

Dehumidification capacity: 21 to 66 kg/h
100 to 300 m² (swimming-pools)



Heating
recovery



Heating and **dehumidification** of covered pools
Optimized energy consumption
Electronic control

USE

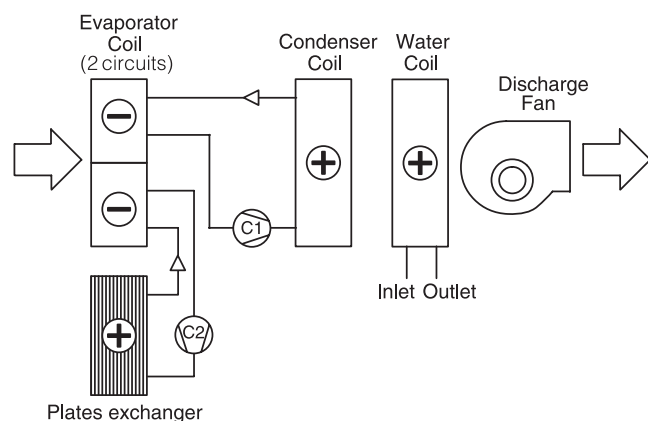
The Air Handling Units of the **BCP aquair series** are indoor monoblock units designed to preserve buildings from humidity: covered pools, etc... The units are suitable for other cases.

RANGE

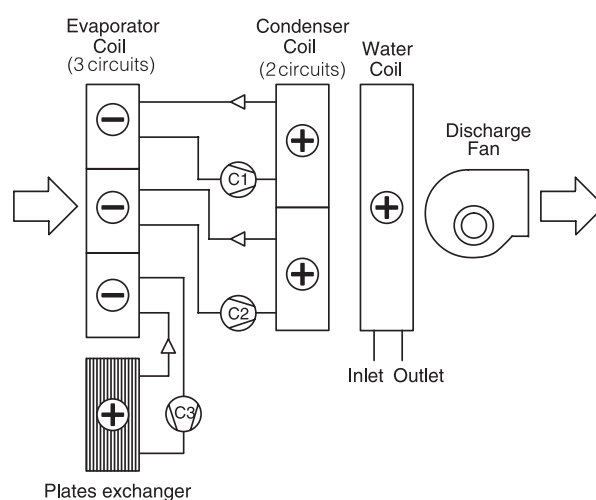
BCP aquair: 2 cooling circuits, 2 compressors, 5 models:
• 110 / 140 / 180 / 230 / 265.
BCP aquair: 3 cooling circuits, 3 compressors, 1 model:
• 315.

PRINCIPLE SCHEMES

BCP - 110 / 140 / 180 / 230 / 265



BCP - 315



NOTE: comprehensive brochure with dimensions and fan curves in .pdf file (consult us)

CHARACTERISTICS

■ Standard equipment

- Sandwich-panel casing made up of 1 mm galvanized steel plates covered with polyester and glass fiber insulation of 25 mm.
- Support frame with hinged doors to access to the sections of the unit.
- Panels and doors with rubber joints to ensure watertightness.

■ Internal air circuit

- Filter G3, renewable and easy-cleaning.
- Direct expansion chiller coil, with two circuits, copper tubes and aluminium fins covered with polyvinyl (optional).
- One circuit condenser coil, copper tubes and aluminium fins, with optional polyurethane protection (air condenser) and welded plates (water condenser).
- Condensates pan with drain hole.
- Ventilation group, made up of a galvanized metal sheet centrifugal propeller and an external motor.
- Air BY-PASS damper, manual setting.

■ Cooling circuit

- Units with 2 or 3 cooling circuits:
 - All the circuits participate in the air dehumidification process, evaporating in 2/3 circuits coil.
 - One of the circuits is condensed over a special nickel welded SMO-254 steel plate exchanger (high corrosion resistance), filled with pool water. Partial energy recovery from the evaporation process.
 - The other circuit is condensed over an air coil located at the evaporator air outlet, heating the cold and dry air before going through the optional hot water coil.
- Two or three Scroll hermetic compressors, depending upon the model, with thermal insulation, integral protection of the motor temperature, mounted on antivibrations dampers.
- Thermostatic expansion valve with external equalization.
- Anti-acid dryer filter.
- Complete refrigerant load **R-407c**.

■ Protections

- High and low pressure pressostats.
- Main door switch.
- Protection fuses of the compressor and motorfans power supply.

- Automatic circuit switch.
- Air temperature limit thermostat at the inlet of the dehumidification coil.
- Compressor anti-short-cycle timer.
- Double access door to the fan.

■ Electrical panel

- Complete electrical panel, totally wired.
- Main earthing.
- Contactors for compressor(s) and motorfans

Carel pCOc Electronic control

Relative humidity and temperature control (optional) with the following functions:

- LCD screen with permanent display of the humidity setting, measurements of temperature and relative humidity return.
- Configuration and operating parameters selection.
- Relative humidity control.
- Temperature control (with optional electrical heater).

■ Options

- Hot water coil with a 3-way proportional valve.
- Condensation coils and hot water coil made up of aluminium fins covered with polyvinyl.
- Copper/copper fins coil.
- 1 or 2-stage electrical heater with incorporated control.
- G4 and F7 filters.
- Dirty filter pressostat.
- Water condenser flexible connections.
- Hot water coil flexible connections .
- External air intake damper.
- Mixing box free-cooling: 3 - damper box
- Servomotor with incorporated return spring damper.
- Return axial fan.
- Remote control panel.
- Possibility of centralized management (pCO electronic control).

TECHNICAL CHARACTERISTICS

BCP aquair		110	140	180	230	265	315
Air circuit	Cooling capacity (1) (kW)	31,6	39,7	53,3	67,3	77,1	95,2
	Absorbed capacity (2) (kW)	7,0	8,8	12,4	15,6	18,5	22,9
	Dehumidification capacity (kg/h)	21,7	27,3	36,1	44,6	53,4	65,5
	Nominal air flow (m³/h)	5.500	7.000	9.000	11.500	13.250	16.000
	Maximum air flow (m³/h)	6.600	8.400	10.800	13.800	15.900	19.200
	Available static pressure (mmwg)	15	15	15	15	15	15
	Fan type / Number	CENTRIFUGAL/ 1					
	Power (kW)	1,1	1,5	2,2	3,0	4,0	5,5
High flow air circuit (optional)	Nominal air flow (m³/h)	10.500	10.500	17.250	17.250	24.000	-
	Fan type / Number	CENTRIFUGAL / 1					-
	Power (kW)	3,0	3,0	5,5	5,5	7,5	-
	Weight (kg)	15	10	80	75	95	-
Heat recovery	Heating capacity (4) (kW)	10	16,9	20,7	24,9	28,2	43,1
	Nominal water flow (l / h)	1.733	2.924	3.574	4.301	4.864	7.452
	Pressure drop (mmwg)	1,5	1,4	1,9	1,4	1,7	1,7
	Hydraulic connections	1"	1 1/4"	1 1/4"	1 1/2"	1 1/2"	1 1/2"
Compressor	Type	SCROLL					
	Number	2					3
	Air circuit number / recovery	1 / 1					2 / 1
	Stage number	2					3
Hot water electrical heater (optional)	Heating capacity (3) (kW)	61,5	71,5	90,0	105,0	129,0	145,0
	Nominal water flow (l / h)	3.200	3.730	4.690	5.470	6.720	7.520
	Pressure drop (mmwg)	2,3	3,1	1,4	1,8	2,1	2,6
	Hydraulic connections	1 1/4"	1 1/4"	1 1/2"	1 1/2"	1 1/2"	1 1/2"
Max. Power Input 400 V / III ph / 50 Hz (A)		37,7	31,6	48,0	55,9	61,0	86,6
Refrigerant	Type	R-407c					
	Charge (kg)	7,4	12,1	14,7	15,5	17,8	16,9
Dimensions	Length (mm)	2.070	2.070	2.282	2.282	2.450	2.450
	Width (mm)	1.248	1.248	1.498	1.498	1.498	1.498
	Height (mm)	1.315	1.315	1.613	1.613	1.813	1.813
Weight	(kg)	630	665	895	920	1.080	1.155
Condensate Draining Ø		CONNECTION 3/4"					

(1) Cooling capacity for inlet air temperature conditions of 28°C and 65% RH.

(2) Total absorbed capacity for compressor and motorfan under nominal conditions.

(3) Water from the hot water coil 82/65°C.

(4) Recovery circuit water 28/33°C.

NOTE: The optional High Flow is not available on the 315 model.

RETURN MODULE CHARACTERISTICS (OPTIONAL)

BCP aquair		110	140	180	230	265	315
Return Fan	Available static pressure (mm.w.g)	10	10	10	10	10	10
	Fan type / Number	CENTRIFUGAL / 1					
	Power (kW)	0,55	0,75	1,5	2,2	2,2	3
	Return fan weight (kg)	144	150	269	276	312	314
	Return fan weight + free-cooling (kg)	438	444	602	609	697	700
High flow Return Fan (optional)	Available static pressure. (mm.w.g)	10	10	10	10	10	-
	Fan type / Number	CENTRIFUGAL / 1					
	Power (kW)	2,2	2,2	3,0	3,0	4,0	-
	Return fan weight (kg)	163	163	316	316	360	-
	Return fan weight + free-cooling (kg)	456	456	737	737	815	-
Total dimensions	Length (mm)	4.078	4.078	4.502	4.502	4.838	4.838
	Weight (mm)	1.248	1.248	1.498	1.498	1.498	1.498
	Height (mm)	1.315	1.315	1.613	1.613	1.813	1.813

NOTE: The optional High Flow is not available on the 315 model.

MAXIMUM CURRENT (A)

BCP aquair		110	140	180	230	265	315
Compressor	400 V / III ph / 50 Hz	18 + 17	11 + 17	14 + 29	14 + 35	17 + 35	(29 x 2) + 17
Discharge fan	230 V / III ph / 50 Hz	4,7	6,1	8,7	11,9	15,5	20,1
	400 V / III ph / 50 Hz	2,7	3,6	5,0	6,9	9,0	11,6
High flow discharge fan (optional)	230 V / III ph / 50 Hz	11,9	11,9	20,1	20,1	--	-
	400 V / III ph / 50 Hz	6,9	6,9	11,6	11,6	14,7	-
Discharge fan (optional)	230 V / III ph / 50 Hz	2,8	3,6	6,1	8,7	8,7	11,9
	400 V / III ph / 50 Hz	1,6	2,1	3,6	5,0	5,0	6,9
High Flow Return Fan (optional)	230 V / III ph / 50 Hz	8,9	8,9	11,9	11,9	15,5	-
	400 V / III ph / 50 Hz	5,0	5,0	6,9	6,9	9,0	-

WIRING SECTION (MM²)

BCP aquair		110	140	180	230	265	315
Power Supply	400 V 3 wires + T + GND	16	16	16 XLPE	25 XLPE	25 XLPE	35 XLPE

NOTE: The power supply should be modified in case of additional electrical heater. The maximum current will be calculated as a sum of each element selecting the wiring section according to regulations.

NOTE: The wiring sections are not contractual. Depending on the length and the current, an appropriate section should be studied. Calculations made for installation B type according to table 1 of IRC-BT-19 (REBT 2002) and PVC insulation = Polyvinyl chloride (Maximum temperature 70°C (permanent service)) or a XLPE = Reticulated polyethylene (Maximum temperature 90°C in the conductor (permanent service)).

NOTE: The electrical line should be protected by an automatic magnetothermal switch and/or fuses planned by the installer.

SOUND POWER LEVEL

A) The **sound power level** in the **discharge fan outlet**, to take into account for the silencer calculation:

BCP aquair	110	140	180	230	265	315
dB(A)	75,0	77,8	81,3	85,9	87,2	91,1

B) The **sound power level** in the **high flow fan (optional)**, to take into account for the silencer calculation:

BCP aquair	110	140	180	230	265	315
dB(A)	86,3	86,3	85,5	85,5	85,7	-

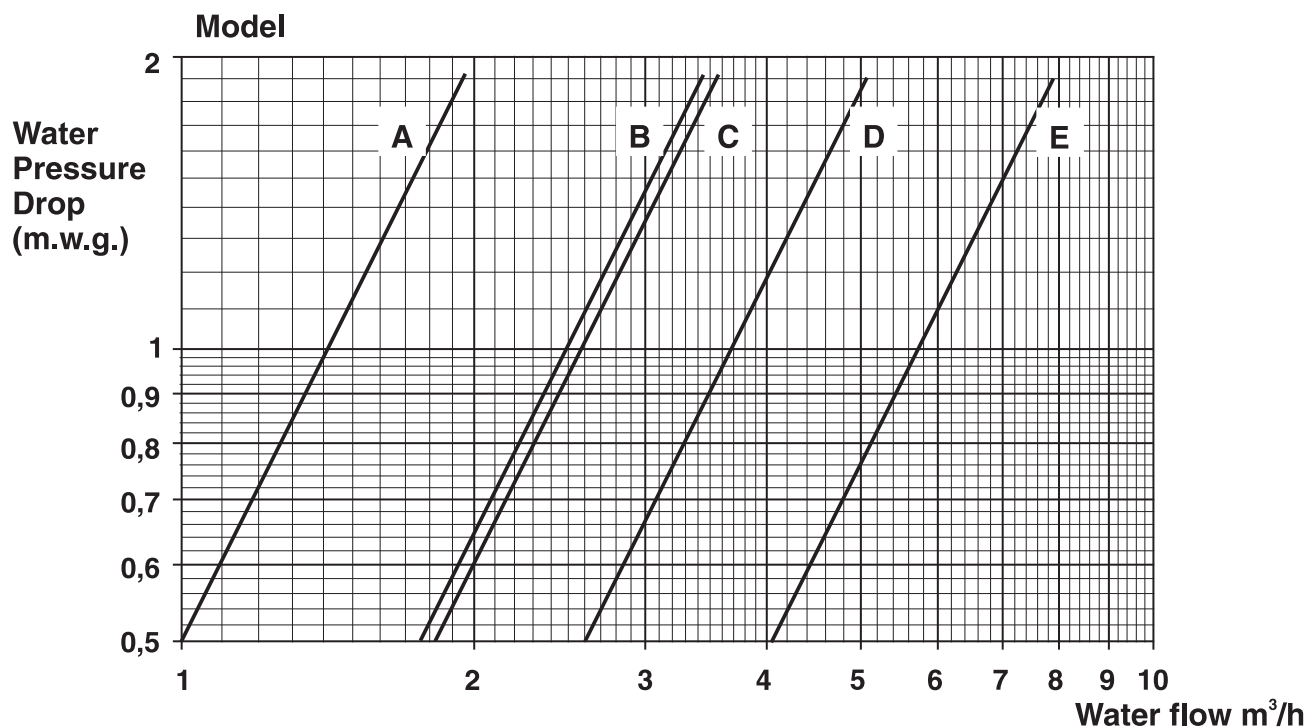
C) The **sound power level** in the **return fan intake (optional)**, to take into account for the silencer calculation:

BCP aquair	110	140	180	230	265	315
dB(A)	75,8	80,9	77,4	83,0	81,3	86,0

D) The **sound power level** in the **high flow return fan (optional)**, to take into account for the silencer calculation:

BCP aquair	110	140	180	230	265	315
dB(A)	80,7	80,7	80,7	80,7	83,2	-

WATER PRESSURE DROP IN THE EXCHANGER



BCP aquair	A	B	C	D		E
MODEL	110	140	180	230	265	315

CORROSION RESISTANCE

In the plates exchanger, corrosion problems may occur due to water characteristics and its variation. The exchanger plates are made up of SMO 254 stainless steel, and the material used for the plates welding is copper or nickel (BCP AQUAIR = nickel welding). Hereafter is indicated the water corrosion resistance for these materials with different compositions:

Water contents	Unit	Heat exchanger, copper brazed (WP type)	Heat exchanger, nicked brazed (NP type)
pH - value		7 - 9	6 - 10
Saturation index S(delta pH-value)		-0,2 < 0 < +0,2	No specifications
Total hardness	°dH	6 - 15	6 - 15
Conductivity	µS/cm	10 ... 500	No specifications
Filtered substances	mg/l	< 30	< 30
Chlorides	mg/l	< 20.000 (upper values consult)	
Free chlorine	mg/l	Consult	
Hydrogen sulphide	mg/l	< 0,05	No specifications
Ammonia	mg/l	< 2	No specifications
Sulphaes	mg/l	< 100	< 300
Hydrogen carbonate	mg/l	< 300	No specifications
Hydrogen carbonate / Sulphates	mg/l	> 1	No specifications
Sulphides	mg/l	< 1	< 5
Nitrate	mg/l	< 100	No specifications
Nitrite	mg/l	< 0,1	No specifications
Iron	mg/l	< 0,2	No specifications
Manganese	mg/l	< 0,1	No specifications
Free carbonic acid	mg/l	< 20	No specifications

NOTE: The values stated are guide values which show variations under particular operating conditions.

Important: If the pool water is introduced directly into the unit's water condenser, the addition of chlorine should never be carried out before the inlet of this condenser.

OPTIONAL ELECTRICAL HEATER

ELECTRICAL CONNECTIONS SECTION AND AVAILABLE POWER

BCP aquair	VOLTAGE	400 V / III ph / 50 Hz									
	POWER (kW)	3	6	9	12	15	18	24	27	36	54
110 / 140 180 / 230 265 / 315	Intensity (A)	4,3	8,7	13,0	17,3	21,7	26,0	34,6	39,0	52,0	77,9
	Section (mm²)	1,5	1,5	2,5	4	6	10	10	16	25	2 x 16