



Rigging and Assembly Instructions



INDUCED DRAFT EVAPORATIVE CONDENSERS AND CLOSED CIRCUIT COOLERS

FOR EVAPCO AUTHORIZED PARTS AND SERVICE, CONTACT YOUR LOCAL
MR. GOODTOWER SERVICE PROVIDER OR THE EVAPCO PLANT NEAREST YOU.

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ATC and ATW Coil Products

Method of Shipment

Induced draft coil products are shipped with the top section(s) separate from the bottom section(s). These sections have mating flanges and will join together in a waterproof joint when sealed and bolted together as described in the following instructions. Miscellaneous items, such as sealer, self-tapping screws and any other required materials, are packaged and placed inside the pan for shipment. For units consisting of multiple cells, drip channels and splash guards will ship loose in the basin for field installation.

For 2,4 and 2,6 m wide units, the motors and drives are factory aligned and then shipped loose inside the basin section for mounting during installation. Refer to the "External Motor Installation" section in this bulletin.

Storage

Do not place tarps or other coverings over the top of the units if the units are to be stored before installation. Excessive heat can build up if the units are covered causing possible damage to the PVC eliminators or PVC louvers. For extended storage beyond six months rotate the fan and fan motor shaft(s) monthly. Also, the fan shaft bearings should be purged and regreased prior to start-up.

Structural Steel Support

1,2 - 2,4 - 2,6 and 3,6 m Wide Models

Two structural "I" beams running the length of the unit are required for supporting the unit. These beams should be located underneath the outer flanges of the unit. (See Figure 1a)

4,9 - 5,3 and 7,3 m Wide Models

Three structural "I" beams running the length of the unit are required for supporting the unit. Locate two beams underneath the outer flanges of the unit, and locate one beam longitudinally along the center of the unit. (See Figure 1b.)

All Models

Mounting holes, 19 mm in diameter, are located in the bottom flange for bolting to the structural steel (see certified print for exact bolt hole location). Bolt the bottom section to the steel support before rigging the top section.

Beams should be sized in accordance with accepted structural practices. Maximum deflection of the beam under the unit to be 1/360 of the unit length, not to exceed 13 mm. Deflection may be calculated by using 55% of the operating weight as a uniform load on each beam (see certified print for operating weight).

The supporting "I" beams should be level before setting the unit. Do not level the unit by shimming between the bottom flange and the beams as this will not provide proper longitudinal support.

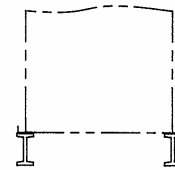
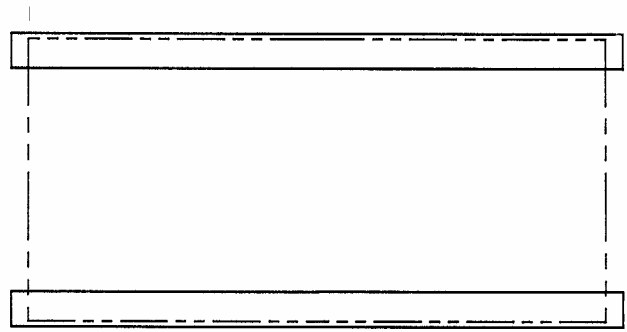


Figure 1a - Steel Support (1,2 - 2,4 - 2,6 and 3,6 m wide models)

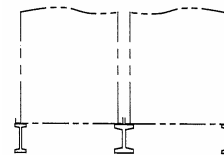
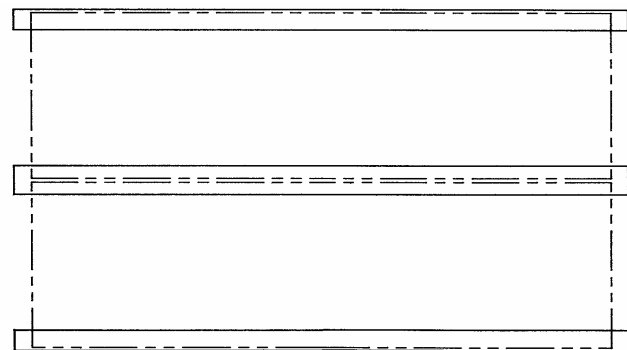


Figure 1b - Steel Support (4,9 - 5,3 and 7,3 m wide models)

ATC and ATW Coil Products

Rigging Basin Section

Lifting devices are located in the upper corners of the basin section for lifting and final positioning purposes as shown in Figures 2a and 2b. The hook of the crane must be a minimum dimension of "H" above the top of the section being lifted to prevent undue strain on the lifting devices. See Table 1 for the minimum "H" dimension. These lifting devices should not be used for extended lifts or where any hazard exists unless safety slings are employed under the section. **(See "Extended Lifts" section for proper arrangement.)** Bolt the basin section to the steel support before rigging the coil/fan section.

| Basin Section Length (m) | Min. "H" Dim. (m) | Basin Section Length (m) | Min. "H" Dim. (m) |
|--------------------------|-------------------|--------------------------|-------------------|
| 1,8 | 2,4 | 6,0 | 6,3 |
| 2,6 and 2,7 | 3,0 | 6,3 | 6,6 |
| 3,2 | 3,3 | 7,2 | 4,5 |
| 3,6 | 4,5 | 8,4 | 4,8 |
| 4,3 | 5,1 | 10,8 | 5,7 |
| 5,4 | 5,7 | 12 | 6,3 |

Table 1 - Minimum "H" Dimension for Basin Sections

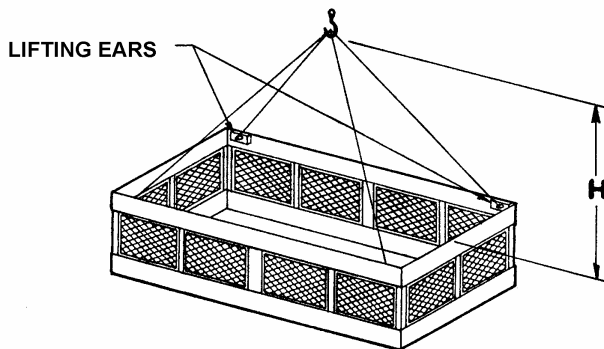


Figure 2a - Basin Section up to 6,3 m long

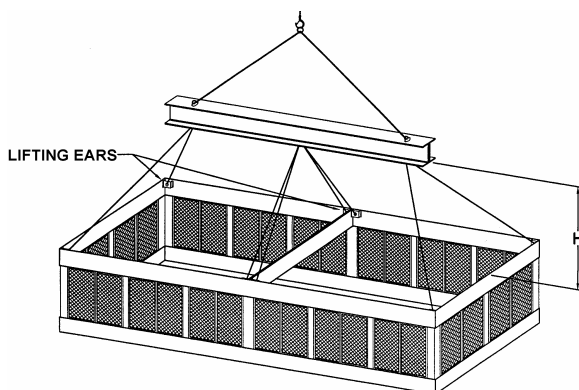


Figure 2b - Basin Section 7,3 to 12 m long

Joining Multi-Cell Units

Basin Sections - 2,4 - 2,6 and 3,6 m Wide Models (7,3 - 12 m long)

The models with two bottom sections are shipped separately and are furnished with a connecting equalizer flume between them. In addition to the equalizer flumes, these units are provided with drip channels and splash guards to keep water from exiting between the cells.

The equalizer flume is factory installed on one section for field connection to the other. It is important to connect the equalizer flume to balance the water level in the pans for proper pump suction operation. The following procedures are to be performed in sequence.

1. Install the basin section with the factory installed flume on it as described earlier.
2. Clean the flanges on the equalizer flume on the end to be field connected. Apply a layer of sealer tape on the flange centered between the hole centers and the outside edge. Remove paper backing strip from the sealer tape. (See Figure 3.)
3. Clean the mating surface of the equalizer opening of any dirt, grease or moisture.
4. Rig the second basin section adjacent to the equalizer flume on the steel support as shown in Figure 4.
5. Align the bolt holes in the equalizer flume and equalizer opening with drift pins (drift pins provided by others) while drawing the second basin section against the flanged connection.
6. Install 8 mm bolts, nuts and washers in every hole around the equalizer opening and tighten.
7. Bolt the second basin section to the steel support.
8. Place the drip channel over the adjoining pan section flanges. Secure by installing 8 mm self-tapping screws through the retaining clips into the end panels. For stainless steel construction, secure by installing 6 mm stainless steel bolts through the retaining clips into brass rivnuts secured in the end panel. (See Figure 5.)
9. Place the vertical splash guard in the bend of the vertical supports. Attach the vertical splash guard using 8 mm tappers. For stainless steel construction, attach the vertical splash guard using 6 mm stainless steel nuts and bolts. (See Figure 3.)

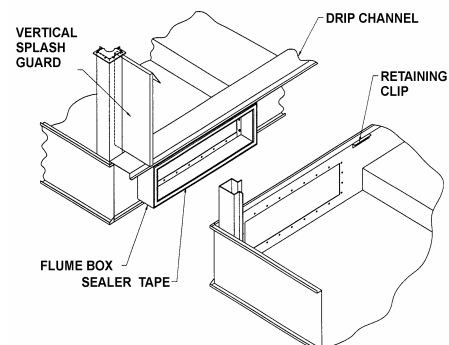


Figure 3 - Equalizer Flume Connection

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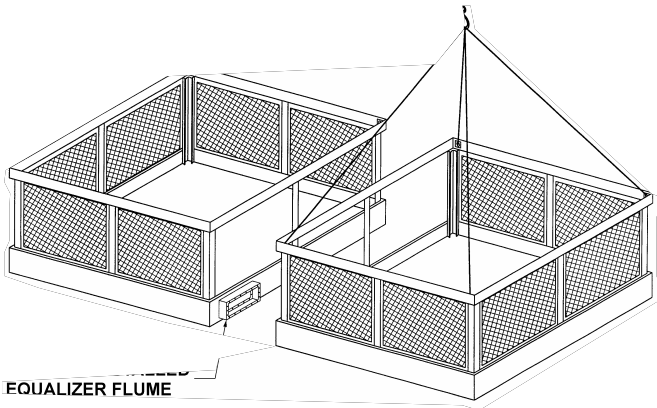


Figure 4 - Equalizer Flume Rigging Detail

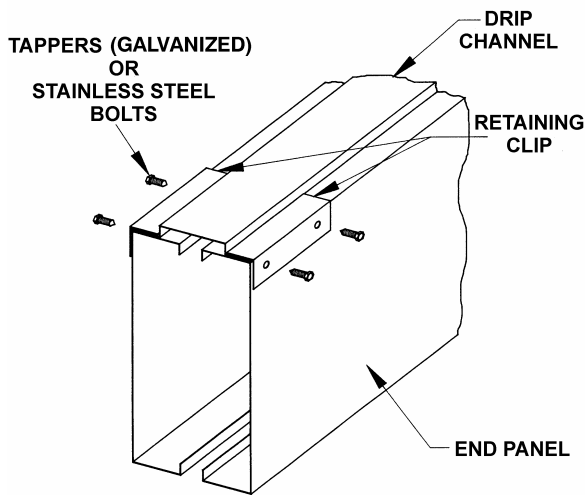


Figure 5 - Drip Channel Installation

Joining Multi-Cell Units Basin Sections - 4,9 - 5,3 and 7,3 m Wide Models (3,6 to 12 m long)

On 4,9 - 5,3 and 7,3 m wide models the equalizer flume is located on the sides of adjoining basin sections. This flume is shipped loose and must be installed to both basin sections. In addition to the equalizer flume, these units are provided with drip channels and splash guards to keep water from exiting between the cells. The following procedure should be performed in order to assure proper assembly.

1. Install one basin section of the unit on structural steel and secure as described earlier.
2. Mating flanges which will make contact with others should be cleaned to remove dirt, grease and moisture. Apply a layer of sealer tape on one side panel centered over the flume box holes as shown in Figure 6. Remove paper backing strip from the sealer tape.
3. The side of the flume box which has studs installed in it should now be connected to the side panel. The studs are pushed through the sealer tape and holes of the side panel and are secured by washers, lock washers and

4. Clean the mating flanges on the equalizer flume on the end to be field connected. Apply a layer of sealer tape on the flange, centered between the hole centers and the outside edge. Remove paper backing strip from the sealer tape.
5. Clean the mating surface of the side panel of any dirt, grease or moisture. Rig the second basin section adjacent to the equalizer flume on the steel support.
6. Align the bolt holes in the equalizer flume and equalizer opening with drift pins while drawing the second basin section against the first as shown in Figure 6.
7. Install 8 mm bolts, nuts and washers in every hole around the equalizer opening and tighten.
8. Bolt the second basin section to the steel support.
9. Remove the 6 mm bolts which hold the drip channel retaining clips to the end panel. Place the drip channel assembly over the adjoining pan section flanges. Turn around the retaining clips and reinstall using the same hardware. (See Figures 6 and 7.)
10. Fasten the drip channel sections together, end to end, by driving a self-tapping 6 mm screw through the section end with the larger hole into the mating end with the smaller hole. Stainless steel units will use 6 mm stainless steel nuts, bolts, and washers. (See Figure 7.)
11. Place the vertical splash guard in the bend of the vertical supports. Attach the vertical splash guard using 6 mm tappers. For stainless steel construction, attach the vertical splash guard using 8 mm stainless steel nuts and bolts. (See Figure 8.)

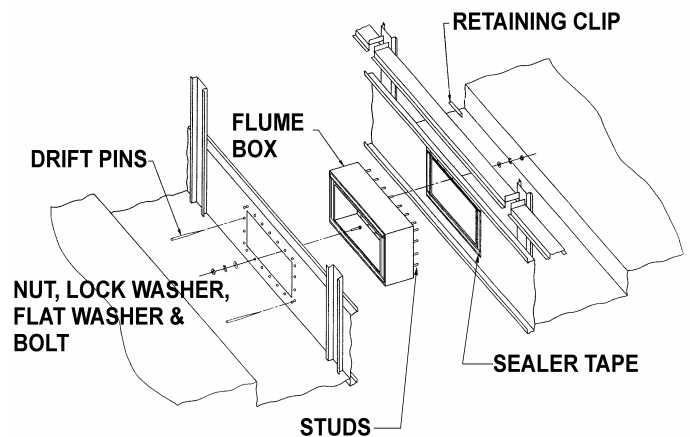


Figure 6 - Equalizer Flume Assembly, 4,9 - 5,3 and 7,3 m wide models

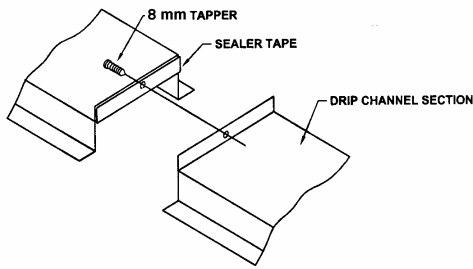


Figure 7 - Drip Channel Assembly

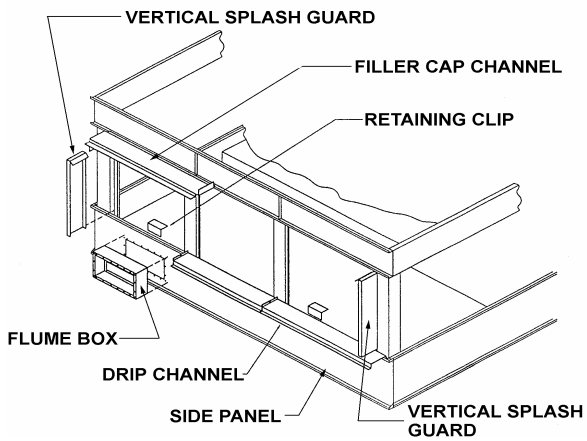


Figure 8 - Drip Channel and Splash Guards, 4,9 - 5,3 and 7,3 m wide models

Applying Sealer Tape

Once the bottom section has been set on the supporting steel and bolted in place, the top flanges should be wiped down to remove any dirt or moisture. Sealer tape should be placed over the mounting hole centerline on the side flanges. Apply two strips of sealer tape, one partially overlapping the other, on the end flanges.

The sealer tape should overlap on the corners as shown in Figure 9. Do not splice the sealer tape along the end flanges and preferably not on the side flanges if it can be avoided. **Always remove the paper backing from the sealer tape.**

Units have two or more coil/fan sections. In these cases, sealer must be applied to all internal flanges as shown in Figure 10.

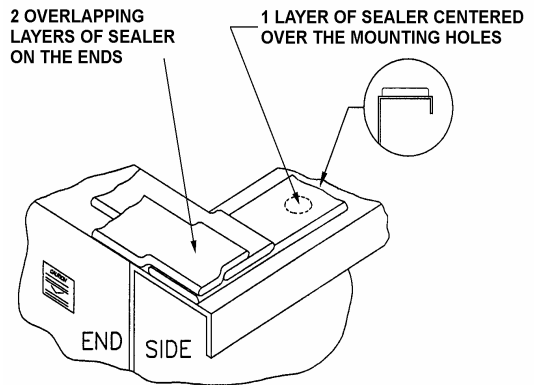


Figure 9 - Proper Sealer Tape Application

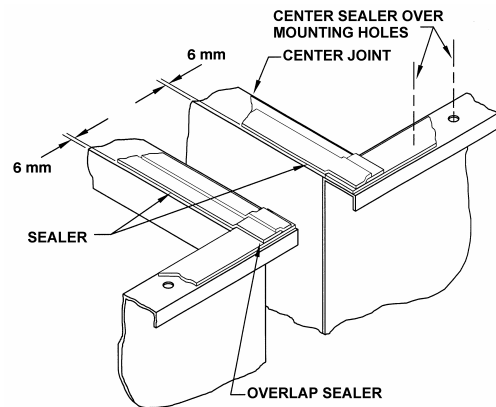


Figure 10 - Sealer Detail for Center Joint of Units with two or more Coil/Fan Sections

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Coil/Fan Section

Four lifting ears are provided in the lower corners of most coil/fan sections for lifting into final position. Some sections will have two additional lifting ears in the middle of the section. (See Figures 10a and 10b.)

Use all lifting ears. A spreader beam must be used for lifting the top section(s) as shown in Figures 10a and 10b.

The hook of the crane must be a minimum dimension “H” above the top section being lifted to prevent undue strain on the lifting ears. See Table 2 for the minimum “H” dimension. These lifting devices should not be used for extended lifts or where any hazard exists unless safety slings are employed under the section. **(See “Extended Lifts” for proper arrangement.)**

Note: For 2,4 m wide models, mount the external motor prior to rigging as detailed in the “External Motor Installation” section.

| Basin Section Length (m) | Min. “H” Dim. (m) | Basin Section Length (m) | Min. “H” Dim. (m) |
|--------------------------|-------------------|--------------------------|-------------------|
| 1,8 | 2,4 | 4,3 | 4,2 |
| 2,6 and 2,7 | 2,7 | 5,4 | 5,1 |
| 3,2 | 3,3 | 6,0 | 5,4 |
| 3,6 | 3,6 | 6,3 | 5,7 |

Table 2 - Minimum “H” Dimension for Coil/Fan Sections

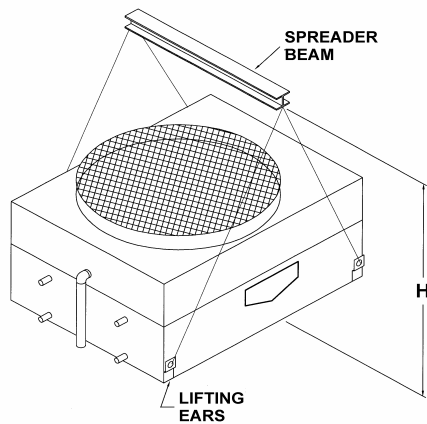


Figure 10a - Four Point Lift

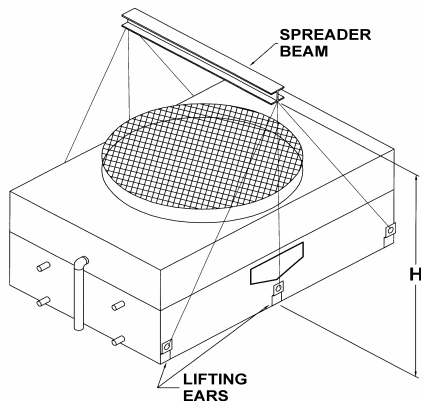


Figure 10b - Six Point Lift

Extended Lifts

Important: The lifting devices and “U” bolts should be used for final positioning only and for lifting where no danger exists. If they are used for extended lifts, safety slings should be provided under the sections.

The preferred method for extended lifts is to use slings under the unit. (See Figure 11.) Spreader bars should always be used between the cables at the top of the section to prevent damage to the upper flanges or fan cylinders.

Safety slings and skids should be removed before final positioning of the unit.

Refer to Tables 1 and 2 for minimum “H” dimensions.

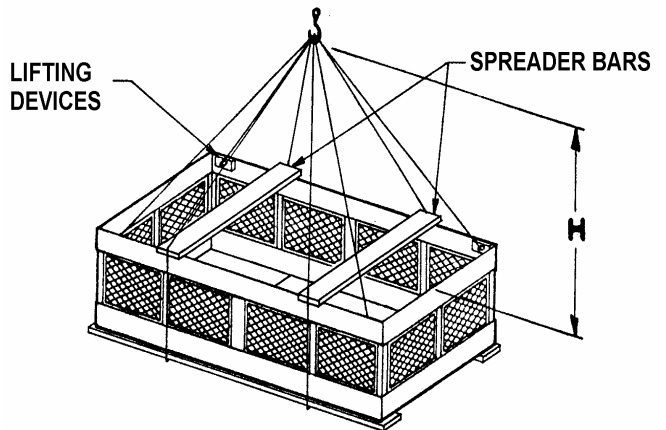


Figure 11 - Extended Lifts, Basin Section

ATC and ATW Coil Products

Assembly of the Coil/Fan Section to the Basin Section (1,2 - 2,4 - 2,6 and 3,6 m wide models)

Before assembling the coil/fan section to the basin section, remove any loose parts shipped in the pan.

Wipe the flanges on the bottom of the coil/fan section. Check to see that the water distribution and coil connections are in the correct position relative to the basin section (see certified print). Units are also provided with match markings on each section (i.e. A1 of basin section should match up with A1 of coil/fan section).

Then lower the coil/fan section to within several centimeters of the basin section making sure the two sections do not touch and the sealer is not disturbed. Place drift pins (see Figure 12) in at least 3 of the corner mounting holes and gradually lower the coil/fan section into place using the drift pins to guide the section down accurately onto the mating flange.

Place self-tapping screws in all four corner bolt holes and in the center holes. Then continue to install the rest of the self-tapping screws working from the corners toward the center, using drift pins to align the holes. A self-tapper must be installed in every hole on the side flanges although none are required on the end flanges.

Note: 8 mm stainless steel nuts, bolts and washers are used for stainless steel construction.

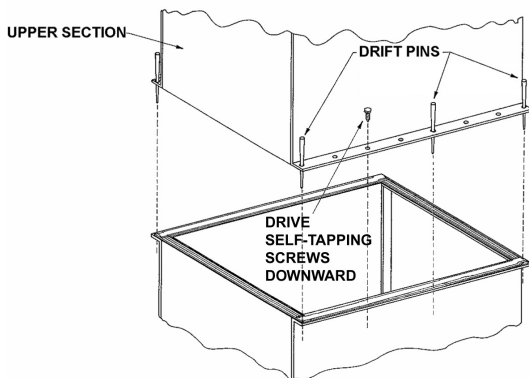


Figure 12 - Mating Upper Section to Basin Section

These units will have multiple coil/fan sections that will be mounted in the same fashion as described above for the first section. When assembling the coil/fan sections to the basin sections, self-cutting screws are required along all mating flanges. The internal mating flange can be accessed from inside the unit. All self-cutting screws are driven upward (see Figure 13) through the mating flange.

Note: 8 mm stainless steel nuts, bolts and washers are used for stainless steel construction.

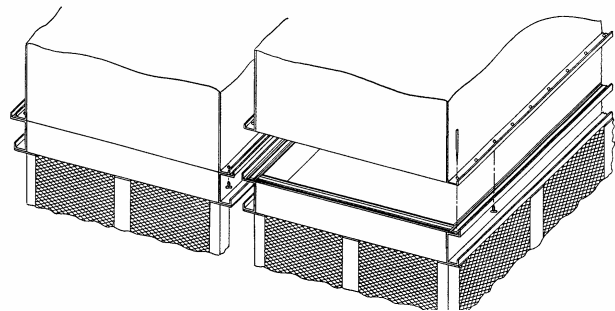


Figure 13 - Mating Upper Section to Basin Section

After the coil/fan sections have been secured to the basin sections, a Filler Cap Channel should be installed between the basin sections to prevent debris from entering the basins. These sections are simply positioned over the mating flanges as shown in Figure 14. The Filler Cap Channel can be installed from inside the unit by inserting the channel through the space between the basin and coil/fan sections. The channel does not require fastening.

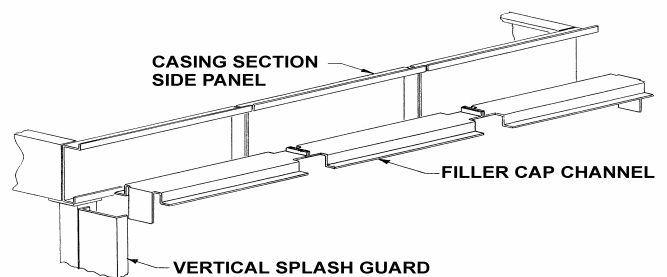


Figure 14 - Filler Cap Channel Assembly

ATC and ATW Coil Products

Mounting Fan Screens (3,6 and 7,3 m wide models)

In certain situations some units may be shipped with the fan screens in the basin. Under these circumstances use the following procedures to mount the fan screen on the discharge cylinder.

WARNING: DO NOT WALK ON THE FAN SCREENS AT ANY TIME!

1. Place both halves of the fan screen on top of the discharge cylinder. Each half will be tagged to match markings on the cylinder. Align the eyelets of the fan screen with the holes that can be found on the perimeter of the discharge cylinder.
2. At each hole, attach the fan screen to the discharge cylinder as shown in Figure 15.
3. Join the two screen halves with wire clips (Figure 16). There should be 4 wire clips on each side of the fan screen. Space the wire clips evenly across the radius of the fan screen as shown in Figure 17.

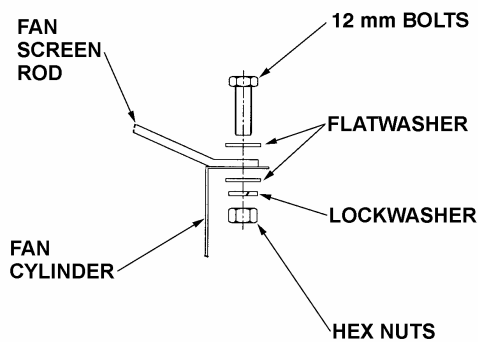


Figure 15 - Attaching Fan Screen to Cylinder

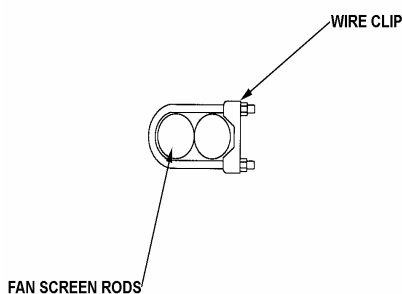


Figure 16 - Wire Clip Arrangement

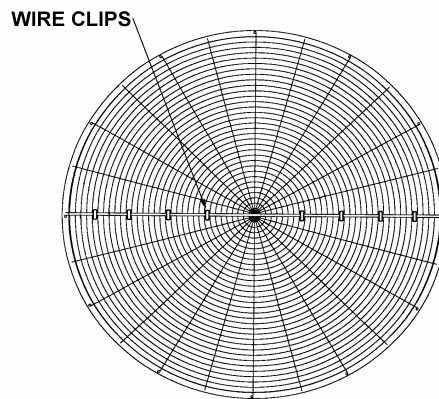


Figure 17 - Wire Clip Spacing

Mounting Fan Screens

On these models, the fan screen is supported from underneath by an "X" shaped support frame.

1. Set the support frame across the top of the discharge cylinder (See Figure 18).
2. Place both halves of the fan screen on top of the support frame. Each half will be tagged to match markings on the cylinder. Align the eyelets of the fan screen with the holes on the cylinder perimeter.
3. Join the two screen halves with wire clips (See Figure 16). There should be four clips on either side of the fan screen. Space them evenly as shown in Figure 17.
4. At each hole, attach the fan screen to the discharge cylinder as shown in Figure 15. At the four points where the support frame meets the cylinder, bolt the support frame to the cylinder together with the fan screen.

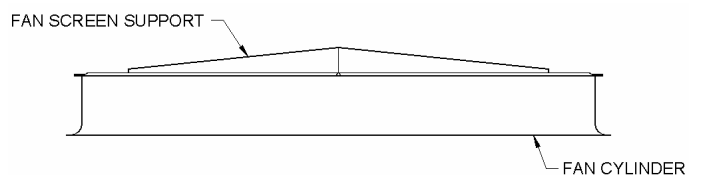


Figure 18 - Support Frame Installation

ATC and ATW Coil Products

Optional Motor and Gear Box Davit

This accessory is available to aid in the removal of fan motors and gear boxes. The assembly consists of a davit and a mounting base that is attached to the side of the unit next to the access door. Both of these items will ship loose in the unit's basin. On multiple cell units, there will be a mounting base on each cell. There are two types of motor davits: single point davits provided on units with the Powerband Belt Drive System (Figure 19) and dual point davits provided on units with the optional gear drive system (Figure 20). Use the following procedure to install the mounting base.

1. Place the mounting base on the 8 mm studs protruding from the fan section near the access door.
2. Use 8 mm lockwashers and nuts to secure the mounting base to the unit (See Figure 21).

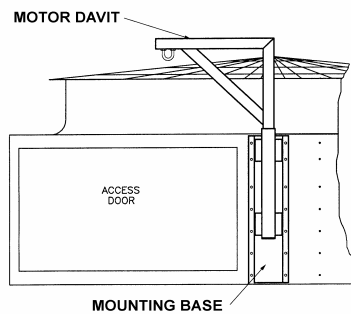


Figure 19 - Single Point Davit Arrangement

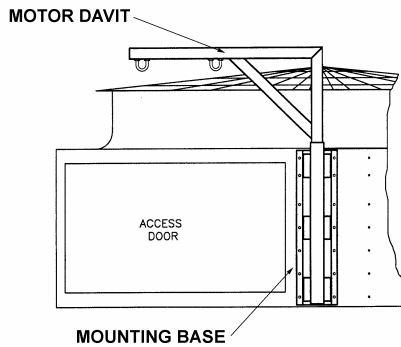


Figure 20 - Dual Point Davit Arrangement

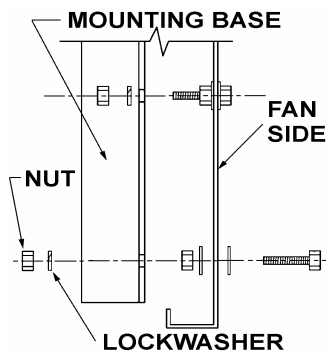


Figure 21 - Mounting Base Installation

Optional Discharge Hood Damper Section Assembly ATW Models

Once the upper section (casing/fan section) has been secured to the bottom section, inspect the top of the upper section to ensure removal of any shipping blocks or other obstructions. Lower the discharge hood damper section onto the top of the upper section while aligning the holes located in each corner.

Place self-tapping bolts in all four corner bolt holes. Then continue to install the rest of the self-tapping bolts working from the corners toward the center using drift pins to align the holes. A self-tapper must be installed in every hole on the side flanges although none are required on the end flanges.

Note: Do not use U-bolts to lift the discharge hood damper section when attached to another part of the equipment. Always lift the hood separately and follow the rigging sequence shown.

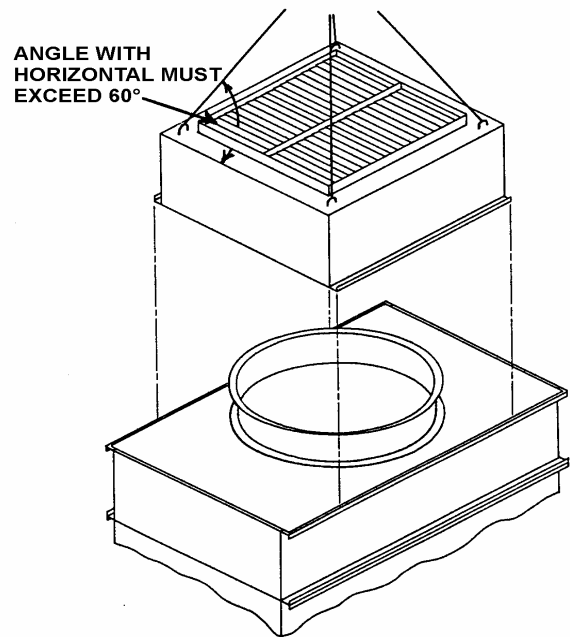


Figure 22 - Mating Discharge Hood Damper Section to Coil/Fan Section

ATC and ATW Coil Products

External Motor Installation

1. Study Figure 23 before installing the motor base on the unit.
2. Insert the lifting device into "U" bolt **A** on motor base **B**.
3. Lift the motor base and insert the pivot pin **C** down into hole **E** and pivot pin **F** into hole **D**.
4. Install washer and nut (do not overtighten) on pivot pins. Install jam nut on pivot pin **C**.
5. Insert "J" bolts **G** into holes **H**. Install flat washers and cotter pins. Place nuts and washers on threaded portion of "J" bolts. These will be behind the motor base installed in the next step.
6. Insert "J" bolts into holes **J** in the motor base. Install flat washers, lock washer and nuts. Remove lifting device from the "U" bolt on the motor base. Position motor base toward casing of unit for belt installation.
7. Install Powerband belt **K** (Figure 24) around fan sheave and motor sheave. Tighten belt by adjusting nuts on "J" bolts. Do not over tighten the belts. The center of the belt should deflect approximately 19 mm with moderate hand pressure.
8. Measure to see that the top and bottom of the motor base are the same distance out from the casing of the unit. This should ensure that the sheaves are properly aligned as they have been pre-set at the factory.
9. As a final check, lay a straight edge from sheave to sheave. There should be four point contact. (See Figure 25.) Adjust the position of the motor sheave as necessary.
10. To install Motor Guard **L**, match up hinges and install hinge pins **M**. (See Figure 24.)
11. Close Motor Guard and install (2) wing bolts **N**.

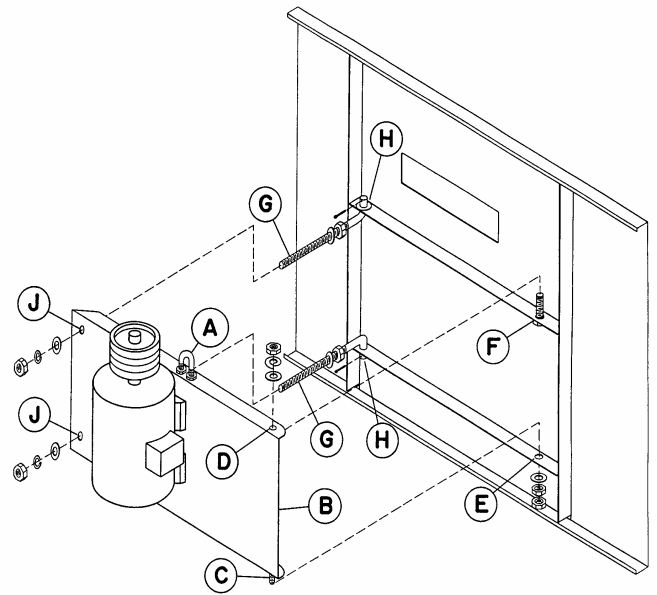


Figure 23 - External Motor Installation

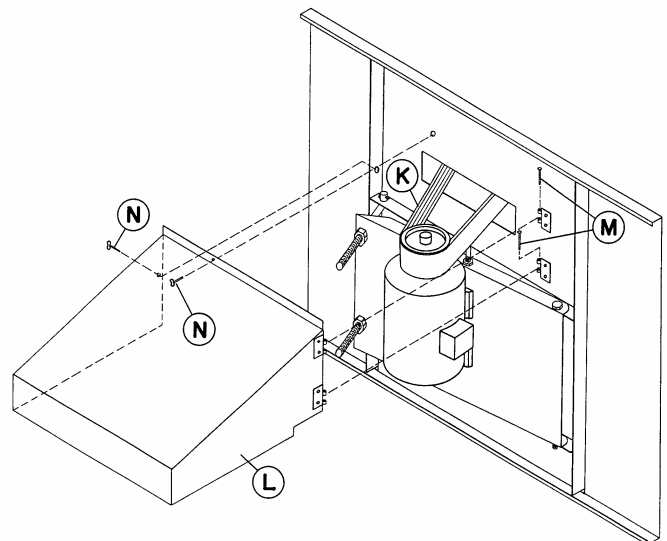


Figure 24 - Motor Guard and Powerband Belt Installation

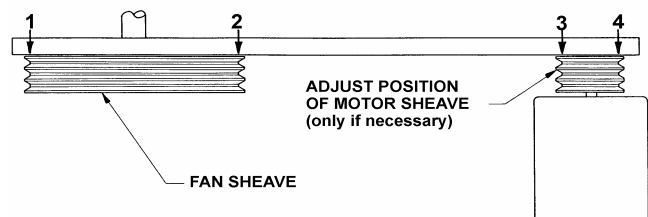


Figure 25 - Sheave Alignment Check

General Information - Start-up & Maintenance

Start-up Details

Shipping Chocks and Debris

Remove any chocks that have been placed inside the unit for shipping purposes. Be sure to remove the chocks from between the fan and fan guard if applicable. Clean all debris from the basin prior to start-up. Close and secure all access doors.

Pump Discharge Line

Connect the riser pipe from the pump discharge on the basin section to the riser pipe on the coil/fan section using the flexible connection and hose clamps provided.

Bleed-off Line

A bleed-off line and valve are installed on the unit when shipped with a pump. On units shipped without a pump (remote sump applications) make sure a bleed-off line and valve are properly sized and installed on the discharge side of the pump and connected to a convenient drain. In either case, the bleed-off valve should be fully open.

Strainer

Check the strainers, if applicable, in the basin section to make certain they are in the proper location over the pump suction, along side of the anti-vortex hood. (See Figure 26.)

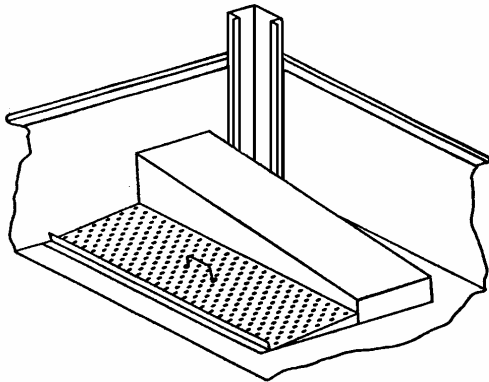


Figure 26 - Strainer Location

Screens

Protective fan screens are provided across the top of the fan cylinders of all models. Check and tighten all bolts.

Float Valve Adjustment

The float valve is pre-set at the factory; however, adjustment should be checked after rigging. The float valve should be adjusted so that the centerline of the float is at the measurement shown in Table 3a or 3b from the basin bottom. Raise or lower the float by using the wing nuts on the vertical threaded rod only. Do not adjust the horizontal rod.

| Unit Length (m) | Level (mm) |
|-----------------|------------|
| to 2,7 | 220 |
| 3,6 | 300 |

Table 3a - Float Valve Adjustment 1,2 m Wide Models

| Unit Length | Level (mm) |
|-------------|------------|
| All Models | 340 |

Table 3b - Float Valve Adjustment 2,4 through 7,3 m Wide Models

Starting Sequence

Before starting the unit, check that all access openings, safety screens and covers are in place. Start the unit as outlined below:

1. Fill the pan to the overflow level.
2. Bump start and check the spray water pump(s) for proper rotation. Directional arrows are found on the pump impeller housing.
3. Bump start and check the fan(s) for proper rotation. Directional arrows are placed on the side of the fan cylinder.

Maintenance

Once the installation is complete and the unit is turned on, it is important that it be properly maintained. Maintenance is not difficult or time-consuming but must be done regularly to assure full performance of the unit. Refer to the maintenance instructions enclosed with the unit for proper maintenance procedures.

Freeze Protection

Proper freeze protection must be provided if the unit is located in a cold climate. Refer to maintenance instructions as well as product bulletins for further information.

ATC and ATW Coil Products

**Rigging Hardware Parts
are shipped together the unit(s)
for field assembly**