



United Technologies

PRODUCT SELECTION DATA



- 30WG optimized for cooling
- 61WG optimized for heating
 - Compact design
- Plug and play approach
 - High efficiency

Water-Cooled and Condenserless Liquid Chillers
Water-Sourced Heat Pumps

61WG/30WG/30WGA



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AQUASNAP
Heating

AQUASNAP

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61WG/30WG/30WGA

Nominal cooling capacity 25-190 kW

Nominal heating capacity 29-230 kW

The 30WG/30WGA and 61WG units are new Carrier chillers and heat pumps designed for commercial (offices, small hotels, leisure facilities), residential and industrial applications. All units offer a unique combination of high performance and functionality in an exceptionally compact chassis.

61WG units are designed for high-temperature heating applications with hot water production possible up to 65 °C and a COP of above 5.

The 30WG, also available as a condenserless version (30WGA), is designed for air-conditioning applications with a high ESEER value. As they can produce chilled water down to -12 °C they are also suitable for process applications.

A large number of options is available for the whole range:

- hydronic kits with or without variable water flow rate,
- reinforced sound insulation,
- stacking and connection of two units
- low-temperature applications down to -12 °C (30WG only).

Features

- Reduced footprint
- Scroll compressors and R-410A refrigerant
- Variable-flow pump
- Low-noise option (-3 dB(A))
- Stacking of two units for increased capacity (up to size 090)
- Several communication protocols available: JBus, BacNet, MS/TP, LON
- Water connection at the top or rear (30WG/61WG only)

Available versions

61WG - optimised for heating

- High temperature up to +65 °C
- Evaporator temperature down to -5 °C
- Control of the three-way diverter valve for domestic hot water and space heating requirements
- System approach - the Heating System Manager maximises the global efficiency of complex systems where the 61WG units are combined with an auxiliary heating source to serve multi-zone space heating and domestic hot water production.

30WG - optimised for air conditioning and process Heating & Cooling

- Evaporator temperature down to -12 °C
- Condenser temperature up to +60 °C
- Condensing pressure control devices available

30WGA - optimised for air conditioning

- Continuous operation up to 62 °C saturated condensing temperature
- Compatible remote condensers available
- Optimised remote condenser fan control

The right unit for any application

- The high temperature of the 61WG units makes them compatible with most heating systems, both in new and refurbished buildings and permits domestic hot water production (with a dedicated temperature setpoint).
- Option 153 “Built-in DHW and space heating control” allows control of both domestic hot water and space heating requirements:
 - Domestic hot water production: a built-in three-way valve is directed to divert the heat flow from the space heating loop to the domestic hot water loop and vice versa.
 - Space heating control: the setpoint is adjustable, based on the daily schedule or the outside air temperature (weather compensation function).
 - Control of auxiliary systems: if an alarm is detected at the 61WG/30WG or if there is insufficient heating capacity, a digital signal starts an auxiliary electric heater (1 to 4 stages) or boiler.
 - Pump control: allows control of the built-in pump as well as the pump in the secondary loop (to terminals).
- In 30WG units the pressure control signal ensures safe unit operation and maximised performance at low source-side water temperatures.
- The condenserless 30WGA units are ideal for refurbishment projects where a remote condenser exists on site, and for all projects without geothermal/natural sinks for heat rejection.
- In 61WG/30WG units the Heating System Manager (HSM) accessory allows control of systems with several heat sources and different additional systems: electric heat, boiler or for the most complex systems district heating (see pages 9 to 11).

Adaptability and simple installation

- The 30WG and 61WG units can be provided with several hydronic kit options, both on the evaporator and/or condenser side, with different levels of available pressure and variable or fixed-speed pumps (see page 7).
- If option 153 is selected domestic hot water production is controlled via a built-in three-way diverter valve (not supplied).
- 61WG and 30WG units offer water-side cooling/heating reversibility.
- Remote condenser fan control possible for 30WGA units.

Water connections at the rear of the unit



Internal view of 61WG unit with hydronic kit



- 61WG/30WG/30WGA units are equipped with the latest generation R410A scroll compressor, optimised for typical operating conditions for water-sourced units.

Component accessibility

See photos below.

Access to scroll compressors



Internal view of 30WG 170



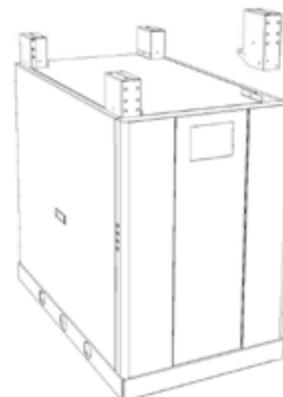
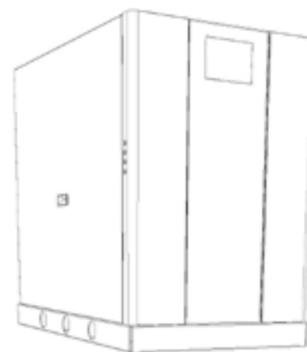
Access to control panel



Water connections at the top of the unit



Two-unit stacking option for reduced footprint size 020-090



A compact high-performance product range

- Small footprint, ideal for refurbished buildings, allows access in very tight plant rooms.
- 61WG: A COP above 5 satisfies even the most stringent standards, with a leaving water temperature of up to 65 °C without supplementary system.
- 30WG: The ESEER of over 5.5 for dual-compressor units - one of the highest in its category.
- The 30WGA is based on the 30WG design to ensure efficient operation for applications with remote air-cooled condensers.
- Variable-flow pumps reduce system energy consumption.
- The entire range offers low sound levels, allowing installation in any building type. The low-noise option ensures enhanced acoustic comfort (-3 dB(A)).

Advance control

The control is a numerical control that combines intelligence with operating simplicity. Depending on the options used, the unit manages the operation of compressors, evaporator and condenser water pumps and fans (drycooler)

■ Optimised energy management

- A patented auto-adaptive algorithm optimizes the condensing pressure at part load to reduce compressor load and ensure perfect supply for the evaporator with liquid refrigerant. The algorithm controls the operation of the variable-speed condenser water pump and the fans (drycooler)- Controller automatically resets the chilled-water temperature setpoint based on the outside air temperature or the return water temperature. The control can also operate on a second setpoint (example: unoccupied mode).
- Master/slave control of two heat pumps operating in parallel with operating time equalisation and automatic changeover in case of a unit fault. The CCN clock board connection offers other control possibilities:
- Two independent time schedules to control:
- Unit start/stop
- Operation at a second chilled-water setpoint (for example: unoccupied mode)

■ Total unit protection

- A patented auto-adaptive algorithm controls compressor operation and permanently adapts to the system characteristics (water loop inertia). Dangerous compressor cycling is prevented. The unit can operate safely with a low water volume, and this frequently makes a buffer tank unnecessary (see minimum water volume later in this document).
- The controller permanently analyses the compressor suction and discharge pressures and temperatures. If an abnormal situation is detected, the control reacts, e.g. by reducing the capacity. As a result the compressors always operate in their ideal temperature range and many unit shut-downs due to a fault can be prevented.

■ Remote control

A connection terminal allows remote control of the Aquasnap by wired cable:

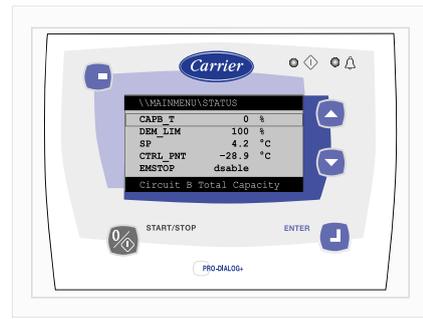
- Start/stop: Opening of this contact will shut down the unit
- Dual set-point: Closing of this contact activates a second set-point (example: unoccupied mode).
- Demand limit: Closing of this contact limits the maximum heat pump capacity to a predefined value.
- Operation indication: This volt-free contact indicates that the heat pump is operating (cooling load).
- Alarm indication: This volt-free contact indicates the presence of a major fault that has led to the shut-down of one or several refrigerant circuits.

■ Remote management

The Aquasnap is equipped with an RS485 serial port that offers multiple remote control, monitoring and diagnostic possibilities. Carrier offers a vast choice of control products, specially designed to control, manage and supervise the operation of an air conditioning system. Please consult your Carrier representative for more information.

The Aquasnap also communicates with other building management systems via optional communication gateways.

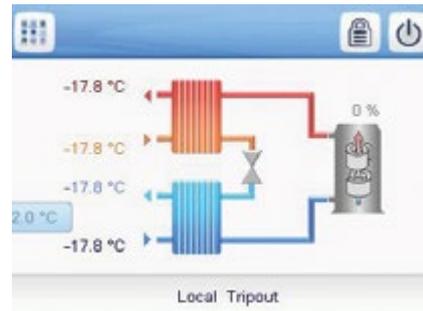
Pro-Dialog+ interface (Sizes 020-090)



■ Ease-of-use

- The Pro-Dialog+ interface include five keys that permit navigation via intuitive tree-structure menus. Access to the information is very quick.
- This new backlit LCD interface includes control by a contrast potentiometer for optimised visibility in all lighting conditions.
- The information is clearly displayed in English, French, German, Italian and Spanish (for other languages please consult Carrier Service).
- The Pro-Dialog+ navigation uses intuitive tree-structure menus, similar to the Internet navigators. The menus are user-friendly and permit quick access to the principal operating parameters: number of compressors operating, suction/discharge pressure, compressor operating hours, setpoint, temperatures.

Touch Pilot Junior control (sizes 110-190)



The Touch Pilot Junior features a control with advanced communication technology over Ethernet (IP), user-friendly and intuitive user interface with 4.3" colour touch screen.

- Integrated advanced communication features
 - With hydronic module: Water pressure display and water flow rate calculation
 - Easy and high-speed communication technology over Ethernet (IP) to a building management system
- 4.3" Touch Pilot user interface
 - Access to multiple unit parameters
 - Concise and clear information is available in local languages
 - Complete menu, customised for different users (end user, service personnel or Carrier engineers)

Remote management (standard)

Units with Touch Pilot Junior control can be easily accessed from the internet, using a PC with an Ethernet connection. This makes remote control quick and easy and offers significant advantages for service operations.

Maintenance function (standard)

The Touch Pilot Junior include functionality of maintenance

- Compulsory Maintenance Reminder–FGAS sealing check
- Periodic Maintenance Reminder. Configurable alarm of maintenance in days, month or hours of operation

30WG/30WGA units compatible the Carrier 09 series drycoolers/remote condensers

The Carrier 09 series drycoolers and remote condensers are compatible with the 30WG and 30WGA units.

The chiller 30WG/30WGA can control the fans of the dry cooler / remote condenser via digital or analogue outputs (according to AC or EC motors) with following options :

- For chiller 30WG/30WGA : option 154
- For dry cooler / remote condenser : dedicated control cabinet with an auxiliary board.

A simple communication bus is required between the chiller and the dry cooler/ remote condenser.

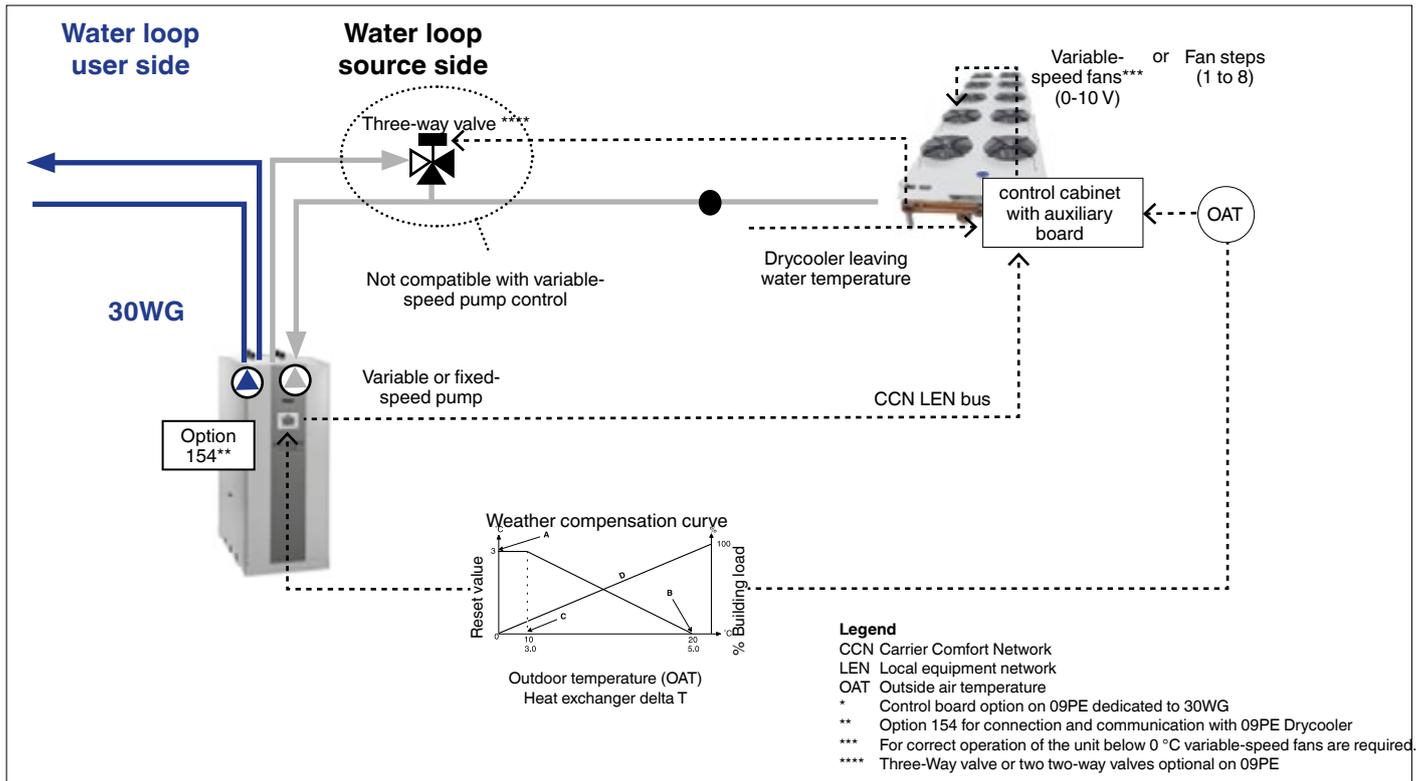
As all control components are installed and tested in the factory, installation and start-up of the unit and its associated drycooler/remote condenser are simplified.

Control board algorithms optimise energy consumption based on:

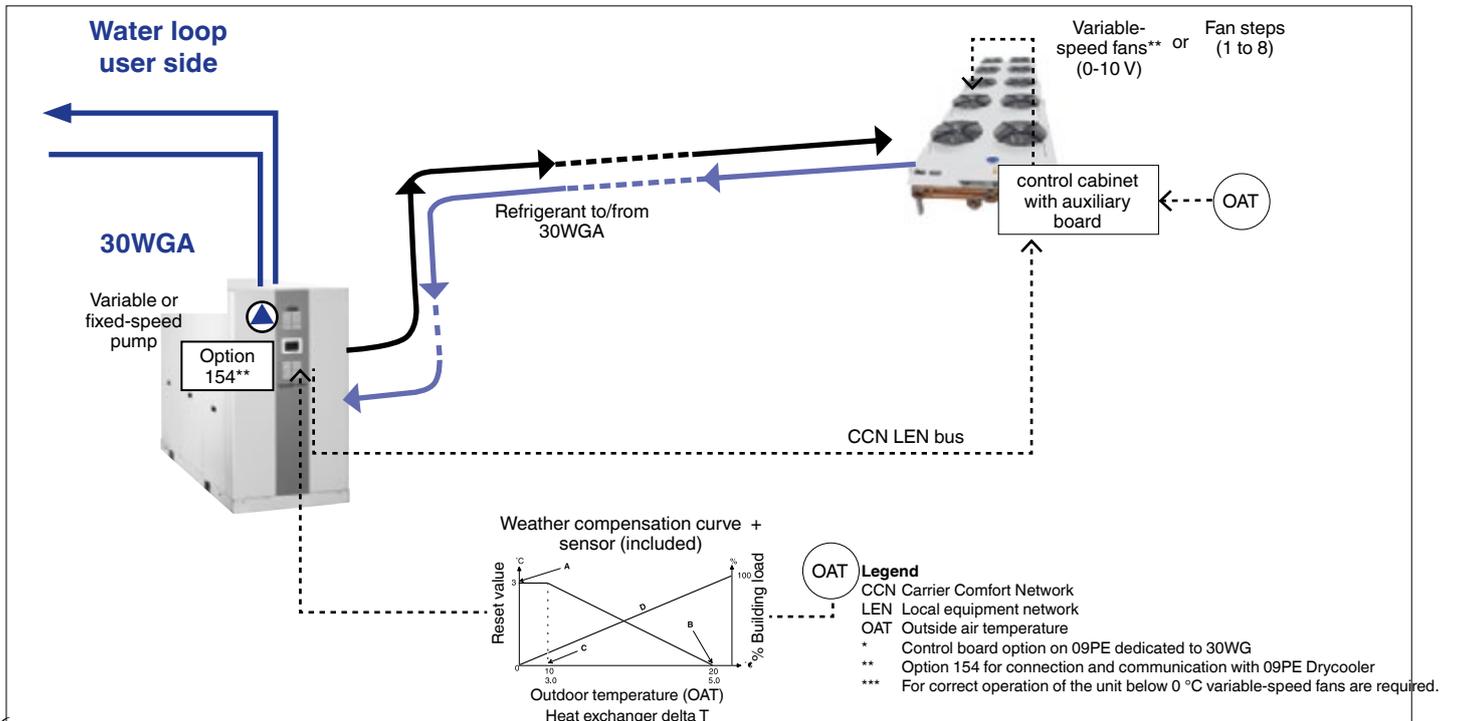
- the outside temperature and chilled-water temperature read for drycoolers
- the outside temperature and saturated refrigerant discharge temperature read for remote condensers.

A simple communication bus is required downstream to connect the control board to the unit control.

30WG system concept



30WGA system concept



Options

Options	No.	Description	Advantages	Use
Low-temperature brine solution	6	Low temperature glycol solution production down to -12 °C with ethylene glycol	Covers specific applications such as ice storage and industrial processes	30WG 20 90/ 150-190 61WG 020-90 30WGA 020-90
Soft Starter	25	Electronic starter on each compressor	Reduced start-up current	30WG 020-190 61WG 020-90 30WGA 020-90
Master/slave operation	58	Unit equipped with supplementary water outlet temperature sensor kit to be field-installed allowing master/slave operation of two units connected in parallel	Optimised operation of two units connected in parrallele operation with operating time equalisation	30WG 020-190 61WG 020-90 30WGA 020-90
External disconnect handle	70F	The handle of the electrical disconnect switch is on the outside of the unit	Quick access to the unit disconnect switch	30WG 020-190 61WG 020-90 30WGA 020-90
Condenser insulation	86	Thermal condenser insulation	Minimizes thermal dispersions condenser side (key option for heat pump or heat recovery applications) and allows compliancy with special installation criteria (hot parts insulated)	30WG 020-190 61WG 020-90
HP single-pump hydronic module	116R	Single high-pressure water pump, water filter, electronic water flow control, pressure transducers. For more details, refer to the dedicated chapter (expansion tank not included.Option with built-in safety hydraulic components available.)	Easy and fast installation (plug & play)	30WG 110-190
LP evap. single-pump	116T	Evaporator hydronic module equipped with low pressure fixed-speed pump, drain valve, air vent and pressure sensors. For more details, refer to the dedicated chapter (expansion tank not included) Select option 293 for built-in safety hydraulic components.	Easy and fast installation (plug & play)	30WG 020-190 61WG 020-90 30WGA 020-90
HP evap. variable-speed single-pump	116V	Evaporator hydronic module equipped with high-pressure variable-speed pump, drain valve, air vent and pressure sensors. For more details, refer to the dedicated chapter (expansion tank not included) Select option 293 for built-in safety hydraulic components.	Easy and fast installation (plug & play), significant pumping energy cost savings (more than two-thirds), tighter water flow control, improved sytem reliability	30WG 020-190 61WG 020-90 30WGA 020-90
HP VSD dual-pump hydronic mod.	116W	Dual high-pressure water pump with variable speed drive (VSD), water filter, electronic flow switch, pressure transducers. Multiple possibilities of water flow control. For more details, refer to the dedicated chapter (expansion tank not included) Option with built-in safety hydraulic components available)	Easy and fast installation (plug & play), significant pumping energy cost savings (more than two-thirds), tighter water flow control, improved sytem reliability	30WG 110-190
LPVSD single-pump	116Y	Evaporator hydronic module equipped with low -pressure variable-speed pump, drain valve, air vent and pressure sensors. For more details, refer to the dedicated chapter (expansion tank not included) Select option 293 for built-in safety hydraulic components.	Easy and fast installation (plug & play), significant pumping energy cost savings (more than two-thirds), tighter water flow control, improved sytem reliability	30WG 110-190
J-Bus gateway	148B	Two-directional communication board complying with JBus protocol	Connects the unit by communication bus to a building management system	30WG 020-190 61WG 020-90 30WGA 020-90
BacNet gateway	148C	Two-directional communication board complying with BacNet protocol	Easy connection by communication bus to a building management system	30WG 020-90 61WG 020-90 30WGA 020-90
Lon gateway	148D	Two-directional communication board complying with Lon Talk protocol	Connects the unit by communication bus to a building management system	30WG 020-190 61WG 020-90 30WGA 020-90
Bacnet over IP	149	Two-directional high-speed communication using BACnet protocol over Ethernet network (IP)	Easy and high-speed connection by ethernet line to a building management system. Allows access to multiple unit parameters	30WG 110-190
Built-in DHW & space heating control	153	Control board factory-installed on the unit, control using weather compensation, control of supplementary electric heater (4 stages) or boiler, needle valve for domestic hot-water production with programmable time schedule.	Permits easy control of a basic heating system	30WG 020-190 61WG 020-90
Specific dry cooler control	154	Dedicated connexion and software for 09PE drycooler managment. For 09PE drycooler need to select the option armoire de régulation piloté par le chiller	Permits the use of an energy-efficient plug-and-play system	30WG 020-190 30WGA 020-90
Compliance with Russian regulations	199	EAC certification	Conformance with Russian regulations	30WG 020-190 61WG 020-90 30WGA 020-90
Low noise level	257	Compressor sound enclosure	Reduced sound emissions	30WG 020-190 61WG 020-90 30WGA 020-90
Very low sound level	258	Enhanced sound insulation of main noise sources (Material classified CD0S2 fire class according to Euroclass 13-501).	6 dB(A) quieter than standard . Refer to the physical data table for detailed values	30WG 020-90 61WG 020-90 30WGA 020-90
Evaporator screw connection sleeves kit	264	Evaporator inlet/outlet screw connection sleeves	Allows unit connection to a screw connector	30WG 020-190 61WG 020-90 30WGA 020-90
Condenser screw connection sleeves kit	265	Condenser inlet/outlet screw connection sleeves	Allows unit connection to a screw connector	30WG 020-190 61WG 020-90
Welded evaporator connection kit	266	Victaulic piping connections with welded joints	Easy installation	30WG 020-190 61WG 020-90 30WGA 020-90
Welded condenser water connection kit	267	Victaulic piping connections with welded joints	Easy installation	30WG 020-190 61WG 020-90
HP single-pump, cond. side	270R	Condenser hydronic module equipped with high pressure fixed-speed pump, drain valve, air vent and pressure sensors. Select option 293A for built-in safety hydraulic components.	Easy and fast installation (plug & play)	30WG 110-190

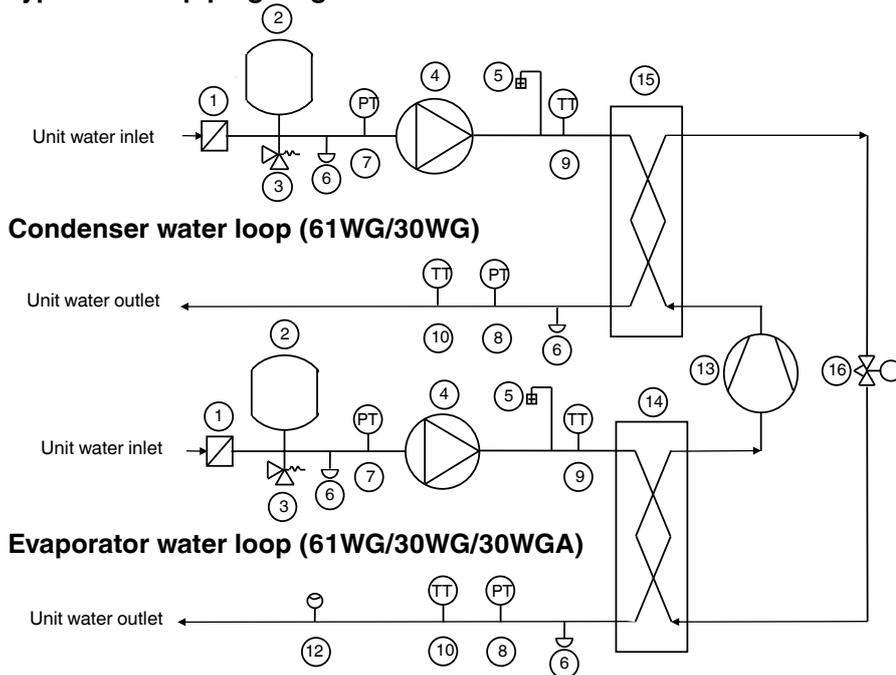
Options	No.	Description	Advantages	Use
LP single-pump, cond. side	270T	Condenser hydronic module equipped with low pressure fixed-speed pump, drain valve, air vent and pressure sensors. Select option 293A for built-in safety hydraulic components.	Easy and fast installation (plug & play)	30WG 020-190 61WG 020-90
HP cond. variable-speed single-pump	270V	Condenser hydronic module equipped with high-pressure variable-speed pump, drain valve, air vent and pressure sensors. (expansion tank not included) Select option 293A for built-in safety hydraulic components.	Easy and fast installation (plug & play), reduced power consumption of the water circulation pump	30WG 020-190 61WG 020-90
HP cond. variable-speed dual-pump	270W	Condenser hydronic module equipped with dual high-pressure variable-speed pump, drain valve, air vent and pressure sensors. (expansion tank not included) Select option 293A for built-in safety hydraulic components.	Easy and fast installation (plug & play), reduced power consumption of the water circulation pump	30WG 110-190
LP cond. variable-speed single-pump	270Y	Condenser hydronic module equipped with low-pressure variable-speed pump, drain valve, air vent and pressure sensors. (expansion tank not included) Select option 293A for built-in safety hydraulic components.	Easy and fast installation (plug & play), reduced power consumption of the water circulation pump	30WG 110-190
Unit stackable for operation	273	Unit stackable for operation	Reduced footprint size	30WG 020-090 61WG 020-090 30WGA 020-090
water connection at the top	274	Customer water connection at the top of the unit	Reduced footprint size	30WG 020-190 61WG 020-90
Remote user interface	275	User interface for remote installation	Remote control of the unit and its operating parameters	30WG 020-090 61WG 020-090 30WGA 020-90
Safety hydraulic components, evap. side	293	Screen filter, expansion tank and relief valve integrated in the evaporator hydronic module	Easy and fast installation (plug & play), operating safety	30WG 020-190 61WG 020-90 30WGA 020-90
Safety hydraulic components, cond. side	293A	Screen filter, expansion tank and relief valve integrated in the condenser hydronic module	Easy and fast installation (plug & play), operating safety	30WG 020-190 61WG 020-90
Set point adjustment by 4-20mA signal	311	Connections to allow a 4-20mA signal input	Easy energy management, allow to adjust set point by a 4-20mA external signal	30WG 020-190 61WG 020-90 30WGA 020-90
External temperature sensor	312	"External temperature sensor control for using weather compensation"	Allow to adjust set point using weather compensation and define autorisation operation mode to external temperature	30WG 020-190 61WG 020-90 30WGA 020-90
Free Cooling dry cooler management	313	Control & connections to a Free Cooling Drycooler 09PE or 09VE fitted with option FC control box	Easy system management, Extended control capabilities to a drycooler used in Free Cooling mode	30WG 020-190 61WG 020-90 30WGA 020-90

Accessories

Accessories	Description	Advantages	Use
00PPG000488000- Heating System Manager type A: It controls one heat emitter type with an auxiliary electric heater or boiler.	Additional control box not supplied with the unit, to be installed remotely	Heating system control facilitated	30WG 020-190 61WG 020-90
00PPG000488100- Heating System Manager type B: It controls two heat emitter types (or independent zones) and domestic hot water production with an auxiliary electric heater or boiler.	Additional control box not supplied with the unit, to be installed remotely	Heating system control facilitated	30WG 020-190 61WG 020-90
00PPG000488200- Heating System Manager type C: It controls two heat emitter types (or independent zones) and domestic hot water production with a district heating network as auxiliary source.	Additional control box not supplied with the unit, to be installed remotely	Heating system control facilitated	30WG 020-190 61WG 020-90

Hydronic module (options 116T, 270T)

Typical water piping diagram



Components of unit and hydronic module

- 1 Victaulic screen filter (option 293 or 293A only)
- 2 Expansion tank (option 293 or 293A only)
- 3 Safety valve (option 293 or 293A only)
- 4 Water pump
- 5 Air vent
- 6 Water drain valve
- 7/8 Entering/leaving pressure sensor
- 9/10 Entering/leaving temperature probe
- 12 Flow switch 61WG option 272 (sizes 020-045 only)
- 13 Compressor
- 14 Evaporator
- 15 Condenser
- 16 Expansion device

NOTE: Units without hydronic module include a flow switch.

Physical data, units with hydronic module

61WG/30WG/30WGA		020	025	030	035	040	045	050	060	070	080	090	110	120	140	150	170	190	
Operating weight, 30WG/61WG (options 116V and 270V)*	kg	305	313	313	321	327	334	513	521	533	544	574	1056	1082	1108	1218	1270	1301	
Operating weight, 30WGA (option 116V)*	kg	250	258	258	263	266	271	431	435	442	449	465							
Height**	mm	1463	1463	1463	1463	1463	1463	1463	1463	1463	1463	1463	1574	1574	1574	1574	1574	1574	
Hydronic module with option 293 or 293A																			
Maximum operating pressure	kPa	300	300	300	300	300	300	300	300	300	300	300	400	400	400	400	400	400	
Water filter (max. removed particle diameter)	mm	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	
Expansion tank capacity***	l	8	8	8	8	8	8	12	12	12	12	12	25	25	25	35	35	35	
Water connections	in	1.5	1.5	1.5	1.5	1.5	1.5	2	2	2	2	2	2,5	2,5	2,5	3	3	3	

* Weight shown is a guideline only.

** The length and width dimensions are the same as for the standard unit.

*** When delivered, the standard pre-inflation of the tanks is not necessary the optimal value for the system. To permit changing the water volume, change the inflation pressure to a pressure that is close to the static head of the system. Fill the system with water (purging the air) to a pressure value that is 10 to 20 kPa higher than the pressure in the tank.

Electrical data, options 116T, 270T

The pumps that are factory-installed in these units comply with the European Ecodesign directive ErP. The additional electrical data required by regulation 640/2009 are given in the installation, operation and maintenance instructions.

This regulation regards the application of directive 2008/28/CE on the eco-design requirements for electric motors.

Heating System Manager - 61WG/30WG units

This accessory allows improved integration of the 61WG/30WG heat pump to maximise the energy efficiency performance. With three system levels for nine typical configurations, most heating only applications are covered - from the simplest to the most complex, such as interfacing with a district heating system.

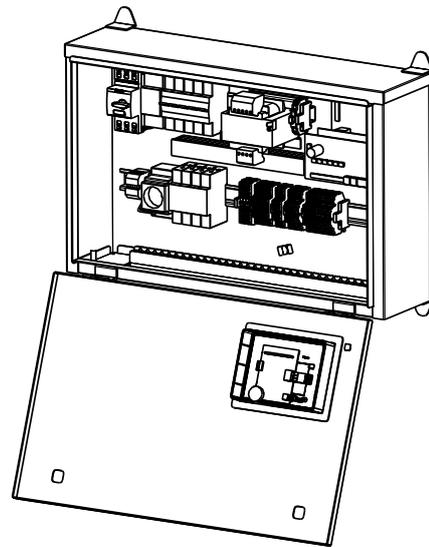
Each of these accessory configurations is described in detail the installation manual for this accessory:

- choice of additional control options (on/off volt-free contact or 0-10 V signal for increased performance),
- domestic hot water production temperature control and distribution.

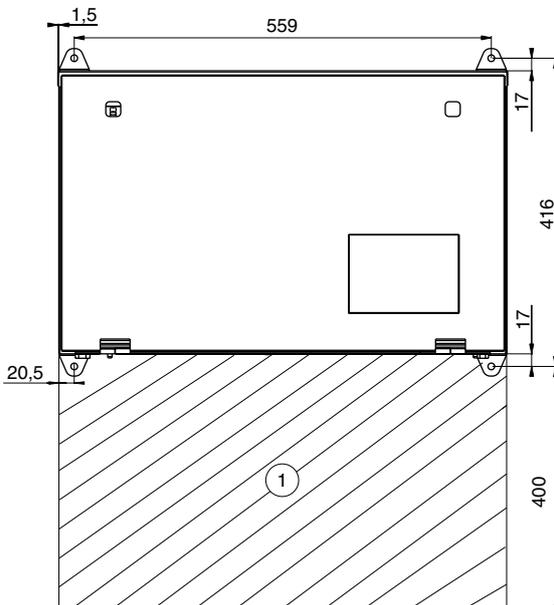
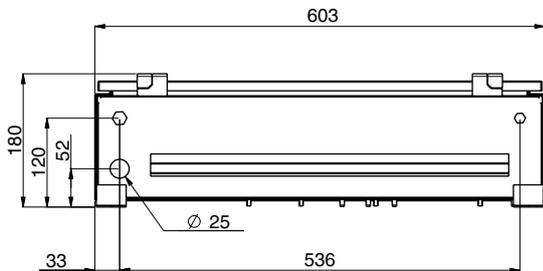
The control box can supply all auxiliary devices such as the circulating pumps or the mixing or switching valves.

The heat pump is controlled by a CCN bus and the control box includes an NRCP2-BASE board, a ProDialog interface as well as all required sensors.

HSM control box

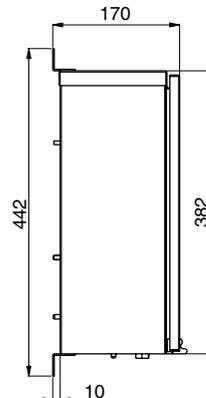


HSM control box dimensions



Installation safety notes

- The hydronic installation must be carried out by qualified personnel in accordance with applicable laws and following standard accepted practices.
- The hydronic installation must be regularly serviced.
- An incorrect hydronic installation that does not comply with the safety, electrical and thermal standards, as well as lacking/poor maintenance can lead to excessive pressures and cause piping breaks.



Legend:
All dimensions are in mm.

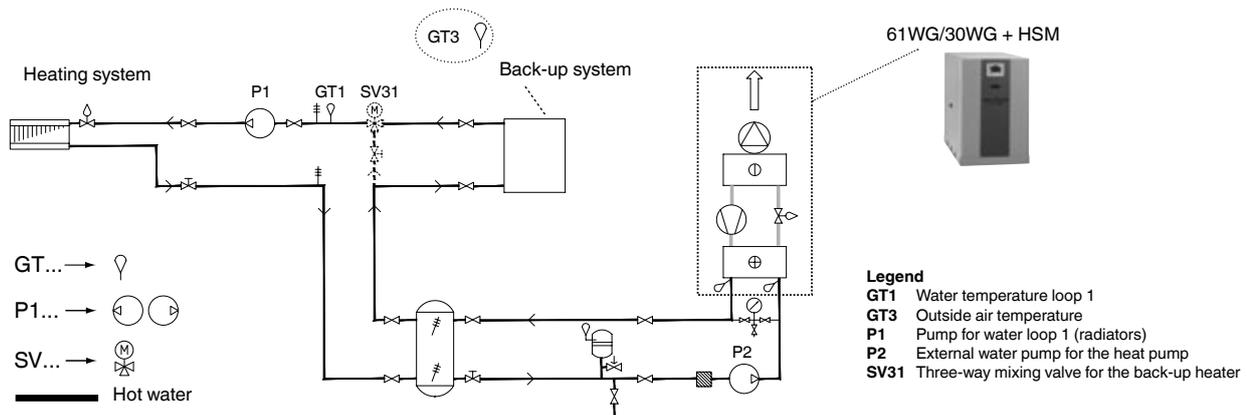
1 Clearance required to open the door and for customer connection

Heating System Manager - 61WG/30WG units (cont.)

Accessory 00PPG000488000- Heating System Manager type A

- Heating System Manager: one heat emitter type with supplementary electric heater or boiler:
 - Allows control of a non-reversible heating system that includes a 61WG/30WG heat pump and a single heat emitter type or a single comfort zone. For optimised energy efficiency the heat pump is controlled by a configurable weather compensation system. The control box controls a supplementary electric heater or a stand-by boiler. The control box supplies power to the circulating pumps.

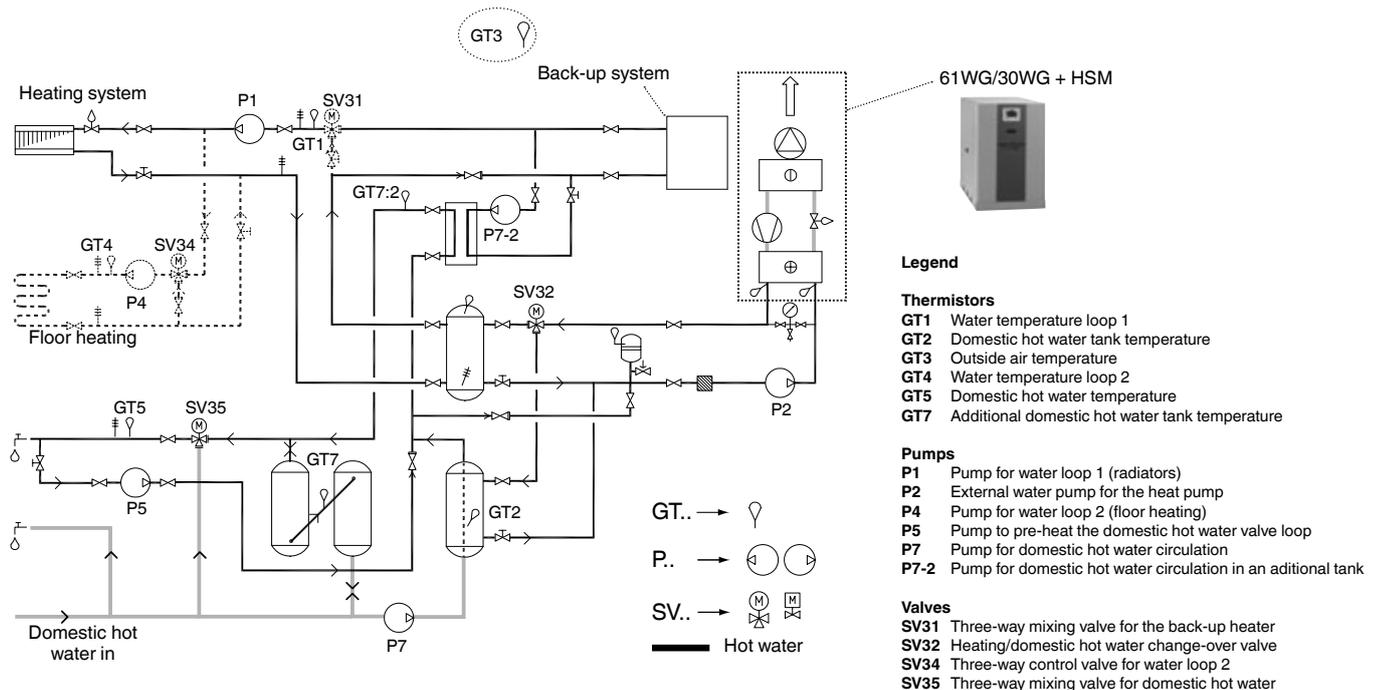
Heating system example: one heat emitter type with supplementary electric heating or stand-by boiler



Accessory 00PPG000488100- Heating System Manager type B

- Heating System Manager (as accessory 00PPG000488000-) two heat emitter types or independent zones and domestic hot water production:
 - Allows control of a non-reversible heating system that includes a 61WG/30WG heat pump and two different heat emitter types and/or two independent comfort zones. For optimised energy efficiency the heat pump is controlled by a configurable weather compensation system. The control box controls a supplementary electric heater or a stand-by boiler. The control box supplies power to the circulating pumps. Hot-water production can be permanent or programmable with a second setpoint at the heat pump and control of a switching valve.

Heating system example: two heat emitter types or independent zones and domestic hot water production



NOTES:

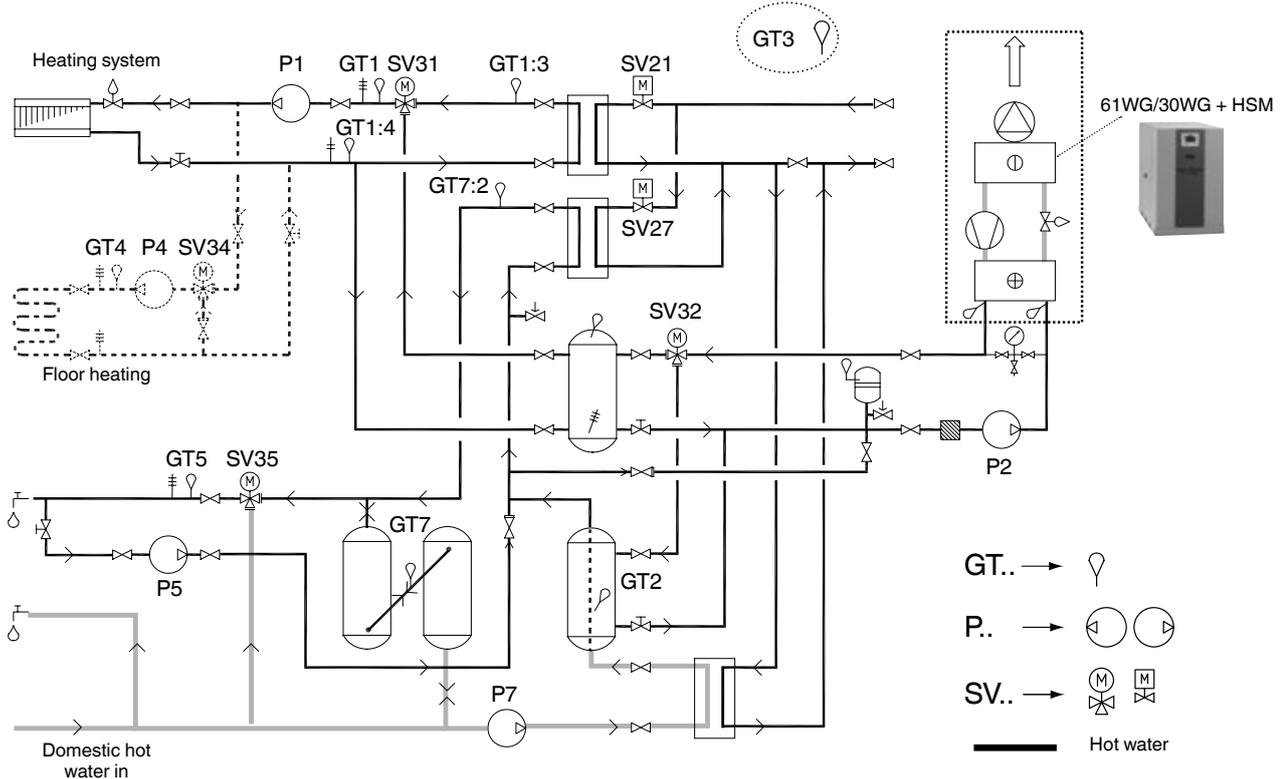
- This application example includes two zones and a supplementary boiler and domestic hot-water production.
- The installation includes a switching valve (SV32) that allows switching from the heat pump capacity of the heating system to domestic hot-water production.
- The primary heating circuit is the domestic hot-water production circuit. It includes a tank with an equivalent pressure drop to simplify system balancing.

Heating System Manager - 61WG/30WG units (cont.)

Accessory 00PPG000488200- Heating System Manager type C

- Heating System Manager (as accessory 00PPG000488100-) with the possibility to obtain additional heating and domestic hot-water production capacity from a district heating system:
 - Allows control of a non-reversible heating system that includes a 61WG/30WG heat pump and two different heat emitter types and/or two independent comfort zones. For optimised energy efficiency the heat pump is controlled by a configurable weather compensation system. The control box controls the heating and/or domestic hot-water production support from a district heating system. The control box supplies power to the circulating pumps. Hot-water production can be permanent or programmable with a second setpoint at the heat pump and control of a switching valve.

Heating system example: with the possibility to obtain additional heating and domestic hot-water production capacity from a district heating system



Legend

Thermistors

- GT1 Water temperature loop 1
- GT1:3 Heat exchanger leaving water temperature, district heating
- GT1:4 Heat exchanger entering water temperature, district heating
- GT2 Domestic hot water tank temperature
- GT3 Outside air temperature
- GT4 Water temperature loop 2
- GT5 Domestic hot water temperature
- GT7 Additional domestic hot water tank temperature
- GT7:2 Back-up heat exchanger temperature for domestic hot water

Pumps

- P1 Pump for water loop 1 (radiators)
- P2 External water pump for the heat pump
- P4 Pump for water loop 2 (floor heating)
- P5 Pump to pre-heat the domestic hot water valve loop
- P7 Pump for domestic hot water circulation

Valves

- SV21 Valve for district heating heat exchanger for heating
- SV27 Valve for district heating heat exchanger for domestic hot water
- SV31 Three-way mixing valve for the back-up heater
- SV32 Heating/domestic hot water change-over valve
- SV34 Three-way control valve for water loop 2
- SV35 Three-way mixing valve for domestic hot water

Physical data, 61WG units

61WG				020	025	030	035	040	045	050	060	070	080	090
Heating														
Standard unit	H1	Nominal capacity	kW	29.0	34.4	38.3	44.2	50.2	57.2	68.6	78.2	88.4	100.1	116.5
Full load performances*	H1	COP	kW/kW	5.42	5.29	5.21	5.29	5.34	5.32	5.49	5.36	5.46	5.28	5.33
	H1	Eurovent class heating	A	A	A	A	A	A	A	A	A	A	A	A
	H2	Nominal capacity	kW	21.7	25.7	29.4	34.1	37.7	42.1	50.4	56.7	67.0	74.6	87.0
	H2	COP	kW/kW	4.24	4.26	4.29	4.27	4.27	4.25	4.25	4.27	4.26	4.28	4.29
	H3	Nominal capacity	kW	27.7	33.0	36.7	42.7	48.7	54.8	66.4	75.7	84.1	95.3	109.0
	H3	COP	kW/kW	4.35	4.34	4.20	4.27	4.32	4.36	4.51	4.32	4.35	4.27	4.31
	H3	Eurovent class heating	B	B	B	B	B	B	B	A	B	B	B	B
	H4	Nominal capacity	kW	26.9	32.0	35.4	41.3	46.5	52.3	63.6	74.0	80.4	90.3	103.0
	H4	COP	kW/kW	3.65	3.68	3.52	3.59	3.56	3.66	3.75	3.64	3.63	3.56	3.60
	H5	Nominal capacity	kW	25.7	30.7	33.7	39.6	42.9	49.1	60.6	70.7	76.3	85.0	97.4
	H5	COP	kW/kW	2.96	2.96	2.86	2.93	2.88	2.96	2.98	3.04	2.99	2.94	2.97
Full load performances**	H1	Gross nominal capacity	kW	28.9	34.3	38.1	44.1	49.9	57.0	68.3	77.9	88.1	99.6	116
	H1	Gross COP	kW/kW	5.75	5.62	5.56	5.64	5.73	5.69	5.76	5.63	5.76	5.59	5.65
	H2	Gross nominal capacity	kW	21.6	25.7	29.3	34.0	37.6	42.0	50.3	56.5	66.8	74.4	86.7
	H2	Gross COP	kW/kW	4.42	4.46	4.51	4.49	4.49	4.46	4.38	4.41	4.42	4.44	4.46
	H3	Gross nominal capacity	kW	27.6	32.9	36.5	42.5	48.5	54.5	66.2	75.4	83.8	94.9	109
	H3	Gross COP	kW/kW	4.53	4.53	4.39	4.47	4.53	4.58	4.67	4.47	4.51	4.44	4.47
	H4	Gross nominal capacity	kW	26.9	31.9	35.3	41.3	46.4	52.2	63.6	73.9	80.2	90.2	102.9
	H4	Gross COP	kW/kW	3.75	3.78	3.62	3.69	3.66	3.76	3.82	3.71	3.70	3.63	3.68
	H5	Gross nominal capacity	kW	25.7	30.7	33.6	39.5	42.9	49.0	60.5	70.7	76.3	85.0	97.3
	H5	Gross COP	kW/kW	3.01	3.01	2.91	2.98	2.93	3.01	3.01	3.08	3.02	2.98	3.00
Seasonal efficiency***	H1	SCOP	kW/kW	5.36	5.20	5.11	5.19	5.23	5.19	5.84	5.93	5.93	5.83	5.82
	H1	ηs heat	%	206	200	197	200	201	200	226	229	229	225	225
	H1	Prated	kW	34	41	45	53	60	68	81	93	105	119	139
	H4	SCOP	kW/kW	4.37	4.32	4.20	4.28	4.32	4.35	4.86	4.88	4.80	4.89	4.80
	H4	ηs heat	%	167	165	160	163	165	166	186	187	184	188	184
	H4	Prated	kW	32	38	42	49	56	63	76	88	97	109	124
Operating weight⁽¹⁾			kg	191	200	200	207	212	220	386	392	403	413	441
		Operating weight with option 258 ⁽¹⁾	kg	198	207	207	214	219	227	399	405	416	426	454
Sound levels⁽²⁾														
		Sound power level, standard unit	dB(A)	67.0	68.5	69.0	69.3	70.0	70.1	71.5	72.0	72.0	73.0	73.4
		Sound power level, option 257	dB(A)	65.0	65.8	65.8	66.6	68.4	68.4	68.4	68.6	69.0	69.0	69.9
		Sound power level, option 258	dB(A)	61.2	62.4	63.4	63.2	64.4	63.9	66.2	66.1	66.1	67.3	67.2
		Sound power level, option 257 + 258	dB(A)	60.4	61.8	62.3	62.4	63.7	62.9	64.9	64.8	65.1	66.0	66.0
Dimensions, standard unit⁽³⁾														
		Width	mm	600	600	600	600	600	600	880	880	880	880	880
		Length	mm	1044	1044	1044	1044	1044	1044	1474	1474	1474	1474	1474
		Height	mm	901	901	901	901	901	901	901	901	901	901	901
Compressors				Hermetic scroll 48.3 r/s										
		Quantity		1	1	1	1	1	1	2	2	2	2	2
		Number of capacity stages		1	1	1	1	1	1	2	2	2	2	2
		Minimum capacity	%	100	100	100	100	100	100	50	50	50	50	50
Refrigerant⁽¹⁾				R410A										
		Charge, standard unit	kg	3.5	3.5	3.6	3.7	4.0	4.6	7.6	7.8	7.9	8.7	11.5
			teqCO ₂	7.2	7.3	7.4	7.6	8.2	9.5	15.9	16.3	16.5	18.2	24
		Charge, unit with option 272	kg	2.7	2.9	2.9	3.0	3.2	3.9	7.2	7.3	7.4	7.6	10.5
			teqCO ₂	5.6	6.0	6.1	6.3	6.7	8.1	14.9	15.2	15.5	15.9	21.9
Capacity control				Pro-Dialog+										
Evaporator				Direct-expansion plate heat exchanger										
		Water volume	l	3.3	3.6	3.6	4.2	4.6	5.0	8.4	9.2	9.6	10.4	12.5
		Water connections		Victaulic										
		Inlet/outlet	in	1.5	1.5	1.5	1.5	1.5	1.5	2	2	2	2	2
		Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Condenser				Plate heat exchanger										
		Net water volume	l	3.3	3.6	3.6	4.2	4.6	5.0	8.4	9.2	9.6	10.4	12.5
		Water connections		Victaulic										
		Inlet/outlet	in	1.5	1.5	1.5	1.5	1.5	1.5	2	2	2	2	2
		Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Chassis paint colour				Colour code: RAL7035										

* In accordance with standard EN14511-3:2013

** Not in accordance with standard EN14511-3:2013. These performances do not take into account the correction for the proportional heating capacity and power input generated by the water pump to overcome the internal pressure drop in the heat exchanger.

*** In accordance with standard EN14825:2013, average climate

H1 Heating mode conditions: evaporator entering/leaving water temperature 10 °C/7 °C, condenser entering/leaving water temperature 30 °C/35 °C, evaporator and condenser fouling factor 0 m2 K/W.

H2 Heating mode conditions: evaporator entering/leaving water temperature 0 °C/-3 °C, condenser entering/leaving water temperature 30 °C/35 °C, evaporator and condenser fouling factor 0 m2 K/W, evaporator fluid: 30%

H3 Heating mode conditions: evaporator entering/leaving water temperature 10 °C/7 °C, condenser entering/leaving water temperature 40 °C/45 °C, evaporator and condenser fouling factor 0 m2 K/W.

H4 Heating mode conditions: evaporator entering/leaving water temperature 10 °C/7 °C, condenser entering/leaving water temperature 47 °C/55 °C, evaporator and condenser fouling factor 0 m2 K/W.

H5 Heating mode conditions: evaporator entering/leaving water temperature 10 °C/7 °C, condenser entering/leaving water temperature 55 °C/65 °C, evaporator and condenser fouling factor 0 m2 K/W.

⁽¹⁾ Weight shown is a guideline only. Please refer to the unit nameplate

⁽²⁾ In dB ref=10-12 W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.

⁽³⁾ The dimensions shown are for the standard unit. For other unit types please refer to the dimensional drawings.



Eurovent certified values

Physical data, 30WG units

30WG			020	025	030	035	040	045	050	060	070	080	090	
Cooling														
Standard unit	C1	Nominal capacity	kW	24.6	28.7	31.5	36.7	41.8	46.6	58.1	63.4	73.8	83.9	94.6
Full load performances*	C1	EER	kW/kW	4.72	4.72	4.69	4.73	4.69	4.72	4.72	4.65	4.69	4.65	4.68
	C1	Eurovent class cooling	B	B	B	B	B	B	B	B	B	B	B	B
	C2	Nominal capacity	kW	33.9	39.3	43.0	50.1	56.6	65.6	78.6	86.0	101.7	113.2	129.4
	C2	EER	kW/kW	6.42	6.10	6.03	6.04	5.90	6.06	6.12	5.93	6.19	5.93	6.13
	C2	Eurovent class cooling	A	A	A	A	A	A	A	A	A	A	A	A
Full load performances**	C1	Gross nominal capacity	kW	24.7	28.8	31.6	36.9	42.0	46.8	58.3	63.5	74.0	84.1	94.8
	C1	Gross EER	kW/kW	4.93	4.94	4.93	4.96	4.93	4.96	4.90	4.82	4.88	4.84	4.87
	C2	Gross nominal capacity	kW	34.1	39.5	43.3	50.4	56.9	66.0	78.8	86.3	102.1	113.6	129.9
	C2	Gross EER	kW/kW	6.91	6.56	6.52	6.53	6.37	6.59	6.49	6.31	6.62	6.35	6.57
Seasonal efficiency*	C1	ESEER	kW/kW	5.10	5.09	5.03	5.05	5.03	5.07	5.83	5.87	5.79	5.99	5.93
Seasonal efficiency**	C1	Gross ESEER	kW/kW	5.35	5.35	5.30	5.32	5.32	5.36	6.31	6.38	6.30	6.54	6.44
Seasonal efficiency***	H1	SCOP	kW/kW	4.60	4.58	4.56	4.58	4.56	4.55	5.24	5.27	5.17	5.23	5.15
	H1	ηs heat	%	176	175	174	175	175	174	202	203	199	201	198
	H1	Prated	kW	38	45	49	57	66	73	91	99	116	132	148
Integrated part load value	IPLV		kW/kW	5.87	5.88	5.77	5.80	5.80	5.84	6.61	6.70	6.60	6.87	6.78
Operating weight⁽¹⁾			kg	191	200	200	207	212	220	386	392	403	413	441
Operating weight with option 258 ⁽¹⁾				kg	198	207	207	214	219	227	399	405	416	454
Sound levels⁽²⁾														
Sound power level		dB(A)	67.0	68.5	69.0	69.3	70.0	70.1	71.5	72.0	72.0	73.0	73.4	
Sound power level, option 257		dB(A)	65.0	65.8	65.8	66.6	68.4	68.4	68.4	68.6	69.0	69.0	69.9	
Sound power level, option 258		dB(A)	61.2	62.4	63.4	63.2	64.4	63.9	66.2	66.1	66.1	67.3	67.2	
Sound power level, option 257 + 258		dB(A)	60.4	61.8	62.3	62.4	63.7	62.9	64.9	64.8	65.1	66.0	66.0	
Dimensions, standard unit⁽³⁾														
Width		mm	600	600	600	600	600	600	880	880	880	880	880	
Length		mm	1044	1044	1044	1044	1044	1044	1474	1474	1474	1474	1474	
Height		mm	901	901	901	901	901	901	901	901	901	901	901	
Compressors		Hermetic scroll 48.3 r/s												
Quantity			1	1	1	1	1	1	2	2	2	2	2	
Number of capacity stages			1	1	1	1	1	1	2	2	2	2	2	
Minimum capacity		%	100	100	100	100	100	100	50	50	50	50	50	
Refrigerant⁽¹⁾		R410A												
Charge		kg	3.5	3.5	3.6	3.7	4.0	4.6	7.6	7.8	7.9	8.7	11.5	
		teqCO ₂	7.2	7.3	7.4	7.6	8.2	9.5	15.9	16.3	16.5	18.2	24	
Capacity control		Pro-Dialog+												
Evaporator		Direct-expansion plate heat exchanger												
Water volume		l	3.3	3.6	3.6	4.2	4.6	5.0	8.4	9.2	9.6	10.4	12.5	
Water connections		Vitaulic												
Inlet/outlet		in	1.5	1.5	1.5	1.5	1.5	1.5	2	2	2	2	2	
Max. water-side operating pressure		kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	
Condenser		Plate heat exchanger												
Net water volume		l	3.3	3.6	3.6	4.2	4.6	5.0	8.4	9.2	9.6	10.4	12.5	
Water connections		Vitaulic												
Inlet/outlet		in	1.5	1.5	1.5	1.5	1.5	1.5	2	2	2	2	2	
Max. water-side operating pressure		kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	
Chassis paint colour		Colour code: RAL7035												

* In accordance with standard EN14511-3:2013

** Not in accordance with standard EN14511-3:2013. These performances do not take into account the correction for the proportional heating capacity and power input generated by the water pump to overcome the internal pressure drop in the heat exchanger.

*** In accordance with standard EN14825:2013, average climate

C1 Cooling mode conditions: evaporator water entering/leaving temperature 12°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 (m2k) / W

C2 Cooling mode conditions: evaporator water entering/leaving temperature 18°C/23°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 (m2k) / W

H1 Heating mode conditions: evaporator entering/leaving water temperature 10 °C/7 °C, condenser entering/leaving water temperature 30 °C/35 °C, evaporator and condenser fouling factor 0 m2 K/W.
IPLV Calculations according to standard performances (in accordance with AHRI 550-590).

⁽¹⁾ Weight shown is a guideline only. Please refer to the unit nameplate

⁽²⁾ In dB ref=10-12 W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.

⁽³⁾ The dimensions shown are for the standard unit. For other unit types please refer to the dimensional drawings.



Eurovent certified values

Physical data, 30WG units, sizes 110 to 190

30WG			110	120	140	150	170	190	
Cooling									
Standard unit	C1	Nominal capacity	kW	114.5	129.9	143.6	152.9	171.9	191.8
Full load performances*	C1	EER	kW/kW	4.79	4.77	4.70	4.83	4.78	4.79
	C1	Eurovent class cooling		B	B	B	B	B	B
	C2	Nominal capacity	kW	155.1	176	196.3	206.8	230.5	261.7
	C2	EER	kW/kW	6.2	6.1	6.01	6.23	5.97	6.14
	C2	Eurovent class cooling		A	A	A	A	A	A
	H1	Nominal capacity	kW	137	155.5	172.3	183.2	206.3	230.1
	H1	COP	kW/kW	5.63	5.61	5.53	5.67	5.62	5.59
	H1	Eurovent class heating		A	A	A	A	A	A
	H4	Nominal capacity	kW	125.1	140.1	155.2	166.5	188.6	208.6
	H4	COP	kW/kW	3.59	3.63	3.57	3.6	3.76	3.6
Full load performances**	C1	Gross nominal capacity	kW	114.8	130.2	144	153.3	172.3	192.4
	C1	Gross EER	kW/kW	4.96	4.92	4.86	5	4.94	4.96
	C2	Gross nominal capacity	kW	155.6	176.6	197	207.5	231.3	262.8
	C2	Gross EER	kW/kW	6.55	6.42	6.34	6.59	6.29	6.51
Seasonal efficiency*	C1	ESEER	kW/kW	6.11	6.22	6.15	6.05	6.11	6.02
	C3	SEPR	kW/kW	-	-	-	4.75	4.81	4.76
Seasonal efficiency***	H1	SCOP	kW/kW	6.31	6.37	6.29	6.31	6.32	6.18
	H1	ηs heat	%	244	247	244	244	245	239
	H1	Prated	kW	155	176	196	208	234	261
	H4	SCOP	kW/kW	5.05	5.09	5.05	5.02	5.17	4.96
	H4	ηs heat	%	194	196	194	193	199	190
	H4	Prated	kW	143	161	178	191	216	239
Integrated part load value	IPLV	kW/kW	6.79	6.91	6.83	6.77	6.84	6.77	
Operating weight ⁽¹⁾		kg	707	733	758	841	877	908	
Sound levels ⁽²⁾									
		Sound power level	dB(A)	75,5	76,5	77,8	76,0	77,0	78,4
		Sound power level, option 257	dB(A)	72,5	73,5	74,8	73,0	74,0	75,4
Dimensions, standard unit ⁽³⁾									
		Width	mm	880	880	880	880	880	880
		Length	mm	1583	1583	1583	1583	1583	1583
		Height	mm	1574	1574	1574	1574	1574	1574
Compressors			Hermetic scroll 48.3 r/s						
		Quantity		3	3	3	4	4	4
		Number of capacity stages		3	3	3	4	4	4
		Minimum capacity	%	33	33	33	25	25	25
Refrigerant ⁽¹⁾			R410A						
		Charge, standard unit	kg	13,3	14,5	15,6	21,0	23,0	24,2
			teqCO ₂	27,8	30,3	32,6	43,8	48,0	50,5
Capacity control			TouchPilot Junior						
Evaporator			Direct-expansion plate heat exchanger						
		Water volume	l	15,18	17,35	19,04	23,16	26,52	29,05
		Water connections	-	Victaulic					
		Inlet/outlet	in	2 1/2	2 1/2	2 1/2	3	3	3
		Max. water-side operating pressure without hydronic module	kPa	1000	1000	1000	1000	1000	1000
Condenser			Plate heat exchanger						
		Net water volume	l	15,18	17,35	19,04	23,16	26,52	29,05
		Water connections	-	Victaulic					
		Inlet/outlet	in	2 1/2	2 1/2	2 1/2	3	3	3
		Max. water-side operating pressure without hydronic module	kPa	1000	1000	1000	1000	1000	1000
Chassis paint colour			Colour code: RAL7035						

* In accordance with standard EN14511-3:2013

** Not in accordance with standard EN14511-3:2013. These performances do not take into account the correction for the proportional heating capacity and power input generated by the water pump to overcome the internal pressure drop in the heat exchanger.

*** In accordance with standard EN14825:2013, average climate

C1 Cooling mode conditions: evaporator water entering/leaving temperature 12°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 (m2k) / W

C2 Cooling mode conditions: evaporator water entering/leaving temperature 18°C/23°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 (m2k) / W

C3 Cooling mode conditions: evaporator water entering/leaving temperature -2°C/-8°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 (m2k) / W

H1 Heating mode conditions: evaporator entering/leaving water temperature 10 °C/7 °C, condenser entering/leaving water temperature 30 °C/35 °C, evaporator and condenser fouling factor 0 m2 K/W.

H4 Heating mode conditions: evaporator entering/leaving water temperature 10 °C/7 °C, condenser entering/leaving water temperature 47 °C/55 °C, evaporator and condenser fouling factor 0 m2 K/W.

IPLV Calculations according to standard performances (in accordance with AHRI 550-590).

⁽¹⁾ Weight shown is a guideline only. Please refer to the unit nameplate

⁽²⁾ In dB ref=10-12 W, (A) weighting. Declared dual number noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.

⁽³⁾ The dimensions shown are for the standard unit. For other unit types please refer to the dimensional drawings.



Eurovent certified values

Physical data, 30WGA units

30WGA				020	025	030	035	040	045	050	060	070	080	090
Standard unit	C1	Nominal capacity	kW	22.6	27.0	29.5	34.7	39.2	43.7	53.7	59.8	69.2	78.3	87.8
Full load performances*	C1	EER	kW/kW	3.75	3.84	3.87	3.93	3.94	3.90	3.82	3.85	3.86	3.91	3.88
	C2	Nominal capacity	kW	32.1	38.1	41.9	48.9	55.2	63.1	75.9	83.9	98.1	110.5	124.6
	C2	EER	kW/kW	5.51	5.36	5.44	5.51	5.44	5.53	5.36	5.37	5.45	5.42	5.42
	C1	Gross nominal capacity	kW	22.7	27.1	29.6	34.8	39.4	43.8	53.8	59.9	69.4	78.4	88.0
Full load performances**	C1	Gross EER	kW/kW	3.80	3.91	3.94	4.00	4.02	3.98	3.86	3.89	3.91	3.95	3.93
	C2	Gross nominal capacity	kW	32.2	38.3	42.1	49.2	55.5	63.5	76.2	84.1	98.4	110.9	125.0
	C2	Gross EER	kW/kW	5.67	5.52	5.62	5.69	5.63	5.72	5.47	5.48	5.58	5.55	5.54
Operating weight⁽¹⁾			kg	164	171	171	177	180	185	321	324	332	339	354
Operating weight with option 258 ⁽¹⁾			kg	171	178	178	184	187	192	334	337	345	352	367
Sound levels⁽²⁾														
Sound power level			dB(A)	67.0	68.5	69.0	69.3	70.0	70.1	71.5	72.0	72.0	73.0	73.4
Sound power level, option 257			dB(A)	65.0	65.8	65.8	66.6	68.4	68.4	68.4	68.6	69.0	69.0	69.9
Sound power level, option 258			dB(A)	61.2	62.4	63.4	63.2	64.4	63.9	66.2	66.1	66.1	67.3	67.2
Sound power level, option 257 + 258			dB(A)	60.4	61.8	62.3	62.4	63.7	62.9	64.9	64.8	65.1	66.0	66.0
Dimensions, standard unit⁽³⁾														
Width		mm		600	600	600	600	600	600	880	880	880	880	880
Length		mm		1044	1044	1044	1044	1044	1044	1474	1474	1474	1474	1474
Height		mm		901	901	901	901	901	901	901	901	901	901	901
Compressors														
				Hermetic scroll 48.3 r/s										
Circuit A				1	1	1	1	1	1	2	2	2	2	2
Circuit B				-	-	-	-	-	-	-	-	-	-	-
Number of capacity stages				1	1	1	1	1	1	2	2	2	2	2
Minimum capacity		%		100	100	100	100	100	100	50	50	50	50	50
Refrigerant				R410A										
Capacity control				Pro-Dialog+										
Evaporator				Direct-expansion plate heat exchanger										
Water volume		l		3.3	3.6	3.6	4.2	4.6	5.0	8.4	9.2	9.6	10.4	12.5
Water connections				Victaulic										
Inlet/outlet		in		1.5	1.5	1.5	1.5	1.5	1.5	2	2	2	2	2
Max. water-side operating pressure without hydronic module		kPa		1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Refrigerant connections														
Discharge line diameter		in		7/8	7/8	7/8	7/8	7/8	7/8	1-1/8	1-1/8	1-1/8	1-1/8	1-1/8
Liquid line diameter		in		5/8	5/8	5/8	5/8	5/8	5/8	7/8	7/8	7/8	7/8	7/8
Chassis paint colour				Colour code: RAL7035										

* In accordance with standard EN14511-3:2013. Refrigerant piping equivalent length (without drier and valves) = 3 m.

** Not in accordance with standard EN14511-3:2013. These performances do not take into account the correction for the proportional heating capacity and power input generated by the water pump to overcome the internal pressure drop in the heat exchanger. Refrigerant piping equivalent length (without drier and valves) = 3 m

C1 Cooling mode conditions: evaporator entering/leaving water temperature 12 °C/7 °C, saturated condensing temperature 45 °C, subcooling 5 K, evaporator fouling factor 0 m² K/W.

C2 Cooling mode conditions: evaporator entering/leaving water temperature 23 °C/18 °C, saturated condensing temperature 45 °C, subcooling 5 K, evaporator fouling factor 0 m² K/W.

⁽¹⁾ Weight shown is a guideline only. Please refer to the unit nameplate

⁽²⁾ In dB ref=10-12 W, (A) weighting. Declared dual number noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.

⁽³⁾ The dimensions shown are for the standard unit. For other unit types please refer to the dimensional drawings.

Electrical data notes and operating conditions:

- 61WG/30WG/30WGA units have a single power connection point, located immediately upstream of the main disconnect switch.
- The control box includes the following standard features:
 - a main disconnect switch,
 - the starter and motor protection devices for each compressor and the pumps
 - the control devices
- Field connections: All connections to the system and the electrical installations must be in full accordance with all applicable local codes.
- The Carrier 61WG/30WG/30WGA units are designed and built to ensure conformance with these codes. The recommendations of European standard EN 60204-1 (machine safety - electrical machine components - part 1: general regulations - corresponds to IEC 60204-1) are specifically taken into account, when designing the electrical unit equipment.

Notes:

- Generally the recommendations of IEC 60364 are accepted as compliance with the requirements of the installation directives. Conformance with EN 60204-1 is the best means of ensuring compliance with the Machines Directive § 1.5.1.
 - Annex B of EN 60204-1 describes the electrical characteristics used for the operation of the machines.
- The operating conditions for the units are specified below:

Environment* - Environment as classified in EN 60721 (equivalent to CEI60721):

 - Indoor installation,
 - ambient temperature range: +5 °C for the temperature minimum to +40 °C, class 4K4H,
 - humidity range (non-condensing)*:
 - 50% relative humidity at 40 °C
 - 90% relative humidity at 20 °C
 - altitude: ≤ 2000 m (see note for table 4.7 in the IOM)
 - indoor installation*

- presence of water: class AD2 (possibility of water droplets)
 - presence of hard solids, class 4S2 (no significant dust present)
 - presence of corrosive and polluting substances, class 4C2 (negligible)
 - vibration and shock, class AG2, AH2
 - competence of personnel, class BA4* (trained personnel - IEC 60364)
- Power supply frequency variation: ± 2 Hz.
 - The neutral (N) conductor must not be connected directly to the unit (if necessary use a transformer).
 - Over-current protection of the power supply conductors is not provided with the unit.
 - The factory-installed disconnect switch(es)/circuit breaker(s) is (are) of a type suitable for power interruption in accordance with EN 60947.
 - The units are designed for simplified connection on TN(s) networks (IEC 60364). For IT networks provide a local earth and consult competent local organisations to complete the electrical installation. Units delivered with speed drive (option 116V and 270V) are not compatible with IT network.
 - Derived currents: If protection by monitoring of derived currents is necessary to ensure the safety of the installation, the control of the cut-out value must take the presence of leak currents into consideration that result from the use of frequency converters in the unit. A value of at least 150 mA is recommended to control differential protection devices.

NOTE: If particular aspects of an actual installation do not conform to the conditions described above, or if there are other conditions which should be considered, always contact your local Carrier representative.

* The protection level of the control boxes required to conform to this class is IPX1B (according to reference document IEC 60529). All 61WG/30WG/30WGA units fulfil this protection condition. Units equipped with front casing panel meet class IP23. If the casing panel has been removed, access to energised components is protected to level IPXXB.

Electrical data

61WG without hydronic module		020	025	030	035	040	045	050	060	070	080	090
Power circuit												
Nominal voltage	V-ph-Hz	400-3-50										
Voltage range	V	360-440										
Control circuit supply		24 V, via internal transformer										
Maximum start-up current draw (Un)*												
Standard unit	A	98	142	142	147	158	197	161	163	172	185	226
Unit with electronic starter option	A	53.9	78.1	78.1	80.9	86.9	108.4	98	99	105	114	139
Unit power factor at maximum capacity**		0.83	0.82	0.84	0.83	0.82	0.84	0.82	0.82	0.83	0.82	0.84
Maximum operating power input**		kW	9.7	11.4	12.8	14.7	16.6	18.7	22.8	25.6	29.4	37.4
Nominal unit operating current draw***		A	12.9	15.8	16.8	19.2	20.7	24.6	31.6	33.6	38.4	49.2
Maximum operating current draw (Un)****		A	16.1	19.6	21.1	24.4	26.7	30.9	39.2	42.2	48.8	61.8
Maximum operating current draw (Un-10%) †		A	17.8	21.6	23.2	26.9	29.4	34.0	43.2	46.4	53.8	68.0
Customer-side unit power reserve		Customer reserve at the 24 V control power circuit										
Short-circuit stability and protection		See table below "Short-circuit stability current"										

* Maximum instantaneous start-up current at operating limit values (maximum operating current of the smallest compressor(s) + locked rotor current or limited start-up current of the largest compressor).

** Maximum power input at the unit operating limits.

*** Values obtained at standardised Eurovent conditions: evaporator entering/leaving water temperature 10 °C/7 °C, condenser entering/leaving water temperature 30 °C/35 °C.

**** Maximum unit operating current at maximum unit power input and 400 V.

† Maximum unit operating current at maximum unit power input and 360 V.

30WG without hydronic module		020	025	030	035	040	045	050	060	070	080	090
Power circuit												
Nominal voltage	V-ph-Hz	400-3-50										
Voltage range	V	360-440										
Control circuit supply		24 V, via internal transformer										
Maximum start-up current draw (Un)*												
Standard unit	A	98	142	142	147	158	197	161	163	172	185	227
Unit with electronic starter option	A	53.9	78.1	78.1	80.9	86.9	108.4	96.8	97.9	104.1	112.3	137.4
Unit power factor at maximum capacity**		0.83	0.82	0.84	0.83	0.82	0.84	0.82	0.82	0.83	0.82	0.84
Maximum operating power input**		kW	9.7	11.4	12.8	14.7	16.6	18.7	22.8	24.6	29.4	37.4
Nominal unit operating current draw***		A	12.9	18.8	16.8	19.2	20.7	24.6	31.6	33.6	38.4	49.2
Maximum operating current draw (Un)****		A	15.6	18.7	19.8	23.2	25.4	29.0	37.5	39.6	46.4	58.0
Maximum operating current draw (Un-10%) †		A	17.2	20.6	21.8	25.6	28.0	31.9	41.2	43.6	51.2	63.8
Customer-side unit power reserve		Customer reserve at the 24 V control power circuit										
Short-circuit stability and protection		See table below "Short-circuit stability current"										

* Maximum instantaneous start-up current at operating limit values (maximum operating current of the smallest compressor(s) + locked rotor current or limited start-up current of the largest compressor).

** Maximum power input at the unit operating limits.

*** Values obtained at standardised Eurovent conditions: evaporator entering/leaving water temperature 12 °C/7 °C, condenser entering/leaving water temperature 30 °C/ 35 °C.

**** Maximum unit operating current at maximum unit power input and 400 V.

† Maximum unit operating current at maximum unit power input and 360 V.

30WG without hydronic module		110	120	140	150	170	190
Power circuit							
Nominal voltage	V-ph-Hz	400-3-50					
Voltage range	V	360-440					
Control circuit supply		24 V, via internal transformer					
Maximum start-up current draw (Un)*							
Standard unit	A	193,4	208,8	255	216,6	234,2	284
Unit with electronic starter option	A	127,3	137,7	166,4	150,5	163,1	195,4
Unit power factor at maximum capacity**		0,85	0,85	0,85	0,85	0,85	0,85
Maximum operating power input**		kW	41	45	51	55	68
Nominal unit operating current draw***		A	45,6	49,5	59,1	60,8	78,8
Maximum operating current draw (Un)****		A	69,6	76,2	87	92,8	116
Maximum operating current draw (Un-10%)†		A	76,8	84	95,7	102,4	127,6
Customer-side unit power reserve		Customer reserve at the 24 V control power circuit					
Short-circuit stability and protection		See table below "Short-circuit stability current"					

* Maximum instantaneous start-up current at operating limit values (maximum operating current of the smallest compressor(s) + locked rotor current or limited start-up current of the largest compressor).

** Maximum power input at the unit operating limits.

*** Values obtained at standardised Eurovent conditions: evaporator entering/leaving water temperature 12 °C/7 °C, condenser entering/leaving water temperature 30 °C/ 35 °C.

**** Maximum unit operating current at maximum unit power input and 400 V.

† Maximum unit operating current at maximum unit power input and 360 V.

30WGA without hydronic module		020	025	030	035	040	045	050	060	070	080	090
Power circuit												
Nominal voltage	V-ph-Hz	400-3-50										
Voltage range	V	360-440										
Control circuit supply												
24 V, via internal transformer												
Maximum start-up current draw (Un)*												
Standard unit	A	98	142	142	147	158	197	161	163	172	185	228
Unit with electronic starter option	A	53.9	78.1	78.1	80.9	86.9	108.4	96.8	97.9	104.1	112.3	137.4
Unit power factor at maximum capacity**												
0.83 0.82 0.84 0.83 0.82 0.84 0.82 0.82 0.82 0.83 0.82 0.84												
Maximum operating power input**												
kW 9.7 11.4 12.8 14.7 16.6 18.7 22.8 25.6 29.4 33.2 37.4												
Nominal unit operating current draw***												
A 11.4 13.8 14.7 16.5 18.1 21.2 27.6 29.4 33.0 36.2 42.4												
Maximum operating current draw (Un)****												
A 14.7 17.7 19.3 21.7 24.1 27.5 35.4 38.7 43.5 48.1 55.0												
Maximum operating current draw (Un-10%) †												
A 16.2 19.5 21.3 23.9 26.5 30.3 39.0 42.6 47.8 53.0 60.6												
Customer-side unit power reserve												
Customer reserve at the 24 V control power circuit												
Short-circuit stability and protection												
See table below "Short-circuit stability current"												

- * Maximum instantaneous start-up current at operating limit values (maximum operating current of the smallest compressor(s) + locked rotor current or limited start-up current of the largest compressor).
** Maximum power input at the unit operating limits.
*** Values obtained at the following conditions: evaporator entering/leaving water temperature 12 °C/7 °C, condenser entering/leaving water temperature 45 °C.
**** Maximum unit operating current at maximum unit power input and 400 V.
† Maximum unit operating current at maximum unit power input and 360 V.

Short-circuit stability current (TN system*) - standard unit (with main disconnect switch)

61WG/30WG/30WGA		020	025	030	035	040	045	050	060	070	080	090
Value with non-specified upstream protection												
Short-term current at 1 s - I _{cw} - kA rms	3	3	3	3	3	3	3	3	3	3	3	3
Admissible peak current - I _{pk} - kA pk	6	6	6	6	6	6	6	6	6	6	6	6
Maximum value with upstream protection (by circuit breaker)												
Conditional short-circuit current I _{cc} - kA rms	40	40	40	40	40	40	40	40	40	40	40	40
Schneider circuit breaker - Compact series	NSX 100N											
Reference number**	LV429795											

- * Earthing system type
** If another current limitation protection system is used, its time-current and thermal constraint (I²t) trip characteristics must be at least equivalent to those of the recommended Schneider circuit breaker. Contact your nearest Carrier office.
The short-circuit stability current values above are in accordance with the TN system.

30WG		110	120	140	150	170	190
Value with non-specified upstream protection							
Short-term current at 1 s - I _{cw} - kA rms		5,5	5,5	5,5	5,5	5,5	5,5
Admissible peak current - I _{pk} - kA pk		20	20	20	20	20	20
Maximum value with upstream protection (by circuit breaker)							
Conditional short-circuit current I _{cc} - kA rms		154	154	154	154	154	154
Schneider circuit breaker - Compact series		NSX 100N					
Reference number**		LV429795					

- * Earthing system type
** If another current limitation protection system is used, its time-current and thermal constraint (I²t) trip characteristics must be at least equivalent to those of the recommended Schneider circuit breaker. Contact your nearest Carrier office.
The short-circuit stability current values above are in accordance with the TN system.

Part load performances

With the rapid increase in energy costs and the care about environmental impacts of electricity production, power consumption of air conditioning equipment has become an important topic. The energy efficiency of a unit at full load is rarely representative of the actual performance of the units, as on average a unit works less than 5% of the time at full load.

IPLV (in accordance with AHRI 550/590)

The IPLV (integrated part load value) allows evaluation of the average energy efficiency based on four operating conditions defined by the AHRI (Air Conditioning, Heating and Refrigeration Institute). The IPLV is the average weighted value of the cooling coefficient of performance (COPc) at different operating conditions, weighted by the operating time.

IPLV (integrated part load value)

Load %	Condenser entering water temperature, °C	Energy efficiency	Operating time, %
100	29.4	COPc ₁	1
75	23.9	COPc ₂	42
50	18.3	COPc ₃	45
25	18.3	COPc ₄	12

IPLV = COPc1 x 1% + COPc2 x 42% + COPc3 x 45% + COPc4 x 12%

Note: Constant leaving water temperature: 6.67 °C

The heat load of a building depends on many factors, such as the outside air temperature, the exposure to the sun and its occupation.

Consequently it is preferable to use the average energy efficiency, calculated at several operating points that are representative for the unit utilisation.

ESEER (in accordance with EUROVENT)

The ESEER (European seasonal energy efficiency ratio) permits evaluation of the average energy efficiency at part load, based on four operating conditions defined by Eurovent. The ESEER is the average value of energy efficiency ratios (EER) at different operating conditions, weighted by the operating time.

ESEER (European seasonal energy efficiency ratio)

Load %	Condenser entering water temperature, °C	Energy efficiency	Operating time, %
100	30	EER ₁	3
75	26	EER ₂	33
50	22	EER ₃	41
25	18	EER ₄	23

ESEER = EER₁ x 3% + EER₂ x 33% + EER₃ x 41% + EER₄ x 23%

Note: Constant leaving water temperature: 7 °C

SCOP (In accordance with standard EN14825:2013, average climate)

SCOP (In accordance with standard EN14825:2013, average climate)

The SCOP (Seasonal Coefficient of Performance) permit evaluation of the average energy efficiency at part load, based on multipoint conditions (16°C to -10°C for average climate) and number of hours occurring at each air temperature (Bin hours).

To be able to compare the energy efficiency of boilers using a primary energy source (gas or fuel) with heat pumps using a final energy source (electricity), the seasonal efficiency criteria used by the Ecodesign regulations is known as η_s it is based on the use of primary energy sources and expressed in %

Sound spectrum

61WG/30WG/30WGA units with hydronic module (options 116T-116V-270T-270V*)

61WG/30WG/30WGA - standard unit									61WG/30WG/30WGA - Unit with low-noise option (option 257)										
		Octave bands, Hz						Sound power level				Octave bands, Hz						Sound power level	
		125	250	500	1k	2k	4k					125	250	500	1k	2k	4k		
020	dB	60.1	52.8	51.6	63.2	60.8	56.5	dB(A)	67.0	020	dB	58.7	57.9	49.8	60.3	57.2	51.2	dB(A)	65.0
025	dB	63.9	56.3	55.7	63.2	59.8	58.2	dB(A)	68.5	025	dB	58.2	57.4	55.2	61.6	57.5	54.2	dB(A)	65.8
030	dB	61.1	58.8	57.6	64.0	62.6	59.9	dB(A)	69.0	030	dB	58.2	57.4	55.5	60.8	58.7	54.3	dB(A)	65.8
035	dB	64.1	59.2	59.0	63.9	61.2	57.8	dB(A)	69.3	035	dB	58.2	57.4	58.5	62.2	58.8	53.8	dB(A)	66.6
040	dB	58.6	59.7	58.4	66.7	63.6	58.5	dB(A)	70.0	040	dB	63.9	58.2	56.4	63.6	59.8	53.0	dB(A)	68.4
045	dB	56.9	56.1	56.8	66.2	64.8	62.1	dB(A)	70.1	045	dB	58.2	57.4	56.3	64.6	62.5	58.0	dB(A)	68.4
050	dB	47.2	59.6	64.6	67.9	65.7	56.3	dB(A)	71.5	050	dB	47.5	57.4	61.0	65.4	61.8	50.7	dB(A)	68.4
060	dB	43.2	60.9	65.2	67.5	67.2	56.7	dB(A)	72.0	060	dB	43.2	58.5	61.3	64.7	63.1	50.9	dB(A)	68.6
070	dB	46.3	61.4	66.8	67.4	65.9	54.8	dB(A)	72.0	070	dB	46.6	59.4	63.3	65.0	62.2	49.3	dB(A)	69.0
080	dB	40.1	61.2	65.4	69.6	67.6	54.8	dB(A)	73.0	080	dB	39.4	58.1	60.9	66.1	62.8	48.2	dB(A)	69.0
090	dB	50.6	64.1	63.9	69.2	68.9	58.4	dB(A)	73.4	090	dB	50.4	61.5	59.8	66.2	64.6	52.3	dB(A)	69.9
110	dB	83	73	71	70	68	65	dB(A)	75.5	110	dB	80	70	68	67	65	62	dB(A)	72.5
120	dB	84	74	72	71	69	66	dB(A)	76.5	120	dB	81	71	69	68	66	63	dB(A)	73.5
140	dB	80	75	71	74	72	65	dB(A)	77.8	140	dB	77	72	68	71	69	62	dB(A)	74.8
150	dB	78	74	71	70	71	65	dB(A)	76.0	150	dB	75	71	68	67	68	62	dB(A)	73.0
170	dB	79	75	72	71	72	66	dB(A)	77.0	170	dB	76	72	69	68	69	63	dB(A)	74.0
190	dB	82	76	75	74	71	66	dB(A)	78.4	190	dB	79	73	72	71	68	63	dB(A)	75.4

61WG/30WG/30WGA units with hydronic module (options 116T-116V-270T-270V*)

61WG/30WG/30WGA - Unit with hydronic module option									61WG/30WG/30WGA - Unit with hydronic module option and option 257*										
		Octave bands, Hz						Sound power level				Octave bands, Hz						Sound power level	
		125	250	500	1k	2k	4k					125	250	500	1k	2k	4k		
020	dB	61.1	70.2	67.9	68.3	67.5	60.3	dB(A)	75.0	020	dB	61.6	70.5	67.1	65.9	64.6	56.9	dB(A)	74.0
025	dB	61.0	69.8	67.7	68.8	67.5	62.4	dB(A)	75.0	025	dB	61.6	70.2	67.0	66.5	64.7	59.1	dB(A)	74.0
030	dB	60.8	69.8	67.7	68.4	68.2	62.4	dB(A)	75.0	030	dB	61.4	70.2	67.0	66.1	65.4	59.1	dB(A)	74.0
035	dB	60.8	69.6	67.7	68.9	68.0	61.8	dB(A)	75.0	035	dB	61.4	70.0	67.0	66.6	65.2	58.5	dB(A)	74.0
040	dB	60.5	69.6	67.5	69.2	68.1	60.7	dB(A)	75.0	040	dB	61.1	70.0	66.8	66.9	65.3	57.4	dB(A)	74.0
045	dB	62.4	70.4	68.3	71.2	71.2	66.1	dB(A)	77.0	045	dB	62.4	70.2	67.0	68.3	67.8	62.2	dB(A)	75.0
050	dB	53.6	71.2	71.6	71.1	69.0	59.1	dB(A)	77.0	050	dB	55.1	70.7	70.5	70.3	67.2	56.3	dB(A)	76.0
060	dB	53.3	71.2	71.6	70.7	69.6	59.2	dB(A)	77.0	060	dB	54.8	70.7	70.5	69.9	67.8	56.4	dB(A)	76.0
070	dB	54.4	72.0	72.7	72.2	70.5	59.6	dB(A)	78.0	070	dB	54.8	70.4	70.5	70.3	67.6	55.7	dB(A)	76.0
080	dB	54.0	72.0	72.5	72.5	70.6	58.5	dB(A)	78.0	080	dB	54.4	70.4	70.3	70.6	67.7	54.6	dB(A)	76.0
090	dB	54.1	71.0	71.5	72.7	71.9	62.1	dB(A)	78.0	090	dB	55.7	70.6	70.5	72.0	70.2	59.4	dB(A)	77.0
110	dB	84	74	72	71	69	66	dB(A)	77	110	dB	82	72	70	69	67	64	dB(A)	74.5
120	dB	85	75	73	72	70	67	dB(A)	77.5	120	dB	83	73	71	70	68	65	dB(A)	75.5
140	dB	81	76	72	75	73	66	dB(A)	78.8	140	dB	79	74	70	73	71	64	dB(A)	76.8
150	dB	79	75	72	71	72	66	dB(A)	77.0	150	dB	77	73	70	69	70	64	dB(A)	75.0
170	dB	80	76	73	72	73	67	dB(A)	78.0	170	dB	78	74	71	70	71	65	dB(A)	76.0
190	dB	83	77	76	75	72	67	dB(A)	79.4	190	dB	81	75	74	73	70	65	dB(A)	77.4

*** Option numbers**

- 257 Low sound level (up to 3 dB(A) lower than standard unit)
- 116T Single low-pressure hydronic module, evaporator
- 116V Single high-pressure hydronic module, evaporator

- 270T Single low-pressure hydronic module, condenser
- 270V Single high-pressure hydronic module, condenser

61WG/30WG/30WGA units very low noise option (option 258*)

61WG/30WG/30WGA - standard unit with Option 258*									61WG/30WG/30WGA - Unit with very low-noise option (option 257 + 258*)										
		Octave bands, Hz						Sound power level			Octave bands, Hz						Sound power level		
		125	250	500	1k	2k	4k				125	250	500	1k	2k	4k			
020	dB	54	56	49	57	47	44	dB(A)	61.2	020	dB	54	55	47	56	46	45	dB(A)	60.4
025	dB	57	59	53	55	46	46	dB(A)	62.4	025	dB	56	57	51	56	45	47	dB(A)	61.8
030	dB	56	60	55	55	49	48	dB(A)	63.4	030	dB	55	59	53	54	48	49	dB(A)	62.3
035	dB	57	59	56	55	47	46	dB(A)	63.2	035	dB	56	58	55	55	46	47	dB(A)	62.4
040	dB	55	60	55	60	50	47	dB(A)	64.4	040	dB	53	59	53	60	49	48	dB(A)	63.7
045	dB	53	59	54	60	51	50	dB(A)	63.9	045	dB	51	58	52	59	50	51	dB(A)	62.9
050	dB	43	59	62	62	52	44	dB(A)	66.2	050	dB	41	58	60	61	51	45	dB(A)	64.9
060	dB	39	60	62	61	53	45	dB(A)	66.1	060	dB	37	59	60	60	52	46	dB(A)	64.8
070	dB	42	60	62	61	52	43	dB(A)	66.1	070	dB	40	59	61	60	51	44	dB(A)	65.1
080	dB	36	60	62	64	54	43	dB(A)	67.3	080	dB	34	59	60	63	53	44	dB(A)	66.0
090	dB	47	62	61	63	55	46	dB(A)	67.2	090	dB	45	61	59	62	54	47	dB(A)	66.0

61WG/30WG/30WGA units with hydronic module (options 116T-116V-270T-270V*)

61WG/30WG/30WGA - Unit with hydronic module option and option 258*									61WG/30WG/30WGA - Unit with hydronic module option and option 257 + 258*										
		Octave bands, Hz						Sound power level			Octave bands, Hz						Sound power level		
		125	250	500	1k	2k	4k				125	250	500	1k	2k	4k			
020	dB	54	65	63	60	61	59	dB(A)	69.3	020	dB	53	64	62	59	60	58	dB(A)	68.3
025	dB	54	65	63	61	61	61	dB(A)	69.6	025	dB	53	64	62	60	60	60	dB(A)	68.6
030	dB	54	65	63	60	61	61	dB(A)	69.5	030	dB	53	64	62	59	60	60	dB(A)	68.5
035	dB	54	65	63	61	61	61	dB(A)	69.6	035	dB	53	64	62	60	60	60	dB(A)	68.6
040	dB	54	65	63	61	61	60	dB(A)	69.5	040	dB	53	64	62	60	60	59	dB(A)	68.5
045	dB	55	65	63	63	64	65	dB(A)	71.2	045	dB	54	64	62	62	63	64	dB(A)	70.2
050	dB	47	66	67	63	62	58	dB(A)	71.2	050	dB	46	65	66	62	61	57	dB(A)	70.2
060	dB	46	66	67	63	63	58	dB(A)	71.4	060	dB	45	65	66	62	62	57	dB(A)	70.4
070	dB	47	67	68	64	64	59	dB(A)	72.4	070	dB	46	66	67	63	63	58	dB(A)	71.4
080	dB	47	67	67	65	64	57	dB(A)	72.1	080	dB	46	66	66	64	63	56	dB(A)	71.1
090	dB	47	66	67	65	65	61	dB(A)	72.2	090	dB	46	65	66	64	64	60	dB(A)	71.2

*** Option numbers**

- 257 Low sound level (up to 3 dB(A) lower than standard unit)
- 116T Single low-pressure hydronic module, evaporator
- 116V Single high-pressure hydronic module, evaporator
- 258 Very low noise (up to 6 dB(A) lower than standard unit)
(C-s2,d0 compliant to Fire certification EN 13-501)

- 270T Single low-pressure hydronic module, condenser
- 270V Single high-pressure hydronic module, condenser

Operating limits, 61WG

61WG		Minimum	Maximum
Evaporator			
Entering water temperature at start-up	°C	7.5*	27
Leaving water temperature during operation	°C	5**	20
Entering/leaving water temperature difference	K	2.5	7
Condenser			
Entering water temperature at start-up	°C	15***	60****
Leaving water temperature during operation	°C	20	65
Entering/leaving water temperature difference	K	2.5	18

- * For entering water temperatures below 7.5 °C at start-up, contact Carrier.
- ** If the leaving water temperature is below 5 °C, a frost protection solution must be used. Please refer to option 6 for evaporator leaving water low-temperature applications (< 5 °C).
- *** For applications with a condenser entering temperature below 15 °C the use of a three-way valve is recommended. This three-way valve can be controlled by the 0-10 V analogue output of the Pro-Dialog+ control.
- **** For a water flow rate that corresponds to a maximum water-side temperature difference of 5 K.

61WG + option 272 (geothermal application)		Minimum	Maximum
Evaporator			
Entering water temperature at start-up	°C	-2.5*	25
Leaving water temperature during operation	°C	-5*	20
Entering/leaving water temperature difference	K	2.5	5
Condenser			
Entering water temperature at start-up	°C	15**	60***
Leaving water temperature during operation	°C	20	65
Entering/leaving water temperature difference	K	2.5	18

- * A frost protection solution must be used.
- ** For applications with a condenser entering temperature below 15 °C the use of a three-way valve is recommended. This three-way valve can be controlled by the 0-10 V analogue output of the Pro-Dialog+ control.
- *** For a water flow rate that corresponds to a maximum water-side temperature difference of 5 K.

Operating limits, 30WG

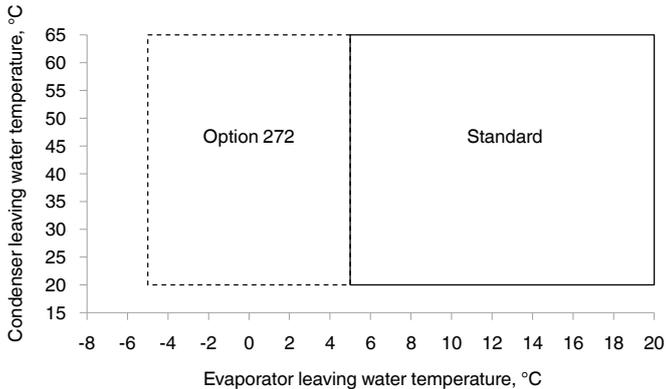
30WG		Minimum	Maximum
Evaporator			
Entering water temperature at start-up	°C	7.5*	27
Leaving water temperature during operation	°C	5**	20
Entering/leaving water temperature difference	K	2.5	7
Condenser			
Entering water temperature at start-up	°C	15***	55****
Leaving water temperature during operation	°C	20	60
Entering/leaving water temperature difference	K	2.5	18

- * For entering water temperatures below 7.5 °C at start-up, contact Carrier.
- ** If the leaving water temperature is below 5 °C, a frost protection solution must be used. Please refer to option 6 for evaporator leaving water low-temperature applications (< 5 °C).
- *** For applications with a condenser entering temperature below 15 °C the use of a three-way valve is recommended. This three-way valve can be controlled by the 0-10 V analogue output of the TouchPilot Junior control.
- **** For a water flow rate that corresponds to a maximum water-side temperature difference of 5 K.

30WG 20-90/150-190 + option 6		Minimum	Maximum
Evaporator			
Entering water temperature at start-up	°C	-9.5*	27
Leaving water temperature during operation	°C	-12*	20
Entering/leaving water temperature difference	K	2.5	5
Condenser			
Entering water temperature at start-up	°C	15**	55***
Leaving water temperature during operation	°C	20	60
Entering/leaving water temperature difference	K	2.5	18

- Note:** Do not exceed the maximum operating temperature.
- * A frost protection solution must be used.
- ** For applications with a condenser entering temperature below 15 °C the use of a three-way valve is recommended. This three-way valve can be controlled by the 0-10 V analogue output of the TouchPilot Junior control.
- *** For a water flow rate that corresponds to a maximum water-side temperature difference of 5 K.

Operating range, 61WG

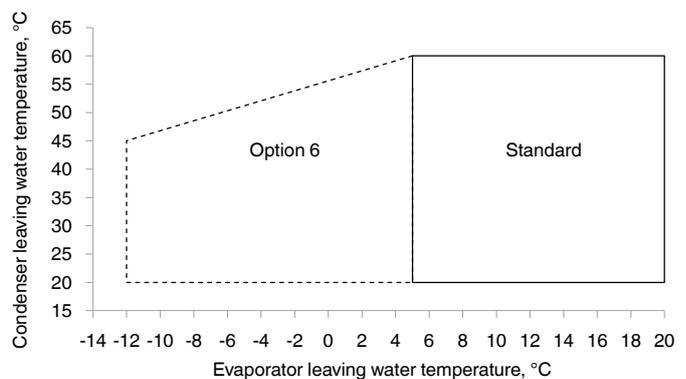


- 61WG standard unit
- - - 61WG unit with option 272 (brine to water)
- Option 272: Condenser-side high-temperature water production, with glycol solution on the evaporator side

30WG + drycooler		Minimum	Maximum
Evaporator			
Entering water temperature at start-up	°C	7.5*	27
Leaving water temperature during operation	°C	5**	20
Entering/leaving water temperature difference	K	2.5	7
Condenser without hydronic kit			
Entering air temperature at start-up + during operation	°C	10-15****	40-45****
Condenser with option 270V (kit with variable-speed pump)			
Entering air temperature at start-up+ during operation	°C	-10†	40-45****

- * For entering water temperatures below 7.5 °C at start-up, contact Carrier.
- ** If the leaving water temperature is below 5 °C, a frost protection solution must be used. Please refer to option 6 for evaporator leaving water low-temperature applications (< 5 °C).
- *** The minimum entering air temperature is based on the drycooler selection.
- **** The maximum entering air temperature is based on the drycooler selection.
- † For applications with a low condenser entering air temperature the use of a three-way valve is recommended. This three-way valve can be controlled by the 0-10 V analogue output of the TouchPilot Junior control.

Operating range, 30WG



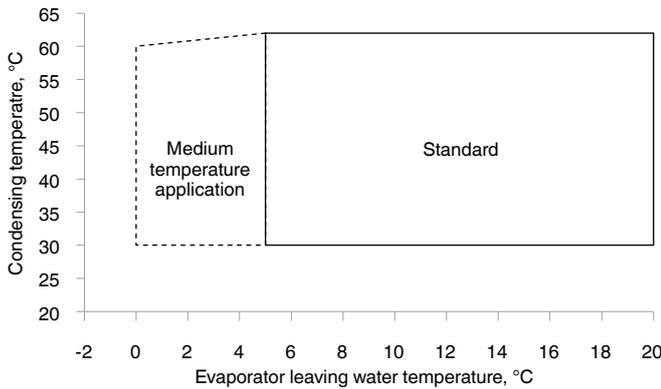
- 30WG standard unit
- - - 30WG unit with option 6 (brine)
- Option 6: Very low-temperature glycol solution

Operating limits, 30WGA

30WGA		Minimum	Maximum
Evaporator			
Entering water temperature at start-up	°C	7.5*	27
Leaving water temperature during operation	°C	5**	20
Entering/leaving water temperature difference	K	2,5	7
Air entering temperature (at start-up and during operation)***			
Air entering temperature (fixed-speed fan)	°C	0***	35 to 48†
Air entering temperature (variable-speed fan)	°C	-10 to -20†	35 to 48‡

* For entering water temperatures below 7.5 °C at start-up, contact Carrier.
 ** 30WGA unit can operate down to 0 °C if the configuration of the fluid type used is modified. If the leaving water temperature is below 5 °C, a frost protection solution must be used.
 *** The minimum temperature range is based on the condenser selected. If the condenser only has a few fan stages, the use of variable-speed fans is recommended from 10 °C.
 † The minimum temperature range is based on the condenser selected.
 ‡ The maximum temperature range is based on the condenser selected.

Operating range, 30WGA



— 30WGA standard unit
 - - - 30WGA unit for medium temperature application (% glycol < 25%)

Water loop volume

Evaporator and condenser

■ **Minimum volume**
 A minimum water volume is required for correct unit operation. The minimum water loop volume can be calculated in accordance with the following formula:

$$\text{Volume} = \text{CAP(kW)} \times \text{N}^* = \text{litres, where CAP is the cooling capacity at nominal operating conditions.}$$

Air conditioning application	N*
61WG/30WG/30WGA 020-090	2.5

Minimum water loop volume (evaporator and condenser side)

30WG	size	110	120	140	150	170	190
Pure water	l	269	323	366	192	231	261

The water volume in the condenser loop has no impact on the operation of the unit.

Note: In the heat pump mode (unit control based on the hot-water temperature) the minimum volume of the condenser loop must be calculated the same way as for the evaporator loop, replacing the cooling capacity with the heating capacity.

- **Industrial process cooling**
 Certain industrial process applications may require high stability of the leaving water temperature levels. In this case the values above must be increased.
- **Maximum volume**
 Units with hydronic module incorporate an expansion tank sized for the maximum water loop volume.

The table below gives the maximum water loop volume (in litres) for pure water or ethylene glycol with various concentrations.

61WG/30WG/30WGA		020-045			060-090		
Static pressure	kPa	100	200	300	100	200	300
	bar	1	2	3	1	2	3
Pure water	l	220	450	75	340	225	115
10% ethylene glycol	l	165	110	53	255	170	85
20% ethylene glycol	l	100	70	35	150	100	50
35% ethylene glycol	l	85	55	30	130	85	45

Maximum water loop volume (evaporator and condenser side)

30WG		110-140			150-190		
Static pressure	kPa	150	200	150	200	200	300
	bar	1,5	2	1,5	2	2	3
Pure water	l	894	655	1376	918	225	115
10% ethylene glycol	l	678	498	1045	697	170	85
20% ethylene glycol	l	561	412	864	576	100	50
35% ethylene glycol	l	483	354	744	496	85	45

Water flow rates

Standard 61WG

61WG	Evaporator water flow rate, l/s					
	Minimum*		Minimum**	Maximum***		Maximum****
	Low pressure	High pressure		Low pressure	High pressure	
020	1.0	0.9	0.5	3.1	3.6	3.8
025	1.0	1.0	0.5	3.3	3.8	4.1
030	1.0	1.0	0.5	3.3	3.8	4.1
035	1.1	1.1	0.6	3.6	4.2	4.7
040	1.2	1.1	0.6	3.8	4.4	5.0
045	1.2	1.1	0.8	4.0	4.6	5.4
050	1.6	1.4	0.8	5.4	7.8	9.2
060	1.5	1.6	1.0	6.1	8.0	9.9
070	1.6	1.5	1.1	6.2	8.1	10.3
080	1.6	1.5	1.3	6.3	8.3	10.9
090	2.0	1.6	1.5	7.8	8.7	12.5

- * Units with hydronic module
Flow rate for a maximum permitted temperature difference at the minimum leaving water temperature
- ** Units without hydronic module
Flow rate for a maximum permitted temperature difference at the minimum leaving water temperature
- *** Units with hydronic module
Maximum flow rate for an available pressure of 20 kPa (unit with low-pressure hydronic module) or 50 kPa (unit with high-pressure hydronic module)
- **** Units without hydronic module
Maximum flow rate for a pressure drop of 100 kPa in the plate heat exchanger.

61WG	Condenser water flow rate, l/s			
	Minimum*	Maximum**		Maximum***
		Low pressure	High pressure	
020	0.3	3.1	3.5	3.8
025	0.3	3.3	3.8	4.1
030	0.3	3.3	3.8	4.1
035	0.4	3.5	4.1	4.7
040	0.4	3.7	4.3	5.0
045	0.4	3.9	4.5	5.4
050	0.4	4.8	6.8	7.0
060	0.5	5.5	7.0	7.5
070	0.5	5.6	7.2	7.8
080	0.6	5.8	7.4	8.2
090	0.6	7.2	7.9	9.3

- * Units with or without hydronic module
Minimum flow rate for a water temperature difference of 18 K-
Note: Operation permitted up to a value of 20 K.
- ** Units with hydronic module
Maximum flow rate for an available pressure of 20 kPa (unit with low-pressure hydronic module) or 50 kPa (unit with high-pressure hydronic module)
- *** Units without hydronic module
Maximum flow rate for a pressure drop of 100 kPa in the plate heat exchanger

61WG with option 272

61WG	Minimum evaporator glycol solution flow rate - option 272*, l/s		
	Minimum**	Minimum***	
		Low pressure	High pressure
020	0.5	0.5	0.5
025	0.5	0.5	0.5
030	0.5	0.5	0.5
035	0.6	0.6	0.6
040	0.6	0.6	0.6
045	0.8	0.8	0.8
050	2.0	1.9	0.8
060	1.9	1.9	1.0
070	1.9	1.9	1.1
080	1.9	2.0	1.3
090	2.2	2.0	1.5

- * Option 272: Condenser side high-temperature water production, evaporator side with glycol solution,
- ** Units with hydronic module
Minimum flow rate for a maximum permitted temperature difference at the minimum leaving water temperature
- *** Units without hydronic module
Minimum flow rate for a maximum permitted temperature difference at the minimum leaving water temperature

Standard 30WG/30WGA

30WG 30WGA	Evaporator water flow rate, l/s					
	Minimum*		Minimum**	Maximum***		Maximum†
	Low pressure	High pressure		Low pressure	High pressure	
020	1.0	0.9	0.5	3.1	3.6	3.8
025	1.0	1.0	0.5	3.3	3.8	4.1
030	1.0	1.0	0.5	3.3	3.8	4.1
035	1.1	1.1	0.6	3.6	4.2	4.7
040	1.1	1.1	0.6	3.8	4.4	5
045	1.2	1.1	0.8	4.0	4.6	5.4
050	1.6	1.4	0.8	5.4	7.8	9.2
060	1.5	1.6	1.0	6.1	8.0	9.9
070	1.6	1.5	1.1	6.2	8.1	10.3
080	1.6	1.5	1.3	6.3	8.3	10.9
090	2.0	1.6	1.5	7.8	8.7	12.5
110	2	1,25	0,8	7,5	11,8	14,4
120	2	1,25	0,9	7,6	12,5	16,7
140	2	1,25	1	8,6	12,8	18,3
150	2	1,25	0,8	8,6	12,5	16,1
170	2	1,25	0,9	13,6	13,1	18,3
190	2	1,25	1	14,0	13,3	20,3

- * Units with hydronic module
Flow rate for a maximum permitted temperature difference at the minimum leaving water temperature
- ** Units without hydronic module
Flow rate for a maximum permitted temperature difference at the minimum leaving water temperature
- *** Units with hydronic module
Maximum flow rate for an available pressure of 20 kPa (unit with low-pressure hydronic module) or 50 kPa (unit with high-pressure hydronic module)
- † Units without hydronic module
Maximum flow rate for a pressure drop of 100 kPa in the plate heat exchanger.

30WG	Condenser water flow rate, l/s			
	Minimum*	Maximum**		Maximum***
		Low pressure	High pressure	
020	0.3	3.1	3.5	3.8
025	0.3	3.3	3.8	4.1
030	0.3	3.3	3.8	4.1
035	0.4	3.5	4.1	4.7
040	0.4	3.7	4.3	5.0
045	0.4	3.9	4.5	5.4
050	0.4	4.8	6.8	7.0
060	0.5	5.5	7.0	7.5
070	0.5	5.6	7.2	7.8
080	0.6	5.8	7.4	8.2
090	0.6	7.2	7.9	9.3
110	0,5	11,4	11,7	13,1
120	0,5	12,5	12,4	15,0
140	0,6	13,2	12,9	16,7
150	0,5	12,6	13,8	16,4
170	0,5	13,6	14,4	18,9
190	0,6	14,0	14,7	20,6

- * Units with or without hydronic module
Minimum flow rate for a water temperature difference of 18 K-
Note: Operation permitted up to a value of 20 K.
- ** Units with hydronic module
Maximum flow rate for an available pressure of 20 kPa (unit with low-pressure hydronic module) or 50 kPa (unit with high-pressure hydronic module)
- *** Units without hydronic module
Maximum flow rate for a pressure drop of 100 kPa in the plate heat exchanger

30WG with option 6

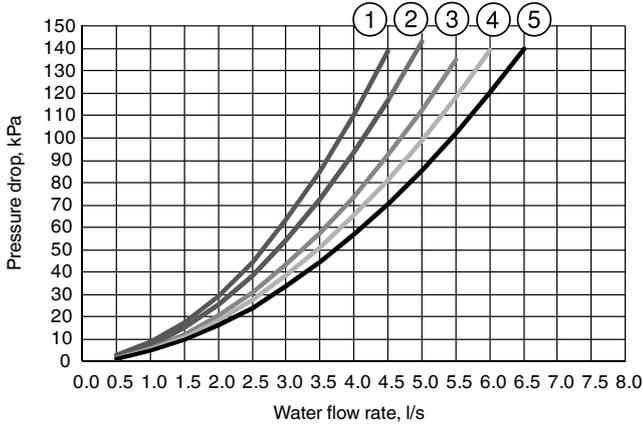
30WG	Minimum evaporator glycol solution flow rate - option 6*, l/s		
	Minimum**	Minimum***	
		Low pressure	High pressure
020	1.4	1.3	0.5
025	1.5	1.3	0.5
030	1.5	1.3	0.5
035	1.6	1.5	0.6
040	1.7	1.5	0.6
045	1.8	1.5	0.8
050	2.5	2.2	0.8
060	2.2	2.3	1.0
070	2.2	2.4	1.1
080	2.3	2.4	1.3
090	2.5	2.5	1.5
110	2	1,4	1,5
120	2	1,4	1,5
140	2	1,4	1,5
150	2	1,4	1,5
170	2	1,4	1,5
190	2	1,4	1,5

- * Option 6: Glycol solution production, very low temperature
- ** Units with hydronic module
Minimum flow rate for a maximum permitted temperature difference at the minimum leaving water temperature
- *** Units without hydronic module
Minimum flow rate for a maximum permitted temperature difference at the minimum leaving water temperature

Plate heat exchanger pressure drop (includes internal piping)

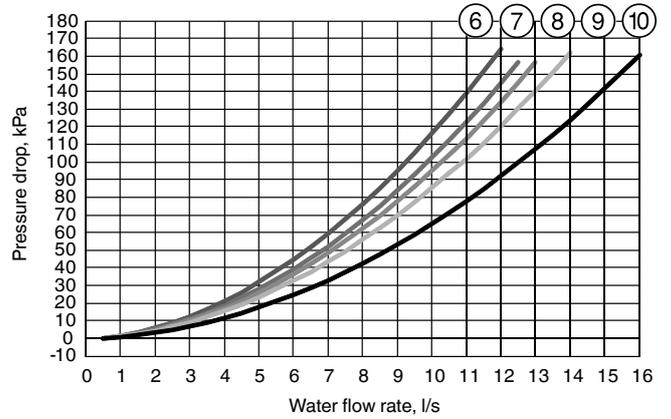
Evaporator - standard unit without hydronic module - Water only

61WG/30WG/30WGA 020-045



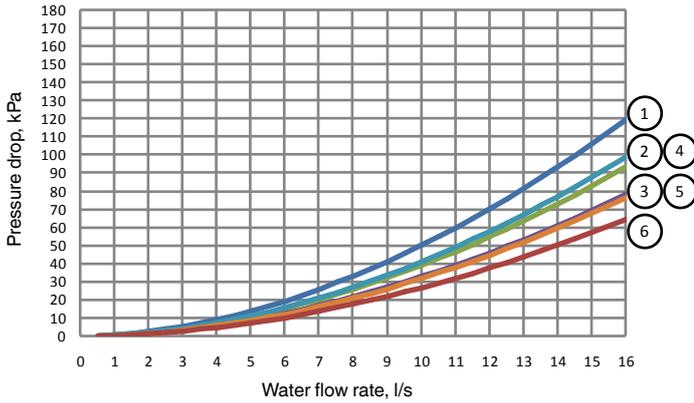
- 1 61WG/30WG/30WGA 020
- 2 61WG/30WG/30WGA 025 to 61WG/30WG/30WGA 030
- 3 61WG/30WG/30WGA 035
- 4 61WG/30WG/30WGA 040
- 5 61WG/30WG/30WGA 045

61WG/30WG/30WGA 050-090



- 6 61WG/30WG/30WGA 050
- 7 61WG/30WG/30WGA 060
- 8 61WG/30WG/30WGA 070
- 9 61WG/30WG/30WGA 080
- 10 61WG/30WG/30WGA 090

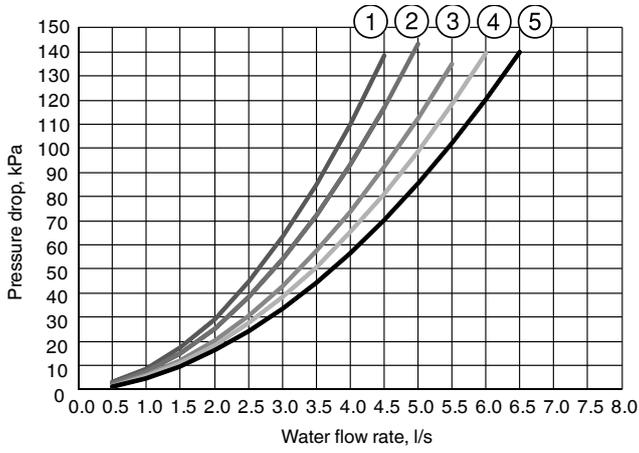
30WG 110-190



- 1 30WG 110
- 2 30WG 120
- 3 30WG 140
- 4 30WG 150
- 5 30WG 170
- 6 30WG 190

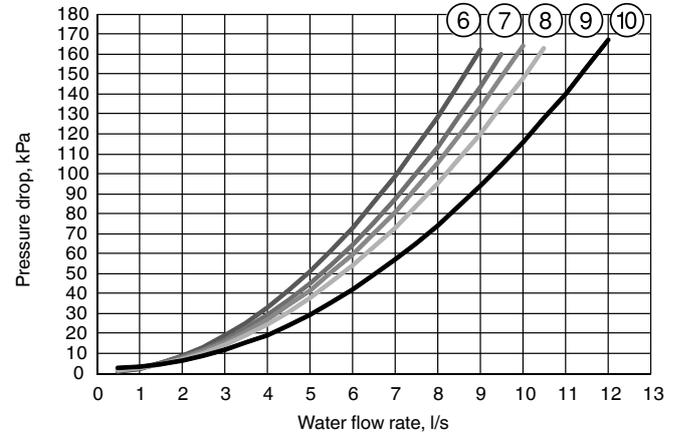
Condenser - standard unit without hydronic module - Water only

61WG/30WG 020-045



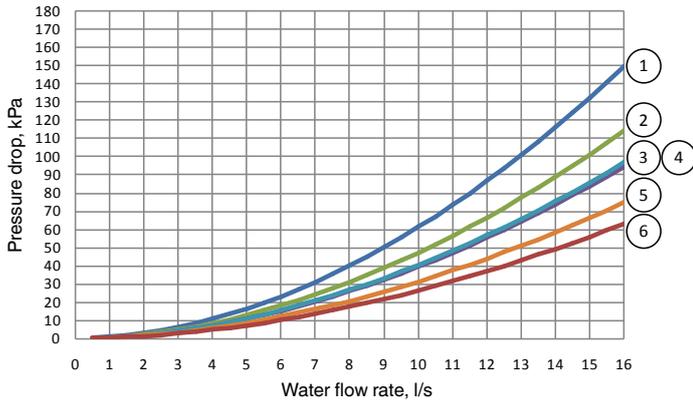
- 1 61WG/30WG 020
- 2 61WG/30WG 025 to 030
- 3 61WG/30WG 035
- 4 61WG/30WG 040
- 5 61WG/30WG 045

61WG/30WG 050-090



- 6 61WG/30WG 050
- 7 61WG/30WG 060
- 8 61WG/30WG 070
- 9 61WG/30WG 080
- 10 61WG/30WG 090

30WG 110-190



- 1 30WG 110
- 2 30WG 120
- 3 30WG 140
- 4 30WG 150
- 5 30WG 170
- 6 30WG 190

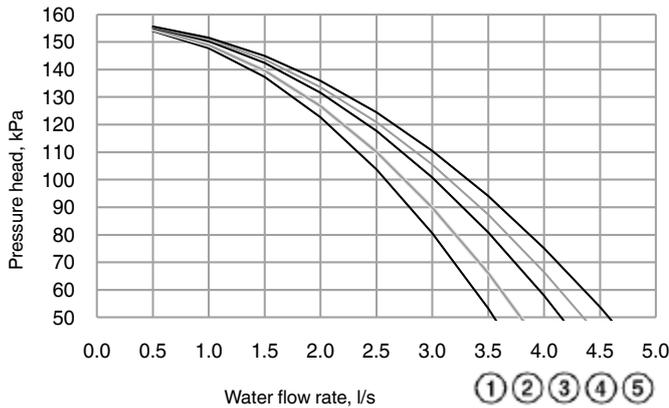
Available external static pressure, units with hydronic module (variable-speed high-pressure pumps)

Data applicable for:

- Fresh water (without antifreeze) 20 °C
- In case of use of the glycol, the maximum water flow is reduced
- The curves represented below are in normal conditions: leaving water on the back side of the unit (without option 274).

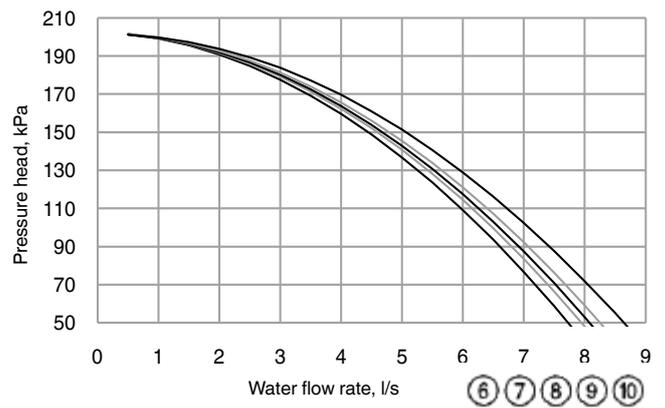
Evaporator

61WG/30WG/30WGA 020-045



- 1 61WG/30WG/30WGA 020
- 2 61WG/30WG/30WGA 025 to 030
- 3 61WG/30WG/30WGA 035
- 4 61WG/30WG/30WGA 040
- 5 61WG/30WG/30WGA 045

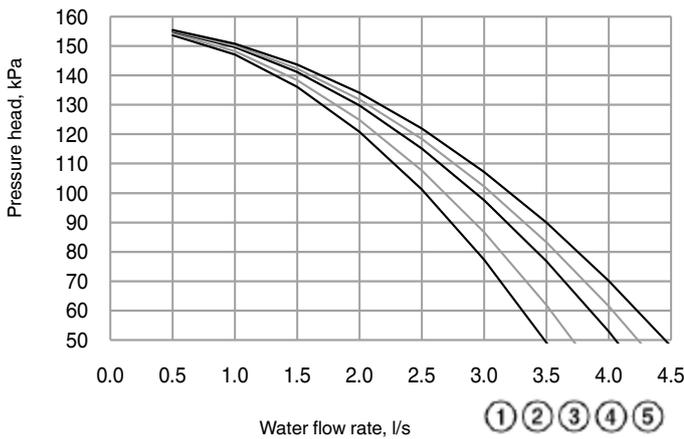
61WG/30WG/30WGA 050-090



- 6 61WG/30WG/30WGA 050
- 7 61WG/30WG/30WGA 060
- 8 61WG/30WG/30WGA 070
- 9 61WG/30WG/30WGA 080
- 10 61WG/30WG/30WGA 090

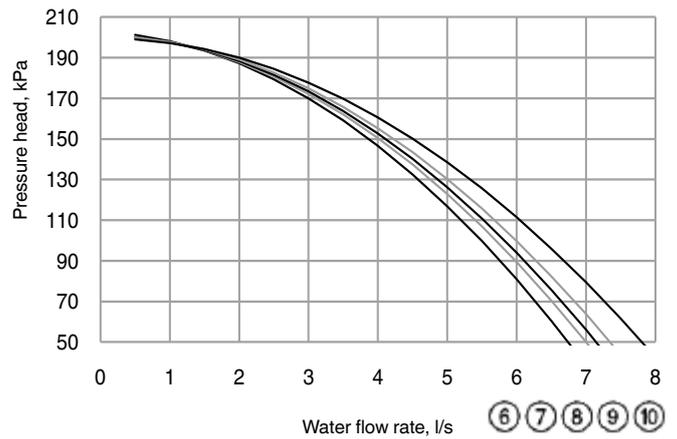
Condenser

61WG/30WG 020-045



- 1 61WG-30WG 020
- 2 61WG-30WG 025 to 030
- 3 61WG-30WG 035
- 4 61WG-30WG 040
- 5 61WG-30WG 045

61WG/30WG 050-090



- 6 61WG-30WG 050
- 7 61WG-30WG 060
- 8 61WG-30WG 070
- 9 61WG-30WG 080
- 10 61WG-30WG 090

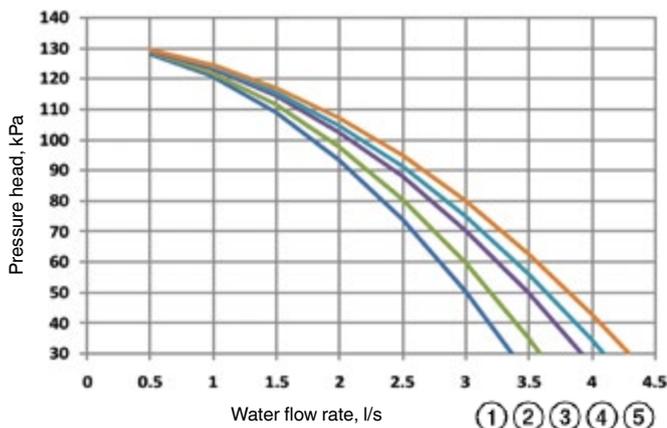
Available external static pressure, units with hydronic module (fixed-speed low-pressure pumps)

Data applicable for:

- Fresh water 20 °C
- In case of use of the glycol, the maximum water flow is reduced
- The curves represented below are in normal conditions: leaving water on the back side of the unit (without option 274).

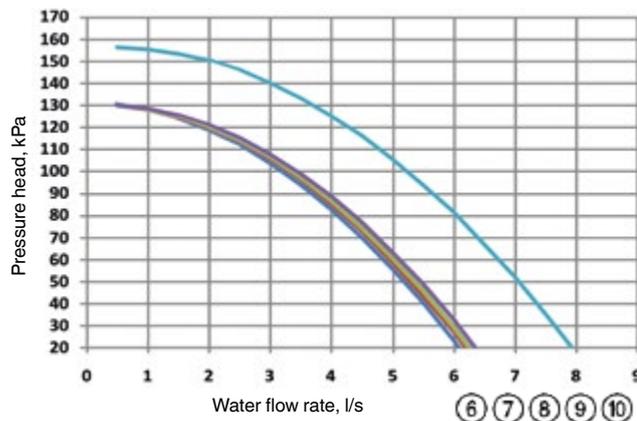
Evaporator

61WG/30WG/30WGA 020-045



- 1 61WG/30WG/30WGA 020
- 2 61WG/30WG/30WGA 025 to 030
- 3 61WG/30WG/30WGA 035
- 4 61WG/30WG/30WGA 040
- 5 61WG/30WG/30WGA 045

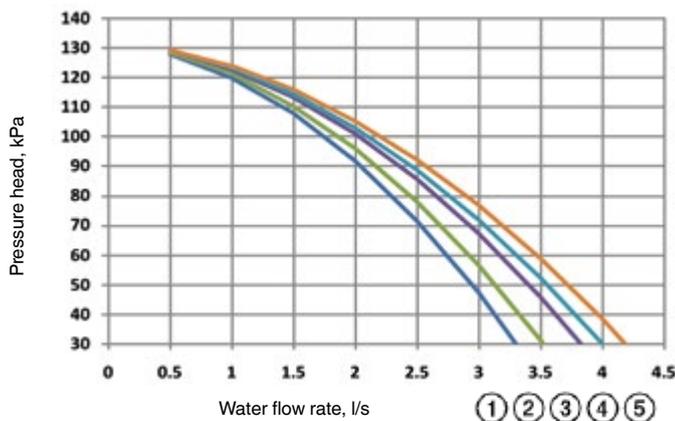
61WG/30WG/30WGA 050-090



- 6 61WG/30WG/30WGA 050
- 7 61WG/30WG/30WGA 060
- 8 61WG/30WG/30WGA 070
- 9 61WG/30WG/30WGA 080
- 10 61WG/30WG/30WGA 090

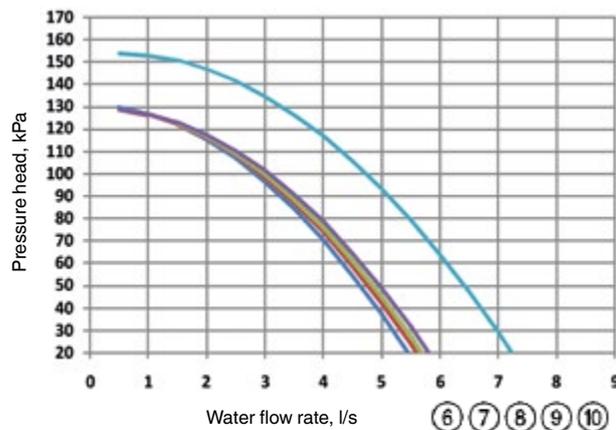
Condenser

61WG/30WG 020-045



- 1 61WG/30WG 020
- 2 61WG/30WG 025 to 030
- 3 61WG/30WG 035
- 4 61WG/30WG 040
- 5 61WG/30WG 045

61WG/30WG 050-090

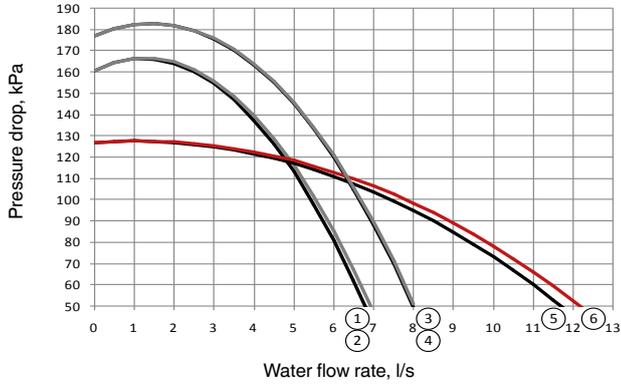


- 6 61WG/30WG 050
- 7 61WG/30WG 060
- 8 61WG/30WG 070
- 9 61WG/30WG 080
- 10 61WG/30WG 090

Available external pressure, units with hydronic module (fixed-speed low-pressure single pumps)

Evaporator 30WG

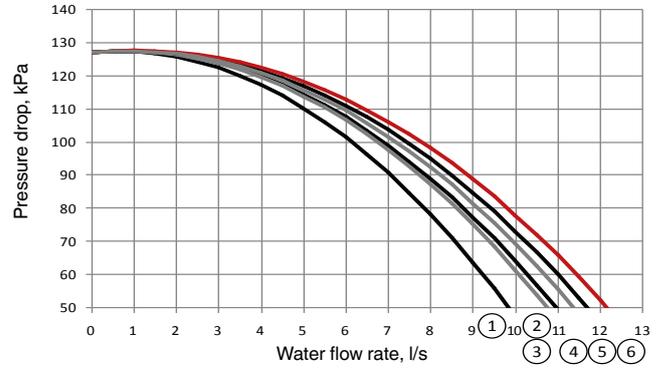
Sizes 110-190



- 1 30WG 110
- 2 30WG 120
- 3 30WG 140
- 4 30WG 150
- 5 30WG 170
- 6 30WG 190

Condenser 30WG

Sizes 110-190

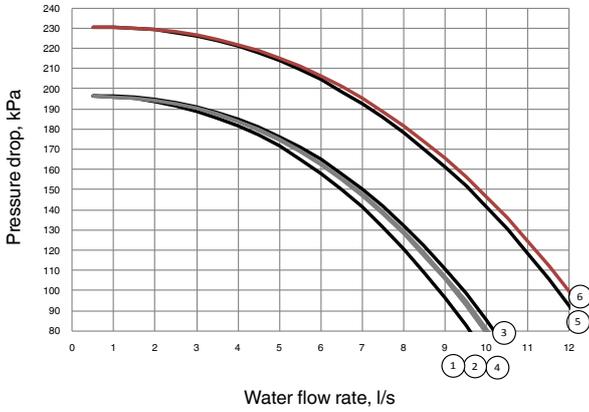


- 1 30WG 110
- 2 30WG 120
- 3 30WG 140
- 4 30WG 150
- 5 30WG 170
- 6 30WG 190

Available external pressure, units with hydronic module (variable-speed high-pressure double pumps)

Evaporator 30WG

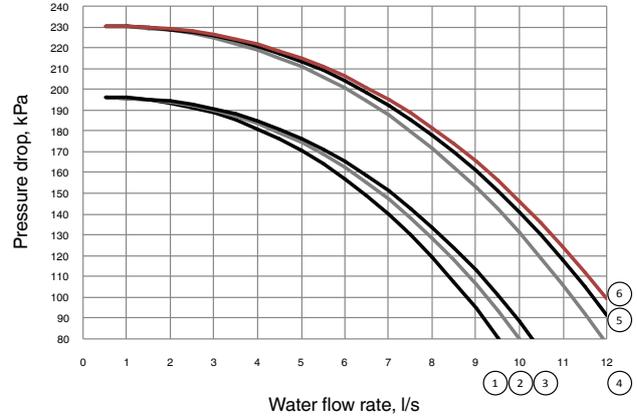
Sizes 110-190



- 1 30WG 110
- 2 30WG 120
- 3 30WG 140
- 4 30WG 150
- 5 30WG 170
- 6 30WG 190

Condenser 30WG

Sizes 110-190

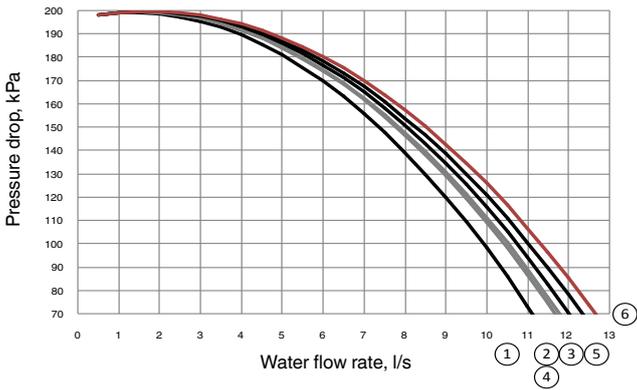


- 1 30WG 110
- 2 30WG 120
- 3 30WG 140
- 4 30WG 150
- 5 30WG 170
- 6 30WG 190

Available external pressure, units with hydronic module (variable-speed high-pressure single pumps)

Evaporator 30WG

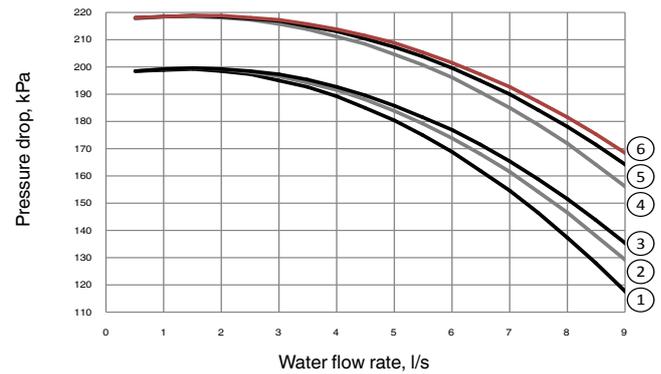
Sizes 110-190



- 1 30WG 110
- 2 30WG 120
- 3 30WG 140
- 4 30WG 150
- 5 30WG 170
- 6 30WG 190

Condenser 30WG

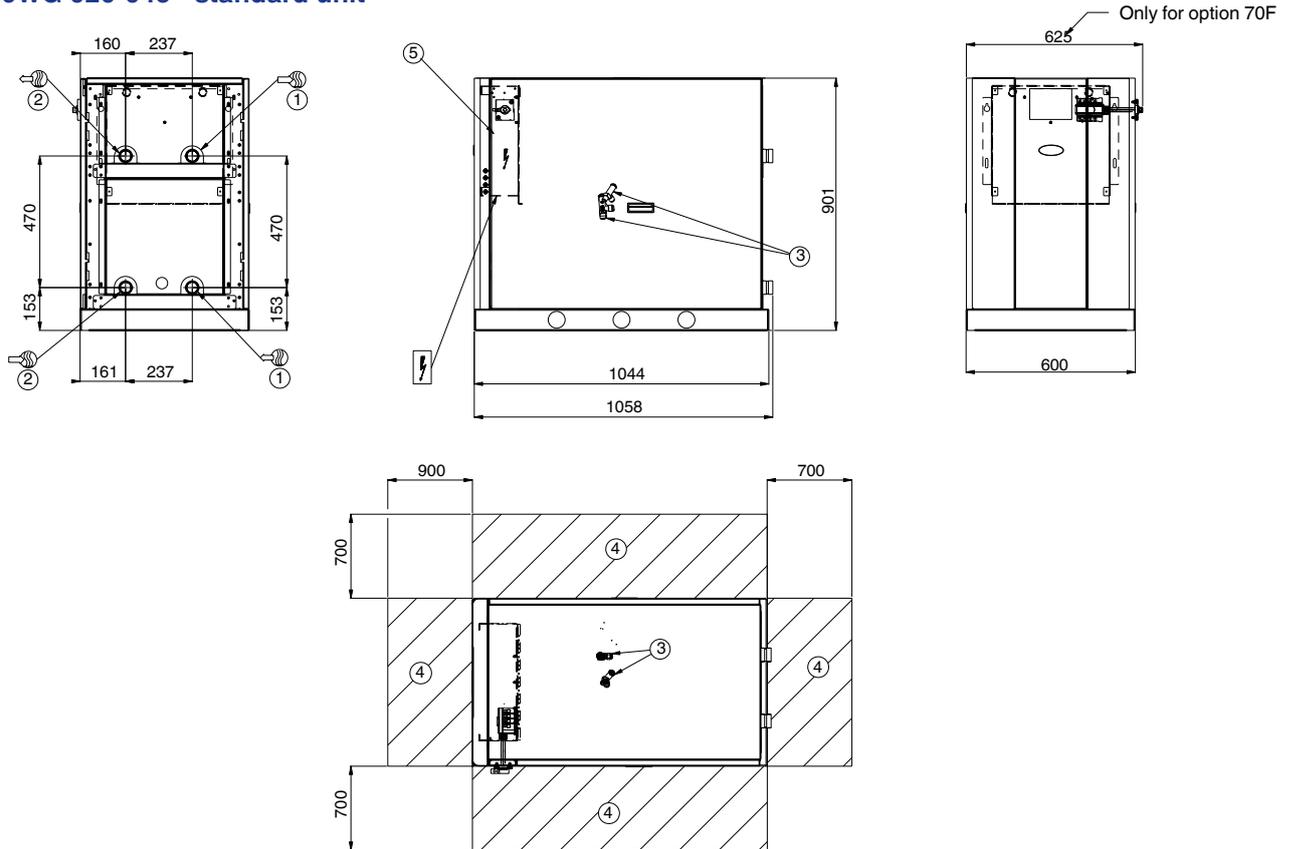
Sizes 110-190



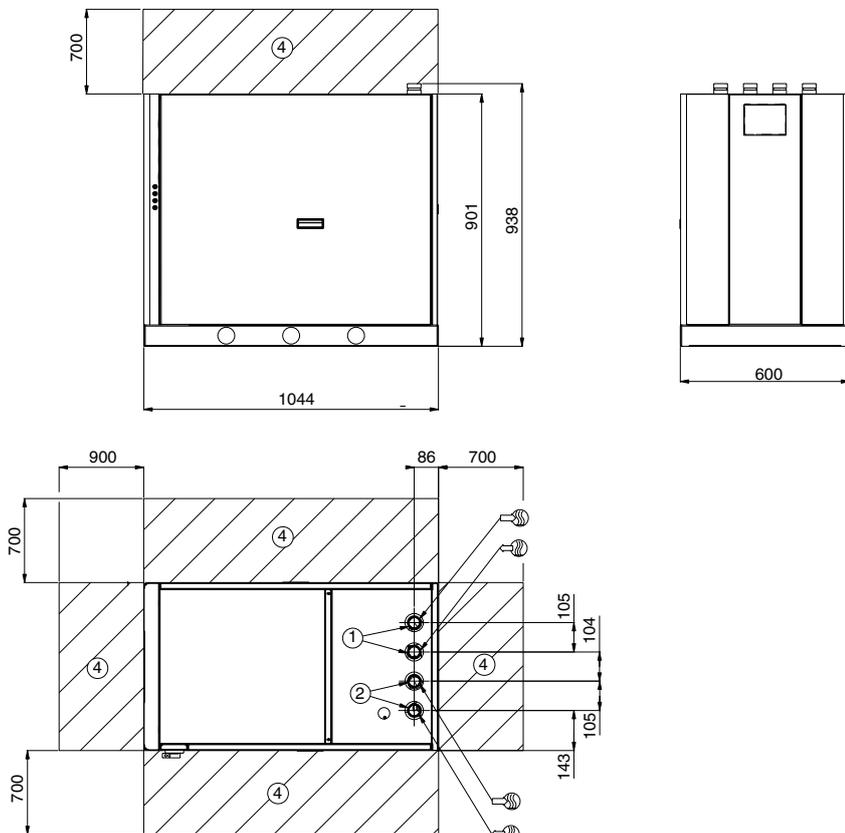
- 1 30WG 110
- 2 30WG 120
- 3 30WG 140
- 4 30WG 150
- 5 30WG 170
- 6 30WG 190

Dimensions/clearances

61WG/30WG 020-045 - standard unit



61WG/30WG 020-045 - unit with top connections (option 274)



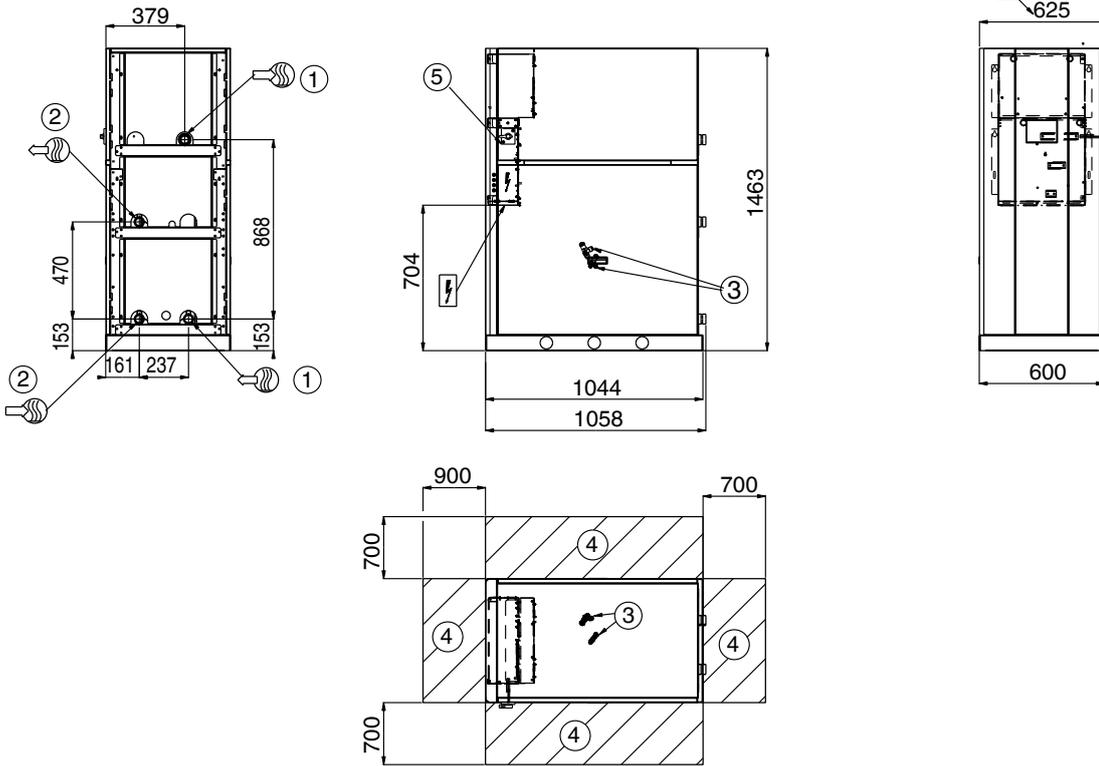
Legend:
All dimensions are in mm.

- ① Evaporator
- ② Condenser
- ③ Safety valve
- ④ Clearances required for maintenance (see note)
- ⑤ Control box
- Water inlet
- Water outlet
- Power wiring connection

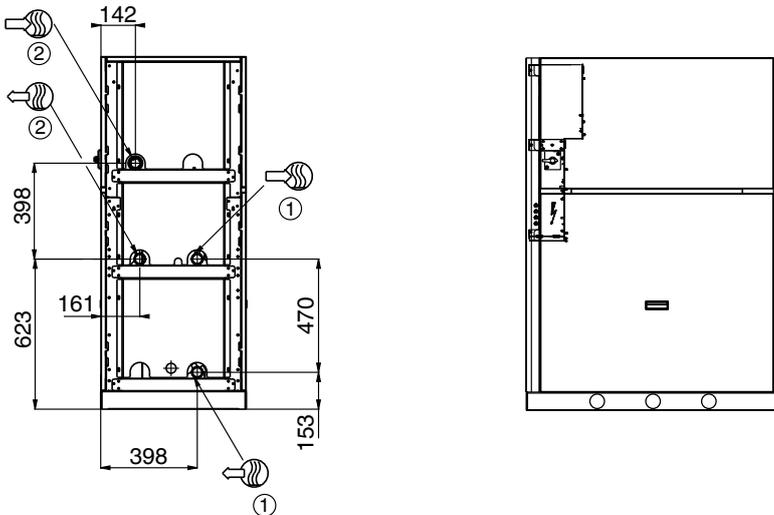
NOTE: Non-contractual drawings. Refer to the certified dimensional drawings available on request, when designing an installation.

61WG/30WG 020-045 - unit with evaporator hydronic module (option 116)

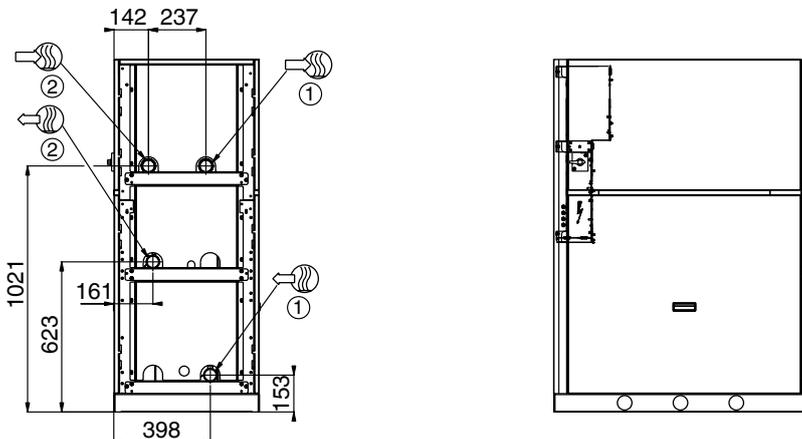
Only for option 70F



61WG/30WG 020-045 - unit with condenser hydronic module (option 270)



61WG/30WG 020-045 - unit with evaporator/condenser hydronic modules (options 116 + 270)

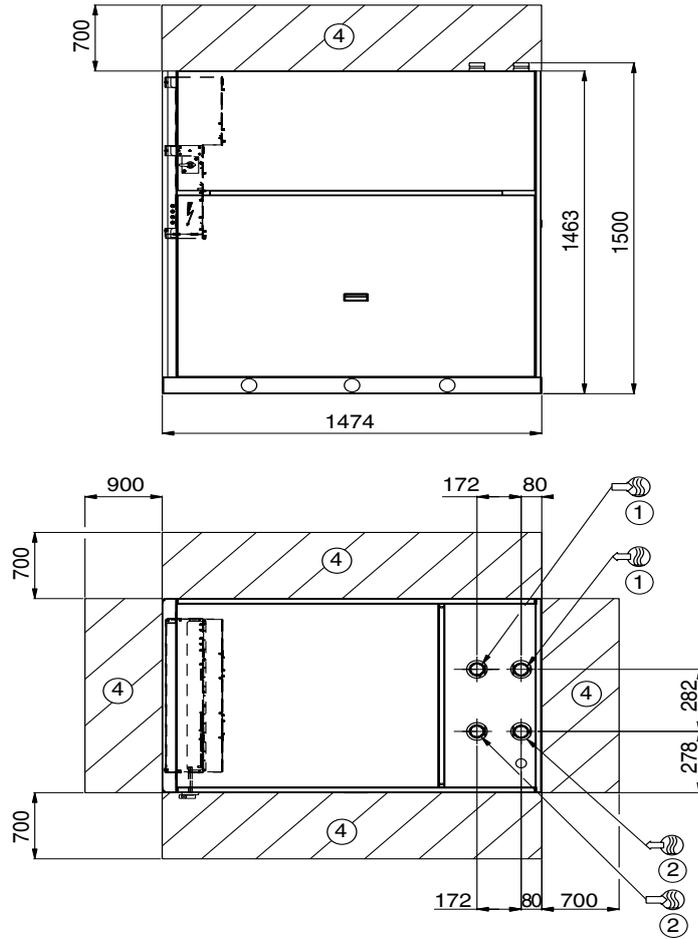


Legend:
All dimensions are in mm.

- ① Evaporator
- ② Condenser
- ③ Safety valve
- ④ Clearances required for maintenance (see note)
- ⑤ Control box
- ⬇️ Water inlet
- ⬆️ Water outlet
- ⚡ Power wiring connection

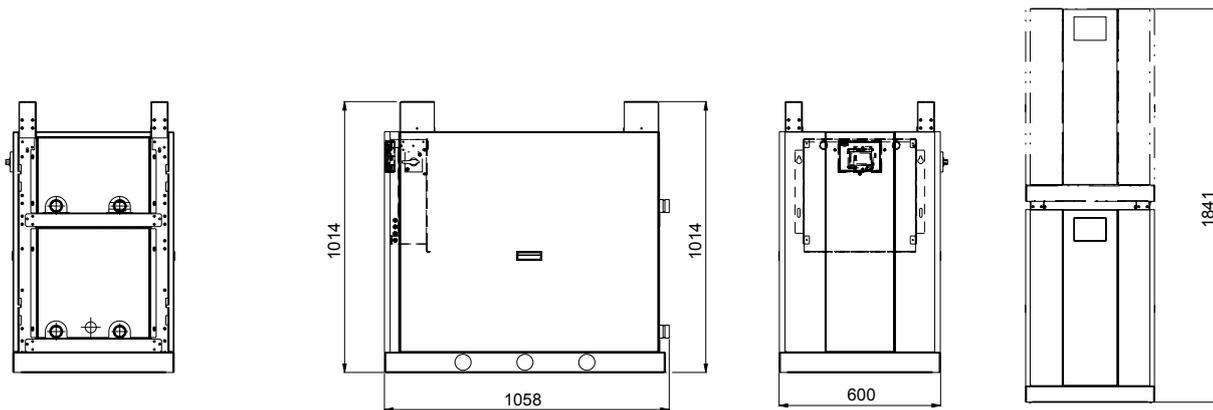
NOTE: Non-contractual drawings. Refer to the certified dimensional drawings available on request, when designing an installation.

**61WG/30WG 020-045 - unit with hydronic module and top connections
(options 116 + 274 or 270 + 274 or 116 + 270 + 274)**



61WG/30WG 020-045 - stackable unit (option 273)

NOTE: The water and electrical connections are identical to those of the standard unit.



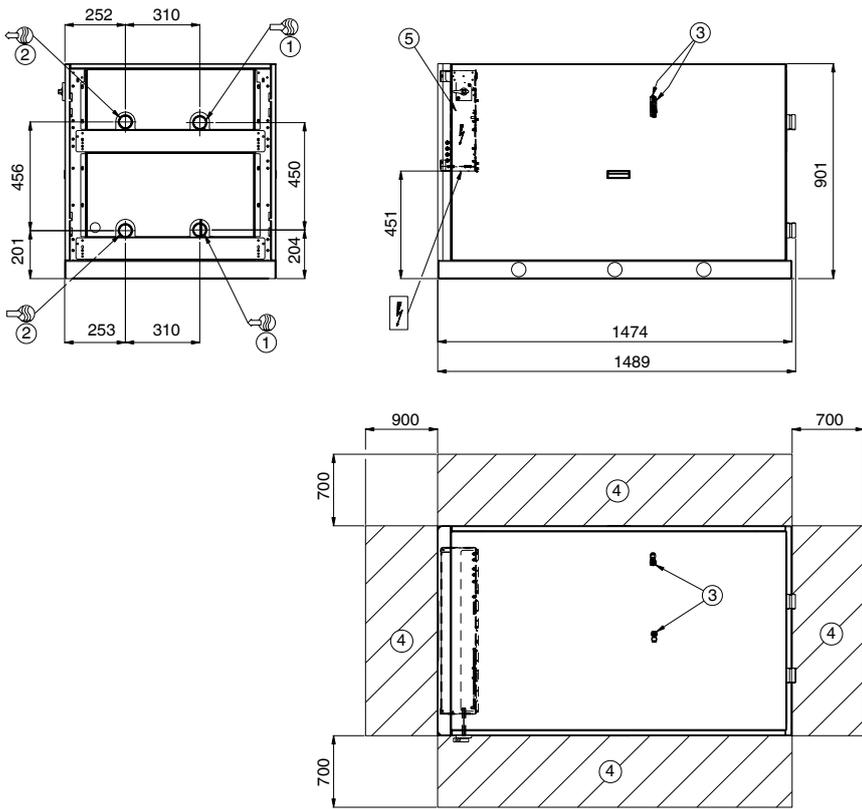
Legend:

All dimensions are in mm.

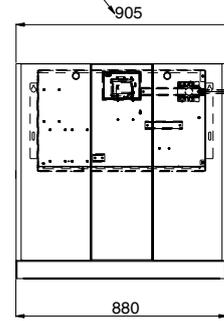
- ① Evaporator
- ② Condenser
- ③ Safety valve
- ④ Clearances required for maintenance (see note)
- ⑤ Control box
- Water inlet
- Water outlet
- Power wiring connection

NOTE: Non-contractual drawings. Refer to the certified dimensional drawings available on request, when designing an installation.

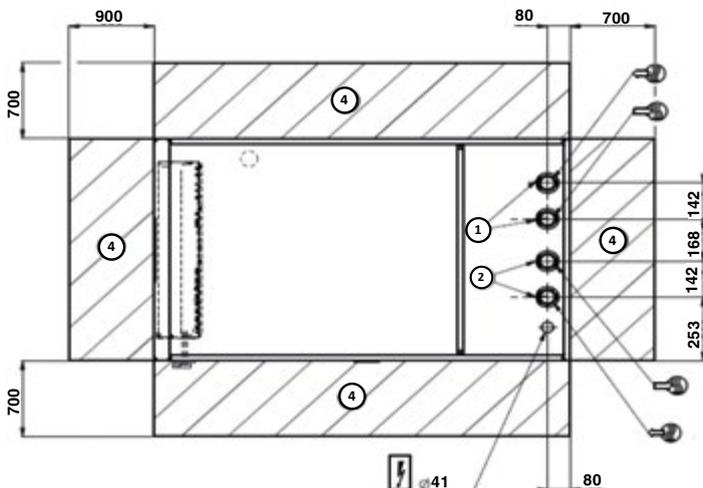
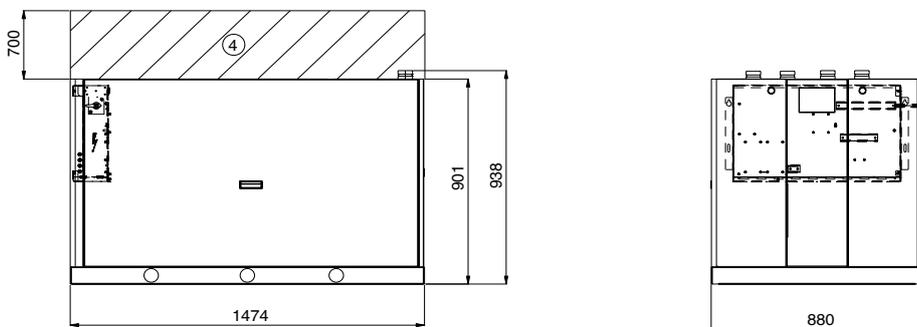
61WG/30WG 050-090 - standard unit



Only for option 70F



61WG/30WG 050-090 - unit with top connections (option 274)



Legend:

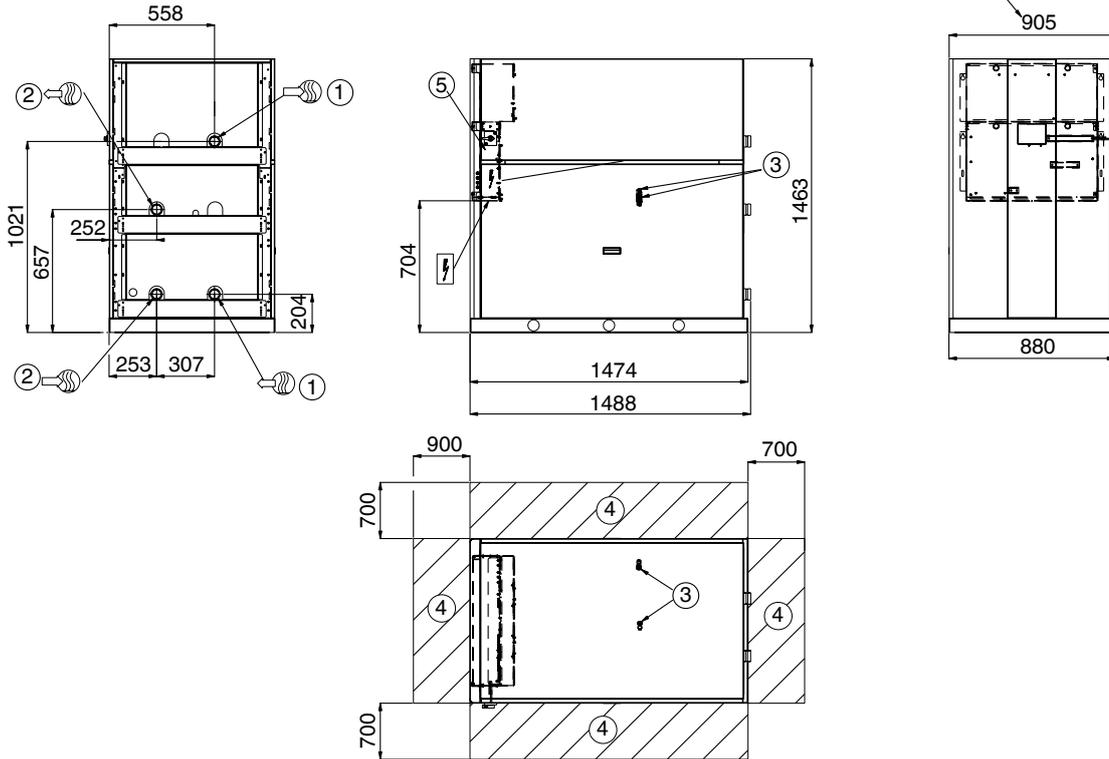
All dimensions are in mm.

- ① Evaporator
- ② Condenser
- ③ Safety valve
- ④ Clearances required for maintenance (see note)
- ⑤ Control box
- Water inlet
- Water outlet
- Power wiring connection

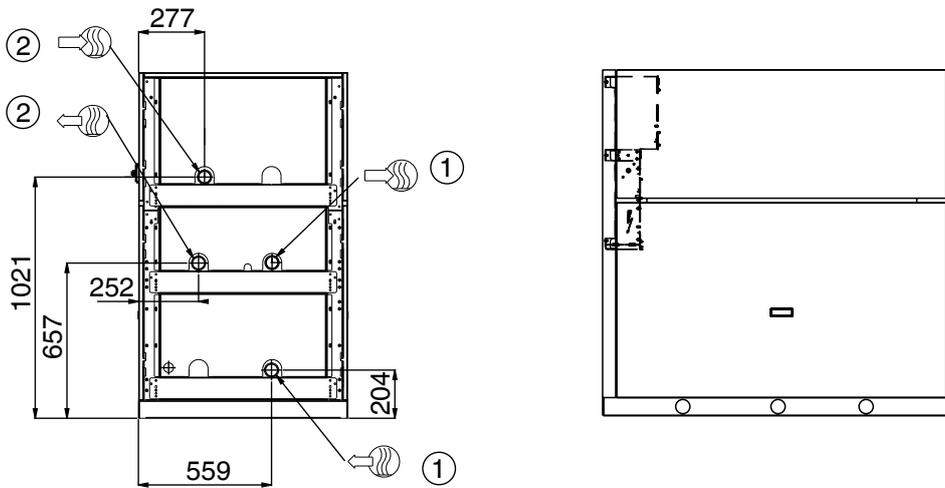
NOTE: Non-contractual drawings. Refer to the certified dimensional drawings available on request, when designing an installation.

61WG/30WG 050-090 - unit with evaporator hydronic module (option 116)

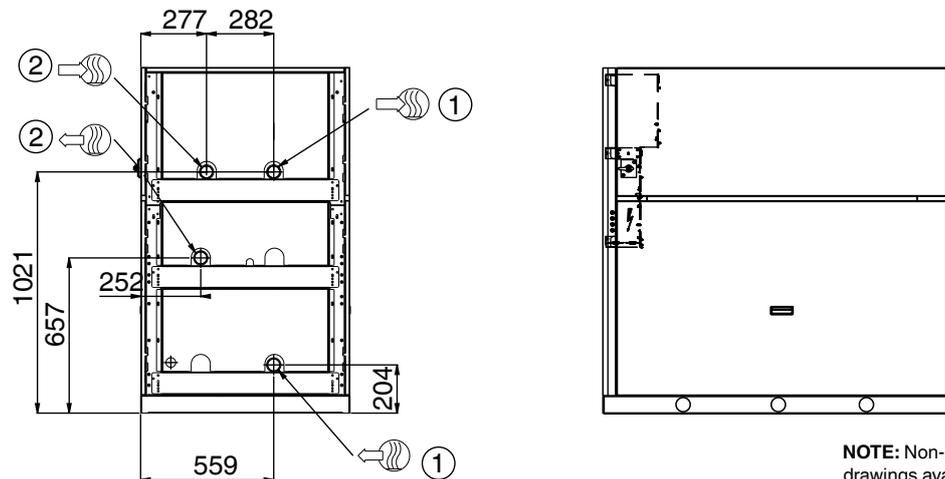
Only for option 70F



61WG/30WG 050-090 - unit with condenser hydronic module (option 270)



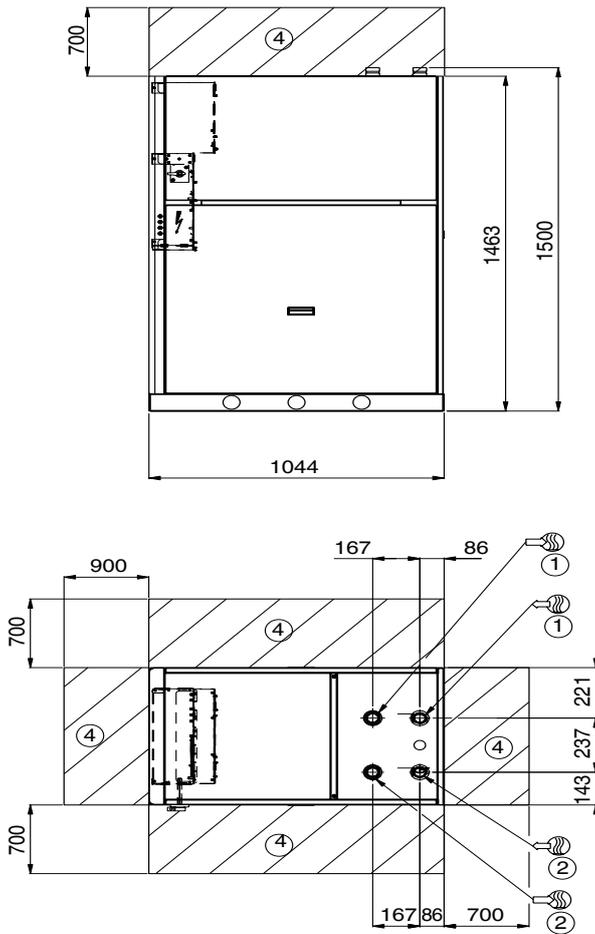
61WG/30WG 050-090 - unit with evaporator/condenser hydronic modules (options 116 + 270)



- Legend:**
All dimensions are in mm.
- ① Evaporator
 - ② Condenser
 - ③ Safety valve
 - ④ Clearances required for maintenance (see note)
 - ⑤ Control box
 - Water inlet
 - Water outlet
 - Power wiring connection

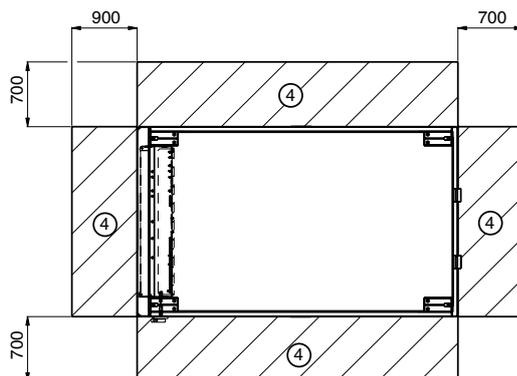
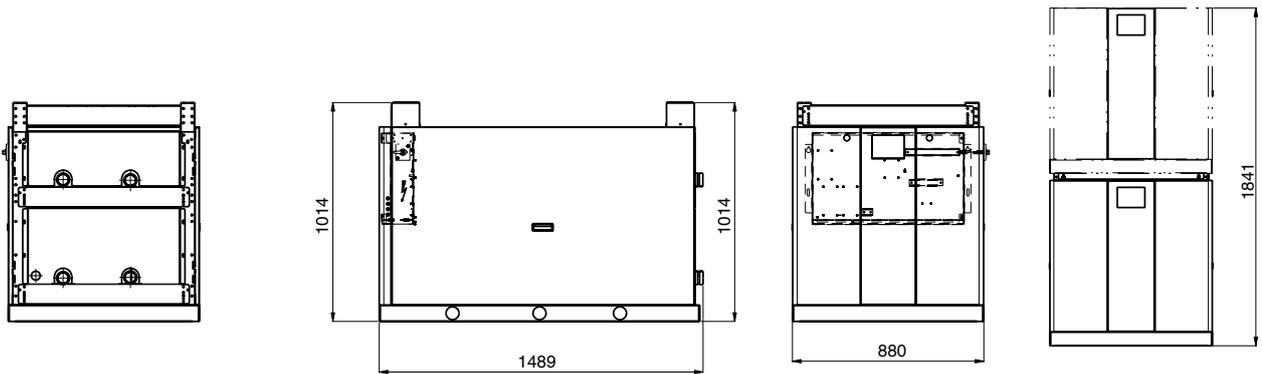
NOTE: Non-contractual drawings. Refer to the certified dimensional drawings available on request, when designing an installation.

**61WG/30WG 050-090 - unit with hydronic module and top connections
(options 116 + 274 or 270 + 274 or 116 + 270 + 274)**



61WG/30WG 050-090 - stackable unit (option 273)

NOTE: The water and electrical connections are identical to those of the standard unit.



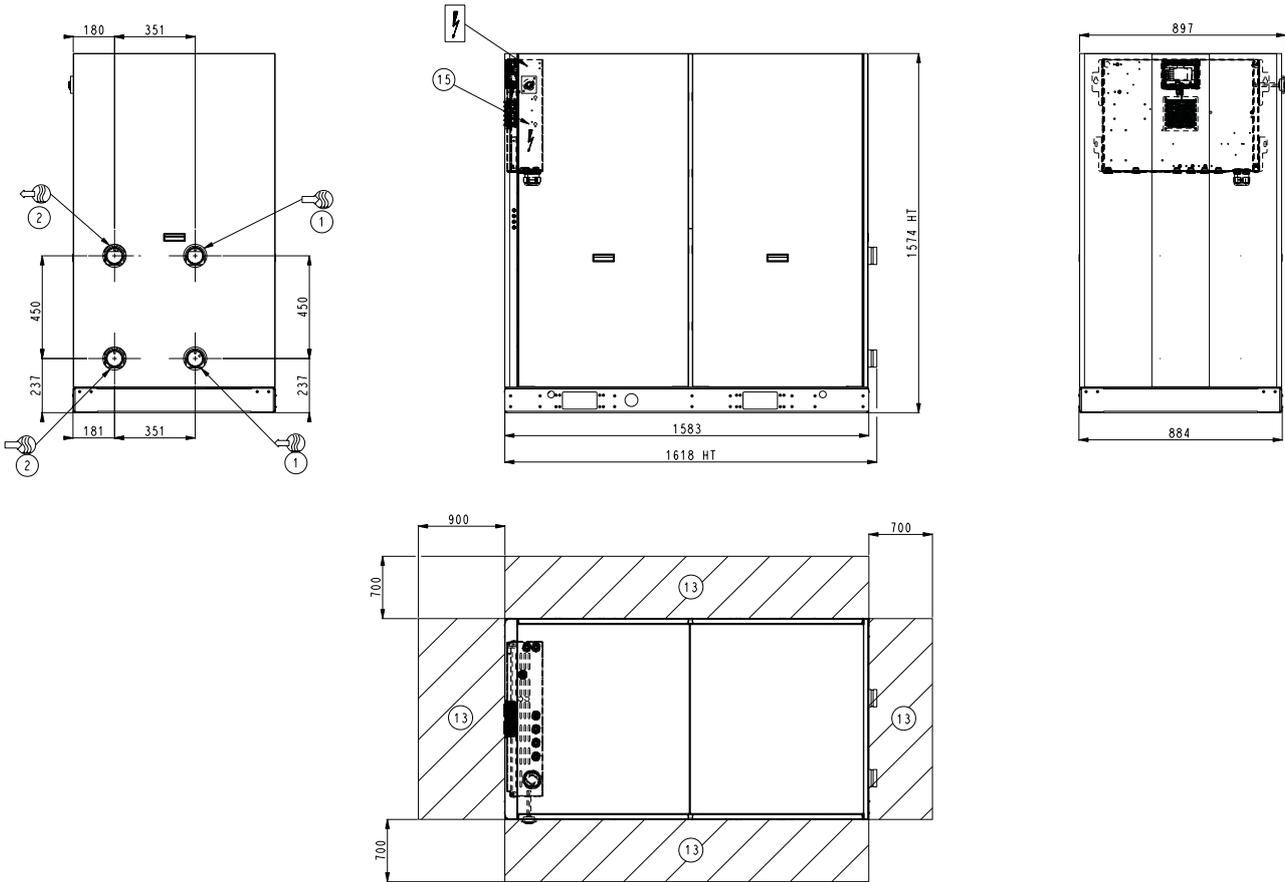
Legend:

All dimensions are in mm.

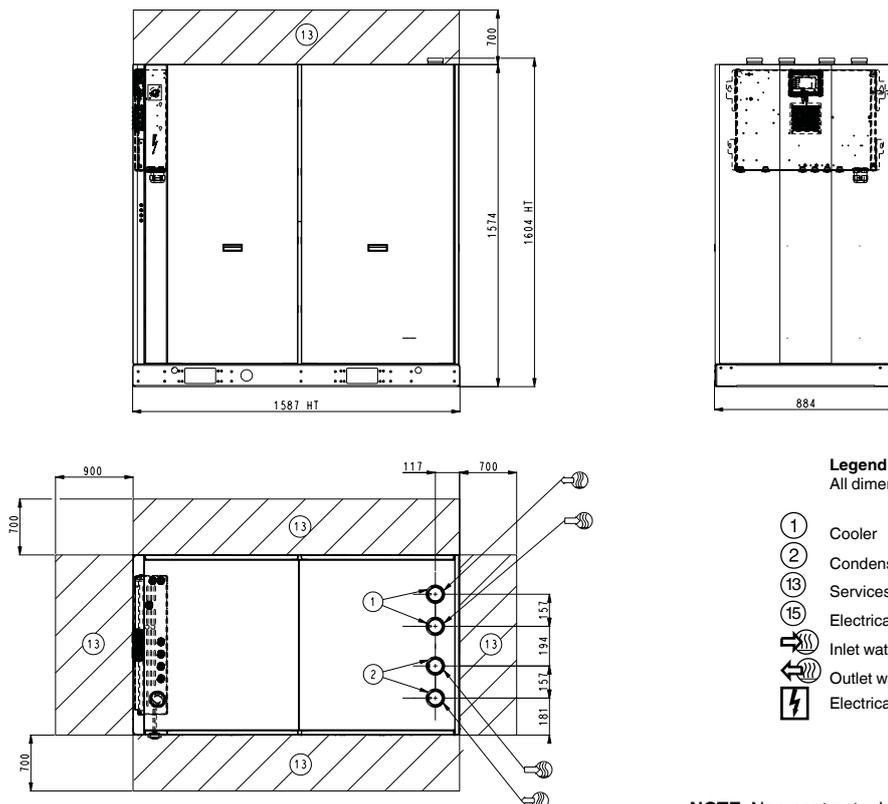
- ① Evaporator
- ② Condenser
- ③ Safety valve
- ④ Clearances required for maintenance (see note)
- ⑤ Control box
- Water inlet
- Water outlet
- Power wiring connection

NOTE: Non-contractual drawings. Refer to the certified dimensional drawings available on request, when designing an installation.

30WG 110-140 - standard unit



30WG 110-140 - unit with top connections (option 274)

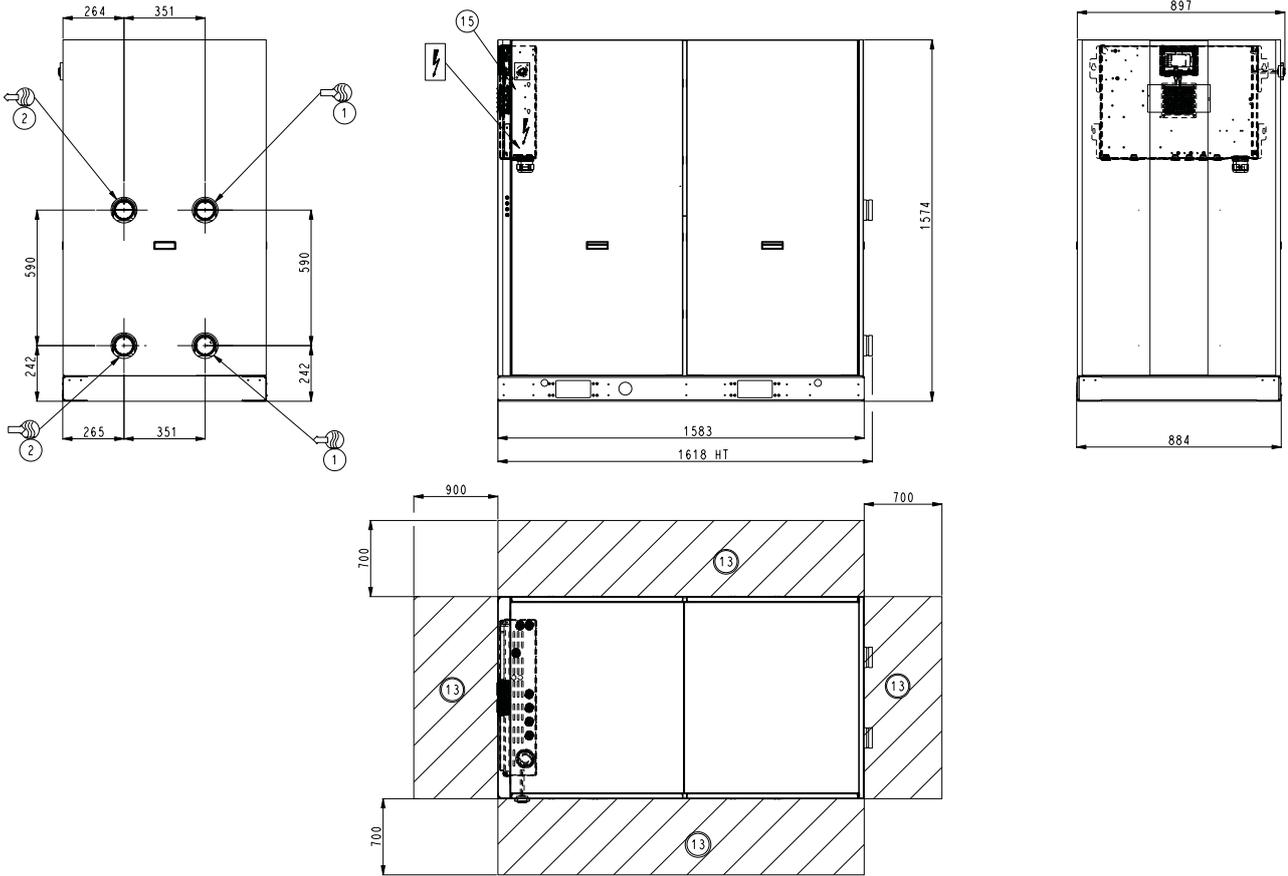


Legend:
All dimensions are in mm.

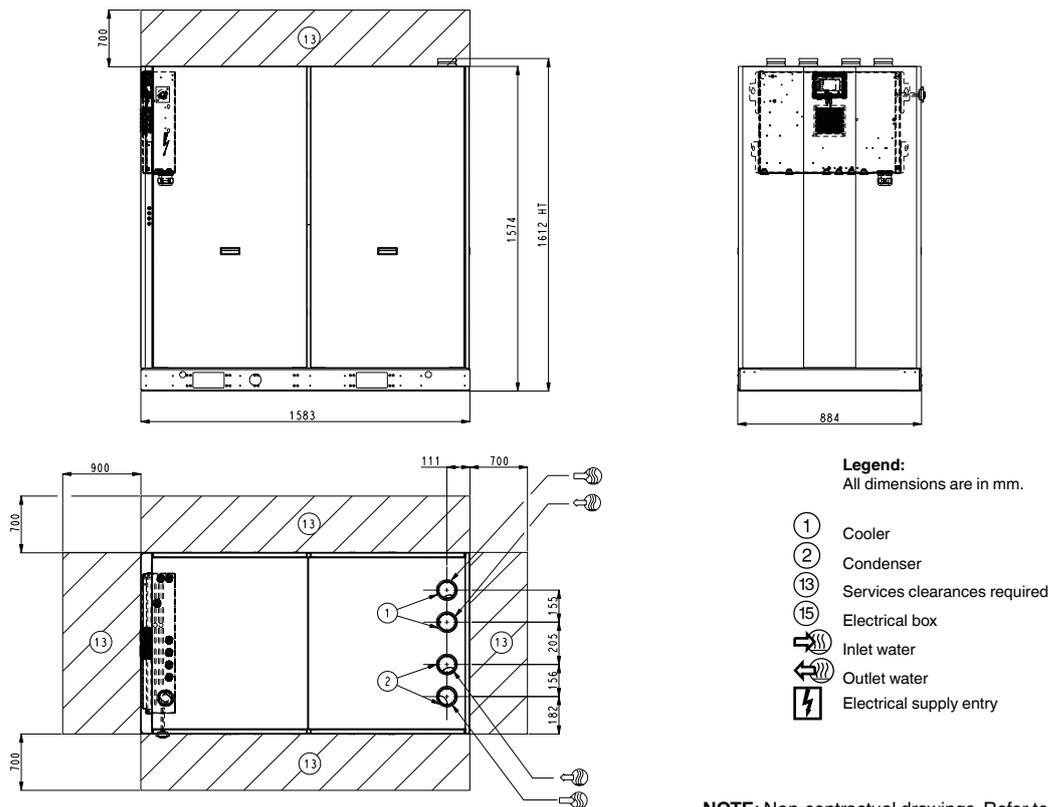
- ① Cooler
- ② Condenser
- ⑬ Services clearances required
- ⑮ Electrical box
- ⚡ Inlet water
- ⚡ Outlet water
- ⚡ Electrical supply entry

NOTE: Non-contractual drawings. Refer to the certified dimensional drawings available on request, when designing an installation.

30WG 150-190 - standard unit



30WG 150-190 - unit with top connections (option 274)

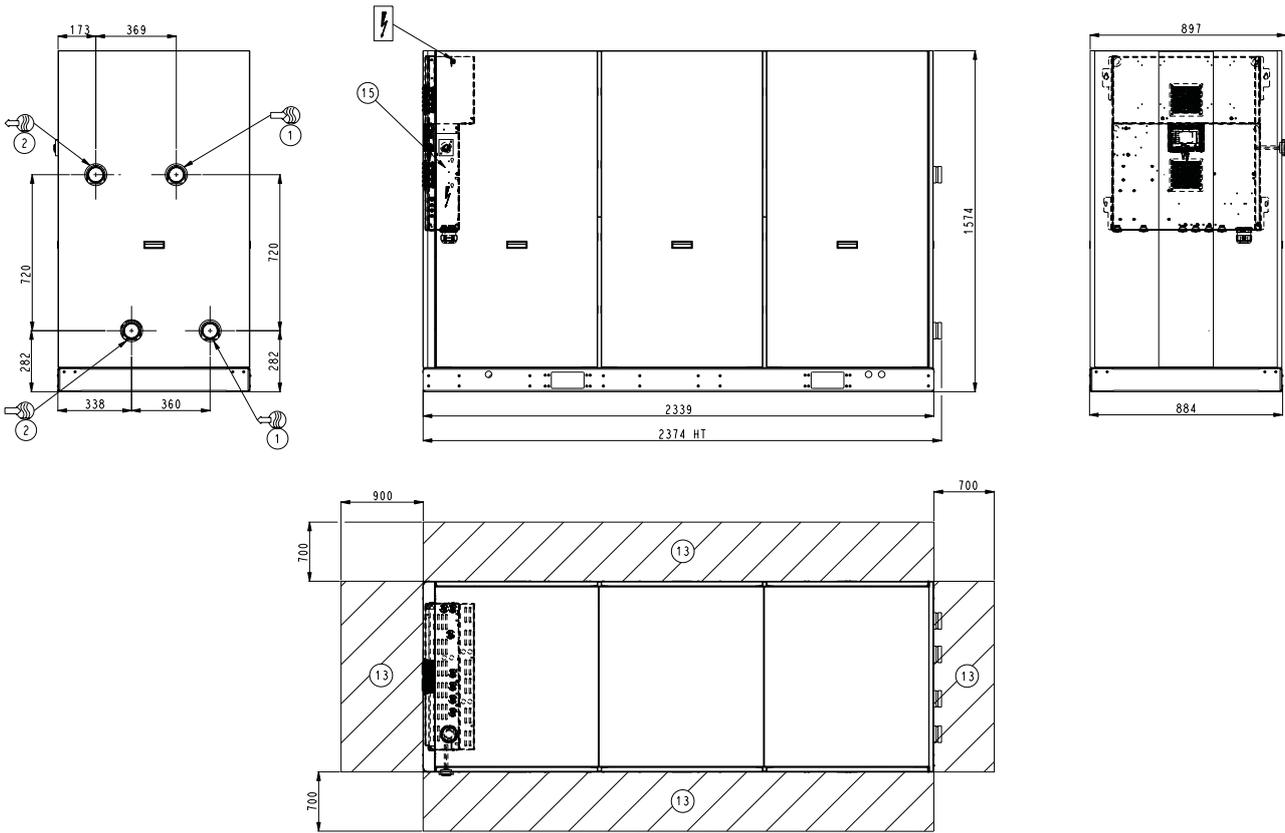


Legend:
All dimensions are in mm.

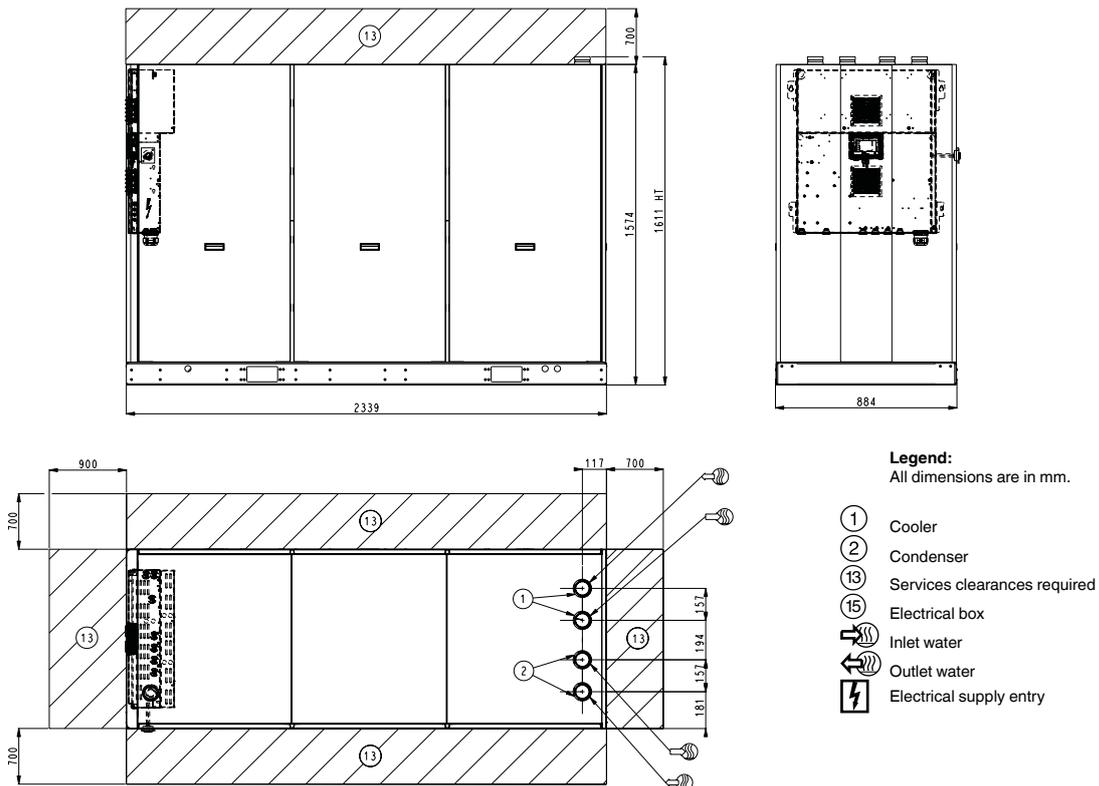
- ① Cooler
- ② Condenser
- ⑬ Services clearances required
- ⑮ Electrical box
- ⬇️ Inlet water
- ⬆️ Outlet water
- ⚡ Electrical supply entry

NOTE: Non-contractual drawings. Refer to the certified dimensional drawings available on request, when designing an installation.

30WG 110-140 - unit with hydronic kit (option 116-270)

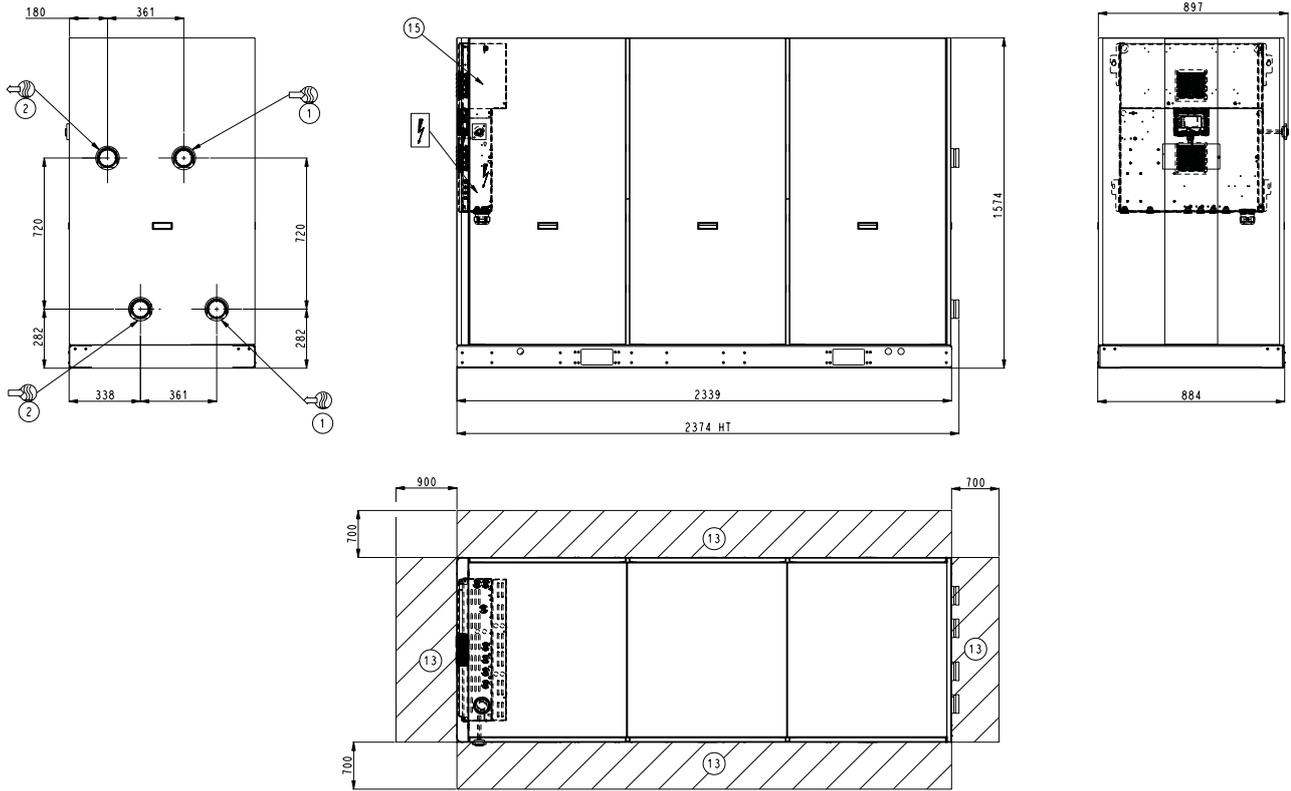


30WG 110-140 - unit with hydronic kit and top connections (option 116-270 and 274)

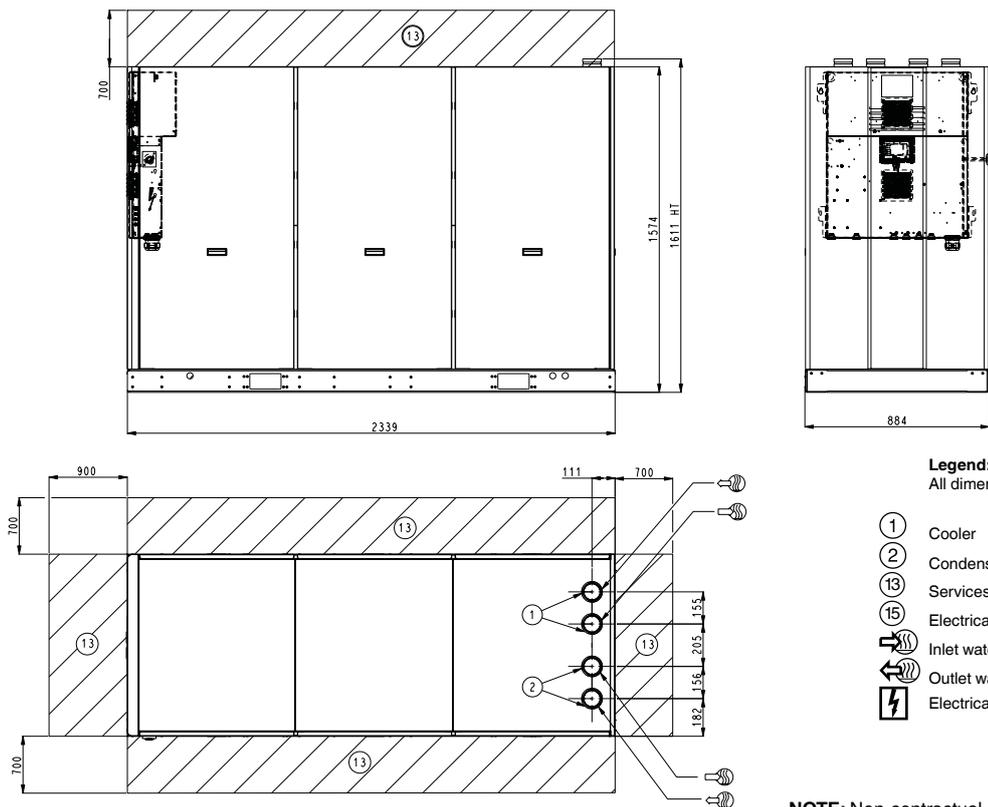


NOTE: Non-contractual drawings. Refer to the certified dimensional drawings available on request, when designing an installation.

30WG 150-190 - unit with hydronic kit (option 116-270)



30WG 150-190 - unit with hydronic kit and top connections (option 116-270 and 274)



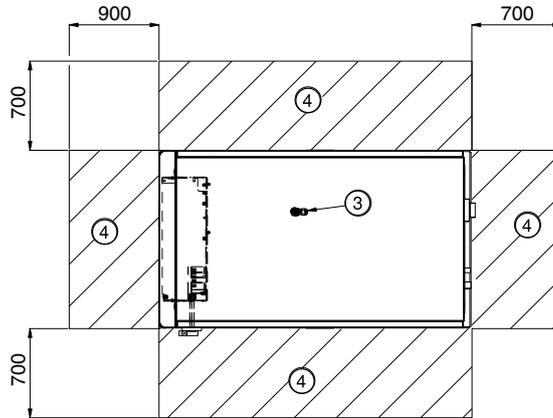
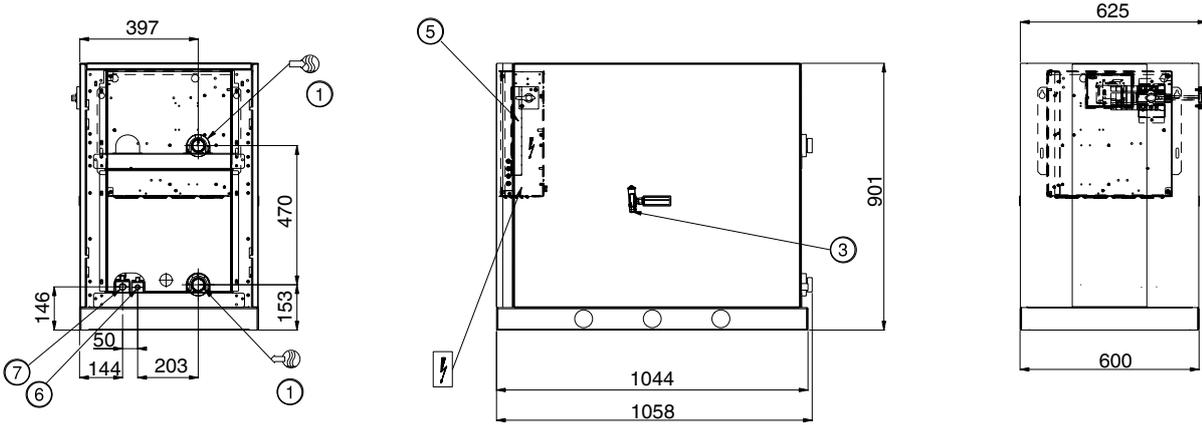
Legend:

All dimensions are in mm.

- ① Cooler
- ② Condenser
- ⑬ Services clearances required
- ⑮ Electrical box
- Inlet water
- Outlet water
- Electrical supply entry

NOTE: Non-contractual drawings. Refer to the certified dimensional drawings available on request, when designing an installation.

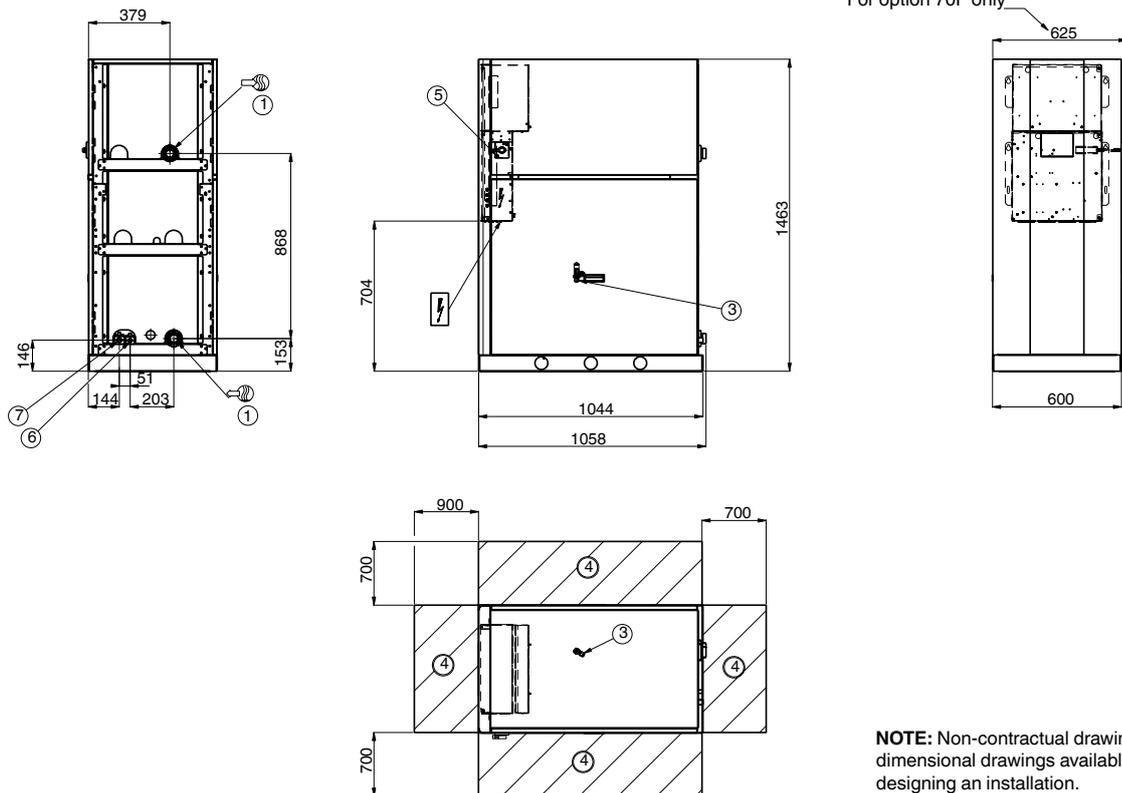
30WGA 020-045 - standard unit



Legend:
All dimensions are in mm

- ① Evaporator
- ③ Safety valve
- ④ Clearances required for maintenance (see note)
- ⑤ Control box
- ⑥ Refrigerant inlet
- ⑦ Refrigerant outlet
- Water inlet
- Water outlet
- Power wiring connection

30WGA 020-045 - unit with evaporator hydronic module (option 116)

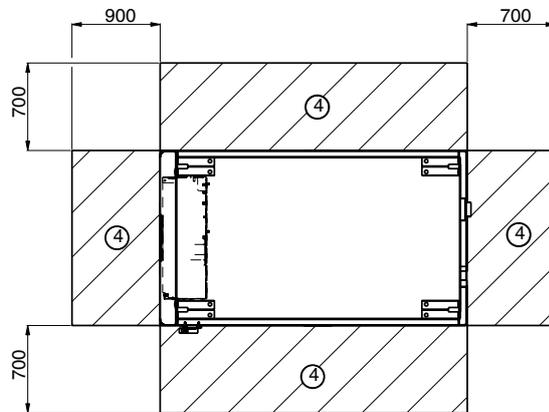
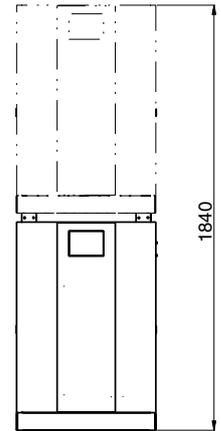
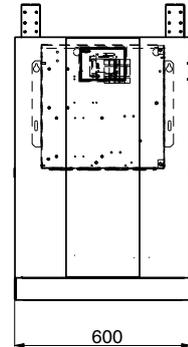
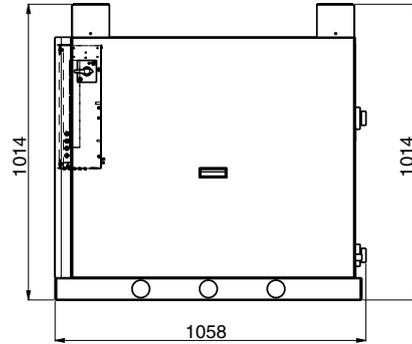
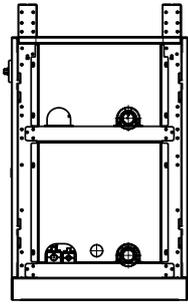


For option 70F only

NOTE: Non-contractual drawings. Refer to the certified dimensional drawings available on request, when designing an installation.

30WGA 020-045 - stackable unit (option 273)

NOTE: The water and electrical connections are identical to those of the standard unit.

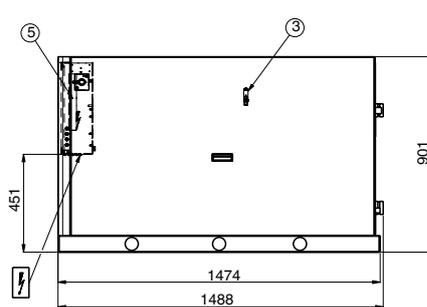
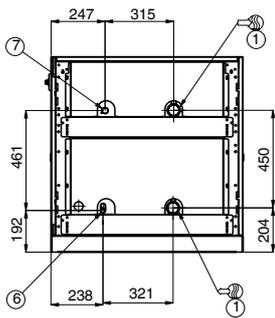


Legend:

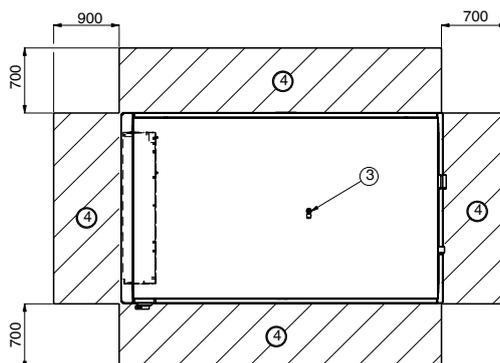
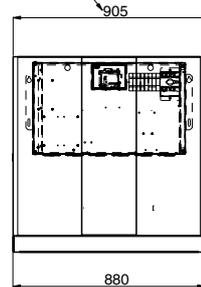
All dimensions are in mm

- ① Evaporator
- ③ Safety valve
- ④ Clearances required for maintenance (see note)
- ⑤ Control box
- ⑥ Refrigerant inlet
- ⑦ Refrigerant outlet
- Water inlet
- Water outlet
- Power wiring connection

30WGA 050-090 - standard unit

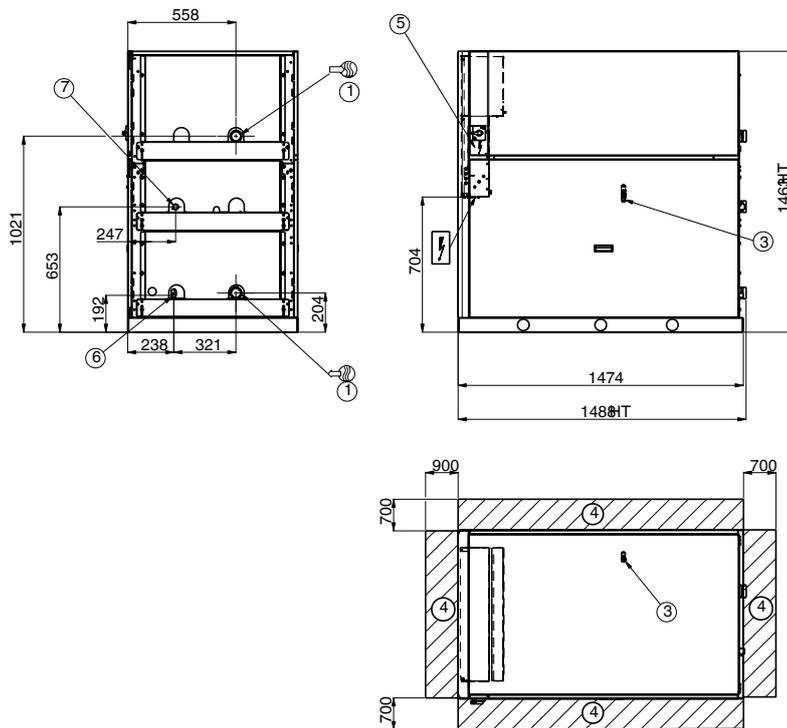


For option 70F only

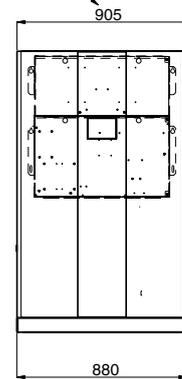


NOTE: Non-contractual drawings. Refer to the certified dimensional drawings available on request, when designing an installation.

30WGA 050-090 - unit with evaporator hydronic module (option 116)



For option 70F only

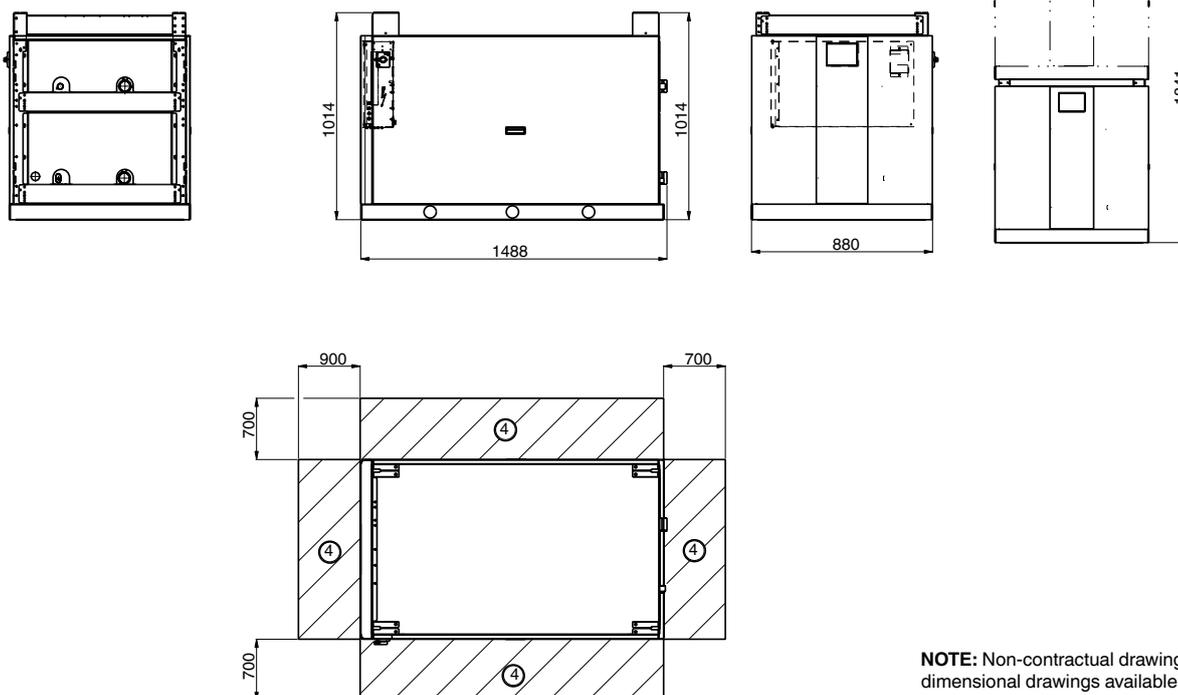


Legend:
All dimensions are in mm

- ① Evaporator
- ③ Safety valve
- ④ Clearances required for maintenance (see note)
- ⑤ Control box
- ⑥ Refrigerant inlet
- ⑦ Refrigerant outlet
- Water inlet
- Water outlet
- Power wiring connection

30WGA 050-090 - stackable unit (option 273)

NOTE: The water and electrical connections are identical to those of the standard unit.



NOTE: Non-contractual drawings. Refer to the certified dimensional drawings available on request, when designing an installation.

Variable water flow system (VWF)

Variable water flow is a hydronic control function package that permits control of the water flow rate.

The VWF not only ensures control at full load, a specific Carrier algorithm linked to an electronic frequency converter also continuously modulates the flow rate to minimise pump consumption at full load as well as part load.

The hydronic module includes pressure transducers that permit intelligent measurement of the water flow rate and real-time display on the Pro-Dialog+ interface. All adjustments can be made directly on the interface, speeding up start-up and maintenance.

As VWF acts directly on the pump, the system no longer requires the control valve at the unit outlet. However, for applications with two-way valves a bypass system must be kept to guarantee the minimum flow rate.

Operating logic

■ Full-load setpoint

The flow rate control at full load uses the Pro-Dialog+ & TouchPilot Junior interface, reducing the pump speed. This first control saves energy that would normally be dissipated in the control valve. For example, if the pressure supplied by the pump is reduced by 20% the power consumption of the pump is reduced by the same ratio, compared to a traditional installation.

■ Operating mode at part load

Pro-Dialog+ & TouchPilot Junior includes two part-load operating modes:

- Constant outlet pressure control
- Constant delta T control.

1 – Constant unit outlet pressure control

The control continuously acts on the pump speed to ensure a constant outlet pressure.

This solution is suitable for installations with two-way valves. When these close, the water speed will accelerate in the system branches that are still open. For a fixed-speed pump this results in an unnecessary increase of the pressure at the pump outlet.

The outlet pressure control mode ensures that each circuit branch always has a uniform supply, without unnecessary energy waste.

In industrial processes such as plastic injection moulding, this solution ensures that each terminal unit has the correct pressure supply.

2 – Constant delta T control

The VWF algorithm maintains a constant delta T no matter what the unit load, reducing the flow rate to the minimum.

This solution can be used for systems with two-way or three-way valves and achieves higher energy savings than the “Constant unit outlet pressure control” mode. It is suitable for the majority of comfort applications.

Guide specification, 61WG/30WG/30WGA

Quality assurance

- The water-sourced units shall be designed for indoor installation in a plant room.
- The water-sourced units shall use ozone-friendly refrigerant R410A and include scroll compressors.
- The design and manufacturing site of the units shall be certified in accordance with the quality management system ISO 9001.
- The development test site of the units shall be certified to the quality management system ISO 17025.
- The design and manufacturing site of the units shall be certified in accordance with the environmental management system ISO 14001.
- The published performances for the units shall be Eurovent-certified and all units are factory-tested before shipment.
- The units shall meet the following product quality standards: 2014/35/UE, 2014/30/UE, 2014/68/UE, 2011/65/UE "RoHS 2", 2012/19/EU "WEEE", 2008/28/EC "Ecodesign", EN14511.

61WG product features

- The hot-water production unit shall have a heating capacity of ____ kW, a maximum power input of ____ kW and a COP of ____ kW/kW.
- The evaporator leaving water temperature shall be ____ °C with a temperature difference of ____ K and a condenser leaving water temperature of ____ °C with a temperature difference of ____ K.
- The hot-water production unit shall be able to produce hot water up to 65 °C and cold water to class ____ in accordance with Eurovent.
- The hot-water production unit shall have weather compensation control, controlling a needle valve and permitting hot-water production at a second setpoint of ____ °C, controlled by a clock.
- It shall control a supplementary 4-stage electric heater and be able to manage a relief boiler (heat pump stopped).
- A second circulation pump shall be controlled by the hot-water production unit.

30WG product features

- The chilled-water production unit shall have a cooling capacity of ____ kW, a maximum power input of ____ kW and an ESEER of ____ kW/kW.
- The evaporator leaving water temperature shall be ____ °C with a temperature difference of ____ K and a condenser leaving water temperature of ____ °C with a temperature difference of ____ K.
- The chilled-water production unit shall be able to produce hot water up to 60 °C and class ____ heating in accordance with Eurovent.
- The chilled-water production unit shall be connected by communication bus to a drycooler.

30WGA product features

- The refrigerant circuit of the condenserless unit shall include a check valve on the discharge line piping, a solenoid valve on the liquid line piping and a nitrogen holding charge.
- The unit shall be capable of delivering cooling capacity with a saturated condensing temperature of up to 62 °C.
- The chiller shall be connected to a remote condenser via communication bus.
- Fan control on the remote condenser shall be possible via a digital output (up to 8 steps possible) or via an analogue 0-10 V output signal for variable-speed fans.
- Fan operation shall be controlled remotely based on the outside temperature and the saturated refrigerant discharge temperature

Common 61WG/30WG/30WGA unit features

- The unit shall have water connections at the top/back and a footprint size of ____ m².
- The hydronic kit, located in the upper unit section shall include all required hydronic components including an expansion tank of ____ litres.
- The circulation pumps have fixed speed/variable water flow with a minimum frequency of 25 Hz. The evaporator water pressure drop shall be ____ kPa and the condenser water pressure drop shall be ____ kPa.
- All hydronic and refrigerant circuit components of the unit shall be compatible with a condenser leaving water temperature of 65 °C.
- The unit shall be stackable in pairs, controlled in master/slave configuration for a total capacity of ____ kW (sizes 020 to 090).
- The unit shall operate with 400 V-3 ph-50 Hz (400 V ± 10%) without neutral and it shall only have one connection point.
- The main control panel shall be protected by a glass panel and shall only be opened with a special tool.
- The unit control circuit voltage shall be 24 V maximum, supplied by a factory-installed transformer. The compressor shall offer quick keyed electrical connection.
- The unit shall include numerical control, with the possibility of remote control. It shall ensure the control of the compressors, evaporator and condenser water pumps and the fans (drycooler).
- The numerical control shall include a patented auto-adaptive Carrier algorithm that controls the operation of the compressors and permanently adjusts to the application characteristics including the water loop inertia.
- Dangerous compressor cycles are reduced to six per hour.
- The control menus shall permit direct access to all unit data including the history of possible faults.



Order No.16121, 01.2017. Supersedes order No. 16121, 10.2014.
Manufacturer reserves the right to change any product specifications without notice.



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Approval

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