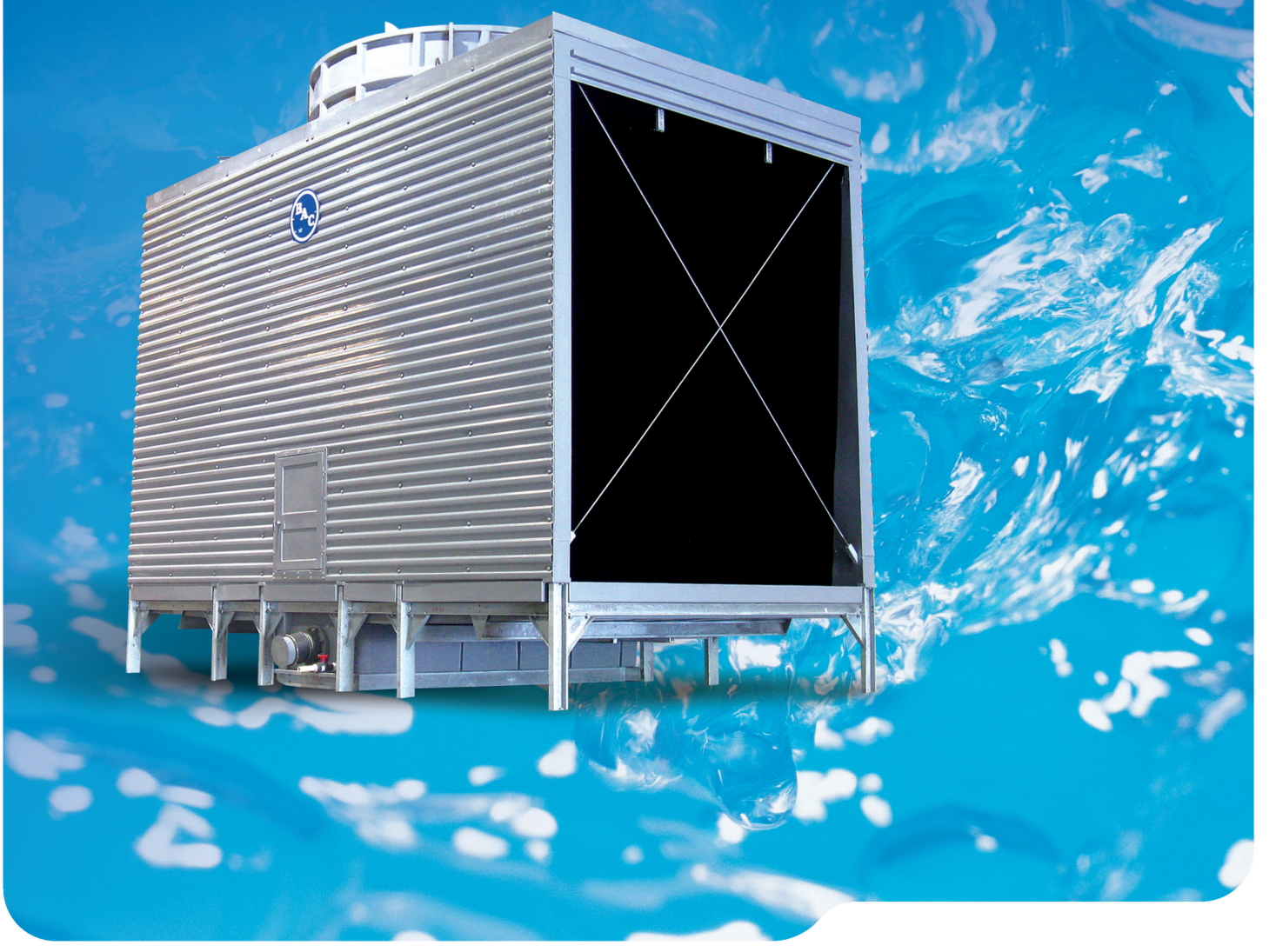
*...because temperature matters™*

Baltimore Aircoil Company

# Series ACT Cooling Tower

CTI CERTIFIED



Baltimore Aircoil Company

**Baltimore Aircoil Company is a world leader in the design and manufacture of evaporative cooling and heat transfer equipment. Founded in 1938, BAC has 13 manufacturing facilities throughout the world. In China, BAC has two factories in Dalian and sales offices in Beijing, Shanghai and Guangzhou.**

## CTI Certification

Independent certification of cooling tower thermal performance assures owners and operators that they will receive full value from their investment. Performance certification can actually reduce first cost by eliminating the need for "safety factors" when sizing the equipment and the cost of a field acceptance test to verify performance. BAC is committed to providing CTI certification for all its cooling towers.

CTI CERTIFIED

## ISO 9001 Certification

ISO 9001 Certification confirms BAC's commitment to quality assurance and reaffirms that BAC meets international standards set for management principles, designs, closed-loop corrective action, training and documentation control in all of its engineering and manufacturing operations.

ISO 9001 COMPANY

## Research and Development

BAC maintains the industry's most advanced research and product development facility where a broad range of environmental and operating conditions are simulated to evaluate material and component performance. The BAC research and development program has resulted in hundreds of new patents and the most complete line of proven evaporative cooling products in the industry.

# Series ACT Cooling Towers

## Single Cell Capacity
## 132-1,082 Nominal Tons

Series ACT Cooling Towers deliver independently verified, fully rated thermal performance over a wide range of flow and temperature requirements. Standard design features satisfy today's environmental concerns, minimize installation costs, maximize year-round operating reliability and simplify maintenance requirements.

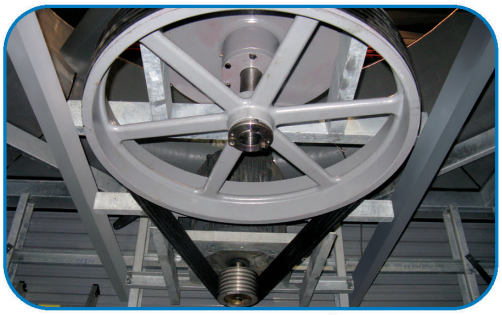
## Series ACT Cooling Towers

- Reliable performance
- High efficiency, low energy consumption
- Low installation cost
- Easy maintenance
- Long service life

# Benefits

## Reliable Performance

- Constructed of premium materials & components, the Series ACT cooling towers deliver the highest standard of quality with CTI certified performance.

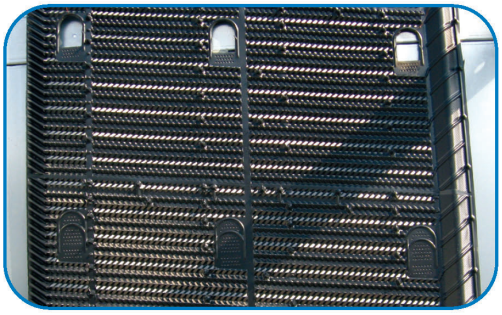


High Efficiency Fan Drive System

## High Efficiency, Low Energy Consumption

- Evaporative cooling equipment minimizes the energy consumption of the entire system because it provides lower operating temperatures. The owner saves money while conserving natural resources and reducing environment impact.

- The Series ACT provides the heat rejection required at the lowest possible energy input via:
  - High efficiency, low horsepower axial fans
  - High efficiency VersaCross™ Fill provides maximum air/water contact time at low air pressure drops
  - High efficiency water distribution system.



Patented VersaCross™ Fill

Hot Water Basin

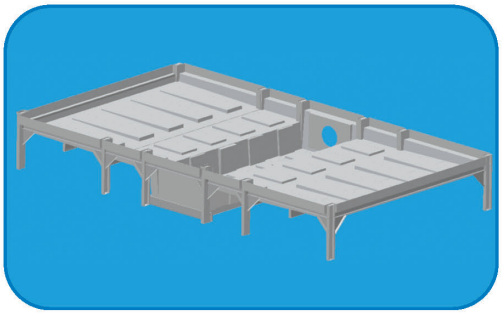
Large Capacity Basin

## Low Installation Cost

- **Optimized Structural Support** can minimize the number of support beams or columns.
- **VersaCross™ Fill** can be installed 10 to 12 sheets at a time, compared to the typical "1 sheet at a time", resulting in dramatic installation labor savings.
- **Large Capacity Basin** is designed to hold more pull-down water volume.

## Easy Maintenance

- **Cold Water Basin** is sloped toward the center section to facilitate cleaning and to protect against corrosion, scale formation, biological fouling, algae, slime and other micro-organisms.
- **Water Outlet Strainer** is easy to take out for cleaning.
- **Fill Surface** is elevated above the sloped cold water basin to facilitate flushing of dirt and debris from this critical area.
- **Access Doors** on the end walls provide easy access to the unit interior to adjust make-up float valve, clean the cold water basin and strainer, and service the fan drive system.

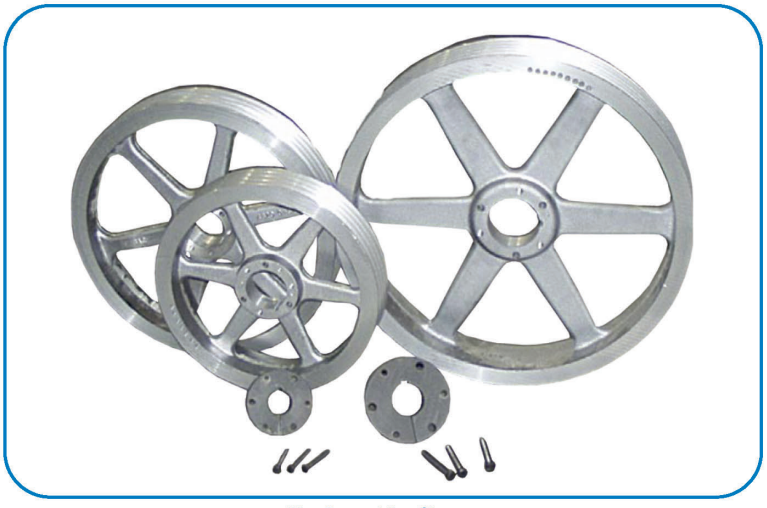


Hygienic Cold Water Basin

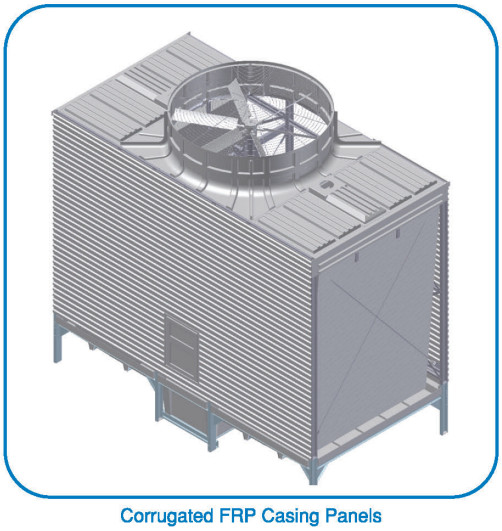
Access Door

## Long Service Life

- **Sheave & Fan** are made of high quality aluminum alloy, providing corrosion-resistance in the moist cooling tower environment.
- **Corrugated FRP Casing Panels** and **FRP Hot and Cold Water Basins** provide corrosion-resistance and reliability.
- **High Quality Components** ensure reliable year-round operation.

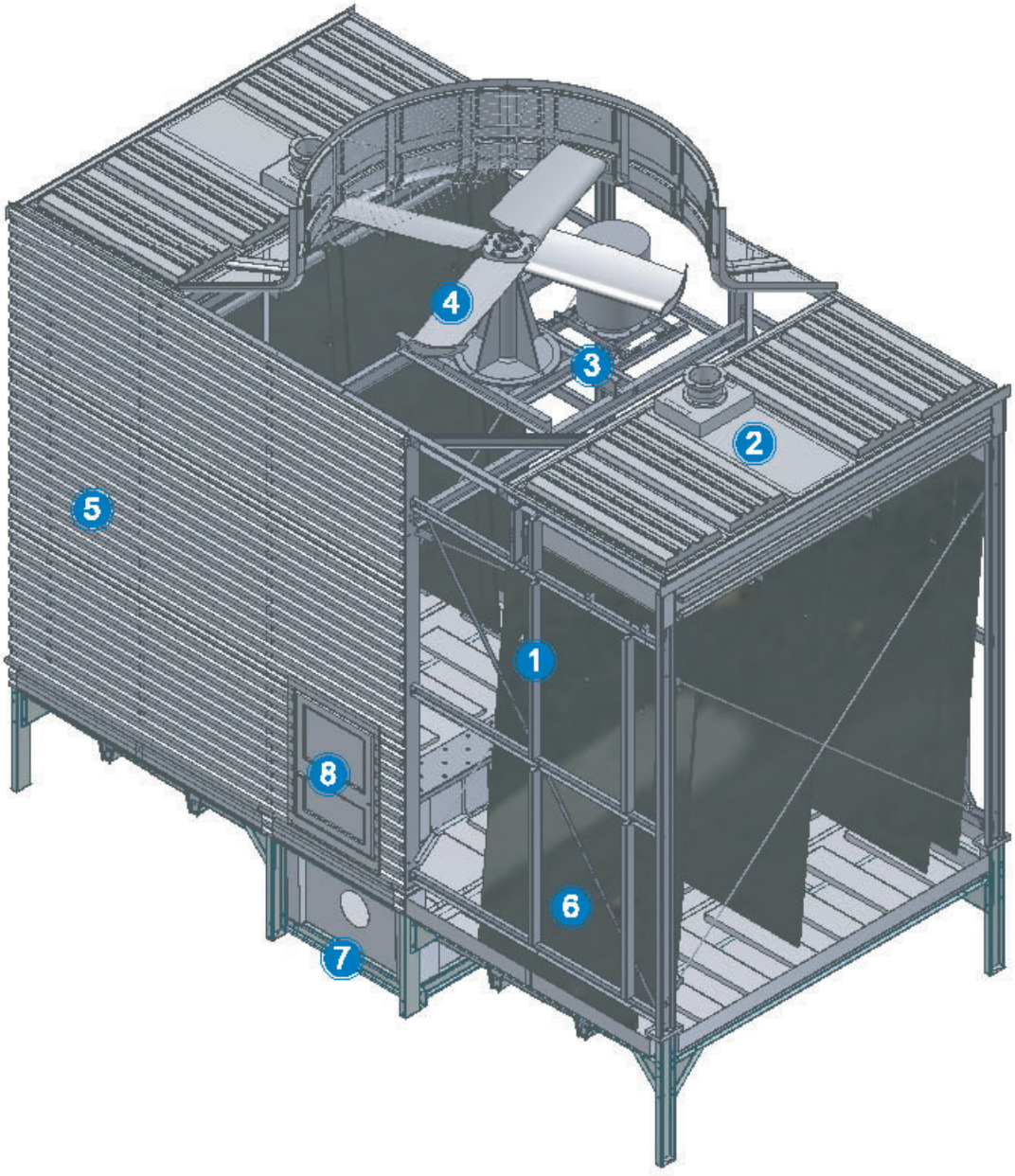


Aluminum Alloy Sheave



Corrugated FRP Casing Panels

# Construction Details



## 1 Heavy-Duty Construction

- Heavy-gauge hot-dip galvanized steel frame
- Optional stainless steel frame structure
- Designed to meet high wind loads

## 2 Water Distribution System

- Anti-vortexing design, even water distribution
- Low pump head gravity distribution basins
- Large orifice, 360° non-clog nozzles

## 3 Fan Drive System

- Corrosion resistant aluminum alloy sheaves
- Premium quality, solid backed, multi-groove belt
- Heavy-duty bearings
- Cooling tower duty fan motor

## 4 Low HP Axial Fan

- High efficiency
- Quiet operation
- Corrosion resistant

## 5 FRP Casing Panels

- Corrosion resistant
- Maintenance free
- UV resistant finish

## 6 VersaCross™ Fill Surface with Integral Louvers and Integral Drift Eliminators

- High efficiency heat transfer surface
- Polyvinyl chloride (PVC) material
- Impervious to rot, decay and biological attack

## 7 Hygienic Cold Water Basin

- Sloped cold water basin for easy cleaning
- Adjustable water make-up assembly
- Large capacity basin designed for greater pull-down water volume
- Corrosion resistant FRP material of construction

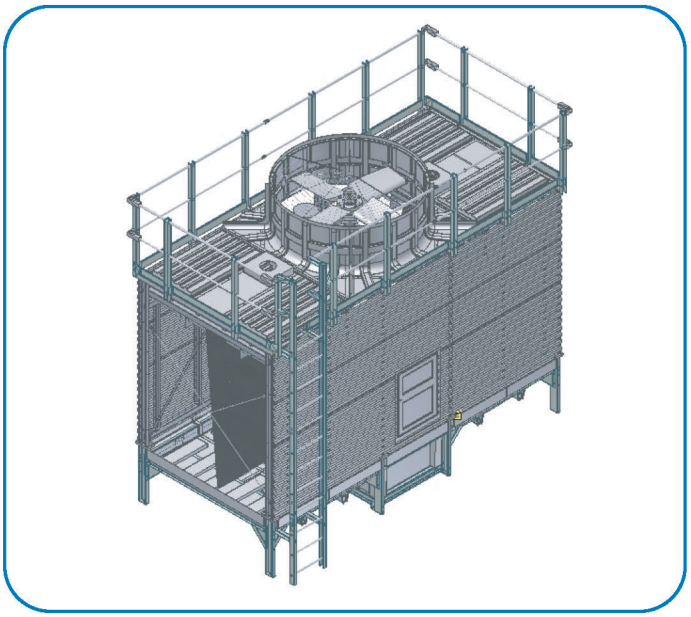
## 8 Access Door

- Access doors with handle

# Accessories

## Ladder, Safety Cage and Handrails

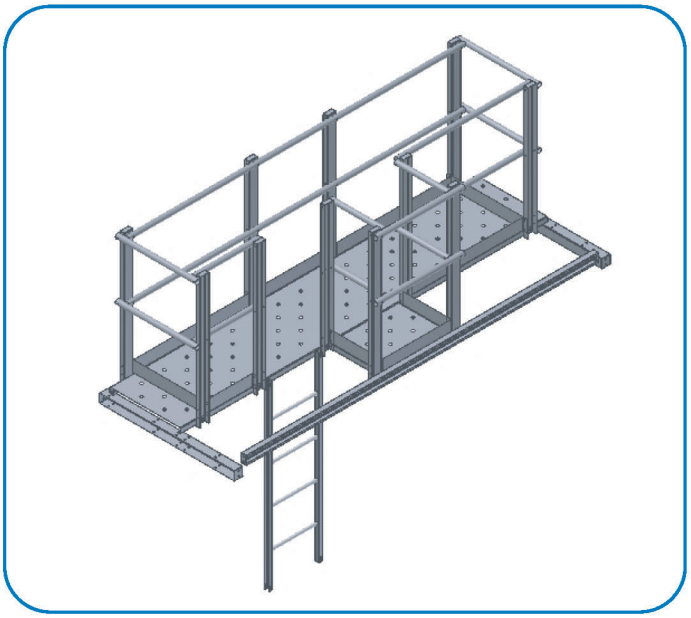
In the event the owner requires easy access to the cooling tower fan deck, the Series ACT Cooling Tower can be furnished with ladders extending from the top of the unit to the base as well as safety cages and handrail packages. All components are designed to meet OSHA requirements. All access to the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



Ladder and Handrails

## Internal Service Platform

A galvanized steel internal walk-way 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, an internal ladder and upper service platform are available. All components are designed to meet OSHA requirements.



Internal Service Platform

## Vibration Cutout Switch

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 to ensure reliable protection. Additional contacts can be provided for either switch type to activate an alarm.

Vibration Cutout Switch

## 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. Electric immersion heaters, which maintain +40°F (4.4°C) water temperature, are a simple and inexpensive way of providing such protection.

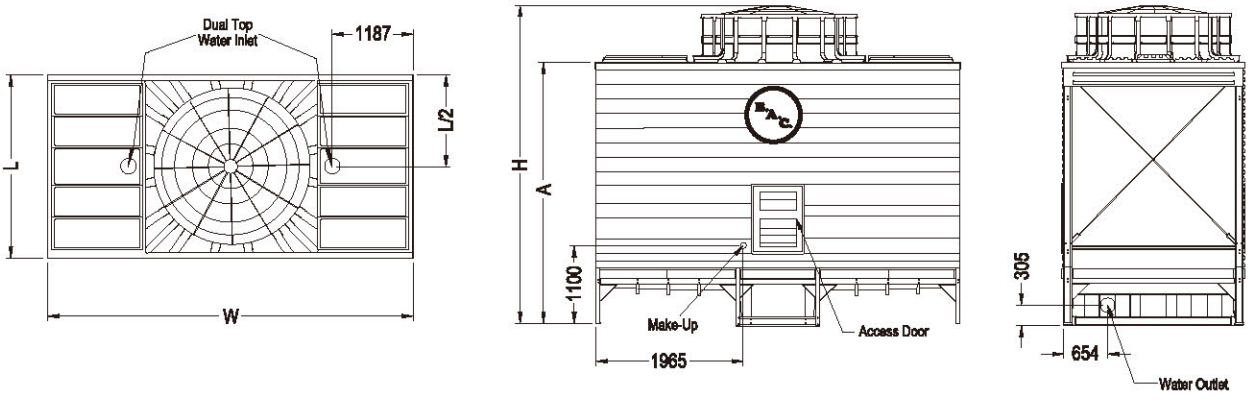
| Model Numbers | 0°F(-17.8°C) Ambient Heaters | | -20°F(-28.9°C) Ambient Heaters | |
|---|---|---|---|---|
| | Number of Heaters | kw per Heater | Number of Heaters | kw per Heater |
| ACT-0816* | 2 | 6 | 2 | 7.5 |
| ACT-0917* | 2 | 7.5 | 2 | 9 |
| ACT-1018* | 2 | 8 | 2 | 12 |
| ACT-1120* | 2 | 10 | 2 | 14 |
| ACT-1321* | 2 | 12 | 2 | 16 |
| ACT-14237 | 2 | 14 | 2 | 20 |

**Note:** The table data is based on 380V/3 phase/50Hz power and standard, single-cell unit configuration.

Basin Heaters

# Engineering Data

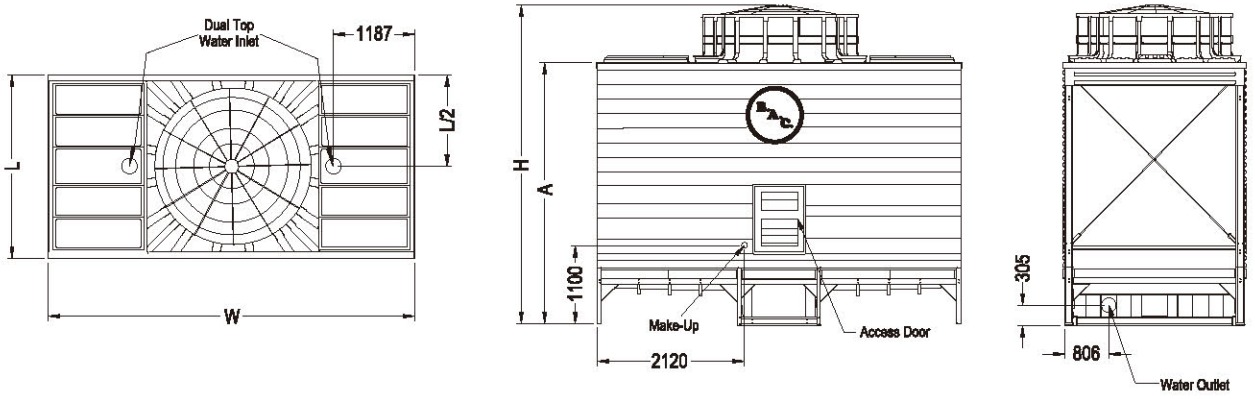
**Do not use for construction.** Refer to factory certified dimensions. This catalog includes data current at the time of publication, which should be reconfirmed at the time of purchase.




| MODEL NUMBER | NOMINAL TONNAGE | MOTOR (KW) | AIR FLOW ($m^3/h$) | WEIGHTS(kg) | | DIMENSIONS(mm) | | | | CONNECTION SIZES | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | SHIPPING | OPERATING | L | W | H | A | MAKE-UP WATER (in) | TOP INLET (mm) | OUTLET (mm) |
| ACT-08161-G | 132 | 2.2 | 61883 | 1954 | 5734 | 2288 | 4918 | 3794 | 2974 | 1 1/2 | 125 | 200 |
| ACT-08161-H | 161 | 4 | 74970 | 1965 | 5745 | | | | | | | |
| ACT-08161-J | 178 | 5.5 | 83022 | 1984 | 5764 | | | | | | | |
| ACT-08161-K | 197 | 7.5 | 91675 | 1997 | 5777 | | | | | | | |
| ACT-08161-L | 223 | 11 | 103599 | 2044 | 5824 | | | | | | | |
| ACT-08162-H | 178 | 4 | 80778 | 2080 | 5860 | 2288 | 4918 | 4200 | 3380 | 1 1/2 | 125 | 200 |
| ACT-08162-J | 197 | 5.5 | 89459 | 2099 | 5879 | | | | | | | |
| ACT-08162-K | 218 | 7.5 | 98780 | 2112 | 5892 | | | | | | | |
| ACT-08162-L | 247 | 11 | 111611 | 2159 | 5939 | | | | | | | |
| ACT-08162-M | 274 | 15 | 123127 | 2192 | 5972 | | | | | | | |

**Notes:**

1. Operating weight is based on the water level in the cold water basin at overflow height.
2. Nominal tons of cooling represents 3 GPM (0.684 $m^3/h$) of water from a 95°F (35°C) to 85°F (29.4°C) at a 78°F (25.6°C) entering wet-bulb temperature.
3. If you need multi-cell towers, consult your local BAC representative.

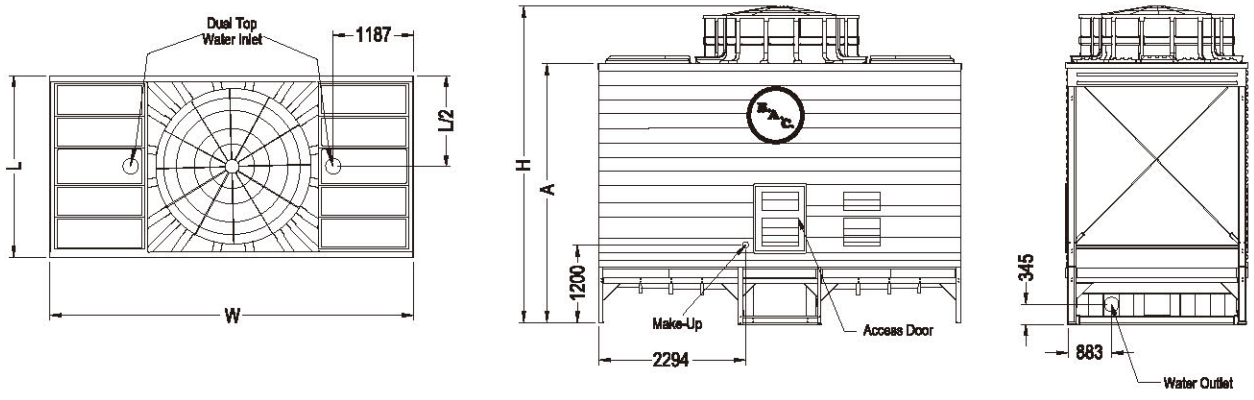



| MODEL NUMBER | NOMINAL TONNAGE | MOTOR (KW) | AIR FLOW ($m^3/h$) | WEIGHTS(kg) | | DIMENSIONS(mm) | | | | CONNECTION SIZES | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | SHIPPING | OPERATING | L | W | H | A | MAKE-UP WATER (in) | TOP INLET (mm) | OUTLET (mm) |
| ACT-09172-J | 229 | 5.5 | 102365 | 2349 | 6864 | 2592 | 5222 | 4213 | 3380 | 1 1/2 | 150 | 200 |
| ACT-09172-K | 253 | 7.5 | 112956 | 2363 | 6878 | | | | | | | |
| ACT-09172-L | 286 | 11 | 127517 | 2407 | 6922 | | | | | | | |
| ACT-09172-M | 317 | 15 | 140566 | 2429 | 6944 | | | | | | | |
| ACT-09172-N | 339 | 18.5 | 150093 | 2466 | 6981 | | | | | | | |
| ACT-09173-K | 268 | 7.5 | 120235 | 2487 | 7002 | 2592 | 5222 | 4620 | 3787 | 1 1/2 | 150 | 200 |
| ACT-09173-L | 304 | 11 | 135711 | 2531 | 7046 | | | | | | | |
| ACT-09173-M | 336 | 15 | 149566 | 2553 | 7068 | | | | | | | |
| ACT-09173-N | 360 | 18.5 | 159675 | 2591 | 7106 | | | | | | | |
| ACT-09173-O | 380 | 22 | 168498 | 2625 | 7140 | | | | | | | |
| ACT-09174-L | 328 | 11 | 142322 | 2653 | 7168 | 2592 | 5222 | 5026 | 4193 | 1 1/2 | 150 | 200 |
| ACT-09174-M | 363 | 15 | 156865 | 2675 | 7190 | | | | | | | |
| ACT-09174-N | 388 | 18.5 | 167472 | 2713 | 7228 | | | | | | | |
| ACT-09174-O | 411 | 22 | 176728 | 2747 | 7262 | | | | | | | |
| ACT-09174-P | 454 | 30 | 194471 | 2803 | 7318 | | | | | | | |

**Notes:**

1. Operating weight is based on the water level in the cold water basin at overflow height.
2. Nominal tons of cooling represents 3 GPM (0.684 $m^3/h$) of water from a 95°F (35°C) to 85°F (29.4°C) at a 78°F (25.6°C) entering wet-bulb temperature.
3. If you need multi-cell towers, consult your local BAC representative.

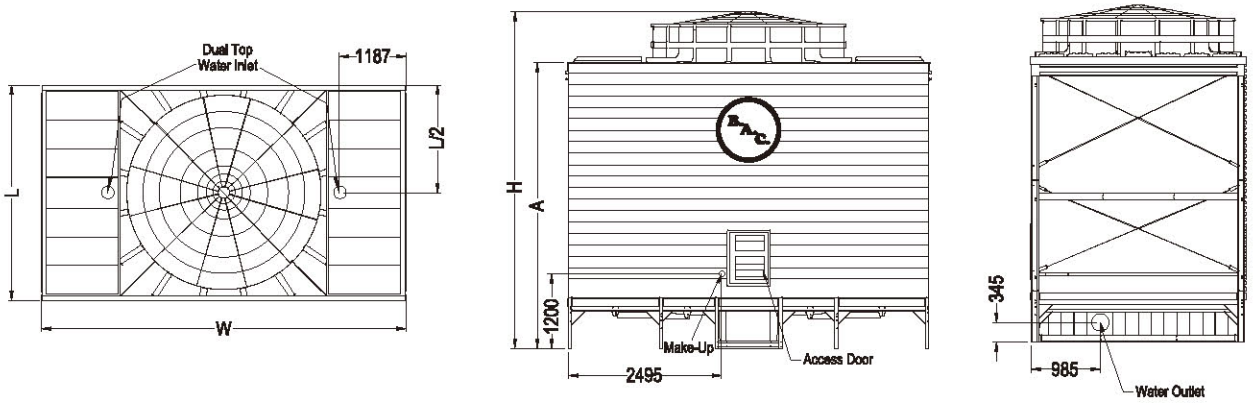
# Engineering Data




| MODEL NUMBER | NOMINAL TONNAGE | MOTOR (KW) | AIR FLOW ($m^3/h$) | WEIGHTS(kg) | | DIMENSIONS(mm) | | | | CONNECTION SIZES | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | SHIPPING | OPERATING | L | W | H | A | MAKE-UP WATER (in) | TOP INLET (mm) | OUTLET (mm) |
| ACT-10184-KM | 323 | 7.5 | 143766 | 2990 | 8660 | 2946 | 5576 | 5143 | 4291 | 1 1/2 | 200 | 250 |
| ACT-10184-LM | 366 | 11 | 162161 | 3034 | 8704 | | | | | | | |
| ACT-10184-M | 405 | 15 | 178598 | 3056 | 8726 | | | | | | | |
| ACT-10184-N | 434 | 18.5 | 190581 | 3089 | 8759 | | | | | | | |
| ACT-10184-O | 459 | 22 | 201025 | 3105 | 8775 | | | | | | | |
| ACT-10184-P | 507 | 30 | 221017 | 3161 | 8831 | | | | | | | |
| ACT-10184-Q | 543 | 37 | 235531 | 3242 | 8912 | | | | | | | |
| ACT-10185-LM | 405 | 11 | 168732 | 3173 | 8843 | 2946 | 5576 | 5550 | 4698 | 1 1/2 | 200 | 250 |
| ACT-10185-MM | 448 | 15 | 185793 | 3195 | 8865 | | | | | | | |
| ACT-10185-N | 479 | 18.5 | 198213 | 3228 | 8898 | | | | | | | |
| ACT-10185-O | 507 | 22 | 209035 | 3243 | 8913 | | | | | | | |
| ACT-10185-P | 561 | 30 | 229722 | 3300 | 8970 | | | | | | | |
| ACT-10185-Q | 600 | 37 | 244742 | 3381 | 9051 | | | | | | | |
| ACT-10185-R | 639 | 45 | 259484 | 3426 | 9096 | | | | | | | |

**Notes:**

1. Operating weight is based on the water level in the cold water basin at overflow height.
2. Nominal tons of cooling represents 3 GPM (0.684 $m^3/h$) of water from a 95°F (35°C) to 85°F (29.4°C) at a 78°F (25.6°C) entering wet-bulb temperature.
3. If you need multi-cell towers, consult your local BAC representative.

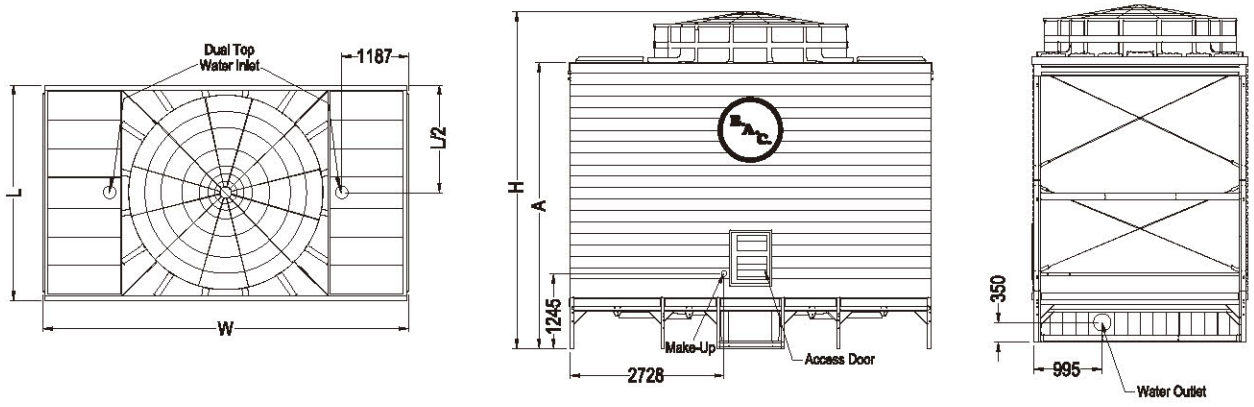



| MODEL NUMBER | NOMINAL TONNAGE | MOTOR (KW) | AIR FLOW ($m^3/h$) | WEIGHTS(kg) | | DIMENSIONS(mm) | | | | CONNECTION SIZES | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | SHIPPING | OPERATING | L | W | H | A | MAKE-UP WATER (in) | TOP INLET (mm) | OUTLET (mm) |
| ACT-11205-LM | 450 | 11 | 190482 | 3707 | 10007 | 3349 | 5979 | 5600 | 4721 | 1 1/2 | 200 | 250 |
| ACT-11205-MM | 497 | 15 | 209624 | 3729 | 10029 | | | | | | | |
| ACT-11205-NM | 533 | 18.5 | 223552 | 3767 | 10067 | | | | | | | |
| ACT-11205-O | 563 | 22 | 235688 | 3802 | 10102 | | | | | | | |
| ACT-11205-P | 623 | 30 | 258876 | 3883 | 10183 | | | | | | | |
| ACT-11205-Q | 667 | 37 | 275683 | 3944 | 10244 | | | | | | | |
| ACT-11205-R | 711 | 45 | 292190 | 4013 | 10313 | | | | | | | |
| ACT-11205-S | 744 | 55 | 303773 | 4078 | 10378 | | | | | | | |
| ACT-11206-MM | 518 | 15 | 217908 | 4032 | 10332 | 3349 | 5979 | 6006 | 5127 | 1 1/2 | 200 | 250 |
| ACT-11206-NM | 554 | 18.5 | 232480 | 4069 | 10369 | | | | | | | |
| ACT-11206-O | 586 | 22 | 245191 | 4105 | 10405 | | | | | | | |
| ACT-11206-P | 648 | 30 | 269405 | 4186 | 10486 | | | | | | | |
| ACT-11206-Q | 694 | 37 | 286970 | 4247 | 10547 | | | | | | | |
| ACT-11206-R | 740 | 45 | 304221 | 4316 | 10616 | | | | | | | |
| ACT-11206-S | 774 | 55 | 316376 | 4381 | 10681 | | | | | | | |

**Notes:**

1. Operating weight is based on the water level in the cold water basin at overflow height.
2. Nominal tons of cooling represents 3 GPM (0.684 $m^3/h$) of water from a 95°F (35°C) to 85°F (29.4°C) at a 78°F (25.6°C) entering wet-bulb temperature.
3. If you need multi-cell towers, consult your local BAC representative.
4. The fill of ACT-11205* is single stack and the fill of ACT-11206* is double stack.

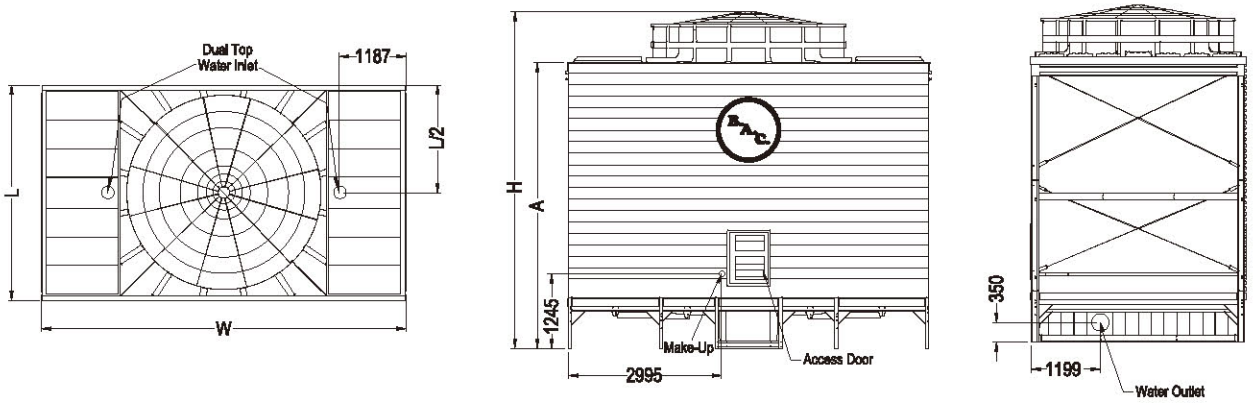
# Engineering Data




| MODEL NUMBER | NOMINAL TONNAGE | MOTOR (KW) | AIR FLOW ($m^3/h$) | WEIGHTS(kg) | | DIMENSIONS(mm) | | | | CONNECTION SIZES | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | SHIPPING | OPERATING | L | W | H | A | MAKE-UP WATER (in) | TOP INLET (mm) | OUTLET (mm) |
| ACT-13216-MM | 569 | 15 | 254837 | 4535 | 12200 | 3815 | 6445 | 6060 | 5172 | 1 1/2 | 250 | 300 |
| ACT-13216-NM | 609 | 18.5 | 271429 | 4573 | 12238 | | | | | | | |
| ACT-13216-O | 644 | 22 | 285849 | 4588 | 12253 | | | | | | | |
| ACT-13216-P | 713 | 30 | 313332 | 4684 | 12349 | | | | | | | |
| ACT-13216-Q | 763 | 37 | 333193 | 4746 | 12411 | | | | | | | |
| ACT-13216-R | 813 | 45 | 352632 | 4813 | 12478 | | | | | | | |
| ACT-13216-S | 851 | 55 | 366064 | 4878 | 12543 | | | | | | | |
| ACT-13217-NM | 671 | 18.5 | 291213 | 4896 | 12561 | 3815 | 6445 | 6873 | 5985 | 1 1/2 | 250 | 300 |
| ACT-13217-OM | 710 | 22 | 306643 | 4912 | 12577 | | | | | | | |
| ACT-13217-P | 785 | 30 | 336008 | 5007 | 12672 | | | | | | | |
| ACT-13217-Q | 841 | 37 | 357197 | 5069 | 12734 | | | | | | | |
| ACT-13217-R | 896 | 45 | 377962 | 5136 | 12801 | | | | | | | |
| ACT-13217-S | 937 | 55 | 392258 | 5201 | 12866 | | | | | | | |

**Notes:**

1. Operating weight is based on the water level in the cold water basin at overflow height.
2. Nominal tons of cooling represents 3 GPM (0.684 $m^3/h$) of water from a 95°F (35°C) to 85°F (29.4°C) at a 78°F (25.6°C) entering wet-bulb temperature.
3. If you need multi-cell towers, consult your local BAC representative.




| MODEL NUMBER | NOMINAL TONNAGE | MOTOR (KW) | AIR FLOW ($m^3/h$) | WEIGHTS(kg) | | DIMENSIONS(mm) | | | | CONNECTION SIZES | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | SHIPPING | OPERATING | L | W | H | A | MAKE-UP WATER (in) | TOP INLET (mm) | OUTLET (mm) |
| ACT-14237-OM | 804 | 22 | 350628 | 5548 | 14893 | 4349 | 6979 | 6960 | 5985 | 2 | 250 | 300 |
| ACT-14237-P | 889 | 30 | 383526 | 5604 | 14949 | | | | | | | |
| ACT-14237-Q | 951 | 37 | 407211 | 5685 | 15030 | | | | | | | |
| ACT-14237-R | 1014 | 45 | 430346 | 5834 | 15179 | | | | | | | |
| ACT-14237-S | 1082 | 55 | 455163 | 5899 | 15244 | | | | | | | |

**Notes:**

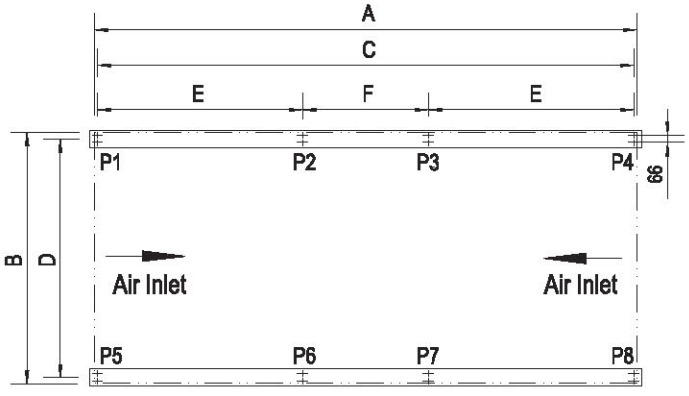
1. Operating weight is based on the water level in the cold water basin at overflow height.
2. Nominal tons of cooling represents 3 GPM (0.684 $m^3/h$) of water from a 95°F (35°C) to 85°F (29.4°C) at a 78°F (25.6°C) entering wet-bulb temperature.
3. If you need multi-cell towers, consult your local BAC representative.

# Structural Support

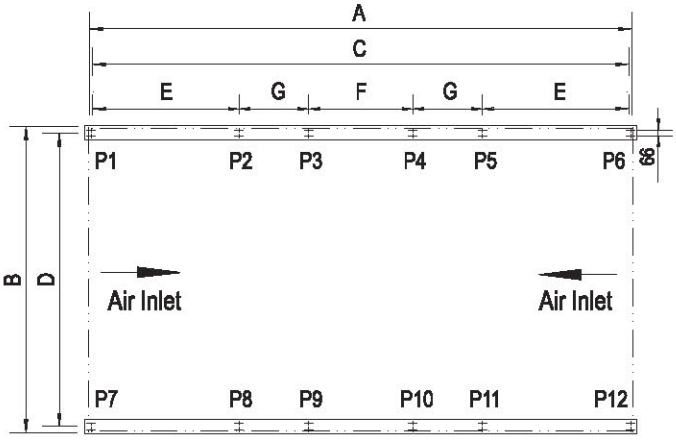
The recommended support arrangement for the Series ACT Cooling Tower consists of parallel I-beams positioned as shown on the drawings. Besides providing adequate support, the steel also serves to raise the unit above any solid foundation to assure access to the bottom of the tower.

| MODEL NUMBER | DIMENSIONS (mm) | | | | | | |
|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G |
| ACT-08161-G<br>ACT-08161-H<br>ACT-08161-J<br>ACT-08161-K<br>ACT-08161-L | 4918 | 2288 | 4865 | 2162 | 1862 | 1141 | — |
| ACT-08162-H<br>ACT-08162-J<br>ACT-08162-K<br>ACT-08162-L<br>ACT-08162-M | 4918 | 2288 | 4865 | 2162 | 1862 | 1141 | — |
| ACT-09172-J<br>ACT-09172-K<br>ACT-09172-L<br>ACT-09172-M<br>ACT-09172-N | 5222 | 2592 | 5169 | 2466 | 2014 | 1141 | — |
| ACT-09173-K<br>ACT-09173-L<br>ACT-09173-M<br>ACT-09173-N<br>ACT-09173-O | 5222 | 2592 | 5169 | 2466 | 2014 | 1141 | — |
| ACT-09174-L<br>ACT-09174-M<br>ACT-09174-N<br>ACT-09174-O<br>ACT-09174-P | 5222 | 2592 | 5169 | 2466 | 2014 | 1141 | — |
| ACT-10184-KM<br>ACT-10184-LM<br>ACT-10184-M<br>ACT-10184-N<br>ACT-10184-O<br>ACT-10184-P<br>ACT-10184-Q | 5576 | 2946 | 5523 | 2820 | 2191 | 1141 | — |
| ACT-10185-LM<br>ACT-10185-MM<br>ACT-10185-N<br>ACT-10185-O<br>ACT-10185-P<br>ACT-10185-Q<br>ACT-10185-R | 5576 | 2946 | 5523 | 2820 | 2191 | 1141 | — |
| ACT-11205-LM<br>ACT-11205-MM<br>ACT-11205-NM<br>ACT-11205-O<br>ACT-11205-P<br>ACT-11205-Q<br>ACT-11205-R<br>ACT-11205-S | 5979 | 3349 | 5926 | 3223 | 1625 | 1141 | 768 |
| ACT-11206-MM<br>ACT-11206-NM<br>ACT-11206-O<br>ACT-11206-P<br>ACT-11206-Q<br>ACT-11206-R<br>ACT-11206-S | 5979 | 3349 | 5926 | 3223 | 1625 | 1141 | 768 |
| ACT-13216-MM<br>ACT-13216-NM<br>ACT-13216-O<br>ACT-13216-P<br>ACT-13216-Q<br>ACT-13216-R<br>ACT-13216-S | 6445 | 3815 | 6392 | 3689 | 1625 | 1141 | 1000 |

| MODEL NUMBER | DIMENSIONS (mm) | | | | | | |
|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G |
| ACT-13217-NM | 6445 | 3815 | 6392 | 3689 | 1625 | 1141 | 1000 |
| ACT-13217-OM | | | | | | | |
| ACT-13217-P | | | | | | | |
| ACT-13217-Q | | | | | | | |
| ACT-13217-R | | | | | | | |
| ACT-13217-S | | | | | | | |
| ACT-14237-OM | 6979 | 4349 | 6930 | 4223 | 1625 | 1141 | 1270 |
| ACT-14237-P | | | | | | | |
| ACT-14237-Q | | | | | | | |
| ACT-14237-R | | | | | | | |
| ACT-14237-S | | | | | | | |




ACT-08161-G through ACT-10185-R




ACT-11205-LM through ACT-14237-S

**Notes:**

1. Support beams and anchor bolts to be selected and installed by others.
2. All support steel must be level at the top.
3. 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".
4. If point vibration isolation is used with multi-cell towers, the isolators must be located under the support steel, not between the support steel and the cooling towers.

# Engineering Specifications

## 1.0 Cooling Tower

1.1 General: Furnish and install_____, 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 (l/s) of water from _____ °F (°C) to _____ °F (°C) at _____ °F (°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.

1.3 Corrosion Resistant Construction (standard): Unless otherwise noted in this specification, all casing panels and hot and cold water basins shall be FRP and structural members shall be constructed of hot-dip galvanized steel.

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.

## 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.

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.

2.3 Cold Water Basin: The cold water basin shall be constructed of fiberglass reinforced polyester (FRP). Basin shall include a depressed center section with drain/clean-out connection. The basin area under the fill shall be sloped toward the depressed center section to facilitate cleaning. Standard basin accessories shall include a PVC make-up valve with large diameter plastic float for easy adjustment of the operating water level. (For 2" and larger size, bronze make-up valve should be used)

2.4 Water Outlet: 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. The strainer and anti-vortex device shall be constructed of stainless steel.

2.5 Water Distribution System: The hot water distribution basins shall be the open gravity type for easy cleaning, and constructed of FRP. The basins must be accessible from outside the unit and serviceable during tower operation. Basin baffle and plastic nozzles shall be provided to assure even distribution of the water over the fill.

## 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.

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.
3.3 Fan Drive: The fan(s) shall be driven by a one-piece, multi-groove, solid back V- type belt with taper lock sheaves designed for 150% of the motor nameplate horsepower. The belt 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 aluminum to minimize corrosion and maintenance and ensure maximum drive and powerband operating life.
3.5 Fan Motor: Fan motor(s) shall be totally enclosed air over (TEAO), reversible, squirrel cage, ball bearing type designed specifically for cooling tower service. The motor shall be furnished with special moisture protection on windings, shafts and bearings.

## 4.0 Fill、Louver and Drift Eliminators

4.1 Fill、Louver and Drift Eliminators shall be formed from self-extinguishing (per ASTM-568) polyvinyl chloride (PVC) of 15mil thickness 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 manufactured, tested and rated by the cooling tower manufacturer and shall be elevated above the cold water basin floor to facilitate cleaning.

## 5.0 Access

5.1 Access Door: One access door should be provided as standard for access into the plenum section.
5.2 Internal Walkway: An internal walkway is provided as standard in the plenum section 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 floor and fill/drift eliminators, shall not be considered as internal working surface.

## 6.0 Sound

6.1 Sound Level: To maintain the quality of the local environment, the maximum sound pressure levels (dB) measured 1.5 m from the cooling tower operating at full fan speed shall not exceed the sound levels detailed below.

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

## 7.0 Accessories

7.1 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.
7.2 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.
(Alternate) 7.2 Vibration Cutout Switch: Provide an electronic remote reset vibration switch with contact for BAS monitoring. Wiring shall be by the installing contractor. The electronic vibration cutout switch shall be set 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 2 to 1000 Hertz and a trip point of 0.45 in/sec (0.0114 m/sec).
7.3 Ladder, Safety Cage and Handrails: A hot-dip galvanized steel ladder shall be provided for access to the fan deck. The handrails shall also be provided around the perimeter of the cooling tower cells. All components are designed to meet OSHA requirements.
7.4 Internal Platform: An internal platform shall be provided for inspection and maintenance. Other components of the cooling tower, i.e. basin and fill/drift eliminators, shall not be considered an internal working surface. All components are designed to meet OSHA requirements.

ONE OF THE Amsted INDUSTRIES

# Baltimore Aircoil Company

Contact your local BAC
Representative for more information