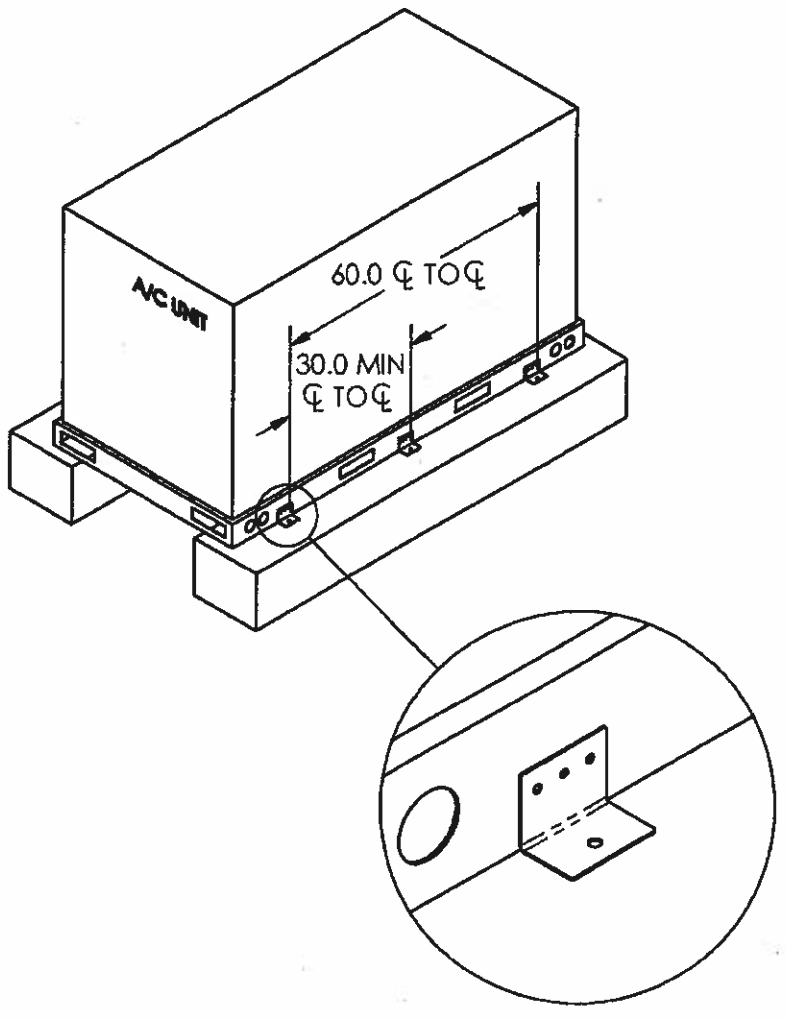
Mounting to Concrete or Stand



DETAIL A
SCALE 1 : 5

QTY. 3 -1/4" SDSM
SCREWS AND WASHERS
PER BRACKET, (6) BRACKETS

QTY. 1 - 3/8" SAE GR5 bolts, nut and washer per bracket into properly designed Metal Stand (by others)
or
QTY. 1 - 3/8" Powers Wedge-Bolt+ anchor per bracket into minimum 2000psi concrete (by others), as follows:
- 2-1/8" min embed
- 2-3/4" edge distance
- 2-1/2" min spacing

CARRIER Chassis 6a:

Models: 38AUD, AUZ, and AUQ size 16

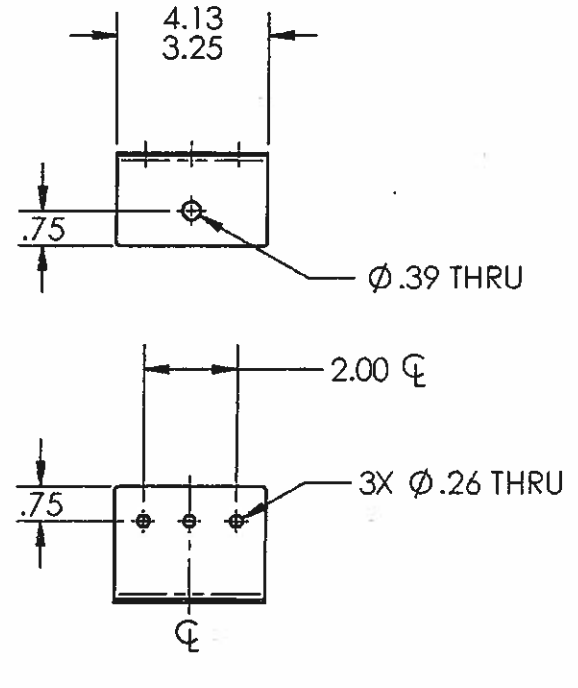
Each condenser unit listed above conforms to the Florida Building Code 6th Edition (2017) requirements for installation including High Velocity Hurricane Zone (HVHZ), Risk Category III/IV (V = 186 MPH), exposure category "D", and installation height up to and including 65 feet above grade.

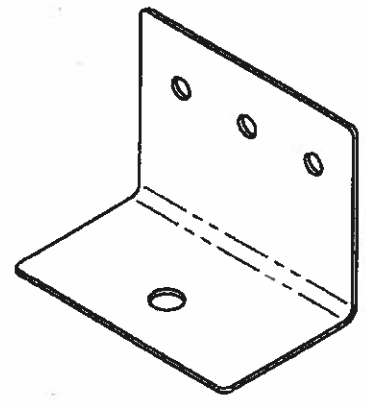
Worst case is -16 (chassis 6) 86-3/8" x 44-1/8" x 50-3/8" tall.

ALLOWABLE DESIGN PRESSURES FOR THE UNIT ITSELF:

Design Lateral Pressure = 197.2 psf
Design Uplift Pressure = 95.4 psf

Unit itself will withstand wind loads imposed by 197.2 psf lateral and 95.4 psf uplift design pressures, provided the 16 gage galvanized base rails are fastened to a properly designed concrete slab, metal stand, curb, curb adapter, or other suitable mounting arrangement and all factory supplied assembly fasteners are in place.





ISOMETRIC VIEW

MATERIAL: GALVANIZED STEEL OR APPROVED EQUIVALENT
DESCRIPTION: 16 GA., 90 DEG. BRACKET

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Job No: Carrier Condenser Units
Title: Model List and Details
Job No: Chassis 6A
04-17-20
Created by:
S1

Rational Analysis: 15 TON Chassis 6A
86-3/8" x 45-1/8" x 50-3/8"

Design Pressures complying to FBC Building 1620.6 (HVHZ):
V = 186 mph (Risk Cat. III/IV)
Exposure Category "D"
Z = 65 ft, Kz = 1.33, Kzt = 1.0, KD = 0.90
Qz = .00256 Kz Kzt KD V^2 = 106.0 psf

Lateral Wind Pressure = WL = Qz (3.1) = 328.6 psf
Uplift Wind Pressure = UL = Qz (1.5) = 159.0 psf
Design Lateral Pressure = WL(0.6) = 197.2 psf
Design Uplift Pressure = UL (0.6) = 95.4 psf

Lateral Positive Design Pressure = 197.2 (0.8) / (0.8 + 0.5) = 121.3 psf (Worst Case Positive)
Lateral Negative Design Pressure = 197.2 (0.5) / (0.8 + 0.5) = 75.8 psf
Sidewall Negative Design Pressure = 197.2 (0.7) / (0.8 + 0.5) = 106.2 psf (Worst Case Negative)

22 GA. posts, 20 panels, the 18 GA. cover, and 16 GA. base rails are fastened together, using #10-12 serrated washer, self-tapping 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 (22 GA.) = 306 lbs (ultimate)
Pullout Strength (20 GA.) = 351 lbs (ultimate)
Pullout Strength (18 GA. min.) = 450 lbs (ultimate)
Shear Strength (22 GA.) = 684 lbs (ultimate based on 22 GA. in-contact)
Shear Strength (20 GA.) = 684 lbs (ultimate based on 22 GA. in-contact)
Shear Strength (18 GA.) = 723 lbs (ultimate based on 22 GA. in-contact)
Shear Strength (16 GA.) = 927 lbs (ultimate based on 18 GA. in-contact)

Components and Cladding:

"Top Cover" (38AU500072):
85" x 43.4" draw formed 18 GA. cover, with (3) large holes, anchored with (15) screws:
(8) cover-post screws at all corners by 22 GA. posts
(7) cover-panel screws along (3) edges by 20 GA. panels
The overturning moment across the unit, applied to the corner post screws (2), created the highest load approximation given the uplift pressures and number of screws applied to the top cover. The individual screw load calculation simplifies to dividing the total uplift load by 4.

Total Area = 25.6 sq.ft. – 8.3 sq.ft. = 17.3 sq.ft.
Uplift Load = 17.3 (95.4) = 1653.9 lbs
Screw Load = 1653.9/4 = 413.5 lbs
Safety Factor = 723/413.5 = 1.7x OK for components and cladding

"Center Post" (38AU500075):
3.2" x 45.4" draw formed 20 GA. panel anchored at edges with (11) screws, as follows:
(2) screws through top cover into top cover, perpendicular to face
(1) screws through left vertical edge through flange, perpendicular to face
(2) screws through right vertical edge through flange, perpendicular to face
(2) screws at 7/16 inch above bottom edge through panel into base rail
Area = 1.01 sq.ft.
Load = 1.01 (106.2) = 107.1 lbs
Screw Load = 107.1/7 = 15.3 lbs
Safety Factor = 351/15.3 = 23.0x OK for components and cladding

"Access Panel" (50HE500376):
4.5" x 43.1" draw formed 20 GA. panel anchored at edges with (4) screws, as follows:
(2) screws through top panel and into face at the top
(2) screws at .35 inch above bottom edge through panel into base rail
Area = 1.3 sq.ft.
Load = 1.3 (106.2) = 143.0 lbs
Screw Load = 143.0/4 = 35.8 lbs
Safety Factor = 351/35.8 = 9.8x OK for components and cladding

"Front Panel" (38AU500078):
43.2" x 45.1" draw formed 20 GA. panel, anchored at edges with (7) screws, as follows:
(2) screws through each vertical edge through flanges, perpendicular to face
(3) screws at 7/16 inch above bottom edge through panel into base rail
Top edge of "Front Panel" is trapped inside the "Top Cover" (38AU500072), the bottom subtends the lower half of the panel, and the failure criterion along the bottom edge yields (5) screws for load consideration.

Half Area = 6.8 sq.ft.
Load = 6.8 (106.2)/2 = 718.3 lbs
Screw Load = 718.3/4 = 143.7 lbs
Safety Factor = 351/143.7 = 2.4x OK for components and cladding

The remaining panel (38AU500079) "Outdoor Panel" has less area and greater fastener quantity and openings limiting negative pressure effects for increased safety factor.

Connection of upper frame and panels to base rails:

The total overturning moment applied across the width of the base rails, to the (10) rail-panel screws shear capacity, 20 GA. (min) cladding into 16 GA. base rails, is the load approximation chosen in order to maximize design calculation variables for increased safety factor – (8) rail-post screw capacity neglected.

Connection of 20 GA. panels to 16 GA. (min) rails around the perimeter:
Screw Load = (208,395 + 58,285)/10(45.1) = 461.8 lbs (shear) per screw
Safety Factor = 1119/(461.8) = 2.4x OK for components and cladding

Unit itself will withstand wind loads imposed by 197.2 psf lateral and 95.4 psf uplift design pressures provided the 16 GA. galvanized base rails are fastened to a properly designed concrete slab, metal stand, curb, curb adapter, or other suitable mounting arrangement with all factory supplied assembly fasteners at the proper torque.

Connection of unit base rails to properly designed Metal Stand or Concrete:

Metal Stand or Concrete Connection:
Using (3) brackets, 2-1/2" x 2" x 3-1/4 - 4-1/8" wide, 16 GA. (min), spaced 30.0" (min) on-center into base rails,
Using (3) screws per bracket, (3) brackets each long side:
Screw Load = 5959/(18) = 331.1 lbs (tension)
Safety Factor = 573/331.1 = 1.7x (tension) OK for components and cladding
Screw Load = (150,110 + 46,235)/(3)(3)(45.13) = 483.4 lbs (shear)
Safety Factor = 1389/483.4 = 2.9x (shear) OK for components and cladding

Metal Stand Fasteners:
Using (3) brackets, 2-1/2" x 2" x 3-1/4 - 4-1/8" wide, 16 GA. (min), spaced 30.0" (min) on-center into base rails:
Using (1) 3/8" SAE GR5 bolt/washer per bracket, (3) brackets each long side:
Bolt Load = (150,110 + 46,235)/(1)(3)(45.13) = 1371.3 lbs (tension)
Bolt Load = 5959/(3)(2) = 993.2 lbs (shear)
Safety Factor = 3720/1371.3 = 2.7x (tension) OK
Safety Factor = 1937/993.2 = 2.0x (shear) OK

Concrete Fasteners:
Using 2000psi (min) concrete, 4" (min) thick (by others),
Using (1) 3/8" Powers Wedge-Bolt+ anchors, (3) brackets each long side:
Bolt Load = (150,110 + 46,235)/(1)(3)(45.13) = 1371.3 lbs (tension)
Bolt Load = 5959/(6) = 993.2 lbs (shear)
Safety Factor = 3000/1371.3 = 2.2x (tension) OK
Safety Factor = 3100/993.2 = 3.1x (shear) OK

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Job No: Carrier Condenser Units
Title: Model List and Details
Job No: Chassis 6A
04-17-20
Created by:
S2