



S.O. Ltd

Cyclone Evaporative Air Coolers



SO18ATK/ADK/ASK Operating Instructions



S.O.Ltd

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

Passed ISO 9001: 2000
International Quality System Certificate

Troubleshooting

Fault	Symptoms	Remedy/ solution
1. The indicator doesn't light.	1. No power. 2. Signal cable is broken or incorrectly fitted. 3. Faulty master control board. 4. Blown main power fuse on master control board. 5. Faulty control panel.	1. Check the power supply. 2. Adjust plugs or change the signal cable. 3. Change the main control board. 4. Change the fuse on the main control board. 5. Change the control panel.
2. Controller fault.	1. Power interruption. 2. External interference. 3. Panel goes wrong. 4. Control cable badly connected.	1. Switch off, restart the machine. 2. Move controller to a non-affected area. 3. Replace the panel. 4. Check connectors and reconnect control cable.
3. Display normal, but little or no airflow.	1. The fan runs in reverse. 2. The fan stopped. 3. Main breaker faulty. 4. Dust filter screen is blocked or dirty. 5. Fan is damaged. 6. Main board failure.	1. Adjust the phase. 2. Make sure wiring is correct. Make sure fan motor is not burnt. 3. Check contactor/Change the coil. 4. Clean or change dust screen. 5. Change the fan. 6. Change the main board.
4. The fan motor runs erratically.	1. The main contactor faulty. 2. Main control board faulty. 3. Control panel faulty. 4. Control cable faulty.	1. Change the contactor. 2. Change the main control board. 3. Change the control panel. 4. Check connectors or replace control cable.
5. No cool air and the low water indicator, does not come on.	1. Water level sensor fault. 2. The water pump has failed. 3. Main control board faulty. 4. Control panel fault. 5. Damaged control cable.	1. Replace the water level probe. 2. Change the water pump. 3. Change the main control board. 4. Replace the panel. 5. Change the control cable.
6. No cool air and the low water warning light on.	1. Main water supply is off. 2. Water inlet blocked or faulty. 3. Water inlet valve faulty. 4. Main control board fault. 5. Water level sensor faulty.	1. Check the utility water supply and water pressure. 2. Check and clean inline water filter screen. 3. Replace faulty inlet valve. 4. Change the main control board. 5. Change the water level sensor.
7. Draining valve leaking.	1. Inlet valve is damaged. 2. Drain valve is damaged. 3. Main control board faulty. 4. Water level sensor faulty.	1. Change the inlet valve. 2. Change the drain valve. 3. Change the main control board. 4. Change the water level sensor.
8. Unit does not switch off.	1. The indoor control board faulty. 2. The outdoor main control board faulty. 3. Main contactor faulty.	1. Change the inside control panel. 2. Change the main control board. 3. Check contactor/Change coil.
9. Water leaking into air ducts.	1. Water tank damaged. 2. Air ducting not adequately sealed. 3. Dust screens are blocked.	1. Repair or change the water tank. 2. Re-seal and test. 3. Clean or change dust screens on the unit.
10. Excessive noise.	1. Duct bend, too sharp. 2. Air outlet restricted or too small. 3. Fan Blades touching the fan shroud or are distorted. 4. Fan motor bearings worn.	1. Redo duct with larger radius/fit acoustic material. 2. Clear obstruction/Enlarge air outlets. 3. Change or adjust the fan blade. 4. Change the motor.

Note: For any further technical assistance please contact S.O. Ltd.

Warranty

Cooler 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.

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

Preface

Thank you for choosing an S.O. Ltd Evaporative Air Cooler.

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

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

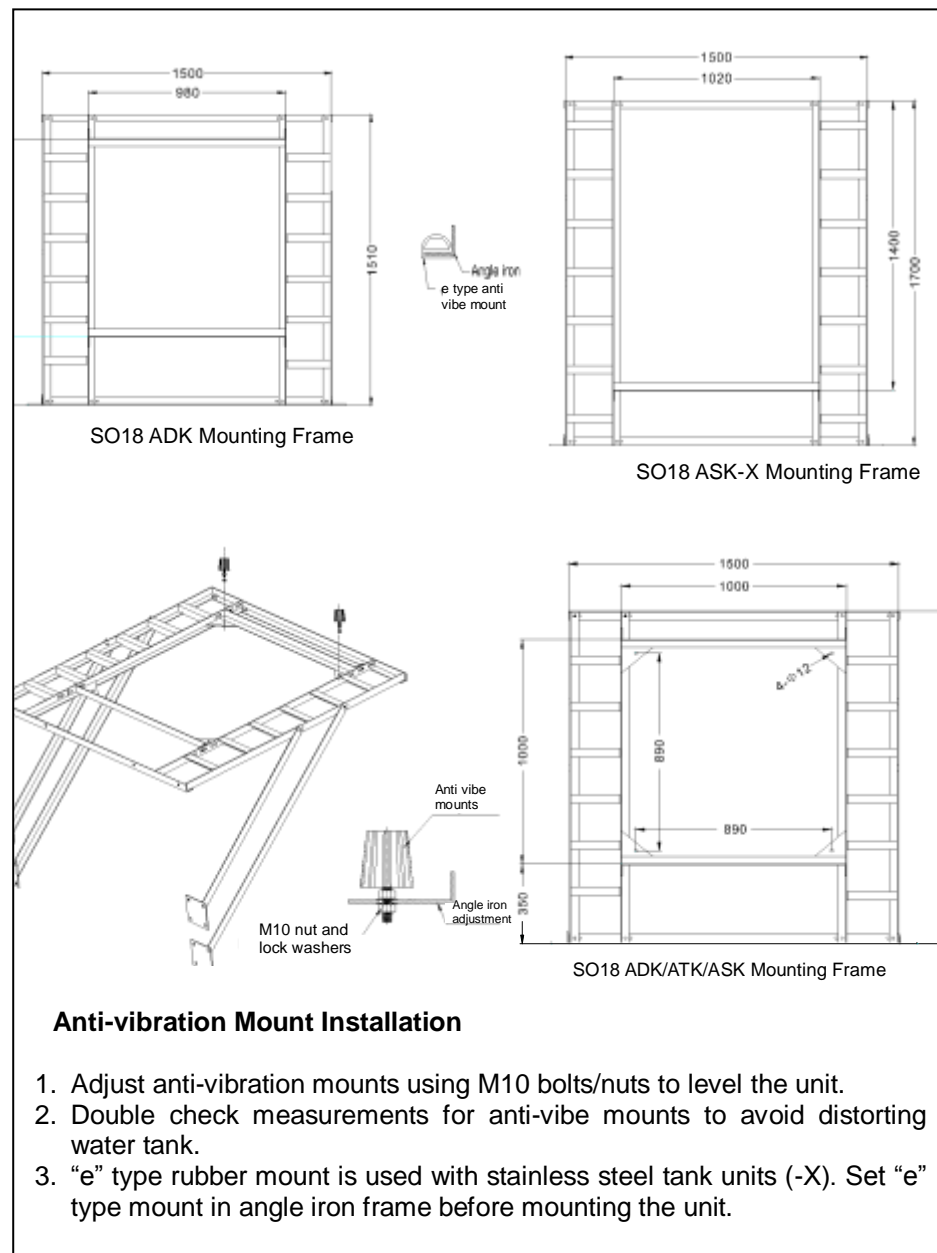
Please read this instruction manual carefully before using the unit.

Content

Accessories/parts List

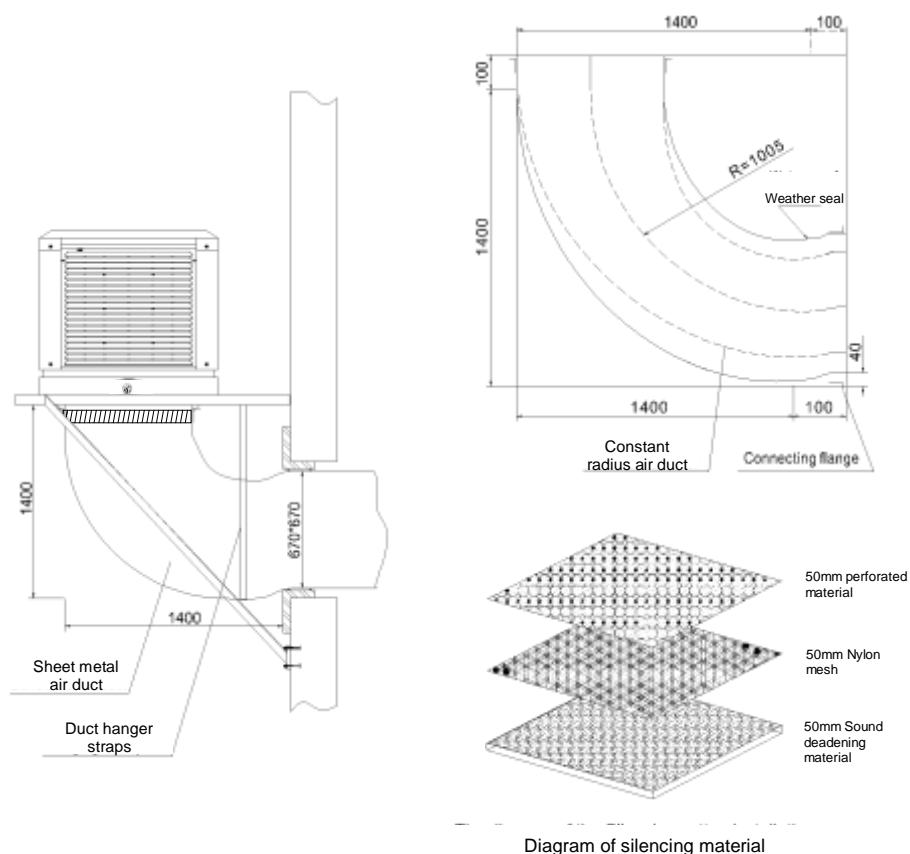
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Mounting frames and anti-vibe mounts



Air duct specifications

SO18 ADK as an example



Note:

1. To ensure efficient air flow, the overall radius of the duct must be $1 \frac{1}{2}$ times the size of the air exit duct (on unit) diameter. Using above diagram with 1500 x 1500 dimensions, the inside radius of the duct should be $\frac{1}{2}$ that of the whole duct.
2. To reduce duct noise created by high volume air flow, glue / fasten sound deadening material to the inside surfaces of the duct.

Basic principle of operation

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

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.

Applications

The SO18 Cyclone Series of Evaporative Air Coolers can be used in a wide variety of environments and applications. Below is a list of examples that the SO18 Series of Evaporative Air Coolers can be used in. Applications are not limited to these lists:

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

Cyclone models and air supply types



SO18 ADK
Down Draft
UV Stable Plastic



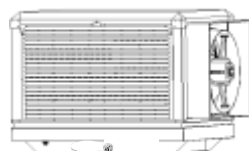
SO18 ATK
Top Draft
UV Stable Plastic



SO15/18 ASK
Side Draft
UV Stable
Polypropylene



SO10 ASK
Side Draft
UV Stable Plastic



SO18 ASK-X
Side Draft
Stainless Steel

Specifications

Model	Max airflow (m ³ /h)	Power/KW	Tank/ltr	Overall Dimensions	Air outlet diameter	Weight (kg)	Noise DB(A)
SO10ASK	10000	0.75	25	1170x1100x1000	Ø630	80	≤78
SO15ASK	15000	0.75	45	1170x1100x950	670x670	58	≤78
SO18ADK	18000	1.25	25	1100x1100x1000	670x670	65	≤78
SO18ASK	18000	1.25	45	1170x1100x950	670x670	58	≤78
SO18ATK	18000	1.25	25	1100x1100x1100	735x735	65	≤78
SO18ADKX	18000	1.25	40	1100x1100x1100	670x670	85	≤78
SO18ASKX	18000	1.25	50	1560x1090x1075	670x670	100	≤78
SO18ATKX	18000	1.25	40	1090x1090x1130	735x735	92	≤78

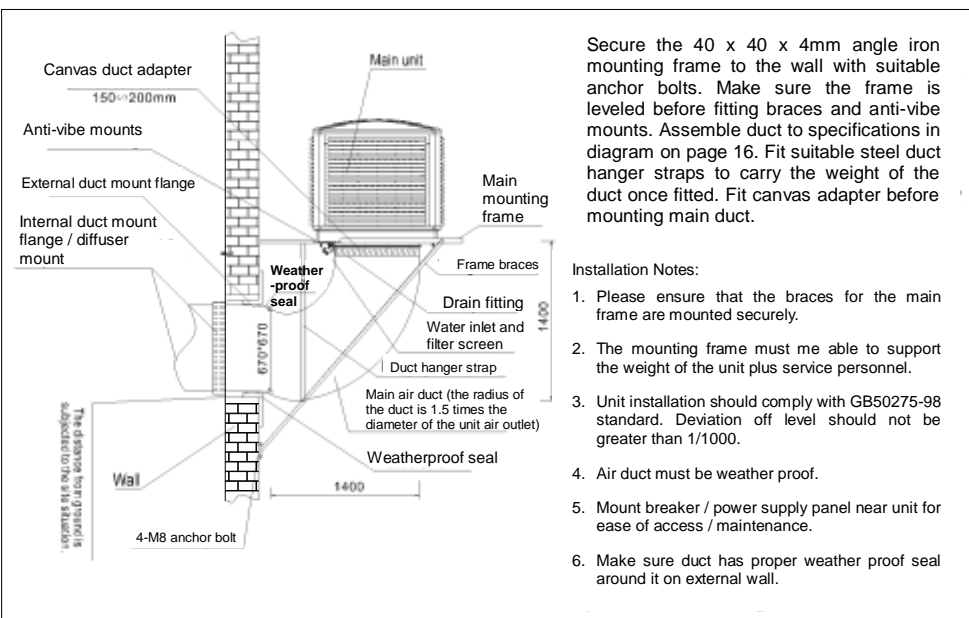
Control panel display fault codes

Fault codes :

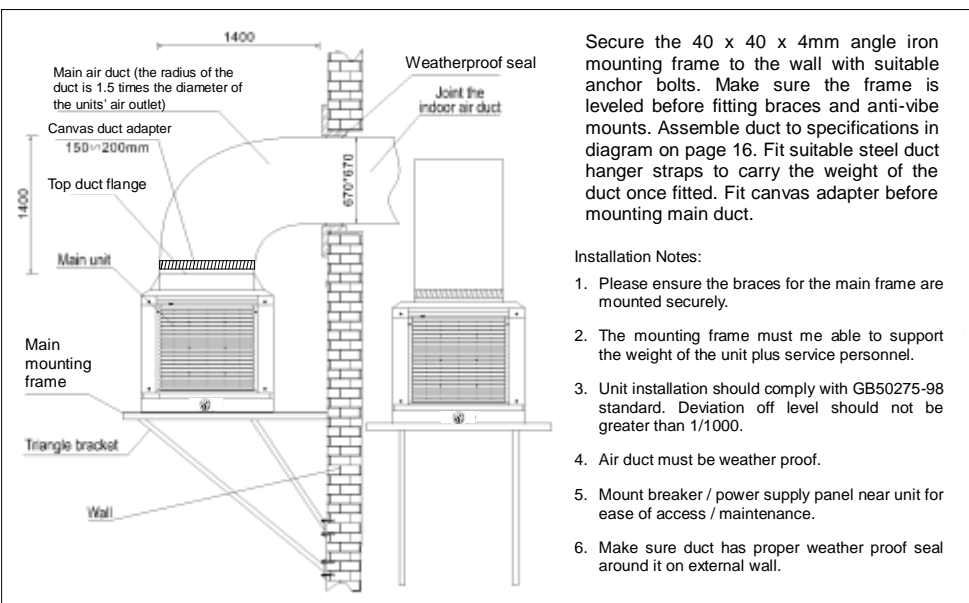
- C1: No water sensor/fault
- C2: Water inlet valve relay fault
- C3: Low water level fault
- C4: Water pump relay fault
- C5: Middle water level fault
- C6: Swing motor relay fault
- C7: High water level fault
- C8: Water drain valve relay fault
- E0: Frequency converter fault
- E1: Over electricity/current flow protection
- E2: Over voltage protection
- E3: Under voltage protection
- E4: Loss of phase
- E5: DSP and EEPROM communication fault
- E6: Frequency converter failure
- E7: Overload fault
- E8: 15V fault
- E9: Communication fault (no signal between DSP and main PCB)
- F4: Communication fault (no signal from main PCB to DSP)
- F5: Lack of service fault
- F6: Communication fault between control board and main board, (check the connected wire of the control board with main board)
- FF: Communication fault between control board and thermal over load.

Installation diagram of the unit

Installation diagram of downdraft type unit



Installation diagram of top draft type unit



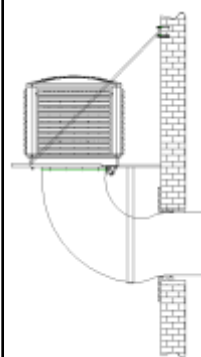
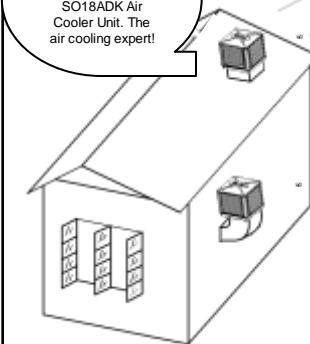
Warning

Before operating the unit, please read the following instructions carefully:

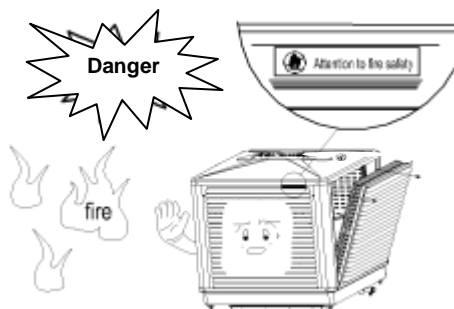
Optimum operating conditions

- a) Ambient temperatures: 18 - 45°
- b) Relative humidity: up to 85%
- c) Atmospheric pressure: 86KPA-106KPA.
- d) The supplied water should be soft water, water temperature $\leq 45^{\circ}\text{C}$, water supply pressure: 0.15-0.6Mpa.
- e) Voltage tolerance $\pm 5\%$.
- f) Environmental Air quality should be no less than GB3096 third grade(Including).
- g) Corrosion-free environment.

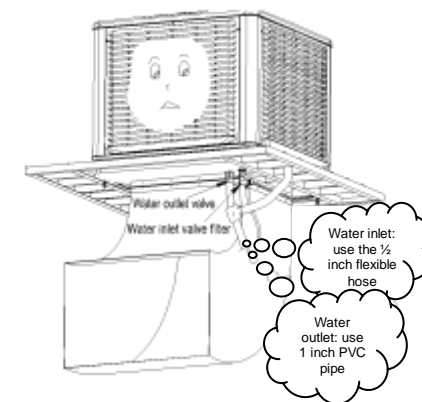
Don't worry about the heat; I am a Cyclone SO18ADK Air Cooler Unit. The air cooling expert!



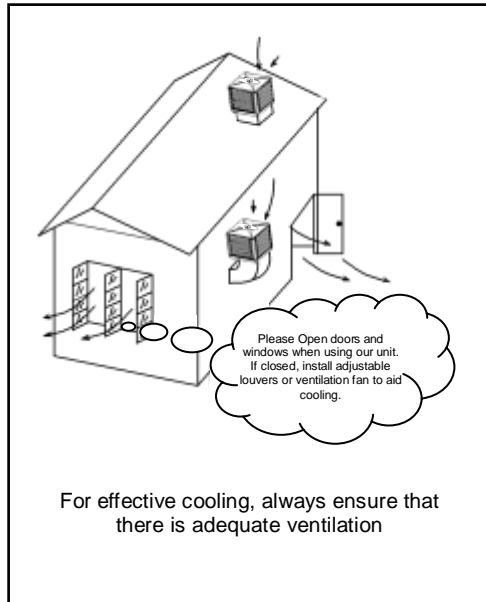
Check security of mounting frame and braces every year. Ensure all the anchor bolts are in good condition and fastened securely



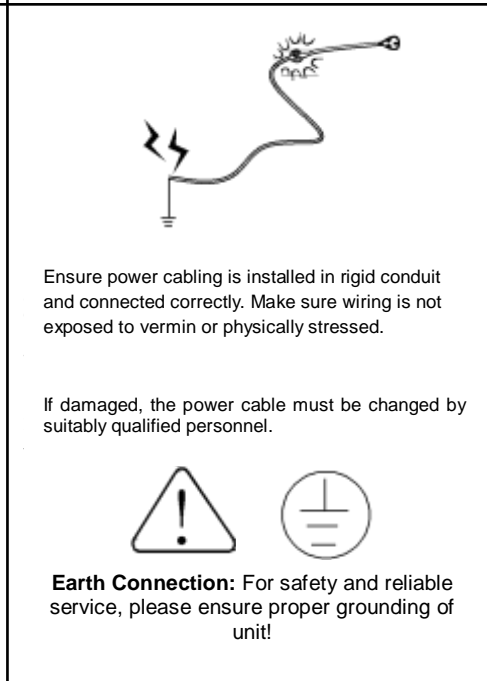
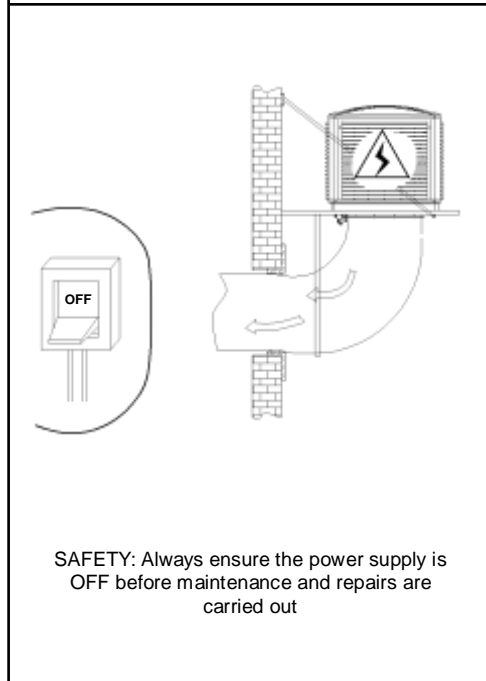
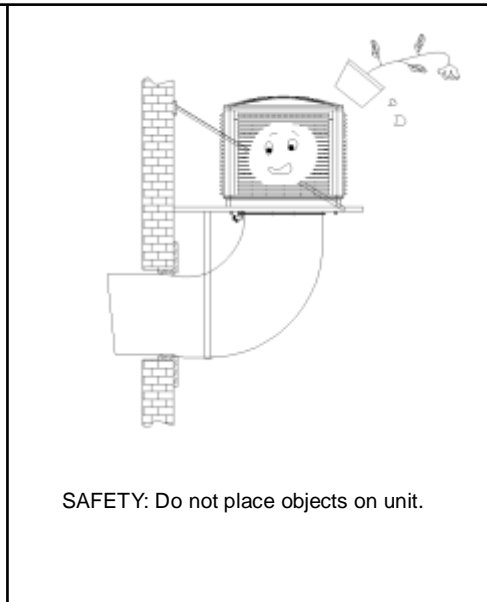
Do not expose units to naked flame during transportation, installation and operation.



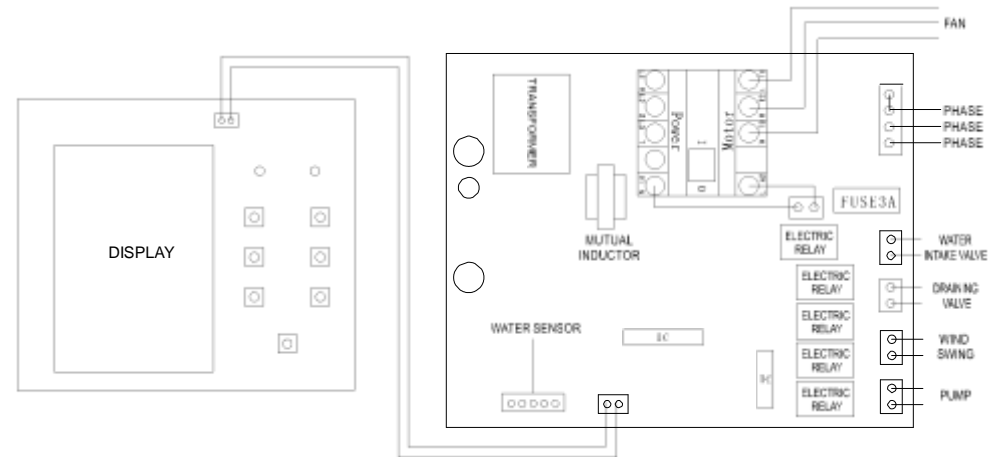
Please ensure water inlet pipe and drain are properly maintained.



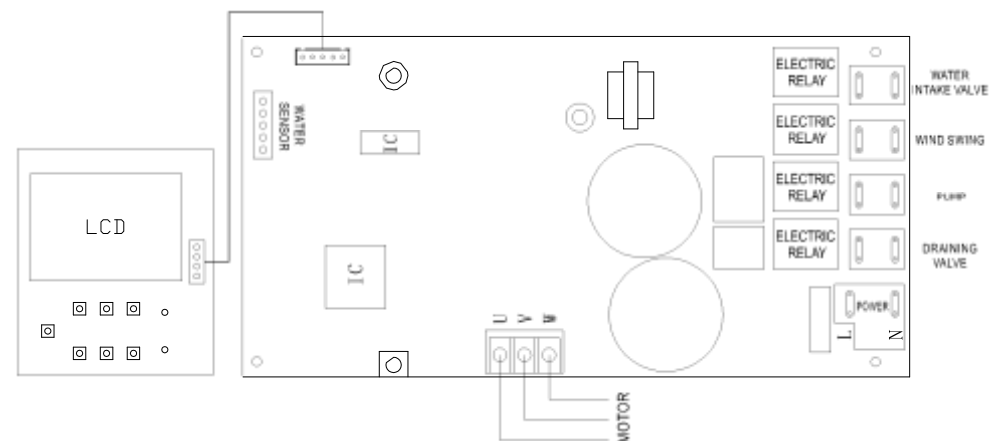
For effective cooling, always ensure that there is adequate ventilation



SINGE PHASE 240V CIRCUIT DIAGRAM

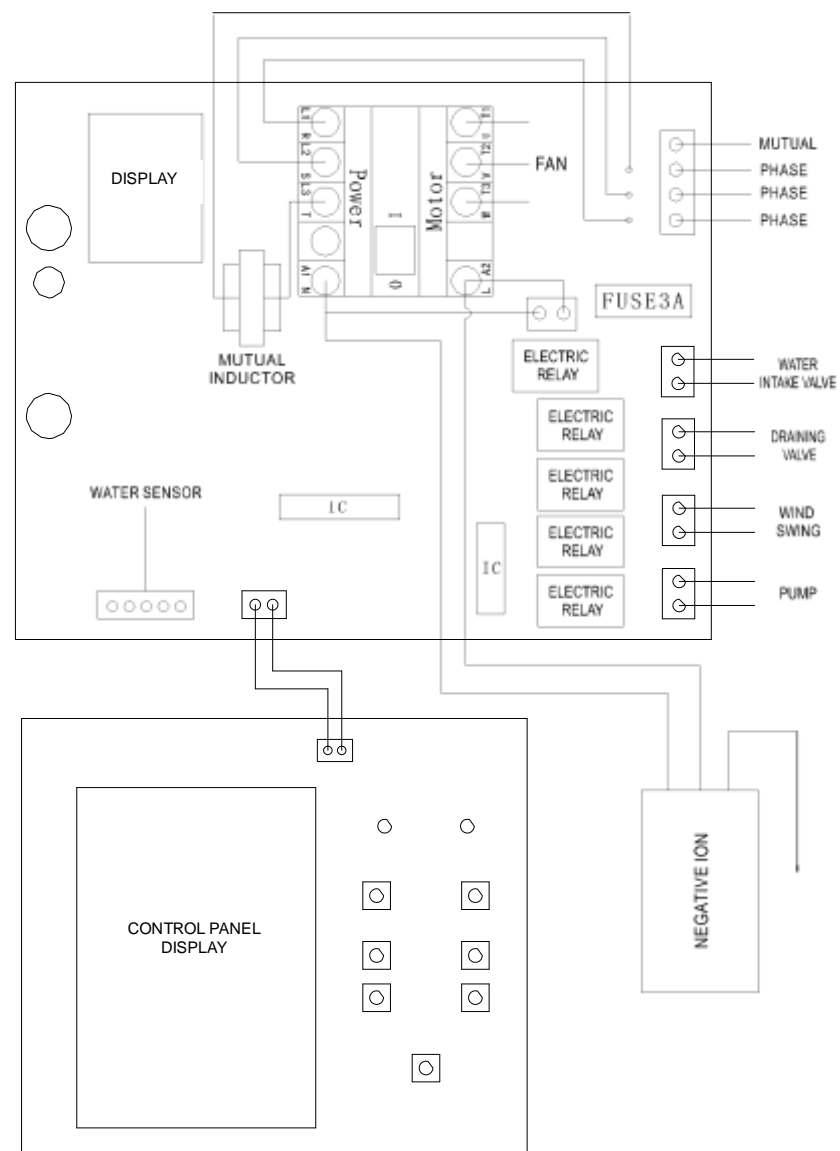


Single phase 240V main board with variable frequency / speed

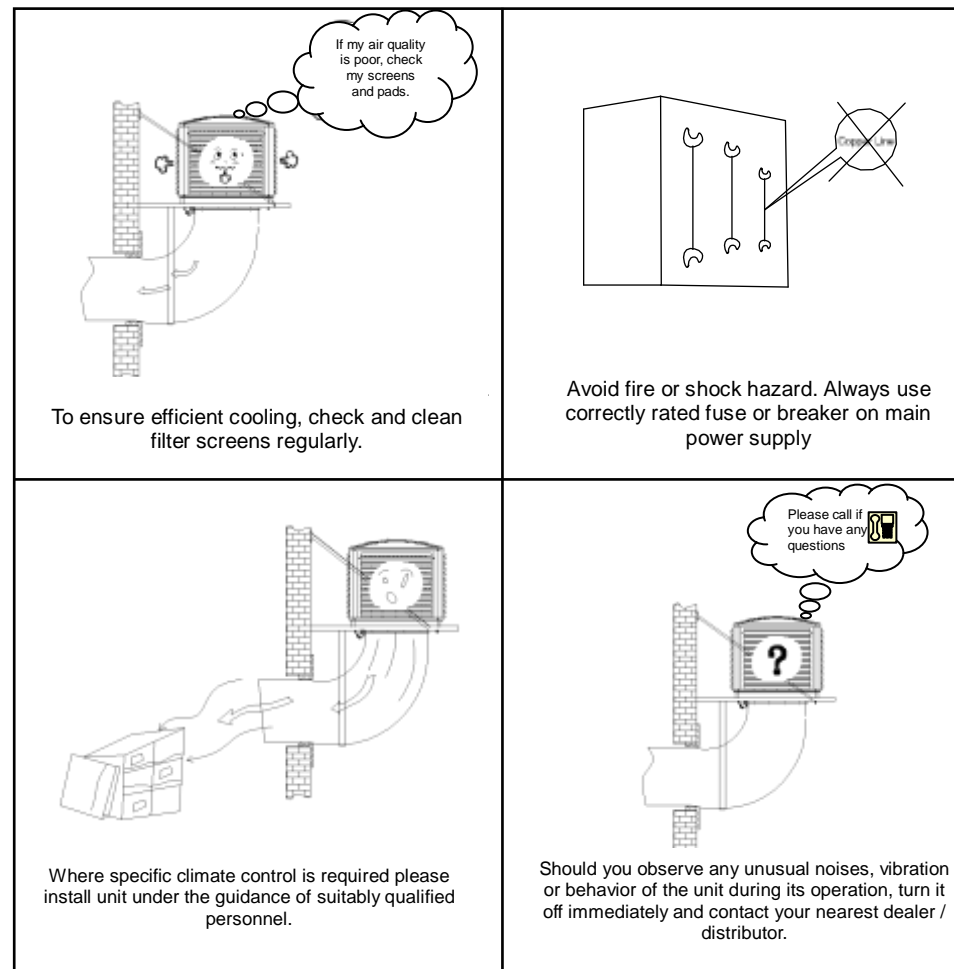


Attention: Single phase unit power cable should be connected to suitable breaker (breaker box/ panel). Do **NOT** install unit power cable with plug.

THREE PHASE 415V CIRCUIT DIAGRAM



(Only for reference; for details, please refer to switch box)

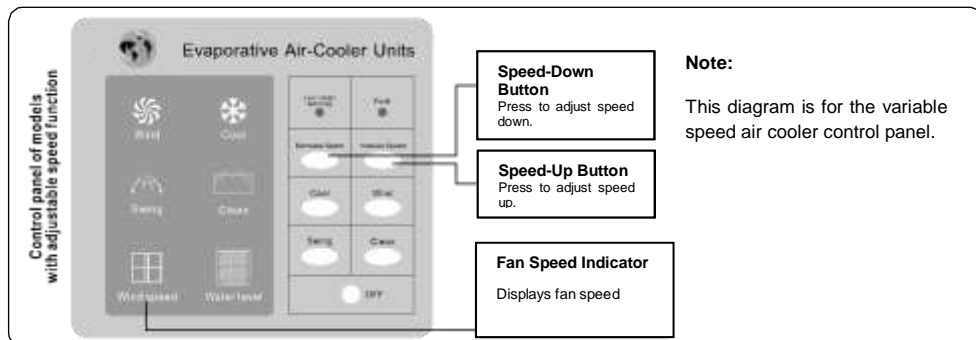
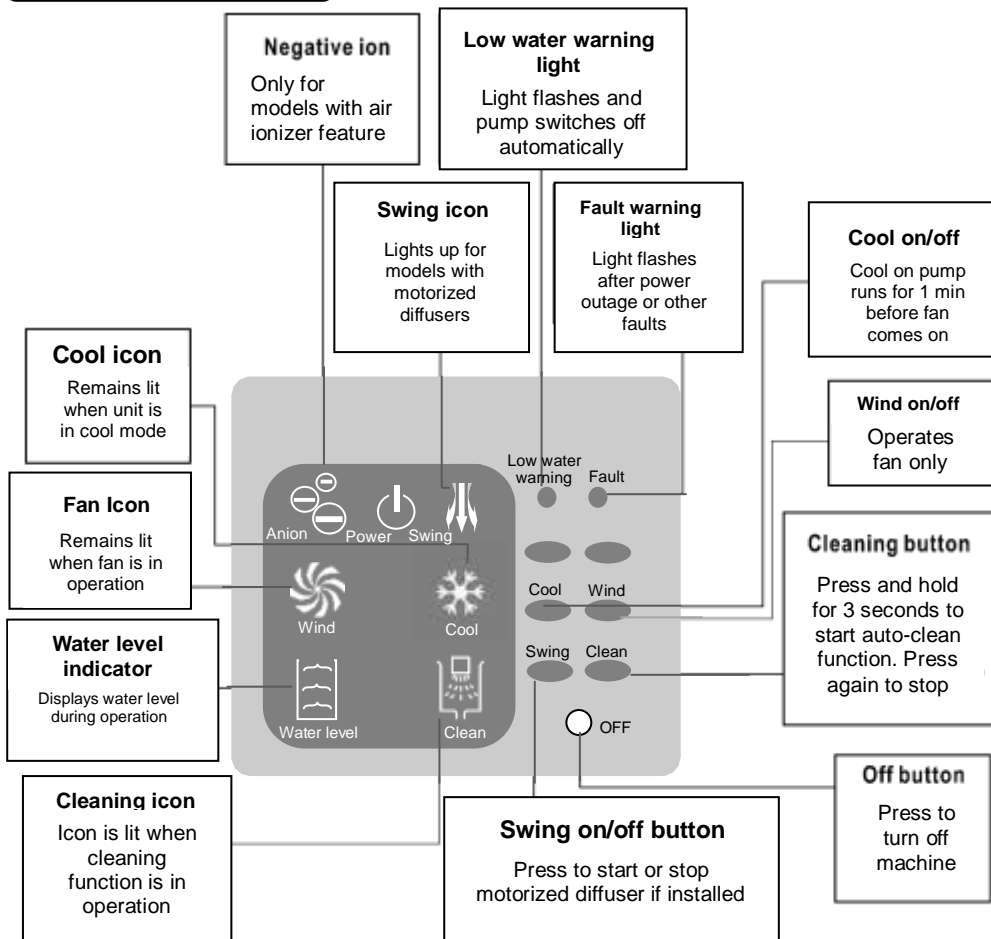


Warning:



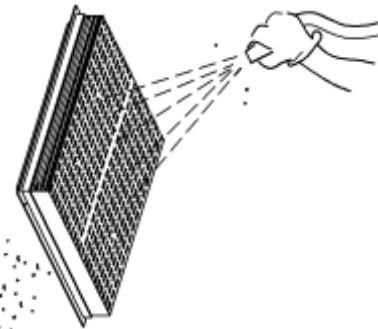
1. The manufacturer is not liable for any failure due to incorrect installation or operation of units
2. To avoid accidental damage, always ensure installation, repairs, or moving of the unit is carried out by suitably qualified personnel.

Control panel illustration



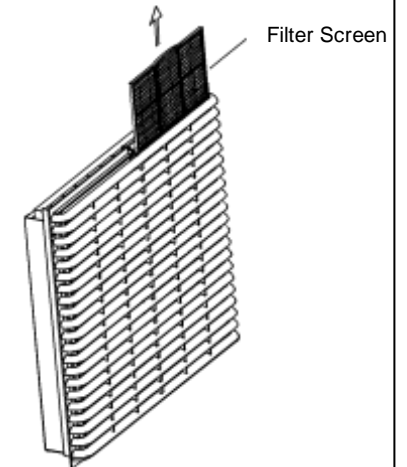
Fifth: Cooling pad maintenance

Clean the cooling pad with water from inside to outside



Warning:

1. Do not use high pressure water jet to wash.
2. Do not use detergents with alkaline or acid content.

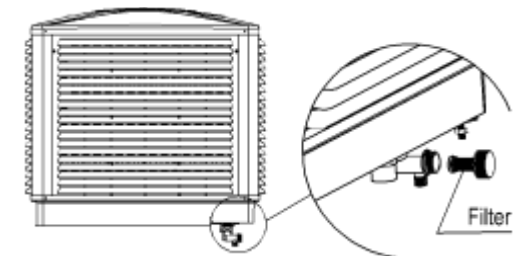


Regularly clean filter screens.

Sixth: Cleaning of water filter.

Note:

1. To clean water filter screen, remove cover then pull out filter.
2. Clean the filter
3. Re-fit filter into cover and reassemble.

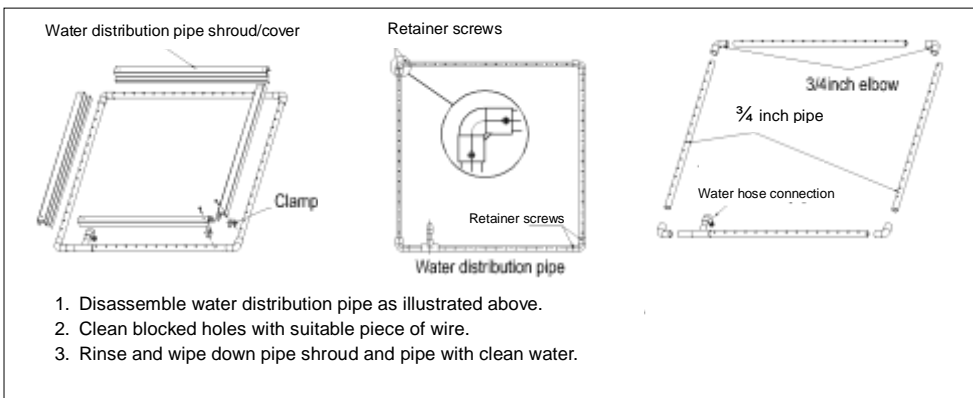
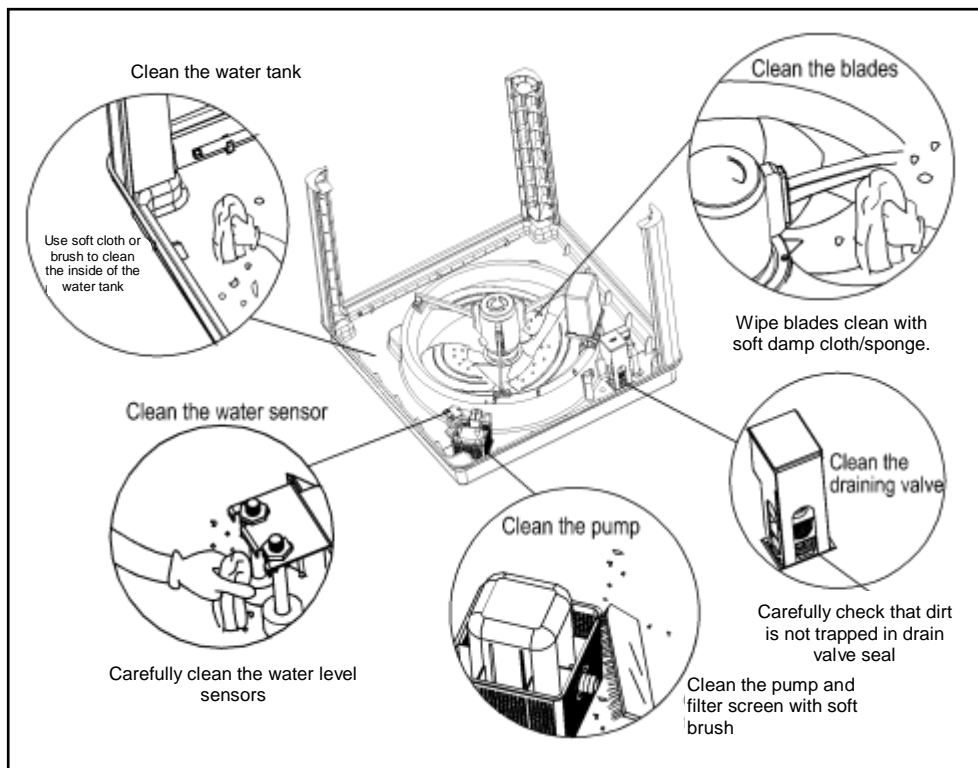


Seventh: To assemble unit, reverse disassembly procedure.



Warning:

Always isolate power supply (switch off power) before carrying out any cleaning / maintenance.

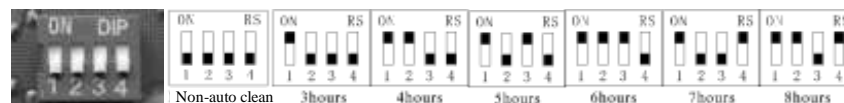
Third: Water distribution pipe maintenance**Fourth: Main component and water tank maintenance****Operating instructions**

- 1) Press COOL to turn on the unit in the cooling mode. The Cool icon will light. Shortly after the Cleaning Icon will light, indicating that the unit will go through the self cleaning cycle before going to cooling mode. To bypass this feature press the clean button within 3 seconds of the cool button. The pump will circulate water from the tank over the cooling pads for approximately, 60 seconds before the fan starts.
- 2) Press WIND to start the fan without the cooling. This may be used on more humid days
- 3) FAN SPEED: Use the increase or decrease speed buttons to adjust the fan speed as required. The fan speed is indicated by numbers 1 – 9 on the display 1 being low to 9 highest.
- 4) SWING FEATURE: Once the desired fan speed is selected you may press the swing button to switch on the oscillating louver function where oscillating diffusers have been installed. The swing icon will remain lit while the function is in operation.
- 5) CLEANING: To save water consumption the air cooler has been preset in non-auto clean mode (see below for programming). The unit must be cleaned/flushed at least once per week. To start the clean function press and hold down the CLEAN button for three (3) seconds. The self cleaning function icon will remain lit until the cleaning sequence is complete.
- 6) When turning OFF the air cooler it is important to dry the cooling pads before shutdown. To do this press the OFF button to switch off the machine, then press WIND to restart the unit in the fan mode. (the fan will come on after 15 – 20 seconds as the control panel resets) Run the air cooler in WIND mode for approximately 5 – 10 minutes to dry out pads before pressing the OFF button again to switch the unit off. The Air cooler will remain in standby.
- 7) If Fault light is ON or FLASHING press the ON/OFF button and hold down for 10 – 15 seconds to reset the control panel. (NOTE: Panel should be reset after a power outage) Should the fault light stay on after resetting please contact S.O Ltd or their nearest service provider for assistance.

Auto-cleaning instructions

This air cooler has a programmable auto clean function. The auto clean function can be preset to flush/clean the air cooler water tank once every three (3) to eight (8) hours depending on the surrounding conditions.

To program the unit, switch off the power and remove the back cover of the control panel. Adjust the positions of the dip switches to the desired setting as shown in the diagrams below. Refit the cover and turn on unit. The Auto clean indicator icon will flash during the auto clean cycle.



Dip Switches

4 toggle switch unit

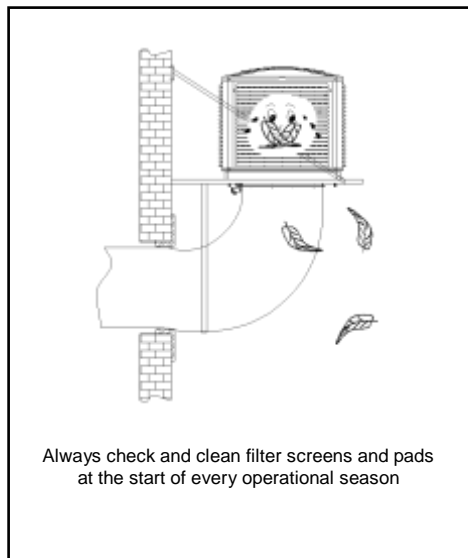


Dip Switches

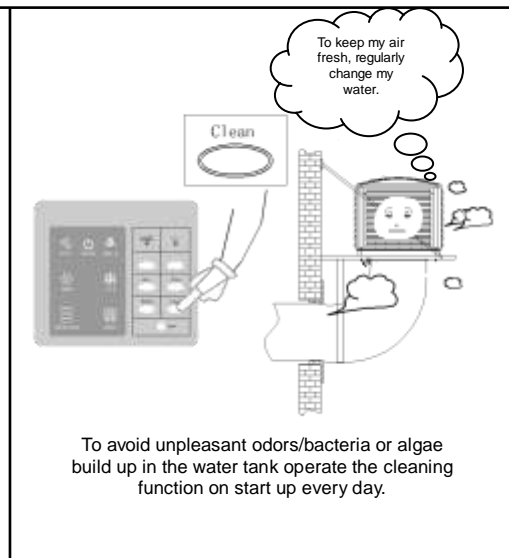
5 toggle switch unit

Maintenance

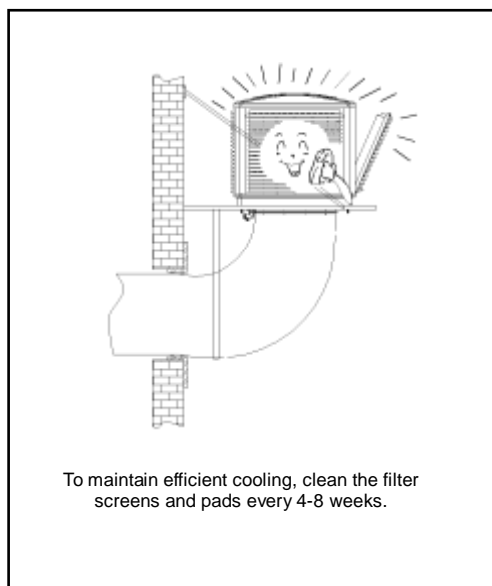
A. Pre-season operational checks



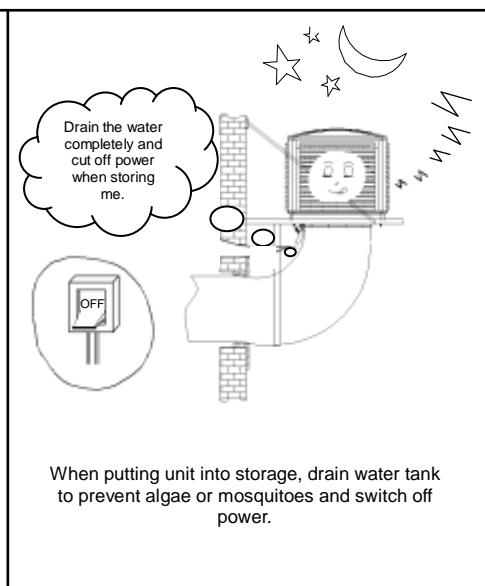
B. Operating season maintenance



C. Routine maintenance



D. End of season storage procedure

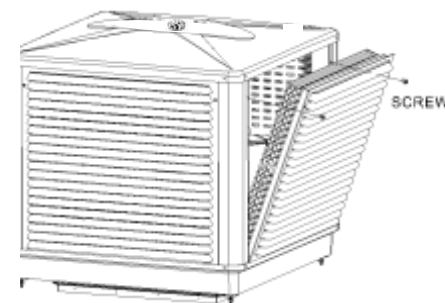


E. 4-8 week routine maintenance

To ensure efficient performance, the following cleaning procedure is recommended every 4-8 weeks

First: Cooling pad removal

1. Remove the two retaining screws at the top of each pad/panel.
2. Pull the top of the louver panel outwards then up, to remove from the unit.
3. Reverse this procedure to reassemble.



Second: Top cover and water distribution pipe removal.

1. Remove securing screws at each corner and lift off top cover.
2. Slacken hose clamp and pull off the water hose, then lift off water distribution pipe assembly.

