



S.O.Ltd

Gale Force Evaporative Air Coolers

SO6000/8000-JC Operating Instructions



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The company reserves the right to change the product design and the specification without notice.



Preface

Thank you for choosing an SO6000/8000 JC Evaporative Air Cooler.

Please note that the appearance of the unit you have purchased may vary with the ones illustrated in this Instruction & Operational manual. This is due to continuous product improvements.

Slight differences between the unit and the one used in the illustrations will not affect the performance.

Please read this instruction manual carefully before using the unit.

Content

Preface	1
Content	1
Basic principle of operation	2
Application	2
Warnings and safety tips	3
Specifications	4
Location of cooler	4
Operation instructions	5
Important notes	6
Packaging and transportation	6
Installation	7
Tips for duct work	8
Regular maintenance	8
Cooling pad replacement	9
Warranty	9
Troubleshooting	10

Troubleshooting

FAULT	SYMPTOM	REMEDY
Unit does not start	<ol style="list-style-type: none"> No electrical power to unit <ol style="list-style-type: none"> Fuse blown Circuit breaker tripped GFCI tripped Power cable unplugged or damaged Motor overheated Motor seized Motor turns but not starting 	<ol style="list-style-type: none"> Check power <ol style="list-style-type: none"> Replace fuse Reset breaker Reset GFCI Plug in cord or replace if damaged Try restart after cool down Replace motor Replace capacitor
Low air flow / low cooling	<ol style="list-style-type: none"> Insufficient air exhaust vents Cooling pads dry <ol style="list-style-type: none"> Cooling pads blocked/dirty Blocked water distributor Large dry spots on pads Pump failed Loose water connections 	<ol style="list-style-type: none"> Open windows or doors Check water distribution system <ol style="list-style-type: none"> Clean or replace pads Check water distributors Check cooler water level Clean or replace pump Check for leaks and tighten fittings
Musty or unpleasant odor	<ol style="list-style-type: none"> Stale or stagnant water in tank Pads mildewed or clogged Pads not saturated before cooler comes on 	<ol style="list-style-type: none"> Drain, flush and clean Clean or replace pads Turn on pump before starting fan
Unusual noise / vibration from the unit.	<ol style="list-style-type: none"> Loose parts Blower wheel loose or rubbing 	<ol style="list-style-type: none"> Check and tighten where needed Inspect and adjust, or replace
Water spraying in the discharge air stream.	<ol style="list-style-type: none"> Too much water delivered to the cooling pads Outdoor humidity level is too high or it is raining Water contaminated 	<ol style="list-style-type: none"> Make sure pads are properly positioned in the pad frames and the unit is level. If necessary, reduce the flow of water to the pads by tightening the screw on the hose restrictor clamp found on the pump discharge hose. Use cooler as a fan only (turn pump off) or discontinue use of cooler until outdoor humidity level drops. Drain water tank and refill with fresh water

Cooling pad replacement

The cooling pads should be replaced at least once a year, at the beginning of each cooling season. The changing of cooling pads will vary according to local conditions. Units working in areas with a lot of dust or airborne particles may need to change the elements more often.

Replacement:

To remove pad assembly panels.

- 1) Lift up panel, then pull the bottom of the panel out towards you, as it clears the side of the water tank, pull it down and out from the unit.
- 2) Lay the metal side down on a flat surface and remove the pad retainers. The paper elements can now be removed.
- 3) Rinse off pad assembly, then install new paper element and retainer.
- 4) To refit panels reverse the removal procedure.

Warranty

S.O. Ltd. extends a limited warranty on this model of evaporative air cooler. The warranty covers defective materials and workmanship, operated under normal conditions for up to one year from the date of purchase. The warranty applies only to the original purchaser. A copy of original purchase receipt is required for all warranty claims.

This warranty does not cover:

1. We are not responsible for replacement of cooler pads. These are disposable components and should be replaced periodically. We are not responsible for any incidental or consequential damage resulting from malfunction. We are not responsible for any damage received from the use of any water additives, softeners, and chemicals or de-scaling materials that maybe be used in this air cooler.
2. We are not liable for any damage caused by excessive voltage fluctuations. All units are rated at up to +/- 5% of the rated voltage.
3. We are not liable for the cost of service calls to diagnose cause of trouble, or labour charges to repair and/or replace parts.

Parts & accessory warranty

The warranty on parts & accessories only applies to items purchased directly from S.O. Ltd. For all parts and accessories purchased from another source, the customer must contact the company they purchased the items from. S.O. Ltd will provide the following warranty on parts & accessories.

Fan motors – One year from date of purchase, after a proof of purchase is received, S.O. Ltd must receive all original labels on the motor before warranty is considered valid.

Printed circuit boards Ninety (90) days from the date of purchase

Fans (axial and centrifugal), Belts, Pulleys, Water Pumps, Shafts, and all other components which may be needed to keep unit operational, which includes metal and fabricated parts –

Thirty (30) days from date of purchase.

This warranty does not cover damage caused from neglect, misuse, alterations to the product, any accidents or damage during shipment.

Neglect or misuse includes malfunctions caused by lack of regular servicing and cleaning of components that have become fouled with mineral deposits due to hard-water conditions.

Alterations to the unit include the substitution of any non-S.O. Ltd components and installation of any parts which are not listed for the unit.

To obtain service under this warranty, contact the dealer where you purchased your evaporative cooler.

The following information is required.

- 1) A copy of the original receipt.
- 2) The model and serial number of the evaporative air cooler unit.
- 3) Date of installation, and a description of your problem.

Please include your name, address and zip code/post code.

If you cannot locate your dealer, contact customer service of S.O. Ltd.

This warranty is the only warranty extended by S.O. Ltd to suppliers and/or purchasers of this evaporative air cooler. S.O. Ltd disclaims all other warranties, express or implied that arise by the operation of the law, except that implied warranties of merchantability or fitness for a particular purpose are limit to the duration of the warranty period. S.O. Ltd shall not be liable for any incidental or consequential damage which may have resulted from any alleged breach or warranty.

Basic principle of operation

Evaporative air coolers are environmentally friendly, low energy consuming and healthy, alternative air cooling systems.

The basic principle of operation is as follows: Water from the base tank is pumped up and circulated over specially treated paper cooling pads. The blower/fan sucks hot outside air through the corrugated paper pads. As the hot air passes through, the water evaporates, cooling the air. This process produces fresh cool air. The excess water returns to the base water tank where it will be re-circulated.

Application

The SO6000/8000 JC Gale Force window / wall mounted evaporative air coolers can be used in a wide variety of environments and applications. Below is a list of examples where the SO6000/8000 JC Series of Evaporative Air Coolers can be used. Applications are not limited to these lists:

- Residential: Bedrooms, Living Rooms, Dining Rooms,
- Manufacturing: Textile, Machinery, Glass, Hardware and Leather.
- Processing: Electronic, Painting, Plastic, Clothes Making, Food Prep etc.
- Others: Bakery, Laundries, Waiting Room, Schools, Supermarkets, Restaurants, Stock Rooms, Gardens, Patios

Warnings and safety tips

- Read instructions and labels carefully.
- Before working on the cooler, always disconnect the power.
- This cooler operates on 240 Volts AC, 60Hz (cycle) 1-phase.
- Do not operate if power cable/cords are damaged in any way.
- Do not roll over or crush power cord with heavy or sharp objects.
- Do not operate unit unless all panels are securely in place.
- Remove the plug from the electrical receptacle/outlet by pulling on the plug and not the cord.
- Test the receptacle/outlet/breaker monthly to ensure safe operation.
- Never wash your cooler cabinet with a high pressure hose, water spray may damage the cooling pads, fan motor and electronics.
- If the unit is damaged or it malfunctions, do not continue to operate it. Switch the unit off immediately. Refer to trouble shooters guide or contact S.O. Ltd.

Tips for duct work

- (1)The ducting can be made from, galvanized sheet steel, fiber-glass duct board, fabrics and some plastics.
- (2)The air diffusers should be installed to direct cooling air to the required areas. The volume and velocity of the airflow should be taken into consideration when selecting the air diffusers.
- (3)The specification of duct depends on air volume, and the air velocity. The main duct should be kept at 6-8m/s, while the branches are 4-5m/s; no less than 3-4m/s at the ends.
- (4)The airflow can be controlled by adjustable damper.
- (5)The air duct should not exceed 15m in length.
- (6)The ducting should be kept as straight as possible to maintain efficient airflow.
Note: Unnecessary bends and branches will reduce air pressure.
- (7)A motor driven diffuser will increase the coverage of areas being cooled.
- (8)The air duct and cooler should be connected with a flexible.

Regular maintenance

Routine drying of pads:

For best results, dry the pads (turn off cool mode) for 10 – 15mins before turning off the unit. Do not use water above 40°C. A soft brush can be used with running water to gently scrub dust/dirt off the pads.

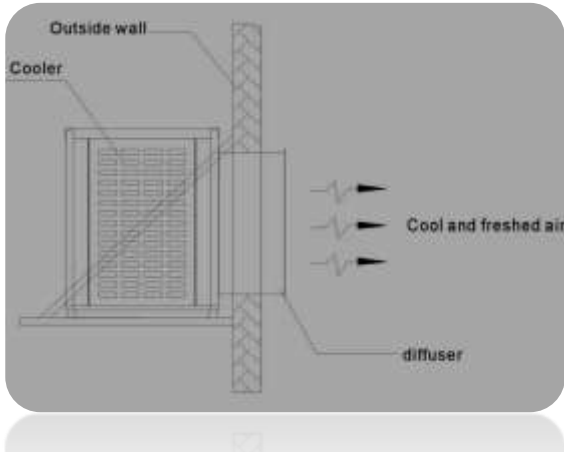
Routine draining of water tank:

The water tank should be drained at least once a week to reduce mineral build up. Failure to regularly drain the water tank may lead to odours, increased the mineral deposits and reduces the life of the cooling pads. Use a damp cloth/sponge with a mild detergent to wipe off any mineral deposits that appear outside or inside of the unit at least once per week.

Checks and adjustments before operation:

- (1)Is the cooler installed horizontally?
- (2)Is drain pipe securely connected to the unit?
- (3)Are there any water leaks?
- (4)Adjust water level in the tank?
- (5)Is the power supply connected correctly (check phase rotation for three phase units)?
- (6)Is the control panel wired correctly?
- (7)Is the operating voltage correct and within the specified working range?
- (8)Check for obstructions in the grill?
- (9)Check unit for any unusual noises/vibration.
- (10)Are there any foreign objects in the tank?

Installation



Installing the Gale Force window unit

The SO6000/SO8000 Evaporative Air Cooler can be installed/mounted on an outer wall/window, with a fixed diffuser, a motorized diffuser (increased coverage) or ducted to the specific areas to be cooled.

1. Install the wall mounted bracket/frame before mounting the air cooler. Securely fasten wall mounted brackets/ frame. The mainframe must be horizontal.
2. Install the drain fixtures and pipe through the pre-bored hole in the bottom of the cooler.
3. Attach the float valve to the side of the cooler using the hole provided. The hose adapter attaches to the brass inlet fitting on the float valve. Make sure that the hose washer/seal is in place. Position the water pump close to blower housing to prevent contact with the paper pads.
4. Connect to a water supply using a commercial grade garden hose (supplied by customer) connected to the adapter.
5. Adjust the water level so that adequate water is supplied to the cooling pads without excess water splashing out of the base tank during normal operation. This may be done by gently bending the float rod on the float valve to set the optimum water level
6. Plug the grounded plug directly into a 240 volt AC 60Hz electrical power supply with designated (correct) rated breaker. Note: improper voltage will burn out the motor and pump windings and will void the warranty.

Specifications

No. of Phase: 1 Phase	Air Pressure: 80Pa / 150Pa
Voltage: 240V	Dimension: 60x50x70 (cm) / 63x80x91(cm)
Frequency: 60Hz	Vent: 25x30(cm) / 30x40(cm)
Current: 2 A/ 2.6 A	Max Fair Flow: 6,000m ³ /h / 8,000m ³ /h
Power: 280watts/ 650 watts	Water Consumption: 3-10Ltr/H
Fan Type: Centrifugal	Noise Level: 48-60db/ <65db
Control Type: manual and remote	Effective Area: 40-60m ² / 50 – 80m ²
Water Level Probe: Float Switch	

Location of cooler

The Gale Force range of evaporative air coolers are designed to be mounted and installed externally. The unit must be securely mounted to the wall or window frame of the room /area to be cooled. The unit must be installed level and with suitable ducting where applicable. The area to be cooled must have good ventilation, situated on the opposite side of the area from the air cooler. This will allow the cooled air to be moved through the space and exhausted back outdoors. This is critical for efficient operation of the air cooler.

Operation instructions

Operating tip: Run the pump for a few minutes before turning on the blower. This allows the cooling pads to pre-wet for quicker and efficient cooling.

VENT

- VENT function starts the fan alone and blows air into the room.
- Press **【FAN】** , to turn the fan on/off. Use up/down buttons to switch the fan speed between high, middle, and low.

COOL

- Cooling function starts the water pump and wets the pads, to start the evaporative cooling.
- Press **【COOL】** , to turn the water pump on/off.
- While in COOL mode, if there is a low water condition for 30 seconds, the pump will shut down automatically. When the water level returns to normal, the water pump will restart automatically.

CLEANING

- CLEANING function opens the drain valve and allows stagnant/old water to drain out.
- Press **【CLEAN】** , to turn the drain valve on/ off manually. When the water supply is off for long periods, the user should use the CLEAN function to drain the water out. This will keep the water tank dry and clean. While the unit is working, the user can also use CLEAN function to change water and keep the water fresh.
- In CLEAN mode the drain valve will remain open for 5 minutes and closes automatically. While cleaning, the water level will drop. If the water level drops to an unsafe level for the water pump, the controller will stop the COOL mode until the water level returns to normal. The COOL mode will restart.

SWING

- Press **【swing】** to turn on/off the auto swing diffuser if the option is installed and connected.

REMOTE

- The remote and manual controls are the same. **【FAN (or COOL in some cases)】 【COOL】 【CLEAN (or DRAIN in some cases)】 【SWING】** .
- The ON/OFF can turn all functions off with the unit.
- **【↑】 【↓】 【←】 【→】** all perform the same function as **【FAN】** .

LED and alarms

- Turn on : indicator LED comes on, with 1 chime.
- Turn off : indicator LED comes on, with 2 chime.
- Low water (COOL mode off) : Low water LED comes on
- COOLING Low water : Low water LED comes on. After 30 seconds, low water alarm operates continuously.
- OVER VOLTAGE protection : OVER VOLTAGE LED on. Alarm operates continuously.

Loss of phase protection : LOSS PHASE LED on. Alarm operates continuously.

Important Notes

1. For effective cooling the area must be well ventilated and dry.
2. The unit takes in air from outside, filters and cools it.
3. Ensure that the power supply voltage is correct.
4. Ensure correct wiring of the power and controller. All units must be installed with a designated power supply line and protective breaker.
5. The units can work with power supply of no more than +/-10% from the rated voltage for the unit. Low voltage may cause motor failure or undue frequent starts and stops. Long-term low voltage or high voltage will cause damage to the motor.
6. The controller and its wiring must be shielded from electrical and magnetic interference, such as frequency converters, areas with microwave transmission/reception. Avoid wiring the power supply lines parallel to these sources. In cases where the power lines must pass near these sources of interference, maintain a distance of 30cm or more from interference source.
7. The unit must be installed, tested and adjusted by suitably qualified engineer/service provider.

Packaging and transportation

1. Packed in carton.
2. Keep dry and upright.
3. Do not stack more than 4 units high in storage.
4. Keep the unit upright during transportation.