



**Installation & Operating Instructions  
For  
Goettl Evaporative Coolers**

**Manufactured By  
GOETTL AIR CONDITIONING, INC.  
P.O. Box 52029, Phoenix, Arizona 85072-2029**

# INSTALLATION

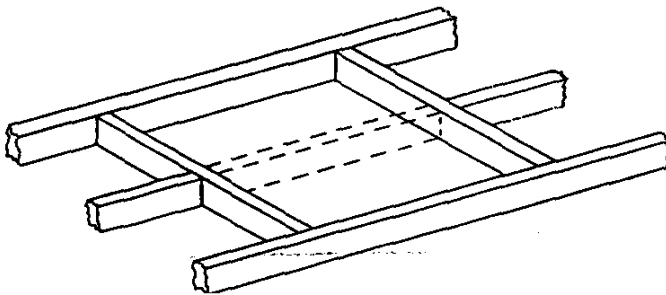
1. Before you start, read all of the instructions.
2. Installations may require that you adapt these instructions to special requirements.
3. On receiving your cooler, check for concealed shipping damage, and note any damage on the freight bill. Such damage is the responsibility of the freight carrier, and any claims must be filed with them. Unpack the unit carefully, being sure that accessories and instructions are not discarded with the packing material.

## ROOF MOUNTED UNITS

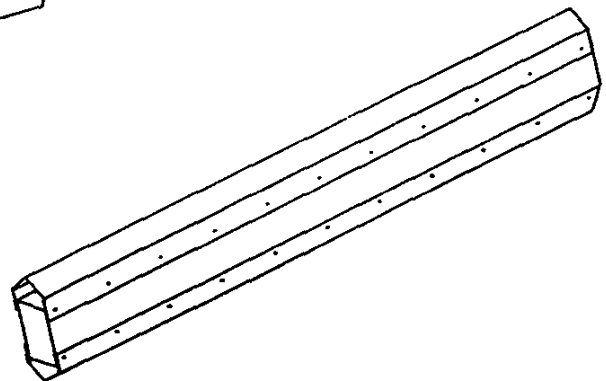
### Step 1:

Select location of cooler and roof opening as determined by requirements of ductwork, roof construction and cooler appearance.

Cut the roof opening. Do not cut any structural members without approval of your architect, builder, or authorized persons having jurisdiction. Follow their instructions. If approval is received to cut joists or roof rafters, it is suggested they be headed as shown in figure 1a. Where the rafter or joist must be left in place it should be capped both top and bottom to deflect air flow, as shown in figure 1b. Note that leaving such framing in the duct can cut down cooler air delivery as much as 10%.



*Fig. 1a. Cut and framed roof opening for cooler installation.*



*Figure 1b. Capped rafter or joist.*

**Step 2:**

Construct an angle iron or wood platform to provide a level mounting surface for the cooler. Typical roof platforms are shown in Figure 2 for down discharge coolers and Figure 3 for horizontal discharge coolers.

Measure cooler, or find size from catalog to determine size of platform. Platform must be located so cooler discharge opening will line up with duct work. On a pitched roof the open sides of the platform frame may be covered with galvanized sheet steel or other weatherproof material. An opening or removable panel must be left in one side, large enough for access for the drain fitting in the cooler bottom. For down discharge coolers the duct should be fastened to the platform collar before setting cooler in place. The duct should have a standing flange over which the cooler discharge opening will fit.

Flash and seal around the duct. Figures 2 and 3 show flashing and rain shield to provide weather tightness with flexibility.

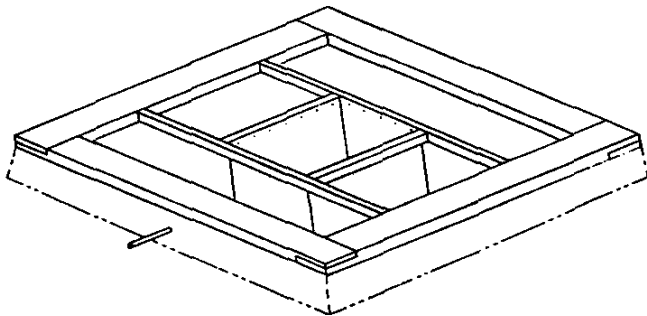
**WALL MOUNTED HORIZONTAL DISCHARGE UNITS**

**Step 1.**

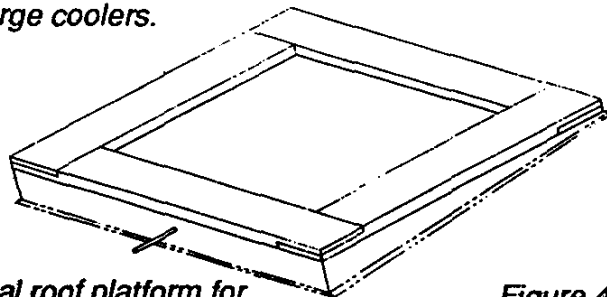
Determine location of cooler, and of opening in the building wall, depending on duct work and building arrangement.

Check with your architect or builder before cutting any structural member.

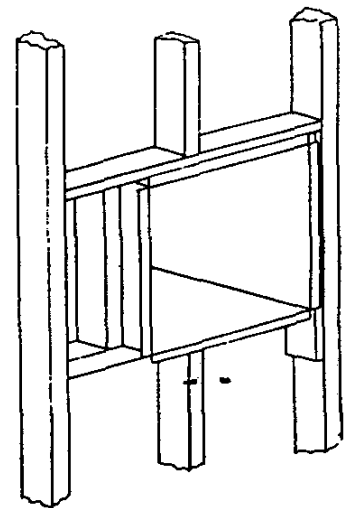
Approval received, cut the wall opening frame, as shown in Figure 4. Any stud which must be cut should be headed and the opening framed as shown.



*Figure 2. Construction of roof platform for down discharge coolers.*



*Figure 3. Typical roof platform for horizontal discharge coolers.*



*Figure 4. Cut and framed opening for wall mounted, horizontal discharge cooler installation.*

**Step 2.**

Construct a platform, either from the ground or fastened to the building wall, to provide a level mounting surface for the cooler. A typical mounting platform is shown in Figure 5. Measure cooler or find size from catalog to determine size of platform and position of duct opening in wall.

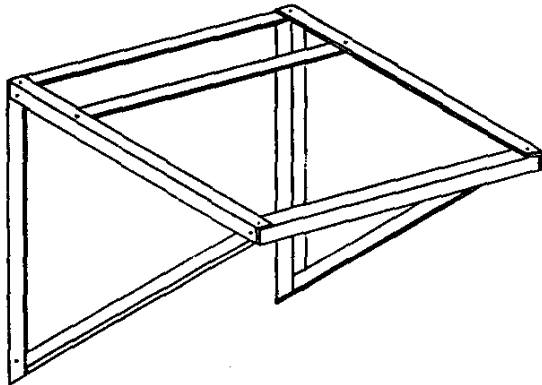
It is usually easiest to install main duct in the attic space before lifting the cooler into place. Flash and seal around the duct so the entire entry is weathertight.

**ALL UNITS**

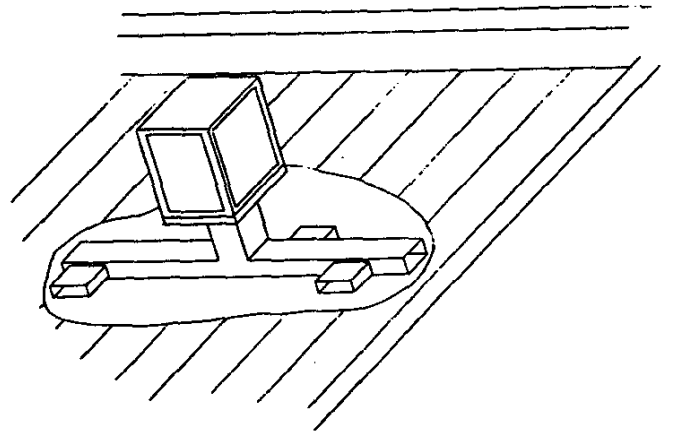
**Step 3.**

Mount the cooler on the platform. For large coolers, sign and rigging companies are often available to lift the unit into place. Large coolers are of bolted construction and can be disassembled and taken up in pieces if necessary.

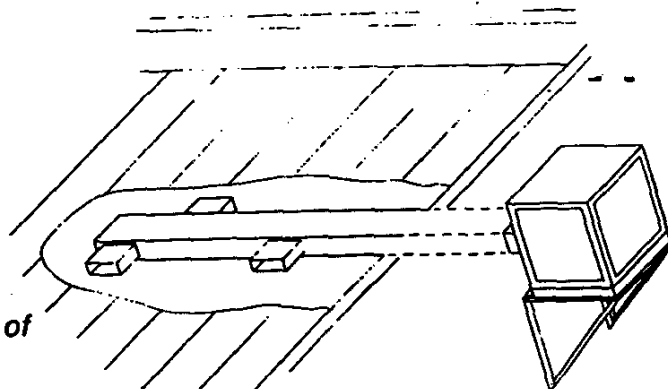
The unit should be sealed and isolated from the platform and from the duct flange with sponge rubber or plastic seal strips. Figures 6 and 7 show typical completed installations. Anchor lines from top of cooler to roof may be necessary in areas with very high winds.



*Figure 5. Typical wall-type platform for evaporative cooler.*



*Figure 6. Typical installation of roof-mounted down discharge unit.*



*Figure 7. Typical completed installation of wall mounted horizontal discharge unit.*

**Step 4.**

Connect 1/4" O.D. water tubing to cold water supply, Either an adapter faucet or a saddle valve can be used for connection to the water supply line.

Connect electrical conduit to junction box assembly located in corner of cooler top. Electrical knock outs are provided on the corner post for electrical connection convenience. Refer to wiring diagrams (located within the manual) for proper connections. All wiring must be done in accordance with all local codes. All units must be grounded in accordance to all code requirements.

**Step 5.**

Each unit contains a heavy duty constructed motor cradle. Each cradle is secured to the motor mounting bracket. Mount motor in motor cradle and secure with motor clamps provided in the bag assembly. Attach motor sheave and align belt.

Adjust belt tension by sliding motor cradle. Belt tension should be set until belt can easily be deflected 1/2 to 3/4 of an inch. Secure motor cradle into position by tightening four bolts.

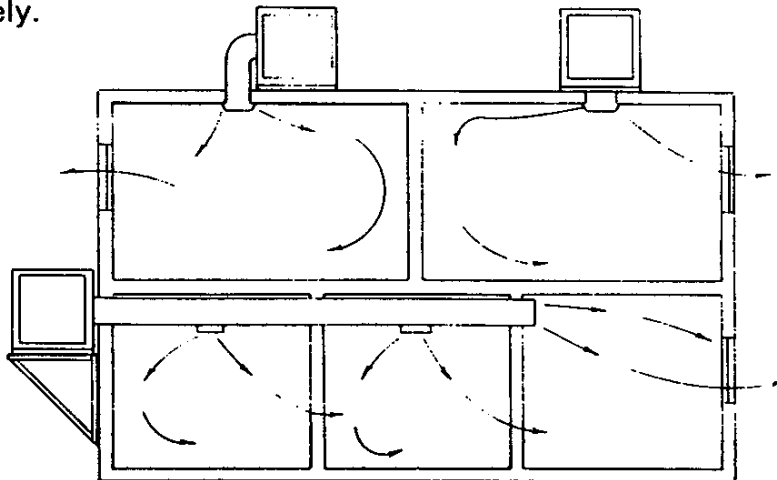
**Step 6.**

Connect duct work as required and install room grilles or discharge vents. For simple installations a duct equal in size to the cooler discharge opening will be satisfactory. Grilles should have four-way adjustable vanes for air flow direction.

**Step 7.**

Make the final adjustment on cooler according to the following check list:

1. Be sure duct work is complete, all dampers are open and all grilles are wide open. Check electrical input to unit for correct voltage.
2. Turn on electrical power supply. Check blower and pump motors to be sure both are operating freely.



*Figure 8. Combination duct and direct type cooling is often used in multi-unit commercial installations.*

3. Check current draw of blower motor. A tong type ammeter is usually the most convenient method of measuring. Be sure motor current is not greater than name plate full load rating at the supply voltage used. If motor current is too high, the motor pulley can be adjusted to slow the blower wheel. Turning the free half counter-clockwise (decreasing pitch diameter) will decrease blower speed and air delivery, and decrease motor amperes. Turning clockwise will increase blower speed and increase motor amperes. The pulley must not be opened so far as to allow the belt to ride on the hub, since this will cause rapid wear. The locking set screw should only be tightened down on the flat provided. Tightening down on the threads will make the pulley difficult to adjust at any later time.

Motor adjusting bolts must be moved to compensate for tighter or looser belt, depending on which way the pulley was adjusted. Set belt tension so that moderate hand pressure will depress belt at center point between pulleys approximately 1 inch. Remember that too-loose belts cause belt slippage, wear and noise, while too-tight belts cause excessive bearing wear.

Refer to Figure 1.

Step 8.

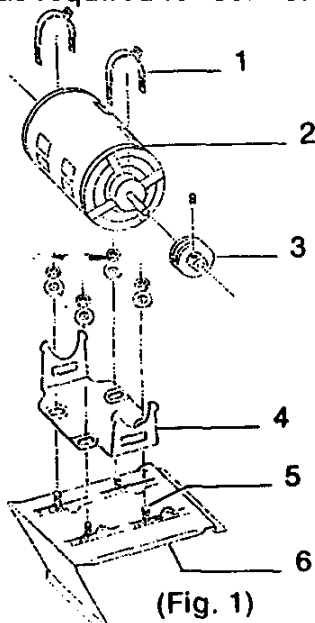
Turn on water. Check float valve operation, and adjust to provide correct water depth in cooler bottom. Water should be 2 1/2 inches deep.

Step 9.

Check for equal water flow from all distributor tubes. If water flow is too great, reduce by closing pinch fitting on pump discharge tube. Then check water flow from water trough in louver troughs.

Step 10.

After entire system is operating, adjust dampers and grille louvers to provide air in various rooms as required for comfort.



1. Motor clamps
2. Motor
3. Motor pulley
4. Motor cradle
5. Adjustment bolts
6. Motor mount

# SERVICE

## UNIT MAINTENANCE

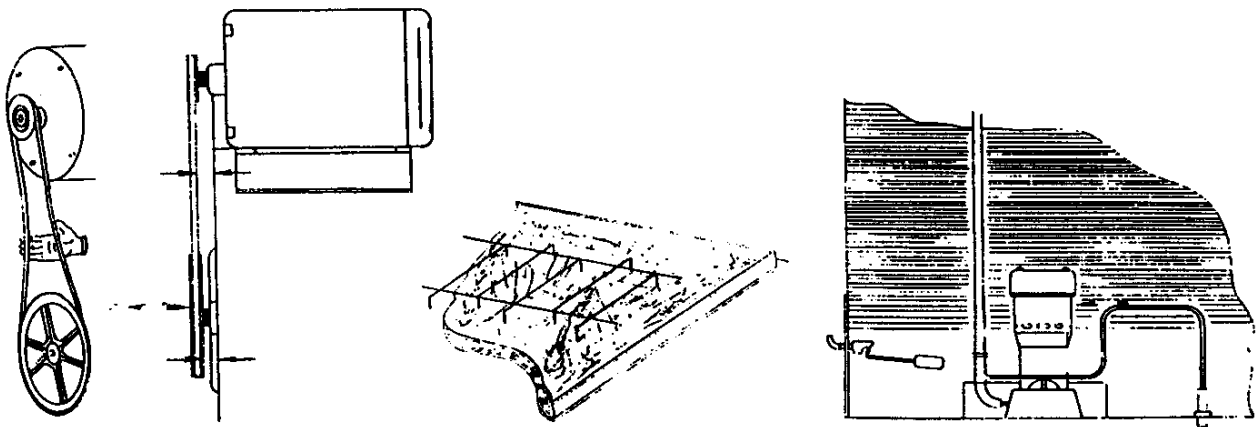
**WATER CONTROL:** Coolers are controlled manually by line valve. Turn valve on until water flows freely from all water distributor tubes and in sufficient quantity to thoroughly soak pads. Before turning on motor, let water run a few minutes to remove dust from pads and prevent delivery of untreated air.

**ADJUSTABLE MOTOR PULLEY:** Adjustable motor pulleys are set at the factory for maximum motor load and maximum air delivery of cooler not connected to a duct and register system. When cooler is connected to a duct system, the cooler air capacity and motor amperage decreases due to static pressure duct resistance. The adjustable motor pulley is used **ONLY** to compensate for duct system resistance by returning cooler and motor to maximum load capacity and should not be adjusted except for this purpose.

**CAUTION:** When it is necessary to adjust pulley, **AMPERAGE OF MOTOR MUST BE CHECKED TO MAKE CERTAIN IT DOES NOT EXCEED THE MAXIMUM ALLOWED AS STAMPED ON MOTOR SPECIFICATION PLATE.** Only person with proper electrical equipment and thorough knowledge of adjustable pulleys should attempt adjustment of motor pulley on your cooler.

**IMPROPER PULLEY ADJUSTMENT COULD OVERLOAD AND BURN OUT MOTOR.**

**BELT ADJUSTMENT:** Correct belt tension and alignment is important as it cuts power consumption and prolongs life of belt and motor. When installing or adjusting belt, loosen the four motor mount bolts and adjust until belt can be easily deflected 1/2 to 3/4 of an inch. **DO NOT TIGHTEN BELT BY ADJUSTING MOTOR PULLEY.** Align belt vertically by centering motor pulley in-line with blower pulley. Re-tighten the four motor mount bolts.



**AIR EXHAUSTING:** Windows or doors at a point most distant from cooler air inlet should be left open to permit free movement of air out of area being cooled, and avoid building up static pressure. Proper location of exhaust openings is important as they guide flow of air through areas where cooling is desired.

**WATER CONTROL:** The overflow standpipe screwed into drain bushing forms a water reservoir of the cooler bottom. The floating valve regulates water supply into cooler reservoir. The depth of water is regulated by loosening the float adjustment screw and raising or lowering float until water level remains approximately 2 1/2 deep. If manual valve is present in water supply line, open valve and allow to remain open during the cooling season. Water flow to cooler pads is furnished by the recirculating pump, and the desired amount of water is regulated by the water check clamp located on pump hose between pump and water distributor.

**BLEED OFF ATTACHMENT KIT:** A small, pinpoint amount of "used" water is bled off or discarded whenever the pump is in use. This keeps the water fresh and free from mineral concentrations.

**CLEANING:** The cooler cabinet and recirculating pump should be periodically inspected, cleaned and all scratches or bare metal should be covered with suitable protective paint. To prevent excessive deposits of water minerals and sediment, the reservoir pan should be cleaned at least every sixty days of operation. When a recirculating pump is used, remove overflow standpipe from drain fitting and allow water to drain. thoroughly clean pump and components making sure that impeller is free before cooler operation. Replace standpipe and fill reservoir. Operate cooler 15 minutes, then allow all water to drain through, thus cleaning entire system. always drain water reservoir completely when cooler is not in use over prolonged periods and particularly at end of cooling season.

**OILING:** All motors and blower shaft bearings are oiled at the factory, but should be checked before operating cooler. If need for oiling is indicated, use any good grade S.A.E. No. 20 or 30 oil. Apply 2 or 3 drops of oil to each oil cup on cooler motor and pump motor. The oil cups on blower shaft bearings should be filled. Under normal use, oiling is required every three months of operation.

**THE SLIDING DAMPER:** (Optional) On the blower, housing should be closed in the fall to keep cold air from entering the building. For pre-season cleaning, with the damper still closed, the blades of the blower are accessible for cleaning through the opening in the blower housing, this makes it possible to keep debris from entering the home.

**IMPORTANT:** Before operating cooler at the beginning of each cooling season, turn blower wheel, cooler motor and pump motor shafts by hand to make sure they turn freely. Failure to do this may result in burning out motor.

**FILTER PADS:** Filter pads should be replaced with fresh aspen fiber excelsior and DUSTRAP filter at least once a year, at the beginning of each cooling season. The need for changing pads more frequently varies with locality and rapidity with which dirt, alkali, and other foreign matter accumulates in pads. If cooling efficiency is impaired, it may be desirable to change pads several times during cooling season.



## **PAD REPLACEMENT:**

1. With louvered panel lying on flat surface, wire retainer face up, grasp retainer in center and pull upward, thus bowing retainer, at the same time pulling out ends of wire from underneath flange of louvered panel.
2. Clean louvered panels, if necessary.
3. Replace pad with new material, being sure pad is of uniform thickness, without voids, which permit untreated air to enter the cooling system.
4. Replace wire pad retainer and reverse steps to complete pad replacement in same manner as removal.

## **MOTOR REPLACEMENT:**

The motor can easily be replaced by removing plug from junction box and removing motor clamps.

## **CAUTION:**

**DISCONNECT ALL ELECTRICAL POWER SOURCE PRIOR TO PERFORMING ANY MAINTENANCE ON UNIT.**

Remove louver panels using lower handles. Do not remove panels by inserting hands into open louver sections.

Replace motor and motor cord, and secure motor with clamps. Secure motor sheave and connect motor plug to junction box receptacle. Turn on power and check amp draw on motor. Adjust motor sheave as necessary (Ref. Page 7). Turn off power and secure louver panels. Turn on power.

# TROUBLESHOOTING

Here is a listing of some common service problems, with probable causes and suggested remedies:

PROBLEM	PROBABLE CAUSE	SUGGESTED REMEDIES
Inadequate Cooling:	Cooler undersized	Replace with larger cooler
	Clogged or dirty filters	Replace with pads
	Dry pads or lack of water while cooler is operating	Check water distributing system for possible obstruction in tubing. Check pump.
	Insufficient air discharge openings or inadequate exhaust from area being cooled, causing humidity building up and discomfort.	Make sure there is adequate provision for exhausting air from area being cooled.
	Excessive humidity. (See also item above re: inadequate exhaust)	In some areas, there may be a few days during the summer when the relative humidity is high, resulting in complaints about poor cooling. The limitations of an evaporative cooler under conditions of high wet bulb temperature should be explained to the customer.
	Blower turning backwards	Reconnect motor for correct direction
	Blower installed backward	Remove and reinstall blower wheel to turn in correct direction
Belt slipping or wearing excessively:	Blower running too slow	Check motor amps. If below name plate amperage, readjust variable pitch motor pulley to increase blower speed.
	Belt loose.	Adjust belt
	Moisture getting on belt.	Check for loose water connections
	Pulleys out of line	Align pulleys

<b>PROBLEM</b>	<b>PROBABLE CAUSE</b>	<b>SUGGESTED REMEDY</b>
Belt slipping or wearing excessively (cont.):	Worn belts	Replace belts
	Worn or imperfect pulleys	Replace pulleys
Blower fails to start:	No fuse or fuse blown	Replace fuse
	Loose electrical Connections	Check all electrical connections
	Defective switch	Replace switch
	Motor burned out	Replace motor
	Belt or pulley loose	Check belts or pulleys
	Belt broken or missing	Install new belt
Motor overheats or burns out:	Belt too tight	Check belt tension
	Improper adjustment of variable pitch motor pulley causing motor overload	Check variable pitch motor pulley for proper adjustment. A variable pitch motor pulley can be adjusted to accommodate the speed of the blower to the ductwork used. Adjust pulley so motor amperes do not exceed full load amperes shown on motor name plate.
	Low voltage	Check voltage and consult with power company if voltage is low
	Incorrect power supply	Check power supply against motor name plate specifications
Pump fails to operate:	Incorrect motor, motor has been changed	Be sure motor is correct size for cooler
	Pump motor failure	Replace complete pump
	Improper wiring of pump leads to motor and switch	Recheck pump leads connected to power and switch.
	Loose electrical connections	Check electrical connections
	Pump switch faulty	Replace pump switch

<b>PROBLEM</b>	<b>PROBABLE CAUSE</b>	<b>SUGGESTED REMEDY</b>
Pump runs but does not circulate water, pump runs but pads lack water:	Insufficient water in bottom of cooler pan	Check float adjustment, water should be maintained at approximately 2 1/2" depth.
	Pump screen plugged	Clean screen
	Clogged tubing	Clean the tubing
	Foreign matter lodged in the water distributing tee	Remove pump hose from the tee and clean out foreign matter
Cooler noisy:	Wheel rubbing on housing	Re-position wheel
	Wheel out of balance due to dirt, etc.	Check wheel and clean
	Cooler delivering more air than needed	Adjust motor pulley to slow down blower
	Improper alignment of blower bearings	Loosen blower bearings and realign
	Improper adjustment of blower shaft set collars	Adjust blower shaft, set collars snug but not too tight
	Belt "squealing"	Tighten belt by adjusting motor. Apply belt dressing to belt. In some cases it may be necessary to replace belt
Continuous over-flow of water:	Float valve adjustment incorrect	Adjust float valve
	Valve stuck open because of lime deposits	Clean valve and adjust
Water being thrown into room:	Loose Dist. tubing or pump hose connections	Check and tighten all tubing and hose connections
	Break in copper tubing or pump hose	Replace any cracked or broken tubing or hose
	Cover not installed on float valve to prevent spray	Install cover on float valve to prevent spray
	Pads not properly installed in holders and have sagged	Make sure filters are properly installed in holders, which prevent sagging filters.

**PROBLEM****PROBABLE CAUSE****SUGGESTED REMEDIES**

Water being thrown into room, (cont):

Discharge ends of water distribution tube do not fit into the water distributing troughs in top of pad frames

Make sure water distribution tubing discharges water into water distribution troughs in top of pad frames

Old pads that have developed thin spots

Replace with new pads

Pump delivering excessive water to filters

Install hose clamps on hose to restrict supply of water.

Foam or suds

When filter pads are installed where the water is relatively soft, if the wood has a higher than normal amount of saponin, the pump may churn up suds

Drain and refill cooler sump with fresh water. May need to be repeated for severe cases

Algae in sump water

Drain cooler bottom and clean thoroughly, fill with fresh water. Install new pads

Filters remain wet after shut down

Allow blower to run for about 10 minutes after pump is shut off to dry off pads

Water level too high. Keeps lower edge of filter always wet

Re-adjust water level so filters are above water in cooler bottom

Rapid formation of white deposits on pads and louvers:

High mineral content of supply water

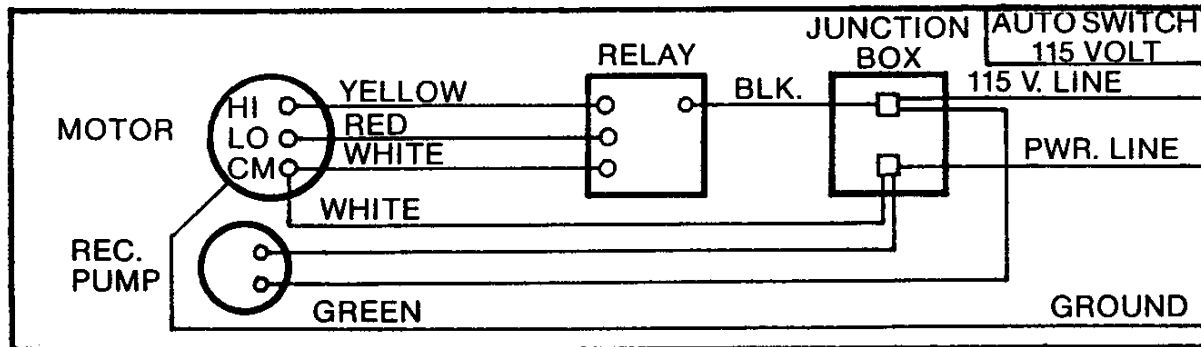
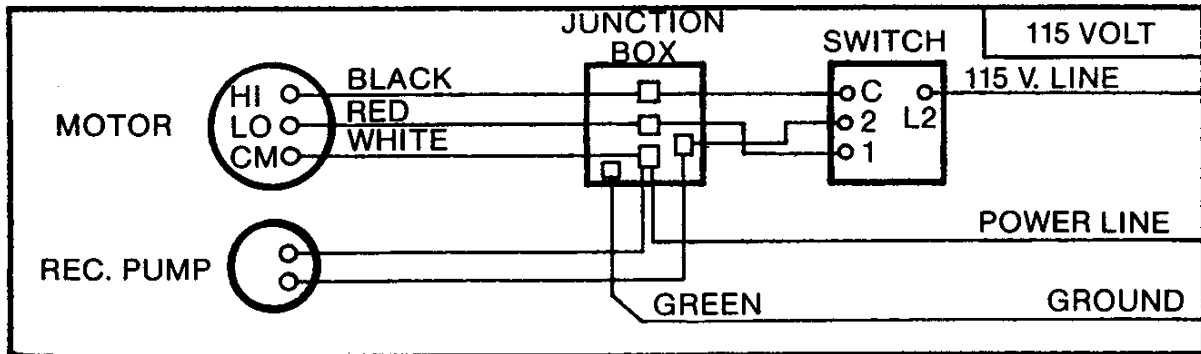
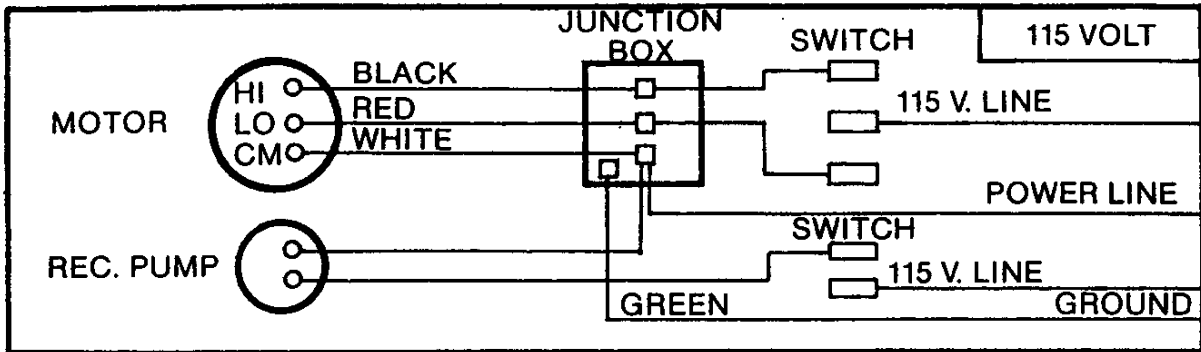
Install drain connections from cooler with a shut-off valve in a convenient location. Instruct user to open valve about once a week to flush out all the water in the cooler. Frequency of flushing will vary depending on hardness of water supply and amount of usage of the cooler. Adjust bleed off.

Dust and alkali pulling off pads:

Pads dry when cooler started up

Turn pump on about 10 minutes before blower is turned on

# BASIC WIRING DIAGRAMS



**CAUTION:** Always make sure unit is properly grounded in accordance with National Electric Code.  
**Do not** connect pump wire to Hi and Low terminals.  
**Important** — Improper wiring will void warranty.