

NOTE: After installation, keep this booklet with the makeup air system installation/operation manual.

OPTIONS AS3, AS4, AS5, AND AS8 EVAPORATIVE COOLING MODULE

INSTALLATION/OPERATION/MAINTENANCE
FORM I-OPT-EC (6-16)
OBSOLETES FORM I-OPT-EC

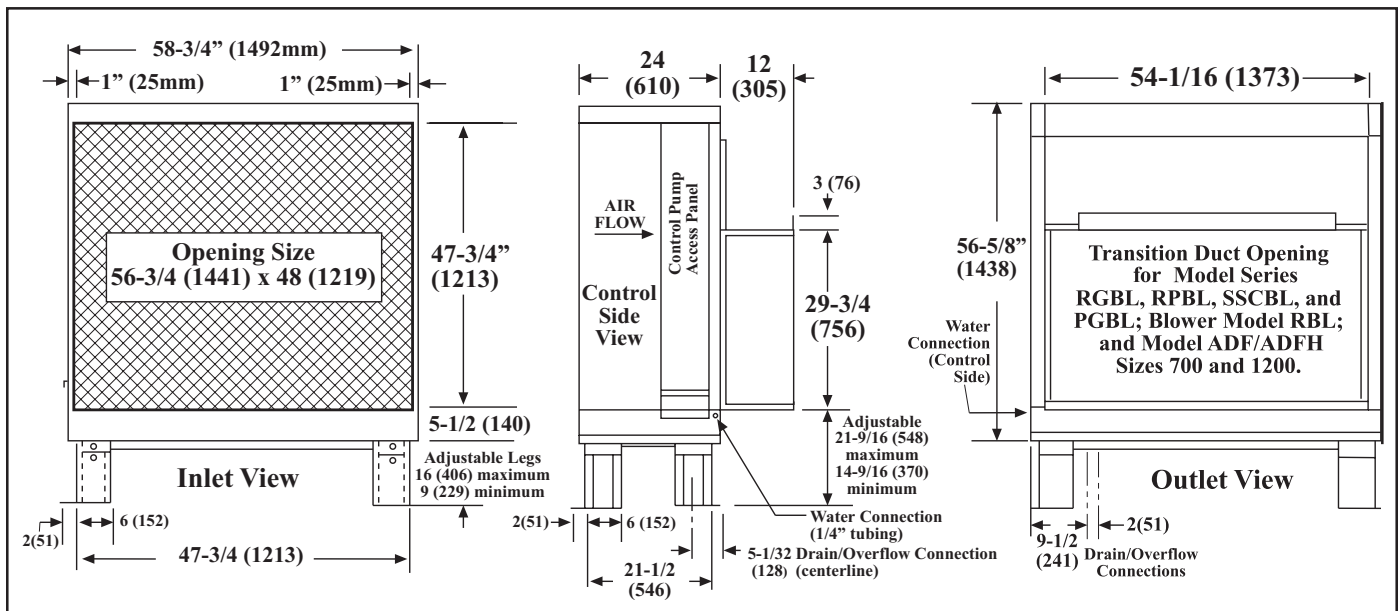
APPLIES TO: Models RGLB,RPBL,SSCBL,PGBL;
Models ADF/ADFH 700/1200; Model RBL

1. Description/ Application

The optional evaporative cooling module for packaged indirect-fired system Model Series RGLB, RPBL, SSCBL, PGBL, blower cabinet Model RBL, and direct-fired makeup air Models ADF/ADFH 700/1200 is factory assembled but requires field installation. Evaporative cooling module **Option AS3** includes 6" rigid cellulose media; **Option AS4** includes 12" rigid cellulose media; **Option AS5** includes 6" rigid glass fiber media; and **Option AS8** includes 12" rigid glass fiber media. The base parts for supporting the evaporative cooling module and the transition duct for connecting it to the unit are shipped with the module for field assembly and installation. If optional moisture elimination pads, a drain and fill kit, and/or a water hammer arrestor are to be included in the installation, they also require field installation.

Indoor Installation Note: The evaporative cooling module cannot be suspended; it must be placed on a platform. If the installation is not conducive to providing a platform for the optional evaporative cooling module to attach directly to the cabinet, install a compatible Model REC evaporative cooling module which also must be mounted but requires a field-fabricated transition duct and can be located further away. All evaporative cooling modules require outside air.

2. Dimensions



3. Installation Preparation Check List:

- Make certain the installation complies with all local, utility and federal building and safety codes and regulations.
- Check module for shipping damage. If damage is found, document the damage with the transporting agency and immediately contact your Distributor.

- Check fabricated parts in the duct kit package against parts list shown in **FIGURE 2**, page 3. The package also includes the hardware listed here.

Transition Duct Hardware Package	
#10x1/2" Screws	(58) 11813
1/4 - 20 Hex Head Bolts	(10) 16246
1/4 - 20 Nuts	(10) 16050

3. Installation Preparation Check List (cont'd):

In addition, the following parts for making electrical and water connections are shipped in the bottom pan of the evaporative cooling module.

Qty	P/N	Description
1	105945	1/4" Hose I.D. x 1/2" N.P.T. Bleed Line Fitting (not used with optional timed metering AquaSaver® system)
2	16835	Bushings, Heyco #SR-7W-2

- If the evaporative cooling module is being installed **indoors** (Model SSCBL, PGBL, or ADF/ADFH 700/1200), outside makeup air must be provided.
- If optional shipped-separate equipment will be included (Drain and Fill Kit, Freeze Protection Kit, Moisture Elimination Pads, and/or Water Hammer Arrestor), check to be sure that these parts are available for installation.
- Make certain the roof or platform is capable of handling the additional load of a cooling module with a full reservoir.

Weights of Evaporative Cooling Module - With Wet Media & Full Reservoir

Module with 6" rigid cellulose media (Opt AS3) 379 lbs (172 kg)
 Module with 12" rigid cellulose media (Opt AS4) 431 lbs (195 kg)
 Module with 6" rigid glass fiber media (Opt AS5) 420 lbs (191 kg)
 Module with 12" rigid glass fiber media (Opt AS8) 514 lbs (233 kg)

- Make certain the surface is level and free of debris where cooling module will be mounted.
- Do not mount directly on soft tar roofs where the legs could sink and tilt the cooler. Provide a weather-resistant, solid wood or metal base under the cooling module support base.
- Make certain that there will be adequate clearance between the bottom of the reservoir and the roof or platform to allow for drain and overflow pipe connections.

4. Base and Transition Duct Installation Instructions

Attach the evaporative cooling module after the makeup air unit is in its permanent location. **Do not** install the evaporative cooling module and connecting duct while the blowers are in operation. **Steps 2-11 are illustrated on FIGURE 2, page 3. Steps 12-20 are illustrated in FIGURE 4, page 4.**

FOLLOW EACH STEP IN ORDER.

STEP 1:

- 1) Be sure all preparations have been made. Review Preparation Checklist, pages 1 and 2.

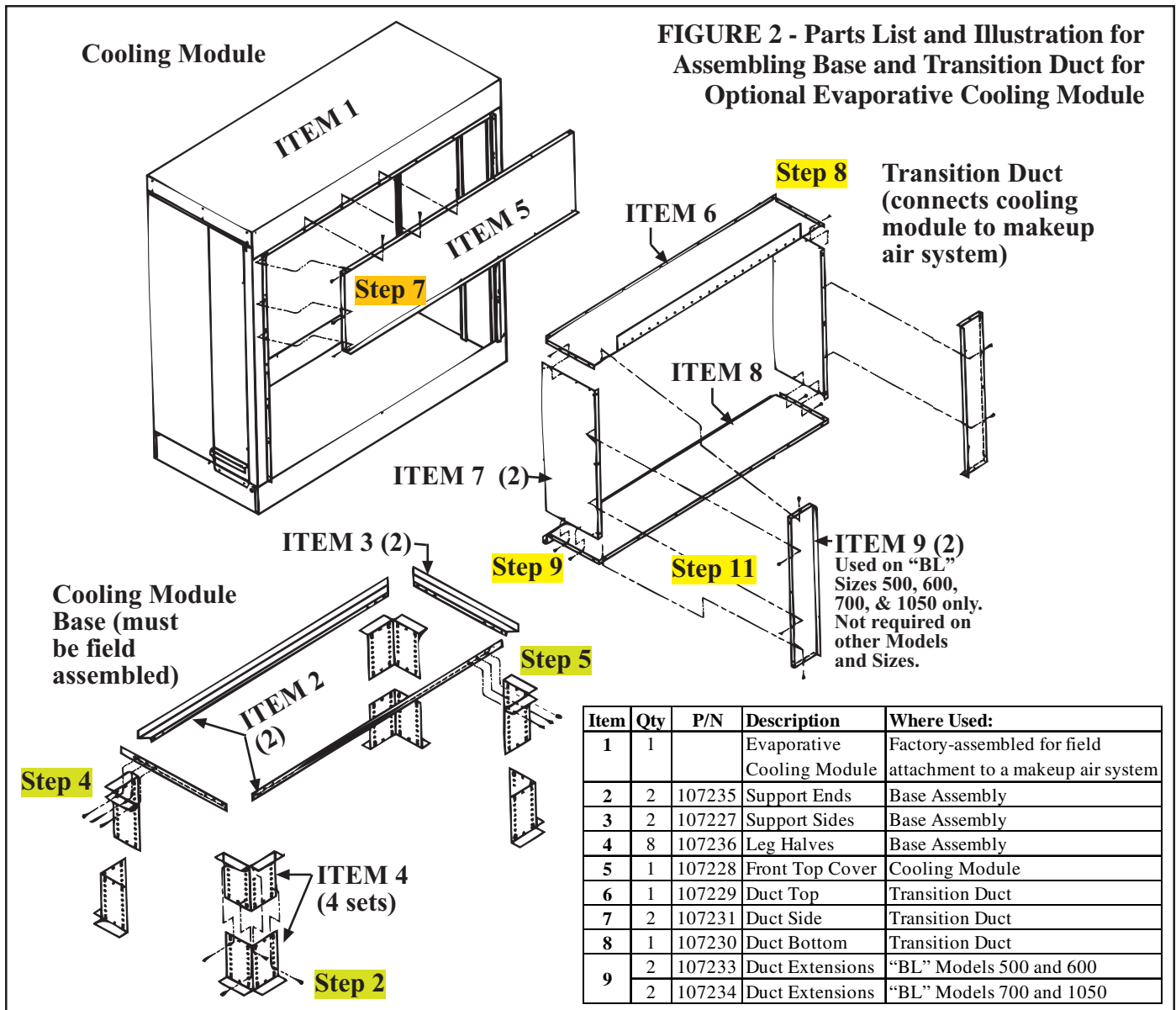
Assembling Base, FIGURE 1 & STEPS 2-5, FIGURE 2:

- 2) Using four bolts and nuts per leg, fasten the two leg halves (ITEM 4) together. See **FIGURE 2, Step #2**. The top flange of the assembled legs should be level with the bottom of the system cabinet. Adjust legs to proper height and tighten bolts securely. Assemble all four legs.
- 3) Approximately two feet (610mm) from the air inlet side of the cabinet, position the four assembled legs in a rectangular pattern corresponding to the size of the cooler. Depending on the type of surface, it may be necessary to set the legs on a weather-resistant, solid wood or metal base. Check again to be sure that the top of the legs are level with the bottom of the makeup air system cabinet.
- 4) Place rail sides (ITEM 3) on the **inside** of the top flanges of the leg assemblies. Using the bolts and nuts provided, bolt the side rail to the top three holes located on the legs just below the top flange. Repeat on the remaining three legs. Tighten nuts securely.
- 5) Place the rail ends (ITEM 2) on the **inside** of the top flange of the leg assemblies. Bolt the end rail to the top three holes located on the legs just below the top flange. Repeat on the remaining three legs. Tighten nuts securely.

FIGURE 1- Assembled Base for Evaporative Cooling Module



Adjustable Leg Height
 16" (406mm) Maximum
 9" (229mm) Minimum

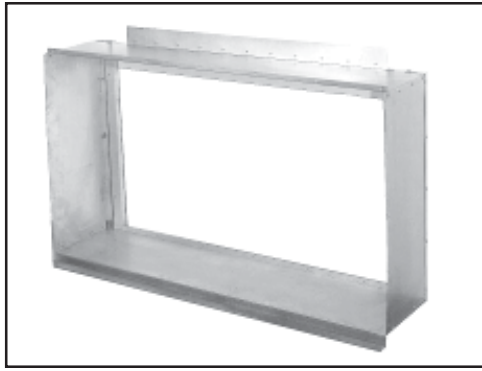


Attaching Cover and Assembling Transition Duct (FIGURE 2, STEPS 7-11)

- 6) Carefully lift the evaporative cooling module (ITEM 1) from both ends and place it on the completed base assembly. Be certain that the cooling module is level and all base assembly bolts are secure.
- 7) Attach front top cover (ITEM 5) to cooling module, as shown in **STEP #7** using 13 of the # 10 x 1/2" long sheetmetal screws. There will be three screws per side and seven screws across the top.
- 8) Attach transition duct sides (ITEM 7) to duct top (ITEM 6) using eight, #10 x 1/2" long sheetmetal screws. As shown in **STEP #8**, there will be four screws per side.
- 9) Fasten the duct bottom (ITEM 8) to the transition duct sub-assembly begun above by following **STEP #9**, using eight of the #10 x 1/2" long sheetmetal screws provided. Again, there will be four per side.
- 10) If the packaged heating system is a "BL" 500, 600, 700 or 1050 size, the duct extensions (ITEM 9) must also be installed on the transition duct. If the packaged heater is a "BL" 400, 800, or 1200 size, an RBL, or an ADF/ADFH, skip **STEP 11** and continue with **STEP 12**.
- 11) There are two sizes of the duct extensions. One is used to fit the "BL" 500 or 600 size heaters; one fits the 700 and 1050 size heaters. To fasten the duct extension (ITEM 9) to the transition duct assembly, use 14 #10 x 1/2" long metal screws as shown in **STEP #11**. Five screws will be used on each side of the extension and one up through the bottom of the extension.

Assembling Transition Duct (cont'd)

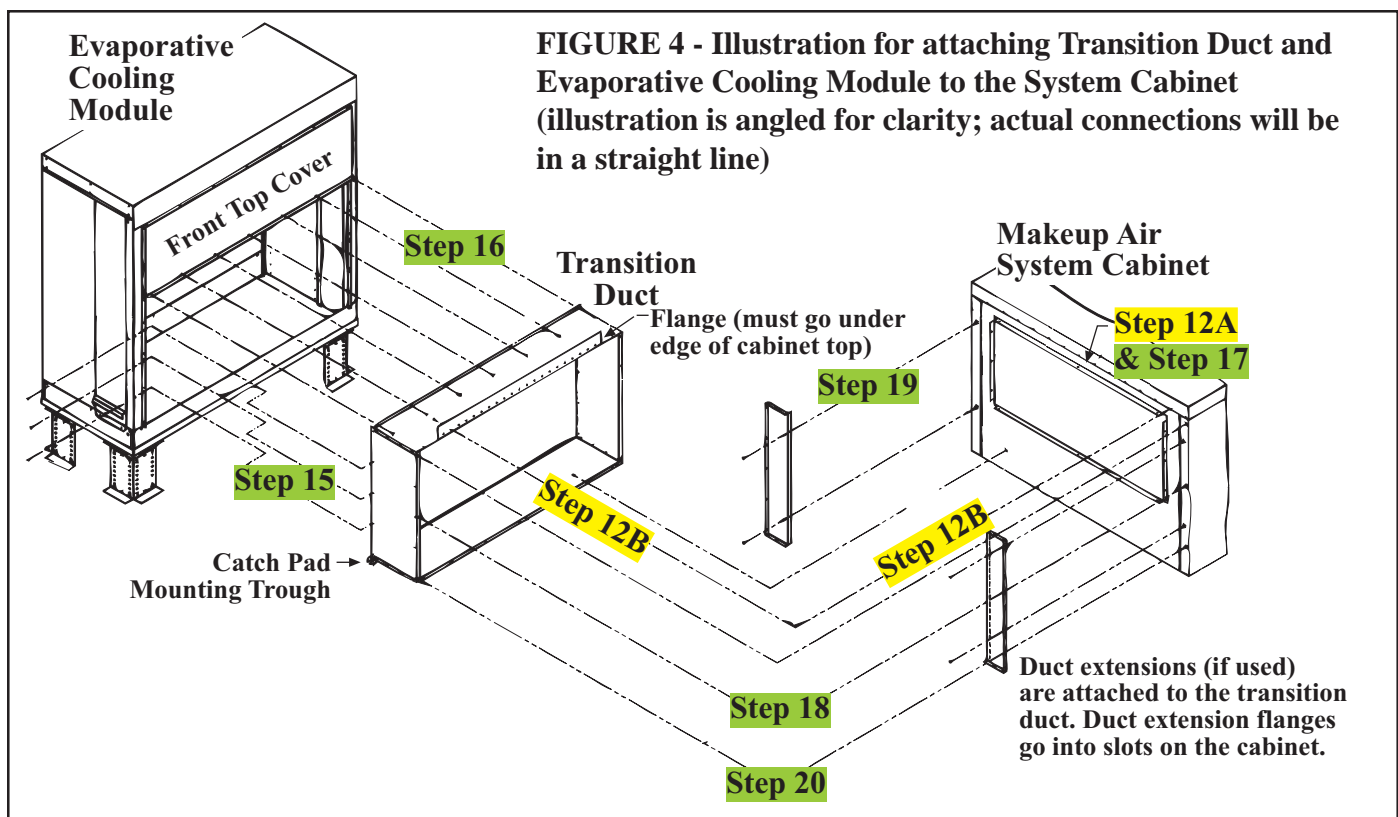
FIGURE 3 - Assembled Transition Duct



Attaching Transition Duct and Cooling Module to System Cabinet (FIGURE 4, STEPS 12-21):

- 12) Following **Step #12A**, remove the screws from along the top rear lip of the blower cabinet panel. Slip the transition duct flange **underneath** the cabinet top edge and **loosely** insert two screws through the top edge, through the transition duct flange, and into the cabinet end panel. **Follow STEP #12B.**
- 13) If the transition duct has duct extensions (**FIGURE 2, ITEM 9**), insert the duct extension mounting flanges into the slots on the cabinet end panel.
- 14) With the transition duct attached to the cabinet, carefully tilt the transition duct upward enough to clear the cooler reservoir pan and slide the evaporative cooling module underneath the catch pad mounting trough. Squeeze the cooling module and transition duct assembly into the system cabinet until a tight fit is obtained.
- 15) Following **STEP #15**, line up the holes in the cooling module corner leg with the holes in the transition duct sides. Using five #10 x 1/2" long sheetmetal screws per side, fasten the transition duct sides to the cooling moduler.
- 16) Following **STEP #16**, fasten the transition duct top lip to the front top cover of the cooling module with seven of the #10 x 1/2" long sheetmetal screws provided.
- 17) With the cooling module and transition duct properly positioned on the blower cabinet, tighten the two screws loosely inserted in **STEP 12B**. Insert and tighten screws in the remaining holes along top edge of cabinet.

NOTE: When attaching the transition duct to the cabinet (**STEP 18 or 19**), you may find it easier with the media pads removed. See **FIGURES 5 and 7** and the corresponding



instructions on pages 5 and 6 for removal and replacement of media pads. If optional moisture elimination pads are being included, media pads will have to be removed to complete the installation.

- 18) If there are no duct extensions on the transition duct, reach inside the cooling module and fasten the cooler to the back of the cabinet and panel as shown in **STEP #18**. There are no holes in the cabinet end panel, so six #10x1/2" long self-drilling sheetmetal screws must be used. The screws are provided in the duct kit and are recognizable by their drill bit type cutter and slotted head.
- 19) If there are duct extensions on the transition duct, reach inside the cooling module and fasten the duct extensions to the back of the cabinet end panel as shown in **STEP #19**. There are no holes in the end panel, so four #10x1/2" long self-drilling sheetmetal screws must be used. The screws are provided in the duct kit and are recognizable by their drill bit type cutter and slotted head.
- 20) Attach bottom of duct assembly, by using seven #10 x 1/2" long self-drilling screws, to the cabinet end panel as shown in **STEP #20**.
- 21) The evaporative cooling module should now be installed. Be certain all screws are in place. Seal all corners of the transition duct assembly with a waterproof silicone sealant to prevent moisture from entering the cabinet.

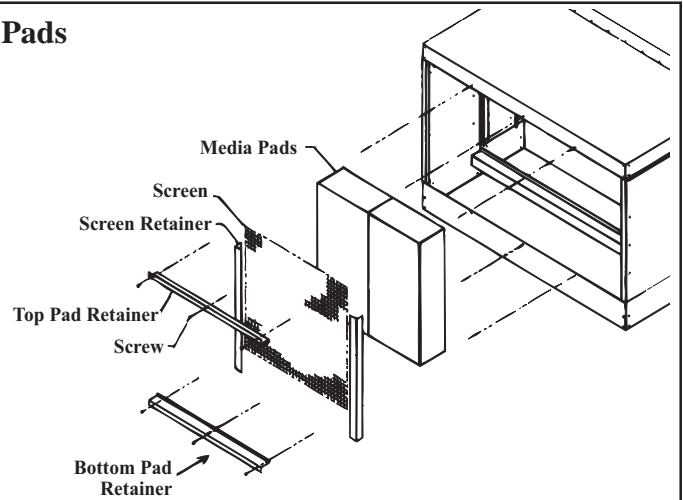
5. Installing Optional Moisture Elimination Pads

Option ASA1 moisture elimination pads are shipped separately for field installation. Follow these installation instructions. If this option is not being installed, continue to Paragraph 6.

Media pads must be removed to install the moisture elimination pads (See **FIGURE 5**). **FIGURE 6** illustrates installation of the moisture elimination pads.
Remove Media Pads

FIGURE 5 - Removal (and Replacement) of Media Pads

- 1) Remove the three sheetmetal screws that hold the top pad retainer.
- 2) Release the top pad retainer from the cooling module.
- 3) Remove the three sheetmetal screws that hold the bottom pad retainer. Release the bottom pad retainer from the cooling module.
- 4) Disengage the screen retainers from the sides of the media.
- 5) Disengage the inlet screen from the media pads and remove from the cooling module.
- 6) Slide all media pads horizontally away from cooling module until clear of bottom reservoir pan.

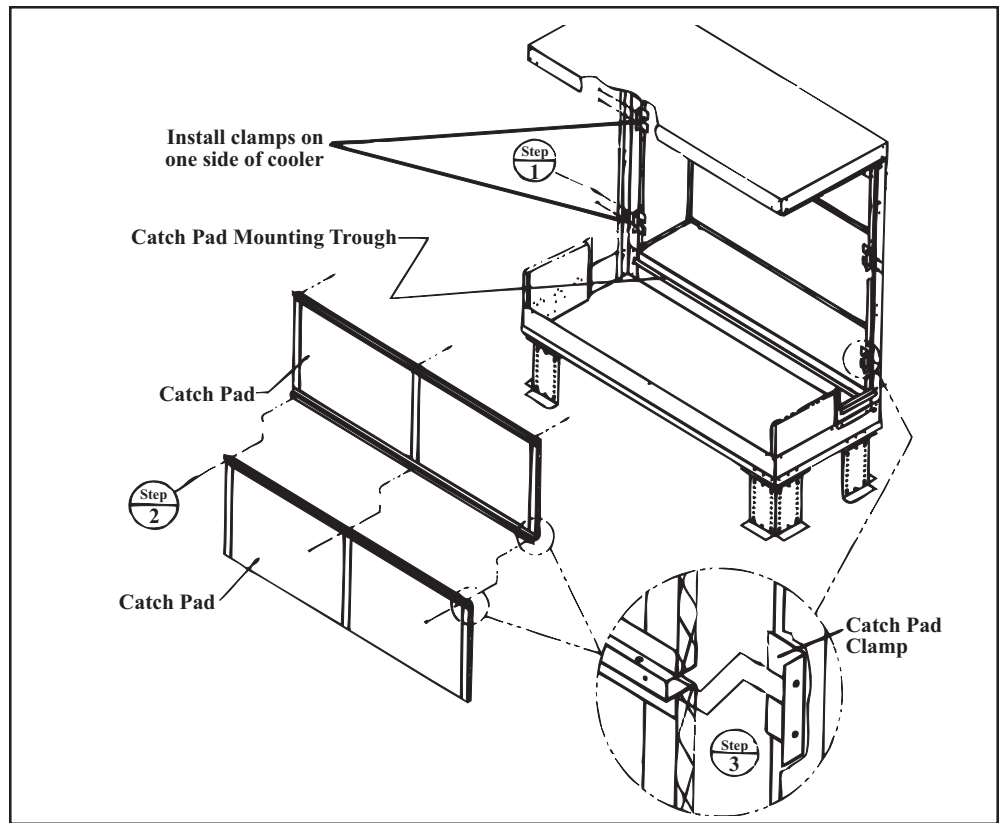


Install Moisture Elimination Pads (See FIGURE 6, page 6.)

- 1) Prepare module by attaching two catch pad clamps to one side of the cooler's front legs. Screw through the legs into the clamp with four of the #10 x 1/2" long sheetmetal screws provided.
- 2) Prepare catch pads by assembling them together. Use three of the #10 x 1/2" long sheetmetal screws provided.
- 3) Guide the catch pad assembly through the inlet of the cooling module and place the bottom of the lower pad into the catch pad mounting trough. The screen part of the catch pad assembly should always be facing the attached air mover. Slip the catch pad assembly into the two slots located in the catch pad clamps installed in Step (1).
- 4) With the pads in place, complete the assembly by sliding one of the two remaining clamps over the middle seam where the assembled catch pads meet. Slip the other clamp over the top catch pad frame and fasten both clamps to the cooling module leg using sheetmetal screws provided.

5. Installing Optional Moisture Elimination Pads (cont'd)

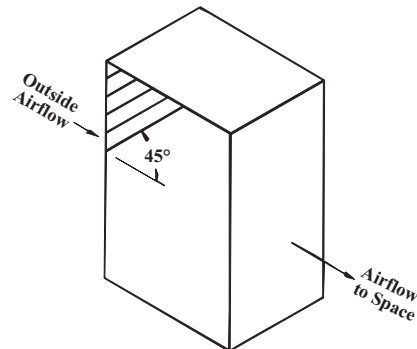
FIGURE 6 - Installation of Optional Moisture Elimination Catch Pads, Option ASA1



Replace Media Pads (See FIGURE 5 and FIGURE 7, page 5.)

Reverse procedure in FIGURE 5 to replace the media. Media must be installed as shown in FIGURE 7.

FIGURE 7 - Airflow Direction through the Media Pads

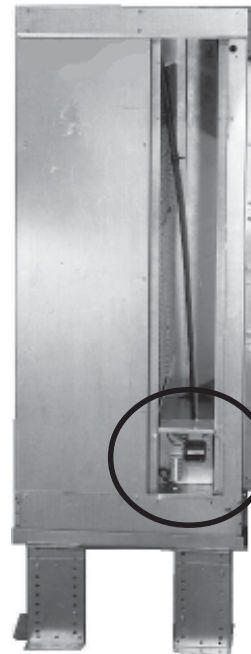


IMPORTANT: Cooling media is made up of two different sheets of cooling material. Each has its own unique angle. When replacing the cooling media, **BE CERTAIN** the 45° angle slopes downward toward the incoming outside air. If the media is not installed properly, water blowoff from the media pads will occur.

6. Re-Position Pump/Junction Box Assembly

To avoid shipping damage, the pump/junction box assembly is attached to the top of the side panel for shipment. Support the pump and remove the four screws that hold the assembly in position. Re-position the assembly as shown in FIGURE 8 and attach using the same screws.

FIGURE 8 - Re-position pump/junction box assembly.



For shipping, pump/junction box is attached at the top.

Remove pump/junction box from shipping position (above) and re-attach in "working" position (illustrated).

7. Electrical Connections

FIGURE 9A - Diagram of Evaporative Cooling Module Factory-Installed Wiring -- "BL" Models with 115/230/1/60 or 230/460/575/3/60 (Heater Options AK3, 6, 7 or 8) and Models ADF/ADFH 700/1200 (see Note above)

Line voltage wiring must be field installed between the blower junction box and the evaporative cooling module junction box. The tubing-encased wires are factory-connected in the cooling module junction box.

NOTE: Models ADF/ADFH have only 115V optional evaporative cooling module pumps. A transformer is included on the unit.

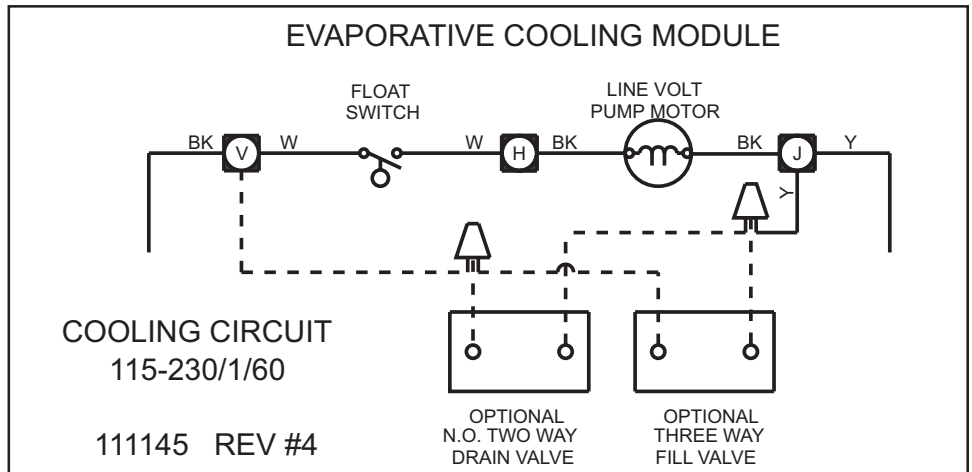
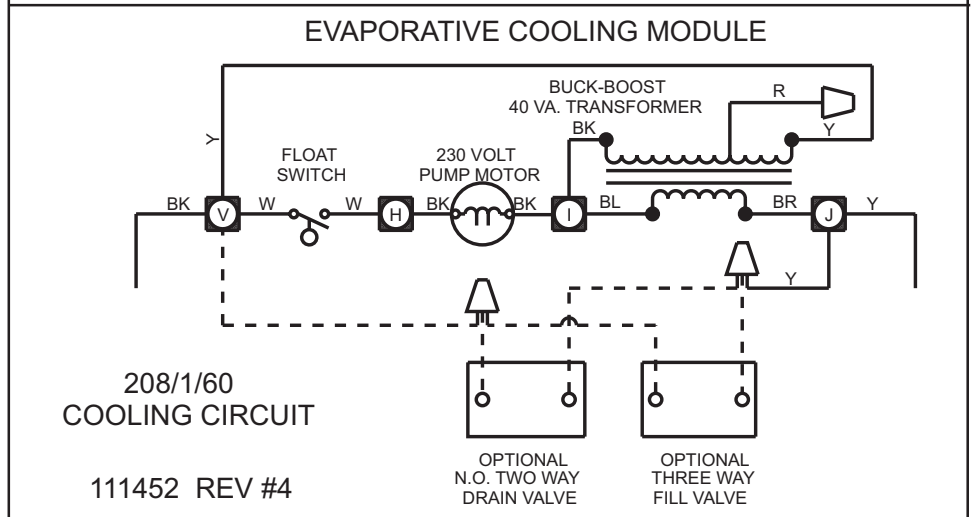


FIGURE 9B - Diagram of Evaporative Cooling Module Factory-Installed Wiring -- Systems with 208/1-3/60 (Heater Option AK2 or AK5)



Instructions for "Internal Field-Required Wiring From Cooling Module to System Cabinet

WARNING: Disconnect power to the unit.

NOTE: The two snap strain relief bushings are shipped in the bottom pan of the cooling module.

1. Remove the compartment door panels and electrical compartment cover. Remove the service panel in line with the hole in the cooling module.
2. Drill a 7/8" hole in the cabinet end panel in line with the hole in the cooling module junction box.
3. Pull the tubing-encased wires through the hole in the blower cabinet. Place the strain relief bushings around the tubing and insert the bushing into the hole (Bushing must be used to prevent water from leaking into the cabinet). Route the wires across the cabinet bottom. If there are any filters, run the wires through the slot in the bottom filter rack. If there are inlet dampers, be careful that the wires do not interfere with the damper controls. Run the wires up to the electrical compartment, remove a plug from one of the bottom entrance hole, and push the tubing-encased wires into the electrical compartment. Place the other strain relief bushing around the tubing and insert the bushing into the hole in the electrical compartment.
4. Follow the wiring diagram included with the heater to properly connect the wires to the terminal blocks. If there is excess tubing and/or wiring, trim before making connections.
5. Before unit is operated, replace all door panels and fasten all latches.

8. Water Connections

WARNINGS: Water reservoir (outdoor systems) must be drained and pump motor turned off when outside temperature falls below 32°F. Pump must never be operated without water in the reservoir.

Supply and Drain Water Connections

Float Valve (FIGURE 10) - In a module with pump and float controls, a float valve maintains the appropriate water level in the reservoir.

Use a field-supplied 1/4" diameter tubing with a compression nut and tubing ferrule to connect the fresh water supply to the inlet of the float valve. Place nut and ferrule over tubing and insert tubing into the float valve stem. Tighten nut securely.

FIGURE 10 - Connect Fresh Water Supply to Inlet of Float Valve

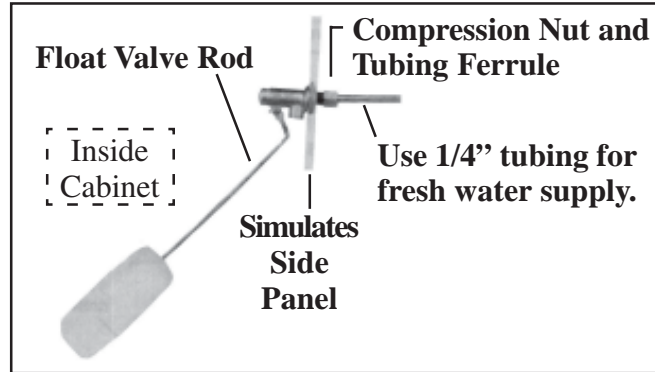


FIGURE 11 - Water Connections including Optional Drain and Fill Kit

An optional automatic fill and drain kit will automatically release supply water to the cooling module when a call for cooling is made and will drain all water from the reservoir when the cooling switch is deactivated or a cooling thermostat is satisfied. If installing an optional fill and drain kit, see **FIGURE 11** and follow the instructions that apply. Consult the wiring diagram for electrical connections.

Instructions for Installing Optional Fill & Drain Kit

NOTE: Follow instructions included in the valve packages for attaching valves to the water line only. The remainder of the installation instructions with the valves do not apply to this type of application.

Water Line Connections (See illustration.):

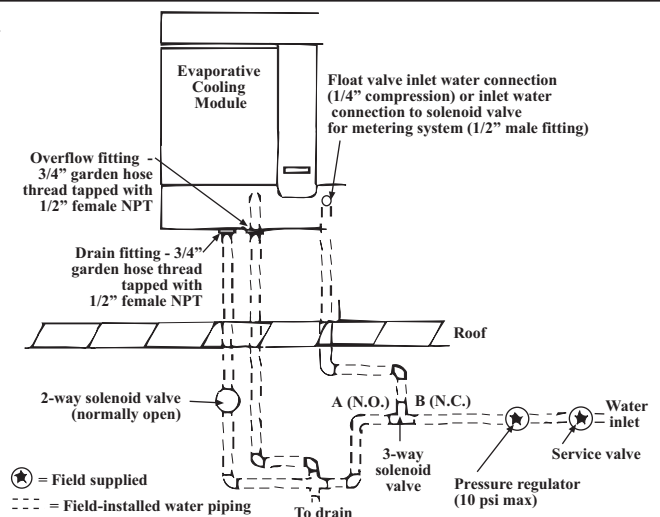
Supply (3-Way Valve) Connections - Connect the water supply line to "B" (normally closed). Connect the water drain line to "A" (normally open). Connect the middle outlet to supply the water to the cooling module reservoir.

Drain (2-Way Valve) Connections - Connect the drain pipe from the reservoir to "A". Connect the outlet side to "B" and connect into drain lines from the cooling reservoir and the supply valve.

Electrical Connections (requires black and white 14-gauge wire) - Refer to Wiring Diagram provided with the furnace:

WARNING: Risk of electrical shock. Disconnect the power.

1. Refer to the wiring diagram for terminal connections. (NOTE: If kit is not ordered with the system, connections will not be shown on the diagram. Terminal connections are specific to each system. Contact the factory for terminal connections. Be prepared to provide all model information.)



2. Run field-supplied black wire from the electrical compartment (terminal on the wiring diagram) of the evaporative cooling module and connect to the black wire on both the 3-way and the 2-way valve.
3. Run field-supplied white wire from the electrical compartment (terminal on the wiring diagram) of the evaporative cooling module and connect to the white wire on both the 3-way and the 2-way valve.

AquaSaver Timed Metering Control System - If the cooling module is equipped with a timed metering system, connect a 1/2" water line to the fitting on the side of the cooling module.

Due to various water pressures and installation conditions, the water supply line may bang abruptly when the solenoid valve in the AquaSaver system closes. This banging

can be minimized by installing a water hammer arrestor in the supply line. If installing an optional water hammer arrestor, select an indoor (above 32°F) location, either horizontal or vertical, in line with and as close to the solenoid valve as possible. Follow the manufacturer's instructions to install and maintain the water hammer arrestor.

A freeze protection kit is available for a module with a timed control system. It includes a two-way valve and is shipped separately for field installation.

All Cooling Modules - A manual water shutoff should be installed upstream of the inlet, at a convenient non-freezing location, to allow the water supply to be turned on and off. If necessary, install a bleed line between the manual valve and the cooling module inlet to allow drainage of the line between the shutoff valve and the cooling module.

All cooling modules are equipped with an overflow and drain fitting. The fittings are in the cabinet bottom and come complete with a locknut and a sealing gasket. Check these fittings for tightness before installing the overflow and drain piping. The drain and overflow fitting will accommodate a 3/4" garden hose thread and is tapped with a 1/2" female pipe thread for iron pipe.

Bleed Line Connection (module equipped with pump and float controls only; does not apply to module with AquaSaver timed controls) – Using the 1/4" I.D. x 1/2" N.P.T. nylon bleed line fitting (shipped in evaporative cooler bottom pan), thread the fitting into the female adapter on the distribution pipe. The hose barb will protrude from the side of the cabinet (See **FIGURE 12**). Attach a 1/4" I.D. hose to the barb and run to the nearest drain.

Discharging a quantity of water by “bleed off” will limit the concentration of undesirable minerals in the water being circulated through the cooling module. Minerals buildup because evaporation only releases “pure water vapor” causing the concentration of contaminants in the water to increase as the evaporation process continues to occur. The minerals accumulate on the media, in the water lines, on the pump, and in the reservoir. Adequate bleed off is important to maintaining an efficiently operating evaporative cooling system.

Filling and Adjusting the Water Level in the Reservoir (module equipped with pump and float controls only; does not apply to module with AquaSaver timed metering controls) – Turn on the water supply. Check for a good flow. When the float valve (**FIGURE 10**) shuts off the water supply, measure the water depth. The depth of the water should be approximately 3". It may be necessary to adjust the float valve to obtain the proper water level or to free the float valve from obstructions. To adjust the float valve, carefully bend the float valve rod upward to raise the water level or downward to decrease the water level.

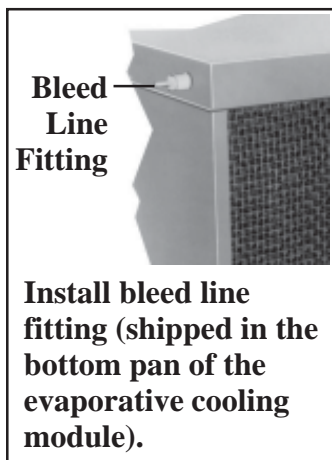
While the reservoir is full, check for any water leaks. The reservoir was tested, but if any small leaks are present, drain the reservoir and apply a waterproof silicone sealer around corners and welds.

Proper water flow over the evaporative cooling media is critical to extend the life and maintain the efficiency of the pads.

CAUTION: Do not flood the media pads with extreme quantities of water for long periods as this will cause premature breakdown of the media. An even flow from top to bottom of the media with the least amount of water is all that is required to assure maximum efficiency and media life span. More water does not provide more evaporation or more cooling.

Float and Pump Control System - Using the ball valve (**FIGURE 13**, page 10), located in the middle of the length of hose running from the pump to the sprinkler pipe inlet, adjust the valve handle to allow the flow to completely dampen the media pads from top to bottom.

FIGURE 12 - Air Inlet Side of Evaporative Cooling Module Showing Bleed Line Fitting



9. Adjust Water Flow Over Pads

WARNING: Adjust ball valve only when power is disconnected from the unit. Failure to do so can cause electrical shock, personal injury, or death.

9. Adjust Water Flow Over Pads (cont'd)

FIGURE 13 - Disconnect the power and adjust the water flow with the ball valve.



Operate the unit watching the water flow. After 15 minutes with the blower in operation, the water should have completely dampened the pads but should not be flowing off the entering side of the media. If water is flowing off the entering side of the media, turn the system off, disconnect the power, and reduce the entering water flow.

AquaSaver Timed Metering Control System - NOTE: Water flow and pad wetting time should be adjusted at maximum airflow and wet bulb depression to assure complete wetting of the media at the extreme operating conditions.

In addition to adjusting water flow, the timing of the water on/off cycle can be adjusted. Adjustments are correct when **1)** the water rises from the holes in the sprinkler pipe (See **FIGURE 14**) consistently along the entire pipe length, **2)** the media pads wet evenly after a few "ON" cycles (no dry spots or dry streaks), and **3)** a slight amount of excess water collects at the drain at the completion of the "ON" cycle.

1) AquaSaver Water Flow Adjustment - Using the ball valve illustrated in **FIGURE 13**, adjust the water flow depending on the pad height. See **FIGURE 14**.

FIGURE 14 - Adjust Water Flow with the Ball Valve in FIGURE 13.

Pad Height	A = Water rise from PVC Sprinkler Pipe
24" (610mm)	1/8" to 1/2" (3 to 13mm)
48" (1219mm)	1/4" to 1/2" (6 to 13mm)

2) AquaSaver Timer Adjustment - At any given temperature, the media pads should completely wet from top to bottom during the ON cycle. The microprocessor has three preset timing settings based on media size. The appropriate setting is selected by changing the position of the suitcase jumper at J2 on the microprocessor. Remove the cover and check the setting (See **FIGURE 15**).

FIGURE 15 - AquaSaver Microprocessor Control in the Junction Box

NOTE: Prior to 2003 the AquaSaver timed cycle was controlled by a mechanical timer. Turn the adjustment screw clockwise to increase the ON time or counterclockwise to decrease the ON time. One complete turn will adjust the cycle by 12 to 14 seconds.

If the jumper is at the appropriate location for the media, replace the cover. If the jumper needs to be moved, move it to the appropriate setting. The setting will go into effect when the power is restored.

Check the "ON" timing; the media pads should be wet from top to bottom during the ON cycle.

If the preset timing is not suitable for the application, follow the instructions supplied with the microprocessor to change the calibration of the "On" and/or "Off" cycle.

All Modules - Check the reservoir for any water leaks. The reservoir was water tested, but if any small leaks are present, drain the reservoir and apply a waterproof silicone sealer around corners and welds.

Maintenance 10. Media

Media - Over time, excessive amounts of mineral deposits will begin to build up on the media. Annually, scale and dirt should be washed off the entering surface of the media. Remove the pad retainers and screen. Clean the media using a garden hose, mild soap, and a soft bristled brush. When the media becomes too clogged with mineral deposits and dirt that it cannot be cleaned, the pads should be replaced. The average pad life is approximately three cooling seasons.

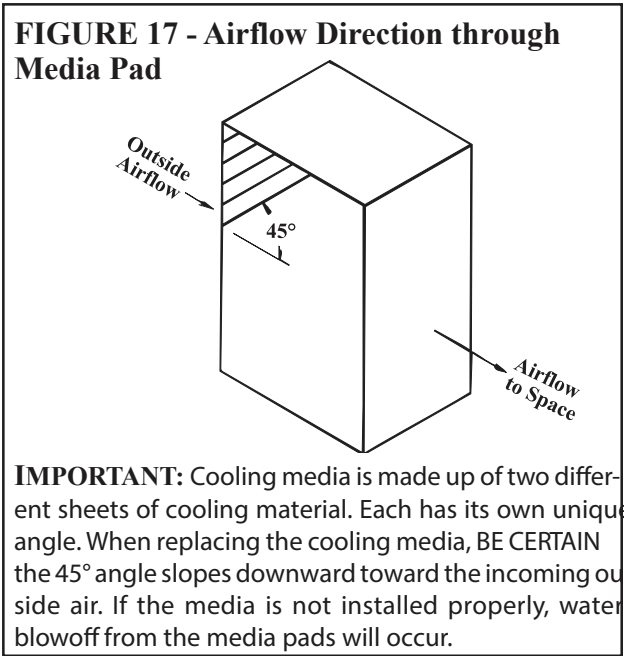
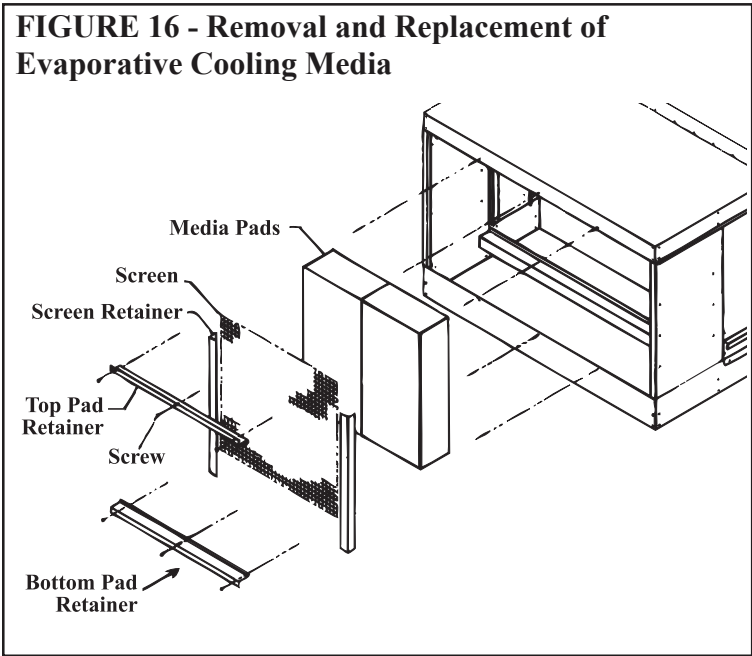
WARNING:
Disconnect all power to the unit before doing any maintenance.
Failure to do so may cause electrical shock, personal injury or death.

Instructions for Replacing Evaporative Cooling Media Pads (FIGURE 16)

Select the correct replacement part numbers and order replacement media pads through your Distributor. Follow the instructions below and remove and replace pads as shown in FIGURES 16 and 17.

Evaporative Cooling Module Media Pads					
Media Pad Sizes	Qty	Replacement Part No.			
		Cellulose		Glass Fiber	
		6"	12"	6"	12"
48x12	4	107190	107194	107199	107201
48x8-5/8	1	107191	107195	107200	107202

1. Remove the three sheetmetal screws that hold the top pad retainer in place. Release the top pad retainer from the cooling module.
2. Remove the three sheetmetal screws that hold the bottom pad retainer in place. Release the bottom pad retainer from the cooling module.
3. Disengage the screen retainers from the sides of the media.
4. Disengage the inlet screen from the media pads and remove from the cooling module.
5. Slide all media pads horizontally away from the cooling module until clear of bottom reservoir pan. Dispose of media properly.
6. Slide new media pads over both support rails until back stop is encountered. Media **MUST** be placed with airflow as shown in **FIGURE 17**.
7. Center screen on the incoming air side of the media.
8. Re-position the two side screen retainers by fitting them between the side of the media pad and the side of the cooling module. The retainers should fit snugly, pinching the screen against the media pads.
9. Position the bottom pad retainer between the pad and the reservoir pan. Fasten with the three sheetmetal screws removed in Step 2.
10. Position the top pad retainer between the pad and the top of the cooling module. Fasten with the three sheetmetal screws removed in Step 1.



11. Water Lines

Water Feed Line and PVC Distribution Piping – Annually, the water supply line and the PVC water distribution pipe should be flushed of debris and contaminants. Remove the media pads following the instructions above. Remove the water feed line from the downstream side of the ball valve and unscrew the water bleed line barbed hose fitting. Force a fresh water supply up through the water inlet hose and thoroughly flush the distribution pipe.

12. Water Pump

Water Pump and Inlet Basket Screen – Annually, the pump and inlet basket should be removed, disassembled and cleaned.

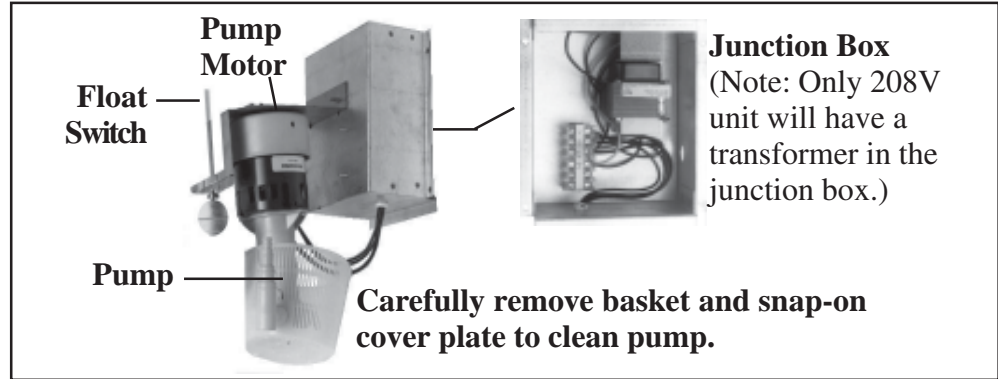
WARNING: Do not expose pump motor or any part of the electrical box to water. Evaporative cooling pump is NOT submersible.

Maintenance (cont'd)

12. Water Pump (cont'd)

1. Disconnect the power supply to the unit.
2. Remove the junction box door and disconnect the two power supply wires from the terminal block inside the junction box.
3. Disconnect the water feed line hose from the upstream side of the ball valve.
4. Unscrew the four sheetmetal screws holding the junction box to the cooling module. Remove the junction box-pump-float switch assembly.
5. Dislodge the inlet basket screen from the pump and clean any buildup of debris and dirt. Carefully remove the base cover plate from the bottom of the pump. Using a mild soap solution, wash all deposits from the inside of the pump and remove all debris from the impeller.
6. Reassemble the pump. Replace the parts in exact reverse order, being careful that everything is returned to its proper position.

FIGURE 18 - Remove Junction Box, Pump and Float Switch as an Assembly



SERVICE

13. Troubleshooting Chart

WARNING: Disconnect the power before servicing the cooling module. Failure to do so can cause electrical shock, personal injury or death.

PROBLEM	PROBABLE CAUSE	REMEDY
Pump doesn't run (pump & float system) – Unit is calling for cooling and reservoir	1. Electrical connections (low voltage)	1. Verify all electrical connections. Verify correct voltage at pump terminals H
	2. Electric float switch.	2. Check position of the actuators on the electric float switch.
	3. Dirty pump.	3. Clean pump. See Paragraph 10.
	4. Defective pump.	4. Replace pump.
Required water level (3") not being maintained (pump & float control system)	1. Float valve	1. Adjust float valve. See Paragraph 8.
	2. Optional drain and fill valves	2. Check valves for proper operation. See Paragraphs 8 and 9.
	3. Incorrect overflow pipe nipple (should be 3-1/2").	3. Replace pipe nipple.
	4. Drain leaking.	4. Tighten drain fittings
Water running off of media pads	1. Excessive water flow	1. Adjust ball valve in distribution line. See Paragraph 9.
	2. Media pads need cleaned or replaced	2. Clean or replace media pads. See Paragraph 10.
Water not distributing evenly	1. Distribution line clogged.	1. Flush distribution line. See Paragraph 12.
	2. Holes in distribution line turned	2. Check position of distribution line. Holes should be spraying upward toward diffuser. If not positioned with holes toward top, adjust position of line.
	3. Pump not running on correct voltage.	3. Check voltage at pump terminal in cooling module junction box
Media pads becoming clogged and discolored quickly (scale and salt deposits)	1. Bleedoff line clogged or inadequate bleedoff (pump & float control system)	1. Clean bleed line. See Paragraph 8. A uniform buildup of minerals on the entering air face of the media indicates insufficient bleedoff. Increase the rate until the mineral deposits dissipate.
	2. Excessive water flow.	2. Reduce flow by adjusting ball valve in distribution line. See Paragraph 12.
Water blowoff from media pads or water being pulled from reservoir.	1. Media pads installed incorrectly.	1. Install media pads correctly. See Paragraph 8.
	2. Requires moisture elimination pad (Over 600 FPM)	2. Install moisture elimination pad. Follow instructions, page 5.
	3. Water level not 3" (pump & float system).	3. See second problem listed (Required water level not being maintained)

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 O'Fallon, MO | Printed in U.S.A. (6/16)
 Form I-OPT-EC (6-16) P/N 160202