



**BALTIMORE
AIRCOIL COMPANY**



Series 1500

Series 1500 Cooling Tower

RIGGING & ASSEMBLY INSTRUCTIONS



Series 1500 Cooling Towers should be rigged and assembled as outlined in this bulletin.

These procedures should be thoroughly reviewed prior to the actual rigging and assembly of the equipment to acquaint all personnel with procedures to be followed and to assure that all necessary equipment will be available beforehand.



Be sure to have a copy of the certified drawing available for reference. If you do not have a copy of this drawing, or if you need additional information about this unit, contact your local BAC Representative whose name and telephone number are on a label adjacent to the access door. The model number and serial number of the unit are also located in this area.



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Introduction

WARNING: In the event of extended lifts or where hazards exist, the lifting devices should be used in conjunction with safety slings placed under the unit.

CAUTION: Only personnel qualified to do so should undertake operation, maintenance and repair of this equipment. Proper care, procedures and tools must be used in handling, lifting, installing, operating, maintaining and repairing this equipment to prevent personal injury and/or property damage.



Safety

Adequate precautions appropriate for the installation and location of these products should be taken to safeguard the equipment and the premises from damage and the public from possible injury. **The procedures in this manual must be thoroughly reviewed prior to rigging and assembly. Read all warnings, cautions, and notes detailed in the margins.**



When the fan speed of the unit is to be changed from the factory set speed, including the use of a variable speed device, steps must be taken to avoid operating at or near the fan's "critical speed" which could result in fan failure and possible injury or damage. Consult with your local BAC Representative on any such applications.

Shipping

BAC Cooling Towers are factory assembled to assure uniform quality and minimum field assembly. Models 15146 to 15177, 15201, and 15219 ship in one section per cell. All other models ship in two sections per cell. For the dimensions and weights of a specific unit or section, refer to the certified drawings.

Pre-Rigging Checks

When the unit is delivered to the jobsite, it should be checked thoroughly to ensure all required items have been received and are free of any shipping damage prior to signing the bill of lading.

The following parts should be inspected:

- Sheaves and Belts
- Bearings
- Bearing Supports
- Fan Motor(s)
- Fan(s) and Fan Shaft(s)
- Float Valve Assembly(s)
- Water Distribution System
- Hot Water Basin Integral Strainers
- Fill
- Cold Water Basin Accessories
- Interior Surfaces
- Exterior Surfaces
- Louvers
- Optional Air Intake Screens (when provided)
- Mating Surfaces Between Sections / Modules
- Miscellaneous Items: All bolts, nuts, washers, and sealer tape required to assemble sections or component parts are furnished by BAC and shipped with the unit. A checklist inside the envelope marked "Customer Information Packet" indicates what miscellaneous parts are included with the shipment and where they are packed. This envelope will be attached to the side of the unit or located in a box inside the unit.



Introduction

Safety

Shipping

Pre-Rigging Checks

Unit Weights

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Unit Weights

Before rigging any unit, the weight of each section should be verified from the unit certified drawing. Some accessories add additional weight as shown on the respective accessory drawings.

Anchoring

Seven-eighths (7/8") diameter holes are provided in the bottom flange of the basin section for bolting the unit to the support beams. Refer to the suggested support location drawing included in the submittal for location and quantity of the mounting holes. **The unit must be level for proper operation.** Anchor bolts must be provided by others.

Cold Weather Operation

These products must be protected by mechanical and operational methods against damage and/or reduced effectiveness due to possible freeze-up. Please refer to the *Common Operation and Maintenance Manual* on www.BaltimoreAircoil.com, or contact your local BAC Representative for recommended cold weather operation strategies.

Location

All evaporative cooling equipment must be located to ensure an adequate supply of fresh air to the unit air intakes. When units are located adjacent to walls or in enclosures, care must be taken to ensure the warm, saturated, discharge air is not deflected and recirculated back to the air intakes.

Each unit should be located and positioned to prevent the introduction of discharge air into the ventilation system of any building. For detailed recommendations on BAC equipment layout, see our website at www.BaltimoreAircoil.com or contact your local Representative.

Warranties

Please refer to the Limitation of Warranties (located in the submittal package) applicable to and in effect at the time of the sale/purchase of these products.



WARNING: Before an actual lift is undertaken, ensure no water, snow, ice, or debris has collected in the basin or elsewhere in the unit. Such accumulations will add substantially to the equipment's lifting weight.



NOTE: Each unit must be located and positioned to prevent the introduction of discharge air into the ventilation systems of the building on which the unit is located and of adjacent buildings.

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SERIES 1500 COOLING TOWER

Rigging & Assembly

NOTE: Figure 1 shows the proper rigging of a Series 1500 that ships in one-section. Figure 2 shows the proper rigging of a two-section unit.



Rigging

Refer to **Table 1** and **Figures 1 and 2** for the required minimum spreader bar and the recommended vertical dimension “H” from the lifting device at the base of each unit or section to the spreader bar.

In the event of extended lifts or where hazards exist, the lifting devices should be used in conjunction with safety slings placed under the unit.

NOTE: All single-cell and multi-cell units must be rigged one section at a time. Series 1500 Cooling Tower models 15146 to 15177, 15201, and 15219 ship in one section per cell. All other models ship in two sections per cell.



Model Number	Dimensions (for each cell)		
	Section	Min. H	Min. W
15146 to 15177, 15201, 15219	One Section	12'	W1=11' 10"
15200, 15227 to 15282	Upper	15'	W2=6', W3=12'
	Lower	8'	W1=12'
15296 to 15425	Upper	17'	W2=6', W3=12'
	Lower	11'	W1=12'

Table 1. Minimum Vertical Dimension and Spreader Bar Length

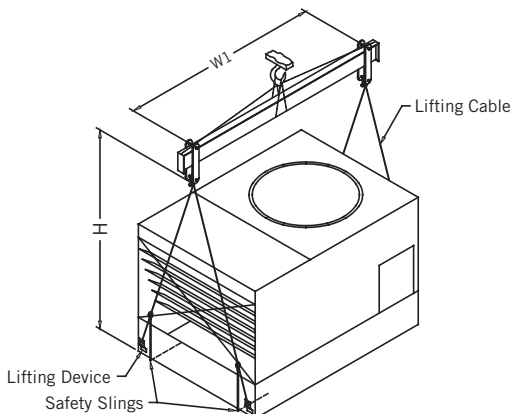


Figure 1. One-Section Cells Series 1500 Models 15146 to 15177, 15201, & 15219

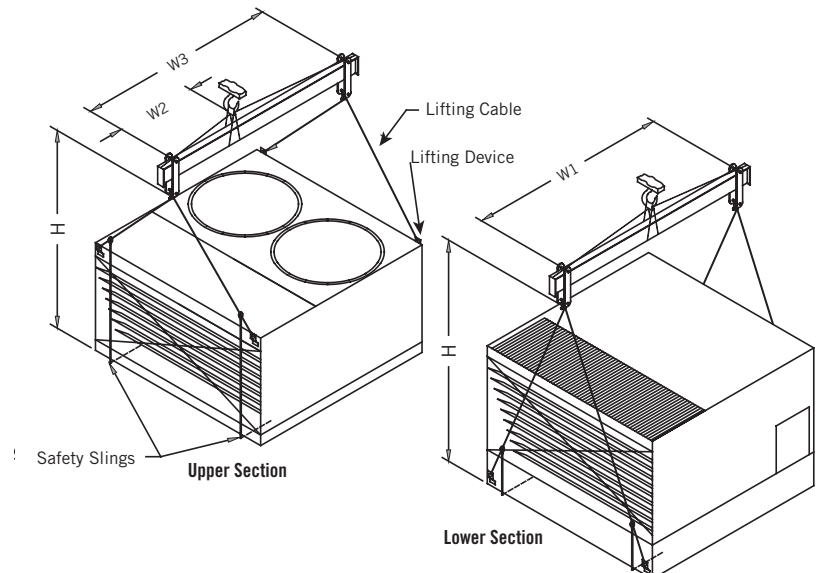


Figure 2. Two-Section Cells Series 1500 Models 15200, 15227 to 15425

Single-Cell Installation



Two Piece Section Assembly

1. Remove any accessories shipped in the cold water basin.
2. Position the lower section on the unit supports and bolt in place.
3. Wipe any moisture and dirt from the perimeter mating flanges of the lower section.
4. Install foam seal tape (BAC part # 270175) supplied with the unit, as illustrated in **Figure 3**, on the mating flanges of the lower section in a continuous line. At each corner, allow 1" overlap.
5. Before lowering the upper section onto the lower section, be sure to line up the bolt holes using drift pins as illustrated in **Figure 4**, no fewer than one hole at each edge. Guide the upper section onto the lower section starting with a bolt hole at one corner and following down the flange.
6. Match marks must line up as shown in **Figure 3**.
7. Secure the upper section in place as shown in **Figure 3** to ensure leak-free operation.

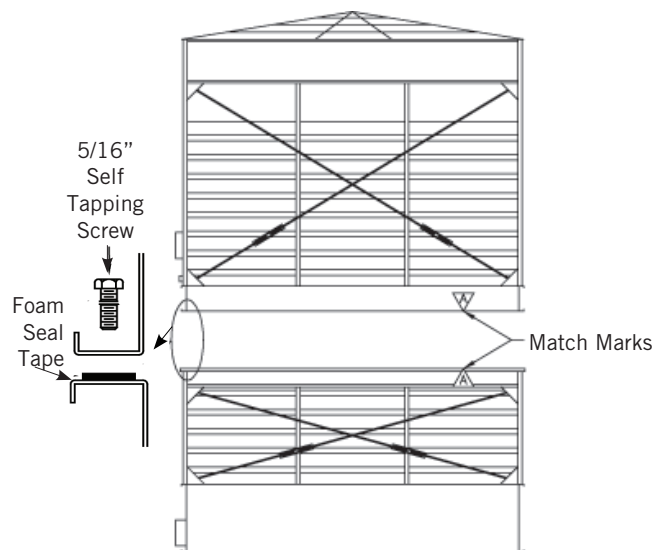


Figure 3. Upper and Lower Assembly for Series 1500 Cooling Towers



Figure 4. Drift Pin Alignment

Multi-Cell Installation

Refer to the submittal drawings for the proper orientation of each cell. The number and “face” are stenciled on the outer basin wall. Multi-cell cooling tower installations may employ flume boxes to equalize the water level in the basin of each cell. Follow directions in “Flume Box Installation” for details on their installation.

Multi-Cell Unit Assembly

1. First, position the first cell’s lower section on the unit supports and bolt in place. For units shipped in two sections per cell, follow the instructions on **Page 5** for “Single-Cell Installation” for installation of the first cell.
2. Each subsequent cell should be assembled just adjacent to its final location, and then properly positioned on structural supports next to the previous cell and bolted in place. For units furnished with a flume box, use the flume box assembly procedure outlined in Flume Box Installation” to connect the basins of the multi-cell units.

Flume Box Installation

1. Position Cell #1 on the unit support and bolt in place.
2. Wipe down the surface adjacent to the flume opening of Cell #1 to remove any dirt or moisture that may have accumulated during shipment.
3. Wipe down the flanges on both ends of the flume box. On one end, apply a layer of flat butyl sealer tape (BAC part # 554000) around the face of the flange over the centerline of the holes. Do not overlap or stretch too thinly at the corners. When it is necessary to splice the sealer tape, be sure to press the two ends together to form a smooth, continuous strip. Apply a second layer of flat butyl sealer tape (BAC part # 554000) over the first layer following the same procedure. Refer to **Figure 5, Detail A**.
4. Using drift pins to align the flume box bolt holes, place the flume box over the opening in the basin of Cell #1.
5. Fasten into place as shown in **Figure 6**. For basins with TriArmor® Corrosion Protection System, backing plates are to be installed inside the basin and flume box opening (see **Figure 7, Detail A**). Insert the 3/8” self-tapping screws or bolts in each hole from the flume box into the basin wall and backing strips (if applicable) as illustrated in **Figure 7**.
6. Apply two layers of flat butyl sealer tape (BAC part # 554000) to the other end of the flume box.
7. Wipe down the surface adjacent to the flume opening of Cell #2 to remove any dirt or moisture. Position Cell #2 on the unit supports.
8. Using drift pins to assure alignment, draw Cell #2 tight against the flume box.
9. Repeat Step 5 to fasten the flume box to Cell #2.



NOTE: Flume boxes furnished with units constructed with TriArmor® Corrosion Protection System or stainless steel basins are assembled with stainless steel bolts, washers and nuts in lieu of self tapping screws. Before installing the nuts, apply a lubricant to the bolts to reduce the potential for seizing.



Multi-Cell Installation

Multi-Cell Unit Assembly

Flume Box Installation

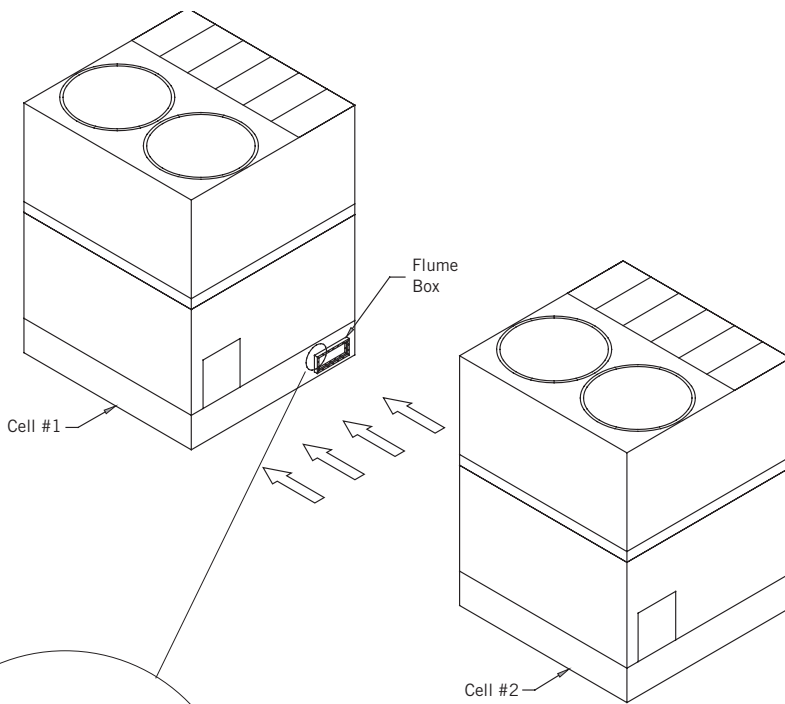
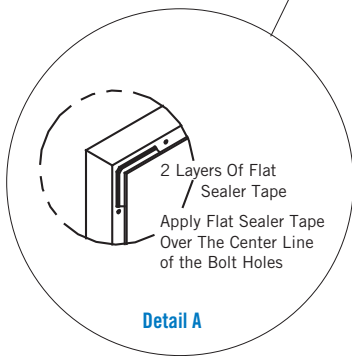


Figure 5. Flume Box Installation



NOTE: For cold water basins constructed with the TriArmor® Corrosion Protection System, attach the vertical and horizontal backing plates as shown in **Figure 7, Detail A.**



Detail A

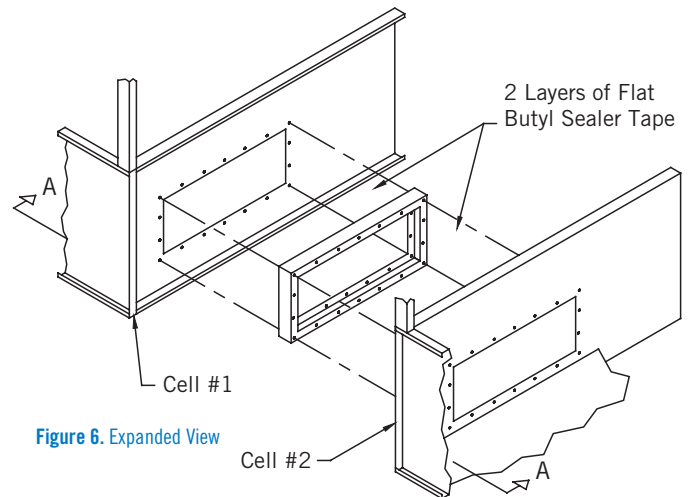


Figure 6. Expanded View

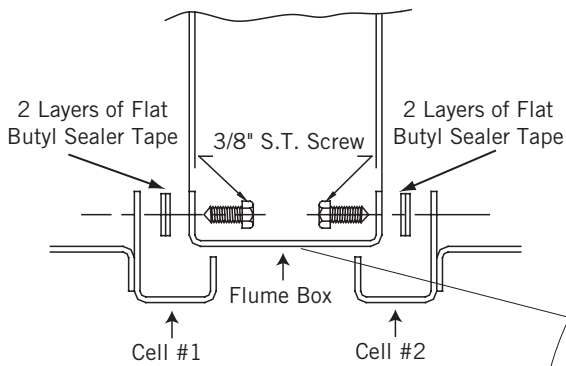
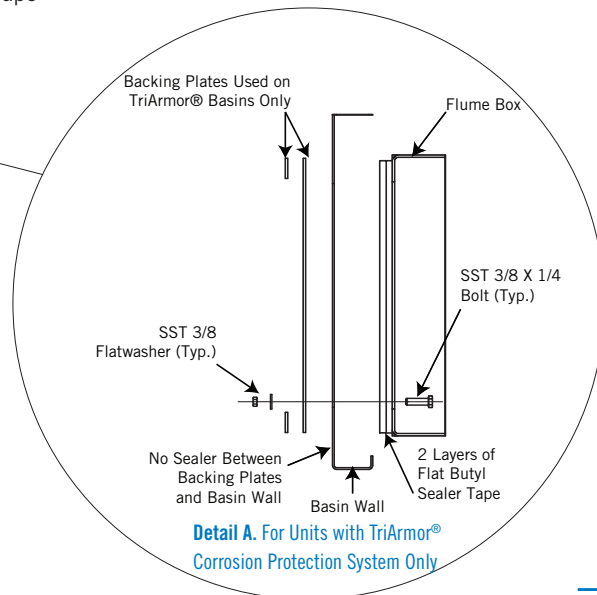


Figure 7. Elevation View



Detail A. For Units with TriArmor® Corrosion Protection System Only

Optional Positive Closure Plate

The optional positive closure plate and gasket can be furnished on multi-cell units to allow individual cells to be isolated for cleaning and routine maintenance. The plate ships loose inside the cold water basin.

1. Remove nuts and flat washer from the flume box.
2. Position the neoprene gasket and positive closure plate over the bolts and fasten in place with 3/8" wing nut and flat washers.
3. When the cooling tower operation does not require use of the positive closure plate, remove the closure plate and gasket. Retighten the flume box using the wing nuts and flat washers.

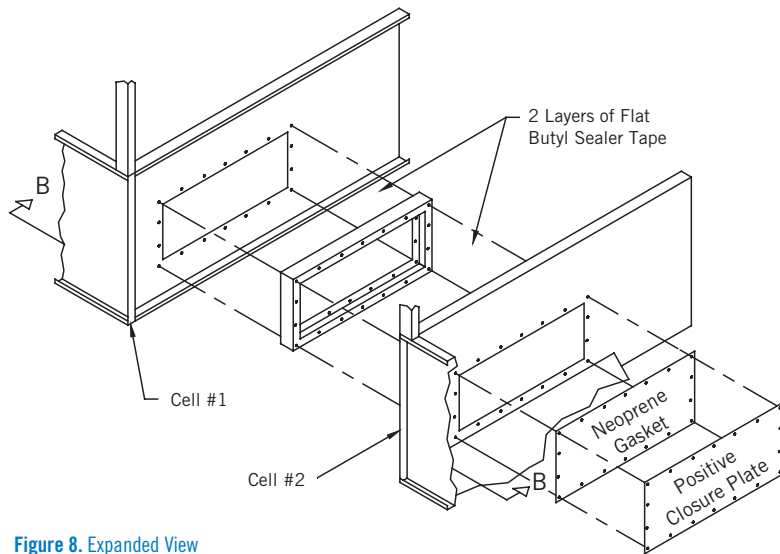


Figure 8. Expanded View

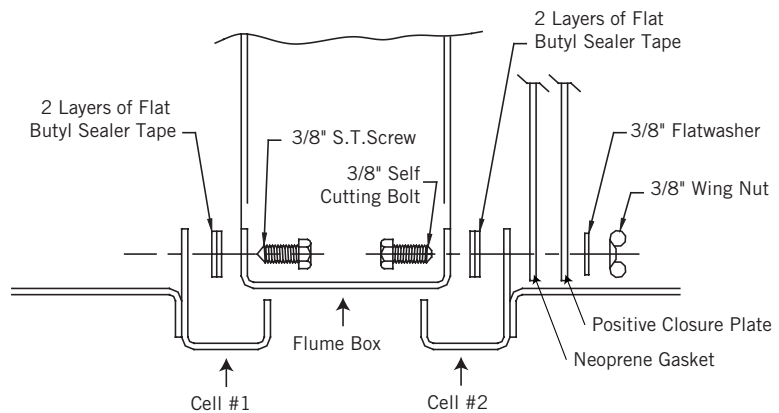


Figure 9. Elevation View

Optional Side Outlet Depressed Sump Box Installation

The optional side outlet depressed sump box allows a cooling tower water outlet connection to be piped from underneath the unit in four possible directions, 90° apart. The piping connection is a bolt circle designed to fit an ASME Class 150 flat face flange with a full-face gasket.

To install the side outlet depressed sump box, follow the steps below:

1. Wipe the edges around the opening inside the cold water basin to remove any dirt or moisture that may have accumulated during shipment.
2. Apply a layer of trapezoidal butyl sealer tape (BAC part #554009) around the opening in the basin over the centerline of the holes. Do not stretch the sealer tape too thinly or overlap at the corners. When it is necessary to splice the sealer tape, be sure to press the two ends together to form a smooth continuous strip. Apply a second layer of trapezoidal butyl sealer tape (BAC part #554009) over the first layer following the same procedure. Refer to **Figure 10**. The sealer tape needs to be positioned between the sump box and the inside basin bottom.
3. Insert the sump box assembly into the opening in the cold water basin and attach it to the basin with 3/8" x 1" bolts, flat washers, lock washers, and nuts as shown in **Figure 10, Detail A**.
4. Place the suction strainer over the opening.

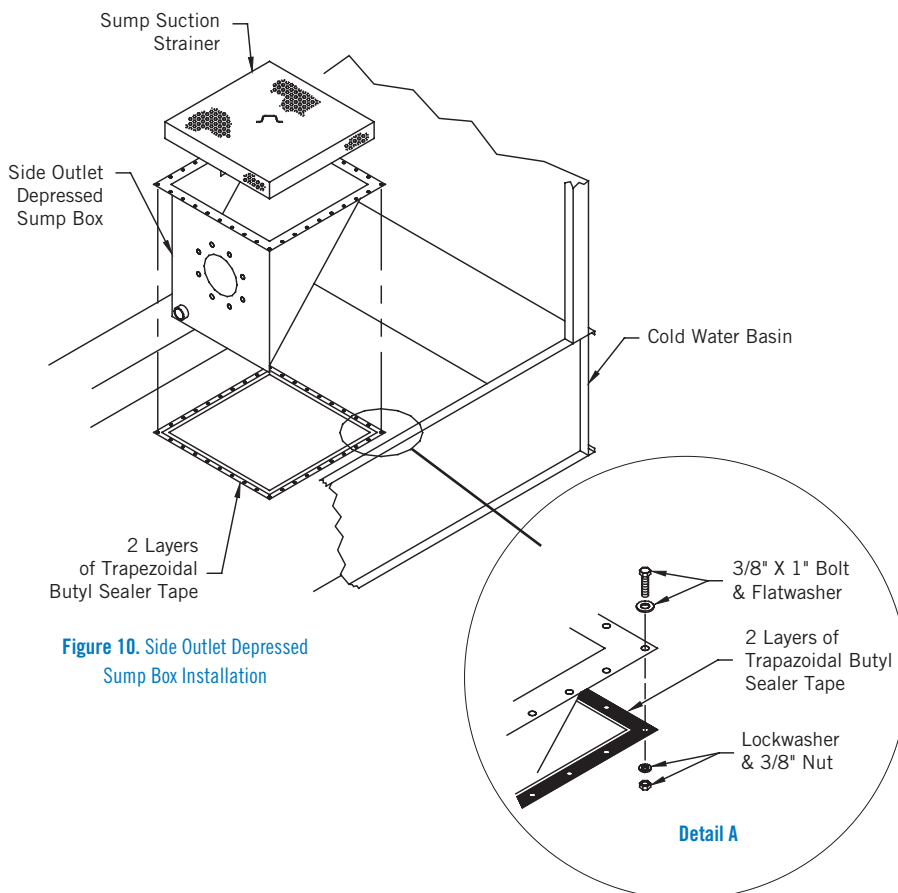


Figure 10. Side Outlet Depressed Sump Box Installation

Motor Location and Conduit Installation

Use the following and notes when installing electrical conduit for cooling towers supplied with the BALTDRIIVE® Power Train or BALTI GUARD™ Fan System. Notice the table for weight adds for two-speed motors and the BALTI GUARD™ Fan System.

Installation Notes:

1. All conduit must be water tight and pitched downward to allow condensation to drain away from motor conduit box. Therefore, do not run the conduit through the fan deck.
2. All wiring must conform to local and national electrical codes. Junction box/safety switch and all conduit from fan motor conduit box to be sized, provided, and installed by others.
3. Rigid conduit outside casing panel must turn down to junction box.
4. On multi-cell units, use separate conduit lines for each fan motor. Run conduit through adjacent cells to junction box and or disconnect switch on front/rear cell.

2-Speed Motor Weight Add	
Motor HP	Weight (lbs)
7.5	140
10	185
15	90
20	80
25	210
30	170
40	225

Table 2. 2-Speed Motor Weight Add^[1]

BALTI GUARD™ Fan System Motor Weight Add	
Motor HP	Weight (lbs)
3	100
5	110
7.5	160
10	175
15	300
20	260
25	390
30	440

Table 3. BALTI GUARD™ Fan System Motor Weight Add^[2]

NOTE:

1. Weights given represent the additional weight when a 2-speed motor is ordered and should be added to the standard unit weight.
2. If the optional BALTI GUARD™ Fan System is ordered, weights given are for each BALTI GUARD motor and should be added to the standard unit weight.



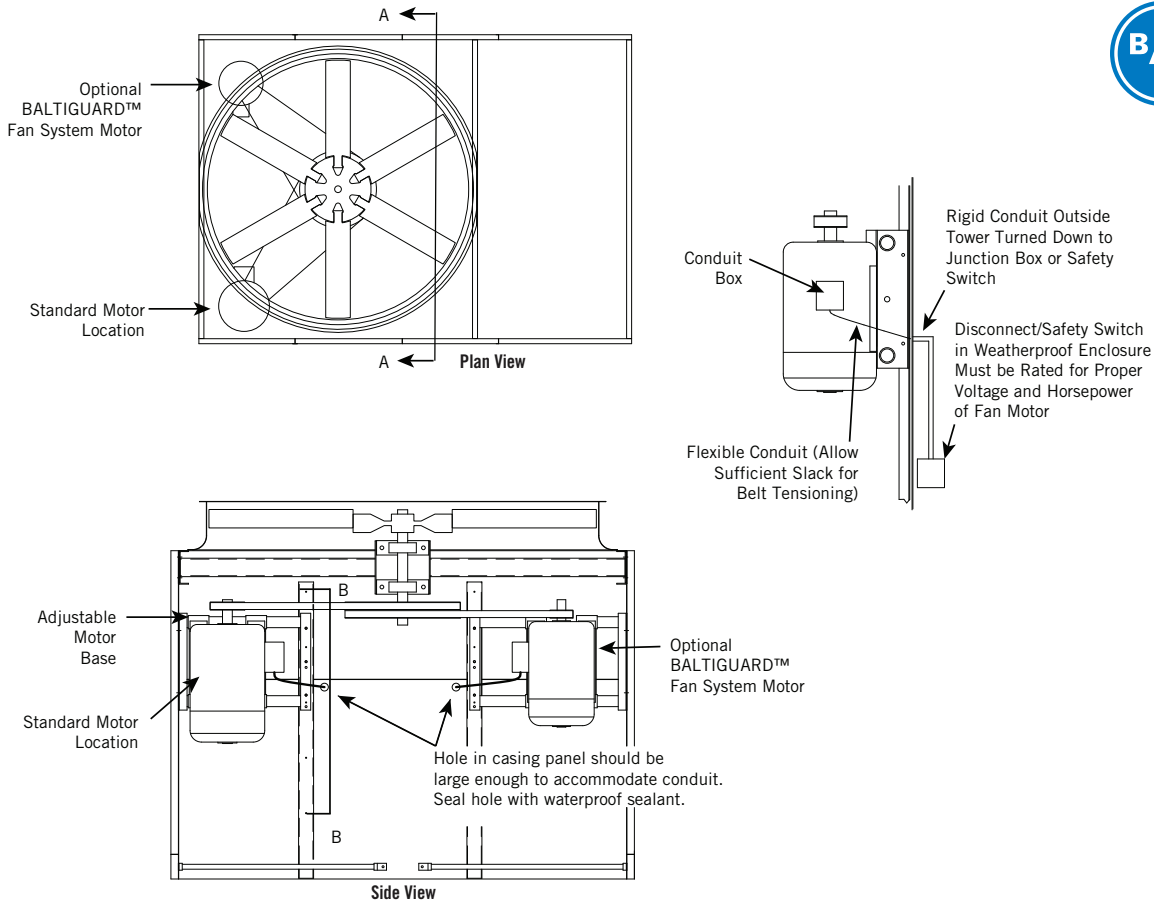


Figure 11. Standard Motor and Optional BALTI GUARD™ Fan System Location

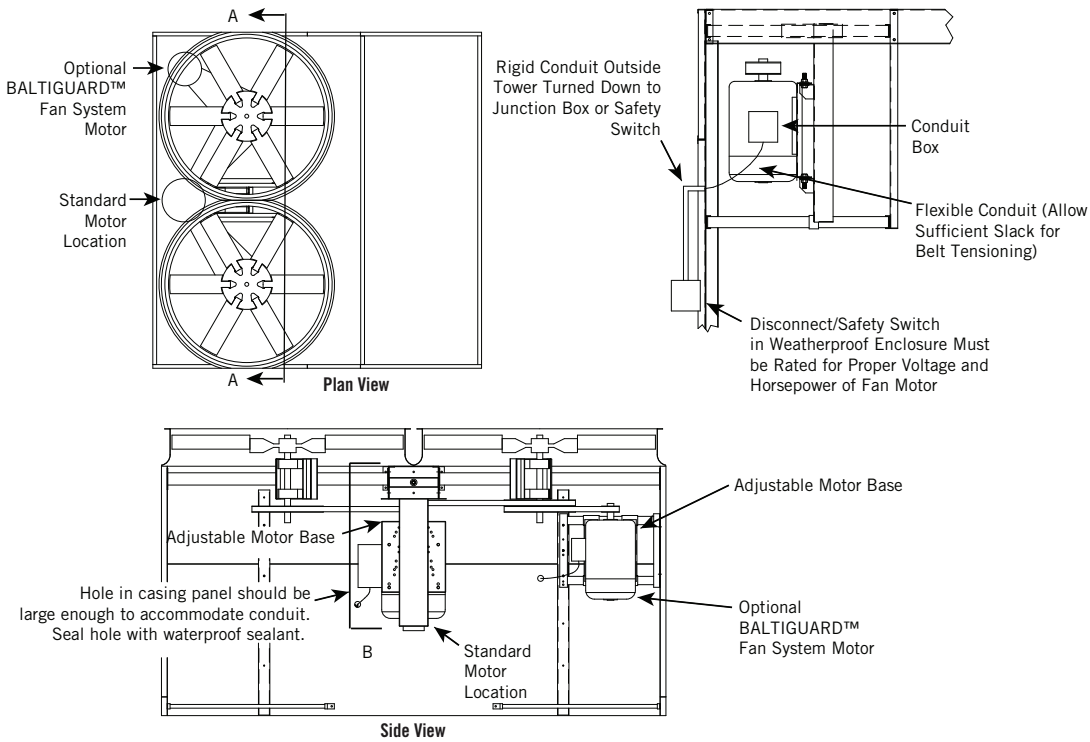


Figure 12. Standard Motor and Optional BALTI GUARD™ Fan System Location for Dual Fan Units

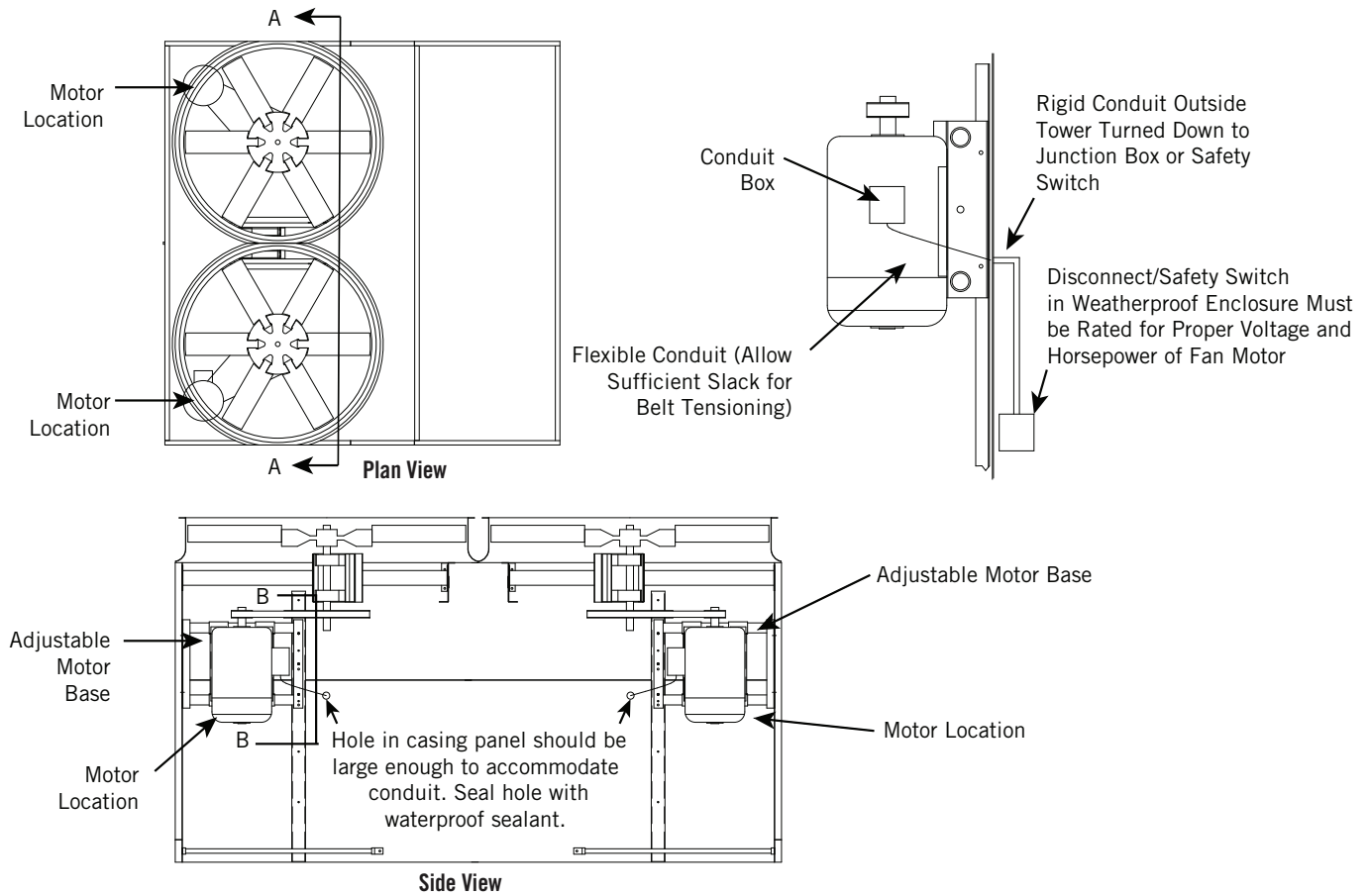


Figure 13. Motor Location for Independent Fan System

Optional Accessories and Equipment

All optional accessories such as ladders, safety cages, and deck grating between cells should be installed as shown on the appropriate reference drawing in the submittal package from Baltimore Aircoil Company. The appropriate access package reference drawing is included with the unit in the envelope marked "Customer Information Packet". This envelope will be attached to the side of the unit or located in a box inside the unit.

Parts available for purchase
at www.CoolingTowerWorld.com



Recommended Spare Parts

BAC's Factory Authorized Parts are manufactured to meet rigorous cooling tower duty specifications and are guaranteed to fit your unit and perform as original equipment.

BAC is proud to introduce Cooling Tower World, the only place to purchase BAC Factory Authorized Parts online. All Cooling Tower Parts are shipped second day and carry a full 1-year warranty backed by BAC. To purchase parts online, visit www.CoolingTowerWorld.com today.

BAC Factory Authorized Parts can also be ordered through your local BAC Representative. In addition, most BAC Representatives maintain a local inventory of commonly used parts. For a free unit inspection, call your local BAC Representative today.

Even with this fast delivery capability, it is still recommended that certain essential, emergency repair parts be maintained in your local inventory to minimize any potential downtime.

Basic Recommended Spare Parts

- Bearing set
- Float valve or repair kit
- Float ball
- Solenoid valve (if unit is equipped with electric water level control)
- Powerband or set of belts
- Spray nozzle kit with grommets
- Basin heater and low water cut out
- Door gasket
- Strainer (inlet and suction)
- Fan and sheave bushings
- Pump seal and gasket kit for coil products
- Automatic bearing greaser refill kit

Parts to Consider if Extended Downtime is a Concern

- Spray pump for coil products
- Axial or centrifugal fan
- Fan shaft
- Sheave set
- Fan motor

COOLING TOWERS

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