

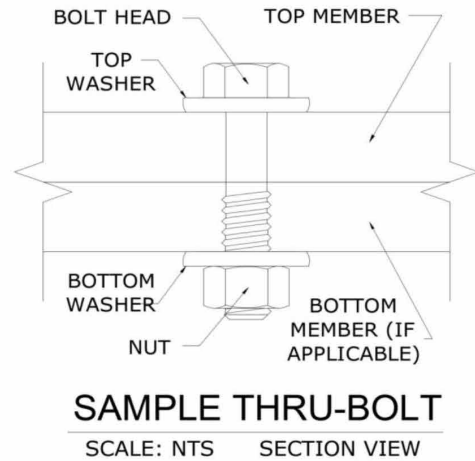
J. Unit High Wind Tie-Down

15-25T COMMERCIAL PACKAGE UNITS

Engineering **Express**® | TER-22-50302

TERMINOLOGY, CONTINUED

The following abbreviations may appear in this report: "Addtl." for "additional", "AHJ" for "Authority Having Jurisdiction", "alum" for "aluminum", "ASCE" for "American Society of Civil Engineers", "ASD" for "Allowable Stress Design", "ASTM" for "American Society for Testing and Materials", "EA." for "each", "E.D." for edge distance, "EDDS" for "extra deep drawing steel", "e.g." for "exempli gratia" or "for example", "equiv." for "equivalent", "fc" for "compressive strength of concrete after 28 days of curing", "FBC" for "Florida Building Code", "FEA" for "Finite Element Analysis", "FLCA" for "Florida Certificate of Authorization", "FS" for "Florida Statutes", "Fu" for "ultimate tensile strength" or "ultimate tensile stress", "Fy" for "yield strength" or "yield stress" "GA" for "gauge", "GR." or "Gr." for "grade", "HVAC" for "heating, ventilation, and air conditioning", "HVHZ" for "High-Velocity Hurricane Zone", "i.e." for "id est" or "in other words", "in" for "inch", "lb" for "pound (force)", "max." for "maximum", "min." for "minimum", "mm" for "millimeter", "NTS" for "not to scale", "O.C." for "on center", "OD" for "outer diameter", "PE" for "Professional Engineer", "qty" for "quantity", "SAE" for "Society of Automotive Engineering", "SMS" for "sheet metal screws", "SS" for "stainless steel", "TER" for "Technical Evaluation Report", "typ." for "typical", "U.N.O." for "unless noted otherwise", "UTS" for "ultimate tensile strength" or "ultimate tensile stress", "WLL" for "working load limit", "w/o" for "without", "YS" for "yield strength" or "yield stress", "#" for "number", "&" for "and", and "Ø" for "diameter". For additional abbreviation/terminology clarifications, please contact this office.



Note: The term "Thru-Bolt" or through bolt, if used herein, refers to a bolt passing through the member(s) in contact and is fastened by a nut at the end opposite the screw head. Nut shall be equivalent to or exceed the strength of the bolt U.N.O. Nut shall be sized to accommodate the same nominal diameter as the bolt U.N.O. See diagram above-right for a sample thru-bolt configuration.

Note: For instances herein which list material specifications as "[material type] or stronger": U.N.O. herein, the term "stronger" refers to a material with a UTS value equal to or greater than the UTS value of the stated material type. Consult appropriate literature for established material UTS values.

Note: Equivalent steel gauge thicknesses as used in this evaluation, U.N.O., are as follows: 20 GA (.036"), 18 GA (.048"), 16 GA (.060"), 14 GA (.075"), 12 GA (.098").

LIMITATIONS & CONDITIONS OF USE, CONTINUED

Use of this product shall be in strict accordance with this TER as noted herein. The supporting host structure shall be designed to resist all superimposed loads as determined by others on a site-specific basis as may be required by the authority having jurisdiction. Host structure conditions which are not accounted for in this product's respective anchor schedule shall be designed for on a site-specific basis by a registered Professional Engineer. No evaluation is offered for the host supporting structure by use of this document. Adjustment factors noted herein and the applicable building codes must be considered, where applicable. Product components shall be of the material(s) specified in the manufacturer-provided product specifications. All supporting components which are permanently installed shall be protected against corrosion, contamination, and other such damage at all times. All fasteners and anchors shall be installed in accordance with the applicable provisions specified herein in addition to the anchor/fastener manufacturers' published installation instructions. Fasteners must penetrate the supporting members such that the full length of the threaded portion is embedded within the main member. This evaluation does not offer any evaluation to meet large missile impact debris requirements under any circumstances.

All of the wind-resisting exterior panels (with accompanying retrofits) individually meet or exceed their capacity to resist the design wind loads as stated in the calculations as required by the codes and standards stated herein. Due to the indeterminate nature of these units, distortion and deflection cannot be accurately evaluated, but with diaphragm action of external components and internal stiffeners, the base unit has the capacity to withstand these forces with individual external parts being contained. Inspections shall be implemented during annual equipment maintenance or after a named storm; all fasteners and cabinet components are to be verified, and all damaged, loose, corroded and/or broken fasteners and cabinet components shall be replaced to ensure structural integrity against hurricane wind forces. Contact this office for any reevaluation needs as designated by the Authority Having Jurisdiction.

SEE APPENDIX ON NEXT PAGE

Proj. #	Remarks	By	Checked	Date	Proj. #	Remarks	By	Checked	Date
22-50302	Initial Issue	EPR	RWN	07/08/22					

P. APPENDICES

J. Unit High Wind Tie-Down

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APPENDIX A: DESIGN WIND PRESSURE GUIDE

Max. Ult. Wind Speed (V _{ult})	Max. MRH (Roof Height)	Exposure Category	Required Design Wind Pressures (ASD)	
			Lateral Pressure	Uplift Pressure
140 mph	At-Grade (0 ft)	C	± 26 psf	0* psf
		D	± 31 psf	0* psf
	100 ft	C	± 63 psf	50 psf
		D	± 71 psf	56 psf
	200 ft	C	± 72 psf	57 psf
		D	± 80 psf	63 psf
175 mph	At-Grade (0 ft)	C	± 40 psf	0* psf
		D	± 49 psf	0* psf
	100 ft	C	± 98 psf	77 psf
		D	± 111 psf	87 psf
	200 ft	C	± 113 psf	89 psf
		D	± 124 psf	98 psf
186 mph	At-Grade (0 ft)	C	± 46 psf	0* psf
		D	± 54 psf	0* psf
	100 ft	C	± 111 psf	87 psf
		D	± 125 psf	99 psf
	200 ft	C	± 127 psf	100 psf
		D	± 140 psf	111 psf

100-psf

Note: Any table values with the format shown left, if present, indicate design wind pressures and site conditions that are **not approved for use** by this evaluation. Seek additional engineering or contact this firm for design solutions.

DIRECTIVE: This design pressure guide is for reference only and shall be approved for use by the Authority Having Jurisdiction (AHJ). If the design pressures listed in this guide are not used, required design pressures shall be calculated separately. For site-specific scenarios classified as Exposure Category B, the required design pressures stated for Exposure Category C in the above guide shall be used or design pressures shall be calculated separately. For heights and parameters beyond the parameters listed in this guide, visit our Online Calculator via the website link (<https://ecalc.io/forces>) or QR Code below, or obtain calculations separately by others.

The required ASD design pressures listed in this guide were calculated per the table's listed corresponding site conditions. The project design professional or permitting contractor shall verify that the site-specific conditions are equal to or less than the approved design parameters listed in the guide. Per the note below table: any values shown as "XX psf", indicate wind pressures and corresponding site conditions that are **not valid for use** with this evaluation (exceeds the max. rated pressures).

*Note: Per the codes and standards referenced herein, uplift is not required for mechanical equipment at-grade. If uplift at-grade is required by the AHJ, contact this firm for a site-specific evaluation.

At-Grade (0 ft MRH) Required Design Pressures:

- ASCE 7 "Design Wind Loads: Other Structures"
- Structure Shape = Square, flat terrain
- Height of structure (unit + stand or curb, if used) = 6 ft max.
- Width of unit = 1 ft min., Depth of unit = 11 in min.

Rooftop (>15 ft MRH) Required Design Pressures:

- ASCE 7 "Design Wind Loads: Other Structures: Rooftop Structures and Equipment for Buildings"
- Structure Shape = Square, flat terrain
- z = up to 7 ft, where z = height of stand or curb + ½ unit height
- Lateral GC_r = 1.90; Uplift GC_r = 1.50

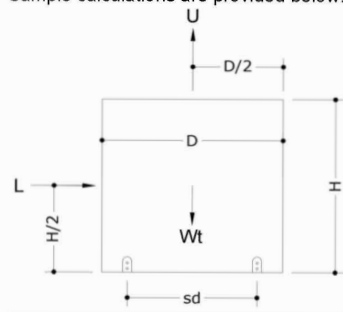
VISIT [ECALC.IO/FORCES](https://ecalc.io/forces)

FOR DESIGN AID CALCULATORS AND RESOURCES RELATED TO THIS TER & GUIDES HEREIN, OR SCAN THE QR CODE RIGHT >



UNIT REACTIONS FROM WIND GUIDE

DIRECTIVE: This guide is intended for use by a design professional. Design parameters shall abide all specifications and limitations stated in this report. Design professional shall consider all forces, including seismic and snow loads, per the governing building code. Unit reactions obtained from this guide shall be verified by a registered Professional Engineer. Reactions are applicable for unit-to-host connections only. Sample calculations are provided below.



- Lateral Wind Pressure, P_{lat}
- Unit Height, H
- Unit Width, W
- Support Spacing across Depth, sd

- Uplift Wind Pressure, P_{up}
- Unit Depth, D
- Unit Weight, Wt
- Support Spacing across Width, sw

Unit Reaction Equations:

Long Side (Width x Height):

- Sliding Force, L = P_{lat} x W x H
- Uplift Force, U = P_{up} x W x D
- Total Tension per Long Side = (L x H/2 + U x sd/2 - Wt x 0.6 x sd/2) / sd

Short Side (Depth x Height):

- Sliding Force, L = P_{lat} x D x H
- Uplift Force, U = P_{up} x W x D
- Total Tension per Short Side = (L x H/2 + U x sw/2 - Wt x 0.6 x sw/2) / sw

Example: A (48" W x 36" D x 42" H), 250 lb net weight unit at wind pressures of 120 psf lateral and 95 psf uplift, on a 24" wide roof stand, shall have the following unit reactions:

Long Side (Width x Height):

- Sliding Force, L = P_{lat} x W x H
= (120 psf) x (48 in) x (42 in) x (1 in² / 144 ft²) = **1680 lb**
- Uplift Force, U = P_{up} x W x D
= (95 psf) x (48 in) x (36 in) x (1 in² / 144 ft²) = **1140 lb**
- Total Tension per Long Side =
= (L x H/2 + U x sd/2 - Wt x 0.6 x sd/2) / sd
= ((1680 lb x 42/2 in) + (1140 lb x 24/2 in) - (250 lb x 0.6 x 24/2 in)) / 24 in = **1965 lb**

Short Side (Depth x Height):

- Sliding Force, L = P_{lat} x D x H
= (120 psf) x (36 in) x (42 in) x (1 in² / 144 ft²) = **1260 lb**
- Uplift Force, U = P_{up} x W x D
= (95 psf) x (48 in) x (36 in) x (1 in² / 144 ft²) = **1140 lb**
- Total Tension per Short Side =
= (L x H/2 + U x sw/2 - Wt x 0.6 x sw/2) / sw
= ((1260 lb x 42/2 in) + (1140 lb x 48/2 in) - (250 lb x 0.6 x 48/2 in)) / 48 in = **1046 lb**

IN ALL CONDITIONS IT IS THE RESPONSIBILITY OF THE PERMIT HOLDER TO ENSURE THE HOST STRUCTURE IS CAPABLE OF WITHSTANDING THE RATED GRAVITY, LATERAL, AND UPLIFT FORCES BY SITE-SPECIFIC DESIGN. NO WARRANTY OF ANY KIND, EXPRESSED OR IMPLIED, IS OFFERED BY ENGINEERING EXPRESS AS TO THE INTEGRITY OF THE HOST STRUCTURE TO CARRY DESIGN FORCE LOADS INCURRED BY THIS UNIT.

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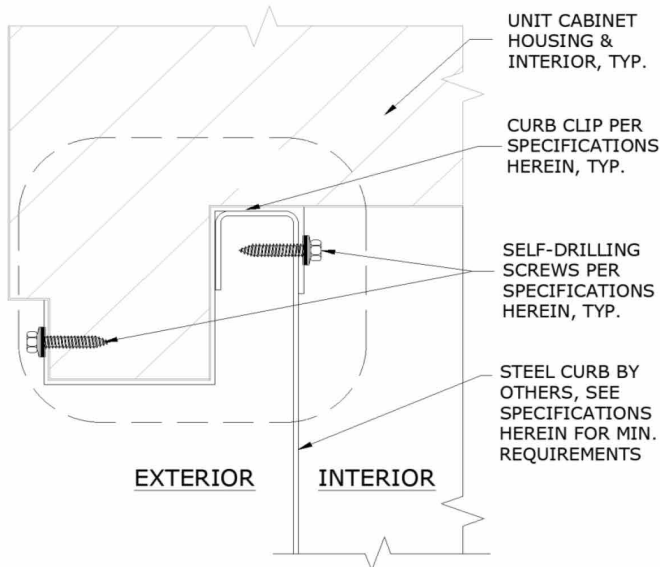
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J. Unit High Wind Tie-Down

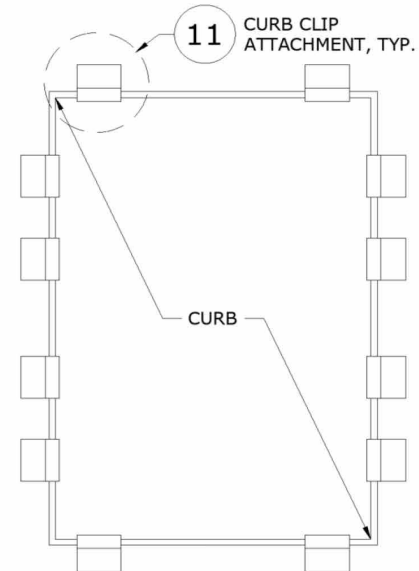
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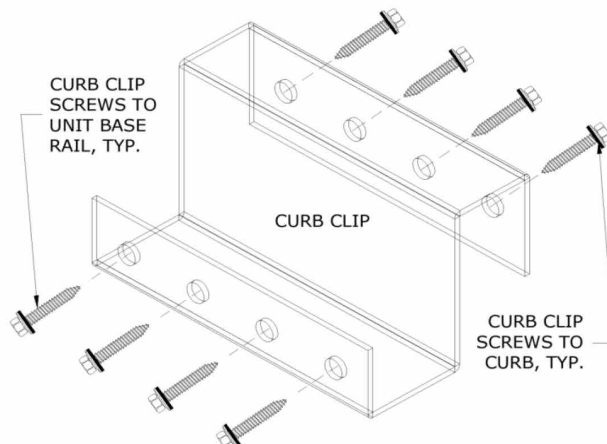
UNIT MOUNT TO STEEL CURB DETAILS



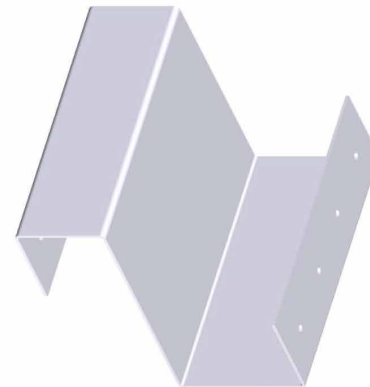
9 UNIT ATTACHMENT TO CURB WITH CURB CLIP, TYP.
SCALE: NTS SECTION VIEW



10 SAMPLE TIE-DOWN CLIP LAYOUT
SCALE: NTS PLAN VIEW



11 SAMPLE CURB CLIP SCREW ATTACHMENT, TYP.
SCALE: NTS ISOMETRIC VIEW



12 MICROMETL CURB CLIP, TYP.
SCALE: NTS ISOMETRIC VIEW

UNIT MOUNT TO STEEL CURB DETAILS NOTES

For each Detail in this section, see Unit Mount to Steel Schedule and Notes on the previous page for all tie-down components and specifications required.

The unit components, curb, curb clip, and screws depicted in the Details on this page are for illustrative purposes only and may vary in quantity and/or appearance. Unit mounting specifications may not be depicted in full. Component sizes may be exaggerated for illustration clarity.

Sample curb clip placement shown in Detail 10 and sample curb clip shown in Detail 11 are for illustrative purposes only. The MicrometL curb clip shown has been pre-reviewed by Engineering Express to meet the curb clip specifications stated herein and is approved for use. See the previous page for specifications.

P. APPENDICES

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UNIT MOUNT TO STEEL CURB SCHEDULE

Application	Max. ASD Wind Pressures Lateral (Uplift)	# of Curb Clips per Long Side	# of Curb Clips per Short Side	# of Curb Clips Total per Unit
Rooftop Mount to Steel Curb	± 80 psf (64 psf)	2	2	8
	± 110 psf (87 psf)	3	2	10
	± 140 psf (111 psf)	4	2	12

UNIT MOUNT TO STEEL CURB SCHEDULE NOTES

SCHEDULE DIRECTIVE: The Schedule table above is divided into maximum wind pressure tiers (each row of table). Site-specific wind pressures up to ± 80 psf lateral & 64 psf uplift shall use, at-minimum, the specifications as stated in the ± 80 psf lateral (64 psf uplift) pressure tier row. Site-specific wind pressures that fall in-between pressure tiers shall use, at-minimum, the specifications as specified by the higher pressure tier. This schedule applies to all units described in this evaluation. Steel curb by others shall be 16 GA. min. thick, UTS = 45 ksi min. (equiv. to ASTM A653 Gr. 33 or stronger) galv. steel. Curb structural integrity and attachment to host structure shall be by others. Curb schedule may also be used for at-grade applications to steel curbs. See specifications and Unit Mount to Curb Details herein.

Example: Say you are installing a unit at a site location with site-specific wind pressures of ± 85 psf lateral and 68 psf uplift. In this case, you would need to follow, at-minimum, the specifications corresponding to the ± 110 psf (87 psf) wind pressure tier row. By consulting the Schedule table:

CURB CLIP NOTES: Curb clips may also be referred to as "curb brackets" or curb "hold-down brackets". Curb clips shall be 16 GA min. thick, UTS = 45 ksi min. (equiv. to ASTM A653 Gr. 33 or stronger) galv. steel. Curb clips shall be equally spaced along specified curb side (± 12" variance as needed). Position end curb clips on unit long sides 12" minimum away from either end of side edge. Position end curb clips on unit short sides towards the unit corners, 3" minimum and 12" maximum away from either end of side edge. See Unit Mount to Curb Details herein.

Fasten curb clip to curb with (4) #14, SAE Gr. 2 min. or SS SMS with 1/2" min. edge distance to edge of curb and curb clip edge, and 1" min. spacing between screws. (Note: Size #14 SMS are 1/4" Ø). Fasten curb clips to curb prior to unit placement on curb and curb clip attachment to unit. Ensure all screws fully engage with both members in contact.

Once unit is positioned on curb and the unit base rail is resting on the curb clips: Fasten curb clip to unit base rail with (4) #14, SAE Gr. 2 min. or SS SMS with 1/2" min. edge distance to edge of curb clip and unit base rail edge, and 1" min. spacing between screws. Ensure all screws fully engage with both members in contact.

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Q. DECOMMISSIONING

Q.1. Before Beginning Decommissioning

Before carrying out decommissioning, the technician performing decommissioning must be familiar with the equipment and its safety procedures, and ensure electrical power is available to the unit. See **Section A.3.1. Working Personnel Qualifications** for more information.

Before recovering the refrigerant, an oil and refrigerant sample must be taken if the technician intends to reuse the recovered refrigerant to have a record.

Before beginning any work on systems containing flammable refrigerants, safety checks are necessary to ensure that the risk of ignition is minimized. See **C.2.6. No Ignition Sources**.

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.

Work shall be undertaken under a controlled procedure so as to minimize the risk of flammable gas or vapor being present while work is being performed. See **A.3. Importance of a Quality Installation**.

All maintenance staff and others working in the local area shall be instructed on the nature of the work being performed. Work in confined spaces shall be avoided.

The area shall be checked with an appropriate refrigerant detector before and during work to ensure the technician is aware of potentially toxic or flammable atmospheres.

Q.2. Decommissioning Procedure

Follow the decommissioning procedure outlined below:

READ ALL STEPS BEFORE BEGINNING.

- Become familiar with the equipment, its operation, and its safety procedures.
- Isolate the system electrically.
- Ensure that mechanical handling equipment for the refrigerant cylinders is at hand, if required.
- Ensure personal, protective equipment is being used correctly.
- A competent supervisor must be present during the refrigerant recovery process. Ensure such a person is available on site.

- Confirm that the recovery equipment and cylinders are correct for the equipment and its refrigerant.
- Follow the steps outlined in **Section J.1.1. Check for Refrigerant Leaks** and Section **J.1.1.3. Removal and Evacuation of Refrigerant**.
- If possible, pump down the refrigerant system.
- If a vacuum is not possible, make a manifold so that the refrigerant can be removed from various parts of the system.
- Make sure that the recovery cylinder is situated on the scale before recovery begins.
- Start the recovery machine and operate it in accordance with its instructions.
- Do not overflow the cylinders. No more than 80% volume liquid charge is allowed.
- Do not exceed the maximum working pressure of the cylinder, even temporarily.
- When the cylinders have been filled correctly and the process is complete, make sure that the cylinders and the recovery equipment are removed from the site promptly.
- Verify all isolation valves on the unit are closed (off).
- Recovered refrigerant shall not be charged into another unit unless a sample was taken prior to recovering the refrigerant and its been cleaned and checked.

Q.3. Labeling

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

Equipment must be labelled stating that it has been decommissioned and emptied of refrigerant. The label must be dated and signed. Ensure that there are label(s) on the unit stating that this equipment contains **flammable refrigerant**.

R. INFORMATION FOR THE OWNER

R.1. Product Model and Serial Number

The product model and serial number are both located on the rating plate found on the supply/return panel of the unit.

R.2. Information for the Owner: Maintenance and Service

For routine maintenance, general diagnostics for cooling and heating, and other generalized information regarding filter changing, cleaning the condensate pan, cleaning the coils, and general inspections, refer to the Use and Care Guides available on the manufacturer's website.

At least once a year, scheduled service checks must be made to verify the safety systems in this unit are working as intended.

R.2.1 Filter Changing

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 contained 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 CONTAINED 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.

R.2.2 Cleaning Condensate Pan

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.

R.2.3 Cleaning Coils

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.

R. INFORMATION FOR THE OWNER

R.2.3 Cleaning Coils (Cont.)

5. Using a sprayer and water ONLY, clean the coil following the guidelines below:

- Use a 90° 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.
- Spray perpendicular to the face of the coil. The maximum source angle should not exceed 25 degrees to the face of the coil.
- 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.

R.2.4 Checking Electrical Components

Repair and maintenance of electrical components must include safety checks and component inspections.

If a fault exists that could compromise safety, then no electrical supply can be connected to the unit until the error causing the fault is repaired. If the fault cannot be corrected immediately but it is necessary to continue operation, an adequate temporary solution must be used. The temporary solution must be communicated to the owner.

Initial safety checks include:

- Confirming that the capacitors are discharged. This must be done safely to avoid the possibility of sparking.
- Ensure that no live electrical components or wiring are exposed while charging, recovering, or purging the system.
- Confirm that the unit grounding is constant and secure.

R.3. Refrigerant Recovery

When removing refrigerant from a unit, either for service or decommissioning, the following practices are required to safely remove the refrigerant.

When transferring the refrigerant into cylinders, ensure that only the appropriate recovery cylinders are employed.

- Ensure that the correct number of recovery cylinders are available to hold the total system charge.
- All cylinders used must be designed for recovering R-454B refrigerant.
- Cylinders shall be complete with a pressure-relief valve and shut-off valves, all in working order.

- Empty recovery cylinders must be evacuated and cooled before refrigerant recovery occurs.

The following equipment is required to be on site and in good working condition prior to and during refrigerant recovery:

- The technician's recovery equipment
- The recovery equipment's instructions that details the proper recovery of flammable refrigerant
- A set of calibrated weighing scales
- Hoses, which must be complete with leak-free disconnect couplings.

If in doubt, contact the manufacturer about recovering flammable refrigerant.

The recovered refrigerant must be processed according to local legislation in the correct recovery cylinder, and the relevant waste transfer note arranged. **DO NOT MIX REFRIGERANTS IN RECOVERY UNITS OR RECOVERY CYLINDERS.**

If compressors or compressor oils are to be removed, ensure that they have been evacuated to make certain that the flammable refrigerant, R-454B, does not remain within the lubricant. The compressor body must not be heated by an open flame or other ignition sourced to accelerate this process. When oil is drained from a system, it shall be carried out safely.

R.4. Warranty Information

For more information on this unit's factory warranty, see the warranty card shipped with the unit. The warranty card is also provided on the manufacturer's website.

S. INSTALLATION CHECK LIST AND JOB SITE SHEET

Commercial Job Site Information

Site Information and Application Details:

Business Name : _____ Model Number : _____
(Please include all letters and digits of the model number)
Address : _____
City : _____ State : _____ Zip : _____
Serial Number : _____
(Please include all letters and digits of the serial number)
Site Contact : _____
Phone : _____ Mobile : _____ Date of Install : _____
(When was the unit installed, month, day, and year)
Email : _____

Business Name : _____ Technician Name : _____
Address : _____ Visit Date: _____
City : _____ State : _____ Zip : _____ Technician Name : _____
Site Contact : _____ Visit Date: _____
Phone : _____ Mobile : _____ Technician Name : _____
Email : _____ Visit Date: _____

Distributor and Support Details:

Distributor Name : _____ Rep Name : _____
City : _____ State : _____ Visit Date: _____

Unit Setup and Operational Information

Voltage and Amperage Information :

Line Voltage Measurements :

Base Voltage : 208 240 460 Phase : 1 3
(Circle one) (Circle one)
Measured Line Voltage : _____
Phase A to B : _____ Phase A to Ground : _____
Phase B to C : _____ Phase B to Ground : _____
Phase C to A : _____ Phase C to Ground : _____
Breaker Size : _____ Conductor Size: _____

24VAC Low Voltage Measurements :

Transformer Tap : 208 240 460
(Circle one)
24VAC Measured Voltage : R to C : _____
24VAC Measured Amp Load : _____
Transformer Load: _____
T-stat Load: _____

Amperage and Power Measurements :

	Full Running Load	Blower	Compressor 1	Compressor 2	Outdoor Fans
Phase A :	_____	_____	_____	_____	_____
Phase B :	_____	_____	_____	_____	_____
Phase C :	_____	_____	_____	_____	_____

Circuit 1 :

Suction Line

Liquid Line

Pressure (PSI) : _____
Temperature (°F) : _____
Superheat (°F) : _____

Pressure (PSI) : _____
Temperature (°F) : _____
Sub-cooling (°F) : _____

Circuit 2 :

Suction Line

Liquid Line

Pressure (PSI) : _____
Temperature (°F) : _____
Sub-cooling (°F) : _____

Pressure (PSI) : _____
Temperature (°F) : _____
Sub-cooling (°F) : _____

Outdoor Air Temperature (°F) : _____ Return Air Temperature (°F) : _____ Supply Air Temperature (°F) : _____
Outdoor Air Wet Bulb (°F) : _____ Return Air Wet Bulb (°F) : _____ Supply Air Wet Bulb (°F) : _____

S. INSTALLATION CHECK LIST AND JOB SITE SHEET

Commercial Job Site Information

Air Flow CFM :

Building Design CFM : _____

Operating System CFM : _____

Blower Speed :

Motor RPM : _____

Blower RPM : _____

Blower Sheave Turns : _____

(Turns are measured from a fully closed position)

Static Pressure :

Return Static Pressure : _____

Supply Static Pressure : _____

Total Static Pressure : _____

Variable Frequency Drive (VFD) : (low fan speed settings are located in DDC Control)

Factory Equipped: Yes No
(Circle one)

Power Setting (uLu) : _____

Low Fan Speed % : _____

Active VFD Display (Hz) : _____

Runs to 45hz on Start?: Yes No
(Circle one)

1stg Cooling Speed % : _____

LOC/REM Light On?: Yes No
(Circle one)

Runs to 60hz 2nd Stage?: Yes No
(Circle one)

Low Economizer % : _____

Economizer Setup and Information :

Outdoor Air:

Design CFM : _____

Design % : _____

Measured CFM : _____

Measured % : _____

Blade Position and Settings:

Minimum Position - Low : _____

Minimum Position - High : _____

Min Position Shaft Angle : _____

Measured % : _____

Program Settings:

Enthalpy Zone Setting : A B C D E
(Circle one)

Mixed Air Temperature : _____

Min Position Shaft Angle : _____

Measured % : _____

Heat or Furnace Information :

Gas Heat :

Fuel Type : Natural LP
(Circle one)

Input BTU : _____

Measured BTU : _____

Line Gas Pressure : _____

Manifold Pressure - Low : _____

Manifold Pressure - High : _____

Number of Orifices : _____

Orifice Size : _____

Flame Signal - microamp (s) : _____

Voltage: Amperage: Pressure Switches
(measured in inches w.c.)
Line 1 Line 2 Line 1 Line 2 RPM Low High Close Open

Inducer 1: _____

Inducer 2: _____

Inducer 3: _____

Inducer 4: _____

Main Limit Closed: Yes No
(Circle one)

Over Temp Limit Closed: Yes No
(Circle one)

Spark Visible at Igniter : Yes No
(Circle one)

Burner Flames Blue : Yes No
(Circle one)

Electric Heat :

System Voltage : 208 240 460
(Circle one)

Total Kw input Rating : _____

Stage 1 Amps: Stage 2 Amps: Stage 1 Watts: Stage 2 Watts:

Phase A : _____

Phase B : _____

Phase C : _____

Notes and Comments :





