



CONTAINERIZED

ATC Evaporative Condensers & ATW Closed Circuit Coolers



Engineered to Deliver the
Maximum Capacity and
Highest Quality to the
Worldwide Market - with the
Lowest Shipping Costs!



IARW International Association of Refrigerated Warehouses

MEMBER **i iar** International Institute of Ammonia Refrigeration



Since its founding in 1976, EVAPCO, Incorporated has become an industry leader in the engineering and manufacturing of quality heat transfer products around the world. EVAPCO's mission is to provide first class service and quality products for the following markets:

- Industrial Refrigeration
- Commercial HVAC
- Industrial Process
- Power

EVAPCO's powerful combination of financial strength and technical expertise has established the company as a recognized manufacturer of market-leading products on a worldwide basis. EVAPCO is also recognized for the superior technology of their environmentally friendly product innovations in sound reduction and water management.

EVAPCO is an employee owned company with a strong emphasis on research & development and modern manufacturing plants. EVAPCO has earned a reputation for technological innovation and superior product quality by featuring products that are designed to offer these operating advantages:

- Higher System Efficiency
- Environmentally Friendly
- Lower Annual Operating Costs
- Reliable, Simple Operation and Maintenance

With an ongoing commitment to Research & Development programs, EVAPCO provides the most advanced products in the industry—**Technology for the Future, Available Today!**



EVAPCO products are manufactured in 17 locations in 8 countries around the world and supplied through a sales network consisting of over 170 offices.

Advanced Technology Coolers & Condensers for a Worldwide Market

The Containerized line of Evaporative Condensers & Closed Circuit Coolers has been custom-engineered to ship in standard shipping containers. This feature greatly reduces the transportation costs associated with shipping. Customers around the world will benefit from the Advanced Technology features which are standard on the Containerized design:

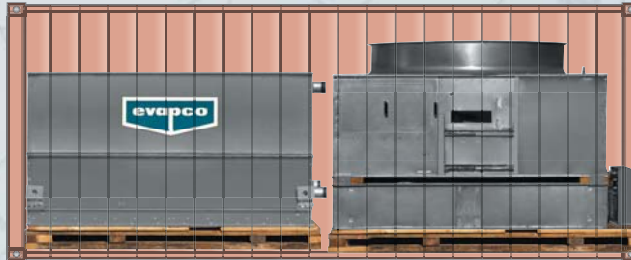
- Low-Energy Consumption
- Induced-Draft Operation
- Thermal-Pak® Coils
- ZM® Nozzles
- PVC Water Distribution System
- WST Air Inlet Louvers
- Simple Operation and Maintenance

The Containerized Coolers & Condensers have been designed for simplified field assembly and rigging, while delivering the quality and reliability of a factory-built unit. These units provide the maximum capacity with the lowest ocean shipping cost!

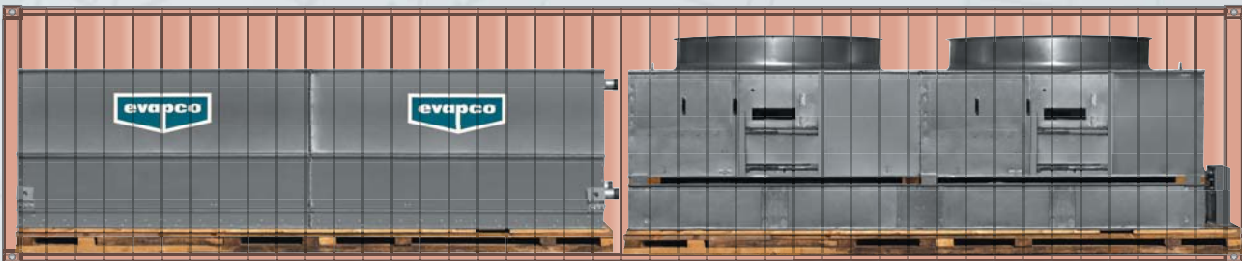


Designed to Lower Transportation and Installation Costs while Delivering Advanced Technology, Superior Performance, Ease of Maintenance and Long, Trouble-Free Operation.

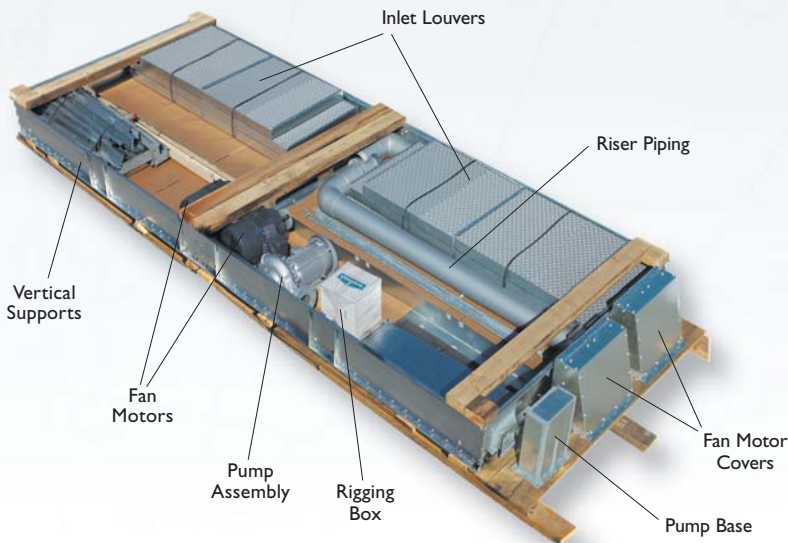
A complete 2.24M x 2.74M (7.35 ft. x 9 ft.) unit will fit in a 20' Shipping Container!



A complete 2.24M x 5.49M (7.35 ft. x 18 ft.) unit will fit in a 40' Shipping Container!



All Parts Required for Assembly Ship Inside the Basin.



Optional Accessories Ship Inside the Container

- Sloped Ladder
- Motor Davit
- Vibration Cutout Switch
- Basin Heater Package
- Electric Water Level Control
- Specialty Motors

Easy Field Assembly

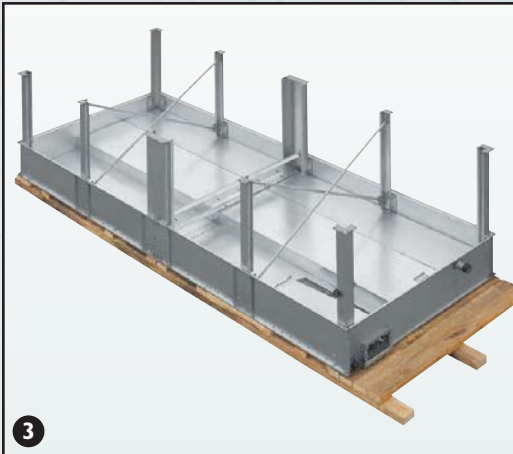
(See rigging and assembly instructions for fully detailed procedure.)



1 Unload Unit from Container



2 Mount Fan Section to Coil Section



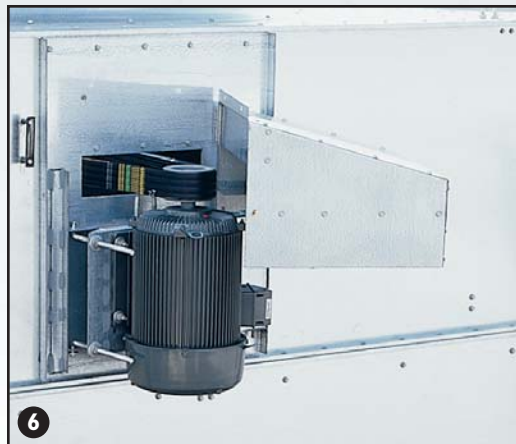
3 Install Vertical Posts in Basin Section



4 Mount Coil/Fan to Basin Section



5 Mount Pump and Piping



6 Mount Fan Motor



C-ATC

EVAPORATIVE CONDENSERS



CONTAINERIZED ADVANCED TECHNOLOGY CONDENSER

*Up to 251 TR (178TR Ammonia) in a 20' Shipping Container!**

*Up to 504 TR (357TR Ammonia) in a 40' Shipping Container!**

Technology for the Future...Available Today!

*Tons at standard conditions: HCFC-22 and HFC-134a. 40.6°C (105°F) condensing, 4.5°C (40F) suction and 25.6°C (78°F) W.B.; ammonia 35.7°C (96.3°F) condensing, -6.7°C (20°F) suction and 25.6°C (78°F) W.B.

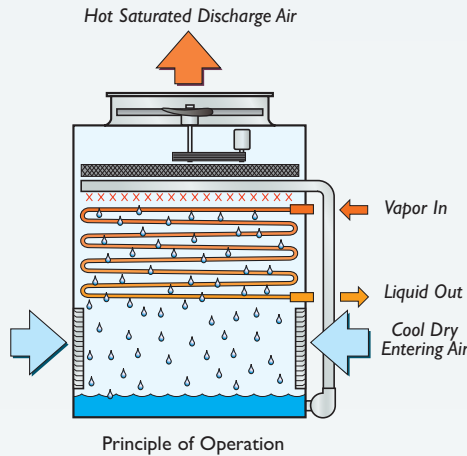


C-ATC Design and Construction Features

The C-ATC line of evaporative condensers reflects EVAPCO's continuing commitment to research and development. Their advanced design provides owners with many operational and performance advantages. For particularly corrosive environments, EVAPCO condensers are available with Type 304 or 316 Stainless Steel construction. Contact the factory for details on available options.

Principle of Operation

The process fluid is circulated through the coil of the evaporative condenser. Heat from the process fluid is dissipated through the coil tubes to the water cascading downward over the tubes. Simultaneously, air is drawn in through the air inlet louvers at the base of the cooler and travels upward over the coil opposite the water flow. A small portion of the water is evaporated which removes the heat. The warm moist air is drawn to the top of the closed circuit cooler by the fan and is discharged to the atmosphere. The remaining water falls to the sump at the bottom of the cooler where it is recirculated by the pump up through the water distribution system and back down over the coils.



Fan Drive System

The fan motor and drive assembly is designed to allow easy servicing of the motor and adjustment of the belt tension from the exterior of the unit. The totally enclosed fan cooled (T.E.F.C.) fan motor is mounted on the outside for easy access. A protective cover swings away to allow servicing and belt adjustment.

A large, hinged access door with a "quick release" latch provides access to the fan section for maintenance.



External Motor Mount (Optional Ladder Shown)

Fan Shaft Bearings

The fan shaft bearings in C-ATC units are specially selected for long, trouble-free life. They are rated for an L-10 life of 75,000 to 135,000 hours and are the heaviest pillow block bearings available.

Aluminum Alloy Pulleys

Fan pulleys located in the air stream are constructed of corrosion free aluminum for long life. The aluminum also helps belts last longer.

Power-Band Drive Belt

The Power-Band is a solid-back, multigroove belt system that has high lateral rigidity. The belt is constructed of neoprene with polyester cords. The drive belt is designed for 150 percent of the motor nameplate horsepower for long life and durability.

WST Air Inlet Louvers

Water and Sight Tight air inlet louvers are designed to effectively eliminate splash-out and sunlight, greatly reducing the potential for algae formation inside the condenser. They are manufactured of corrosion-free PVC and mounted in light-weight frames to allow for easy removal and convenient access to the basin section.



Type 304 Stainless Steel Strainers

Subjected to excessive wear and corrosion, the sump strainer is critical to the successful operation of the condenser. EVAPCO uses only stainless steel for this very important component.





U.S. Patent No. 6315804

PVC Drift Eliminators

EVAPCO eliminators are constructed entirely of inert, corrosion-free PVC. This patented design reduces drift rate to 0.001% and has been specially treated to resist damaging ultraviolet light. The eliminators are assembled in easily handled sections to facilitate removal, thereby exposing the upper portion of the unit and water distribution system for periodic inspection.

ZM[®] Nozzles

Even and constant water distribution is paramount for reliable, scale-free evaporative condensing. EVAPCO'S Zero Maintenance Spray Nozzle remains clog-free under the toughest conditions to deliver approximately 6 GPM to every square foot of coil plan area (4 lps per square meter).

The heavy-duty, fiber-reinforced ZM[®] spray nozzles have a 1-5/16" (33.3 mm) diameter opening and a 1-1/2" (38.1 mm) splash plate clearance, enabling EVAPCO to use 75% fewer nozzles.



Furthermore, the fixed position ZM[®] Spray Nozzles are mounted in corrosion-free PVC water distribution pipes that have threaded end caps. Together, these elements combine to provide unequal coil coverage, scale prevention and make the industry's best performing, non-corrosive, maintenance-free water distribution system.

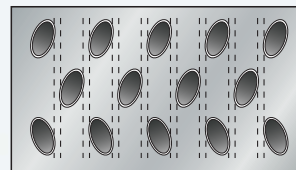
Thermal-Pak[®] Coil

EVAPCO'S patented Thermal-Pak[®] condensing coils feature a design which assures maximum condensing capacity. The air flow thru the coil is counter-flow to the refrigerant flow, providing the most efficient heat transfer. This special coil design is utilized to reduce the air pressure drop through the unit while maximizing tube surface area and increasing its heat transfer capabilities. The uniquely shaped tubes of the coil are staggered in the direction of air flow to obtain a high film coefficient. In addition, all tubes are pitched in the direction of refrigerant flow assure drainage of liquid refrigerant.

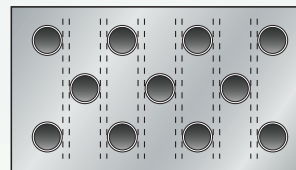
These characteristics and other engineering advancements of the Thermal-Pak[®] coil have been proven in EVAPCO'S world-class research and development laboratory resulting in the following end user benefits:

- Lower Operating Refrigerant Charge
- Low Power Consumption Per Ton
- Lower Operating Weight
- Small Plan Area Per Ton

U.S. Patent No. 5799725



Thermal-Pak[®] Coil by EVAPCO



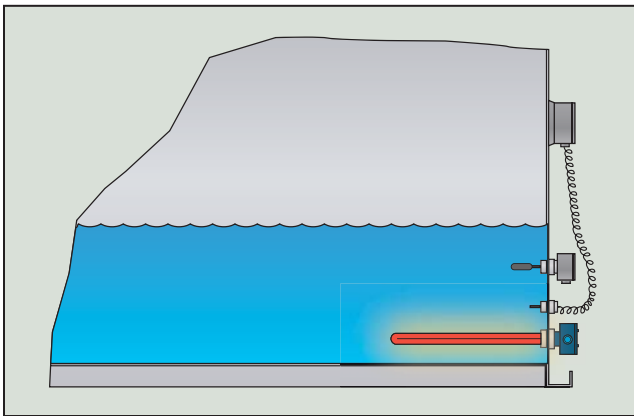
Round Tube Coil by Others

The coils are manufactured from high quality steel tubing following the most stringent quality control procedures. Each circuit is inspected to assure the material quality and then tested before being assembled into a coil. Finally, the assembled coil is air pressure tested under water at 400 psig (35 bar in accordance with the "Pressure Equipment Directive" (PED) 97/23/EC in Europe). To protect the coil against corrosion, it is placed in a heavy-duty steel frame and the entire assembly is dipped in molten zinc (hot dip galvanized) at a temperature of approximately 800°F (430°C).



Electric Heaters

Electric immersion heaters for the condenser basin are available. They are sized to maintain a +4°C to +5°C (+40°F) pan water temperature with the fans off and an ambient air temperature of -18°C (0°F). They are furnished with a thermostat and low water protection device to cycle the heater on when required and to prevent the heater elements from energizing unless they are completely submerged. All components are in weatherproof enclosures for outdoor use. The heater power contactors and electric wiring are not included as standard.

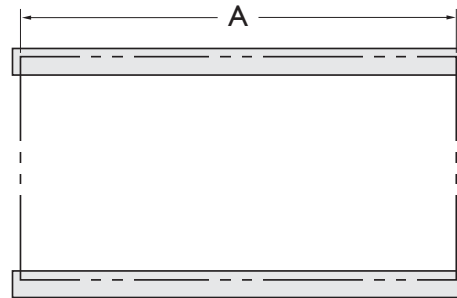


Heater Sizes			
Models	-18°C 0°F kW	-29°C -20°F kW	-40°C -40°F kW
C-ATC-181 to 251	7	10	15
C-ATC-264 to 338	8	14	18
C-ATC-329 to 373	10	14	20
C-ATC-362 to 504	12	18	24

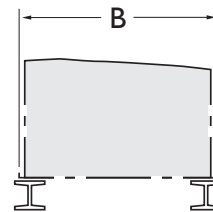
Steel Support

The recommended support for EVAPCO condensers is structural "I" beams located under the outer flanges and running the entire length of the unit. Mounting holes, 19mm (3/4") in diameter are located in the bottom channels of the pan section to provide for bolting to the structural steel. (Refer to certified drawings from the factory for bolt hole locations).

Beams should be level to within 3mm per 2m (1/8" per 6') before setting the unit in place. Do not level the unit by shimming between it and the "I" beams as this will not provide proper longitudinal support.



Plan View



End Elevation

Models	S.I. Units (mm)		English Units	
	A	B	A	B
CATC-181 to 251	2731	2240	8' 11-1/2"	7' 4-3/16"
CATC-264 to 338	3651	2240	11' 11-3/4"	7' 4-3/16"
CATC-329 to 373	4261	2240	13' 11-3/4"	7' 4-3/16"
CATC-362 to 504	5486	2240	18' 0"	7' 4-3/16"

Selection Procedure

The following procedure is applicable to both reciprocating and screw compressors. (Refer to factory for selection on centrifugal compressors). The total heat of rejection for the system is determined by adding the evaporator load, expressed in kW or BTU/Hr; and the absorbed kW or BTU/Hr of the compressor motor. This procedure applies to both open type and hermetic compressors.

Heat of Rejection Method

Heat of Rejection = Evaporator Load (kW or BTU/Hr) + Compressor Load (kW or BTU/Hr)

The compressor load (BTU/Hr) can be calculated by one of the following formulae:

Open Compressors:

$$\text{Compressor Load (BTU/hr)} = \text{Compressor BHP} \times 2545$$

Hermetic Compressors:

$$\text{Compressor Load (BTU/hr)} = \text{kW Compressor Input} \times 3415$$

Once the heat of rejection has been determined, multiply it by the factor for the specified operating conditions (condensing temperature and wet bulb temperature) obtained from either Table 1a/1b or Table 2a/2b. The resultant figure is then used to select a unit from Table 3a/3b. Unit capacities in Table 3B are given in thousands of BTU/Hr; or MBH.

Note: For screw compressor selections employing water cooled oil cooling, select a condenser for the total load (BTU/Hr or kW) as described above. The condenser can then function in one of two ways:

- (1) Recirculating water from the water sump can be used directly in the oil cooler. A separate pump should be employed and the return water should be directed into the water sump at the opposite end from the pump suction.
- (2) The condenser coil can be circuited so that water or a glycol-water mixture for the oil cooler can be cooled in a separate section of the coil. Specify load and water flow required.

If the oil cooler is supplied by water from a separate source, then the oil cooling load should be deducted from the heat of rejection before making the selection.

EXAMPLE - S.I. Units

Given: 500 kW evaporator load, HCFC-22 refrigerant, 35°C condensing temperature, 26°C wet bulb temperature with a 150 kW compressor.

Selection:

$$\begin{array}{rcl} \text{Evaporator Load} & = & 500 \text{ kW} \\ \text{Compressor Load} & = & 150 \text{ kW} \\ \hline \text{Total} & = & 750 \text{ kW} \end{array}$$

From Table 1a the capacity factor for 35°C condensing temperature and 26°C wet bulb temperature is 1.71. Therefore, the corrected heat of rejection load is:

$$\begin{array}{rcl} 750 \text{ kW} & \times & 1.71 & = & 1282.5 \text{ kW} \\ \left(\begin{array}{c} \text{Total Heat} \\ \text{of Rejection} \end{array} \right) & & \left(\begin{array}{c} \text{Capacity} \\ \text{Factor} \end{array} \right) & & \left(\begin{array}{c} \text{Corrected Heat} \\ \text{Rejection Load} \end{array} \right) \end{array}$$

Model C-ATC-304 is selected by using the unit heat of rejection capacities found in Table 3a.

EXAMPLE - English Units

Given: 240 ton evaporator load, ammonia (R-717) refrigerant, 95°F condensing temperature, 80°F wet bulb temperature with a 250 compressor BHP.

Selection:

$$\begin{array}{rcl} \text{Evaporator Load} & = & 240 \text{ tons} \times 12,000 = 2,880,000 \text{ BTU/Hr} \\ \text{Compressor Load} & = & 250 \text{ BHP} \times 2545 = 636,250 \text{ BTU/Hr} \\ \hline \text{Total} & = & 3,516,250 \text{ BTU/Hr} \end{array}$$

From Table 2b the capacity factor for 95°F condensing temperature and 80°F wet bulb temperature is 1.63. Therefore, the corrected heat of rejection load is:

$$\begin{array}{rcl} 3,516.25 \text{ MBH} & \times & 1.63 & = & 5,731.49 \text{ MBH} \\ \left(\begin{array}{c} \text{Total Heat} \\ \text{of Rejection} \end{array} \right) & & \left(\begin{array}{c} \text{Capacity} \\ \text{Factor} \end{array} \right) & & \left(\begin{array}{c} \text{Corrected Heat} \\ \text{Rejection Load} \end{array} \right) \end{array}$$

Model C-ATC-415 is selected by using the unit heat of rejection capacities found in Table 3b.



Table 1a - HCFC-22 and HFC-134a Heat Rejection Factors – S.I. Units

Condensing Pres. (kPa)		Cond. Temp. °C	Wet Bulb Temperature, (°C)																	
HCFC-22	HFC-134a		10	12	14	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1090	669	30	1.07	1.15	1.25	1.38	1.47	1.57	1.69	1.83	2.00	2.23	2.50	2.86	3.36	—	—	—	—	—
1154	718	32	0.94	1.01	1.09	1.19	1.26	1.32	1.40	1.49	1.60	1.74	1.90	2.11	2.36	—	—	—	—	—
1220	759	34	0.85	0.90	0.97	1.04	1.09	1.14	1.20	1.26	1.34	1.43	1.54	1.66	1.81	2.02	2.31	—	—	—
1253	785	35	0.80	0.85	0.91	0.97	1.02	1.06	1.11	1.15	1.21	1.29	1.37	1.46	1.56	1.71	1.89	2.13	2.41	2.77
1287	814	36	0.77	0.81	0.86	0.92	0.96	1.00	1.04	1.07	1.13	1.19	1.26	1.34	1.43	1.56	1.71	1.90	2.14	2.43
1359	856	38	0.70	0.74	0.78	0.82	0.85	0.86	0.90	0.93	0.96	1.01	1.06	1.11	1.18	1.26	1.35	1.47	1.62	1.78
1431	915	40	0.65	0.67	0.70	0.73	0.76	0.78	0.80	0.83	0.86	0.89	0.93	0.97	1.02	1.08	1.14	1.22	1.32	1.44
1508	978	42	0.59	0.62	0.64	0.67	0.68	0.70	0.72	0.74	0.77	0.80	0.83	0.86	0.89	0.94	0.98	1.04	1.11	1.19
1587	1026	44	0.54	0.56	0.59	0.61	0.62	0.63	0.65	0.66	0.68	0.70	0.73	0.75	0.78	0.82	0.85	0.89	0.92	0.97

Note: Consult factory for selections using other refrigerants.

Table 2a - Ammonia (R-717) Heat Rejection Factors – S.I. Units

Condensing Pres. (kPa)		Cond. Temp. °C	Wet Bulb Temperature, (°C)																
			10	12	14	16	17	18	19	20	21	22	23	24	25	26	27	28	29
1063	30	0.95	1.03	1.12	1.23	1.31	1.40	1.51	1.63	1.79	1.99	2.24	2.56	3.00	—	—	—	—	—
1133	32	0.84	0.90	0.97	1.06	1.12	1.18	1.25	1.32	1.43	1.55	1.70	1.88	2.11	—	—	—	—	—
1206	34	0.76	0.81	0.86	0.93	0.98	1.02	1.07	1.12	1.19	1.28	1.36	1.48	1.61	1.80	2.06	—	—	—
1245	35	0.71	0.76	0.81	0.87	0.91	0.95	0.99	1.03	1.08	1.15	1.23	1.30	1.39	1.53	1.69	1.90	2.15	2.47
1284	36	0.69	0.73	0.77	0.82	0.86	0.89	0.92	0.96	1.01	1.07	1.13	1.20	1.28	1.39	1.53	1.70	1.91	2.17
1365	38	0.63	0.66	0.69	0.73	0.76	0.78	0.81	0.83	0.86	0.90	0.94	0.99	1.05	1.12	1.21	1.31	1.44	1.59
1451	40	0.58	0.60	0.62	0.65	0.67	0.70	0.72	0.74	0.76	0.80	0.83	0.87	0.91	0.96	1.02	1.09	1.18	1.29
1539	42	0.53	0.55	0.57	0.60	0.61	0.63	0.64	0.66	0.68	0.71	0.74	0.76	0.80	0.84	0.88	0.93	0.99	1.06
1630	44	0.49	0.50	0.52	0.54	0.56	0.56	0.58	0.59	0.61	0.63	0.65	0.67	0.70	0.73	0.76	0.79	0.83	0.86

Table 3a - Unit Heat Rejection Capacity – S.I. Units

C-ATC Model	kW Base	C-ATC Model	kW Base	C-ATC Model	kW Base
181	780	282	1,215	373	1,608
193	832	304	1,310	387	1,668
208	896	316	1,362	415	1,789
220	948	329	1,418	442	1,905
225	970	338	1,457	453	1,952
241	1,039	351	1,513	462	1,991
251	1,082	362	1,560	482	2,077
264	1,138	367	1,582	504	2,172

Table 1b - HCFC-22 and HFC-134a Heat Rejection Factors – English Units

Condensing Pres. (psig)		Cond. Temp. °F	Wet Bulb Temperature, (°F)																	
HCFC-22	HFC-134a		50	55	60	62	64	66	68	70	72	74	75	76	77	78	80	82	84	86
156	95	85	1.10	1.22	1.39	1.50	1.61	1.75	1.93	2.13	2.42	2.78	3.02	3.29	3.64	4.00	-	-	-	-
168	104	90	.93	1.02	1.14	1.21	1.28	1.36	1.45	1.57	1.71	1.89	2.00	2.12	2.25	2.38	2.85	3.50	-	-
182	114	95	.80	.87	.95	1.00	1.05	1.10	1.15	1.22	1.31	1.40	1.45	1.50	1.56	1.64	1.82	2.07	2.37	2.77
196	124	100	.71	.76	.82	.85	.88	.91	.94	.98	1.03	1.09	1.12	1.15	1.20	1.24	1.34	1.46	1.63	1.82
211	135	105	.63	.66	.70	.72	.75	.77	.80	.83	.87	.91	.93	.95	.97	1.00	1.06	1.13	1.23	1.35
226	146	110	.56	.59	.62	.64	.65	.67	.69	.71	.74	.77	.78	.80	.82	.84	.88	.93	.98	1.04

Note: Consult factory for selections using other refrigerants.

Table 2b - Ammonia (R-717) Heat Rejection Factors – English Units

Condensing Pres. (psig)		Cond. Temp. °F	Wet Bulb Temperature, (°F)																	
			50	55	60	62	64	66	68	70	72	74	75	76	77	78	80	82	84	86
152	85	.98	1.09	1.24	1.34	1.44	1.56	1.72	1.90	2.16	2.48	2.70	2.94	3.25	3.57	-	-	-	-	
166	90	.83	.91	1.02	1.08	1.14	1.21	1.29	1.40	1.53	1.69	1.79	1.89	2.01	2.12	2.54	3.12	-	-	
181	95	.71	.78	.85	.89	.94	.98	1.03	1.09	1.17	1.25	1.29	1.34	1.39	1.47	1.63	1.85	2.12	2.47	
185	96.3	.69	.75	.82	.86	.90	.94	.98	1.03	1.10	1.18	1.22	1.26	1.31	1.37	1.51	1.71	1.94	2.25	
197	100	.63	.68	.73	.76	.79	.81	.84	.87	.92	.97	1.00	1.03	1.07	1.11	1.20	1.30	1.46	1.63	
214	105	.56	.59	.62	.64	.67	.69	.71	.74	.78	.81	.83	.85	.87	.89	.95	1.01	1.10	1.21	
232	110	.50	.53	.55	.57	.58	.60	.62	.63	.66	.69	.70	.71	.73	.75	.79	.83	.87	.93	

Table 3b - Unit Heat Rejection Capacity – English Units

C-ATC Model	MBH Base
181	2,661
193	2,837
208	3,058
220	3,234
225	3,308
241	3,543
251	3,690
264	3,881

C-ATC Model	MBH Base
282	4,145
304	4,469
316	4,645
329	4,836
338	4,969
351	5,160
362	5,321
367	5,395

C-ATC Model	MBH Base
373	5,483
387	5,689
415	6,101
442	6,497
453	6,659
462	6,791
482	7,085
504	7,409



C-ATC Engineering Dimensions & Data – S.I. Units

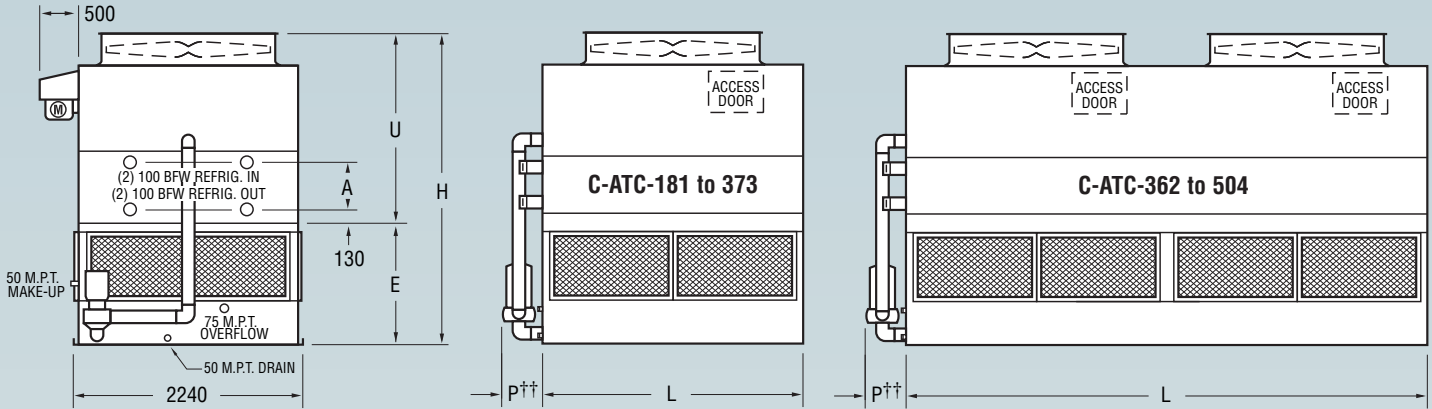


Table I Engineering Data

C-ATC Model No.*	R-717 KW*	Fans		Weights			Refrigerant Operating Charge kg***	Coil Volume L	Spray Pump		Remote Sump			Dimensions (mm)					
		KW	m ³ /s	Shipping	Operating	Heaviest Section			KW	L/s	Liters Req'd**	Conn. Size (mm)	Operating Weight	Height H	Upper U	Lower E	Coil A	Length L	Pump P
C-ATC-181	551	5.5	16.8	3,420	4,140	2,690	66	544	1.5	25.8	455	200	3,610	3423	2105	1318	495	2727	563
C-ATC-193	590	7.5	18.5	3,420	4,150	2,690	66	544	1.5	25.8	455	200	3,620	3423	2105	1318	495	2727	563
C-ATC-208	638	7.5	17.9	3,890	4,650	3,160	84	710	1.5	25.8	455	200	4,120	3613	2296	1318	686	2727	563
C-ATC-225	689	11	20.1	3,950	4,710	3,220	84	710	1.5	25.8	455	200	4,180	3613	2296	1318	686	2727	563
C-ATC-220	672	7.5	17.4	4,380	5,180	3,660	104	876	1.5	25.8	455	200	4,650	3804	2486	1318	876	2727	563
C-ATC-241	737	11	19.5	4,440	5,240	3,710	104	876	1.5	25.8	455	200	4,710	3804	2486	1318	876	2727	563
C-ATC-251	767	11	18.9	4,930	5,760	4,200	122	1041	1.5	25.8	455	200	5,230	3994	2677	1318	1067	2727	563
C-ATC-264	806	11	25.5	4,210	5,240	3,330	84	715	2.2	34.7	585	250	4,510	3423	2105	1318	495	3648	631
C-ATC-282	862	11	24.8	4,850	5,930	3,970	111	937	2.2	34.7	585	250	5,200	3613	2296	1318	686	3648	631
C-ATC-304	931	11	24.0	5,470	6,600	4,590	138	1160	2.2	34.7	585	250	5,870	3804	2486	1318	876	3648	631
C-ATC-316	965	15	26.0	5,500	6,630	4,620	138	1160	2.2	34.7	585	250	5,900	3804	2486	1318	876	3648	631
C-ATC-338	1,034	15	25.2	6,150	7,330	5,270	163	1382	2.2	34.7	585	250	6,600	3994	2677	1318	1067	3648	631
C-ATC-329	1,004	11	26.8	6,300	7,580	5,280	159	1349	2.2	37.8	700	250	6,760	3915	2486	1429	876	4258	617
C-ATC-351	1,073	15	29.1	6,320	7,610	5,310	159	1349	2.2	37.8	700	250	6,790	3915	2486	1429	876	4258	617
C-ATC-367	1,120	15	28.2	7,070	8,410	6,060	191	1610	2.2	37.8	700	250	7,590	4105	2677	1429	1067	4258	617
C-ATC-373	1,142	18.5	30.0	7,080	8,430	6,070	191	1610	2.2	37.8	700	250	7,610	4105	2677	1429	1067	4258	617
C-ATC-362	1,107	(2)5.5	33.8	6,340	7,920	4,950	125	1056	4	50.4	890	300	6,840	3632	2105	1527	495	5483	670
C-ATC-387	1,180	(2)7.5	37.1	6,350	7,940	4,960	125	1056	4	50.4	890	300	6,860	3632	2105	1527	495	5483	670
C-ATC-415	1,267	(2)7.5	36.0	7,310	8,970	5,910	166	1392	4	50.4	890	300	7,890	3823	2296	1527	686	5483	670
C-ATC-453	1,383	(2)11	40.3	7,420	9,080	6,030	166	1392	4	50.4	890	300	8,000	3823	2296	1527	686	5483	670
C-ATC-442	1,348	(2)7.5	34.9	8,260	10,000	6,870	204	1728	4	50.4	890	300	8,920	4013	2486	1527	876	5483	670
C-ATC-482	1,473	(2)11	39.1	8,380	10,120	6,990	204	1728	4	50.4	890	300	9,040	4013	2486	1527	876	5483	670
C-ATC-462	1,413	(2)7.5	33.8	9,240	11,050	7,850	243	2064	4	50.4	890	300	9,970	4204	2677	1527	1067	5483	670
C-ATC-504	1,538	(2)11	37.9	9,360	11,170	7,970	243	2064	4	50.4	890	300	10,090	4204	2677	1527	1067	5483	670

* Tons at standard conditions: HCFC-22 and HFC-134a. 40.6°C condensing, 4.5°C suction and 25.6°C W.B.; ammonia 35.7°C condensing, -6.7°C suction and 25.6°C W.B.

** Liters shown is water in suspension in unit and piping. Allow for additional water in bottom of remote sump to cover pump suction and strainer during operation. (300mm would normally be sufficient.)

*** Refrigerant charge is shown for R-717. Multiply by 1.93 for R-22 and 1.98 for R-134a.

† Heaviest section is the coil section.

†† Pump base ships loose on models C-ATC-264 to 338.

Dimensions are subject to change. Do not use for pre-fabrication.

C-ATC Engineering Dimensions & Data – English Units

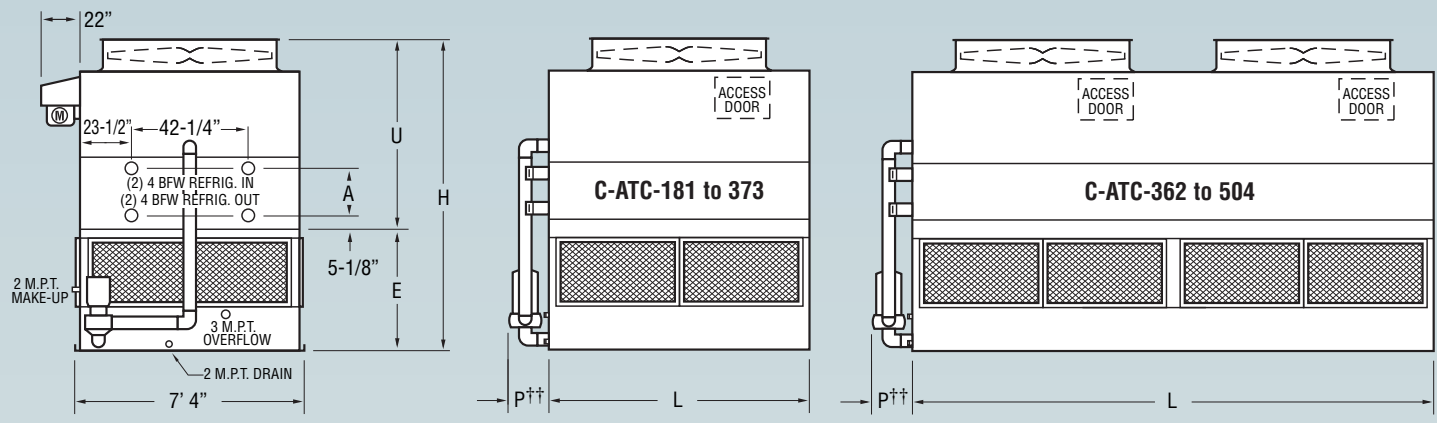


Table I Engineering Data

C-ATC Model No.*	R-717 Tons*	Fans		Weights			Refrigerant Operating Charge lbs.***	Coil Volume ft³	Spray Pump		Remote Sump			Dimensions					
		HP	CFM	Shipping	Operating	Heaviest Section			HP	GPM	Gallons Req'd**	Conn. Size	Operating Weight	Height H	Upper U	Lower E	Coil A	Length L	Pump P
C-ATC-181	128	7.5	35,830	7,530	9,130	5,930	145	19	2	410	120	8"	7,960	11' 2-3/4"	6' 10-7/8"	4' 3-7/8"	19-1/2"	8' 11-3/8"	22-1/8"
C-ATC-193	137	10	39,290	7,540	9,140	5,940	145	19	2	410	120	8"	7,970	11' 2-3/4"	6' 10-7/8"	4' 3-7/8"	19-1/2"	8' 11-3/8"	22-1/8"
C-ATC-208	148	10	38,140	8,570	10,250	6,970	185	25	2	410	120	8"	9,080	11' 10-1/4"	7' 6-3/8"	4' 3-7/8"	27"	8' 11-3/8"	22-1/8"
C-ATC-225	160	15	42,730	8,700	10,380	7,100	185	25	2	410	120	8"	9,210	11' 10-1/4"	7' 6-3/8"	4' 3-7/8"	27"	8' 11-3/8"	22-1/8"
C-ATC-220	156	10	37,000	9,660	11,420	8,060	230	31	2	410	120	8"	10,250	12' 5-3/4"	8' 1-7/8"	4' 3-7/8"	34-1/2"	8' 11-3/8"	22-1/8"
C-ATC-241	171	15	41,450	9,790	11,550	8,190	230	31	2	410	120	8"	10,380	12' 5-3/4"	8' 1-7/8"	4' 3-7/8"	34-1/2"	8' 11-3/8"	22-1/8"
C-ATC-251	178	15	40,170	10,860	12,700	9,260	270	37	2	410	120	8"	11,530	13' 1-1/4"	8' 9-3/8"	4' 3-7/8"	42"	8' 11-3/8"	22-1/8"
C-ATC-264	187	15	54,270	9,280	11,550	7,350	185	25	3	550	155	10"	9,940	11' 2-3/4"	6' 10-7/8"	4' 3-7/8"	19-1/2"	11' 11-5/8"	24-7/8"
C-ATC-282	200	15	52,690	10,690	13,070	8,760	245	33	3	550	155	10"	11,460	11' 10-1/4"	7' 6-3/8"	4' 3-7/8"	27"	11' 11-5/8"	24-7/8"
C-ATC-304	216	15	51,110	12,060	14,550	10,130	305	41	3	550	155	10"	12,940	12' 5-3/4"	8' 1-7/8"	4' 3-7/8"	34-1/2"	11' 11-5/8"	24-7/8"
C-ATC-316	224	20	55,390	12,120	14,610	10,190	305	41	3	550	155	10"	13,000	12' 5-3/4"	8' 1-7/8"	4' 3-7/8"	34-1/2"	11' 11-5/8"	24-7/8"
C-ATC-338	240	20	53,680	13,550	16,150	11,620	360	49	3	550	155	10"	14,540	13' 1-1/4"	8' 9-3/8"	4' 3-7/8"	42"	11' 11-5/8"	24-7/8"
C-ATC-329	233	15	57,120	13,880	16,720	11,650	350	48	3	600	185	10"	14,910	12' 10-1/8"	8' 1-7/8"	4' 8-1/4"	34-1/2"	13' 11-5/8"	24-1/4"
C-ATC-351	249	20	61,910	13,940	16,780	11,710	350	48	3	600	185	10"	14,970	12' 10-1/8"	8' 1-7/8"	4' 8-1/4"	34-1/2"	13' 11-5/8"	24-1/4"
C-ATC-367	260	20	60,000	15,580	18,550	13,350	420	57	3	600	185	10"	16,740	13' 5-5/8"	8' 9-3/8"	4' 8-1/4"	42"	13' 11-5/8"	24-1/4"
C-ATC-373	265	25	63,860	15,610	18,580	13,380	420	57	3	600	185	10"	16,770	13' 5-5/8"	8' 9-3/8"	4' 8-1/4"	42"	13' 11-5/8"	24-1/4"
C-ATC-362	257	(2)7.5	71,910	13,980	17,470	10,910	275	37	5	800	235	12"	15,090	11' 11"	6' 10-7/8"	5' 1/8"	19-1/2"	17' 11-7/8"	26-3/8"
C-ATC-387	274	(2)10	78,880	14,010	17,500	10,940	275	37	5	800	235	12"	15,120	11' 11"	6' 10-7/8"	5' 1/8"	19-1/2"	17' 11-7/8"	26-3/8"
C-ATC-415	294	(2)10	76,580	16,110	19,770	13,040	365	49	5	800	235	12"	17,390	12' 6-1/2"	7' 6-3/8"	5' 1/8"	27"	17' 11-7/8"	26-3/8"
C-ATC-453	321	(2)15	85,790	16,360	20,020	13,290	365	49	5	800	235	12"	17,640	12' 6-1/2"	7' 6-3/8"	5' 1/8"	27"	17' 11-7/8"	26-3/8"
C-ATC-442	313	(2)10	74,280	18,220	22,050	15,150	450	61	5	800	235	12"	19,670	13' 2"	8' 1-7/8"	5' 1/8"	34-1/2"	17' 11-7/8"	26-3/8"
C-ATC-482	342	(2)15	83,210	18,470	22,300	15,400	450	61	5	800	235	12"	19,920	13' 2"	8' 1-7/8"	5' 1/8"	34-1/2"	17' 11-7/8"	26-3/8"
C-ATC-462	328	(2)10	71,980	20,380	24,370	17,310	535	73	5	800	235	12"	21,990	13' 9-1/2"	8' 9-3/8"	5' 1/8"	42"	17' 11-7/8"	26-3/8"
C-ATC-504	357	(2)15	80,640	20,630	24,620	17,560	535	73	5	800	235	12"	22,240	13' 9-1/2"	8' 9-3/8"	5' 1/8"	42"	17' 11-7/8"	26-3/8"

* Tons at standard conditions: HCFC-22 and HFC-134a. 105°F condensing, 40°F suction and 78°F V.W.B.; ammonia 96.3°F condensing, 20°F suction and 78°F V.W.B.
 ** Gallons shown is water in suspension in unit and piping. Allow for additional water in bottom of remote sump to cover pump suction and strainer during operation. (12" would normally be sufficient.)
 *** Refrigerant charge is shown for R-717. Multiply by 1.93 for R-22 and 1.98 for R-134a.
 † Heaviest section is the coil section.
 †† Pump base ships loose on models C-ATC-264 to 338.
 Dimensions are subject to change. Do not use for pre-fabrication.



C-ATC Evaporative Condenser Specification

Furnish and install as shown on the plans an EVAPCO Model _____ induced draft counterflow evaporative condenser with a condensing capacity of _____ BTUH (kW) operating with a _____ refrigerant at _____ °F (°C) condensing temperature with a _____ °F (°C) entering wet bulb temperature.

Basin and Casing

The basin and casing shall be constructed of heavy gauge mill hot-dip galvanized steel (G-235 in U.S.A., Z-725 in Europe and Z-600 in Asia) for long life and durability. Standard basin accessories shall include overflow, drain, type 304 stainless steel strainers, and brass make-up valve with plastic float.

Fan Motor

_____ horsepower (kW) totally enclosed fan cooled motors with 1.15 service factor shall be furnished suitable for outdoor service on _____ volts, _____ hertz, and _____ phase. Motor(s) shall be mounted on an adjustable base, which is accessible from the outside of the unit for service. A swing away protective cover shall shield the motor and sheave from the weather.

Drive

The fan drive shall be multigroove, solid back V-belt type with taper lock sheaves designed for 150% of the motor nameplate horsepower. The belt material shall be neoprene reinforced with polyester cord and specifically designed for evaporative cooler service. Fan sheave shall be aluminum alloy construction. The fans and the fan sheaves shall be mounted on the shaft with a specially coated bushing to provide maximum corrosion protection. Belt adjustment shall be accomplished from the exterior of the unit. Bearing lube lines shall be extended to the exterior of the unit for easy maintenance.

Axial Propeller Fans

Fans shall be heavy-duty axial propeller type statically balanced. The fans shall be constructed of aluminum alloy blades, installed in a closely fitted cowl with venturi air inlet. Fan screens shall be galvanized steel mesh and frame, bolted to the fan cowl.

Fan Shaft Bearings

Fan shaft bearings shall be heavy-duty self-aligning ball type with grease fittings extended to the outside of the unit. Materials shall be stainless steel balls with chrome steel races and zinc plated housing for corrosion resistance. Bearings shall be designed for a minimum L-10 life of 75,000 hours.

Water Recirculation Pump

The pump(s) shall be a close-coupled, centrifugal type with mechanical seal, installed vertically at the factory to allow free drainage on shut down. _____ horsepower (kW) totally enclosed motor(s) shall be furnished suitable for outdoor service on _____ volts, _____ hertz, and _____ phase.

Heat Transfer Coil

Cooling coil(s) shall be all prime surface steel, encased in a steel framework and hot-dip galvanized after fabrication as a complete assembly. The tubes shall be arranged in a self-spacing, staggered pattern in the direction of airflow for maximum heat transfer efficiency and minimum pressure drop, without the use of additional spacers between the coil tubes. The coil(s) shall be pneumatically tested at 400 psig, under water (35 bar in accordance with "Pressure Equipment Directive" (PED) 97/23/EC in Europe).

Water Distribution System

The spray header shall be constructed of schedule 40 polyvinyl chloride pipe for corrosion resistance. All spray branches shall be removable for cleaning. The water shall be distributed over the entire coil surface by heavy-duty, fiber-reinforced spray nozzles [1-5/16" (33.3mm) diameter opening and 1-1/2" (38.1mm) splash plate clearance] with internal sludge ring to eliminate clogging. Nozzles shall be threaded into spray header to provide easy removal for maintenance.

Eliminators

The eliminators shall be constructed entirely of inert polyvinyl chloride (PVC) in easily handled sections. The eliminator design shall incorporate three changes in air direction to assure complete removal of all entrained moisture from the discharge air stream. Maximum drift rate shall be less than 0.001% of the circulating water rate.

Louvers

The louvers shall be constructed from polyvinyl chloride (PVC). The louvers shall be mounted in easily removable frames for access to the pan for maintenance. The louvers shall have a minimum of two changes in air direction to prevent splash out and block direct sunlight.

Finish

All basin and casing materials shall be constructed of heavy gauge mill hot-dip galvanized steel (G-235 in U.S.A., Z-725 in Europe and Z-600 in Asia). During fabrication, all panel edges shall be coated with a 95% pure zinc-rich compound for superior protection against corrosion.



C-ATW

CLOSED CIRCUIT COOLER



CAT-W COOLERS

CONTAINERIZED **A**DVANCED **T**ECHNOLOGY **W**ATER COOLER

*Up to 143 Tons in a 20' Shipping Container!**

*Up to 334 Tons in a 40' Shipping Container!**

Technology for the Future...Available Today!

* Tons at standard conditions: 37.7°C (100°F) inlet, 32.2°C (90°F) outlet and 25.6°C (78°F) WB

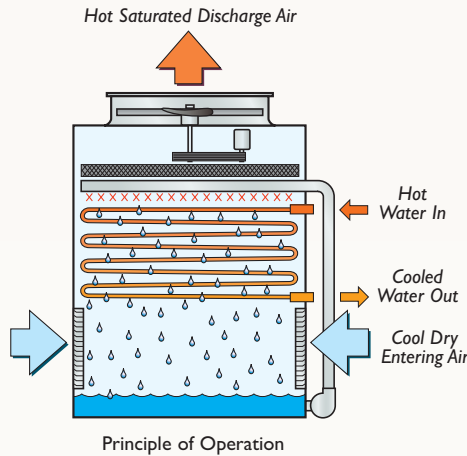


C-ATW Design and Construction Features

The C-ATW line of closed circuit coolers reflects EVAPCO's continuing commitment to research and development. Their advanced design provides owners with many operational and performance advantages. For particularly corrosive environments, EVAPCO condensers are available with Type 304 or 316 Stainless Steel construction. Contact the factory for details on available options.

Principle of Operation

The process fluid is circulated through the coil of the closed circuit cooler. Heat from the process fluid is dissipated through the coil tubes to the water cascading downward over the tubes. Simultaneously, air is drawn in through the air inlet louvers at the base of the cooler and travels upward over the coil opposite the water flow. A small portion of the water is evaporated which removes the heat. The warm moist air is drawn to the top of the closed circuit cooler by the fan and is discharged to the atmosphere. The remaining water falls to the sump at the bottom of the cooler where it is recirculated by the pump up through the water distribution system and back down over the coils.



Fan Drive System

The fan motor and drive assembly is designed to allow easy servicing of the motor and adjustment of the belt tension from the exterior of the unit. The totally enclosed fan cooled (T.E.F.C.) fan motor is mounted on the outside for easy access. A protective cover swings away to allow servicing and belt adjustment.

A large, hinged access door with a "quick release" latch provides access to the fan section for maintenance.



External Motor Mount (Optional Ladder Shown)

Fan Shaft Bearings

The fan shaft bearings in C-ATW units are specially selected for long, trouble-free life. They are rated for an L-10 life of 75,000 to 135,000 hours and are the heaviest pillow block bearings available.

Aluminum Alloy Pulleys

Fan pulleys located in the air stream are constructed of corrosion free aluminum for long life. The aluminum also helps belts last longer.

Power-Band Drive Belt

The Power-Band is a solid-back, multigroove belt system that has high lateral rigidity. The belt is constructed of neoprene with polyester cords. The drive belt is designed for 150 percent of the motor nameplate horsepower for long life and durability.

WST Air Inlet Louvers

Water and Sight Tight air inlet louvers are designed to effectively eliminate splash-out and sunlight, greatly reducing the potential for algae formation inside the condenser. They are manufactured of corrosion-free PVC and mounted in light-weight frames to allow for easy removal and convenient access to the basin section.



Type 304 Stainless Steel Strainers

Subjected to excessive wear and corrosion, the sump strainer is critical to the successful operation of the condenser. EVAPCO uses only stainless steel for this very important component.





U.S. Patent No. 6315804

PVC Drift Eliminators

EVAPCO eliminators are constructed entirely of inert, corrosion-free PVC. This patented design reduces drift rate to 0.001% and has been specially treated to resist damaging ultraviolet light. The eliminators are assembled in easily handled sections to facilitate removal, thereby exposing the upper portion of the unit and water distribution system for periodic inspection.



ZM[®] Nozzles

Even and constant water distribution is paramount for reliable, scale-free evaporative condensing. EVAPCO'S Zero Maintenance Spray Nozzle remains clog-free under the toughest conditions to deliver approximately 6 GPM to every square foot of coil plan area (4 lps per square meter).

The heavy-duty, fiber-reinforced ZM[®] spray nozzles have a 1-5/16" (33.3 mm) diameter opening and a 1-1/2" (38.1 mm) splash plate clearance, enabling EVAPCO to use 75% fewer nozzles.



Furthermore, the fixed position ZM[®] Spray Nozzles are mounted in corrosion-free PVC water distribution pipes that have threaded end caps. Together, these elements combine to provide unequalled coil coverage, scale prevention and make the industry's best performing, non-corrosive, maintenance-free water distribution system.

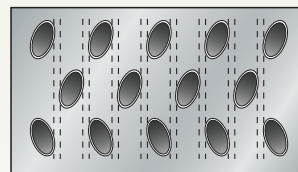
Thermal-Pak[®] Coil

EVAPCO'S patented Thermal-Pak[®] coils feature a design which assures maximum cooling capacity. The air flow thru the coil is counterflow to the process fluid, providing the most efficient heat transfer. This special coil design is utilized to reduce the air pressure drop through the unit while maximizing tube surface area and increasing its heat transfer capabilities. The uniquely shaped tubes of the coil are staggered in the direction of air flow to obtain a high film coefficient. In addition, all tubes are pitched in the direction of flow to assure drainage of the process fluid.

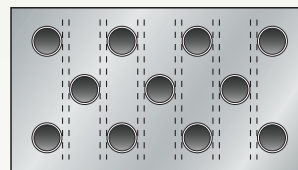
These characteristics and other engineering advancements of the Thermal-Pak[®] coil have been proven in EVAPCO'S world-class research and development laboratory resulting in the following end user benefits:

- Low Power Consumption Per Ton
- Lower Operating Weight
- Small Plan Area Per Ton

U.S. Patent No. 5799725



Thermal-Pak[®] Coil by EVAPCO



Round Tube Coil by Others

The coils are manufactured from high quality steel tubing following the most stringent quality control procedures. Each circuit is inspected to assure the material quality and then tested before being assembled into a coil. Finally, the assembled coil is air pressure tested under water at 400 psig (35 bar in accordance with the "Pressure Equipment Directive" (PED) 97/23/EC in Europe). To protect the coil against corrosion, it is placed in a heavy-duty steel frame and the entire assembly is dipped in molten zinc (hot dip galvanized) at a temperature of approximately 800°F (430°C).



Design

EVAPCO units are of heavy-duty construction and designed for long trouble-free operation. Proper equipment selection, installation and maintenance is, however, necessary to ensure full unit performance. Some of the major considerations in the application of a cooler are presented below. For additional information, contact the factory.

Air Circulation

It is important that proper air circulation be provided. The best location is on an unobstructed roof top or on ground level away from walls and other barriers. Those closed circuit coolers located in wells, enclosures or adjacent to high walls must be properly located to avoid the problems associated with recirculation.

Recirculation raises the wet bulb temperature of the entering air causing the water temperature to rise above the design. For these cases, the discharge of the fan should be located at a height even with the adjacent wall, thereby reducing the chance of recirculation. For additional information, see the EVAPCO Equipment Layout Manual.

Good engineering practice dictates that the closed circuit cooler discharge air not be directed or located close to or in the vicinity of building air intakes.

Piping

Cooler piping should be designed and installed in accordance with generally accepted engineering practices. The piping layout should be symmetrical on multiple unit systems, and sized for a reasonably low water velocity and pressure drop.

The standard closed circuit cooler is recommended only on a closed, pressurized system. The piping system should include an expansion tank to allow for fluid expansion and purging air from the system.

Note: Closed Circuit Coolers should never be used on an open type system. An open type system with a cooler may result in premature coil failure.

The piping system should be designed to permit complete drainage of the heat exchanger coil. This will require a vacuum breaker or air vent to be installed at the high point and a drain valve installed at the low point of the piping system. Both must be adequately sized.

All piping should be securely anchored by properly designed hangers and supports. No external loads should be placed upon the cooler connections, nor should any of the pipe supports be anchored to the cooler framework.

Recirculating Water System

The surest way to protect the recirculating water system from freezing is with a remote sump. The remote sump should be located inside the building and below the unit. When a remote sump arrangement is selected, the spray pump is provided by others and installed at the remote sump. All water in the closed circuit cooler basin should drain to the remote sump when the spray pump cycles off.

Other freeze protection methods are available when a remote sump is not feasible. Electric pan heaters, steam or hot water coils can be used to keep the pan water from freezing when the unit cycles off. Water lines to and from the unit, spray pump and related piping should be heat traced and insulated up to the overflow level in order to protect from freezing.

The unit should not be operated dry (fans on, pump off) unless the basin is completely drained and the unit has been designed for dry operation. Consult the factory when dry operation is a requirement.

Freeze Protection

If the units are installed in a cold climate and operated year-round, freeze protection must be provided for the heat exchanger coil in the unit as well as for the recirculating water system.

Heat Exchanger Coil

The simplest and most foolproof method of protecting the heat exchanger coil from freeze-up is to use a glycol solution. If this is not possible, an auxiliary heat load must be maintained on the coil at all times so that the water temperature does not drop below 50°F (10°C) when the cooler is shut down. Heat loss data shown for each unit is based on 50°F (10°C) water in the coil, -10°F (-23.3°C) ambient and 45 MPH (72.4 KPH) winds (fan and pump off).

Heat Loss Data, MBH

Model	Standard Unit (KW)	Standard Unit (MBH)
C-ATW 67-3*	56	192
C-ATW 67-4*	68	232
C-ATW 67-5*	76	261
C-ATW 67-6*	81	278
C-ATW 89-3*	75	258
C-ATW 89-4*	91	312
C-ATW 89-5*	103	351
C-ATW 89-6*	110	375
C-ATW 103-3*	89	303
C-ATW 103-4*	107	365
C-ATW 103-5*	121	412
C-ATW 103-6*	128	438
C-ATW 133-3*	115	392
C-ATW 133-4*	138	473
C-ATW 133-5*	156	532
C-ATW 133-6*	166	568

If glycol is not used, in addition to ensuring the water temperature in the coil does not drop below 50°F (10°C) when the cooler is shut down, a minimum recommended flow rate per unit must be maintained as shown.

Minimum Flow Rate

Box Size	Minimum Flow (LPS)	Minimum Flow (GPM)
C-ATW 67	15	240
C-ATW 89		
C-ATW 103		
C-ATW 133		

Water Treatment

In some cases, the make-up water will have high impurity levels and a normal bleed will not be enough to prevent scale formation. In these cases, the services of an experienced water treatment company should be retained.

The water treatment program prescribed for the given conditions must be compatible with the unit's materials of construction, including the galvanized coil. If an acid is used to control pH, it should be accurately metered in dilute solution such that the spray water is held between a pH of 6.5 and 8.3. Batch feeding of chemicals is not recommended.

Units constructed of galvanized steel operating with circulating water having a pH of 8.3 or higher may require periodic passivation to prevent the formation of white rust. White rust is a corrosion byproduct of the protective zinc barrier and appears on the metal surface as white, waxy formations. If white rust forms and is left untreated, it may flake off and leave the bare metal substrate exposed.

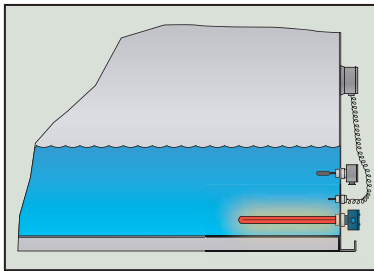
Control of Biological Contaminants

Water quality should be checked regularly for biological contamination. If biological contamination is detected, a more aggressive water treatment and mechanical cleaning program is required. The water treatment program should be performed in conjunction with a qualified water treatment company. It is important that all internal surfaces be kept clean of accumulated dirt or sludge. In addition, the drift eliminators should be kept in good operating condition to minimize water from exiting the evaporative cooling unit in the discharge air.

To minimize the risk of biological contamination, at initial start up or after an extended shut down, it is recommended that the cooler be properly treated. Clean all debris such as leaves and dirt from the unit. Completely fill the basin to the overflow level with fresh water. Initiate a biocide water treatment or shock treatment program prior to operating the unit. It is preferable that all such procedures be conducted or supervised by a water treatment specialist.

Electric Heaters

Electric immersion heaters for the cooler basin are available. They are sized to maintain a +4°C to +5°C (+40°F) pan water temperature with the fans off and an ambient air temperature of -18°C (0°F). They are furnished with a thermostat and low water protection device to cycle the heater on when required and to prevent the heater elements from energizing unless they are completely submerged. All components are in weatherproof enclosures for outdoor use. The heater power contactors and electric wiring are not included as standard.



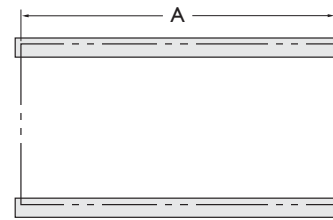
Heater Sizes			
Models	-18°C 0°F kW	-29°C -20°F kW	-40°C -40°F kW
C-ATW 67	7	10	15
C-ATW 89	8	14	18
C-ATW 103	10	14	20
C-ATW 133	12	18	24

Steel Support

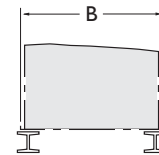
The recommended support for EVAPCO coolers is structural "I" beams located under the outer flanges and running the entire length of the unit. Mounting holes, 19mm (3/4") in diameter are located in the bottom channels of the pan section to provide for bolting to the structural steel. (Refer to certified drawings from the factory for bolt hole locations).

Beams should be level to within 3mm per 2m (1/8" per 6') before setting the unit in place. Do not level the unit by shimming between it and the "I" beams as this will not provide proper longitudinal support.

Steel Support (cont.)



Plan View



End Elevation

C-ATW Supporting Steel Dimensions

Models	S.I. Units (mm)		English Units	
	A	B	A	B
C-ATW 67	2731	2240	8' 11-1/2"	7' 4-3/16"
C-ATW 89	3651	2240	11' 11-3/4"	7' 4-3/16"
C-ATW 103	4261	2240	13' 11-3/4"	7' 4-3/16"
C-ATW 133	5486	2240	18' 0"	7' 4-3/16"

Nominal Tonnage By C-ATW Model

Model	Nominal Flow** (LPS)	Nominal Flow* (GPM)
C-ATW 67-3H	15.1	239
C-ATW 67-3I	17.1	271
C-ATW 67-4I	20.4	323
C-ATW 67-4J	23.5	373
C-ATW 67-5I	22.4	355
C-ATW 67-5J	25.8	409
C-ATW 67-6J	27.0	428
C-ATW 89-3J	26.4	419
C-ATW 89-4J	31.0	492
C-ATW 89-5J	33.9	537
C-ATW 89-5K	37.0	587
C-ATW 89-6K	38.6	612
C-ATW 103-5J	37.7	597
C-ATW 103-5K	41.2	653
C-ATW 103-6K	42.8	679
C-ATW 103-6L	45.8	726
C-ATW 133-3I	38.4	609
C-ATW 133-3J	42.8	678
C-ATW 133-4J	49.5	784
C-ATW 133-4K	56.0	888
C-ATW 133-5J	53.7	851
C-ATW 133-5K	60.8	963
C-ATW 133-6J	56.0	887
C-ATW 133-6K	63.2	1002

*Nominal Conditions: 100°F inlet, 90°F outlet, and 78°F WB

** Nominal Conditions: 37.7°C inlet, 32.2°C outlet, and 25.6°C WB



C-ATW Engineering Dimensions & Data – S.I. Units

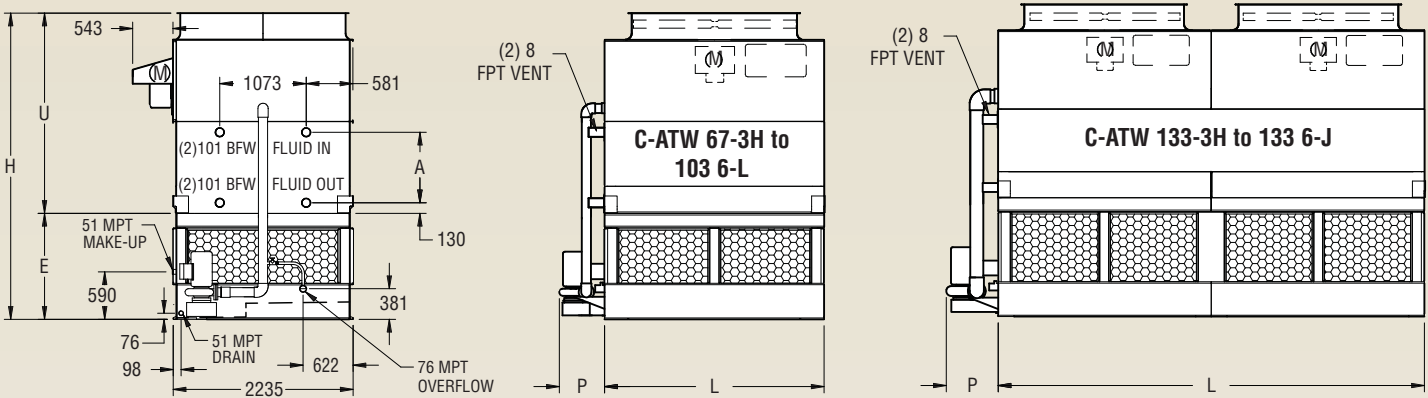


Table I Engineering Data

C-ATW Model No.	Fans		Weights			Coil Volume L	Spray Pump		Remote Sump [△]			Dimensions (mm) [▲]					
	KW	m ³ /s	Shipping	Operating	Heaviest Section [†]		KW	L/s	Liters Req'd*	Conn. Size (mm)	Operating Weight	Height H	Upper U	Lower E	Coil A	Length L	Pump P
CATW 67-3H	5.5	17	3,420	4,560	2,690	544	1.5	25.8	455	200	4,030	3423	2105	1318	495	2727	563
CATW 67-3I	7.5	19	3,420	4,560	2,690	544	1.5	25.8	455	200	4,030	3423	2105	1318	495	2727	563
CATW 67-4I	7.5	18	3,890	5,200	3,160	710	1.5	25.8	455	200	4,670	3613	2296	1318	686	2727	563
CATW 67-4J	11	20	3,950	5,260	3,220	710	1.5	25.8	455	200	4,730	3613	2296	1318	686	2727	563
CATW 67-5I	7.5	17	4,380	5,860	3,660	876	1.5	25.8	455	200	5,330	3804	2486	1318	876	2727	563
CATW 67-5J	11	20	4,440	5,910	3,710	876	1.5	25.8	455	200	5,380	3804	2486	1318	876	2727	563
CATW 67-6J	11	19	4,930	6,570	4,200	1041	1.5	25.8	455	200	6,040	3994	2677	1318	1067	2727	563
CATW 89-3J	11	26	4,210	5,790	3,330	715	2.2	34.7	585	250	5,060	3423	2105	1318	495	3648	631
CATW 89-4J	11	25	4,850	6,650	3,970	937	2.2	34.7	585	250	5,920	3613	2296	1318	686	3648	631
CATW 89-5J	11	24	5,470	7,500	4,590	1160	2.2	34.7	585	250	6,770	3804	2486	1318	876	3648	631
CATW 89-5K	15	26	5,500	7,530	4,620	1160	2.2	34.7	585	250	6,790	3804	2486	1318	876	3648	631
CATW 89-6K	15	25	6,150	8,400	5,270	1382	2.2	34.7	585	250	7,670	3994	2677	1318	1067	3648	631
CATW 103-5J	11	27	6,300	8,630	5,280	1349	2.2	37.8	700	250	7,810	3915	2486	1429	876	4258	617
CATW 103-5K	15	29	6,320	8,650	5,310	1349	2.2	37.8	700	250	7,830	3915	2486	1429	876	4258	617
CATW 103-6K	15	28	7,070	9,660	6,060	1610	2.2	37.8	700	250	8,840	4105	2677	1429	1067	4258	617
CATW 103-6L	18.5	30	7,080	9,670	6,070	1610	2.2	37.8	700	250	8,850	4105	2677	1429	1067	4258	617
CATW 133-3H	(2) 5.5	34	6,340	8,740	4,950	1056	4	50.4	890	300	7,660	3632	2105	1527	495	5483	670
CATW 133-3I	(2) 7.5	37	6,350	8,750	4,960	1056	4	50.4	890	300	7,670	3632	2105	1527	495	5483	670
CATW 133-4I	(2) 7.5	36	7,310	10,040	5,910	1392	4	50.4	890	300	8,960	3823	2296	1527	686	5483	670
CATW 133-4J	(2) 11	40	7,420	10,160	6,030	1392	4	50.4	890	300	9,080	3823	2296	1527	686	5483	670
CATW 133-5I	(2) 7.5	35	8,260	11,340	6,870	1728	4	50.4	890	300	10,260	4013	2486	1527	876	5483	670
CATW 133-5J	(2) 11	39	8,380	11,450	6,990	1728	4	50.4	890	300	10,370	4013	2486	1527	876	5483	670
CATW 133-6I	(2) 7.5	34	9,240	12,650	7,850	2064	4	50.4	890	300	11,570	4204	2677	1527	1067	5483	670
CATW 133-6J	(2) 11	38	9,360	12,760	7,970	2064	4	50.4	890	300	11,680	4204	2677	1527	1067	5483	670

† Heaviest section is the coil/casing section.

* Gallons shown is water in suspension in unit and piping. Allow for additional water in bottom of remote sump to cover pump suction and strainer during operation (12" would normally be sufficient).

▲ Unit dimensions and coil connections may vary slightly from catalog. See factory certified prints for dimensions, quantity of coil connections, and piping configuration. Coil connections are 102mm bevel for weld (BFW). Other connection types such as grooved for mechanical coupling or flanged are also available as options.

△ Remote Sump Configuration

When a remote sump arrangement is selected, the spray pump, suction strainer and associated piping are omitted; the unit is provided with an oversized outlet to facilitate drainage to the remote sump.

C-ATW Engineering Dimensions & Data – English Units

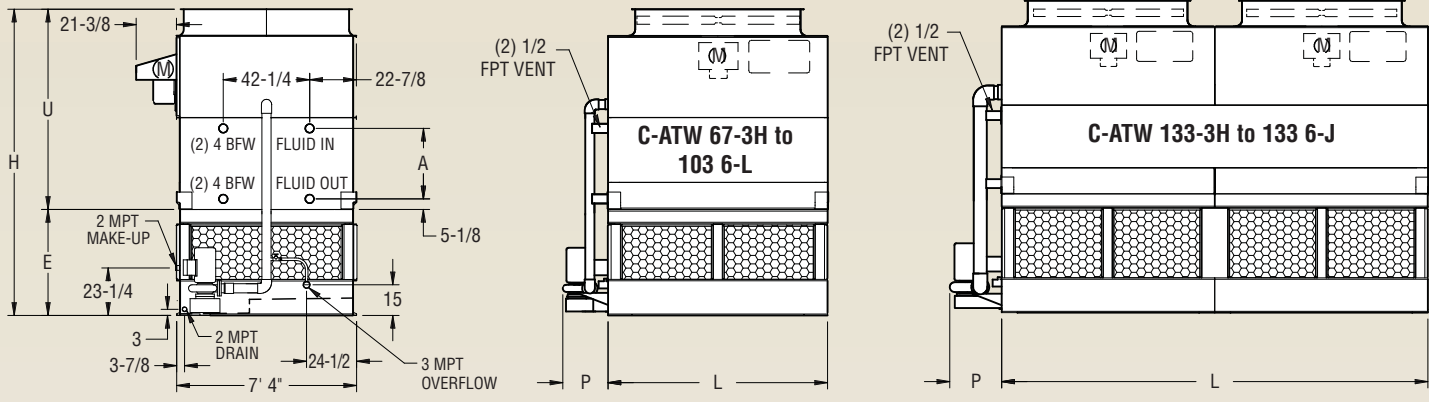


Table I Engineering Data

C-ATW Model No.	Fans		Weights			Coil Volume ft ³	Spray Pump		Remote Sump [△]			Dimensions [▲]					
	HP	CFM	Shipping	Operating	Heaviest Section [†]		HP	GPM	Gallons Req'd*	Conn. Size (in)	Operating Weight	Height H	Upper U	Lower E	Coil A	Length L	Pump P
CATW 67-3H	7.5	35,830	7,530	10,050	5,930	19	2	410	120	8"	8,880	11' 2-3/4"	6' 10-7/8"	4' 3-7/8"	19-1/2"	8' 11-3/8"	22-1/8"
CATW 67-3I	10	39,290	7,540	10,060	5,940	19	2	410	120	8"	8,890	11' 2-3/4"	6' 10-7/8"	4' 3-7/8"	19-1/2"	8' 11-3/8"	22-1/8"
CATW 67-4I	10	38,140	8,570	11,460	6,970	25	2	410	120	8"	10,290	11' 10-1/4"	7' 6-3/8"	4' 3-7/8"	27"	8' 11-3/8"	22-1/8"
CATW 67-4J	15	42,730	8,700	11,590	7,100	25	2	410	120	8"	10,420	11' 10-1/4"	7' 6-3/8"	4' 3-7/8"	27"	8' 11-3/8"	22-1/8"
CATW 67-5I	10	37,000	9,660	12,910	8,060	31	2	410	120	8"	11,740	12' 5-3/4"	8' 1-7/8"	4' 3-7/8"	34-1/2"	8' 11-3/8"	22-1/8"
CATW 67-5J	15	41,450	9,790	13,040	8,190	31	2	410	120	8"	11,870	12' 5-3/4"	8' 1-7/8"	4' 3-7/8"	34-1/2"	8' 11-3/8"	22-1/8"
CATW 67-6J	15	40,170	10,860	14,480	9,260	37	2	410	120	8"	13,310	13' 1-1/4"	8' 9-3/8"	4' 3-7/8"	42"	8' 11-3/8"	22-1/8"
CATW 89-3J	15	54,270	9,280	12,770	7,350	25	3	550	155	10"	11,160	11' 2-3/4"	6' 10-7/8"	4' 3-7/8"	19-1/2"	11' 11-5/8"	24-7/8"
CATW 89-4J	15	52,690	10,690	14,670	8,760	33	3	550	155	10"	13,060	11' 10-1/4"	7' 6-3/8"	4' 3-7/8"	27"	11' 11-5/8"	24-7/8"
CATW 89-5J	15	51,110	12,060	16,530	10,130	41	3	550	155	10"	14,920	12' 5-3/4"	8' 1-7/8"	4' 3-7/8"	34-1/2"	11' 11-5/8"	24-7/8"
CATW 89-5K	20	55,390	12,120	16,590	10,190	41	3	550	155	10"	14,980	12' 5-3/4"	8' 1-7/8"	4' 3-7/8"	34-1/2"	11' 11-5/8"	24-7/8"
CATW 89-6K	20	53,680	13,550	18,510	11,620	49	3	550	155	10"	16,900	13' 1-1/4"	8' 9-3/8"	4' 3-7/8"	42"	11' 11-5/8"	24-7/8"
CATW 103-5J	15	57,120	13,880	19,020	11,650	48	3	600	185	10"	17,210	12' 10-1/8"	8' 1-7/8"	4' 8-1/4"	34-1/2"	13' 11-5/8"	24-1/4"
CATW 103-5K	20	61,910	13,940	19,080	11,710	48	3	600	185	10"	17,270	12' 10-1/8"	8' 1-7/8"	4' 8-1/4"	34-1/2"	13' 11-5/8"	24-1/4"
CATW 103-6K	20	60,000	15,580	21,290	13,350	57	3	600	185	10"	19,480	13' 5-5/8"	8' 9-3/8"	4' 8-1/4"	42"	13' 11-5/8"	24-1/4"
CATW 103-6L	25	63,860	15,610	21,320	13,380	57	3	600	185	10"	19,510	13' 5-5/8"	8' 9-3/8"	4' 8-1/4"	42"	13' 11-5/8"	24-1/4"
CATW 133-3H	(2) 7.5	71,910	13,980	19,270	10,910	37	5	800	235	12"	16,890	11' 11"	6' 10-7/8"	5' 1/8"	19-1/2"	17' 11-7/8"	26-3/8"
CATW 133-3I	(2) 10	78,880	14,010	19,300	10,940	37	5	800	235	12"	16,920	11' 11"	6' 10-7/8"	5' 1/8"	19-1/2"	17' 11-7/8"	26-3/8"
CATW 133-4I	(2) 10	76,580	16,110	22,140	13,040	49	5	800	235	12"	19,760	12' 6-1/2"	7' 6-3/8"	5' 1/8"	27"	17' 11-7/8"	26-3/8"
CATW 133-4J	(2) 15	85,790	16,360	22,390	13,290	49	5	800	235	12"	20,010	12' 6-1/2"	7' 6-3/8"	5' 1/8"	27"	17' 11-7/8"	26-3/8"
CATW 133-5I	(2) 10	74,280	18,220	24,990	15,150	61	5	800	235	12"	22,610	13' 2"	8' 1-7/8"	5' 1/8"	34-1/2"	17' 11-7/8"	26-3/8"
CATW 133-5J	(2) 15	83,210	18,470	25,240	15,400	61	5	800	235	12"	22,860	13' 2"	8' 1-7/8"	5' 1/8"	34-1/2"	17' 11-7/8"	26-3/8"
CATW 133-6I	(2) 10	71,980	20,380	27,890	17,310	73	5	800	235	12"	25,510	13' 9-1/2"	8' 9-3/8"	5' 1/8"	42"	17' 11-7/8"	26-3/8"
CATW 133-6J	(2) 15	80,640	20,630	28,140	17,560	73	5	800	235	12"	25,760	13' 9-1/2"	8' 9-3/8"	5' 1/8"	42"	17' 11-7/8"	26-3/8"

† Heaviest section is the coil/casing section.

* Gallons shown is water in suspension in unit and piping. Allow for additional water in bottom of remote sump to cover pump suction and strainer during operation (12" would normally be sufficient).

▲ Unit dimensions and coil connections may vary slightly from catalog. See factory certified prints for dimensions, quantity of coil connections, and piping configuration. Coil connections are 4" bevel for weld (BFW). Other connection types such as grooved for mechanical coupling or flanged are also available as options.

△ Remote Sump Configuration
When a remote sump arrangement is selected, the spray pump, suction strainer and associated piping are omitted; the unit is provided with an oversized outlet to facilitate drainage to the remote sump.



C-ATW Closed Circuit Cooler Specification

Furnish and install as shown on the plans an EVAPCO Model _____ induced draft counterflow closed circuit cooler. Each unit shall have the capacity to cool _____ LPS of _____ from _____ °F (°C) to _____ °F (°C) with a _____ °F (°C) entering wet bulb temperature.

Basin and Casing

The basin and casing shall be constructed of heavy gauge mill hot-dip galvanized steel (G-235 in U.S.A., Z-725 in Europe and Z-600 in Asia) for long life and durability. Standard basin accessories shall include overflow, drain, type 304 stainless steel strainers, and brass make-up valve with plastic float.

Fan Motor

_____ horsepower (kW) totally enclosed fan cooled motors with 1.15 service factor shall be furnished suitable for outdoor service on _____ volts, _____ hertz, and _____ phase. Motor(s) shall be mounted on an adjustable base, which is accessible from the outside of the unit for service. A swing away protective cover shall shield the motor and sheave from the weather.

Drive

The fan drive shall be multigroove, solid back V-belt type with taper lock sheaves designed for 150% of the motor nameplate horsepower. The belt material shall be neoprene reinforced with polyester cord and specifically designed for evaporative cooler service. Fan sheave shall be aluminum alloy construction. The fans and the fan sheaves shall be mounted on the shaft with a specially coated bushing to provide maximum corrosion protection. Belt adjustment shall be accomplished from the exterior of the unit. Bearing lube lines shall be extended to the exterior of the unit for easy maintenance.

Axial Propeller Fans

Fans shall be heavy-duty axial propeller type statically balanced. The fans shall be constructed of aluminum alloy blades, installed in a closely fitted cowl with venturi air inlet. Fan screens shall be galvanized steel mesh and frame, bolted to the fan cowl.

Fan Shaft Bearings

Fan shaft bearings shall be heavy-duty self-aligning ball type with grease fittings extended to the outside of the unit. Materials shall be stainless steel balls with chrome steel races and zinc plated housing for corrosion resistance. Bearings shall be designed for a minimum L-10 life of 75,000 hours.

Water Recirculation Pump

The pump(s) shall be a close-coupled, centrifugal type with mechanical seal, installed vertically at the factory to allow free drainage on shut down. _____ horsepower (kW) totally enclosed motor(s) shall be furnished suitable for outdoor service on _____ volts, _____ hertz, and _____ phase.

Heat Transfer Coil

Cooling coil(s) shall be all prime surface steel, encased in a steel framework and hot-dip galvanized after fabrication as a complete assembly. The tubes shall be arranged in a self-spacing, staggered pattern in the direction of airflow for maximum heat transfer efficiency and minimum pressure drop, without the use of additional spacers between the coil tubes. The coil(s) shall be pneumatically tested at 400 psig, under water (35 bar in accordance with "Pressure Equipment Directive" (PED) 97/23/EC in Europe).

Water Distribution System

The spray header shall be constructed of schedule 40 polyvinyl chloride pipe for corrosion resistance. All spray branches shall be removable for cleaning. The water shall be distributed over the entire coil surface by heavy-duty, fiber-reinforced spray nozzles [1-5/16" (33.3mm) diameter opening and 1-1/2" (38.1mm) splash plate clearance] with internal sludge ring to eliminate clogging. Nozzles shall be threaded into spray header to provide easy removal for maintenance.

Eliminators

The eliminators shall be constructed entirely of inert polyvinyl chloride (PVC) in easily handled sections. The eliminator design shall incorporate three changes in air direction to assure complete removal of all entrained moisture from the discharge air stream. Maximum drift rate shall be less than 0.001% of the circulating water rate.

Louvers

The louvers shall be constructed from polyvinyl chloride (PVC). The louvers shall be mounted in easily removable frames for access to the pan for maintenance. The louvers shall have a minimum of two changes in air direction to prevent splash out and block direct sunlight.

Finish

All basin and casing materials shall be constructed of heavy gauge mill hot-dip galvanized steel (G-235 in U.S.A., Z-725 in Europe and Z-600 in Asia). During fabrication, all panel edges shall be coated with a 95% pure zinc-rich compound for superior protection against corrosion.

NOTES:



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