BALTIMORE AIRCOIL COMPANY

Nexus® Modular Hybrid Cooler

NEXUS®

MODULAR HYBRID COOLER

RIGGING & ASSEMBLY INSTRUCTIONS

The Nexus® Modular Hybrid Cooler is unlike any other evaporative cooling equipment on the market. There are many unique features and components that should be given special attention during rigging. Each unit can consist of one to six individual modules that are controlled by a shared control panel. Each module has its own spray pump, fan(s), heat transfer module, and associated wiring. Special care should be given to the factory installed wiring between the modules during installation.

The Nexus® Modular Hybrid Cooler 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 ensure that all necessary equipment will be available beforehand. If outstanding circumstances require a departure from the procedures outlined in this manual, contact your local BAC Representative for guidance before proceeding.

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

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RIGGING & ASSEMBLY INSTRUCTIONS »
NEXUS® MODULAR HYBRID COOLER

1 Introduction

WARNINGS:

1. Failure to use designated lifting points 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.
2. Improperly installed and grounded field wiring poses fire and electrocution hazards. Failure to follow code could result in death or serious injury. To avoid these hazards, you MUST follow requirements for field wiring installation and grounding as described in the NEC and your local/state/national electrical codes.

CAUTION: Only personnel qualified to do so should undertake operation, maintenance and repair of this equipment. Proper care, personal protective equipment, 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 listed in this manual must be thoroughly reviewed prior to rigging and assembly. Read all warnings, cautions, and notes detailed in the margins.**

Proper field wiring and grounding is required. All field wiring MUST be performed by qualified personnel. Failure to follow code could result in death or serious injury. Improperly installed and grounded field wiring poses fire and electrocution hazards. To avoid these hazards, you MUST follow requirements for field wiring installation and grounding as described in the NEC and your local/state/national electrical codes.

Shipping

Nexus® Modular Hybrid Coolers are factory-assembled to ensure uniform quality with minimum field assembly ready for field piping and wiring. Additional shipping options are available to aid in unique on-site rigging situations. Refer to your submittal package for the shipping option ordered when purchased. Contact your local BAC Representative for more information. For the dimensions and weights of a specific unit or section, refer to the certified drawings.

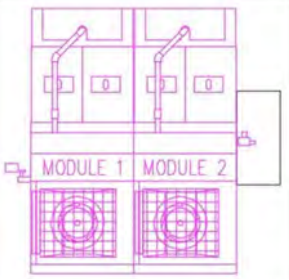

Figure 1a. Standard Shipment: Fully Assembled, Multi-Modules Shipped Connected

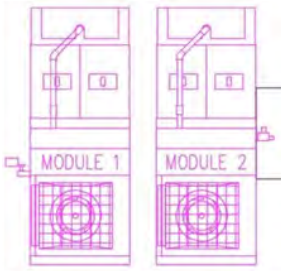

Figure 1b. Modular Shipment: Individual Modules are Shipped and are Connected, Assembled, and Wired On-Site

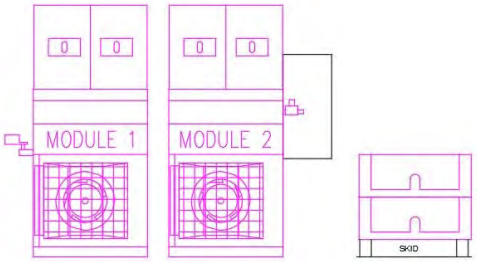

Figure 1c. Modular Shipment: Individual Modules are Shipped with the Spray Section Removed and are Connected, Assembled, and Wired On-Site

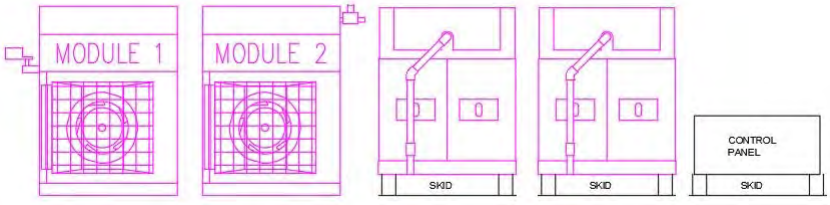

Figure 1d. Modular Shipment: Individual Modules are Shipped with the Spray Section/Heat Transfer Section Removed and the Control Panel Removed, and are Connected, Assembled, and Wired On-Site

Rigging and assembly of the Nexus® Modular Hybrid Cooler depends on the way it was ordered to be shipped. Follow the order below for your shipment.

Figure 1a. Standard Shipment: Fully Assembled, Multi-Modules Shipped Connected		Figure 1b. Modular Shipment: Individual Modules are Shipped and are Connected, Assembled, and Wired On-Site	
Order	**Page #**	**Order**	**Page #**
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Figure 1c. Modular Shipment: Individual Modules are Shipped with the Spray Section Removed and are Connected, Assembled, and Wired On-Site		**Figure 1d. Modular Shipment: Individual Modules are Shipped with the Spray Section/Heat Transfer Section Removed and the Control Panel Removed, and are Connected, Assembled, and Wired On-Site**	
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Table 1. Order of Instructions Based on the Shipping Method

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:

- ❑ hCore® Heat Transfer Technology Surface
- ❑ EC Fan System (Fan(s) and Motors(s))
- ❑ Fan Guard(s)
- ❑ Spray Water Basin
- ❑ Spray Water Basin Accessories (Mechanical Makeup Valve, Recirculating Water Pump, Water Diverter, High and Low Level Switches, etc.)
- ❑ Fluid Connections
- ❑ Piping Manifold and Couplings
- ❑ Component Wiring
- ❑ Spray Distribution System
- ❑ Solenoid Makeup Valve
- ❑ Conductivity-controlled Motorized Drain Valve and Conductivity Meter
- ❑ High Efficiency Drift Eliminators
- ❑ Outside Air Temperature Sensor
- ❑ Interior Surfaces
- ❑ Exterior Surfaces
- ❑ Mating Surfaces Between Sections/ Modules (depending on shipping configuration)
- ❑ Optional Accessories: Basin Heater(s), Positive Closure Dampers, etc.
- ❑ 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.

Unit Weights

Before rigging any unit, the weight of each section should be verified from the unit certified drawing. Unit print weights include the final assembled unit with all accessories.

Anchoring

Seven-eighths inch (7/8") diameter holes are provided in the bottom flange of the lower section for bolting the unit to the support beams. Refer to the suggested support drawing included in the submittal for location and quantity of the mounting holes. **The unit must be level for proper operation** (1/4" over length of unit). Support beams must also be level as shims should not be used between the unit base and the support beams to level the units. Anchor bolts must be minimum SAE J429 Grade 5 or ASTM A325, provided by others. The IBC rating is only certified with standard anchorage locations. Using alternate anchorage locations or alternate steel supports will void any IBC wind or seismic ratings. Contact your local BAC Representative for details.

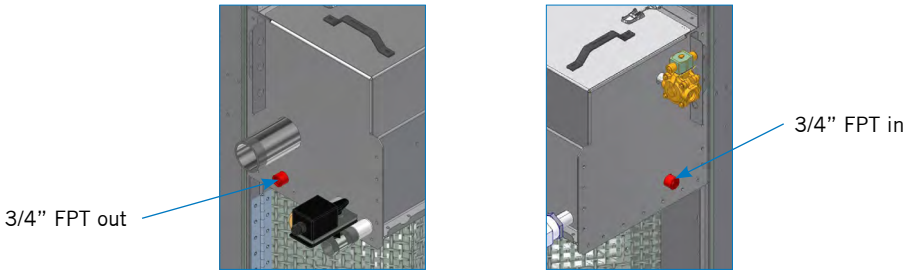
ATTENTION: Before an actual lift is undertaken, ensure no water, snow, ice, or debris has collected in the basin or elsewhere in the unit. Such accumulations will add substantially to the equipment's lifting weight.

Freeze Protection

These products must be protected by mechanical and operational methods against damage and/or reduced effectiveness whenever a unit is stored or idle in freezing ambient conditions. Please refer to the Nexus® Modular Hybrid Cooler Operation and Maintenance Manual, or contact your local BAC Representative for recommended cold weather operation and storage recommendations.

Water Treatment

Units include (2) 3/4" FPT connections on either side of the cold water basin for water treatment, provided by others. Connections have removeable plugs and pipe thread sealant for leak-free operation. Please contact your local water management specialist for more information about a proper water treatment program.



NOTES:

1. Avoid installing the units near warm air discharge sources such as steam vents or boiler stacks from the building. This warm air can be pulled into the unit and affect performance and possible lead to corrosion.
2. 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.

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.

Adequate space for maintenance and inspection surrounding the unit should follow the layout guidelines located on www.BaltimoreAircoil.com. Allow adequate space for access to the Hinged EC Fan System Access Panel, spray distribution system, and the iPilot® Control System.

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.

Unit Operation

Prior to start-up and unit operation, refer to the *Nexus® Modular Hybrid Cooler Operation & Maintenance Manual* shipped with the unit and also available through your local BAC Representative.

Unit Rigging & Assembly

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Refer to **Table 2** and **Figure 2** (on p**age 6**) for the required minimum spreader bar length W1 and W2 and the recommended vertical dimension "H".

Model Number	Number of Modules	H	W1	W2
Installation of a Factory-Assembled Multi-Module Unit (See Figure 1a, page 2)				
NXF-0403-x-x2	2	4'-0"	4'-2"	2'-1"
NXF-0403-x-x3	3	10'-0"	4'-2"	2'-1"
NXF-0403-x-x4	4	10'-0"	4'-2"	2'-1"
NXF-0403-x-x5	5	16'-0"	4'-2"	2'-1"
NXF-0403-x-x6	6	16'-0"	4'-2"	2'-1"
NXF-0603-x-x2	2	4'-0"	6'-2"	3'-1"
NXF-0603-x-x3	3	10'-0"	6'-2"	3'-1"
NXF-0603-x-x4	4	10'-0"	6'-2"	3'-1"
NXF-0603-x-x5	5	16'-0"	6'-2"	3'-1"
NXF-0603-x-x6	6	16'-0"	6'-2"	3'-1"
Installation of a Single Module or a Modular Shipment (See Figures 1b, 1c, and 1d on page 2)				
NXF-0403-x	1-6	4'-0"	4'-2"	2'-1"
NXF-0603-x	1-6	4'-0"	6'-2"	3'-1"

Table 2. Minimum Vertical Dimension and Spreader Bar Length

WARNING: Failure to use designated lifting points 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 and piping connections, refer to the submittal drawing package.

Lifting of a Factory-Assembled Multi-Module Unit

The instructions below are applicable for configurations ordered as shown in Figure 1a on page 2. Refer to the Shipping section on page 2 for the order of rigging and assembly based on the shipping method ordered. Refer to your submittal for details.

Products that are shipped fully-assembled as one unit will be provided with a shared lifting bar that spans the length of the unit. The number of mounting points will be determined by the number of modules (see **Figure 2)**. All wiring between modules is completed at the factory. Care should be taken to avoid damaging protruding components such as valves, piping connections, and wiring conduit.

Prior to lifting, ensure all lifting lines are clear of obstructions to avoid damage to external piping, headers, or connections.

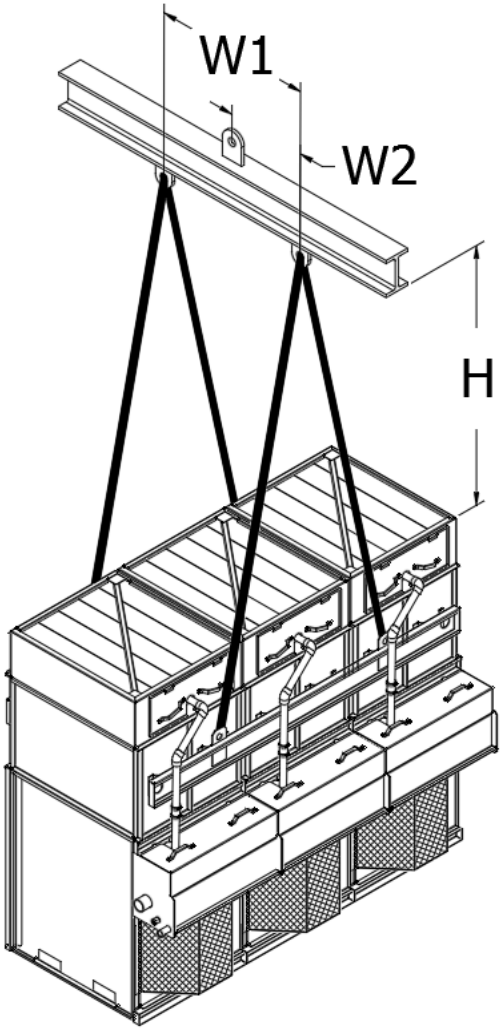

Figure 2. Lifting of Factory-Assembled Multi-Module Unit (Three Module Unit Shown)

WARNING: Failure to use designated lifting points 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, personal protective equipment, procedures and tools must be used in handling, lifting, installing, operating, maintaining, and repairing this equipment to prevent personal injury and/or property damage.

NOTICE: The forklift pockets are only to be used to lift single modules with a forklift or pallet jack. Assembled multi-module units are NOT to be lifted with a forklift or pallet jack.

Lifting of an Assembled Module

The instructions below are applicable for configurations ordered as shown in Figures 1b, 1c, and 1d on page 2. Refer to the Shipping section on page 2 for the order of rigging and assembly based on the shipping method ordered. Refer to your submittal for details.

Refer to **Table 2** on **page 5** and **Figures 2a** and **2b** for each section's required minimum spreader bar length W1 and W2 (if applicable) and the recommended vertical dimension "H".

Prior to lifting, ensure all lifting lines are clear of obstructions to avoid damage to external piping, headers, or connections.

Forklift or pallet jack movement is acceptable for single modules. **Do not lift site assembled multi-module units as one piece using forks.**

Refer to "assembly of Multi-Module units

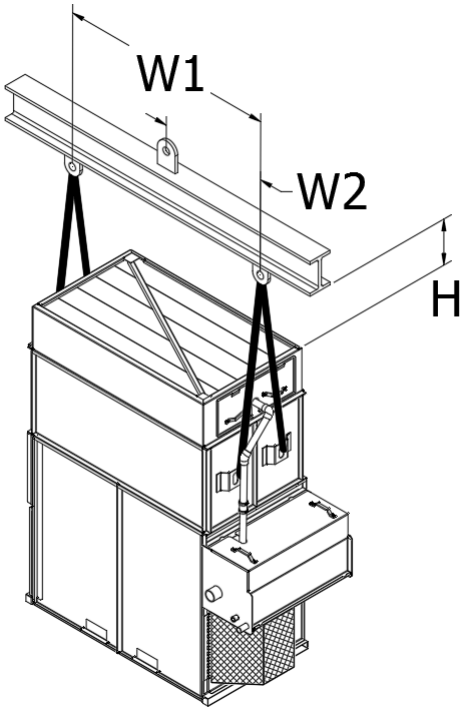

Figure 2a. Lifting of Assembled Single-Module Unit

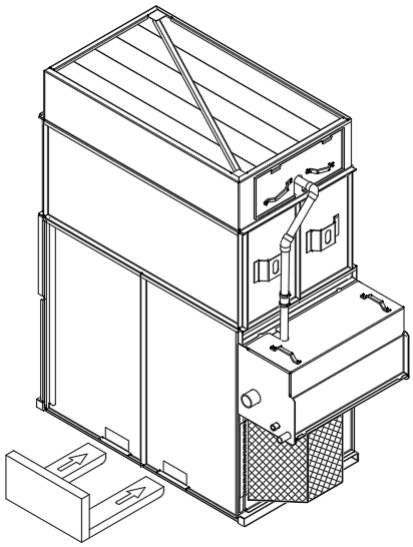

Figure 2b. Moving of Assembled Single-Module Unit

WARNING: Failure to use designated lifting points 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, personal protective equipment, procedures and tools must be used in handling, lifting, installing, operating, maintaining, and repairing this equipment to prevent personal injury and/or property damage.

Lifting and Assembly of the hCore® Heat Transfer Technology Section

The instructions below are applicable for configurations ordered as shown in Figure 1d on page 2. Refer to the Shipping section on page 2 for the order of rigging and assembly based on the shipping method ordered. Refer to your submittal for details.

WARNING: Failure to use designated lifting points 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.

1. Apply sealer tape around the perimeter of the lower fan section as shown on **Figure 3a**. Be sure to overlap sealer tape anywhere two ends meet by 1 inch, including in the corners.
2. Lift the hCore Heat Transfer Technology Section onto the lower fan section using the specified lifting locations in **Figure 3b**.
3. Align sections using drift pins and secure the two sections together using the factory-supplied fasteners. Note the fastener type varies on the location and the unit's material of construction. See **Figure 7** and **Table 3** on **page 10** for more details. Repeat as necessary for all modules of the unit.

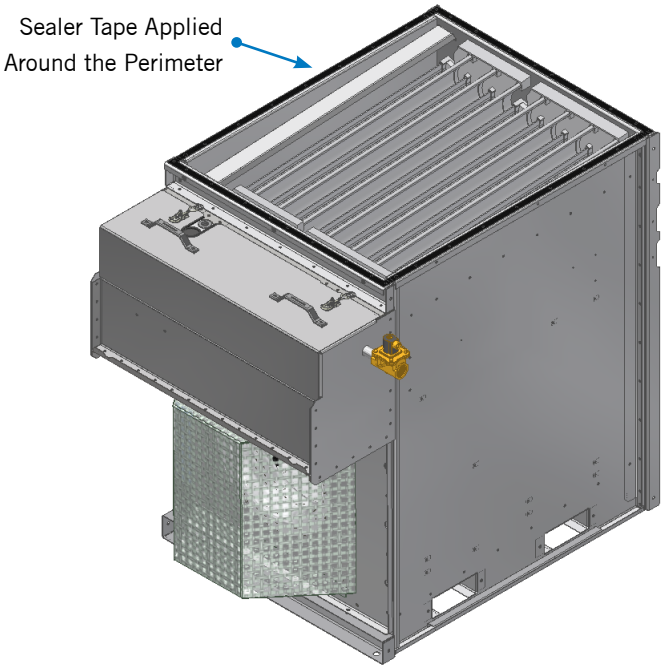

Figure 3a. Applying Sealer Tape to the Lower Fan Section

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

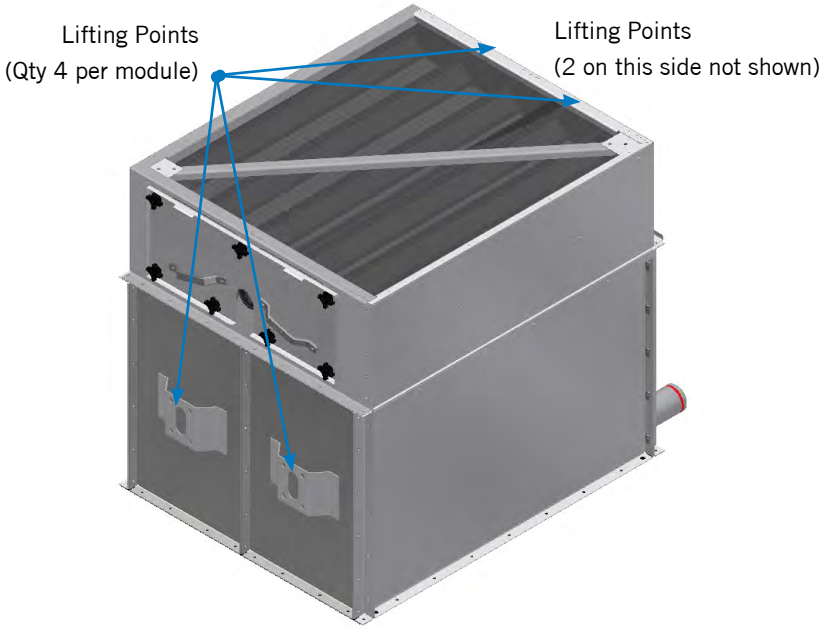

Figure 3b. hCore® Heat Transfer Technology Section Lifting

Lifting and Assembly of the Spray Section

The instructions below are applicable for configurations ordered as shown in Figures 1c and 1d on page 2. Refer to the Shipping section on page 2 for the order of rigging and assembly based on the shipping method ordered. Refer to your submittal for details.

1. **For Figure 1c Only:** Remove the access panel from the spray section, saving the hardware. Then carefully remove the eliminators through the opening. Note each eliminator's orientation and location. The eliminators will be replaced after installing the spray piping. See **Figures 4** and **7** on **page 10.**

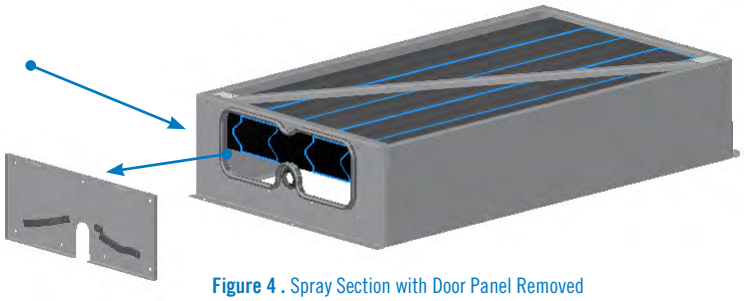

Figure 4 . Spray Section with Door Panel Removed

2. **For Figure 1c Only**: Apply sealer tape to top of the hCore Heat Transfer Technology section per **Figure 5**. Overlap the sealer tape 1 inch in the corners. The spray section can then be lifted and attached on all four sides to the lower section using factory-supplied fasteners. Note the fastener type varies on location and unit material of construction. See **Figure 6** and **Table 3**.

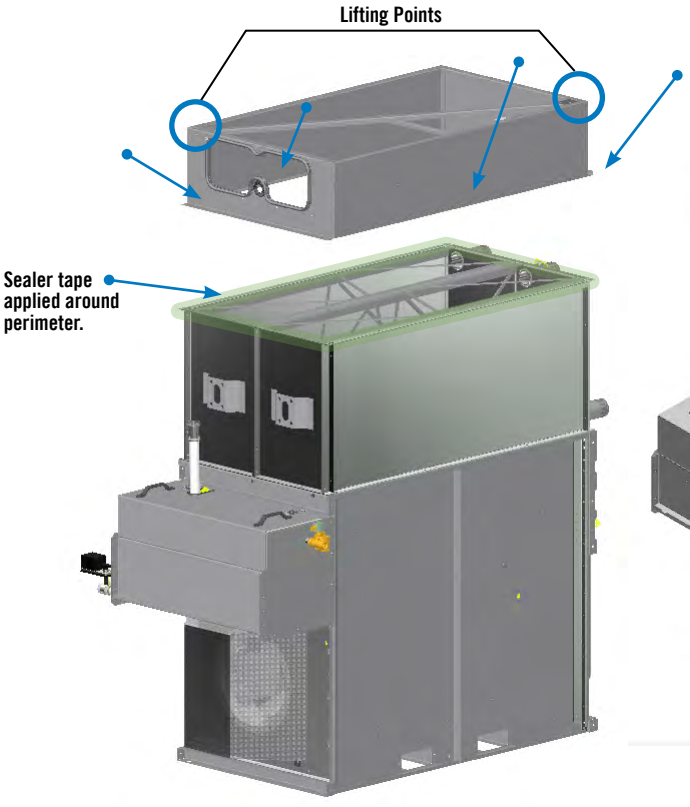

Figure 5. Attaching the Spray Section to the Module

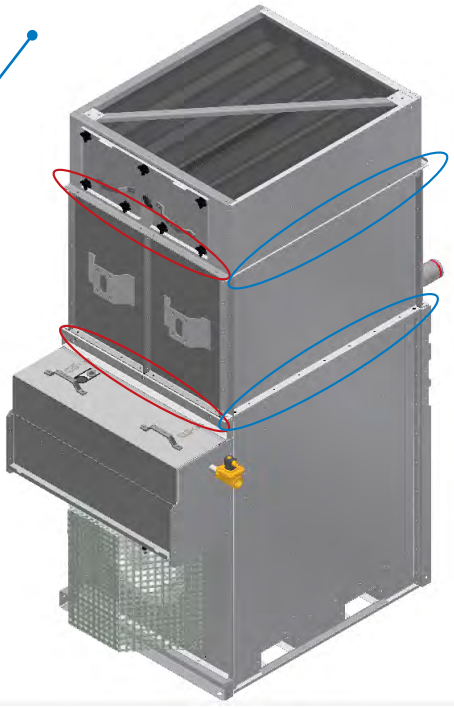

Figure 6. Fastener Type for the Spray Section Assembly

Unit Material of Construction	End Fastener Type (Red Circled Area)	Side Fastener Type (Blue Circled Area)
Thermosetting Hybrid Polymer	5/16" Stainless Steel Nuts and Bolts	5/16" Tappers
Stainless Steel	5/16" Stainless Steel Nuts and Bolts	5/16" Stainless Steel Bolts

Table 3. Fastener Type Depending on Material of Construction

WARNING: Failure to use designated lifting points 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.

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3. **For Figures 1c and 1d:** If it is still in place, remove the access panel from the spray section, saving the hardware. Install the water distribution system pipe between the two rubber couplings (see **Figure 7**). Slide the pipe into the bracket and ensure the nozzles are pointing downward. Place and install two rubber couplings at the top and bottom of the spray pipe. If they were removed, replace the eliminators into the spray section, noting the original location and orientation. Replace the access panel (see **Figure 4**). Repeat as necessary for all modules of the unit.

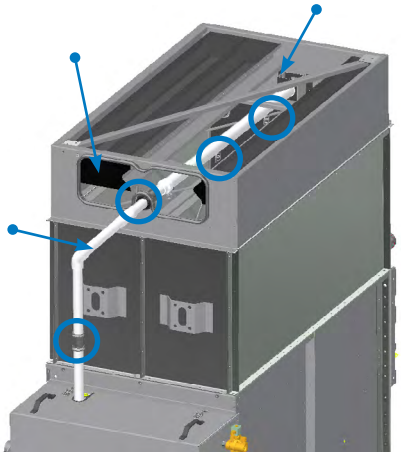

Figure 7. Spray Pipe Install, Upper Pipe and Eliminator Install

Assembly of the iPilot® Control System Panel

The instructions below are applicable for configurations ordered as shown in Figure 1d on page 2. Refer to the Shipping section on page 2 for the order of rigging and assembly based on the shipping method ordered. Refer to your submittal for details.

1. After the module is fully assembled, attach the bracket and mounting channel for the control panel. Measure the control panel width before installing the mount channel to match the mounting location. Also check the control panel location on Face A or B. Refer to your submittal drawing (**see Figures 8, 9a, and 9b**).
2. Attach the control panel using the mounting holes at each corner. Ensure the dimension from the bottom of control panel to the bottom of unit is correct following the **Table 4** "H" dimension (see **Figure 9c**).

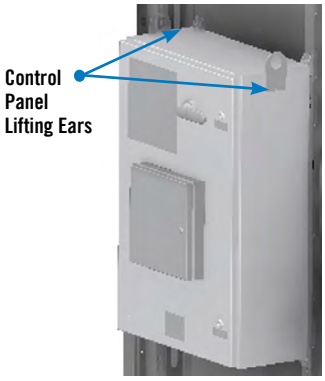

Figure 8. iPilot® Control System Panel

iPilot® Control System Panel size (H x W)	Distance Between the Control Panel Bottom to the Bottom of the Unit (h)
35-1/2" x 23-5/8"	35"
47-1/4" x 35-1/2"	32"

Table 4. iPilot® Control System Panel Size and Distance to the Bottom of the Unit

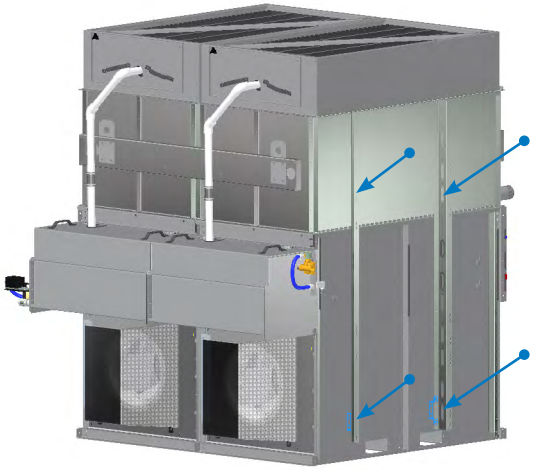

Figure 9a. Installation of the Control Panel on the Mount Channels

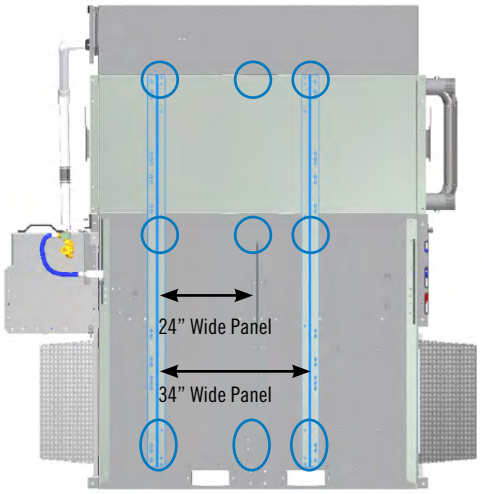

Figure 9b. Control Panel Mount Channel Spacing

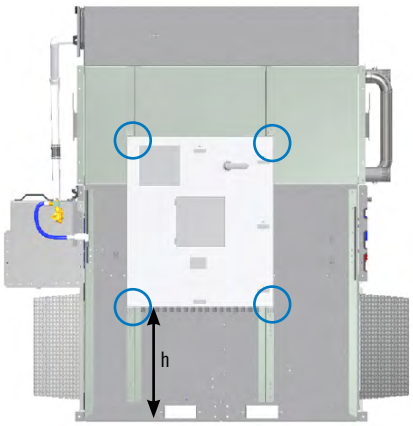

Figure 9c. Control Panel Mounting Height

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2. Improperly installed and grounded field wiring poses fire and electrocution hazards. Failure to follow code could result in death or serious injury. To avoid these hazards, you MUST follow requirements for field wiring installation and grounding as described in NEC and your local/state/national electrical codes.

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Assembly of Multi-Module Units

The instructions below are applicable for configurations ordered as shown in Figures 1b, 1c, and 1d on page 2. Refer to the Shipping section on page 2 for the order of rigging and assembly based on the shipping method ordered. Refer to your submittal for details.

Lift the first module into the final installation location. Refer to **page 2** for lifting of a single module.

1. Prepare the second module's spray water basin by applying sealer tape (BAC part #554009). Where the sealer tape meets in the corners, be sure to overlap one inch. See **Figure 10b**.
2. Maneuver the second module and slide it towards the receiving module. See **Figure 10a**.
3. Bolt the modules together at the locations shown in **Figure 10c**. Use 3/8" bolts at the circled locations and 5/16" bolts in the sump area.
4. Repeat steps 2 through 4 for the remaining modules.
5. Test the spray water basin for leaks by plugging drain, filling basin, and observing the unit for leaks, especially at seams.

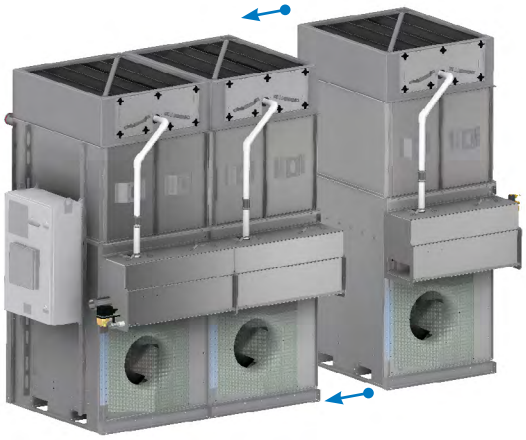


Figure 10a. Module to Module Assembly

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

Figure 10b. Sealer Tape Locations

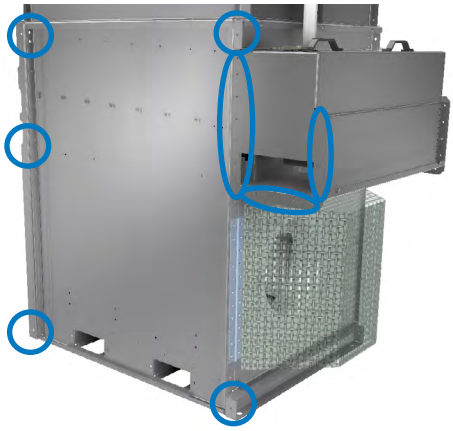
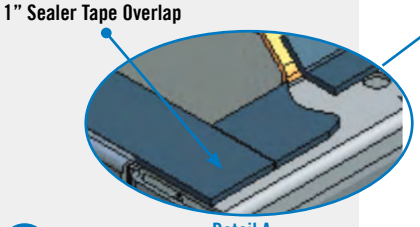


Figure 10c. Location of Bolts Required to Join Modules



Wiring Individual Modules after Assembly

The instructions below are applicable for configurations ordered as shown in Figures 1b, 1c, and 1d on page 2. Refer to the Shipping section on page 2 for the order of rigging and assembly based on the shipping method ordered. Refer to your submittal for details.

The wires will be labeled and identified as follows:

1. **Fan power (Large 4 Wire Cable):** Fan 1-1, Fan 2-1, Fan 3-1, etc.
2. **Fan Communications:** Fan 1-1, Fan 2-1, Fan 3-1, etc.
3. Pumps: Pump 1, Pump 2, etc.
4. **Components:**
   - Conductivity Sensor: Conduct Sensor
   - Drain Valve
   - Make-up Solenoid: Makeup Valve
   - Positive Closure Damper: PCD
   - Leaving Process Fluid Temperature Sensor
   - Basin Heater
   - High Water Level Sensor: High Sensor
   - Low Water Level Sensor: Low Sensor

NOTE: Refer to the wiring diagram provided in the submittal package and inside the control panel for all wiring details.

WARNING: Improperly installed and grounded field wiring poses fire and electrocution hazards. Failure to follow code could result in death or serious injury. To avoid these hazards, you MUST follow requirements for field wiring installation and grounding as described in NEC and your local/state/national electrical codes.

Locating Bundled Wires after Shipping

1. Remove the back cover panel located on the opposite side of water basin (Face D). Find the fan wire stored under cover panel for each module. See **Figure 11**.
2. Remove the side cover panel located on the opposite side of control panel. Find the component wire (drain valve, conductivity sensor or make-up valve) stored under cover panel. See **Figure 12** on **page 14**.
3. Remove the basin cover, then find pump wire stored within the basin. See **Figure 13** on **page 14**.

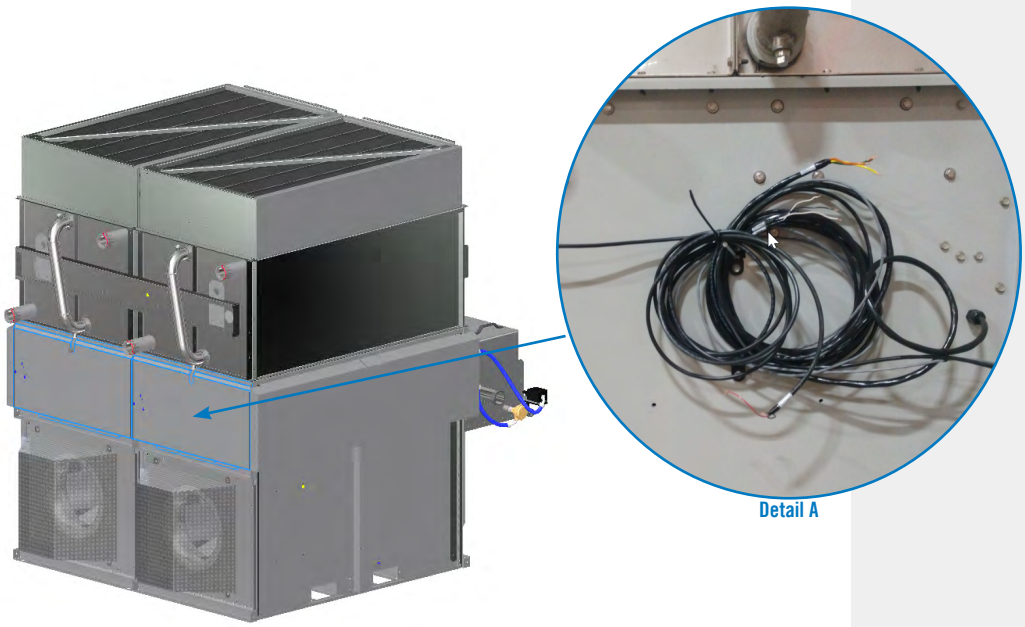


Figure 11. Location of Fan Wiring

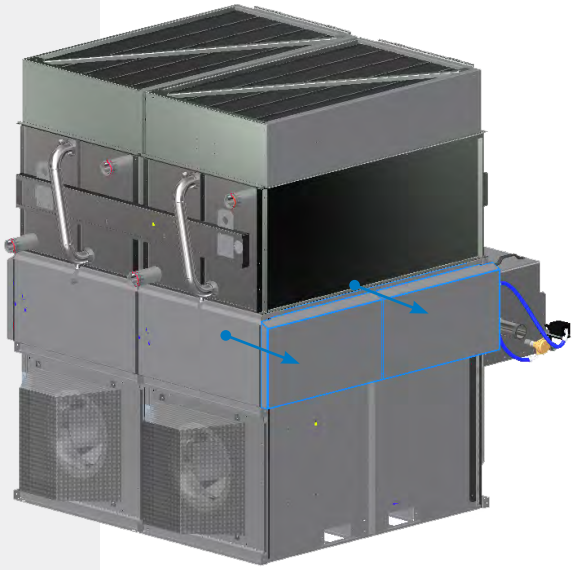


Figure 12. Location of Component Wiring

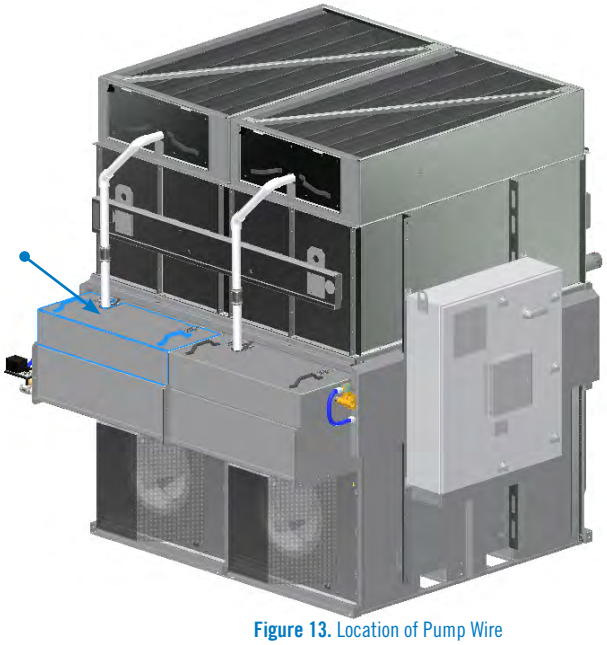


Figure 13. Location of Pump Wire

WARNING: Improperly installed and grounded field wiring poses fire and electrocution hazards. Failure to follow code could result in death or serious injury. To avoid these hazards, you MUST follow requirements for field wiring installation and grounding as described in NEC and your local/ state/national electrical codes.

Routing Wires to the iPilot® Control System Panel

1. Remove the rest of cover panels around control panel and above spray water basin. Keep the hardware for reinstallation of panels. See **Figure 14**.
2. Find the conductivity sensor and the drain valve component wires on the side of unit opposite from the control panel. Pull the wire around the corner to back (opposite the basin side) and secure to the mounts with zip ties (provided by BAC). Pull the wire through the first notch from top and secure the wire to the hole with zip ties. See **Figure 12** and **15**.

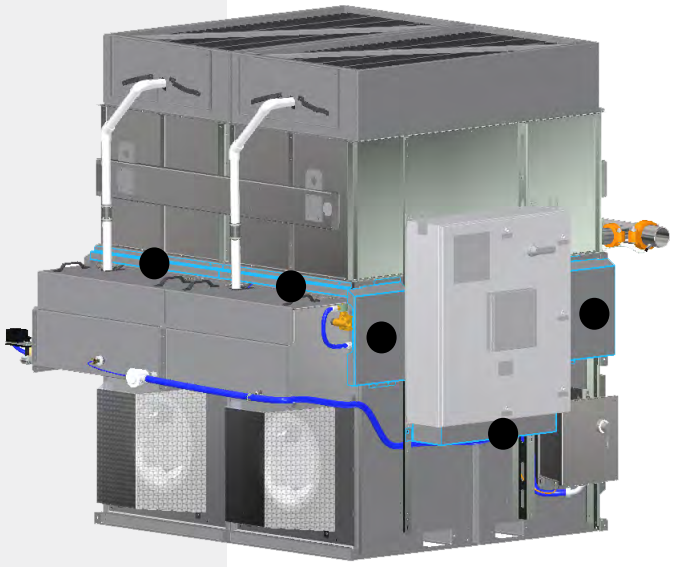


Figure 14. Location of Cover Panels Around the iPilot® Control System Panel (Optional Basin Heater Shown)

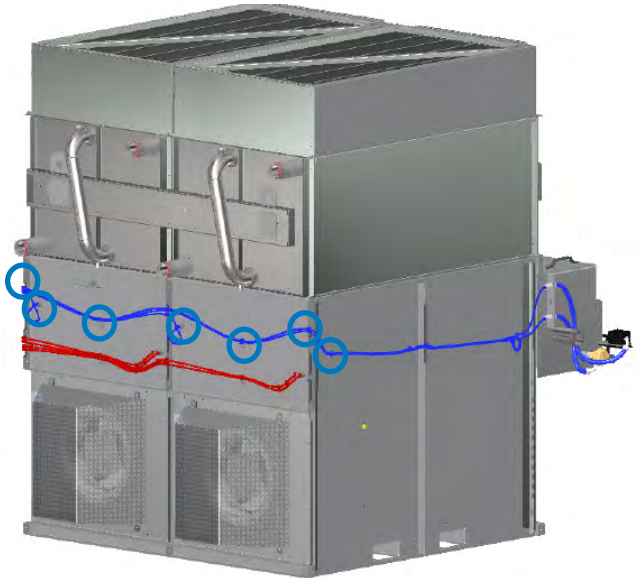


Figure 15. Fan Communication Wire and Component Wire Routing

3. Pull the fan communication wire through the first notch and the wire mount alongside with the component wire. Secure the wire with zip ties. The conductivity sensor, drain valve, and fan communication wire run together to the control panel. See **Figure 15 on page 14.**
4. Route the fan power wire through the third notch from the top and wire mount, then secure the wire with zip ties to the unit. The fan power wire may use the second (middle) notch on NXF-0603 units when need. See **Figure 16**.

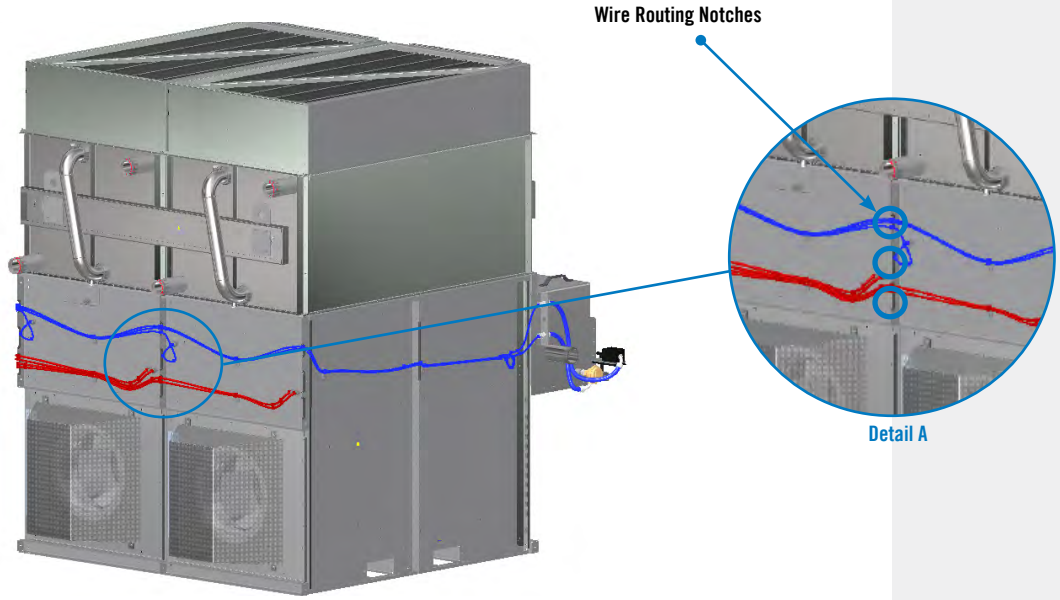


Figure 16. Fan Power Wire (Red Wire)

5. **Read all wire labels and refer to the wiring diagram found inside the iPilot® Control panel before proceeding to the next step.**
6. Route the fan power wire through the bottom oblong hole with the edge trim on the control panel mounting channel. Pull each wire through each cord grip at the bottom of the control panel, then connect each connector of wire to the correct terminal block position. See **Figure 17.**
7. Route the fan communication and component wires through the oblong hole with edge trim on the control panel mount channel. Pull each wire through each cord grip at the bottom of control panel, then connect each connector of wire to the correct terminal blocks position. See **Figure 17**.

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

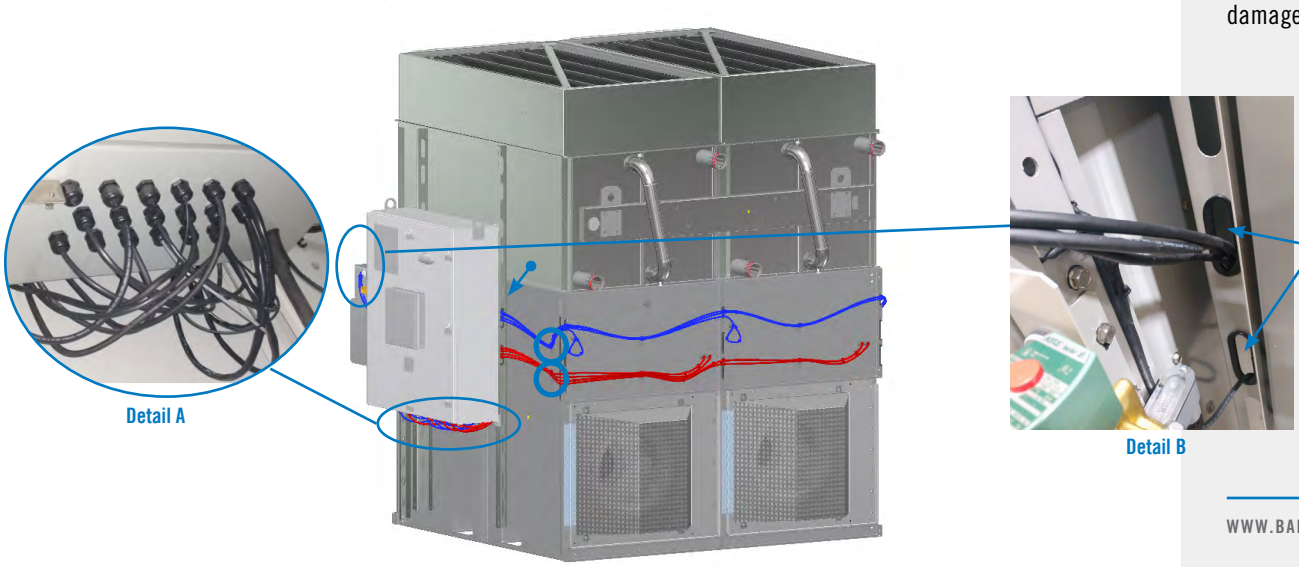


Figure 17. Wire to the iPilot® Control System Panel

WARNING: Improperly installed and grounded field wiring poses fire and electrocution hazards. Failure to follow code could result in death or serious injury. To avoid these hazards, you MUST follow requirements for field wiring installation and grounding as described in NEC and your local/ state/national electrical codes.

8. Route pump wire through grommet at top of spray water basin. Follow wire path toward the control panel end. Pull pump wire through top oblong hole with edge trim on control panel mount channel. Pull each wire through individual cord grips at the bottom of control panel, then connect each wire to the correct terminal block. Please follow wire diagram located within control panel. See **Figure 18**.

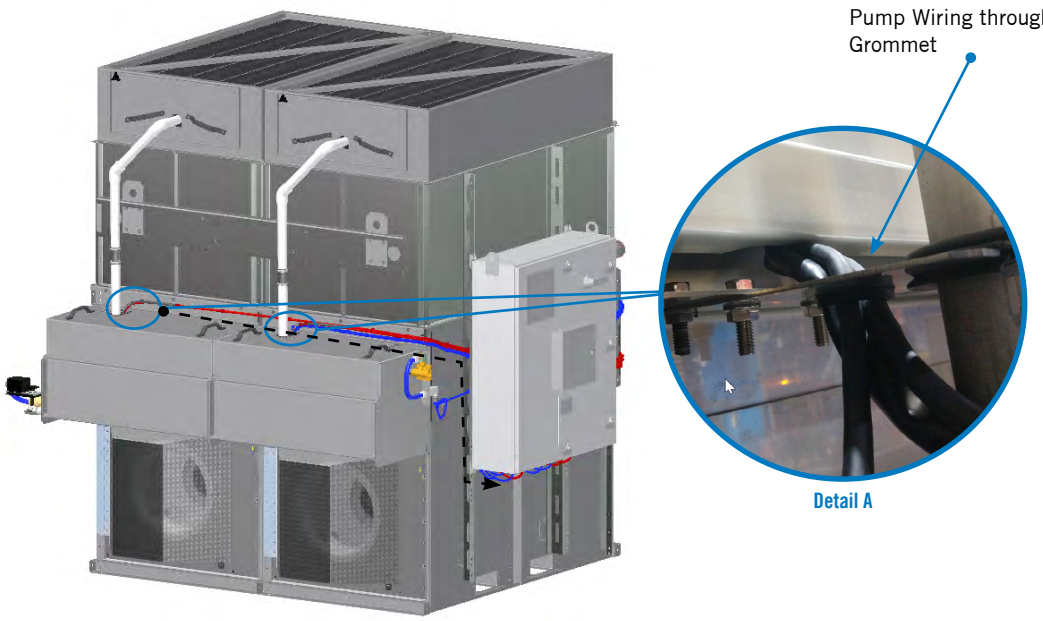


Figure 18. Pump Wire to the iPilot® Control System Panel

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

9. Use a torque wrench on all cord grips and torque down to 50 in-lbs.
10. Install the wire cover panel at the top of the spray water basin. See **Figure 19**. Install the cover panel at the back and side. See **Figure 11** and **12** on **pages 13** and **14**. Finally, install the cover panels around iPilot® Control System panel, see **Figure 14** on **page 14**.

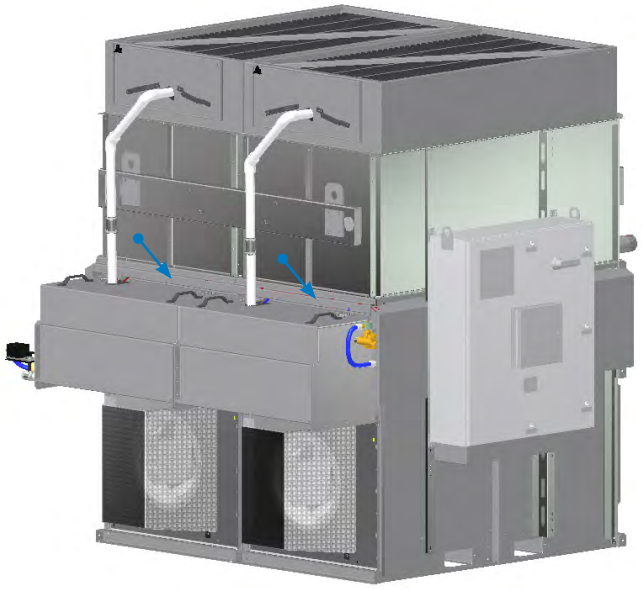


Figure 19. Install Wire Cover

Manifold and Leaving Process Fluid Temperature Sensor Installation

The instructions below are applicable for configurations ordered as shown in Figures 1a, 1b, 1c, and 1d on page 2. 1a accessories may be factory installed. Refer to the Shipping section on page 2 for the order of rigging and assembly based on the shipping method ordered. Refer to your submittal for details.

1. Refer to the *Style 177 Victaulic Installation Manual* for instructions on how to install the manifold. See your customer information packet or visit www.victaulic.com.
2. Place the 3" flexible coupling (Victaulic, BAC #202174M6) onto the hCore® Heat Transfer System. See **Figure 20**.

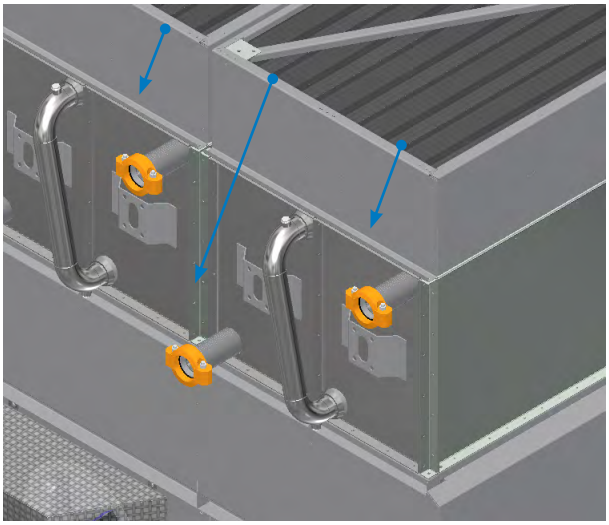


Figure 20. Place Flexible Coupling (Series Flow Shown)

3. Check the drawing in your submittal package for the quantity and the size of the pipe and location. Always start installing pipes from the side furthest from the intended system connection. The connection could be on face A or B. The manifold could also install on face C or D, see **Figure 21**. Refer to your submittal for details.

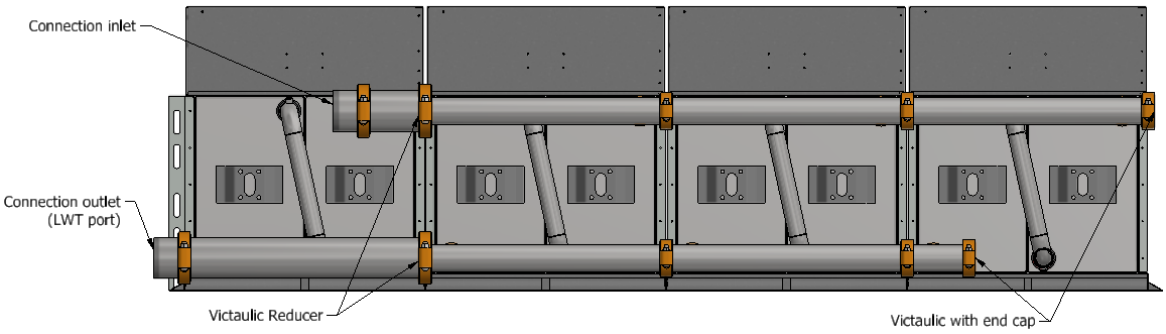


Figure 21. Manifold Layout

4. Always start with the smallest diameter pipe on the engineering drawing with 4" being the smallest possible size. Work toward the intended system connections, attaching the Victaulic unions as needed.

NOTE: Series flow has two flexible couplings (Victaulic) per module, parallel flow has four per module. Refer to your submittal for the flow type.

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

NOTE: Begin the manifold installation from the opposite end of the connection inlet/outlet.

NOTE: Some jobs will require Victaulic reducers to change diameters, see **Figure 21**.

WARNING: Improperly installed and grounded field wiring poses fire and electrocution hazards. Failure to follow code could result in death or serious injury. To avoid these hazards, you MUST follow requirements for field wiring installation and grounding as described in NEC and your local/ state/national electrical codes.

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

5. Install the connection outlet with the leaving process fluid temperature sensor port pointing at 45° toward unit. Run the wire through the cord grip and brackets. Install the bracket as need. This wire will be routed through the same path as the fan communication wire and back to the iPilot® Control System panel. See **Figures 22** and **23**.
6. Connect each connector of wire to the correct terminal block position. Please use the torque wrench on all cord grips and torque down to 50 in-lbs.

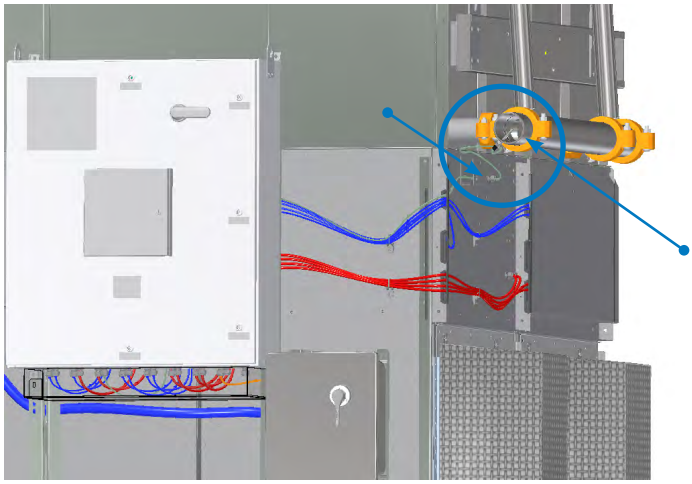


Figure 22. Manifold Connection Outlet and Leaving Process Fluid Temperature Sensor

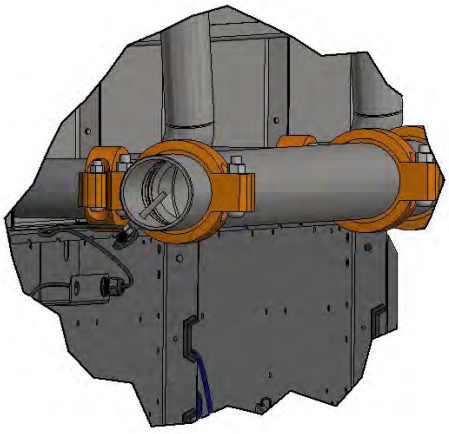


Figure 23. Outlet and Leaving Process Fluid Temperature Sensor

Fan Guard Installation

1. Remove the fastener from the EC Fan System panel. The fastener will be reused in step 2. See **Figure 24a**.
2. Place and align the fan guard mounting hole with the fan panel holes. Secure the fan guard with fasteners from step 1. See **Figure 24b**.

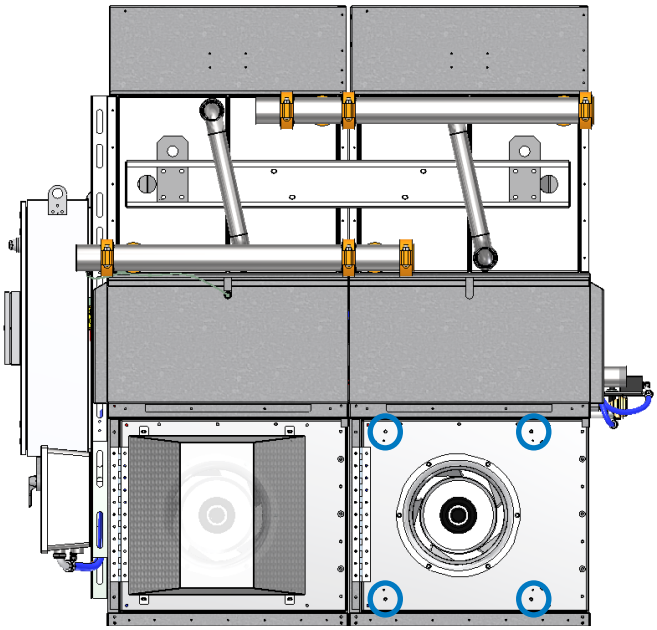


Figure 24a. Fan Guard Installation Step 1

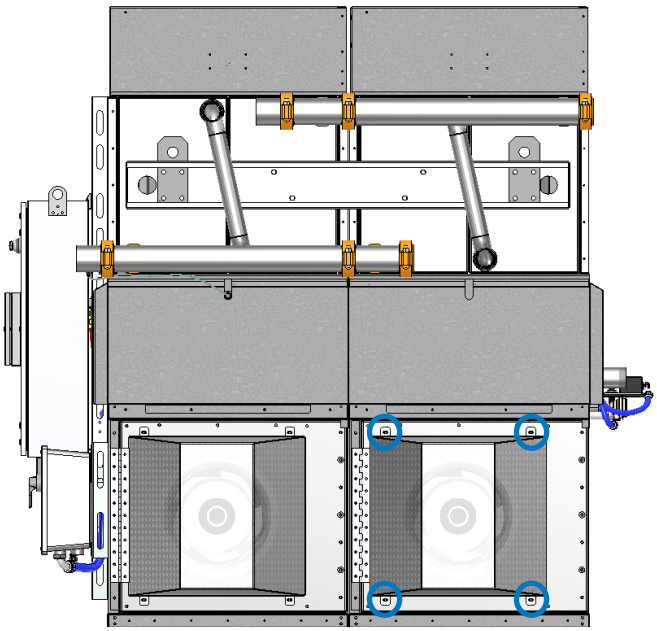


Figure 24b. Fan Guard Installation Step 2

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

WARNING: Improperly installed and grounded field wiring poses fire and electrocution hazards. Failure to follow code could result in death or serious injury. To avoid these hazards, you MUST follow requirements for field wiring installation and grounding as described in NEC and your local/ state/national electrical codes.

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

Optional Sound Attenuation

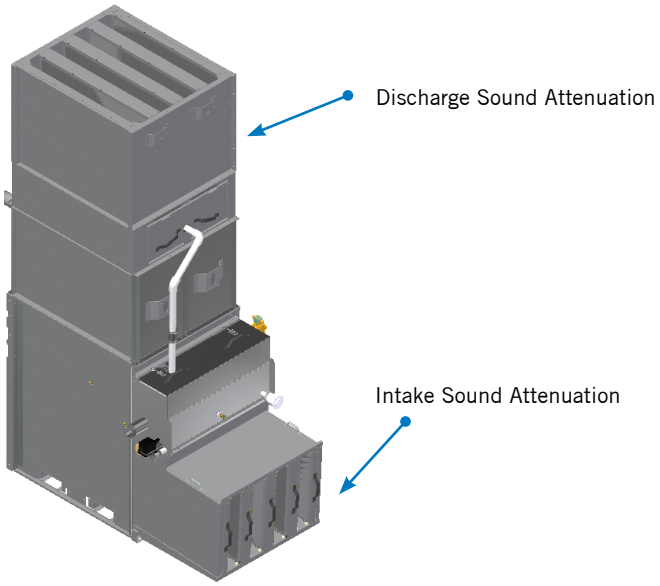


Figure 25. Intake and Discharge Sound Attenuation

Intake Attenuation Assembly

1. Arrival at jobsite:
   a. When intake sound attenuation is provided, each Nexus® Modular Hybrid Cooler unit (single-module or multi-module) will arrive with the following parts:
      i. (1) frame per fan, < 50 lbs each – ships installed on fully-assembled units, or ships loose in crate on units that are not fully-assembled to be field-installed by others.
      ii. (1) attenuator with baffles < 100 lbs – ships loose, with baffles zip-tied to attenuator; all attenuators for each unit ship in crate to be field-installed by others.
      iii. Cover plates – qty (2) for NXF-0403, and qty (4) for NXF-0603, ships loose in crate to be field-installed by others.
      iv. Hardware kit, including foam tape, ships loose in crate.
   b. Inspect all parts and ensure that they are in good condition.
2. To assemble:
   a. For units that ship fully assembled, discharge attenuators can be installed before lifting the unit onto its final location. When modules ship separately, the unit must be assembled and lifted into place before installing discharge attenuators.
   b. Remove the zip ties and slide the baffles out for access to the inside of the attenuator for access to bolt hole locations inside of the attenuator.

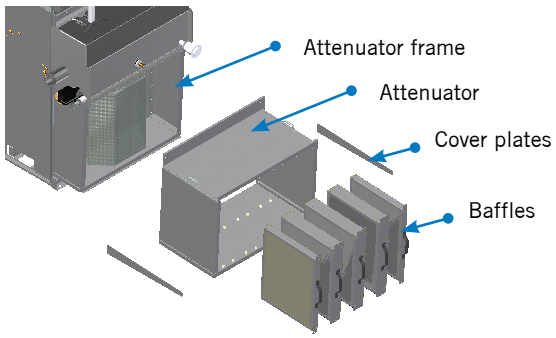


Figure 26. Intake attenuator exploded view

c. If equipment does not ship fully-assembled, install frame onto unit.
d. Clean foam tape surfaces with acetone, and install foam tape on the frame as shown.

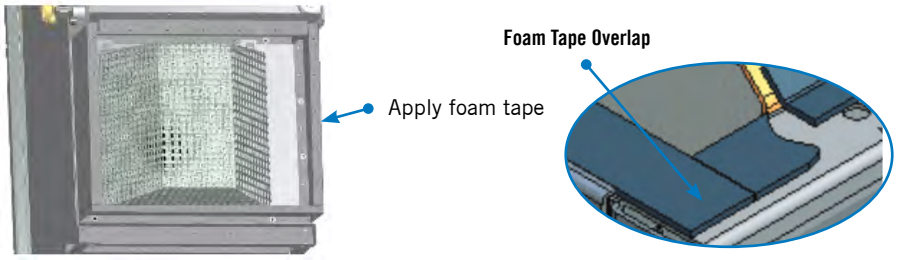


Figure 27. Foam tape installation

Foam tape detail

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

e. Lift the attenuator and align attenuator lip to the frame.

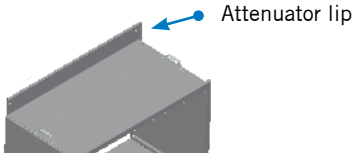


Figure 28. Attenuator alignment

f. Fasten attenuator to frame using the required hardware, listed below.

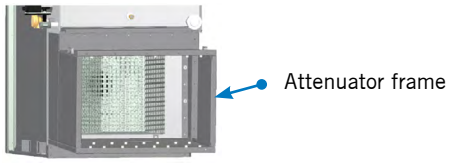


Figure 29. Attenuator installation

i. Galvanized steel protected by a Thermosetting Hybrid Polymer
   1. 05/16”x1” bolts with flat washers and lock washers into weld tabs for attenuator and baffles.
   2. Ø5/16x3/4” tappers for cover plates.

ii. Stainless steel
   1. Ø5/16”x1” bolts with flat washers and lock washers into weld tabs for attenuators, baffles, and cover plates.

g. Install baffles using required hardware, listed above.

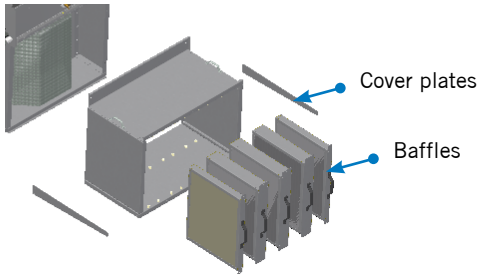


Figure 30. Baffle installation

h. Install cover plates using required hardware, listed above.

WARNING: Improperly installed and grounded field wiring poses fire and electrocution hazards. Failure to follow code could result in death or serious injury. To avoid these hazards, you MUST follow requirements for field wiring installation and grounding as described in NEC and your local/ state/national electrical codes.

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

Dishcharge Attenuation Assembly

1. Arrival at jobsite:
   a. When discharge sound attenuation is provided, all components will ship loose and must be field-installed by others. Parts include the following:
      i. (1) attenuator for up to three modules, or (2) attenuators for four to six modules; attenuators ship on skids.
      ii. Hardware kit, including foam tape, ships in spray water basin.
      iii. Hardware kit, including foam tape, ships loose in crate.
   b. Inspect all parts and ensure that they are in good condition.
2. To assemble:
   a. For units that ship fully assembled, discharge attenuators can be installed before lifting the unit onto its final location. When modules ship separately, the unit must be assembled and lifted into place before installing discharge attenuators.
   b. Clean foam tape surfaces with acetone, and install foam tape on top of spray distribution section.

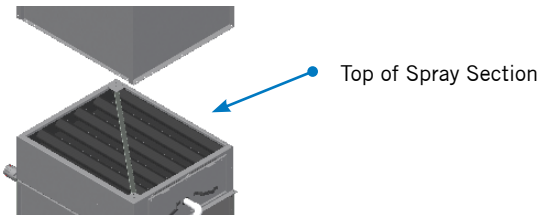


Figure 31. Attenuator assembly

   c. Using lifting points, lift attenuator into place.

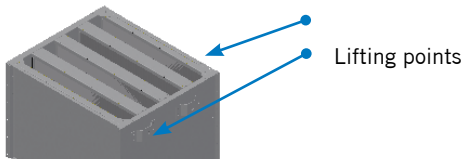


Figure 32. Attenuator installation

   d. Fasten attenuator to unit using the following hardware:
      i. Galvanized steel protected by a Thermosetting Hybrid Polymer
         1. Ø5/16x3/4" tappers into spray frame.
         2. Ø5/16"x1" bolts with flat washers and lock washers between attenuation sections.
      ii. Stainless steel
         1. Ø5/16x1" bolts with flat washers and lock washers into weld tabs on spray frame.
         2. Ø5/16"x1" bolts with nuts, flat washers and lock washers between attenuation sections.
   e. Fasten sections to each other (4-6 module only).
      i. Lift using integral lifting points.

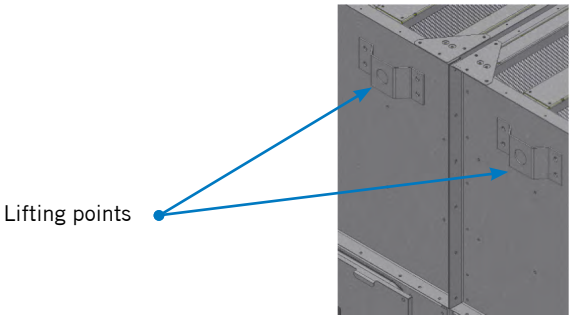


Figure 33. Attenuator assembly for 4-6 modules

ii. For lifting instructions and spreader bar dimensions, see **Table 2** in the "Unit Rigging and Assembly" section.
iii. Use the "H" dimension in **Table 2** from the top of the unit, including discharge accessories.

f. The unit can be rigged in a single lift as a completed assembly, per **Table 2** and **Figure 2.**

Optional Tapered Discharge Hood

Arrival at jobsite:

1. a. When tapered discharge hoods are provided, all components will ship loose and must be field-installed by others.

Figure 34. Tapered discharge hood

2. b. Parts include the following:
   a. Tapered discharge hood - (1) hood for up to 3 modules, or (2) hoods for 4 to 6 modules.
      i. Gap plate attached to a single hood on 4-6 module units.

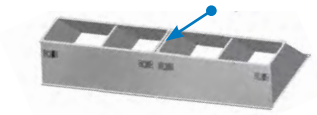


Figure 35. Gap plate

      ii. For 1-3 modules, (1) Section.
      iii. For 4-6 modules, (2) Sections.
         a. 4 modules: (2) 2-module sections.
            i. Gap plate is preinstalled on one of the sections.
         b. 5 modules: (1) 2-module section and (1) 3-module section.
            i. Gap plate will be preinstalled on one of the sections.
            ii.The 2-module section is closest to the control panel.
         c. 6 modules: (2) 3-module sections.
            i. Gap plate will be preinstalled on one of the sections.
         d. Parts arrive onsite as follows:
            i. Hoods ship on skids.
            ii. Hardware kit ships in spray water basin or in crate.
         e. Inspect all parts and ensure that they are in good condition.

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

WARNING: Improperly installed and grounded field wiring poses fire and electrocution hazards. Failure to follow code could result in death or serious injury. To avoid these hazards, you MUST follow requirements for field wiring installation and grounding as described in NEC and your local/ state/national electrical codes.

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

3. To assemble:
   a. For units that ship fully assembled, tapered discharge hood can be installed before lifting the unit onto its final location. When modules ship separately, the unit must be assembled and lifted into place before installing tapered discharge hood.
   b. Clean foam tape surfaces with acetone.
   c. Install foam tape on top of spray distribution section.
   d. Using lifting points, rig hood into place.

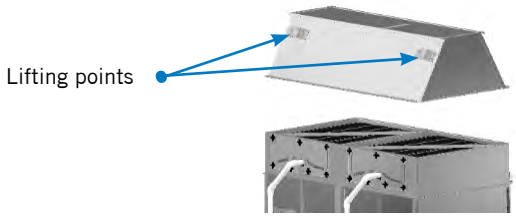


Figure 36. Tapered discharge hood assembly

   i. Fasten tapered discharge hood to unit using the following hardware:
   ii. Galvanized steel protected by a Thermosetting Hybrid Polymer
      1. Ø5/16x3/4" tappers into spray frame.
      2. Ø5/16"x1" bolts with flat washers and lock washers. between attenuation sections into weld tabs.
   iii. Stainless steel
      1. Ø5/16x1" bolts with flat washers and lock washers into weld tabs for spray frame and attenuation sections.
   e. Fasten sections to each other (4-6 module only) with gap plate between sections.

Optional Positive Closure Dampers

Positive closure dampers are available for applications that can benefit from reduced heat loss during the winter, including heat pump loops.

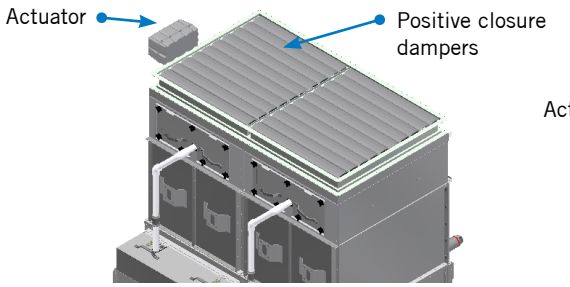


Figure 37a. Positive closure dampers

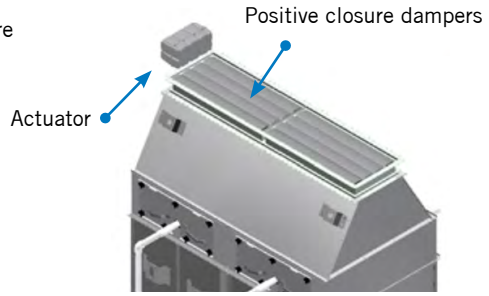


Figure 37b. Tapered discharge hood with positive closure dampers

1. Arrival at jobsite:
   a. When positive closure dampers are provided, they ship separately as follows:
      i. Without tapered discharge hood – ships installed from factory on fully-assembled units, and ships loose on skid for units with other shipping methods.
      ii. With tapered discharge hood – ships installed on hood, which ships separately according to tapered discharge hood section of this manual.
   b. Parts include the following:
      i. Conduit and wiring for actuator, coiled up and installed on same side as control panel.

2. To assemble:
   a. For units that ship fully assembled, positive closure dampers can be installed before lifting the unit onto its final location. When modules ship separately, the unit must be assembled and lifted into place before installing positive closure dampers.
   b. When tapered discharge hood with positive closure dampers is included:
      i. Install hood according to "Optional Tapered Discharge Hood" section of manual.
      ii. Install conduit and wiring from actuators to control panel, per wiring diagram and step titled "To connect wiring."

Figure 38. Tapered discharge hood with positive closure dampers

   c. When tapered discharge hood is not included:
      i. Inspect all parts and ensure that they are in good condition.
      ii. For fully assembled units, the positive closure damper assembly has been installed and wired at the factory.
      iii. For all other shipping methods, the dampers ship loose in crates for field installation and wiring by others.

Figure 39. Positive closure dampers

1. Clean foam tape surfaces with acetone.
2. Install foam tape on top of spray distribution section.
3. On multi module units install the positive closure damper sub frame by first installing plate DAK between each module within the positive closure damper frame using the following hardware. **NOTE:** One positive closure damper sub frame can supply three Nexus modules. On a six-module Nexus there will be two positive closure damper sub frames.
   a. Galvanized steel protected by a Thermosetting Hybrid Polymer
      i. Ø5/16x3/4" tappers into spray frame.
   b. Stainless steel
      i. Ø5/16x1-1/4" tappers into spray frame.
4. Install the positive closure damper sub frame parts WAG & WAH using the following hardware.
   a. Galvanized steel protected by a Thermosetting Hybrid Polymer
      i. Ø5/16x3/4" tappers into spray frame.
      ii. Ø5/16x1" bolt with two flat washers, lock washer and nut (1 at each corner).
   b. Stainless steel
      i. Ø5/16x1-1/4" tappers into spray frame.
      ii. Ø5/16x1" bolt with two flat washers, lock washer and nut (1 at each corner).

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

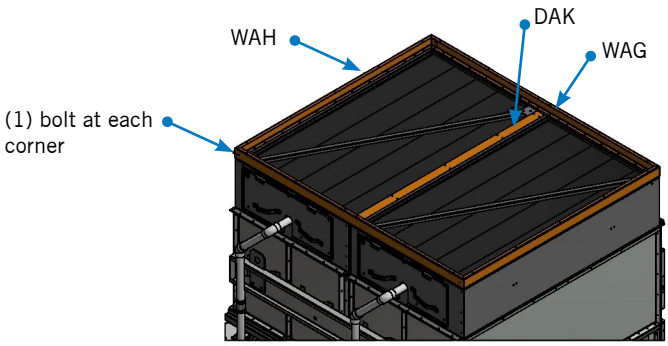


Figure 40. Positive closure damper sub frame

5. Clean foam tape surfaces with acetone
6. Install foam tape on positive closure damper sub frame. Install positive closure damper to sub frame. Lift or handle positive closure damper using the frame. Do not handle or lift the positive closure damper using blades, linkage, actuators, or jackshafting. Lift one positive closure damper assembly at a time. Be sure to mount the positive closure actuator on the same face as the Nexus control panel. For Nexus units that require two positive closure damper assemblies mount the second positive closure damper with the actuator on the opposite end of the unit. **NOTE:** One positive closure damper assembly can supply three Nexus modules. On a six module Nexus there will be two positive closure damper assemblies.
7. Fasten the positive closure damper(s) to the sub frame using the following hardware.
   a. Galvanized steel protected by a Thermosetting Hybrid Polymer
      i. Ø5/16x3/4" tappers into spray frame.
   b. Stainless steel
      i. Ø5/16x1-1/4" tappers into spray frame

d. To connect wiring:
   i. The following procedure applies to all positive closure assemblies that do not ship factory installed.
   ii. Uncoil the positive closure damper flexible conduit and route behind the control panel. Secure the flexible conduit to the unit with zip ties as needed. For Nexus units with more than 3 modules route the flexible conduit from the far positive closure actuator along the outer flange of the positive closure damper frame securing with zip ties as needed.

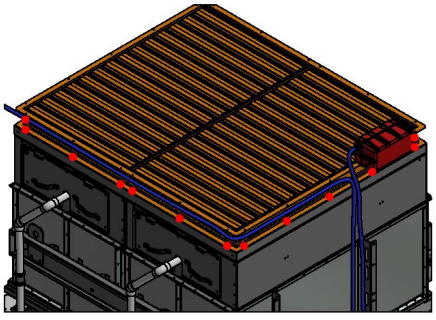


Figure 41. Positive closure damper flexible conduit location

   iii. Secure the flexible conduit into the positive closure damper junction box using the liquidtite conduit fittings. Use zip ties as needed to secure the flexible conduit. Inside the positive closure damper junction box combine all damper communication and power wires according to the wiring diagram below. **NOTE:** Only one set of damper actuator communication and power wires is terminated within the Nexus control panel.
   iv. Secure all loose wiring with zip ties as needed and re-install the positive closure damper junction box cover.

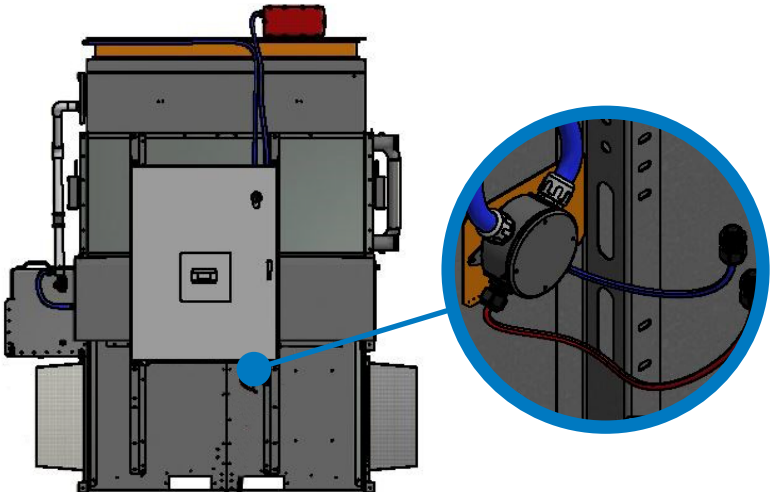


Figure 42. Positive closure damper junction box connection

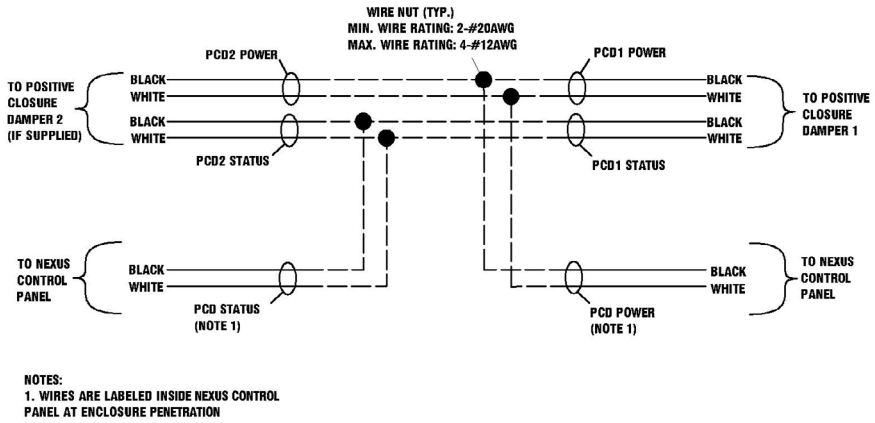


Figure 43. Positive closure junction box wiring diagram

Optional Ducting

The Nexus cooler can be installed indoors and can discharge air through ductwork installed by others. When ductwork is required, install it as follows:

1. Duct each module separately.
2. Ducting at air intake:
   a. Add provision to remove ducting for maintenance purposes, ensuring enough clearance to open the swing out fan panel, per the submittal drawings.
   b. Add provision to access the sump for maintenance.
3. Ducting at air discharge:
   a. Internal partitions are required to prevent air bypass / recirculation between modules when partial load conditions do not require all fans to be running.
   b. For tapered hood without positive closure dampers, ducting between modules can be attached to the internal ducting partition(s) of the tapered hood.

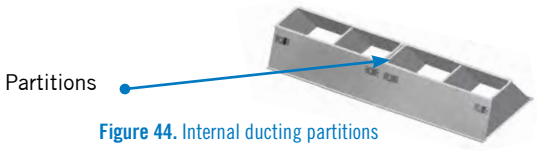


Figure 44. Internal ducting partitions

   c. When the tapered discharge hood is not included, internal partitions should be installed in the ducting that extend to the air discharge of each module.
   d. Add provision to remove ducting for maintenance purposes.
      i. For all units with positive closure dampers, ensure that 2" of clearance above the dampers is available to allow them to open.

Optional UV System

The UV System has been designed to reduce bacterial growth. Please follow these assembly instructions closely to ensure that the reliable system operation.

CAUTION: Do not touch the glass portion of the bulb with bare hands. Always hold it at the ceramic ends.

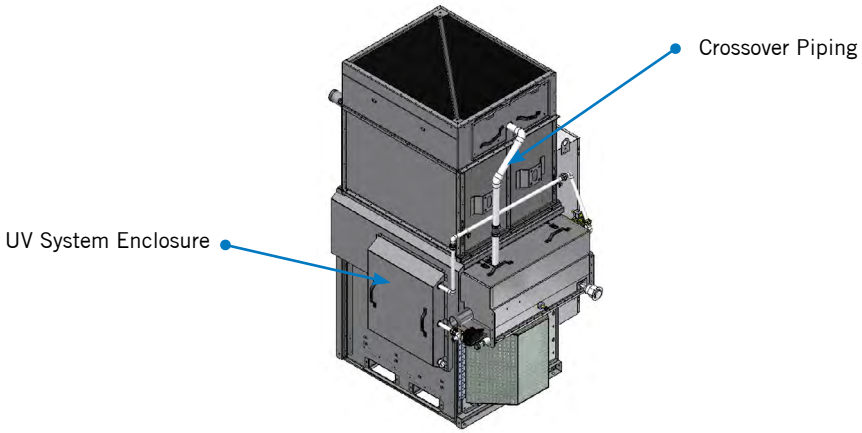


Figure 45. Nexus UV System

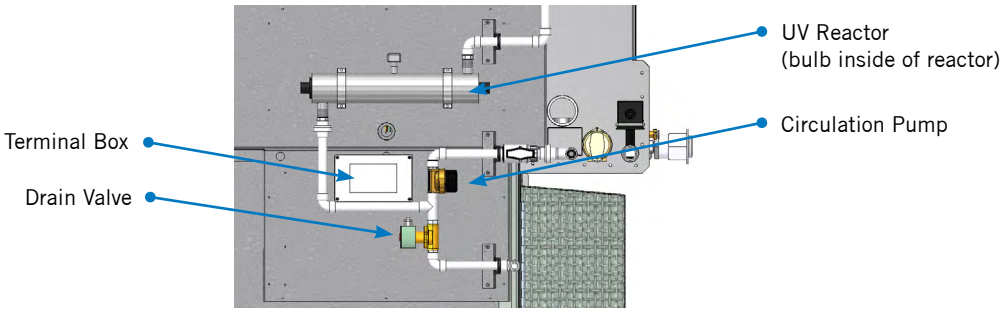


Figure 46. UV System components view

1. Arrival at jobsite:
   a. When the UV System is included, each unit (single-module and multi-module units) includes (1) UV panel for all modules in that unit.
   b. On fully-assembled units, the Nexus UV system will be factory-installed with the exception of the UV light bulb, which is explained below.
   c. When units do not ship fully-assembled, the Nexus UV system will be factory-installed with the exception of the UV bulb, UV system crossover piping, and wiring between the UV System panel and the main control panel. For details,
   s see drawings and wiring diagrams in the submittal.
2. To assemble:
   a. UV bulb
      i. Remove the UV System enclosure cover using a ratchet and ½" socket. Handles are provided to ease the removal and installation of the enclosure panel.

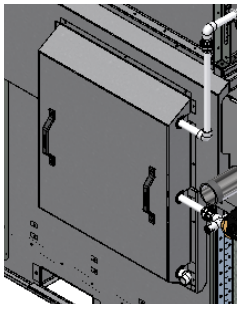


Figure 47. UV System enclosure

      ii. Remove the lamp connector by squeezing the plastic locking tabs on the side of the connector.

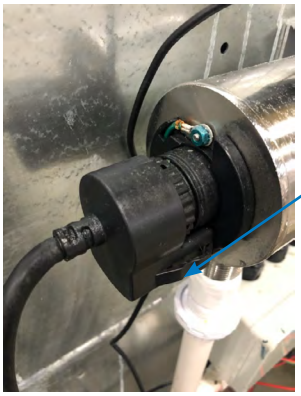


Figure 48. Lamp connector

iii. The UV bulb ships inside of the Nexus sump, adjacent to the UV system, to prevent shipping damage. Remove the UV bulb from the Nexus sump.

iv. **CAUTION: Do not touch the glass portion of the bulb with bare hands. Always hold it at the ceramic ends.** Remove the bulb from the protective packaging.

v. Insert the new bulb fully into the chamber leaving about two inches of the bulb protruding from the chamber.

Figure 49. Bulb connection

vi. Attach the connector to the bulb; the connector will only allow correct installation in one position.

Figure 50. Nexus

vii. Push the connector against connector base together until an audible click is heard.

viii. Replace the UV System cover onto the panel.

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

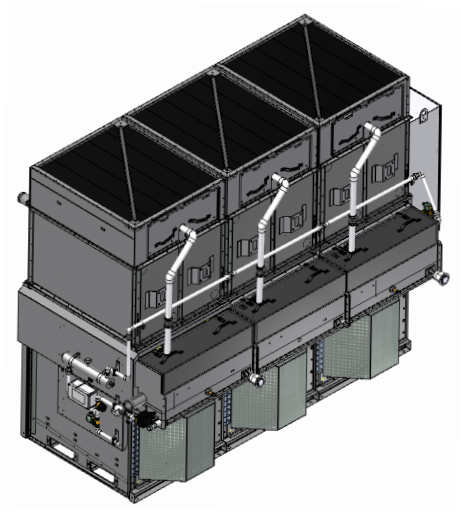


Figure 51. UV System crossover piping for multi-module units

b. UV System crossover piping for units that do not ship with modules fully-assembled
   i. After all modules are fully assembled onsite, remove the crossover piping sections from the shipping crate. These piping section(s) are comprised of 3' to 6' ¾" pipes with union connections on the ends. See the following table for piping lengths:

	Crossover Pipe Quantity	Crossover Pipe Length(s)
1 module	1	42 3/4"
2 module	1	82 1/4"
3 module	1	82 1/4"
	1	39 1/4"
4 module	1	82 1/4"
	1	78 3/4"
5 module	1	82 1/4"
	1	78 3/4"
	1	39 1/4"
6 module	1	82 1/4"
	2	78 3/4"

   ii. Remove the u-bolts from the brackets that are on the face of the hCore® casing.

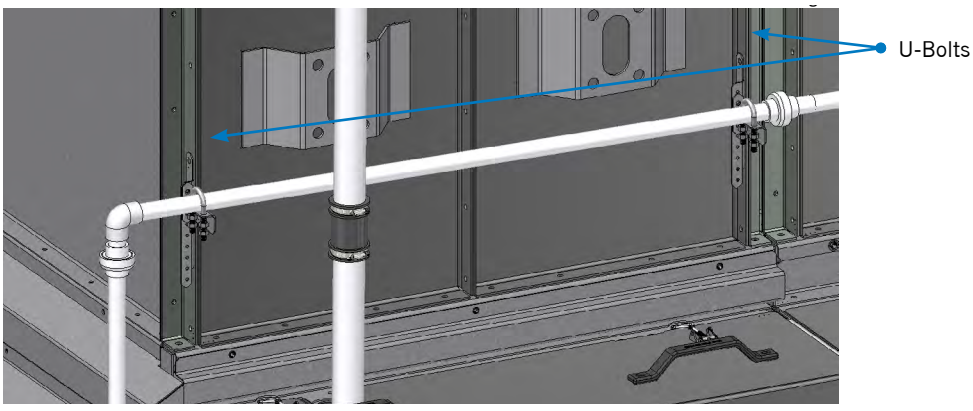


Figure 52. Crossover piping assembly

   iii. Assemble piping sections in series using unions, and attach the assembled pipe section to the piping brackets using the u-bolts were removed.
   iv. The assembled piping system should extend from the UV system, across the sump face of the unit and back into the sump on the control panel side.

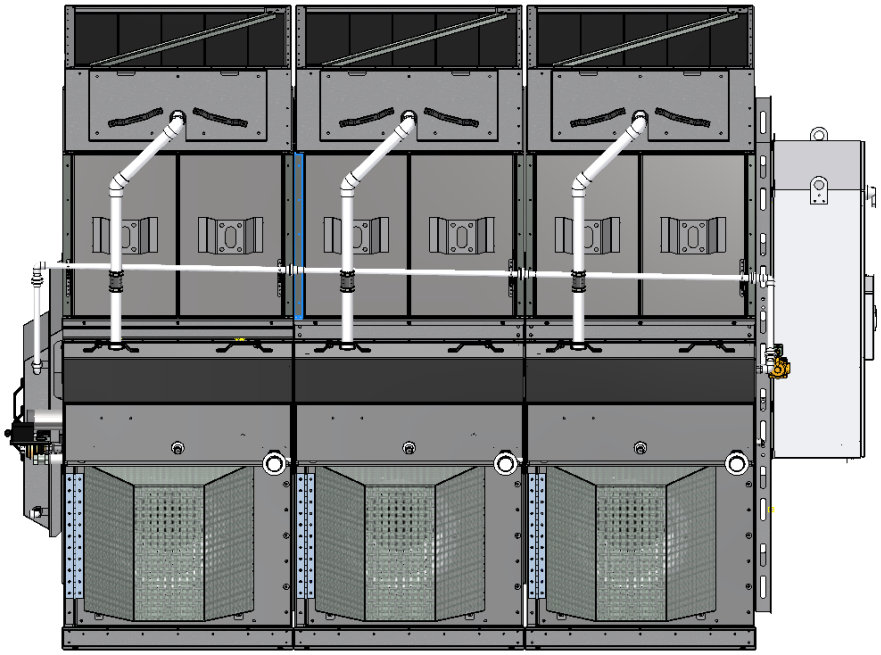


Figure 53. Crossover piping installed

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

3 Electrical Information

Refer to the wiring diagram in the submittal package showing customer power and control signal input connections. If the optional basin heater was ordered, more information can also be found in the submittal package. Refer to the *Nexus® Modular Hybrid Cooler Operation & Maintenance Manual* for more set-up and operation details on the iPilot® Control System available in the Customer Information Packet or through your local BAC Representative.

Electrical Power Quality

WARNING: Improperly installed and grounded field wiring poses fire and electrocution hazards. Failure to follow code could result in death or serious injury. To avoid these hazards, you MUST follow requirements for field wiring installation and grounding as described in NEC and your local/state/national electrical codes.

This unit requires clean electrical power to operate properly. Voltage and frequency should be within 10% of the designed voltage for the unit. Failure to provide this power may damage the unit.

The EC Fan System direct-drive motor(s) contain built-in protection circuits that will shut down the fan if there is a power quality issue. If the fans go into protect or emergency mode, the unit must be shut down and restarted to return to normal operation, assuming the power quality issue has been corrected.

Power Connections

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

The Nexus® Modular Hybrid Cooler requires a three phase 60Hz power source (50Hz also available). The voltages available are 200-208V, 230V and 460V (380V is also available).

A label on the inside of the iPilot® Control System will contain the electrical information for the unit such as the FLA, etc. This electrical information can also be found in the certified drawing in the submittal package.

Please ensure that the correct voltage is supplied to the unit. If unsure, check your unit's submittal package to verify that the provided power matches your unit.

Inspection

Prior to start-up, inspect the general condition of the unit, described in detail in the *Nexus® Modular Hybrid Cooler Operation & Maintenance Manual*.

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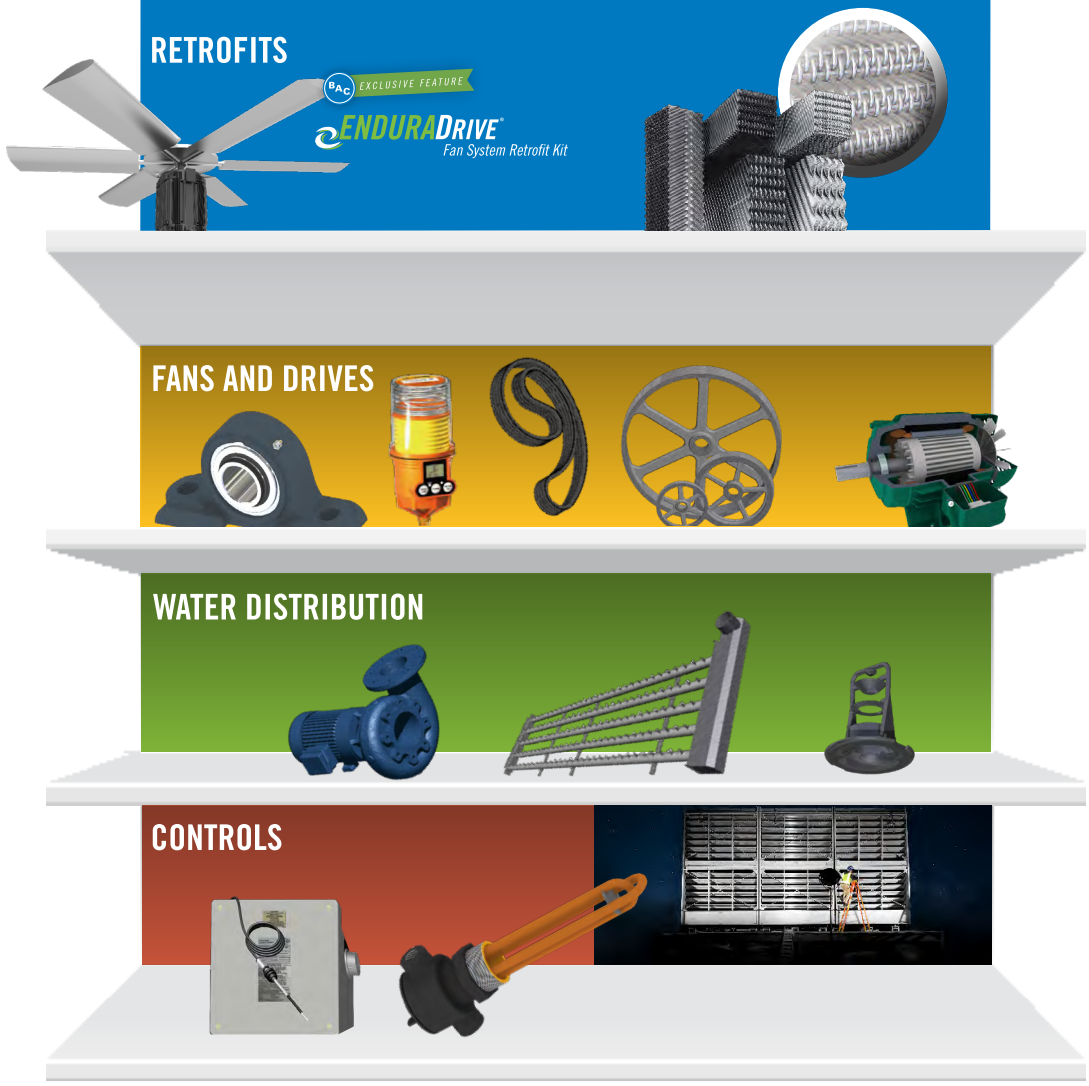

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