



**BALTIMORE
AIRCOIL AUSTRALIA**



Series 1500E/XE

Series 1500E/XE Cooling Tower

RIGGING & ASSEMBLY INSTRUCTIONS



Series 1500E/XE 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.





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Introduction

WARNING: Failure to use lifting provisions can result in a dropped load causing severe injury, death, and/or property damage. Lifts must be performed by qualified riggers following BAC published Rigging Instructions, and generally accepted lifting practices. The use of a supplemental safety sling may also be required if the lift circumstances warrant its use, as determined by the rigging contractor.

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

Series 1500E Cooling Towers are factory assembled to assure uniform quality and minimum field assembly. Models S15E/XES15E-x-06x and S15E/XES15E-x-07x ship in a single piece. 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:

- | | |
|---|--|
| <input type="checkbox"/> Sheaves and Belts | <input type="checkbox"/> Exterior Surfaces |
| <input type="checkbox"/> Bearings | <input type="checkbox"/> Combined Inlet Shields |
| <input type="checkbox"/> Fan Motor(s) | <input type="checkbox"/> Mating Surfaces Between Sections /Modules |
| <input type="checkbox"/> Fan(s) and Fan Shaft(s) | <input type="checkbox"/> 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. |
| <input type="checkbox"/> Float Valve Assembly(s) | |
| <input type="checkbox"/> Water Distribution System | |
| <input type="checkbox"/> Fill | |
| <input type="checkbox"/> Cold Water Basin Accessories | |
| <input type="checkbox"/> Interior Surfaces | |

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 *Series 1500E/XE Operation and Maintenance Manual* on www.BaltimoreAircoil.com.au, 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.au or contact your local Representative.

Warranties

Please refer to the Limitation of Warranties applicable to and in effect at the time of the sale/purchase of these products.

Unit Operation

Prior to start-up and unit operation, refer to the *Series 1500E/XE Operation & Maintenance Manual* shipped with the unit and also available at www.BaltimoreAircoil.com.au



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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.

Rigging & Assembly

WARNING: Failure to use lifting provisions can result in a dropped load causing severe injury, death, and/or property damage. Lifts must be performed by qualified riggers following BAC published Rigging Instructions, and generally accepted lifting practices. The use of a supplemental safety sling may also be required if the lift circumstances warrant its use, as determined by the rigging contractor.

NOTE: For weight information, please refer to the submitted drawings.

NOTE: Models S15E/XES15E-x-06x and S15E/XES15E-x-07x ship in a single piece. All other models ship in two sections per cell.



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

Model Number	Qty of Lower Section	Qty of Upper Section	Dimensions								
			Upper Section			Upper Section			Single Piece Lift		
			W1 (mm)	W2 (mm)	Min. "H" (mm)	W1 (mm)	W2 (mm)	Min. "H" (mm)	W1 (mm)	W2 (mm)	Min. "H" (mm)
S15E/XES15E-0809-06x	Fully Assembled		-	-	-	-	-	-	2400	1200	3400
S15E/XES15E-0812-06x	Fully Assembled		-	-	-	-	-	-	2400	1200	3400
S15E/XES15E-1012-06x	Fully Assembled		-	-	-	-	-	-	3000	1500	3400
S15E/XES15E-1012-09x	1	1	3000	1350	2700	3000	1500	2100	3000	1500	4600
S15E/XES15E-1012-10x	1	1	3000	1350	2700	3000	1500	2400	3000	1500	4900
S15E/XES15E-1018-09x	1	1	3000	1350	2700	3000	1500	2100	3000	1500	4600
S15E/XES15E-1018-10x	1	1	3000	1350	2700	3000	1500	2700	3000	1500	5200
S15E/XES15E-1212-07x	Fully Assembled		-	-	-	-	-	-	3600	1800	3700
S15E/XES15E-1212-09x	1	1	3600	1800	2700	3600	1700	2100	3600	1800	4600
S15E/XES15E-1212-10x	1	1	3600	1800	2700	3600	1700	2400	3600	1800	4900
S15E/XES15E-1212-11x	1	1	3600	1800	2700	3600	1700	2700	3600	1800	5200
S15E/XES15E-1212-12x	1	1	3600	1800	2700	3600	1700	3400	3600	1800	5800
S15E/XES15E-1218-07x	Fully Assembled		-	-	-	-	-	-	3600	1800	1800
S15E/XES15E-1218-09x	1	1	3600	1800	2700	3600	1700	2100	3600	1800	4600
S15E/XES15E-1218-10x	1	1	3600	1800	2700	3600	1700	2700	3600	1800	5200
S15E/XES15E-1218-11x	1	1	3600	1800	2700	3600	1700	3000	3600	1800	5500
S15E/XES15E-1218-12x	1	1	3600	1800	2700	3600	1700	3400	3600	1800	5800

Table 1. Minimum Vertical Dimension and Spreader Bar Length

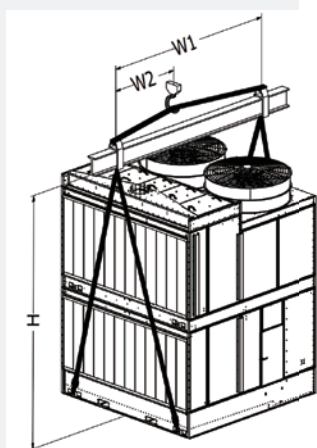


Figure 1. Single Piece Lift

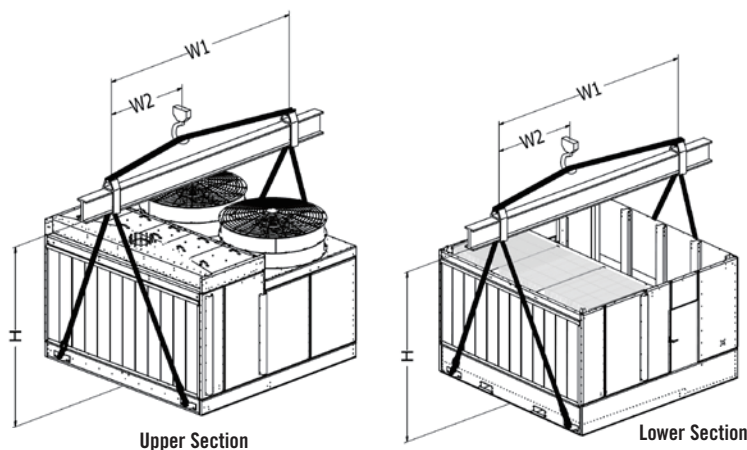


Figure 2. Two-Section Cells



Single-Cell Installation

All single cell 1500E Cooling Towers are designed to be lifted in one assembled piece as shown in **Figure 1**. A two piece lift is shown in **Figures 2 and 3**.

Two Piece Section Assembly

1. Remove any accessories shipped in the cold water basin.
2. **Figures 2 and 3** show the proper rigging of the sections for units that ship in two sections. Position the lower section on the steel support and bolt in place.
3. Wipe any moisture and dirt from the perimeter mating flanges of the lower section.
4. Install flat butyl sealer tape 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" (25mm) 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. Section assembly guides 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.

Assembly

Installation
on Assembly
Installation
Assembly

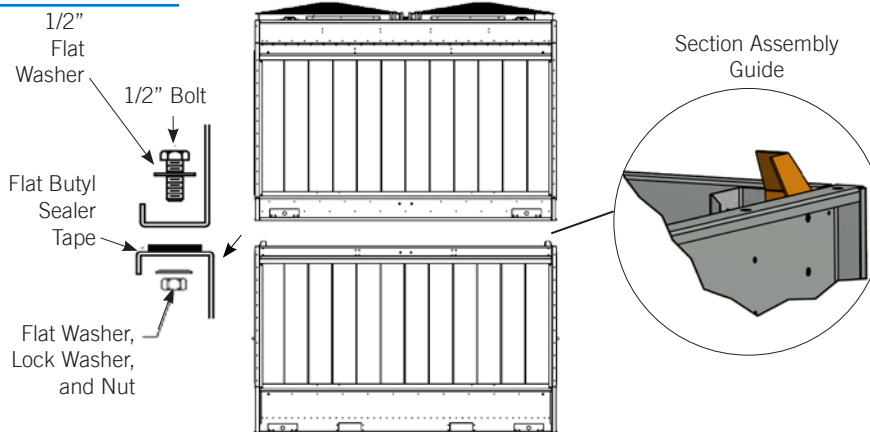


Figure 3. Upper and Lower Assembly for Series 1500E Cooling Towers



Figure 4. Drift Pin Alignment

Multi-Cell Installation

Refer to the submittal drawings for the proper orientation of each cell. 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, attach the first cell's lower section to the support and then fasten the first cell's upper section onto the first cell's secured bottom section.

NOTE: If the unit is provided with a positive closure plate requiring installation, go to “Positive Closure Plate Installation” on **page 7** prior to installing flat washers and wing nuts.

NOTE: Flume boxes furnished with units constructed with 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.

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 next the previous cell. Ensure spacing between the cells at the bottom flange is 2 1/2”(64mm).
3. Some units come furnished with a flume box. If they do, use the flume box assembly procedure outlined below to connect multi-cell units.

Flume Box Installation

1. Position Cell #1 on the unit support and bolt in place.
2. Wipe down the mating surface on the outer, protruding end of the flume box and apply a layer of flat butyl sealer tape around the face of the flange over the centerline of the holes. Do not overlap or stretch the butyl sealer tape too thinly at the corners. When it is necessary to splice the butyl sealer tape, be sure to press the two ends together to form a smooth, continuous strip. See **Figure 5**.
3. Apply a second layer of butyl sealer tape over the first layer following the same procedure.
4. Assemble Cell #2 just adjacent to its final location. Wipe down the mating surface adjacent to the flume box opening to remove any dirt or moisture.
5. Position Cell #2 on unit supports. Using drift pins to ensure alignment, draw Cell #2 tight against the flume box, ensuring that the spacing between the cells at the bottom basin flange is 2 1/2”(64mm).
6. As illustrated in **Figure 6**, insert 3/8”(10mm) x 1 1/4”(32mm) thread cutting screws in each hole from the flume box into the basin wall and tighten.

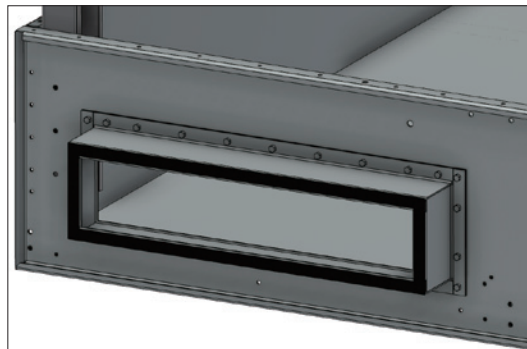


Figure 5. Flume Box Butyl Sealer Tape Application

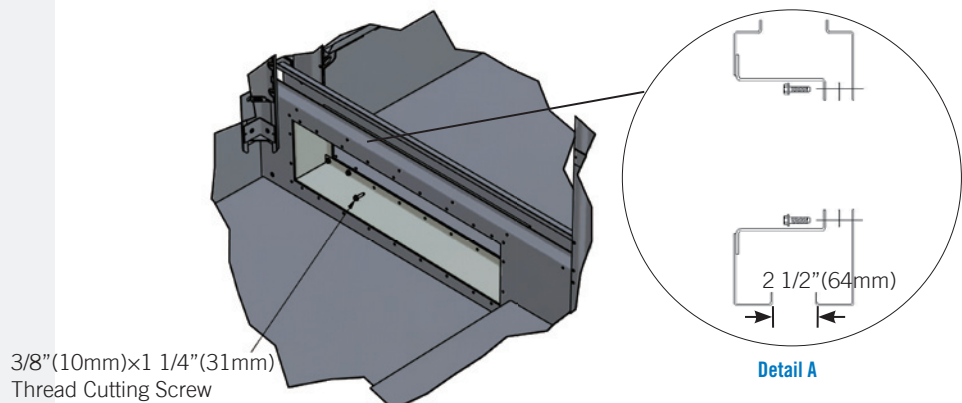


Figure 6. Thread Cutting Screw Pattern for Flume Box



Positive Closure Plate Installation

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. For Series 1500E Cooling Towers, the plate ships loose inside the basin. To install the positive closure plate and gasket, follow the steps below.

1. If installed, remove flat washers and wing nuts from the flume box on the interior of Cell #2.
2. Position the neoprene gasket and positive closure plate over the flume box hardware and fasten in place with 3/8" (10mm) flat washers and wing nuts.

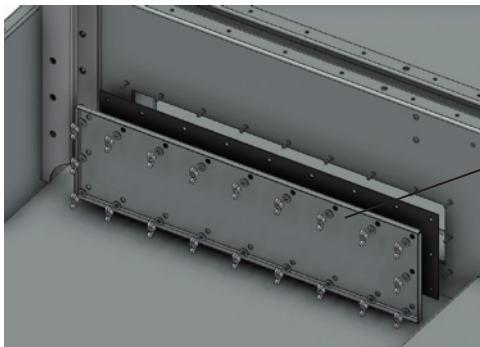
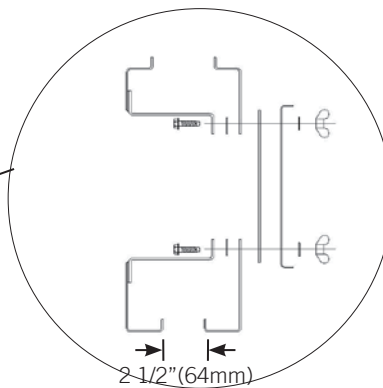


Figure 7. Positive Closure Plate Assembly



Detail A

Motor Location and Conduit Installation

Use the following when installing electrical conduit for Series 1500E Cooling Towers.

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.

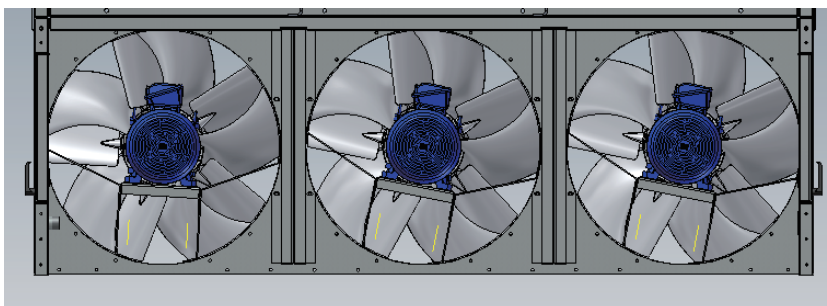


Figure 8. S15E/XES15E-0809-x, S15E/XES15E-0812-x Independent Drive Motor Location

Multi-Cell Installation

Multi-Cell Unit Assembly

Flume Box Installation

Positive Closure Plate Installation

Motor Location and Conduit Installation

Installation Notes

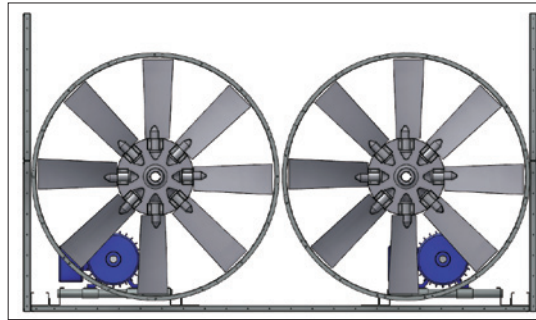


Figure 9. S15E/XES15E-1212-x Independent Drive Motor Location

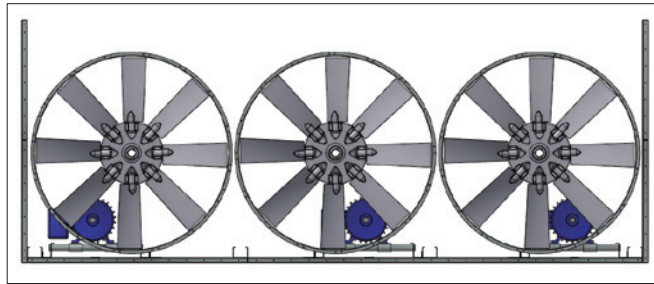


Figure 10. S15E/XES15E-1218-x Independent Drive Motor Location

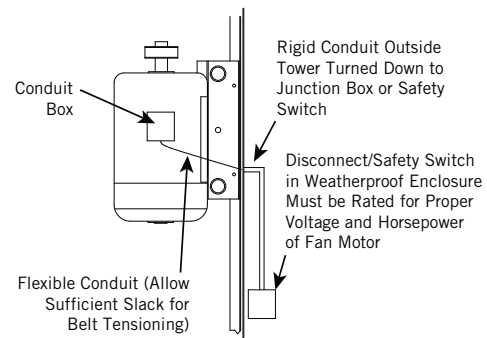


Figure 11. Independent Drive Motor

Fan Guard Installation

Due to height limitations on specific truck shipments, the fan guard may ship unmounted.

One-Piece Fan Guard

Mount the fan guard to the unit as illustrated in **Figure 12, Detail A**.

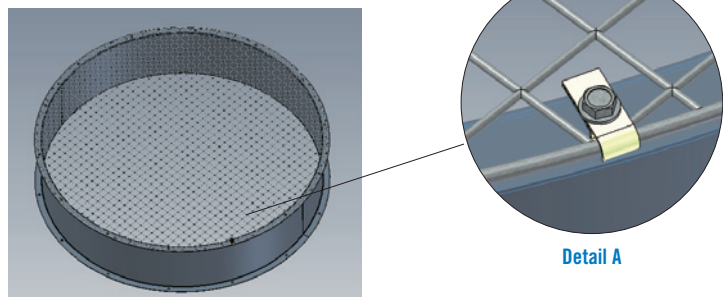


Figure 12. One-Piece Fan Guard Assembly

Optional Accessory Installation

Internal Service Platform (Optional)

1. The platform base is factory installed. The handrail system requires field installation.
2. Please firstly check whether it is full platform or sliding platform. See **Figure 13a** for the internal full platform.
3. For installation of the internal sliding platform, first remove the bolts. See **Figure 13, Detail A**.
4. According to the location of the platform (either on motor side or fill side), move the platform to the correct location, then plug in the bolts again.
5. Secure the vertical handrail posts in each socket using the 3/8" (10mm) bolts provided. See **Figure 13, Detail B**.
6. Connect the vertical handrail posts to each other using the 3/8" (10mm) bolts provided. See **Detail C**. Only two bolts are required per pair of posts, one on top and one on the bottom.
7. Attach the toe boards using 5/16" (10mm) tappers provided. See **Detail D**.
8. Attach the safety gate at the ladder opening using 3/8" (10mm) bolts provided. See **Detail E**.
9. Attach the toe board on the other side using 3/8" (10mm) tappers provide. See **Detail F**.
10. Connect the toe board using 5/16" (8mm) self-tapping screw. See **Detail G**.

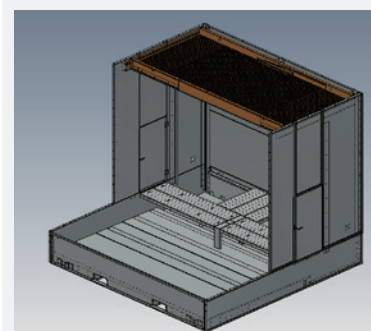


Figure 13a. Internal Full Platform

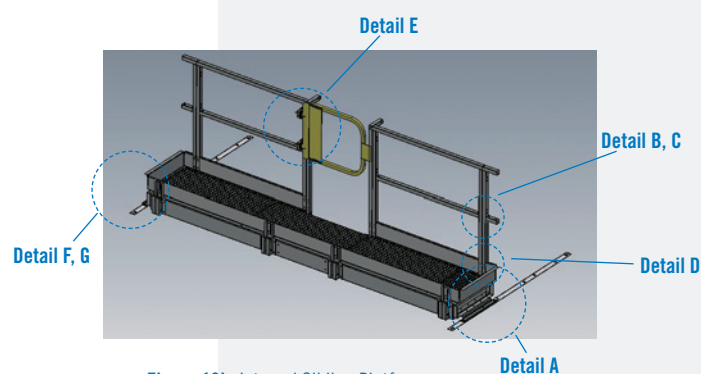
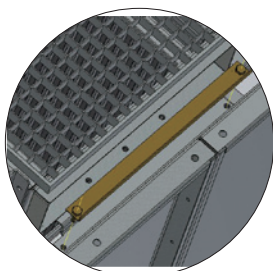
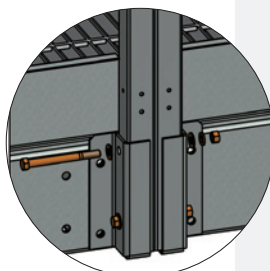


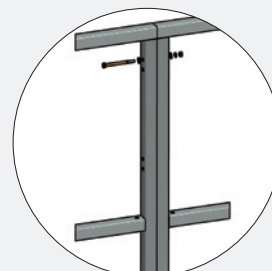
Figure 13b. Internal Sliding Platform



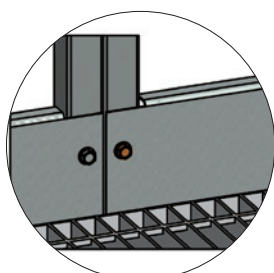
Detail A



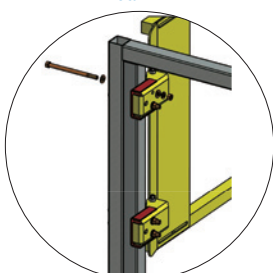
Detail B



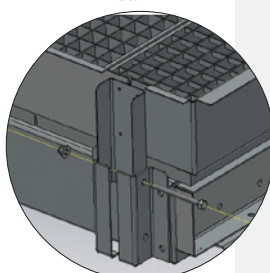
Detail C



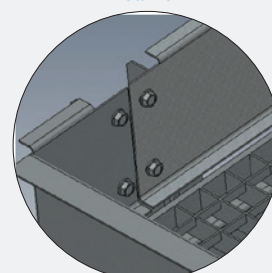
Detail D



Detail E



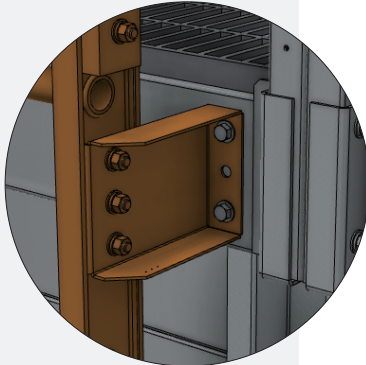
Detail F



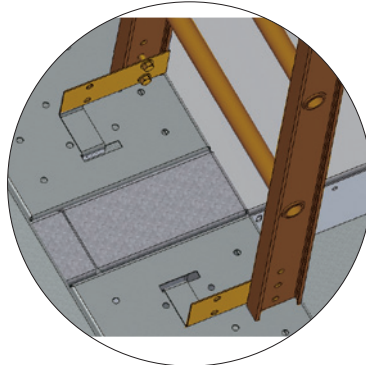
Detail G

Internal Service Platform Ladder (Optional)

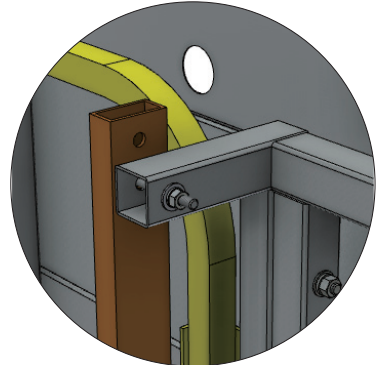
1. Attach ladder bracket to the access platform using 3/8" (10mm) bolts provided. See **Figure 14, Detail A**.
2. Attach the ladder to the walkway using 5/16" (8mm) tappers provided. See **Detail B**.
3. Secure the ladder flair to the platform railing posts using 5/16" (8mm) bolts provided. See **Detail C**.



Detail A



Detail B



Detail C

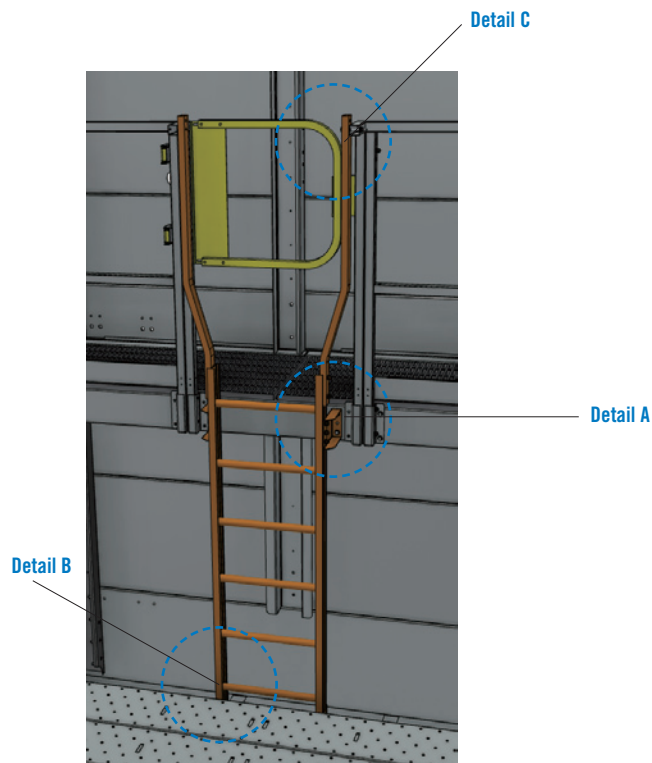


Figure 14. Internal Service Platform Ladder



Optional Accessory Installation

Internal Ladder Only (Optional)

1. Internal ladder can be installed either on motor side or fill side. Move the ladder to the correct location accordingly, then dropping the pre-welded bolts at the top into the mounting holes in the upper support channel. No further fastening is required. See **Figure 15a**.
2. Lift the ladder guiding the bottom posts into the slots on the walkway. See **Figure 15b**.

Internal Service Platform Ladder (Optional)

Internal Ladder Only (Optional)

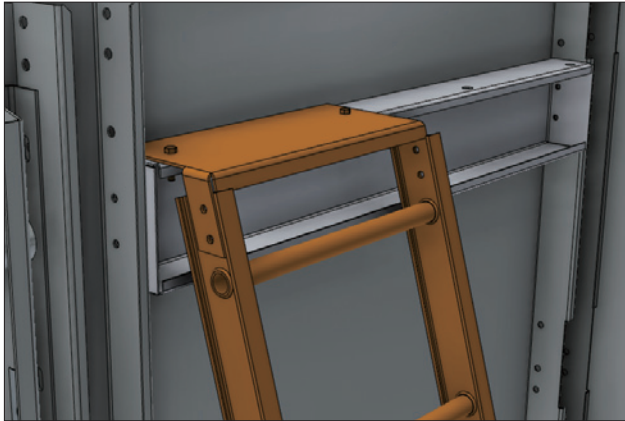


Figure 15a. Upper Section

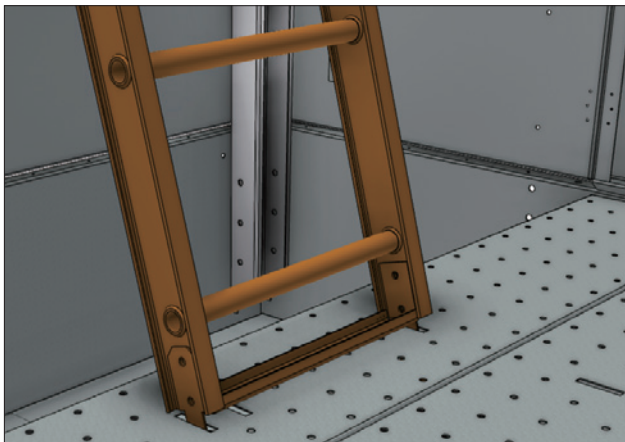


Figure 15b. Lower Section

Ladder Safety Cage (Optional)

1. If the safety cage is shipped in multiple pieces, reassemble the safety cage.
2. Bolt the safety cage to the ladder using flatwashers and locknuts. Orient all fasteners with bolt heads inside safety cage. See **Figure 16. Detail A through D** and refer to **Table 2** for the quantity of bolting locations for different safety cage heights.

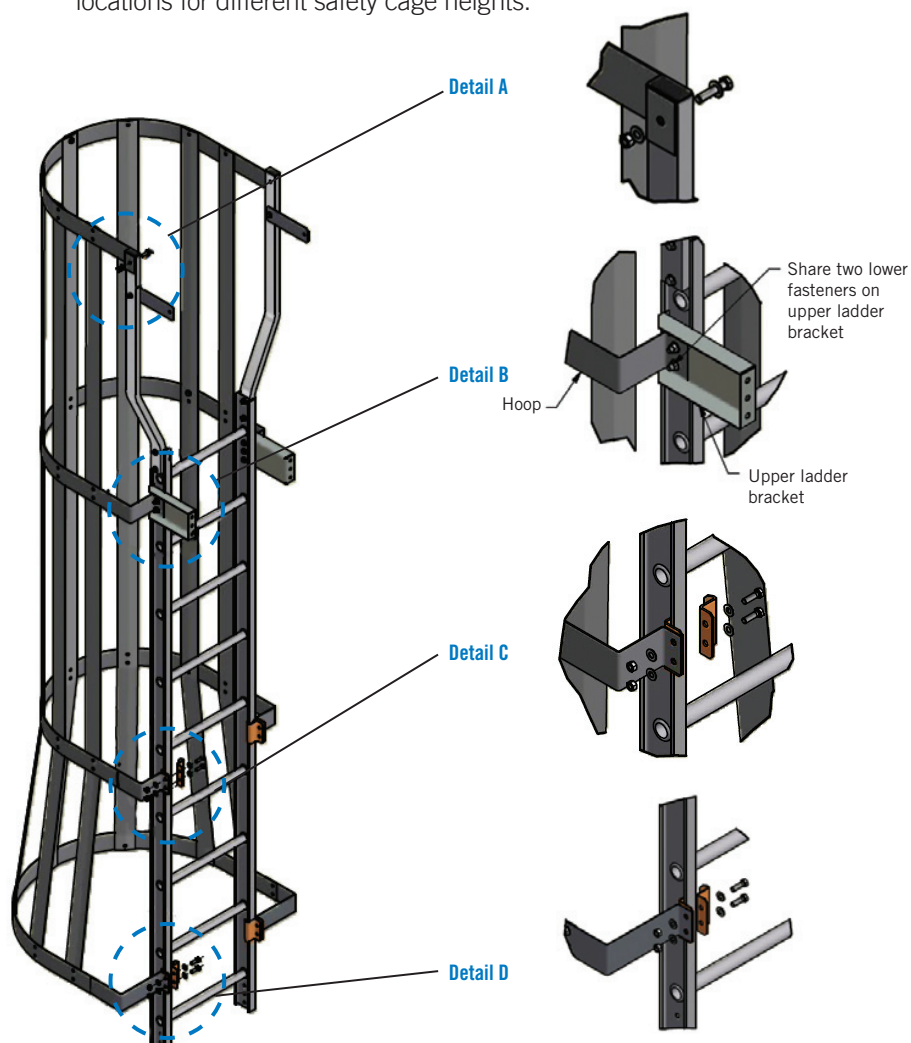


Figure 16. Safety Cage

Cage Height (mm)	Bolting Location				Cage Height (mm)	Bolting Location				Cage Height (mm)	Bolting Location			
	A	B	C	D		A	B	C	D		A	B	C	D
1220	1	—	—	1	3660	1	1	2	1	6095	1	1	4	1
1525	1	1	—	1	3960	1	1	2	1	6400	1	1	4	1
1830	1	1	—	1	4265	1	1	2	1	6705	1	1	4	1
2135	1	1	—	1	4570	1	1	2	1	7010	1	1	4	1
2440	1	1	—	1	4875	1	1	2	1	7315	1	1	4	1
2745	1	1	1	1	5180	1	1	3	1	7620	1	1	5	1
3050	1	1	1	1	5845	1	1	3	1	8230	1	1	5	1
3350	1	1	1	1	5790	1	1	3	1					

Table 2. Ladder Safety Cage Bolting Location and Quantities



Optional Accessory Installation

Ladder Safety Cage (Optional)

Hot Water Basin Handrail (Optional)

Hot Water Basin Handrail (Optional)

1. The welded handrail assemblies drop into pre-installed sockets in a specific configuration depending on the size of the unit.
2. Secure the vertical handrail posts in each slot using the 3/8" (10mm) bolts provided. See **Figure 18, Detail A**.
3. Connect the vertical handrail posts to each other using the 3/8" (10mm) bolts provided. See **Figure 18, Detail B**.

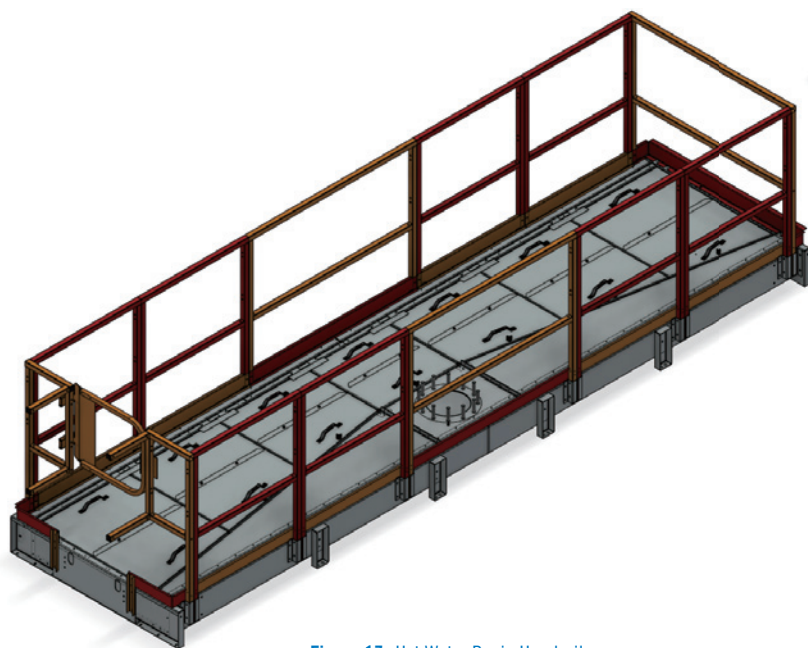


Figure 17. Hot Water Basin Handrail

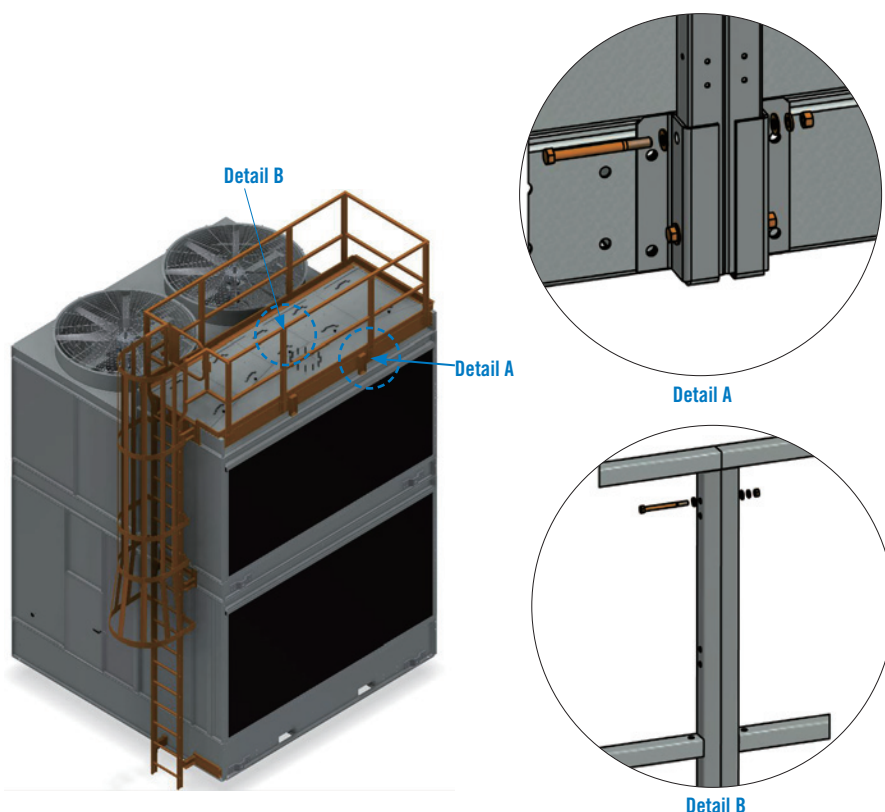
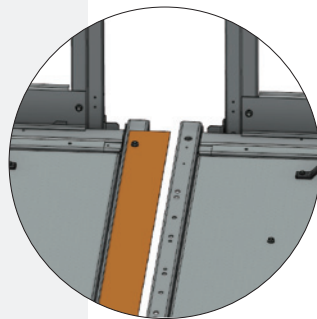


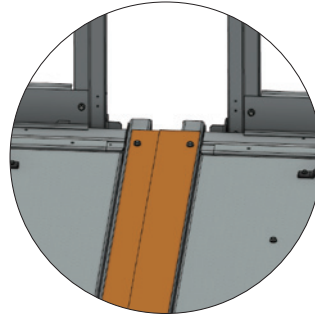
Figure 18. Hot Water Basin Handrail and Ladder

Hot Water Basin Handrail for Multi-cell Units (Optional)

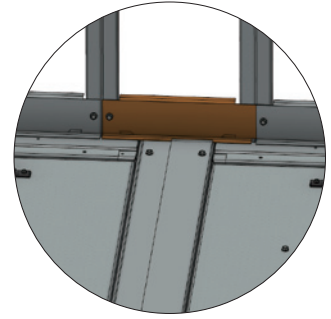
1. Follow the instructions for the hot water basin handrail installation on **Page 19**.
2. Secure the platform plates to the platform base at the gap between the cells using 5/16" (8mm) tappers. See **Detail A** and **B**.
3. Secure the toe board gap plate using 5/16" (8mm) tappers provided. See **Detail C**.
4. The welded handrail assemblies for the gap between cells drop into pre-installed sockets. See **Figure D** below.
5. Secure the vertical handrail posts in each slot using the 3/8" (10mm) bolts provided. See **Detail E**.
6. Connect the vertical handrail posts to each other using the 5/16" (8mm) bolts provided. See **Detail F**.



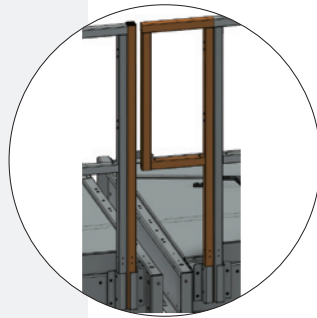
Detail A



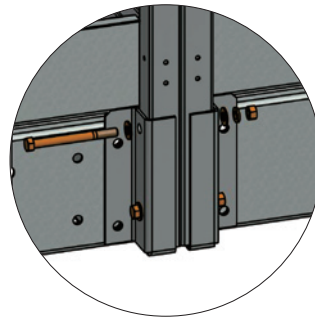
Detail B



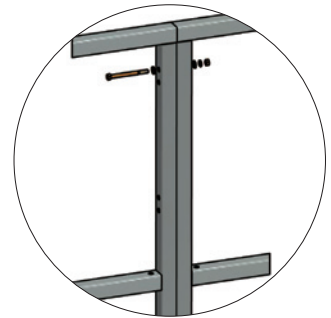
Detail C



Detail D



Detail E



Detail F

Figure 19. Hot Water Basin Handrail for Multi-cell Units



Optional Accessory Installation

Hot Water Basin Handrail Ladder (Optional)

1. If unit is a two-section assembly, attach the mid support channel:
 - Drop the vertical mounting channels into the sheet metal break of the upper section base frame as shown in **Figure 20, Details A and B**.
 - Slide up and lock the vertical mounting channel in place by securing the upper tab in place using the 3/8" (10mm) bolts provided. **See Detail C.**
 - Secure the horizontal channel in place using the 5/16" (8mm) bolts provided. **See Detail D.**
2. Attach the lower ladder support plate using the 3/8" (10mm) bolts provided. **See Detail G.**
3. Secure the ladder brackets to the upper, mid (if applicable), and lower supports using the 3/8" (10mm) bolts provided. Fasten the ladder to the ladder brackets. **See Detail E, F, and G.**
4. Fasten the ladder flair to the railing posts using 5/16" (8mm) bolts provided. **See Detail H.**

Hot Water Basin Handrail for Multi-cell Units (Optional)

Hot Water Basin Handrail Ladder Attachment (Optional)

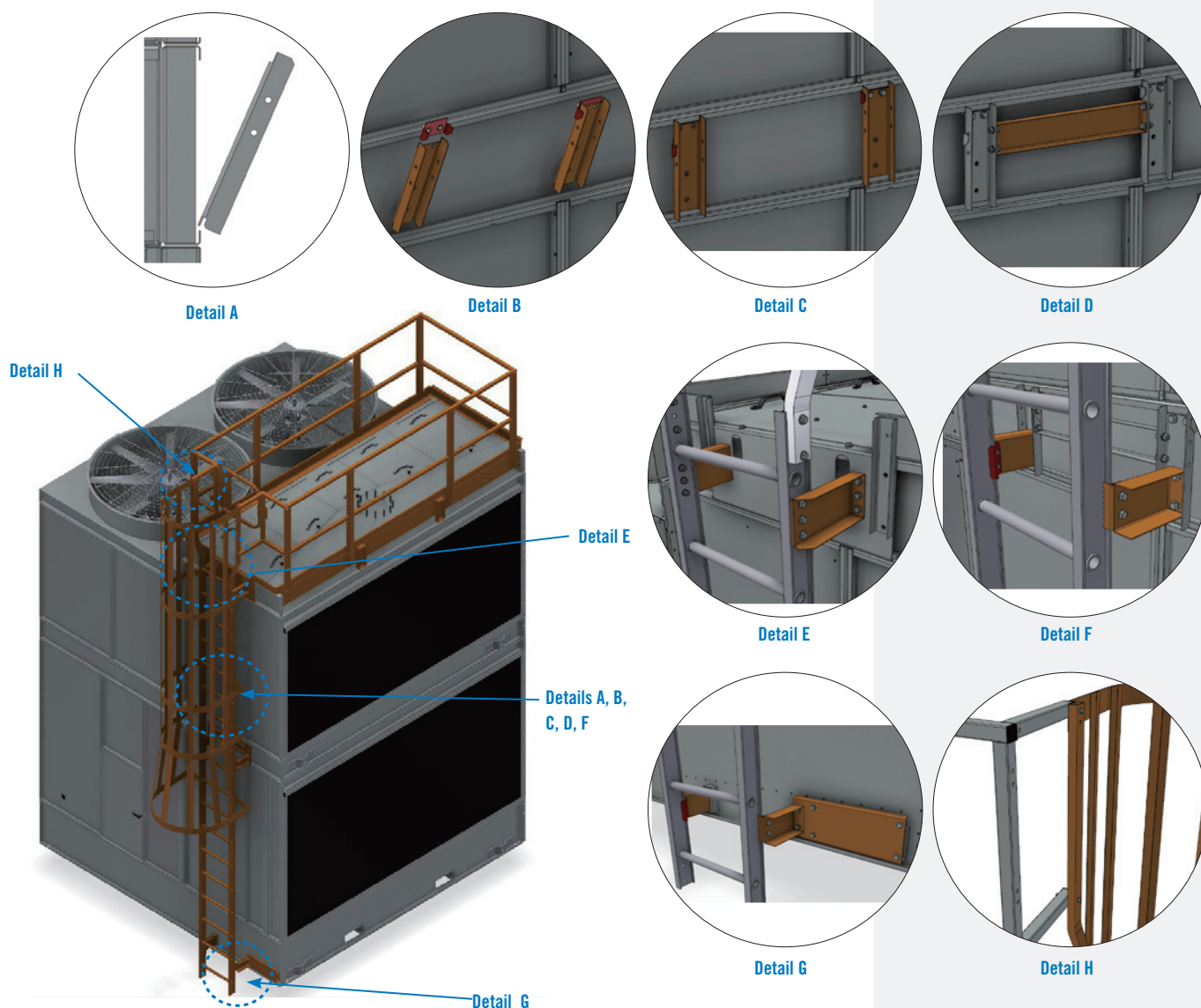


Figure 20. Hot Water Basin Handrail Ladder

Motor Removal System with Davit Arm (Optional)

1. If this option is ordered, two brackets are pre-installed in the factory at each motor location. See **Figure 21, Detail A**.
2. The davit socket is pre-assembled. A hook plate is supplied on the back of the davit socket. Place the hook over the bottom flange of the fan deck frame to hold the weight of the socket while it is being fastened to the unit. See **Detail B**.
3. For each motor location, attach a socket assembly to the two factory installed brackets using eight 3/8" (10mm) hardware supplied. See **Detail C**.
4. Place the davit arm into the davit socket. Use the viewing slots in the front of the socket to ensure the davit arm passes completely through the center plate and rests on the bottom support base. See **Detail D** (Independent Drive davit arm shown).

Operating Instructions

1. Loosen and remove the drive belt.
2. Swing out the motor base.
3. Adjust the motorbase and swing the davit arm so the motor is centered below the eyebolt.
4. Attach the lifting mechanism (supplied by others).

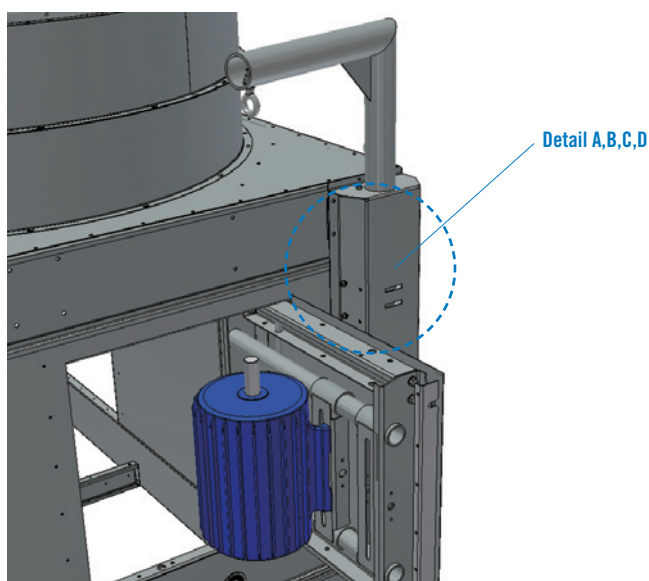
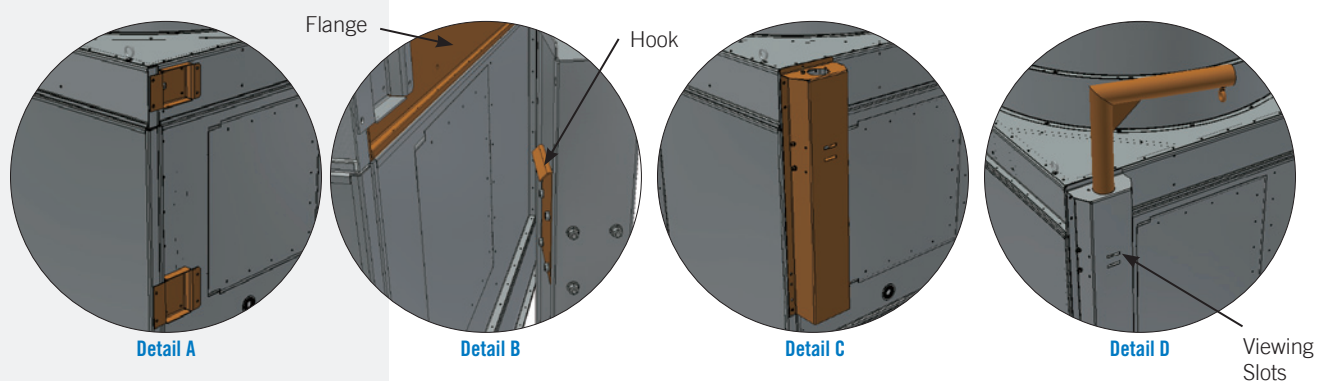


Figure 21. Motor Removal System with Davit Arm
Independent Drive

Bottom Water Outlet/Equalizer/Bypasses (Optional)

1. The bottom connection seal, **Figure 22**, is typical for all bottom outlets, equalizers, and bypasses. Flange mounting hardware and gasket to be supplied by others.
2. Bottom connection seal kit(s) ship in plastic tubs.

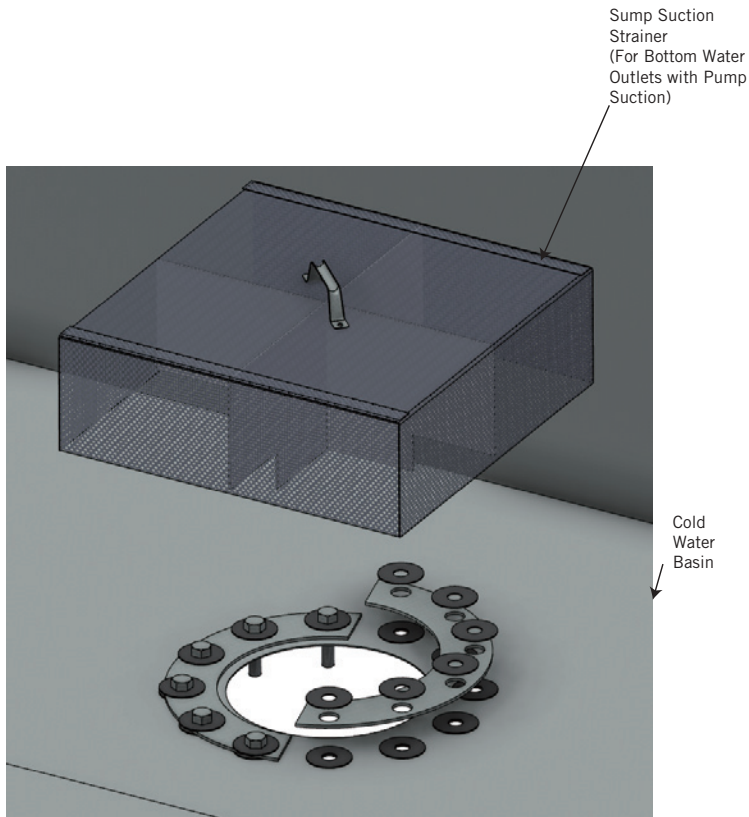


Figure 22. Bottom Water Outlet

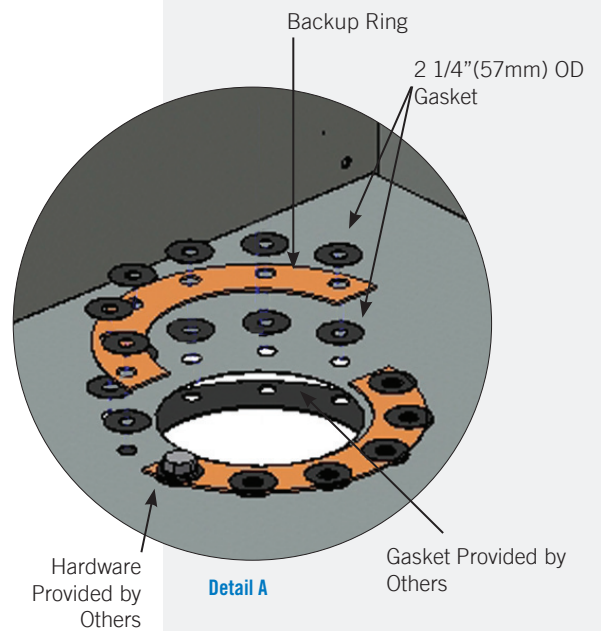


Optional Accessory Installation

Motor Removal System with Davit Arm (Optional)

Bottom Water Outlet/Equalizer/Bypasses (Optional)

Basin Accessories (Optional)



Basin Accessories (Optional)

Basin accessories are not factory installed and will be located in a box inside the unit or secured to the interior of the unit. Refer to the submittal drawings for basin accessory installation locations. Utilize an appropriate pipe thread sealant when installing accessories into basin fittings.

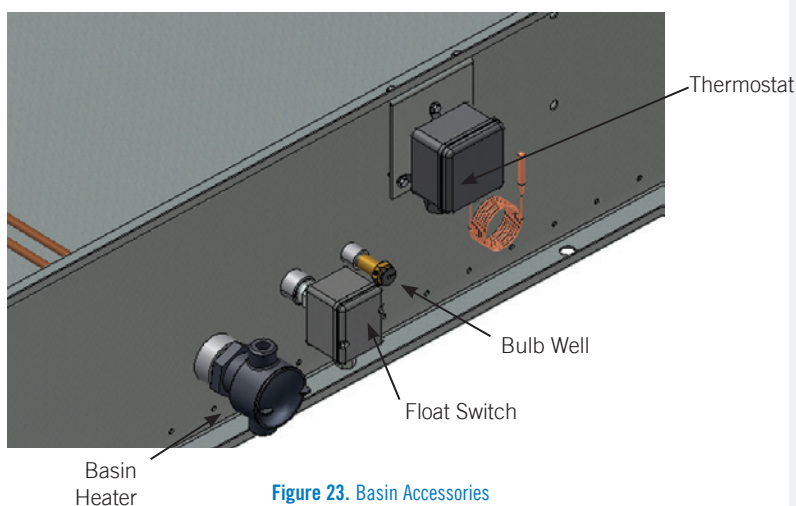


Figure 23. Basin Accessories

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