USE AND CARE GUIDE
FOR YOUR COMMERCIAL GAS ELECTRIC UNIT
WITH R-410A 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.

WHAT TO DO IF YOU SMELL GAS

Do not try to light any appliance. Do not touch any electrical switch; do not use any phone in your building. Leave the building immediately. Immediately call your gas supplier. Follow the gas supplier's instructions.

If you cannot reach your gas supplier, call the fire department.

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

This unit was installed by:

Name/Company Date

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

Point of contact

92-109699-01-00

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 securelv in place.

⚠ WARNING

SHOULD OVERHEATING OCCUR OR THE GAS SUPPLY FAIL TO SHUT OFF, SHUT OFF THE MANUAL GAS VALVE TO THE APPLIANCE BEFORE SHUTTING OFF THE ELECTRICAL SUPPLY. FAILURE TO DO SO CAN RESULT IN AN EXPLOSION OR FIRE CAUSING PROPERTY DAMAGE, SEVERE PERSONAL INJURY OR DEATH!

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 WARRANTOR for conversion information.

The unit was equipped at the factory for use on NATURAL GAS ONLY. Conversion to LP GAS requires a special kit supplied by the WARRANTER.

⚠ WARNING

OBSTRUCTION OF THE AIR VENT ON AN LP TANK REGULATOR CAN CAUSE EXPLOSION OR FIRE RESULTING IN SERIOUS PERSONAL INJURY, DEATH OR PROPERTY DAMAGE. PERIODICALLY INSPECT AND CLEAN THE AIR VENT SCREEN TO PREVENT ANY OBSTRUCTION. KEEP PROTECTIVE REGULATOR COVER IN PLACE, AS EXPOSURE TO THE ELEMENTS CAN CAUSE ICE BUILDUP AND REGULATOR FAILURE.

5. A gas burner needs an adequate supply of combustion and ventilation air for proper and safe operation. Do not block or obstruct air openings on the unit. Do not place anything around the unit that could block the flow of fresh air to the unit.
6. Do not use this unit if any part has been under water. Immediately call a qualified installer, service agency or the gas supplier to inspect the unit and to replace any part of the control system or any gas control that has been under water.

⚠ 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.

7. 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.

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.

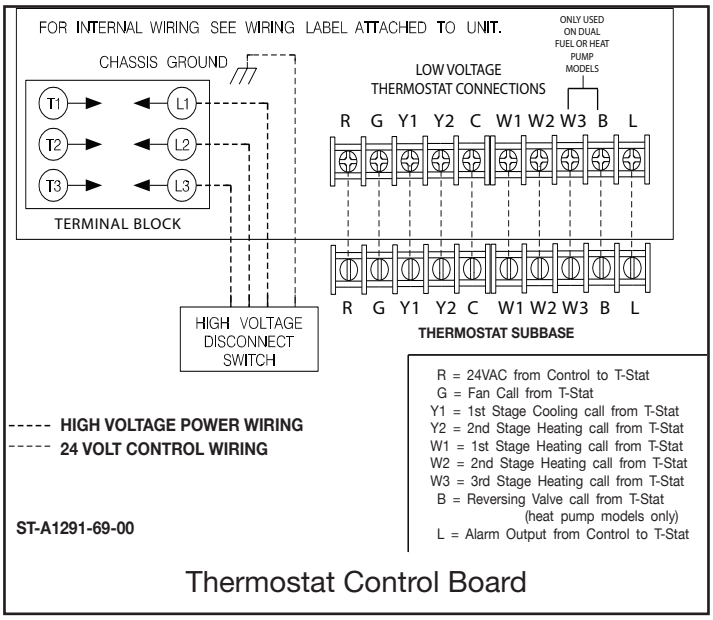
First Stage Cooling Call – *"Y1" Input* – This operates the unit in a 1st Stage cooling operation, turning on the 1st stage of the cooling compressor on 2 stage cooling models, or the cooling compressor of single stage models. On models equipped with an Economizer, this input will trigger a cooling call 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 heating operation, the unit will turn run the 1st stage gas heating operation, see the gas heating section XXXXX for operational details. It will also turn the fan on and run it at a specific speed on multi-speed fan models.

2nd Stage Heating Call – *"W2" Input* – This operates the 2nd stage heating operation, the unit will turn run the 2nd stage gas heating operation, see the gas heating section XXXXX for operational details. It will also turn the fan on and run it at a specific speed on multi-speed fan models.

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

HEATING OPERATION

FOR USER SAFETY, READ BEFORE OPERATING

⚠ WARNING

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

A. This appliance is equipped with an ignition device which automatically lights the burners. Do not try to light the burners by hand.

B. BEFORE OPERATING smell all around the appliance area for gas. Be sure to smell next to the ground because some gas is heavier than air and will settle on the ground.

WHAT TO DO IF YOU SMELL GAS

- Do not try to light any appliance.
- Do not touch any electric switch or appliance.
- Evacuate the building.
- Immediately call your gas supplier. Follow the gas supplier's instructions.
- If you cannot reach your gas supplier, call the fire department.
- Do not return to the building until authorized by the gas supplier or fire department.

C. Turn off the Gas supply to the unit by hand, never use a tool to operate the gas shutoff valve. If you are unable to shut off the gas by hand, contact your installer for service. Force or attempted repair may result in a fire or explosion.

D. Do not use this unit if any part has been under water. Immediately call a qualified installer to inspect or replace the unit.

Sequence of Operations

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

SUMMARY OF NORMAL FURNACE OPERATING SEQUENCE

1. Thermostat calls for heat.
2. Induced draft blower is energized.
3. Inducer proving pressure switch closes.
4. Pre-purge is initiated.
5. Gas valve opens and ignitor is energized for a short ignition period.
6. Burners ignite and flame sensor proves all burners have lit (maximum of 3 attempts for ignition each hour).
7. The indoor fan and blower are turned on shortly after ignition.
8. Thermostat is satisfied and ends the heating call.
9. The gas valve is de-energized and closes, shutting down the burner flame.
10. The indoor fan and inducer motor will run for a short period after.

Troubleshooting- Heating

NOTE: If issues arise in operating the unit, and troubleshooting is required, contact a qualified servicer or installer for disgnostics 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 refridgerant 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 you know or suspect that the compressor is not working, you should place the thermostat system switch on the thermostat subbase to the "Off" position. This will stop the operation of the compressor/condenser unit.
4. If you suspect that a cooling problem has developed with your system and before you advise you servicing contractor, we suggest you check the following service hints.

Troubleshooting- Cooling

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

ROUTINE MAINTENANCE
CONT.
COMBUSTION AREA AND EXHAUST SYSTEM

1. It is recommended that an annual inspection of your furnace be done by a qualified installer.
2. Turn OFF the electrical supply to the furnace and remove the access doors.
3. Inspect the gas burners and burner compartment for dirt, rust, or scale.

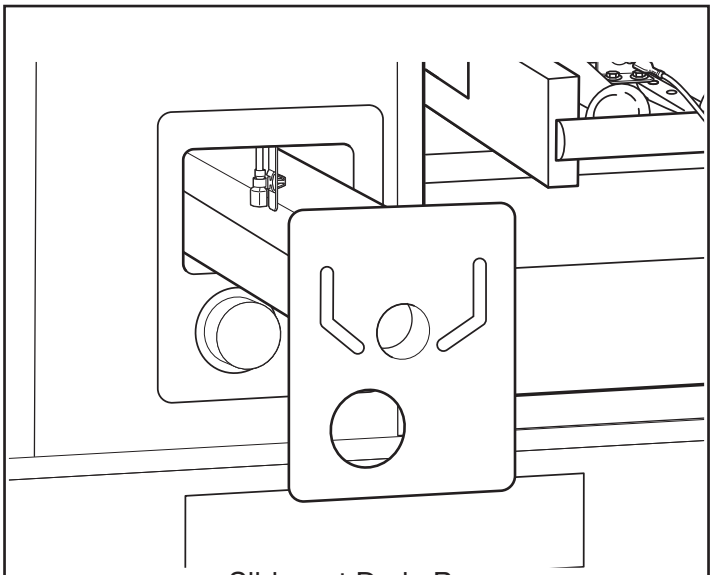
⚠ WARNING

IF DIRT, RUST, SOOT OR SCALE ACCUMULATIONS ARE PRESENT, DO NOT OPERATE THIS FURNACE. INSPECT THE HEAT EXCHANGERS FOR LEAKS. LEAKS CAN CAUSE TOXIC FUMES TO ENTER THE BUILDING AND CAUSE INJURY OR DEATH.

4. Inspect the exhaust area inside and outside the appliance including the exhaust transition piece and the exhaust hood. Be sure that the exhaust transition piece (inside the appliance) and the hood are in place and are physically sound, without holes or excessive corrosion. If these components have deteriorated, have a qualified service professional replace them using factory specified or approved replacement parts only.
5. Be sure that the return air duct connections are physically sound and are sealed to the unit.
6. Look for obvious signs of deterioration of the unit.
7. If the unit is free of the above conditions, replace all access doors, except furnace access panel, and restore electrical power to the unit.
8. Start the furnace and observe its operation. Watch the burner flames to see if they are bright blue. If a suspected malfunction is observed, or the burner flames are not bright blue, apply appropriate service.

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 freezeup. 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.



Slide-out Drain Pan

5. The blower compartment and motor should be inspected and cleaned periodically by your 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 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 this examination annually to insure proper operation.

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.

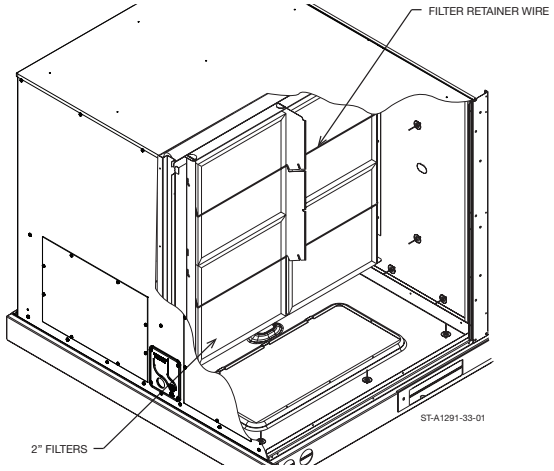
   Aluminum Mesh — Wash with detergent and water. Air dry thoroughly and renew the coating in compliance with the manufacturer's instructions.

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.

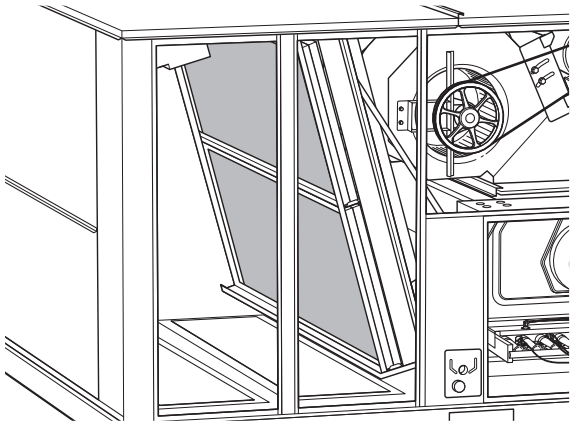
IMPORTANT: Do not operate your system for extended periods without filters, as the dust entrained in the air may pack into the fin area of the evaporator coil creating a condition which could require extensive repairs.

⚠ WARNING

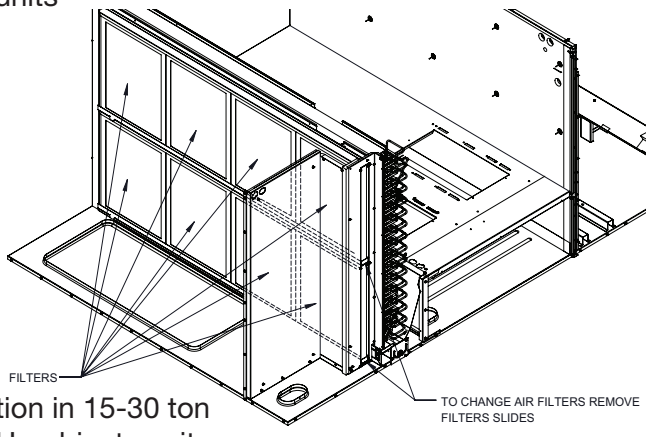
A PORTION OF THE DUST ENTRAINED IN THE AIR MAY TEMPORARILY LODGE IN THE AIR DUCT RUNS AND AT THE SUPPLY REGISTERS. ANY RECIRCULATED DUST PARTICLES WILL BE HEATED AND CHARRED BY CONTACT WITH THE ELECTRIC HEATING ELEMENTS. THIS RESIDUE WILL SOIL CEILINGS, WALLS, FLOORING, AND OTHER BUILDING ARTICLES.



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, serice agency, or the gas supplier to prevent the possibliity 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.

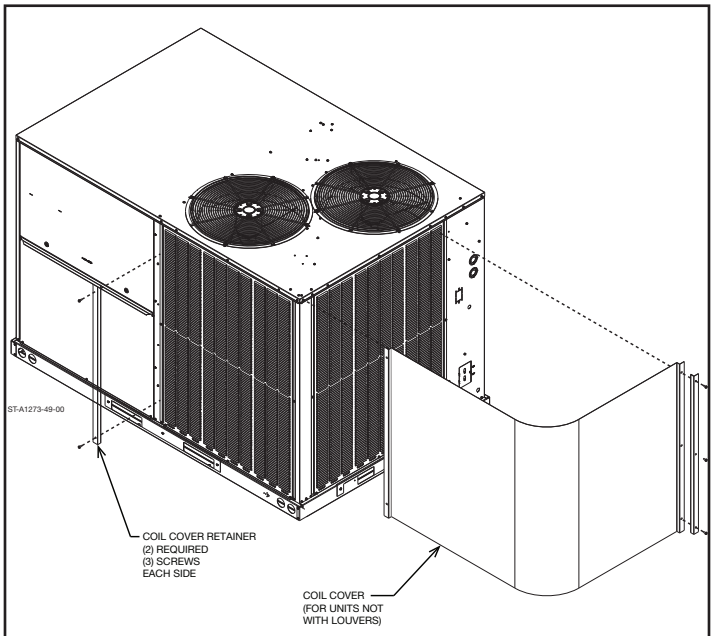
PROTECTING EQUIPMENT FROM THE ENVIROMENT

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, sulphur 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.