

SciPAK™
REFRIGERATION
SYSTEMS
INSTALLATION
MANUAL



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TOOLS REQUIRED FOR UNCRATING AND INSTALLATION OF THE REFRIGERATION SYSTEM



- SAFETY GLASSES
- PRY BAR
- HAMMER
- ADJUSTABLE OPEN END WRENCH (2)
- DRILL DRIVER
- PENCIL

RECEIVING INSPECTION

Congratulations on your purchase of a quality-built refrigeration system. When properly installed and maintained, this product will give many years of trouble-free service. It was shipped using trusted carriers with a history of careful handling, good customer service and prompt delivery.

Even with all of these precautions, occasionally accidents may happen which result in shipping damage. When the product is picked up by the carrier, they assume responsibility for the product until they deliver it to you. Thus, any claims for shipping damages must be filed with the delivering carrier.

Always thoroughly inspect the delivery for visible damages and shortages. Should any damages or shortages be found, be sure to note them in detail on the delivery receipt before you sign it. Make sure the driver signs and dates the delivery receipt acknowledging the damages. This is critical in protecting yourself should a claim need to be filed. Consult the carrier's website for their specific claim procedures. Remember, it is your responsibility to file a claim with the carrier.

In the case of concealed damages that are not discovered in the initial inspection but are found upon removing packaging, time is critical. You should unpack and inspect the unit as soon as possible. If concealed damage is found, stop unpacking and contact the delivering carrier immediately to alert them of the damages and get a claim number. Save all packaging for inspection by the carrier. Consult the carrier website for details in filing a concealed damage claim.

Please remember, the carrier is your only source for reclaiming freight damages. The manufacturer should not be contacted to attempt a return of the product. No returns are accepted without a prior authorization

SAFETY INFORMATION

This manual may contain notices that identify situations that could cause death, serious injury and /or damage to the appliance or property.

Please make note of the following definitions;

! WARNING Indicates a hazardous situation which could result in death or serious injury.

NOTICE Indicates a situation which could result in damage to the appliance or property.

IMPORTANT Indicates important information about the use and care of the appliance.

! WARNING

This appliance should be applied only for the use for which it has been expressly intended. Any other use would be considered improper and therefore dangerous. The manufacturer cannot be held responsible for injury or damage resulting from improper, incorrect and unreasonable use. Failures to install, operate, or maintain the appliance in accordance with this manual will adversely affect safety, performance, component life and warranty coverage.

To reduce the risk of death, electric shock, serious injury or fire, follow basic precautions including but not limited to the following:

- Only qualified service technicians should install and service this appliance.
- This appliance must be installed in accordance with applicable national, state and local codes and regulations.
- To reduce the risk of electrical shock, do not touch the appliance or plug with wet hands.
- Disconnect the appliance from power before servicing.
- The appliance requires an independent power supply of proper capacity. See the appliance nameplate for electrical specifications. Failure to use an independent power supply of proper capacity can result in a tripped breaker, blown fuse, damage to existing wiring or component failure. This could lead to heat generation or fire.
- Do not spray or splash water on the appliance as this may cause short circuits, electrical shock, corrosion or failure.
- Do not make alterations or modifications to the appliance as these could result in electric shock, injury, fire or damage to the appliance.
- Children must be properly supervised around this appliance.
- 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 its use by a person responsible for their safety.
- Do not climb, stand, or hang on or into the appliance or its components. Death or serious injury could occur or the appliance could be damaged.
- Use caution when opening doors or lids and keep fingers out of pinch points areas.
- Do not use combustible sprays or aerosols around the appliance as they may catch fire.
- Do not store gasoline or other flammable substances in or near the appliance as they may catch fire.
- Keep the area around the appliance clean. Dirt, dust or insects around the appliance could cause harm to individuals or damage to the equipment.
- Do not block air inlets or outlets as this would cause cooling performance to be reduced.
- Do not overload the storage capacity of the appliance. Allow space between stored items for air flow.
- Do not load warm or hot items into the appliance. Allow them to cool first or they will raise the cabinet temperature and could hasten the deterioration of other foods stored in the cabinet.
- Component parts must be replaced with manufacturer original equipment parts.

SET-UP AND INSTALLATION

CEILING MOUNTED SELF-CONTAINED REFRIGERATION SYSTEM

! WARNING

This appliance must be installed in accordance with all applicable national, state and local regulations. This appliance is heavy. Use care when lifting and positioning. Work in teams when needed to prevent injury or damage. The store temperature should be at or below 90°F and a relative humidity of 55% or less for indoor installations. At higher temperature or humidity conditions, the performance of these cases may be affected and the capacity diminished. These cases should not be positioned where it is directly exposed to rays of sun or near a direct source of radiant heat or airflow. This will adversely affect the case and will result in reduced performance. Operating this appliance outside its range and installation requirements may affect performance and warranty coverage.

Locating the Appliance

This system requires open air space around it to operate properly. A minimum of 4" above the unit and 24" on all sides is required to operate. Allow space for heated discharge air to escape and a fresh air intake supply.

IMPORTANT

- Confirm that the ambient temperatures are within the tolerances allowed.
- Do not locate next to heat generating appliances.
- Confirm the unit is installed level.
- The system must be isolated on a power circuit.
- Confirm that the power supply matches the required power supply noted on the unit serial plate.

GENERAL INSTALLATION INSTRUCTIONS

This section has the general instructions for installing the ceiling mounted self-contained refrigeration system.

Note:

- Proper "temporary" support of the ceiling panel with the cut out must be added during the installation of the refrigeration.
- Due to the weight of these systems (approximately 200 lbs.), it is highly recommended that proper lifting equipment, such as a fork lift or material lift, be utilized during installation. Be sure to allow for sufficient airflow around the condenser. A 4" minimum clearance is required above the unit with at least 24" clear space on all sides. If multiple units are located in the same area, be sure they do not exhaust hot air into one another. Refer to section titled "Locating and Mounting Condensing Units" for details. In addition to allowing for proper airflow, consideration should be given to the final mounting location of the refrigeration system relative to the customer location to avoid any possible risk of noise impacting the customer experience.

Position the insulated evaporator section of the Refrigeration System over the hole in the walk-in ceiling section. Special care should be used when positioning the evaporator section over the ceiling cut-out. Be sure not to damage the gasket underneath the evaporator section.

Fasten latches and seal perimeter as described in the Latch and Diffuser Installation Instructions found on pages 9 and 10. **When reinstalling the diffuser panel, make sure the ceiling section divider on the panel seals against the black gasket.** Some adjustment may be required by simply bending the ceiling section divider slightly forward or backward. This will prevent any short cycling of discharge and return air.

START-UP AND OPERATION

After meeting the set-up and installation requirements the unit is ready to start-up. Once connected to power through the accompanying control panel and the power switch is in the “on” position the unit will start running. Allow the unit to run for two (2) hours and verify the walk-in is down to temperature prior to loading with product.

TEMPERATURE ADJUSTMENT

These units come equipped with an electronic controller system. The Temperature Control display and operator interface is located on the front of the unit and comes pre-set to give walk-in air temperatures of approximately +37°F for coolers or -10°F for freezers. Refer to the accompanying electronic controller manual for detailed instructions on adjusting the controller settings.

STANDARD TEMPERATURE (COOLER) SYSTEMS

The electronic controller system is a highly efficient electronic controller that regulates an electronic expansion valve in response to evaporator superheat and return air temperature. This system will operate differently from previous system you may have worked with in the past. Refer to the controller instructions supplied with the unit for additional information.

Important: It is the installing contractor's responsibility to check the operation upon start-up and make necessary temperature adjustments as required for proper operation.

Refrigeration Controller

SciPak™ refrigeration systems are equipped with an electronic controller system. See separate instructions on the operation of this electronic temperature control.

Defrost Cycle (Cooler System)

The electronic controller comes pre-set for scheduled defrost cycles but has an optional automatic on-demand defrost algorithm that eliminates unnecessary defrosts typically associated with time-based alternatives which reduces energy consumption.

LOW TEMPERATURE (FREEZER) SYSTEMS

The low temperature, automatic electric defrost SciPak™ refrigeration system utilizes the electronic controller with a programmable set point and a preset algorithm to cycle the fans and compressor in order to maintain a tighter room temperature.

Important: It is the installing contractor's responsibility to check the operation upon start-up and make necessary temperature control adjustments as required for proper operation.

Defrost Cycle

The electronic controller comes pre-set for scheduled defrost cycles but has an optional automatic or demand defrost algorithm that eliminates unnecessary defrosts typically associated with time based alternatives which reduces energy consumption. For additional information see the controller instructions supplied with the refrigeration system.

Reverse Cycle Defrost

This refrigeration system incorporates reverse cycle defrost technology. When the system calls for a defrost event (whether scheduled or demand), the controller will shut down the compressor and energize the reversing valve solenoid to equalize the system pressures.

After a few seconds, the compressor will start and the flow of refrigerant will be reversed. The warm refrigerant will flow thru the evaporator first, defrosting the ice/frost build-up, then thru the EEV which will be held at 50% open, then thru the condenser coil and into the accumulator and finally back to the compressor.

This cycle is terminated when the coil reaches the defrost termination set point at which time the compressor will shut off and a condensate drain period will begin to allow time for the defrost water to drain from the evaporator drain pan to the condensate evaporator pan.

After the drain period, the reversing valve will be de-energized and the compressor will start the cooling process. During the defrost cycle on low temperature systems, the drain pan and drain line heaters will be energized to prevent the condensate from freezing in the evaporator drain pan and drain line.

Fan Delay

When a defrost cycle is terminated the evaporator fan(s) will not start until the evaporator coil temperature is reduced to about +30°F. Once this temperature is reached, the fan delay cycle will turn the fans back on continuing the refrigeration cycle.

The fan delay feature is an important part of defrosting. If the fan(s) was permitted to start immediately following a defrost period, the heat that accumulated in the evaporator housing would be circulated throughout the walk-in, raising the temperature considerably. In addition, any droplets of moisture that remained clinging to the fins of the evaporator coil would be blown into the storage space. The fan delay feature provides for a short refrigeration cycle WITHOUT the evaporator fan(s) to prevent these conditions.

Note: During the initial startup of a SciPak™ Refrigeration System on warm walk-in, the evaporator fan(s) will not start until the evaporator coil reaches +30°F. Further, the evaporator fans may cycle "on" and "off" several times until the evaporator coil reaches and maintains +30°F.

Drainage of Condensate Water

On indoor self-contained SciPak™ systems, the condensate drain tube is factory plumbed to discharge the condensate water into an evaporative drain pan located under the compressor in the condensing unit. The compressor discharge line is routed inside this pan to heat the condensate water to aid evaporation.

In locations where high moisture content exists, it is possible that the evaporative drain pan may overflow. In this case the drain line must be plumbed to an optional electric condensate pan evaporator (part number 133141 or 132962).

LOADING PRODUCT

Once that cabinet has been operating at the desired temperature for a sufficient period of time, product can be loaded into the cabinet.

IMPORTANT

- When loading product use caution not to block airflow to achieve maximum cooling performance.
- Do not load product where it would block the air intake or discharge at the back inside wall of the cabinet.
- Do not load warm product into the cabinet as it will affect the cabinet temperature and products previously stored in the cabinet.
- Products should be in covered containers or wrapped to prevent cross contamination.

SCIPAK™ LATCH AND DIFFUSER INSTALLATION INSTRUCTIONS

1. Remove diffuser from ceiling panel before installing ceiling panel (Figures 1 and 2)



Figure 1



Figure 2

2. Lift SciPak™ into position on top of walk-in. Note: Do not slide SciPak™ into position as cowl gasket damage will occur. If the SciPak™ must be slid into position, place SciPak™ on a piece of cardboard prior to moving to prevent gasket damage.

3. Inspect cowl gasket to ensure proper placement (Figure 3)



Figure 3



Figure 4



Figure 5

4. Secure interior latches (Figure 4)
5. Seal cowl to ceiling at gasket seam above diffuser panel using provided silicone (Figure 5)
6. Replace diffuser panel removed in step 1.

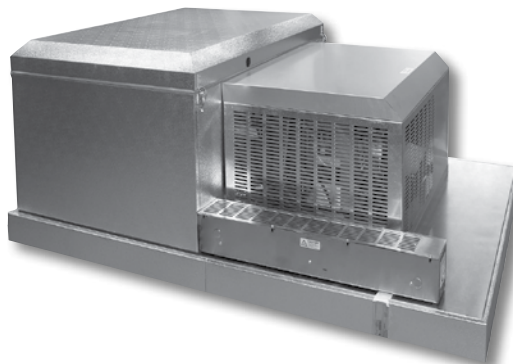
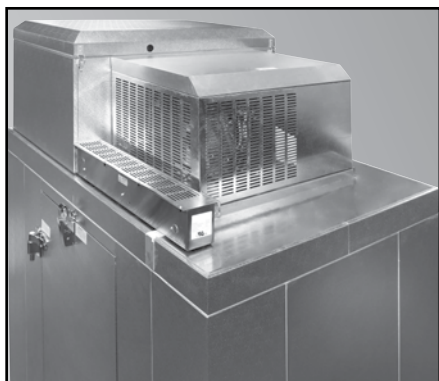
When reinstalling the diffuser panel, make sure the ceiling section divider on the panel seals against the black gasket. Some adjustment may be required by simply bending the ceiling section divider slightly forward or backward. This will prevent any short cycling of discharge and return air.

OPTIONAL FEATURE - ELECTRIC CONDENSATE VAPORIZER

Indoor SciPak™ Applications Only (do not use condensate vaporizer for an outdoor application)

The vaporizer is intended to be mounted in the orientation shown below. Note the location of the condensate drain coming from the evaporator and locate the vaporizer so the condensate water will drain into it. Use the supplied plastic tubing and copper elbow and extend the drain into the vaporizer. Cut the plastic tubing to the desired length.

Provide power to the electric vaporizer per local national electrical codes. Avoid locating vaporizer below any electrical enclosures.

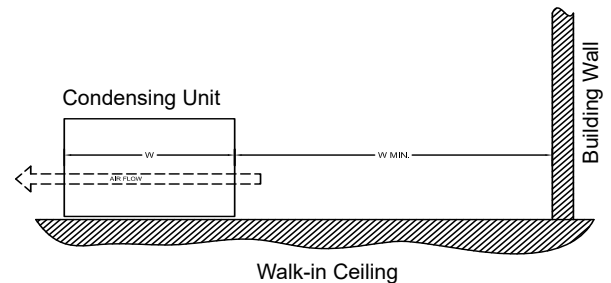


LOCATING AND MOUNTING CONDENSING UNITS

Condensing units (CU's) must be located where there is an unrestricted supply of clean, fresh air. Do not locate units where air discharge from one will enter into the air intake of others nor where the air flow is toward a wall or obstruction. Avoid locating units in restricted spaces where heat will build up and can enter the condenser. There must be room around the unit for regular inspection and service. We recommend 200CFM in any area where condensing units may be located. Air flow should be sufficient to maintain an ambient temperature of no more than 90°F.

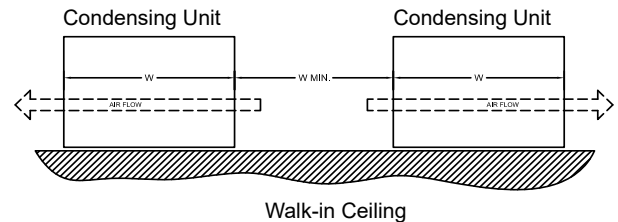
Walls or Obstructions

The units should be located so that air may circulate freely. For proper air flow, all sides of the unit should be a minimum of the width of the condensing unit away from any wall or obstruction. It is preferred that this distance be increased whenever possible.



Multiple units

For units placed side by side, the minimum distance between units should be the width of the largest unit. If units are placed end to end, the minimum distance between units should be 4 feet.



Roof mounted condensing units must have adequate support for their operating weight. Corrosive atmospheres require custom design condensers.

MAINTENANCE

WARNING: When servicing any SciPak™ Refrigeration System or performing any maintenance procedure, always disconnect the main power supply.

The condensing unit is accessible by removing the condensing unit housing. The evaporator coil section is accessible by unlatching and removing the evaporator section housing cover.

Cleaning the Condenser and Evaporator Coils

The efficiency of the refrigeration system, to a great extent, depends upon the unrestricted flow of air through the condenser and evaporator coils. For this reason both coils should be as clean as possible at all times and should have an unrestricted supply of air.

Cleaning the condenser should be done at a minimum of every 3 months.

A vacuum cleaner with a bristle attachment can be used to clean the coil. If debris on the coil cannot be removed easily, a bristle brush can be used to loosen it by gently brushing in the same direction as the fins so as not to damage them and restrict air flow. An air compressor can be used to clean the condenser coil also. The air flow should be directed through the coil from the fan motor side. A damp hand towel can be blocked against the opposite side so that the majority of the dust will be captured in the towel minimizing the mess in the room.

NOTE: Do not use corrosive cleaners as they may damage the copper tubing or welds.

Hot Gas Vaporizer Pan (Indoor Models)

Condensate from the evaporator pan is discharged into a hot gas vaporizer pan, which is located in the condensing unit housing. Here the hot discharge gas from the compressor elevates the temperature of the water and it vaporizes into the atmosphere. This pan should be cleaned periodically to remove solids that remain after the moisture is evaporated. **Do not scrub the copper tubing very hard or use corrosive cleaners as this may damage the copper lines or welds.**

RECOMMENDED PREVENTATIVE MAINTENANCE FOR WALK-INS & REFRIGERATION SYSTEMS

This preventative maintenance is recommended to be executed on a quarterly schedule by a certified technician from an Authorized Service Provider.

Walk-In Coolers & Freezers:

- Check door alignment, door closer and hinges.
- Check door gasket for any tears or damage.
- Check and adjust door sweep.
- Inspect heated vent ports for proper operations.
- Check lighting is in working order.
- Inspect door control, alarm and/or thermometer.

Refrigeration Systems:

- Cycle unit and check operations of refrigeration and defrost modes.
- Clean and inspect evaporator and condenser coils.
- Inspect and secure all electrical connections.
- Check relays and contactors for wear or pitting.
- Check start components.
- Inspect and clean motors, especially around rear air vents.
- Inspect fan blades, shafts, and bearings.
- Check and tighten any flair, quick connect, and roto lock fittings.
- Ensure sight glass is clear.
- Blow out and flush condensate drains/lines.
- Ensure drain pans are free of debris.
- Inspect drier for restrictions by ensuring there is no temperature drop across it.
- Ensure all covers and panels are securely fastened when completed.

MALFUNCTION

POSSIBLE CAUSE

SOLUTION

Compressor will not start - no hum

1. Unplugged or power off
2. Fuse blown or removed
3. Overload tripped
4. Control stuck open
5. Wiring incorrect

1. Plug in service cord or turn power on
2. Replace fuse
3. Determine reasons and correct
4. Repair or replace
5. Check wiring against the diagram

Compressor will not start - hums but trips on overload protector

1. Improperly wired
2. Low voltage to unit
3. Starting capacitor defective
4. Relay failing to close

1. Check wiring against the diagram
2. Determine reason and correct
3. Determine reason and replace
4. Determine reason, correct or replace

Compressor starts and runs, but short cycles on overload protector

1. Low voltage to unit
2. Overload defective
3. Excessive head pressure
4. Compressor hot — warm ambient conditions

1. Determine reason and correct
2. Check current, replace overload protector
3. Check ventilation or restriction in refrigeration system
4. Check refrigerant charge, fix leak if necessary

Compressor operates long or continuously

1. Short of refrigerant
2. Control contact stuck
3. Evaporator coil iced
4. Restriction in refrigeration system
5. Dirty condenser — warm ambient conditions
6. Warm ambient

1. Fix leak, add charge
2. Repair or replace
3. Determine cause, defrost manually
4. Determine location and remove restriction
5. Clean condenser
6. Address ambient conditions

Compressor runs fine, but short cycles

1. Overload protector
2. Cold control
3. Overcharge
4. Air in system
5. Undercharge

1. Check wiring diagram
2. Differential too close - widen
3. Reduce charge
4. Purge and recharge
5. Fix leak, add refrigerant

Starting capacitor open, shorted or blown

1. Relay contacts stuck
2. Low voltage to unit
3. Improper relay

1. Clean contacts or replace relay
2. Determine reason and correct
3. Replace

Relay defective or burned out

1. Incorrect relay
2. Voltage too high or too low

1. Check and replace
2. Determine reason and correct

Refrigerated space too warm

1. Control setting too high
2. Refrigerant overcharge
3. Dirty condenser
4. Evaporator coil iced
5. Not operating
6. Air flow to condenser or evaporator blocked
7. Warm ambient conditions

1. Reset control
2. Purge refrigerant
3. Clean condenser
4. Determine reason and defrost
5. Determine reason, replace if necessary
6. Remove obstruction for free air flow — no storage on top of walk-in
7. Ambient conditions should be 90° or less

Standard temperature system freezes the product

1. Control setting is too low

1. Reset the control

Objectionable noise

1. Fan blade hitting fan shroud
2. Tubing rattle
3. Vibrating fan blade
4. Condenser fan motor rattles
5. General vibration
6. Worn fan motor bearings

1. Reform or cut away small section of shroud
2. Locate and reform
3. Replace fan blade
4. Check motor bracket mounting, tighten
5. Compressor suspension bolts not loosened on applicable models - loosen them
6. Replace fan motor

Water overflowing from evaporator drain pan or condensate vaporizer pan

1. Air leak between refrigeration system and walk-in panel.
2. Drain line from evaporator drain pan to condensate vaporizer is blocked with foreign material.
3. Drain line from evaporator drain pan to condensate vaporizer is blocked with ice.
4. Walk-in operating in high humidity environment (heavy door usage).

1. Check that refrigeration system is properly set in panel opening.
2. Clean blockage from inside of drain line.
3. Check that drain line heater (on freezers) is working and repair or replace as required.
4. Plumb drain line from evaporator to floor drain or replace high gas vaporizer with electric vaporizer. Consult factory for further information.

Thank you for purchasing Refrigerated Solutions Group equipment!
Please visit the links below to complete your
WARRANTY REGISTRATION.



For Master-Bilt
Equipment

master-bilt.com/register



For Norlake
Equipment

norlake.com/register

Refrigerated Solutions Group
891 County Road U
Hudson, WI 54016

800-955-5253 Norlake Foodservice Sales
800-477-5253 Norlake Scientific Sales
800-388-5253 Norlake Parts/Service
877-503-5253 Norlake Walk-In Installation

800-647-1284 Master-Bilt Sales
800-684-8988 Master-Bilt Parts/Service