

EVALUATION SUBJECT: **SURE COMFORT – MAINLINE UNITS**

23-61450

REPORT HOLDER:

RHEEM MANUFACTURING COMPANY, INC.
1100 ABERNATHY ROAD SUITE 1400
ATLANTA, GA, USA
770-351-3000 | RHEEM.COM



SCOPE OF EVALUATION (compliance with the following codes):

THIS IS A STRUCTURAL (WIND) PERFORMANCE EVALUATION ONLY. NO ELECTRICAL OR TEMPERATURE PERFORMANCE RATINGS OR CERTIFICATIONS ARE OFFERED OR IMPLIED HEREIN. UNDER NO CIRCUMSTANCE DOES THIS PERFORMANCE EVALUATION GUARANTEE, IMPLY, OR STATE PERFORMANCE OF THE UNIT IS MAINTAINED DURING OR AFTER A DESIGN EVENT.

This Performance Evaluation is being issued in accordance with the requirements of the **Florida Building Code Eighth Edition (2023)** 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, and FS 471.025. The product noted in this performance evaluation has been tested and/or evaluated as summarized herein.

SUBSTANTIATING DATA:

• **Product Evaluation Documents**

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

Test Reports

Unit cabinetry has been tested in accordance with the maximum design pressure listed herein, per test report 0316.01-20 by American Test Lab of South Florida.

• **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 product evaluation and appears herein.

LIMITATIONS & CONDITIONS OF USE:

Use of the product(s) listed herein shall be in strict accordance with this product evaluation 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 RHEEM 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:

ASTM A653 galvanized sheet steel. Contact Report Holder for further unit construction information.

TERMINOLOGY:

See herein for definitions of terms and abbreviations used in this evaluation.



NOTE: THE GRAPHICAL DEPICTIONS IN THIS EVALUATION 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*:
± 150 psf Lateral, 100 psf Uplift**

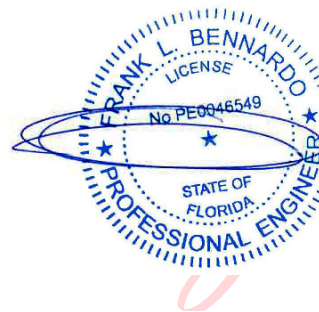
- Required design wind pressures shall be determined according to the guide provided in the Appendix (see last page of this document) or on a site-specific basis in accordance with ASCE 7 and applicable sections of the building code(s) being referenced in accordance with ASD methodology.
- Required design 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, wall-mounted 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.

VISIT [ECALC.IO/RHEEM](https://ecalculator.com/rheem)

FOR MORE INFORMATION AND
DEVIATIONS TO THIS EVALUATION OR
SCAN THE QR CODE TO THE RIGHT >



Engineer Signature & Seal:



**Digitally signed
by Frank
Bennardo
Date: 2023.10.05
16:53:46 -04'00'**

October 5, 2023

Frank Bennardo, P.E.
ENGINEERING EXPRESS®
FL PE #0046549 FLCA #9885

UNIT DIMENSIONS AND CABINERY DESIGNATIONS (CONTINUED ON NEXT PAGE)

Model Number	Weight (lbs)	Length (in)	Width (in)	Height (in)	Cabinet Shell
MLA1318AJ1NA	127	30.13	30.13	27.17	Grilled Cabinetry
MLA1460BJ1NA	296	36.13	36.13	51.17	Grilled Cabinetry
MLA1660AJ1NA	296	36.13	36.13	51.17	Grilled Cabinetry
MLA1660AJ1NB	296	36.13	36.13	51.17	Grilled Cabinetry
MLA1336AJ1NA	164	30.13	30.13	27.17	Grilled Cabinetry
MLA1342AJ1NA	195	30.13	30.13	31.17	Grilled Cabinetry
MLA1348AJ1NA	202	34.13	34.13	27.17	Grilled Cabinetry
MLA1360AC1NB	235	36.13	36.13	31.17	Grilled Cabinetry
MLA1360AJ1NA	235	36.13	36.13	31.17	Grilled Cabinetry
MLA1360AJ1NB	235	36.13	36.13	31.17	Grilled Cabinetry
MLA1748AJ2NB	297	36.13	36.13	51.17	Grilled Cabinetry
MLA1418WJ1NA	152	30.13	30.13	27.17	Grilled Cabinetry
MLA1760AJ2NB	298	36.13	36.13	51.17	Grilled Cabinetry
SA1460BC1NB	296	36.13	36.13	51.17	Grilled Cabinetry
MLA1424XJ1NA	170	34.13	34.13	27.17	Grilled Cabinetry
MLA1430AJ1NA	158	30.13	30.13	27.17	Grilled Cabinetry
MLA1430WJ1NA	167	30.13	30.13	31.17	Grilled Cabinetry
MLA1430XJ1NA	195	36.13	36.13	27.17	Grilled Cabinetry
MLA1436AJ1NA	178	34.13	34.13	27.17	Grilled Cabinetry
MLA1436WJ1NA	187	34.13	34.13	31.17	Grilled Cabinetry
MLA1442CJ1NA	207	34.13	34.13	35.17	Grilled Cabinetry
MLA1442WJ1NA	207	34.13	34.13	35.17	Grilled Cabinetry
MLA1442XJ1NA	253	36.13	36.13	39.17	Grilled Cabinetry
MLA1448AC1NB	232	36.13	36.13	31.17	Grilled Cabinetry
MLA1448AJ1NA	232	36.13	36.13	31.17	Grilled Cabinetry
MLA1460AC1NB	247	36.13	36.13	35.17	Grilled Cabinetry
MLA1460AD1NB	247	36.13	36.13	35.17	Grilled Cabinetry
MLA1460AJ1NA	247	36.13	36.13	35.17	Grilled Cabinetry
SA1460BJ1NA	296	36.13	36.13	51.17	Grilled Cabinetry
MLA1460CD1NB	268	36.13	36.13	45.17	Grilled Cabinetry
MLA1460CJ1NA	268	36.13	36.13	45.17	Grilled Cabinetry
MLA1618AJ1NA	155	30.13	30.13	27.17	Grilled Cabinetry
MLA1624AJ1NA	170	34.13	34.13	27.17	Grilled Cabinetry
MLA1630AJ1NA	195	36.13	36.13	27.17	Grilled Cabinetry
MLA1636AJ1NA	204	36.13	36.13	31.17	Grilled Cabinetry
MLA1642AJ1NA	253	36.13	36.13	39.17	Grilled Cabinetry
MLA1648AJ1NA	268	36.13	36.13	45.17	Grilled Cabinetry
SA1660AJ1NA	296	36.13	36.13	51.17	Grilled Cabinetry
SA1748AJ2NA	297	36.13	36.13	51.17	Grilled Cabinetry
MLA1724AJ2NB	200	34.13	34.13	35.17	Grilled Cabinetry
MLA1736AJ2NB	209	34.13	34.13	51.17	Grilled Cabinetry
SA1748AJ2NB	297	36.13	36.13	51.17	Grilled Cabinetry
SA1760AJ2NA	298	36.13	36.13	51.17	Grilled Cabinetry
SA1760AJ2NB	298	36.13	36.13	51.17	Grilled Cabinetry
MLA1324AJ1NA	142	30.13	30.13	25.17	Grilled Cabinetry
MLA1324BJ1NA	148	30.13	30.13	25.17	Grilled Cabinetry
MLA1330AJ1NA	163	30.13	30.13	25.17	Grilled Cabinetry
MLP1430FJ1NA	198	34.13	34.13	31.17	Grilled Cabinetry
MLP1436AJ1NA	214	34.13	34.13	27.17	Grilled Cabinetry
MLP1436FJ1NA	206	34.13	34.13	35.17	Grilled Cabinetry
MLP1442AJ1NA	208	34.13	34.13	27.17	Grilled Cabinetry
MLP1442FJ1NA	228	34.13	34.13	35.17	Grilled Cabinetry
MLP1448AJ1NA	234	34.13	34.13	35.17	Grilled Cabinetry
MLP1448FJ1NA	264	36.13	36.13	39.17	Grilled Cabinetry

UNIT DIMENSIONS AND CABINERY DESIGNATIONS (CONTINUED FROM PREVIOUS PAGE)

Model Number	Weight (lbs)	Length (in)	Width (in)	Height (in)	Cabinet Shell
MLP1460AJ1NA	269	36.13	36.13	39.17	Grilled Cabinetry
MLP1460BJ1NA	285	36.13	36.13	45.17	Grilled Cabinetry
MLP1460FJ1NA	285	36.13	36.13	45.17	Grilled Cabinetry
MLA1418AJ1NA	143	30.13	30.13	25.17	Grilled Cabinetry
MLA1424BJ1NA	148	30.13	30.13	25.17	Grilled Cabinetry
MLP1530BJ1NA	198	34.13	34.13	31.17	Grilled Cabinetry
MLP1536AJ1NA	206	34.13	34.13	35.17	Grilled Cabinetry
MLP1636AJ2NA	206	34.13	34.13	35.17	Grilled Cabinetry
SA1342AJ1NA	195	30.13	30.13	31.17	Grilled Cabinetry
SA1342AJ1NB	195	30.13	30.13	31.17	Grilled Cabinetry
SA1348AC1NB	202	34.13	34.13	27.17	Grilled Cabinetry
SA1348AD1NB	202	34.13	34.13	27.17	Grilled Cabinetry
SA1348AJ1NA	202	34.13	34.13	27.17	Grilled Cabinetry
SA1360AC1NB	235	36.13	36.13	31.17	Grilled Cabinetry
SA1360AD1NB	235	36.13	36.13	31.17	Grilled Cabinetry
SA1360AJ1NA	235	36.13	36.13	31.17	Grilled Cabinetry
MLA1424WJ1NA	148	30.13	30.13	25.17	Grilled Cabinetry
MLP1418BJ1NA	156	30.13	30.13	25.17	Grilled Cabinetry
MLP1424AJ1NA	152	30.13	30.13	25.17	Grilled Cabinetry
SA1430AJ1NA	158	30.13	30.13	27.17	Grilled Cabinetry
SA1436AC1NB	178	34.13	34.13	27.17	Grilled Cabinetry
SA1436AD1NB	178	34.13	34.13	27.17	Grilled Cabinetry
SA1436AJ1NA	178	34.13	34.13	27.17	Grilled Cabinetry
SA1442AJ1NA	214	36.13	36.13	27.17	Grilled Cabinetry
SA1442CJ1NA	207	34.13	34.13	35.17	Grilled Cabinetry
SA1442XJ1NA	253	36.13	36.13	39.17	Grilled Cabinetry
SA1442XJ1NB	253	36.13	36.13	39.17	Grilled Cabinetry
SA1448AC1NB	232	36.13	36.13	31.17	Grilled Cabinetry
SA1448AD1NB	232	36.13	36.13	31.17	Grilled Cabinetry
SA1448AJ1NA	232	36.13	36.13	31.17	Grilled Cabinetry
SA1460AD1NB	247	36.13	36.13	35.17	Grilled Cabinetry
SA1460AJ1NA	247	36.13	36.13	35.17	Grilled Cabinetry
MLP1424FJ1NA	159	30.13	30.13	25.17	Grilled Cabinetry
MLP1430AJ1NA	208	30.13	30.13	25.17	Grilled Cabinetry
SA1460CC1NB	268	36.13	36.13	45.17	Grilled Cabinetry
SA1460CD1NB	268	36.13	36.13	45.17	Grilled Cabinetry
SA1460CJ1NA	268	36.13	36.13	45.17	Grilled Cabinetry
SA1618AJ1NA	155	30.13	30.13	27.17	Grilled Cabinetry
SA1618AJ1NB	155	30.13	30.13	27.17	Grilled Cabinetry
SA1624AJ1NA	170	34.13	34.13	27.17	Grilled Cabinetry
SA1624AJ1NB	170	34.13	34.13	27.17	Grilled Cabinetry
SA1630AJ1NA	195	36.13	36.13	27.17	Grilled Cabinetry
SA1636AJ1NA	204	36.13	36.13	31.17	Grilled Cabinetry
SA1636AJ1NB	204	36.13	36.13	31.17	Grilled Cabinetry
SA1642AJ1NA	253	36.13	36.13	39.17	Grilled Cabinetry
SA1648AJ1NA	268	36.13	36.13	45.17	Grilled Cabinetry
MLP1518BJ1NA	156	30.13	30.13	25.17	Grilled Cabinetry
SA1724AJ2NB	200	34.13	34.13	35.17	Corner Post
SA1736AJ2NA	209	34.13	34.13	39.17	Corner Post
SA1736AJ2NB	209	34.13	34.13	39.17	Corner Post
MLP1524BJ1NA	159	30.13	30.13	25.17	Corner Post
SA1418AJ1NA	143	30.13	30.13	25.17	Corner Post
SA1424AJ1NA	148	30.13	30.13	25.17	Corner Post
SA1424BJ1NA	148	30.13	30.13	25.17	Corner Post

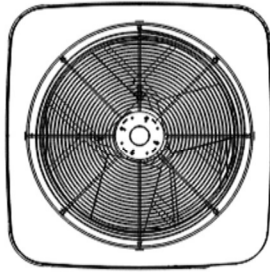
UNIT DIMENSIONS AND CABINERY DESIGNATIONS (CONTINUED FROM PREVIOUS PAGE)

Model Number	Weight (lbs)	Length (in)	Width (in)	Height (in)	Cabinet Shell
SP1418AJ1NA	152	30.13	30.13	25.17	Grilled Cabinetry
SP1418BJ1NA	156	30.13	30.13	25.17	Grilled Cabinetry
SP1418CJ1NA	152	30.13	30.13	25.17	Grilled Cabinetry
SP1424AJ1NA	152	30.13	30.13	25.17	Grilled Cabinetry
SP1430AJ1NA	208	30.13	30.13	25.17	Grilled Cabinetry
SP1436AC1NA	187	34.13	34.13	27.17	Grilled Cabinetry
SP1436AD1NA	187	34.13	34.13	27.17	Grilled Cabinetry
SP1436AJ1NA	214	34.13	34.13	27.17	Grilled Cabinetry
SP1442AD1NA	208	34.13	34.13	27.17	Grilled Cabinetry
SP1442FJ1NA	228	34.13	34.13	35.17	Grilled Cabinetry
SP1448AC1NA	234	34.13	34.13	35.17	Grilled Cabinetry
SP1448AD1NA	234	34.13	34.13	35.17	Grilled Cabinetry
SP1448AJ1NA	234	34.13	34.13	35.17	Grilled Cabinetry
SP1460AC1NA	269	36.13	36.13	39.17	Grilled Cabinetry
SP1460AD1NA	269	36.13	36.13	39.17	Grilled Cabinetry
SP1460AJ1NA	269	36.13	36.13	39.17	Grilled Cabinetry
SP1460BC1NA	285	36.13	36.13	45.17	Grilled Cabinetry
SP1460BJ1NA	285	36.13	36.13	45.17	Grilled Cabinetry
SP1460FC1NA	285	36.13	36.13	45.17	Grilled Cabinetry
SP1460FJ1NA	285	36.13	36.13	45.17	Grilled Cabinetry
SP1518BJ1NA	156	30.13	30.13	25.17	Grilled Cabinetry
SP1518CJ1NA	156	30.13	30.13	25.17	Grilled Cabinetry
SP1524BJ1NA	159	30.13	30.13	25.17	Grilled Cabinetry
SP1530BJ1NA	198	34.13	34.13	31.17	Grilled Cabinetry
SP1536AC1NA	206	34.13	34.13	35.17	Grilled Cabinetry
SP1536AJ1NA	206	34.13	34.13	35.17	Grilled Cabinetry
SP1542AC1NA	228	34.13	34.13	35.17	Grilled Cabinetry
SP1542AJ1NA	228	34.13	34.13	35.17	Grilled Cabinetry
SP1548AC1NA	264	36.13	36.13	39.17	Grilled Cabinetry
SP1548AJ1NA	264	36.13	36.13	39.17	Grilled Cabinetry
SP1560AC1NA	285	36.13	36.13	45.17	Grilled Cabinetry
SP1560AJ1NA	285	36.13	36.13	45.17	Grilled Cabinetry
SP1624AJ2NA	198	34.13	34.13	31.17	Corner Post
SP1636AJ2NA	206	34.13	34.13	35.17	Corner Post
SP1648AJ2NA	264	36.13	36.13	45.17	Corner Post
SP1660AJ2NA	264	36.13	36.13	45.17	Corner Post

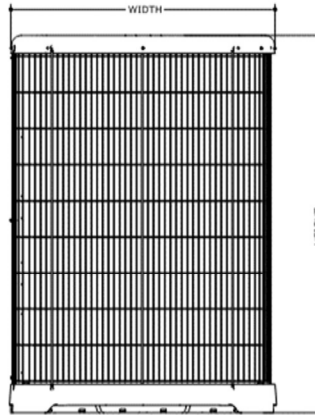
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GRILLED CABINETRY UNITS

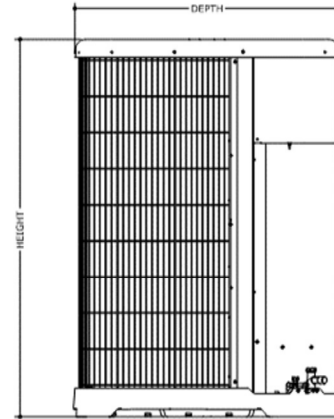
UNIT DIMENSIONS
SCALE: NTS



TOP VIEW

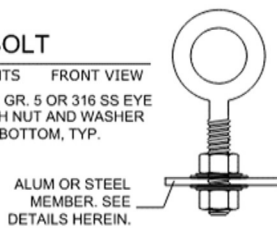


FRONT VIEW



SIDE VIEW

1 EYE BOLT
SCALE: NTS FRONT VIEW
3/4"-20 SAE GR. 5 OR 316 SS EYE BOLT WITH NUT AND WASHER TOP AND BOTTOM, TYP.



ALUM OR STEEL MEMBER. SEE DETAILS HEREIN.

2 TIE-DOWN CABLE
SCALE: NTS FRONT VIEW

3/16" Ø, 7x19 VINYL COATED WIRE ROPE.
NOTE: SUGGESTED LENGTH FOR EACH TIE-DOWN CABLE IS 150" LONG, BUT MAY VARY AS NEEDED. TIGHTEN TO 75 LB TENSION.

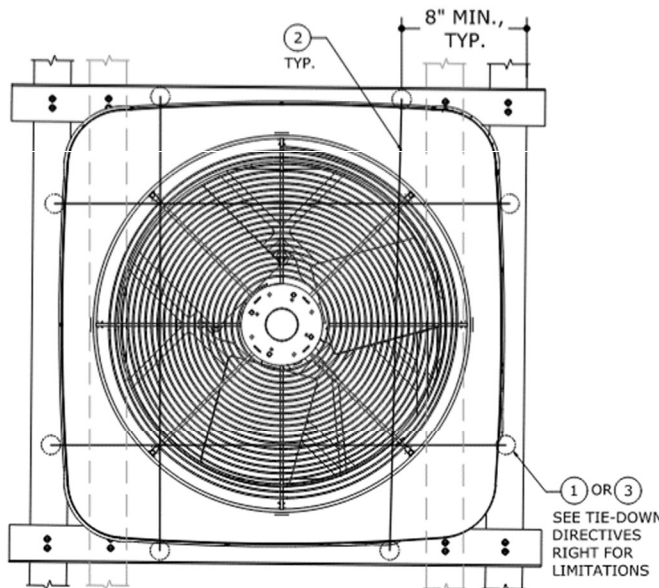


3 CONCRETE ANCHOR
SCALE: NTS FRONT VIEW

1/2" Ø DEWALT TIE WIRE POWER-STUD + SD1 CARBON STEEL WEDGE EXPANSION ANCHOR.
PROVIDE 1-1/2" EMBEDMENT AND 5" MIN. EDGE DISTANCE, TYP.



ANCHOR LAYOUT
SCALE: NTS TOP VIEW



NOTE: ATTACHMENT TO ROOFTOP STAND SHOWN. SEE TIE-DOWN DIRECTIVE RIGHT FOR ATTACHMENT TO CONCRETE SLAB.

FOR FRAME CONSTRUCTION DETAILS, SEE ROOF STAND CONSTRUCTION HEREIN

NOTE: ANCHOR LAYOUT AND TIE-DOWN DIRECTIVE ON THIS PAGE IS VALID FOR:
- ALL GRILLED CABINETRY-DESIGNATED UNITS AS DESCRIBED HEREIN.
- BOTH AT-GRADE AND ROOFTOP INSTALLATIONS
- ALL SUBSTRATES LISTED HEREIN.
- STANDS INSTALLED AT-GRADE IF DESIRED.

MIAMI TECH TIE-DOWN KIT NUMBERS:
SLAB MOUNT: KIT # SCMLTDCKG
ROOF STAND:KIT # SCMLTDCKR

TIE-DOWN DIRECTIVE: AT-GRADE SLAB

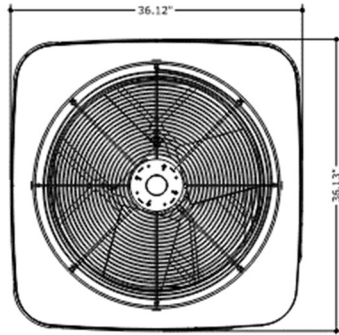
- INSTALL (8) 1/2" Ø DEWALT TIE WIRE POWER-STUD + SD1 CAARBON STEEL WEDGE EXPANSION ANCHORS, (2) PER SIDE, WITH 1-1/2" EMBEDMENT AND 5" EDGE DISTANCE, TYP., AT CIRCLED LOCATIONS IN ANCHOR LAYOUT DIAGRAM SHOWN LEFT. NOTE: ANCHOR LOCATIONS MAY VARY UP TO 3" EITHER DIRECTION FOR EASE OF INSTALLATION.
- SAME CABLE TIE-DOWN DIRECTIVE AS FOR ROOF STAND, SHOWN BELOW.

TIE-DOWN DIRECTIVE: ROOF STAND

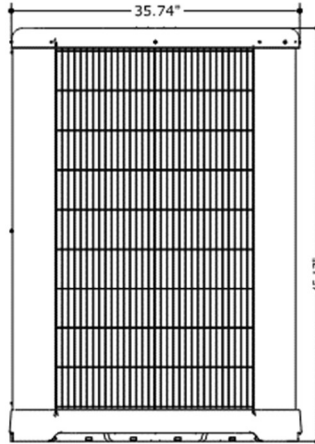
- INSTALL (8) EYE BOLTS, (2) PER SIDE, AT CIRCLED LOCATIONS IN ANCHOR LAYOUT DIAGRAM SHOWN LEFT. NOTE: EYE BOLT LOCATIONS MAY VARY UP TO 3" EITHER DIRECTION FOR EASE OF INSTALLATION. ENSURE 1/2" EDGE DISTANCE IS PROVIDED FROM EDGE OF ANY ALUMINUM OR STEEL MEMBER.
- (4) LENGTHS OF TIE-DOWN CABLES SHALL BE INSTALLED USING THE (8) EYEBOLTS IN THE CONFIGURATION SHOWN IN THE ANCHOR LAYOUT DIAGRAM LEFT PER THE FOLLOWING INSTRUCTIONS:
 - ATTACH CABLE ENDS TO (4) EYE BOLTS (2) PER ADJACENT SIDE). ATTACHMENTS MAY USE HOOKS OR CARABINER CLIPS RATED TO 600 LB MIN.
 - WRAP CABLES OVER TOP OF UNIT AND ATTACH TO EYE BOLTS ON OPPOSITE SIDE. TIGHTEN TURNBUCKLE TO 75 LB CABLE TENSION.

CORNER POST UNITS

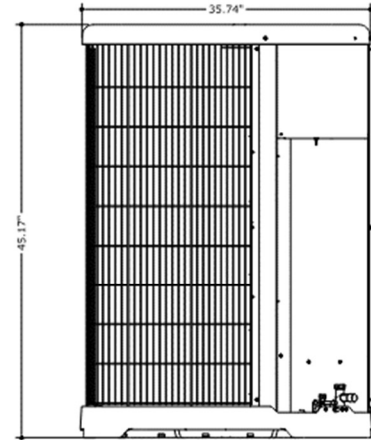
UNIT DIMENSIONS
SCALE: NOT TO SCALE (NTS)



TOP VIEW



FRONT VIEW



SIDE VIEW

MIAMI TECH TIE-DOWN CLIP

4 SCALE: NTS ISOMETRIC VIEW

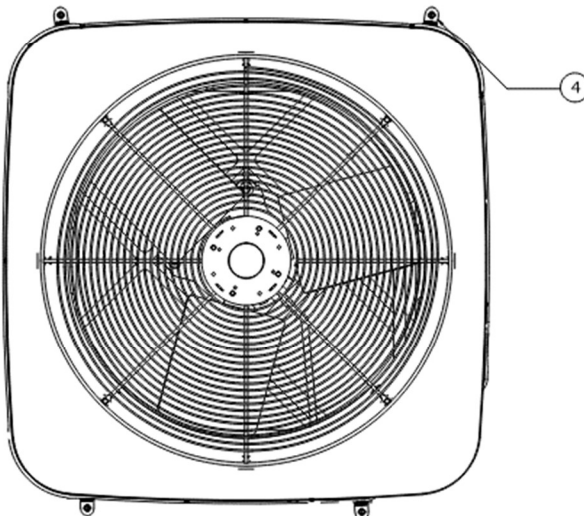
1" WIDE, 10" TALL, AND .07" THICK GALVANIZED STEEL TIE-DOWN CLIP. FASTEN CLIP TO HOST STRUCTURE BY OTHERS WITH (1) ANCHOR PER ANCHOR TO HOST STRUCTURE SCHEDULE ON THIS PAGE.
FASTEN CLIP TO UNIT WITH (4) #10 SS SELF-TAPPING SCREWS WITH .395" Ø WASHER, UTILIZING 1 SCREW PER SLOT FOR THE (4) UPPERMOST SLOTS (SEE CIRCLED SLOTS RIGHT).



NOTE: TIE-DOWN DETAILS LISTED ON THIS PAGE APPLY TO AT-GRADE AND ROOFTOP INSTALLATIONS. SEE SUBSTRATE LIMITATIONS HEREIN.
FOR ATTACHMENT TO ROOF STAND, SEE ROOF STAND CONSTRUCTION HEREIN.

MIAMI TECH TIE-DOWN KIT NUMBERS:
SLAB MOUNT: KIT # SCMLCUTD10KG
ROOF STAND:KIT # SCMLCUTD10KR

TIE-DOWN CLIP LAYOUT
SCALE: NTS TOP VIEW



TIE-DOWN CLIP LAYOUT DIRECTIVE

(4) MIAMI-TECH TIE-DOWN CLIPS AS SHOWN ON THIS PAGE SHALL BE USED TO TIE DOWN THE CORNER POST-DESIGNATED UNITS. TIE-DOWN CLIPS SHALL BE DISTRIBUTED AS FOLLOWS: (2) TIE-DOWN CLIPS ON ONE SIDE, AND (2) TIE-DOWN CLIPS ON THE OPPOSITE SIDE. (1) TIE-DOWN CLIP PER CORNER POST. EACH TIE-DOWN CLIP SHALL MAKE FLUSH CONTACT WITH STEEL CORNER POST.
FASTEN EACH CLIP TO UNIT WITH (4) #10 SS SELF-TAPPING SCREWS WITH .395" Ø WASHER, UTILIZING 1 SCREW PER SLOT FOR THE (4) UPPERMOST SLOTS (SEE CIRCLED SLOTS RIGHT).

NOTE: EITHER PAIR OF OPPOSITE SIDES MAY BE USED (FRONT AND BACK SIDES OR LEFT AND RIGHT SIDES).

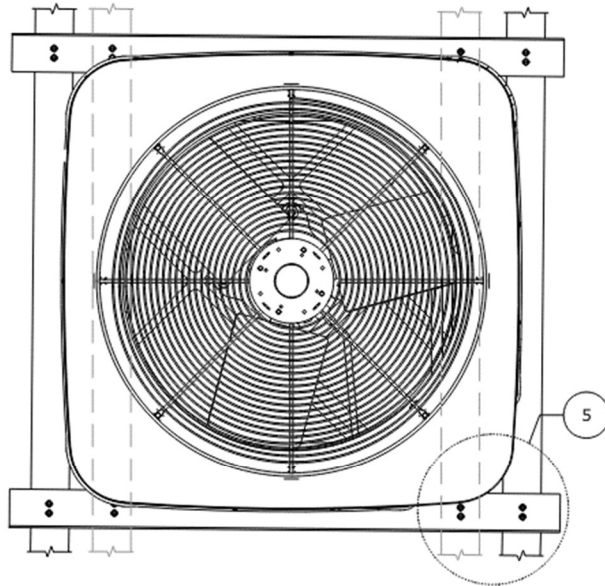
ANCHOR TO HOST STRUCTURE SCHEDULE

ANCHOR TYPE		
3000 psi MIN. CONCRETE	1/8" MIN. THICK ASTM A36 OR STRONGER STEEL	1/8" MIN. THICK 6061-T6 ALUMINUM
A	B	B

A - 3/4" Ø SS ULTRACON OR EQUIVALENT WITH 1-3/4" EMBEDMENT AND 2-1/2" MIN. EDGE DISTANCE, TYP.

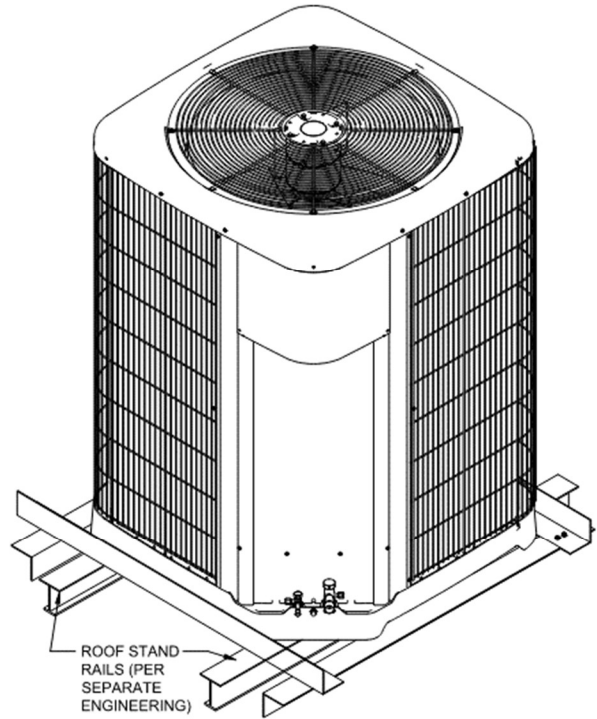
B - 1/2" Ø SS THRU BOLT OR EQUIVALENT WITH 7/16" HEX HEAD, 1/16" NYLON LOCK NUT, AND 1" Ø WASHERS TOP AND BOTTOM, TYP.

ROOF STAND CONSTRUCTION



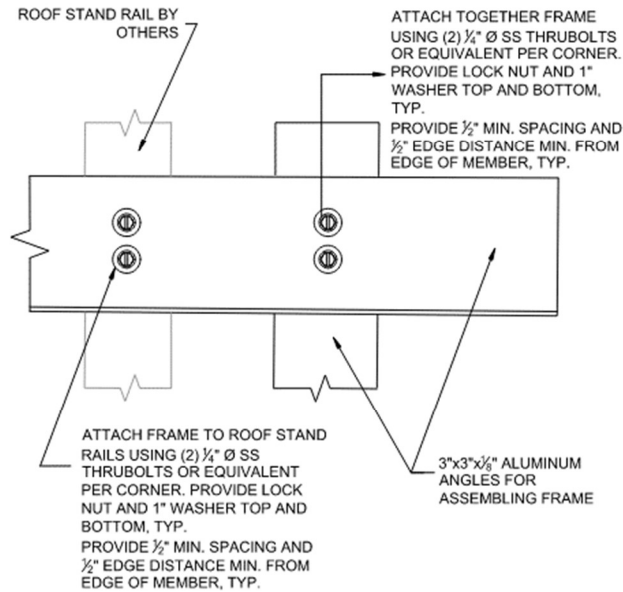
NOTE: UNIT SHALL SIT FLUSH ON EXISTING STAND RAILS

NOTE: ALL DETAILS ON THIS PAGE ARE VALID FOR BOTH GRILLED CABINETRY AND CORNER POST CABINET SHELLS.



SAMPLE UNIT MOUNT ON ROOF STAND/FRAME.

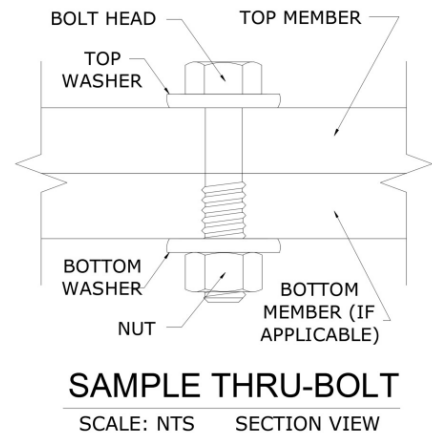
NOTE: TIE-DOWNS ARE NOT SHOWN FOR CLARITY; UNIT SHALL FOLLOW TIE-DOWN DIRECTIVES AS SPECIFIED HEREIN.



5 FRAME TYPICAL CONNECTIONS
SCALE: NTS PLAN VIEW

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", "pcf" for "pounds (force) per cubic foot", "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", "ult" for "ultimate loads", "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 product evaluation 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, 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: This performance evaluation is 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
20-28796	Prev. Submittal	-	-	-					
23-61450	2023 FBC Update	MRT	RWN	09/25/23					

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:


- 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

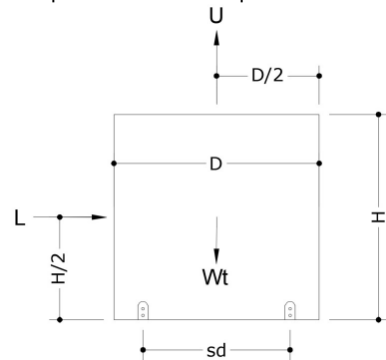
VISIT [ECALC.IO/FORCES](https://ecalc.io/forces)

FOR DESIGN AID CALCULATORS AND RESOURCES RELATED TO THIS EVALUATION & 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 evaluation. 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, W_t
- 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 – W_t 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 – W_t 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 – W_t 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 – W_t 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.