



BCOOL MANUFACTURERS OF AIR-CONDITIONING EQUIPMENT LTD

GEO NF-414 SERIES

GEO THERMAL HEAT PUMPS



HEAT PUMPS
www.marque-nf.com

ISO 9001
ISO 14001
BUREAU VERITAS
Certification



WHY TO PREFER BCOOL LTD GEOTHERMAL HEAT PUMPS

At BCOOL LTD we believe in combining comfort, efficiency and sustainability. Our geothermal heat pumps utilize the natural energy stored beneath the earth's surface to provide **reliable heating and cooling all year round**. With BCOOL GEO NF-414 Series you don't just heat and cool your home – you **invest** in a smarter, cleaner future!



Go Green. Stay Cool. Save Big.



BCOOL LTD – Power from the Earth – Comfort for you



Slash your bills → Cut your energy costs by 30-40%



Eco-friendly Comfort → Utilize the power of Earth



All-season reliability → Stay warm in winter, cool in summer



Built to last → Long lifespan with proper usage and maintenance



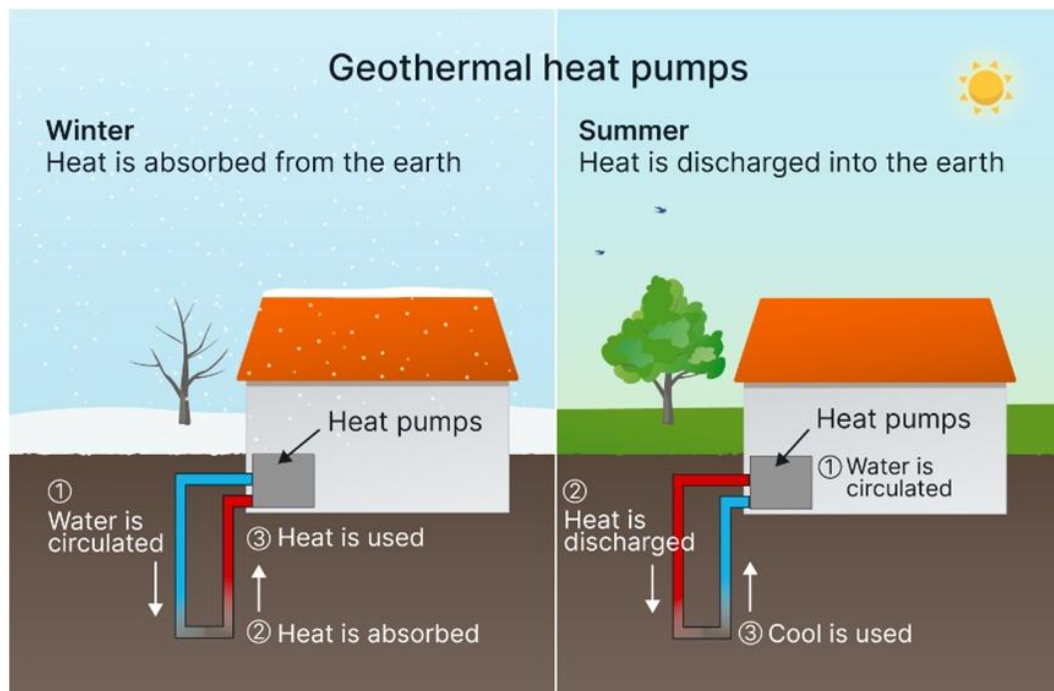
Join our expanding customers base

Heating Capacity

8.16 kW – 97.20 kW

Cooling Capacity

7.38 kW – 87.93 kW



The **BCOOL GEO NF-414 Series** includes packaged water cooled heat pumps for geothermal applications and indoor/outdoor installation. They are available in several types and models with capacities ranging from **8.16 to 97.20 kW in heating** and **7.38 to 87.93 kW in cooling**.

The BCOOL GEO NF-414 SERIES is certified by ECC for the NF-414 Heat Pumps program.

This series is ideal, in combination with underfloor heating/cooling systems or water terminal units/air-handling units, for air-conditioning of residences, school complexes, office-buildings, hotels, hospitals etc. or for supplying hot or cold water in industrial applications.

- **Optimized design** for R410a refrigerant.
 - Casing: Galvanized steel plate with polyester coating.
 - Assembly: Fully bolted/welding free.
 - Compressor: Hermetically sealed scroll type.
 - Water heat exchanger (source/system): Brazed, plate type.
 - Electronic Expansion Valve.
 - Electronic microprocessor control with digital display.
- **Safety and functional devices:**
 - High/low pressure switch.
 - Sequence-phase failure-reverse and voltage monitoring device.
 - Evaporator low temperature protection.
- **Options:**
 - Differential water pressure switches.
 - High/low pressure manometers.
 - Desuperheater for sanitary hot water up to 80°C.
 - Hydraulic module with pumps and all necessary devices.
 - Bus module interface kit for Modbus connection.
 - Remote keyboard.
 - Various optional capabilities.



Generally:

The BCOOL GEO NF-414 Series consists of 10 models, with heating capacities ranging from 8.16 up to 97.20 kW and cooling capacities from 7.38 up to 87.93 kW. It is the outcome of a thorough study and accurate design by experienced BCOOL R&D team to develop and produce geothermal heat pumps with compact shape, high performance and reliability of the highest quality standards.

This series meets the highest levels of aesthetic and technical requirements, using the latest technological innovations, including environmentally friendly R410a refrigerant, that is chlorine-free and has zero ozone depletion potential. GEO NF-414 units are therefore ideal for installation in residential, commercial and industrial applications, due to their robust construction, high-efficiency performance, reliability, selected materials and low operating sound levels.

Casing:

All units use metal parts that are fabricated from heavy gauge galvanized steel sheets, formed to ensure maximum rigidity, that guarantees and preserves the unit's operation during the years. After fabrication, the sheets are degreased, phosphatized and electrostatically powdered with an epoxy-polyester RAL 9016 (Traffic White) coating of a thickness of 60-70 µm.

This fully automated process ensures superior corrosion resistance against the most aggressive ambient conditions. This treatment can withstand a salt spray test of 500 hours according to ASTM B-117.

All components are assembled together using bolts, thus avoiding the need for welding which may harm the galvanization of the steel and ensuring that the whole assembly can fully withstand adverse weather conditions.

The compact footprint of the unit arises from detailed study and design by our engineering team and results in a machine that easily fits in restricted areas, is simple and easy to install and maintain and is designed for easy transportation and lifting.

Removable side panels with special locks are used to permit access only to authorized personnel to internal components of the unit, for inspection and maintenance. Electrical and electronic equipment and components for the proper unit's operation are located inside a weatherproof (IP 55) electrical panel.

Compressors:

All units use low-noise, maintenance-free, hermetic scroll compressors with low vibration levels, especially optimized for R410a refrigerant, provided only from world-class manufacturers. Compressors could be equipped with a crankcase electrical heater for the oil and are internally protected against potential overloading or electrical spikes.

The compressors are mounted on special antivibration rubber mounts, to absorb and eliminate any vibrations from the unit's operation. A noise reduction jacket, with excellent sound absorbing properties, could also be used.

Water Heat Exchanger (source & system):

All units are equipped with a water Braze Plate Heat Exchanger, selected from world class manufacturers. It is made of stainless steel plates (AISI 316/1.4401), especially formed to achieve a large heat transfer surface and assembled by means of an automatic brazing process, under vacuum.

There are probes for water temperature sensors and the whole heat exchanger is wrapped in a heavy insulation material.

Refrigerant circuit:

GEO NF-414 models, from 008 up to 090, have one refrigerant circuit. The expansion device is an electronic expansion valve, ensuring constant suction gas superheat at all operating conditions.

Other components fitted are: 4-way reversing valve, check valve, suction accumulator (optional), liquid receiver (optional), sight glass (optional), large capacity filter dryer and high/low pressure manometers.

Unit protection is provided by a high/low pressure switch with auto reset.

Microprocessor controller:

All units are equipped with a sophisticated controller, that combines intelligence with operating simplicity. The controller constantly monitors all machine parameters and precisely manages among others:

- Automatic compressor control function through return water temperature.
- Frost protection.
- Hydraulic circuits pump control.
- Compressor's start-up time delay function.
- Compressor's running time records.
- Numerous programmable parameters.
- Auto diagnostic stop function due to low water circulation (flow switch).
- Auto diagnostic stop function due to improper high or low operating pressure.
- Auto diagnostic stop function due to compressor's thermal overload.
- Digital display of various error codes.
- Digital display of inlet and outlet source and system water temperatures.
- Switch for remote on/off.
- Switch for remote control in cooling/heating mode.

Optional control capabilities:

- ❖ Remote keyboard.
- ❖ BMS module interface kit for Modbus connection.
- ❖ Parallel chiller operation with optional controller.
- ❖ Wi-Fi operation and cloud connection for remote monitoring.

Other unit accessories/options:

- Compressors with inverter driven motors.
- Differential water pressure switches.
- Pressure relief valve on compressor discharge.
- Hydraulic module with pumps and all necessary devices.
- Water heat exchanger anti-freezing electrical heater.
- Compressor noise reduction jacket.
- Control for two pumps (one stand-by).

TECHNICAL SPECIFICATIONS GEO NF-414 SERIES

MODELS		50 Hz	GEO 008	GEO 010	GEO 015	GEO 020	GEO 030	GEO 040	GEO 050	GEO 060	GEO 080	GEO 090
Heating Performance (1),(3)												
Heating Capacity		kW	8,16	10,80	16,40	21,90	32,40	41,20	48,60	64,90	82,50	97,20
Gross Input Power		kW	1,76	2,09	3,40	4,69	6,56	8,76	10,00	13,00	17,30	19,70
Input Current (Total)		A	3,89	4,14	6,43	9,44	13,95	16,30	20,04	27,91	32,61	40,08
COP		kW/kW	4,64	5,19	4,85	4,68	4,95	4,71	4,83	4,98	4,77	4,92
COP at Condition D (W35) (4)		kW/kW	5,65	6,16	6,16	5,99	5,66	5,56	5,74	5,69	5,61	5,82
SCOP (W35)		kW/kW	4,72	5,10	4,91	4,70	4,83	4,68	4,83	4,87	4,73	4,91
Seasonal Space Heating Efficiency (η _{sh}) (W35)		%	185,00	200,00	192,00	184,00	190,00	184,00	190,00	191,00	186,00	193,00
Energy Efficiency Class		Label	A++	A+++	A++	A++	A++	A++	A++	A++	A++	A++
Water Flow Rate System Side		m³/h	1,55	2,06	3,13	4,17	6,16	7,83	9,22	12,32	15,66	18,44
Pressure Drop System Side		kPa	19,30	18,00	19,50	20,30	20,40	22,50	21,70	27,40	27,70	14,10
Water Flow Rate Source Side		m³/h	2,12	2,87	4,30	5,68	8,48	10,66	12,62	16,96	21,32	20,60
Pressure Drop Source Side		kPa	30,50	19,70	22,30	23,70	25,90	28,40	27,50	32,20	32,30	17,70
Cooling Performance (2)												
Cooling Capacity		kW	7,38	10,00	14,97	19,77	29,54	37,13	43,96	59,08	74,26	87,93
Gross Input Power		kW	1,70	2,04	3,36	4,67	6,55	8,77	10,09	13,11	17,55	20,17
Input Current (Total)		A	3,89	4,14	6,43	9,44	13,95	16,30	20,04	27,91	32,61	40,08
EER		kW/kW	4,11	4,68	4,28	4,09	4,37	4,11	4,24	4,38	4,13	4,29
SEER		kW/kW	4,53	5,04	4,96	4,62	4,80	4,61	4,92	4,87	4,68	5,04
Seasonal Space Cooling Efficiency (η _{sc})		%	159,60	183,60	164,40	155,20	166,80	155,20	160,40	166,40	154,80	160,40
Water Flow Rate System Side		m³/h	1,27	1,72	2,58	3,41	5,09	6,40	7,57	10,18	12,79	15,15
Pressure Drop System Side		kPa	16,20	11,30	12,60	13,00	14,20	15,70	15,10	17,10	17,50	9,56
Water Flow Rate Source Side		m³/h	1,55	2,06	3,13	4,17	6,16	7,83	9,22	12,32	15,66	18,44
Pressure Drop Source Side		kPa	21,70	19,20	20,80	21,20	22,60	25,20	24,20	30,60	31,30	15,80
Construction		Material / Color	Galvanized Steel / Traffic-White (RAL 9016)									
Compressor		Type	Scroll									
Quantity		no.	1					2 (1 tandem)				
Capacity Steps		%	0 - 100%					0 - 50 - 100%				
Maximum Operating Current		A	6,50	8,00	11,00	15,00	21,60	31,00	34,00	43,20	62,00	68,00
Starting Current per Compressor		A	38,00	43,00	67,10	101,00	139,00	140,00	174,00	139,00	140,00	174,00
Water Heat Exchanger (Source)		Type	Brazed Plate									
Quantity		no.	1									
Max. Operating Pressure	Water Side	bar	10									
	Refrigerant Side		45									
Hydraulic Connections (inlet/outlet)		inches	1 1/4"					2 1/2"				
Min. Water Flow Rate		m³/h	0,79	1,08	1,61	2,13	3,18	4,00	4,73	6,36	8,00	9,47
Max. Water Flow Rate		m³/h	2,12	2,87	4,30	5,68	8,48	10,66	12,62	16,96	21,32	25,25
Water Heat Exchanger (System)		Type	Brazed Plate									
Quantity		no.	1									
Max. Operating Pressure	Water Side	bar	10									
	Refrigerant Side		45									
Hydraulic Connections (inlet/outlet)		inches	1 1/4"					2 1/2"				
Min. Water Flow Rate		m³/h	0,79	1,08	1,61	2,13	3,18	4,00	4,73	6,36	8,00	9,47
Max. Water Flow Rate		m³/h	2,12	2,87	4,30	5,68	8,48	10,66	12,62	16,96	21,32	25,25
Electrical Characteristics (5)												
Power Supply		V / Ph / Hz	400 / 3 / 50 + N + PE									
Compressor Carter Resistance Power		W	90,0	90,0	90,0	90,0	90,0	90,0	90,0	2 x 90,0	2 x 90,0	2 x 90,0
Voltage Operating Limits		V	360 - 440									
Refrigerant Circuit												
Quantity		no.	1									
Expansion Device		Type	Electronic Expansion Valve									
Refrigerant	Type/GWP		R410A / 2088									
	kg		0,75	1,00	1,50	1,90	2,50	2,60	3,40	5,50	6,50	6,50
Dimensions	Width	mm	604	604	604	604	604	604	800	750	750	750
	Length	mm	604	604	604	604	604	604	800	980	980	980
	Height	mm	1.079	1.079	1.079	1.079	1.079	1.079	1.200	1.800	1.800	1.800
Shipping Weight (approx.)		kg	105	110	120	140	155	175	210	310	340	390

NOTES

*(1) Heating performance is calculated for the following operational conditions:
Source Water Temperature Inlet/Outlet: 10 °C / 7 °C and Entering/Leaving System Water Temperature: 30 °C / 35 °C (EN14825:2022)

*(2) Cooling performance is calculated for the following operational conditions:
Source Water Temperature Inlet/Outlet: 30 °C / 35 °C and Entering/Leaving System Water Temperature: 12 °C / 7 °C (EN14825:2022)

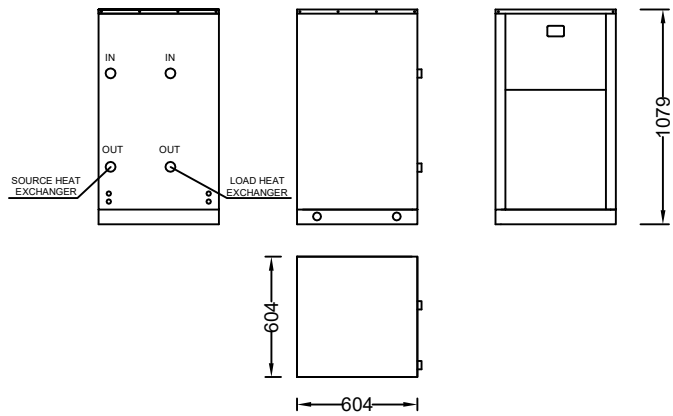
*(3) Heating performances are certified by ECC according to NF-414 program (EN14511:2022 & EN14825:2022)

*(4) According to EN14511:2022 & EN14825:2022.

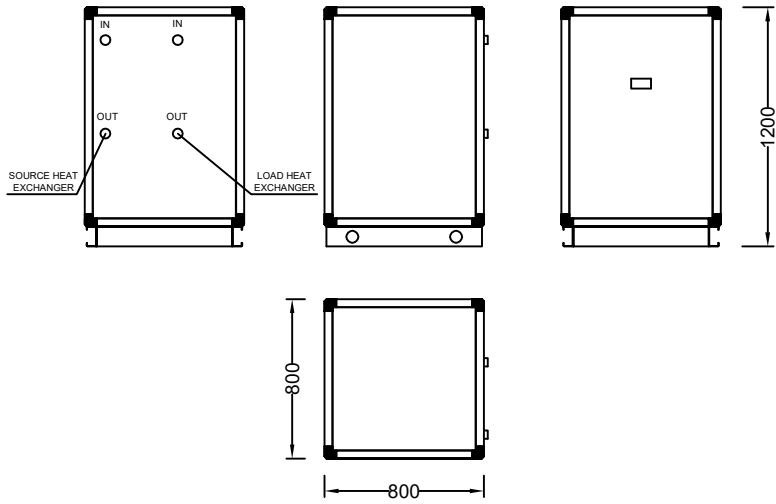
*(5) All connections to the system and the electrical installation must be in full accordance with the applicable national and local codes.

Dimensions in mm

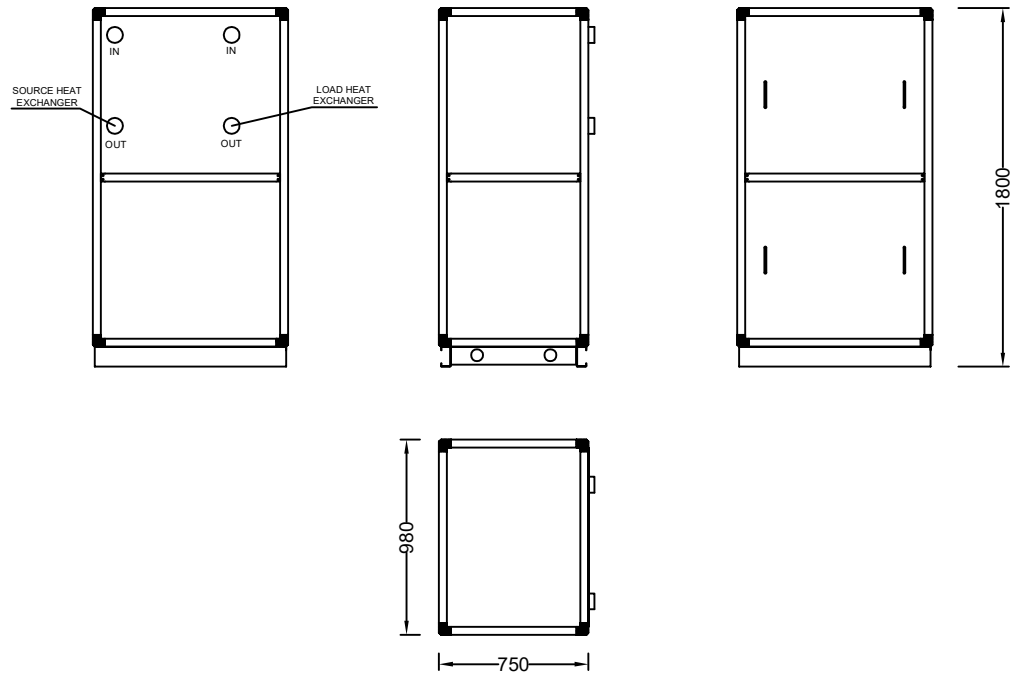
MODELS: GEO 008 - GEO 040



MODEL: GEO 050



MODELS: GEO 060 - GEO 090





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"BCOOL reserves the right to change specifications without prior notice"