PURESTREAM
CWM CHILLERS

BY FRIULAIR

ULTIMATE
ENERGY SAVING
TECHNOLOGY

CWM CHILLER SERIES

CWM PURESTREAM SERIES WATER CHILLERS

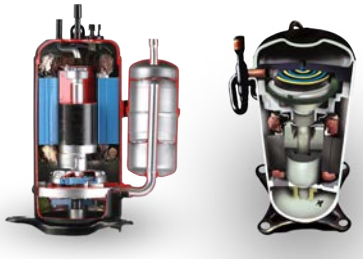
The new CWM Purestream chiller range is specifically designed to meet the stringent cooling requirements of today's advanced equipment and processes. The CWM range proivides precise temperature control of chilled water temperature while operating over long periods of time with varying load demands for many industries and applications. The range includes 8 models providing capacities from 0.45 tons to 4.3 tons and designed to be installed indoors or outdoors (CWM002 excluded). All units are equipped with the necessary components to provide safe, reliable and energy saving operation.

COPPER TUBE AND ALUMINUM FIN CONDENSERS

The CWM chillers utilize generously sized condensers that are the copper tube type with high efficiency aluminium fins. Stainless steel condenser protection filters are also included in order to protect the condensers on the CWM008 thur 014 chiller models. These filters can be easily removed for service and cleaning.

COMPRESSORS

CWM Purestream chillers utilize rotary and scroll compressors (a piston alternative for CWM002). These compressors are the most advanced range of compressors known for reliability and efficiency through their widespread use in the air conditioning and refrieration industries. The scroll compressor adds the additional benefits of quiet operation, no vibration and ability to absorb liquid returns. The compressors are mounted on rubber anti-vibration blocks to reduce noise even further. The three-phase compressors are also protected by an electronic device controlling phase sequences in order to prevent reverse rotation.



CONDENSER FANS

The four-pole axial fan motors are complete with external sickle-shaped fan blade which is activated by condensening pressure which allows for low operating temperature installations located indoors or outdoors. All fans have a protection grill, thermally protected with automatic reset and class F insulation (CWM002 model excluded).

CWM EVAPORATORS – C0-AXIAL AND BRAZED PLATE

The CWM002 thru CWM 006 chiller is equiped with a copper co-axial evaporator. All other CWM models are equipped with an enery efficient compact stainless steel brazed plate evaporator. The electronic controller's anti-freeze function keeps the evaporator's outlet water temperature controlled in order to prevent freeze ups. For models CWM008 thru CWM014 a differential pressure switch protects the evaporator against low water flow.

REFRIGERANT CIRCUIT

The refrigeration circuit is made of high quality materials and assembled by specialised personnel following rigorous brazing procedures that conform to 97/23 directive. The circuit consists of a refrigerant compressor, coaxial or stainless steel brazed plate evaporator, condenser, dehydration filter, flow indicator which indicates the presence of humidity for models CWM008 thru CWM014, thermostatic expansion valve on models CWM 003 thru CWM014, manual reset high pressure gauge, automatic reset low pressure gauge on models CWM008 thru CWM014, high and low pressure gauges on models CWM008 thru CWM014 and connection points for monitoring and maintenance.

WATER CIRCUIT

The water circuit is composed of a thermally insulated storage tank made of plastic material for models CWM002 thru to CWM006 and made of carbon steel for models CWM008 thru CWM014. The circuit also includes: a thermally insulated electric pump, water bypass which prevents problems linked to shut-off valves being closed by mistake, expansion tank for models CWM008 thru CWM014, safety valve for models CWM008 thru CWM014, automatic vent valve for models CWM008 thru CWM014, water differential pressure gauge for models CWM008 thru CWM014, and gauge and drain valve. The storage tank is on the unit outlet in order to limit temperature variations due to the compressor being switched on and off. Models from CWM002 thru CWM006 are deigned for open water circuits and not pressurized circuits. Models CWM008 thru CWM014 have as standard a pressurized water circuit which for these models can also be purchased with an open circuit as an option. Models from CWM002 thru CWM006 have as standard the hydraulic circuit made with non-ferrous materials.

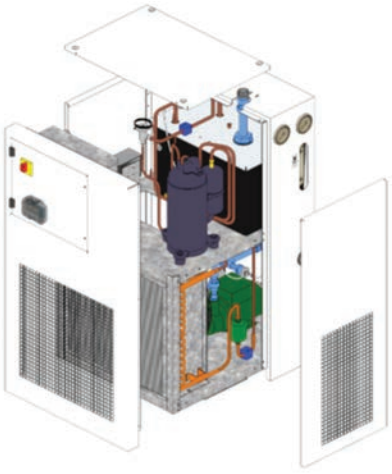
CIRCULATION PUMPS

The CWM chillers are fitted with circulation pumps, models CWM002 thru CWM006 are equipped with a peripheral pump with polymer impeller and brass body, models CWM008 thru CWM014 have a high efficiency, multi-stage centrifugal pump with steel impeller. All parts coming into contact with fluid are made of AISI 304 stainless steel with mechanical seals in carbon/ceramic/EPDM matierials as standard. All models can use water and ethylene glycol mixtures of up to 30%. The pump motor is a 2-pole, self-ventilated, with class F insulation and IP44/IP55 protection level. The CWM series (model CWM002 excluded) comes with two available pressure levels, P3 as standard and P5 available as an option.

FRAME AND CABINET - SERVICE AND MAINTENANCE

All frame and cabinetry material are made of galvanized steel and painted in a powder coat paint finsh. This allows for indoor and outdoor installation and provides protection in harsh environments. All fasteners are produced with either stainless steel or electro-galvanized materials.

The CWM cabinet was designed so that all parts, particularly those requiring maintenance and cleaning are easy to access without interfering with the chiller operation. The chiller is also designed with safety in mind.



CONTROL PANEL

The control panel complies with the Canadian electrical code and includes a door lock disconnect (excluding model CWM002 which blocks access to the control panel when it is powered. The watertight door provides easy access to the electronic controller as well as the numbered panel wires designed to make it easier for trouble shooting and maintenace. There is also an ON/OFF switch on the panel door on models CWM008 thru CWM014.

MICROPROCESSOR CONTROLLER

The electronic micro-processor controls and optimizes all CWM chiller components and functions (excluding model CWM002). The microprocessor regulates the evaporator water outlet temperature, switches pump on and off with the right offset against the compressor, manages compressors on and off cycles based on water temperature required while guaranteeing minimum operating times to protect the compressor, measurement and display of evaporator inlet and outlet temperatures as well as displays and manages the following alarm messages:

- high refrigerant pressure gauge
- low refrigerant pressure gauge (only on models CWM008 thru CWM014)
- water differential pressure gauge (only on models CWM008 thru CWM014)
- compressor thermal/phase sequence control (only on models CWM008 thru CWM014)
- pump thermal (only on models CWM008 thru CWM014)
- temperature probe failure
- pressure probe failure (only on models CWM008 thru CWM014)
- high water temperature
- anti-freeze

CWM002 Electronic Thermostat

CWM003 - 014 Microprocessor Controller

User interface is easy and intuitive and the controller can be enabled for "remote" function with its clear and visible alarm indicator. The easy-to-follow set up menu allows for easy access to set main operating parameters.

The integrated display with its bright digital characters provides a complete real time display of chiller operation and any alarm conditions.

SAFETY AND PROTECTION DEVICES

Temperature probes that control and display evaporator inlet and outlet water temperatures are included to prevent the possiblity of freezing. (model CWM002 excluded). A high pressure gauge/switch signals the chiller to stop operation if the unit reaches irregular pressures on the refrigerant circuit's high pressure side. The unit can be manually reset once the problem has been corrected. A low pressure gauge/switch is included on models CWM008 thru CWM014 which is designed to stop the chiller if refrigerant pressure is too low. Once the pressure is corrected the unit resets automatically and the chiller operation will restart and operate to the preset value. Differential water gauge/switch for models CWM008 thru CWM014 stops the chiller if water capacity is too low.

FACTORY TESTING

Each CWM chiller is tested at full load and checked for the following:

- correct component assembly
- pressurerizing of the refrigerating circuit and tested for any leaks
- pressurerizing of the water circuit
- electrical testing to ensure compliance with electrical standards
- test to ensure protection and safety components work correctly
- test electronic controller
- measurement of electrical performance

APPLICATIONS

- Plastics (injection, blow molding, extrusion, film extrusion, thermoforming)
- Printing and Graphics (manufacture, printing, cardboard, labels, plastic film)
- Medical imaging
- Food (beverage, confectionery, chocolate, processing, storage)
- Lasers (welding, profiling, cutting, optics, medical, marking, aesthetics)
- Mechanical (welding, cutting, profiling, polishing, rolling, grinding)
- Other (wood, ceramics, gold, biogas pharmaceutical, compressed air, textile)
- Hydraulic circuit cooling, Machine Tool
- Paint and Finishing
- EDM

TECHNICAL DATA

CWM Unit		002	003	004	005	006	009	012	014
Cooling capacity [1]	Tons	0.4	0.71	0.95	1.17	1.44	2.23	2.76	3.67
Cooling capacity [1]	kW	1.4	2.6	3.4	4.1	5.1	7.9	9.7	12.9
Compressor power input [1]	kW	0.57	0.68	0.98	1.12	1.53	1.70	2.28	2.90
Total power input [1] [2]	kW	1.82	1.27	1.57	1.71	2.12	3.33	4.22	4.84
Total absorbed current [1] [2]	A	12.60	6.53	7.09	8.74	10.78	5.87	8.75	9.73
EER (pump excluded) [1]	--	1.14	3.33	3.22	3.58	3.31	3.57	3.30	3.68
Water flow [1]	gal/min	1.25	2.28	2.92	3.63	4.40	7.02	8.69	11.43
Available pressure [1] [2]	psig	49.9	42.1	36.6	35.1	29.7	52.0	41.8	31.1
Maximum power input (total) [2] [3]	kW	2.0	1.8	2.2	2.4	2.9	4.7	6.3	7.2
Maximum absorbed current (total) [2] [3]	A	13.9	8.9	9.3	12.2	14.7	7.8	11.8	13.0
Starting current [2] [3]	A	49.1	22.4	33.4	38.4	53.4	35.2	44.3	48.3
Fan power	kW	0.88	0.22	0.22	0.22	0.22	0.89	1.20	1.20
Fan current	A	1.10	0.94	0.94	0.94	0.94	1.40	3.50	3.50
Number of fans	#	1	1	1	1	1	1	1	1
Pump power input [2]	kW	0.37	0.37	0.37	0.37	0.37	0.74	0.74	0.74
Pump absorbed current [2]	A	5.00	2.50	2.50	2.50	2.50	1.80	1.80	1.80
Refrigerant	--	R134a	R407C						
Power supply	Voltage	110/1/60	230/1/60				460/3/60(Trans.575/3/60)		
Compressor type	--	Recip.	Rotary					Scroll	
Evaporator type	--	Coaxial					Brazed plates		
Condenser type	--	Tube&fins							
N° of compressors	#	1	1	1	1	1	1	1	1
Air flow	cfm	424	589	1.248	1.089	1.089	2.825	2.943	3.237
Sound pressure level [4]	dB(A)	40.5	46.5	47	47	47	48	49	49
Water connections diameter NPT	"	1/2"	1/2"	1/2"	1/2"	1/2"	1"	1"	1"
Tank capacity	gal	4.0	6.6	6.6	6.6	6.6	21.1	21.1	21.1
Expansion vessel capacity	gal	--	--	--	--	--	1.3	1.3	1.3
IP protection degree	--	IP20	IP44						
Width	inch	19.1	21.9	21.9	21.9	21.9	31.1	31.1	31.1
Depth	inch	17.9	24.6	24.6	24.6	24.6	39.4	39.4	39.4
Heigth	inch	32.5	38.4	38.4	38.4	38.4	57.7	57.7	57.7
Weight	lb	143	220	227	234	243	529	540	562
P5 PUMP DATA									
Pump power input	kW	n.a.	0.60	0.60	0.60	0.60	0.74	0.74	0.74
Pump absorbed current	A	n.a.	4.10	4.10	4.10	4.10	1.80	1.80	1.80
Available pressure [1] [5]	psig	n.a.	68.4	65.8	67.3	64.7	81.3	67.7	50.6

(1) Data based on the following conditions: water temperature in/out: 68/59°F (20/15°C) - ambient airtemperature: 77°F (25°C)

(2) Data based on unit with standard P3 pump

(3) Data based on worst conditions allowed by safety devices fitted on the unit

(4) Based on 10 meter distance in an open environment

(5) Data based on unit with P5 pump (optional)

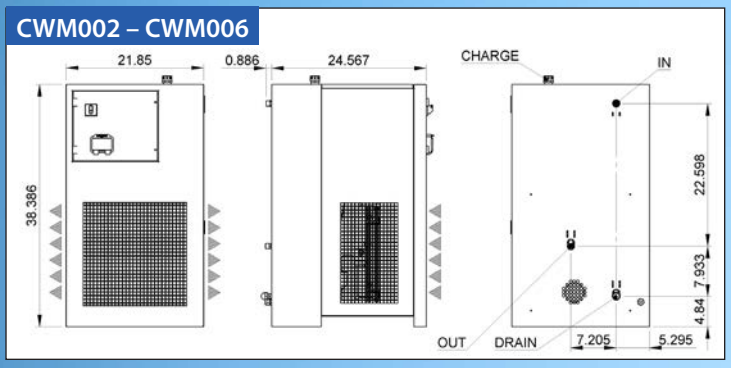
STANDARD FEATURES AND OPTIONS

CWM Models	002	003-006	009	012-014
Thermostat controller	o	x	x	x
Microprocessor controller	x	o	o	o
Thermostatic valve	□	o	o	o
Refrigerant gauges	□	□	o	o
Water gauge	o	o	o	o
Condensing control (fan on-off)	o	o	o	o
Continuous fan speed control (Low air temperature kit)	x	x	□	□
Pump and storage tank	o	o	o	o
Pressurized tank without pump	x	x	□	□
Atmospheric tank with pump	o	o	□	□
Atmospheric tank without pump	□	□*	□	□
High head pump	x	x	o	o
Water differential pressure switch	x	x	□	□
Hydraulic circuit with non-ferrous materials	o	o	□	□
Water level switch	□	□	□	□
Water by-pass	o	o	o	o
Compressor crank case heater	x	□	□	□
High pressure switch	o	o	o	o
Low pressure switch	x	□	o	o
Phase sequence control relay switch	x	x	□	□
Outdoor installation setting	x	o	o	o
Stainless steel air filters	x	x	o	o
Wheels	□	□	□	□

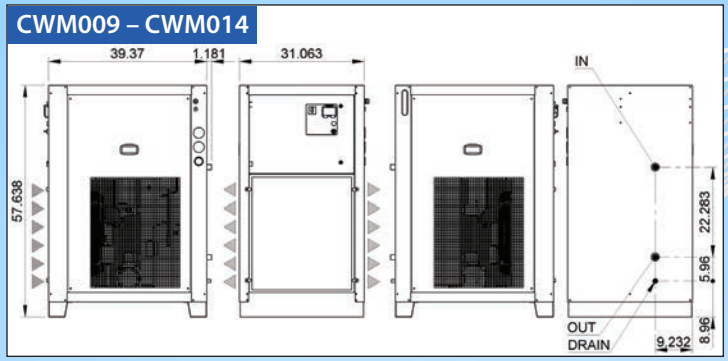
Legend: X not available; O as standard; □ optional; *contact CAG Purification

DIMENSIONAL DATA

CWM002 – CWM006



CWM009 – CWM014



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