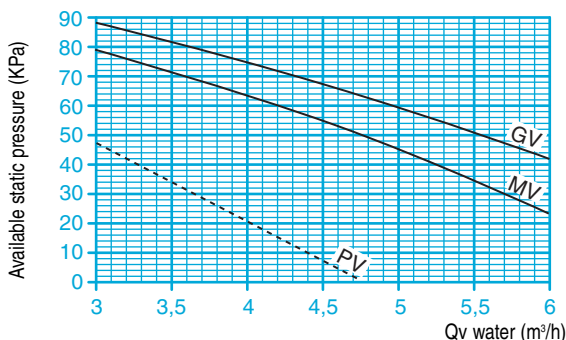
AGEO CALEO - 50H(T)



AGEO CALEO - 65HT



AGEO CALEO - 80HT



The available pressure curves are given for pure water. If monopropylene glycol is to be used, reduce the available pressures by:

- 7 kPa for 20% MPG
- 15 kPa for 40% MPG



Water-to-water high temperature heat pumps

HEATING CAPACITIES

Cold water outlet temp. (°C)		Hot water outlet temp. (°C)														
		35		40		45		50		55		60		65		
		Pc kW	Pa kW	Pc kW	Pa kW	Pc kW	Pa kW	Pc kW	Pa kW	Pc kW	Pa kW	Pc kW	Pa kW	Pc kW	Pa kW	
50H	40% monopropylene glycol solution	-6	11,1	2,5	11,1	2,6	10,9	3,0	10,7	3,5	10,5	4,1				
		-4	12,1	2,5	11,9	2,8	11,7	3,2	11,5	3,7	11,3	4,2	10,8	4,9		
		-2	13,0	2,5	12,8	2,8	12,7	3,2	12,4	3,6	12,2	4,2	11,8	4,9		
		0	14,0	2,5	13,8	2,8	13,6	3,2	13,3	3,6	13,0	4,2	12,6	4,9		
		2	15,0	2,5	14,8	2,8	14,6	3,2	14,3	3,5	14,0	4,0	13,6	4,7	13,4	5,0
	Municipal water	5	15,9	2,6	16,2	2,8	15,9	3,2	15,6	3,6	15,3	4,0	14,9	4,6	14,5	5,0
		6	16,5	2,6	16,7	2,9	16,6	3,2	16,2	3,6	15,8	4,0	15,3	4,6	14,8	4,9
		7	17,8	2,6	17,2	2,9	17,0	3,2	16,6	3,6	16,1	4,1	15,7	4,5	15,2	4,9
		8	18,4	2,6	17,8	2,9	17,5	3,3	17,0	3,7	16,6	4,2	16,1	4,5	15,6	5,0
		10	19,4	2,6	18,8	2,9	18,5	3,2	18,0	3,6	17,5	4,1	16,9	4,5	16,4	5,0
50HT	40% monopropylene glycol solution	-6	11,7	2,7	11,6	2,8	11,5	3,2	11,3	3,7	11,0	4,3				
		-4	12,7	2,7	12,5	3,0	12,3	3,4	12,1	3,9	11,8	4,6	11,3	5,3		
		-2	13,7	2,7	13,5	3,0	13,3	3,4	13,0	3,9	12,8	4,5	12,4	5,2		
		0	14,7	2,7	14,5	3,0	14,2	3,4	14,0	3,9	13,7	4,5	13,3	5,2		
		2	15,8	2,7	15,5	3,0	15,3	3,4	15,0	3,8	14,7	4,3	14,3	5,0	14,0	5,4
	Municipal water	5	16,7	2,8	17,0	3,1	16,7	3,4	16,4	3,8	16,1	4,3	15,6	4,9	15,2	5,4
		6	17,3	2,8	17,5	3,1	17,4	3,5	17,0	3,9	16,6	4,3	16,1	4,9	15,5	5,3
		7	18,7	2,7	18,0	3,1	17,8	3,4	17,4	3,9	16,9	4,4	16,5	4,8	15,9	5,3
		8	19,3	2,7	18,6	3,1	18,3	3,5	17,9	3,9	17,4	4,5	16,9	4,8	16,3	5,4
		10	20,4	2,8	19,8	3,1	19,4	3,5	18,9	3,9	18,3	4,4	17,8	4,8	17,2	5,4
65HT	40% monopropylene glycol solution	-6	13,9	3,1	13,7	3,4	13,5	3,7	13,3	4,2	13,1	4,7				
		-4	14,9	3,1	14,7	3,4	14,5	3,9	14,2	4,2	14,0	4,8	13,7	5,2		
		-2	16,1	3,1	15,8	3,5	16,1	3,4	15,4	4,3	15,2	4,8	14,9	5,3		
		0	17,2	3,2	16,8	3,5	16,7	3,9	16,3	4,3	16,0	4,8	15,8	5,3		
		2	18,5	3,2	17,9	3,6	17,8	4,0	17,4	4,4	17,1	4,8	16,8	5,3	16,4	6,0
	Municipal water	5	20,8	3,3	20,1	3,7	20,0	4,0	19,5	4,5	18,9	5,0	18,4	5,4	17,9	6,1
		6	21,6	3,4	21,1	3,7	20,6	4,1	20,1	4,5	19,5	5,0	19,1	5,4	18,5	6,0
		7	22,3	3,3	21,8	3,7	21,3	4,1	20,7	4,6	20,1	5,0	19,6	5,5	19,0	6,0
		8	23,0	3,4	22,4	3,7	21,8	4,1	21,3	4,6	20,7	5,1	20,0	5,5	19,4	6,2
		10	24,3	3,4	23,7	3,8	23,1	4,2	22,5	4,6	21,9	5,1	21,2	5,6	20,7	6,0
80HT	40% monopropylene glycol solution	-6	17,0	3,7	16,7	4,2	16,5	4,5	16,2	5,2	16,1	5,7				
		-4	18,3	3,8	18,1	4,2	17,8	4,7	17,4	5,2	17,1	5,8	16,8	6,4		
		-2	19,7	3,8	19,4	4,3	19,7	4,2	18,8	5,3	18,6	5,8	18,3	6,4		
		0	21,0	3,9	20,6	4,3	20,4	4,8	20,0	5,3	19,6	5,9	19,3	6,5		
		2	22,6	3,9	22,0	4,4	21,8	4,8	21,3	5,4	20,9	5,9	20,5	6,5	20,1	7,3
	Municipal water	5	25,5	4,1	24,6	4,5	24,5	5,0	23,8	5,5	23,1	6,1	22,6	6,7	21,9	7,5
		6	26,5	4,1	25,9	4,5	25,2	5,0	24,6	5,6	23,9	6,1	23,4	6,6	22,6	7,4
		7	27,3	4,1	26,7	4,6	26,0	5,0	25,4	5,6	24,7	6,1	24,0	6,7	23,2	7,4
		8	28,2	4,1	27,5	4,6	26,8	5,1	26,1	5,6	25,3	6,2	24,5	6,8	23,8	7,5
		10	29,8	4,2	29,0	4,6	28,3	5,1	27,5	5,6	26,8	6,3	26,0	6,8	25,3	7,3

Pa : Compressor power input.
Pc: Validated heating capacity based on the operating limits.

Glycol/water solution required.
Refer to the maintenance manual for information on adjusting the water flow rate on the outdoor exchanger (ground water loop)

AGEO CALEO



Water-to-water high temperature heat pumps

AGEO CALEO

TECHNICAL CHARACTERISTICS

AGEO CALEO		50H	50HT	65HT	80HT
Refrigerant		R410A			
Number		1			
Compressor		hermetic scroll			
Type		hermetic scroll			
Rotation speed		rpm 2900			
Oil capacity (POE)		1.95	1.95	1.66	1.77
Indoor heat exchanger		1/1			
Number/circuits		1/1			
Type		brazed plates			
Water capacity		2.38	2.38	2.76	3.7
Expansion vessel capacity		8		12	
Expansion vessel pre-charge pressure		bar 1,5			
Indoor hydraulic module		1,5			
Max. water capacity of system (pure water/glycol-water solution)		150/91	150/91	225/136	225/136
Min. water capacity of system		66	66	83	102
Number of accelerator pump speeds / Available pressure 25/45°C 10°C		3/39	3/39	3/38	3/37.5
Outdoor heat exchanger		1/1			
Number/circuits		1/1			
Type		brazed plates			
Water capacity		2.38	2.38	2.76	3.7
Expansion vessel capacity		8		12	
Expansion vessel pre-charge pressure		bar 1,5			
Outdoor hydraulic module		1,5			
Max. water capacity of system (glycol/water solution)		214	214	321	321
Number of accelerator pump speeds / Available pressure 25/45°C 10°C		3/38	3/38	3/57	3/58

ELECTRICAL CHARACTERISTICS

AGEO CALEO		50H	50HT	65HT	80HT
Electrical power supply	V	230 V - 50 Hz 1ph + neutral + earth	400 V - 50 Hz 3 ph + neutral + earth		
Rated current	Compressor	A 27.1	10.3	11.2	14.3
	Indoor circuit pump (max.)	A 0.28			
	Outdoor circuit pump (min./max)	A 0.65/1.10		A 1.75/2.02	
	Control	A 0.18			
Compressor starting current	A	43	64	74	101
Max. system current (In)	A	28.66	11.86	13.68	16.78
Electrical wiring (not supplied) (2)		3G10 (1)	5G4 (2)		
Thermostat connections, outdoor sensor, pool sensor, On/Off points	mm ²	0,2 - 1,5			
Well pump contactor coil connections, control circuit kits	mm ²	1,5			
C or D curve magneto-thermal circuit-breaker (not supplied)	Am	32	16	16	20

(1) Cable with 2 or 3 PVC-V2-K charged conductors (high temperature)

(2) Cable with 2 or 3 PVC charged conductors for temperatures < 60°C

Note: for different conditions, refer to French standard NF C15-100

Sound levels

AGEO CALEO		50H	50HT	65HT	80HT
Overall sound pressure level	dB(A)	34	34	36	36

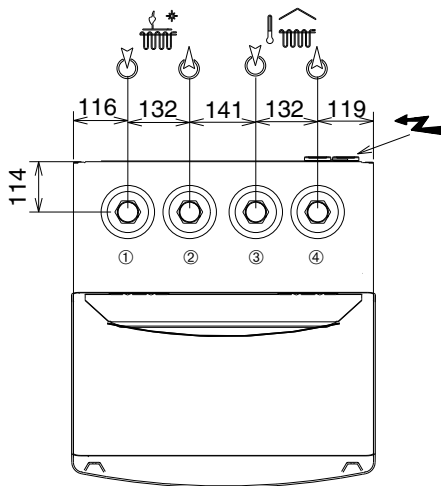
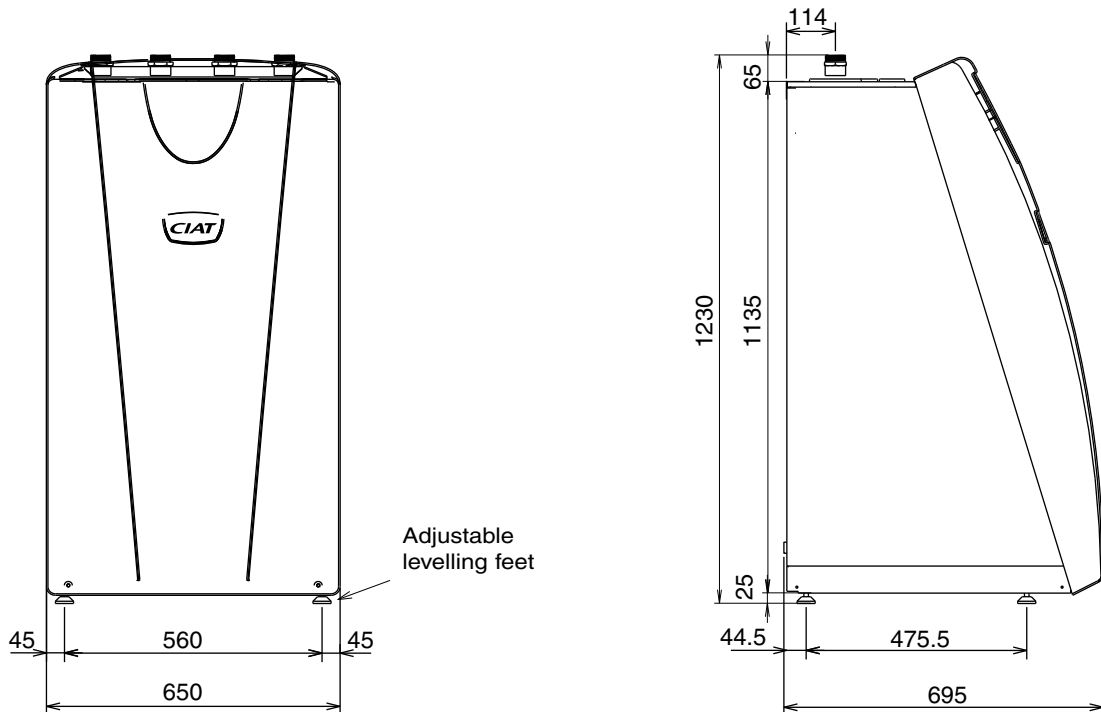
Sound pressure level at 5 metres, 1.5 metres from ground, in a free field, directivity 2.



Water-to-water high temperature heat pumps

DIMENSIONS

AGEO CALEO



⚡ Electrical power supply

- ① Water inlet on outdoor circuit
- ② Water outlet on outdoor circuit
- ③ Water inlet on indoor circuit
- ④ Water outlet on indoor circuit

🔍 Water inlet

🔍 Water outlet

AGEO CALEO	50	65	80
Connection dia. ① ② ③ ④	1" 1/4 GM		
Weight in kg	151	161	165

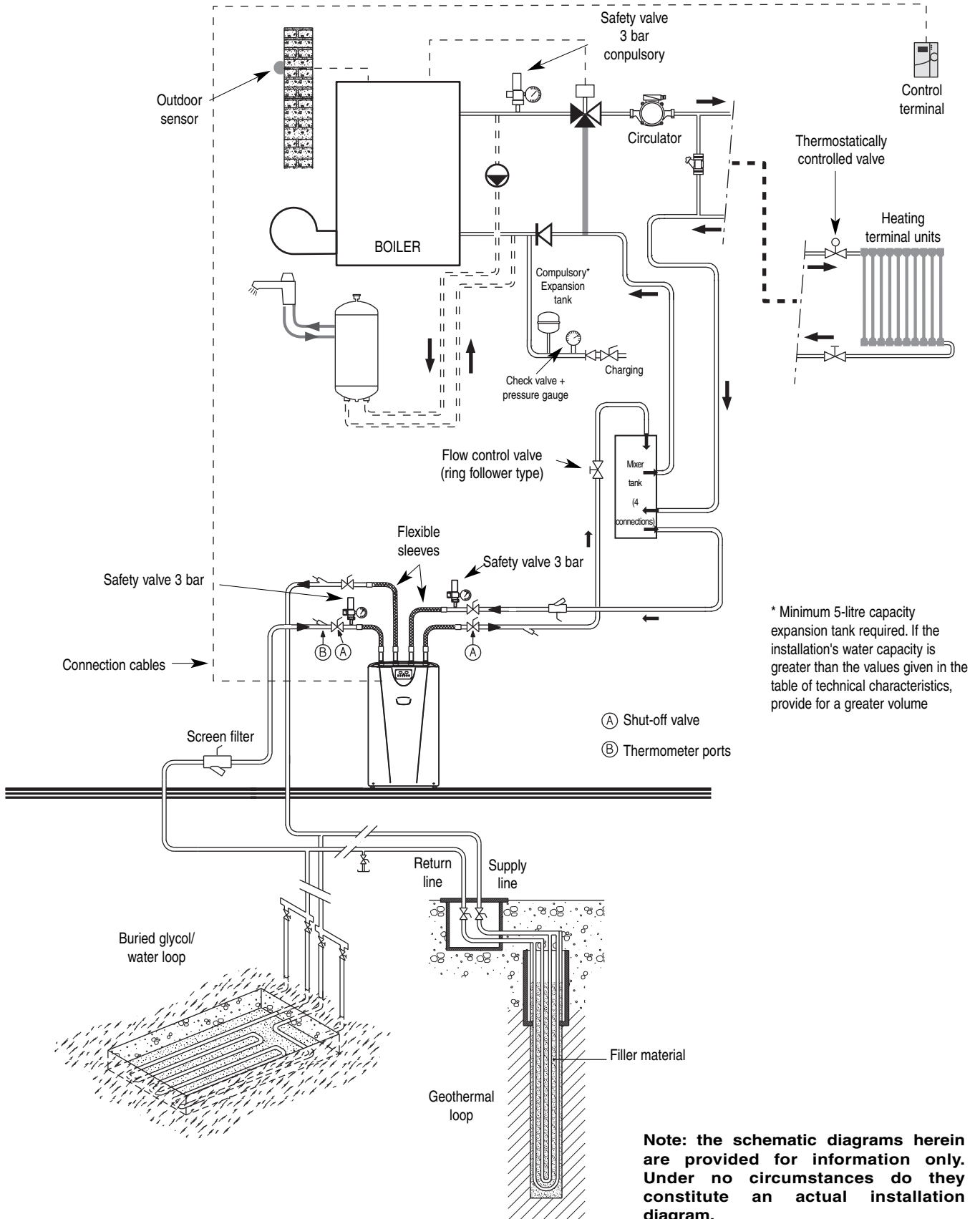


Water-to-water high temperature heat pumps

AGEO CALEO

SCHEMATIC INSTALLATION DIAGRAM

Boiler backup connection

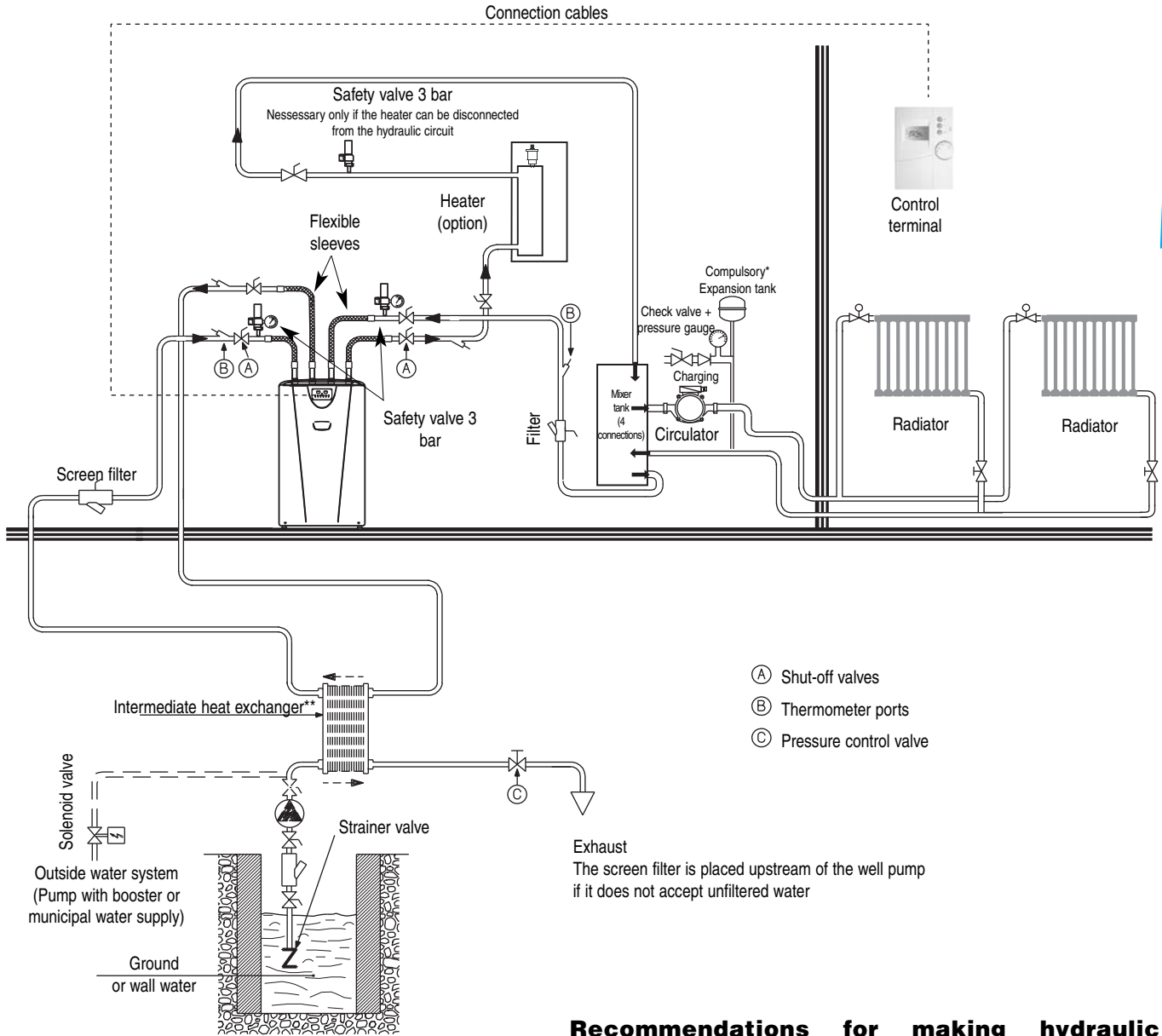




Water-to-water high temperature heat pumps

SCHEMATIC INSTALLATION DIAGRAM

TU connection (Radiator)



* Minimum 5-litre capacity expansion tank required. If the installation's water capacity is greater than the values given in the table of technical characteristics, provide for a greater volume

⚠️ ** CIAT declines all liability for the clogging and malfunctioning of the exchanger in the AGEO CALEO heat pump if this exchanger is not installed.

Recommendations for making hydraulic connections

A constant flow of water must be maintained in the exchangers. Place the flexible anti-vibration sleeves (supplied as an option) between the heat pump exchangers and the hot and cold water pipes. Fasten the hot and cold water pipes to the walls with brackets lined with highly flexible rubber to prevent vibrations. The system must be charged with a sufficient volume of water to avoid compressor short cycles. Install a buffer tank if the volume of water in the heating or cooling system is too low. See the minimum water capacities given in the technical characteristics.

Note: the schematic diagrams herein are provided for information only. Under no circumstances do they constitute an actual installation diagram.

INSTALLATION RECOMMENDATIONS

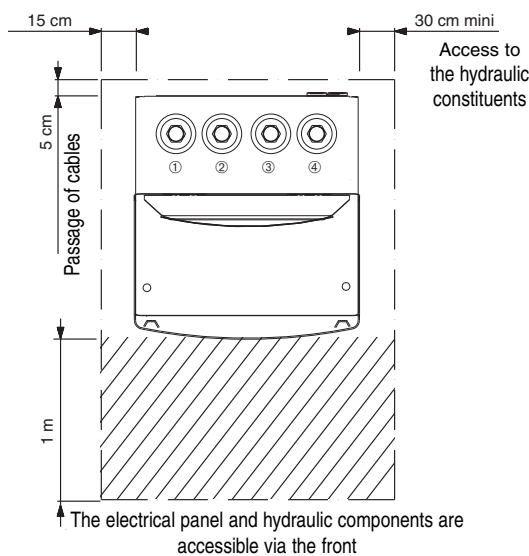
Installation

AGEO CALEO heat pumps are designed for installation in service rooms, laundry rooms and garages protected from adverse weather and freezing temperatures.

Carefully consider where to install the unit inside your home and choose a location that meets your noise level requirements. For example, install it away from bedrooms and avoid contact with surfaces that could transfer noise.

There should be enough clearance around the unit to allow access to the electrical panel and other system components.

Necessary clearance



Hydraulic connections

Hydraulic connections are to be made in accordance with accepted engineering practice.

Use flexible connections to prevent the transmission of noise along the pipes.

As heat pump exchangers are sensitive to clogging, flush the lines thoroughly before connecting them to the unit.

The following accessories are essential to any hydraulic system and must also be installed:

- System drain connection at low point.
- Air vents at high points, etc.
- Safety valves (3 bar tare).
- Make sure the water capacity of the system is sufficient (see technical characteristics).
- Install a buffer tank if necessary.
- A constant flow of water must be maintained in the indoor and outdoor exchangers.
- Install a screen filter on both lines ($< 600 \mu m$) to protect the plate heat exchangers from clogging.
- Follow the direction of the water flow in the exchangers.

Start-up

Follow the instructions given in our installation and maintenance manuals.

Maintenance

- Follow the owner's manual.
- Take out a maintenance contract.

Electrical connections

All the information needed to wire the system is provided on the wiring diagram supplied with the unit. The diagram should be followed to the letter.

Wiring must be performed in accordance with accepted engineering practice and conform to the regulations in force.

A switch and circuit breaker must be installed on the consumer unit by the fitter.

NOTE: To protect the indoor circuit from frost, leave the unit on so that water can flow along the hydraulic lines. Add glycol if the system is not used for an extended period of time.

AGEO CALEO does not protect the outdoor circuit from freezing temperatures.

- Add glycol to horizontal loops and geothermal loops
- Well/ground water heat pumps: lay the pipes in an area protected from freezing temperatures. If necessary, install pipe heaters.

This document is non-contractual. As part of its policy of continual product improvement, CIAT reserves the right to make any technical modification it feels appropriate without prior notification.

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CERTIFIED ISO 9001
QUALITY SYSTEM



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