

OPTIONS

Single P2 Pump	P2
Single P3 Pump	P3
Single P5 Pump	P5
Double P2 Pump	D2
Double P3 Pump	D3
Double P5 Pump	D5
Non ferrous water piping for single pump configuration	WP [1]
Non ferrous water piping for double pump configuration	WD [2]
Pressurized water tank	TP
Non ferrous pressurized water circuit (stainless steel water tank)	TPI
Condenser anti-corrosion treatment Electrofin® (only for CWB 140÷450)	OEC
Condenser anti-corrosion treatment (cataphoresys) (only for CWB 510÷450)	OCT
Compressors shut-off valves	VSC
Single pump configuration shut-off valves	VSP1
Double pump configuration shut-off valves	VSP2
Non-ferrous single pump configuration shut-off valves	VSP11
Non-ferrous double pump configuration shut-off valves	VSP21
Evaporator anti-freeze heater	RA1
Evaporator and pump anti-freeze heater	RA2
Evaporator, pump and tank anti-freeze heaters	RA3
Electrical switchboard anti-condensation heater	RS
Continuous fans speed control - electronic fans (minimum ambient temperature -10.0°C)	CE
Low ambient temperature kit (minimum ambient temperature -20°C)	CL [3]
Partial heat recovery (desuperheater)	HRP [5]
Full heat recovery	HRF [6]
230V electric service plug (in the electric cabinet)	EBS
Compressors soft starters	SFS [4]
Electronic controller sun/rain protection	SRP
Compressors acoustic shields	AI1
Wind baffles kit	FWB
Condensers air filters	FP
Flanged water connections kit (EN1092-1)	WC1
Threaded water connections kit (GAS)	WC2
Stainless steel threaded water connections kit (GAS)	WC2I
Control panel roof kit	FPR
Rubber anti-vibration mountings for no tank units	FA1
Rubber anti-vibration mountings for units with tank	FA2
Automatic water filling kit	WF
Remote Panel kit	ER
Gateway for remote communication	ENB
Wooden Base	PWB
Barrier bag	PBB
Wooden crate (only for CWB 140÷220)	PWC

- [1] WP option provides EPDM piping and stainless steel water connections. Available only with any no tank configuration.
- [2] WD option provides EPDM piping and stainless steel water connections. Available only with no tank and only with double pump (D2, D3, D5) configurations only.
- [3] Includes electronic fans, electrical switchboard anti-condensation heater and liquid receiver.
- [4] Not available on all models. Contact our company.
- [5] Heating power recovered equal to approximately 20% of the cooling power produced.
- [6] Heating power recovered equal to approximately 100% of the cooling power produced.

OTHER RANGES AVAILABLE IN OUR CATALOGUE



QBE

2 to 25kW
Air-cooled chillers
with rotary and scroll compressors



CWE/HWE

13 to 140kW
Air-cooled scroll compressor
chillers and heat pumps



CWB FC

80 to 240kW
Air-cooled chillers
with integrated freecooling



CDC

300 to 1200 kW
Drycoolers
also adiabetic system available

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Chillers

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MADE IN ITALY

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FRIULAIR
Chillers



CWB

AIR-COOLED SCROLL COMPRESSOR CHILLERS

from 140 to 570 kW

Friulair markets its units in many configurations further than the ones listed in this document. Please contact our sales offices for more information: sales.chiller@friulair.com

ERP
SEPR HT
READY 2021

INDUSTRY
Ready 4.0



DESCRIPTION

The CWB range consists on air cooled water chillers with axial fans for outdoor installation. The CWB family comprises 12 basic models with cooling capacities ranging from 140 to 570kW allowing flexibility of the unit configuration and of the related accessories according to the operating conditions of the final installation. CWB units are particularly suitable for installations where continuous chilled water production is required even for applications in low external ambient temperatures. In this case, it is necessary to install the electronic fans speed control.

STRUCTURE

The structure is self-supporting and made up of a galvanized steel frame with polyester powder coating. The panels are easily removable, allowing access for maintenance and repair.

REFRIGERATION CIRCUIT - GENERAL FEATURES

The refrigeration circuit is manufactured by skilled technicians employing quality materials and brazing procedures that comply with Directive 2014/68/EU. All models include the following components (except those listed above): dehydrating filter, sight glass and humidity indicators, high pressure switch and low pressure transducer (with adjustable setting), high and low pressure gauges, pressure taps for checks and maintenance, evaporation and condensation pressure transducers, refrigerant temperature probes and air / water probes.

TECHNICAL DETAILS

REFRIGERATION CIRCUIT

- Manufactured conforming to PED directive 2014/68/EU
- Electronic expansion valve
- Refrigerant solenoid valve
- Sight glass flow indicator
- High pressure switch and high/low pressure transducer
- High and low pressure gauges and plugs

EVAPORATOR

- Copper brazed stainless steel plates heat exchanger
- Compact size and highly efficient
- Anti-freeze protection managed by the electronic controller
- Equipped with differential pressure switch

ELECTRONIC EXPANSION VALVE

The entire range is equipped with electronic expansion valves that considerably increases the energy efficiency of the machine compared to thermostatic-mechanical versions, avoids any risk of evaporator liquid backflow, especially for partial loads applications. These valves, correctly managed by the controller, allow a precise flow of refrigerant to the evaporator, maximizing the super heating control. This also avoids any risk of evaporator liquid backflow.

FANS

- Axial fans equipped with protection grid and class F insulation
- Fans speed regulation cut-phase type as standard

ALARMS CONTROL

- High refrigerant pressure switch
- Low/high refrigerant pressure transducer
- Water differential pressure switch
- Incorrect phase sequence
- Compressors thermal protection
- Temperature failure probe
- Pressure failure probe
- High water temperature
- Anti-freeze
- General alarm available via clean contact in terminal block

HYDRAULIC CIRCUIT

- Standard models are equipped with a stainless steel brazed plates evaporator without tank and pump
- Water differential pressure switch to protect the evaporator from low or no water flow rate
- Temperature probes for setpoint control



ELECTRICAL PANEL

Manufactured according to EN 60204 EC, with door lock disconnecter (It prevents access to the control panel when powered) and waterproof door to access the electronic control. It includes a circuit breaker and an auto-transformer. The wires inside the cabinet are identified.

	CWB	140	160	190	220	270	300	320	380	420	450	510	570
PERFORMANCES 20/15@25 [1]													
Cooling capacity	[kW]	145.83	172.19	199.57	234.32	270.67	293.95	325.24	389.22	429.25	465.64	531.20	580.22
PERFORMANCES 12/7@35 [2][3]													
Cooling capacity	[kW]	106.31	123.32	145.43	170.28	196.66	213.67	235.22	279.75	310.15	337.81	378.47	416.18
Compressors power input	[kW]	36.17	45.52	43.99	56.96	57.01	67.21	86.64	82.91	100.48	119.14	118.19	139.24
Total power input	[kW]	39.77	49.12	49.39	62.36	64.21	74.41	93.84	93.71	111.28	129.94	132.59	153.64
Total absorbed current	[A]	66.20	79.93	82.93	103.43	109.73	125.09	153.52	155.60	184.30	214.83	231.60	259.31
Energy efficiency	EER	2.67	2.51	2.94	2.73	3.06	2.87	2.51	2.99	2.79	2.60	2.85	2.71
Seasonal energy performance ratio [*]	SEPR HT	5.11	5.14	5.08	5.11	5.19	5.11	5.44	5.35	5.33	5.27	5.21	5.51
Water flow	[l/h]	18 286	21 211	25 014	29 289	33 826	36 751	40 458	48 117	53 345	58 103	65 097	71 583
Evaporator pressure drop	[kPa]	32.6	42.6	30.4	40.5	29.7	34.5	20.4	28.1	33.9	39.7	36.5	43.5
ELECTRICAL DATA [3][4]													
Maximum power input (total)	[kW]	53.88	62.46	68.35	81.01	84.78	95.92	116.34	128.52	145.28	162.03	178.66	199.80
Maximum absorbed current (total)	[A]	88.18	100.19	112.36	132.65	139.72	156.81	188.36	208.17	236.74	265.31	300.35	332.91
Starting current	[A]	257.99	263.99	349.03	359.18	319.69	332.51	355.17	371.98	470.40	491.83	500.06	555.48
Fan power	[kW]	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80
Fan current	[A]	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90
Fans quantity	[#]	2	2	3	3	4	4	4	6	6	6	8	8
Power supply	[V/Ph/Hz]	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50
IP protection degree	---	IP54	IP54	IP54	IP54	IP54	IP54	IP54	IP54	IP54	IP54	IP54	IP54
TECHNICAL DATA													
Compressors quantity	[#]	2	2	2	2	4	4	4	4	4	4	4	4
Refrigeration circuits quantity	[#]	1	1	1	1	2	2	2	2	2	2	2	2
Air flow	[m³/h]	44.000	44.000	66.000	66.000	88.000	88.000	88.000	132.000	132.000	132.000	176.000	176.000
Sound pressure level [5]	[dB(A)]	58.0	56.5	58.0	58.0	60.5	60.5	59.5	58.5	59.5	60.5	59.5	61.5
Water connections size (Grooved)	[pollici]	2 1/2"	2 1/2"	2 1/2"	2 1/2"	3"	3"	3"	3"	3"	3"	3"	3"
Width	[mm]	1 104	1 104	1 104	1 104	2 204	2 204	2 204	2 204	2 204	2 204	2 204	2 204
Depth	[mm]	3 004	3 004	4 004	4 004	3 004	3 004	3 004	4 004	4 004	4 004	5 004	5 004
Height	[mm]	1 990	1 990	1 990	1 990	1 990	1 990	1 990	1 990	1 990	1 990	1 990	1 990
Net weight - standard version	[kg]	1 170	1 170	1 290	1 300	1 810	1 830	1 850	2 250	2 270	2 290	2 540	2 570
OPTIONS													
Tank capacity TP/TPI	[dm³]	450	450	450	450	600	600	600	600	600	600	600	600
Expansion vessel capacity	[dm³]	18	18	18	18	18	18	18	18	18	18	18	18
Pump power input P2	[kW]	3.44	3.44	3.44	3.44	4.52	4.52	4.52	6.09	6.09	6.09	8.26	8.26
Pump absorbed current P2	[A]	6.40	6.40	6.40	6.40	8.70	8.70	8.70	10.60	10.60	10.60	13.60	13.60
Pump power input P3	[kW]	6.09	6.09	6.09	6.09	8.26	8.26	8.26	8.26	8.26	8.26	11.98	11.98
Pump absorbed current P3	[A]	10.60	10.60	10.60	10.60	13.60	13.60	13.60	13.60	13.60	13.60	21.30	21.30
Pump power input P5	[kW]	10.12	10.12	10.12	10.12	16.33	16.33	16.33	16.32	16.32	16.32	16.32	16.32
Pump absorbed current P5	[A]	17.20	17.20	17.20	17.20	26.80	26.80	26.80	27.70	27.70	27.70	27.70	27.70

WORKING LIMITS

Refer to the operating limits in the last release of the CWV technical manual. >> Contact the company.

NOTES

- [*] Data in accordance with European Regulation (EU) 2016/2281 for eco-design requirements
- [1] Data referred to: water temp. in/out: 20/15°C – ambient air temp. 25°C
- [2] Data referred to: water temp. in/out: 12/7°C – ambient air temp. 35°C
- [3] Data referred to the unit without pump
- [4] Data related to the heaviest condition allowed, without the intervention of the safety devices
- [5] Data referred to 10m and at an height of 1,5 m in open field

MICROPROCESSOR CONTROLLER

The entire range is equipped with a single electronic controller in order to reduce spare parts. It is one of the best in the market and different options allow a customized software. It displays the unit operation at any time in order to control the water temperature and the current temperature, necessary especially in case of partial or total water flow blockages and it also indicates which safety switch has triggered. It is possible to read and set data from from customers pc through the IP address of the unit. The RS485 port with Modbus RTU communication protocol is installed as standard while the LAN/Ethernet connection is optional.

MAIN FUNCTIONS

- Ambient and water inlet and outlet temperature display
- Identification and display of blocks display using alphanumeric code and full description
- Management of the pump (s) installed and of the 3-way valve
- Water differential pressure alarm delay at the start-up
- Operating counter for compressors
- Compressors and pumps automatic alternation
- No simulation activation of the compressors
- Anti-freeze protection
- Alarm reset
- Remote alarm and on / off remote alarm available via clean contact in terminal block

COMPRESSORS



- Scroll hermetic compressors
- Quiet operation and high efficiency
- Mounted on rubber anti-vibration blocks
- Crankcase heaters as standard
- Phase sequence protection device

CONDENSERS

- Microchannel aluminium coils
- Low refrigerant charge
- Free from galvanic corrosion risk

