



CXV-T Evaporative Condenser

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The CXV-T is perfect for applications where size matters. The CXV-T's superior performance, layout flexibility, and large capacity (645 - 1,888 R-717 tons) make this unit ideal for large tonnage projects. By employing BAC's patented Advanced Coil and Combined Flow Technologies, these units provide value to both the installing contractor and the owner, providing the lowest energy consumption, lowest refrigerant charge, and lowest installation costs possible.



iiar[®]
International Institute of
Ammonia Refrigeration



BAC's CXV-T: When Size Matters

645 to 1,888 R-717 Tons in a Single Unit

Lowest
Refrigerant
Charge
Per Ton

Lower Cost
For Large
Projects

Fewer
Piping
Connections

Layout
Flexibility

Easy
Maintenance



CXV-T Benefits

> Industry Leading Performance

- ▶ Highest capacity footprint in the industry
- ▶ Patented Combined Flow Technology provides the highest capacity at the lowest refrigerant charge in the industry

> Cost Effective Installation

- ▶ Dual air intakes allow for simple steel design and layout flexibility
- ▶ Fewer coil connections save piping, welding, and valves
- ▶ Flexibility of coil connection location simplifies piping
- ▶ Low operating weight reduces crane and steel sizing
- ▶ Single fan and motor reduces wiring and controls
- ▶ Built-in alignment guides allow for fast rigging

> Serviceability

- ▶ Spacious plenum with an optional dry internal walkway
- ▶ Extended lubrication lines and internal ladder (optional)
- ▶ Oversized hinged access doors on each end wall
- ▶ Motor removal davit system (optional)

> Durable Construction

- ▶ Scale reducing technology increases system efficiency
- ▶ Coils fabricated to ASME B31.5 standards
- ▶ Durable materials of construction
 - Mill galvanized (G-235) steel construction (standard)
 - All stainless steel construction available



Multi-Cell CXV-T Installation Showing Simplified Piping



Modular Assembly



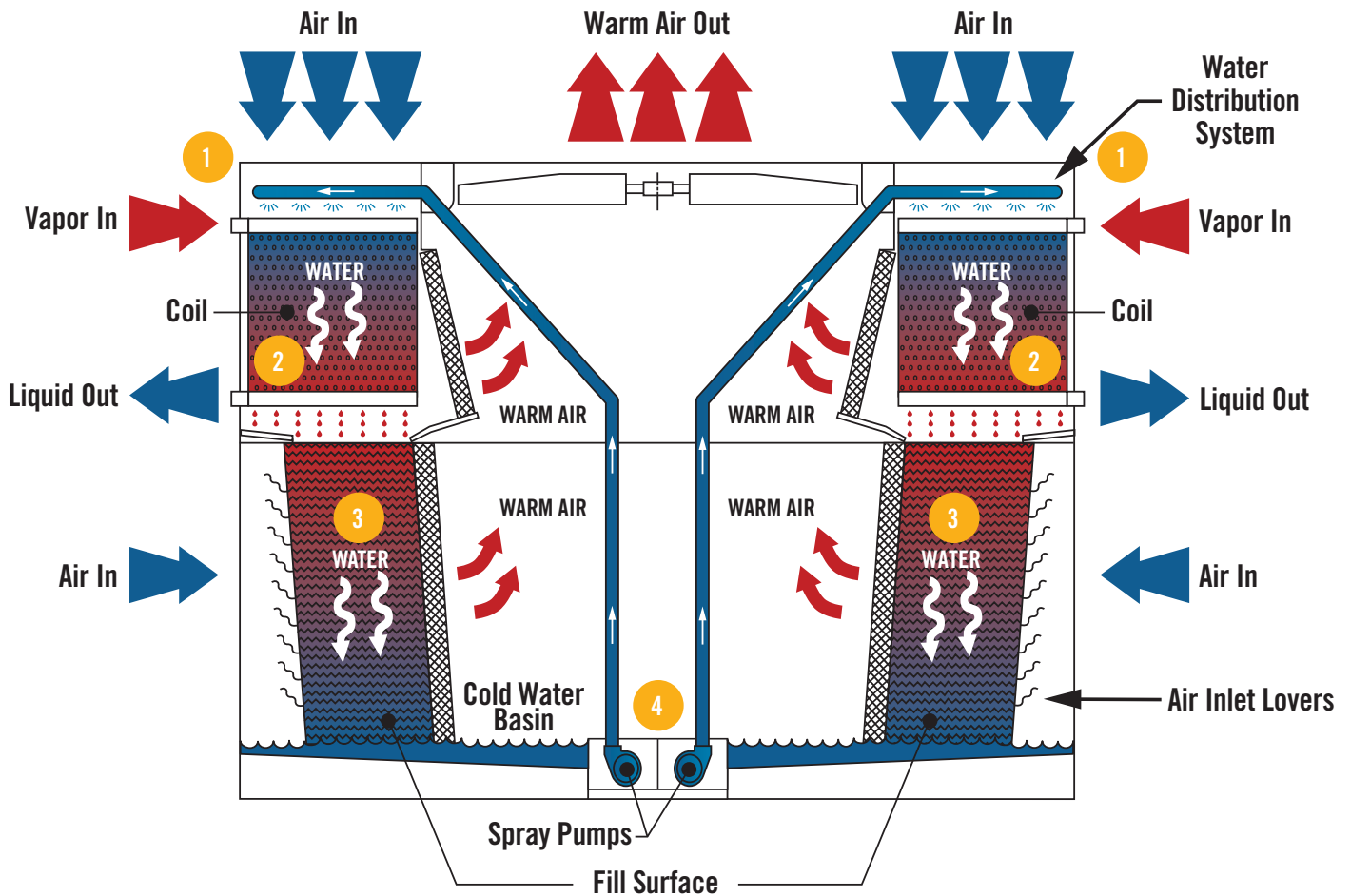
CXV-T with Full Sound Attenuation



> Patented Combined Flow Technology

1 Water is sprayed in parallel with the fresh ambient air flowing over the outside of the condensing coil. Parallel air and water paths minimize scale-producing dry spots that may be found on the bottom of the tubes in other, conventional condensers.

2 The condensing coil rejects heat through both evaporative cooling using the fresh air stream and, more significantly, through sensible cooling of the pre-cooled recirculating spray water. Reducing this evaporative cooling component from the coil section helps to minimize the propensity to form scale on the coil surface.

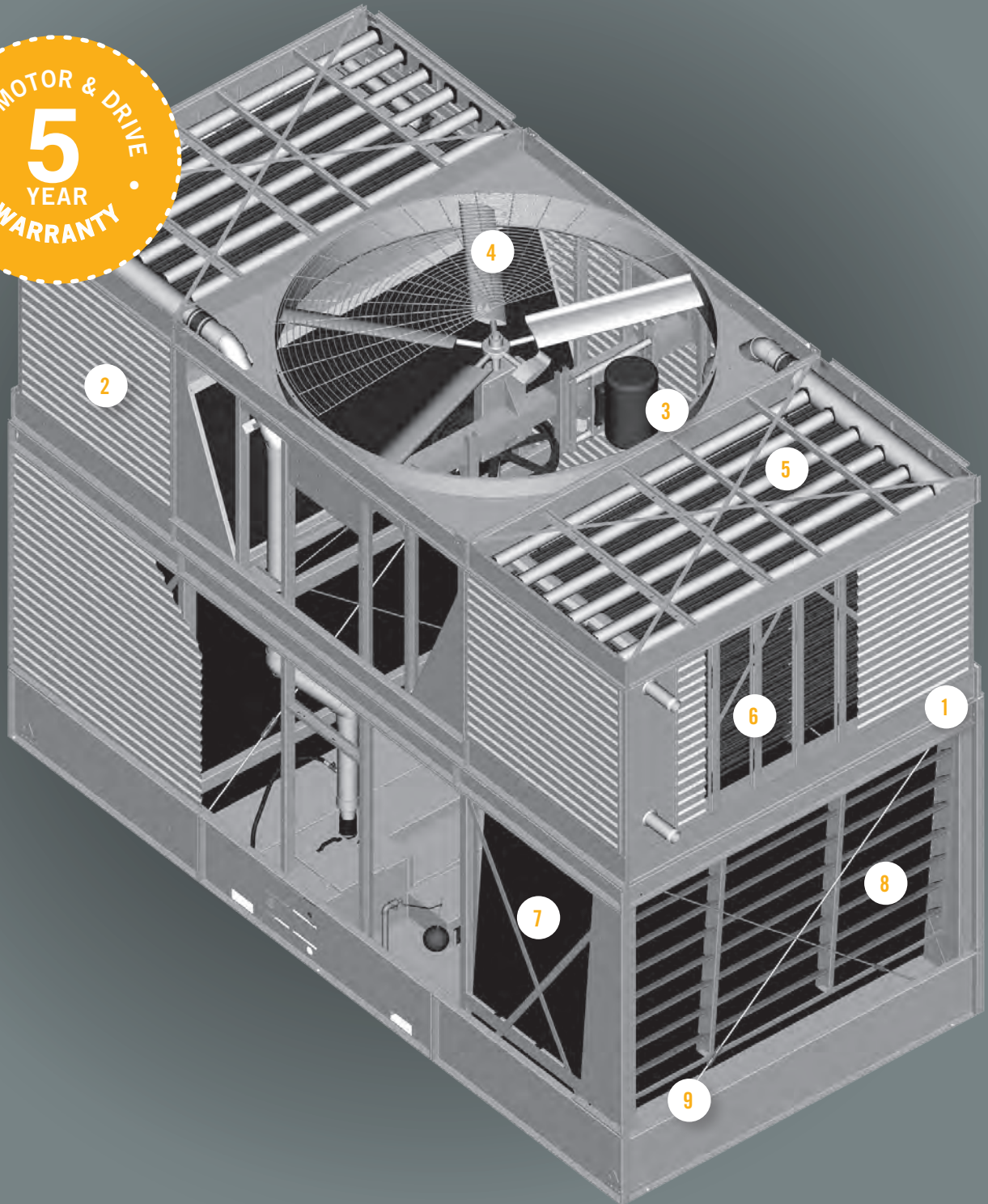


3 The recirculating spray water falls from the coil to a fill surface section where it is cooled by a second fresh air stream using evaporative heat transfer processes.

4 Water is pumped over the condensing coil at a rate of greater than 10 USGPM/ft² of coil plan area to ensure continuous wetting of the primary heat transfer surface, which enhances heat transfer efficiency and minimizes scale formation.

CXV-T Construction Details

BAC MOTOR & DRIVE
5
YEAR
WARRANTY



1 Heavy-Duty Construction

- ▶ G-235 (Z700 metric) mill galvanized steel frame

2 FRP Casing Panels

- ▶ Corrosion resistant
- ▶ Maintenance free
- ▶ UV-resistant finish

3 BALTIDRIVE® Power Train

- ▶ Premium efficient/inverter duty fan motors are standard
- ▶ 5-year motor and drive warranty
- ▶ Corrosion resistant cast aluminum sheaves
- ▶ Heavy-duty bearings, with minimum L₁₀ 80,000 hours
- ▶ Premium quality, solid backed, multi-groove belt

4 Low HP Axial Fan

- ▶ High efficiency
- ▶ Quiet operation
- ▶ Corrosion resistant

5 Water Distribution System

- ▶ Visible and accessible during operation
- ▶ Overlapping spray patterns ensure proper water coverage
- ▶ Large orifice, non-clog 360™ Spray Nozzles

6 Coil Sections

- ▶ Continuous serpentine, steel tubing
- ▶ Hot-dip galvanized after fabrication (HDGAF)
- ▶ Maximum allowable working pressure is 300 psig (2,068 kPa)
- ▶ Sloped tubes for free drainage of fluid
- ▶ Fabricated per ASME B31.5 standards
- ▶ Canadian shipments are supplied with a CRN

7 BACross® Fill with Integral Drift Eliminators

- ▶ Recycled Polyvinyl chloride (PVC)
- ▶ Impervious to rot, decay, and biological attack
- ▶ Flame spread rating of 5 per ASTM E84
- ▶ Elevated off the basin

8 FRP Air Intake Louvers

- ▶ Corrosion resistant
- ▶ UV-resistant finish
- ▶ Maintenance free

9 Basin

- ▶ Sloped basin for easy cleaning
- ▶ Suction strainer with anti-vortex hood
- ▶ Adjustable water make-up assembly

10 Integral Recirculating Spray Water Pumps (NOT SHOWN)

- ▶ Close coupled, bronze fitted centrifugal pumps
- ▶ Totally enclosed fan cooled (TEFC) motors
- ▶ Bleed line with metering valve installed from pump discharge to overflow

11 Hinged Access Doors (NOT SHOWN)

- ▶ Inward swinging door on each end wall

CXV-T

Custom Features & Options

> Materials of Construction

Determining the appropriate material of construction for a project depends on several factors, including water quality, climate and environmental conditions, availability of time and manpower for maintenance, unit lifetime requirements, and budget. BAC provides the widest variety of material of construction options in the industry and has the ability to provide a solution to meet all conditions and budgets.

▶ **STANDARD CONSTRUCTION**

G-235 mill galvanized steel is the heaviest commercially available galvanized steel, universally recognized for its strength and corrosion resistance. To assure long life, a G-235 mill galvanized steel frame with fiberglass reinforced polyester (FRP) casing panels and louvers is used as the standard material of construction. The structural integrity of the unit is provided by its strong steel frame. With proper maintenance and water treatment, G-235 galvanized steel and FRP will provide an excellent service life under the operating conditions normally encountered in refrigeration applications.

▶ **THERMOSETTING HYBRID POLYMER (OPTION)**

A thermosetting hybrid polymer, used to extend equipment life, is applied to select G-235 mill galvanized steel components of the unit. The polymerized coating is baked onto the G-235 mill galvanized steel and creates a barrier to the already corrosion resistant galvanized steel. The thermosetting hybrid polymer has been tested to withstand 6,000 hours in a 5% salt spray without blistering, chipping, or losing adhesion.

▶ **STAINLESS STEEL (OPTION)**

Several Type 304 stainless steel material of construction options are available.

• **WELDED TYPE 304 STAINLESS STEEL BASIN**

A Type 304 welded stainless steel basin is available. All steel panels and structural members of the basin are constructed from Type 304 stainless steel. Seams between panels inside the basin are welded, providing an advantage over bolted stainless steel basins for minimizing susceptibility to leaks at basin seams. The basin is leak tested at the factory and welded seams are provided with a 5-year, leak-proof warranty.



Standard Construction Installation



Thermosetting Hybrid Polymer



Welded Type 304 Stainless Steel Basin



- **ALL TYPE 304 STAINLESS STEEL CONSTRUCTION (OPTION)**

All unit structural elements and the basin are constructed of Type 304 stainless steel. Seams between panels inside the basin are welded, providing an extreme advantage over bolted basins for minimizing susceptibility to leaks at basin seams. The basin is leak tested at the factory and welded seams are provided with a 5-year, leak-proof warranty. Casing panels and air intake louvers are constructed of corrosion and UV-resistant fiberglass reinforced polyester (FRP).

- ▶ **BASINLESS UNIT CONSTRUCTION (OPTION)**

The basinless unit construction option enables CXV-T Evaporative Condensers to be directly installed on new or existing basins. This custom feature reduces maintenance costs by eliminating the integral basin from traditional units. It simplifies piping and pumping requirements of multi-cell installations, eliminates concern for basin corrosion, and provides a cost-effective solution for many field-erected replacement projects. BAC is the only leading evaporative cooling equipment manufacturer to provide basinless construction for factory assembled equipment.

- ▶ **STANDARD FIBERGLASS REINFORCED POLYESTER (FRP) CASING PANELS**

Used with BAC's durable steel frame construction, FRP casing panels offer a more durable corrosion resistant unit. FRP casing panels are a key component due to their corrosion resistant properties.

- ▶ **STEEL CASING PANELS AND LOUVERS (OPTION)**

Steel casing panels and louvers are available in G-235 mill galvanized steel, thermosetting hybrid polymer, and stainless steel.



Welded Type 304 Stainless Steel Basin



Basinless Unit Construction



Steel Louvers

CXV-T

Custom Features & Options

> Coil Configurations

BAC offers a large selection of coil configuration options to fulfill any thermal and pressure drop requirements.

▶ **STANDARD SERPENTINE COIL**

The standard coil is constructed of continuous lengths of all prime surface steel. The coil is hot-dip galvanized after fabrication (HDGAF) to apply a thick, zinc corrosion barrier over the entire exterior surface of the coil. The coil is designed for low pressure drop with sloping tubes for free drainage of fluid. Each coil has a maximum allowable working pressure of 300 psig (2,068 kPa) and is fabricated per ASME B31.5 standards to ensure the highest quality and complete integrity.

▶ **STAINLESS STEEL COIL (OPTION)**

Coils are available in Type 304 stainless steel for specialized applications. The coil is designed for low pressure drop with sloping tubes for free drainage of fluid. Each coil has a maximum allowable working pressure of 300 psig (2,068 kPa) and is fabricated per ASME B31.5 standards to ensure the highest quality and integrity.

▶ **ASME "U" STAMP COIL (OPTION)**

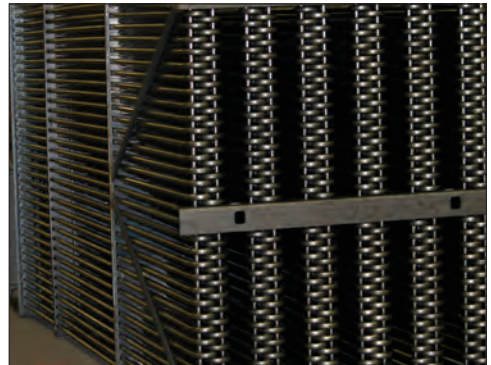
The ASME coils are often requested for heavy industrial or process applications. This serpentine coil is manufactured and tested in accordance with the ASME Boiler and Pressure Vessel Code, Section VIII, Division 1, and bears the ASME "U" stamp. ASME coils are hot-dip galvanized (outside surface) after fabrication (HDGAF). The coil is designed for low pressure drop with sloping tubes for free drainage of fluid. Each coil has a maximum allowable working pressure of 300 psig (2,068 kPa).

▶ **EXTENDED SURFACE COIL (OPTION)**

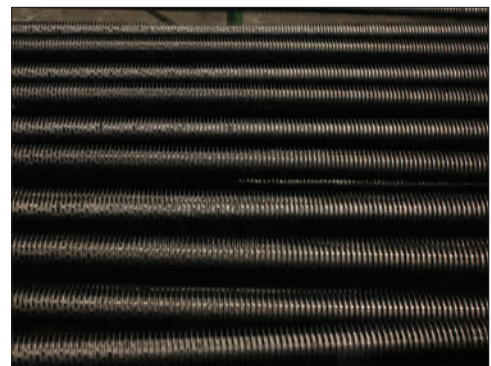
Coils are available with up to all rows finned at 5 fins per inch for seasonal wet/dry operation. The fins increase the surface area of the coil, therefore increasing the heat transfer capability. The coil is hot-dip galvanized after fabrication (HDGAF) to apply a thick, zinc corrosion barrier over the entire exterior surface of the coil and fins. BAC coils are designed for low pressure drops and to be completely drainable with sloping tubes for free drainage of fluid. Each coil has a maximum allowable working pressure of 300 psig (2,068 kPa) and is fabricated per ASME B31.5 standards to ensure the highest quality and complete integrity.



Standard Serpentine Coil



Stainless Steel Coil



Extended Surface Coil



▶ **MULTIPLE CIRCUIT COILS/AUXILIARY COOLING CIRCUIT (OPTION)**

Split coil configurations are available to allow separate process fluid or refrigerant loops through the same unit. Separate loops may be needed for multiple applications requiring different temperature processes or multiple types of process fluids or refrigerants. Multiple refrigerant circuit coils are generally required on halocarbon refrigerant systems, where it is common practice to maintain individual compressor systems. The quantity of circuits, capacity per circuit, and desired connection size and type should be specified when requesting this option.

▶ **SUBCOOLING COILS (OPTION)**

Subcooling coils are available for those halocarbon refrigerant installations where subcooled refrigerant is specified, or where the pressure drop or a vertical rise in the liquid line is great enough to cause excessive flashing. Standard subcooling coil sections provide approximately 10°F (5.6°C) of subcooling at standard conditions. Subcooling sections are approximately 7" high and mounted between the coil and basin sections. Coils are hot-dip galvanized after fabrication and have a maximum allowable working pressure of 300psig (2,068 kPa).

▶ **COPPER SWEAT FITTINGS (OPTION)**

Factory installed copper sweat fittings are available to simplify field piping.



Multiple Circuit Coil



NOTE: A Canadian Registration Number (CRN) is required for all pressure vessels over 15 psig entering Canada. The CRN identifies that the design of a boiler, pressure vessel, or fitting has been accepted and registered for use in Canada. CRN is available for all BAC Dual and TriCoil configurations in Canada.

> Drive System Options

The fan drive system provides the cooling air necessary to reject unwanted heat from the system to the atmosphere. All BAC drive systems use premium efficient cooling tower duty motors and include BAC's comprehensive 5-year motor and drive warranty. Cooling tower duty motors are specially designed for the harsh environment inside an evaporative condenser and have permanently lubricated bearings, drastically decreasing the maintenance requirement of the motor. BAC belt drive systems are the most durable and maintenance friendly drive systems on the market, including single nut adjustment for belt tensioning.



CXV-T

Custom Features & Options

▶ **STANDARD BALTDRIIVE® POWER TRAIN**

The BALTDRIIVE® Power Train utilizes special corrosion resistant materials of construction and state-of-the-art technology to ensure ease of maintenance and reliable year-round performance. This BAC engineered drive system consists of a specially designed powerband and two cast aluminum sheaves located at minimal shaft centerline distances to maximize belt life. When compared to a gear drive system, this specially engineered belt drive system provides many advantages. The BALTDRIIVE® Power Train requires only periodic inspection of components and belt tensioning, which is simple with a single nut adjustment, and requires less downtime. Only fan bearing lubrication is required for routine maintenance. Belt drive systems also have the added advantage of being suitable for variable frequency drive (VFD) applications without requiring expensive optional accessories.



BALTDRIIVE® Power Train Fan System

▶ **BALTIGUARD™ FAN SYSTEM (OPTION)**

The BALTIGUARD™ Fan System consists of two standard single-speed fan motor and drive assemblies. One drive assembly is sized for full speed and load, and the other is sized for approximately 2/3 speed and consumes only 1/3 the design horsepower. This configuration provides the reserve capability of a standby motor in the event of failure. As a minimum, approximately 70% capacity will be available from the low horsepower motor (pony), even on a design wet-bulb day. Controls and wiring are the same as those required for a two-speed, two-winding motor. Redundant motors are available by increasing the size of the standby fan motor of the BALTIGUARD™ Fan System to the size of the main motor. This provides 100% motor redundancy and the greatest level of reliability.



BALTIGUARD PLUS™ Fan System
Used for VFD Applications

▶ **BALTIGUARD PLUS™ FAN SYSTEM (OPTION)**

The BALTIGUARD PLUS™ Fan System builds on the advantages of the BALTIGUARD™ Fan System by adding a variable frequency drive (VFD) to either the pony or the main motor, depending on system requirements. This offers the benefits of additional capacity control and energy savings, along with the redundancy offered by the BALTIGUARD™ Fan System. Alternatively, a VFD can be added to both the pony and main motor for complete capacity control and redundancy under any load.



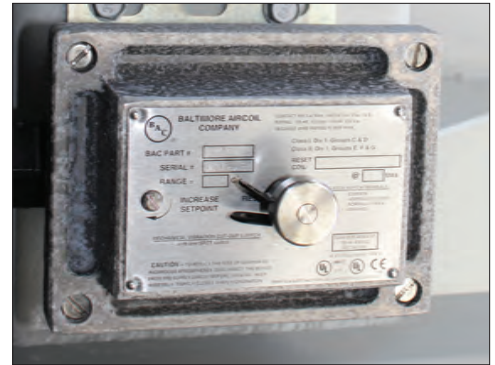


▶ **GEAR DRIVE SYSTEM, CLOSE-COUPLED MOTOR (OPTION)**

A gear drive system is available as a fan drive option on the CXV-T. Both the gear drive and couplings are selected with a 2.0 service factor. Gear construction includes a nickel-alloy steel shaft, case hardened gears, self lubrication, and a single piece, gray iron housing. This drive system ships completely installed and aligned.

▶ **GEAR DRIVE SYSTEM, EXTERNALLY MOUNTED MOTOR (OPTION)**

A gear drive system with a TEFC motor mounted outside the airstream is also available on the CXV-T. A non-corrosive carbon-fiber composite drive shaft with stainless steel hubs is selected with a 2.0 service factor. The motor and drive shaft ship separately for easy field installation.



Vibration Cutout Switch



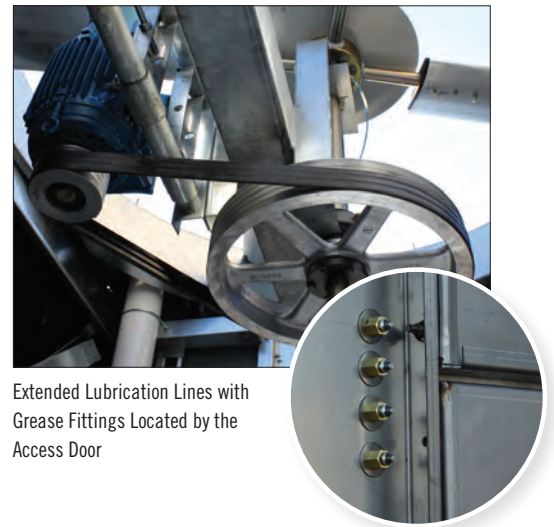
VIBRATION CUTOUT SWITCH (OPTION)

A factory mounted vibration cutout switch is available to effectively protect against rotating equipment failure. BAC can provide either a mechanical or solid-state electronic vibration cutout switch in a NEMA 4 enclosure to ensure reliable protection. Additional contacts can be provided on either switch type to activate an alarm. Remote reset capability is also available on either switch type.



EXTENDED LUBRICATION LINES (OPTION)

Extended lubrication lines are available for lubrication of the fan shaft bearings. Fittings are located on the exterior casing panel next to the access door.



Extended Lubrication Lines with Grease Fittings Located by the Access Door

› **Basin**

The spray water collects in the basin and then is pumped back over the condensing coil. During operation, the sloped CXV-T basin eliminates any stagnant water zones, which are susceptible to biological growth.

▶ **STANDARD MECHANICAL WATER LEVEL CONTROL**

Mechanical make-up valves must operate continuously in the moist and turbulent environment within evaporative cooling equipment. Due to this environment, the operation of the valve must be simple and the valve must be durable. BAC's high quality mechanical water level control assembly is standard with all units and has been specially designed to provide the most reliable operation while being easy to maintain. This accessory is omitted for remote sump applications.



Mechanical Water Level Control

CXV-T

Custom Features & Options

▶ **ELECTRIC WATER LEVEL CONTROL (OPTION)**

BAC's Electric Water Level Control (EWLC) is a state-of-the-art, conductivity actuated, probe type liquid level control. The hermetically sealed EWLC is engineered and manufactured specifically for use in evaporative cooling systems and is equipped with an error code LED to indicate status, including when the water and/or probes are dirty. The EWLC option replaces the standard mechanical make-up valve, and includes a slow closing, solenoid activated valve in the make-up water line to minimize water hammer. EWLC is recommended when more precise water level control is required and in areas that experience sub-freezing conditions.

▶ **BASIN HEATERS (OPTION)**

Evaporative cooling equipment exposed to below freezing ambient temperatures require protection to prevent freezing of the water in the basin when the unit is idle. Factory-installed electric immersion heaters, which maintain 40°F (4.4°C) water temperature, are a simple and inexpensive way of providing such protection.



Basin Heater

HEATER kW DATA

Model Number	0°F (-17.8°C) Ambient Heaters		-20°F (-28.9°C) Ambient Heaters	
	Number of Heaters	kW per Heater	Number of Heaters	kW per Heater
CXV-T645 to T792	2	12	2	15
CXV-T791 to T944	2	14	2	20
CXV-T1290 to T1584	4	12	4	15
CXV-T1582 to T1888	4	14	4	20



NOTE: This table is based on 460V/3 phase/60 Hz power.

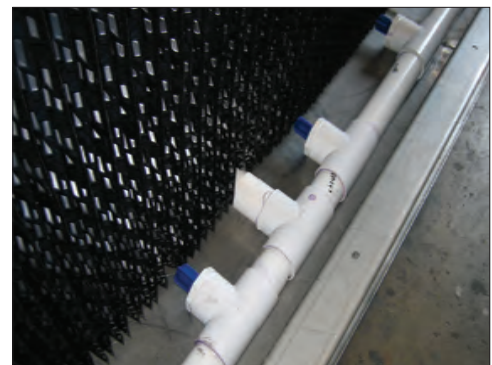


BASIN SWEEPER PIPING (OPTION)

Basin sweeper piping is an effective method of reducing sediment that may collect in the basin. A complete piping system, including nozzles, is provided in the basin to connect to side stream filtration equipment (provided by others). For more information on filtration systems, consult "Filtration Guide" found on **page J233**.

▶ **LOW AND HIGH LEVEL ALARM FLOAT SWITCH (OPTION)**

Low and high level alarm float switches are available to provide added control to your equipment operation. Level alarms can alert operators to an abnormal operating condition to ensure the highest system efficiency with minimal water usage.



Basin Sweeper Piping



> Water Distribution System

▶ STANDARD SPRAY WATER PUMP

The CXV-T comes standard with two integral spray water pumps sized to distribute the recirculating water over the coils, maximizing capacity. The patented BAC 360™ Spray Nozzles are non-clog, ensure even flow over the coil area, and are simple to remove for maintenance. Parallel flow of air and spray water allow for inspection and access to the top of the coils during operation.



Standard Spray Water Pump

> Fill

BACross® Fill, BAC's patented crossflow hanging fill, was developed after years of extensive research. BACross® Fill is made of PVC and is optimized to provide the highest thermal capacity. PVC is virtually impervious to rot, decay, and biological attack. The fill is elevated above the basin floor to facilitate cleaning and maintenance. The integral eliminators effectively strip entrained moisture from the leaving air stream with minimum pressure drop to prevent water loss with negligible impact on efficiency.

▶ STANDARD FILL

Standard fill can be used in applications with spray water temperature up to 130°F (54.4°C). The fill and drift eliminators are formed from self-extinguishing PVC having a flame spread rating of 5 per ASTM E84.

▶ HIGH TEMPERATURE FILL (OPTION)

An optional high temperature fill material is available which increases the maximum allowable spray water temperature to 140°F (60°C). The online selection program automatically determines if high temperature fill is necessary based on the design requirements.



BACross® Fill Manufacturing

CXV-T

Custom Features & Options

> Shipping and Rigging

BAC units are factory-assembled to ensure uniform quality with minimum field assembly. Each unit has been designed with rigging and assembly in mind and includes features to minimize the number of tools required and installation time.

▶ STANDARD RIGGING GUIDES

Rigging guides allow easy alignment and engagement of the coil sections, the fan (plenum) section, and lower section of units. The guides ensure proper placement of the coil sections to the fan section making rigging much simpler and reducing the time required.

▶ KNOCKDOWN UNITS (OPTION)

Knockdown units are available for jobs where access to the evaporative condenser location is limited by elevators, doorways, or similar obstacles, where lifting methods impose very strict weight limits, or where the shipping cost of a fully assembled unit is excessive. All materials of construction and design features are the same as those of a factory assembled unit. Welded Type 304 stainless steel basins are excluded from knockdown due to the need for in-plant assembly.



Standard Rigging Guides

> Sound Options

Recognition of the importance of sound reduction is growing and can be a very important design criterion for any project. BAC maintains the widest selection of sound mitigating options in the market place and can provide the most cost effective option to meet any requirement.

▶ STANDARD FAN

The fan provided for all CXV-T Evaporative Condensers is selected to optimize low sound levels and maximize thermal performance.

▶ LOW SOUND FAN (OPTION)

The Low Sound Fan option reduces sound up to 9 dBA. Adding a high solidity fan decreases fan speeds, which proportionally decreases sound levels.



Low Sound Fans



▶ **SOUND ATTENUATION (OPTION)**

Factory designed, tested, and rated sound attenuation options are available for both the air intake and discharge. Consult your local BAC Representative regarding available options.

› **Access Options**

BAC provides a broad offering of access options. Our evaporative equipment is designed to be easily maintained for sustaining capacity over a longer life. All BAC platforms and ladders are OSHA compliant to ensure personnel safety and code compliance.



Internal Walkway



INTERNAL WALKWAY (OPTION)

An internal walkway is available, allowing access to the spacious plenum area for maintenance and inspection of the basin, make-up, fill, and drive system.

▶ **MOTOR REMOVAL SYSTEM (OPTION)**

The removal system includes davit arm(s) to facilitate motor replacement.



Motor Removal System



EXTERNAL PLATFORM (OPTION)

Every external platform is preassembled and pre-fitted at the factory to ensure that every component will fit and function exactly as described. The platform will ship secured in the basin and attach quickly in the field with minimum fasteners. Safety gates are available for all handrail openings. All components are designed to meet OSHA requirements.

▶ **ACCESS DOOR PLATFORM AND LADDER PACKAGES (OPTION)**

An access door platform is available to allow access to the unit when installed on elevated supports. This option allows for safe access to the unit, as well as a working platform to stage tools for maintenance.



External Motor Platform, Ladder, Handrails, and Safety Cage



NOTE: Platforms, ladders, handrails, safety gates, and safety cages can be added at the time of order or as an aftermarket item.

CXV-T

Custom Features & Options

▶ **HANDRAIL PACKAGES (OPTION)**

Handrail packages are available to provide safe access to the top of the unit for maintenance to the distribution system. Fan deck extensions are available for passage around the fan on units designed with maximized fan diameters or discharge sound attenuation. The specially designed handrail packages are secured for compact shipping in the basin to minimize shipping costs and are ready for field assembly. NOTE: Partial or full grating above the coil air intake is recommended with this option.

▶ **INTERNAL SERVICE PLATFORM AND LADDER PACKAGES (OPTION FOR TWO PIECE UNITS)**

For access to the motor and drive assemblies, an internal ladder and upper service platform with handrails is available on larger units. Safety gates are available for all handrail openings, and all components are designed to meet OSHA requirements. An internal walkway is required with this package.



Internal Ladder, Service Platform, and Walkway