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(Subject to Renew July 1, 2024 or next code cycle)

EVALUATION SUBJECT: **PANELIZED SPLIT SYSTEMS**

TER-22-55953

REPORT HOLDER:

NORTEK GLOBAL HVAC
8000 PHOENIX PARKWAY
O'FALLON, MO 63368 USA
(800) 422-4328 | NORTEK.COM



SCOPE OF EVALUATION (compliance with the following codes):

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This Product Evaluation Report is being issued in accordance with the requirements of the **Florida Building Code Seventh Edition (2020)** per ASCE 7, FBC Building Ch. 16, FBC Building Sections 104.11 & 1522.2, FBC Existing Building Sections 707.1 & 707.2, FBC Mechanical 301.15, FBC Residential M1202.1 & M1301.1, FS 471.025, and Broward County Administrative Provisions 107.3.4. This report is also in accordance with the **International Building & Residential Codes (2012, 2015, & 2018)**. The product noted on this report has been tested and/or evaluated as summarized herein.

IN ACCORDANCE WITH THESE CODES EACH OF THESE REPORTS MUST BEAR THE ORIGINAL SIGNATURE & RAISED SEAL OR DIGITAL SEAL OF THE EVALUATING ENGINEER.

SUBSTANTIATING DATA:

• Product Evaluation Documents

Substantiating documentation has been submitted to provide this TER and is summarized in the sections below.

• Structural Engineering Calculations

Structural engineering calculations have been prepared which evaluate the product based on comparative and/or rational analysis to qualify the following design criteria:

- Max. allowable lateral & uplift wind pressures certified herein
- Max. allowable sliding forces, uplift forces, & overturning moments (see Unit Reactions from Wind Guide on last page)
- Tie-down configuration and anchor capacity for concrete, aluminum, and steel host substrates (host by others).
- Unit panel wind pressure connection integrity

Calculation summary is included in this TER and appears herein. NOTE: No 33% increase in allowable stress has been used in the design of this product.

LIMITATIONS & CONDITIONS OF USE:

Use of the product(s) listed herein shall be in strict accordance with this TER as noted herein and manufacturer-provided model specifications. Installation shall conform to the minimum standards stated in the referenced building code(s) in addition to the specifications and limitations stated herein. See herein for complete limitations & conditions of use.

OPTIONS:

This evaluation is valid for the NORTEK models described herein. The critical unit designs have been determined and used in this evaluation. Any structural changes outside of the design as described herein would void this certification.

UNIT CASING MATERIALS:

20ga galvanized steel sheet equivalent to ASTM A653 EDDS cold rolled steel for removable top panel. 30% Talc reinforced polypropylene for base pan. 24ga galvanized steel sheet ASTM A653 for side protector panels, secured with #12-14 C1016-C1024 at base pan and #10-16 C1016-C1024 sheet metal screws into top. Contact Report Holder for further unit construction information.



NOTE: THE GRAPHICAL DEPICTIONS IN THIS REPORT ARE FOR ILLUSTRATIVE PURPOSES ONLY AND MAY DIFFER IN APPEARANCE.

STRUCTURAL PERFORMANCE:

Models referenced herein are subject to the following design limitations:

Maximum Rated Wind Pressures*:
± 118 psf Lateral, 93 psf Uplift

- Required design wind pressures shall be determined according to the guide provided in the Appendix (see last page of this report) or on a site-specific basis in accordance with ASCE 7 and applicable sections of the building code(s) being referenced in accordance with ASD methodology.
- Required design pressures shall be less than or equal to the maximum pressures listed herein.
- *Maximum Rated Wind Pressures indicate the maximum pressures that all units listed herein are approved for. Valid for at-grade and rooftop applications. See limitations herein.
- Valid for use inside and outside the High-Velocity Hurricane Zone (HVHZ).
- Site-specific wind analysis may produce alternate limitations provided maximum rated wind pressures stated herein are not exceeded.

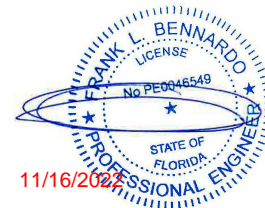
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November 2, 2022

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MODEL INFORMATION (CONTINUED ON FOLLOWING PAGE)

Model Number	Weight (lb)	Unit Dimensions (in)			Cabinet
		Height	Width	Depth	
*SA1BD4M1SN18K	129	24.5	23.75	23.75	A
*SA1BD4M1SN24K	126	24.5	23.75	23.75	A
*SA1BD4M1SN30K	133	28.5	23.75	23.75	A
*SA1BD4M1SN36K	140	28.5	23.75	23.75	A
*SA1BD4M1SN42K	195	29.25	31.75	31.75	B
*SA1BD4M1SN48K	197	29.25	31.75	31.75	B
*SA1BD4M1SN60K	217	33.25	31.75	31.75	B
*SA1BE4M1RN18K	129	32.5	23.75	23.75	A
*SA1BE4M1RN24K	145	32.5	23.75	23.75	A
*SA1BE4M1RN30K	165	29.25	31.75	31.75	B
*SA1BE4M1SN18K	143	28.5	23.75	23.75	A
*SA1BE4M1SN24K	151	32.5	23.75	23.75	A
*SA1BE4M1SN30K	160	29.25	31.75	31.75	B
*SA1BE4M1SN36K	183	37.25	31.75	31.75	B
*SA1BE4M1SN42K	213	41.25	31.75	31.75	B
*SA1BE4M1SN48K	215	41.25	31.75	31.75	B
*SA1BE4M1SN60K	251	45.25	31.75	31.75	B
*SA1BF4M1SN24K	145	36.5	23.75	23.75	A
*SA1BF4M1SN30K	164	29.25	31.75	31.75	B
*SA1BF4M1SN36K	233	41.25	31.75	31.75	B
*SA1BF4M1SN42K	230	45.25	31.75	31.75	B
*SA1BF4M1SN48K	226	45.25	31.75	31.75	B
*SA1BF4M2SN24K	133	36.5	23.75	23.75	A
*SA1BF4M2SN36K	205	37.25	31.75	31.75	B
*SA1BF4M2SN48K	232	41.25	31.75	31.75	B
*SA1BF4M2SN60K	251	45.25	31.75	31.75	B
*SA1BG4MVRN24K	166	36.5	23.75	23.75	A
*SA1BG4MVRN36K	218	37.25	31.75	31.75	B
*SA1BG4MVRN48K	246	45.25	31.75	31.75	B
*SA1BG4MVRN60K	261	45.25	31.75	31.75	B
*SA1QD4M1RN24K	138	28.5	23.75	23.75	A
*SA1QD4M1RN24KA	136	28.5	23.75	23.75	A
*SA1QD4M1RN30K	141	28.5	23.75	23.75	A
*SA1QD4M1RN30KA	140	28.5	23.75	23.75	A
*SA1QD4M1RN36K	149	36.5	23.75	23.75	A
*SA1QD4M1RN36KA	143	36.5	23.75	23.75	A
*SA1QD4M1SN24K	134	24.5	23.75	23.75	A
*SA1QD4M1SN30K	137	28.5	23.75	23.75	A
*SA1QD4M1SN36K	145	28.5	23.75	23.75	A
*SA1QD4M1SN42K	156	29.25	31.75	31.75	B

Model Number	Weight (lb)	Unit Dimensions (in)			Cabinet
		Height	Width	Depth	
*SA1QD4M1SN48K	188	29.25	31.75	31.75	B
*SA1QD4M1SN60K	198	33.25	31.75	31.75	B
*SA1QE4M1RN24K	148	32.5	23.75	23.75	A
*SA1QE4M1RN30K	169	29.25	31.75	31.75	B
*SA1QE4M1SN24K	151	32.5	23.75	23.75	A
*SA1QE4M1SN30K	160	29.25	31.75	31.75	B
*SA1QE4M1SN36K	183	37.25	31.75	31.75	B
*SA1QE4M1SN42K	213	41.25	31.75	31.75	B
*SA1QE4M1SN48K	215	41.25	31.75	31.75	B
*SA1QE4M1SN60K	251	45.25	31.75	31.75	B
*SA3BD4M1SN18K	108	24.5	23.75	23.75	A
*SA3BD4M1SN24K	123	32.5	23.75	23.75	A
*SA3BD4M1SN30K	141	29.25	31.5	31.5	B
*SA3BD4M1SN36K	145	29.25	31.5	31.5	B
*SA3BD4M1SN42K	176	33.25	31.5	31.5	B
*SA3BD4M1SN48K	191	37.25	31.5	31.5	B
*SA3BD4M2SN60K	207	45.25	31.5	31.5	B
*SA3BE4M1SN18K	166	29.25	31.5	31.5	B
*SA3BE4M1SN24K	171	29.25	31.5	31.5	B
*SA3BE4M1SN30K	176	29.25	31.5	31.5	B
*SA3BE4M1SN36K	201	41.25	31.5	31.5	B
*SA3BE4M1SN42K	248	45.25	31.5	31.5	B
*SA3BE4M1SN48K	239	45.25	31.5	31.5	B
*SA3BE4M2SN60K	244	45.25	31.5	31.5	B
*SA3BF4M2SN24K	138	29.25	31.5	31.5	B
*SA3BF4M2SN36K	183	45.25	31.5	31.5	B
*SA3BF4M2SN48K	215	45.25	31.5	31.5	B
*SA3BF4M2SN60K	221	45.25	31.5	31.5	B
*SA3BG4MVRN24K	149	36.5	23.75	23.75	A
*SA3BG4MVRN36K	192	37.25	31.5	31.5	B
*SA3BG4MVRN48K	223	45.25	31.5	31.5	B
*SA3BG4MVRN60K	237	45.25	31.5	31.5	B
*SA3MD4M1RN24K	101	28.5	23.75	23.75	A
*SA3MD4M1RN30K	115	36.5	23.75	23.75	A
*SA3MD4M1SN36K	117	36.5	23.75	23.75	A
*SA3MD4M1SN42K	153	29.25	31.5	31.5	B
*SA3MD4M1SN48K	157	33.25	31.5	31.5	B
*SA3ME4M1RN24K	137	29.25	31.5	31.5	B
*SA3ME4M1RN30K	146	33.25	31.5	31.5	B
*SA3ME4M1SN36K	131	33.25	31.5	31.5	B

See model information notes and diagram next page

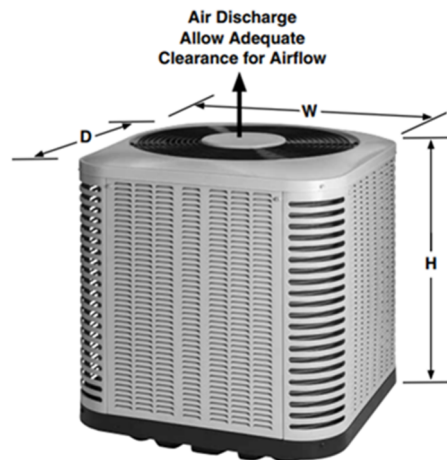
MODEL INFORMATION CONTINUED (Continued from previous page)

Model Number	Weight (lb)	Unit Dimensions (in)			Cabinet
		Height	Width	Depth	
*SA3ME4M1SN24K	190	41.25	31.5	31.5	B
*SA3ME4M1SN48K	206	41.25	31.5	31.5	B
*SA3ME4M1SN60K	211	45.25	31.5	31.5	B
*SA3QD4M1RN24K	100	28.5	23.75	23.75	A
*SA3QD4M1RN30K	114	36.5	23.75	23.75	A
*SA3QD4M1SN36K	118	36.5	23.75	23.75	A
*SA3QD4M1SN42K	153	29.25	31.5	31.5	B
*SA3QD4M1SN48K	157	33.25	31.5	31.5	B
*SA3QE4M1RN24K	136	29.25	31.5	31.5	B
*SA3QE4M1RN30K	124	33.25	31.5	31.5	B
*SA3QE4M1SN36K	151	33.25	31.5	31.5	B
*SA3QE4M1SN42K	189	41.25	31.5	31.5	B
*SA3QE4M1SN48K	190	41.25	31.5	31.5	B
*SH1BE4M1SP18K	185	33.25	31.75	31.75	B
*SH1BE4M1SP24K	192	33.25	31.75	31.75	B
*SH1BE4M1SP30K	208	41.25	31.75	31.75	B
*SH1BE4M1SP36K	212	45.25	31.75	31.75	B
*SH1BE4M1SP42K	232	45.25	31.75	31.75	B
*SH1BE4M1SP48K	234	45.25	31.75	31.75	B
*SH1BE4M1SP60K	236	45.25	31.75	31.75	B
*SH1BE4M1SP60KA	236	45.25	31.75	31.75	B
*SH1BF4M1SP24K	185	37.25	31.75	31.75	B
*SH1BF4M1SP30K	193	37.25	31.75	31.75	B
*SH1BF4M1SP36K	201	45.25	31.75	31.75	B
*SH1BF4M1SP42K	236	45.25	31.75	31.75	B
*SH1BF4M1SP48K	241	45.25	31.75	31.75	B
*SH1BF4M2SX24K	211	37.25	31.75	31.75	B
*SH1BF4M2SX36K	227	45.25	31.75	31.75	B
*SH1BF4M2SX48K	261	45.25	31.75	31.75	B
*SH1BF4M2SX60K	249	45.25	31.75	31.75	B
*SH1BG4CVRX24K	228	37.25	31.75	31.75	B
*SH1BG4CVRX36K	297	41.25	31.75	31.75	B

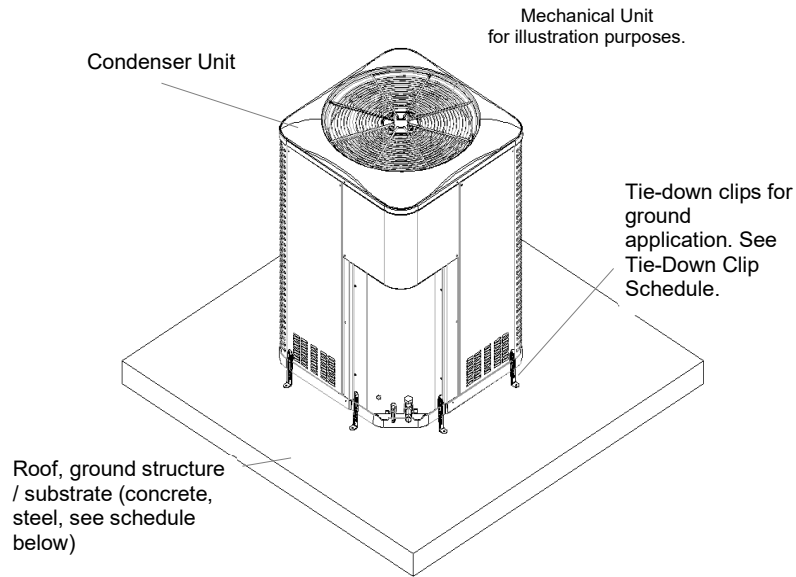
Model Number	Weight (lb)	Unit Dimensions (in)			Cabinet
		Height	Width	Depth	
*SH1BG4CVRX48K	291	41.25	31.75	31.75	B
*SH1BG4CVRX60K	291	45.25	31.75	31.75	B
*SH1QE4M1SP24K	154	33.25	31.75	31.75	B
*SH1QE4M1SP30K	161	41.25	31.75	31.75	B
*SH1QE4M1SP36K	183	45.25	31.75	31.75	B
*SH1QE4M1SP42K	232	45.25	31.75	31.75	B
*SH1QE4M1SP48K	234	45.25	31.75	31.75	B
*SH3BE4M1SP18K	165	33.25	31.5	31.5	B
*SH3BE4M1SP24K	173	37.25	31.5	31.5	B
*SH3BE4M1SP30K	184	41.25	31.5	31.5	B
*SH3BE4M1SP36K	196	45.25	31.5	31.5	B
*SH3BE4M1SP42K	201	45.25	31.5	31.5	B
*SH3BE4M1SP48K	206	45.25	31.5	31.5	B
*SH3BE4M2SX60K	212	45.25	31.5	31.5	B
*SH3BF4M2SX24K	170	37.25	31.5	31.5	B
*SH3BF4M2SX36K	196	45.25	31.5	31.5	B
*SH3BF4M2SX48K	228	45.25	31.5	31.5	B
*SH3BF4M2SX60K	229	45.25	31.5	31.5	B
*SH3BG4CVRX24K	202	37.25	31.5	31.5	B
*SH3BG4CVRX36K	222	41.25	31.5	31.5	B
*SH3BG4CVRX48K	268	41.25	31.5	31.5	B
*SH3BG4CVRX60K	292	45.25	31.5	31.5	B
*SH3ME4M1RP24K	102	37.25	31.5	31.5	B
*SH3ME4M1RP30K	140	45.25	31.5	31.5	B
*SH3ME4M1SP36K	144	45.25	31.5	31.5	B
*SH3ME4M1SP42K	176	45.25	31.5	31.5	B
*SH3ME4M1SP48K	193	45.25	31.5	31.5	B
*SH3QE4M1RP24K	101	37.25	31.5	31.5	B
*SH3QE4M1RP30K	140	45.25	31.5	31.5	B
*SH3QE4M1SP36K	144	45.25	31.5	31.5	B
*SH3QE4M1SP42K	175	45.25	31.5	31.5	B
*SH3QE4M1SP48K	192	45.25	31.5	31.5	B

MODEL INFORMATION NOTES

Unit dimensions listed above are unit net dimensions (as opposed to packing/shipping dimensions). Unit net weights shall be between 70 lb and 330 lb, typ. Model information listed herein is based on information provided by the client. See detail below for definitions of unit dimensions and panel designations (related to the Panel Integrity evaluation summarized herein). In the detail, “W” is short for unit width, “D” for unit depth, and “H” for unit height. Unit appearance may vary. Please contact Report Holder for more information.



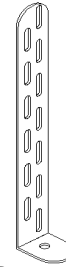
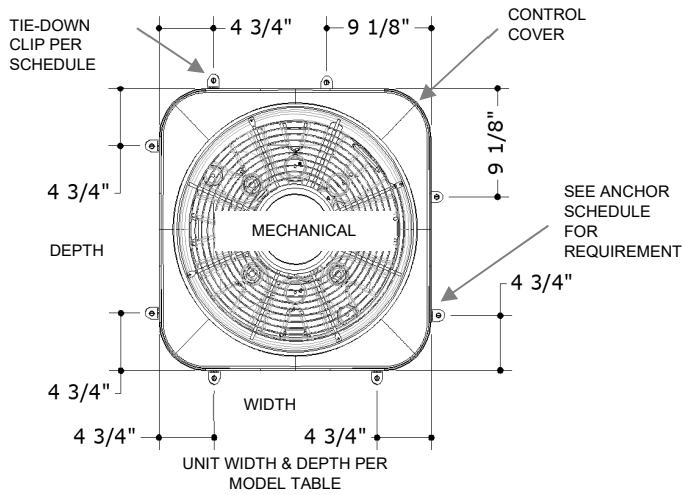
PRODUCT INSTALLATION



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PRODUCT INSTALLATION CONTINUED

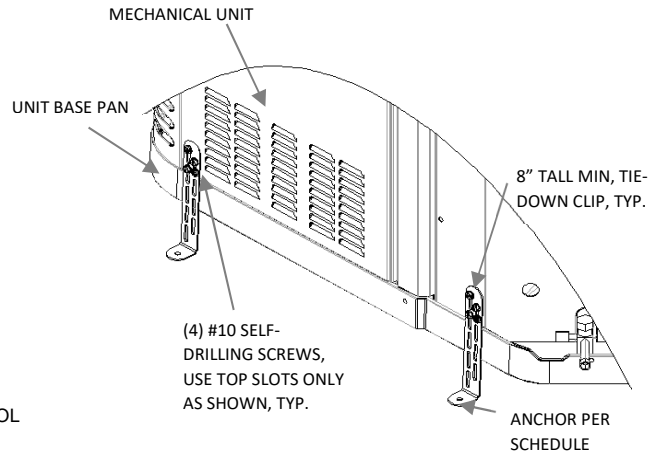
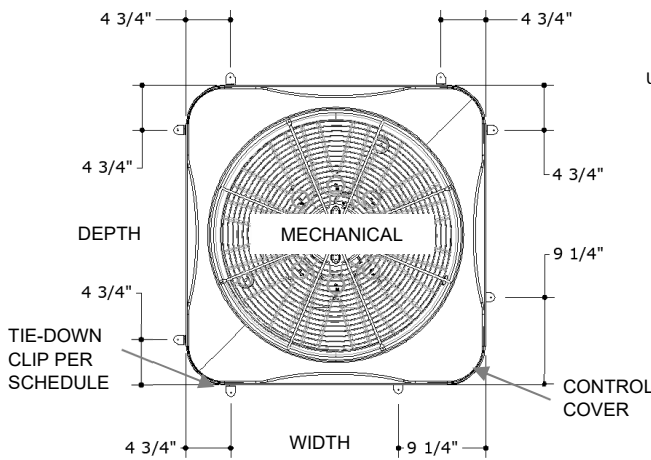
ANCHOR LAYOUT AT GRADE LEVEL CABINET A



TIE-DOWN CLIP (GROUND APPLICATION)

Miami Tech CUTD 1" wide and 8" long min ASTM A653 galvanized steel 0.07" thick for all cabinets tied down at ground; fasten clip to host structure using anchor from Anchor Schedule to Host Structure Table and (4) #10-16 x 1/2" SS316 min self-drilling screw to fasten clip to unit. MIAMI-TECH KIT #NCUTD8KG

ANCHOR LAYOUT AT GRADE LEVEL CABINET B



TIE-DOWN CLIP DETAIL

ANCHOR SCHEDULE TO HOST STRUCTURE

Installation Condition	Max. ASD Wind Pressures Lateral (Uplift)	Anchor Schedule to Host Structure By Others			# of Tie-Down Clips
		f'c = 3 ksi min. Regular-Weight Concrete Host	1/8" min. thick UTS = 58 ksi min. Steel Host	1/8" min. thick 6061-T6 Aluminum Host	
At-Grade	± 54 psf (0 psf)	A	N/A	N/A	8
Rooftop	± 118 psf (93 psf)	N/A	B	B	12

Note: Anchor Schedule is applicable for all unit models and cabinet types listed herein.

Anchor Types to Host Structure:

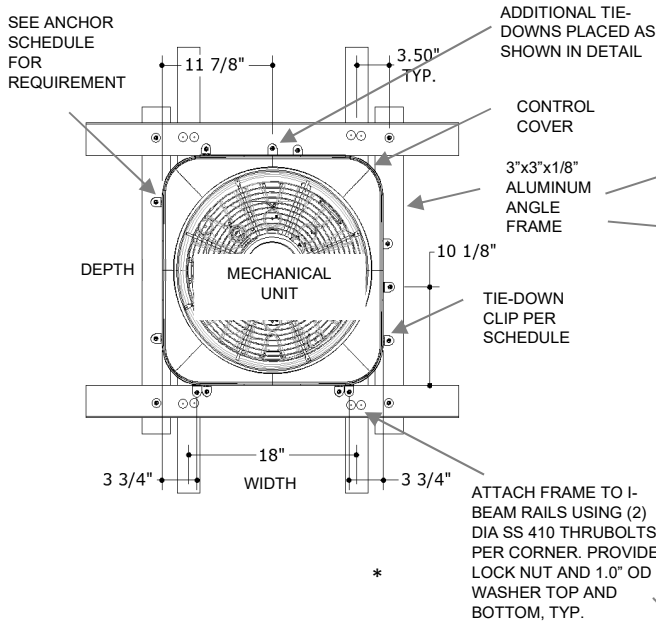
A. - 1/4" HILTI KBV Expansion Anchor embedded 2" in 4,000 psi concrete. 4" from edge minimum.

B. - 1/4" UNC SS 410 bolt minimum 1/2" from edges with nut and washer specified for installation at roof level.

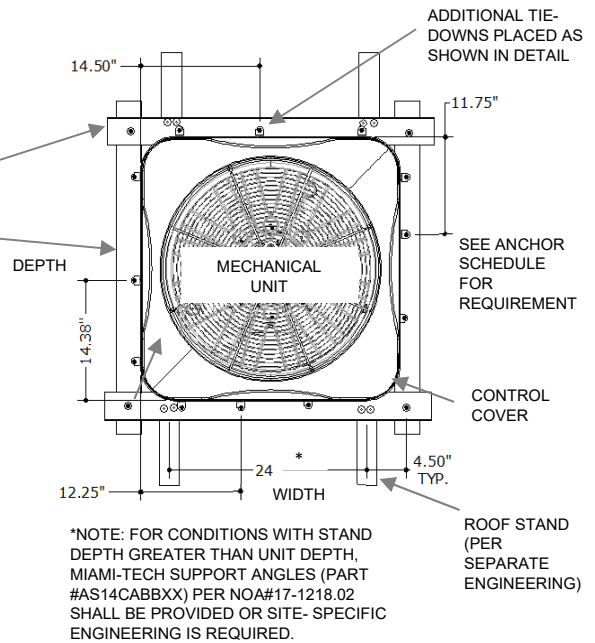
NA. - NOT APPLICABLE

PRODUCT INSTALLATION CONTINUED

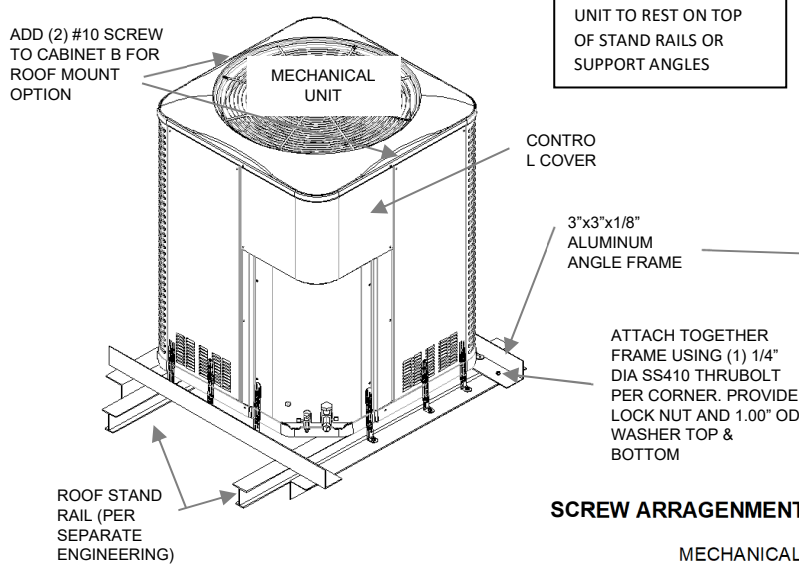
**ANCHOR LAYOUT AT ROOF LEVEL CABINET A
MIAMI-TECH KIT #NCUTD30KR**



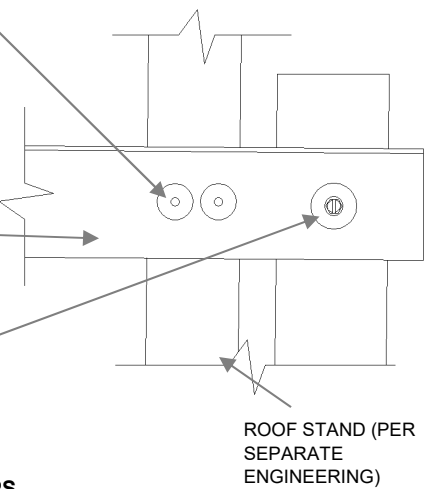
**ANCHOR LAYOUT AT ROOF LEVEL CABINET B
MIAMI-TECH KIT #NCUTD38KR**



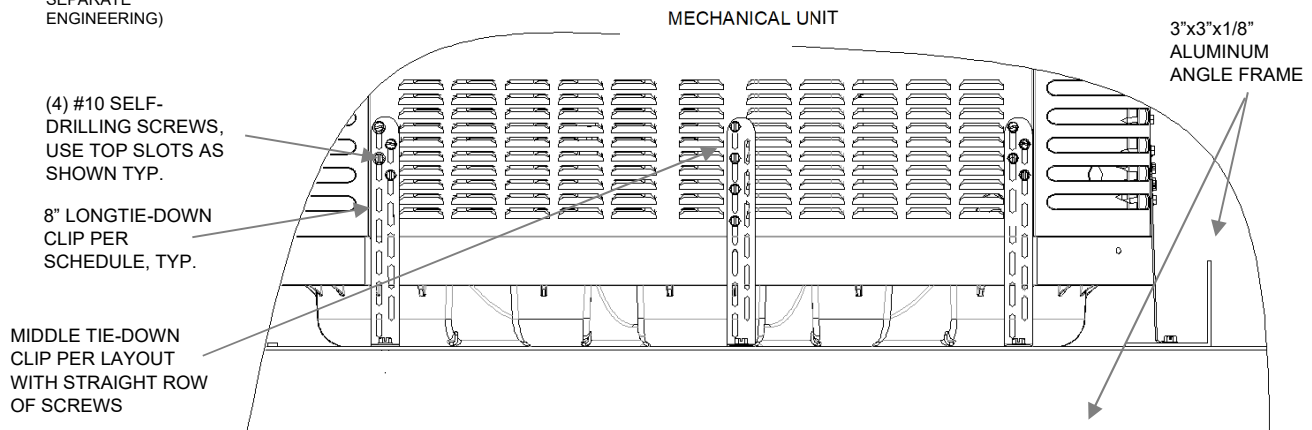
MECHANICAL UNIT ROOF MOUNTED



FRAME TYPICAL CONNECTIONS



SCREW ARRANGEMENT IN CLIPS



PANEL INTEGRITY SUMMARY

Cabinet	Installation Condition	Max. ASD Wind Pressures Lateral (Uplift)	Additional Reinforcement Beyond Original Manufactured Cabinet
A	At-Grade	± 54 psf (0 psf)	Tie-down Clips shown herein.
	Rooftop	± 118 psf (93 psf)	Tie-down Clips shown herein.
B	At-Grade	± 54 psf (0 psf)	Tie-down Clips shown herein.
	Rooftop	± 118 psf (93 psf)	Tie-down Clips shown herein plus (2) addtl. Screws at top of panel.

PANEL INTEGRITY SUMMARY NOTES

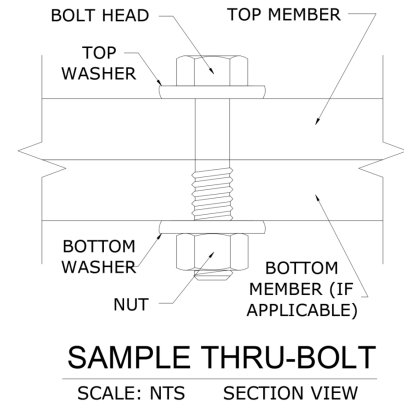
Notes:

1. Panel Integrity Summary applies to all unit models listed herein. See corresponding Cabinet designation and installation Condition for specifications.
2. Calculations performed according to the information provided by the client.
3. Screw quantities were checked to reinforce unit panels as needed. Validate that the screw joins the panel with the supporting element.
4. Additional screw shall be at least #10 x 1/2" long Gr 2.
5. Installer shall insulate dissimilar metals if needed.
6. See screw location on detail page.

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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", "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: 22 GA (.030"), 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 that 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.

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, deflection, and material deformation cannot be accurately evaluated, but with the diaphragm action of external components and internal stiffeners, the base unit (with accompanying retrofits stated herein as applicable) has the capacity to withstand the design wind loads without detaching from the unit and becoming flying debris.

Survivability: Evaluation reports are valid for a newly installed unit and do not include certification of the product beyond a design event or if impacted by any debris. Inspections shall be implemented annually by the end user and after every 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 or as designated by the Authority Having Jurisdiction.

Durability: Components or component assemblies shall not deteriorate, crack, fail, or lose functionality due to galvanic corrosion or weathering. All supporting components which are permanently installed shall be protected against corrosion, contamination, and other such damage at all times. Each component or component assembly shall be supported and oriented in its intended installation position. All exposed plastic components shall be certified to resist sunlight exposure as specified by ASTM B117, or ASTM G155 in Broward or Miami Dade counties.

Extent of Certification: Certification pertains to the overall structural integrity of the unit components listed within the evaluation as required by code, subject to the limitations and criteria stated herein. Operability during or after a design event is not included in this certification. Water infiltration is outside the bounds of this certification. No other certifications are intended other than as described herein. This evaluation alone does not offer any evaluation for large missile impact debris or cyclic wind requirements unless specifically stated herein.

Proj. #	Remarks	By	Checked	Date	Proj. #	Remarks	By	Checked	Date
19-8163.1	Initial issue	LAO	LAO	2019					
22-55953	Add models, 2020 FBC update	MRT	EPR	10/04/2022					

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://ecalcalc.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:

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

Rooftop (>15 ft MRH) Required Design Pressures:

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

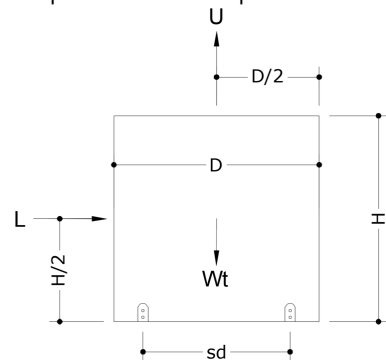
VISIT [ECALC.IO/FORCES](https://ecalcalc.io/forces)

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.



Design Parameters:

- 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):

1. Sliding Force, L = P_{lat} x W x H = (120 psf) x (48 in) x (42 in) x (1 in² / 144 ft²) = **1680 lb**
2. Uplift Force, U = P_{up} x W x D = (95 psf) x (48 in) x (36 in) x (1 in² / 144 ft²) = **1140 lb**
3. 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):

1. Sliding Force, L = P_{lat} x D x H = (120 psf) x (36 in) x (42 in) x (1 in² / 144 ft²) = **1260 lb**
2. Uplift Force, U = P_{up} x W x D = (95 psf) x (48 in) x (36 in) x (1 in² / 144 ft²) = **1140 lb**
3. 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.