



ELFOEnergy Ground Medium²

Water-cooled chiller for indoor installation

WSH-XEE2 10.2 - 120.2 RANGE

Nominal heating capacity (operation heating only)
(W10/W45) from 35 kW to 420 kW

Nominal cooling capacity (operation cooling only)
(W35/W7) from 30 kW to 356 kW



- ▶ PRE-ASSEMBLED UNIT
- ▶ APPLICATION VERSATILITY
- ▶ HIGH SEASONAL EFFICIENCY



Clivet is taking part in the EUROVENT certification programme up to 1.500 kW.
The products concerned appear in the certified products list of the EUROVENT
www.eurovent-certification.com site.

Clivet hydronic system

Designed to provide high energy efficiency and sustainability of the investment, the wide range of Clivet liquid chillers and heat pumps for high efficiency air conditioning of Residential and Commercial spaces and for Industrial applications it is available with air or water source.

HYDRONIC System - Water Source

| | Small and Medium Commercial | | Large Commercial and Industry | | | | | |
|-------------------------------------------------------|-----------------------------|---------------------------------------|-----------------------------------------------------|------------------------|---------------------|--|------|--|
| | ELFOEnergy Ground | ELFOEnergy Ground Medium ² | SPINchiller ¹ Multi Scroll Technology | SCREWLine ³ | Centrifugal Chiller | | | |
| Capacities (kW/Wt) | 6 ÷ 33 kW | 29 ÷ 356 kW | 210 ÷ 730 kW | 570 ÷ 1500 kW | 880 ÷ 1930 kW | | | |
| EoP compliance (heat pumps only) | | | | | | | | |
| Products | | | | | | | | |
| Chillers | WSH-XEE2 | | WSH-XSC3 | | WSH-SB3 | | WCH4 | |
| Heat pump with inversion on the water circuit | WSH-XEE2 | | WSH-XSC3 | | WSH-SB3 | | | |
| Heat pump with inversion on the refrigeration circuit | WSH-EE | | WSH-XSC3 | | | | | |
| Multi-function heat pump | WSH-XEE2 MF | | | | | | | |
| Condenserless units | | | | | MDE-SL3 | | | |
| | | | | | | | | |

Specialization

Every intended use has specific requirements which determine the overall efficiency. For this, the Clivet hydronic system always offers the best solution in every project.

- Modular range with over 8000 kW of overall capacity
- Capacity control with Screw and modular Scroll technology
- Multifunction versions
- Outdoor or indoor (ductable type) installation

Centrality of the Air Renewal

From the Air Renewal depends the comfort in the spaces. Since it often represents the main building energetic load, it also determines the running costs of the entire system.

ZEPHIR3

Autonomous primary air energy thermodynamic recovery system



- Simplifies the system, reduces the heating and cooling generators
- Purifies the air with the standard electronic filters
- Increases the energy efficiency and it also allows a savings of 40% on the running costs
- From -40°C to +50°C of outdoor air temperature

Terminal and AHU complete system

The hydronic terminal units are very diffused for their versatility and reliability. The Clivet range includes many versions that simplify the application in different types of installation and building.

ELFOSpace

High energy efficiency hydronic terminal units

AQX

Air-conditioning unit

- Cased and uncased terminal units, from 1 to 90 kW
- Horizontal and vertical installation
- Energy saving DC fans
- Fitted air conditioning units up to 160.000 m³/h
- EUROVENT certification

ELFOEnergy Ground Medium², three solutions to satisfy different installation requirements

GROUND MEDIUM2 - COOLING ONLY or HEATING ONLY WSH-XEE2:

- Water chiller or non-reversible heat pump
- Partial energy recovery



GROUND MEDIUM2 - HEAT PUMP WSHN-XEE2:

- Reversible-cycle heat pump



GROUND MEDIUM2 - MULTIFUNCTION WSHN-XEE2 MF:

- Reversible-cycle heat pump
- Simultaneous production of hot and chilled water



Clivet. Change thing.

For 25 years, we have been offering solutions to ensure sustainable comfort and the well-being of people and environment.

Clivet's business strategy has always been clearly defined as **the development of high efficiency systems**. It has placed its R&D department at the complete disposal of this strategy, investing significant financial and human resources in this area and identifying its mission as "**Comfort & Energy Saving**", at a time when issues such as **energy saving and high efficiency** were not yet as central to public opinion as they are today.

INCREASE
COMFORT
LEVEL

REDUCE
TOTAL LIFE
CYCLE COST

REDUCE
ENERGY
CONSUMPTION



ELFOEnergy Ground Medium²

Application versatility

ELFOEnergy Ground Medium² is suited to all types of room heaters, fancoil units, radiant systems and radiators.

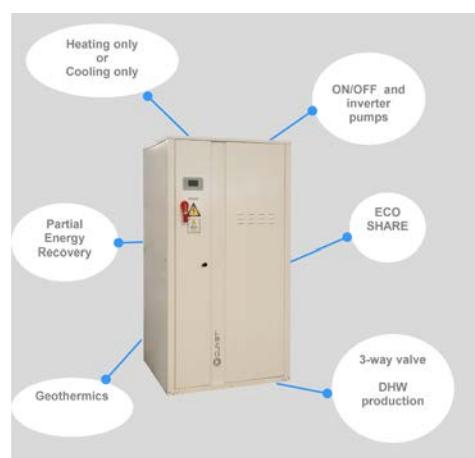
Multiple configurations available:

- **Groundwater version and closed loop Geothermal version**
- **Source and user side hydronic units** with 1 or 2 ON/OFF pumps or VARYFLOW+, or alternatively 2-way or 3-way modulating valve
- **3-way valve** for domestic hot water preparation (for "heating only" units)
- **Partial energy recovery** which recovers around 25% of the available condensation heat (for "cooling only" units)

Pre-assembled unit

ELFOEnergy Ground Medium² can be supplied equipped with components that are often provided separately.

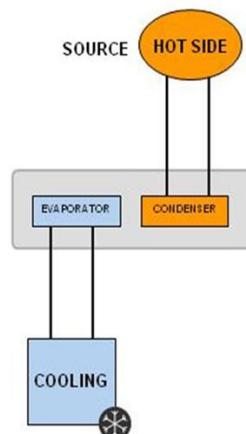
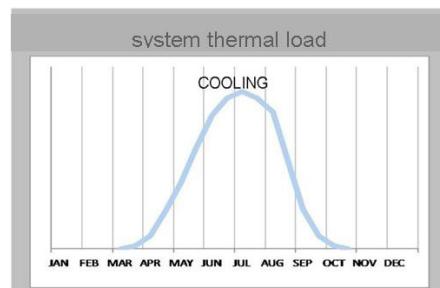
- **Reduces design times:** all accessories have been selected to assure outstanding seasonal efficiency.
- **Reduces installation costs:** the accessories are already connected mechanically and electronically wired up, are controlled by a single controller and tested to be ready for immediate use.
- **Reduces overall dimensions:** the construction and layout of the plumbing components at the back of unit makes it possible, when the heating or chilling power demand is very high, to run several units together, considerably reducing the overall footprint and freeing up space for other equipment while facilitating maintenance.



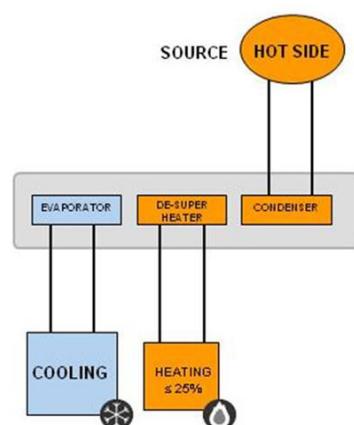
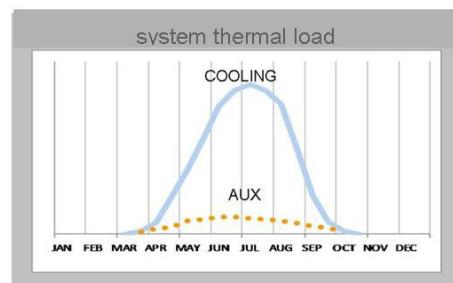
ELFOEnergy Ground Medium²

Cooling only unit, system solutions:

- ▶ Production of chilled water (Operation Cooling-only)

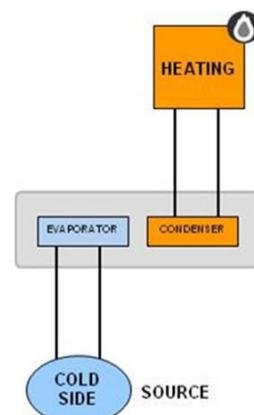
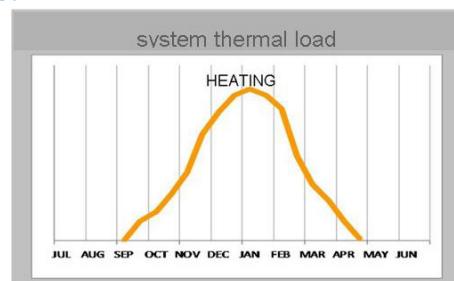


- ▶ Production of chilled water (Operation Cooling-only)
- ▶ Production of domestic hot water from partial recovery (example post-heat)

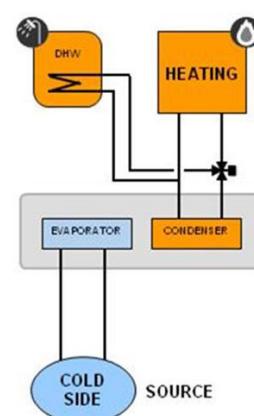
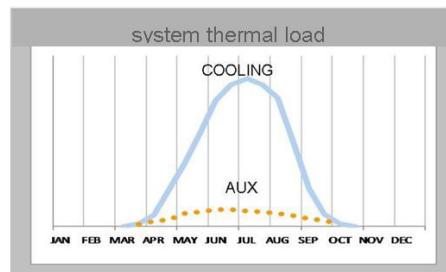


Heating only unit, system solutions:

- ▶ Production of hot water (Operation Heating-only)



- ▶ Production of hot water (Operation Heating-only)
- ▶ Production of domestic hot water with 3-way valve
- ▶ Alternated production for the System or the DHW circuit



High energy efficiency in the annual cycle

ELFOEnergy Ground Medium² reduces yearly energy consumption thanks to its high partial load efficiency, i.e., by far the most frequent condition throughout the system's life-cycle, which also increases the value of the property served. The main components are manufactured on an industrial scale, with maximum manufacturing reliability.

High energy efficiency recovery between 25% and 75% of the system load

The technology of the ELFOEnergy Ground Medium² sets the energy reference for water source heat pumps. The unit may be equipped with **modular scroll technology, ideal for partial loads, an electronic expansion valve** for a quick and precise response to the actual service demand, and high performance heat exchangers. The exceptional performance of ELFOEnergy Ground Medium at partial load makes it much more competitive and efficient than conventional solutions.

The modular scroll is the excellent solution for partial load

ELFOEnergy Ground Medium² employs highly efficient Scroll compressors, with spirals optimised for this type of use.

The advantages are:

- Compressors manufactured in large numbers on an industrial scale, with strict quality checks and highest reliability thanks to the high scale mass production volumes.
- The two sizes of Scroll compressors allow for several control steps. This way, only the necessary energy is supplied.
- **Efficiency increase that can exceed 50% of the operation with part load, thanks to the larger thermal exchange surfaces available.**

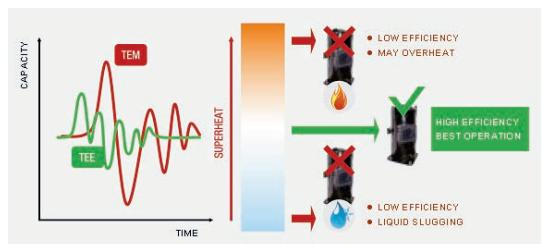
| | | |
|--|------------------------|------------------------|
| | OPERATION COOLING-ONLY | OPERATION HEATING-ONLY |
| | EER = 4,90 | COP = 5,81 |
| | EER = 5,06 | COP = 5,97 |
| | EER = 5,29 | COP = 6,20 |

Example referred size 45.2 at conditions::
W35/W7 cooling only, W10/W35 heating only

Electronic expansion valve

The thermostatic electronic expansion valve (TEE) adapts quickly and precisely to the effective load required for use, permitting a stable and accurate adjustment and **optimal operation of the compressor**.

There is also an additional increase in efficiency in comparison to traditional thermostatic mechanical valves (TEM) and a longer compressor life.



Maximum exchange efficiency

The high energy efficiency of ELFOEnergy Ground Medium² is achieved by carefully dimensioning and rating all components.

To ensure optimal exchange in every climatic condition, the unit has been fitted with generously sized exchangers that have an anticondensation external thermal insulation and an anti-freeze heater to prevent ice from forming.

| | | |
|--|------------------------|------------------------|
| | OPERATION COOLING-ONLY | OPERATION HEATING-ONLY |
| | EER = 6,10 | COP = 5,54 |

COP and EER referred to size 27.2 for application with radiant panels in compliance with EN

A complete offering

Water flow-rate continuous modulation (optional)

ELFOEnergy Ground Medium² enables adoption of both **hot and cold side hydronic units**.

The energy used for the vector pumping is fundamental on the seasonal efficiency.

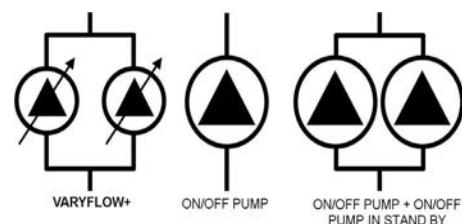
The VARYFLOW + modulating pumping unit made up of two pumps in parallel controlled by inverter, allows a precise water flow-rate modulation reducing notably the consumptions and at the same time it guarantees its functionality also in case of temporary unavailability of one of the two pumps, guaranteeing about the 80% of the nominal flow-rate.

The water flow is modulated by keeping the delivery/return water temperature differential constant.

When the system water temperature is critical, the **VARYFLOW+** controls the condensation/evaporation temperature by extending the operating range of ELFOEnergy Ground Medium².

In case of particular installation needs, the hydronic assemblies are also available:

- **ON/OFF pump:** the traditional solution with high available pressure.
- **ON/OFF pump + ON/OFF pump in stand-by:** the solution that favours reliability. The built-in control balances the operating hours of the two pump and in case of any failure it signals the damage and automatically activates the stand-by pump.
- **2-way or 3-way modulating valves** with electronic control, extend the unit's operating range by modulating the source water flow in relation to temperature.



Advanced control

The control system combines in a single solution the operating efficiency and the user-friendliness.

Continuously monitoring all of the unit operating parameters, it ensures the maintenance of an optimal energy efficiency.

The control includes many safety functions and a complete alarm management.

It also includes advanced functions, such as daily and weekly programming and automatic maximum power consumption limitation (demand limit).

It allows the management of several units in cascade up to 1 master and 6 slave (Ecoshare)

The interface terminal is equipped with a backlit graphic display and a multifunction access keyboard. The multilevel menu is protected by different passwords according to the type of user.



Remote control

The remote control allows accessing to the same functions that are accessible by the built-in unit user interface, and can be installed at a maximum distance of 350 meters.

Modbus®

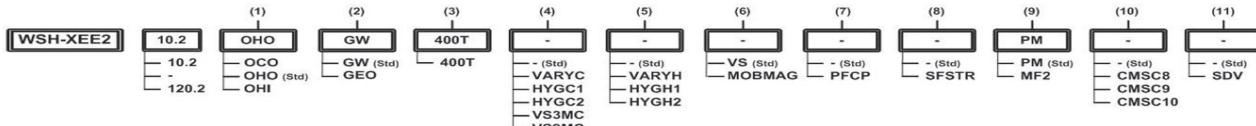
 **BACnet**

 **LonWorks**

System remote management

Thanks to the different available communication devices, the unit is able to exchange information with the main supervision systems by serial connections.

Heating only unit - configuration



(1) Operation

OCO - Cooling only
 OHO - Heating only (standard)
 OHI - Operation with water circuit change-over

(2) Version

GW - Groundwater version (standard)
 GEO - Version for Geothermal application

(3) Voltage

Supply voltage 400V/3/50

(4) Cold side hydronic unit

Refer to the diagrams of the hydronic assembly reported

(5) Hot side hydronic unit

Refer to the diagrams of the hydronic assembly reported

(6) Larger units

VS - Standard enclosure
 MOBMAG - Larger units

(7) Power capacitors

(-) not required (standard)
 PFCP - Power factor correction capacitors ($\cos\phi > 0.9$)

(8) Soft starter

(-) not required (standard)
 SFSTR - Disposal for inrush current reduction (only for sizes from 10.2 to 80.2)

(9) Phase monitor

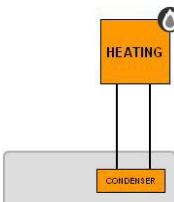
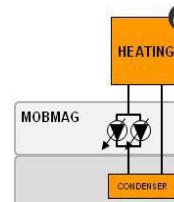
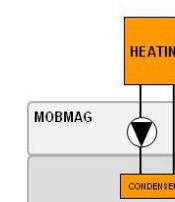
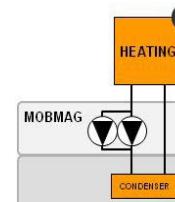
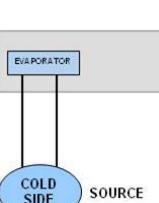
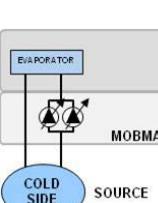
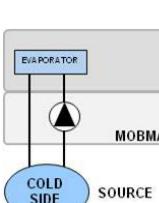
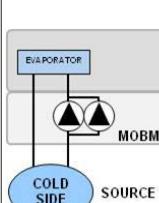
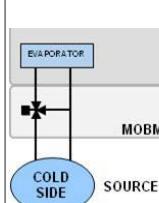
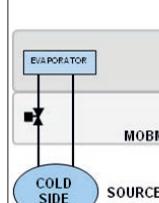
PM - Phase monitor (standard)
 MF2 - Multi-function phase monitor

(10) Communication modules

(-) not required (standard)
 CMSC8 - Serial communication module to BACnet supervisor
 CMSC9 - Serial communication module to Modbus supervisor
 CMSC10 - Serial communication module to LonWorks supervisor

(11) Cutoff valve

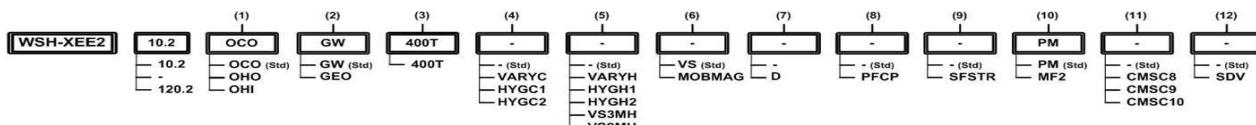
(-) not required (standard)
 SDV - Cutoff valve on compressor supply and return (only for sizes from 10.2 to 80.2)

| Functionalities | Diagram hydronic assemblies - Heating only unit | | | | | |
|----------------------------------------------|----------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| 2-PIPE SYSTEM HOT SIDE | Standard unit (Std)  | Unit with VARYFLOW + (VARYH)  | Unit with one ON/OFF pump (HYGH1)  | Unit with two ON/OFF pumps (HYGH2)  | | |
| 2-PIPE SYSTEM COLD SIDE | Standard unit (Std)  | Unit with VARYFLOW + (VARYC)  | Unit with one ON/OFF pump (HYGC1)  | Unit with two ON/OFF pumps (HYGC2)  | Unit with 3-way modulating valve (VS3MC)  | Unit with 2-way modulating valve (VS2MC)  |

Accessori forniti separatamente

- | | | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> SPCX - Set point compensation with outdoor air temperature probe RCTX - Remote control | <ul style="list-style-type: none"> BACX - BACnet serial communication module CMMBX - Serial communication module to supervisor (MODBUS) CMSLWX - LonWorks serial communication module | <ul style="list-style-type: none"> VS2MCX - Cooling side 2-way modulating valve VS3MCX - Cooling side 3-way modulating valve VACSHX - Heating side domestic hot water switching valve | <ul style="list-style-type: none"> AVIBX - Anti-vibration mount supports IFWX - Steel mesh strainer on the water side |
|---------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|

Cooling only unit - configuration



(1) Operation

OCO - Cooling only (standard)
OHO - Heating only
OHI - Operation with water circuit change-over

(2) Version

GW - Groundwater version (standard)
GEO - Version for Geothermal application

(3) Voltage

Supply voltage 400V/3/50

(4) Cold side hydronic unit

Refer to the diagrams of the hydronic assembly reported

(5) Hot side hydronic unit

Refer to the diagrams of the hydronic assembly reported

(6) Larger units

VS - Standard enclosure
MOBMAG - Larger units

(7) Partial recovery device

(-) not required (standard)
D - Partial energy recovery (only for sizes from 10.2 to 90.2)

(8) Power capacitors

(-) not required (standard)
PFCP - Power factor correction capacitors ($\cos\phi > 0.9$)

(9) Soft starter

(-) not required (standard)
SFSTR - Disposal for inrush current reduction (only for sizes from 10.2 to 80.2)

(10) Phase monitor

PM - Phase monitor (standard)
MF2 - Multi-function phase monitor

(11) Communication modules

(-) not required (standard)
CMSC8 - Serial communication module to BACnet supervisor
CMSC9 - Serial communication module to Modbus supervisor
CMSC10 - Serial communication module to LonWorks supervisor

(12) Cutoff valve

(-) not required (standard)
SDV - Cutoff valve on compressor supply and return (only for sizes from 10.2 to 80.2)

| Functions | | Diagram hydronic assemblies - Cooling only unit | | | | | |
|---------------------------------------------|--------------------------------|----------------------------------------------------|----------------------------------------------------------|-----------------------------------------------------------|------------------------------------------|------------------------------------------|--|
| 2-PIPE SYSTEM HOT SIDE | Standard Unit (Std) | Unit with VARYFLOW+ (VARYH) | Unit with one ON/OFF pump (HYGH1) | Unit with two ON/OFF pumps (HYGH2) | Unit with 3-way modulating valve (VS3MH) | Unit with 2-way modulating valve (VS2MH) | |
| | | | | | | | |
| | Standard Unit (Std) | Unit with VARYFLOW+ (VARYC) | Unit with one ON/OFF pump (HYGC1) | Unit with two ON/OFF pumps (HYGC2) | | | |
| | | | | | | | |
| | Unit with partial recovery (D) | Unit with partial recovery and VARYFLOW+ (D+VARYC) | Unit with partial recovery and one ON/OFF pump (D+HYGC1) | Unit with partial recovery and two ON/OFF pumps (D+HYGC2) | | | |
| | | | | | | | |

Accessori forniti separatamente

| | | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> SPCX - Set point compensation with outdoor air temperature probe RCTX - Remote control | <ul style="list-style-type: none"> BACX - BACnet serial communication module CMMBX - Serial communication module to supervisor (MODBUS) CMSLWX - LonWorks serial communication module | <ul style="list-style-type: none"> VS2MHX - Hot side 2-way modulating valve VS3MHX - Hot side 3-way modulating valve | <ul style="list-style-type: none"> AVIBX - Anti-vibration mount supports IFWX - Steel mesh strainer on the water side |
|---------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|

General technical data

Groundwater version

| Size | 10.2 | 12.2 | 14.2 | 16.2 | 19.2 | 22.2 | 27.2 | 30.2 | 35.2 | 40.2 | 43.2 | 45.2 | 50.2 | 55.2 | 60.2 | 70.2 | 80.2 | 90.2 | 100.2 | 120.2 | | |
|------------------------------------|------|------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|--------|------|
| Radiant panels | | | | | | | | | | | | | | | | | | | | | | |
| Heating only operation | | | | | | | | | | | | | | | | | | | | | | |
| Heating capacity (EN14511:2013) | 1 | kW | 37,1 | 42,8 | 51,7 | 60,1 | 71,3 | 83,8 | 101 | 114 | 132 | 149 | 164 | 177 | 193 | 209 | 238 | 268 | 302 | 340 | 371 | 437 |
| Total power input (EN14511:2013) | 2 | kW | 6,78 | 8,04 | 9,68 | 11,4 | 13,2 | 16,2 | 18,2 | 21,4 | 24,4 | 27,8 | 31,3 | 32,8 | 35,6 | 39,5 | 44,6 | 50,7 | 57,3 | 64,9 | 70,2 | 84,8 |
| COP (EN 14511:2013) | 3 | | 5,47 | 5,33 | 5,34 | 5,29 | 5,42 | 5,16 | 5,54 | 5,35 | 5,39 | 5,36 | 5,24 | 5,41 | 5,41 | 5,30 | 5,35 | 5,30 | 5,28 | 5,24 | 5,28 | 5,16 |
| Cooling only operation | | | | | | | | | | | | | | | | | | | | | | |
| Cooling capacity (EN14511:2013) | 6 | kW | 41,9 | 57,8 | 57,5 | 66,8 | 79,6 | 91,3 | 112 | 126 | 147 | 166 | 183 | 198 | 216 | 234 | 266 | 297 | 335 | 377 | 406 | 473 |
| Total power input (EN14511:2013) | 2 | kW | 6,67 | 8,28 | 10,2 | 11,9 | 13,7 | 16,8 | 18,4 | 21,2 | 25,3 | 28,4 | 32,7 | 34,2 | 37,4 | 41,4 | 47,1 | 54,0 | 62,4 | 67,4 | 74,6 | 88,8 |
| EER (EN 14511:2013) | 7 | | 6,27 | 5,76 | 5,67 | 5,63 | 5,81 | 5,45 | 6,10 | 5,95 | 5,82 | 5,84 | 5,58 | 5,80 | 5,78 | 5,64 | 5,63 | 5,51 | 5,37 | 5,59 | 5,45 | 5,33 |
| Terminal units | | | | | | | | | | | | | | | | | | | | | | |
| Heating only operation | | | | | | | | | | | | | | | | | | | | | | |
| Heating power (EN14511:2013) | 4 | kW | 35,8 | 41,4 | 49,6 | 57,8 | 68,6 | 81,0 | 96,7 | 109 | 126 | 143 | 157 | 169 | 184 | 200 | 227 | 257 | 290 | 328 | 355 | 420 |
| Total power input (EN14511:2013) | 2 | kW | 8,27 | 9,79 | 11,6 | 13,5 | 15,7 | 19,2 | 21,8 | 25,3 | 28,9 | 32,8 | 36,7 | 38,7 | 41,9 | 46,5 | 52,4 | 59,2 | 66,7 | 76,6 | 83,4 | 101 |
| COP (EN 14511:2013) | 3 | | 4,33 | 4,23 | 4,26 | 4,29 | 4,37 | 4,23 | 4,43 | 4,32 | 4,35 | 4,35 | 4,27 | 4,37 | 4,39 | 4,30 | 4,33 | 4,34 | 4,34 | 4,28 | 4,25 | 4,16 |
| Cooling only operation | | | | | | | | | | | | | | | | | | | | | | |
| Cooling capacity (EN14511:2013) | 8 | kW | 30,8 | 35,4 | 42,7 | 49,6 | 59,1 | 68,4 | 83,8 | 94,4 | 109 | 123 | 135 | 147 | 159 | 172 | 197 | 221 | 249 | 280 | 305 | 356 |
| Total power input (EN14511:2013) | 2 | kW | 6,45 | 7,63 | 9,22 | 10,8 | 12,5 | 15,6 | 17,5 | 20,4 | 23,5 | 26,6 | 29,8 | 31,5 | 34,1 | 37,7 | 42,7 | 48,2 | 54,7 | 61,5 | 68,4 | 82,4 |
| EER (EN 14511:2013) | 7 | | 4,77 | 4,64 | 4,63 | 4,61 | 4,72 | 4,39 | 4,80 | 4,63 | 4,62 | 4,63 | 4,53 | 4,65 | 4,68 | 4,58 | 4,60 | 4,59 | 4,55 | 4,56 | 4,46 | 4,32 |
| SEER | 12 | | 5,10 | 5,15 | 5,10 | 5,12 | 5,11 | 5,12 | 5,45 | 5,54 | 5,61 | 5,67 | 5,19 | 5,66 | 5,39 | 5,25 | 5,32 | 5,13 | 5,33 | 5,39 | 5,33 | 5,39 |
| Radiators | | | | | | | | | | | | | | | | | | | | | | |
| Heating only operation | | | | | | | | | | | | | | | | | | | | | | |
| Unit with one ON/OFF pump (HYGSW1) | 5 | | 33,2 | 38,8 | 46,3 | 53,9 | 63,2 | 74,6 | 88,6 | 101 | 116 | 132 | 146 | 156 | 170 | 186 | 210 | 237 | 267 | 303 | 330 | 395 |
| Total power input (EN14511:2013) | 2 | | 10,3 | 12,2 | 14,4 | 16,6 | 19,3 | 23,0 | 26,7 | 30,4 | 35,1 | 39,6 | 44,6 | 47,0 | 51,1 | 56,4 | 63,8 | 71,2 | 79,8 | 93,1 | 102 | 125 |
| COP (EN 14511:2013) | 3 | | 3,22 | 3,17 | 3,21 | 3,25 | 3,27 | 3,24 | 3,32 | 3,32 | 3,30 | 3,32 | 3,27 | 3,31 | 3,33 | 3,29 | 3,33 | 3,35 | 3,26 | 3,24 | 3,17 | |
| Compressor | | | | | | | | | | | | | | | | | | | | | | |
| Type of compressors | | | Scroll | Scroll | |
| No. of compressors | | No | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | |
| Std Capacity control steps | | No | 3 | 3 | 2 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 2 | 3 | 3 | 2 | |
| Oil charge | | I | 3,00 | 3,00 | 3,00 | 6,00 | 6,00 | 6,00 | 7,00 | 7,00 | 8,00 | 10,1 | 11,5 | 11,0 | 11,0 | 13,1 | 12,6 | 12,6 | 12,6 | 12,6 | 12,6 | |
| Refrigerant charge | | kg | 3,8 | 4,1 | 4,4 | 7,4 | 7,7 | 8,5 | 9,4 | 11 | 13 | 14 | 15 | 15 | 18 | 21 | 22 | 24 | 25 | 28 | 29 | 31 |
| Refrigeration circuits | | No | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| Internal exchanger | | | | | | | | | | | | | | | | | | | | | | |
| Type of internal exchanger | 9 | | PHE | PHE | |
| No. of internal exchangers | | No | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| Water flow-rate (Cool side) | 8 | l/s | 1,50 | 1,70 | 2,10 | 2,40 | 2,80 | 3,30 | 4,00 | 4,50 | 5,20 | 5,90 | 6,50 | 7,00 | 7,70 | 8,30 | 9,40 | 10,6 | 12,0 | 13,5 | 14,7 | 17,1 |
| External exchanger | | | | | | | | | | | | | | | | | | | | | | |
| Type of external exchanger | 9 | | PHE | PHE | |
| No. of external exchangers | | No | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| Water flow rate (Heat Side) | 8 | l/s | 1,80 | 2,00 | 2,50 | 2,90 | 3,40 | 4,00 | 4,80 | 5,50 | 6,30 | 7,10 | 7,80 | 8,50 | 9,20 | 10,0 | 11,4 | 12,8 | 14,4 | 16,3 | 17,8 | 20,9 |
| Connections | | | | | | | | | | | | | | | | | | | | | | |
| Water fittings (Standard units) | | | 1'1/4 | 1'1/4 | 1'1/4 | 1'1/4 | 1'1/4 | 1'1/4 | 2'1/2 | 2'1/2 | 2'1/2 | 2'1/2 | 2'1/2 | 2'1/2 | 2'1/2 | 2'1/2 | 2'1/2 | 2'1/2 | 2'1/2 | 3' | 3' | |
| Water fittings (Larger units) | | | 2' | 2' | 2' | 2' | 2' | 2' | 3' | 3' | 3' | 3' | 3' | 3' | 3' | 3' | 3' | 3' | 3' | 3' | 4' | 4' |
| Water circuit | | | | | | | | | | | | | | | | | | | | | | |
| Maximum water side pressure | 10 | MPa | 1,0 | 1,0 | 1,0 | 1,0 | 1,0 | 1,0 | 1,0 | 1,0 | 1,0 | 1,0 | 1,0 | 1,0 | 1,0 | 1,0 | 1,0 | 1,0 | 1,0 | 1,0 | 1,0 | |
| Min. installation water contents | 11 | l | 245 | 233 | 369 | 387 | 373 | 341 | 596 | 810 | 802 | 780 | 998 | 743 | 970 | 1271 | 1690 | 1633 | 2157 | 1442 | 1993 | 3113 |
| Power supply | | | | | | | | | | | | | | | | | | | | | | |
| Standard power supply | | V | 400/3/50 | 400/3/50 | 400/3/50 | 400/3/50 | 400/3/50 | 400/3/50 | 400/3/50 | 400/3/50 | 400/3/50 | 400/3/50 | 400/3/50 | 400/3/50 | 400/3/50 | 400/3/50 | 400/3/50 | 400/3/50 | 400/3/50 | 400/3/50 | | |

The Product is compliant with the ErP (Energy Related Products) European Directive. It includes the Commission delegated Regulation (EU) No 2016/2281, also known as Ecodesign LOT21.

'Contains fluorinated greenhouse gases'(GWP 2087,5)

Note: The unit can operate in cooling-only or in heating-only mode.

1. Data referred to the following conditions: Cold side exchanger water 30/35°C. Hot side exchanger water 10/7°C. Performance data calculated with reference to EN14511:2013
2. The total power draw is calculated by adding the compressor's power draw + the draw required to overcome the internal cold and hot side pressure drops + the control circuit power draw
3. COP (EN 14511:2013) heating performance coefficient. Ratio between delivered heating capacity and power input in compliance with EN 14511:2013
4. Data referred to the following conditions: Cold side exchanger water 40/45°C. Hot side exchanger water 10/7°C. Performance data calculated with reference to EN14511:2013
5. Data referred to the following conditions: Cold side exchanger water 50/55°C. Hot side exchanger water 10/7°C. Performance data calculated with reference to EN14511:2013
6. Data referred to the following conditions: Cold side exchanger water 23/18°C. Hot side exchanger water 30/35 °C. Performance data calculated with reference to EN14511:2013
7. EER (EN 14511:2013) cooling performance coefficient. Ratio between delivered cooling capacity and power input in compliance with EN 14511:2013
8. Data referred to the following conditions: Cold side exchanger water 12/7°C. Hot side exchanger water 30/35 °C. Performance data calculated with reference to EN14511:2013
9. PHE = plate exchanger
10. Conditions for the circuit on the utility side and the circuit on the source side. In configurations with hydronic units, the maximum pressure on the water side is 600 kPa.
11. The minimum system water content calculated value does not consider the internal exchanger water content. With applications or low medium requested loads, the minimum installation water volume is obtained doubling the indicated value
12. Data calculated according to the EN 14825:2016 Regulation

General technical data

Geothermic version

| Size | 10.2 | 12.2 | 14.2 | 16.2 | 19.2 | 22.2 | 27.2 | 30.2 | 35.2 | 40.2 | 43.2 | 45.2 | 50.2 | 55.2 | 60.2 | 70.2 | 80.2 | 90.2 | 100.2 | 120.2 | | |
|----------------------------------|------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|--------|-------|------|
| Radiant panels | | | | | | | | | | | | | | | | | | | | | | |
| Heating only operation | | | | | | | | | | | | | | | | | | | | | | |
| Heating capacity (EN14511:2013) | 1 | kW | 27,7 | 32,4 | 38,3 | 45,7 | 54,1 | 63,9 | 75,2 | 85,0 | 95,7 | 111 | 121 | 130 | 140 | 155 | 174 | 197 | 219 | 247 | 266 | 313 |
| Total power input (EN14511:2013) | 2 | kW | 6,61 | 7,55 | 9,01 | 10,6 | 12,4 | 15,2 | 16,8 | 19,4 | 22,4 | 25,6 | 28,4 | 30,0 | 32,5 | 36,0 | 40,6 | 45,4 | 50,9 | 59,2 | 65,0 | 79,7 |
| COP (EN 14511:2013) | 3 | | 4,19 | 4,29 | 4,26 | 4,32 | 4,35 | 4,21 | 4,47 | 4,38 | 4,28 | 4,32 | 4,27 | 4,33 | 4,31 | 4,32 | 4,28 | 4,33 | 4,30 | 4,17 | 4,09 | 3,93 |
| Terminal units | | | | | | | | | | | | | | | | | | | | | | |
| Heating only operation | | | | | | | | | | | | | | | | | | | | | | |
| Heating capacity (EN14511:2013) | 4 | kW | 27,4 | 32,1 | 37,7 | 45,0 | 52,8 | 62,5 | 73,4 | 83,2 | 93,7 | 108 | 119 | 127 | 138 | 153 | 170 | 193 | 215 | 244 | 263 | 309 |
| Total power input (EN14511:2013) | 2 | kW | 8,18 | 9,51 | 11,2 | 13,1 | 15,3 | 18,3 | 20,6 | 23,5 | 27,1 | 31,0 | 34,5 | 36,5 | 39,6 | 43,8 | 49,6 | 55,2 | 61,6 | 72,4 | 79,1 | 97,3 |
| COP (EN 14511:2013) | 3 | | 3,35 | 3,37 | 3,36 | 3,44 | 3,45 | 3,42 | 3,56 | 3,55 | 3,46 | 3,49 | 3,45 | 3,49 | 3,48 | 3,48 | 3,44 | 3,49 | 3,50 | 3,37 | 3,18 | |
| Compressor | | | | | | | | | | | | | | | | | | | | | | |
| Type of compressors | | | Scroll | Scroll | | |
| No. of compressors | Nr | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | | |
| Std Capacity control steps | Nr | 3 | 3 | 2 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 2 | 3 | 3 | 2 | | |
| Oil charge (C1) | I | 3,00 | 3,00 | 3,00 | 6,00 | 6,00 | 6,00 | 7,00 | 7,00 | 8,00 | 10,1 | 11,5 | 11,0 | 11,0 | 13,1 | 12,6 | 12,6 | 12,6 | 12,6 | 12,6 | | |
| Refrigerant charge | kg | 3,8 | 4,1 | 4,4 | 7,4 | 7,7 | 8,5 | 9,4 | 11 | 13 | 14 | 15 | 15 | 18 | 21 | 22 | 24 | 25 | 28 | 29 | 31 | |
| Refrigeration circuits | Nr | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | |
| Internal exchanger | | | | | | | | | | | | | | | | | | | | | | |
| Type of internal exchanger | 5 | PHE | | | |
| No. of internal exchangers | Nr | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | |
| Water flow-rate (Heat side) | l/s | 1,31 | 1,53 | 1,79 | 2,14 | 2,51 | 2,97 | 3,49 | 3,96 | 4,46 | 5,15 | 5,66 | 6,06 | 6,56 | 7,26 | 8,11 | 9,17 | 10,24 | 11,61 | 12,51 | 14,71 | |
| External exchanger | | | | | | | | | | | | | | | | | | | | | | |
| Type of external exchanger | 5 | PHE | | | |
| No. of external exchangers | Nr | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | |
| Water flow-rate (Cool side) | l/s | 1,66 | 1,95 | 2,29 | 2,76 | 3,24 | 3,83 | 4,52 | 5,13 | 5,72 | 6,63 | 7,25 | 7,78 | 8,42 | 9,33 | 10,37 | 11,80 | 13,19 | 14,73 | 15,80 | 18,25 | |
| Connections | | | | | | | | | | | | | | | | | | | | | | |
| Water fittings (standard units) | | | 1'1/4 | 1'1/4 | 1'1/4 | 1'1/4 | 1'1/4 | 1'1/4 | 2'1/2 | 2'1/2 | 2'1/2 | 2'1/2 | 2'1/2 | 2'1/2 | 2'1/2 | 2'1/2 | 2'1/2 | 2'1/2 | 3' | 3' | | |
| Water fittings (Larger units) | | | 2' | 2' | 2' | 2' | 2' | 2' | 3' | 3' | 3' | 3' | 3' | 3' | 3' | 3' | 3' | 3' | 3' | 4' | 4' | |
| Water circuit | | | | | | | | | | | | | | | | | | | | | | |
| Maximum water side pressure | 6 | MPa | 1,0 | 1,0 | 1,0 | 1,0 | 1,0 | 1,0 | 1,0 | 1,0 | 1,0 | 1,0 | 1,0 | 1,0 | 1,0 | 1,0 | 1,0 | 1,0 | 1,0 | 1,0 | | |
| Power supply | | | | | | | | | | | | | | | | | | | | | | |
| Standard power supply | V | 400/3/50 | 400/3/50 | 400/3/50 | 400/3/50 | 400/3/50 | 400/3/50 | 400/3/50 | 400/3/50 | 400/3/50 | 400/3/50 | 400/3/50 | 400/3/50 | 400/3/50 | 400/3/50 | 400/3/50 | 400/3/50 | 400/3/50 | 400/3/50 | | | |

The Product is compliant with the ErP (Energy Related Products) European Directive. It includes the Commission delegated Regulation (EU) No 2016/2281, also known as Ecodesign LOT21.

'Contains fluorinated greenhouse gases'(GWP 2087,5)

Not: The unit only works in hot mode.

1. Data referred to the following conditions: Hot side exchanger water 30/35 °C. Cold side exchanger water 0/-3 °C. Operation with 30% cold side mixture of water and propylene glycol. Performance data calculated with reference to EN14511:2013
2. The total power draw is calculated by adding the compressor's power draw + the draw required to overcome the internal cold and hot side pressure drops + the control circuit power draw
3. COP (EN 14511:2013) heating performance coefficient. Ratio between delivered heating capacity and power input in compliance with EN 14511:2013
4. Data referred to the following conditions: Hot side exchanger water 40/45°C. Cold side exchanger water 0/-3 °C. Operation with 30% cold side mixture of water and propylene glycol. Performance data calculated with reference to EN14511:2013
5. PHE = plate exchanger
6. Conditions for the circuit on the utility side and the circuit on the source side. In configurations with hydronic units, the maximum pressure on the water side is 600 kPa.

Electrical data

| Size | 10.2 | 12.2 | 14.2 | 16.2 | 19.2 | 22.2 | 27.2 | 30.2 | 35.2 | 40.2 | 43.2 | 45.2 | 50.2 | 55.2 | 60.2 | 70.2 | 80.2 | 90.2 | 100.2 | 120.2 | |
|--------------------------------------------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-------|-------|-----|
| F.L.A. - Full load current at max admissible conditions | | | | | | | | | | | | | | | | | | | | | |
| F.L.A. - Total | A | 19,9 | 23,8 | 28,9 | 31,5 | 36,4 | 44,9 | 51,8 | 60,3 | 66,8 | 74,9 | 81,4 | 89,6 | 96,1 | 104 | 119 | 133 | 148 | 173 | 228 | |
| F.I.I. - Full load power input at max admissible conditions | | | | | | | | | | | | | | | | | | | | | |
| F.I.I. - Total | kW | 11,9 | 14,0 | 16,8 | 19,5 | 22,4 | 26,3 | 30,2 | 34,1 | 39,6 | 44,6 | 50,2 | 53,1 | 58,7 | 63,7 | 72,2 | 81,0 | 90,0 | 106 | 116 | 140 |
| M.I.C. Maximum inrush current | | | | | | | | | | | | | | | | | | | | | |
| M.I.C. - Value | A | 73,7 | 111 | 116 | 126 | 133 | 189 | 196 | 204 | 256 | 302 | 309 | 340 | 347 | 355 | 370 | 468 | 482 | 443 | 458 | 499 |
| M.I.C. with soft start accessory | A | 44,9 | 65,2 | 70,3 | 76,2 | 80,0 | 111 | 118 | 126 | 154 | 180 | 187 | 201 | 208 | 216 | 230 | 284 | 299 | - | - | - |

Electrical data refer to standard units; according to the installed accessories, the data can suffer some variations.

Power supply: 400/3/50 Hz. Voltage variation: max. +/-10%

Voltage unbalance between phases: max 2 %

For non standard voltage please contact Clivet technical office

Units are in compliance with the europeans law CEI EN 60204 and CEI EN 60335

Sound levels

| Size | Sound power level (dB) | | | | | | | | Sound power level | Sound pressure level | | |
|--------------|------------------------|-----|-----|-----|------|------|------|------|-------------------|----------------------|--|--|
| | Octave band (Hz) | | | | | | | | | | | |
| | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 | | | | |
| 10.2 | 78 | 70 | 62 | 52 | 52 | 43 | 41 | 40 | 60 | 44 | | |
| 12.2 | 78 | 69 | 62 | 56 | 52 | 44 | 43 | 38 | 60 | 44 | | |
| 14.2 | 78 | 67 | 61 | 57 | 54 | 46 | 44 | 39 | 60 | 45 | | |
| 16.2 | 78 | 71 | 66 | 63 | 53 | 49 | 46 | 41 | 64 | 49 | | |
| 19.2 | 78 | 73 | 67 | 63 | 55 | 51 | 47 | 42 | 65 | 49 | | |
| 22.2 | 78 | 73 | 65 | 62 | 55 | 52 | 47 | 42 | 64 | 49 | | |
| 27.2 | 78 | 73 | 66 | 62 | 56 | 54 | 48 | 44 | 64 | 49 | | |
| 30.2 | 78 | 74 | 63 | 60 | 56 | 54 | 48 | 44 | 64 | 49 | | |
| 35.2 | 81 | 83 | 80 | 67 | 61 | 61 | 52 | 45 | 74 | 58 | | |
| 40.2 | 81 | 79 | 80 | 67 | 65 | 63 | 55 | 50 | 74 | 58 | | |
| 43.2 | 81 | 83 | 83 | 69 | 66 | 65 | 56 | 49 | 77 | 60 | | |
| 45.2 | 81 | 78 | 80 | 69 | 66 | 62 | 55 | 48 | 74 | 58 | | |
| 50.2 | 81 | 83 | 83 | 70 | 67 | 64 | 56 | 47 | 77 | 60 | | |
| 55.2 | 81 | 80 | 83 | 70 | 68 | 65 | 57 | 50 | 77 | 60 | | |
| 60.2 | 81 | 80 | 83 | 71 | 69 | 65 | 57 | 50 | 77 | 61 | | |
| 70.2 | 82 | 80 | 85 | 73 | 72 | 68 | 60 | 51 | 79 | 63 | | |
| 80.2 | 82 | 80 | 85 | 73 | 74 | 70 | 61 | 52 | 80 | 63 | | |
| 90.2 | 83 | 81 | 86 | 74 | 75 | 71 | 62 | 53 | 81 | 64 | | |
| 100.2 | 83 | 81 | 86 | 74 | 75 | 71 | 62 | 53 | 81 | 64 | | |
| 120.2 | 84 | 82 | 87 | 75 | 76 | 72 | 63 | 54 | 82 | 65 | | |

Sound levels refer to units with full load under nominal test conditions.

The sound pressure level refers to a distance of 1 meter from the outer surface of the unit operating in open field.

Noise levels are determined using the tensiometric method (UNI EN ISO 9614-2)

Data referred to the following conditions:

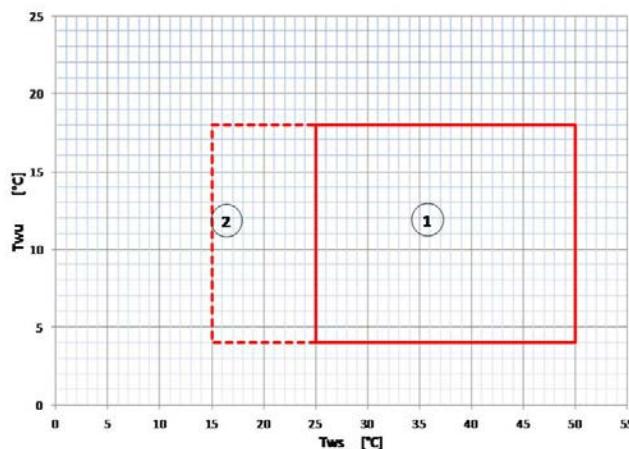
Entering / leaving exchanger water temperature user side 12/7°C

Entering / leaving exchanger water temperature source side 30/35°C

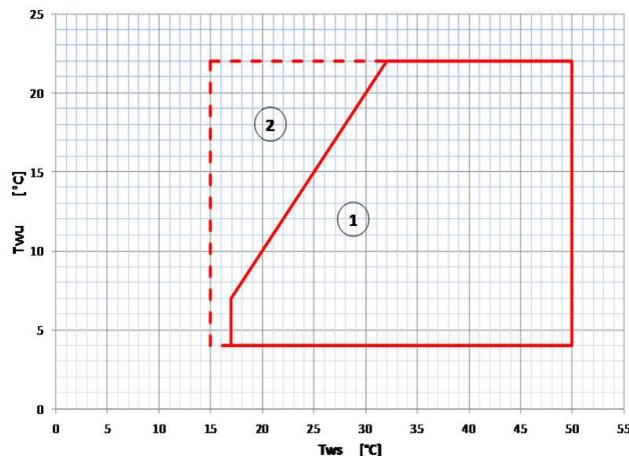
Cooling only unit

Operating Range (Cooling)

Size 10.2 - 12.2 - 14.2



Size 19.2-22.2-27.2-30.2-35.2-40.2-45.2



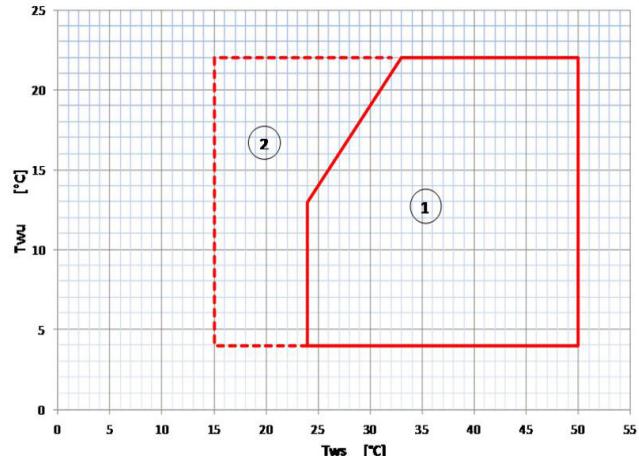
T_{wu} [°C] = Cold side water outlet temperature

T_{ws} [°C] = Hot side water outlet temperature

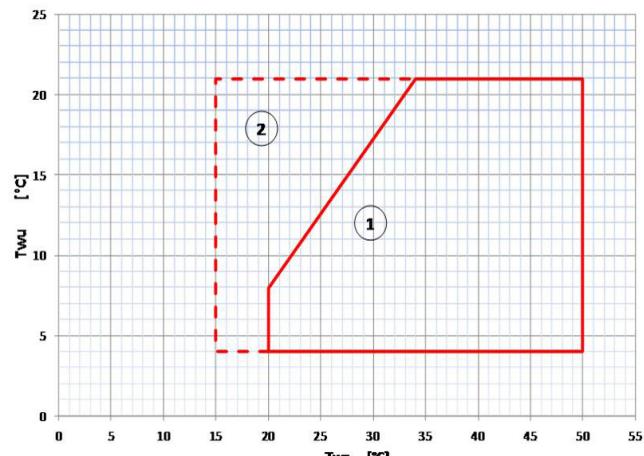
The limits refer to $DT=5$ °C on both the hot and cold sides

1. Normal operating range
2. Range of operation with modulating valve or hot side regulating inverter pump (optional configurations)

Size 16.2



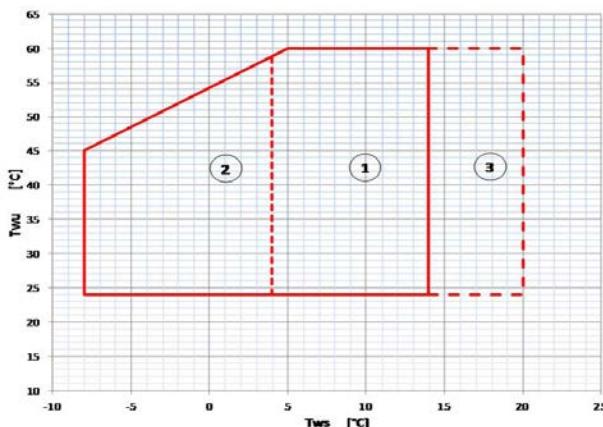
Sizes 43.2-50.2-55.2-60.2-70.2-80.2-90.2-100.2-120.2



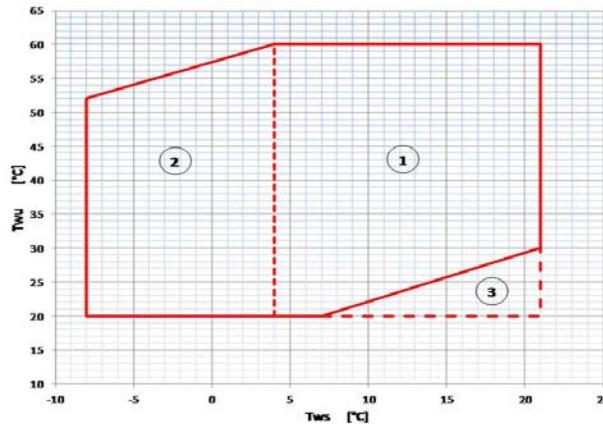
Heating only unit

Operating Range (Heating)

Size 10.2 - 12.2 - 14.2



Size 19.2-22.2-27.2-30.2-35.2-40.2-45.2



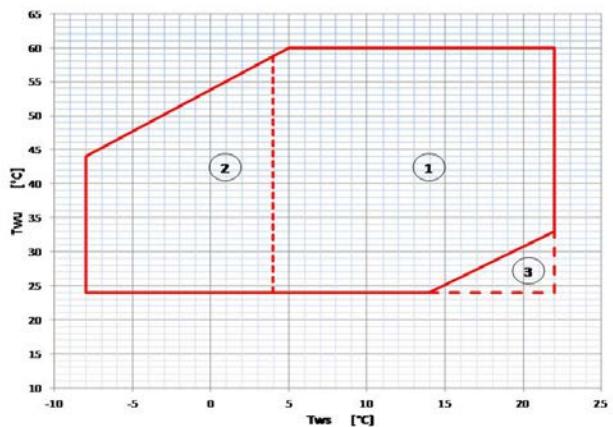
T_{wu} [°C] = Hot side water outlet temperature

T_{ws} [°C] = Cold side water outlet temperature

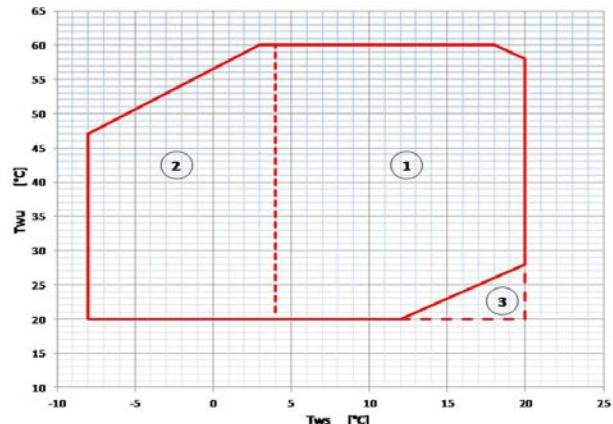
The limits refer to $DT=5$ °C on both the hot and cold sides

1. Normal operating range
2. Operating range in which a glycol/water mix must be used, given the water temperature at the cold side exchanger outlet
3. Range of operation with modulating valve or hot side regulating inverter pump (optional configurations)

Size 16.2



Sizes 43.2-50.2-55.2-60.2-70.2-80.2-90.2-100.2-120.2



Admissible water flow rates

Min. (Qmin) and max. (Qmax) water flow-rates admissibles for the correct unit operation.

| | | | 10.2 | 12.2 | 14.2 | 16.2 | 19.2 | 22.2 | 27.2 | 30.2 | 35.2 | 40.2 | 43.2 | 45.2 | 50.2 | 55.2 | 60.2 | 70.2 | 80.2 | 90.2 | 100.2 | 120.2 |
|--------------|------|-------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-------|-------|
| Heating side | Qmin | [l/s] | 0,8 | 0,8 | 0,8 | 1,0 | 1,1 | 1,1 | 1,8 | 1,8 | 1,8 | 2,4 | 2,4 | 2,4 | 2,9 | 2,9 | 2,9 | 3,8 | 3,8 | 5,3 | 9,5 | 10,5 |
| | Qmax | [l/s] | 4,2 | 4,2 | 4,3 | 4,8 | 4,9 | 5,1 | 8,8 | 8,8 | 9,3 | 11,4 | 11,9 | 12,2 | 14,4 | 15,0 | 15,4 | 18,3 | 19,0 | 23,5 | 28,0 | 29,0 |
| Cooling side | Qmin | [l/s] | 0,8 | 0,8 | 0,8 | 1,0 | 1,1 | 1,1 | 1,9 | 1,9 | 2,6 | 2,6 | 2,6 | 3,5 | 3,5 | 3,5 | 4,5 | 4,5 | 5,0 | 5,0 | 8,5 | 8,5 |
| | Qmax | [l/s] | 3,5 | 3,5 | 4,3 | 4,4 | 4,9 | 5,1 | 8,5 | 8,5 | 11,5 | 11,5 | 11,5 | 14,5 | 14,5 | 15,0 | 18,0 | 18,5 | 21,5 | 22,0 | 27,0 | 27,0 |

Correction factors for glycol use

| % ethylene glycol by weight | | 5% | 10% | 15% | 20% | 25% | 30% | 35% | 40% |
|--------------------------------------------------|----|-------|-------|-------|-------|-------|-------|-------|-------|
| Freezing temperature | °C | -2,0 | -3,9 | -6,5 | -8,9 | -11,8 | -15,6 | -19,0 | -23,4 |
| Safety temperature | °C | 3,0 | 1,0 | -1,0 | -4,0 | -6,0 | -10,0 | -14,0 | -19,0 |
| Cold side exchanger chiller power factor | – | 0,995 | 0,990 | 0,985 | 0,981 | 0,977 | 0,974 | 0,971 | 0,968 |
| Cold side exchanger compressor power draw factor | – | 0,997 | 0,993 | 0,990 | 0,988 | 0,986 | 0,984 | 0,982 | 1,124 |
| Cold side exchanger glycol solution flow factor | – | 1,003 | 1,010 | 1,020 | 1,033 | 1,050 | 1,072 | 1,095 | 1,124 |
| Cold side exchanger pressure drop factor | – | 1,029 | 1,060 | 1,090 | 1,118 | 1,149 | 1,182 | 1,211 | 1,243 |

Fouling Correction Factors

| m ² °C/W | Evaporator | | Condenser | |
|---------------------------|------------|------|-----------|------|
| | F1 | FK1 | F1 | FK1 |
| 0,44 x 10 ⁻⁴ | 1,00 | 1,00 | 1,00 | 1,00 |
| 0,88 x 10 ⁻⁴) | 0,97 | 0,99 | 0,97 | 1,08 |
| 1,76 x 10 ⁻⁴) | 0,94 | 0,98 | 0,92 | 1,05 |

F1 = Cooling capacity correction factors

FK1 = Compressor power input correction factor

Overload and control device calibrations

| | | Intervention | Reset | Value |
|------------------------------------------------------|-------|--------------|-------|-------|
| High pressure switch (gas side) | [kPa] | 4050 | 3300 | – |
| Low pressure alarm (gas side) | [kPa] | 450 | 600 | – |
| Low pressure switch (GEO) (gas side) | [bar] | 200 | 350 | – |
| Antifreeze protection | [°C] | 4 | 6,0 | – |
| high pressure safety valve (gas side) | [kPa] | – | – | 4500 |
| Low pressure safety valve (gas side) | [kPa] | – | – | 3000 |
| Max no. of compressor starts per hour (gas side) | [No] | – | – | 10 |
| Differential pressure switch (water side) | [kPa] | 3 | 5 | – |
| Max. pressure without hydronic assembly (water side) | [kPa] | – | – | 1000 |
| Max. pressure with hydronic assembly (water side) | [kPa] | – | – | 600 |
| Safety valve calibration (water side) (1) | [kPa] | – | – | 600 |

(1) Available only with hydronic assembly option

Standard unit technical specifications

Compressor

Hermetic Scroll compressors with orbiting spiral, equipped with motor protective device for overtemperatures, overcurrents and excessive temperatures of the supply gas. They are mounted on rubber antivibration mounts and comes with a full oil charge. The compressors come with a thermal and acoustic insulation jacket. An automatic oil heater prevents the oil from being diluted by the refrigerant when the compressor stops. The compressors are connected in TANDEM on a single refrigerating circuit and have a biphasic oil equalisation.

Structure

Supporting structure made with zinc-magnesium sheet metal that ensures excellent mechanical features and high long-term resistance against corrosion.

Panelling

External panelling in zinc-magnesium sheet, prepainted RAL 9003, clad internally with heatproof and soundproof material. The panels are easy to remove when access to the internal components is required.

Coolside exchanger

Direct expansion heat exchanger with braze welded stainless steel INOX AISI 316 plates and complete with external thermal/anti-condensation insulation. The exchanger has Victaulic hydraulic connections.

Heating side exchanger

Direct expansion heat exchanger with braze welded stainless steel INOX AISI 316 plates and complete with external thermal/anti-condensation insulation. The exchanger has Victaulic hydraulic connections.

Refrigeration circuit

Refrigeration circuit with:

- anti-acid dehydrator filter
- liquid flow and moisture indicator
- electronic expansion valve
- safety high pressure switch
- low pressure transducer
- high pressure transducer
- high pressure safety valve
- low pressure safety valve
- refrigerant charge

Water circuit

Cooling side

- victaulic connection joints
- differential pressure switch, water side
- drain cock (with hydronic units)
- minimum circuit charge pressure switch (with hydronic units)

Heating side

- victaulic connection joints
- differential pressure switch, water side
- drain cock (with hydronic units)
- minimum circuit charge pressure switch (with hydronic units)

Electrical panel

The capacity section includes:

- main door lock isolator switch
- isolating transformer for auxiliary circuit power supply
- compressor overload protection (in the range between 10.2 and 80.2)
- compressor protection fuse (in the range between 90.2 and 120.2)
- compressor control contactor
- double winding on compressor for reduction of inrush current (in the range between 90.2 and 120.2)

The control section includes:

- interface terminal with graphic display
- display of the set values, the error codes and the parameter index
- keys for ON/OFF control, cool and heat operating modes, alarm reset
- proportional-integral water temperature control
- daily, weekly programmer of temperature set-point and unit on/off
- set-point compensation with 0-10 V signal
- unit switching on management by local or remote (serial)
- antifreeze protection water side
- compressor overload protection and timer
- prealarm function for water antifreeze and high refrigerant gas pressure
- self-diagnosis system with immediate display of the fault code
- automatic rotation control for compressor starts
- compressor operating hour display
- Input for remote ON/OFF control
- potential-free contact for summer / winter change
- dry contacts to control the cumulative alarm signal remotely
- inlet for demand limit (power input limitation according to a 0÷10V external signal)
- double setpoint enabling
- potential-free contacts for compressor status
- phase monitor
- ECOSHARE function for the automatic management of a group of units
- 0÷10V signal output and potential-free contact for auxiliary heater
- enabling of DHW preparation in relation to remote consent
- numeration of electrical panel cables
- designed for natural cooling management (provided by the customer)
- configuration for single on/off pump or service and source side modulating valve

Accessories

- IFWX - Steel mesh strainer on the water side
- SPCX - Set-point compensation with outdoor air temperature probe
- RCTX - Remote control
- AVIBX - Anti-vibration mount supports
- CMMBX - Serial communication module to supervisor (MODBUS)
- CMSLWX - LonWorks serial communication module
- BACX - BACnet serial communication module
- AVIBX - Anti-vibration mount supports
- VS2MCX - Cold side 2-way modulating valve
- VS3MCX - Cold side 3-way modulating valve
- VS2MHX - Hot side 2-way modulating valve
- VS3MHX - Hot side 3-way modulating valve
- VACSHX - Heating side DHW switching valve

Electronic control

Description of step start-up control

The electronic control allows to manage the unit depending on the requested load.

The compressor power steps are activated to maximise efficiency from the lowest to the highest setting.



Main controls

Leaving water temperature control with PID algorithm: it keeps the leaving mean temperature to a set value.

- Auto-adaptive switching on differential: guarantees the compressors minimum operating time in systems with low water content.
- Condensation control based on pressure
- Pre-alarms at automatic reset: in case of alarm it is allowed a certain number of restarts before the definitive lock.
- Compressor operating hour calculation
- Compressor start calculation
- Control and continuous management of the compressor operating conditions to guarantee the unit operating also in extreme conditions
- Water temperature check (when used) to avoid the pipe freezing
- Alarm log
- Autostart after voltage drop
- Local or remote control

Unit status display

By the user interface is possible to display:

- Unit operating mode and status
- Leaving/entering water temperature
- Chiller circuit temperatures and pressures
- Signalling of alarms and anomalies in progress.

Probe, transducer and parameter display

A user interface dedicated section allows the maintenance or technical assistance personnel to control the unit operating state.

This section is accessible only by specialized personnel.

Management of more units in cascade (ECOSHARE)

It allows the management of several units hydraulically connected up to 1 master and 6 slave maximum.

Units must be of the same type: all reversible heat pumps, or all cool only, or all heat only.

Sizes can be different.

The communication among the units is via a BUS serial cable allowing:

- Supply water set-point setting of the slave units
- Setting of logics that increase the system energy efficiency
- Unit operating hours balancing
- Unit management in case of damage (only on slave unit)
- Hydronic assembly switch-off management of units not used

Remote control (RCTX)

The remote control allows the full control of all unit functions from remote position.

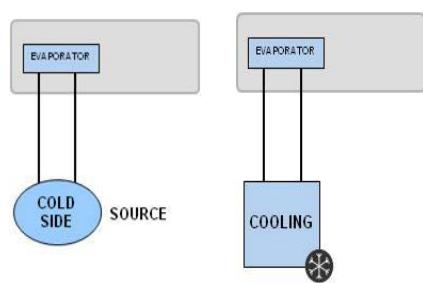
It can be easily installed on the wall and has the same aspect and functions of the user interface on the unit.

Cold side hydronic unit configurations

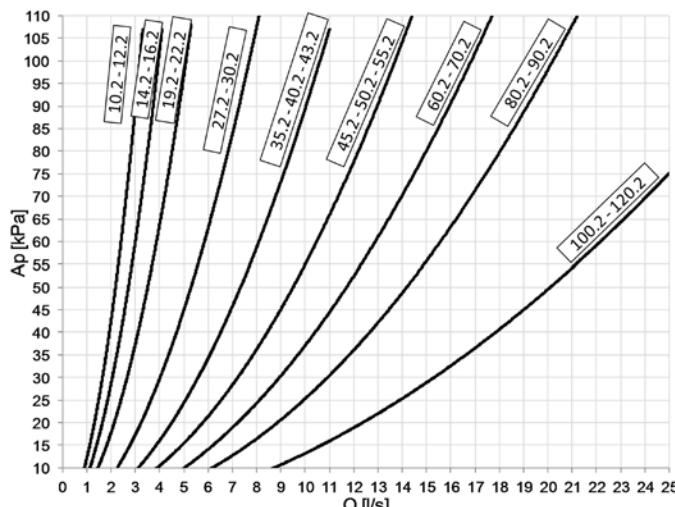
Standard unit (-)

Configuration without cold side hydronic assembly, equipped with components as described on the water diagram key.

All water fittings are Victaulic type. It is possible to control an external pump by an on/off or 0-10V signal.



Cold side exchanger pressure drop curves for groundwater applications



The pressure drops on the water side are calculated by considering an average water temperature at 7°C.

Q = Water flow rate [l/s]
DP = Pressure drops [kPa]

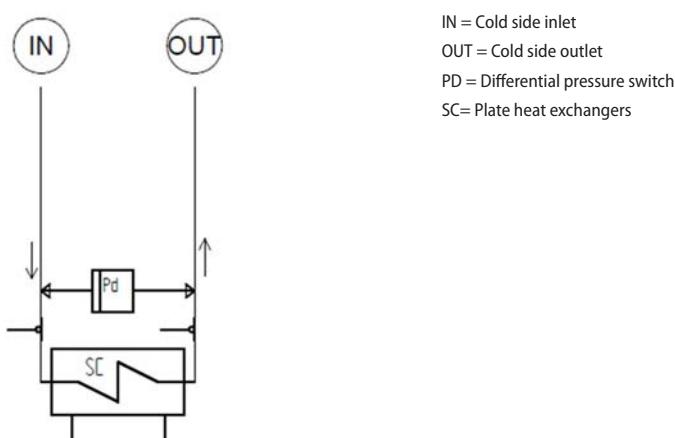
To the cold side exchanger pressure drops must be added the pressure drops of the steel mesh mechanical filter that must be placed on the water input line. It is a device compulsory for the correct unit operation, and it is available as accessory IFWX.

Admissible cold side water flows for groundwater applications

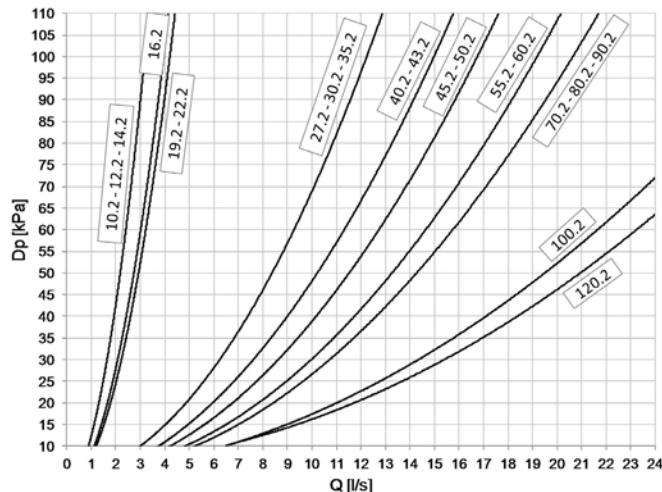
Min. (Qmin) and max. (Qmax) water flow-rates admissibles for the correct unit operation.

| Size | | 10.2 | 12.2 | 14.2 | 16.2 | 19.2 | 22.2 | 27.2 | 30.2 | 35.2 | 40.2 | 43.2 | 45.2 | 50.2 | 55.2 | 60.2 | 70.2 | 80.2 | 90.2 | 100.2 | 120.2 |
|-----------|------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-------|-------|
| Cold side | Qmin [l/s] | 0,8 | 0,8 | 0,8 | 1,0 | 1,1 | 1,1 | 1,9 | 1,9 | 2,6 | 2,6 | 2,6 | 3,5 | 3,5 | 3,5 | 4,5 | 4,5 | 5,0 | 5,0 | 8,5 | 8,5 |
| | Qmax [l/s] | 3,5 | 3,5 | 4,3 | 4,4 | 4,9 | 5,1 | 8,5 | 8,5 | 11,5 | 11,5 | 11,5 | 14,5 | 14,5 | 15,0 | 18,0 | 18,5 | 21,5 | 22,0 | 27,0 | 27,0 |

Cold side water diagram



Cold side exchanger pressure drop curves for geothermal applications



The pressure drops on the water side are calculated by considering an average water temperature at 7°C.

Q = Water flow rate [l/s]
DP = Pressure drops [kPa]

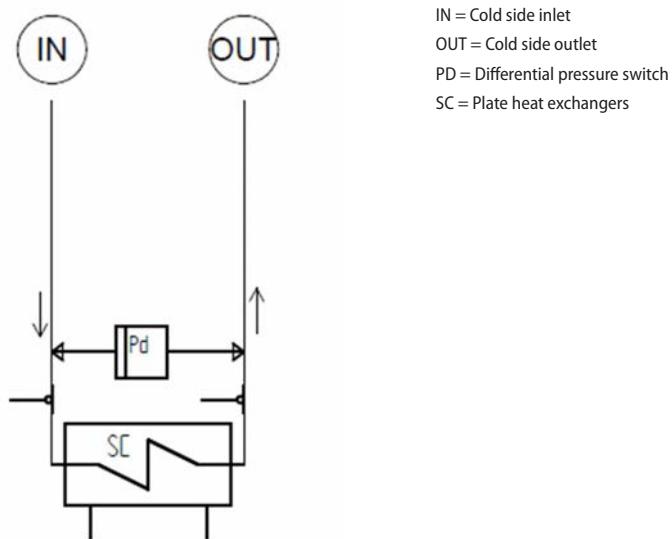
To the cold side exchanger pressure drops must be added the pressure drops of the steel mesh mechanical filter that must be placed on the water input line. It is a device compulsory for the correct unit operation, and it is available as accessory IFWX.

Admissible cold side water flows for geothermal applications

Min. (Qmin) and max. (Qmax) water flow-rates admissibles for the correct unit operation.

| Size | | 10.2 | 12.2 | 14.2 | 16.2 | 19.2 | 22.2 | 27.2 | 30.2 | 35.2 | 40.2 | 43.2 | 45.2 | 50.2 | 55.2 | 60.2 | 70.2 | 80.2 | 90.2 | 100.2 | 120.2 |
|-----------|------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-------|-------|
| Cold side | Qmin [l/s] | 0,8 | 0,8 | 0,8 | 1,0 | 1,1 | 1,1 | 1,8 | 1,8 | 1,8 | 2,4 | 2,4 | 2,4 | 2,9 | 2,9 | 2,9 | 3,8 | 3,8 | 5,3 | 9,5 | 10,5 |
| | Qmax [l/s] | 4,2 | 4,2 | 4,3 | 4,8 | 4,9 | 5,1 | 8,8 | 8,8 | 9,3 | 11,4 | 11,9 | 12,2 | 14,4 | 15,0 | 15,4 | 18,3 | 19,0 | 23,5 | 28,0 | 29,0 |

Cold side water diagram



Cold side hydronic unit configurations

Unit with VARYFLOW + (VARYC)

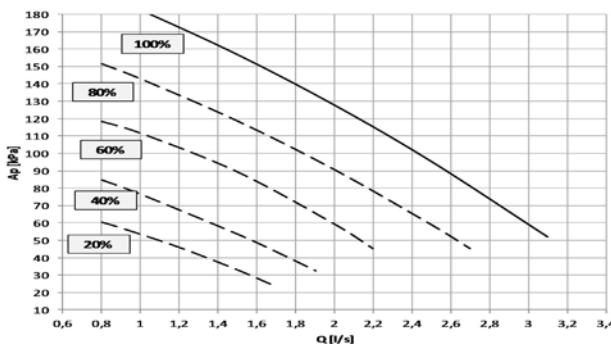
Configuration with 2 centrifugal electric pumps arranged in parallel and controlled by inverter, with housing and impeller made with AISI 304 stainless steel, and components as described on the water diagram key. All water fittings are Victaulic type.

The electric pumps are equipped with three-phase electric motor with IP55-protection and complete with thermoformed insulated casing.

The control, modulates the water flow-rate keeping constant the delta T.

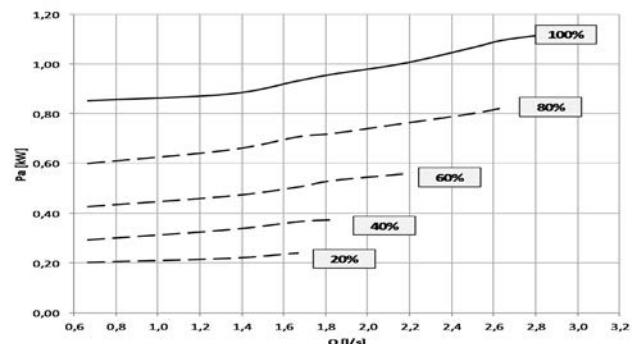
If the water temperature is in critical conditions, it allows to extend the unit operating ranges guaranteeing its operating, automatically reducing the water flow-rate. In the event of one of the two pumps is temporarily unavailable, it guarantees about the 80% of the nominal flow-rate.

Available pressure (Size 10.2 - 12.2)



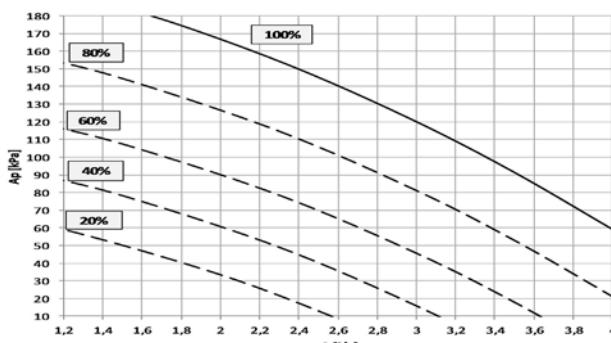
Q = Water flow rate [l/s] Ap = Pressure head, available to the unit fittings [kPa]

Absorption curves (Size 10.2 - 12.2)



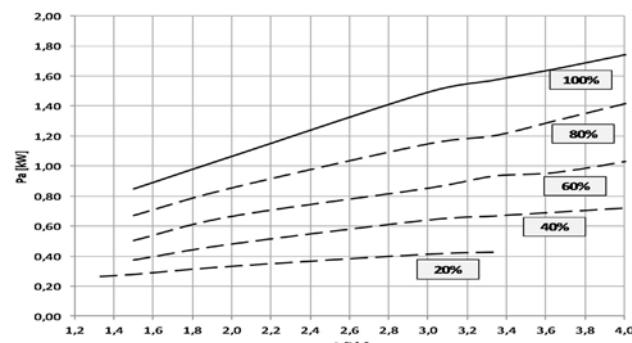
Q = Water flow rate [l/s] Pa = Electrical power draw [kW]

Available pressure (Size 14.2 - 16.2)



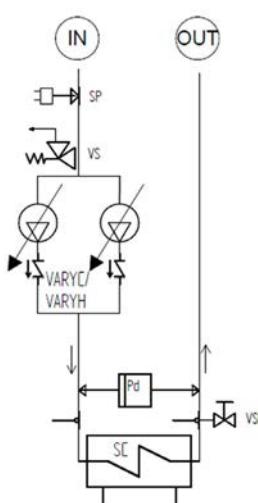
Q = Water flow rate [l/s] Ap = Pressure head, available to the unit fittings [kPa]

Absorption curves (Size 14.2 - 16.2)



Q = Water flow rate [l/s] Pa = Electrical power draw [kW]

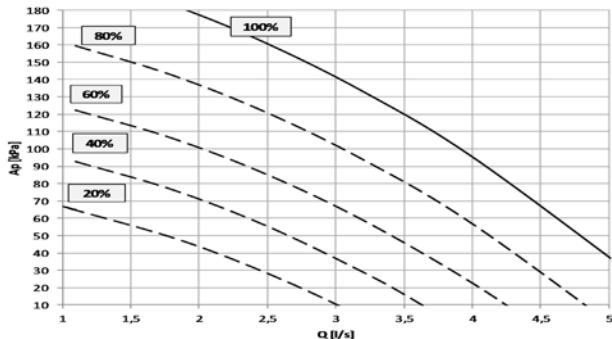
Cold side water diagram



- IN = Cold side inlet
- OUT = Cold side outlet
- SP = Circuit charging pressure switch, calibrated to 0.7 bar
- VS = Safety valve calibrated to 6 bar
- VARYC = Hydronic unit VARYFLOW + cold side
- PD := Differential pressure switch
- VSR = Relief valve
- SC = Plate heat exchangers

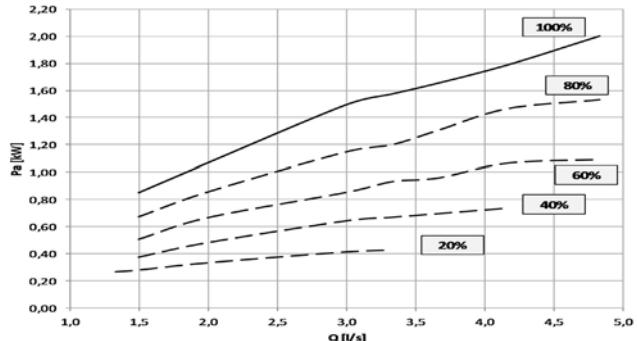
Unit with VARYFLOW + (VARYC)

Available pressure (Size 19.2 - 22.2)



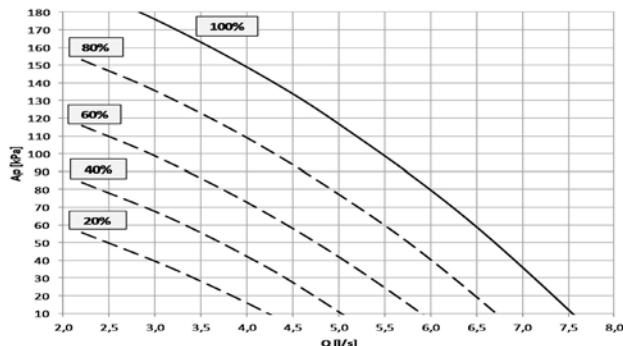
Q = Water flow rate [l/s] Ap = Pressure head, available to the unit fittings [kPa]

Absorption curves (Size 19.2 - 22.2)



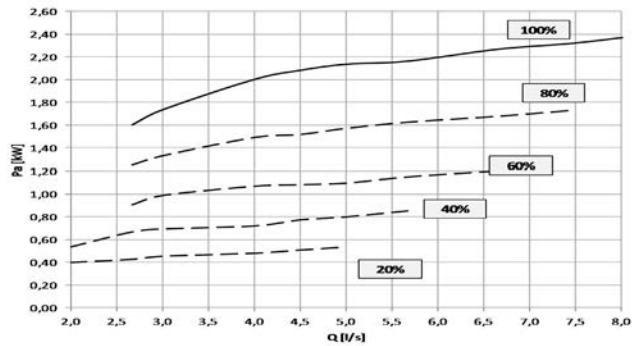
Q = Water flow rate [l/s] Pa = Electrical power draw [kW]

Available pressure (Size 27.2 - 30.2)



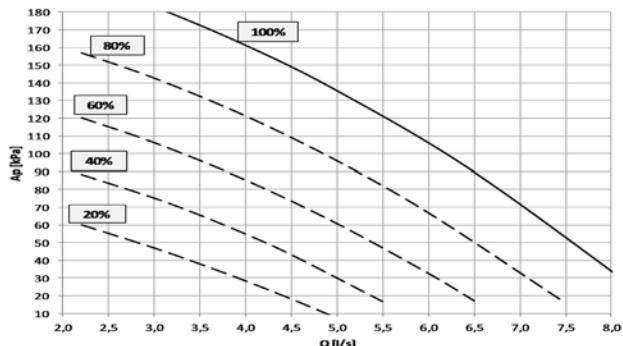
Q = Water flow rate [l/s] Ap = Pressure head, available to the unit fittings [kPa]

Absorption curves (Size 27.2 - 30.2)



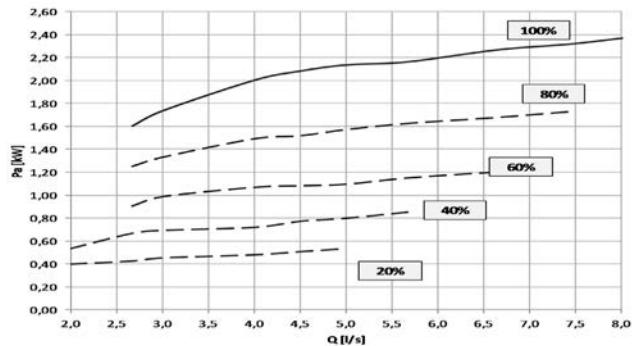
Q = Water flow rate [l/s] Pa = Electrical power draw [kW]

Available pressure (Size 35.2)



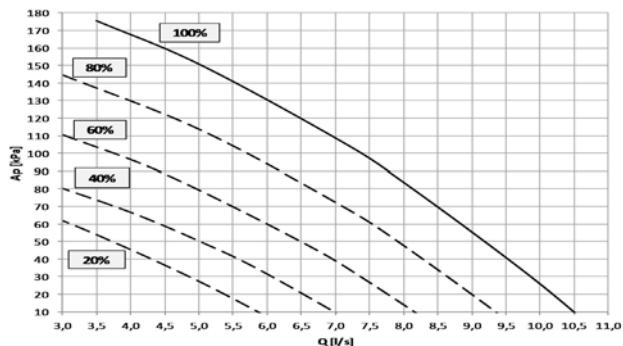
Q = Water flow rate [l/s] Ap = Pressure head, available to the unit fittings [kPa]

Absorption curves (Size 35.2)



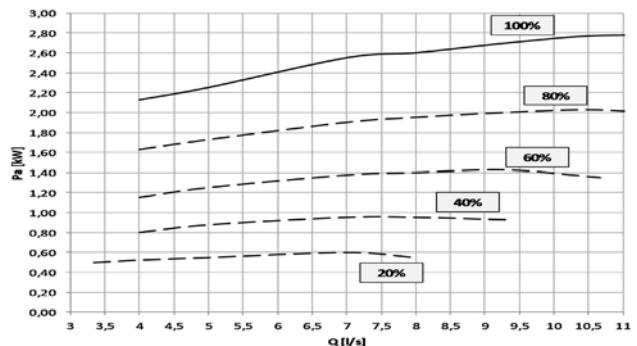
Q = Water flow rate [l/s] Pa = Electrical power draw [kW]

Available pressure (Size 40.2 - 43.2)



Q = Water flow rate [l/s] Ap = Pressure head, available to the unit fittings [kPa]

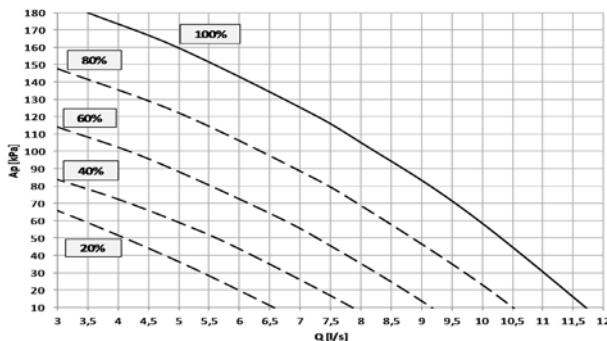
Absorption curves (Size 40.2 - 43.2)



Q = Water flow rate [l/s] Pa = Electrical power draw [kW]

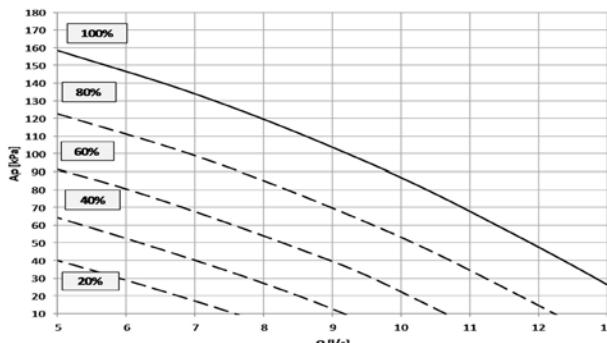
Unit with VARYFLOW + (VARYC)

Available pressure (Size 45.2 - 50.2)



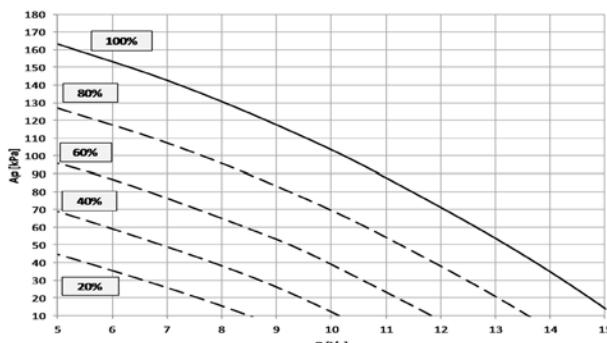
Q = Water flow rate [l/s] Ap = Pressure head, available to the unit fittings [kPa]

Available pressure (Size 55.2)



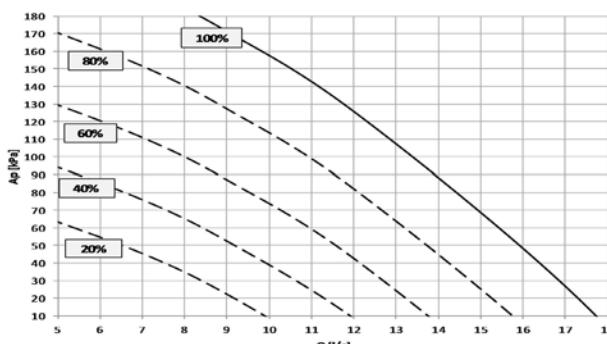
Q = Water flow rate [l/s] Ap = Pressure head, available to the unit fittings [kPa]

Available pressure (Size 60.2)



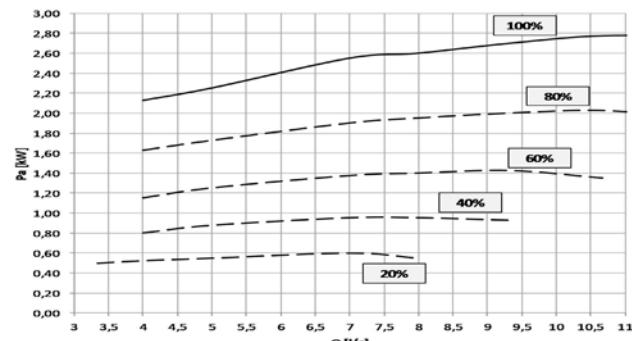
Q = Water flow rate [l/s] Ap = Pressure head, available to the unit fittings [kPa]

Available pressure (Size 70.2)



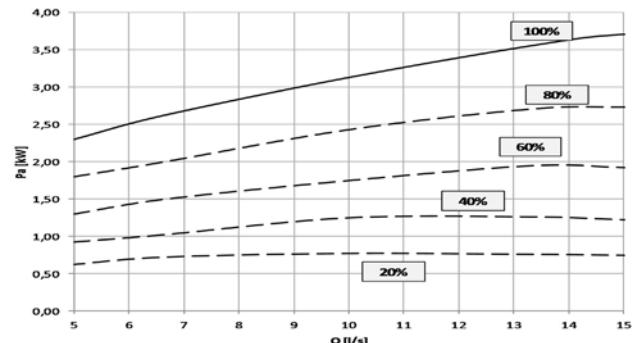
Q = Water flow rate [l/s] Ap = Pressure head, available to the unit fittings [kPa]

Absorption curves (Size 45.2 - 50.2)



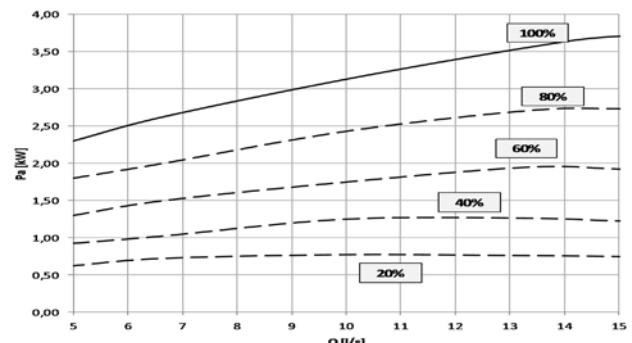
Q = Water flow rate [l/s] Pa = Electrical power draw [kW]

Absorption curves (Size 55.2)



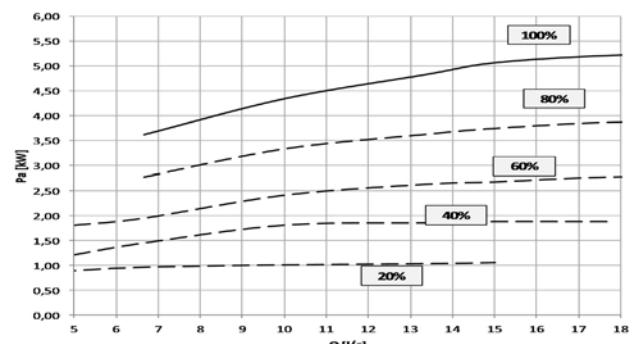
Q = Water flow rate [l/s] Pa = Electrical power draw [kW]

Absorption curves (Size 60.2)



Q = Water flow rate [l/s] Pa = Electrical power draw [kW]

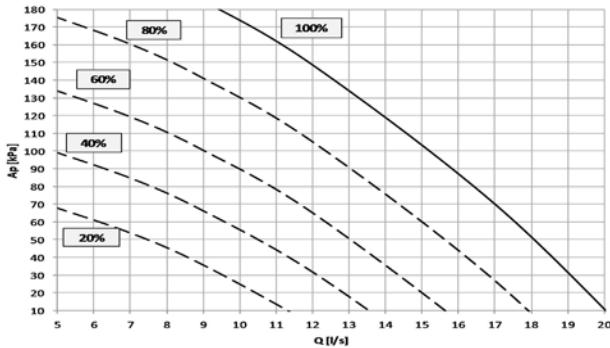
Absorption curves (Size 70.2)



Q = Water flow rate [l/s] Pa = Electrical power draw [kW]

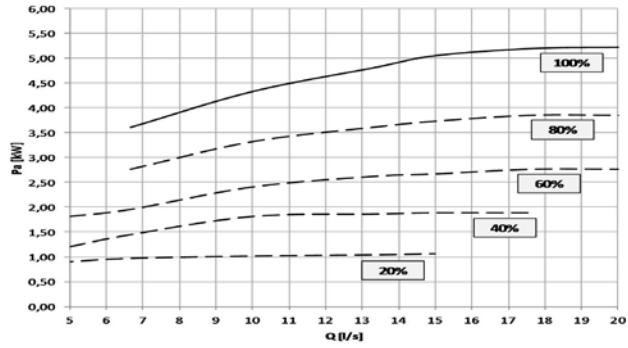
Unit with VARYFLOW + (VARYC)

Available pressure (Size 80.2)



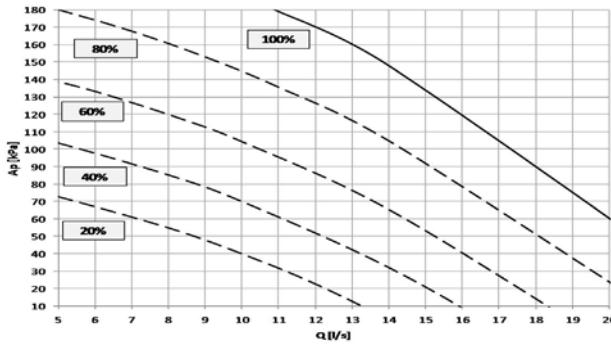
Q = Water flow rate [l/s] Ap = Pressure head, available to the unit fittings [kPa]

Absorption curves (Size 80.2)



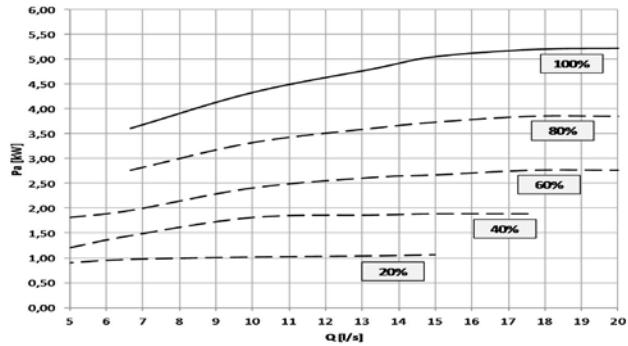
Q = Water flow rate [l/s] Pa = Electrical power draw [kW]

Available pressure (Size 90.2)



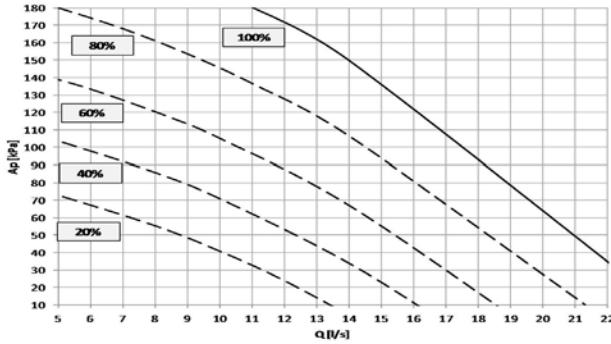
Q = Water flow rate [l/s] Ap = Pressure head, available to the unit fittings [kPa]

Absorption curves (Size 90.2)



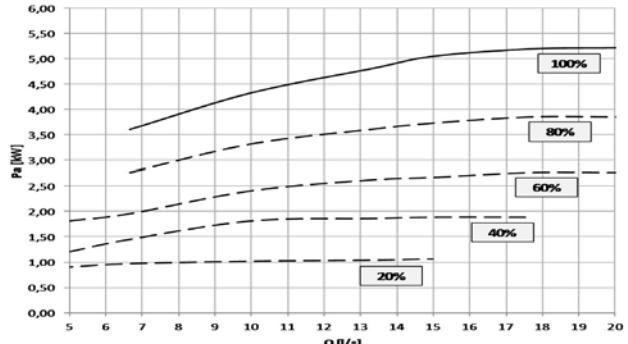
Q = Water flow rate [l/s] Pa = Electrical power draw [kW]

Available pressure (Size 100.2 - 120.2)



Q = Water flow rate [l/s] Ap = Pressure head, available to the unit fittings [kPa]

Absorption curves (Size 100.2 - 120.2)



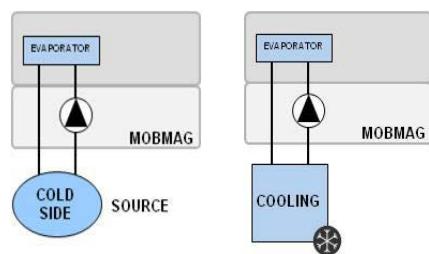
Q = Water flow rate [l/s] Pa = Electrical power draw [kW]

Cold side hydronic unit configurations

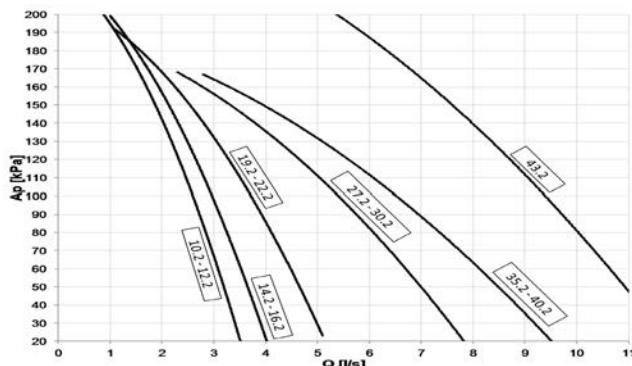
Unit with one ON/OFF pump (HYGC1)

Configuration with 1 centrifugal electric pump, with housing and impeller made with AISI 304 stainless steel, and components as described on the water diagram key. All water fittings are Victaulic type.

The electric pump is equipped with three-phase electric motor with IP55-protection and complete with thermoformed insulated casing.

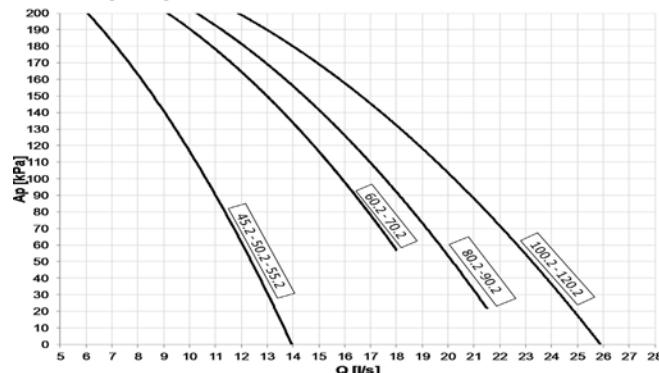


ON/OFF pump available head (Size 10.2 - 43.2)



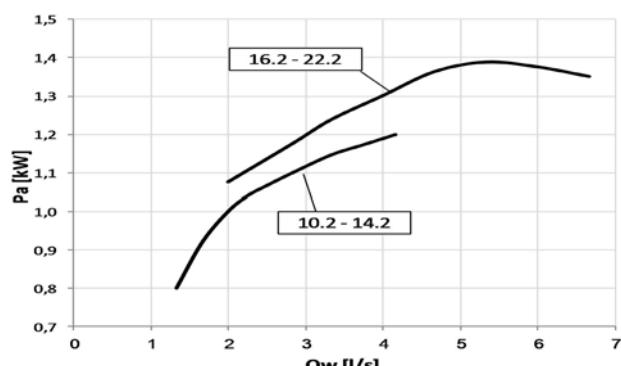
Q = Water flow rate [l/s] Ap = Pressure head, available to the unit fittings [kPa]

ON/OFF pump available head (Size 45.2 - 120.2)



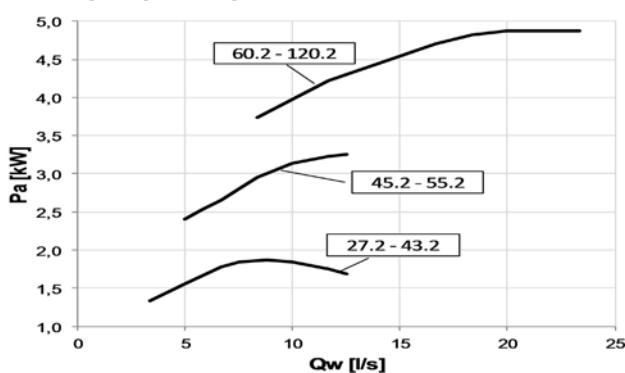
Q = Water flow rate [l/s] Ap = Pressure head, available to the unit fittings [kPa]

ON/OFF pump absorption curves (Size 10.2 - 22.2)



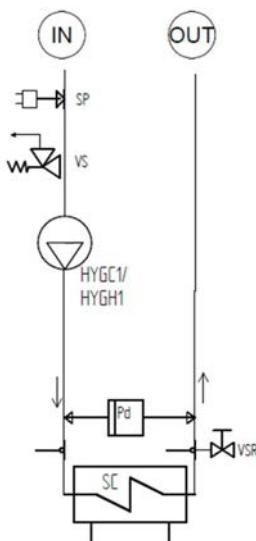
Q = Water flow rate [l/s] Pa = Electrical power draw [kW]

ON/OFF pump absorption curves (Size 27.2 - 120.2)



Q = Water flow rate [l/s] Pa = Electrical power draw [kW]

Cold side water diagram



IN = Cold side inlet
 OUT = Cold side outlet
 SP = Circuit charging pressure switch, calibrated to 0.7 bar
 VS = Safety valve calibrated to 6 bar
 HYGC1 = Hydronic unit with 1 cold side ON/OFF pump
 PD = Differential pressure switch
 VSR = Relief valve
 SC = Plate heat exchangers

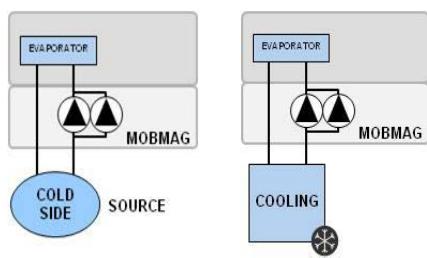
Cold side hydronic unit configurations

Unit with two ON/OFF pumps (HYGC2)

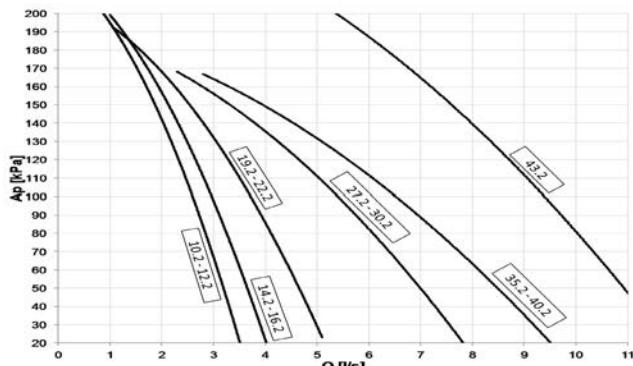
Configuration with 2 centrifugal electric pumps, 1 stand-by, with housing and impeller made with AISI 304 stainless steel, and components as described on the water diagram key. All water fittings are Victaulic type.

The electric pumps are equipped with three-phase electric motor with IP55-protection and complete with thermoformed insulated casing.

The control balances the operating hours and in case of failure it is signaled and the stand-by pump is automatically activated.

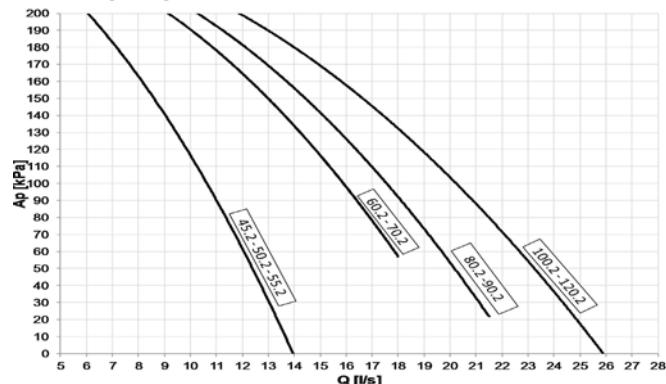


ON/OFF pump available head (Size 10.2 - 43.2)



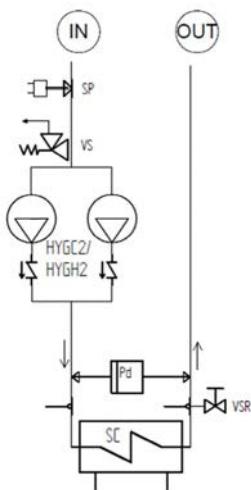
Q = Water flow rate [l/s] Ap = Pressure head, available to the unit fittings [kPa]

ON/OFF pump available head (Size 45.2 - 120.2)



Q = Water flow rate [l/s] Ap = Pressure head, available to the unit fittings [kPa]

Cold side water diagram



- IN = Cold side inlet
- OUT = Cold side outlet
- SP = Circuit charging pressure switch, calibrated to 0.7 bar
- VS = Safety valve calibrated to 6 bar
- HYGC2 = Hydronic unit with 2 cold side ON/OFF pumps
- PD = Differential pressure switch
- VSR = Relief valve
- SC = Plate heat exchangers

Cold side hydronic unit configurations

Unit with 3-way modulating valve (VS3MC)

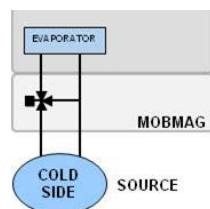
Configuration with one cold side 3-way modulating valve and components as described on the water diagram key.

All water fittings are Victaulic type.

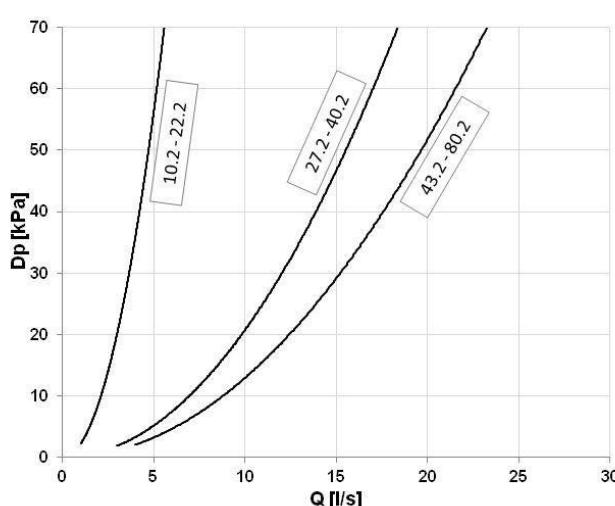
The 3-way modulating valve connects the cold side exchanger inlet and outlet, thus bypassing the exchanger and reducing the flow of water inside it, while keeping the machine's delivery flow constant.

The valve modulation is managed by a 0-10V signal generated by the unit electronic control.

Available only for the size from 10.2 to 80.2.



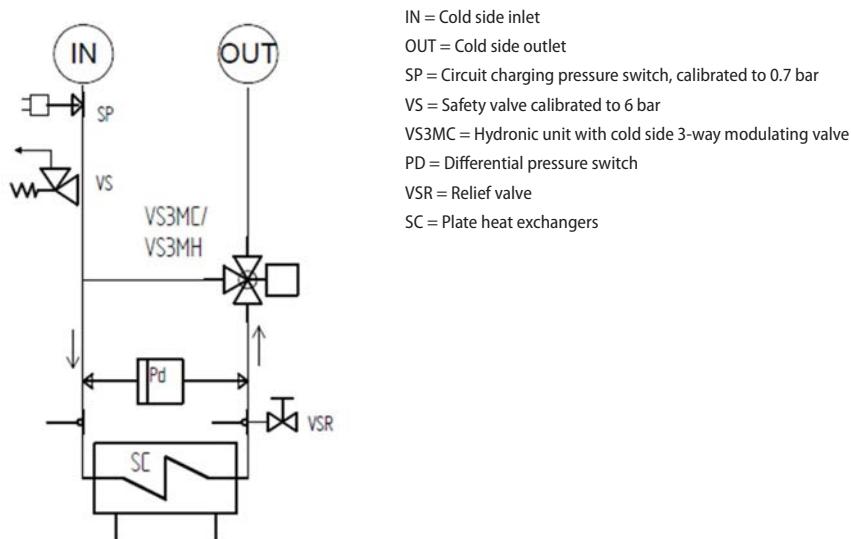
Cold side 3-way modulating valve pressure drops



The pressure drops on the water side are calculated by considering an average water temperature at 7°C.

Q = Water flow rate [l/s]
DP = Pressure drops [kPa]

Cold side water diagram



Cold side hydronic unit configurations

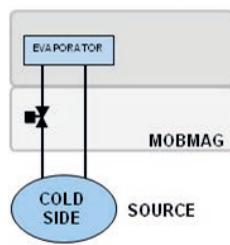
Unit with 2-way modulating valve (VS2MC)

Configuration with one cold side 2-way modulating valve and components as described on the water diagram key.

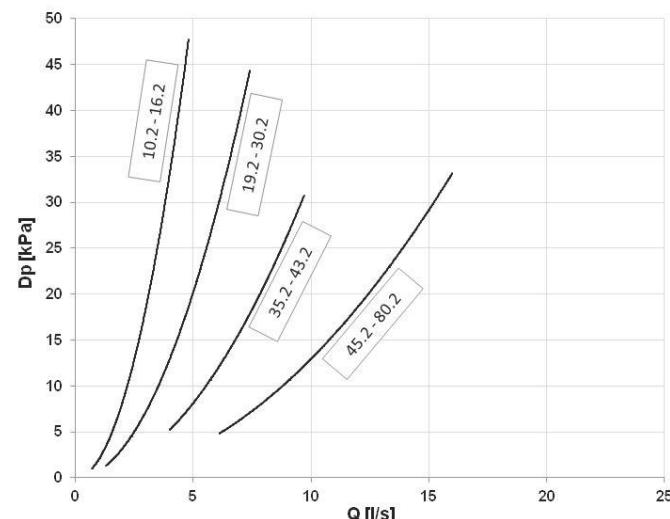
All water fittings are Victaulic type.

The 2-way modulating valve, installed on the cold side exchanger inlet, modulates the water flow in response to a 0-10 V signal from the unit's controller.

Available only for the size from 10.2 to 80.2.



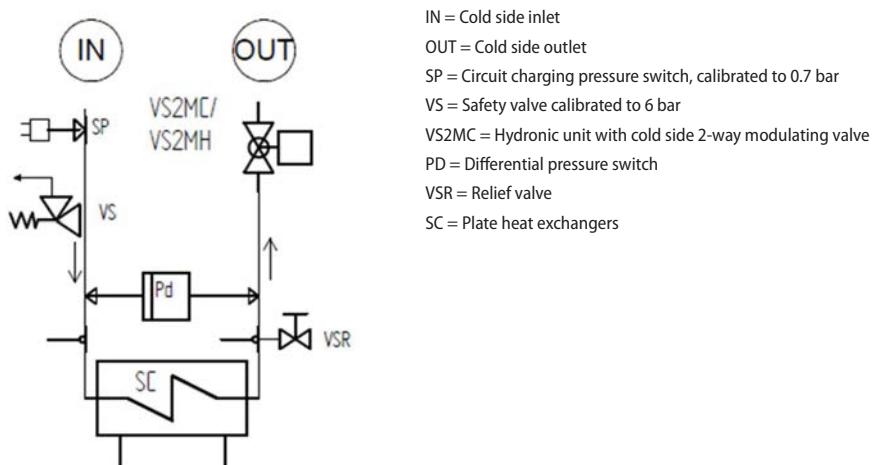
Cold side 2-way modulating valve pressure drops



The pressure drops on the water side are calculated by considering an average water temperature at 7°C.

Q = Water flow rate [l/s]
DP = Pressure drops [kPa]

Cold side water diagram



Cold side hydronic unit configurations

Unit with partial energy recovery (D)

Configuration with one recovery side brazed stainless steel (316 AISI) plate exchanger, and components per the legend of the enclosed plumbing circuit diagram. All water fittings are Victaulic type.

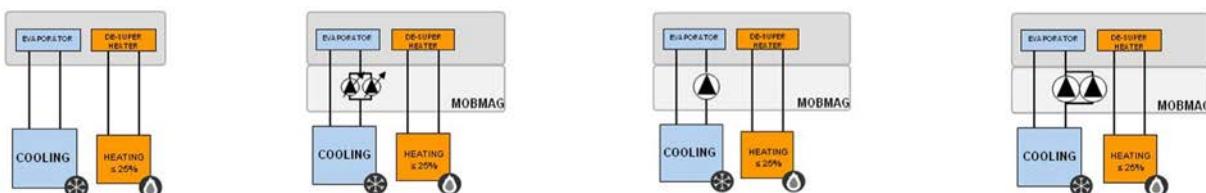
This configuration also permits free hot water production only during the chiller cycle, thanks to partial recovery of condensation heat which would otherwise be dissipated by the hot side heat exchanger.

It is possible to recover about 1/4 of the unit rejected heating capacity equal to the sum of the cooling capacity and the compressor power input.

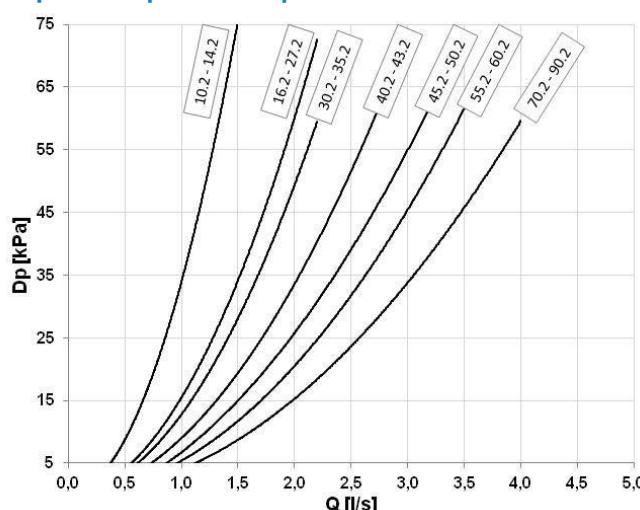
If cold water production is not requested, the unit can not produce hot water.

Option available only for the size from 10.2 to 90.2.

The heating capacity request is made by the digital contact enabling, that activates the pump recovery side (outside the unit).



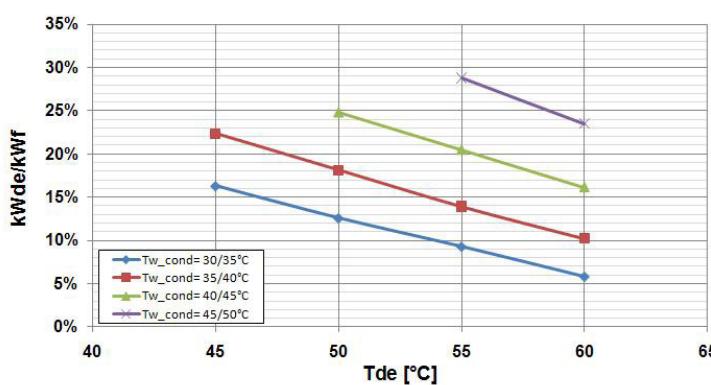
Desuperheater pressure drops



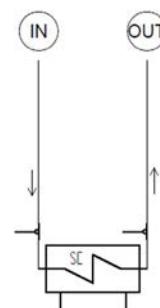
The pressure drops on the water side are calculated by considering an average water temperature at 7°C.

Q = Water flow rate [l/s]
DP = Pressure drops [kPa]

Partial recovery heating capacity



Recovery side water diagram



$kWde/kWf$ = Heat recovered/Cooling capacity [%]
Tde [°C] = Heat recovering device outlet water temperature ($\Delta T = 5^\circ\text{C}$)
Leaving exchanger water temperature user side = 7°C

IN = Recovery side inlet
OUT = Recovery side outlet
SC = Plate heat exchangers

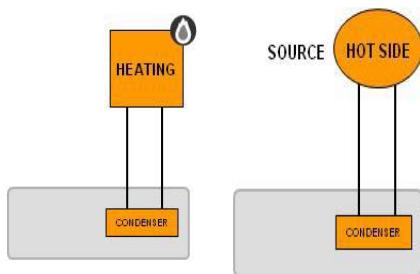
Hot side hydronic unit configurations

Standard unit (-)

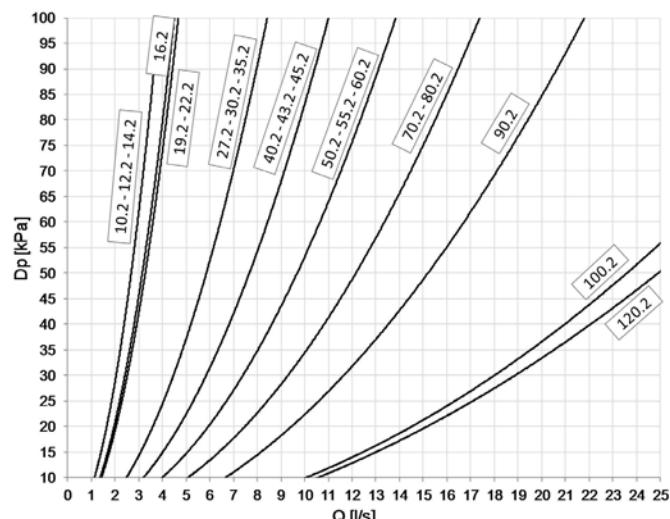
Configuration without hydronic assembly, equipped with components as described on the water diagram key.

All water fittings are Victaulic type.

It is possible to control an external pump by an on/off or 0-10V signal.



Hot side exchanger pressure drop curves



The pressure drops on the water side are calculated by considering an average water temperature at 7°C.

Q = Water flow rate [l/s]
DP = Pressure drops [kPa]

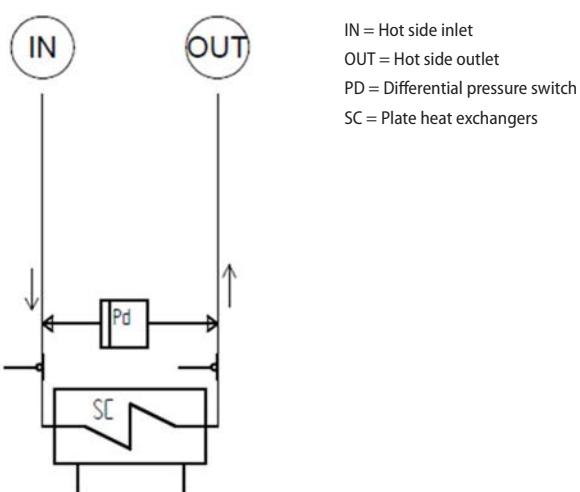
To the hot side exchanger's pressure drop we must add the pressure drop of the steel mesh filter installed on the water intake line. This device is essential to the unit's proper operation, and is available as accessory IFWX.

Admissible hot side water flows

Min. (Qmin) and max. (Qmax) water flow-rates admissibles for the correct unit operation.

| Size | | 10.2 | 12.2 | 14.2 | 16.2 | 19.2 | 22.2 | 27.2 | 30.2 | 35.2 | 40.2 | 43.2 | 45.2 | 50.2 | 55.2 | 60.2 | 70.2 | 80.2 | 90.2 | 100.2 | 120.2 |
|----------|------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-------|-------|
| Hot side | Qmin [l/s] | 0,8 | 0,8 | 0,8 | 1,0 | 1,1 | 1,1 | 1,8 | 1,8 | 1,8 | 2,4 | 2,4 | 2,4 | 2,9 | 2,9 | 2,9 | 3,8 | 3,8 | 5,3 | 9,5 | 10,5 |
| | Qmax [l/s] | 4,2 | 4,2 | 4,3 | 4,8 | 4,9 | 5,1 | 8,8 | 8,8 | 9,3 | 11,4 | 11,9 | 12,2 | 14,4 | 15,0 | 15,4 | 18,3 | 19,0 | 23,5 | 28,0 | 29,0 |

Hot side water diagram



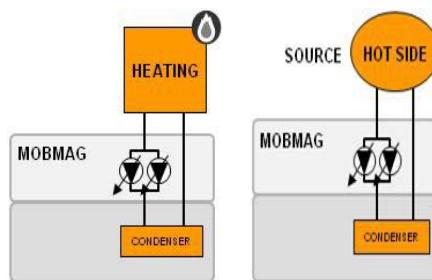
Hot side hydronic unit configurations

Unit with VARYFLOW + (VARYH)

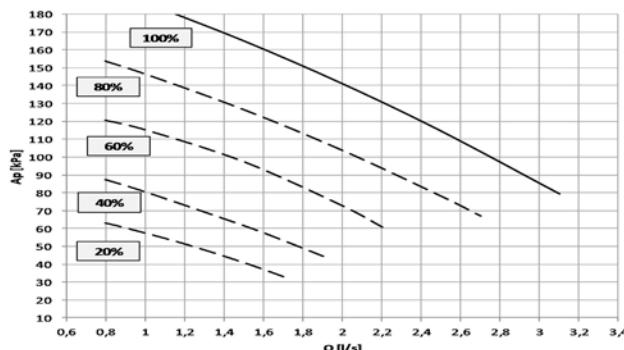
Configuration with 2 centrifugal electric pumps arranged in parallel and controlled by inverter, with housing and impeller made with AISI 304 stainless steel, and components as described on the water diagram key. All water fittings are Victaulic type.

The electric pumps are equipped with three-phase electric motor with IP55-protection and complete with thermoformed insulated casing.

The control, modulates the water flow-rate keeping constant the delta T. If the water temperature is in critical conditions, it allows to extend the unit operating ranges guaranteeing its operating, automatically reducing the water flow-rate. In the event of one of the two pumps is temporarily unavailable, it guarantees about the 80% of the nominal flow-rate.

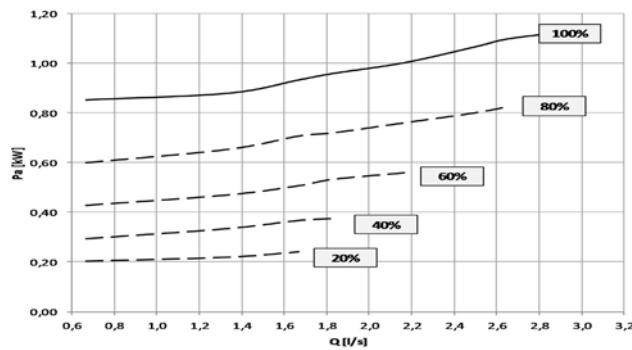


Available pressure (Size 10.2 - 12.2)



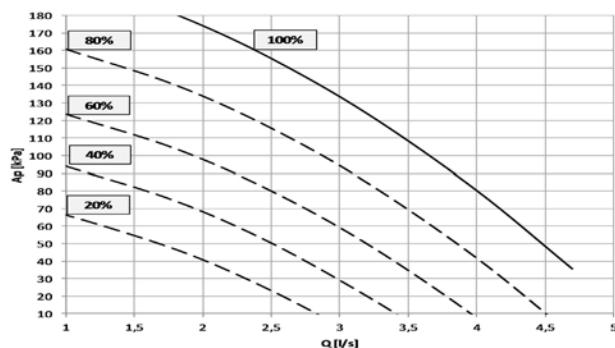
Q = Water flow rate [l/s] Ap = Pressure head, available to the unit fittings [kPa]

Absorption curves (Size 10.2 - 12.2)



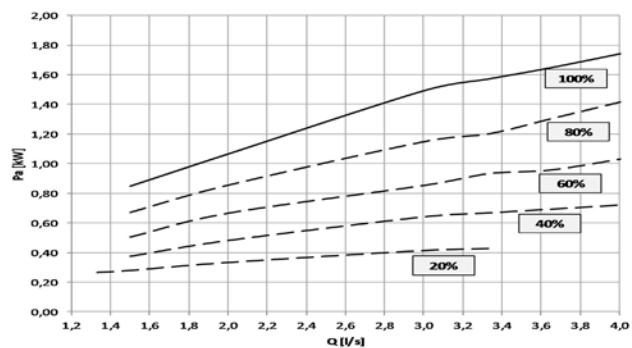
Q = Water flow rate [l/s] Pa = Electrical power draw [kW]

Available pressure (Size 14.2)



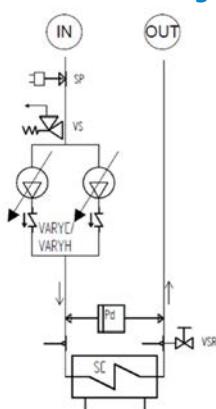
Q = Water flow rate [l/s] Ap = Pressure head, available to the unit fittings [kPa]

Absorption curves (Size 14.2)



Q = Water flow rate [l/s] Pa = Electrical power draw [kW]

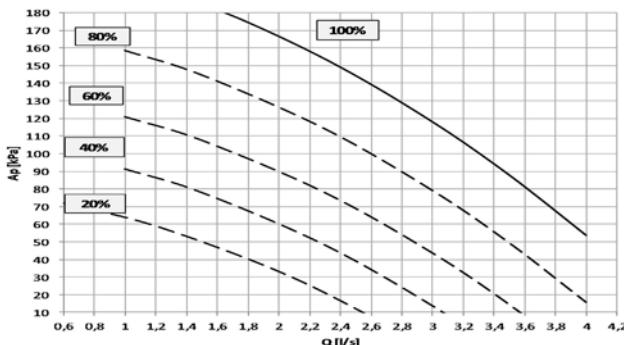
Hot side water diagram



- IN = Hot side inlet
- OUT = Hot side outlet
- SP = Circuit charging pressure switch, calibrated to 0.7 bar
- VS = Safety valve calibrated to 6 bar
- VARYH = Hydronic unit VARYFLOW + hot side
- PD = Differential pressure switch
- VSR = Relief valve
- SC = Plate heat exchangers

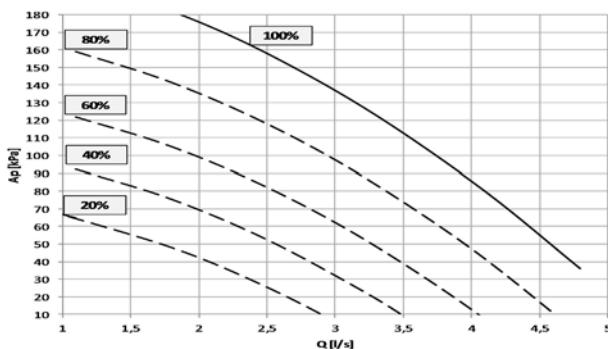
Unit with VARYFLOW + (VARYH)

Available pressure (Size 16.2)



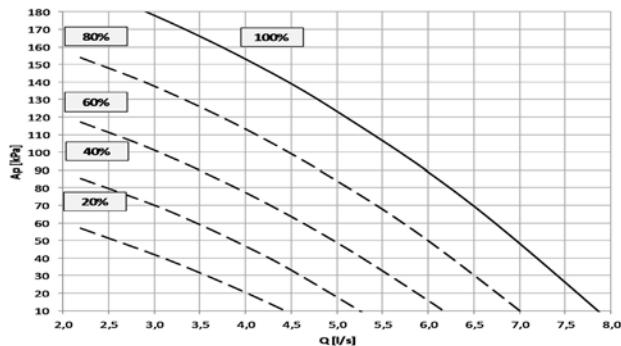
Q = Water flow rate [l/s] Ap = Pressure head, available to the unit fittings [kPa]

Available pressure (Size 19.2 - 22.2)



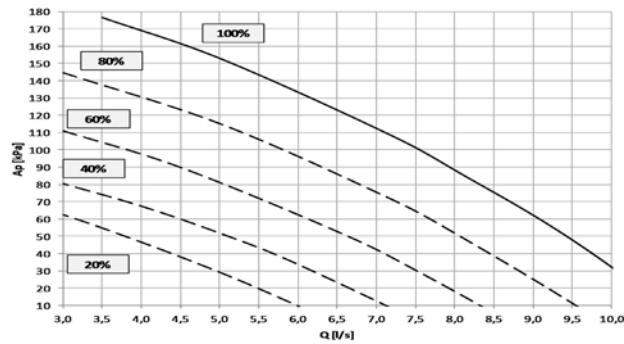
Q = Water flow rate [l/s] Ap = Pressure head, available to the unit fittings [kPa]

Available pressure (Size 27.2 - 30.2 - 35.2)



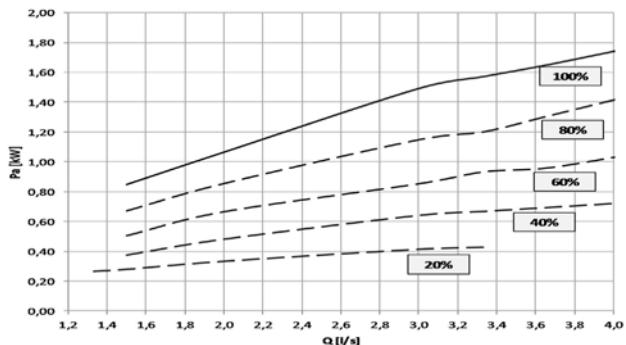
Q = Water flow rate [l/s] Ap = Pressure head, available to the unit fittings [kPa]

Available pressure (Size 40.2 - 43.2 - 45.2)



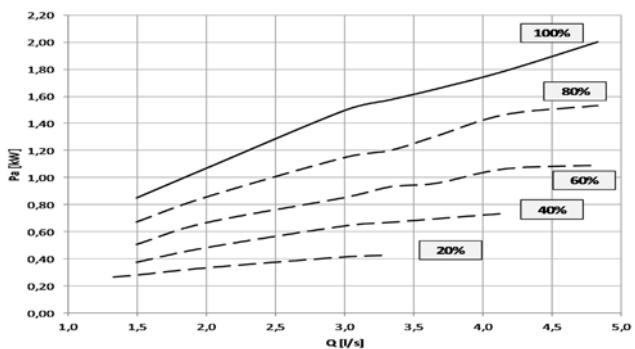
Q = Water flow rate [l/s] Ap = Pressure head, available to the unit fittings [kPa]

Absorption curves (Size 16.2)



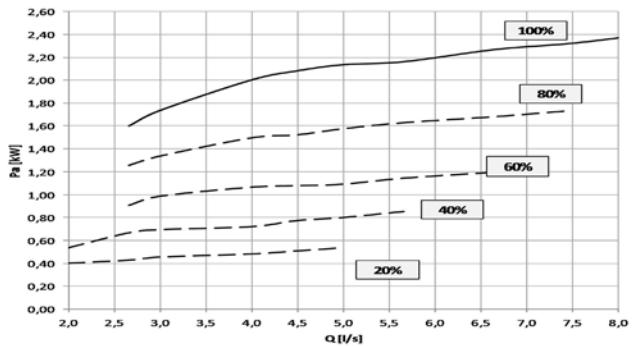
Q = Water flow rate [l/s] Pa = Electrical power draw [kW]

Absorption curves (Size 19.2 - 22.2)



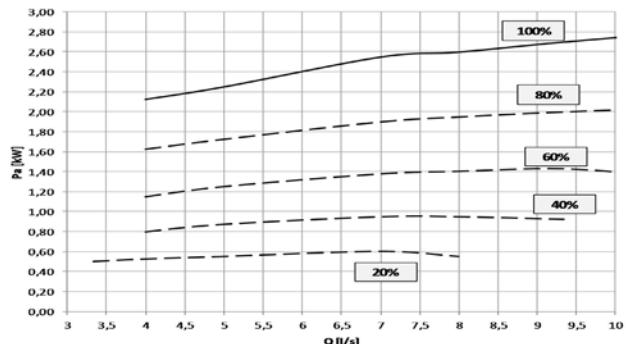
Q = Water flow rate [l/s] Pa = Electrical power draw [kW]

Absorption curves (Size 27.2 - 30.2 - 35.2)



Q = Water flow rate [l/s] Pa = Electrical power draw [kW]

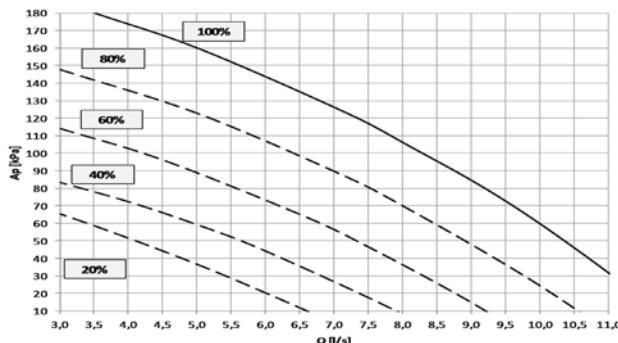
Absorption curves (Size 40.2 - 43.2 - 45.2)



Q = Water flow rate [l/s] Pa = Electrical power draw [kW]

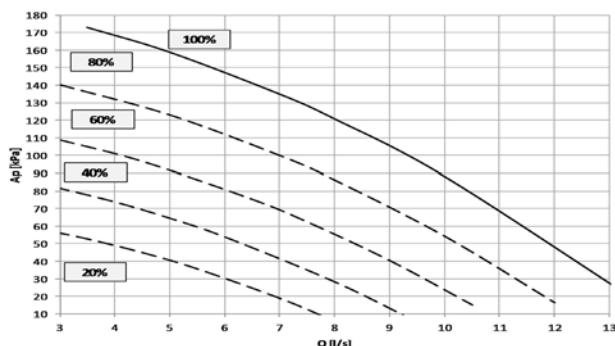
Unit with VARYFLOW + (VARYH)

Available pressure (Size 50.2)



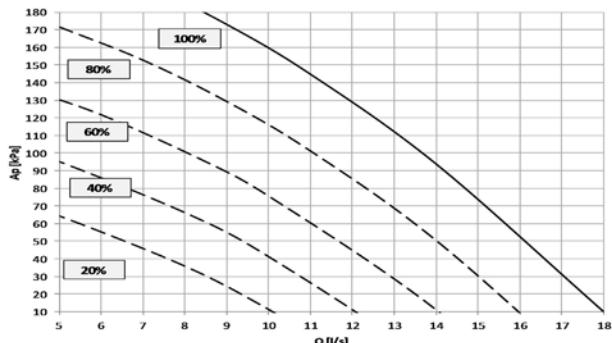
Q = Water flow rate [l/s] Ap = Pressure head, available to the unit fittings [kPa]

Available pressure (Size 55.2 - 60.2)



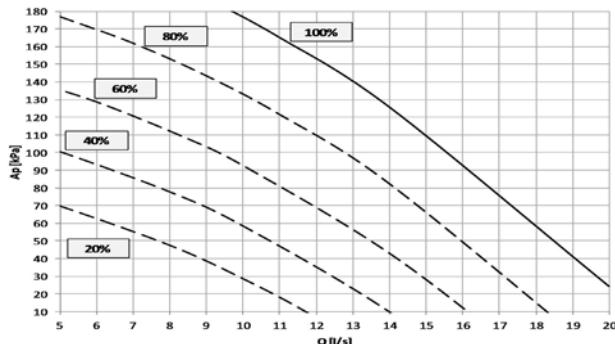
Q = Water flow rate [l/s] Ap = Pressure head, available to the unit fittings [kPa]

Available pressure (Size 70.2 - 80.2)



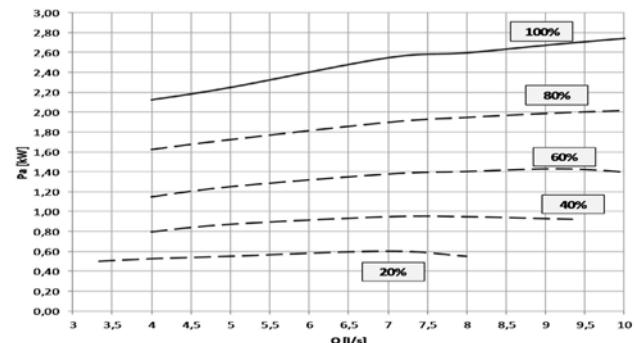
Q = Water flow rate [l/s] Ap = Pressure head, available to the unit fittings [kPa]

Available pressure (Size 90.2)



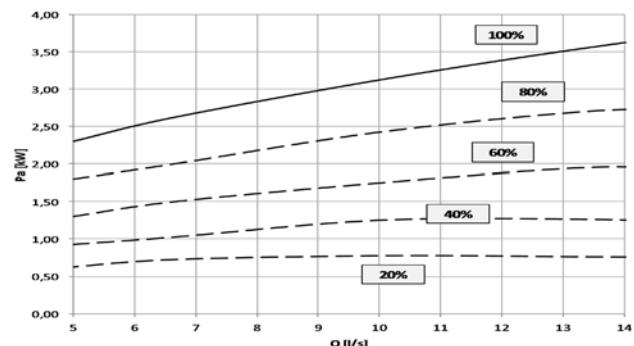
Q = Water flow rate [l/s] Ap = Pressure head, available to the unit fittings [kPa]

Absorption curves (Size 50.2)



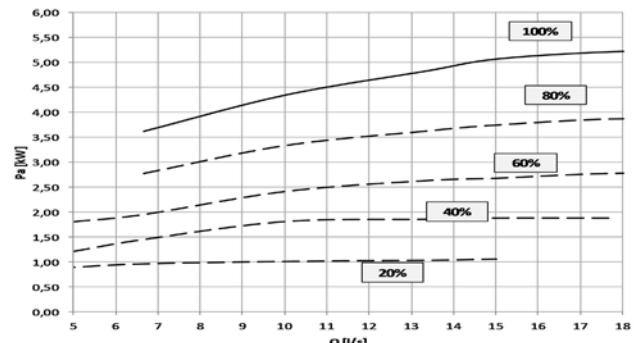
Q = Water flow rate [l/s] Pa = Electrical power draw [kW]

Absorption curves (Size 55.2 - 60.2)



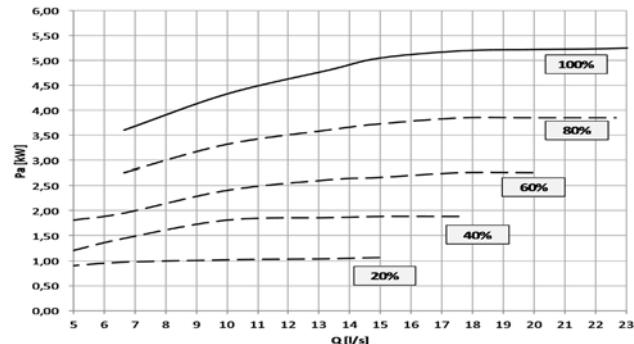
Q = Water flow rate [l/s] Pa = Electrical power draw [kW]

Absorption curves (Size 70.2 - 80.2)



Q = Water flow rate [l/s] Pa = Electrical power draw [kW]

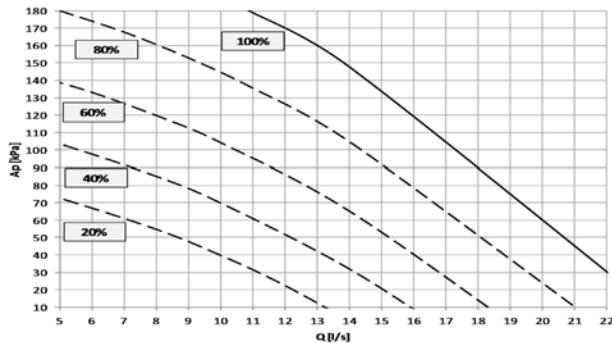
Absorption curves (Size 90.2)



Q = Water flow rate [l/s] Pa = Electrical power draw [kW]

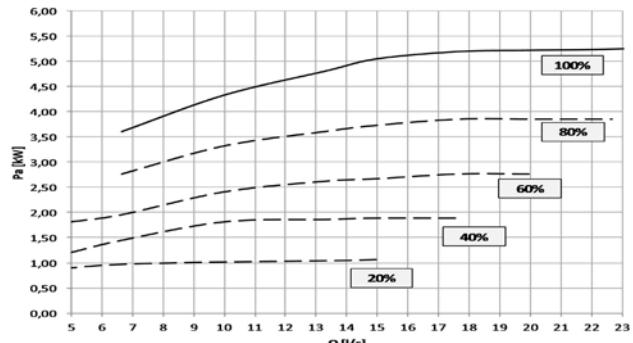
Unit with VARYFLOW + (VARYH)

Available pressure (Size 100.2)



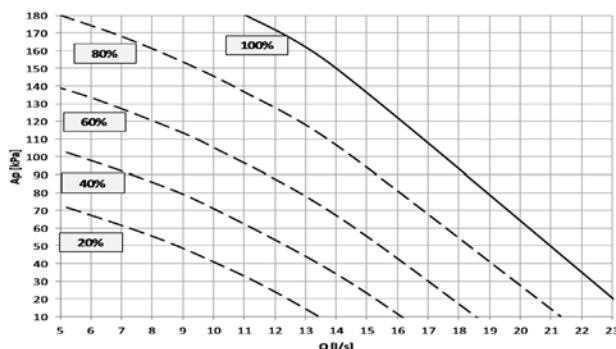
Q = Water flow rate [l/s] Ap = Pressure head, available to the unit fittings [kPa]

Absorption curves (Size 100.2)



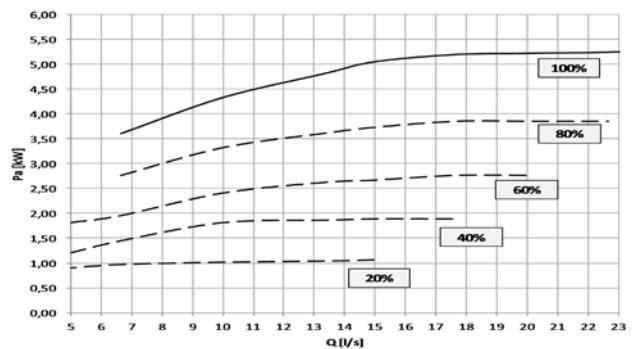
Q = Water flow rate [l/s] Pa = Electrical power draw [kW]

Available pressure (Size 120.2)



Q = Water flow rate [l/s] Ap = Pressure head, available to the unit fittings [kPa]

Absorption curves (Size 120.2)



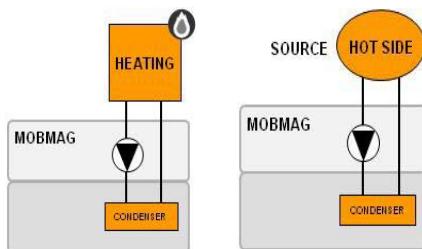
Q = Water flow rate [l/s] Pa = Electrical power draw [kW]

Hot side hydronic unit configurations

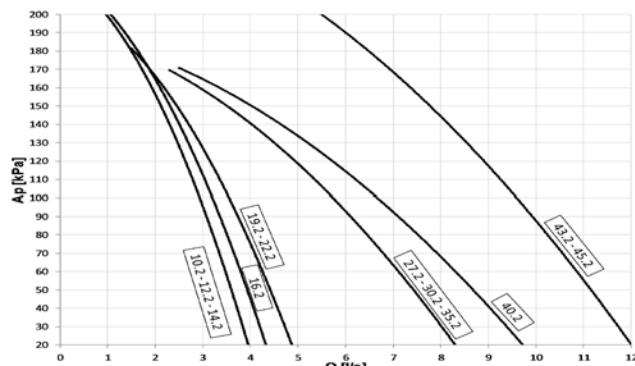
Unit with one ON/OFF pump (HYGH1)

Configuration with 1 centrifugal electric pump, with housing and impeller made with AISI 304 stainless steel, and components as described on the water diagram key. All water fittings are Victaulic type.

The electric pump is equipped with three-phase electric motor with IP55-protection and complete with thermoformed insulated casing.

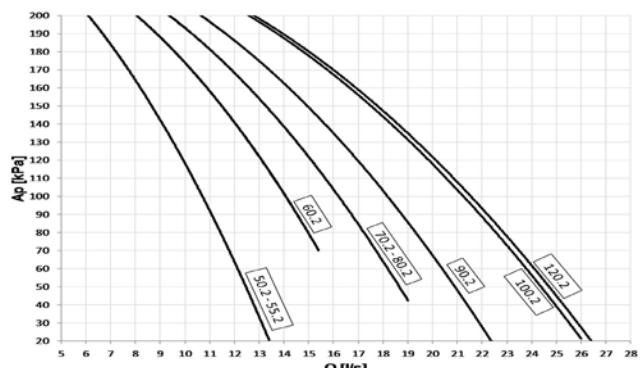


ON/OFF pump available head (Size 10.2 - 45.2)



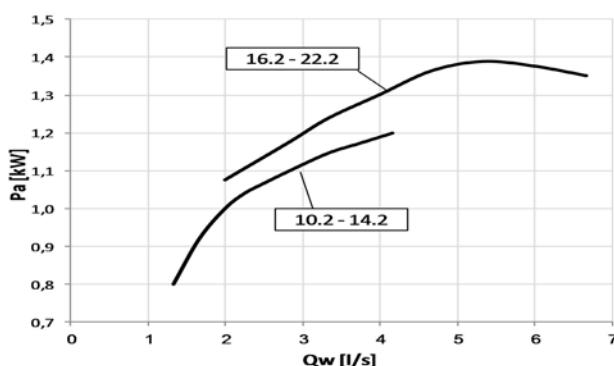
Q = Water flow rate [l/s] Ap = Pressure head, available to the unit fittings [kPa]

ON/OFF pump available head (Size 50.2 - 120.2)



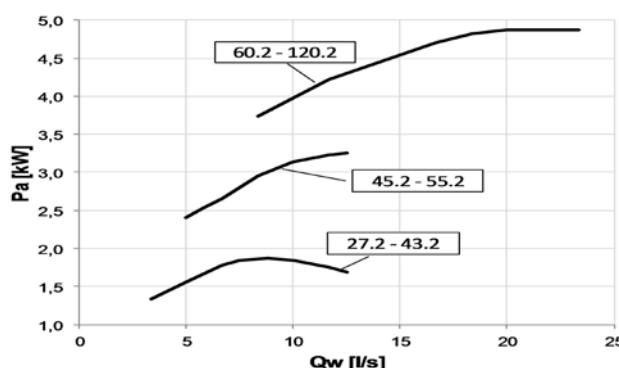
Q = Water flow rate [l/s] Ap = Pressure head, available to the unit fittings [kPa]

ON/OFF pump absorption curves (Size 10.2 - 22.2)



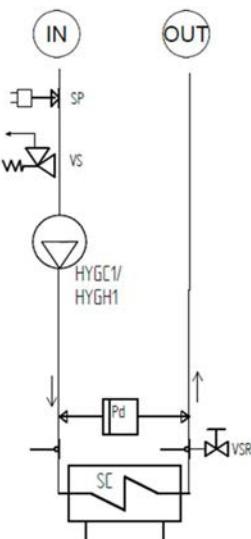
Qw = Water flow rate [l/s] Pa = Electrical power draw [kW]

ON/OFF pump absorption curves (Size 27.2 - 120.2)



Qw = Water flow rate [l/s] Pa = Electrical power draw [kW]

Hot side water diagram



IN = Hot side inlet
 OUT = Hot side outlet
 SP = Circuit charging pressure switch, calibrated to 0.7 bar
 VS = Safety valve calibrated to 6 bar
 HYGH1 = Hydronic unit with 1 hot side ON/OFF pump
 PD = Differential pressure switch
 VSR = Relief valve
 SC = Plate heat exchangers

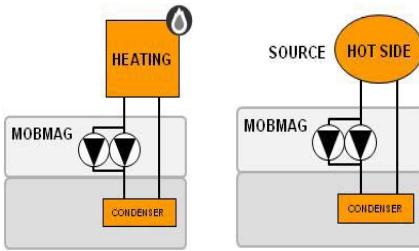
Hot side hydronic unit configurations

Unit with two ON/OFF pumps (HYGH2)

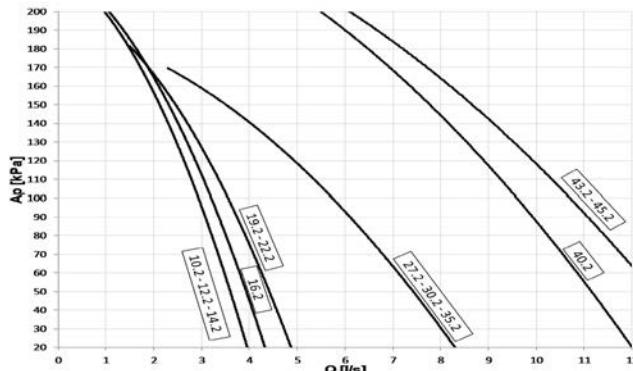
Configuration with 2 centrifugal electric pumps, 1 stand-by, with housing and impeller made with AISI 304 stainless steel, and components as described on the water diagram key. All water fittings are Victaulic type.

The electric pumps are equipped with three-phase electric motor with IP55-protection and complete with thermoformed insulated casing.

The control balances the operating hours and in case of failure it is signaled and the stand-by pump is automatically activated.

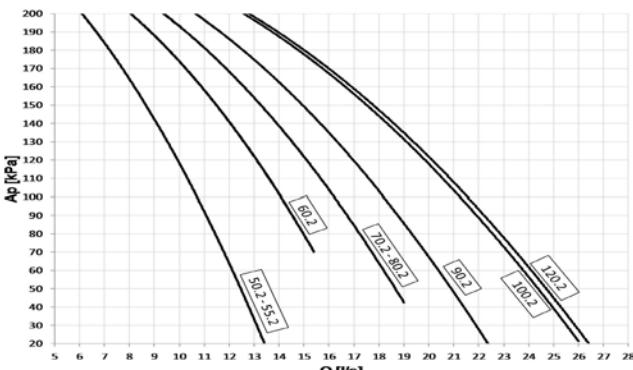


ON/OFF pump available head (Size 10.2 - 45.2)



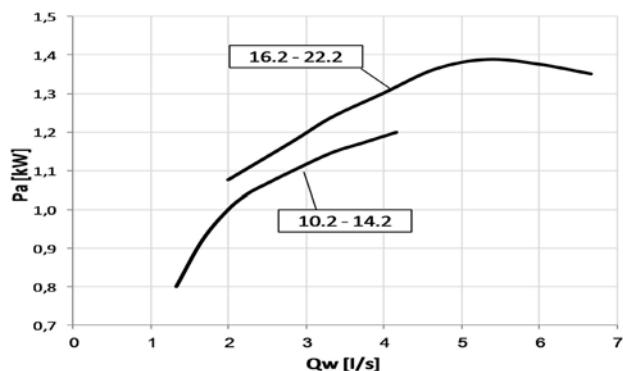
Q = Water flow rate [l/s] Ap = Pressure head, available to the unit fittings [kPa]

ON/OFF pump available head (Size 50.2 - 120.2)



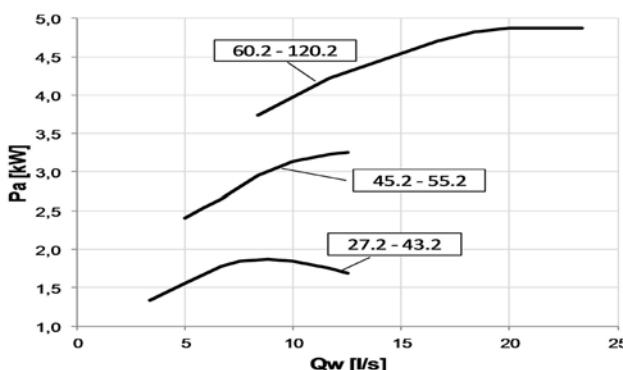
Q = Water flow rate [l/s] Ap = Pressure head, available to the unit fittings [kPa]

ON/OFF pump absorption curves (Size 10.2 - 22.2)



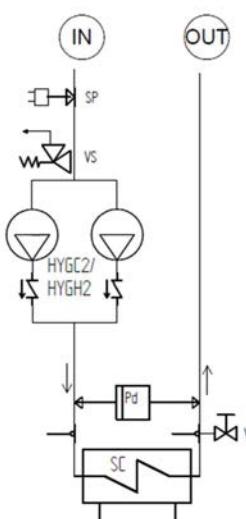
Q = Water flow rate [l/s] Pa = Electrical power draw [kW]

ON/OFF pump absorption curves (Size 27.2 - 120.2)



Q = Water flow rate [l/s] Pa = Electrical power draw [kW]

Hot side water diagram



IN = Hot side inlet
 OUT = Hot side outlet
 SP = Circuit charging pressure switch, calibrated to 0.7 bar
 VS = Safety valve calibrated to 6 bar
 HYGH2 = Hydronic unit with 2 hot side ON/OFF pumps
 PD = Differential pressure switch
 VSR = Relief valve
 SC = Plate heat exchangers

Hot side hydronic unit configurations

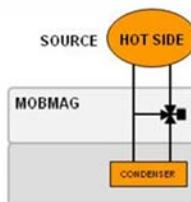
Unit with 3-way modulating valve (VS3MH)

Configuration with 1 hot side 3-way modulating valve and components as described on the water diagram key.

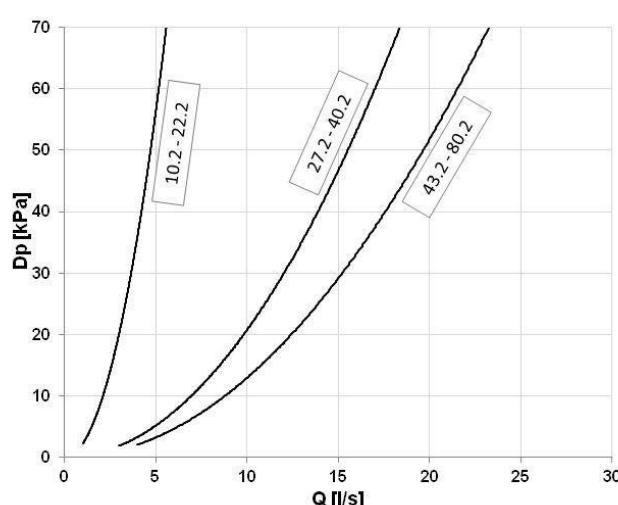
The 3-way modulating valve connects the hot side exchanger inlet and outlet, thus bypassing the exchanger and reducing the flow of water inside it, while keeping the machine's delivery flow constant.

The valve modulation is managed by a 0-10V signal generated by the unit electronic control.

Available only for the size from 10.2 to 80.2.



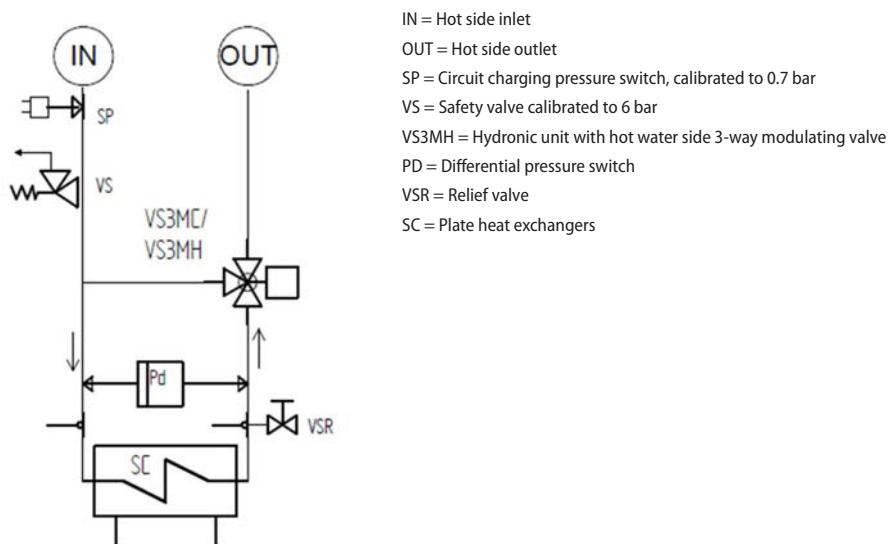
Hot side 3-way modulating valve pressure drops



The pressure drops on the water side are calculated by considering an average water temperature at 7°C.

Q = Water flow rate [l/s]
DP = Pressure drops [kPa]

Hot side water diagram



Hot side hydronic unit configurations

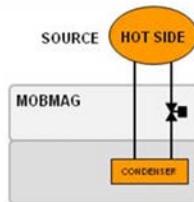
Unit with 2-way modulating valve (VS2MH)

Configuration with 1 hot side 2-way modulating valve and components as described on the water diagram key.

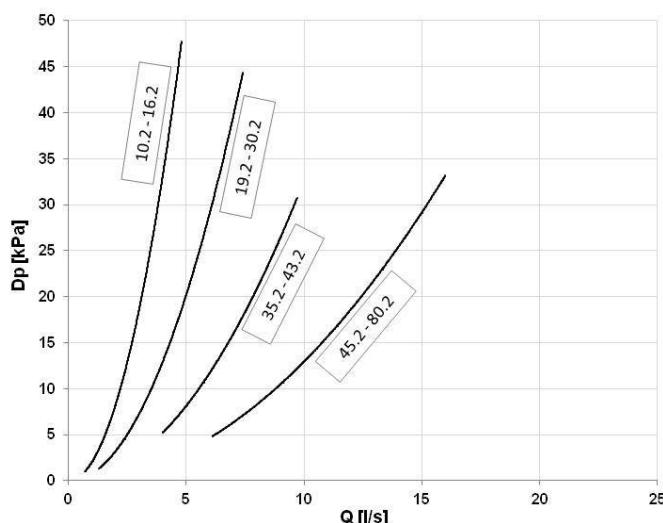
All water fittings are Victaulic type.

The 2-way modulating valve, installed on the hot side exchanger inlet, modulates the water flow in response to a 0-10 V signal from the unit's controller.

Available only for the size from 10.2 to 80.2.



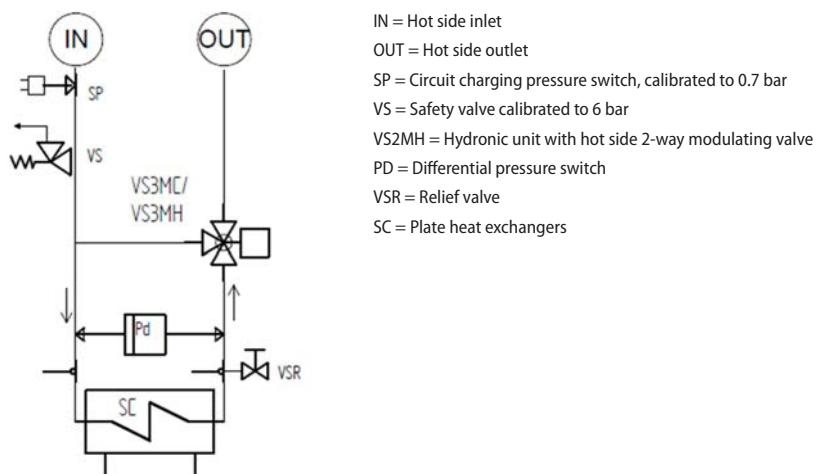
Hot side 2-way modulating valve pressure drops



The pressure drops on the water side are calculated by considering an average water temperature at 7°C.

Q = Water flow rate [l/s]
DP = Pressure drops [kPa]

Hot side water diagram



Built-in configuration options

MOBMAG - Larger units

The large cabinet configuration is selected automatically when any hydronic unit (user or source side) or valve (2-/3-way modulating valve) is selected.

To facilitate the handling, the Large cabinet structure has been revised, the position of components has been changed, and therefore the operations of disassembly are simplified, saving 50% of the time. The instructions for disassembly are reported in detail in the installation and operating manual.

PFCP - Power factor correction capacitors ($\cos\phi > 0.9$)

The component is necessary to lower the phase difference between current and voltage in the electromagnetic components of the unit (e.g. asynchronous motors). The component allows to put the $\cos\phi$ power factor to values on average higher than 0.9, reducing the network reactive power. This often leads to an economic benefit which the energy provider grants to the final user.

MF2 - Multi-function phase monitor

The multifunction phase monitor controls all phases and their sequence, checks for voltage anomalies (+/-10%), and automatically restores operation of the unit as soon as the power supply returns to normal.

This control allows to:

- salvaguardare i componenti interni dell'unità, che essendo alimentati da una tensione anomala potrebbero funzionare in modo non corretto o rompersi;
- quickly identify, among the alarms of the unit's components, the real cause of the malfunction due to the sudden change in voltage.

SDV - Cutoff valve on compressor supply and return

This option makes it possible to be isolated and substituted without discharging the refrigerant from within the refrigeration circuit. This means that the extraordinary maintenance activities are facilitated.

Option available only for the size from 10.2 to 80.2.

SFSTR - Disposal for inrush current reduction

Electronic device that automatically and gradually starts the compressors, thereby reducing the current peak generated in star-triangle start-ups and therefore reduces the mechanical stress on the motor and the electrodynamic stress on the power cables and on the mains.

Option available only for the size from 10.2 to 80.2.

 For size from 90.2 to 120.2 the starting current check is standard. The function is guaranteed by the presence in the motor of the compressor of larger size of a double winding. This solution allows to start the compressor in two stages, obtaining two peaks of reduced current, spaced apart from one another.

CMSC8 - Serial communication module to BACnet supervisor

Allows the serial connection to supervision systems, by using BACnet as communication protocol. It allows the access to the entire list of operation variables, controls and alarms. With this accessory, every unit can communicate with the main supervision systems.

The device is installed and wired built-in the unit.

 The configuration and management activities for the BACnet networks are the responsibility of the client.

 The total length of each serial line do not exceed 1000 meters and the line must be connected in bus typology (in/out)

CMSC9 - Serial communication module to Modbus supervisor

This enables the serial connection of the supervision system, using Modbus as the communication protocol. It enables access to the complete list of operational variables, commands and alarms. Using this accessory every unit can dialogue with the main supervision systems.

The device is installed and wired built-in the unit.

 The total length of each serial line do not exceed 1000 meters and the line must be connected in bus typology (in/out)

CMSC10 - Serial communication module to LonWorks supervisor

This enables the serial connection of the supervision system which uses the LonWorks communication protocol. It enables access to a list of operating variables, commands and alarms which comply with the Echelon® standard.

The device is installed and wired built-in the unit.

 The configuration and management activities for the LonWorks networks are the responsibility of the client.

 LonWorks technology uses the LonTalk® protocol for communicating between the network nodes. Contact the service supplier for further information.

Accessories separately supplied

RCTX - Remote control

This option allows to have full control over all the unit functions from a remote position.

It can be easily installed on the wall and has the same aspect and functions of the user interface on the unit.



All device functions can be repeated with a normal portable PC connected to the unit with an Ethernet cable and equipped with an internet navigation browser.



The device should be installed on the wall using suitable plugs, electrically hooked up and connected to the unit (installation and wiring are the responsibility of the Customer). Max. remote distance 350 m without auxiliary supply.



Data and power supply serial connection cable n.1 twisted and shielded pair. Diameter of the individual conductor 0.8 mm.



BACX - BACnet serial communication module

Allows the serial connection to supervision systems by using BACnet-IP as a communication protocol. It allows the access to the entire list of operating variables, controls and alarms. With this accessory every unit can communicate with the main supervision systems.



The configuration and management activities for the BACnet networks are the responsibility of the client.



The total length of each serial line do not exceed 1000 meters and the line must be connected in bus typology (in/out)

CMMBX - Serial communication module to supervisor (Modbus)

This enables the serial connection of the supervision system, using Modbus as the communication protocol. It enables access to the complete list of operational variables, commands and alarms. Using this accessory every unit can dialogue with the main supervision systems.



The total length of each serial line do not exceed 1000 meters and the line must be connected in bus typology (in/out)

CMSLWX - LonWorks serial communication module

This enables the serial connection of the supervision system which uses the LonWorks communication protocol. It enables access to a list of operating variables, commands and alarms which comply with the Echelon® standard.



The configuration and management activities for the LonWorks networks are the responsibility of the client.



LonWorks technology uses the LonTalk® protocol for communicating between the network nodes. Contact the service supplier for further information.

SPCX - Set-point compensation with outdoor air temperature probe

The setpoint compensation with air probe changes the calibration of the setpoint in relation to the temperature of the outside air and this reduces energy costs. The probe is connected to the unit's main control module and the maximum length of the connection cable is 20 meters. The sensor must not be influenced by factors that might affect its reading (for instance direct sunlight, contact with external heat sources, etc.) and therefore must be placed in a sheltered place.

3-way modulating valve pressure drops (VS3MHX-VS3MCX)

VS3MHX - Heating side three-way modulating valve

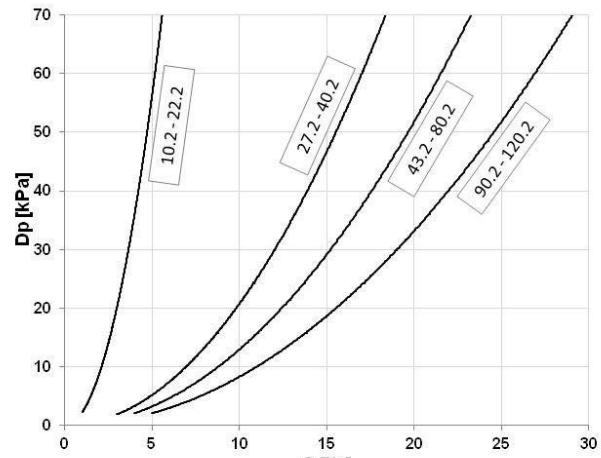
The 3-way modulating valve connects the hot side exchanger inlet and outlet, thus bypassing the exchanger and reducing the flow of water inside it, while keeping the machine's delivery flow constant.

The valve modulation is managed by a 0-10V signal generated by the unit electronic control.

VS3MCX - Cooling side three-way modulating valve

The 3-way modulating valve connects the cold side exchanger inlet and outlet, thus bypassing the exchanger and reducing the flow of water inside it, while keeping the machine's delivery flow constant.

The valve modulation is managed by a 0-10V signal generated by the unit electronic control.

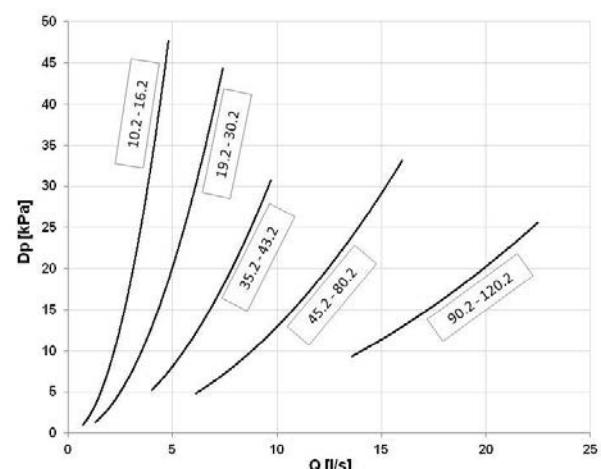


Q = Water flow rate [l/s]
DP = Pressure drops [kPa]

2-way modulating valve pressure drops (VS2MHX-VS2MCX)

VS2MHX - Heating side two-way modulating valve

The 2-way modulating valve, installed on the hot side exchanger inlet, modulates the water flow in response to a 0-10 V signal from the unit's controller.



Q = Water flow rate [l/s]
DP = Pressure drops [kPa]

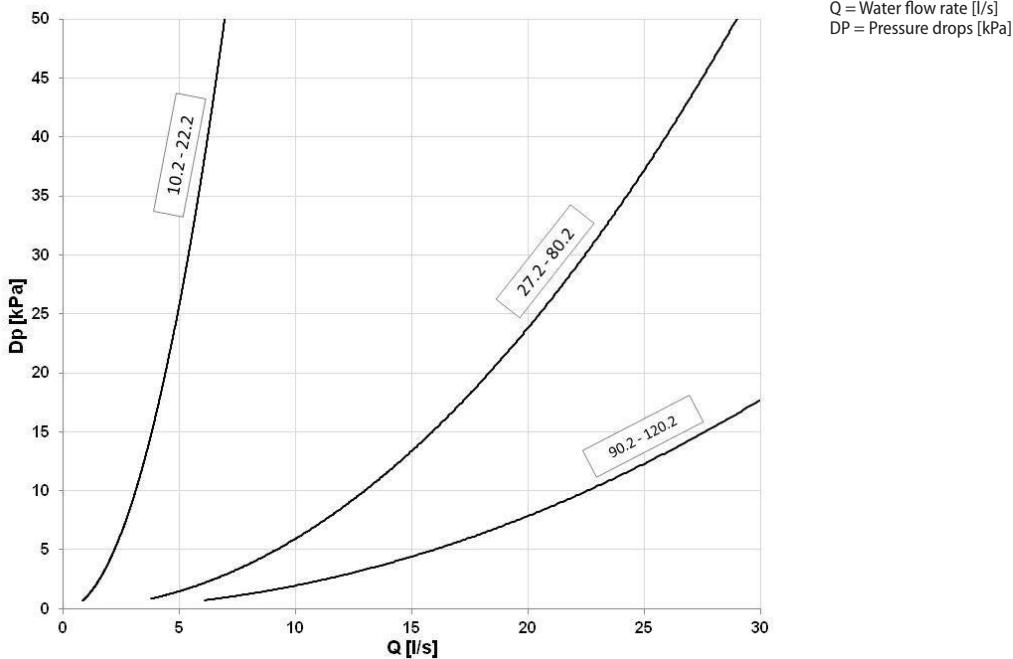
AVIBX - Anti-vibration mount supports

The rubber antivibration mounts are attached in special housing on the support frame and serve to smooth the vibrations produced by the unit thus reducing the noise transmitted to the support structure.

IFWX - Steel mesh strainer on the water side

The device prevents any impurity in the water circuit to dirt the heat exchanger. The stainless steel mesh mechanical strainer must be placed on the water inlet line. It can be easily dismounted for usual maintenance and cleaning operations. It can be used on the user and source side.

Pressure drops of steel mesh strainer water side



VACSHX - Heating side DHW switching valve

The heating side DHW switching valve is also supplied as a separate accessory.

The DHW is called by the closure of the potential-free contact present in the unit electric panel. In heating, the control regulates the 3-way valve commutation because it deviates the flow-rate from installation to DHW storage tank, changes the installation set into the DHW one, thermoregulates and activates or deactivates the compressors depending on the distance from the DHW set. In cooling, the control switches off the compressors due to the mode changing, regulates the 3-way valve commutation and starts the compressors after the safety time owed to on/off.

For sizes from 10.2 to 22.2 the DHW switching valve is 2".

For sizes from 27.2 to 40.2 the DHW switching valve is 2"1/2".

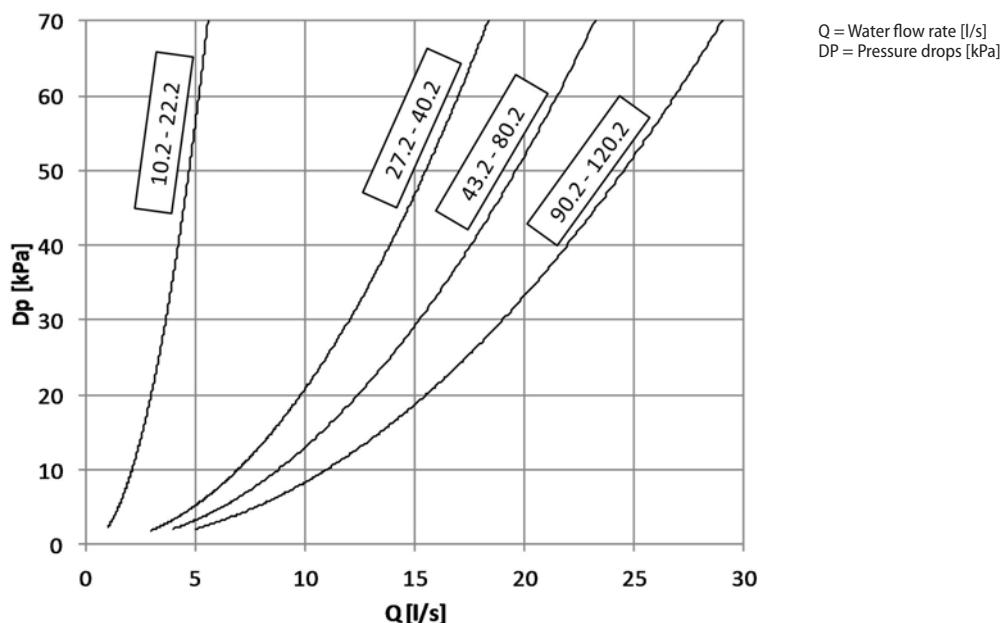
For sizes from 43.2 to 80.2 the DHW switching valve is 3".

For sizes from 90.2 to 120.2 the DHW switching valve is 4".

The hot side DHW switching valve has a IP 40 protection degree.

It is therefore compulsory that client provides a protection for the external liquid valve.

DHW diverter valve pressure drops



Heating only unit

Performance in Heating - Groundwater version

Size 10.2 - 40.2

| Size | To °C | Cold side water outlet temperature (°C) | | | | | | | | | | | |
|------|-------|-----------------------------------------|------|------|------|------|------|------|------|-------|-------|-------|-------|
| | | 5 | | 7 | | 10 | | 12 | | 15 | | 17 | |
| | | kWt | kWe | kWt | kWe | kWt | kWe | kWt | kWe | kWt | kWe | kWt | kWe |
| 10.2 | 30 | 35,5 | 5,55 | 37,4 | 5,52 | 40,5 | 5,48 | 42,7 | 5,46 | 46,4* | 5,43* | 48,6* | 5,41* |
| | 35 | 35,0 | 6,21 | 36,9 | 6,18 | 40,0 | 6,15 | 42,1 | 6,13 | 45,6* | 6,10* | 47,8* | 6,09* |
| | 45 | 33,9 | 7,79 | 35,7 | 7,75 | 38,5 | 7,71 | 40,5 | 7,67 | 43,6* | 7,63* | 45,6* | 7,61* |
| | 55 | 31,6 | 10,0 | 33,1 | 9,93 | 35,5 | 9,83 | 37,4 | 9,77 | 40,1* | 9,69* | 41,8* | 9,65* |
| | 60 | 31,1 | 12,0 | 32,7 | 11,9 | 35,2 | 11,8 | 36,8 | 11,7 | 39,5* | 11,5* | 41,1* | 11,4* |
| 12.2 | 30 | 40,9 | 6,48 | 43,2 | 6,5 | 46,7 | 6,54 | 49,2 | 6,58 | 53,4* | 6,65* | 56,4* | 6,70* |
| | 35 | 40,4 | 7,23 | 42,6 | 7,26 | 46,0 | 7,31 | 48,5 | 7,35 | 52,6* | 7,43* | 56,0* | 7,48* |
| | 45 | 39,1 | 9,10 | 41,2 | 9,12 | 44,7 | 8,89 | 46,7 | 9,17 | 50,4* | 9,23* | 52,7* | 9,27* |
| | 55 | 36,8 | 11,7 | 38,6 | 11,7 | 41,4 | 11,7 | 43,4 | 11,7 | 46,6* | 11,7* | 48,6* | 11,7* |
| | 60 | 36,7 | 14,1 | 38,4 | 14,0 | 41,4 | 14,0 | 43,3 | 13,9 | 46,4* | 13,9* | 48,4* | 13,8* |
| 14.2 | 30 | 49,2 | 7,84 | 52,0 | 7,9 | 56,2 | 8,00 | 59,3 | 8,08 | 64,4* | 8,22* | 67,7* | 8,32* |
| | 35 | 48,6 | 8,68 | 51,4 | 8,74 | 55,4 | 8,84 | 58,4 | 8,91 | 63,3* | 9,04* | 66,6* | 9,13* |
| | 45 | 46,8 | 10,8 | 49,3 | 10,9 | 53,4 | 10,9 | 56,2 | 11,0 | 61,4* | 10,7* | 64,2* | 10,9* |
| | 55 | 43,9 | 13,8 | 46,0 | 13,8 | 49,6 | 13,9 | 52,0 | 13,9 | 56,0* | 14,0* | 58,6* | 14,0* |
| | 60 | 43,9 | 16,3 | 46,1 | 16,3 | 49,6 | 16,3 | 51,6 | 16,1 | 56,0* | 16,3* | 58,6* | 16,3* |
| 16.2 | 30 | 57,3 | 9,25 | 60,6 | 9,34 | 65,5 | 9,42 | 69,2 | 9,42 | 74,9 | 9,55 | 78,9 | 9,66 |
| | 35 | 56,5 | 10,1 | 59,7 | 10,2 | 64,5 | 10,3 | 68,1 | 10,4 | 73,7 | 10,5 | 77,6 | 10,7 |
| | 45 | 54,5 | 12,4 | 57,5 | 12,5 | 62,1 | 12,6 | 65,1 | 12,6 | 70,3 | 12,8 | 74,0 | 12,9 |
| | 55 | 51,1 | 15,8 | 53,6 | 15,8 | 57,5 | 15,8 | 60,4 | 15,8 | 64,7 | 15,9 | 67,9 | 16,0 |
| | 60 | 50,7 | 18,9 | 53,1 | 18,8 | 57,0 | 18,7 | 59,6 | 18,7 | 64,1 | 18,6 | 67,3 | 18,7 |
| 19.2 | 30 | 67,9 | 10,8 | 71,8 | 10,8 | 77,8 | 10,9 | 82,1 | 11,0 | 88,7 | 11,2 | 93,4 | 11,3 |
| | 35 | 67,0 | 11,8 | 70,8 | 11,8 | 76,6 | 11,9 | 80,7 | 12,0 | 87,0 | 12,1 | 91,8 | 12,3 |
| | 45 | 64,7 | 14,5 | 68,1 | 14,6 | 73,2 | 14,6 | 77,0 | 14,7 | 83,3 | 14,7 | 87,5 | 14,8 |
| | 55 | 59,9 | 18,5 | 62,8 | 18,5 | 67,3 | 18,5 | 70,7 | 18,5 | 76,0 | 18,6 | 79,8 | 18,6 |
| | 60 | 58,9 | 22,0 | 61,9 | 22,0 | 66,4 | 21,9 | 69,5 | 21,9 | 74,6 | 21,8 | 78,3 | 21,8 |
| 22.2 | 30 | 79,5 | 13,0 | 84,0 | 13,0 | 90,7 | 13,0 | 95,4 | 13,0 | 103 | 12,9 | 108 | 12,8 |
| | 35 | 78,8 | 14,4 | 83,1 | 14,4 | 89,8 | 14,5 | 94,4 | 14,6 | 102 | 14,6 | 107 | 14,6 |
| | 45 | 76,2 | 17,5 | 80,4 | 17,6 | 86,5 | 17,7 | 90,8 | 17,8 | 97,5 | 18,0 | 102 | 18,0 |
| | 55 | 70,7 | 21,7 | 74,1 | 21,8 | 79,7 | 21,9 | 83,8 | 21,5 | 89,6 | 22,2 | 93,9 | 22,3 |
| | 60 | 70,1 | 25,4 | 73,5 | 25,4 | 78,5 | 25,4 | 82,4 | 25,4 | 88,5 | 25,5 | 92,8 | 25,6 |
| 27.2 | 30 | 96,3 | 15,2 | 102 | 15,2 | 110 | 15,2 | 115 | 15,2 | 125 | 15,2 | 131 | 15,2 |
| | 35 | 95,1 | 16,7 | 100 | 16,8 | 108 | 16,9 | 114 | 16,9 | 123 | 17,0 | 129 | 17,0 |
| | 45 | 91,4 | 20,6 | 96,3 | 20,6 | 104 | 20,8 | 109 | 20,9 | 117 | 21,0 | 123 | 21,1 |
| | 55 | 84,1 | 25,7 | 88,3 | 25,8 | 95,1 | 25,9 | 99,3 | 26,0 | 107 | 26,2 | 112 | 26,3 |
| | 60 | 82,3 | 28,9 | 86,4 | 28,9 | 93,0 | 29,1 | 97,6 | 29,1 | 105 | 29,3 | 110 | 29,4 |
| 30.2 | 30 | 109 | 17,5 | 115 | 17,5 | 123 | 17,4 | 130 | 17,3 | 140 | 17,0 | 147 | 16,9 |
| | 35 | 108 | 19,4 | 114 | 19,5 | 122 | 19,6 | 129 | 19,6 | 139 | 19,6 | 146 | 19,5 |
| | 45 | 103 | 23,6 | 109 | 23,8 | 117 | 24,0 | 123 | 24,2 | 133 | 24,3 | 139 | 24,5 |
| | 55 | 95,6 | 29,0 | 100 | 29,2 | 108 | 29,5 | 113 | 29,6 | 121 | 30,0 | 127 | 30,2 |
| | 60 | 93,8 | 32,3 | 98,3 | 32,4 | 106 | 32,6 | 111 | 32,8 | 120 | 33,1 | 126 | 33,3 |
| 35.2 | 30 | 126 | 20,5 | 133 | 20,5 | 144 | 20,7 | 152 | 20,7 | 165 | 20,8 | 174 | 20,8 |
| | 35 | 124 | 22,4 | 131 | 22,6 | 142 | 22,8 | 150 | 23,0 | 162 | 23,1 | 171 | 23,2 |
| | 45 | 119 | 27,1 | 125 | 27,3 | 135 | 27,6 | 142 | 27,8 | 153 | 28,1 | 161 | 28,3 |
| | 55 | 110 | 33,7 | 115 | 33,9 | 124 | 34,2 | 130 | 34,5 | 140 | 34,8 | 147 | 35,0 |
| | 60 | 109 | 37,8 | 115 | 37,9 | 124 | 38,2 | 130 | 38,4 | 140 | 38,7 | 147 | 38,9 |
| 40.2 | 30 | 143 | 23,3 | 151 | 23,4 | 163 | 23,6 | 171 | 23,6 | 186 | 23,7 | 195 | 23,7 |
| | 35 | 141 | 25,5 | 148 | 25,7 | 161 | 25,9 | 169 | 26,0 | 183 | 26,2 | 192 | 26,3 |
| | 45 | 135 | 30,9 | 142 | 31,1 | 153 | 31,3 | 161 | 31,5 | 173 | 31,8 | 182 | 31,9 |
| | 55 | 125 | 38,1 | 131 | 38,3 | 141 | 38,6 | 148 | 38,8 | 159 | 39,1 | 166 | 39,3 |
| | 60 | 123 | 42,5 | 129 | 42,6 | 139 | 42,8 | 146 | 43,0 | 157 | 43,3 | 164 | 43,5 |

kWt = Heating capacity (kW)

kWe = Total Electrical power absorbed (compressor + Auxiliary Circuit)(kW)

To = Water outlet temperature hot side (°C)

The performances are referred to $\Delta t = 5^\circ\text{C}$ on both the hot and cold sides

* Performance with modulating valve or control inverter pump cold side (optional configurations)

Heating only unit

Performance in Heating - Groundwater version

Size 43.2 - 120.2

| Size | To °C | Cold side water outlet temperature (°C) | | | | | | | | | | | |
|-------|-------|-----------------------------------------|------|-----|------|-----|------|-----|------|-----|------|-----|------|
| | | 5 | | 7 | | 10 | | 12 | | 15 | | 17 | |
| | | kWt | kWe | kWt | kWe | kWt | kWe | kWt | kWe | kWt | kWe | kWt | kWe |
| 43.2 | 30 | 157 | 26,2 | 166 | 26,4 | 180 | 26,7 | 190 | 27,0 | 206 | 27,4 | 217 | 27,6 |
| | 35 | 155 | 28,4 | 163 | 28,7 | 176 | 29,0 | 186 | 29,2 | 202 | 29,6 | 212 | 29,9 |
| | 45 | 148 | 34,4 | 156 | 34,5 | 168 | 34,9 | 177 | 35,1 | 191 | 35,5 | 200 | 35,7 |
| | 55 | 138 | 42,8 | 145 | 42,9 | 156 | 43,2 | 163 | 43,5 | 176 | 43,9 | 184 | 44,1 |
| | 60 | 137 | 47,5 | 143 | 46,8 | 154 | 48,3 | 162 | 48,5 | 175 | 48,8 | 183 | 49,0 |
| 45.2 | 30 | 170 | 27,6 | 179 | 27,7 | 194 | 28,0 | 205 | 28,1 | 222 | 28,2 | 233 | 28,3 |
| | 35 | 167 | 30,1 | 176 | 30,3 | 191 | 30,7 | 201 | 30,9 | 218 | 31,2 | 229 | 31,3 |
| | 45 | 160 | 36,5 | 168 | 36,7 | 182 | 37,1 | 191 | 37,4 | 207 | 37,8 | 217 | 38,1 |
| | 55 | 148 | 45,3 | 155 | 45,5 | 166 | 45,9 | 175 | 46,2 | 188 | 46,6 | 197 | 47,0 |
| | 60 | 147 | 50,5 | 154 | 50,7 | 165 | 51,1 | 174 | 51,3 | 187 | 51,9 | 197 | 52,2 |
| 50.2 | 30 | 185 | 30,2 | 195 | 30,4 | 212 | 30,9 | 224 | 31,2 | 244 | 31,6 | 256 | 31,9 |
| | 35 | 182 | 32,7 | 192 | 32,9 | 208 | 33,4 | 220 | 33,7 | 238 | 34,2 | 251 | 34,5 |
| | 45 | 174 | 39,5 | 183 | 39,7 | 197 | 40,1 | 208 | 40,4 | 226 | 40,9 | 237 | 41,3 |
| | 55 | 161 | 49,3 | 169 | 49,5 | 182 | 49,8 | 191 | 50,1 | 206 | 50,7 | 215 | 51,1 |
| | 60 | 160 | 55,3 | 167 | 55,4 | 180 | 55,7 | 189 | 56,0 | 204 | 56,5 | 214 | 56,9 |
| 55.2 | 30 | 201 | 33,3 | 212 | 33,5 | 230 | 33,9 | 243 | 34,3 | 263 | 34,7 | 277 | 35,1 |
| | 35 | 197 | 36,1 | 208 | 36,3 | 225 | 36,8 | 238 | 37,1 | 258 | 37,6 | 271 | 38,0 |
| | 45 | 190 | 43,6 | 199 | 43,9 | 215 | 44,3 | 227 | 44,6 | 244 | 45,1 | 256 | 45,4 |
| | 55 | 176 | 54,2 | 185 | 54,5 | 198 | 54,8 | 208 | 55,1 | 224 | 55,6 | 234 | 56,0 |
| | 60 | 175 | 60,5 | 182 | 60,7 | 196 | 61,0 | 206 | 61,3 | 221 | 61,7 | 232 | 62,1 |
| 60.2 | 30 | 225 | 35,9 | 238 | 36,2 | 259 | 36,6 | 273 | 37,0 | 296 | 37,4 | 313 | 37,8 |
| | 35 | 220 | 40,3 | 232 | 40,6 | 252 | 41,1 | 267 | 41,6 | 289 | 42,2 | 305 | 42,6 |
| | 45 | 216 | 48,7 | 228 | 49,1 | 245 | 49,5 | 259 | 49,9 | 279 | 50,5 | 292 | 50,9 |
| | 55 | 202 | 60,7 | 212 | 61,0 | 227 | 61,4 | 238 | 61,8 | 256 | 62,5 | 268 | 62,9 |
| | 60 | 199 | 68,1 | 209 | 68,4 | 224 | 68,7 | 235 | 69,1 | 252 | 69,7 | 265 | 70,1 |
| 70.2 | 30 | 256 | 42,7 | 271 | 43,2 | 294 | 44,0 | 310 | 44,6 | 336 | 45,6 | 353 | 46,2 |
| | 35 | 252 | 46,0 | 267 | 46,5 | 289 | 47,3 | 305 | 47,9 | 330 | 48,8 | 347 | 49,5 |
| | 45 | 243 | 55,4 | 256 | 55,8 | 276 | 56,5 | 290 | 57,0 | 314 | 57,9 | 330 | 58,6 |
| | 55 | 225 | 68,4 | 236 | 68,8 | 253 | 69,4 | 266 | 69,9 | 286 | 70,9 | 300 | 71,5 |
| | 60 | 223 | 76,1 | 233 | 76,5 | 250 | 77,1 | 263 | 77,5 | 283 | 78,4 | 297 | 78,9 |
| 80.2 | 30 | 290 | 48,2 | 306 | 48,9 | 332 | 50,0 | 350 | 50,9 | 380 | 52,3 | 400 | 53,2 |
| | 35 | 285 | 52,0 | 301 | 52,7 | 326 | 53,8 | 344 | 54,7 | 372 | 56,0 | 391 | 56,8 |
| | 45 | 274 | 62,4 | 288 | 63,0 | 311 | 63,9 | 327 | 64,6 | 352 | 65,8 | 370 | 66,5 |
| | 55 | 253 | 76,5 | 266 | 77,1 | 285 | 78,0 | 299 | 78,6 | 323 | 79,7 | 339 | 80,4 |
| | 60 | 251 | 84,6 | 263 | 85,2 | 283 | 86,1 | 297 | 86,7 | 320 | 87,7 | 335 | 88,3 |
| 90.2 | 30 | 326 | 54,2 | 344 | 54,6 | 372 | 55,2 | 392 | 55,6 | 425 | 56,3 | 446 | 56,7 |
| | 35 | 321 | 59,0 | 339 | 59,4 | 367 | 60,1 | 386 | 60,6 | 418 | 61,3 | 439 | 61,8 |
| | 45 | 310 | 71,7 | 327 | 72,1 | 351 | 72,6 | 369 | 73,1 | 397 | 73,8 | 415 | 74,2 |
| | 55 | 288 | 89,9 | 302 | 90,2 | 323 | 90,6 | 339 | 91,0 | 364 | 91,6 | 380 | 92,0 |
| | 60 | 287 | 101 | 299 | 101 | 320 | 102 | 335 | 102 | 360 | 103 | 377 | 103 |
| 100.2 | 30 | 357 | 60,7 | 375 | 61,3 | 404 | 62,1 | 425 | 62,8 | 460 | 63,9 | 483 | 64,7 |
| | 35 | 352 | 66,0 | 370 | 66,6 | 398 | 67,5 | 419 | 68,2 | 452 | 69,3 | 475 | 70,0 |
| | 45 | 338 | 79,9 | 354 | 80,4 | 379 | 81,2 | 398 | 81,8 | 429 | 82,7 | 450 | 83,4 |
| | 55 | 312 | 99,6 | 326 | 100 | 350 | 101 | 367 | 101 | 393 | 102 | 411 | 102 |
| | 60 | 311 | 112 | 325 | 112 | 348 | 112 | 365 | 113 | 392 | 114 | 410 | 114 |
| 120.2 | 30 | 422 | 72,4 | 443 | 72,8 | 475 | 73,5 | 500 | 74,0 | 540 | 74,9 | 566 | 75,4 |
| | 35 | 416 | 79,1 | 436 | 79,6 | 469 | 80,4 | 492 | 80,9 | 531 | 81,8 | 556 | 82,4 |
| | 45 | 400 | 96,4 | 419 | 96,8 | 449 | 97,4 | 471 | 97,9 | 507 | 98,7 | 531 | 99,2 |
| | 55 | 370 | 122 | 386 | 122 | 412 | 122 | 434 | 122 | 463 | 123 | 483 | 123 |
| | 60 | 370 | 137 | 386 | 137 | 413 | 138 | 433 | 138 | 464 | 138 | 485 | 138 |

kWt = Heating capacity (kW)

kWe = Total Electrical power absorbed (compressor + Auxiliary Circuit)(kW)

To = Water outlet temperature hot side (°C)

The performances are referred to $\Delta t = 5^\circ\text{C}$ on both the hot and cold side

Cooling only unit

Performances in cooling - Groundwater version

Size 10.2 - 35.2

| Size | To (°C) | Hot side water outlet temperature (°C) | | | | | | | | | |
|------|---------|----------------------------------------|------|------|------|------|------|------|------|------|------|
| | | 30 | | 35 | | 40 | | 45 | | 50 | |
| | | kWf | kWe | kWf | kWe | kWf | kWe | kWf | kWe | kWf | kWe |
| 10.2 | 5 | 30,2 | 5,48 | 29,0 | 6,15 | 27,6 | 6,98 | 25,9 | 7,79 | 23,6 | 8,90 |
| | 7 | 32,2 | 5,45 | 31,0 | 6,12 | 29,4 | 6,95 | 27,7 | 7,75 | 25,3 | 8,84 |
| | 10 | 35,1 | 5,41 | 33,8 | 6,08 | 32,0 | 6,91 | 30,2 | 7,71 | 27,7 | 8,77 |
| | 12 | 36,8 | 5,39 | 35,5 | 6,07 | 33,9 | 6,88 | 31,9 | 7,67 | 29,4 | 8,72 |
| | 15 | 40,3 | 5,36 | 38,8 | 6,05 | 36,9 | 6,85 | 34,9 | 7,63 | 32,2 | 8,66 |
| | 18 | 43,7 | 5,33 | 42,2 | 6,02 | 39,9 | 6,82 | 37,9 | 7,59 | 35,0 | 8,60 |
| 12.2 | 5 | 34,7 | 6,38 | 33,5 | 7,16 | 31,7 | 8,13 | 29,8 | 9,10 | 27,3 | 10,4 |
| | 7 | 37,0 | 6,40 | 35,6 | 7,18 | 33,8 | 8,15 | 31,8 | 9,12 | 29,2 | 10,4 |
| | 10 | 40,1 | 6,45 | 38,6 | 7,23 | 36,9 | 8,19 | 35,2 | 8,89 | 32,2 | 10,3 |
| | 12 | 42,3 | 6,55 | 40,7 | 7,35 | 38,8 | 8,30 | 36,5 | 9,26 | 33,7 | 10,5 |
| | 15 | 45,7 | 6,62 | 44,2 | 7,43 | 42,0 | 8,37 | 39,7 | 9,32 | 36,6 | 10,6 |
| | 18 | 49,7 | 6,70 | 48,0 | 7,52 | 45,6 | 8,45 | 43,2 | 9,39 | 39,9 | 10,6 |
| 14.2 | 5 | 41,8 | 7,69 | 40,2 | 8,59 | 38,0 | 9,70 | 36,0 | 10,7 | 32,9 | 12,2 |
| | 7 | 44,6 | 7,76 | 42,9 | 8,65 | 40,6 | 9,74 | 38,8 | 10,6 | 35,3 | 12,2 |
| | 10 | 48,2 | 7,86 | 46,5 | 8,75 | 44,3 | 9,83 | 41,7 | 11,0 | 38,4 | 12,4 |
| | 12 | 50,9 | 8,03 | 48,9 | 8,91 | 46,6 | 9,98 | 43,9 | 11,1 | 40,5 | 12,6 |
| | 15 | 55,0 | 8,16 | 53,1 | 9,04 | 50,7 | 10,1 | 48,9 | 10,8 | 44,6 | 12,5 |
| | 18 | 59,8 | 8,30 | 57,7 | 9,18 | 55,3 | 10,2 | 52,8 | 11,1 | 48,5 | 12,6 |
| 16.2 | 5 | 48,5 | 9,24 | 46,7 | 10,0 | 44,3 | 11,3 | 41,7 | 12,4 | 38,3 | 14,1 |
| | 7 | 51,8 | 9,53 | 49,9 | 10,1 | 47,4 | 11,3 | 44,6 | 12,5 | 41,0 | 14,1 |
| | 10 | 56,2 | 9,53 | 54,1 | 10,2 | 51,4 | 11,4 | 48,7 | 12,6 | 44,8 | 14,2 |
| | 12 | 59,3 | 9,36 | 57,0 | 10,4 | 54,1 | 11,6 | 51,1 | 12,7 | 47,2 | 14,4 |
| | 15 | 64,7 | 9,52 | 62,2 | 10,5 | 59,1 | 11,7 | 55,7 | 12,9 | 51,5 | 14,5 |
| | 18 | 70,2 | 9,67 | 67,4 | 10,7 | 64,1 | 11,9 | 60,3 | 13,1 | 55,8 | 14,6 |
| 19.2 | 5 | 57,7 | 10,6 | 55,7 | 11,7 | 52,8 | 13,1 | 49,7 | 14,5 | 45,3 | 16,5 |
| | 7 | 61,6 | 10,6 | 59,4 | 11,7 | 56,5 | 13,1 | 53,2 | 14,6 | 48,5 | 16,5 |
| | 10 | 66,8 | 10,7 | 64,5 | 11,8 | 61,1 | 13,2 | 57,6 | 14,6 | 52,7 | 16,6 |
| | 12 | 70,2 | 10,9 | 67,9 | 12,0 | 64,3 | 13,4 | 60,7 | 14,8 | 55,7 | 16,8 |
| | 15 | 76,7 | 11,1 | 74,0 | 12,2 | 70,2 | 13,5 | 66,4 | 14,9 | 60,9 | 16,8 |
| | 18 | 83,2 | 11,3 | 80,2 | 12,3 | 76,1 | 13,6 | 72,0 | 15,0 | 66,2 | 16,9 |
| 22.2 | 5 | 66,9 | 13,0 | 64,5 | 14,4 | 61,2 | 16,0 | 57,3 | 17,7 | 52,6 | 19,9 |
| | 7 | 71,5 | 13,0 | 68,8 | 14,5 | 65,4 | 16,1 | 61,2 | 17,8 | 56,2 | 20,0 |
| | 10 | 77,2 | 13,0 | 74,6 | 14,6 | 70,8 | 16,3 | 66,8 | 18,0 | 61,2 | 20,1 |
| | 12 | 81,1 | 13,2 | 78,2 | 14,8 | 74,7 | 16,5 | 70,2 | 18,3 | 64,4 | 20,4 |
| | 15 | 88,4 | 13,1 | 85,1 | 14,9 | 81,3 | 16,6 | 76,6 | 18,4 | 70,5 | 20,6 |
| | 18 | 95,6 | 13,0 | 92,0 | 14,9 | 87,9 | 16,7 | 82,9 | 18,6 | 76,5 | 20,8 |
| 27.2 | 5 | 82,2 | 15,0 | 79,0 | 16,7 | 75,1 | 18,7 | 70,3 | 20,8 | 64,1 | 23,4 |
| | 7 | 87,4 | 15,1 | 84,2 | 16,8 | 80,1 | 18,8 | 75,1 | 20,9 | 68,5 | 23,5 |
| | 10 | 94,6 | 15,1 | 91,2 | 16,9 | 86,7 | 18,9 | 81,5 | 21,0 | 74,7 | 23,6 |
| | 12 | 99,7 | 15,1 | 95,8 | 16,9 | 91,5 | 19,0 | 85,8 | 21,1 | 78,5 | 23,7 |
| | 15 | 108 | 15,1 | 104 | 17,0 | 99,7 | 19,0 | 93,5 | 21,2 | 85,8 | 23,9 |
| | 18 | 117 | 15,0 | 113 | 17,0 | 108 | 19,1 | 101 | 21,4 | 93,1 | 24,0 |
| 30.2 | 5 | 92,4 | 17,2 | 89,0 | 19,2 | 84,6 | 21,4 | 79,1 | 23,6 | 72,5 | 26,3 |
| | 7 | 98,5 | 17,2 | 94,8 | 19,3 | 90,1 | 21,5 | 84,3 | 23,8 | 77,3 | 26,5 |
| | 10 | 106 | 17,1 | 102 | 19,4 | 97,7 | 21,7 | 91,7 | 24,0 | 84,2 | 26,7 |
| | 12 | 112 | 17,2 | 108 | 19,6 | 103 | 22,0 | 96,5 | 24,4 | 88,6 | 27,2 |
| | 15 | 122 | 16,9 | 117 | 19,5 | 112 | 22,0 | 105 | 24,6 | 96,7 | 27,4 |
| | 18 | 132 | 16,6 | 127 | 19,5 | 121 | 22,1 | 114 | 24,8 | 105 | 27,7 |
| 35.2 | 5 | 107 | 20,1 | 102 | 22,2 | 97,2 | 24,5 | 90,7 | 27,1 | 83,0 | 30,4 |
| | 7 | 114 | 20,2 | 109 | 22,4 | 104 | 24,7 | 96,7 | 27,3 | 88,6 | 30,6 |
| | 10 | 124 | 20,3 | 118 | 22,6 | 113 | 25,0 | 106 | 27,6 | 96,9 | 30,9 |
| | 12 | 131 | 20,6 | 125 | 23,0 | 119 | 25,4 | 111 | 28,1 | 102 | 31,5 |
| | 15 | 143 | 20,6 | 137 | 23,1 | 130 | 25,6 | 121 | 28,4 | 111 | 31,8 |
| | 18 | 154 | 20,7 | 148 | 23,3 | 141 | 25,8 | 131 | 28,7 | 121 | 32,1 |

kWf = Cooling capacity in kW

To = Water outlet temperature cold side (°C)

The performances are referred to DeltaT=5°C on both the hot and cold sides

Cooling only unit

Performances in cooling - Groundwater version

Size 40.2 - 60.2

| Size | To (°C) | Hot side water outlet temperature (°C) | | | | | | | | | |
|------|---------|----------------------------------------|------|-----|------|-----|------|-----|------|------|------|
| | | 30 | | 35 | | 40 | | 45 | | 50 | |
| | | kWf | kWe | kWf | kWe | kWf | kWe | kWf | kWe | kWf | kWe |
| 40.2 | 5 | 121 | 22,9 | 116 | 25,3 | 110 | 28,0 | 103 | 30,9 | 94,8 | 34,5 |
| | 7 | 129 | 23,0 | 124 | 25,4 | 118 | 28,2 | 110 | 31,1 | 101 | 34,7 |
| | 10 | 139 | 23,1 | 134 | 25,6 | 127 | 28,4 | 120 | 31,3 | 110 | 35 |
| | 12 | 147 | 23,4 | 141 | 26,0 | 135 | 28,8 | 126 | 31,8 | 116 | 35,5 |
| | 15 | 160 | 23,5 | 154 | 26,1 | 147 | 29,0 | 137 | 32,1 | 127 | 35,8 |
| | 18 | 173 | 23,5 | 167 | 26,3 | 159 | 29,2 | 149 | 32,4 | 137 | 36,1 |
| 43.2 | 5 | 132 | 25,7 | 127 | 28,1 | 121 | 31,1 | 113 | 34,4 | 104 | 38,6 |
| | 7 | 141 | 25,9 | 136 | 28,4 | 129 | 31,3 | 121 | 34,5 | 111 | 38,7 |
| | 10 | 153 | 26,2 | 147 | 28,7 | 140 | 31,6 | 131 | 34,9 | 120 | 39,1 |
| | 12 | 161 | 26,7 | 155 | 29,2 | 147 | 32,1 | 138 | 35,5 | 127 | 39,7 |
| | 15 | 176 | 27,1 | 169 | 29,6 | 161 | 32,5 | 151 | 35,8 | 139 | 40,1 |
| | 18 | 192 | 27,5 | 184 | 30,0 | 175 | 32,8 | 164 | 36,2 | 151 | 40,4 |
| 45.2 | 5 | 144 | 27,0 | 138 | 29,8 | 131 | 33,0 | 123 | 36,5 | 112 | 40,9 |
| | 7 | 153 | 27,2 | 147 | 30,0 | 140 | 33,2 | 131 | 36,7 | 120 | 41,1 |
| | 10 | 166 | 27,4 | 160 | 30,4 | 152 | 33,5 | 142 | 37,1 | 130 | 41,5 |
| | 12 | 175 | 27,8 | 169 | 30,9 | 160 | 34,1 | 150 | 37,8 | 138 | 42,2 |
| | 15 | 191 | 28,0 | 184 | 31,2 | 175 | 34,4 | 164 | 38,2 | 150 | 42,6 |
| | 18 | 207 | 28,2 | 199 | 31,4 | 190 | 34,8 | 177 | 38,6 | 163 | 43,1 |
| 50.2 | 5 | 156 | 29,5 | 150 | 32,4 | 142 | 35,8 | 133 | 39,5 | 122 | 44,4 |
| | 7 | 167 | 29,8 | 160 | 32,6 | 152 | 36,0 | 142 | 39,7 | 131 | 44,6 |
| | 10 | 182 | 30,2 | 174 | 33,1 | 166 | 36,4 | 155 | 40,1 | 142 | 45,0 |
| | 12 | 191 | 30,8 | 184 | 33,7 | 175 | 37,0 | 163 | 40,8 | 150 | 45,7 |
| | 15 | 209 | 31,3 | 200 | 34,2 | 191 | 37,5 | 178 | 41,2 | 164 | 46,2 |
| | 18 | 227 | 31,8 | 217 | 34,7 | 207 | 38,0 | 193 | 41,6 | 178 | 46,7 |
| 55.2 | 5 | 169 | 32,5 | 162 | 35,7 | 154 | 39,5 | 145 | 43,6 | 133 | 48,9 |
| | 7 | 181 | 32,8 | 173 | 36,0 | 165 | 39,7 | 154 | 43,9 | 142 | 49,2 |
| | 10 | 195 | 33,2 | 188 | 36,4 | 179 | 40,1 | 168 | 44,3 | 154 | 49,6 |
| | 12 | 207 | 33,9 | 199 | 37,1 | 189 | 40,8 | 177 | 45,0 | 163 | 50,3 |
| | 15 | 226 | 34,4 | 217 | 37,6 | 206 | 41,3 | 193 | 45,5 | 178 | 50,9 |
| | 18 | 244 | 34,9 | 235 | 38,1 | 224 | 41,7 | 209 | 46,0 | 193 | 51,4 |
| 60.2 | 5 | 193 | 36,7 | 185 | 40,3 | 175 | 44,5 | 164 | 49,3 | 150 | 55,3 |
| | 7 | 206 | 37,0 | 197 | 40,6 | 188 | 44,8 | 175 | 49,6 | 160 | 55,6 |
| | 10 | 223 | 37,6 | 214 | 41,2 | 203 | 45,3 | 190 | 50,0 | 174 | 56,1 |
| | 12 | 235 | 38,3 | 225 | 42,0 | 214 | 46,1 | 200 | 51,0 | 184 | 57,1 |
| | 15 | 257 | 38,9 | 246 | 42,6 | 234 | 46,7 | 219 | 51,6 | 201 | 57,7 |
| | 18 | 279 | 39,5 | 267 | 43,2 | 254 | 47,3 | 237 | 52,2 | 219 | 58,4 |

kWf = Cooling capacity in kW

kWe = Total Electrical power absorbed (compressor + Auxiliary Circuit)(kW)

To = Water outlet temperature cold side (°C)

The performances are referred to DeltaT=5°C on both the hot and cold sides

Cooling only unit

Performances in cooling - Groundwater version

Size 70.2 - 120.2

| Size | To (°C) | Hot side water outlet temperature (°C) | | | | | | | | | |
|-------|---------|----------------------------------------|------|-----|------|-----|------|-----|------|-----|------|
| | | 30 | | 35 | | 40 | | 45 | | 50 | |
| | | kWf | kWe | kWf | kWe | kWf | kWe | kWf | kWe | kWf | kWe |
| 70.2 | 5 | 216 | 41,7 | 208 | 45,6 | 198 | 50,3 | 186 | 55,4 | 171 | 61,9 |
| | 7 | 231 | 42,2 | 222 | 46,0 | 212 | 50,7 | 198 | 55,8 | 182 | 62,3 |
| | 10 | 250 | 42,9 | 241 | 46,8 | 229 | 51,4 | 216 | 56,5 | 198 | 63,0 |
| | 12 | 264 | 44,0 | 254 | 47,9 | 241 | 52,4 | 226 | 57,6 | 208 | 64,1 |
| | 15 | 287 | 45,0 | 277 | 48,9 | 263 | 53,3 | 247 | 58,5 | 227 | 65,0 |
| | 18 | 311 | 45,9 | 299 | 49,8 | 285 | 54,2 | 267 | 59,4 | 246 | 65,9 |
| 80.2 | 5 | 244 | 47,2 | 235 | 51,5 | 223 | 56,7 | 210 | 62,4 | 192 | 69,4 |
| | 7 | 259 | 47,8 | 250 | 52,2 | 238 | 57,3 | 223 | 63,0 | 205 | 70,0 |
| | 10 | 283 | 49,0 | 272 | 53,3 | 259 | 58,2 | 242 | 63,9 | 223 | 70,9 |
| | 12 | 297 | 50,4 | 286 | 54,7 | 273 | 59,5 | 255 | 65,3 | 235 | 72,3 |
| | 15 | 323 | 51,8 | 311 | 56,0 | 297 | 60,7 | 278 | 66,4 | 256 | 73,4 |
| | 18 | 349 | 53,2 | 337 | 57,4 | 321 | 61,9 | 301 | 67,6 | 278 | 74,5 |
| 90.2 | 5 | 276 | 53,1 | 264 | 58,4 | 253 | 64,6 | 236 | 71,7 | 216 | 80,8 |
| | 7 | 294 | 53,5 | 281 | 58,8 | 269 | 65,0 | 252 | 72,1 | 231 | 81,1 |
| | 10 | 319 | 54,1 | 306 | 59,5 | 292 | 65,5 | 274 | 72,6 | 251 | 81,6 |
| | 12 | 333 | 55,0 | 321 | 60,6 | 306 | 66,6 | 288 | 73,8 | 264 | 82,9 |
| | 15 | 364 | 55,7 | 350 | 61,4 | 334 | 67,3 | 313 | 74,5 | 288 | 83,5 |
| | 18 | 394 | 56,4 | 380 | 62,1 | 362 | 68,0 | 339 | 75,2 | 311 | 84,2 |
| 100.2 | 5 | 300 | 60,1 | 289 | 66,0 | 275 | 72,4 | 257 | 79,9 | 235 | 89,8 |
| | 7 | 319 | 60,7 | 306 | 66,6 | 291 | 72,9 | 273 | 80,4 | 249 | 90,2 |
| | 10 | 343 | 61,7 | 331 | 67,5 | 315 | 73,8 | 295 | 81,2 | 271 | 90,9 |
| | 12 | 360 | 63,1 | 347 | 68,9 | 330 | 75,2 | 310 | 82,6 | 285 | 92,4 |
| | 15 | 392 | 64,2 | 377 | 70,0 | 360 | 76,3 | 337 | 83,6 | 310 | 93,3 |
| | 18 | 423 | 65,4 | 408 | 71,2 | 389 | 77,4 | 365 | 84,6 | 336 | 94,2 |
| 120.2 | 5 | 351 | 72,3 | 337 | 79,5 | 321 | 87,3 | 300 | 97,0 | 273 | 110 |
| | 7 | 371 | 72,8 | 357 | 80,0 | 340 | 87,8 | 318 | 97,3 | 290 | 110 |
| | 10 | 401 | 73,5 | 388 | 80,8 | 370 | 88,6 | 345 | 97,9 | 315 | 110 |
| | 12 | 421 | 74,8 | 407 | 82,2 | 387 | 90,0 | 362 | 99,4 | 333 | 112 |
| | 15 | 458 | 75,7 | 441 | 83,2 | 421 | 90,9 | 395 | 100 | 363 | 113 |
| | 18 | 494 | 76,6 | 476 | 84,1 | 455 | 91,8 | 427 | 101 | 393 | 113 |

kWf = Cooling capacity in kW

kWe = Total Electrical power absorbed (compressor + Auxiliary Circuit)(kW)

To = Water outlet temperature cold side (°C)

The performances are referred to DeltaT=5°C on both the hot and cold sides

Heating only unit

Performance in Heating - Geothermal version

Size 10.2 - 40.2

| Grandezze | To (°C) | Cold side water outlet temperature (°C) | | | | | | | | | | | |
|-----------|---------|-----------------------------------------|------|------|------|------|------|------|------|------|------|------|------|
| | | -6 | | -3 | | -1 | | 0 | | 1 | | 3 | |
| | | kWt | kWe | kWt | kWe | kWt | kWe | kWt | kWe | kWt | kWe | kWt | kWe |
| 10.2 | 30 | 25,7 | 5,66 | 27,8 | 5,62 | 29,4 | 5,6 | 30,3 | 5,57 | 31,2 | 5,56 | 33,0 | 5,53 |
| | 35 | 25,5 | 6,31 | 27,6 | 6,26 | 29,2 | 6,23 | 30,0 | 6,22 | 30,9 | 6,20 | 32,7 | 6,17 |
| | 45 | 25,2 | 8,02 | 27,3 | 7,88 | 28,7 | 7,93 | 29,5 | 7,91 | 30,3 | 7,88 | 31,9 | 7,84 |
| | 50 | - | - | 26,4 | 9,10 | 27,8 | 9,09 | 28,6 | 9,05 | 29,3 | 9,02 | 30,9 | 8,96 |
| | 55 | - | - | - | - | - | - | 27,7 | 10,2 | 28,3 | 10,2 | 29,8 | 10,1 |
| 12.2 | 30 | 30,0 | 6,34 | 32,5 | 6,35 | 34,4 | 6,36 | 35,5 | 6,36 | 36,5 | 6,37 | 38,6 | 6,38 |
| | 35 | 29,8 | 7,07 | 32,2 | 7,08 | 34,1 | 7,09 | 35,1 | 7,10 | 36,1 | 7,10 | 38,1 | 7,12 |
| | 45 | 29,7 | 9,05 | 31,9 | 9,10 | 33,6 | 9,08 | 34,5 | 9,08 | 35,5 | 9,08 | 37,4 | 9,08 |
| | 50 | - | - | 31,1 | 10,5 | 32,8 | 10,5 | 33,6 | 10,4 | 34,5 | 10,4 | 36,3 | 10,4 |
| | 55 | - | - | - | - | - | - | 32,7 | 11,8 | 33,5 | 11,8 | 35,2 | 11,8 |
| 14.2 | 30 | 35,4 | 7,47 | 38,5 | 7,52 | 40,7 | 7,56 | 41,9 | 7,58 | 43,3 | 7,60 | 45,7 | 7,65 |
| | 35 | 35,1 | 8,31 | 38,1 | 8,36 | 40,2 | 8,40 | 41,5 | 8,42 | 42,7 | 8,44 | 45,1 | 8,48 |
| | 45 | 34,7 | 10,6 | 37,5 | 10,6 | 39,5 | 10,7 | 40,7 | 10,7 | 41,9 | 10,7 | 44,2 | 10,7 |
| | 50 | - | - | 36,5 | 12,1 | 38,5 | 12,2 | 39,5 | 12,2 | 40,6 | 12,2 | 42,8 | 12,2 |
| | 55 | - | - | - | - | - | - | 38,4 | 13,7 | 39,4 | 13,7 | 41,5 | 13,7 |
| 16.2 | 30 | 42,3 | 8,89 | 46,0 | 8,89 | 48,6 | 8,90 | 50,1 | 8,91 | 51,6 | 8,92 | 54,7 | 8,95 |
| | 35 | 41,9 | 9,83 | 45,4 | 9,85 | 48,0 | 9,86 | 49,5 | 9,88 | 50,9 | 9,89 | 53,9 | 9,93 |
| | 45 | 41,3 | 12,5 | 44,7 | 12,4 | 47,1 | 12,4 | 48,4 | 12,4 | 49,7 | 12,4 | 52,5 | 12,5 |
| | 50 | - | - | 43,4 | 14,2 | 45,7 | 14,2 | 46,9 | 14,2 | 48,2 | 14,2 | 50,7 | 14,2 |
| | 55 | - | - | - | - | - | - | - | - | 46,6 | 15,9 | 49,0 | 15,9 |
| 19.2 | 30 | 50,1 | 10,3 | 54,4 | 10,4 | 57,4 | 10,4 | 59,3 | 10,4 | 60,9 | 10,4 | 64,4 | 10,4 |
| | 35 | 49,5 | 11,4 | 53,8 | 11,5 | 56,7 | 11,5 | 58,5 | 11,5 | 60,1 | 11,5 | 63,5 | 11,6 |
| | 45 | 48,6 | 14,5 | 52,5 | 14,5 | 55,6 | 14,5 | 57,1 | 14,5 | 58,6 | 14,5 | 61,7 | 14,5 |
| | 50 | 47,1 | 16,6 | 50,8 | 16,5 | 53,6 | 16,5 | 55,1 | 16,5 | 56,6 | 16,5 | 59,5 | 16,5 |
| | 55 | - | - | 49,0 | 18,6 | 51,7 | 18,6 | 53,1 | 18,6 | 54,6 | 18,6 | 57,2 | 18,6 |
| 22.2 | 30 | 59,0 | 12,5 | 64,1 | 12,6 | 67,6 | 12,6 | 69,6 | 12,7 | 71,5 | 12,7 | 75,6 | 12,7 |
| | 35 | 58,5 | 13,7 | 63,5 | 13,9 | 67,0 | 14,0 | 68,9 | 14,0 | 70,7 | 14,0 | 74,7 | 14,1 |
| | 45 | 57,6 | 17,1 | 62,1 | 17,1 | 65,5 | 17,2 | 67,3 | 17,3 | 69,4 | 17,3 | 72,9 | 17,4 |
| | 50 | 56,1 | 19,4 | 60,3 | 19,4 | 63,5 | 19,4 | 65,2 | 19,5 | 67,0 | 19,5 | 70,3 | 19,6 |
| | 55 | - | - | 58,5 | 21,7 | 61,6 | 21,7 | 63,1 | 21,7 | 64,6 | 21,7 | 67,8 | 21,7 |
| 27.2 | 30 | 69,0 | 14,7 | 75,7 | 14,8 | 80,1 | 14,9 | 82,5 | 14,9 | 85,0 | 14,9 | 89,8 | 15,0 |
| | 35 | 68,4 | 16,1 | 75,0 | 16,2 | 79,4 | 16,3 | 81,7 | 16,4 | 84,1 | 16,4 | 88,8 | 16,5 |
| | 45 | 66,9 | 20,0 | 73,1 | 20,1 | 77,3 | 20,2 | 79,4 | 20,2 | 81,5 | 20,3 | 86,1 | 20,4 |
| | 50 | 64,8 | 22,7 | 70,7 | 22,7 | 74,5 | 22,8 | 76,5 | 22,8 | 78,6 | 22,9 | 82,8 | 23,0 |
| | 55 | - | - | 68,2 | 25,4 | 71,7 | 25,4 | 73,6 | 25,4 | 75,6 | 25,5 | 79,6 | 25,5 |
| 30.2 | 30 | 77,9 | 16,9 | 85,5 | 17,1 | 90,4 | 17,2 | 93,1 | 17,2 | 95,7 | 17,3 | 101 | 17,3 |
| | 35 | 77,3 | 18,4 | 84,7 | 18,7 | 89,7 | 18,8 | 92,2 | 18,9 | 94,8 | 18,9 | 100 | 19,1 |
| | 45 | 75,9 | 22,6 | 82,9 | 22,8 | 87,4 | 22,9 | 89,8 | 23,0 | 92,2 | 23,1 | 97,3 | 23,3 |
| | 50 | 73,8 | 25,5 | 80,3 | 25,7 | 84,5 | 25,7 | 86,7 | 25,8 | 89,0 | 25,9 | 93,7 | 26,0 |
| | 55 | - | - | 77,7 | 28,5 | 81,6 | 28,6 | 83,6 | 28,6 | 85,8 | 28,6 | 90,2 | 28,8 |
| 35.2 | 30 | 87,7 | 19,5 | 96,6 | 19,7 | 102 | 19,8 | 105 | 19,9 | 109 | 19,9 | 115 | 20,1 |
| | 35 | 86,7 | 21,2 | 95,3 | 21,4 | 101 | 21,6 | 104 | 21,7 | 107 | 21,7 | 113 | 21,9 |
| | 45 | 85,5 | 26,0 | 93,3 | 26,2 | 98,4 | 26,4 | 101 | 26,5 | 104 | 26,6 | 110 | 26,8 |
| | 50 | 82,8 | 29,4 | 90,5 | 29,6 | 95,4 | 29,7 | 97,9 | 29,8 | 101 | 29,9 | 106 | 30,1 |
| | 55 | - | - | - | - | 92,4 | 33,1 | 94,8 | 33,2 | 97,3 | 33,3 | 102 | 33,4 |
| 40.2 | 30 | 101 | 22,3 | 111 | 22,6 | 118 | 22,7 | 121 | 22,8 | 125 | 22,8 | 132 | 22,9 |
| | 35 | 101 | 24,3 | 110 | 24,5 | 116 | 24,7 | 120 | 24,8 | 123 | 24,9 | 130 | 25,0 |
| | 45 | 99 | 29,8 | 108 | 30,1 | 114 | 30,2 | 117 | 30,3 | 120 | 30,4 | 127 | 30,6 |
| | 50 | 95,8 | 33,5 | 105 | 33,7 | 110 | 33,9 | 113 | 34,0 | 116 | 34,0 | 122 | 34,2 |
| | 55 | - | - | - | - | 106 | 37,5 | 109 | 37,6 | 112 | 37,7 | 118 | 37,8 |

kWt = Heating capacity (kW)

kWe = Total Electrical power absorbed (compressor + Auxiliary Circuit)(kW)

To = Water outlet temperature hot side (°C)

The performances are referred to $\Delta t = 5^\circ\text{C}$ on both the hot and cold sides

Data refer to operation with a mix of water and propylene glycol at 30% on the cold side

Heating only unit

Performance in Heating - Geothermal version

Size 43.2 - 120.2

| Grandezze | To (°C) | Cold side water outlet temperature (°C) | | | | | | | | | | | |
|-----------|---------|-----------------------------------------|------|-----|------|-----|------|-----|------|-----|------|-----|------|
| | | -6 | | -3 | | -1 | | 0 | | 1 | | 3 | |
| | | kWt | kWe | kWt | kWe | kWt | kWe | kWt | kWe | kWt | kWe | kWt | kWe |
| 43.2 | 30 | 111 | 24,9 | 122 | 25,2 | 130 | 25,3 | 133 | 25,4 | 138 | 25,5 | 146 | 25,7 |
| | 35 | 110 | 27,1 | 121 | 27,3 | 127 | 27,5 | 131 | 27,5 | 136 | 27,6 | 143 | 27,8 |
| | 45 | 109 | 33,3 | 119 | 33,5 | 125 | 33,7 | 128 | 33,7 | 132 | 33,8 | 139 | 34,0 |
| | 50 | - | - | 115 | 37,7 | 121 | 37,9 | 124 | 37,9 | 128 | 38,0 | 135 | 38,2 |
| | 55 | - | - | - | - | 117 | 42,1 | 120 | 42,1 | 124 | 42,2 | 130 | 42,4 |
| 45.2 | 30 | 119 | 26,2 | 131 | 26,5 | 138 | 26,6 | 142 | 26,7 | 147 | 26,8 | 155 | 27,0 |
| | 35 | 118 | 28,6 | 129 | 28,9 | 137 | 29,0 | 141 | 29,1 | 145 | 29,2 | 153 | 29,4 |
| | 45 | 117 | 35,4 | 127 | 35,5 | 134 | 35,6 | 137 | 35,7 | 141 | 35,8 | 149 | 36,1 |
| | 50 | 114 | 39,9 | 123 | 40,0 | 130 | 40,1 | 133 | 40,2 | 137 | 40,3 | 144 | 40,5 |
| | 55 | - | - | - | - | 126 | 44,6 | 129 | 44,6 | 132 | 44,7 | 139 | 44,9 |
| 50.2 | 30 | 129 | 28,6 | 142 | 28,9 | 150 | 29,1 | 155 | 29,2 | 160 | 29,3 | 169 | 29,5 |
| | 35 | 127 | 31,1 | 140 | 31,3 | 148 | 31,5 | 152 | 31,6 | 157 | 31,7 | 166 | 31,9 |
| | 45 | 126 | 38,4 | 137 | 38,6 | 145 | 38,7 | 149 | 38,8 | 153 | 38,9 | 161 | 39,1 |
| | 50 | - | - | 134 | 43,5 | 141 | 43,6 | 145 | 43,7 | 148 | 43,8 | 156 | 44,0 |
| | 55 | - | - | - | - | 137 | 48,6 | 140 | 48,6 | 144 | 48,7 | 151 | 48,9 |
| 55.2 | 30 | 143 | 31,6 | 156 | 31,9 | 166 | 32,1 | 171 | 32,2 | 176 | 32,3 | 186 | 32,5 |
| | 35 | 142 | 34,4 | 155 | 34,7 | 164 | 34,9 | 168 | 35,0 | 173 | 35,1 | 183 | 35,3 |
| | 45 | 140 | 42,5 | 152 | 42,7 | 160 | 42,8 | 165 | 42,9 | 169 | 43,1 | 179 | 43,3 |
| | 50 | - | - | 148 | 48,0 | 156 | 48,1 | 159 | 48,2 | 164 | 48,3 | 173 | 48,5 |
| | 55 | - | - | - | - | 151 | 53,5 | 154 | 53,6 | 159 | 53,6 | 166 | 53,8 |
| 60.2 | 30 | 160 | 35,4 | 175 | 35,8 | 185 | 36,0 | 191 | 36,1 | 197 | 36,3 | 208 | 36,6 |
| | 35 | 159 | 38,7 | 173 | 39,0 | 183 | 39,2 | 188 | 39,3 | 194 | 39,5 | 205 | 39,8 |
| | 45 | 157 | 48,1 | 170 | 48,2 | 179 | 48,2 | 184 | 48,4 | 189 | 48,5 | 200 | 48,8 |
| | 50 | - | - | 166 | 54,3 | 174 | 54,4 | 179 | 54,5 | 184 | 54,6 | 193 | 54,8 |
| | 55 | - | - | - | - | 169 | 60,6 | 174 | 60,6 | 178 | 60,7 | 187 | 60,9 |
| 70.2 | 30 | 181 | 39,7 | 198 | 40,2 | 209 | 40,5 | 215 | 40,7 | 222 | 40,9 | 235 | 41,3 |
| | 35 | 180 | 43,2 | 196 | 43,7 | 207 | 44,0 | 213 | 44,2 | 219 | 44,4 | 231 | 44,8 |
| | 45 | 178 | 53,3 | 192 | 53,7 | 203 | 54,0 | 208 | 54,1 | 214 | 54,3 | 226 | 54,7 |
| | 50 | - | - | 187 | 60,1 | 197 | 60,4 | 202 | 60,6 | 208 | 60,8 | 218 | 61,2 |
| | 55 | - | - | - | - | 191 | 66,9 | 196 | 67,1 | 201 | 67,3 | 211 | 67,6 |
| 80.2 | 30 | 202 | 44,1 | 220 | 44,8 | 233 | 45,3 | 239 | 45,6 | 247 | 45,8 | 260 | 46,4 |
| | 35 | 200 | 48,0 | 218 | 48,7 | 231 | 49,2 | 236 | 49,5 | 243 | 49,7 | 257 | 50,2 |
| | 45 | 198 | 58,9 | 214 | 59,7 | 226 | 60,2 | 231 | 60,4 | 238 | 60,6 | 251 | 61,2 |
| | 50 | - | - | 208 | 66,6 | 219 | 67,1 | 224 | 67,4 | 230 | 67,6 | 242 | 68,2 |
| | 55 | - | - | - | - | 212 | 74,1 | 218 | 74,4 | 223 | 74,7 | 234 | 75,2 |
| 90.2 | 30 | 229 | 51,6 | 248 | 52,0 | 262 | 52,3 | 269 | 52,5 | 276 | 52,6 | 292 | 52,9 |
| | 35 | 228 | 56,2 | 246 | 56,7 | 260 | 57,0 | 267 | 57,2 | 274 | 57,3 | 289 | 57,6 |
| | 45 | 225 | 69,9 | 243 | 70,2 | 256 | 70,4 | 261 | 70,5 | 269 | 70,7 | 283 | 71,0 |
| | 50 | - | - | 236 | 79,6 | 249 | 79,7 | 254 | 79,8 | 261 | 79,9 | 274 | 80,2 |
| | 55 | - | - | - | - | 241 | 89,1 | 247 | 89,1 | 252 | 89,2 | 265 | 89,4 |
| 100.2 | 30 | 247 | 56,7 | 267 | 57,3 | 282 | 57,7 | 290 | 57,9 | 298 | 58,2 | 314 | 58,6 |
| | 35 | 245 | 61,5 | 265 | 62,1 | 279 | 62,6 | 288 | 62,8 | 295 | 63,0 | 311 | 63,5 |
| | 45 | 243 | 76,1 | 262 | 76,6 | 276 | 77,0 | 282 | 77,2 | 290 | 77,5 | 304 | 77,9 |
| | 50 | - | - | 254 | 86,5 | 267 | 86,9 | 273 | 87,1 | 281 | 87,3 | 295 | 87,7 |
| | 55 | - | - | - | - | 259 | 96,8 | 265 | 97,0 | 272 | 97,2 | 285 | 97,6 |
| 120.2 | 30 | 290 | 69,0 | 313 | 69,5 | 331 | 70,0 | 340 | 70,1 | 348 | 70,3 | 367 | 70,7 |
| | 35 | 289 | 74,9 | 312 | 75,5 | 329 | 76,0 | 337 | 76,2 | 346 | 76,4 | 365 | 76,9 |
| | 45 | 287 | 93,3 | 308 | 93,8 | 324 | 94,2 | 333 | 94,4 | 340 | 94,6 | 357 | 94,9 |
| | 50 | - | - | 299 | 107 | 314 | 107 | 323 | 107 | 330 | 107 | 346 | 108 |
| | 55 | - | - | - | - | 304 | 120 | 313 | 120 | 320 | 120 | 335 | 121 |

kWt = Heating capacity (kW)

kWe = Total Electrical power absorbed (compressor + Auxiliary Circuit)(kW)

To = Water outlet temperature hot side (°C)

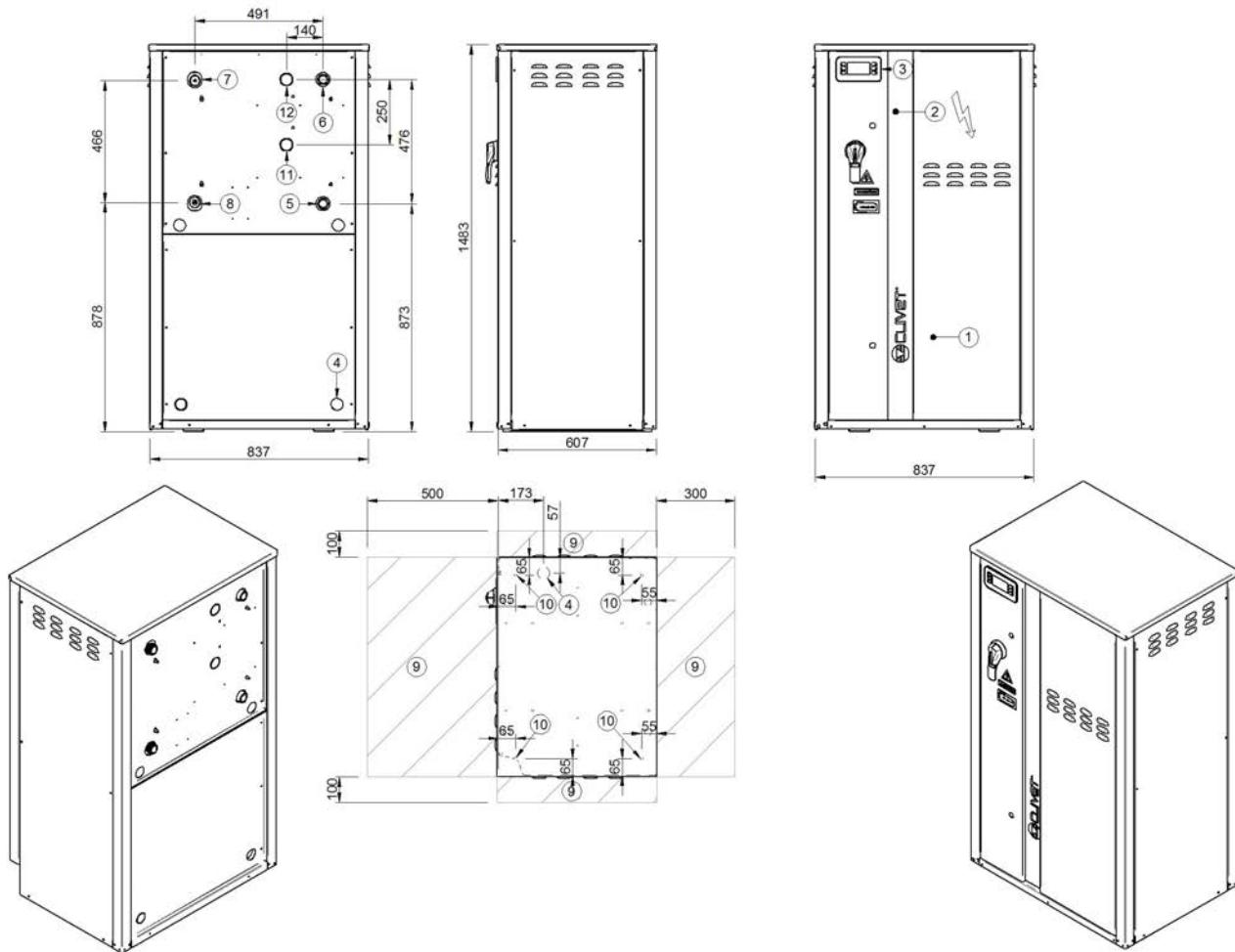
The performances are referred to DeltaT=5°C on both the hot and cold sides

Data refer to operation with a mix of water and propylene glycol at 30% on the cold side

Dimensional - Standard and Geothermic version without hydronic unit

Sizes 10.2 - 22.2

DAA8P10 2_22 2 STD REV00



1. Compressor compartment
2. Electrical panel
3. Unit control keypad
4. Power input
5. Hot side water return (1" 1/4 GAS)
6. Hot side water supply (1" 1/4 GAS)
7. Cold side water return (1" 1/4 GAS)
8. Cold side water supply (1" 1/4 GAS)
9. Functional spaces
10. Vibration damper mounts Ø 12,5
11. Partial recovery water return (1" 1/4 Victaulic)
12. Partial recovery water supply (1" 1/4 Victaulic)

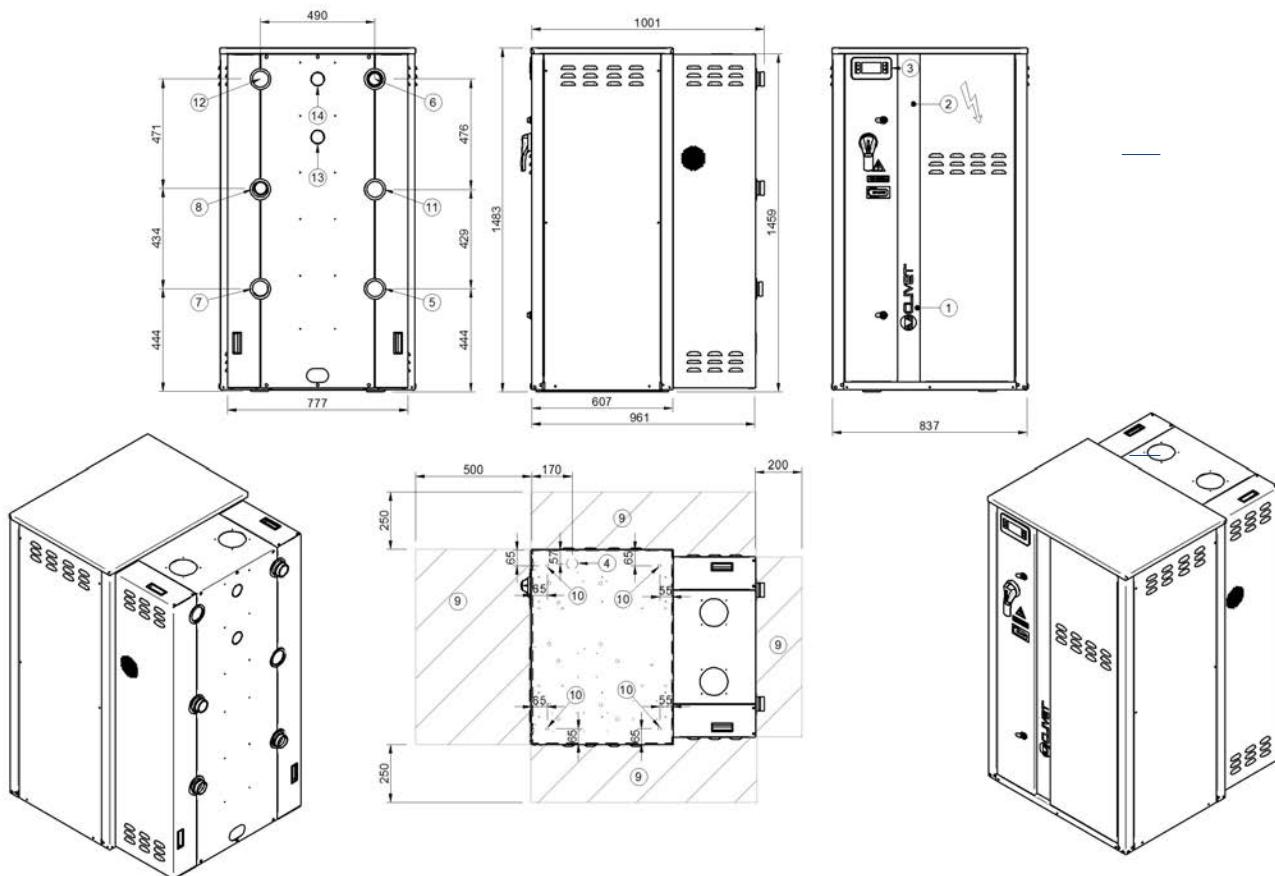
| Size | | 10.2 | 12.2 | 14.2 | 16.2 | 19.2 | 22.2 |
|-------------------------------|----|------|------|------|------|------|------|
| Length | mm | 837 | 837 | 837 | 837 | 837 | 837 |
| Height | mm | 1483 | 1483 | 1483 | 1483 | 1483 | 1483 |
| Depth | mm | 607 | 607 | 607 | 607 | 607 | 607 |
| Operating weight - standard | kg | 212 | 212 | 225 | 276 | 295 | 308 |
| Shipping weight - standard | kg | 206 | 206 | 216 | 263 | 277 | 295 |
| Operating weight - Geothermic | kg | 218 | 218 | 225 | 287 | 302 | 315 |
| Shipping weight - Geothermic | kg | 210 | 210 | 216 | 270 | 282 | 300 |

The presence of optional accessories may result in a substantial variation of the weights shown in the table.

Dimensional - Standard and Geothermic version with hydronic unit option and oversize enclosure (MOBMAG)

Sizes 10.2 - 22.2

DAA8P10 2_22 2 MAG REV00



1. Compressor compartment
2. Electrical panel
3. Unit control keypad
4. Power input
5. Hot side water return (2"Victaulic)
6. Hot side water supply (2"Victaulic)
7. Cold side water return (2"Victaulic)
8. Cold side water supply (2"Victaulic)
9. Functional spaces
10. Vibration damper mounts Ø 12,5
11. Hot side water return without pumps (2"Victaulic)
12. Cold side water return without pumps (2"Victaulic)
13. Partial recovery water return (1" 1/4 Victaulic)
14. Partial recovery water supply (1" 1/4 Victaulic)

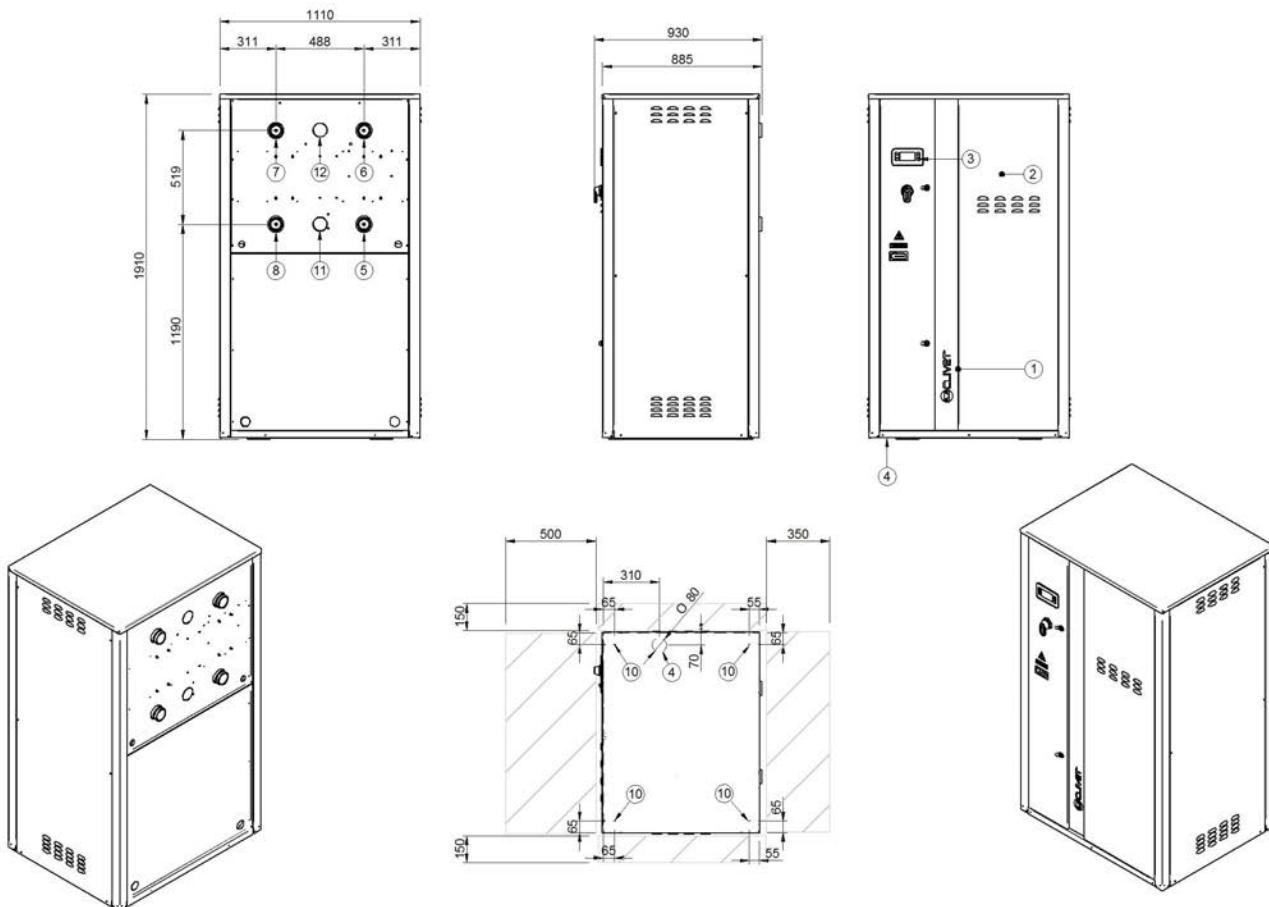
| Size | 10.2 | 12.2 | 14.2 | 16.2 | 19.2 | 22.2 |
|-------------------------------|------|------|------|------|------|------|
| Length | mm | 837 | 837 | 837 | 837 | 837 |
| Height | mm | 1483 | 1483 | 1483 | 1483 | 1483 |
| Depth | mm | 961 | 961 | 961 | 961 | 961 |
| Operating weight - standard | kg | 285 | 285 | 301 | 352 | 372 |
| Shipping weight - standard | kg | 268 | 268 | 281 | 328 | 342 |
| Operating weight - Geothermic | kg | 292 | 292 | 301 | 363 | 379 |
| Shipping weight - Geothermic | kg | 272 | 272 | 281 | 335 | 347 |

The weights refer to the unit equipped with the following options: cold side hydronic unit VARYFLOW+ (VARYC), hot side hydronic unit VARYFLOW+ (VARYH), oversize enclosure (MOBMAG). The presence of optional accessories may result in a substantial variation of the weights shown in the table.

Dimensional - Standard and Geothermic version without hydronic unit

Sizes 27.2 - 60.2

DAA8P27 2_60 2 STD REV01



1. Compressor compartment
2. Electrical panel
3. Unit control keypad
4. Power input
5. Hot side water return (2" 1/2 Victaulic)
6. Hot side water supply (2" 1/2 Victaulic)
7. Cold side water return (2" 1/2 Victaulic)
8. Cold side water supply (2" 1/2 Victaulic)
9. Functional spaces
10. Vibration damper mounts Ø 12,5
11. Partial recovery water return (2"Victaulic)
12. Partial recovery water supply (2"Victaulic)

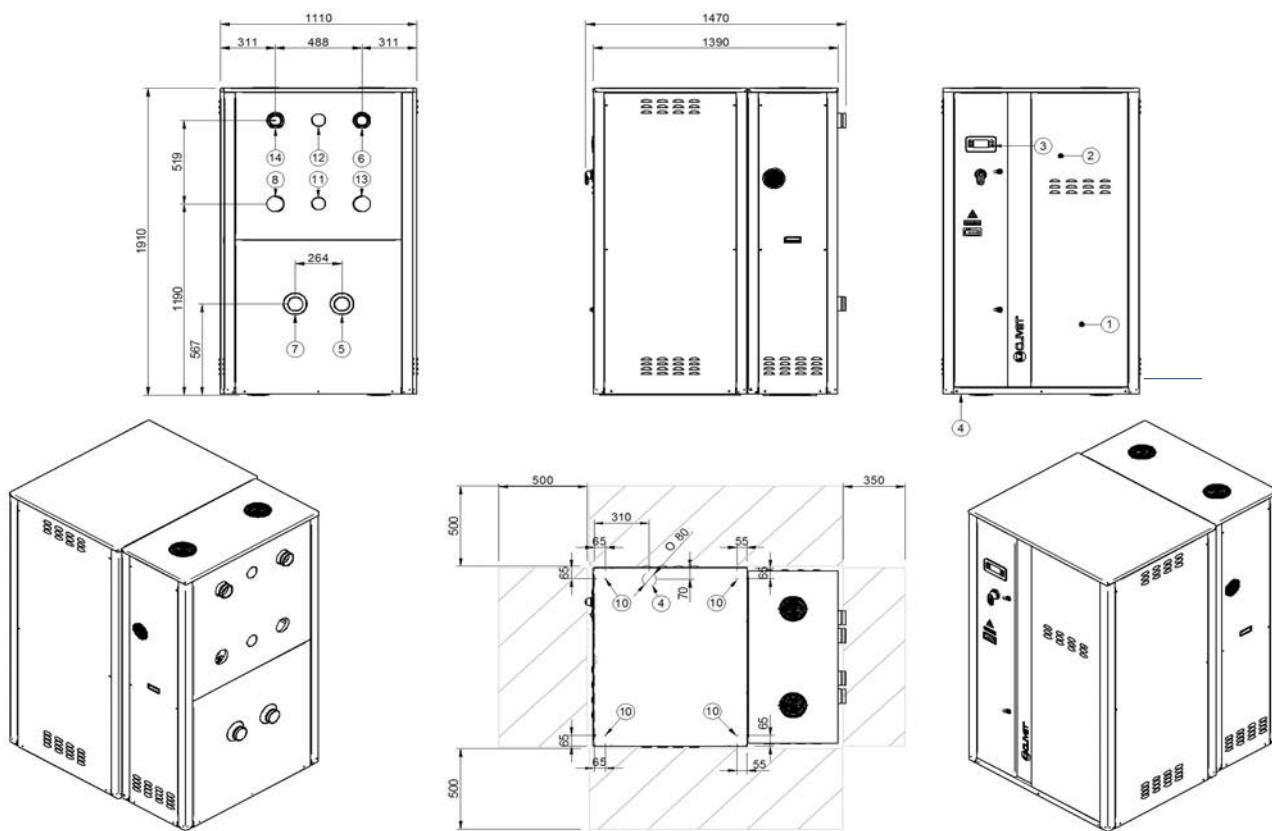
| Size | | 27.2 | 30.2 | 35.2 | 40.2 | 43.2 | 45.2 | 50.2 | 55.2 | 60.2 |
|-------------------------------|----|------|------|------|------|------|------|------|------|------|
| Length | mm | 1110 | 1110 | 1110 | 1110 | 1110 | 1110 | 1110 | 1110 | 1110 |
| Height | mm | 1910 | 1910 | 1910 | 1910 | 1910 | 1910 | 1910 | 1910 | 1910 |
| Depth | mm | 885 | 885 | 885 | 885 | 885 | 885 | 885 | 885 | 885 |
| Operating weight - standard | kg | 421 | 424 | 510 | 557 | 622 | 572 | 670 | 700 | 733 |
| Shipping weight - standard | kg | 418 | 421 | 505 | 548 | 613 | 560 | 653 | 683 | 717 |
| Operating weight - Geothermic | kg | 452 | 455 | 529 | 594 | 659 | 607 | 705 | 757 | 772 |
| Shipping weight - Geothermic | kg | 442 | 445 | 520 | 576 | 642 | 587 | 680 | 728 | 748 |

The presence of optional accessories may result in a substantial variation of the weights shown in the table.

Dimensional - Version standard with hydronic unit option and oversize enclosure (MOBMAG)

Sizes 27.2 - 60.2

DAA8P27 2_60 2 MAG REV01



1. Compressor compartment
2. Electrical panel
3. Unit control keypad
4. Power input
5. Hot side water return (3"Victaulic)
6. Hot side water supply (3"Victaulic)
7. Cold side water return (3"Victaulic)
8. Cold side water supply (3"Victaulic)
9. Functional spaces
10. Vibration damper mounts Ø 12,5
11. Partial recovery water return (2"Victaulic)
12. Partial recovery water supply (2"Victaulic)
13. Hot side water return without pumps (3"Victaulic)
14. Cold side water return without pumps (3"Victaulic)

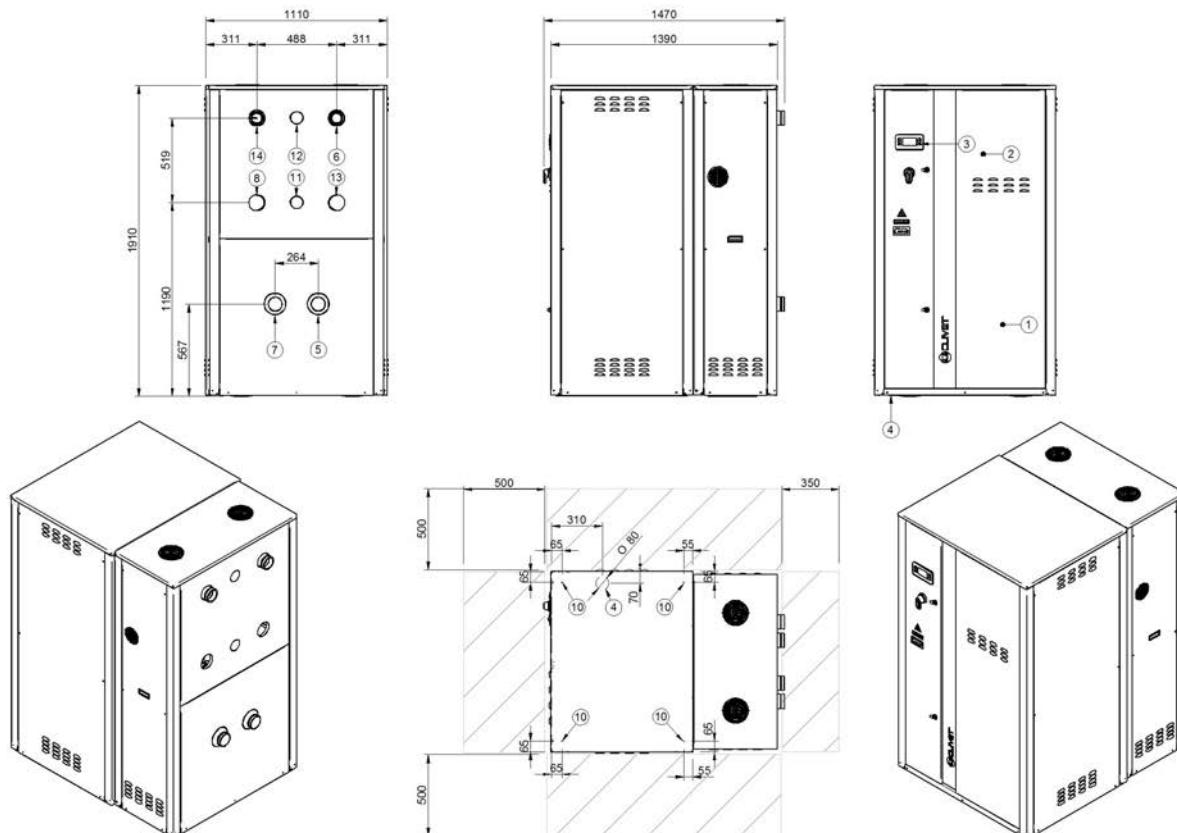
| Size | | 27.2 | 30.2 | 35.2 | 40.2 | 43.2 | 45.2 | 50.2 | 55.2 | 60.2 |
|------------------|----|------|------|------|------|------|------|------|------|------|
| Length | mm | 1110 | 1110 | 1110 | 1110 | 1110 | 1110 | 1110 | 1110 | 1110 |
| Height | mm | 1910 | 1910 | 1910 | 1910 | 1910 | 1910 | 1910 | 1910 | 1910 |
| Depth | mm | 1390 | 1390 | 1390 | 1390 | 1390 | 1390 | 1390 | 1390 | 1390 |
| Operating weight | kg | 567 | 570 | 656 | 710 | 792 | 743 | 840 | 878 | 911 |
| Shipping weight | kg | 534 | 537 | 621 | 672 | 738 | 685 | 778 | 816 | 850 |

The weights refer to the unit equipped with the following options: cold side hydronic unit VARYFLOW+ (VARYC), hot side hydronic unit VARYFLOW+ (VARYH), oversize enclosure (MOBMAG). The presence of optional accessories may result in a substantial variation of the weights shown in the table.

Dimensional - Geothermic version with hydronic unit option and oversize enclosure (MOBMAG)

Size 27.2 - 50.2

DAA8P27 2_50 2 MAG_GEO REV01



1. Compressor compartment
2. Electrical panel
3. Unit control keypad
4. Power input
5. Hot side water return (3" Victaulic)
6. Hot side water supply (3" Victaulic)
7. Cold side water return (3" Victaulic)
8. Cold side water supply (3" Victaulic)
9. Functional spaces
10. Vibration damper mounts Ø 12,5
11. Partial recovery water return (2" Victaulic)
12. Partial recovery water supply (2" Victaulic)
13. Hot side water return without pumps (3" Victaulic)
14. Cold side water return without pumps (3" Victaulic)

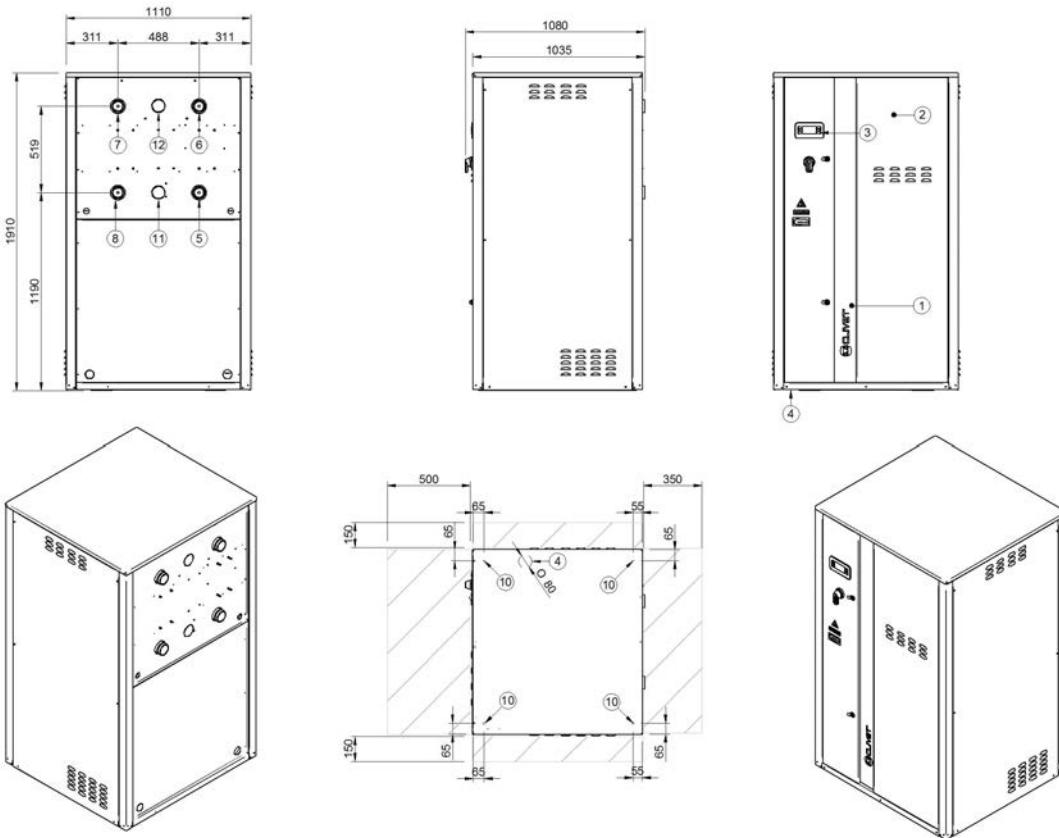
| Size | | 27.2 | 30.2 | 35.2 | 40.2 | 43.2 | 45.2 | 50.2 |
|------------------|----|------|------|------|------|------|------|------|
| Length | mm | 1110 | 1110 | 1110 | 1110 | 1110 | 1110 | 1110 |
| Height | mm | 1910 | 1910 | 1910 | 1910 | 1910 | 1910 | 1910 |
| Depth | mm | 1390 | 1390 | 1390 | 1390 | 1390 | 1390 | 1390 |
| Operating weight | kg | 597 | 600 | 675 | 747 | 829 | 778 | 875 |
| Shipping weight | kg | 558 | 561 | 636 | 700 | 767 | 712 | 805 |

The weights refer to the unit equipped with the following options: cold side hydronic unit VARYFLOW+ (VARYC), hot side hydronic unit VARYFLOW+ (VARYH), oversize enclosure (MOBMAG). The presence of optional accessories may result in a substantial variation of the weights shown in the table.

Dimensional - Version standard and geothermic without hydronic unit

DAA8P70 2_90 2 STD REV00

Size 70.2 - 90.2



1. Compressor compartment
2. Electrical panel
3. Unit control keypad
4. Power input
5. Hot side water return (2" 1/2 Victaulic)
6. Hot side water supply (2"1/2 Victaulic)
7. Cold side water return (2" 1/2 Victaulic)
8. Cold side water supply (2" 1/2 Victaulic)
9. Functional spaces
10. Vibration damper mounts Ø 12,5
11. Partial recovery water return (2"Victaulic)
12. Partial recovery water supply (2"Victaulic)

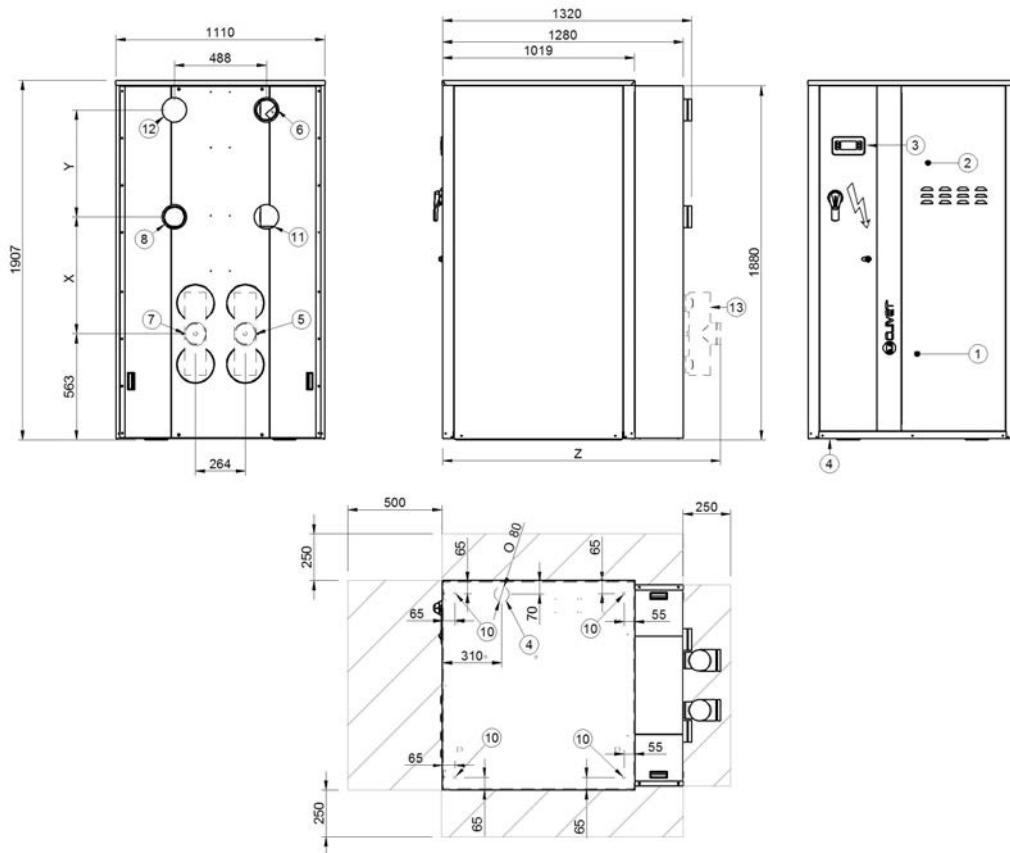
| Size | | 70.2 | 80.2 | 90.2 |
|-------------------------------|----|------|------|------|
| Length | mm | 1110 | 1110 | 1110 |
| Height | mm | 1910 | 1910 | 1910 |
| Depth | mm | 1035 | 1035 | 1035 |
| Operating weight - standard | kg | 771 | 809 | 890 |
| Shipping weight - standard | kg | 749 | 781 | 860 |
| Operating weight - Geothermic | kg | 829 | 841 | 922 |
| Shipping weight - Geothermic | kg | 794 | 806 | 885 |

The presence of optional accessories may result in a substantial variation of the weights shown in the table.

Dimensional - Version standard with hydronic unit option and oversize enclosure (MOBMAG)

Size 70.2 - 90.2

DAA8P70 2_90 2 MAG REV00



1. Compressor compartment
2. Electrical panel
3. Unit control keypad
4. Power input
5. Hot side water return (3"Victaulic)
6. Hot side water supply (3"Victaulic)
7. Cold side water return (3"Victaulic)
8. Cold side water supply (3"Victaulic)
9. Functional spaces
10. Vibration damper mounts Ø 12,5
11. Partial recovery water return (2"Victaulic)
12. Partial recovery water supply (2"Victaulic)
13. Hot side water return without pumps (3"Victaulic)
14. Cold side water return without pumps (3"Victaulic)

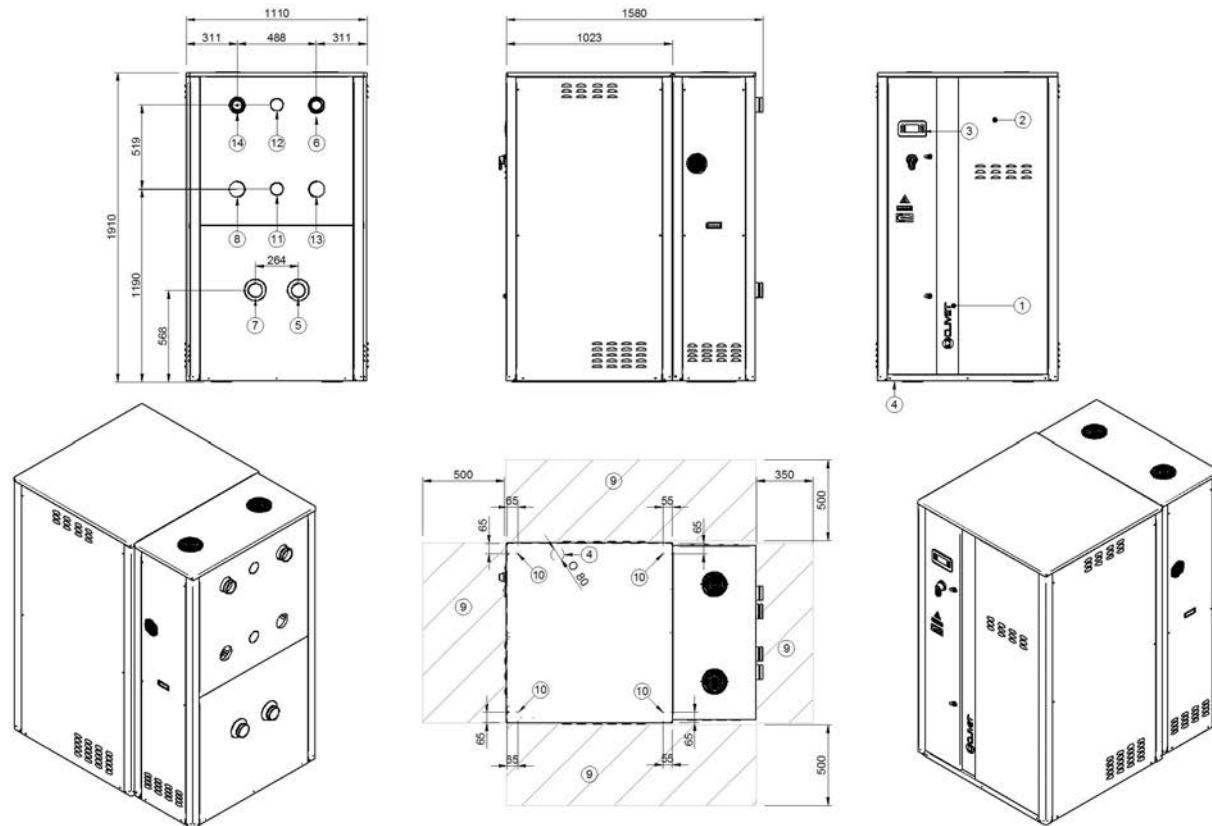
| Size | | 70.2 | 80.2 | 90.2 |
|------------------|----|------|------|------|
| Length | mm | 1110 | 1110 | 1110 |
| Height | mm | 1910 | 1910 | 1910 |
| Depth | mm | 1580 | 1580 | 1580 |
| Operating weight | kg | 956 | 993 | 1103 |
| Shipping weight | kg | 888 | 920 | 1002 |

The weights refer to the unit equipped with the following options: cold side hydronic unit VARYFLOW+ (VARYC), hot side hydronic unit VARYFLOW+ (VARYH), oversize enclosure (MOBMAG). The presence of optional accessories may result in a substantial variation of the weights shown in the table.

Dimensional - Geothermic version with hydronic unit option and oversize enclosure (MOBMAG)

Size 55.2 - 90.2

DAA8P55 2_90 2 MAG_GEO REV00



1. Compressor compartment
2. Electrical panel
3. Unit control keypad
4. Power input
5. Hot side water return (3" Victaulic)
6. Hot side water supply (3" Victaulic)
7. Cold side water return (3" Victaulic)
8. Cold side water supply (3" Victaulic)
9. Functional spaces
10. Vibration damper mounts Ø 12,5
11. Partial recovery water return (2" Victaulic)
12. Partial recovery water supply (2" Victaulic)
13. Hot side water return without pumps (3" Victaulic)
14. Cold side water return without pumps (3" Victaulic)

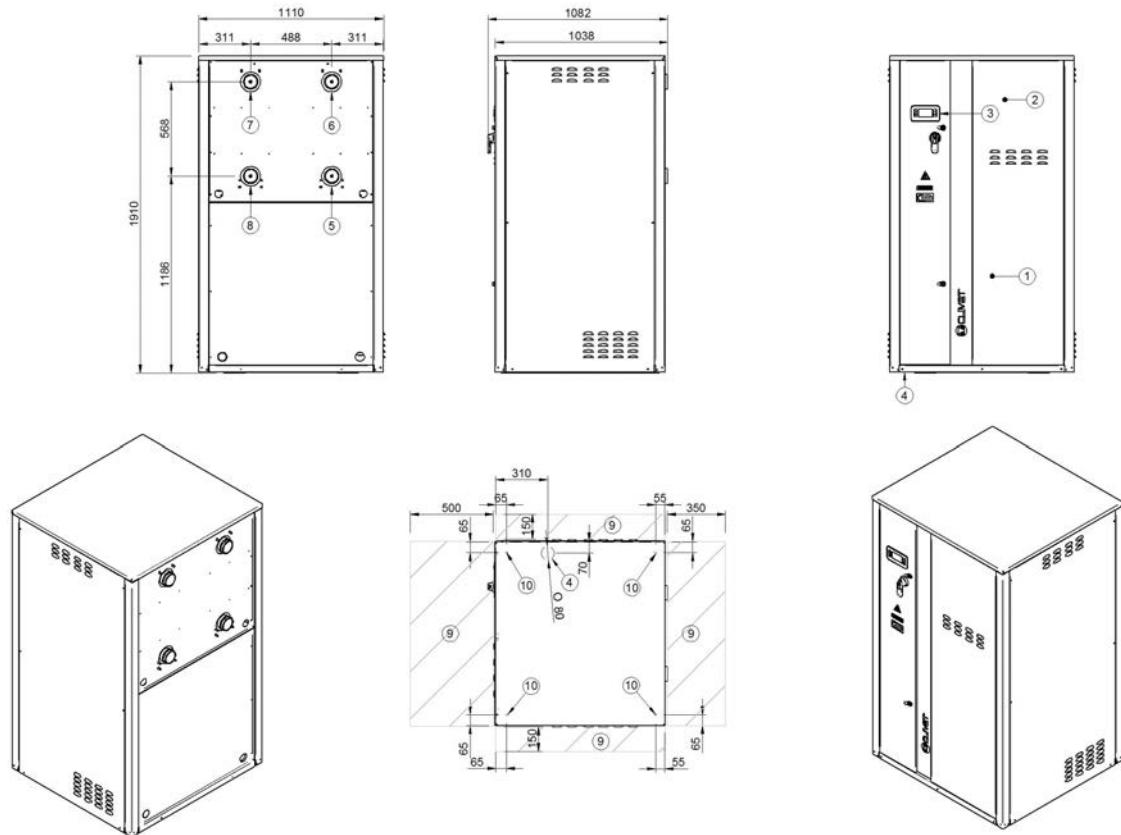
| Size | | 55.2 | 60.2 | 70.2 | 80.2 | 90.2 |
|------------------|----|------|------|------|------|------|
| Length | mm | 1110 | 1110 | 1110 | 1110 | 1110 |
| Height | mm | 1910 | 1910 | 1910 | 1910 | 1910 |
| Depth | mm | 1580 | 1580 | 1580 | 1580 | 1580 |
| Operating weight | kg | 935 | 950 | 1013 | 1025 | 1134 |
| Shipping weight | kg | 861 | 881 | 933 | 945 | 1027 |

The weights refer to the unit equipped with the following options: cold side hydronic unit VARYFLOW+ (VARYC), hot side hydronic unit VARYFLOW+ (VARYH), oversize enclosure (MOBMAG). The presence of optional accessories may result in a substantial variation of the weights shown in the table.

Dimensional - Version standard and geothermic without hydronic unit

Size 100.2 - 120.2

DAA8P100 2_120 2 STD REV00



1. Compressor compartment
2. Electrical panel
3. Unit control keypad
4. Power input
5. Hot side water return (3" Victaulic)
6. Hot side water supply (3" Victaulic)
7. Cold side water return (3" Victaulic)
8. Cold side water supply (3" Victaulic)
9. Functional spaces
10. Vibration damper mounts Ø 12,5

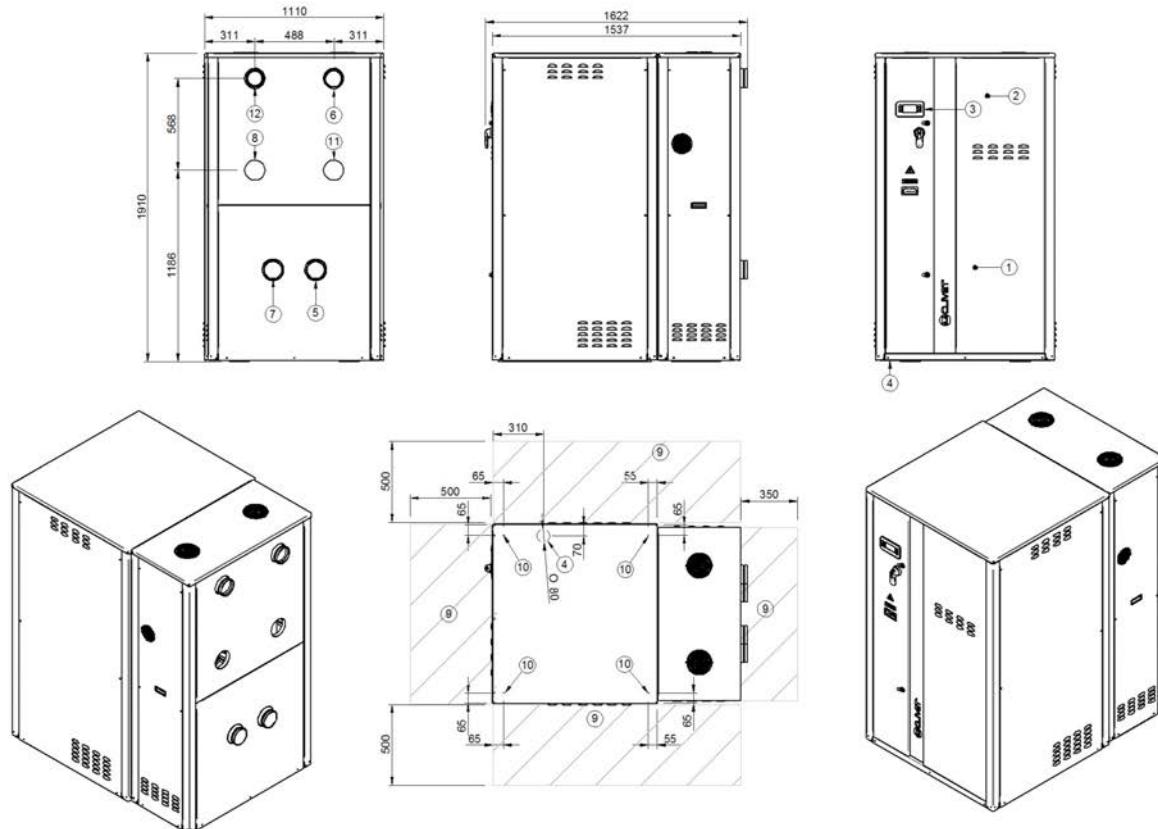
| Size | | 100.2 | 120.2 |
|-------------------------------|----|-------|-------|
| Length | mm | 1110 | 1110 |
| Height | mm | 1910 | 1910 |
| Depth | mm | 1038 | 1038 |
| Operating weight - standard | kg | 1085 | 1205 |
| Shipping weight - standard | kg | 1017 | 1131 |
| Operating weight - Geothermic | kg | 1129 | 1271 |
| Shipping weight - Geothermic | kg | 1050 | 1182 |

The presence of optional accessories may result in a substantial variation of the weights shown in the table.

Dimensional - Version standard and geothermic with hydronic unit option and oversize enclosure (MOBMAG)

Size 100.2 - 120.2

DAA8P100 2_120 2 MAG REV01
DATA/DATE 07/03/2019



1. Compressor compartment
2. Electrical panel
3. Unit control keypad
4. Power input
5. Hot side water return (4"Victaulic)
6. Hot side water supply (4" Victaulic)
7. Cold side water return (4"Victaulic)
8. Cold side water supply (4"Victaulic)
9. Functional spaces
10. Vibration damper mounts Ø 12,5
11. Hot side water return without pumps (4"Victaulic)
12. Cold side water return without pumps (4"Victaulic)

| Size | 100.2 | 120.2 |
|-------------------------------|-------|-----------|
| Length | mm | 1110 1110 |
| Height | mm | 1910 1910 |
| Depth | mm | 1537 1537 |
| Operating weight - standard | kg | 1302 1422 |
| Shipping weight - standard | kg | 1163 1277 |
| Operating weight - Geothermic | kg | 1346 1488 |
| Shipping weight - Geothermic | kg | 1196 1328 |

The weights refer to the unit equipped with the following options: cold side hydronic unit VARYFLOW+ (VARYC), hot side hydronic unit VARYFLOW+ (VARYH), oversize enclosure (MOBMAG). The presence of optional accessories may result in a substantial variation of the weights shown in the table.

**CLIVET SPA**

Via Camp Long 25, Z.I. Villapaiera - 32032 Feltre (BL) - Italy
Tel. + 39 0439 3131 - Fax + 39 0439 313300 - info@clivet.it

CLIVET GROUP UK Limited

4 Kingdom Close, Segensworth East - Fareham, Hampshire - PO15 5TJ - United Kingdom
Tel. + 44 (0) 1489 572238 - Fax + 44 (0) 1489 573033 - enquiries@clivetgroup.co.uk

CLIVET GROUP UK Limited (Operations)

Units F5&F6 Railway Triangle Ind Est, Walton Road - Portsmouth, Hampshire - PO6 1TG - United Kingdom
Tel. +44 (0) 2392 381235 - Fax. +44 (0) 2392 381243 - service@clivetgroup.co.uk

CLIVET ESPAÑA S.A.U.

C/ Bac de Roda, 36 - 08019 Barcelona - España
Tel: +34 93 8606248 - Fax +34 93 8855392 - info@clivet.es

Av.Manoteras Nº 38, Oficina C303 - 28050 Madrid - España
Tel. +34 91 6658280 - Fax +34 91 6657806 - info@clivet.es

CLIVET GmbH

Hummelsbütteler Steindamm 84, 22851 Norderstedt - Germany
Tel. + 49 (0) 40 32 59 57-0 - Fax + 49 (0) 40 32 59 57-194 - info.de@clivet.com

CLIVET RUSSIA

Elektrozavodskaya st. 24, office 509 - 107023, Moscow, Russia
Tel. + 74956462009 - Fax + 74956462009 - info.ru@clivet.com

CLIVET MIDEAST FZCO

Dubai Silicon Oasis (DSO), High Bay Complex, Office N. 20, PO BOX 342009, Dubai, UAE
Tel. + 9714 3208499 - Fax + 9714 3208216 - info@clivet.ae

CLIVET AIRCONDITIONING SYSTEMS PRIVATE LIMITED

4BA, Gundeche Onclave, Kherani Road - Sakinaka, Andheri (East) - Mumbai 400 072 - India
Tel. +91 22 6193 7000 - Fax +91 22 6193 7001 - info.in@clivet.com

www.clivet.com
www.clivetlive.com