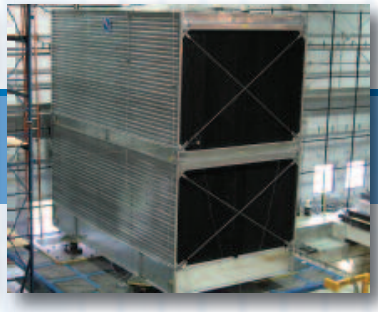
Series 3000
Cooling Towers

Product Detail

Series 3000
Spotlight


- EVERTOUGH™ Construction
- TriArmor® Corrosion Protection System
- Basinless Construction
- Mechanical Equipment Removal System
- Factory Wired and Mounted Terminal Box
- IBC Compliant

EVERTOUGH™ CONSTRUCTION

TriArmor® Corrosion Protection System

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CTI CERTIFIED

Benefits

Low Energy Consumption

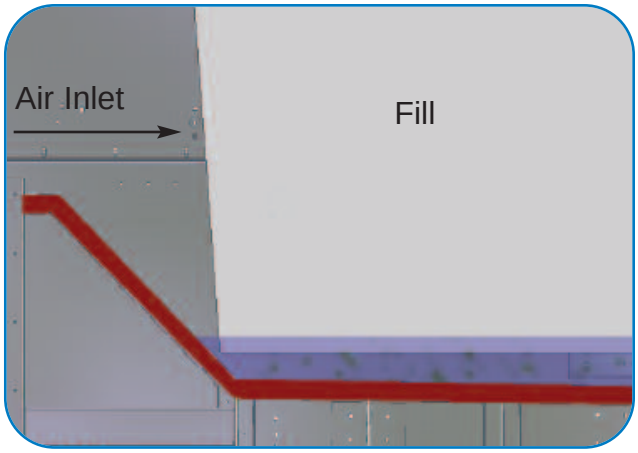
- Evaporative cooling equipment minimizes energy consumption of an entire system by providing lower leaving condenser water temperatures as compared with comparable air cooled equipment. Owners save money while conserving natural resources and reducing environmental impact.
- Series 3000 Cooling Towers provide the heat rejection required at the lowest possible energy input via:
    - High efficiency, low horsepower axial fans
    - High efficiency BACross® Fill, which provides maximum air/water contact time at low air pressure drops
    - Premium efficient/VFD duty fan motors are standard
    - Variable Frequency Drives (Optional) (See page K1 for details)
    - BALTIGUARD™ Fan System (Optional) (See page D16 for details)
    - BALTIGUARD PLUS™ Fan System (Optional) (See page D16 for details)
- All units meet or exceed ASHRAE Standard 90.1 energy efficiency requirements.

Low Installed Cost

- **Modular Design –** Models 3728C through 31056C and 31132C through 31301C ship in two sections to minimize the size and weight of the heaviest lift, allowing for the use of smaller, less costly cranes.
- **Piping –** The optional EASY CONNECT® Piping Arrangement further reduces installation costs by eliminating overhead piping and piping support requirements (see page D17 for details).
- **Terminal Box –** A terminal box includes a factory-mounted enclosure, factory wiring to terminal blocks for the fan motors and vibration cutout switch, and grounding lugs. This option is available only when BAC Controls are ordered.

Easy Maintenance

- **Easy Cleaning –** The fill surface is elevated above the sloped cold water basin to facilitate flushing of dirt and debris from this critical area.
- **Hinged Access Doors –** Provide easy access to the unit interior to adjust the make-up float valve, clean the cold water basin and strainer, and service the fan drive system.
- **Hygienic Cold Water Basin –** The cold water basin is sloped at the air inlet faces to eliminate stagnant water and reduce biological growth. Additionally, the suction strainer is easily removed to simplify maintenance.

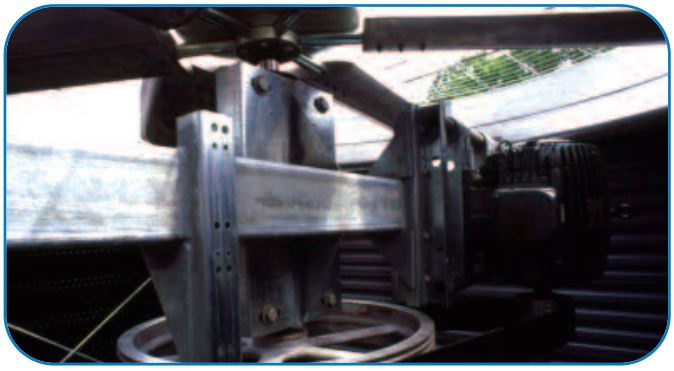


Hygienic Cold Water Basin

- **Combined Inlet Shields -** Corrosion resistant PVC screens can be factory installed over the air inlet. These inlet shields protect the cold water basin from sunlight and reduce the potential for algae growth. The shields also prevent debris from entering the cold water basin.
- **Mechanical Equipment Removal System -** The removal system has a modular design and is able to remove motors as well as gear drives. See page D20 for details.

Reliable Year-Round Operation

- **Drive System –** Backed by a 5-year fan motor and drive warranty, the BALTIDRIVE® 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.
- **Separate Air Inlet Louvers –** Reduce the potential for scale build-up and damaging ice formations at the air/water interface by providing a line of sight from the outside of the unit into the fill.



BALTIDRIVE® Power Train

Long Service Life

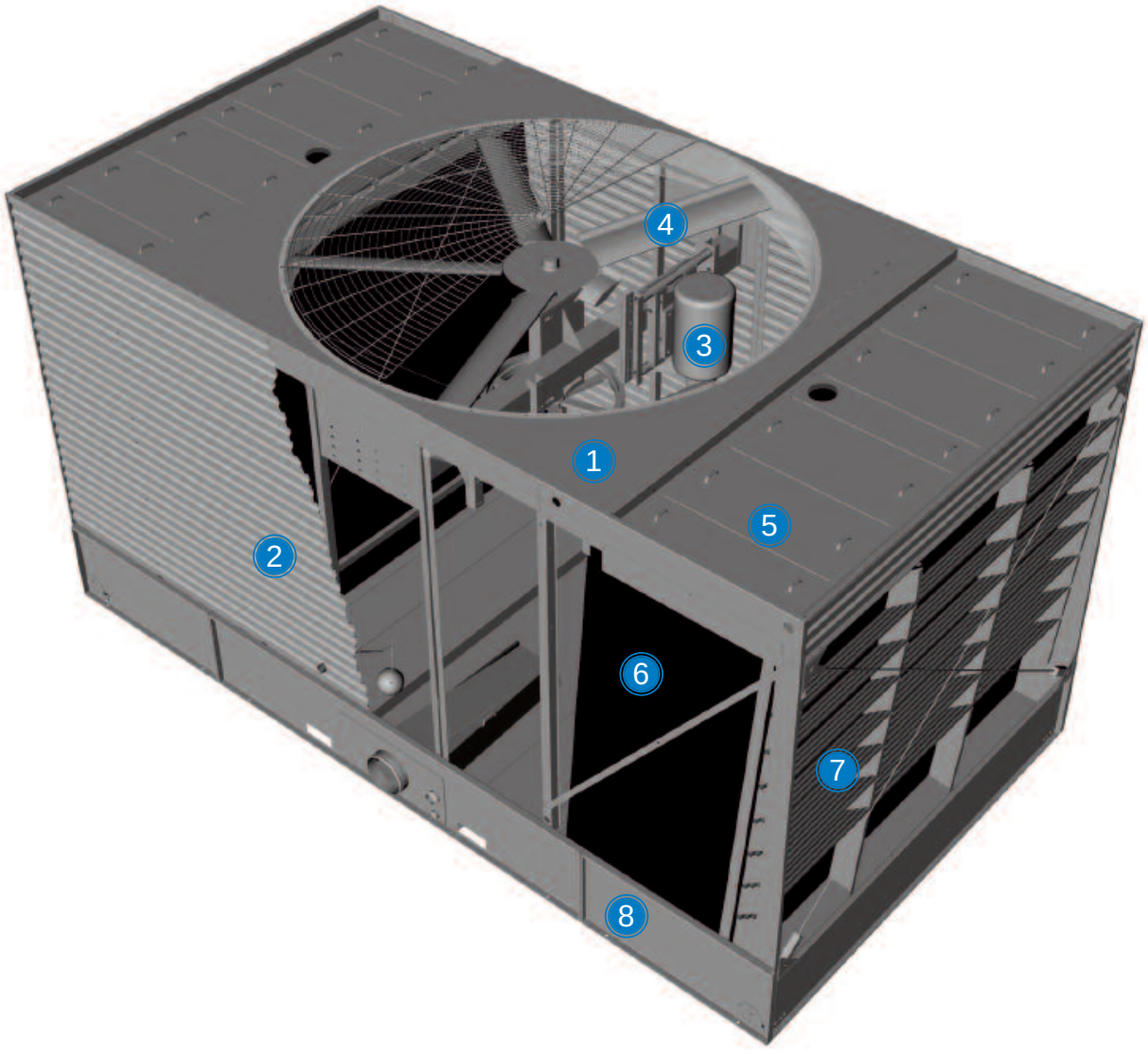
- **Frame Construction –** Enables casing panels, critical links for long service life, to be constructed of corrosion-resistant, fiberglass reinforced polyester (FRP).
- **Materials of Construction –** Various materials are available to meet the corrosion resistance, unit operating life, and budgetary requirements of any project (see page D15 for construction options).

Series 3000 Cooling Tower

- **IBC Compliance -** Series 3000 Cooling Towers are designed to meet requirements of the 2006 International Building Code (IBC). Specifically, a unit was shake table tested at an independent lab in accordance with AC 156. Tests were conducted before and after testing to verify functionality and certify the use of the Series 3000 Cooling Towers in applications where the Component Importance Factor is 1.5. The standard unit can be certified up to an S_{DS} of 1.4g which covers most US seismic applications. In addition, the Series 3000 Cooling Towers have been designed to withstand wind loads of 30 psf or higher. BAC can also provide an upgraded tower to meet more extreme seismic or wind levels.

Construction Details

Series 3000



Baltimore Aircoil Company

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1 Heavy-Duty Construction

- Heavy-gauge G-235 (Z700 Metric) hot-dip galvanized steel frame
- Independently shake table tested and certified per 2006 IBC up to an S_{DS} of 1.4, Component Importance Factor of 1.5
- Designed to withstand wind loads of 30 psf or higher

2 FRP Casing Panels

- Corrosion resistant
- Maintenance free
- UV-resistant finish

3 BALTIDRIVE® Power Train

- Premium quality, solid backed, multi-groove belt
- Corrosion resistant cast aluminum sheaves
- Heavy-duty bearings with a minimum L_{10} of 80,000 hours.
- Premium efficient/VFD duty fan motors as standard
- 5-year motor and drive warranty

4 Low Horsepower Axial Fan

- High efficiency
- Quiet operation
- Corrosion resistant

5 Water Distribution System

- Steel covers in easy to remove sections
- Low pump head gravity distribution basins
- Large orifice, 360º non-clog nozzles

6 BACross® Fill with Integral Drift Eliminators

- High efficiency heat transfer surface
- Polyvinyl chloride (PVC)
- Impervious to rot, decay and biological attack
- Flame spread rating of 5 per ASTM E84

7 FRP Air Inlet Louvers

- Corrosion resistant
- Maintenance free
- UV resistant finish

8 Hygienic Cold Water Basin

- Sloped at the air inlet face to eliminate stagnant water
- Sloped for easy cleaning
- Easily removable suction strainer sections
- Adjustable water make-up assembly

9 Hinged Access Doors (Not Shown)

- Inward swinging door on each end wall

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Custom Features and Options

Construction Options

- **Standard Construction:**
  Steel panels and structural elements are constructed of G-235 (Z700 metric) hot-dip galvanized steel. Casing panels and air inlet louvers are constructed of UV-resistant, fiberglass reinforced polyester (FRP).

- **Optional EVERTOUGH™ Construction:**
  EVERTOUGH™ Construction combines the most corrosion resistant materials to provide the best value in corrosion protection for most water chemistries. Specifically, the following materials are used:

  - The cold water basin is constructed with the TriArmor® Corrosion Protection System. The basin is leak tested at the factory and warranted against leaks and corrosion for 5 years.
  - Designated steel components above the cold water basin are constructed of heavy-gauge G-235 galvanized steel and further protected with a thermosetting hybrid polymer.
  - The hot water basins are constructed of corrosion and UV-resistant pultruded fiberglass reinforced polyester (PFRP) with corrosion resistant basin covers.
  - The casing panels and air inlet louvers are constructed of corrosion and UV-resistant FRP.

  EVERTOUGH™ Construction is backed by a comprehensive Louver-to-Louver℠ 5-year warranty which covers ALL components from the fan to the cold water basin, from louver to louver including the motor.

- **Optional TriArmor® Corrosion Protection System:**
  The cold water basin is constructed of the TriArmor® Corrosion Protection System. The system consists of a heavy-gauge G-235 galvanized steel substrate, fully encapsulated by a thermosetting hybrid polymer and further protected by a polyurethane barrier applied to all submerged surfaces of the cold water basin. The basin is leak tested at the factory and warranted against leaks and corrosion for 5 years.

- **Optional Thermosetting Hybrid Polymer:**
  A thermosetting hybrid polymer coating used to extend equipment life, is applied to select hot-dip galvanized steel components of the cooling tower. The thermosetting hybrid polymer has been tested to withstand 6000 hours in a 5% salt spray without blistering, chipping, or loss of adhesion.

- **Optional Stainless Steel Cold Water Basin:**
  A Type 304 stainless steel cold water basin is provided. Seams between panels inside the cold water basin are welded. The basin is leak tested at the factory and welded seams are warranted against leaks for 5-years.

- **Optional Stainless Steel Hot and Cold Water Basins:**
  Type 304 stainless steel hot water basins are provided in addition to the cold water basin described above.

- **Optional JE PREMIER SERIES® Construction:**
  Steel panels and structural elements are constructed of Type 304 stainless steel. Seams between panels inside the cold water basin are welded. The basin is leak tested at the factory and welded seams are provided with a 5-year leak-proof warranty. Casing panels and air inlet louvers are constructed of corrosion and UV-resistant fiberglass reinforced polyester (FRP). Each cooling tower provided with the JE PREMIER SERIES® Construction is backed by a comprehensive Louver-to-Louver℠ 5-Year Warranty, which covers ALL components from the fan to the cold water basin, from louver to louver, including the motor.

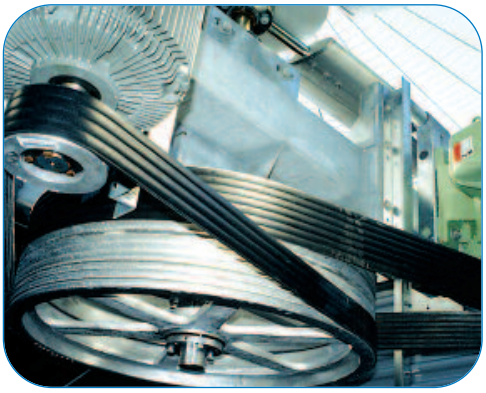
- **Optional Seismic and Wind Rated Unit:**
  Select steel panels and structural members are upgraded for extreme seismic and wind load applications.

Fan Drive System

The fan drive system provides the cooling air necessary to reject unwanted heat from the system to the atmosphere. The standard fan drive system on the Series 3000 is the exclusive BALTIDRIVE® Power Train. This BAC engineered drive system consists of a specially designed powerband and two cast aluminum sheaves located on minimum shaft centerline distances to maximize belt life. A premium efficient cooling tower duty fan motor provides maximum performance and is backed by BAC's comprehensive 5-year motor and fan drive warranty.

BALTIGUARD™ Fan System

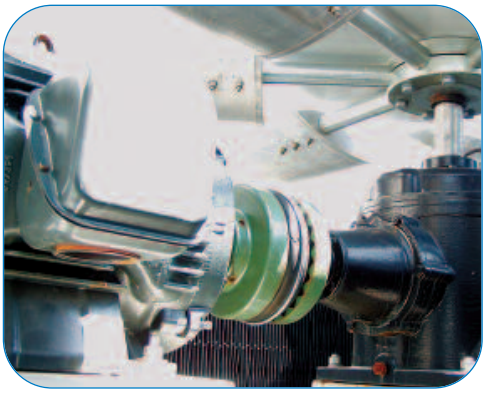
The BALTIGUARD™ Fan System consists of two standard single-speed fan motor and drive assemblies. One drive assembly is sized for full speed and load, and the other is sized approximately 2/3 speed and consumes only 1/3 the design horsepower. This configuration allows the reserve capacity of a standby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



BALTIGUARD™ Fan System

BALTIGUARD PLUS™ Fan System

The BALTIGUARD PLUS™ Fan System builds on the advantages of the BALTIGUARD™ Fan System by adding a VFD to one motor. For more information on the BALTIGUARD PLUS™ Fan System refer to page K1.



Gear Drive System, Close-Coupled Motor

Gear Drive System, Close-Coupled Motor

A gear drive system is available as a fan drive option on Series 3000 Cooling Towers. Both the gear drive and couplings are selected with a 2.0 service factor. Gear construction includes a nickel-alloy steel shaft, casehardened gears, self lubrication, and a single piece, gray iron housing. This drive system ships completely installed and aligned.

Gear Drive System, Externally Mounted Motor

Gear Drive System, Externally Mounted Motor

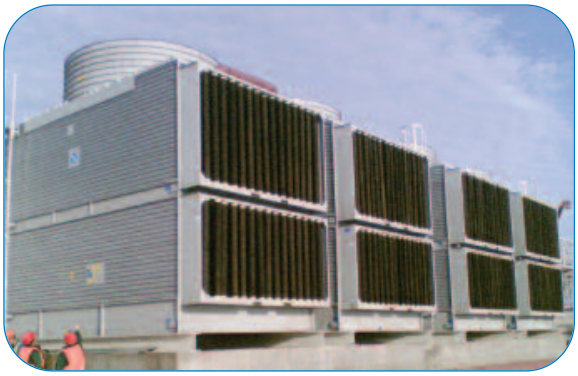
A gear drive system with a TEFC motor mounted outside the airstream is also available on Series 3000 Cooling Towers. A non-corrosive carbon-fiber composite drive shaft with stainless steel hubs is selected with a 2.0 service factor. The motor and drive shaft ship separately for easy field installation.

Custom Features and Options

Low Sound Operation

The low sound levels generated by Series 3000 Cooling Towers make them suitable for installation in most environments. For very sound sensitive installations, the Series 3000 is available with a low sound fan option that significantly reduces the sound levels generated from the tower with minimal impact on thermal performance. The cooling tower thermal performance with the low sound fan has been certified in accordance with CTI Standard STD-201. For extremely sound sensitive installations, most units are available with the Whisper Quiet Fan option to further reduce sound levels.

In addition, factory designed, tested and rated sound attenuation is available for both the air intake and discharge of Series 3000 Cooling Towers. For more information on sound, refer to pages M128.



Unit With Intake Sound Attenuation

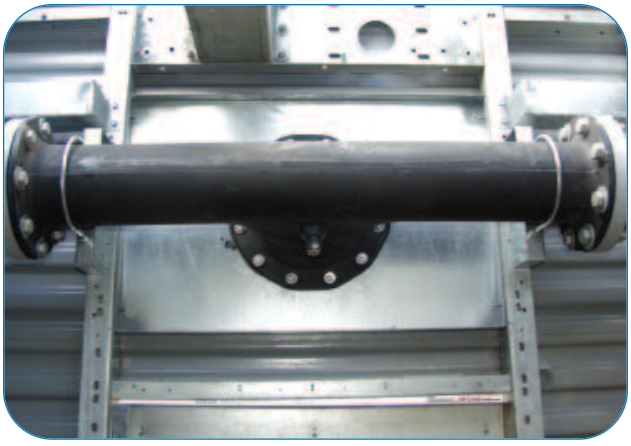
Basinless Series 3000 Cooling Tower on a Concrete Basin

Basinless Unit Construction

The basinless unit construction option enables Series 3000 Cooling Towers to be directly installed on new or existing concrete cold water 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 and provides a cost-effective solution for many field-erected cooling tower replacement projects.

EASY CONNECT® Piping Arrangement

This BAC option simplifies water inlet piping on the Series 3000 Cooling Tower. This piping arrangement automatically balances flow within each cell, eliminating the need for flow balancing valves. A single water inlet connection, located on the side or bottom of each unit, eliminates the need for overhead piping and piping supports.



EASY CONNECT® Piping Arrangement

Accessories

Ladder, Safety Cage, Gate, and Handrails

In the event the owner requires easy access to the cooling tower fan deck, the Series 3000 Cooling Tower can be furnished with ladders extending from the top of the unit to the base, as well as safety cages, safety gates, and handrail packages. All components are designed to meet OSHA requirements. All access to the top of the equipment must be made in accordance with applicable governmental occupational safety standards.

External Platform at Louver Face

External Service Platforms

For external service, louver face platforms, access door platforms, and fan deck extensions can be added to the cooling tower when the unit is purchased or as an aftermarket item. Safety cages and safety gates are also available. All components are designed to meet OSHA requirements.

Internal Walkway

Internal Walkway and Service Platform

A galvanized steel internal walkway is available to provide a permanent working surface for easy access to the strainer, outlet, and make-up water assembly. For access to the motor and drive assemblies on two-piece units, an internal ladder and upper service platform with handrails is available. Safety gates are available for all handrail openings. All components are designed to meet OSHA requirements.

Internal Ladder and Service Platform

Vibration Cutout Switch

A factory mounted vibration cutout switch is available to effectively protect against equipment failure due to excessive vibration of the mechanical equipment system. 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 to either switch type to activate an alarm.

Accessories

Basin Heaters

Cooling towers exposed to below freezing ambient temperatures require protection to prevent freezing of the water in the cold water 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.

Heater kW Data

Model Numbers	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
3240C to 3379C	2	6	2	9
3412C to 3527C	2	8	2	12
3473C to 3672C	2	10	2	14
3728C to 31056C	2	12	2	15
3583C to 3725C	2	14	2	18
31132C to 31301C	2	14	2	20

Note: The table data is based on 460V/3 phase/60Hz power and standard, single-cell unit configuration

Electric Water Level Control Package

The electric water level control replaces the standard mechanical make-up valve when more precise water level control is required. This package consists of a conductance-actuated level control mounted in the basin and a solenoid activated valve in the make-up water line. The valve is slow closing to minimize water hammer.

Electric water level control package and basin heater

Extended Lubrication Lines

Extended lubrication lines with grease fittings are available for lubrication of the fan shaft bearings. Fittings are located inside the plenum area next to the access door.

High Temperature Fill

If operation above 130°F (54.4°C) is anticipated, an optional high temperature fill material is available which increases the maximum allowable entering water temperature to 140˚F (60.0˚C).

Factory Mutual Approval

All multi-cell Series 3000 Cooling Towers are available with Factory Mutual (FM) Approved construction as an option.

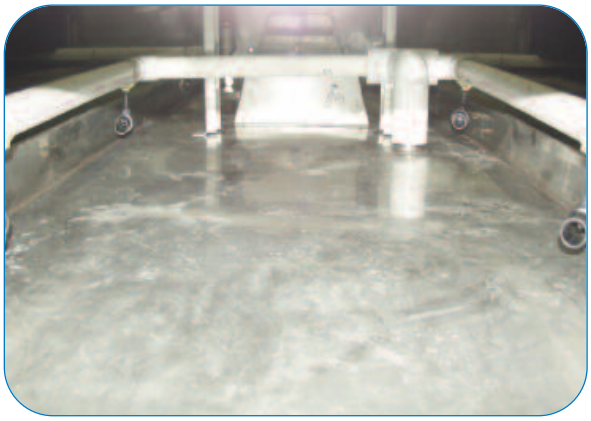
Externally Mounted Terminal Box

Equipment Controls

BAC control panels are specifically designed to work seamlessly with all BAC units and engineered to meet your particular application. A terminal box, available on Series 3000 Cooling Towers, includes a factory-mounted enclosure, factory wiring to terminal blocks for the fan motors and vibration cut-out switch, and grounding lugs. For more information on BAC Equipment Controls, refer to section K.

Mechanical Equipment Removal

There are three types of mechanical equipment removal systems available. One will handle motors/gears weighing less than 900 lbs. The second will handle motors/gears weighing more than 900 lbs, and the last handles motors located outside the airstream.



Basin Sweeper Piping

Basin Sweeper Piping

Basin sweeper piping provides an effective method of preventing sediment from collecting in the cold water basin of the tower. A complete piping system, including nozzles, is provided in the tower basin for connection to side stream filtration equipment (by others). For more information on filtration systems, refer to page M163.

Side Outlet Depressed Sump

A side outlet depressed sump box is available for field installation below the base of the tower to facilitate jobsite piping. The outlet connection is designed to mate with an ASME Class 150 Flat Face Flange. See the Connection Guide on page M60, for more information on standard and optional unit connection types.

Velocity Recovery Stacks

Velocity Recovery Stacks

Velocity recovery stacks are available on the Series 3000 Cooling Tower for increased incremental thermal performance. This accessory can be used to gain extra capacity in tight layouts, while maintaining the same footprint and unit horsepower, as well as maintaining CTI certification. Field assembly is required.

Engineering Data

Do not use for construction. Refer to factory certified dimensions. This handbook includes data current at the time of publication, which should be reconfirmed at the time of purchase. Up-to-date engineering data, product selection software, and more can be found at **www.BaltimoreAircoil.com**.

Series 3000

Single Cell Unit

Model Number	Nominal Tonnage[5]	Motor HP	Fan (CFM)	Weights (lbs)			Dimensions[4]			
				Operating[1]	Shipping	Heaviest Section	L	W	H[3]	A
3240C	240	10	62,790	15,200	7,610	7,610	8' 5-3/4"	18' 0-1/2"	9' 3-5/8"	8' 7-3/4"
3272C	272	15	71,340	15,320	7,730	7,730				
3299C	299	20	78,110	15,380	7,790	7,790				
3333C	325	20	85,720	16,190	8,060	8,060	8' 5-3/4"	18' 0-1/2"	10' 7-5/8"	9' 11-3/4"
3358C	349	25	91,960	16,220	8,090	8,090				
3379C	369	30	97,400	16,270	8,140	8,140				
3412C	399	25	103,700	19,000	9,390	9,390	9' 9-1/4"	20' 0-1/2"	10' 9-1/8"	9' 11-3/4"
3436C	422	30	109,830	19,050	9,440	9,440				
3455C	434	25	112,250	19,770	9,710	9,710	9' 9-1/4"	20' 0-1/2"	12' 1-1/8"	11' 3-3/4"
3482C	459	30	118,880	19,820	9,760	9,760				
3527C	502	40	130,160	19,980	9,920	9,920				
3473C	458	25	118,870	22,730	10,900	10,900	11' 9-3/4"	21' 6-1/2"	10' 10-1/8"	9' 11-3/4"
3501C	485	30	125,900	22,780	10,950	10,950				
3552C	527	30	136,170	25,150	11,510	11,510	11' 9-3/4"	21' 6-1/2"	12' 2-1/8"	11' 3-3/4"
3604C	577	40	149,090	25,310	11,670	11,670				
3648C	619	50	159,950	25,320	11,680	11,680				
3672C	642	60	166,020	26,080	12,440	12,440			12' 8-1/8"	
3728C	728	40	178,860	30,700	14,460	8,430	11' 9-3/4"	21' 6-1/2"	16' 4-7/8"	15' 5-1/2"
3781C	781	50	191,890	30,860	14,620	8,590				
3828C	828	60	203,230	30,870	14,630	8,600				
3872C	846	50	206,630	33,700	15,380	8,600	11' 9-3/4"	21' 6-1/2"	19' 0-7/8"	18' 1-1/2"
3923C	896	60	218,840	33,910	15,590	8,810				
3970C	941	75	230,080	34,870	16,550	9,770				
3985C	985	60	229,950	36,500	16,360	9,210	11' 9-3/4"	21' 6-1/2"	21' 8-7/8"	20' 9-1/2"
31056C	1,056	75	246,700	36,590	16,440	9,290				
3583C	557	25	143,950	32,890	15,650	15,650	13' 11-1/8"	24' 0-1/2"	12' 3-1/8"	11' 3-3/4"
3618C	591	30	152,460	32,940	15,700	15,700				
3676C	646	40	166,920	33,100	15,860	15,860				
3725C	693	50	179,080	33,110	15,870	15,870				
31132C	1,105	75	267,880	43,080	20,830	11,430	13' 11-1/8"	24' 0-1/2"	19' 8-7/8"	18' 1-1/2"
31213C	1,213	75	282,010	45,760	21,530	12,140	13' 11-1/8"	24' 0-1/2"	22' 4-7/8"	20' 9-1/2"
31301C[2]	1,301	100	302,580	47,680	23,450	13,230	13' 11-1/8"	24' 0-1/2	22' 8-1/4"	20' 9-1/2"

Notes:

1. Operating weight is based on the water level in the cold water basin at overflow height. If a lower operating weight is needed to meet design requirements, your local BAC Representative can provide additional assistance.
2. 31301C is supplied with a gear drive system as standard.
3. Models shipped with an optional gear drive or low sound fan may have heights up to 10.5" greater than shown. For units with Whisper Quiet Fans please contact your local BAC Representative for accurate height dimensions.
4. Refer to page D24 for dimensional reference drawings.
5. Nominal tons of cooling represents the capability to cool 3 GPM of water from a 95ºF entering water temperature to an 85ºF leaving water temperature at a 78ºF entering wet-bulb temperature.

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Double Cell Units

Model Number	Nominal Tonnage[5]	Motor HP	Fan (CFM)	Weights (lbs)			Dimensions[4]			
				Operating[1]	Shipping	Heaviest Section	L	W	H[3]	A
3240C-2	480	(2) 10	125,580	30,400	15,200	7,610	17' 2"	18' 0-1/2"	9' 3-5/8"	8' 7-3/4"
3272C-2	544	(2) 15	142,680	30,640	15,460	7,730				
3299C-2	598	(2) 20	156,220	30,760	15,580	7,790				
3333C-2	650	(2) 20	171,440	32,380	16,120	8,060	17' 2"	18' 0-1/2"	10' 7-5/8"	9' 11-3/4"
3358C-2	698	(2) 25	183,920	32,440	16,180	8,090				
3379C-2	738	(2) 30	194,800	32,540	16,280	8,140				
3412C-2	798	(2) 25	207,400	38,000	18,780	9,390	19' 9"	20' 0-1/2"	10' 9-1/8"	9' 11-3/4"
3436C-2	844	(2) 30	219,660	38,100	18,880	9,440				
3455C-2	868	(2) 25	224,500	39,540	19,420	9,710	19' 9"	20' 0-1/2"	12' 1-1/8"	11' 3-3/4"
3482C-2	918	(2) 30	237,760	39,640	19,520	9,760				
3527C-2	1,004	(2) 40	260,320	39,960	19,840	9,920				
3473C-2	916	(2) 25	237,740	45,460	21,800	10,900	23' 10"	21' 6-1/2"	10' 10-1/8"	9' 11-3/4"
3501C-2	970	(2) 30	251,800	45,560	21,900	10,950				
3552C-2	1,054	(2) 30	272,340	50,300	23,020	11,510	23' 10"	21' 6-1/2"	12' 2-1/8"	11' 3-3/4"
3604C-2	1,154	(2) 40	298,180	50,620	23,340	11,670				
3648C-2	1,238	(2) 50	319,900	50,640	23,360	11,680				
3672C-2	1,284	(2) 60	332,040	52,160	24,880	12,440			12' 8-1/8"	
3728C-2	1,456	(2) 40	357,720	61,400	28,920	8,430	23' 10"	21' 6-1/2"	16' 4-7/8"	15' 5-1/2"
3781C-2	1,562	(2) 50	383,780	61,720	29,240	8,590				
3828C-2	1,656	(2) 60	406,460	61,740	29,260	8,600				
3872C-2	1,692	(2) 50	413,260	67,400	30,760	8,600	23' 10"	21' 6-1/2"	19' 0-7/8"	18' 1-1/2"
3923C-2	1,792	(2) 60	437,680	67,820	31,180	8,810				
3970C-2	1,882	(2) 75	460,160	69,740	33,100	9,770				
3985C-2	1,970	(2) 60	459,900	73,000	32,720	9,210	23' 10"	21' 6-1/2"	21' 8-7/8"	20' 9-1/2"
31056C-2	2,112	(2) 75	493,400	73,180	32,880	9,290				
3583C-2	1,144	(2) 25	287,900	65,780	31,300	15,650	28' 0-3/4"	24' 0-1/2"	12' 3-1/8"	11' 3-3/4"
3618C-2	1,182	(2) 30	304,920	65,880	31,400	15,700				
3676C-2	1,292	(2) 40	333,840	66,200	31,720	15,860				
3725C-2	1,386	(2) 50	358,160	66,220	31,740	15,870				
31132C-2	2,210	(2) 75	535,760	86,160	41,660	11,430	28' 0-3/4"	24' 0-1/2"	19' 8-7/8"	18' 1-1/2"
31213C-2	2,426	(2) 75	564,020	91,520	43,060	12,140	28' 0-3/4"	24' 0-1/2"	22' 4-7/8"	20' 9-1/2"
31301C-2[2]	2,602	(2) 100	605,160	95,360	46,900	13,230	28' 0-3/4"	24' 0-1/2"	22' 8-1/4"	20' 9-1/2"

Notes:

1. Operating weight is based on the water level in the cold water basin at overflow height. If a lower operating weight is needed to meet design requirements, your local BAC Representative can provide additional assistance.
2. 31301C-2 is supplied with a gear drive system as standard.
3. Models shipped with an optional gear drive or low sound fan may have heights up to 10.5" greater than shown. For units with Whisper Quiet Fans please contact your local BAC Representative for accurate height dimensions.
4. Refer to page D24 for dimensional reference drawings.
5. Nominal tons of cooling represents the capability to cool 3 GPM of water from a 95ºF entering water temperature to an 85ºF leaving water temperature at a 78ºF entering wet-bulb temperature.

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Engineering Data

Do not use for construction. Refer to factory certified dimensions. This handbook includes data current at the time of publication, which should be reconfirmed at the time of purchase. Up-to-date engineering data, complimentary product selection software, and more can be found at **www.BaltimoreAircoil.com**.

Model Number	Dimensions							Connection Sizes [1,3]			
	B	C	D	E	F	G	J	Make-Up Water	Top Inlet	Single Inlet	Outlet
3240C 3272C 3299C	8-1/16”	5' 8-1/4”	10' 5-1/2”	7' 1-1/4”	1/4”	4' 2-7/8”	8' 8-1/4”	1”	(2) 6”	8”	8”
3333C 3358C 3379C	8-1/16”	6' 1-1/4”	10' 5-1/2”	7' 1-1/4”	1/4”	4' 2-7/8”	8' 8-1/4”	1”	(2) 6”	8”	8”
3412C 3436C	8-1/16”	6' 1-1/4”	11' 5-1/2”	8' 1-1/4”	1-1/4”	4' 10-5/8”	9' 0-3/4”	1-1/2”	(2) 6”	8”	8”
3455C 3482C 3527C	9-1/8”	6' 6-3/4”	11' 5-1/2”	8' 1-1/4”	1-1/4”	4' 10-5/8”	9' 0-3/4”	1-1/2”	(2) 8”	10”	10”
3473C 3501C	9-1/8”	6'-6-3/4”	12' 2-1/2”	8' 10-1/4”	1-1/4”	5' 10-7/8”	12' 0-1/4”	1-1/2”	(2) 8”	10”	10”
3552C 3604C 3648C 3672C	9-1/8”	6' 6-3/4”	12' 2-1/2”	8' 10-1/4”	1-1/4”	5' 10-7/8”	12' 0-1/4”	1-1/2”	(2) 8”	10”	10”
3728C 3781C 3828C	9-1/8”	10' 4-1/2”	12' 2-1/2”	8' 10-1/4”	1-1/4”	5' 10-7/8”	12' 0-1/4”	1-1/2”	(2) 8”	12”	12”
3872C 3923C 3970C	9-1/8”	13' 0-1/2”	12' 2-1/2”	8' 10-1/4”	1-1/4”	5' 10-7/8”	12' 0-1/4”	1-1/2”	(2) 8”	12”	12”
3985C 31056C	9-1/8”	15' 8-1/2”	12' 2-1/2”	8' 10-1/4”	1-1/4”	5' 10-7/8”	12' 0-1/4”	1-1/2”	(2) 8”	12”	12”
3583C 3618C 3676C 3725C	9-1/8”	6' 6-3/4”	13' 5-1/2”	10' 1-1/4”	5/8”	6' 11-9/16”	14' 1-5/8”	1-1/2”	(2) 8”	10”	10”
31132C	9-5/8”	13' 0-1/2”	13' 5-1/2”	10' 1-1/4”	5/8”	6' 11-9/16”	14' 1-5/8”	2”	(2) 10”	14”	14”
31213C 31301C	9-5/8”	15' 8-1/2”	13' 5-1/2”	10' 1-1/4”	5/8”	6' 11-9/16”	14' 1-5/8”	2”	(2) 10”	14”	14”

Notes:

1. The specific size of the inlet and outlet connection may vary with the design cooling water flow rate.

2. Unless otherwise indicated, all connections 3” and smaller are male pipe thread, and connections 4” and larger are beveled for welding and grooved to suit a mechanical coupling.

3. On double cell units, connections are the same size but are located on both ends of the unit.

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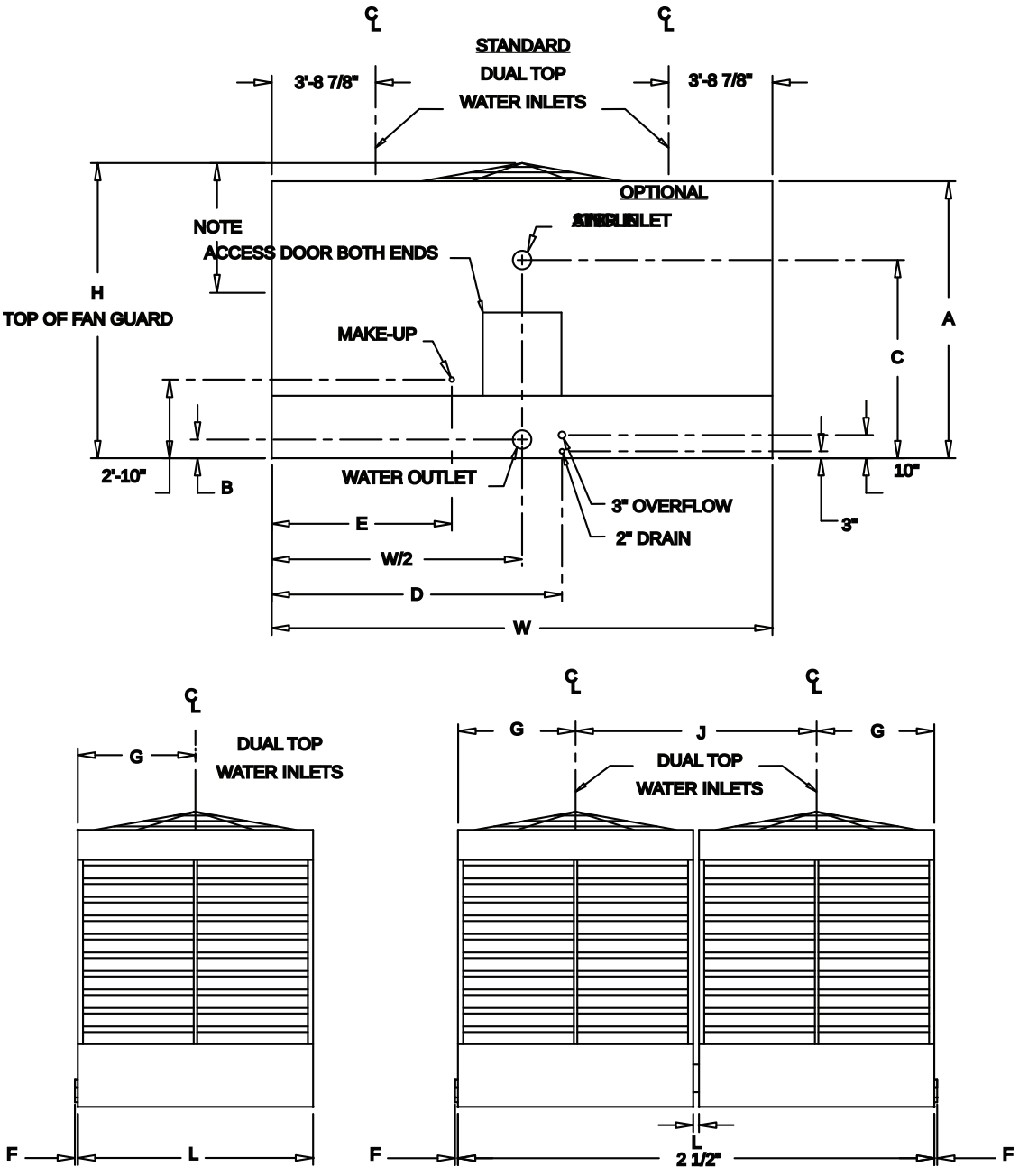

Single Cell Unit

Double Cell Unit

Notes:

3728C thru 31056C and 31132C thru 31301C ship in two sections per cell.

The top section is the heaviest and tallest.

Top section heights are:

- 3728C thru 3970C: 10' 3-1/8"
- 3985C thru 31056C: 11' 7-1/8"
- 31132C: 10' 11-1/8"
- 31213C: 12' 3-1/8"
- 31301C: 12' 6-1/2"

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Concrete Basin Engineering Data for Optional Basinless Units

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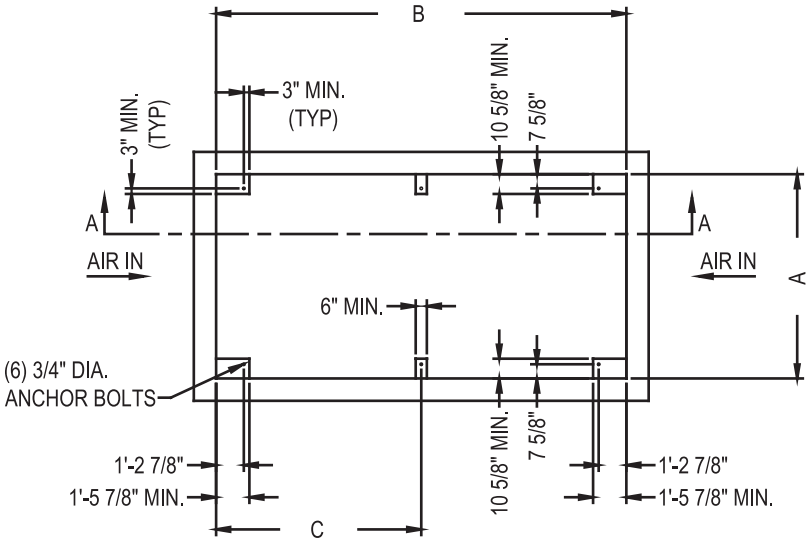
Single Cell Unit

Model Number	Operating Load Vertical (LBS)	Maximum Operating Weight (LBS)	A	B	C	D
3240C	2,420	9,690	9' 1-3/4"	18' 4-1/2"	9' 2-1/4"	N/A
3272C	2,460	9,820				
3299C	2,470	9,880				
3333C	2,670	10,670	9' 1-3/4"	18' 4-1/2"	9' 2-1/4"	N/A
3358C	2,680	10,700				
3379C	2,690	10,750				
3412C	3,130	12,510	10' 5-1/4"	20' 4-1/2"	10' 2-1/4"	N/A
3436C	3,140	12,560				
3455C	3,350	13,410	10' 5-1/4"	20' 4-1/2"	10' 2-1/4"	N/A
3482C	3,370	13,460				
3527C	3,410	13,620				
3473C	3,770	15,070	12' 5-3/4"	21' 10-1/2"	10' 11-1/4"	N/A
3501C	3,780	15,120				
3552C	4,100	16,410	12' 5-3/4"	21' 10-1/2"	10' 11-1/4"	N/A
3604C	4,140	16,570				
3648C	4,150	16,580				
3672C	4,450	17,780				
3728C	5,640	22,570	12' 5-3/4"	21' 10-1/2"	10' 11-1/4"	N/A
3781C	5,650	22,580				
3828C	5,700	22,800				
3872C	6,390	25,540	12' 5-3/4"	21' 10-1/2"	10' 11-1/4"	N/A
3923C	6,440	25,760				
3970C	6,760	27,040				
3985C	7,690	30,750	12' 5-3/4"	21' 10-1/2"	10' 11-1/4"	N/A
31056C	7,710	30,840				
3583C	3,100	18,630	14' 7-1/8"	24' 4-1/2"	7' 8-1/4"	9' 0"
3618C	3,110	18,680				
3676C	3,140	18,840				
3725C	3,140	18,850				
31132C	4,940	29,620	14' 7-1/8"	24' 4-1/2"	7' 8-1/4"	9' 0"
31213C	5,440	32,630	14' 7-1/8"	24' 4-1/2"	7' 8-1/4"	9' 0"
31301C	5,820	34,920				

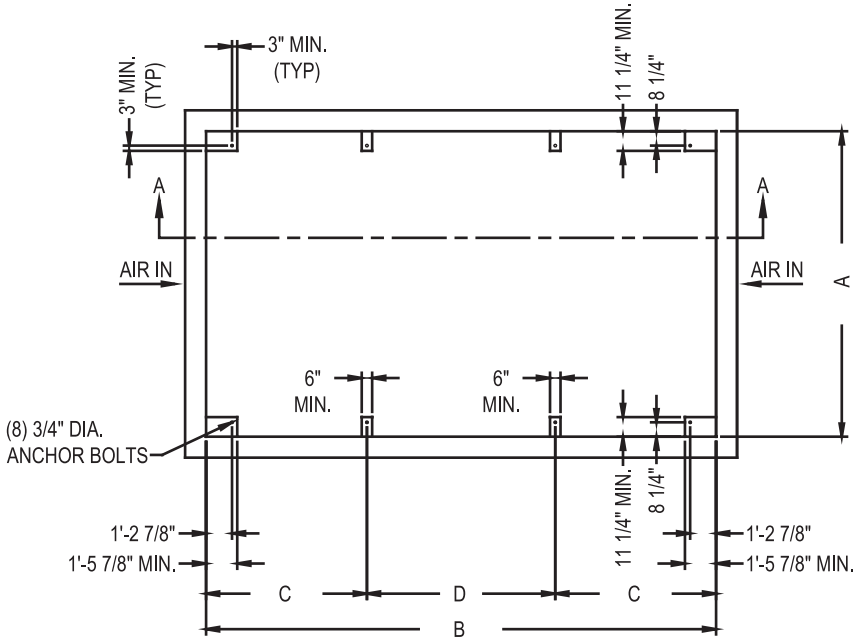
Notes:

1. Purchaser to design, construct and furnish basin (including anchor bolts) in accordance with requirements given. Purchaser must also supply sump, overflow, drain, cleanout and water make-up to suit requirements.
2. All anchor bolts shall be 3/4" diameter, 1-1/2" projection (±1/4"), fully threaded. Bolt to have one nut and washer. Anchor bolt and column bearing point locations and elevations must be maintained ±1/8".
3. Pier dimensions shown are minimum bearing surfaces required for the tower structure and do not include corner chamfers on the concrete piers.
4. Fill to be located below the operating water level. (see section A-A, next page)
5. Maximum operating weight does not include concrete basin or water retained in the basin.



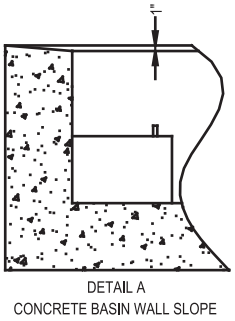
PLAN VIEW OF BASIN

Models 3240C thru Models 31056C

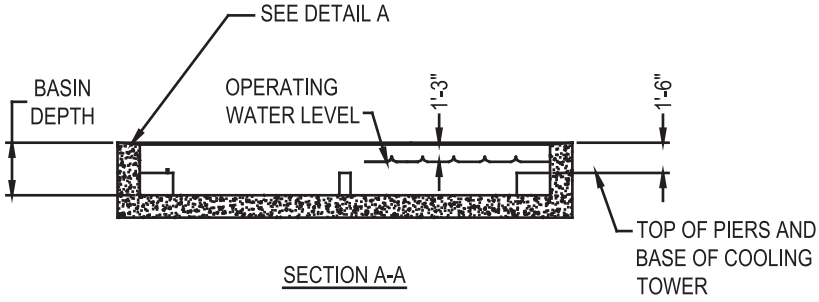


PLAN VIEW OF BASIN

Models 3583C thru Models 31301C



DETAIL A
CONCRETE BASIN WALL SLOPE



SECTION A-A

All Models

Structural Support

The recommended support arrangement for the Series 3000 Cooling Tower consists of parallel I-beams positioned as shown on the drawings. Besides providing adequate support, the steel also serves to raise the unit above any solid foundation to assure access to the bottom of the tower. The Series 3000 Cooling Tower may also be supported on columns at the anchor bolt locations shown in Plan A or Plan C.

A minimum bearing surface of 12” x 12” (304.8mm x 304.8mm) must be provided under each of the concentrated load points (See Note 6, next page). To support a Series 3000 Cooling Tower on columns, with an alternate steel support arrangement, or the optional upgraded seismic and wind rated unit, consult your local BAC Representative.

Model Number	Weights (lbs)			Dimensions							
	Operating[1]	Shipping[1,2]	WT. at Bolt Hole Locations	L1	L2	W	A	B	C	D	E
3240C	15,200	7,610	3,800	8' 5-3/4”	17' 2”	18' 0-1/2”	9' 4”	9' 4”	1-1/8”	8' 3-1/2”	4-3/4”
3272C	15,320	7,730	3,830								
3299C	15,380	7,790	3,845								
3333C	16,190	8,060	4,048	8' 5-3/4”	17' 2”	18' 0-1/2”	9' 4”	9' 4”	1-1/8”	8' 3-1/2”	4-3/4”
3358C	16,220	8,090	4,055								
3379C	16,270	8,140	4,068								
3412C	19,000	9,390	4,750	9' 9-1/4”	19' 9”	20' 0-1/2”	11' 4”	11' 4”	1-1/8”	9' 7”	4-3/4”
3436C	19,050	9,440	4,763								
3455C	19,770	9,710	4,943	9' 9 -1/4”	19' 9”	20' 0-1/2”	11' 4”	11' 4”	1-1/8”	9' 7”	4-3/4”
3482C	19,820	9,760	4,955								
3527C	19,980	9,920	4,995								
3473C	22,730	10,900	5,683	11' 9-3/4”	23' 10”	21' 6-1/2”	12' 10”	12' 10”	1-1/8”	11' 7-1/2”	4-3/4”
3501C	22,780	10,950	5,695								
3552C	25,150	11,510	6,288	11' 9-3/4”	23' 10”	21' 6-1/2”	12' 10”	12' 10”	1-1/8”	11' 7-1/2”	4-3/4”
3604C	25,310	11,670	6,328								
3648C	25,320	11,680	6,330								
3672C	26,080	12,440	6,520								
3728C	30,700	14,460	7,675	11' 9-3/4”	23' 10”	21' 6-1/2”	12' 10”	12' 10”	1-1/8”	11' 7-1/2”	4-3/4”
3781C	30,860	14,620	7,715								
3828C	30,870	14,630	7,718								
3872C	33,700	15,380	8,425	11' 9-3/4”	23' 10”	21' 6-1/2”	12' 10”	12' 10”	1-1/8”	11' 7-1/2”	4-3/4”
3923C	33,910	15,590	8,478								
3970C	34,870	16,550	8,718								
3985C	36,500	16,360	9,125	11' 9-3/4”	23' 10”	21' 6-1/2”	12' 10”	12' 10”	1-1/8”	11' 7-1/2”	4-3/4”
31056C	36,590	16,440	9,148								
3583C	32,890	15,650	8,223	13' 11-1/8”	28' 0-3/4”	24' 0-1/2”	15' 4”	15' 4”	1-11/16”	13' 7-3/4”	5-7/8”
3618C	32,940	15,700	8,235								
3676C	33,100	15,860	8,275								
3725C	33,110	15,870	8,278								
31132C	43,080	20,830	10,770	13' 11-1/8”	28' 0-3/4”	24' 0-1/2”	15' 4”	15' 4”	1-11/16”	13' 7-3/4”	5-7/8”
31213C	45,760	21,530	11,440	13' 11-1/8”	28' 0-3/4”	24' 0-1/2”	15' 4”	15' 4”	1-11/16”	13' 7-3/4”	5-7/8”
31301C	47,680	23,450	11,920								

See notes, next page.

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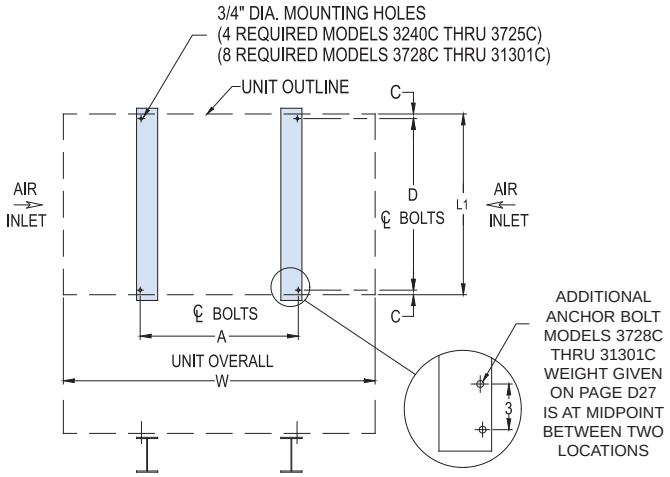
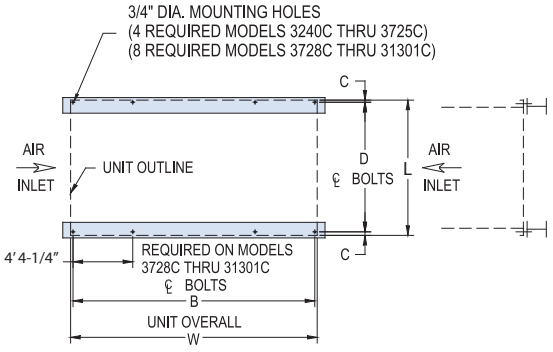
Single Cell Unit



Plan A

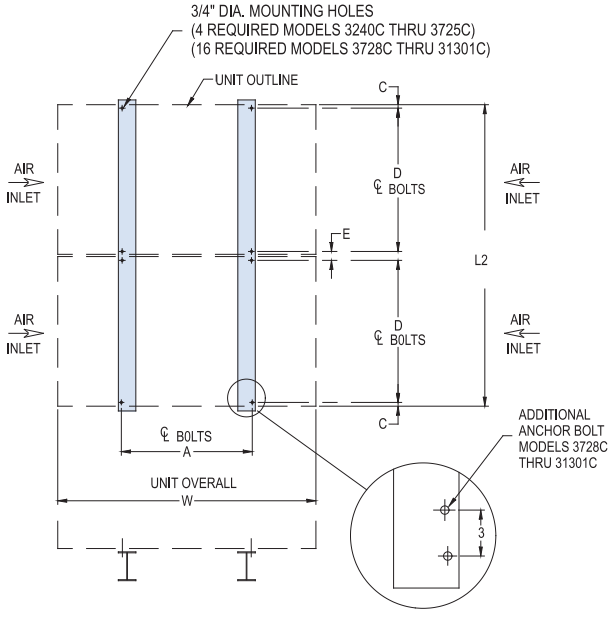


Plan B

Notes:

1. Weights are for a single cell. To obtain weights for multi-cell units, multiply by the number of cells.
2. Operating weight and weight loading are for a single cell tower with water at overflow level in the cold water basin.
3. Support beams and anchor bolts to be selected and installed by others.
4. All support steel must be level at the top.
5. Beams must be selected in accordance with accepted structural practice. Maximum deflection of beam under unit to be 1/360 of span, not to exceed 1/2".
6. If point vibration isolation is used, the isolators must be located under the support steel, not between the support steel and the cooling towers.

Double Cell Unit



Plan C

Engineering Specifications

See our website at www.BaltimoreAircoil.com for an electronic copy of product engineering specifications.

Series 3000

1.0 Cooling Tower

1.1 General: Furnish and install _____ factory-assembled, induced draft, crossflow cooling tower(s) with vertical air discharge, conforming in all aspects to the specifications, schedules and as shown on the plans. Overall dimensions shall not exceed approximately _____ ft (mm) long X _____ ft (mm) wide X _____ ft (mm) high. The total connected fan horsepower shall not exceed _____ HP (kW). The cooling tower(s) shall be Baltimore Aircoil Company Model _____.

1.2 Thermal Capacity: The cooling tower(s) shall be warranted by the manufacturer to cool _____ USGPM (lps) of water from _____ ºF(°C) to _____ ºF(°C) at _____ ºF(°C) entering wet-bulb temperature. Additionally, the thermal performance shall be certified by the Cooling Technology Institute in accordance with CTI Certification Standard STD-201. Lacking such certification, a field acceptance test shall be conducted within the warranty period in accordance with CTI Acceptance Test Code ATC-105, by the Cooling Technology Institute or other qualified independent third party testing agency. Manufacturers' performance guarantees or performance bonds without CTI Certification or independent field thermal performance test shall not be accepted. The cooling tower(s) shall comply with the energy efficiency requirements of ASHRAE Standard 90.1.

1.3 EVERTOUGH™ Construction: All steel panels and structural members shall be protected with a thermosetting hybrid polymer. In addition, the cold water basin shall be protected with the TriArmor® Corrosion Protection System. The system shall consist of G-235 galvanized steel encapsulated with a thermosetting hybrid polymer further protected by a polyurethane barrier applied to all submerged surfaces exposed to a circulating system water. The polyurethane barrier shall seal all factory seams in the cold water basin to ensure a corrosion resistant and water tight construction, and shall be warranted against leaks and corrosion for five (5) years. Standard basin accessories shall include: a corrosion resistant make-up valve with large diameter polystyrene filled plastic float for easy adjustment of the operating water level, removable anti-vortexing device to prevent air entrainment, and large area lift out strainers with perforated openings sized smaller than the water distribution system nozzles. The strainer and anti-vortexing device shall be constructed from Type 304 stainless steel to prevent corrosion. A welded Type 304 or 316 stainless steel basin shall be an acceptable alternative; provided the basin is warranted against leaks and corrosion for a period of at least 5 years. A bolted basin shall not be an acceptable alternative. The hot water basins shall be constructed of UV and corrosion resistant pultruded fiberglass reinforced polyester (PFRP). The entire cooling tower, including fan motor, drive system, bearings, and structure, shall be backed by a comprehensive Louver-to-Louver℠ Five-Year warranty. Type 301 stainless steel is not acceptable.

1.4 Quality Assurance: The cooling tower manufacturer shall have a Management System certified by an accredited registrar as complying with the requirements of ISO9001:2000 to ensure consistent quality of products and services. Manufacturers that are not ISO9001 Certified shall not be acceptable.

1.5 Wind and Seismic Forces: Seismic Rating: The structure shall be designed, tested and certified in accordance with IBC 2006 regulations to meet a minimum unrestricted seismic design S_{DS} = __ g with an Importance Factor of 1.5. The unit shall be certified by the manufacturer for operation after a seismic event, up to the S_{DS} rating listed above, and verify that such rating is based actual on shake-table testing. Experience or calculation data is not acceptable to verify operation. Units not provided with a certificate of IBC 2006 compliance shall not be an acceptable alternative.

2.0 Construction Details

2.1 Structure: The cooling tower shall be constructed with a sturdy structural frame designed to transmit all wind, seismic and mechanical loads to the equipment anchorage. The frame shall be constructed of heavy-gauge steel angles and channels.

2.2 Casing Panels: Casing panels shall be constructed of corrosion and UV-resistant fiberglass reinforced polyester (FRP) to minimize maintenance requirements and prolong equipment life. Casing panels shall not provide structural support, since the sturdy, structural frame of the tower accurately transfers all loads to the equipment anchorage. Corrosion resistant Type 304 stainless steel casing panels may be used in lieu of FRP panels.

2.3 Cold Water Basin: The cold water basin shall be protected with the TriArmor® Corrosion Protection System. The system shall consist of G-235 galvanized steel encapsulated with a thermosetting hybrid polymer further protected by a polyurethane liner factory applied to all submerged surfaces. The polyurethane barrier shall seal all factory seams in the cold water basin to ensure a corrosion resistant and water tight construction, and shall be warranted against leaks and corrosion for five (5) years. Field applied polyurethane or polyurethane applied directly to galvanized steel is not an acceptable alternative. Standard basin accessories shall include: a corrosion resistant make-up valve with large diameter polystyrene filled plastic float for easy adjustment of the operating water level, removable anti-vortexing device to prevent air entrainment, and large area lift out strainers with perforated openings sized smaller than the water distribution system nozzles. The strainer and anti-vortexing device shall be constructed from Type 304 stainless steel to prevent corrosion. A welded Type 304 or 316 stainless steel basin shall be an acceptable alternative; provided the basin is warranted against leaks and corrosion for a period of at least 5 years. A bolted basin shall not be an acceptable alternative. Type 301 stainless steel is not acceptable.

2.4 Water Outlet: The water outlet connection shall be beveled for welding and grooved for mechanical coupling or bolt hole circle designed to accept an ASME Class 150 Flat Face Flange. The outlet shall be provided with large-area lift out strainers with perforated openings sized smaller than the water distribution nozzles and an anti-vortexing device to prevent air entrainment.

2.5 Water Distribution System: The hot water distribution basins shall be open gravity type for easy cleaning, and constructed of pultruded fiberglass reinforced polyester (PFRP) or Type 304 or 316 stainless steel. The basins must be accessible from outside the unit and serviceable during tower operation. Basin weirs and plastic metering devices shall be provided to assure the even distribution of water over the fill. Lift-off distribution covers shall be designed to withstand 50 psf (244 kg/m^2) live load or a 200 pound (90.7 kg) concentrated load. Gravity flow nozzles shall be snap-in type for easy removal. Should pressurized nozzles be used, they shall utilize grommets, which ensure easy removal.

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2.6 EASY CONNECT® Piping Arrangement (optional): Each tower cell shall be furnished with a single water inlet connection complete with the means to automatically balance flow rates to the hot water basins.

3.0 Mechanical Equipment

3.1 Fan(s): Fan(s) shall be heavy-duty, axial flow with aluminum alloy blades selected to provide optimum cooling tower thermal performance with minimal sound levels. Air shall discharge through a fan cylinder designed for streamlined air entry and minimum tip clearance for maximum fan efficiency. The top of the fan cylinder shall be equipped with a conical, non-sagging removable fan guard.

3.2 Bearings: Fan(s) and shaft(s) shall be supported by heavy-duty, self-aligning, grease-packed ball bearings with moisture proof seals and integral slinger collars, designed for a minimum L_{10} life of 80,000 hours.

3.3 Fan Drive: The fan(s) shall be driven by a one-piece, multi-groove, solid back V- type powerband with taper lock sheaves designed for 150% of the motor nameplate horsepower. The powerband shall be constructed of neoprene reinforced polyester cord and be specifically designed for cooling tower service.

3.4 Sheaves: Fan and motor sheave(s) shall be fabricated from corrosion-resistant materials to minimize maintenance

3.5 Fan Motor: Fan motor(s) shall be totally enclosed, reversible, squirrel cage, ball bearing type designed specifically for cooling tower service. The motor shall be furnished with special moisture protection on winding, shafts, and bearings and appropriately labeled for “cooling tower duty.” Fan motors shall be premium efficient/inverter duty type designed per NEMA Standard MG1, Section IV Part 31.

3.6 Mechanical Equipment Warranty: The fan(s), fan shaft(s), sheaves, bearings, mechanical equipment support and fan motor shall be warranted against defects in materials and workmanship for a period of five (5) years from date of shipment.

4.0 Fill and Drift Eliminators

4.1 Fill and Drift Eliminators: The fill and integral drift eliminators shall be formed from self-extinguishing (per ASTM-568) polyvinyl chloride (PVC) having a flame spread rating of 5 per ASTM E84 and shall be impervious to rot, decay, fungus and biological attack. The fill shall be suitable for entering water temperatures up to and including 130°F (54.4°C). The fill shall be manufactured, tested and rated by the cooling tower manufacturer and shall be elevated above the cold water floor to facilitate cleaning. Spacing between fill sheets shall be a minimum of 3/4 inches (19.1 mm) to reduce the tendency for fouling and ensure proper airflow for maximum cooling capacity.

5.0 Air Inlet Louvers

5.1 Air Inlet Louvers: Air Inlet louvers shall be separate from the fill and removable to provide easy access for inspection of the air/water interface at the louver face. Louvers shall prevent water splash out during fan cycling and be constructed of maintenance free, corrosion and UV-resistant, fiberglass reinforced polyester (FRP).

6.0 Access

6.1 Plenum Access: Two hinged access doors shall be provided for access into the plenum section.

7.0 Sound

7.1 Sound Level: To maintain the quality of the local environment, the maximum sound pressure levels (dB) measured 50 ft (15240 mm) from the cooling tower operating at full fan speed shall not exceed the sound levels detailed below. If the tower exceeds these conditions the tower must be either oversized and reduced in horsepower, provided with a low sound fan, or provided with sound attenuation. One piece fans are not acceptable.

Location	63	125	250	500	1000	2000	4000	8000	dB(A)
Discharge									
Air Inlet									
Cased Face									

8.0 Accessories

8.1 Basin Heater(s): The cooling tower cold water basin shall be provided with electric heater(s) to prevent freezing in low ambient conditions. The heater(s) shall be selected to maintain 40°F (4.44°C) basin water temperatures at _____°F (°C) ambient. The heater(s) shall be _____ V /____ phase/ ___Hz electric and shall be provided with low water cutout and thermostat.

8.2 Vibration Cutout Switch: Provide a mechanical local reset vibration switch. The mechanical vibration cutout switch will be guaranteed to trip at a point so as not to cause damage to the cooling tower. To ensure this, the trip point will be set in a frequency range of 0 to 3,600 RPM and a trip point of 0.2 to 2.0 g’s.

8.3 Ladder: An aluminum ladder (with galvanized steel safety cage) shall be provided for access to the fan deck. Access door or service platforms are not acceptable.

8.4 Handrails: 1-1/4" (31.75 mm) galvanized steel handrail shall be provided around the perimeter of the cooling tower cells. The handrails shall be provided with knee and toe rails and shall conform to the requirements of OSHA applicable at the time of shipment.

8.5 Internal Walkway: An internal walkway shall be provided in the plenum section to provide for inspection and maintenance. All working surfaces shall be able to withstand 50 psf (244 kg/m^2) live load or 200 pound (90.7 kg) concentrated load. Other components of the cooling tower, i.e. basin and fill/drift eliminators, shall not be considered an internal working surface. Cooling tower manufacturers that promote these surfaces to be used as a working platform shall provide a two-year extended warranty to the Owner to repair any damage to these surfaces caused during routine maintenance.

8.6 Mechanical Equipment Removal Davit: Provide the mechanical equipment removal option to aid in motor removal or gear drive. The davit shall be portable from cell to cell and the heaviest piece shall weigh 60 lbs. The davit shall lower the motor or gear drive from the mechanical equipment supports down to an internal metal working surface.

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...because temperature matters™

Project Report

VersaCross™ Replacement Fill 3 Towers in 36 Hours!

Before: Day 1, 8:50AM

After: Day 2, 11:30AM

Recently, a large plastic bottle manufacturing plant located in Dallas, Texas was scheduled for plant shutdown. During this shutdown, three Series 3000 cooling towers were to undergo major overhauls which would include repairing and coating the cold water basins and replacing the fill.

Here's the hitch:

Due to production considerations, all work had to be completed in 36 hours! The next scheduled shutdown would not occur for another year, so the job had to be done right the first time!

After discussing the options of glued bundles, the original fill, and a VersaCross™ Replacement Fill Kit with the local BAC Representative, the owner chose VersaCross™ Fill based on the following reasons:

- Shipment in 2 weeks or less - compared to 4 to 6 weeks
- Complete pre-engineered kit with all supports, hardware, and instructions
- Increased thermal performance benefit
- Quicker installation time and low total cost of materials and labor

The contractor was prepared to work around the clock with a crew size of 3-4 men per cell. But, by dinner time the first day, the existing fill had been removed, the towers were cleaned, inspected, & corrosion issues were addressed, and the new VersaCross™ fill supports were already installed. The only thing left to do was install the fill. In fact, the job was so far ahead of schedule, the crews were sent home for a good night's rest!

Work resumed the following morning at 7:00 AM. The fill was quickly installed and the towers were in operable condition by noon! The owner was back in production as scheduled and the contractor had generated great savings against his projected budget.

Another successful VersaCross™ Fill Kit installation!

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