

GROUND SOURCE HEAT PUMPS

- GSHP...: water/water⁽¹⁾ from 7.4 to 35.2 kW and glycol water/water⁽²⁾ from 5.7 to 28 kW underground collectors or groundwater draw-off.
- GSHP... /V 200 GHL: water/water⁽¹⁾ from 7.4 to 22.2 kW and glycol water/water⁽²⁾ from 5.7 to 17.1 kW underground collectors or groundwater draw-off. DHW production by integrated DHW tank placed beneath the HP.
- GSHP... /B 200 GHL: water/water⁽¹⁾ from 7.4 to 22.2 kW and glycol water/water⁽²⁾ from 5.7 to 17.1 kW underground collectors or groundwater draw-off. DHW production by DHW tank placed beside the HP.
- GSHP... /V 200 GSHL: water/water⁽¹⁾ from 7.4 to 22.2 kW and glycol water/water⁽²⁾ from 5.7 to 17.1 kW underground collectors or groundwater draw-off. DHW production by integrated solar DHW tank placed beneath the HP.
- GSHP... /B 200 GSHL: water/water⁽¹⁾ from 7.4 to 22.2 kW and glycol water/water⁽²⁾ from 5.7 to 17.1 kW underground collectors or groundwater draw-off. DHW production by DHW tank placed beside the HP.



GSHP...



GSHP.../V 200 GHL (GSHL)



GSHP.../B 200 GHL (GSHL)



GSHP...:
heating, cooling
GSHP.../V and B 200:
heating, cooling and DHW
production



HP
ground/water
groundwater/water



Electricity
(energy supplied to the
compressor)



Natural renewable energy
free of charges

The GSHP... is a range of reversible geothermal heat pumps that operate on water (glycol water)/water with closed loop collection (from the ground or underground collectors), by drilling or draw-off. They stand out for their high performances:

- in water/water collection⁽¹⁾: COP up to 5.6
- in glycol water/water collection⁽²⁾: COP up to 4.5

Thanks to their reversibility and the cooling option (underfloor cooling type), GSHPs provide optimum year-round comfort.

The GSHP.../V and B 200 GHL versions come complete with a domestic hot water tank and the GSHP.../V and B 200 GSHL versions with a solar domestic hot water tank.

Thanks to their compact design (0.47 m² floor space for the GSHP... version) and their silent running, they can be easily incorporated in new or existing homes.

CONDITIONS OF USE

Limit operating temperatures in heating mode:

- Water: +7°C / 80°C
- Collection (source): -15°C / 35°C

Limit operating temperatures in cooling mode:

- Water: +7°C / 25°C
- Collection (source): -15°C / 35°C

Max. heating circuit operating pressure: 3 bar

Max. collection circuit operating pressure: 3 bar

Protection rating: IP 21

(1) at 10°C - 7°C / 30°C - 35°C

(2) at 0°C - -3°C / 30°C - 35°C

RANGE PRESENTATION

GSHP... is a range of mixed energy geothermal heat pumps that run on closed loop collection from the ground using underground collectors (horizontal collection), drilling (vertical collection) or groundwater draw-off. They are tested in the factory and delivered fully assembled.

The GSHP 5, 9, 12, 15, 19, 27 models

The GSHP 5, 9, and 12 come in two versions: for single-phase (MR) and three-phase (TR) connection. The GSHP 15, 19 and 27 can be connected only in three-phase.

All of these models come with:

- a Scroll hermetic compressor,
- a 4-way valve that enables reversibility of the HP,
- two oversize plate exchangers (collection end and heating end),
- pressure release valves, a dehydrator filter, HP/LP safety pressure switches,
- an electronic start-up current limiter,
- a 10-litre expansion vessel, primary end (source) and a second expansion vessel, secondary end (heating) only on the GSHP 5, 9, 12, and 15 versions,
- two heating pumps with energy efficiency index (EEI) < 0.23 (primary end and secondary end) on the GSHP 5, 9, 12, and 15 versions. The heating pumps are optional on the GSHP 19 version,
- a flow rate meter, secondary end, and a flow rate detector, primary end,
- an electronic pressure gauge, a safety valve and an air vent,
- a back-up electric immersion heater kit available as an option,
- noise insulation,
- a reversal valve (heating / DHW) in the GSHP 5, 9, 12 and 15 models. For the GSHP 19 and 27, an external reversal valve can be ordered as an option.

STRONG POINTS

- reversible HP for heating and cooling,
- can be connected to vertical or horizontal collectors or to a groundwater source,
- Max. HP temperature: 65°C up to GSHP 19 kW and 62°C for the GSHP 27 kW model,
- Products NF HP certified,
- GSHP 5, 9, 12 and 15 models fully fitted out (pumps with an energy efficiency index (EEI) < 0.23, safety valves, expansion vessels, pressure gauge, heating - DHW reversal valve...),
- Full range with the GSHP .../and B 200 GHL models, which handle DHW production, models with solar DHW tank (GSHL),
- DIEMATIC iSystem control panel suited to all installation scenarios, including the most complex, enables multi-circuit management and optimum management for systems that incorporate various heating generators (heat pump + boiler...),

- a control panel fitted with the DIEMATIC iSystem control system, which can be used to manage various of the HP's parameters, as well as a heating or cooling multi-circuit. The outside temperature sensor is provided.

The **GSHP 5, 9, 12, 15/V 200 GHL and B 200 GHL models** include the HP in combination with the 200-litre domestic hot water tank.

- In the /B... version; the DHW tank, which has the same look as the HP, is placed beside the HP.
- In the /V... version; the same DHW tank is placed beneath it to create a uniform column.

The associated DHW tank is a "High Load" glass-lined high performance stratification DHW tank, equipped with a plate exchanger combined with a load pump, a DHW sensor and adjustable feet. The tank itself is protected by a TAS (Titan Active System®) anode without material consumption.

The **GSHP 5, 9, 12, 15/V 200 GSHL and B 200 GSHL models** include the HP in combination with a solar domestic hot water tank.

- In the /B... version; the solar DHW tank, which has the same look as the HP, is placed beside the HP.
- In the /V... version; the same solar DHW tank is placed beneath it to create a uniform column.

The associated DHW tank is a "High Load" glass-lined high performance stratification DHW tank, equipped with a plate exchanger combined with a load pump, a solar coil, a TAS (Titan Active System®) anode without material consumption to protect the tank, an end piece for a circulating loop, two DHW sensors, a solar sensor and adjustable feet.

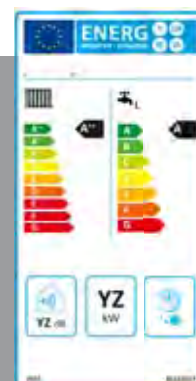
- COP up to 5.64 on water/water collection: 10°C - 7°C / 30°C - 35°C
- COP up to 4.5 on glycol water/water collection: 0°C - -3°C / 30°C - 35°C
- DHW COP in accordance with EN 16147 up to 2.47,
- Quantity of refrigerant less than 2 kg up to GSHP 12. No annual service of or restrictions on the installation.
- 2 to 10 GSHP HPs can be mounted in cascade. Cascade mounting can be used for running in cooling mode with or without a buffer tank.








Created by De Dietrich, the **ECO-SOLUTIONS** label guarantees you a range of products compliant with the European Eco-design and Energy Labelling directives. These directives apply from 26 September 2015 to heating and domestic hot water appliances.

With De Dietrich **ECO-SOLUTIONS**, you can benefit from the latest generation of multienergy systems, easier to use, with better performance and energy savings, designed to give you greater comfort while caring for the environment. **ECO-SOLUTIONS** also mean expertise, advice and a wide range of services from the De Dietrich professional network.

The energy label, together with the **ECO-SOLUTIONS**, shows you the performance of your chosen product. More info at www.ecodesign.dedietrich-heating.com



MODELS AVAILABLE

Heat pump	Connection	In water/water collection		In glycol water/water collection		Model	
		Heat capacity ⁽¹⁾ (kW)	COP ⁽¹⁾	Heat capacity ⁽²⁾ (kW)	COP ⁽²⁾		
Heating only  GSHP_Q0001	(2 or 3 packages)	Single-phase	742	5.64	5.70	4.38	GSHP 5 MR-E
		Single-phase	12.95	5.52	9.8	4.39	GSHP 9 MR-E
		Single-phase	16.58	5.30	12.66	4.35	GSHP 12 MR-E
		Three-phase	742	5.64	5.70	4.38	GSHP 5 TR-E
		Three-phase	12.95	5.52	9.8	4.39	GSHP 9 TR-E
		Three-phase	16.58	5.30	12.66	4.35	GSHP 12 TR-E
		Three-phase	22.27	5.38	17.09	4.50	GSHP 15 TR-E
		Three-phase	28.11	5.14	20.40	4.28	GSHP 19 TR
		Three-phase	35.25	4.71	27.99	4.10	GSHP 27 TR
Heating and domestic hot water by DHW tank  Column version GSHP_Q0002  Juxtaposed DHW tank version GSHP_Q0003	With 200-litre "High Load" glass-lined stratification DHW tank (3 packages)	Single-phase	742	5.64	5.70	4.38	GSHP 5 MR/V 200 GHL
		Single-phase	12.95	5.52	9.8	4.39	GSHP 9 MR/V 200 GHL
		Single-phase	16.58	5.30	12.66	4.35	GSHP 12 MR/V 200 GHL
		Three-phase	742	5.64	5.70	4.38	GSHP 5 TR/V 200 GHL
		Three-phase	12.95	5.52	9.8	4.39	GSHP 9 TR/V 200 GHL
		Three-phase	16.58	5.30	12.66	4.35	GSHP 12 TR/V 200 GHL
		Three-phase	22.27	5.38	17.09	4.50	GSHP 15 TR/V 200 GHL
		Single-phase	742	5.64	5.70	4.38	GSHP 5 MR/B 200 GHL
		Single-phase	12.95	5.52	9.8	4.39	GSHP 9 MR/B 200 GHL
		Single-phase	16.58	5.30	12.66	4.35	GSHP 12 MR/B 200 GHL
		Three-phase	742	5.64	5.70	4.38	GSHP 5 TR/B 200 GHL
		Three-phase	12.95	5.52	9.8	4.39	GSHP 9 TR/B 200 GHL
		Three-phase	16.58	5.30	12.66	4.35	GSHP 12 TR/B 200 GHL
		Three-phase	22.27	5.38	17.09	4.50	GSHP 15 TR/B 200 GHL
		Heating and domestic hot water by solar DHW tank  Column version GSHP_Q0002  Juxtaposed solar DHW tank version GSHP_Q0003	With 200-litre "High Load" glass-lined stratification solar DHW tank (3 packages)	Single-phase	742	5.64	5.70
Single-phase	12.95			5.52	9.8	4.39	GSHP 9 MR/V 200 GSHL
Single-phase	16.58			5.30	12.66	4.35	GSHP 12 MR/V 200 GSHL
Three-phase	742			5.64	5.70	4.38	GSHP 5 TR/V 200 GSHL
Three-phase	12.95			5.52	9.8	4.39	GSHP 9 TR/V 200 GSHL
Three-phase	16.58			5.30	12.66	4.35	GSHP 12 TR/V 200 GSHL
Three-phase	22.27			5.38	17.09	4.50	GSHP 15 TR/V 200 GSHL
Single-phase	742			5.64	5.70	4.38	GSHP 5 MR/B 200 GSHL
Single-phase	12.95			5.52	9.8	4.39	GSHP 9 MR/B 200 GSHL
Single-phase	16.58			5.30	12.66	4.35	GSHP 12 MR/B 200 GSHL
Three-phase	742			5.64	5.70	4.38	GSHP 5 TR/B 200 GSHL
Three-phase	12.95			5.52	9.8	4.39	GSHP 9 TR/B 200 GSHL
Three-phase	16.58			5.30	12.66	4.35	GSHP 12 TR/B 200 GSHL
Three-phase	22.27			5.38	17.09	4.50	GSHP 15 TR/B 200 GSHL

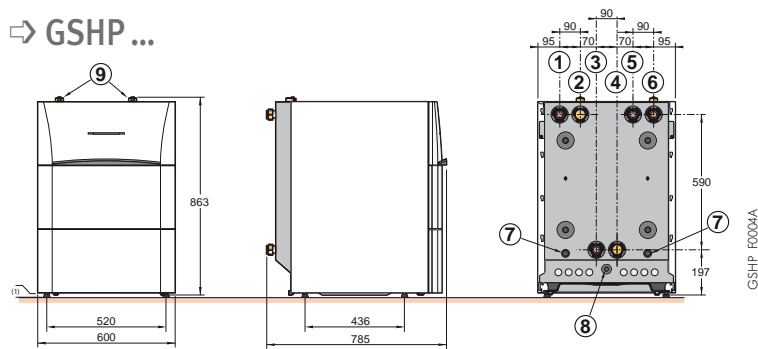
(1) in water/water collection: 10°C - 7°C / 30°C - 35°C

(2) in glycol water (30%)/water collection: 0°C - -3°C / 30°C - 35°C

TECHNICAL SPECIFICATIONS

MAIN DIMENSIONS (mm and inches)

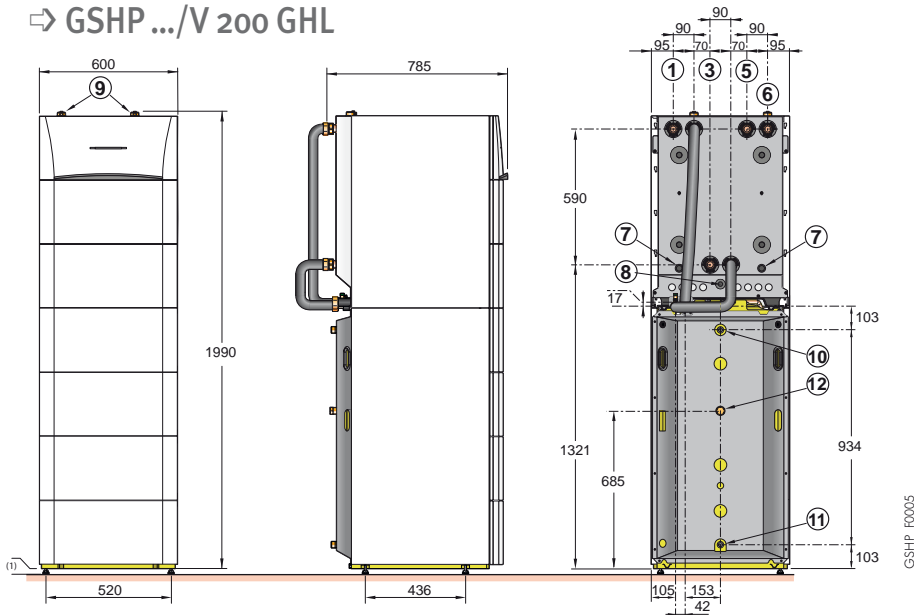
GSHP ...



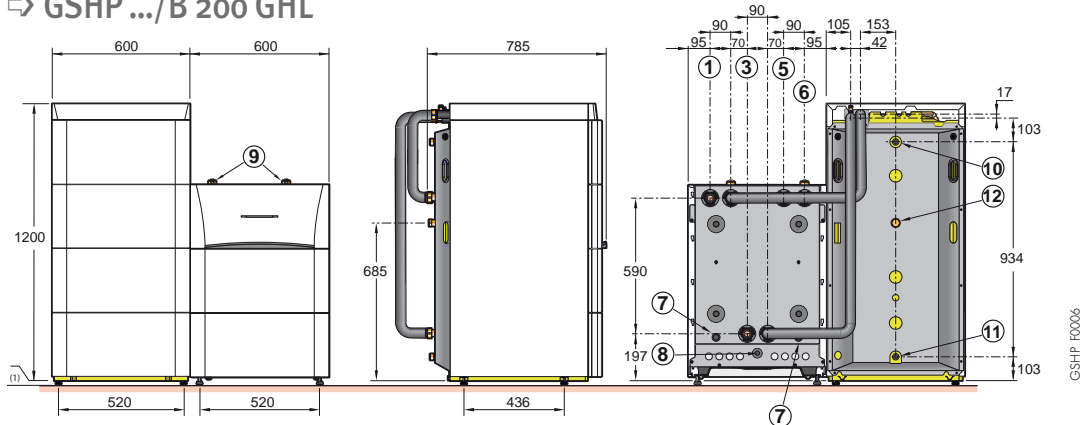
Key

- | | |
|--|--|
| <ul style="list-style-type: none"> ① - GSHP 5/9/12/15: heating flow circuit G 1" - GSHP 19/27: heating return circuit G 1" 1/4
(comes with 2 isolating valves and a filter) ② - GSHP 5/9/12/15: primary DHW tank flow (if installed) G 1" - GSHP 19/27: flow to heating circuit G 1" 1/4 ③ - GSHP 5/9/12/15: heating return circuit G 1" (comes with 2 isolating valves and a filter) - GSHP 19/27: plug ④ - GSHP 5/9/12/15: primary DHW tank return (if installed) G 1" - GSHP 19/27: plug | <ul style="list-style-type: none"> ⑤ Geothermal collection circuit flow G 1" 1/4
(comes with 1 isolating valve fitted with a pressure gauge) ⑥ Geothermal collection circuit return G 1" 1/4
(comes with 2 isolating valves and a filter) ⑦ Safety valves discharge (collection end, heating end) ⑧ Condensates discharge ⑨ Automatic air vents (collection end, heating end) (I) Feet adjustable from 10 to 30 mm |
|--|--|

GSHP .../V 200 GHL



GSHP .../B 200 GHL



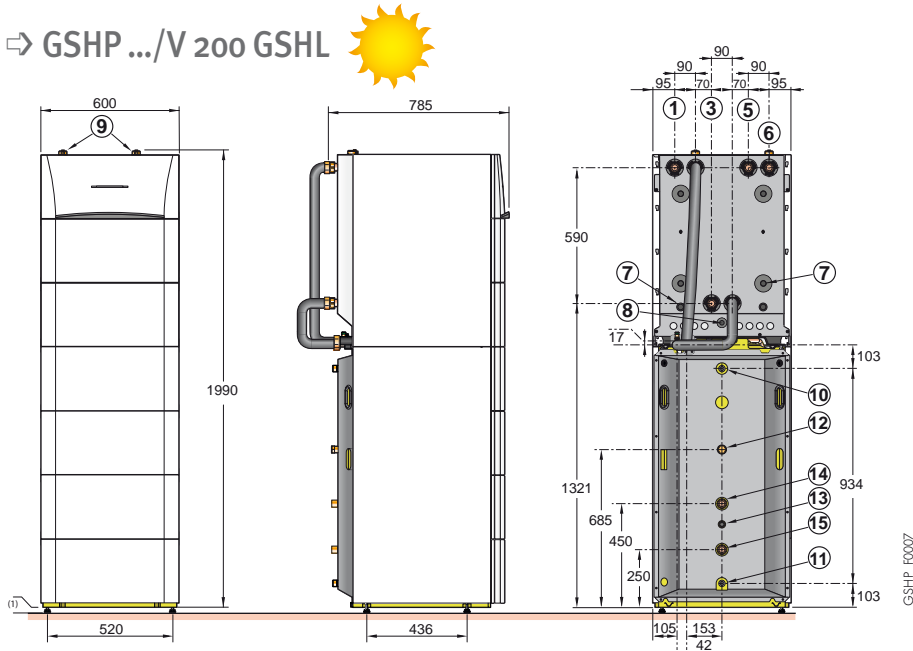
Key

- | | |
|--|--|
| <ul style="list-style-type: none"> ① Heating flow circuit G 1" ③ Heating return circuit G 1"
(comes with 2 isolating valves and a filter) ⑤ Geothermal collection circuit flow G 1" 1/4
(comes with 1 isolating valve fitted with a pressure gauge) ⑥ Geothermal collection circuit return G 1" 1/4
(comes with 2 isolating valves and a filter) | <ul style="list-style-type: none"> ⑦ Safety valves discharge (collection end, heating end) ⑧ Condensates discharge ⑨ Automatic air vents (collection end, heating end) ⑩ DHW outlet G 3/4" ⑪ Domestic cold water inlet G 3/4" ⑫ Recirculating loop return G 3/4" (I) Feet adjustable from 10 to 30 mm |
|--|--|

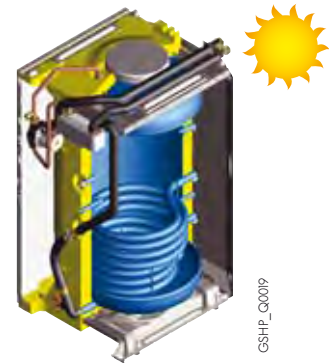
TECHNICAL SPECIFICATIONS

MAIN DIMENSIONS (mm and inches)

⇒ GSHP .../V 200 GSHL



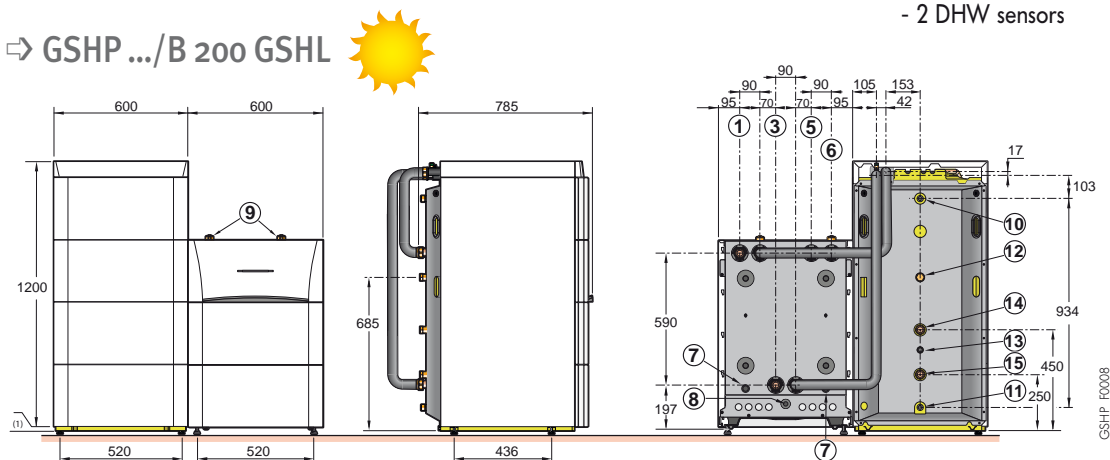
Calorifier 200 GSHL



Stratification solar DHW tank, fitted with:

- a load pump
- a plate exchanger
- a drain cock
- TAS glass-lined tank protection
- 2 DHW sensors

⇒ GSHP .../B 200 GSHL



Key

- | | |
|--|---|
| <ul style="list-style-type: none"> ① Heating flow circuit G 1" ③ Heating return circuit G 1" (comes with 2 isolating valves and a filter) ⑤ Geothermal collection circuit flow G 1" 1/4 (comes with 1 isolating valve fitted with a pressure gauge) ⑥ Geothermal collection circuit return G 1" 1/4 (comes with 2 isolating valves and a filter) ⑦ Safety valves discharge (collection end, heating end) ⑧ Condensates discharge | <ul style="list-style-type: none"> ⑨ Automatic air vents (collection end, heating end) ⑩ DHW outlet G 3/4" ⑪ Domestic cold water inlet G 3/4" ⑫ Recirculating loop return G 3/4" ⑬ Emplacement for solar sensor ⑭ Solar exchanger inlet G 1" ⑮ Solar exchanger outlet G 1" |
|--|---|
- (I) Feet adjustable from 10 to 30 mm

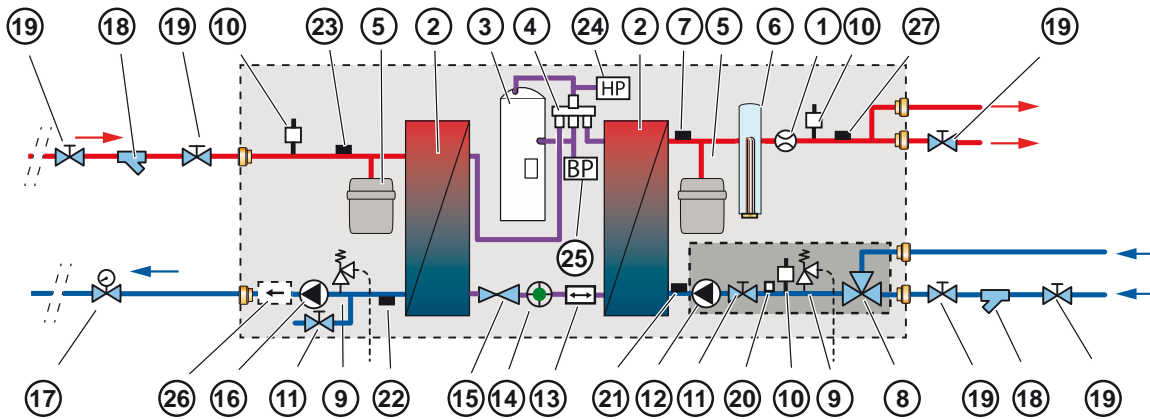
TECHNICAL SPECIFICATIONS

OPERATING PRINCIPLE

The HPs in the GSHP range extract some of the heat found in the ground (or the groundwater) to restore it to the heating circuit (or for domestic hot water production) by means of the refrigerant. The refrigerant circuit is a closed circuit that combines

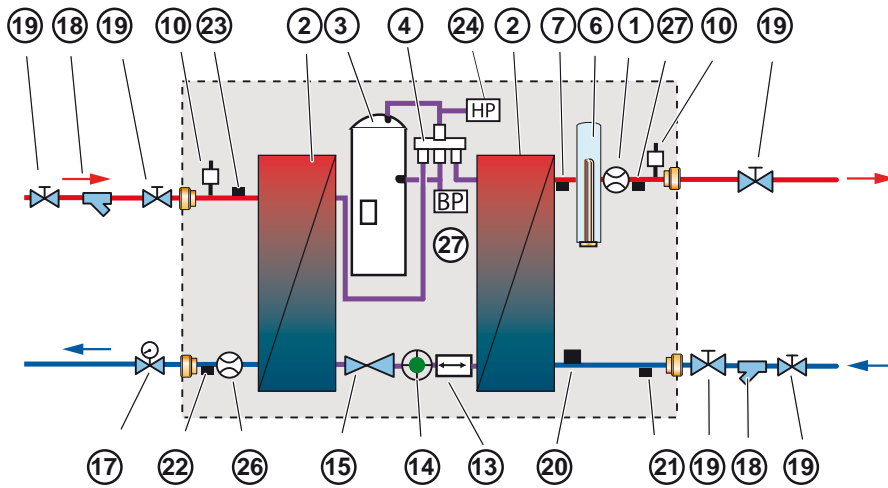
an evaporator, a compressor, a condenser and a pressure release valve. The schematic below can be used to identify the components found in this circuit and those found at the "collection" and "heating" ends.

⇒ GSHP 5, 9, 12, 15



GSHP_f0118

⇒ GSHP 19, 27



GSHP_f0119

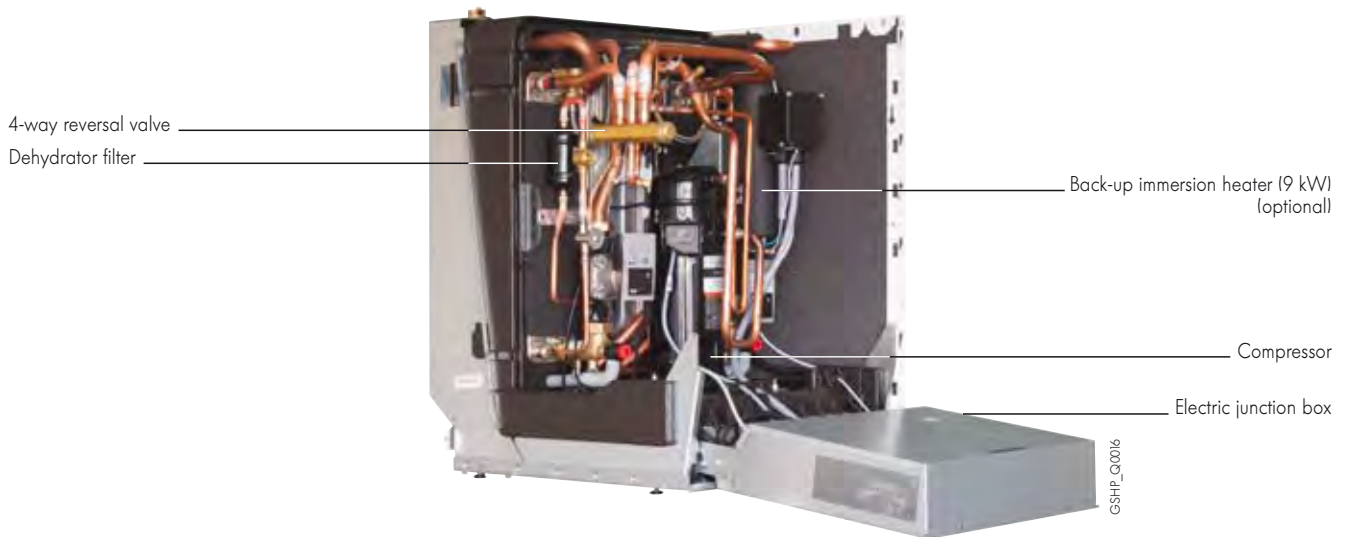
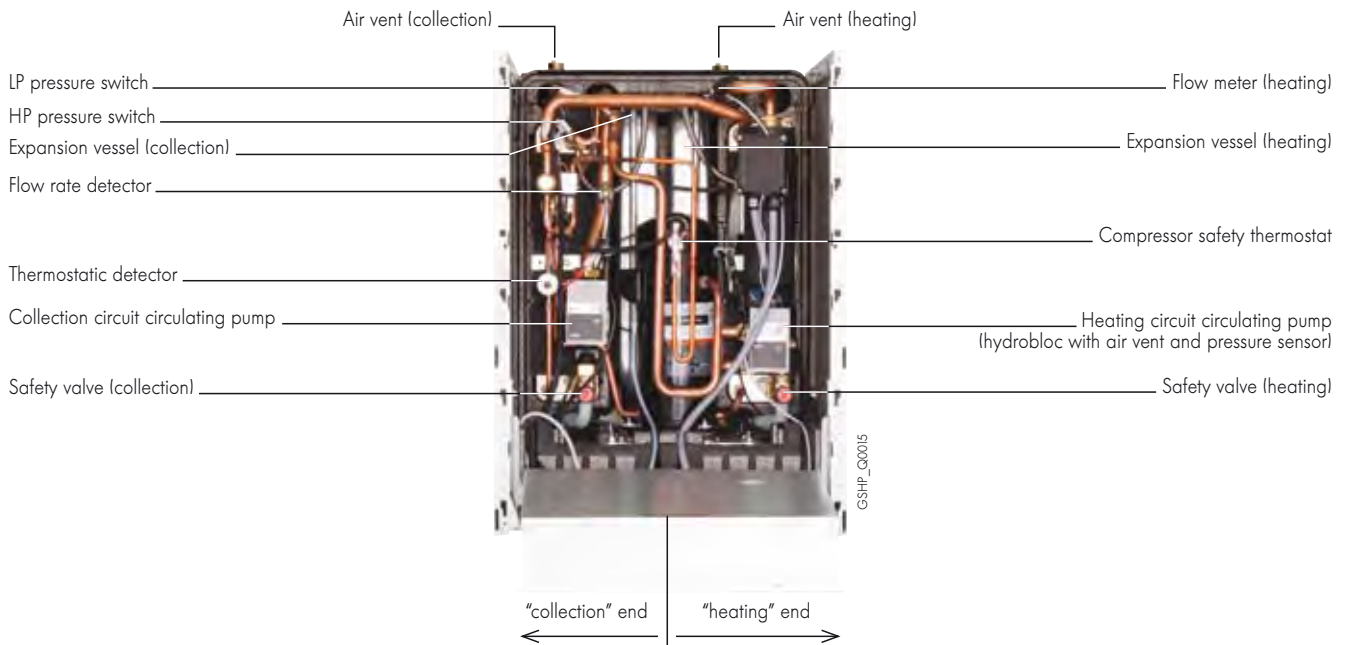
Key

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| ① Flow meter | ⑩ Automatic air vent | ⑲ Isolating valve |
| ② Stainless steel plate exchanger | ⑪ Drain cock | ⑳ Pressure sensor |
| ③ Compressor | ⑫ Heating circuit circulating pump | ㉑ Heating circuit return temperature sensor |
| ④ 4-way cycle reversal valve | ⑬ Dehydrator filter | ㉒ Collection circuit flow temperature sensor |
| ⑤ 10-litre expansion vessel | ⑭ Refrigerant indicator light | ㉓ Collection circuit return temperature sensor |
| ⑥ Back-up immersion heater (option HZ19 or HZ20) | ⑮ Thermostatic pressure release valve | ㉔ HP pressure switch |
| ⑦ Heating circuit flow sensor | ⑯ Collection circuit circulating pump | ㉕ LP pressure switch |
| ⑧ Reversal valve (heating/DHW) | ⑰ Valve with pressure gauge | ㉖ Flow rate detector |
| ⑨ Safety valve | ⑱ Filter | ㉗ Heater outlet sensor |

TECHNICAL SPECIFICATIONS

DESCRIPTION

Front view of the GSHP 5, 9, 12 and 15 (fascia and insulating cover removed, electric junction box tilted)



Noise insulation on the GSHP 5, 9, 12 and 15



TECHNICAL SPECIFICATIONS

TECHNICAL SPECIFICATIONS

⇒ Heat pump

Conditions of use: use limit temperatures

In heating mode:

Water: +7°C / +80°C

Collection (source): -15°C / +35°C

In cooling mode:

Water: +7°C / 25°C

Collection (source): -15°C / +35°C

Max. heating circuit operating pressure:

3 bar

Max. collection circuit operating pressure:

3 bar

Models		GSHP...		5 MR-E	5 TR-E	9 MR-E	9 TR-E	12 MR-E	12 TR-E	15 TR-E	19 TR	27 TR
		GSHP.../V 200 and B 200 GHL	GSHP.../V 200 and B 200 GSHL									
Heat capacity (1)	kW	5.70	5.70	9.88	9.88	12.66	12.66	17.09	20.40	27.99	-	-
COP (1)		4.38	4.38	4.39	4.39	4.35	4.35	4.50	4.28	4.10	-	-
Absorbed electrical power (1)	kWe	1.30	1.30	2.25	2.25	2.91	2.91	3.80	4.76	6.83	-	-
Heat capacity (2)	kW	5.39	5.39	9.41	9.41	12.21	12.21	16.35	20.05	26.82	-	-
COP (2)		3.31	3.31	3.43	3.43	3.42	3.42	3.53	3.43	3.28	-	-
Absorbed electrical power (2)	kWe	1.63	1.63	2.74	2.74	3.57	3.57	4.63	5.84	8.17	-	-
Heat capacity (3)	kW	7.42	7.42	12.95	12.95	16.58	16.58	22.27	28.11	35.25	-	-
COP (3)		5.64	5.64	5.52	5.52	5.30	5.30	5.38	5.14	4.71	-	-
Absorbed electrical power (3)	kWe	1.31	1.31	2.34	2.34	3.13	3.13	4.14	5.47	7.49	-	-
Heat capacity (4)	kW	7.01	7.01	12.51	12.51	15.94	15.94	21.44	26.95	34.40	-	-
COP (4)		4.25	4.25	4.37	4.37	4.20	4.20	4.27	4.12	3.90	-	-
Absorbed electrical power (4)	kWe	1.65	1.65	2.86	2.86	3.80	3.80	5.02	6.54	8.83	-	-
Refrigerant power (water at 18°C / 23°C)	kW	7.23	7.23	8.9	8.9	15.91	15.91	21.22	25.28	30.84	-	-
EER (water at 18°C / 23°C)		4.77	4.77	3.57	3.57	4.91	4.91	4.67	4.47	4.46	-	-
Absorbed electrical power (water at 18°C / 23°C)	kWe	1.52	1.52	2.42	2.42	3.24	3.24	4.54	5.66	6.92	-	-
Refrigerant power (water at 7°C / 12°C)	kW	5.21	5.21	12.1	12.1	11.6	11.6	16.28	18.98	24.42	-	-
EER (water at 7°C / 12°C)		3.56	3.56	4.74	4.74	3.68	3.68	3.96	3.67	3.76	-	-
Absorbed electrical power (water at 7°C / 12°C)	kWe	1.46	1.46	2.51	2.51	3.16	3.16	4.11	5.17	6.5	-	-
* Seasonal space heating energy efficiency (5)	%	136	136	140	140	140	140	145	140	134	-	-
* Seasonal space heating energy efficiency (with outdoor sensor) (6)	%	138	138	142	142	142	142	147	142	136	-	-
Supply voltage	V	230 V mono	400V tri	230 V mono	400V tri	230 V mono	400V tri	400V tri	400V tri	400V tri	400V tri	400V tri
Ampere rating	A	12.8	4.8	22.8	7.4	27.9	9.7	13	15.3	21.6	-	-
Start-up amperage	A	<30	<30	<30	<30	<30	<30	<30	<30	<30	-	-
Acoustic power	dB(A)	49	49	53	53	52	52	51	53	50	-	-
Refrigerant R 410A	kg	1.50	1.50	1.70	1.70	1.80	1.80	2.50	2.54	3.18	-	-
Weight empty	kg	127	127	143	143	143	143	161	148	162	-	-

(1) Performances in accordance with NF EN 14511-2 running on glycol water (30%) / water: 0°C - -3°C / 30°C - 35°C

(2) Performances in accordance with NF EN 14511-2 running on glycol water (30%) / water: 0°C - -3°C / 40°C - 45°C

(3) Performances in accordance with NF EN 14511-2: 10°C - 7°C / 30°C - 35°C

(4) Performances in accordance with NF EN 14511-2: 10°C - 7°C / 40°C - 45°C

(5) According to commission regulation (EU) n° 813/2013

(6) According to commission regulation (EU) n° 811/2013

* Under average temperature for a HP operating with glycol water - water

⇒ Domestic hot water production

Models		GSHP.../V 200 and B 200 GHL	5 MR-E	5 TR-E	9 MR-E	9 TR-E	12 MR-E	12 TR-E	15 TR-E
Draw-off cycle (1)			L	L	L	L	L	L	L
Water heating energy efficiency (2)	%		115	115	115	115	115	115	115
Nominal capacity of the DHW tank	L		194	194	194	194	194	194	194
Max. volume of hot water usable (Vmax)	L		270	270	270	270	270	270	270
Warming-up time (th)	h		2h 10	2h 10	1h 05	1h 05	0h 55	0h 55	0h 50
Absorbed power in stabilised running (Pes)	W		38	38	38	38	38	38	38
COP DHW (1)			2.7	2.7	2.7	2.7	2.7	2.7	2.6
Gross weights ...V 200 GHL/...B 200 GHL	kg		243/246	243/246	259/262	259/262	261/264	261/264	276/279

(1) In accordance with NF EN 16147

Models		GSHP.../V 200 and B 200 GSHL	5 MR-E	5 TR-E	9 MR-E	9 TR-E	12 MR-E	12 TR-E	15 TR-E
Capacity of the DHW tank	L		187	187	187	187	187	187	187
Water heating energy efficiency (2)	%		115	115	115	115	115	115	115
Solar volume/Back-up volume	L		73/114	73/114	73/114	73/114	73/114	73/114	73/114

(2) According to commission regulation (EU) n° 811/2013

TECHNICAL SPECIFICATIONS

ENERGY LABELLING

Each GSHP comes with its energy label, which integrates information like: energy efficiency, annual energy consumption, manufacturer's name, noise level...

By combining your GSHP with a solar system, a DHW buffer tank, a control system or another generator, you can improve the

performance of your installation and generate a corresponding "system" label:

go to our website

"www.ecodesign.dedietrich-heating.com"

RECOMMENDED GSHP 5 TO 15 / DHW TANK COMBINATIONS

	Capacity (l)	Surface area coil exchange (m ²)	Qpr (kWh/24 h)	GSHP 5MR/TR	GSHP 9MR/TR	GSHP 12MR/TR	GSHP 15 TR	GSHP 19 TR	GSHP 27 TR
BPB 150	150	0.84	1.1	●	●	○	○	○	○
BPB 200	200	1.20	1.3	●	●	●	○	○	○
BPB 300	300	1.70	1.6	●	●	●	○	○	○
BPB 400	400	2.20	2.0	●	●	●	●	○	○
BPB 500	500	3.10	2.2	●	●	●	●	●	●
BEPC 300	300	2.5	2.2	●	●	●	●	●	●

● Combination recommended ○ Combination not recommended

NOMINAL FLOW RATES, COLLECTION END AND HEATING END

	GSHP 5				GSHP 9			
	glycol water		water		glycol water		water	
Return/Flow, collection end (°C)	0/-3	0/-3	10/7	10/7	0/-3	0/-3	10/7	10/7
Return/Flow, heating end (°C)	30/35	40/45	30/35	40/45	30/35	40/45	30/35	40/45
Nominal flow rate, collection circuit (m ³ /h)	1.4	1.2	1.8	1.5	2.4	2.1	3.0	2.8
ΔT collection circuit (K)	3	3	3	3	3	3	3	3
Nominal flow rate, heating circuit (m ³ /h)	1.0	0.9	1.3	1.2	1.7	1.6	2.2	2.2
ΔT heating circuit (K)	5	5	5	5	5	5	5	5

	GSHP 12				GSHP 15			
	glycol water		water		glycol water		water	
Return/Flow, collection end (°C)	0/-3	0/-3	10/7	10/7	0/-3	0/-3	10/7	10/7
Return/Flow, heating end (°C)	30/35	40/45	30/35	40/45	30/35	40/45	30/35	40/45
Nominal flow rate, collection circuit (m ³ /h)	3.1	2.7	3.9	3.5	4.2	3.7	5.2	4.7
ΔT collection circuit (K)	3	3	3	3	3	3	3	3
Nominal flow rate, heating circuit (m ³ /h)	2.2	2.1	2.9	2.8	3.0	2.8	3.9	3.7
ΔT heating circuit (K)	5	5	5	5	5	5	5	5

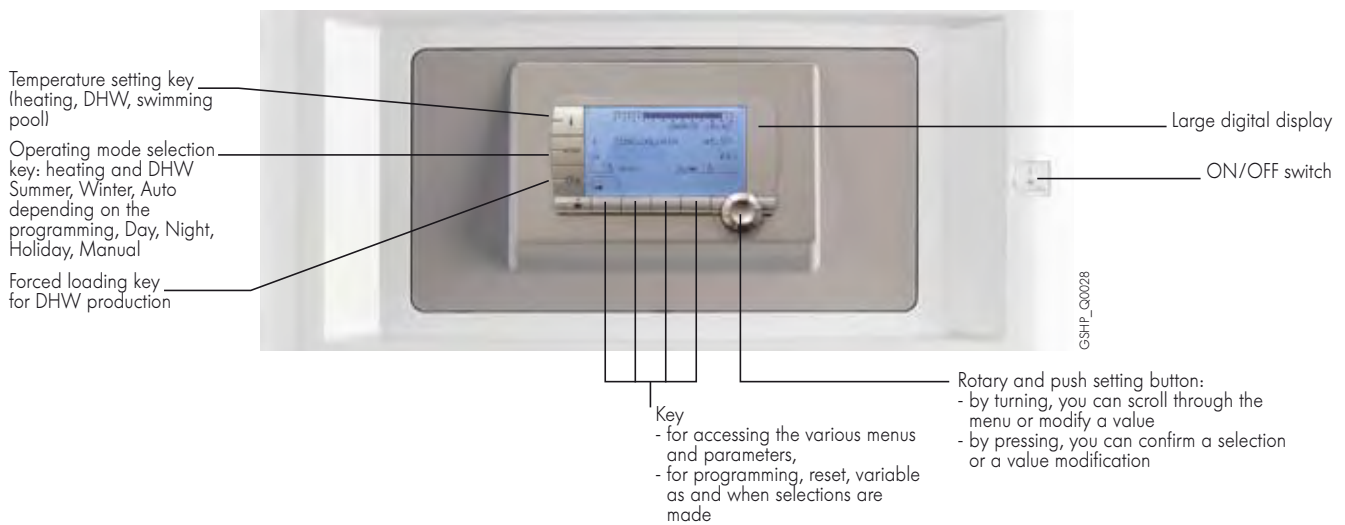
	GSHP 19				GSHP 27			
	glycol water		water		glycol water		water	
Return/Flow, collection end (°C)	0/-3	0/-3	10/7	10/7	0/-3	0/-3	10/7	10/7
Return/Flow, heating end (°C)	30/35	40/45	30/35	40/45	30/35	40/45	30/35	40/45
Nominal flow rate, collection circuit (m ³ /h)	5.0	4.5	6.5	5.9	6.7	5.9	8.0	7.3
Loss of pressure, collection circuit (mbar)	349.9	293.4	577.6	475.6	485.0	384.7	665.3	570.6
ΔT collection circuit (K)	3	3	3	3	3	3	3	3
Nominal flow rate, heating circuit (m ³ /h)	3.5	3.5	4.9	4.7	4.8	4.7	6.1	6.0
Loss of pressure, heating end (mbar)	231.1	225.4	422.5	392.9	315.6	292.8	492.7	473.3
ΔT heating circuit (K)	5	5	5	5	5	5	5	5

CONTROL PANEL

The **DIEMATIC iSystem control panel** is a highly advanced control panel with new command ergonomics, incorporating as standard a programmable electronic control system that manages both refrigerant module operation and heating operation. It modulates the heating water temperature according to the outside temperature and can also modulate the room temperature if a CDI D. iSystem, CDR D. iSystem or simplified interactive remote control (available as options) is connected. As standard, DIEMATIC iSystem is capable of automatically running a central heating system with a direct circuit without mixing valve and a circuit with mixing valve (but the flow sensor - package AD199 - must be ordered separately).

By connecting yet another “PCB + sensor for 1 valve circuit” option (package AD249), it becomes possible to control a total of up to 3 circuits and each of those circuits can be fitted with a CDI or CDR D. iSystem remote control (optional).

This control system has been developed specifically to allow the **optimum management of systems that combine various heating generators** (heat pump + solar system or boiler...). It enables the installer to set the parameters for the entire heating system, irrespective of its degree of complexity. In the context of more extensive systems, it is also possible to connect 2, and up to 10 GSHPs, in cascade, which can run in cooling mode with or without a buffer tank. The connection of extra additional circuits is also possible through the DIEMATIC VM iSystem control system.



DIEMATIC iSystem CONTROL PANEL OPTIONS



Domestic hot water sensor - Package AD212

This is used for the priority regulation of the temperature and the programming of domestic hot water production by a buffer tank. 2 sensors come

as standard with the DHW tanks. 200 GHL and 200 GSHL.



Flow sensor after valve - Package AD199

This sensor is needed to connect the first circuit with mixing valve to the GSHP.



PCB + sensor for 1 mixing valve - Package AD249

This is used to command a mixing valve with electromechanical or electrothermal motor. The board is inserted in the DIEMATIC iSystem control panel and is connected by plug-in connectors.

DIEMATIC iSystem can accommodate one “PCB + sensor” option, enabling it to command one additional mixing valve.



Buffer tank sensor - Package AD250

This sensor is used to fit the 200 GT buffer tank with a second sensor in order to optimise the water temperature in the tank.

OPTIONS

DIEMATIC iSystem CONTROL PANEL OPTIONS

AD284/285



CALENTA_Q0005

AD252



8666Q172A

CDI D. iSystem interactive remote control - Package AD285

CDR D. iSystem interactive "radio" remote control (without transmitter/receiver radio) - Package AD284

Radio boiler module DIEMATIC iSystem (transmitter / receiver) - Package AD252

These are used to override all instructions from the DIEMATIC iSystem control panel from the room in which they are installed. In addition, they enable the self-adaptability of the heating regime for the circuit concerned (one CDI D. iSystem or CDR D. iSystem per circuit).

In the case of the CDR D. iSystem, the data are transmitted by radio waves from the place where the CDR D. iSystem is installed to the transmitter/receiver box (package AD252) placed close to the boiler.



8575Q037

Remote control with room sensor - Package FM52

This is used from the room in which it is installed to override certain instructions from the DIEMATIC iSystem panel:

- room temperature program and instruction override. It is also used to enable the selfadaptability of the heating curve for the circuit concerned (1 remote control per circuit).



8227Q020

BUS connection cable (length 12 m) - Package AD134

The BUS cable is used to make the connection between 2 HP GSHP fitted with the DIEMATIC iSystem control panel in a cascade installation,

as well as the connection of a DIEMATIC VM control unit or a telemonitoring network transmitter.

AD251



8575Q034

AD252



8666Q172A

Radio outside temperature sensor - Package AD251

Boiler radio module (radio transmitter) - Package AD252

The radio outside temperature sensor can be delivered as optional equipment for systems in which the installation of the external wire connection sensor delivered with DIEMATIC iSystem control panel would be too complex. If this sensor is used:

- With a wire connection remote control (AD285 or FM52), it is necessary to order the "Boiler radio module".
- With a radio remote control (AD284), already combined with a "boiler radio module" (AD252), control of a second module is not necessary.

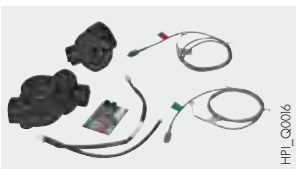


HPL_Q0017

Sensor kit for underfloor heating / cooling - Package HK27

Sensor that measures the hygrometry level. It must be fitted to the underfloor heating / cooling flow. In "cooling mode" mode, it is used to disable

the HP when the hygrometry level is too high to prevent the appearance of condensation.



HPL_Q0016

Energy counting - Package HK29

This kit comprises an electronic PCB and 2 temperature sensors which, once installed, can meter energy use.

The PCB must be mounted in an additional pulse meter (not delivered).



GSHP_Q0012

Safety thermostat wiring kit - Package HZ29

OPTIONS



Reversal valve (heating / DHW) for GSHP 19/27 TR - Package HZ17

This kit includes a motorised reversal valve and a DHW sensor. It is used to connect the GSHP 19/27 TR to an independent DHW tank for DHW production.

GSHP_Q0010



Strainer + isolating valve - Package EH61

This filter is used to protect the plate exchangers in the HP against impurities.

PAC_Q0009B



Insulation kit for cooling mode - Package ER581

GSHP_Q0005



Electrical back-up kit

- 9 kW for GSHP 5, 9, 12, 15: Package HZ20
- 9 kW for GSHP 19, 27: Package HZ19

GSHP_Q0008



Barrage exchanger

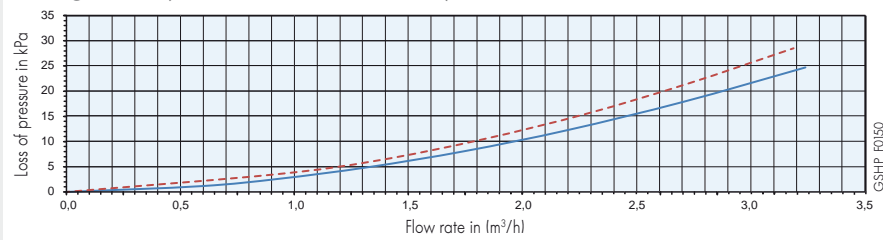
- for GSHP 5 and 9 MR/TR: HZ24
- for GSHP 12 MR/TR and 15 TR: HZ26
- for GSHP 19 and 27 TR: HZ28

The barrage exchangers are intended for groundwater installations to protect the evaporator in the heat pump from corrosive, scaling or

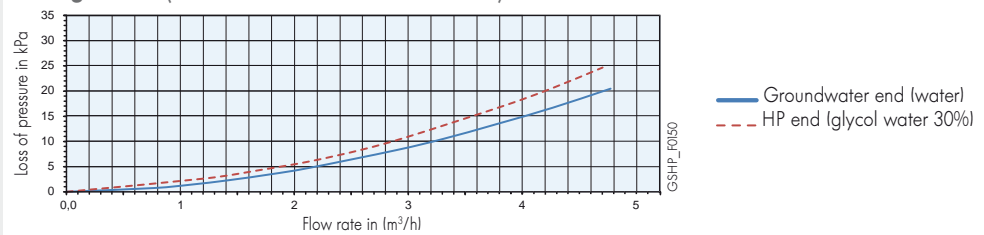
charged water and guarantee that the GSHP runs correctly.

GSHP_F0102

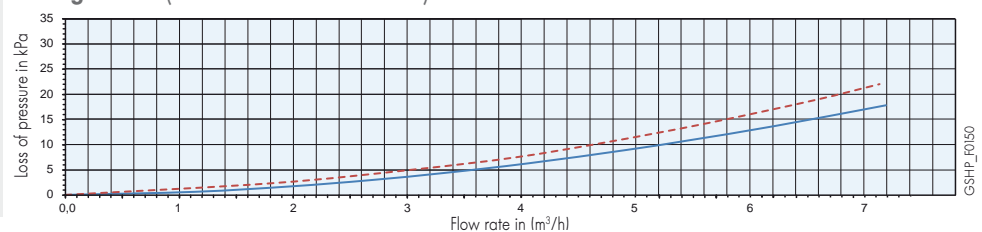
Loss of pressure in the barrage exchangers Package HZ24 (with GSHP 5 and 9 MR/TR)



Package HZ26 (with GSHP 12 MR/TR and 15 TR)



Package HZ28 (with GSHP 19 and 27 TR)



OPTIONS

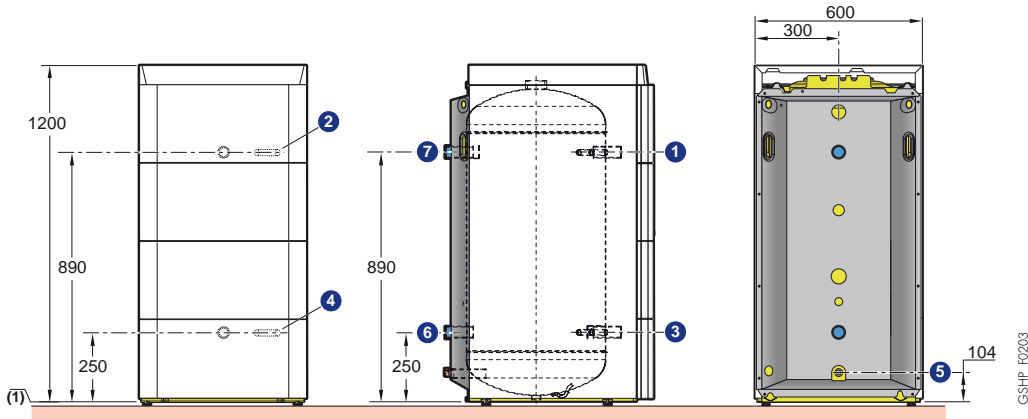


AGC_Q0035

200 GT buffer tank - Package ER602

The buffer tank is intended to increase the volume of water in an installation in order to limit short-cycle running of the compressor. The greater the volume, the more the number of compressor start-ups will be reduced and the longer its lifespan. The tank comes with a temperature sensor.

A second temperature sensor (option AD250) can be installed to optimise management of the water volume.

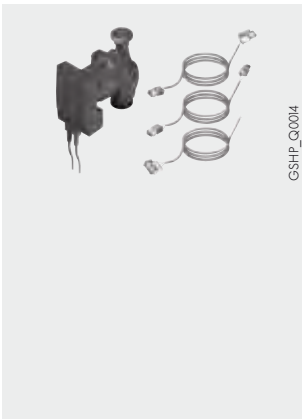


GSHP_F0203

GSHP_Q0021

Key

- ① Flow to the heating circuit
 - ② Top position for temperature sensor (provided)
 - ③ Heating circuit return
 - ④ Bottom position for temperature sensor
 - ⑤ Draining and filling opening
 - ⑥ "Return" from the GSHP heat pump
 - ⑦ "Flow" from the GSHP heat pump
- (tank delivered with a 1/4" air vent valve and a 1/2" drain cock)
- (I) Feet adjustable from 10 to 30 mm

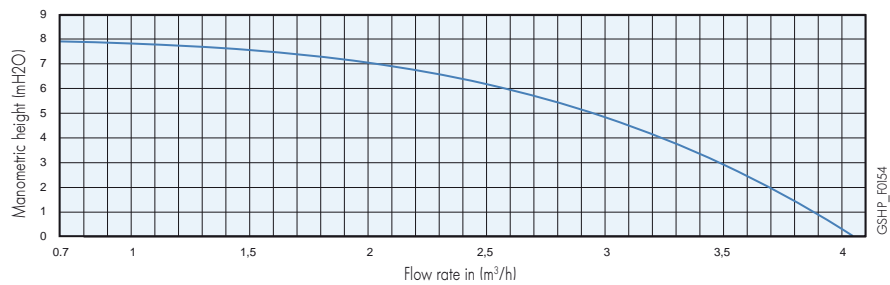


GSHP_Q0014

WILO PARA 25/1-8 pump for GSHP 19 - Package HZ63

External pump which can be installed at the primary and secondary end of the GSHP 19 TR.

Specification of the pump WILO PARA 25/1-8

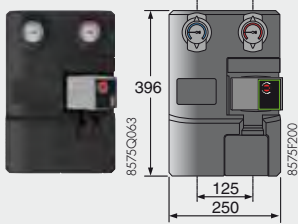


GSHP_F0154

OPTIONS

HYDRAULIC ACCESSORIES

EA143

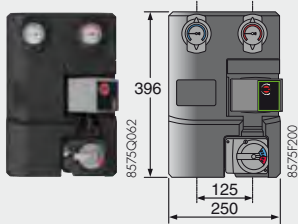


Hydraulic module for 1 direct circuit - Package EA143 (with a high energy efficiency pump $EEl < 0.23$)

This module is fully assembled, insulated and tested, fitted with an high performance energy pump, a differential safety valve, thermometers built into the

gate valves and a non return valve built into the outlet valve.

EA144



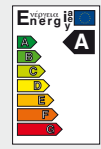
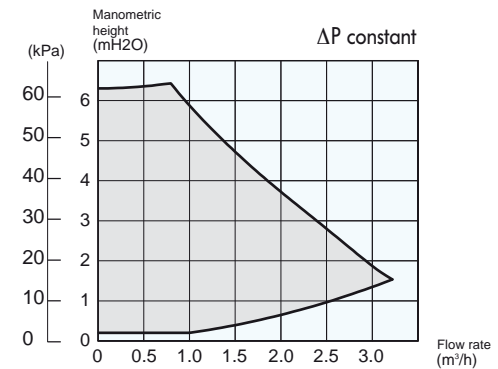
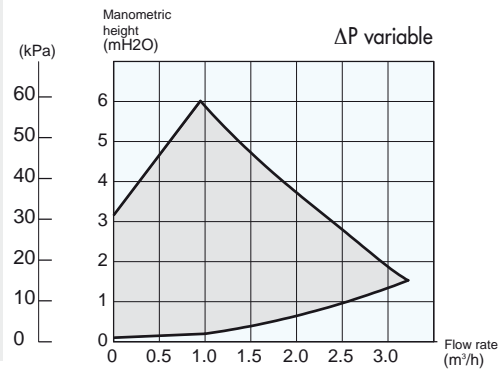
Hydraulic module for 1 circuit with mixing valve - Package EA144

(with a high energy efficiency pump) $EEl < 0.23$)

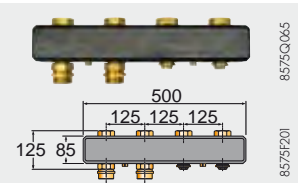
This module is fully assembled, insulated and tested, fitted with an high performance energy pump, a motorized 3-way mixing valve, a differential safety

valve, thermometers built into the gate valves and a non return valve built into the outlet valve.

Technical specifications of the pump WILO-YONOS PARA RS 25/6 fitted to the hydraulic modules EA143 and EA144



Picto_ENERGIE_A-A



Collector for 2 or 3 circuits - Package EA140

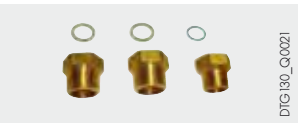
With an installation with 2 or 3 circuits and modules EA143/144.



Wall-hung console for a hydraulic module - Package EA142

This console is used to fix a hydraulic module for direct circuit or circuit with valve to the wall. Is used when one of the two hydraulic modules

is mounted on its own. It incorporates two brass male/female connectors.



Set connection G in R (1" and 3/4") - Package BH84

This kit includes 2 G 1 - R 1 fittings and G 3/4-R 3/4 fitting with gaskets and can be used

to switch from flat gasket fittings to conical fittings (water tightness in the threading).



2 wall bracket for collector - Package EA141

This console is used to fix the collector EA140 on the wall.

OPTIONS

HYDRAULIC ACCESSORIES



Kit to connect the 200 GT buffer tank to a heating circuit with mixing valve - Package ER604
(this kit can only be used in combination with the 200 GT buffer tank)

This kit contains the heating pump, the 3-way mixing valve and the flow sensor. The kit is fitted to the 200 GT buffer tank (package ER602) and,

from there, enables the connection of a circuit with mixing valve.

200 GT buffer tank equipped with ER604 and ER605 kits



Kit for connecting the 200 GT buffer tank to a direct circuit - Package ER605
(this kit can only be used in combination with the 200 GT buffer tank)

This kit contains the heating pump and is fitted to the 200 GT buffer tank (package ER602). It enables connection to a direct circuit.



Kit to connect the HP to an external circuit - Package ER606

This kit comprises the connections to be installed in the HP, which enable connection of one or more external circuits.



Kit for connecting the GSHP 5 to 15 to the juxtaposed 200 GT buffer tank - Package ER611



Kit for connecting the GSHP 5 to 15 to the column configuration of the 200 GT buffer tank - Package ER610

HYDRAULICS ACCESSORIES

List of packages required according to the type of installation to realize

		Installation with 200 GT buffer tank (without DHW)	
		GSHP 5 to 15	
1 direct circuit		or	
Necessary regulation options	—		—
1 circuit with mixing valve		or	
Necessary regulation options	Flow sensor included in the package ER604		Flow sensor included in the package ER604
1 direct circuit + 1 circuit with mixing valve		or	
Necessary regulation options	Flow sensor included in the package ER604		Flow sensor included in the package ER604
2 circuits with mixing valve		or	
Necessary regulation options	AD199 + AD249		AD199 + AD249
3 circuits, 2 of them with mixing valve		or	
Necessary regulation options	AD199 + AD249		AD199 + AD249

HYDRAULICS ACCESSORIES

List of packages required according to the type of installation to realize

Installation with 200 GT buffer tank (with DHW)		
GSHP 5 to 15/V 200... (calorifier positioned under the HP)	GSHP 5 to 15/B 200... (calorifier positioned to the right or to the left of the HP)	
-	-	-
Flow sensor included in the package ER604	Flow sensor included in the package ER604	Flow sensor included in the package ER604
Flow sensor included in the package ER604	Flow sensor included in the package ER604	Flow sensor included in the package ER604
AD199 + AD249	AD199 + AD249	AD199 + AD249
AD199 + AD249	AD199 + AD249	AD199 + AD249

INFORMATION REQUIRED FOR INSTALLATION OF A HP

IZING GSHP HPS: GENERAL

Ground / water and Water / Water heat pumps can cover all of a home's heating needs. It is important to size the HP as accurately as possible. For reasons of cost or available land surface area, you may have to slightly undersize the HP and plan for an additional back-up.

For optimum sizing, we recommend that you observe the following rules (QualiPAC recommendations):

- 80% of losses ≤ HP output ≤ 120% of losses
- HP output + Back-up output = 120% of losses

Table used to select models in the GSHP range with glycol water

Heat losses in [kW] with Tbasis	5	6	7	8	9	10	11	12	13	14	15	17	20
HP GSHP	9 MR 9 TR	9 MR 9 TR	9 MR 9 TR	9 MR +3 9 TR +3	12 MR 12 TR	12 MR 12 TR	12 MR +3 12 TR +3	15 TR	15 TR	15 TR	19 TR	19 TR	27 TR
	or 5 MR +3 5 TR +3	or 5 MR +3 5 TR +3	or 5 MR +3 5 TR +3		or 9 MR +3 9 TR +3	or 9 MR +3 9 TR +3	or 9 MR +6 9 TR +6	or 12 MR +3 12 TR +3	or 12 MR +3 12 TR +3	or 12 MR +6 12 TR +6	or 12 MR +6 12 TR +6	or 15 TR +6	or 15 TR +9
Heat losses in [kW] with Tbasis	21	22	23	24	25	26	27	28	29	30			
HP GSHP	27 TR	27 TR	27 TR +3	27 TR +3	27 TR +3	27 TR +6	27 TR +6	27 TR +9	27 TR +9	27 TR +9			
	or 19 TR +6	or 19 TR +6	or 19 TR +9	or 19 TR +9									

Table used to select models in the GSHP range with groundwater

Heat losses in [kW] with Tbasis	5	6	7	8	9	10	11	12	13	14	15	17	20	21	22	
HP GSHP	5 MR 5 TR	5 MR 5 TR	9 MR 9 TR	9 MR 9 TR	9 MR 9 TR	9 MR 9 TR	9 MR +3 9 TR +3	12 MR 12 TR	12 MR 12 TR	12 MR +3 12 TR +3	12 MR +3 12 TR +3	15 TR	19 TR	19 TR	19 TR	
			or 5 MR +3 5 TR +3	or 5 MR +3 5 TR +3	or 5 MR +6 5 TR +6			or 9 MR +6 9 TR +6	or 9 MR +3 9 TR +3	or 9 MR +3 9 TR +3	or 9 MR +6 9 TR +6	or 9 MR +6 9 TR +6	or 12 MR +6 12 TR +6	or 15 TR +3	or 15 TR +6	or 15 TR +6
Heat losses in [kW] with Tbasis	23	24	25	26	27	28	29	30	31	32	33	34	35	36		
HP GSHP	19 TR +3	19 TR +3	19 TR +3	27 TR	27 TR	27 TR	27 TR	27 TR +3	27 TR +3	27 TR +6	27 TR +6	27 TR +9	27 TR +9	27 TR +9	27 TR +9	
	or 15 TR +6	or 15 TR +9	or 15 TR +9	or 19 TR +6	or 19 TR +6	or 19 TR +9	or 19 TR +9									

Comments:

- the losses must be precisely calculated without oversizing coefficient

- (+3), (+6) or (+9) corresponds to the minimum electrical or hydraulic back-up required in kW.

INFORMATION REQUIRED FOR INSTALLATION OF A HP

IZING UNDERGROUND VERTICAL COLLECTORS (U-SHAPED PIPE)

Sizing must be rigorously established.

Any undersizing will impair performance and draw-off output over time.

Sizing of the collector is done in heating mode, based on a ground draw-off output that depends on its nature (see the NF X 10-970 standard).

The sizing and installation of the vertical probe is the **responsibility of the driller** who may be able to correct the ratios given below, depending on the exact nature of the land.

Type of land	Specific output extracted in W/m	
	For 1800 h per annum	For 2400 h per annum
Approximate general values		
Poor subsoils (dry sediments)	25	20
Normally rocky subsoils, sediments saturated with water	60	50
Consolidated rock with high thermal conductivity	84	70
Specific rocks		
Gravel and dry sand	<25	<20
Gravel and sand saturated with water	65 to 80	55 to 65
Wet clay	35 to 80	30 to 40
Massive limestone	55 to 70	45 to 60
Sandstone	65 to 80	55 to 65
Granite	65 to 85	55 to 70
Basalt	40 to 65	35 to 55
Gneiss	70 to 85	60 to 70

IZING UNDERGROUND HORIZONTAL COLLECTORS

The tables on the next page give the lengths, surface areas and capacities of the underground collectors according to pipe diameter, spacing and the nature of the ground. They also show the approximate capacity of the installation, the diameter of the connection circuit between the collector and the HP, and the nominal flow rate of the pump.

The orders of magnitude of the draw-off output according to ground type are:

Dry sand: 15 W/m²

Wet sand: 20 W/m²

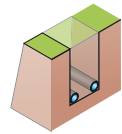
Dry clay: 25 W/m²

Wet clay: 30 W/m²

Clay saturated with water: 40 W/m²

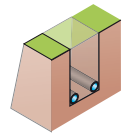
INFORMATION REQUIRED FOR INSTALLATION OF A HP

Sizing horizontal collectors laid under stripped topsoil (at 30°C - 35°C)



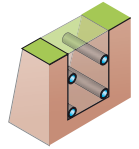
HP model	Heating output in kW at 30°C / 35°C	COP at 30°C / 35°C	Draw-off output in kW	Ground type	Underground collectors in PE 20 with spacing of 40 cm				Underground collectors in PE 25 with spacing of 60 cm				Pipe diameter between collector and HP (L max 20 m)	Nominal flow rate in m³/h
					Length in m	Surface area in m²	Pipe capacity	Approximate capacity of the system in L	Length in m	Surface area in m²	Volume	Approximate capacity of the system in L		
GSHP 5 MR GSHP 5 TR	5.7	4.38	4.40	Dry sand	800	320	160.8	190	500	300	163.5	190	PE 32	1.4
				Wet sand	600	240	120.6	150	400	240	130.8	160		
				Dry clay	500	200	100.5	130	300	180	98.1	120		
				Wet clay	400	160	80.4	110	300	180	98.1	120		
				Clay saturated with water	300	120	60.3	90	200	120	65.4	90		
GSHP 9 MR GSHP 9 TR	9.88	4.39	7.63	Dry sand	1300	520	261.3	310	900	540	294.3	340	PE 40	2.4
				Wet sand	1000	400	201	250	700	420	228.9	270		
				Dry clay	800	320	160.8	210	600	360	196.2	240		
				Wet clay	700	280	140.7	190	500	300	163.5	210		
				Clay saturated with water	500	200	100.5	140	400	240	130.8	180		
GSHP 12 MR GSHP 12 TR	12.66	4.35	9.75	Dry sand	1700	680	341.7	390	1100	660	359.7	400	PE 40	3.1
				Wet sand	1300	520	261.3	310	900	540	294.3	340		
				Dry clay	1000	400	201	250	700	420	228.9	270		
				Wet clay	900	360	180.9	230	600	360	196.2	240		
				Clay saturated with water	700	280	140.7	190	500	300	163.5	210		
GSHP 15 TR	17.09	4.50	13.29	Dry sand	2300	920	462.3	530	1500	900	490.5	560	PE 50	4.2
				Wet sand	1700	680	341.7	410	1200	720	392.4	460		
				Dry clay	1400	560	281.4	350	900	540	294.3	360		
				Wet clay	1200	480	241.2	310	800	480	261.6	330		
				Clay saturated with water	900	360	180.9	250	600	360	196.2	260		
GSHP 19 TR	20.4	4.28	15.63	Dry sand	2700	1080	542.7	610	1800	1080	588.6	660	PE 50	5
				Wet sand	2000	800	402	470	1400	840	457.8	530		
				Dry clay	1600	640	321.6	390	1100	660	359.7	430		
				Wet clay	1400	560	281.4	350	900	540	294.3	360		
				Clay saturated with water	1000	400	201	270	700	420	228.9	300		
GSHP 27 TR	27.99	4.10	21.16	Dry sand	3600	1440	723.6	790	2400	1440	784.8	850	PE 50	6.7
				Wet sand	2700	1080	542.7	610	1800	1080	588.6	660		
				Dry clay	2200	880	442.2	510	1500	900	490.5	560		
				Wet clay	1800	720	361.8	430	1200	720	392.4	460		
				Clay saturated with water	1400	560	281.4	350	900	540	294.3	360		

Sizing horizontal collectors laid under stripped topsoil (at 40°C - 45°C)



HP model	Heating output in kW at 40°C / 45°C	COP at 40°C / 45°C	Draw-off output in kW	Ground type	Underground collectors in PE 20 with spacing of 40 cm				Underground collectors in PE 25 with spacing of 60 cm				Pipe diameter between collector and HP (L max 20 m)	Nominal flow rate in m³/h
					Length in m	Surface area in m²	Pipe capacity	Approximate capacity of the system in L	Length in m	Surface area in m²	Volume	Approximate capacity of the system in L		
GSHP 5 MR GSHP 5 TR	5.39	3.31	3.76	Dry sand	700	280	141	170	500	300	164	190	PE 32	1.2
				Wet sand	500	200	101	130	400	240	131	160		
				Dry clay	400	160	80	110	300	180	98	120		
				Wet clay	400	160	80	110	300	180	98	120		
				Clay saturated with water	300	120	60	90	200	120	65	90		
GSHP 9 MR GSHP 9 TR	9.41	3.43	6.67	Dry sand	1200	480	241	290	800	480	262	310	PE 40	2.1
				Wet sand	900	360	181	230	600	360	196	240		
				Dry clay	700	280	141	190	500	300	164	210		
				Wet clay	600	240	121	160	400	240	131	180		
				Clay saturated with water	500	200	101	140	300	180	98	140		
GSHP 12 MR GSHP 12 TR	12.21	3.42	8.64	Dry sand	1500	600	302	350	1000	600	327	370	PE 40	2.7
				Wet sand	1100	440	221	270	800	480	262	310		
				Dry clay	900	360	181	230	600	360	196	240		
				Wet clay	800	320	161	210	500	300	164	210		
				Clay saturated with water	600	240	121	160	400	240	131	180		
GSHP 15 TR	16.35	3.53	11.72	Dry sand	2000	800	402	470	1400	840	458	530	PE 50	3.7
				Wet sand	1500	600	302	370	1000	600	327	400		
				Dry clay	1200	480	241	310	800	480	262	330		
				Wet clay	1000	400	201	270	700	420	229	300		
				Clay saturated with water	800	320	161	230	500	300	164	230		
GSHP 19 TR	20.05	3.43	14.20	Dry sand	2400	960	482	550	1600	960	523	590	PE 50	4.5
				Wet sand	1800	720	362	430	1200	720	392	460		
				Dry clay	1500	600	302	370	1000	600	327	400		
				Wet clay	1200	480	241	310	800	480	262	330		
				Clay saturated with water	900	360	181	250	600	360	196	260		
GSHP 27 TR	26.82	3.28	18.64	Dry sand	3200	1280	643	710	2100	1260	687	760	PE 50	5.9
				Wet sand	2400	960	482	550	1600	960	523	590		
				Dry clay	1900	760	382	450	1300	780	425	490		
				Wet clay	1600	640	322	390	1100	660	360	430		
				Clay saturated with water	1200	480	241	310	800	480	262	330		

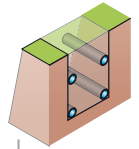
INFORMATION REQUIRED FOR INSTALLATION OF A HP



Sizing horizontal collectors laid in trenches (at 30°C - 35°C)

HP model	Heating output in kW at 30°C / 35°C	COP at 30°C / 35°C	Draw-off output in kW	Ground type	Underground collectors in PE 25 with spacing of 60 cm in 2 layers				Pipe diameter between collector and HP (L max 20 m)	Nominal flow rate in m³/h
					Length in m	Surface area in m²	Volume	Approximate capacity of the system in L		
GSHP 5 MR GSHP 5 TR	5.7	4.38	4.40	Dry sand	1000	300	327	350	PE 32	1.4
				Wet sand	800	240	261.6	290		
				Dry clay	600	180	196.2	220		
				Wet clay	500	150	163.5	190		
				Clay saturated with water	400	120	130.8	160		
GSHP 9 MR GSHP 9 TR	9.88	4.39	7.63	Dry sand	1700	510	555.9	600	PE 40	2.4
				Wet sand	1300	390	425.1	470		
				Dry clay	1100	330	359.7	400		
				Wet clay	900	270	294.3	340		
				Clay saturated with water	700	210	228.9	270		
GSHP 12 MR GSHP 12 TR	12.66	4.35	9.75	Dry sand	2200	660	719.4	760	PE 40	3.1
				Wet sand	1700	510	555.9	600		
				Dry clay	1300	390	425.1	470		
				Wet clay	1100	330	359.7	400		
				Clay saturated with water	900	270	294.3	340		
GSHP 15 TR	17.09	4.50	13.29	Dry sand	3000	900	981	1050	PE 50	4.2
				Wet sand	2300	690	752.1	820		
				Dry clay	1800	540	588.6	660		
				Wet clay	1500	450	490.5	560		
				Clay saturated with water	1200	360	392.4	460		
GSHP 19 TR	20.4	4.28	15.63	Dry sand	3500	1050	1144.5	1210	PE 50	5
				Wet sand	2700	810	882.9	950		
				Dry clay	2100	630	686.7	760		
				Wet clay	1800	540	588.6	660		
				Clay saturated with water	1400	420	457.8	530		
GSHP 27 TR	27.99	4.10	21.16	Dry sand	4800	1440	1569.6	1640	PE 50	6.7
				Wet sand	3600	1080	1177.2	1250		
				Dry clay	2900	870	948.3	1020		
				Wet clay	2400	720	784.8	850		
				Clay saturated with water	1800	540	588.6	660		

Sizing horizontal collectors laid in trenches (at 40°C - 45°C)



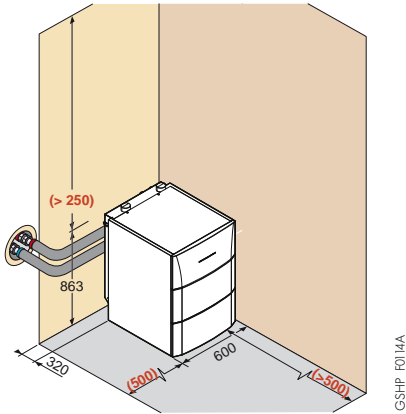
HP model	Heating output in kW at 40°C / 45°C	COP at 40°C / 45°C	Draw-off output in kW	Ground type	Underground collectors in PE 25 with spacing of 60 cm in 2 layers				Pipe diameter between collector and HP (L max 20 m)	Nominal flow rate in m³/h
					Length in m	Surface area in m²	Volume	Approximate capacity of the system in L		
GSHP 5 MR GSHP 5 TR	5.39	3.31	3.76	Dry sand	900	270	294	320	PE 32	1.2
				Wet sand	700	210	229	260		
				Dry clay	600	180	196	220		
				Wet clay	500	150	164	190		
				Clay saturated with water	400	120	131	160		
GSHP 9 MR GSHP 9 TR	9.41	3.43	6.67	Dry sand	1500	450	491	530	PE 40	2.1
				Wet sand	1200	360	392	440		
				Dry clay	900	270	294	340		
				Wet clay	800	240	262	310		
				Clay saturated with water	600	180	196	240		
GSHP 12 MR GSHP 12 TR	12.21	3.42	8.64	Dry sand	2000	600	654	700	PE 40	2.7
				Wet sand	1500	450	491	530		
				Dry clay	1200	360	392	440		
				Wet clay	1000	300	327	370		
				Clay saturated with water	800	240	262	310		
GSHP 15 TR	16.35	3.53	11.72	Dry sand	2700	810	883	950	PE 50	3.7
				Wet sand	2000	600	654	720		
				Dry clay	1600	480	523	590		
				Wet clay	1400	420	458	530		
				Clay saturated with water	1000	300	327	400		
GSHP 19 TR	20.05	3.43	14.20	Dry sand	3200	960	1046	1120	PE 50	4.5
				Wet sand	2400	720	785	850		
				Dry clay	1900	570	621	690		
				Wet clay	1600	480	523	590		
				Clay saturated with water	1200	360	392	460		
GSHP 27 TR	26.82	3.28	18.64	Dry sand	4200	1260	1373	1440	PE 50	5.9
				Wet sand	3200	960	1046	1120		
				Dry clay	2500	750	818	890		
				Wet clay	2100	630	687	760		
				Clay saturated with water	1600	480	523	590		

INFORMATIONS REQUIRED FOR INSTALLATION OF A HP

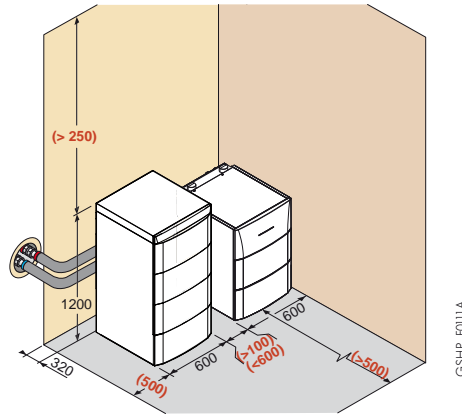
INSTALLING THE GSHP

The sizes given in (red) should be observed to optimise connection, commissioning and maintenance operations on the heat pump.

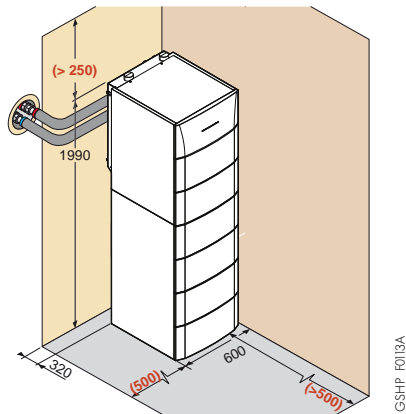
GSHP ...



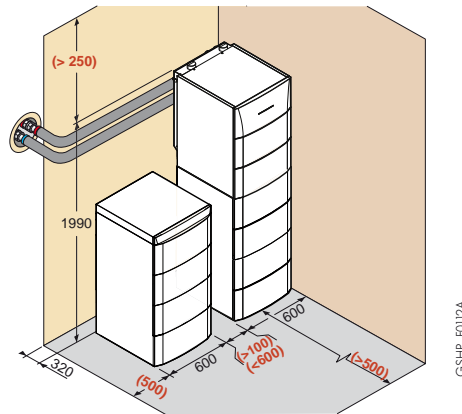
GSHP.../B 200 GHL or GSHL



GSHP.../V 200 GHL or GSHL



GSHP .../V 200 GHL or GSHL (with 200 GT buffer tank)



LAYING UNDERGROUND COLLECTORS

The table opposite gives the minimum distances to be observed between the collector field and any obstacles that may exist in the vicinity (collector sizing, see p. 20/21).

Obstacles	Minimum distances in m
Trees	5
Underground, non-hydraulic networks	1.5
Foundation, well, septic tank, discharge outlets, etc.	3

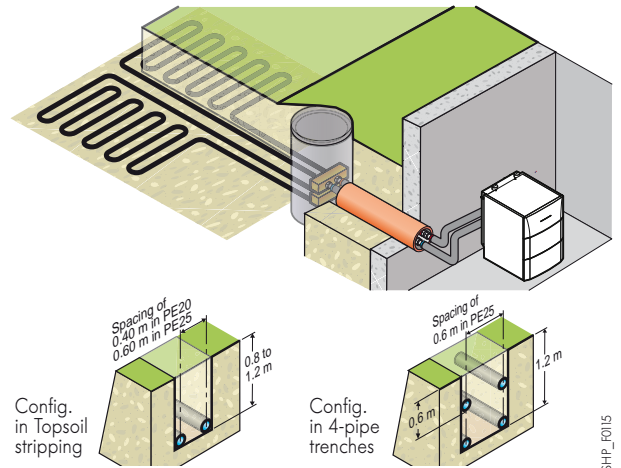
INFORMATIONS REQUIRED FOR INSTALLATION OF A HP

Laying underground horizontal collectors

The underground horizontal collectors can be laid either beneath stripped topsoil in one layer, or in 4-pipe trenches, with collector.

Installation precautions:

- the collectors must be placed in an easy access manhole fitted with a containment tray
- no connections must be made to underground collectors except via the aforementioned collectors
- fit a warning device to delimit the collection zone
- fit a bed of sand if the land fill presents clumps or stones likely to crush the pipes.



GSHP_I015

Laying underground vertical collectors

The underground vertical collectors come in the form of sensors made of double U-shaped pipes in polyethylene PE 25, 32 or 40.

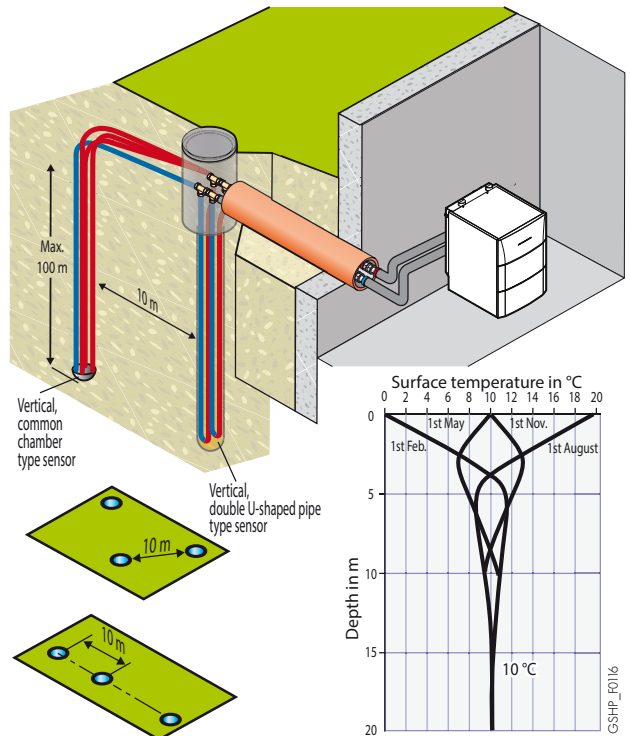
The installation of these sensors must always be done by a drilling professional duly trained in such techniques.

Installation precautions:

- install the collectors in an easy access manhole fitted with a containment tray
- check that the static pressure at the bottom part of the sensor falls within the limits of use of the pipes
- minimum spacing between 2 boreholes: 10 m minimum and, if there are more than 4 collectors, install them in staggered rows

Note: drilling depth

We have noticed that there is no longer any seasonal influence on the ground temperature as of 10-15 m in depth: this enables the HP to run in a stable fashion all year round. The schematic opposite gives the ground temperature according to season and depth.



GSHP_I016

Laying underground collectors

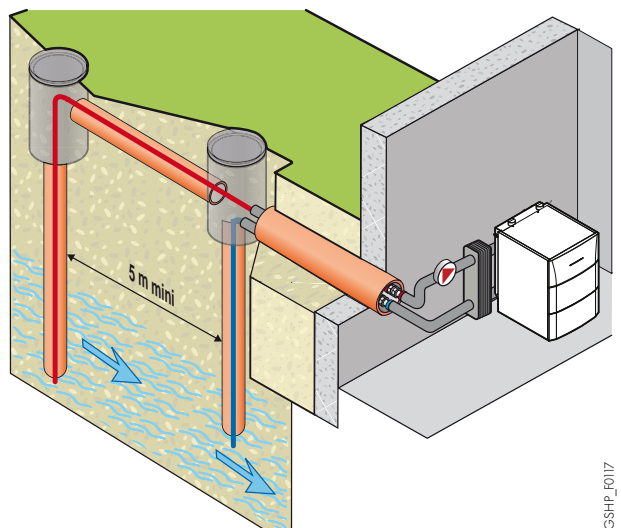
Note: Drilling must be done in accordance with the regulations of the country.

Primary pump: For draw-off depths down to 10 m, we usually employ surface pumps whereas, for greater depths, the pumps are generally immersed.

Water quality requirements of the groundwater:

In order to protect the primary GSHP exchanger, it is necessary to observe the following limit values:

- Iron < 0.2 mg/l, Manganese < 0.1 mg/l.



GSHP_I017

INFORMATIONS REQUIRED FOR INSTALLATION OF A HP

HYDRAULIC CONNECTION

Antifreeze protection

The underground horizontal or vertical collectors connected to a GSHP heat pump must contain glycol. The recommended glycol content will be between 25 and 30%.

Note: Do not use mono ethylene glycol based products (toxic product).

Buffer tank

The buffer tank is intended to increase the volume of water in the heating installation in order to limit short-cycle running of the compressor. The greater the volume, the more the number of compressor start-ups will be reduced and the longer its lifespan.

The installation of a buffer tank is therefore recommended, particularly for installations with radiators and/or fan convection heaters.

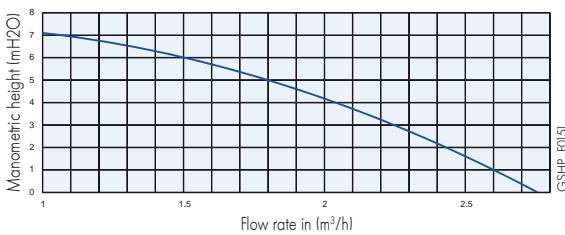
Frost protection Antifreeze concentration depending on the base outside temp.

Protection Antifreeze mono-propylene glycol (%)	The base outside temp. (°C)
20	- 5
30	- 10
40	- 15

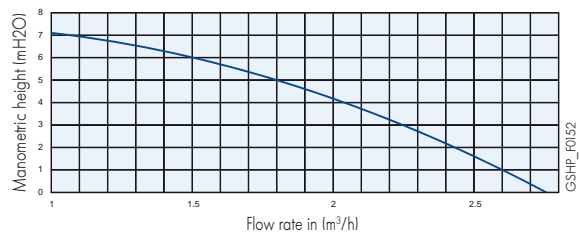
The recommended volume is a minimum of ≈ 10 l/kW; for example, for an 11 kW HP, you need a volume of water in the installation of at least 110 l. We also offer an optional 200-l buffer tank - see page 20.

OPERATING CHARACTERISTICS

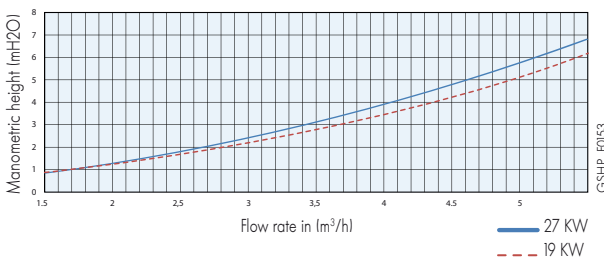
GSHP 5, 9, 12, 15: specification of the heating pump, heating end



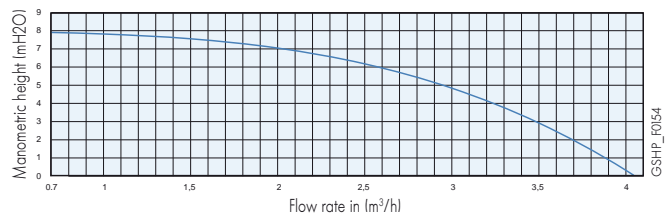
GSHP 5, 9: specification of the heating pump, collection end



GSHP 19, 27: loss of pressure, heating circuit end



GSHP 12, 15: specification of the heating pump, collection end (optional on GSHP 19 TR)



INFORMATIONS REQUIRED FOR INSTALLATION OF A HP

ELECTRICAL CONNECTION

The electrical installation of heat pumps must be done in accordance with the local and national Codes of Practice and

pursuant to prevailing standards, decrees and subsequent texts.

Recommended cable cross-sections and circuit breakers to be installed

HP		Type	Power supply HP GSHP		Sensors
			...phase	SC	Curve C* DJ
GSHP	5 MR	Mono	3x2.5	16 A	2x0.75
	5 TR	Tri	5x1.5	10 A	2x0.75
	9 MR	Mono	3x6	32 A	2x0.75
	9 TR	Tri	5x1.5	10 A	2x0.75
	12 MR	Mono	3x6	32 A	2x0.75
	12 TR	Tri	5x2.5	16 A	2x0.75
	15 TR	Tri	5x2.5	16 A	2x0.75
	19 TR	Tri	5x6	32 A	2x0.75
27 TR	Tri	5x6	32 A	2x0.75	

Electrical back-up (optional)		
Single-phase 6 kW	SC	3 x 6 mm ²
	DJ	32 A (curve C)
Three-phase 9 kW	SC	5 x 2.5 mm ²
	DJ	16 A (curve C)

SC = cable cross-section in mm²

DJ = circuit breaker

* motor: curve D - differential protection

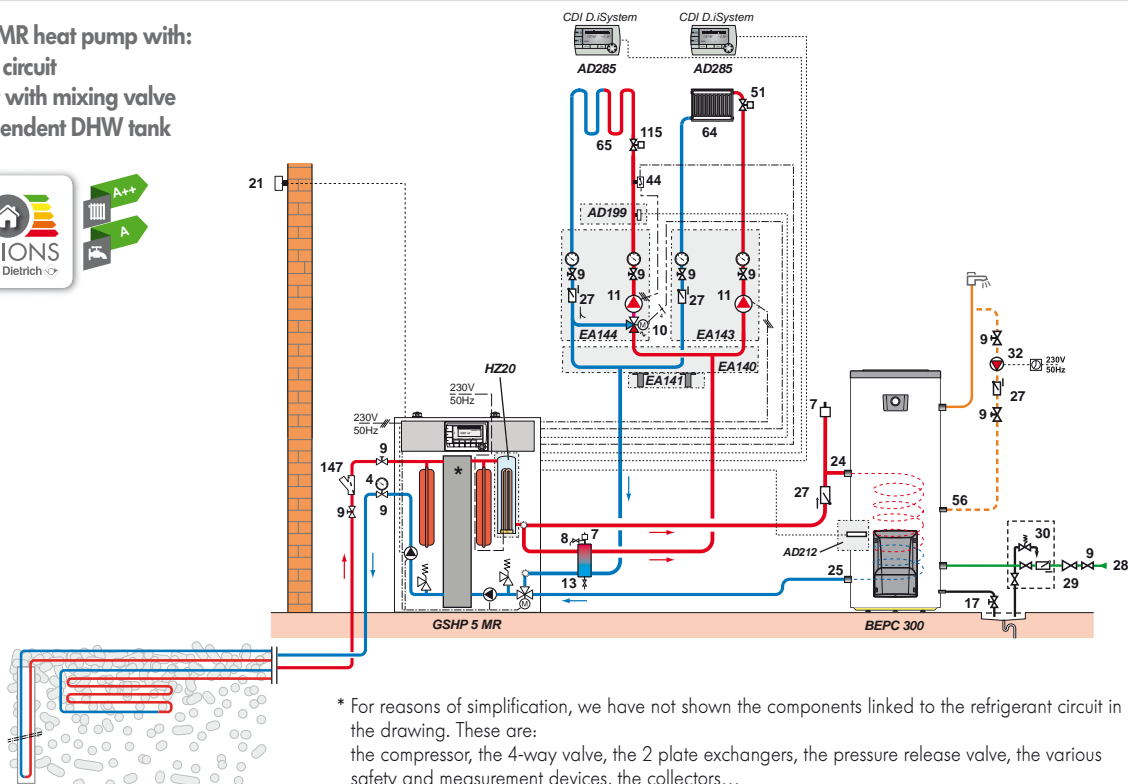
KEY

- | | | | |
|--|--|--|--|
| <ul style="list-style-type: none"> 3 Safety valve 3 bar 4 Manometer 7 Automatic air vent 8 Sectioning valve 9 Isolation valve 10 3-way mixing valve 11 Electronic pump for heating circuit 13 Flushing valve 16 Expansion tank 17 Draining valve 18 Filling the heating circuit 21 Outside temperature sensor 23 Outlet temperature sensor after mixing valve | <ul style="list-style-type: none"> 24 Primary inlet on the DHW tank exchanger 25 Primary outlet on the DHW tank exchanger 26 Domestic water load pump 27 Non-return valve 28 Domestic cold water inlet 29 Pressure reducer 30 Sealed safety device calibrated to 7 bars 32 DHW loop pump 44 65°C limiter thermostat with manual reset for underfloor heating 46 3 way-directional valve with motor | <ul style="list-style-type: none"> 50 Disconnecter 51 Thermostatic valve 52 Differential safety valve 56 DHW circulation loop return 64 Radiator circuit (gentle heat radiators, for example) 65 Low temperature circuit (underfloor heating, for example) 88 Expansion vessel solar circuit 89 Container for heat-carrying fluid 90 Antithermosiphon loop (= 10 x Ø pipe) 109 Thermostatic mixing valve | <ul style="list-style-type: none"> 114 Primary solar circuit filling and draining circuit 115 Thermostatic distribution valve per zone 132 Complete solar station with DIEMASOL control unit 147 Filter + gate valves 148 Primary pump collection |
|--|--|--|--|

EXAMPLES OF INSTALLATION

GSHP 5 MR heat pump with:

- 1 direct circuit
- 1 circuit with mixing valve
- 1 independent DHW tank

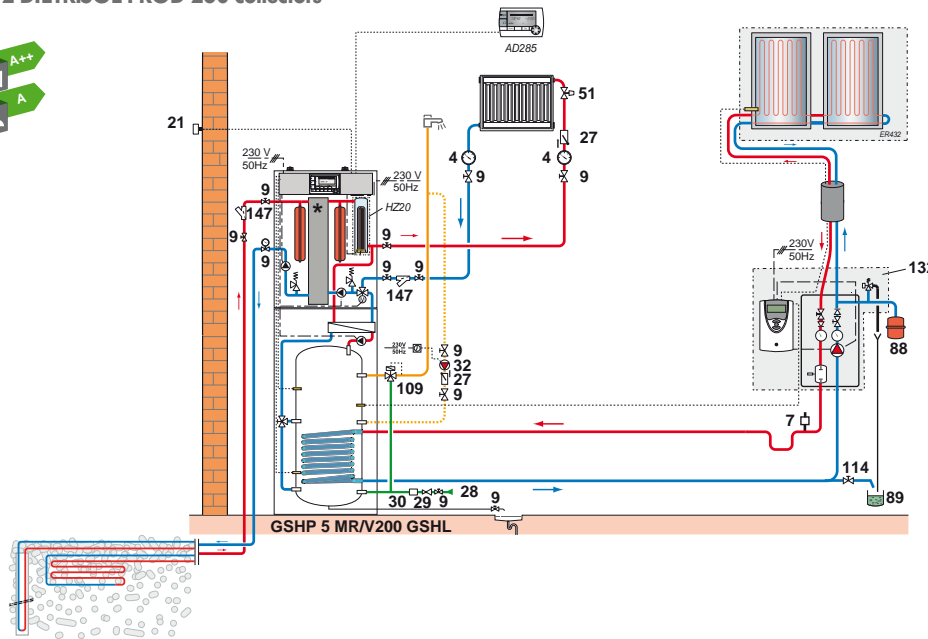


* For reasons of simplification, we have not shown the components linked to the refrigerant circuit in the drawing. These are: the compressor, the 4-way valve, the 2 plate exchangers, the pressure release valve, the various safety and measurement devices, the collectors...

EXAMPLES OF INSTALLATION

GSHP 5 MR/V 200 GSHL heat pump (version with solar DHW tank mounted beneath the HP) with:

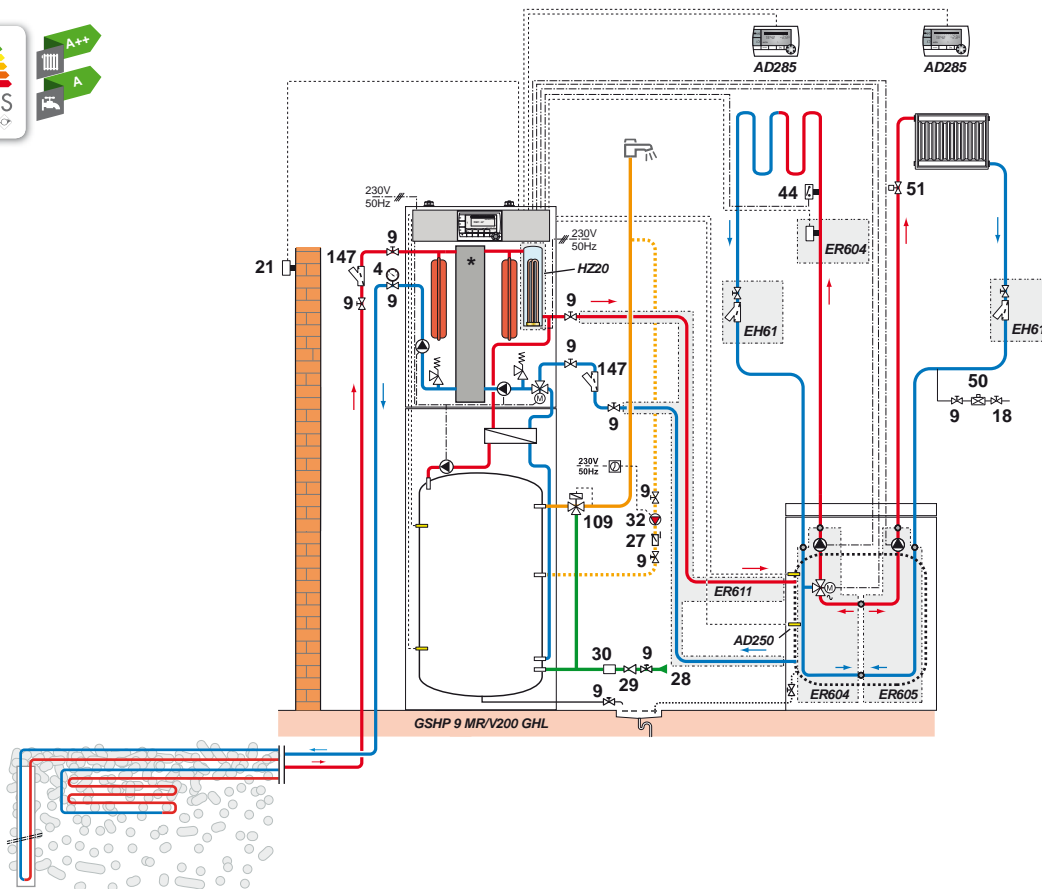
- 1 radiator circuit (with an interactive remote control),
- 1 solar circuit with 2 DIETRISOL PROD 230 collectors



GSHP_F0120

GSHP 9 MR/V 200 GHL heat pump (version with DHW tank mounted beneath the HP) with:

- 1 x 200 GT buffer tank,
- 1 radiator circuit (with an interactive remote control),
- 1 circuit with mixing valve (with an interactive remote control)



GSHP_F0155A

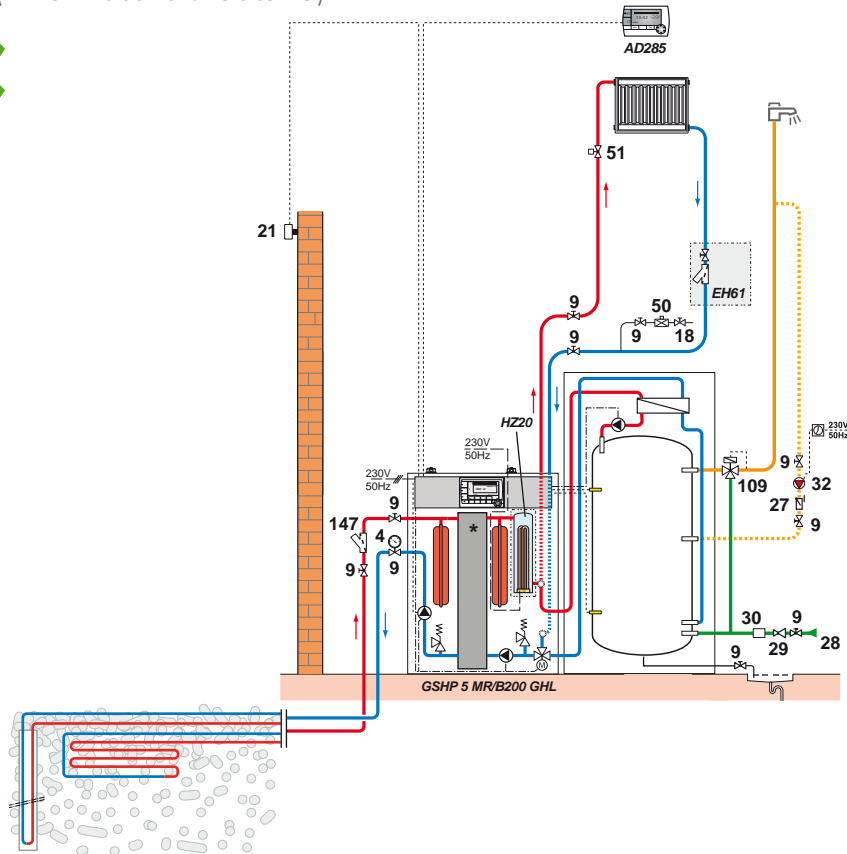
Key: see page 25

* For reasons of simplification, we have not shown the components linked to the refrigerant circuit in the drawing. These are: the compressor, the 4-way valve, the 2 plate exchangers, the pressure release valve, the various safety and measurement devices, the collectors...

EXAMPLES OF INSTALLATION

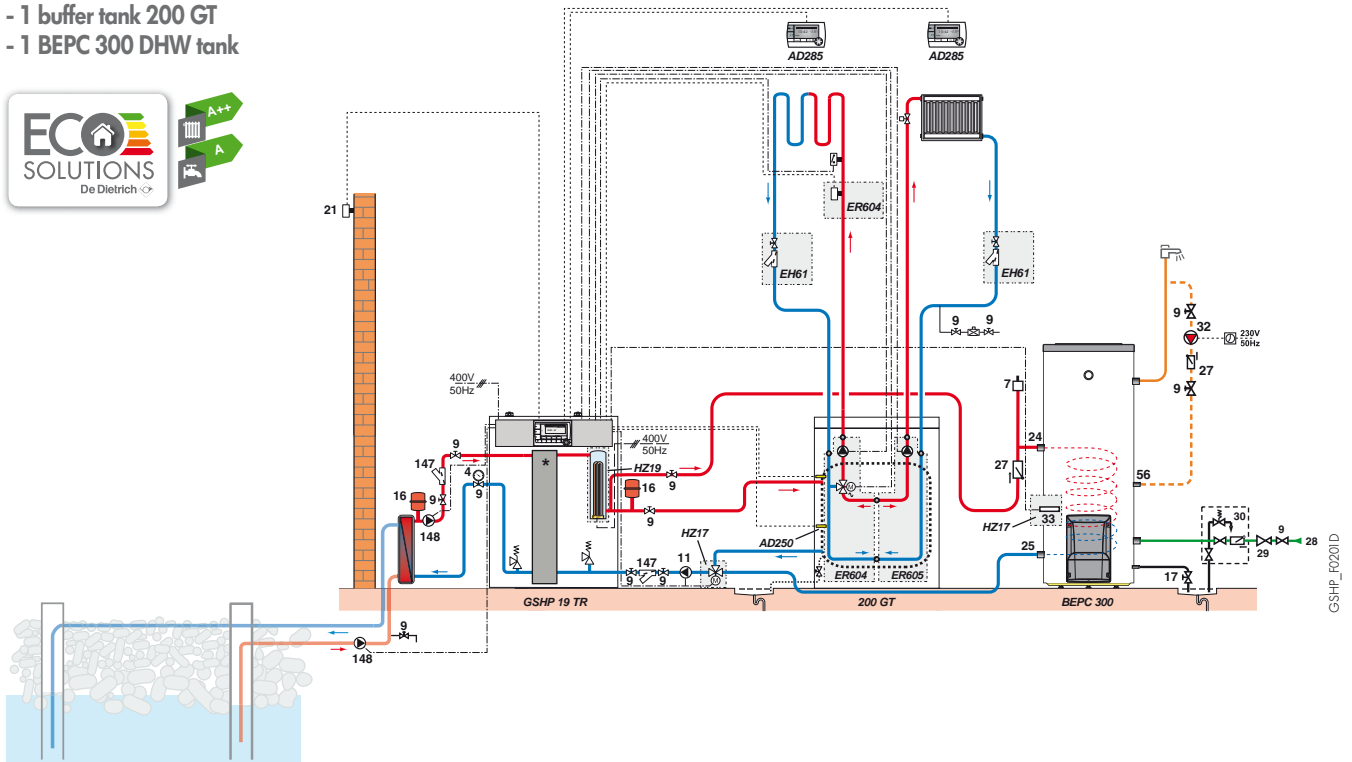
GSHP 5 MR/B 200 GHl heat pump (version with DHW tank beside the HP) with:

- 1 direct radiator circuit (with an interactive remote control)



GSHP 19 TR heat pump with a barrage exchanger for draw-off from the groundwater:

- 1 direct underfloor heating circuit (with an interactive remote control)
- 1 radiator circuit (with an interactive remote control)
- 1 buffer tank 200 GT
- 1 BEPC 300 DHW tank



Key: see page 25

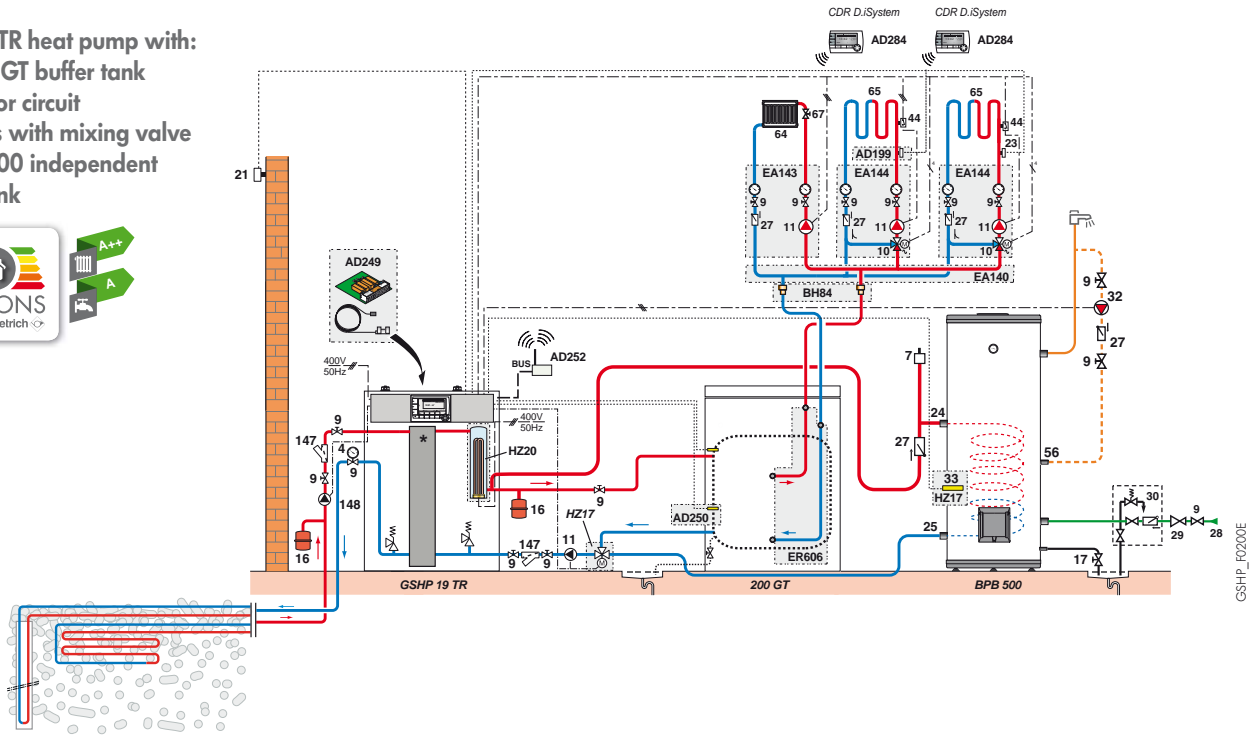
* For reasons of simplification, we have not shown the components linked to the refrigerant circuit in the drawing. These are: the compressor, the 4-way valve, the 2 plate exchangers, the pressure release valve, the various safety and measurement devices, the collectors...

GSHP_F0202B

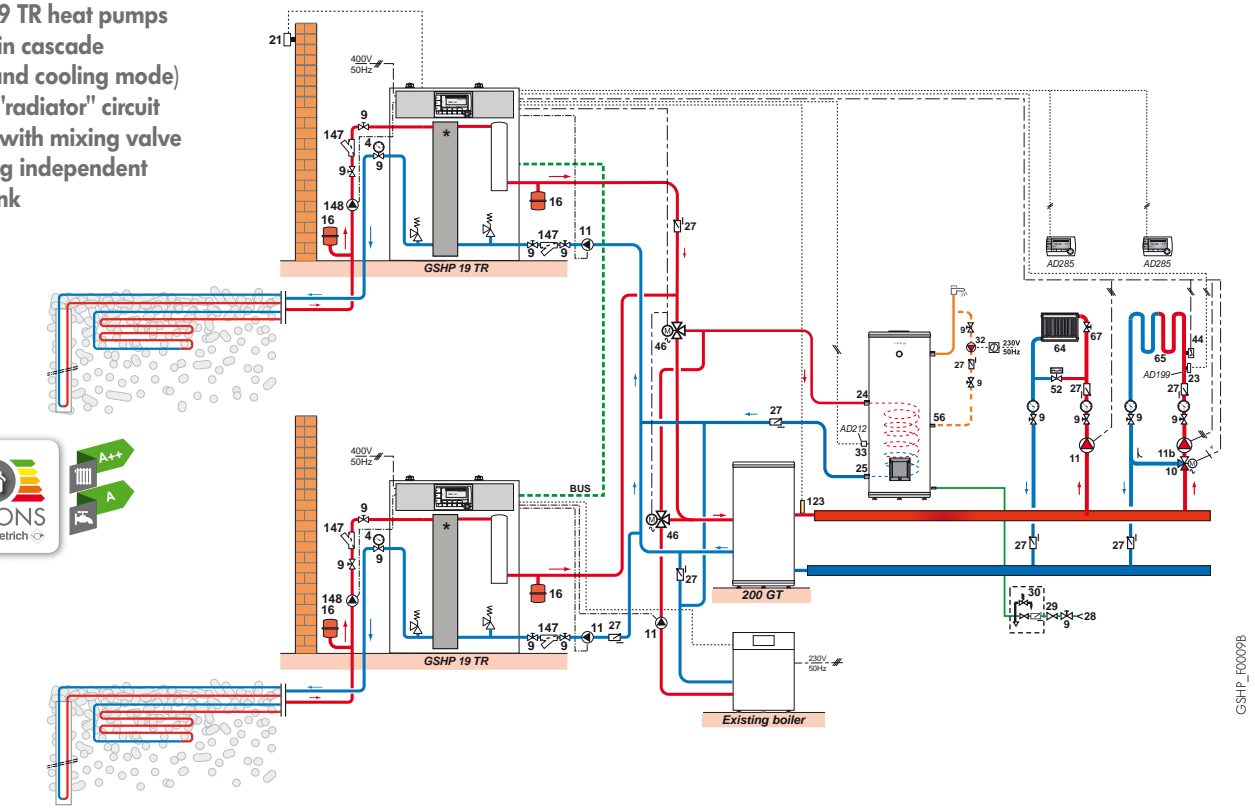
GSHP_F0201D

EXAMPLES OF INSTALLATION

- GSHP 19 TR heat pump with:**
- 1 x 200 GT buffer tank
 - 1 radiator circuit
 - 2 circuits with mixing valve
 - 1 BPB 500 independent DHW tank



- 2 GSHP 19 TR heat pumps mounted in cascade (heating and cooling mode)**
- 1 direct "radiator" circuit
 - 1 circuit with mixing valve
 - 1 existing independent DHW tank



Key: see page 25

* For reasons of simplification, we have not shown the components linked to the refrigerant circuit in the drawing. These are: the compressor, the 4-way valve, the 2 plate exchangers, the pressure release valve, the various safety and measurement devices, the collectors...

Important recommendations
 In order best to exploit the performance levels of heat pumps to provide optimum comfort and make them last as long as possible, we recommend paying special attention to their installation, commissioning and servicing. To do this, abide by the various instruction manuals provided with the appliances. In addition, De Dietrich offers the commissioning of heat pumps in its catalogue. The conclusion of a service contract is also strongly recommended.