USE AND CARE GUIDE
FOR YOUR COMMERCIAL HEAT PUMP UNIT
WITH R-454B REFRIGERANT

DO NOT DESTROY. PLEASE READ CAREFULLY AND KEEP IN A SAFE PLACE FOR FUTURE REFERENCE BY A SERVICER OR USER OF THIS APPLIANCE.

⚠ WARNING

ELECTRICAL SHOCK, FIRE, OR EXPLOSION HAZARD

Failure to follow the safety warnings exactly could result in dangerous operation, serious injury, death, or property damage.

Improper servicing could result in dangerous operation, serious injury, death, or property damage

Before servicing, disconnect all electrical power to furnace.

When servicing controls, label all wires prior to disconnecting. Reconnect wires correctly. Verify proper operation after servicing.

⚠ FOR YOUR SAFETY

— DO NOT STORE OR USE GASOLINE OR OTHER FLAMMABLE VAPORS, LIQUIDS, OR COMBUSTIBLE MATERIALS IN THE VICINITY OF THIS OR ANY OTHER APPLIANCE.

— INSTALLATION AND SERVICE MUST BE PERFORMED BY A QUALIFIED INSTALLER, SERVICE AGENCY, OR GAS SUPPLIER.

This unit was installed by:

Name/Company Date

If issues with operation occur or service is required, contact your servicer here:

Point of contact

INTRODUCTION

Recognize this symbol as an indication of Important Safety Information!

This manual contains the operating instructions for your commercial packaged unit. There are precautions that should be taken to maximize satisfaction from this air conditioner.

IMPORTANT: COMPLETELY READ ALL INSTRUCTIONS PRIOR TO ATTEMPTING TO OPERATE OR MAINTAIN THE PRODUCT.

This unit has been designed to give you many years of efficient, dependable comfort. With regular maintenance, your unit will operate satisfactorily year after year. Please read this manual to familiarize yourself with operation, maintenance and safety procedures. The images and information contained within this document may not be an exact representation of every unit, accessory, installation, etc. We reserve the right to change the content of this document at any time.

SAFETY

Carefully follow these safety rules:

1. The area around the unit must be kept clear and free of all combustible materials including gasoline and other flammable vapors and liquids.
2. Do not block the combustion air inlets or the exhaust air outlet openings.
3. Do not operate the unit without all panels and doors securely in place.
4. Any additions, changes or conversions required in order for the unit to satisfactorily meet the application needs should be made by a qualified installer, service agency or the gas supplier, using factory specified or approved parts. Read your WARRANTY. Contact the WARRANTER for conversion information.
5. The combustion air inlet/exhaust outlet hood and surrounding area are very hot when operating in heating mode. Do not allow children to play on or around the unit.
6. The equipment must be stored in a way that prevents mechanical damage from occurring.
7. Work shall be conducted under a controlled procedure so as to minimize the risk of flammable gas or vapor being present while work is being performed.

⚠ WARNING

DO NOT ALLOW DEBRIS SUCH AS LEAVES, GRASS, WEEDS, SHRUBS, VINES OR SNOW ACCUMULATE IN THE AREA SURROUNDING THE UNIT, PARTICULARLY IN THE VICINITY OF THE VENT, AIR INTAKE AND A/C CONDENSER FINS. DOING SO CAN RESULT IN INADEQUATE UNIT PERFORMANCE OR CREATE A FIRE HAZARD RESULTING IN PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.

8. All maintenance staff and others working in the local area must be instructed on the nature of work being carried out. Work in confined spaces must be avoided.
9. The area must be checked with an appropriate refrigerant detector prior to and during work to ensure the technician is aware of potentially toxic or flammable atmospheres.

BE AWARE THAT REFRIGERANTS MAY NOT CONTAIN AN ODOR.

12. When performing any maintenance or troubleshooting on the refrigerating equipment or associated parts, a dry powder CO2 fire extinguisher must be nearby for emergency use.

NOTICE: No person carrying out work in relation to a refrigerating system that involves exposing any pipe work shall use any sources of ignition in such a manner that may lead to the risk of fire or explosion. All possible ignition sources, including cigarette smoking, should be kept sufficiently far away from the site of installation, repair, removal, and disposal, during which refrigerant can possibly be released to the surrounding space. Prior to work taking place, the area around the equipment must be surveyed to make sure that there are no flammable hazards or ignition risks. “No Smoking” signs must be displayed.

13. Before beginning any work on the system or conducting any hot work, ensure that the area is in the open or that it is adequately ventilated. Ventilation must continue while the unit is being worked on. Ventilation is required to safely disperse any released refrigerant into the atmosphere.

14. Prior to beginning any work on the systems containing flammable refrigerants, safety check are necessary to ensure that the risk of ignition is minimized.

DO NOT USE MEANS TO ACCELERATE THE DEFROSTING PROCESS OR TO CLEAN, OTHER THAN THOSE RECOMMENDED BY THE MANUFACTURER.

⚠ WARNING

THE APPLIANCE SHALL BE STORED IN A ROOM WITHOUT CONTINUOUSLY OPERATING IGNITION SOURCES (FOR EXAMPLE: OPEN FLAMES, AN OPERATING GAS APPLIANCE, OR AN OPERATING ELECTRIC HEATER).

⚠ WARNING

DO NOT PIERCE OR BURN.

WORKING PERSONNEL QUALIFICATIONS

Every installation, maintenance, service, and repair working procedure must be conducted by qualified personnel who have been trained in operating and servicing units that employ flammable refrigerants such as R-454B.

Examples of working procedures include but are not limited to:

•Breaking into the refrigeration circuit

•Opening sealed components

•Opening ventilated enclosures

This appliance is not intended for use by persons (including children) with reduced physical, sensory, or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning the use of the appliance by a person responsible for their safety.

Children should be supervised to ensure that they do not play with the appliance.

SYSTEM OPERATION INFORMATION

Advice to the Customer

Carefully follow these safety rules:

1. Keep the filter clean. The system will operate more efficiently and provide better conditioned air.
2. Arrange furnishings and decor so that the supply and return air registers and grills are unobstructed.
3. Close doors and windows. This will reduce the cooling load on the system for a more economical operation.
4. Avoid excessive use of exhaust fans.
5. Window shades and awnings will reduce the cooling load.
6. Do not permit the heat generated by equipment or appliances to influence the thermostat operation.
7. Do not disconnect the main power to the unit unless the servicer is planning on removing panels to perform service. This is a safety precaution for the protection of the compressor. Otherwise, use the thermostat switches to shut the system off.
8. For extended periods of disuse, set the thermostat system switch in the “OFF” position and fan switch in the “AUTO” position.

THERMOSTAT OPERATION

The system is designed to be controlled with a 24VAC Thermostat installed in the space. Install the thermostat on the wall in accordance with the manufacture instructions. The thermostat will provide occupancy, cooling, and heating calls to the system for operation.

This is standard on all non-DDC models, for thermostat control on DDC models the control board must be set to the Control by Thermostat mode.

Occupancy Call – *“G” Input* – This operates the unit in a Fan only mode, no cooling or heating is provided. On models equipped with an Economizer, this input will move the damper blades to the Minimum Outside Air position as set in the Economizer Controller.

First Stage Cooling Call – *“Y1” Input* – This operates the unit in a 1st Stage cooling operation, turning on the 1st stage of the cooling compressor on 2-stage cooling models, or the cooling compressor of single stage models. On models equipped with an Economizer, this input will trigger a cooling call and if the economizer controller determines that “Free Cooling” is available it will open the dampers up and bypass turning on the compressor. See the Economizer Manual for operational details.

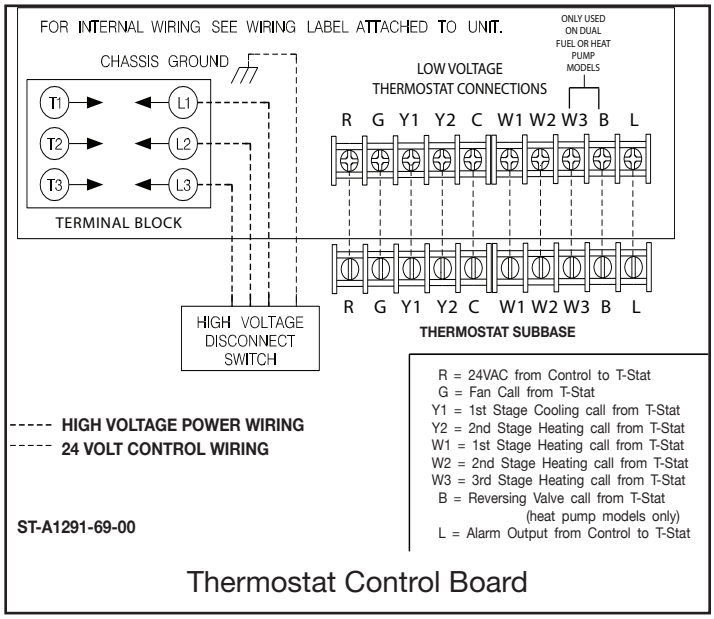
Second Stage Cooling Call – *“Y2” Input* – This operates the unit in a 2nd stage cooling operation, turning on the 2nd stage of the cooling compressor on 2-stage models. The control board must have a “Y1” input call in addition to the “Y2” input call to run the 2nd stage compressor operation. This input will also trigger a higher fan speed on models equipped with a multi-speed fan system. On models equipped with an Economizer, this input will trigger operation based upon the configuration of the economizer controller. It can run 2 stages of free cooling, or bring on a stage of mechanical cooling along with the free cooling operation. See the economizer manual for operational and setup details.

1st Stage Heating Call – *“W1” Input* – this operates the 1st stage Emergency heating operation, the unit will turn on 1st stage Electric Heating Elements, if equipped. This input will also shut down the heat pump heating mode. It will also turn the fan on and run it at high speed on multi-speed fan models.

2nd Stage Heating Call – *"W2" Input* – this operates the 2nd stage Emergency heating operation, the unit will turn on 2nd stage Electric Heating Elements, if equipped. This input will also shut down the heat pump heating mode. It will also turn the fan on and run it at high speed on multi-speed fan models.

Heat Pump Call – *"B" Input* – this operates the unit in a Heat Pump Mode, where a "Y1" and "Y2" input trigger the stages of the compressors, adding the "B" input triggers the control board to turn on the reversing valves and run the unit in Heating Mode. This input also triggers the Fan to run at a specific speed based upon the compressor stages on units with multi-speed fan.

Alarm Output – *"L" Output* – this provides a signal of a fault condition with the economizer on Non-DDC units, and any fault condition on DDC units. This input on a typical Thermostat turns on a light or provides a notification on the screen for service.



Thermostat Control Board

SELECTION OF ROOM TEMPERATURE

It is most important to select the comfort temperature desired for either heating or cooling by use of the thermostat temperature selector.

DO NOT PLAY WITH THE THERMOSTAT. SET IT AND FORGET IT.

If unfamiliar with the temperature selection procedure, ask the installing contractor to familiarize users with the operation of the thermostat.

DEFROST CYCLE

FOR USER SAFETY, READ BEFORE OPERATING

When the outdoor temperature drops below 45°, frost may start to form on the outdoor coil. Frost buildup will be heaviest on damp days with the temperature at 35° to 40°. The Heat Pump has an automatic control which will reverse the system and stop the outdoor fan to defrost the coil when needed. Some units operate on a timer at 45 to 90 minute intervals. Others have an electronic control which senses coil and air temperatures to determine when a defrost cycle is needed. They may go as long as 6 hours between defrosts. The coil may be almost completely covered with frost at some times. Don't worry unless it continues to build up a thicker layer with areas of hard clear ice. If excessive ice buildup should occur, call your serviceman.

When the Heat Pump is defrosting, a cloud of steam may rise from the outdoor unit for a short time. This is normal and harmless.

The water which runs from the defrosting coil must be drained away from the unit. Snow drifts must be kept cleared away to prevent ice buildup in the coil from defrost water.

Important things to remember about the Defrost Cycle.

1. Water must drain away from the coil and unit to prevent damage from ice buildup. Keep snow cleared away.
2. The outdoor fan stops. The unit may make some strange hissing or gurgling noises and a cloud of steam. They are normal.
3. If you notice excessive frost, all a licensed installer to clear ice buildup.

⚠ WARNING

IF YOU DO NOT FOLLOW THESE INSTRUCTIONS EXACTLY, A FIRE OR EXPLOSION MAY RESULT CAUSING PROPERTY DAMAGE, PERSONAL INJURY OR LOSS OF LIFE.

Sequence of Operations

NOTE: If questions regarding the unit's sequence of operation arise, consult the Installation and Operation Manual included with the unit.

Troubleshooting- Heating

NOTE: If issues arise in operating the unit, and troubleshooting is required, contact a qualified servicer or installer for diagnostics and repairs.

COOLING OPERATION

To Operate Cooling System

To Start: Set thermostat at desired setting with system switch on “Cool” and fan switch on “Auto” or “On” position.

To Shut Down: Set thermostat to “Off” position”

GENERAL INFORMATION- COOLING

1. If the condenser coil is allowed to become restricted by dirt, lint, paper, etc., the system efficiency will suffer and abnormally high refrigerant operating pressures will result. To correct this condition, be sure to first cut off power to the unit and then clean such material from the condenser coil and cabinet. Using a hose with a nozzle can be effective in cleaning the condenser coil, but the water should be sprayed from the inside to outside of the coil in the opposite direction for normal airflow. Disconnect the main power before washing the coil.

3. If the compressor is suspected or not working, place the thermostat system switch on the thermostat subbase to the “Off” position. This will stop the operation of the compressor.

4. If a cooling problem in this system is suspected, check the following service hints before contacting the manufacturer’s support specialist.

Troubleshooting- Cooling

NOTE: If issues arise in operating the unit, and troubleshooting is required, contact a qualified servicer or installer for diagnostics and repairs.

ROUTINE MAINTENANCE

⚠ WARNING

DISCONNECT MAIN ELECTRICAL POWER TO THE UNIT BEFORE ATTEMPTING ANY MAINTENANCE. FAILURE TO DO SO CAN RESULT IN SEVERE ELECTRICAL SHOCK OR DEATH.

Routine maintenance to be provided by a qualified installer, service agency or the gas supplier ONLY.

EXAMINATION OF INSTALLATION

1. The combustion air inlets and combustion air outlets must be clear and free of obstructions.

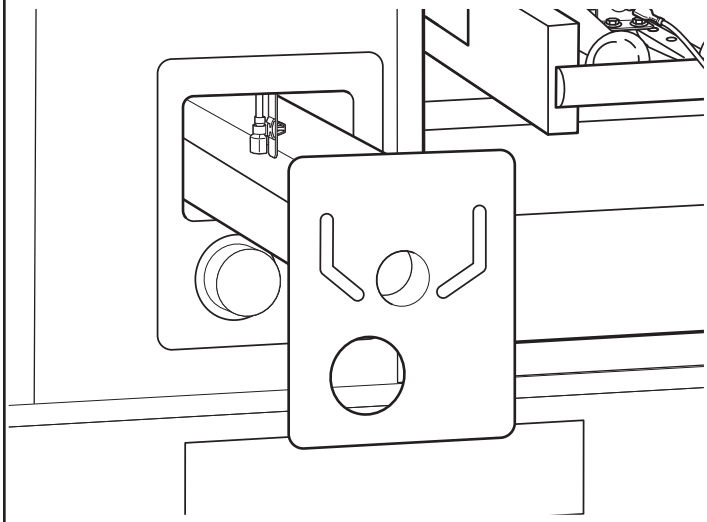
2. The return and supply duct connections should be physically sound and sealed where they connect to the unit.

3. Check for obvious signs of deterioration of the unit.

4. **CONDENSATE DRAIN** — Check annually and, if necessary, clean drain pan and drain line. In winter, keep drain and trap dry or protect against freeze-up. If this unit is installed with proper clearances, then the drain pan on most units is removable (check unit Specification Sheet to determine whether or not your unit is equipped with a slide-out drain pan). Refer to the unit Installation and Operation Manual for specific instruction on clearances and how to clean the drain pan.

5. The blower compartment and motor should be inspected and cleaned periodically by your qualified installer or service agency to prevent the possibility of overheating due to an accumulation of dust and dirt on the windings or on the motor exterior. And, as suggested elsewhere in these instructions, the air filters should be kept clean because dirty filters can restrict airflow and the motor depends upon sufficient air flowing across and through it to keep from overheating.

6. Perform the examination annually to insure proper operation.



Slide-out Drain Pan

FILTER MAINTENANCE

⚠ WARNING

DISCONNECT THE MAIN POWER TO THE OUTDOOR UNIT BEFORE ATTEMPTING ANY MAINTENANCE OPERATION. FAILURE TO DO SO CAN RESULT IN SEVERE ELECTRICAL SHOCK OR DEATH.

1. Keep air filters clean. There are several types of material used in air filters and there are many possible locations for air filters. Consult with your contractor as to the locations of the filters and type of material in use.

2. How To Clean:

   Glass Fiber (Throwaway) — This is a disposable type of filter. Inspect monthly and replace when necessary. A new building will normally require more frequent attention to the filters.

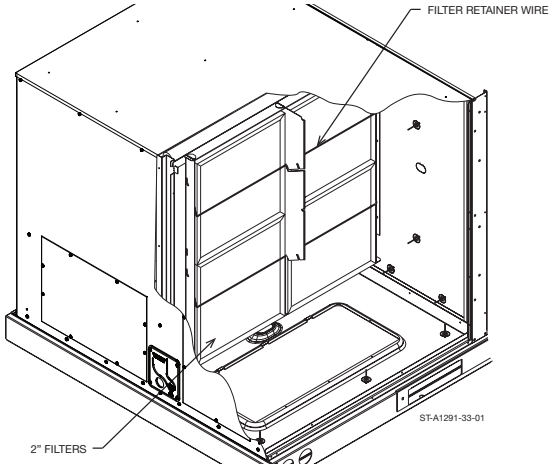
   Aluminum Mesh — Wash with detergent and water. Air dry thoroughly and renew the coating in compliance with the manufacturer's instructions.

Pleated or MERV Filters (Throwaway) —There are various types and levels of filtration available. These may require more frequent inspection or replacement. Consult with the filter manufacturer.

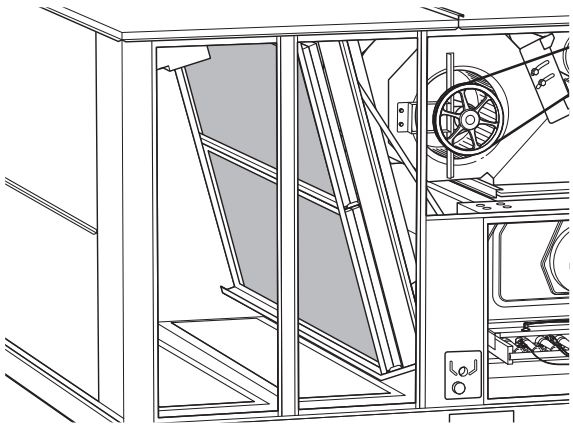
IMPORTANT: Do not operate your system for extended periods without filters, as the dust entrained in the air may pack into the fin area of the evaporator coil creating a condition which could require extensive repairs.

⚠ WARNING

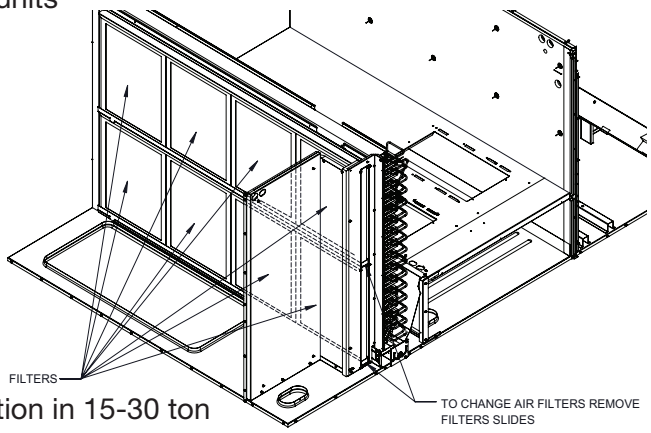
A PORTION OF THE DUST ENTRAINED IN THE AIR MAY TEMPORARILY LODGE IN THE AIR DUCT RUNS AND AT THE SUPPLY REGISTERS. ANY RECIRCULATED DUST PARTICLES WILL BE HEATED AND CHARRED BY CONTACT WITH THE ELECTRIC HEATING ELEMENTS. THIS RESIDUE WILL SOIL CEILINGS, WALLS, FLOORING, AND OTHER BUILDING ARTICLES.



Filter location in 3-12.5 ton units



Filter location in 15-25 ton G-cabinet units



Filter location in 15-30 ton H-cabinets units

LUBRICATION

IMPORTANT: DO NOT attempt to lubricate the bearings on the blower motor or the induced draft blower motor. Addition of lubrications can reduce the motor life and void the warranty.

The blower motor and induced draft blower motor in some units are pre-lubricated by the manufacturer and do not require further attention.

The blower motor and induced draft blower motor must be cleaned periodically by a qualified installer, service agency, or the gas supplier to prevent the possibility of overheating due to an accumulation of dust and dirt on the windings or on the motor exterior. And, as suggested elsewhere in these instructions, the air filters can restrict airflow. The motor depends upon sufficient air flowing across and through it to keep from overheating.

Consult with the unit's Installation and Operation Manual for specific lubrication instructions. Note that some are pre-lubricated, but some other units require lubrication upon inspection.

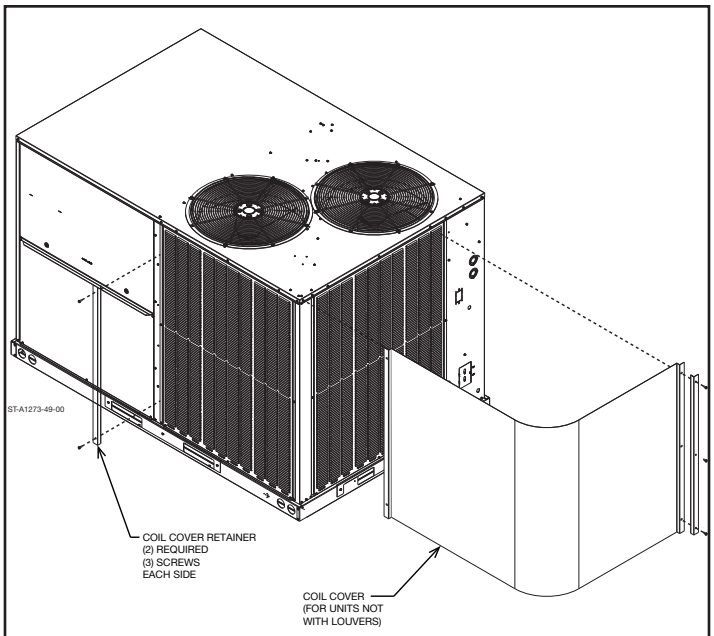
PROTECTING EQUIPMENT FROM THE ENVIRONMENT

The metal parts of this unit may be subject to rust or deterioration in adverse environmental conditions. This oxidation could shorten the equipment's useful life. Salt spray, fog, or mist in seacoast areas, sulfur or chlorine from landscaping watering systems, and various chemical contaminants from industries such as paper mills and petroleum refineries are especially corrosive.

⚠ WARNING

DISCONNECT ALL POWER TO UNIT BEFORE STARTING MAINTENANCE. FAILURE TO DO SO CAN RESULT IN SEVERE ELECTRICAL SHOCK OR DEATH.

1. Avoid having sprinkler heads spray directly on the unit cabinet.
2. Frequent washing of the cabinet, fan blade, and coil with fresh water will remove most of the salt or other contaminants that build up on the unit.
3. Regular cleaning and waxing of the cabinet with a good automobile polish will provide some protection.
4. A good liquid cleaner may be used several times a year to remove matter that will not wash off the cabinet with water. **Do not use and chemicals or cleaners on the coils.**



Location of the coils demonstrated on 7.5-12.5 T unit after coil cover used for shipping is removed.

Several different types of protective coatings are offered in some areas. These coatings may provide some benefit, but the effectiveness of such coating materials cannot be verified by the equipment manufacturer.

The best protection is frequent cleaning, maintenance and minimal exposure to contaminants.

MICROCHANNEL COIL CLEANING GUIDELINES

NOTE: Clean the Microchannel using only water. Due to the aluminum construction, do not use cleaners or detergents because they may cause corrosion to the Microchannel, leading to refrigerant leaks.

Directions to clean the Microchannel coils are as follows:

1. Disconnect power to the unit.
2. Wear proper personal protection equipment such as a face shield, gloves, and waterproof clothing.
3. Remove panels from the unit to gain safe access to the microchannel coils.

NOTE: Clean the coil from the inside out, in the opposite direction of normal airflow, allowing the debris to be pushed out rather than further in.

4. Use a soft brush or vacuum to remove base debris or surface-loaded fibers from both sides of the coil.
5. Using a sprayer and water ONLY, clean the coil following the guidelines below:

   a. Use a 90º sprayer nozzle attachment to aid in cleaning the closely spaced coils. Sprayer nozzle pressure should not exceed 600 psi. Use a flat fan spray nozzle with an angle of at least 15 degrees.

   b. Spray perpendicular to the face of the coil. The maximum source angle should not exceed 25 degrees to the face of the coil.

   c. Spray approximately 1”-3” from the coil surface.

6. Do not allow the sprayer to come in contact with the tube and fin as it may damage the coil.