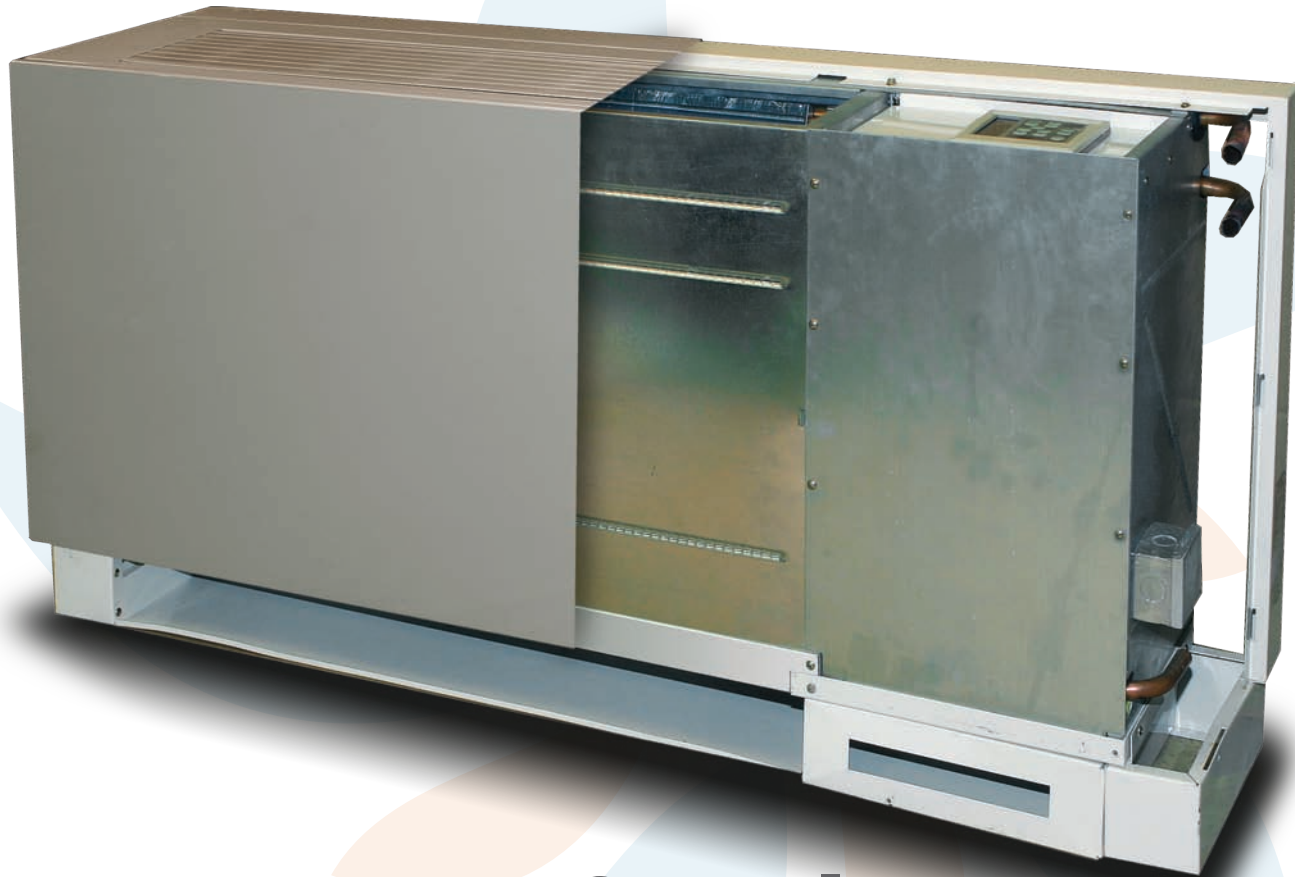


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ICE AIR
World Class Comfort®



Console Water Source Heat Pump (WSHP)

OPERATING & MAINTENANCE MANUAL

SAFETY WARNINGS

- Must be installed by qualified, trained installation personnel
- Must be installed in accordance with ice air installation manual and procedures
- Must be serviced by qualified, trained personnel
- Must be operated with all chassis sheet metal parts properly in place
- Must be operated with all enclosure (cabinet) parts in place
- Intended for indoor use only
- Electric shock hazard - disconnect from live electric circuit before servicing
- Moving parts hazard – disconnect from live electric circuit before servicing
- Read this entire operations manual before operating the unit
- Must be operated on a dedicated single circuit with proper electrical overcurrent protection

WELCOME

Congratulations on your selection of Ice Air Water Source Heat Pump (WSHPs) for your comfort conditioning requirements. WSHP units are combination cooling and heating units, which provide an efficient, room-by-room source for comfort conditioning of your living environment.

Ice Air WSHP units are built to a high standard of quality and reliability, employing commercial grade components and heavy duty, galvanized sheet metal casings. With proper maintenance and usage, Ice Air WSHPs should provide many years of efficient, quiet and trouble-free comfort.

To enhance your use of your Ice Air equipment, you will want to read and carefully follow all of the instructions contained in this Operating and Maintenance Manual. We recommend that you pay special attention to the Safety and Warning Information section at the beginning of this Manual, and to the various safety advisories throughout this Manual.

Please retain this Manual for your future reference. We suggest that you retain it with other important documents and product manuals. The information contained within this Manual, unless noted herein, applies to all Ice Air WSHP models. If your unit has optional features, they will be explained in a separate instruction sheet specific to that option.

On behalf of Ice Air, and our network of distributors and dealers, we are happy to welcome you to our base of satisfied customers!

We recommend that you record the following information about your Ice Air WSHP products:

CONSUMER REFERENCE INFORMATION

LOCATION	MODEL NUMBER	SERIAL NUMBER
Living Room		
Master Bedroom		
Bedroom		
Dining Room		

CONSUMER SAFETY AND OPERATING NOTES:

FOR SAFE AND OPTIMAL ENJOYMENT OF YOUR ICE AIR WSHP UNIT, PLEASE READ THE FOLLOWING CONSUMER SAFETY AND OPERATING NOTES CAREFULLY BEFORE OPERATING YOUR EQUIPMENT!

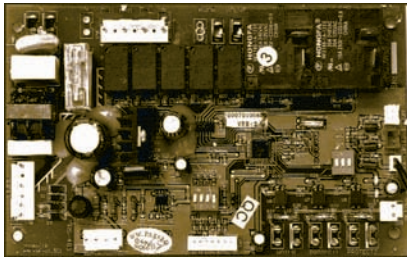
- This unit **MUST** be serviced only by professionally trained, qualified technicians. Do **NOT** attempt to maintain or service this unit on your own - severe injury and death can occur from electric shock, moving parts, and other hazards.
- Your Ice Air units must each be wired on an individual, dedicated electrical circuit with the correct voltage and proper amperage (capacity) to match the unit nameplate requirements.
- Each unit's electric circuit must have a proper overcurrent protection device, employing an approved circuit breaker or fuse of the proper rating under NEMA and local building codes.
- Every unit contains refrigerant within a sealed and pressurized refrigerant system. This system must not be opened or tampered with and any refrigeration system repairs **MUST** be carried out by trained technicians. Refrigerant must be properly handled and recycled per EPA regulations and guidelines.
- Your Ice Air unit must be properly installed and commissioned to operate correctly. Improper unit installation, adjustment or commissioning, and / or improper heating system installation and connection can lead to equipment malfunction and hazardous operating conditions, and may void your Warranty. If you have any doubt about the proper installation of your WSHP unit, please contact your property manager at once to have a qualified technician inspect the equipment. Do **NOT** operate the equipment when in doubt - have it inspected first!
- Your Ice Air equipment is covered by a manufacturer's Warranty (see Warranty Information Sheet for full terms and conditions). Your unit(s) must be properly installed and kept free of obstructions. Additionally, proper cleaning of the unit filter, evaporator coil and all air flow areas must be maintained. Failure to do so will decrease unit function and efficiency, and may void your Warranty.

ELECTRICAL DATA

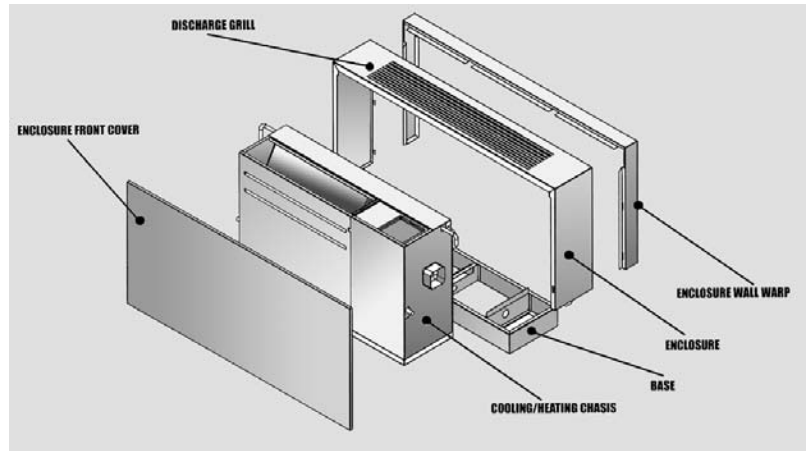
- Assure that available power is the same voltage and phase as indicated on the unit serial plate. Line and voltage wiring must be executed in accordance with local codes or to the National Electrical Code or in Canada to Canadian Electrical Standards.
- Apply correct line voltage to unit. Disconnect switch near unit is required by code. Power to unit must be sized correctly and have dual element class RK5 fuses or HACR circuit breaker for branch circuit overcurrent protection. Consult the unit serial plate for current ratings.
- All 208/230V units are wired for 208V operation unless otherwise specified.

The following physical conditions must be maintained for proper unit operation:

- Unobstructed air flow into and out of the unit room enclosure (cabinet)
 - Therefore:
 - Do not place furniture, rugs or objects directly in front of, underneath or against the unit cabinet front
 - Do not place plants, fabrics or objects on top of or blocking the enclosure discharge grille (at the cabinet top)
 - Do not block the top of the cabinet with drapes or curtains. To ensure proper cooling and heating, drapes and curtains should be opened or positioned so that the air discharge from the unit does not flow behind these window treatments
 - Have the unit filter properly cleaned and serviced to prevent air blockage from dirt and dust within the filter media
- Proper installation and operating environment must be maintained.
 - Therefore:
 - Do not operate the unit in corrosive environments such as chemical plants, refineries or salt spray areas
 - Operate only with proper electrical service and protective circuit breakers or fuses in place
 - Operate only with all chassis and enclosure sheet metal parts in place and properly installed
 - In areas of high concentrations of dirt, dust, pet dander or pollutants, clean the filter often (at least monthly).
 - Do not clean the unit with any solvents or cleaning solutions that may damage the equipment (see maintenance Instructions for proper cleaning protocols)
 - Understand and follow the unit operating instructions below before using your WSHP equipment.



PC Board



**Unit components
(Front exploded view)**

OPERATING INSTRUCTIONS & SEQUENCE OF OPERATIONS

Controls (General Description)

All standard Ice Air WSHP units are equipped with unit mounted digital controls. (If your unit has optional wall mounted or remote controls, see the separate operating instructions supplied with those controls). The standard controls are located under the Air Discharge Grille at the top of the room cabinet. Lift the Access Door, located at the right side of the Air Discharge Grille, to access the control panel.

Ice Air WSHP console units are controlled by a state of the art electronic package that is comprised of a digital control pad and an internal Power Control Board (PCB)

The large LCD display panel includes clearly marked, backlit control buttons. The Control pad is a user-friendly device that enables the user to enter desired temperature settings and operational modes. A built in timer allows for night set back programming.



Control Pad

SEQUENCE OF OPERATION - COOLING MODE

Your WSHP unit has three cooling modes – High, Medium and Low. The unit compressor will operate in all three modes, cycling on and off as called for by your temperature (thermostat) setting.

■ HI COOL

Indoor fan runs at high speed for maximum air circulation and cooling. Use this mode for rapid cooling, for cooling large areas and for enhanced cooling during high temperature and humidity periods.

■ MEDIUM COOL

Indoor fan runs at medium speed for normal air circulation and cooling. Use this mode once your desired temperature has been achieved, for quieter and more efficient operation in larger rooms.

■ LO COOL

Indoor fan runs at a lower speed, for maintaining desired temperature once a smaller room has been initially cooled down. Allows for quieter and more energy efficient operation.

IMPORTANT NOTE:

- Do NOT attempt to restart the unit in Cooling mode for at least three minutes after any of these actions:
 - Turning the unit OFF
 - Resetting the Temperature Control to a Warmer position
 - Switching from Cooling mode to any other mode
 - You can, however, switch between Lo, Med and Hi Cooling (or vice versa) at any time without this 3 minute delay

OPERATING INSTRUCTION - COOLING MODE

- To activate cooling, press the mode button until **COOL** lights up.
- Press up/down arrow keys to your desired temperature
- Choose one of the Fan Speeds (Lo, Med or Hi or Auto) based on your optimal comfort level
- Compressor will cycle when temperature reaches the set point. After compressor stops, allow at least 3 minutes before restarting (this applies only if you have manually turned the unit off or reset the thermostat - during normal running conditions, the unit will automatically allow for the required restart delay)

The temperature reading that is on constant display is the **ambient room temperature**.

SEQUENCE OF OPERATION - HEATING MODE

Your WSHP unit has three speeds in heating mode, High, Medium and Low.

HEAT

- To activate heating, press the Mode button until **HEAT** lights up
 - Press up/down arrow keys to your desired temperature.
 - Press Fan button to select the desired fan speed.
 - The unit will cycle until the set temperature is achieved and then will continuously cycle to maintain the set temperature. The temperature reading that is on constant display is the ambient room temperature.
- Room temperature must be below 83°F for the Heat mode to operate properly.

TIMER

The timer function operates in one hour intervals and at same day settings only. Press the Timer button to activate the timer function. Continue to press the **TIMER** button allows for desired time selection for both **TIMER Start** and **Stop**. Please note that the Unit timer function operates in 1 hour increments only for one day after being set.

LOCKOUT SAFETY

All Ice Air WSHP units have its own lockout circuit to shut down the compressor during an abnormal condition. During unit operation the compressor will be automatically turned off due to one of two safety conditions.

- High pressure
- Low temperature
- Condensate overflow

OPERATING INSTRUCTIONS - DRY MODE

- To activate Dry Mode, press the Mode Button until **DRY** lights up.
- In Dry Mode, the fan will run at low speed, fan speed selection will be disabled.
- Set temperature to the desired set point.
- Once the ambient temperature is higher than the set point, the compressor will start to eliminate humidity in the room.

MAINTENANCE & SERVICE

CAUTION: to prevent injury or death due to electrical shock or contact with moving part, turn off the disconnect switch before servicing this unit

IMPORTANT NOTE: It is not the intent of this maintenance manual to correct any installation deficiencies. If you have any doubt about the proper initial installation (or reinstallation after servicing) of your WSHP unit(s)- noisy or inefficient unit operation, frayed or damaged electrical connections, improper unit appearance, etc. - please contact a trained servicer or building maintenance staff immediately.

DO NOT OPERATE ANY EQUIPMENT THAT DOES NOT APPEAR TO BE FUNCTIONING PROPERLY!

Maintenance Overview

Your Ice Air WSHP Unit is designed to provide you with many years of efficient, trouble-free comfort conditioning service. To ensure equipment longevity and efficiency, please make sure that the following simple maintenance procedures are followed.

This manual assumes that your WSHP unit has been installed by a qualified installation professional, and is operating properly prior to maintenance service.

- Have your unit periodically inspected by a properly trained service professional or building maintenance staff person. The unit should be checked for the safe and proper functioning of all of its systems at least once a year. The following recommended maintenance procedures should be carried out only by trained personnel with strict adherence to the safety guidelines outlined at the beginning of this manual. These procedures **MUST** be followed to ensure your safety and the safety of the person maintaining the equipment

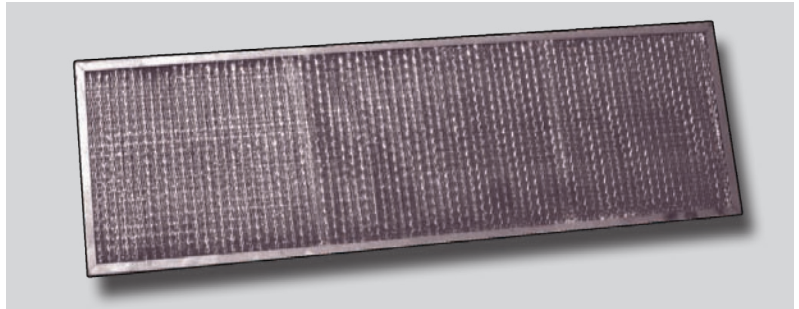
FILTER

Ice Air WSHPs are equipped with a washable/reusable Aluminum Filter. It is recommended that you clean the indoor air filter after every 350 to 400 hours of unit operation - more frequently if the unit is running in an environment of high dust, pet dander or other pollutants in the indoor atmosphere.

- Filter inspection: The filter is located at the bottom of your unit. To remove unit slide it out towards you.
- To reinstall place filter under the unit and slide back in to the filter rack

Filter Cleaning:

To clean your filter use luke warm water with a biodegradable cleaner rinse and allow to dry completely before installing back to unit. (As an alternate cleaning method, the filter may be cleaned on both sides using a vacuum cleaner with a soft brush type attachment.)



Filter

DO NOT OPERATE UNIT WITHOUT FILTERS.

This practice will damage and or seriously impair the performance of your unit and could void your Warranty.

ROOMSIDE COMPONENT CLEANING -

Evaporator Coil and Drain Pan / Drain Hoses:

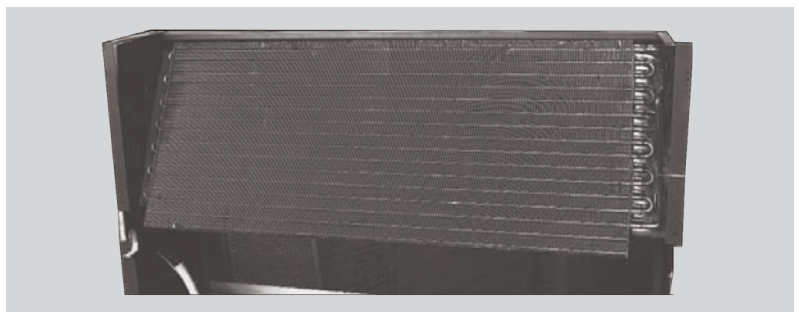
IMPORTANT NOTE:

The power cord **MUST** be disconnected from the electrical outlet before carrying out any of the following cleaning!

To access the components within the roomside section of the unit, disconnect unit power and then remove the unit chassis front cover by unscrewing the retaining screws that hold the front cover in place (use a Phillips head driver). You will then have access to the following components:

Evaporator Coil

Check the coil for cleanliness and uniformity of fins. If the coil is dirty, vacuum clean with a soft brush attachment. This is the only form of cleaning that should be carried out within an apartment. If the coil requires additional cleaning, the unit must be removed from the wall cabinet and cleaned using compressed air and / or washed. These operations **MUST** be carried out in a facility properly equipped to handle this type of work in a safe and professional manner. Do not carry out this cleaning in a finished apartment or office area.



Evaporator Coil

Drain Pan / Drain Hose Cleaning

The condensate pan is located directly under the evaporator coil. Check the visible section of the interior of the drain pan for any buildup of dirt or condensate water.

Wash annually to remove all dirt buildup. Check condensate drain pan for algae growth every 2 to 3 months. If algae growth is apparent consult a water treatment specialist for treatment.

Drain Pan / Drain Hose Cleaning

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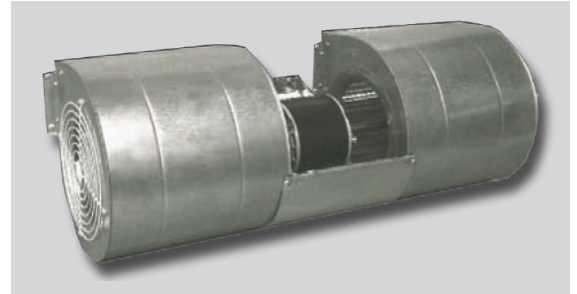
Wash annually to remove all dirt buildup. Check condensate drain pan for algae growth every 2 to 3 months. If algae growth is apparent **consult a water treatment specialist for treatment.**

Drain Hose

Check drain hose for leaks and blockage to eliminate potential problems.

Evaporator Motor and Blower Assembly

If there is evidence of dirt or dust build up the evaporator motor or blowers, they should be cleaned either by vacuum cleaning (if working in an apartment) or by removing the unit to a workshop location and cleaning with compressed air. Always obey safety guidelines for using compressed air in this latter case. Your Ice Air WSHP has permanently lubricated motor bearings that do not require additional lubrication. Blowers and motor are factory assembled for quiet performance - if there is any excessive noise and vibration from this assembly, it should be serviced by a qualified technician.



Blower Assembly

Compressor:

Annual check should be performed to detect potential problems.

- Amperage draw should not exceed normal full load amps (FLA) consult nameplate for information.



Compressor

Heat Exchanger:

Water coil maintenance is not required. If the unit installation is located in a system with water problem history it is best to establish a periodic maintenance program. It is the building responsibility to maintain a water system that should provide your unit with treated and filtered water to keep water flowing freely thru your equipment. Generally if the water flow exceeds 3 gpm per ton the water velocities should keep your coil free of scaling and debris that could lead to coil erosion and fouling up.



Heat Exchanger

GENERAL UNIT INSPECTION

Visually inspect unit at least once a month. Pay special attention to hose assemblies and connections. Repair any leaks and replace deteriorated hose immediately to avoid potential costly damage to your property due to component failure.

TROUBLESHOOTING

1.

If unit is not operating conduct the following checks:

- Check the electrical connections
- Check the voltage and current against the electrical specifications on the unit nameplate
- Look for wiring errors. Check for loose screw connections in both line and low voltage terminals.
- Check the water supply piping for proper water connection.
- Check for dirty filters
- Check indoor fan for proper operation.
- Check that unit did not cycle off due to improper thermostat settings
- Check for fault codes on the control board consult the trouble shooting guide.

2.

If checks above fail to reveal operating problem

If the unit still do not operate after reset, contact trained service technician to conduct full unit diagnostics and repair to equipment. Record any unit that does not operate noting the unit serial number on your report

TROUBLE SHOOTING ERROR CODE MENU

CODE NO.	CODE DESCRIPTION	ERROR CAUSE	MACHINE OPERATION SYMPTOMS	HOW TO REPAIR
E11	Ambient Temperature Sensor Fail	Loose Wire Loose Connector Sensor failure	Machine will cycle for 50 minutes and shuts down	Trace Ambient sensor wiring Check for loose connections Replace Ambient Sensor
E12	Evaporator Sensor Failure	Loose Wire Loose Connector Sensor failure	Machine shuts down Low pressure sensor and freezestat failed	Trace Evaporator sensor wiring Check for loose connections Replace Evaporator Coil Sensor
E19	Low Temperature Low Pressure sensor	Dirty Air Filter Return Air Obstruction Protecting Compressor	Compressor Shut Down Low Refrigerant	Remove Filter Check bottom intake of machine Charge Check Refrigerant charge
E29 COOLING	Exiting Water temperature too High over 140F Entering Water temperature too High	Check EWT	Machine enters safe mode Compressor stops Exiting Water Temperature must be bellow 120F	Check Chiller water temperature and water flow Check entering water temperature
E29 HEATING	Low EWT less than 42.8F	Check EWT	Compressor will not start unless the Exiting Water temperature is above 50F	Check entering water temperature
E14	Water temperature sensor located on the coaxial coil failure	Loose wire connection Temp sensor failure	Machine will shut off immediately Low pressure sensor and freezestat not functioning	Replace sensor
E18	The high pressure limit has been exceeded.	Entering water temp too high. Poor air flow	Compressor shuts down while the blower fan will operate to cool down the evaporator coil no heat	Check water temperature Check/replace filter Check for refrigerant leak.
E02	Communication Error	Loose connection	Machine will stop operating	Check wiring from control pad to PCB Replace board / Replace Pad

To restart machine after error resolution press RESET. Than turn machine on normal operation will resume.