



Featuring The All New
ENDURADRIVE™
Fan System



Cooling Towers



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BAC offers the most comprehensive product line of factory assembled cooling towers globally. With our unprecedented experience in designing and manufacturing highly efficient and sustainable cooling towers, we have the solution for any application.




THE BEST STOP FOR...

- ✓ Over 75 years of innovating cutting edge technology
- ✓ Capacities ranging from 12 to 1,446 nominal tons in a single unit
- ✓ Factory assembled accessories that reduce field labor and ongoing maintenance
- ✓ The largest variety of motor horsepowers, footprints, and air intake configurations

THE ONE STOP FOR...

- ✓ Shake table tested units that meet wind and seismic requirements of the International Building Code, have OSHPD pre-approval, and guarantee operability after a seismic event
- ✓ Rugged material of construction: TriArmor® Corrosion Protection System
- ✓ XE Models provide the most extremely efficient cooling towers in the world

Unique Features

	SERIES 3000	SERIES 1500	PT2
Model			
Flow and Fan System	Crossflow, Induced Draft, Axial Fan	Crossflow, Induced Draft, Axial Fan	Counterflow, Induced Draft, Axial Fan
Cataloged Capacity Range	171 - 1,446 Nominal Tons* 513 - 4,338 USGPM at 95°F to 85°F at a 78°F	92 - 747 Nominal Tons* 276 - 3,150 USGPM at 95°F to 85°F at a 78°F	99 - 787 Nominal Tons* 297 - 2,361 USGPM at 95°F to 85°F at a 78°F
UNIQUE FEATURES	<ul style="list-style-type: none"> • XE Models meet or exceed two times ASHRAE Standard 90.1 energy efficiency requirements, reducing energy and operating costs up to 37.5% • Designed to meet wind and seismic requirements for the International Building Code (IBC) • TriArmor® Corrosion Protection System and EVERTOUGH™ Construction offer cost effective, alternative to standard construction • Basinless construction available • ENDURADRIVE™ Fan System 	<ul style="list-style-type: none"> • 26% less annual maintenance costs compared to other compact footprint products • XE Models meet or exceed two times ASHRAE Standard 90.1 energy efficiency requirements, reducing energy and operating costs up to 50% • Ideal for tight enclosures • Single air intake • Ideal replacement unit • Independent fan operation • Low sound options • Designed to meet wind and seismic requirements for the International Building Code (IBC) 	<ul style="list-style-type: none"> • Designed to meet wind and seismic requirements for the International Building Code (IBC) • Meets or exceeds ASHRAE Standard 90.1 energy efficiency requirements • Reduced footprint for low tonnage requirements • TriArmor® Corrosion Protection System and EVERTOUGH™ Construction offers a cost effective, highly protective upgrade to conventional construction • Single piece rigging • Low sound options

*Nominal Tons 3 USGPM/ton of water cooled from 95°F to 85°F at a 78°F EWB

VT0/VT1	LOW PROFILE VTL	FXT	
			Model
Counterflow, Forced Draft, Centrifugal Fan	Counterflow, Forced Draft, Centrifugal Fan	Crossflow, Forced Draft, Axial Fan	Flow and Fan System
12 - 1,335 Nominal Tons* 36 - 4,005 USGPM at 95°F to 85°F at a 78°F	16 - 272 Nominal Tons* 48 - 816 USGPM at 95°F to 85°F at a 78°F	58 - 268 Nominal Tons* 174 - 804 USGPM at 95°F to 85°F at a 78°F	Catalogued Capacity Range
<ul style="list-style-type: none"> Centrifugal fan for indoor applications Suitable for sound sensitive applications High temperature industrial applications BALTIGUARD™ Fan System available for continuous operation Easy maintenance with motors and drives located outside the discharge airstream 	<ul style="list-style-type: none"> Low profile to meet low height requirements Centrifugal fan for indoor applications Single piece shipping and rigging Suitable for sound sensitive applications High temperature industrial applications BALTIGUARD™ Fan System available for continuous operation 	<ul style="list-style-type: none"> High efficient, low horsepower axial fans Single piece lift, shipping, and rigging Motor is located on the exterior of the unit for easy maintenance Forced draft design protects moving parts for a long service life Easy maintenance 	UNIQUE FEATURES

*Nominal Tons 3 USGPM/ton of water cooled from 95°F to 85°F at a 78°F EWB

XE Models

XE Models are now available on both the Series 3000 and Series 1500 Cooling Towers. XE Models are tailored for projects that require an extreme efficiency unit to further minimize energy costs, reduce sound levels, and contribute to LEED® Certification Points. XE Models are at least two times more efficient than the minimum requirements established in ASHRAE Standard 90.1 - 2013. The following example illustrates the operating cost savings over the life of a cooling tower comparing the first cost model and an XE Model for a 500-Ton Selection.



LOWEST OPERATING COSTS

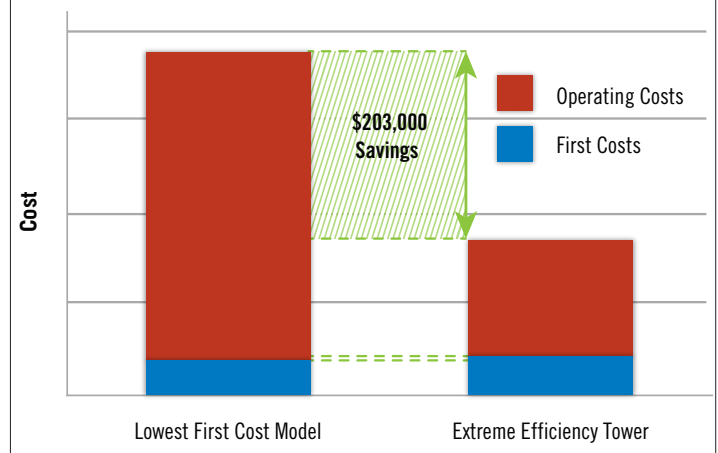
- ✓ Significant reduction in operating costs
- ✓ Payback typically 2 years or less



REDUCED SOUND LEVELS

- ✓ Sound reduction up to 50% (3dB)
- ✓ Fans optimized to minimize sound levels and maximize efficiency
- ✓ Additional sound reducing options available

500-Ton Selection Series 3000 vs Series 3000 XE Model Comparison of First & Operating Cost



Note: Operating costs based on fan kW x \$0.12kWh x 2500EFLH (equivalent full load hours) x 20 years (2011 ASHRAE Handbook HVAC Applications) x 3% per year energy inflation factor.



INCREASED OPERATING RELIABILITY

- ✓ BALTIDRIVE® Power Train Fan System
- ✓ Extends the life of the mechanical drive components (minimum L10 bearing life 288,000 hours)
- ✓ 5-year motor and drive warranty

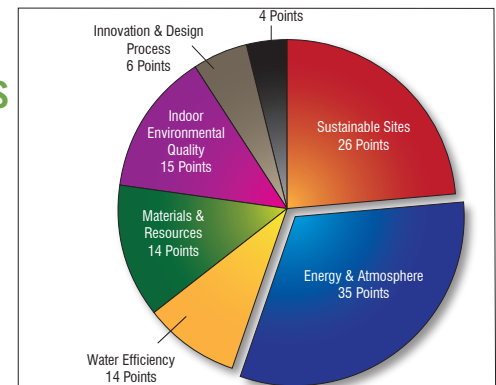


Series 1500 XE Model Cooling Tower



LEED® CERTIFICATION CONTRIBUTIONS

- ✓ Industry leading energy efficiencies
- ✓ Provides energy cost savings
- ✓ Contributes to Energy and Atmosphere LEED® Credit Points (EAc1)



LEED® Point Breakdown for New Construction



Lowest Operating Costs



Reduced Sounds Levels



Increased Operating Reliability



Contributes to LEED® Certification

COMPARE > SELECT > SPECIFY >



Series 3000



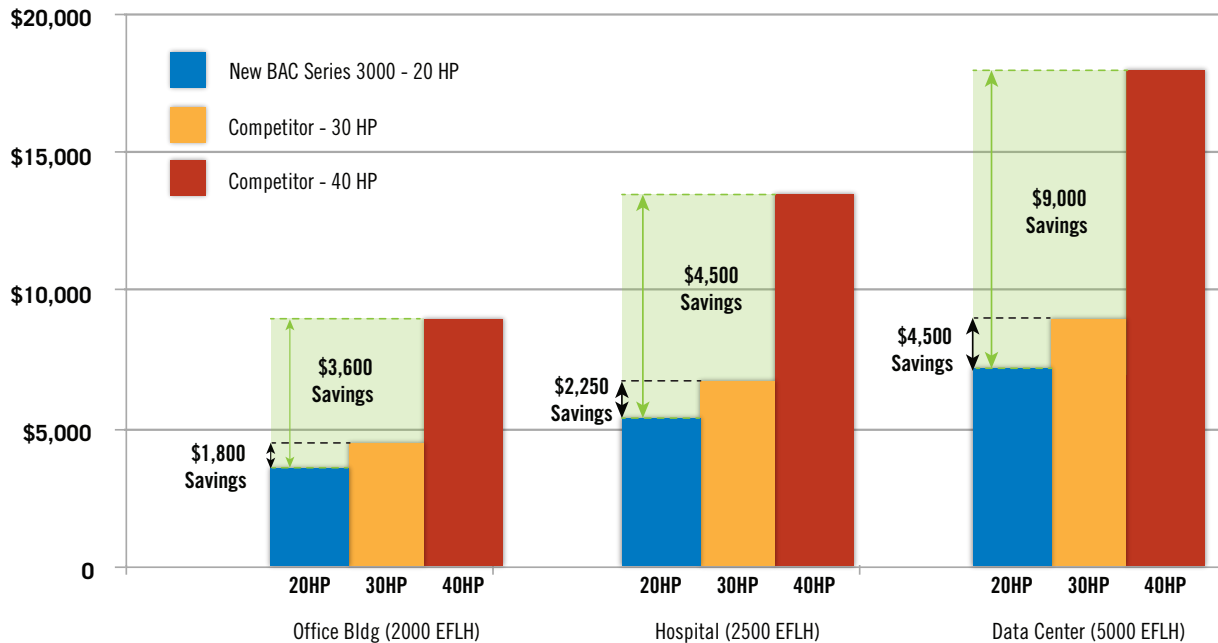
The NEW Series 3000 Cooling Tower continues its industry leading tradition. With expanded selection flexibility and a capacity increase of up to 16%, the Series 3000 Cooling Tower provides an extremely efficient solution for all your application needs.

REDUCED ENERGY CONSUMPTION

- ✓ Most efficient cooling tower in the industry
- ✓ Up to a 16% increase in capacity
- ✓ Exceeds ASHRAE 90.1-2013 efficiency requirements

400-Ton Example:	Series 3000	Competition	Competition
Fan HP	20	30	40
Footprint (L x W x H)	8.5' x 18' x 12'	8.5' x 18' x 12'	8.5' x 18' x 12'
Nominal Tons	400	386	423

400-Ton Example: Annual Operating Cost for a 20, 30, & 40 HP





Note: The ENDURADRIVE™ Fan System is the only variable speed direct drive solution for modular cooling towers.

RELIABLE YEAR-ROUND OPERATION

- ✓ Superior winter operating performance
- ✓ BALTDRIVE® Power Train Fan System
- ✓ Rigid frame construction
- ✓ Meets wind and seismic requirements of the International Building Code (IBC)

MORE SELECTION FLEXIBILITY

- ✓ 31 new models
- ✓ 3 new box sizes
- ✓ 69 Series 3000 Cooling Tower XE models are available in a full array of box sizes

ENHANCED PAYBACK ANALYSIS

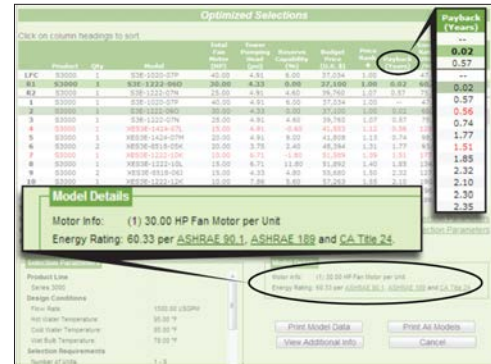
- ✓ Provides alternative selections based on energy savings and minimum payback
- ✓ User-defined life-cycle cost inputs
- ✓ XE models featured in selection program

EASIEST TO MAINTAIN

- ✓ Direct access to:
 - Cold water basin
 - Hot water basin
 - Drive system
- ✓ Patented hygienic cold water basin
- ✓ Factory assembled access options available for ease of maintenance
- ✓ The optional ENDURADRIVE™ Fan System offers 10% energy savings, 90% lower maintenance costs, and 100% reliability on the transmission system



New Series 3000 Cooling Tower



Enhanced Product Selection Software



Factory Pre-Assembled Platforms



Series 1500



The Series 1500 Cooling Tower is the industry's most serviceable unit without compromising performance and fit. With expanded models almost doubling the capacity range and a performance increase of up to 13%, the Series 1500 Cooling Tower provides an excellent solution for all your application needs.

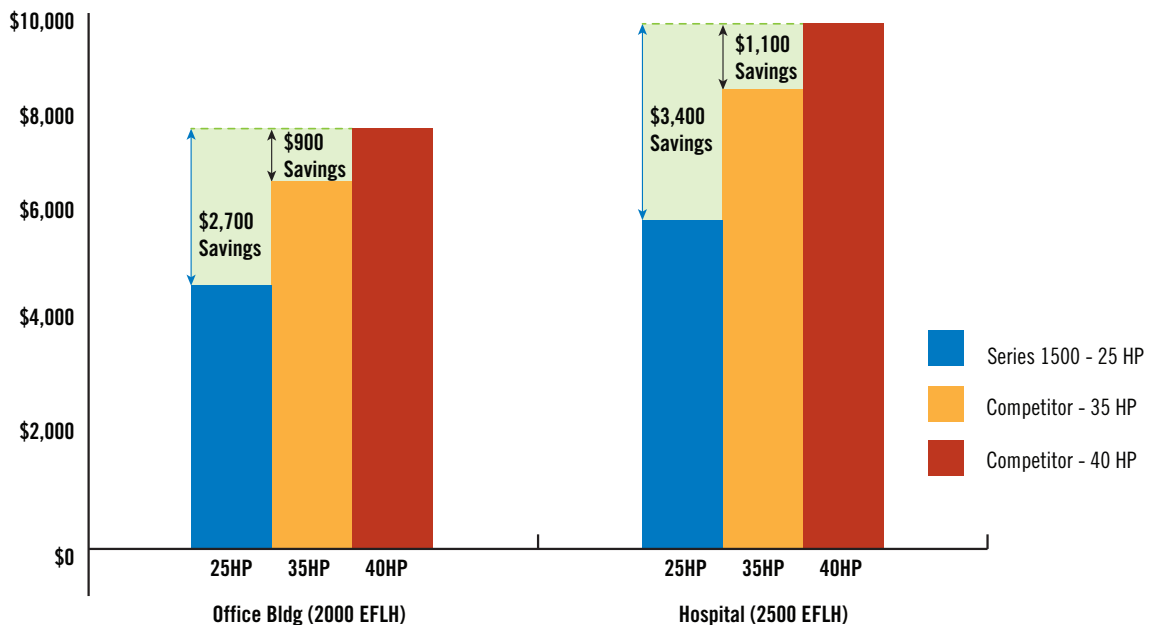
REDUCED ENERGY CONSUMPTION

- ✓ Performance increase of up to 13%
- ✓ Meets or exceeds ASHRAE 90.1-2013 efficiency requirements
- ✓ Offers excellent performance and serviceability in a compact footprint
- ✓ Further reduce energy cost with XE Models

400-Ton Example:	Series 1500	Competition	Competition
Fan HP	25	35	40
Footprint (L x W x H)	12'x12'x14.2'	12'x10'x15.5'	12'x12'x16.7'
Nominal Tons	401	395	423
Easy Service Access	✓	—	✓

Note: The unit selections for this example were based on maintaining installed layout parameters, which includes footprint and layout dimensions, as well as first cost of the unit.

400-Ton Example: Annual Operating Cost for a 25, 35 and 40 HP Motor



Energy Cost Savings Based on a 400-Ton System (\$0.12 kWh) for equivalent full load hours.



Note: Ideal replacement unit with the ability to use existing support steel and minimize piping and wiring changes.

THE MOST SERVICEABLE TOWER

- ✓ 26% less annual maintenance cost compared to other compact footprint products



NOTE: Difference was based on comparing costs to complete maintenance items listed in O&M Manual

- ✓ Direct access to:
 - Sloped cold water basin
 - Hot water basin which can be inspected during full operation of the system pump
 - Drive system through a spacious plenum and oversized doors on both sides of the unit
- ✓ Factory pre-assembled access options available for ease of maintenance



Factory Pre-Assembled External Access Platform

RELIABLE YEAR-ROUND OPERATION

- ✓ Superior winter operation
- ✓ Standard independent fan motors provide capacity control and redundancy
- ✓ Meets wind and seismic requirements of the International Building Code
- ✓ Tested per the California's Office of Statewide Health Planning and Development (OSHPD) requirements



Shake Table Testing

THE IDEAL REPLACEMENT UNIT FOR EXISTING BAC'S OR COMPETITORS' EQUIPMENT

- ✓ When replacing centrifugal fan towers, the Series 1500 Cooling Tower reduces installation AND operating costs
- ✓ Save up to \$7,000 on installation costs for replacement projects:
 - Fits on existing steel support
 - No enclosure modifications because of the layout flexibility of the single air intake
 - Minimal piping changes
 - Reuse starters

✓ Annual Operating Cost Savings \$4,500		
400-Ton Example		
	Existing Unit	Series 1500
Footprint (L x W x H)	12'x12'x16.3'	12'x12'x15.6'
HP	50	25
Annual Operating Costs	\$9,000	\$4,500



PT2

IBC Compliant

The PT2 Cooling Tower now has a capacity range from 99 to 787 nominal tons with the introduction of the new 12' x 18' box size. With a standard two fan mechanical, the PT2-1218 tower provides redundancy for critical applications and capacity control from the independent fans and motors. The PT2 is an ideal replacement unit that highlights BAC's commitment to easy maintenance and installation. The units also reduce energy consumption with premium efficient motors, are easy to install with a single piece lift and BAC's InterLok™ System, have a wind rating of 130 psf, and are seismically verified up to a S_{DS} of 2.93g at grade.



Two-cell PT2 Installation

LOW ENVIRONMENTAL IMPACT

- ✓ Energy efficient
 - All units meet or exceed ASHRAE Standard 90.1 energy efficiency requirements
 - Premium efficient/inverter duty fan motors
- ✓ Sound Reduction Options
 - Standard fan is high efficiency and low sound
 - For further reduced sound levels, Low Sound Fans and sound attenuation are available (optional)

EASY MAINTENANCE

- ✓ External motor adjustment with included wrench
- ✓ Inward sliding access doors do not limit workspace
- ✓ External platforms and ladders improve accessibility (optional)
- ✓ BranchLok™ Removal System allows for tool-less spray branch removal
- ✓ Easily accessible cleanout port flushes water distribution debris to outside the unit
- ✓ Louvers are easily removed without tools
- ✓ Removable inspection panels allow for easy inspection and access to the fill (optional)

RELIABLE AND DURABLE CONSTRUCTION

- ✓ PT2-1218 models have a standard two fan mechanical which provides redundancy
 - Ideal for critical applications
- ✓ Seismically verified through dynamic shake table testing up to a S_{DS} of 2.93g at grade
- ✓ Meets wind and seismic requirements of the 2009 International Building Code (IBC)
- ✓ Listed on California's Office of Statewide Health Planning and Development (OSHPD) pre-approved equipment list
- ✓ Enhanced longevity with a variety of materials of construction (see page 15)

IDEAL REPLACEMENT UNIT

- ✓ Units are designed to mount directly on the existing support steel of both crossflow and counterflow cooling towers
- ✓ Fan motor configurations can be supplied to match existing wiring

LOW INSTALLED COST

- ✓ Single piece lift available on all models
- ✓ Models ship in multiple sections to minimize the size and weight of the heaviest lift, allowing for use of smaller, less costly cranes
- ✓ BAC's InterLok™ System aligns the casing and the basin to expedite rigging and requires no sealer tape
- ✓ Factory pre-assembled platforms reduce installation time (optional)



Note: All NEW 12'x18' box size now available up to 787 tons. Featuring a two fan mechanical as standard, which offers critical redundancy.



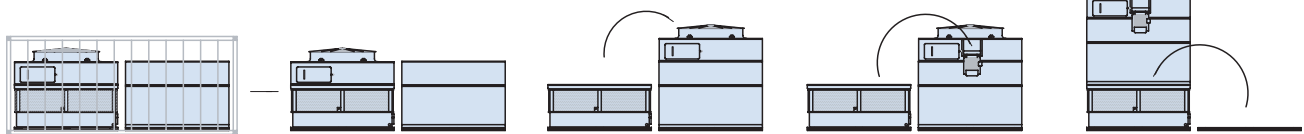
Shake Table Testing



Single Piece Lift



External Access Platform (Optional)



Easily Assembled Containerized Units



Series V

Series V Cooling Towers provide solutions to some of the most challenging cooling scenarios. Suitable for applications where external duct work and other sources of external static pressure exist, the VTL, VT0, and VT1 can be used in indoor and outdoor applications. With the addition of steel fill, Series V Cooling Towers are also ideal for high temperature applications.



VT1 Installation



VTL Installation



Note: Series V Cooling Towers are equipped to withstand high temperature applications when supplied with steel fill.

FLEXIBLE INSTALLATION

- ✓ Centrifugal fans are suitable for applications where external duct work and other sources of external static pressure exist
- ✓ Can be located indoors
- ✓ Low profile VTL fits well into mechanical equipment rooms with low ceilings and is easily hidden behind louvered walls on buildings

LOW ENVIRONMENTAL IMPACT

- ✓ Energy efficient
 - All units meet or exceed ASHRAE Standard 90.1 energy efficiency requirements
 - Premium efficient/inverter duty fan motors
 - BALTIGUARD™ Fan System provides redundancy and energy savings by providing a pony motor (optional)
- ✓ Sound Reduction Options
 - Centrifugal fans have inherently low sound characteristics
 - Factory designed sound attenuation is available for both the air intake and discharge (optional)
 - Particularly sound sensitive areas can be accommodated by facing the quiet blank-off panel to the sound sensitive direction

EASY MAINTENANCE

- ✓ Fans, motors, and drive system are located outside of the moist discharge air stream, protecting them from moisture, condensation, and icing while facilitating maintenance
- ✓ All moving parts are located near the base of the unit within easy reach for cleaning, lubrication, or adjustments
- ✓ Nozzles are non-clogging, reducing maintenance costs and ensuring efficient equipment operation
- ✓ Split fan housing for easy air moving component replacement



External Drive Access



BALTIGUARD™ Fan System (Optional)



Intake Sound Attenuation (Optional)



FXT

BAC's FXT was the first cooling tower to be certified by the Cooling Technology Institute (CTI) and still holds its certification to this day. The FXT's performance, maintainability, and low initial cost make it an industry standard for a wide range of projects.



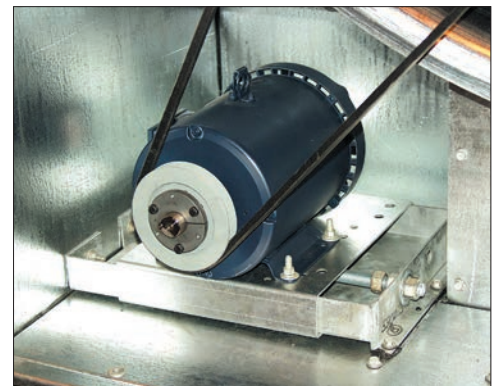
Single Piece Lift

LOW ENERGY CONSUMPTION

- ✓ All units meet or exceed ASHRAE Standard 90.1 energy efficiency requirements
- ✓ Premium efficient/inverter duty fan motors
- ✓ High efficiency, low horsepower, axial fans

LOW INSTALLED COST

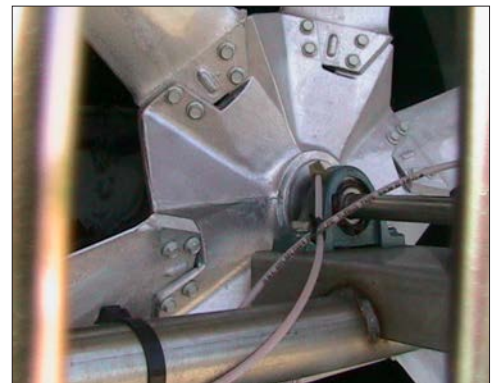
- ✓ Single piece lift
- ✓ Ships completely assembled, minimizing installation time and cost
 - No motors to mount
 - No sheaves to align
 - No belts to install
 - No make-up system to assemble



Easily Accessible Motor

EASY MAINTENANCE

- ✓ The fan motor is located on the exterior of the unit for easy maintenance and belt adjustment
- ✓ Basin covers are standard keeping debris from entering the hot water basin
- ✓ Extended lubrication lines are provided as standard on the exterior of the unit for bearing lubrication
- ✓ An access door makes access to the interior of the unit easy for adjusting the float valve, cleaning the strainer, or flushing the basin



Extended Lubrication Lines

BAC Materials of Construction



BAC offers a variety of materials to meet the corrosion resistance, unit operating life, and budgetary requirements of any project. Each of these materials underwent extensive testing in BAC's Corporate Technology Center and have been successfully operating in the field for at least ten years.

Standard Construction Hot dip galvanized G-235 steel construction structural members.

TriArmor® Corrosion Protection System A BAC exclusive three layer barrier that is proven to provide greater corrosion protection than stainless steel for cold water basins. It is completely impervious to cooling system water chemistries and operating conditions as well as pitting, chloride stress, crevice crack corrosion, and leaks.

G-235 galvanized structural steel is fully encapsulated with a thermosetting hybrid polymer, providing a second layer of protection and providing a base for the third layer. Once assembled, the interior of the basin receives a coating of an industrial grade polyurethane barrier, finalizing the seamless construction on the cold water basin. Provided with a 5-year leak and corrosion protection warranty.

EVERTOUGH™ Construction For the ultimate in corrosion protection, BAC offers EVERTOUGH™ Construction, which combines the benefits of the TriArmor® Corrosion Protection System—three layers of protection in the cold water basin—and adds polymeric water distribution systems and all steel structural components protected by thermosetting hybrid polymer. Provided with a 5 year louver-to-louver warranty, EVERTOUGH™ Construction optimizes corrosion resistance for all water chemistries.

Welded Type 304 Stainless Steel Cold Water Basin This factory welded cold water basin provides further security against leaks and comes with a 5 year leak warranty.

Stainless Steel Construction BAC stainless steel units have panels and structural elements constructed of Type 304 stainless steel and have factory welded seams in the cold water basin to ensure watertight assembly, and the basin is leak tested at the factory. All factory seams are warranted for 5 years against leaks.

BAC EXCLUSIVE FEATURES



- 1 G-235 Heavy Galvanized Steel Basin
- 2 Thermosetting Hybrid Polymer Coating
- 3 Impermeable Polyurethane Barrier

Enhanced three-layer corrosion protection for the cold water basin



The highest level of corrosion protection for all vulnerable components

With its variety of material of construction options, BAC delivers units designed for long service life under any budgetary concern. For more information or selection assistance, please contact your local BAC Representative.

BAC Type 304 Stainless Steel

BAC testing and experience confirms that, when it comes to stainless steel, Type 304 stainless steel provides the best value for owners and operators. While some manufacturers are offering Type 301L stainless steel as an alternative, BAC has evaluated the lower cost alternative and determined it has a reduced level of corrosion protection, making it an unacceptable risk for owners and operators.

Product Comparison

ITEMS SHADED IN BLUE ARE BAC EXCLUSIVE FEATURES AND OPTIONS

Standard Features	Series 3000	Series 1500	PT2	VT0/VT1	VTL	FXT
Axial Fan	•	•	•			•
Centrifugal Fan ^[1]				•	•	
Large Plenum Area for Access	•	•				
Capacity Range (Nominal Tons)	171 - 1,446	92 - 747	99 - 787	12 - 1,335	16 - 272	58 - 268
Shake Table Tested	•	•	•			
Premium Efficient Fan Motors	•	•	•	•	•	•
BALTDRIIVE® Power Train	•	•	•			
Patented BAC Hygienic Cold Water Basin	•					
Separate Air Inlet Louvers	•		•			
Weir Dams	•	•				
Fully Assembled Containerized Units for Export ^[2]			•	•	•	
Construction Options						
XE Models	•	•				
TriArmor® Corrosion Protection System	•	•	•			
EVERTOUGH™ Construction	•		•			
Welded Stainless Steel Cold Water Basin ^[3]	•	•	•			
Stainless Steel Construction ^[3]	•	•	•	•	•	
Options and Accessories						
Independent Fan Operation		Standard		•		
BALTIGUARD™ Fan System	•	•		•	•	
ENDURADRIVE™ Fan System	•					
Low Sound Fan	•	•	•			
Whisper Quiet Fan	•	•				
Intake Sound Attenuation	•	•		•	•	
Discharge Sound Attenuation	•	•	•	•	•	
Handrails with Ladder ^[4]	•	•		•	•	
Factory Assembled External Access Platform with Ladder ^[4]	•	•	•			
Internal Ladder and Service Platform	•	•				
Internal Walkway	•	Standard				
Gear Drive	•					
Basinless Unit Construction	•					
Indoor Applications				•	•	
Low Ceiling Applications					•	
Motor Removal System	•		•			
Single Point Wiring ^[5]	•		•			
Steel Fill				•	•	
VR Stacks	•					
Codes and Standards						
CTI Standard 201	•	•	•	•	•	•
ASHRAE 90.1	•	•	•	•	•	•
OSHPD Pre-approved List	•	•	•			
Factory Mutual (FM)	•		•			

Note 1: Centrifugal fan units can overcome ESP imposed by duct work or other restrictions. A larger fan motor may be required. Contact your local BAC Representative for selection and application assistance.

Note 2: Please contact your local BAC Representative to discuss containerization options for certain box sizes.

Note 3: Seams between the panels inside the cold water basin are welded for Series 3000, Series 1500, and PT2 models. The basin is leak tested at the factory and welded seams are provided with a five-year leak-proof warranty.

Note 4: Safety cages are available on ladders when required by local safety standards.

Note 5: Single point wiring is available for the fan motor and vibration cut out switch when ordered with BAC Controls.

Cooling Tower Solutions?

Visit www.BaltimoreAircoil.com:

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