



MAINTENANCE GUIDE

- SIMPLE AND EASY GUIDE TO COOLER MAINTENANCE
- SAVE ON MAINTENANCE COST
- EXTEND LIFE OF COOLER

TABLE OF CONTENTS

I. Cooler MaintenancePage 2
A. Pre-Season Start-UpPage 2-3
B. Seasonal CarePage 4
C. WinterizingPage 4
II. TroubleshootingPage 5-8

I. COOLER MAINTENANCE

Read all instructions and procedures before proceeding with any of the maintenance steps. Only qualified personnel should attempt cooler servicing.

A. Pre-Season Start-Up

IMPORTANT: Never work on cooler with the electricity turned on. Risk of electrical shock is higher with water in the cooler pan and in the supply lines. Electrical shock is potentially lethal.

1. Proceed with caution. Turn "OFF" the indoor cooler wall switch. Turn "OFF" the electrical circuit breaker supplying power to the cooler. Turning "OFF" this circuit breaker reduces the chance of the cooler being accidentally turned on indoors.
2. Remove cooler cover. Clean and fold cover and store in cool, dry place. Do not store in humid area such as laundry room.
3. Where applicable, remove and store slide damper in vertical duct. Automatic opening barometric dampers do not need to be removed.
4. Remove pad frames and place frames on flat surface. Remove old cooler pads and thoroughly clean all mineral deposits, loose debris, and paint from frames. A wire brush may be used.
5. Paint metal pad frames. (Do not paint plastic pad frames.) Use a high quality, rust resistant spray paint such as Dial's Tan Cooler Paint.
6. Clean water reservoir (cooler pan). Remove all loose debris and mineral deposits. A paint scraper and a wire brush may be needed. **CAUTION:** For coolers that have original, factory supplied, rust protection on the cooler pan, care must be taken not to damage this protection. Damaging this protection could expose metal and result in premature cooler corrosion.
7. Recoat reservoir to cover all voids and exposed (unprotected) metal areas. (Do not recoat plastic cooler reservoirs.) Use an undercoating that will not prematurely become brittle or crack, such as Dial's Submarine Cooler Coating. A brush-on or aerosol spray coating can be used. Apply undercoating by following coating container directions.
8. Remove belt and check for cracks or excessive wear. Replace if necessary.
9. Check blower bearings by spinning blower pulley by hand. Both the blower pulley and its shaft should freely rotate. If pulley rotates but shaft does not, check tightness of blower pulley set screw. Tighten if necessary and repeat test. If blower shaft does not easily rotate, replace blower bearings.
10. Oil blower bearings by filling each bearing oil cup with a high grade, non-detergent, cooler motor oil, such as Dial's Cooler Oil. Do not use 3-in-1 oil or sewing machine oil.
11. Check blower pulley for straightness. Replace pulley if it is bent or deformed.
12. Check blower shaft for wear at bearing interfaces. Move blower pulley up and down. If any looseness exists, replace shaft.
13. Check blower shaft for excessive end-play. Push and pull on blower pulley. Some end-play is normal. If shaft movement exceeds 1/16 inch, loosen far side shaft collar. Adjust collar position to restrict shaft end-play to less than 1/16 inch.
14. Check blower shaft for straightness. Spin blower pulley by hand. For pulley wobble that exceeds 1/16 inch, replace blower shaft. Wobble can cause excessive noise and vibration.
15. Check motor bearings by spinning motor pulley by hand. Both the motor pulley and its shaft should freely rotate. If pulley rotates but shaft does not, check tightness of pulley shaft set screw. Tighten if necessary and repeat test. If motor shaft is frozen or does not easily rotate, replace motor.
16. Where applicable, oil motor bearings by filling each bearing oil cup with a high grade, non-detergent, cooler motor oil. If oil cups do not exist, the motor has permanently lubricated bearings and no oiling is needed.
17. Check motor pulley for straightness. Replace pulley if it is bent or deformed.
18. Check motor shaft for wear at its bearing interfaces. Move motor pulley up and down. If any looseness exists, replace motor.
19. Check motor shaft for excessive end-play. Push and pull on motor pulley. Some end-play is normal. If shaft movement exceeds 1/16 inch, replace motor.
20. Compare alignment of motor pulley. Motor pulley should be in line with blower pulley. Correct misalignment by moving motor pulley. Misalignment can cause premature failure of pulleys, belt, bearings, shaft, or motor.
21. Check tightness of blower wheel set screws. Also check that blower wheel is centered in blower housing opening.

22. Check water pump bearings. Turn pump impeller by hand. If pump shaft is frozen, or does not rotate freely, replace pump. It is recommended that a replacement pump have thermal overload protection, be equipped with a ground wire, and be made of flame retardant plastic.
23. Check overflow standpipe and drain assembly. Remove nut and drain bushing to examine gasket. Replace gasket if brittle or cracked. Reassemble and make sure standpipe is securely in place.
24. Prior to turning on water and filling reservoir, make sure that any recently applied undercoating has had sufficient time to cure. Coating is ready when it is only slightly tacky. Follow coating container directions. If reservoir is filled with water before coating has cured, some of the coating can become suspended and result in clogging the pump or water distributor system.
25. Check seal of float valve. Water through valve should completely shut off when float is lifted up. If not, replace float to prevent overflowing of water. Where applicable, examine float valve splash shield. Shields prevent water from splashing into ducting, onto motor, etc.
26. Adjust water shut off level of float valve. Set water level to approximately 1/2 inch below top of overflow standpipe. This will allow for water in pads to drain into reservoir after cooler turns off.
27. Test operation of pump. Turn circuit breaker "ON". Turn indoor cooler wall switch to "Pump Only" position. Adequate water flow through distributor tubes should exist. Turn cooler wall switch to "OFF" position. If adequate water flow does not exist, see Pump Troubleshooting Section in manual.
28. Test operation of blower motor. Turn indoor cooler wall switch to "Vent" position for 1 speed motors, and to both "High Vent" and "Low Vent" positions for 2 speed motors. Verify motor shaft rotation. Turn cooler wall switch to "OFF" position. Turn circuit breaker "OFF". If motor fails to operate properly, see Motor Troubleshooting Section in manual.
29. Reinstall belt onto motor pulley and blower pulley. First place belt on motor pulley and on top half of blower pulley. Then rotate blower pulley by hand until belt fits into pulley groove.
30. Check belt for proper tension. Adjust motor mounting position (on motor mounting bracket) until a 3 pound force deflects the belt 3/4 inch to 1 inch. Excessive belt tension will cause motor bearings and blower bearings to fail prematurely.
31. Examine cooler pads. Old Aspen pads should be replaced. Poly pads can be cleaned or, if needed, replaced. Install cooler pads into frames by covering ENTIRE vented area of each frame. This will ensure that no air passes through voids or holes between frame and pad. Pad thickness also needs to be consistent to provide uniform air cooling.
32. Install frames (with pads) into cooler.
33. Turn circuit breaker "ON".

B. Seasonal Care

In order for evaporative air coolers to provide maximum efficiency and reliability throughout the cooling season, periodic maintenance is required. The frequency of service depends on many factors, primarily the amount of cooler operating time and the local water conditions. As a result, the frequency of cooler seasonal care may vary slightly from what is recommended within this manual. 1) For local water hardness levels that are above average, Aspen pads will need replacement at least once a season, and possibly once a month. Also, poly pads will need a cleaning at least once a season. Always drain cooler reservoir water whenever pads are replaced or cleaned.

2) Weekly draining of cooler reservoir water is strongly recommended. This will reduce the concentration of dissolved solids (scale forming compounds) that build up within the cooler water. Drain reservoir by attaching a garden hose to cooler drain bushing and removing overflow standpipe, or by installing a cooler flush kit. Note: To protect roof shingles, avoid draining reservoir water onto roof.

3) At mid-season, oil blower bearings and motor bearings (where applicable). Use a high grade, non-detergent, cooler motor oil. Do not use 3-in-1 or sewing machine oil.

C. Winterizing

End of season maintenance (winterizing) will prolong the life of the cooler and its parts. The following steps are recommended to adequately prepare the evaporative cooler for the upcoming winter season.

1) Turn "OFF" water source to cooler.

2) Turn "OFF" indoor cooler wall switch. Turn "OFF" evaporative cooler electrical circuit breaker. Disconnect electrical plugs of motor and pump.

3) Remove belt and store in cool, dry place.

4) Drain cooler water reservoir by attaching a garden hose to cooler drain bushing and remove overflow standpipe. Note: To protect roof shingles, avoid draining reservoir water onto roof.

5) Drain all water out of cooler water supply line to prevent freeze damage.

6) Oil blower bearings and motor bearings (where applicable). Use a high grade, non-detergent cooler motor oil. Do not use 3-in-1 oil or sewing machine oil.

7) Where applicable, reinstall slide damper in vertical duct.

8) Reinstall cooler cover to keep dust out of cooler and insulate house from cold drafts through cooler.

NOTE: It is recommended that a heavy grade canvas be used for the cooler cover. It will last longer and will help prevent winter rusting inside the cooler. Winter rusting results when warm house air enters the cooler and causes water condensation on cold metal parts. A canvas cover keeps metal surfaces warmer and also allows any water vapor to "breathe" through the cover.

II. TROUBLESHOOTING

Proper cooler maintenance (pre-season start up, seasonal care, and winterizing) will assist in minimizing evaporative cooler problems. Some of the most common evaporative cooler problems are listed below. After identifying the problem, read across the page to find the probable cause and the appropriate solution. Replacement parts can be found easily and inexpensively wherever coolers are sold and serviced. Troubleshooting and service to the evaporative cooler should be performed by qualified personnel only.

CAUTION: If motor has stopped running due to overheating, turn motor "OFF" prior to any work on the evaporative cooler to avoid an unexpected motor start up.

IMPORTANT: When performing troubleshooting tasks on any electrical parts, always turn the electricity "OFF" prior to assembly and disassembly of these items.

PROBLEM	POSSIBLE CAUSE(S)	SOLUTION(S)				
A. Motor cycles on and off (starts & stops)	A.1. Motor pulley diameter too large	<p>A.1.1. For variable diameter motor pulleys: Use an ammeter to properly set pulley diameter until motor current draw is approximately equal to, but not greater than, the motor current nameplate reading; OR, if an ammeter is not available, continually open the pulley diameter 1/2 turn at a time until motor no longer cycles on and off.</p> <p>Cooler installations with little to no ducting may require opening pulley up to 5 turns. Cooler installations with multiple ducts may require opening pulley 2-1/2 (or more) turns. Recommended adjustable pulley sizes:</p> <table style="margin-left: 40px;"> <tr> <td>Motor Pulley</td> <td>Adjustable</td> </tr> <tr> <td>Horsepower</td> <td>Size (O.D.)</td> </tr> </table> <p>A.1.2. For fixed diameter motor pulleys: Check owners manual for proper pulley size. Replace if needed.</p>	Motor Pulley	Adjustable	Horsepower	Size (O.D.)
	Motor Pulley	Adjustable				
	Horsepower	Size (O.D.)				
	A.2. Belt tension too tight	A.2.1. Adjust motor mounting bracket so that a 3 lb. force will deflect the belt 3/4" to 1".				
A.3. Blower bearings too tight	A.3.1. Oil blower bearings. Replace bearings if necessary.					
	A.4. Loose electrical connection	A.4.1. Check connections and tighten where needed.				
B. Motor ran once, but now won't turn on and its casing is hot	B.1. Motor pulley diameter too large	B.1.1. See solution A.1.1. & A.1.2.				
	B.2. Belt tension too tight	B.2.1. See solution A.2.1.				
C. Motor hums, but does not run and its casing is hot	C.1. Motor pulley diameter too large	C.1.1. See solution A.1.1. & A.1.2.				
	C.2. Belt tension too tight	C.2.1. See solution A.2.1.				

II. TROUBLESHOOTING (cont'd)

PROBLEM	POSSIBLE CAUSE(S)	SOLUTION(S)
D. Motor does not turn on	D.1. Bad wall switch	D.1.1. Replace wall switch
	D.2. Bad thermostat	D.2.1. Replace thermostat
	D.3. Bad electrical connection(s)	D.3.1. Check for damaged electrical cord. Replace if needed. D.3.2. Check for tripped circuit breaker. Reset breaker. D.3.3. See solution A.4.1.
E. Motor runs but no air enters house	E.1. Duct damper blocking air	E.1.1. Remove damper
F. Motor runs but not enough air enters house	F.1. Inadequate exhaust ventilation	F.1.1. Open additional doors or windows. F.1.2. Increase house exhaust ventilation by installing additional ceiling vents, such as Dial's Ventmatic or Ventmatic XL. F.1.3. Increase ventilation through attic.
	F.2. Dirty pads	F.2.1. Clean or replace pads.
	F.3. Belt tension too loose	F.3.1. See solution A.2.1.
	F.4. Motor pulley diameter too small	F.4.1. For fixed diameter motor pulleys, see solution A.1.2. F.4.2. For variable diameter motor pulleys, increase pulley diameter.
G. Excessive humidity level	G.1. Inadequate exhaust ventilation	G.1.1. See solution F.1.1., F.1.2. & F.1.3.
	G.2. Outside air too humid	G.2.1. Turn cooler wall switch to vent position.
	G.3. Bad thermostat	G.3.1. Replace thermostat
H. Cooler air too warm / house air too warm	H.1. Dry pads	H.1.1. Check for defective pump switch. Replace switch if necessary. H.1.2. Check water pump for proper operation. Replace if pump is not running, or if water flow from pump is severely inadequate. H.1.3. Check for restriction(s) in pump elbow, pump hose, distributor head, distributor tubes, and drip trays. Remove restriction(s) or replace defective part(s).
	H.2. Dirty pads	H.2.1. Clean or replace pads.
	H.3. Excessive open areas in pads	H.3.1. Repack or replace pads.
	H.4. Clogged pump screen	H.4.1. Clean or replace screen.
	H.5. Insufficient water level in reservoir	H.5.1. Adjust water shut-off level of float valve. Set water level to approximately 1/2 inch below top of overflow standpipe. At this level, the water pump should not suck in any air while it is running.

II. TROUBLESHOOTING (cont'd)

H. Cooler air too warm / house air too warm (continued)	H.6. Cooler air being misdirected	H.6.1. Redirect cooler air in room by opening door(s) or window(s) where cooling is being effected. H.6.2. See solution F.1.2. & F.1.3	
	I. Water leaking from cooler / water running off roof	I.1. Reservoir water level too high	I.1.1. Partially drain reservoir and then see solution H.5.1. I.1.2. Check seal of float valve. Water through valve should completely shut off when float is raised up. Replace if necessary.
		I.2. Leak at fitting connection	I.2.1. Tighten fitting nut, or replace fitting if necessary.
		I.3. Leak in tubing	I.3.1. Replace damaged tubing.
I.4. Clogged overflow standpipe		I.4.1. Clean or replace standpipe.	
J. Water running into house	J.1. Excessive open area(s) in pad(s); typically on top	J.1.1. Reinstall or replace pads. Air flow can be strong enough to carry water drops into blower.	
	J.2. Float valve splash shield	J.2.1. Replace splash shield, or float valve assembly. Shields prevent water from splashing into ducting.	
	J.3. Distributor tubes do not discharge water into frame water troughs	J.3.1. Rework or replace distributor tubes and head to correct alignment.	
	J.4. Frame water troughs overflowing with water	J.4.1. Clean debris from slots of water trough. J.4.2. Restrict water flow from pump using pump hose restrictor clamp.	
K. Chattering sound	K.1. Float valve loose	K.1.1. Tighten float valve.	
	K.2. Float valve no longer seals	K.2.1. Replace float valve.	
	K.3. Copper water supply line vibrating	K.3.1. Re-support water line with tube straps.	
L. Excessive noise	L.1. Loose motor	L.1.1. Tighten motor mounting bolts and nuts.	
		L.1.2. Tighten motor clamps.	
	L.2. Bent motor pulley	L.2.1. Replace motor pulley.	
	L.3. Bent blower pulley	L.3.1. Replace blower pulley	
	L.4. Excessive motor shaft end-play	L.4.1. Replace motor.	
	L.5. Excessive blower shaft end-play	L.5.1. Adjust shaft collars. Replace collar(s) if necessary.	
	L.6. Excessive motor shaft wear	L.6.1. Replace motor.	
	L.7. Excessive blower shaft wear	L.7.1. Replace blower bearings and shaft.	
L.8. Cooler not adequately secured to roof	L.8.1. Re-support cooler to roof.		
M. Thumping sound	M.1. Damaged belt	M.1.1. Replace belt.	
	M.2. Mineral buildup on pulley(s)	M.2.1. Clean pulley(s).	

II. TROUBLESHOOTING (cont'd)

N. Squealing sound during start up	N.1. Loose belt	N.1.1. See solution A.2.1. N.2.1. Replace belt.
O. High pitched whine	O.1. Worn motor bearings	O.1.1. Replace motor.
	O.2. Worn blower bearings	O.2.1. Replace blower bearings.