

## WATER-COOLED AND CONDENSERLESS LIQUID CHILLERS WATER-SOURCED HEAT PUMPS

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



## 30WG/30WGA

Nominal heating capacity 29-230 kW  
Nominal cooling capacity 25-190 kW

The 30WG/30WGA 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.

The 30WG, also available as a condenserless version (30WGA), is designed for air-conditioning applications with a high SEER 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:

- hydraulic modules 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).

**30WG 110-190 with option 49 availability: Q2.2018**



HEATING



CARRIER participates in the ECP programme for LCP/HP  
Check ongoing validity of certificate:  
[www.eurovent-certification.com](http://www.eurovent-certification.com)

## CUSTOMER BENEFITS

### 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)

### Available versions

#### 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

- 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 set-point 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 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 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 units can be provided with several hydraulic module 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).
- 30WG units offer water-side cooling/heating reversibility.
- Remote condenser fan control possible for 30WGA units.

### Water connections at the rear of the unit



## CUSTOMER BENEFITS

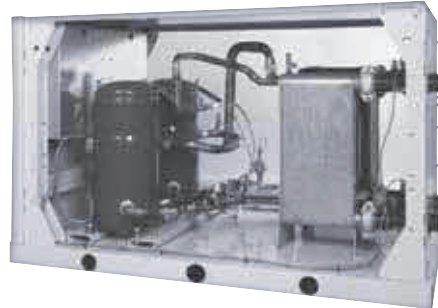
**Internal view of 30WG 170**



**Component accessibility**

See photos below.

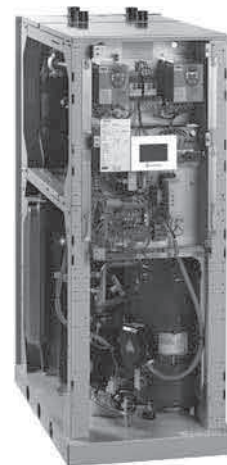
**Access to scroll compressors**



**Water connections at the top of the unit**



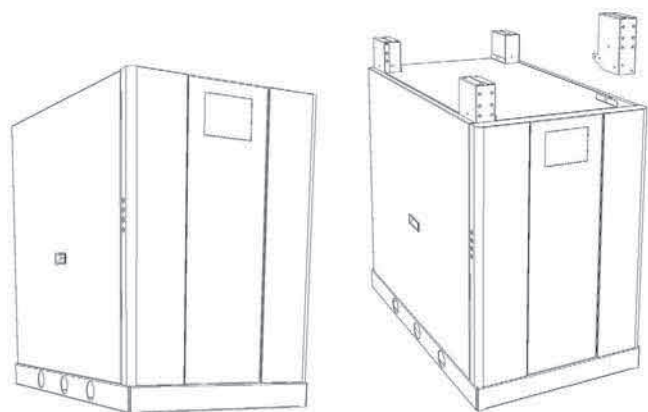
**Access to control panel**



### A compact high-performance product range

- Small footprint, ideal for refurbished buildings, allows access in very tight plant rooms.
- 30WG: High SEER and SEPR  
Units optimized for process and comfort applications.
- 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)).
- 30WG/30WGA units are equipped with the latest generation R410A scroll compressor, optimised for typical operating conditions for water-sourced units.

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



PHYSICAL DATA, 30WG UNITS, SIZES 110 TO 190

30WG			110	120	140	150	170	190	
<b>Heating</b>									
Full load performances*	HW1	Nominal capacity	kW	137	156	172	183	206	230
		COP	kW/kW	5,63	5,61	5,53	5,67	5,62	5,59
	HW2	Nominal capacity	kW	131	148	163	174	197	218
		COP	kW/kW	4,44	4,45	4,38	4,41	4,50	4,38
	HW3	Nominal capacity	kW	125	140	155	167	189	209
		COP	kW/kW	3,59	3,63	3,57	3,60	3,76	3,60
Seasonal energy efficiency**	HW1	SCOP <sub>30/35°C</sub>	kW/kW	6,31	6,37	6,29	6,31	6,32	6,18
		η <sub>s heat</sub> <sub>30/35°C</sub>	%	244	247	244	244	245	239
	HW3	SCOP <sub>47/55°C</sub>	kW/kW	5,05	5,09	5,05	5,02	5,17	4,96
		η <sub>s heat</sub> <sub>47/55°C</sub>	%	194	196	194	193	199	190
		P <sub>rated</sub>	kW	143	161	178	191	216	239
	<b>Cooling</b>								
<b>Standard unit</b>		Nominal capacity	kW	115	130	144	153	172	192
Full load performances*	CW1	EER	kW/kW	4,79	4,77	4,70	4,83	4,78	4,79
		Eurovent class		B	B	B	B	B	B
	CW2	Nominal capacity	kW	155	176	196	207	231	262
		EER	kW/kW	6,20	6,10	6,01	6,23	5,97	6,14
		Eurovent class		A	A	A	A	A	A
	Seasonal energy efficiency		SEER <sub>12/7°C</sub> Comfort low temp.	kW/kW	6,12	6,24	6,17	5,97	6,06
		SEER <sub>23/18°C</sub> Comfort medium temp.	kW/kW	6,95	7,10	6,95	6,72	6,72	6,74
		SEPR <sub>12/7°C</sub> Process high temp.	kWh/kWh	6,98	7,13	6,90	6,54	6,62	6,41
		SEPR <sub>2/-8°C</sub> Process medium temp.	kWh/kWh	4,01	4,40	4,35	4,52	4,65	4,45
<b>Integrated part load value</b>	IPLV.SI	kW/kW	6,86	6,98	6,90	6,82	6,89	6,82	
<b>Operating weight</b> <sup>(1)</sup>		kg	707	733	758	841	877	908	
<b>Sound levels</b> <sup>(2)</sup>									
	Sound power level, standard unit	dB(A)	76	77	78	76	77	78	
	Sound power level, option 257	dB(A)	73	74	75	73	74	75	
<b>Dimensions, standard unit</b> <sup>(3)</sup>									
	Width	mm	880	880	880	880	880	880	
	Length	mm	1583	1583	1583	1583	1583	1583	
	Height	mm	1574	1574	1574	1574	1574	1574	
<b>Compressors</b>									
	Quantity		Hermetic scroll 48.3 r/s						
	Number of capacity stages		3	3	3	4	4	4	
	Minimum capacity	%	33	33	33	25	25	25	
<b>Refrigerant</b> <sup>(1)</sup>									
	Charge, standard unit	kg	13,3	14,5	15,6	21,0	23,0	24,2	
		teqCO <sub>2</sub>	27,8	30,3	32,6	43,8	48,0	50,5	

\* In accordance with standard EN14511-3:2013  
 \*\* In accordance with standard EN14825:2013, average climate  
 HW1 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 m<sup>2</sup>. k/W  
 HW2 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 m<sup>2</sup>. k/W  
 HW3 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 m<sup>2</sup>. k/W  
 CW1 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 m<sup>2</sup>.K/W  
 CW2 Cooling mode conditions: Evaporator water entering/leaving temperature 23°C/18°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m<sup>2</sup>.K/W  
 η<sub>s heat</sub><sub>30/35°C</sub> Applicable Ecodesign regulation: (EU) No 813/2013 & SCOP<sub>30/35°C</sub>  
 η<sub>s heat</sub><sub>47/55°C</sub> Applicable Ecodesign regulation: (EU) No 813/2013 & SCOP<sub>47/55°C</sub>  
 SEER<sub>12/7°C</sub> Applicable Ecodesign regulation: (EU) No 2016/2281 & SEPR<sub>12/7°C</sub>  
 SEER<sub>23/18°C</sub> Applicable Ecodesign regulation: (EU) No 2016/2281  
 SEPR<sub>2/-8°C</sub> Applicable Ecodesign regulation: (EU) No 2015/1095  
 IPLV.SI Calculations according to standard performances AHRI 551-591.  
 (1) Weight shown is a guideline only. Please refer to the unit nameplate  
 (2) In dB ref=10<sup>-12</sup> 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.  
 (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
<b>Capacity control</b>		TouchPilot Junior					
<b>Evaporator</b>		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 hydraulic module	kPa	1000	1000	1000	1000	1000	1000
<b>Condenser</b>		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 hydraulic module	kPa	1000	1000	1000	1000	1000	1000
<b>Chassis paint color</b>		Color code: RAL7035					

## ELECTRICAL DATA

30WG without hydraulic module		020	025	030	035	040	045	050	060	070	080	090
<b>Power circuit</b>												
Nominal voltage	V-ph-Hz	400-3-50										
Voltage range	V	360-440										
<b>Control circuit supply</b>												
24 V, via internal transformer												
<b>Maximum start-up current draw (Un)<sup>(1)</sup></b>												
Standard unit	A	98	142	142	147	158	197	161	162	170	183	226
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
<b>Unit power factor at maximum capacity<sup>(2)</sup></b>												
0,9												
<b>Maximum operating power input<sup>(2)</sup></b>												
kW												
9,2 10,8 11,7 13,7 15,1 17,1 21,5 23,3 27,3 30,3 34,2												
<b>Nominal unit operating current draw<sup>(3)</sup></b>												
A												
10,5 13,2 13,8 15,6 16,2 20,2 26,4 27,6 31,2 32,4 40,4												
<b>Maximum operating current draw (Un)<sup>(4)</sup></b>												
A												
15,6 18,7 19,8 23,2 25,4 29 37,4 39,6 46,4 50,8 58												
<b>Maximum operating current draw (Un-10%)<sup>†</sup></b>												
A												
17,3 20,8 22 25,8 28,2 32,2 41,6 44 51,6 56,4 64,4												
<b>Customer-side unit power reserve</b>												
Customer reserve at the 24 V control power circuit												
<b>Short-circuit stability and protection</b>												
See table below "Short-circuit stability current"												

- (1) 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).  
(2) Maximum power input at the unit operating limits.  
(3) Values obtained at standardised Eurovent conditions: evaporator entering/leaving water temperature 12 °C/7 °C, condenser entering/leaving water temperature 30 °C/ 35 °C.  
(4) 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 hydraulic module		110	120	140	150	170	190
<b>Power circuit</b>							
Nominal voltage	V-ph-Hz	400-3-50					
Voltage range	V	360-440					
<b>Control circuit supply</b>							
24 V, via internal transformer							
<b>Maximum start-up current draw (Un)<sup>(1)</sup></b>							
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
<b>Unit power factor at maximum capacity<sup>(2)</sup></b>							
0,87 0,85 0,85 0,87 0,85 0,85							
<b>Maximum operating power input<sup>(2)</sup></b>							
kW							
41 45 51 55 60 68							
<b>Nominal unit operating current draw<sup>(3)</sup></b>							
A							
46,8 48,6 60,6 62,4 64,8 80,8							
<b>Maximum operating current draw (Un)<sup>(4)</sup></b>							
A							
69,6 76,2 87 92,8 101,6 116							
<b>Maximum operating current draw (Un-10%)<sup>†</sup></b>							
A							
77,3 84,7 96,7 103,1 112,9 128,9							
<b>Customer-side unit power reserve</b>							
Customer reserve at the 24 V control power circuit							
<b>Short-circuit stability and protection</b>							
See table below "Short-circuit stability current"							

- (1) 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).  
(2) Maximum power input at the unit operating limits.  
(3) Values obtained at standardised Eurovent conditions: evaporator entering/leaving water temperature 12 °C/7 °C, condenser entering/leaving water temperature 30 °C/ 35 °C.  
(4) Maximum unit operating current at maximum unit power input and 400 V.  
† Maximum unit operating current at maximum unit power input and 360 V.

## ELECTRICAL DATA

### Short-circuit stability current (TN system<sup>(1)</sup>) - standard unit (with main disconnect switch)

30WG/30WGA		020	025	030	035	040	045	050	060	070	080	090
<b>Value with non-specified upstream protection</b>												
Short-term current at 1 s - I <sub>cw</sub>	kA rms	3	3	3	3	3	3	3	3	3	3	3
Admissible peak current - I <sub>pk</sub>	kA pk	6	6	6	6	6	6	6	6	6	6	6
<b>Maximum value with upstream protection (by circuit breaker)</b>												
Conditional short-circuit current I <sub>cc</sub>	kA rms	40	40	40	40	40	40	40	40	40	40	40
Schneider circuit breaker - Compact series		NSX 100N										
Reference number <sup>(2)</sup>		LV429795										

(1) Earthing system type

(2) If another current limitation protection system is used, its time-current and thermal constraint (I<sup>2</sup>t) trip characteristics must be at least equivalent to those of the recommended Schneider circuit breaker.  
The short-circuit stability current values above are suitable with the TN system.

30WG/30WGA		110	120	140	150	170	190
<b>Value with non-specified upstream protection</b>							
Short-term current at 1 s - I <sub>cw</sub>	kA rms	5,5	5,5	5,5	5,5	5,5	5,5
Admissible peak current - I <sub>pk</sub>	kA pk	20	20	20	20	20	20
<b>Maximum value with upstream protection (by circuit breaker)</b>							
Conditional short-circuit current I <sub>cc</sub>	kA rms	154	154	154	154	154	154
Schneider circuit breaker - Compact series		NSX 100N					
Reference number <sup>(2)</sup>		LV429795					

(1) Earthing system type

(2) If another current limitation protection system is used, its time-current and thermal constraint (I<sup>2</sup>t) trip characteristics must be at least equivalent to those of the recommended Schneider circuit breaker.  
The short-circuit stability current values above are suitable with the TN system.

#### 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.
1. The operating conditions for the units are specified below:  
Environment<sup>(1)</sup> - 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)<sup>(1)</sup>:
  - 50% relative humidity at 40 °C
  - 90% relative humidity at 20 °C

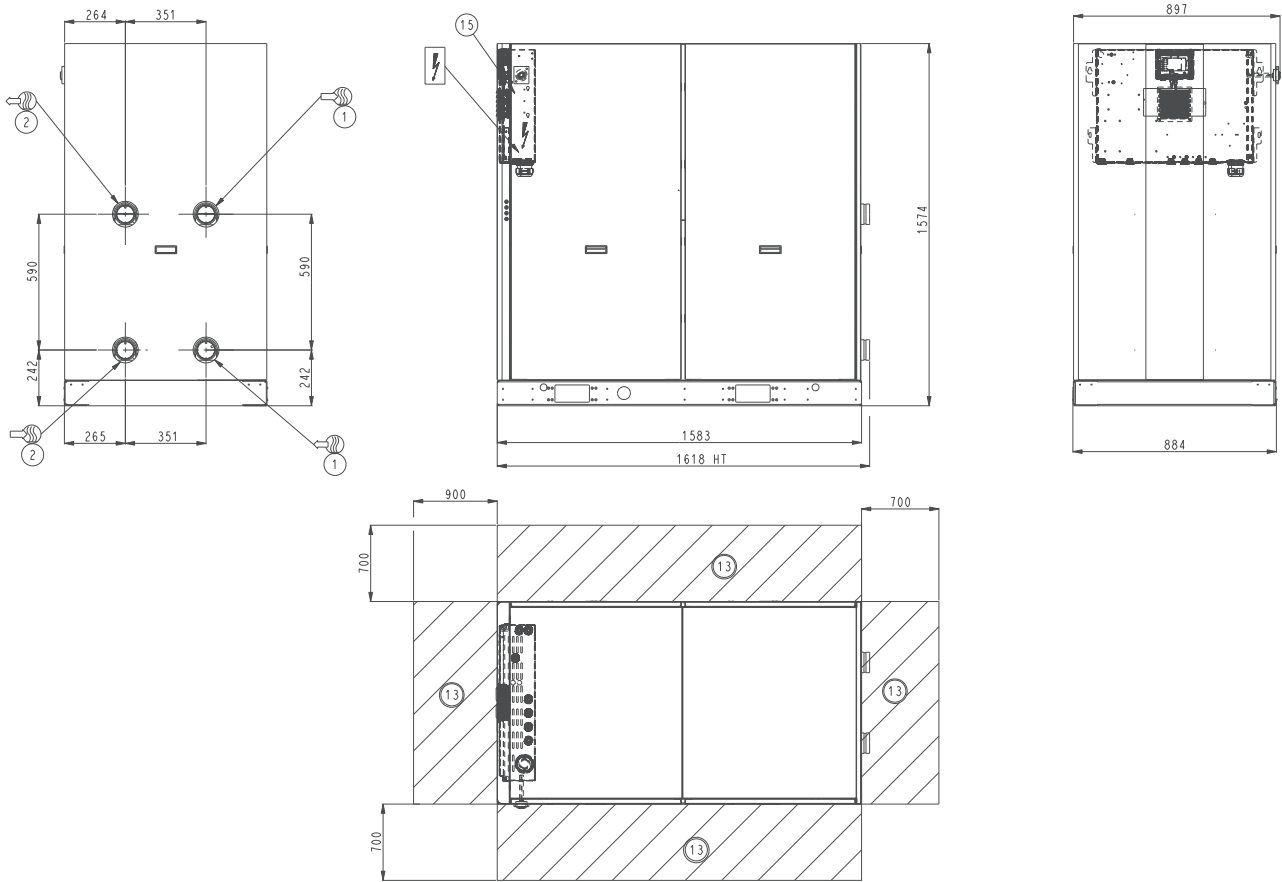
- altitude: ≤ 2000 m (see note for table 4.7 in the IOM) indoor installation<sup>(1)</sup>
  - presence of water: class AD2 (possibility of water droplets)
  - presence of hard solids, class 4S2 (no significant dust present)
  - presence of corrosive and polluting substances, class 4C2 (negligible)
  - vibration and shock, class AG2, AH2
  - competence of personnel, class BA4<sup>(1)</sup> (trained personnel - IEC 60364)
2. Power supply frequency variation: ± 2 Hz.
3. The neutral (N) conductor must not be connected directly to the unit (if necessary use a transformer).
4. Over-current protection of the power supply conductors is not provided with the unit.
5. The factory-installed disconnect switch(es)/circuit breaker(s) is (are) of a type suitable for power interruption in accordance with EN 60947.
6. 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 are not compatible with IT network.
7. 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.**

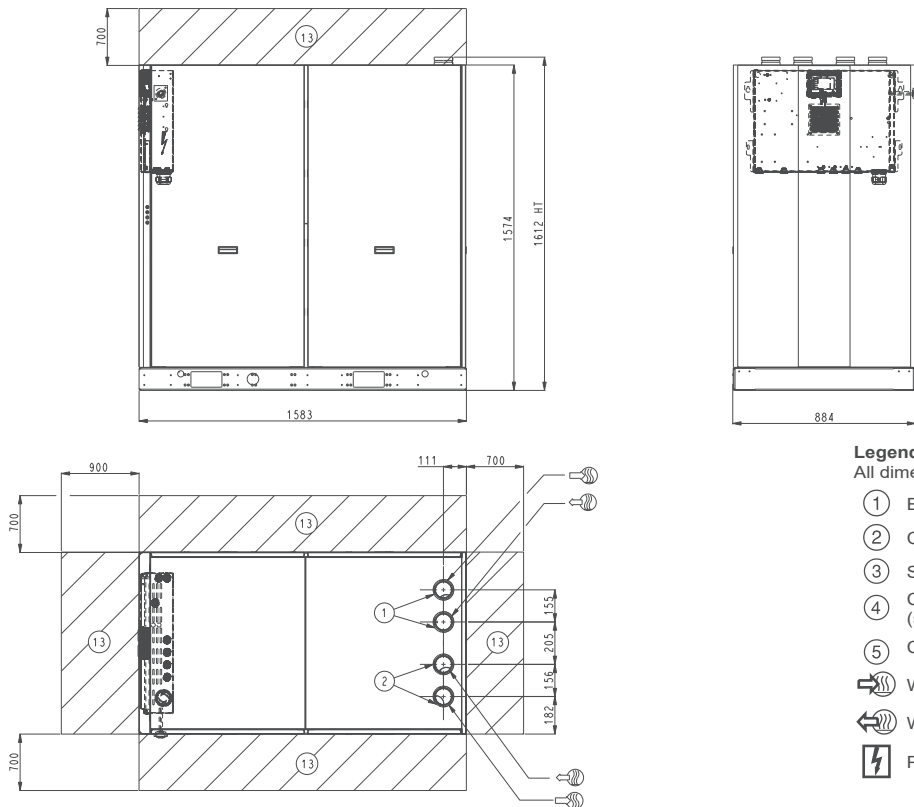
- (1) The protection level of the control boxes required to conform to this class is IPX1B (according to reference document IEC 60529). All 61WG/30WG/30WGA units fulfil this protection condition.  
Units equipped with front casing panel meet class IP23. If the casing panel has been removed, access to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

**DIMENSIONS/CLEARANCES**

**30WG 150-190 - standard unit**



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



**Legend**

All dimensions are in mm.

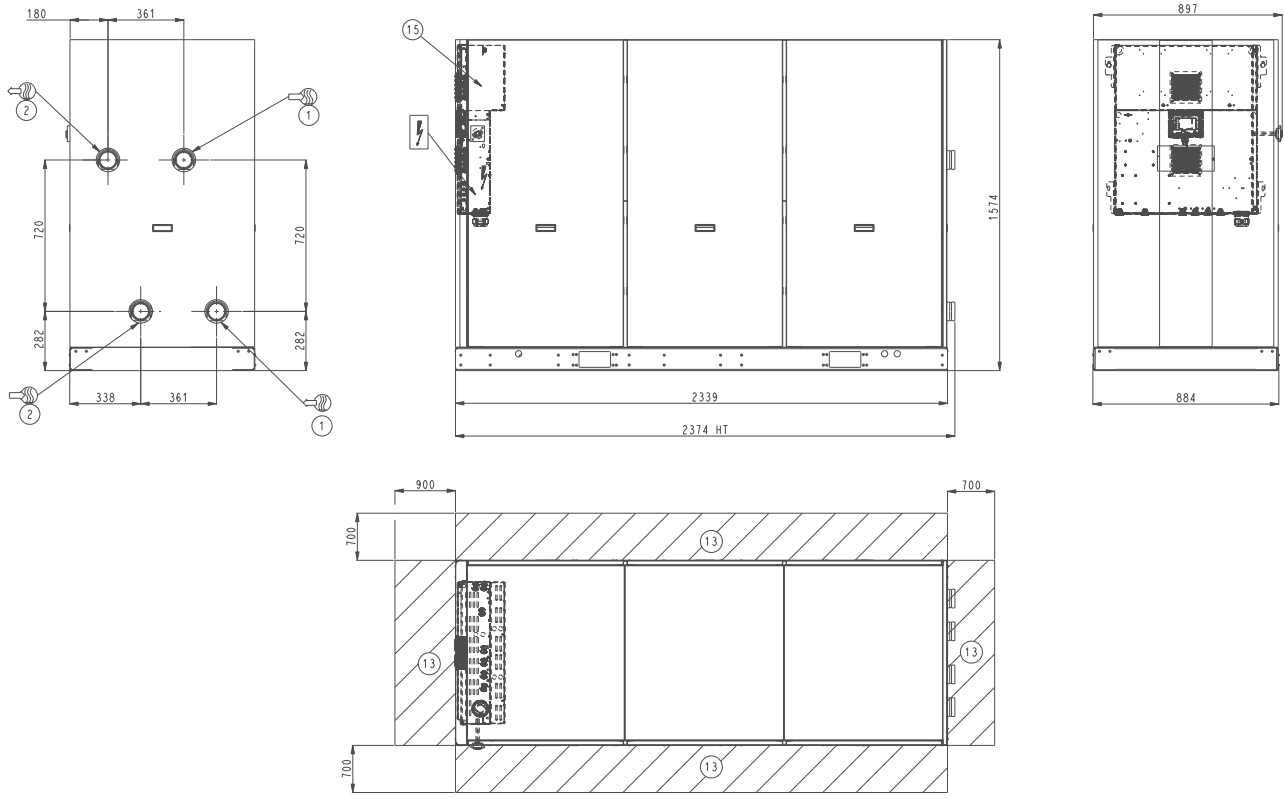
- ① Evaporator
- ② Condenser
- ③ Safety valve
- ④ Clearances required for maintenance (see note)
- ⑤ Control box
- Water inlet.
- Water outlet
- Power wiring connection

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



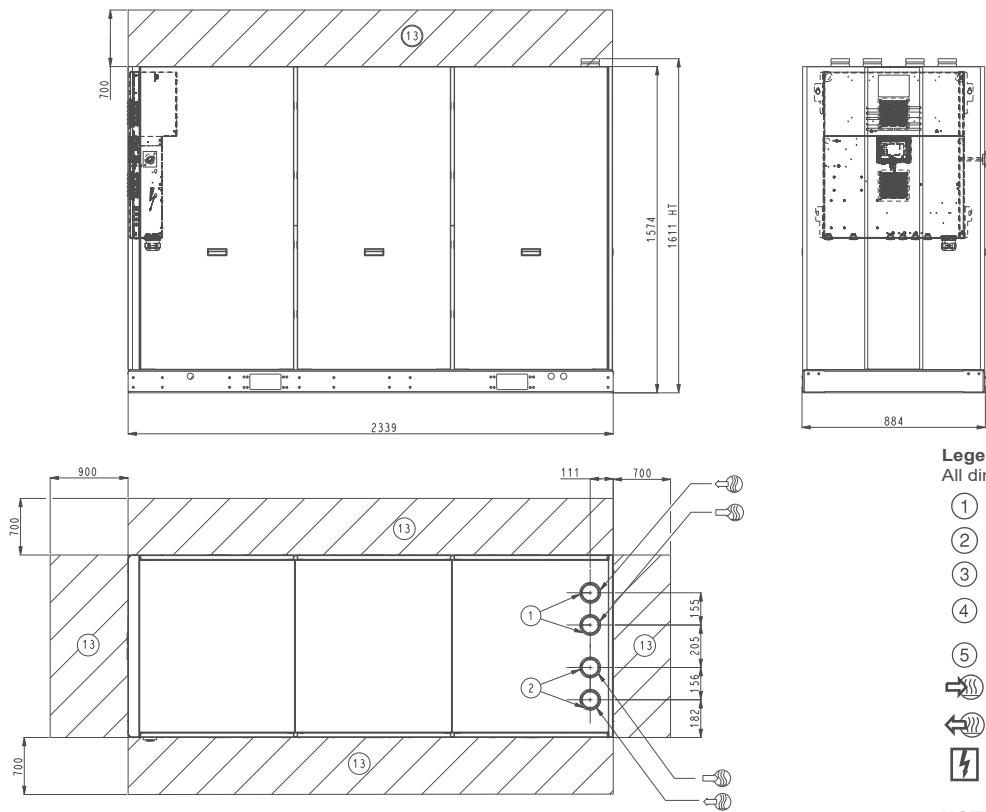
**DIMENSIONS/CLEARANCES**

**30WG 150-190 - unit with hydraulic module (option 116-270)**



**30WG 0 0**

**0**



**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.