CARRIER Chassis 3a & 4a:

Models: 38AUD/AXD size 12 (min) through 14 (max) 38AUZ/AXZ and 38AUQ/AXQ size 07 (min) through 14 (max)

Each package unit air conditioner listed above conforms to the Florida Building Code 8th Edition (2023) requirements for installation including High Velocity Hurricane Zone (HVHZ), Risk Category III (V = 186 MPH), exposure category "D", and installation on a roof height of up to and including 60 feet above grade (i.e., 65' to mid-height of unit). Worst case is -14 (chassis 4a) 59-5/8" x 45-7/8" x 50-3/8" tall.

ALLOWABLE DESIGN PRESSURES (ASD) FOR THE TIE-DOWN:

Design Lateral Pressure = 114.1 lb/ft² Design Uplift Pressure = 90.1 lb/ft^2

This sheet shows tie-down details of the unit to concrete or metal framing. Suitability of concrete or metal frame by others. See drawing 24008-1A for Miami-Dade BORA 2018 equipment analysis details if unit is installed in Miami-Dade.



Tie-down Calculations (Direction A is normal to length of unit):

Wind Direction	A, equipment (excluding curb)			Calculation Results	
		F_h=q_h*(GC_r)*A_f		Totals at Base of Equip:	
н	50.375 in	GC_r =	1.9 Eq 29.4-2		
L	59.625 in	A_f	20.9 SQ FT		
v	45.875 in			Clips:	
		F_h=q_h*(GC_r)	190.2 lb/sq ft	# screws on upwind side	6
Veight	400 lbs	F min (lb/sq ft)	16 ASCE7, section 29.8	# screws per short side	0
		F_h=q_h*(GC_r)*A_f =	3968 lb		
				0.6W+0.6D	
/_ult	186 mph	F_v=q_h*(GC_r)*A_r			313.2 LB uplift/screw
ASD	144.1 mph	GC r=	1.5 Eq 29.4-3		
				1/4" SMS	, w 16ga steel
				against h	ead and 16ga
Risk Category	III	A_f	19.0 SQ FT	not agair	st
Exposure	D			ANCHOR ALLOWABLE TENSION	191 LBS
		Fv=qh*(GCr)	150.2 lb/sg ft	ANCHOR ALLOWABLE SHEAR	463 LBS
z	1.33 Table 29.3-1 (65 ft elev.)	F min (lb/sq ft)	16 ASCE7, section 29.8		
 . d	0.85 ASCE7, table 26.6-1	F v=q h*(GC r)*A f=	2852.8 lb	Anchor installed horizontally (uplift loads h	ardware in shear)
_ zt	1	/ _		Anchor Combined loading value	
-				0.46 must be less than o	r=to 1
a z=0.00256*K z*K zt*K d*V^2 (lb/saft)				Anchor is OK	
. 7=	100.1 nsf				

Typical Base of Clip to concrete/metal tie down (metal and ground calculation similar, see Anchor Table for values):

Totals at Base of clip into concrete:		Totals at Base of clip into concrete:	
Concrete anchor:		Concrete anchor:	
# anchors on upwind side	5	# anchors on upwind side	3
# anchors per short side	0	# anchors per short side	0
0.6W+0.6D		0.6W+0.6D	
	342 LB uplift/anchor]	571 LB uplift/anchor
Shear at base		Shear at base	
# anchors	10	# anchors	6
	238.1 LB shear/anchor		396.8 LB shear/anchor
Simpson Wedge-all Anchor, 2500psi		Simpso	n Wedge-all Anchor, 2500 psi
3/8" ai	chors, 1.75" embed	3/8" an	chors, 2.625" embed
ANCHOR ALLOWABLE TENSION	472.5 LBS	ANCHOR ALLOWABLE TENSION	970 LBS
ANCHOR ALLOWABLE SHEAR	570 LBS	ANCHOR ALLOWABLE SHEAR	1055 LBS
Anchor installed vertically (uplift loads hardv	are in tension)	Anchor installed vertically (uplift loads ha	rdware in tension)
Anchor Combined loading value		Anchor Combined loading value	
0.82 must be less than	or = to 1	0.61 must be less than	or = to 1
Anchor is OK		Anchor is OK	



cs	X, # ANCHORS PER LONG SIDE	Y, # TOTAL ANCHORS
SIMPSON .25" LONG 75" IN 2500PSI	5	10
Simpson .25" Long 75" in 2500psi • Ground	2	4
BOLT SAE GR5 UT	2	4
DIA. NCHOR, 3.5" O OF 2.625" IN E	3	6

Anchor Spe

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Sealed and the signature must be verified on any electronic copies. Samuel Martin, P.E. FL PE# 69293 SRM Mechanical Design, Inc. FL CA# 32380 20197 NE 16th PL Miami, FL 33179 bel 305-318-5883					
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Rational Analysis: Worst case is -14 (chassis 4a) 59-5/8" x 45-7/8" x 50-3/8" tall.

Design Pressures complying to FBC Building 1620.6 (HVHZ): V = 186 mph (Risk Cat. III), For Exp.Cat. "D" and Z = 65 ft, K_z = 1.33, K_{zt} = 1.0, K_d = 0.85 q_z = .00256K_zK_{zt}K_dV² = 100.12 lb/ft² Using 1620.6, Lateral Wind Pressure= W_L = q_z(1.9) = 190.2 lb/ft² Uplift Wind Pressure= U_I = q_z(1.5) = 150.2 lb/ft²

Factoring in the required Load Combination factor (0.6): Design Lateral Pressure (ASD) = $W_L(0.6) = 114.1 \text{ lb/ft}^2$ Design Uplift Pressure (ASD) = $U_L(0.6) = 90.1 \text{ lb/ft}^2$

Positive pressure acts toward the surface being considered and negative pressure acts away, only the negative pressure will remove a panel from the machine.

22 ga. panels and columns are fastened together and to 16 ga. base rails using #10 serrated washer head self piercing screws having 0.425" head diameter, 0.19" nominal diameter, and 0.14" minor diameter. These screws are expected to exhibit the following properties based upon ICC-ES Report ESR-2196:

Pullout Strength in 22 ga. = 306 lbs (ultimate) Pullover strength of 22 ga. = 828 lbs (ultimate) Shear Strength in 22 ga. = 684 lbs (ultimate)

Pullout Strength in 16 ga. = 450 lbs (ultimate - based upon 18 ga.) Shear Strength in 16 ga. = 927 lbs (ultimate - based upon 18 ga.)

Components and Cladding:

"Top Cover" (38AU50008):

54.7" x 44.5" draw formed 20 GA. cover, anchored at all corners with (8) cover-post screws. and along the edges with (5) cover-panel screws. The top cover also has (2) 22.4" dia. holes, reducing the total area. The overturning moment across the unit, applied to the comer post screws (2), created the highest load approximation given the uplift pressures applied to the top cover. The individual screw load calculation simplifies to dividing total uplift load by 4.

OK for components and cladding

Total Area = 17.8- 5.5 = 12.3 sq.ft. Uplift Load = 12.3 (90.1) = 1108.2 lbs Screw Load= 1108.2/4 = 277 lbs Safety Factor = 684/277 = 2.5x

"Side Panel" (38AU500030):

32.8 "x 45.7" draw formed 22 GA. panel, anchored at edges with (13) screws, as follows:
(4) screws through top panel at top, perpendicular to face
(4) screws along the right vertical edge, perpendicular to face
(4) screws at 7/16 inch above bottom edge through panel into base rail. perpendicular to face
(1) screw through left flange, parallel to face
(1) screw through left flange, parallel to face
(2) Area = 10.2 sq.ft.
Load= 10.2 (114.1) = 1164 lbs
Screw Load (12 screws, 1 in shear)= 1164/12 = 97 lbs
Safety Factor = 351/97 = 3.6
OK for components and cladding

FIELD MODIFICATION NOTES:

- 1. INSTALL 5"X5"X 12 GA THICK GALVANIZED REINFORCING ANGLE TO CORNER AS SHOWN. TOP OF ANGLE WITH NOTCH TO BE INSTALLED UNDER TOP COVER OF UNIT.
- 2. INSTALL QTY. (5) 1/4" DIAMETER SHEETMETAL SCREWS PER LEG OF ANGLE. QTY (20) TOTAL. SCREWS TO HAVE CORROSION RESISTANT COATING SUITABLE FOR THE LOCATION. COASTAL INSTALLATIONS REQUIRE HOT DIP GALVANIZED OR STAINLESS STEEL SCREWS.
- 3. IT IS OWNER'S RESPONSIBILITY TO ENSURE THAT ALL MANUFACTURER'S SCREWS, PANEL SCREWS, AND REINFORCING ANGLE SCREWS ARE IN PLACE AS PART OF THEIR PERIODIC MAINTENANCE AND HURRICANE PREPARATION PLANS.
- 4. IT IS OWNER'S RESPONSIBILITY TO ENSURE THAT UNIT AND SCREWS ARE MAINTAINED AND DO NOT CORRODE OVER TIME.

Components and Cladding (continued):

"Outdoor Panel" (48TM501190):
45.49" x 11.55" draw formed 22 GA. panel, anchored with (8) screws, as follows:
(1) screws through top panel and into face at the top, perpendicular to face
(4) screws along the left vertical edge of flange
(1) screw 7/16 inch above bottom edge through panel into base rail
Area= 3. 7 sq .ft.
Load= 3.7 (114.1) = 422.2 lbs
Screw Load = 422.2/8 = 52.8 lbs
Safety Factor= 351/52.8 = 6.65
OK for components and cladding

"Access Panel" (38AU500061): 42.60" x 45.00" draw formed 22 GA. panel, trapped inside "Top Cover" (38AU50008) anchored by face; and (3) screws at 7/16 inch above bottom edge through panel into base rail, perpendicular to the panel and will be used in the load calculation:

Area = 13.3 sq.ft. Load = 13.3 (114.1)/2 = 758.8 lbs Screw Load= 758.8/5 = 151.8 lbs Safety Factor = 306/151.8 = 2.0x

OK for compo

Unit Construction:

Unit with Field Modifications shown below and all manufacturer's screws properly installed will with satisfy Miami-Dade BORA interpretation of 2018.

For connection of unit base rails to properly designed metal stand, or structural concrete (by ot

See drawing 24008-1 for Tie-down details.



	SERVICE DESIGN
(2) screws along each vertical edge, perpendicular to o face; of which, (5) screws subtending the lower half of onents and cladding hstand wind loads imposed by the design conditions and hers):	ENGINEER: DIGITAL SEAL EMBLEM ON PAGE 1. NOT NEEDED HERE FOR MULTIPAGE PDF FILE. Samuel Martin, PE, State of Florida, Professional Engineer, License No. 69293. This item has been digitally signed by Samuel Martin, PE on date as shown on timestamp above. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.
	Samuel Martin, P.E. FL PE# 69293 SRM Mechanical Design, Inc. FL CA# 32380 20197 NE 16th PL Miami, FL 33179 tel: 305-318-5883 e-mail: sales@srmmech.com REVION HISTOR: PEVION HISTOR:
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