



CHGV

**AIR COOLED WATER CHILLER
WITH HYDRAULIC EQUIPMENT
AIR / WATER
47 to 78 kW**



CHGV 50


CHGV 64

CHGV 72

CHGV 80

PHRV heat pump model also available

MARKING

This product marked  conforms to the essential requirements of the Directives:

- Low voltage no. 73/23 EEC, modified 93/68 EEC.
- Electromagnetic Compatibility no. 89/336 EEC, modified 92/31 EEC and 93/68 EEC.
- Pressure Equipment Directive No. 97/23/CE.



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APPLIANCES FILLED WITH R 407 C

R 407 C

- Fluid R 407 C, as opposed to R22, is not a pure fluid but a blend composed of:
 - 23% R 32 + 25% R 125 + 52% R 134 A.
- The compressors approved for operation with this fluid are filled beforehand with polyalcohol oil.
Contrary to mineral oil, it is very hygroscopic: it absorbs the humidity of the ambient air very quickly. This can modify its lubricant properties and lead in time to the destruction of the compressor.

MAINTENANCE INSTRUCTIONS

- 1 - Never add oil to the appliance; the compressor is filled with polyalcohol oil, a special oil which cannot tolerate the presence of other oils.
- 2 - The instruments used for:
 - filling,
 - pressure measurements,
 - emptying under vacuum,
 - recovering the fluid,must be compatible and only used for the R 407 C fluid.

- 3 - The weight of the refrigerant contained in the storage bottle must be checked constantly. Do not use it from the moment the remaining weight is less than 10% of the total weight.
- 4 - In the case of a new charge:
 - do not use the charging cylinder,
 - use a balance and a dip pipe type R 407 C cylinder,
 - charge the weight of R 407 C as per the value indicated on the unit's identification plate,
 - IMPORTANT: see instruction 3 above.
- 5 - The charge **must** be undertaken in liquid phase.
- 6 - In case of leakage, do not complete the charge: recover the remaining refrigerant for recycling and perform a total charge.
Recovery, recycling or the destruction of the fluid must be done in compliance with the laws in force in the country concerned.
- 7 - If the refrigerant circuit is opened, you must:
 - avoid the entry of air into the circuit as much as possible,
 - replace the filter drier,
 - perform the "vacuum operation" at a minimum level of **0.3 mbar (static)**.

1 - APPLICATION - USE

- Air cooled type chilled water generator intended for climate control in buildings.
- Single package unit, factory assembled and tested.
- Designed for outdoor installation.
- Supplied fully charged with R 407 C refrigerant.
- Convenient hydraulic and electrical connections.
- Practical service access via removable panels.

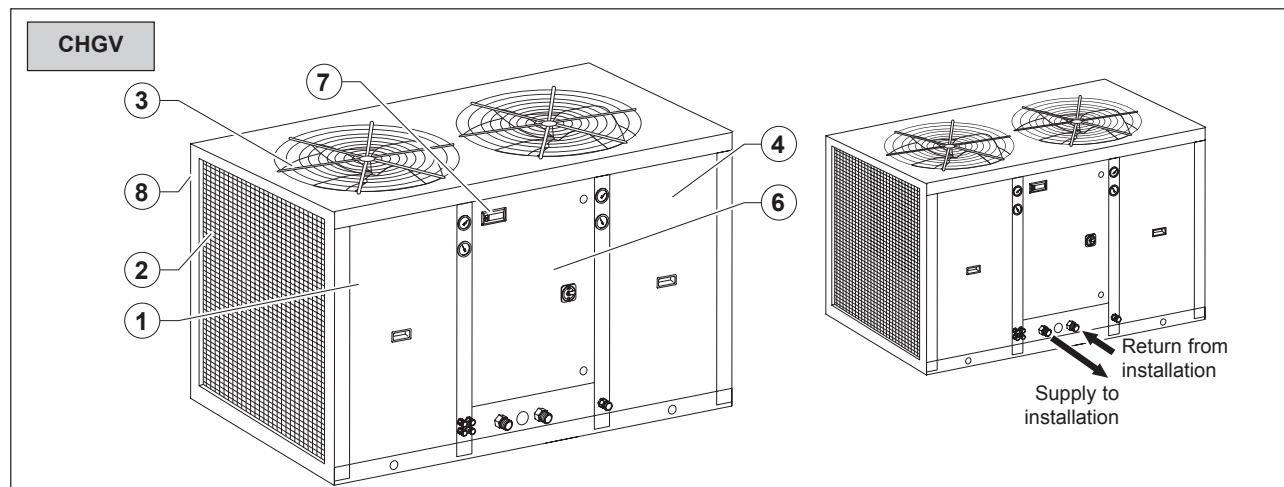
2 - DESCRIPTION - COMPOSITION OF UNIT

2.1 - DESCRIPTION

- The range includes 1 single type of unit:
 - CHGV: An air cooled chilled water generator with built-in hydraulic equipment.

	Refrigerant	Model
		2 refrigerant circuits
CHGV	R407C	50 / 64 / 72 / 80

2.2 - COMPOSITION OF UNIT



COMPRESSOR ①

- 1 compressor per refrigerating circuit.
- Hermetic SCROLL compressor with sound-proofing cover.
- Installed on rubber anti-vibration pads.
- Internal thermal protection of the motor winding.

CONDENSER ②

- 1 condenser per refrigerating circuit.
- Coil in L, consisting of copper pipes and crimped aluminium fins.
- Protective grille.
- Condensation pressure probe for the proportional "All-season" control.

FAN ③

- 1 ventilator per refrigerating circuit.
- Direct driven axial fan.
- 1-speed motor 230/1/50Hz.
- Insulation classification F.
- Internal thermal protection.
- Protection class IP55.
- Proportional "All-season" control as standard.

EVAPORATOR ④

- 1 evaporator common to both refrigeration circuit.
- Plate-type stainless steel (AISI 316L) water treatment section with freezing protection.
- Water circulation controlled by differential pressure switch.
- Water inlet temperature probes (for control).
- Water outlet temperature sensor (for anti-freeze alarm).

REFRIGERANT CIRCUIT ⑤

- R 407 C refrigerant.
- Thermostatic expansion valve.
- Drier filter.
- Automatic reset high pressure and low pressure switches.
- Copper tubing.
- Liquid receiver.

HYDRAULIC CIRCUIT ⑥

- Ⓐ - 1 pump with insulation.
- Ⓑ - 1 fill valve Ø 1/4" F.
- Ⓒ - 1 pressure gauge / valve - 3 bar.
- Ⓓ - 1 air relief valve.
- Ⓔ - 1 control valve.
- Ⓕ - 1 expansion tank.
- Ⓖ - 1 water flow rate pressure switch.

SWITCH BOX ⑦

- Accessible via hinge-mounted door.
- Main switch.
- Phase-sequence tester.
- Power and control circuitry protected by magnetothermal circuit breakers.
- Complies with standard EN 60 204-1.
- Short circuit current 10 kA, as per IEC 947-2.

ELECTRONIC CONTROL "ECH" ⑧

- Microprocessor control module, including:
 - chilled water temperature control (water return),
 - control of operating parameters,
 - self-adapting algorithm for water volume reduction,
 - circulating pump control (frost protection function),
 - dynamic setpoints are possible according to the outside temperature (to be activated at the time of installation by means of special parameterisation),
 - anti-short cycle system,
 - compressor and circulating pump hour counters,
 - anti-freeze security (water exchanger),
 - digital display of:
 - . water temperature,
 - . set-points,
 - . alarm code (HP, LP, water output, probes, anti-freeze...).
 - possibility of remote reporting of alarms by means of an available potential-free contact,
 - remote control with display unit (accessory),
 - serial communications port (RS 485 interface, accessory).

CHASSIS - BODYWORK ⑨

- Galvanised sheet metal with light grey oven-baked polyester powder paint (RAL 7035).

3 - ACCESSORIES

3.1 - ANTI-VIBRATION KIT

- Kit includes:
 - 1 set of 4 anti-vibration plates, thickness 25 mm - code **70600035**.
 - 1 set of 2 flexible hoses: length 1.5 m, Ø 1" 1/2 - code **70600034**.

3.2 - HP AND LP PRESSURE GAUGES

- The accessory includes 1 set of 2 pressure gauges (HP and LP). Two per apparatus must be ordered.
- Code **70970006** for CHGV 50 - 64 - 72,
- Code **70970007** for CHGV 80,
- These elements, mounted on the vertical members of the unit's front face, display the high and low pressure values for the refrigeration circuit.

3.3 - REMOTE CONTROL

- Code **70250057**.
- Enables reporting of the controller's display keypad functions up to a distance of 100 meters.



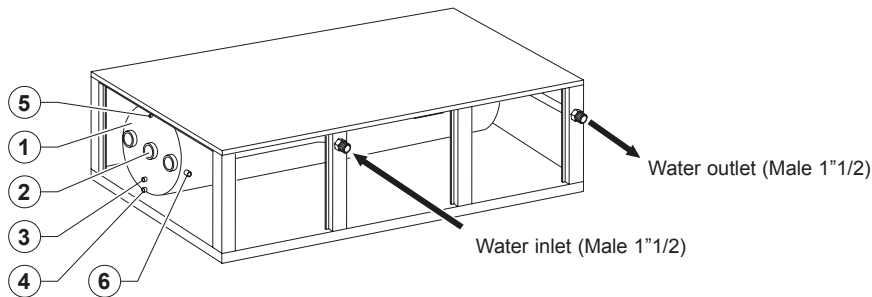
3.4 - SERIAL COMMUNICATIONS INTERFACE RS 485 (MODBUS PROTOCOL)

- Code **70250056**.
- Interface module installed inside the unit's electrical box.
- MODBUS protocol. Please consult us for details concerning the protocol and addressing of data.

3.5 - 300-LITRE BUFFER TANK

- Code **70600120**: model without supplementary heating with 800 W anti-freeze resistance (single-phase 230 VAC),
- Designed to be installed either underneath the unit, or separately.
For installation underneath the unit, the tank is supplied with mounting brackets and an insulated tube for connection between the unit's water outlet and the tank's water inlet.

Composition:



Mark		70600120 without heating
1	Sheetmetal buffer tank - polyurethane insulation	•
2	800 W anti-freeze resistance	•
3	Fill valve	•
4	Drain valve	•
5	Purge	•
6	Safety valve (3 bar)	•
	Galvanized steel chassis, painted RAL 7035	•

Anti-freeze resistance:

- Immersion heater mounted on the tank.
- Power: 800 W, single-phase 230 VAC.
- With limiting thermostat.
- **The power supply and heating element control are to be done separately at the time of installation (not supplied).**

4 - TECHNICAL AND PHYSICAL CHARACTERISTICS

4.1 - TECHNICAL CHARACTERISTICS

CHGV		50	64	72	80
Cooling capacity	kW	47.60	62	67	78
Total nominal power consumption Cooling (**)	kW	20.60	26.40	28.80	29.40
Total nominal current Cooling	A	38.70	47.70	54	55.50
EER (**)		2.31	2.35	2.33	2.65
Water flow rate	m ³ /h	8.21	10.65	11.50	13.43
Available manometric delivery head	kPa	220	160	145	80
Hydraulic connection	male 1"1/2 (40 x 49)	●	●	●	●
Maximum power consumption per unit (*)	kW	25	32	36	36.60
Maximum current per unit (*)	A	42.80	56.30	60.40	64.80
Starting current	A	170	185	225	225
Electrical supply cable section	mm ²	16	16	25	25
Sound-proofed hermetic SCROLL compressor		●	●	●	●
Number		2	2	2	2
Nominal current per compressor	A	17	20.80	23.10	23.80
Power consumption per compressor	kW	9.90	12.50	14.30	14.70
Refrigerant circuit (number)		2	2	2	2
R 407 C refrigerant charge	kg	2 x 7.25	2 x 8	2 x 9	2 x 12.50
Stainless steel brazed plate-type water exchanger		●	●	●	●
Number		1	1	1	1
Water capacity	liters	2.44	3.10	3.30	3.85
Helicoidal fan (direct driven)		●	●	●	●
Number		2	2	2	2
Air flow	m ³ /h	9,800	11,000	11,000	11,000
Diameter	mm	760	760	760	760
Max. rotation speed (motor)	rpm	620	660	660	660
Nominal current per motor (single-phase 230 VAC)	A	3.50	3.90	3.90	3.90
Power consumption per motor	kW	0.75	0.85	0.85	0.85
Installation minimum water volume (***)	liters	120	160	170	200
Installation maximum water volume (****)	liters	1,500	1,500	1,500	1,500
Expansion tank (operating pressure: 1.5 bar)	liters	18	18	18	18
Safety valve pressure	bar	3	3	3	3
Electrical characteristics hydraulic pump					
Maximum power consumption (pump only)	kW	1.40	1.40	1.90	1.90
Maximum current	A	2.70	2.70	3.50	3.50

(*) In the operating range.

(**) Gross value without hydraulic pump.

(***) If the water volume is below the minimum, a buffer tank must be installed.

(****) If the water volume is above the maximum, an additional expansion tank is required.

• **Power supply:**

400V (±10%) / 3 Ph + Neutral + Earth / 50Hz

• **Nominal operating conditions:**

- water inlet temperature : + 12°C
- water outlet temperature : + 7°C
- outdoor dry bulb temperature : + 35°C





Operating limits:

- temperature of inlet air to condenser : - 10°C to + 45°C
- pure water outlet temperature : + 4°C to + 20°C

Consult us for any special climatic conditions departing significantly from the nominal conditions.

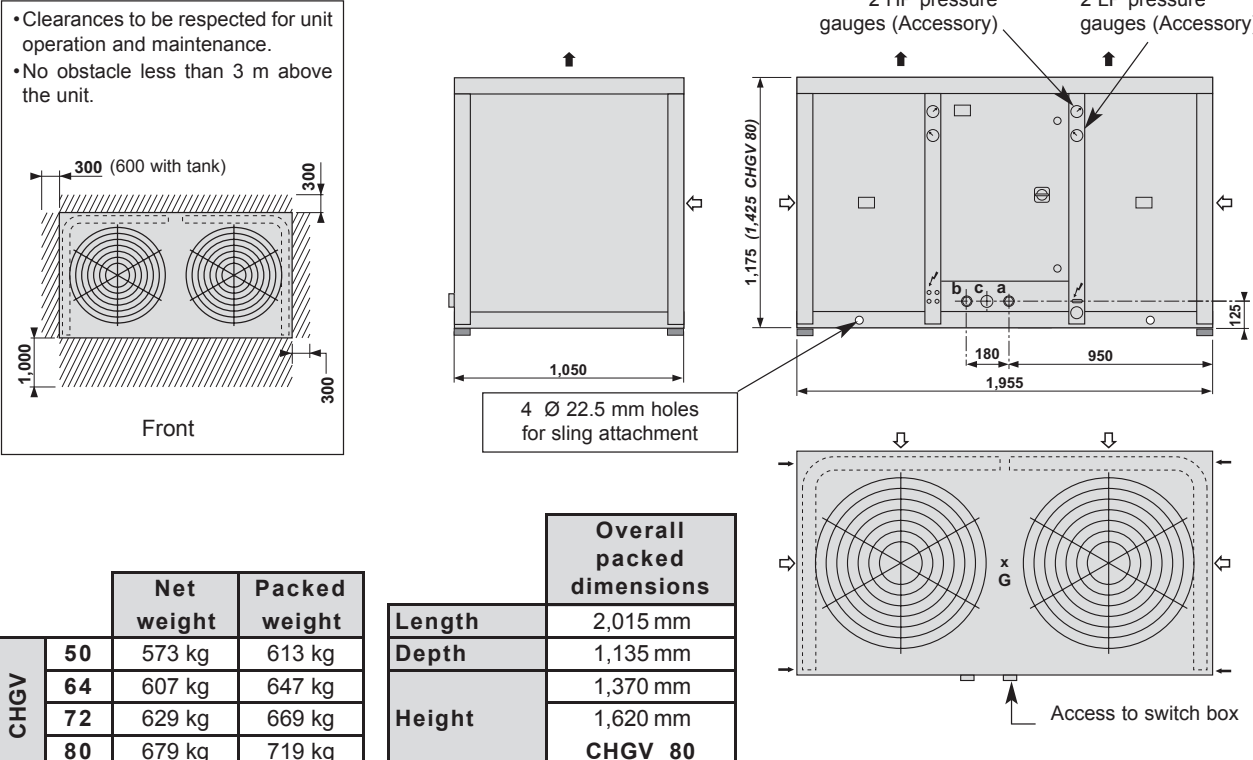
4.2 - PHYSICAL CHARACTERISTICS

Dimensions (in mm) are given for standard units without options.
General tolerance ± 10 mm.

-  Condenser air discharge
-  Condenser air suction
- a** Chilled water inlet connection
- b** Chilled water outlet connection
- c** HP and LP hose entry
-  Electrical connections
-  Location of the 4 anti-vibration pads (accessory) (100 x 100 x 25 mm) under girders
- G** Centre of gravity (in the centre of the unit)

4.2.1 - CHGV

• Clearances to be respected for unit operation and maintenance.
• No obstacle less than 3 m above the unit.



2 HP pressure gauges (Accessory) 2 LP pressure gauges (Accessory)

1,175 (1,425 CHGV 80)

1,050

4 \varnothing 22.5 mm holes for sling attachment

180 950

1,955

125

Front

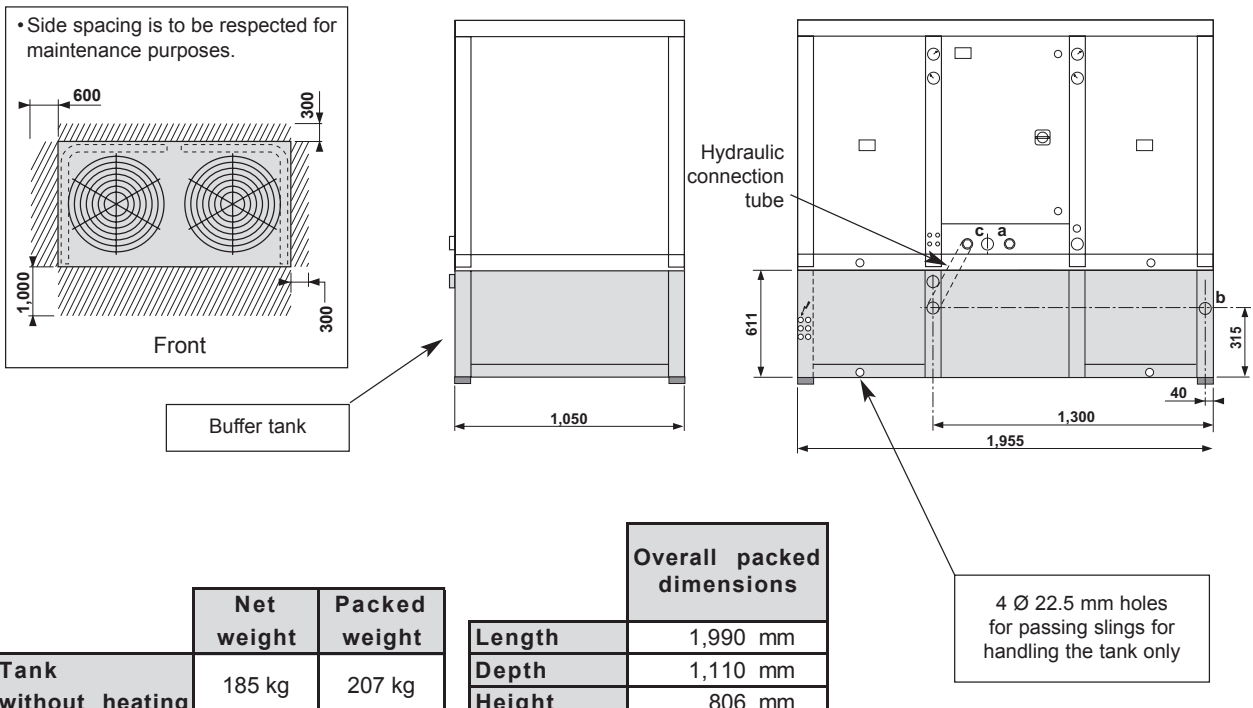
Access to switch box

CHGV	Net weight		Packed weight	
	50	573 kg	613 kg	
	64	607 kg	647 kg	
	72	629 kg	669 kg	
80	679 kg	719 kg		

Overall packed dimensions	
Length	2,015 mm
Depth	1,135 mm
Height	1,370 mm
	1,620 mm
CHGV 80	

4.2.2 - 300-litre buffer tank (accessory)

• Side spacing is to be respected for maintenance purposes.



600

300

1,000

300

Front

Buffer tank

1,050

Hydraulic connection tube

611

315

40

1,300

1,955

4 \varnothing 22.5 mm holes for passing slings for handling the tank only

Tank without heating	Net weight		Packed weight	
		185 kg	207 kg	

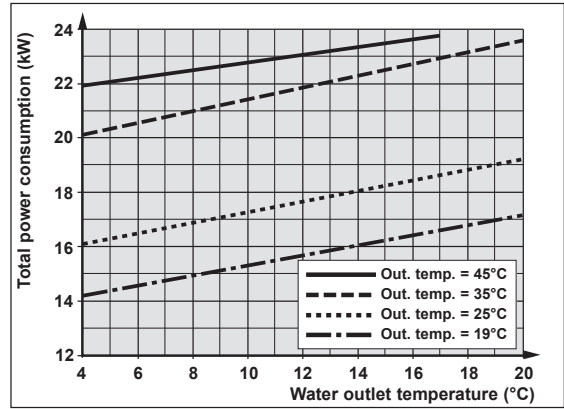
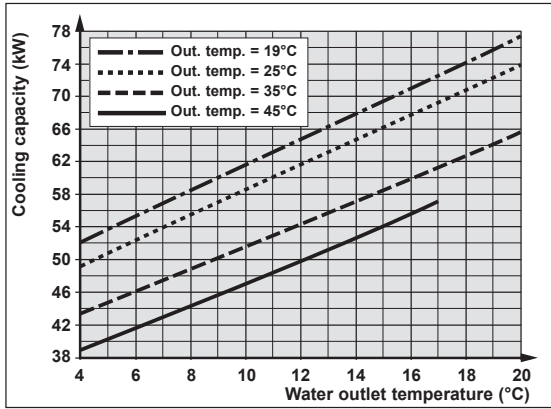
Overall packed dimensions	
Length	1,990 mm
Depth	1,110 mm
Height	806 mm

5 - TOTAL COOLING CAPACITIES AND POWER CONSUMPTIONS

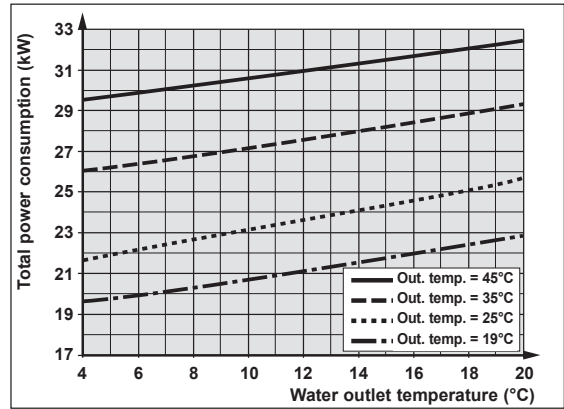
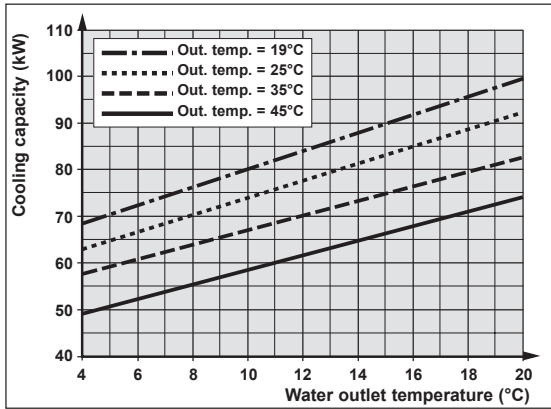
COOLING CAPACITIES

TOTAL POWER CONSUMPTIONS

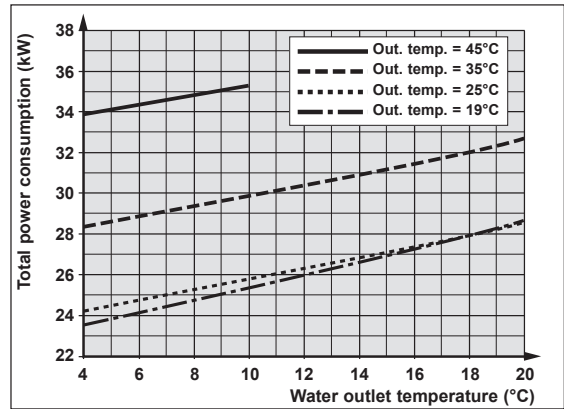
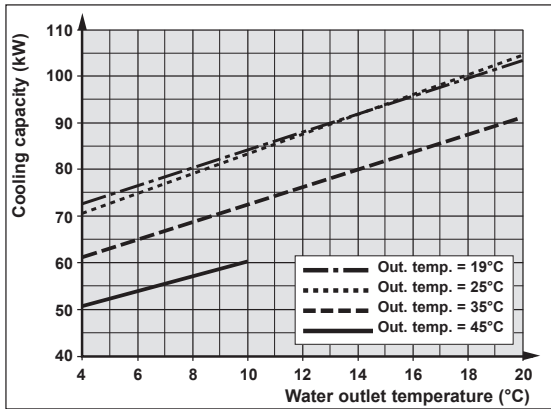
CHGV 50



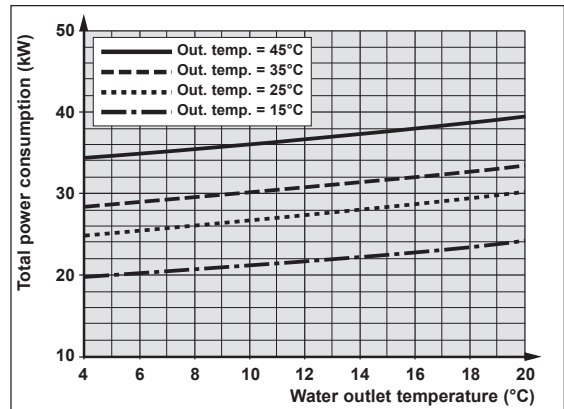
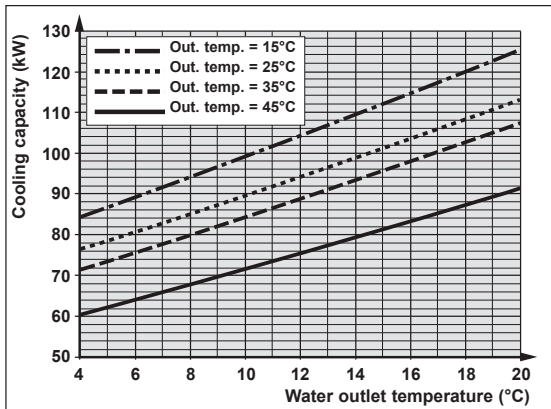
CHGV 64



CHGV 72



CHGV 80



ΔT (water) between 4 and 6°K

6 - CORRECTION OF COOLING CAPACITY

• **IMPORTANT:**

Use monopropylene glycol; a minimum rate of 15% to 20% is needed to avoid any risk of corrosion.

PRINCIPLE OF USING THE CURVES

A - Choose the percentage of glycol according to the minimum temperature to protect the hydraulic circuit against frost.

B - **Example:**

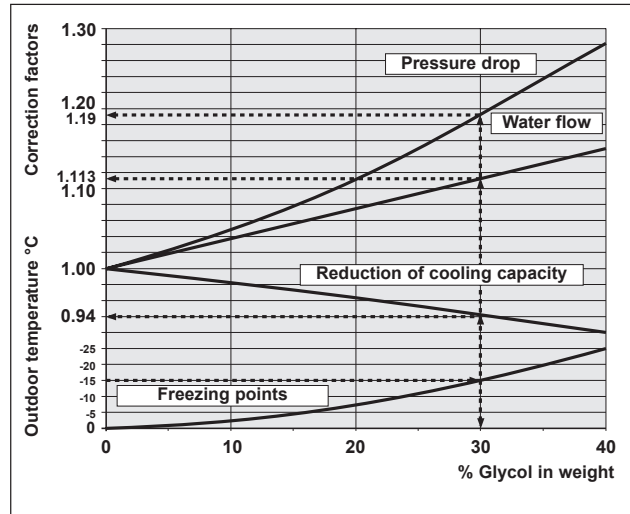
Protection at an external temperature of -15°C, which gives 30% monopropylene glycol (freezing points curve).

The loss of capacity is given on the "Reduction of cooling capacity" curve (0.94).

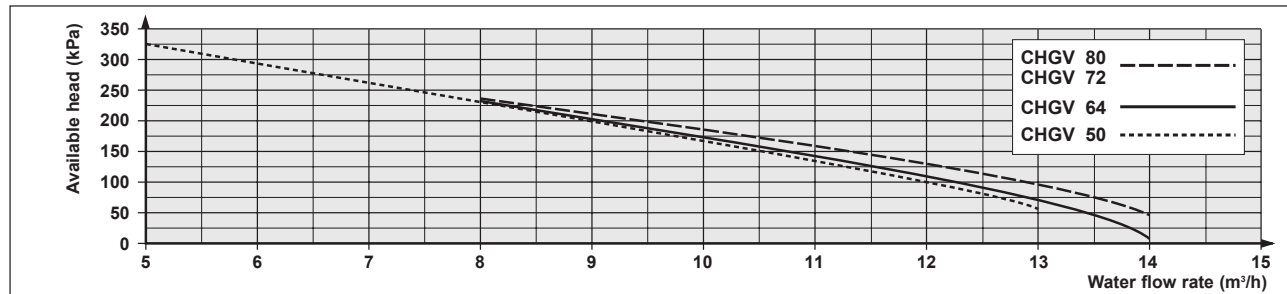
The new flow is given by the coefficient on the water flow curve (1.113).

Likewise, to determine the new pressure drop coefficient in relation to the nominal flow, read the pressure drop curve (1.19).

Valid curves for setting temperature at the water inlet.



7 - CURVES OF AVAILABLE HEADS AT UNIT OUTLET



8 - SOUND LEVELS

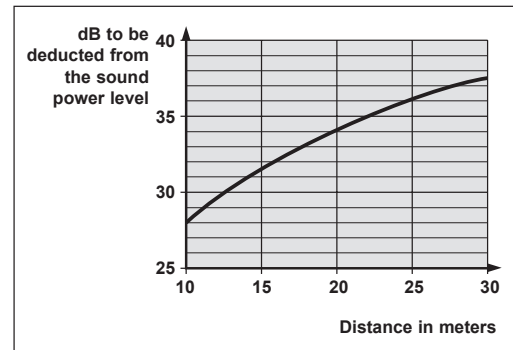
CHGV	Power level (dBA)	Sound-pressure level (dBA)
50	78	50
64	82	54
72	87	59
80	87	59

• **Nominal operating conditions:**

- Ambient temperature: 35°C.

• **Sound-pressure level:**

- Unit installed outdoors (free field) on a reflective surface.
- Measurement carried out at a distance of 10 m.



9 - INSTALLATION INFORMATION

- See details in the installation manual.

9.1 - INSTALLATION

- Protection index of the unit:
 - IP 24 : for the electrical equipment,
(IPXXB : for the mechanical hazards).
- Before installation, verify the following points:
 - the unit must be installed outside in an appropriate location and in compliance with environmental requirements (sound level, integration, etc...),
 - the water chiller's installation location must be perfectly level and strong enough to support the weight of the unit and must have adequate inundation protection,
 - sufficient space around the unit should be provided in order to facilitate servicing and maintenance operations,
 - air suction to the coil and fan discharge must not be obstructed,
 - install the unit above the region's average snowfall level,
 - vibrations and noise must not be transmitted to adjacent buildings,
 - install the machine on anti-vibration pads and fit hoses on piping elements, as required,
 - if necessary, consult an acoustics specialist concerning the unit's optimum location,
 - 4 holes Ø 22.5 enable to place hoisting hooks and lift the unit.

9.2 - ELECTRICAL CONNECTIONS

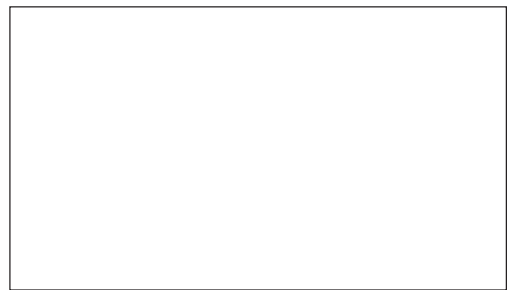
- All required information is indicated on the electrical diagram provided with the unit and in the installation manual.
- Connections are to be made in compliance with the standard code of practice and as per the standards in force at the site of installation.

9.3 - HYDRAULIC CONNECTIONS

- The hydraulic connections are to be made in compliance with the standard code of practice.
- **IMPERATIVE:** Install the filter supplied on the water inlet of the unit.

9.4 - STARTING - MAINTENANCE

- Refer to the installation guide and the maintenance manual.
- **IMPORTANT:**
 - The unit's electronic control features a frost protection device that automatically starts the water circulating pump depending on the outside temperature (adjustable threshold), even if the unit is turned off.
 - In the event the unit may be taken out of service or in the case of a high risk of freezing:
 - either drain the installation,
 - or add glycol to the circuit.
 - Tank anti-freeze resistance:
its electrical power supply and control must be separate from those of the unit.



Due to our policy of continuous development, our products are liable to modification without notice.

Technibel

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