GHT
GEOTHERMAL TECHNOLOGIES

GHT Brine defrosters

Technical specification for brine-earth heat exchangers
G-2000/2001, G-4000/4001, G-6000/6001, G-8000/8001

Made in Latvia

Description

Brine defroster is ground heat exchanger that has been developed to use with heat recovery ventilation units. With very high energy efficiency GHT brine defrosters has also large heating and cooling power, high COP, casing fully made of EPP, very light – easy installation at the site.

Advantages

GHT brine defrosters has many advantages:

- Low air pressure drop
- Housing made of EPP - exclude possible thermal bridges
- High heating and cooling power
- Unit is designed to be used as LEFT and RIGHT versions
- Unit size is designed for better packaging
- Very light - easier installation at the site
- Brine pump with energy efficiency class A

Benefits

- Energy saving due to use of renewable energy and very high COP.
- During cold winter season brine defroster will prevent ventilation unit heat exchanger from freezing and damaging.
- During hot summer period it will cool the incoming air and helps to create pleasant indoor environment.

Brine defroster models

G-2000, G-4000, G-6000

G-8000

G-2001, G-4001, G-6001

G-8001

Units consists of:

- EPP housing
- Heat exchanger
- G4 filter (Z-PLEAT L COARSE 70%)
- A class circulation pump
- Filling group
- Expansion vessel
- Safety valve

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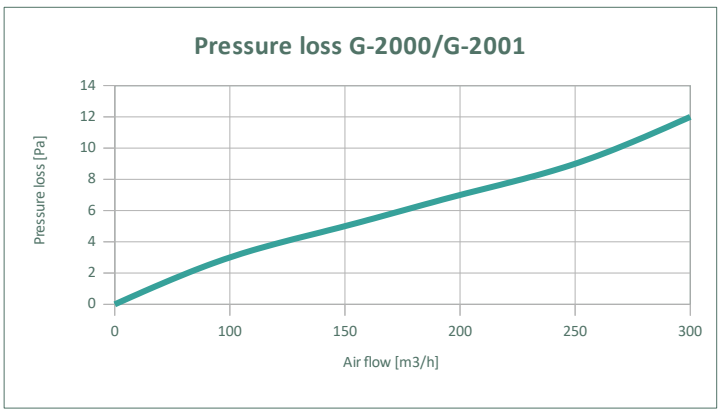
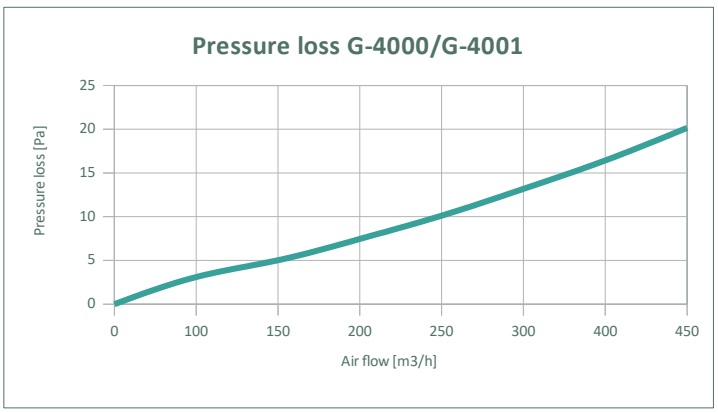
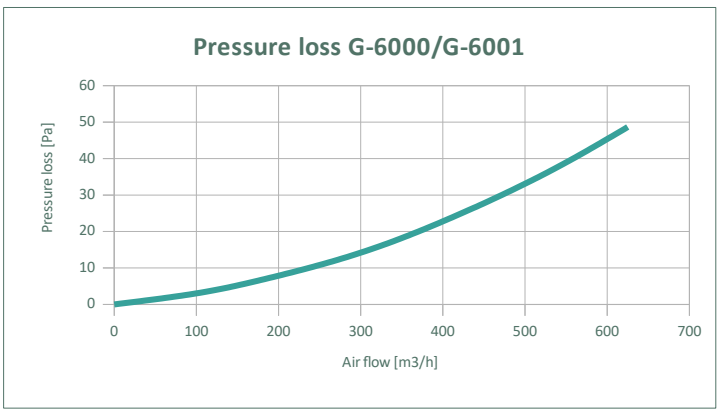
Technical specification

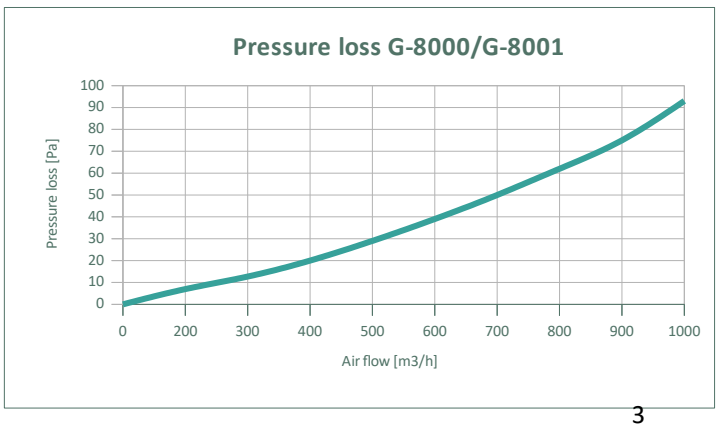
Description	G-2000/G-2001	G-4000/G-4001	G-6000/G-6001	G-8000/G-8001
Weight	15kg/8kg	18kg/11kg	23kg/13kg	28kg/18kg
Unit dimension (LxWxH)	590x390x720mm/ 590x390x530mm			
Air duct connection	DN 250			
Operating temperature	-22 ^{0}C to 60 ^{0}C			
Heat exchanger fin type	Aluminum			Copper
Power consumption	20W	20W	30W	40W
Heating power	2.48kW	3.83kW	5.44kW	8.10kW
Cooling power	2.62kW	4.01kW	6.02kW	8.72kW
Maximum airflow	300m^3/h	450m^3/h	600m^3/h	1000m^3/h
Glycol pressure drop	6.62kPa	9.2kPa	7.85kPa	17.9kPa
Glycol flow l/h	370 l/h	560 l/h	1350 l/h	2100 l/h
Brine temperature (winter/summer)	+6^{0}C / +12^{0}C			
Brine connection	¾ inch external thread			
Condensate drain connection	D40 external thread			
Supply voltage	230 V, 50 Hz			

Pressure loss





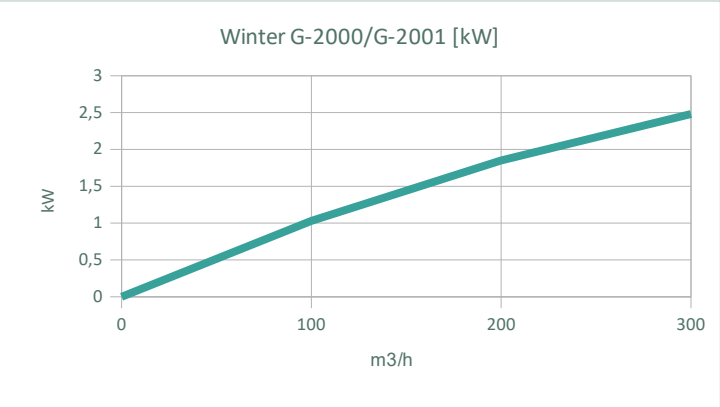


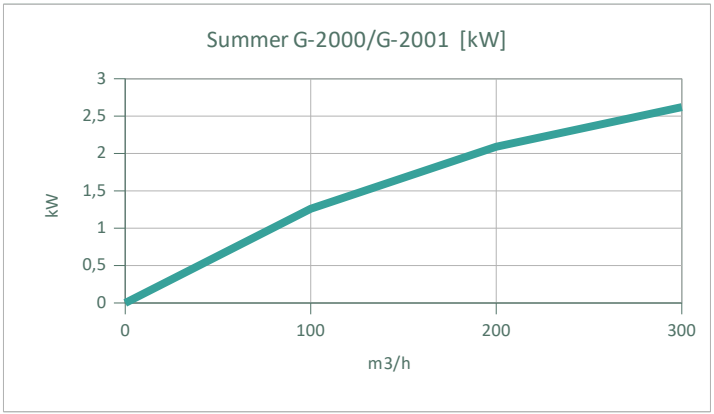


Heating and cooling power

Unit G-2000/G-2001

Winter outside air temp -22°C; Summer outside air temperature +30°C

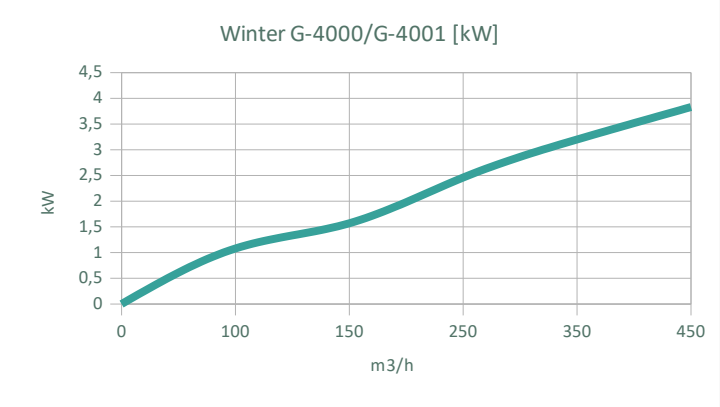


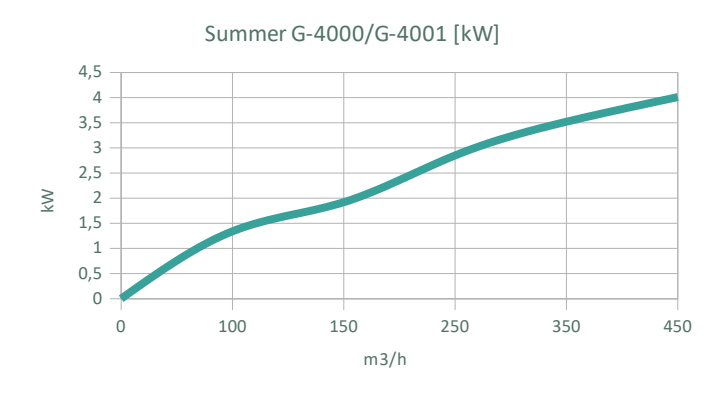


m³/h	Supply air temp. [winter °C]	Supply air temp. [Summer °C]
100	4.26	13.5
200	1.6	16.1
300	-0.99	18.1

Unit G-4000/G-4001

Winter outside air temp -22°C; Summer outside air temperature +30°C



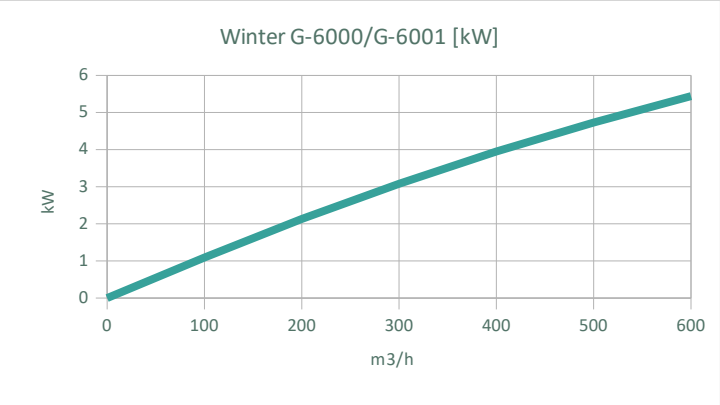


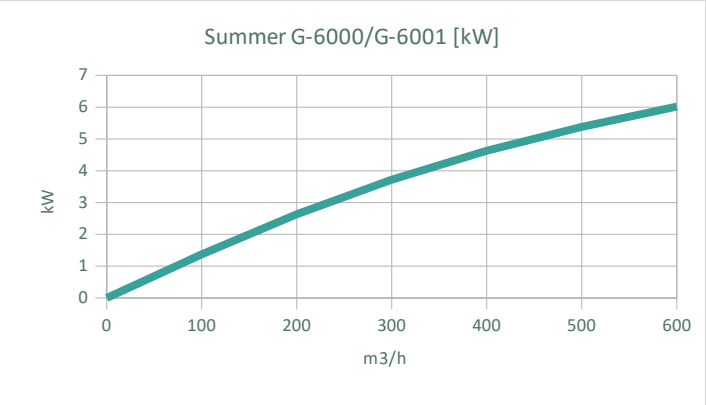
m³/h	Supply air temp. [winter °C]	Supply air temp. [Summer °C]
100	5.4	12.5
150	4.7	13.3
250	3.08	15
350	1.25	16.5
450	-0.35	17.8

Heating and cooling power

Unit G-6000/G-6001

Winter outside air temp -22°C; Summer outside air temperature +30°C

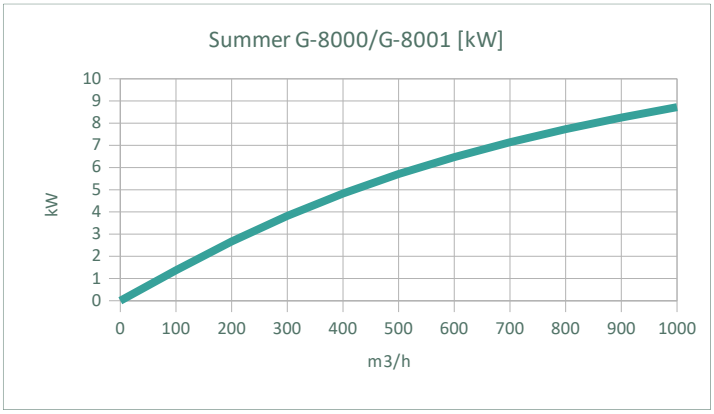




m³/h	Supply air temp. [winter °C]	Supply air temp. [Summer °C]
100	5.82	12.1
200	5.17	12.8
300	4.17	13.8
400	3.12	14.8
500	2.07	15.7
600	1.06	16.5

Unit G-8000/G-8001

Winter outside air temp -22°C; Summer outside air temperature +30°C



m³/h	Supply air temp. [winter °C]	Supply air temp. [Summer °C]
100	6.44	12
200	5.25	12.6
300	4.47	13.4
400	3.63	14.2
500	2.76	15
600	1.76	15.7
700	0.91	16.4
800	0.1	17
900	-0.66	17.5
1000	-1.37	18.1

Minimal requirements on ground collector

This table includes information on minimal ground collector length. Detailed and correct calculations has to be done by installer's engineer based on local conditions.

Units G-2000/G-2001

Ground type	Collector length [m]	Pipe dimension	Circulation pump stage	Brine content approx [l]
Dry sand	300	DN32	1	175
Damp sand	150	DN32	1	95
Dry loam	150	DN32	1	95
Damp loam	120	DN32	1	80

Units G-4000/G-4001

Ground type	Collector length [m]	Pipe dimension	Circulation pump stage	Brine content approx [l]
Dry sand	500	DN32	1	280
Damp sand	250	DN32	1	145
Dry loam	200	DN32	1	130
Damp loam	170	DN32	1	100

Units G-6000/G-6001

Ground type	Collector length [m]	Pipe dimension	Circulation pump stage	Brine content approx [l]
Dry sand	600	DN32	1	340
Damp sand	300	DN32	1	175
Dry loam	270	DN32	1	160
Damp loam	200	DN32	1	120

Units G-8000/G-8001

Ground type	Collector length [m]	Pipe dimension	Circulation pump stage	Brine content approx [l]
Dry sand	1000	DN40	1 or 2	560
Damp sand	500	DN40	1 or 2	285
Dry loam	450	DN40	1 or 2	250
Damp loam	320	DN40	1 or 2	185

As a rough estimate, you can work on the basis of 0.5 m brine ducting per 1 m³/h air quantity. However, a minimum of 100 m with smaller system. To be able to securely rule out the possibility of damage to the ducts, the collector ducts must be placed in a bed of 0.4 m of sand (depending on type of PE pipe).

The geothermal heat collector can either be installed in an open space or a trench system, depending on the size of the property. The pipe has to be laid horizontally in the ground, the perfect depth is 1,5 to 2 m (but not deeper than 5 m). The distance between the pipes should be minimum 0,5m. The highest point of the brine circle is the vent of the brine-defroster's safety unit.

Vertical boreholes also can be used as source of energy.

Accurate calculation has to be done by local engineer.

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