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Technical Evaluation Report

DIVISION: 23 08 00–COMMISSIONING OF HVAC

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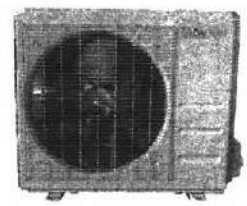
Subject to Renew January 1, 2021 or next code cycle change)

EVALUATION SUBJECT: **DAIZUKI DX SERIES MINI SPLIT SYSTEMS** TER-19-18112

REPORT HOLDER:
EVERWELL PARTS INC.
10914 NW 33RD ST #100
MIAMI, FL 33172, USA
305-406-2331 | EVERWELLPARTS.COM

Florida Building Code Sixth Edition (2017)



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.

This Product Evaluation Report is being issued in accordance with the requirements of the **Florida Building Code Sixth Edition (2017)** per FBC Section 104.11.1, FMC 301.15, FBC Building Ch. 16, ASCE-7-10, FBC Existing Building sections 707.1, 707.2, FBC Building 1522.2, and FBC Residential M1202.1, M1301.1, FS 471.025, including Broward County Administrative Provisions 107.3.4. 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 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:

- Maximum allowable unit panel wind pressure connection integrity
- Maximum allowable uplift, sliding, & overturning moment for ground and roof applications

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

INSTALLATION:
The product(s) listed above shall be installed in strict compliance with this TER & manufacturer-provided model specifications.
The product components shall be of the material specified in the manufacturer-provided product specifications. All screws must be installed in accordance with the applicable provisions & anchor manufacturer's published installation instructions.

LIMITATIONS & CONDITIONS OF USE:
Use of this product shall be in strict accordance with this TER as noted herein. See final page for complete limitations and conditions of use.

INSTALLATION:
Shall follow manufacturer specifications as well as information provided herein.

FINISH:
Baked enamel, casing color white ivory.

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

UNIT CASING MATERIAL:
19 ga galv. sheet steel equivalent to ASTM A653 CS Cold Rolled Steels. Removable top & side covers secured with #8 SAE diam 1016 SMS screws.
Knockouts provided for utility & control connections.

OPTIONS:
This evaluation is valid for all DAIZUKI models that appear in the table located on the final page of this report.

STRUCTURAL PERFORMANCE:
Models referenced herein are subject to the following design limitations:
ASCE-710 Exposure Categories C
Up to and including 175mpha (Vult) for up to 200' MRH**. HVHZ***
Up to and including 170mph (Vult) for up to 250' MRH**. HVHZ***
Up to and including 200mph (Vult) for up to 53' MRH**. Non-HVHZ***
Exposure Categories D
Up to and including 175mph (Vult) for up to 60' MRH**. HVHZ***
Using 200' retrofit per corresponding group
Ground or Roof Application per installation instructions
**Mean Roof Height ***High Velocity Hurricane Zone

Maximum Rated Wind Pressure:

119psf Lateral 93psf Uplift (ASD)

Site specific wind analysis may produce alternate limitations provided maximum

ABOUT THIS DOCUMENT:

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December 2, 2019

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

If Signed by If Checked:
Gordon DiBattisto, PE
FL PE #82328

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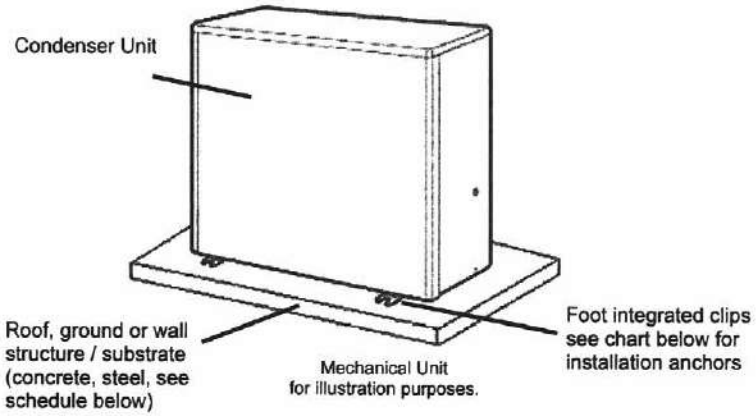
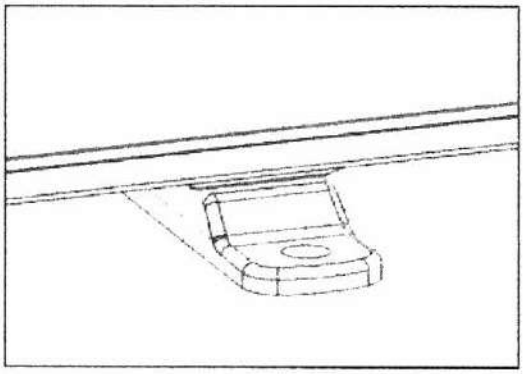
SECTION 2 PRODUCT INSTALLATION





UNIT INTEGRATED FOOT

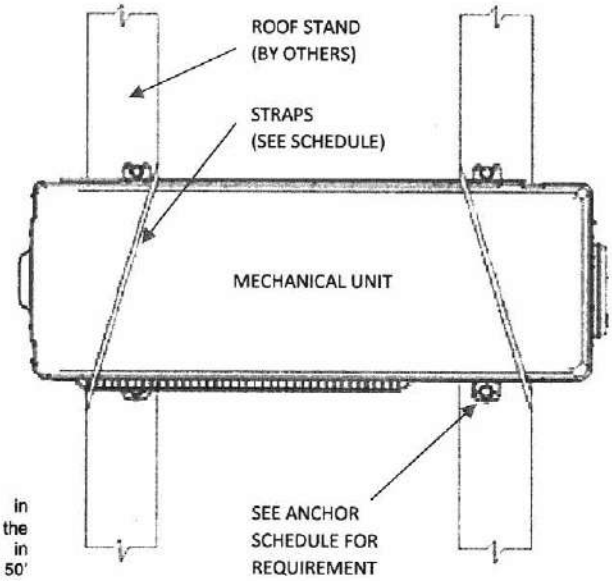
Equivalent to ASTM A653 galvanized cold rolled steel 0.08" thick; fasten cabinet using Anchor from Anchor Schedule to Host Structure Table and SAE GR5 ASTM-A449 OD 1" washer & nut to secure anchor to supporting structure. (Figure for illustration purposes)

ANCHOR SCHEDULE TO HOST STRUCTURE

Cabinet	Ground or Roof Height*	Anchor Type		
		Concrete	1/8" Min A36 Steel	1/8" Min 6061-T6 Aluminum
All unit models	Ground	A / C	NA	NA
	50' (65')	NA	B	B
	120' (150')	NA	B	B
	200' (250')	NA	B	B

Anchor Types to Host Structure:

A. - 1/4" ELCO ULTRACON SS4 Anchor embedded 1-3/4" in 3,000 psi concrete. 2-1/2" from edge minimum.
B. - 3/8" -16 UNC SAE Grade 5 screw minimum 1/2" from edges with nut and washer specified, for integrated foot installed at roof.
C. – 1/4" DeWalt Screw Bolt embedded 2" into 3000 psi concrete, 2" edge distance minimum.
NA. – NOT APPLICABLE



SUPPORTING STRUCTURES:

- METAL STAND.
- CONCRETE SLAB.
- WALL BRACKET.
- METAL CURB.

TIE-DOWN STRAP AND CLIP SCHEDULE

Cabinet	Ground or Roof Height*	Number of Straps	Minimum WLL per Strap (lbs)
All unit models	Ground	NA	NA
	50' (65')	2	500
	120' (150')	2	500
	200' (250')	2	500

*The value shown in parentheses indicates the allowable roof height in 170mph conditions. i.e. 50' (65') indicates an allowable roof height of 50' for 175mph or 65' for 170mph Vult.

Tie-down Strap Type:
(for roof applications)

Working Load Limit (WLL) per strap's manufacturer - specified per strap, strap length shall be verified on site for all cabinets.
NA. - No straps required

Note:
Tie-down straps shall be wrapped around unit and roof stand rail, and shall be tightened using the buckle. Provide two straps per unit.
Straps material shall be high strength webbing and shall be compliant for exterior grade use if they contain plastic components, per FBC chapter 26. Select strap from table based on WLL requirements

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.

SECTION 3 SUPPORTING CALCULATIONS & SUMMARY

FORCES SUMMARY

Cabinet	Ground or Roof Height*	Lateral Pressure (psf)	Uplift Pressure (psf)	Max Large Side Force (lbs)	Max Large Side Overturn (lbs-in)	Max Large Side Tension (lbs)	Max Short Side Force (lbs)	Max Short Side Overturn (lbs-in)	Max Short Side Tension (lbs)	Max Uplift Force (lbs)
Model # DX36C426H*	Ground	52.3	41.2	323.5	8265.2	469.0	187.0	6182.8	122.9	127.9
	50' (65')	89.4	70.6	553.1	14136.4	832.7	319.6	10582.7	241.1	219.1
	120' (150')	106.5	84.1	658.9	16840.2	1000.3	380.7	12606.8	295.4	261.0
	200' (250')	118.3	93.4	731.7	18701.0	1115.5	422.8	13999.8	332.8	289.8

*Note: Forces Summary based on largest unit model for worst case scenario. See table on page 4 for all approved unit models.

PANEL INTEGRITY SUMMARY

Cabinet	Ground or Roof Height*	Panel Name	Required Wind Pressure (lb/ft²)	Force on Panel (lbs)	Additional Screw Qty Needed (pcs)	Additional screws required beyond original manufactured cabinet
Model # DX36C426H*	Ground	TOP PANEL	41.2	127.9	0	Yes
		PANEL A	52.3	323.5	1	
		PANEL B	52.3	187.0	0	
		PANEL C	52.3	56.1	0	
	50' (65')	TOP PANEL	70.6	219.1	0	Yes
		PANEL A	89.4	553.1	2	
		PANEL B	89.4	319.6	0	
		PANEL C	89.4	95.9	0	
	120' (150')	TOP PANEL	84.1	261.0	0	Yes
		PANEL A	106.5	658.9	2	
		PANEL B	106.5	380.7	0	
		PANEL C	106.5	114.2	0	
	200' (250')	TOP PANEL	93.4	289.8	0	Yes
		PANEL A	118.3	731.7	3	
		PANEL B	118.3	422.8	0	
		PANEL C	118.3	126.8	0	

*Note: Forces Summary based on largest unit model for worst case scenario. See table on page 4 for all approved unit models and panel name designations. Screws shall be equally spaced along bottom edge of panel specified.

ELEVATIONS & DIMENSIONS

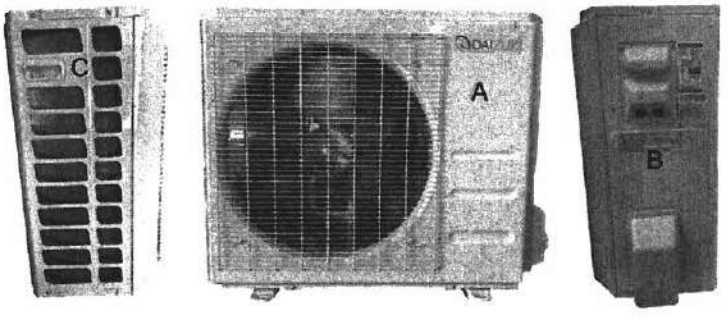
Model #	Width (in)	Depth (in)	Height (in)	Weight (lbs)
DX09C416H-19	30.31	11.81	21.85	66.80
DX12C416H-19	31.50	13.11	21.81	70.33
DX09C426H-19	30.31	11.81	21.85	50.00*
DX12C426H-19	31.50	13.11	21.81	67.00
DX18C426H-19	31.50	13.11	21.81	50.00*
DX24C426H-19	33.27	14.29	27.64	50.00*
DX36C426H-19	37.24	16.14	31.89	143.74

*Note: Minimum unit weight listed. Max weight shall not exceed 200 lbs.

UNIT PANELS

Images for illustration purposes,
actual units may differ.

TOP PANEL



LIMITATIONS & CONDITIONS OF USE:

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 codes must be considered, where applicable. All supporting components which are permanently installed shall be protected against corrosion, contamination, and other such damage at all times. 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 which typically are not required for this type of product.
All of the wind resisting exterior panels, individually meet or exceed their capacity to resist the design wind loads as stated in the calculations as required by the FBC. 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. Yearly inspections, during equipment maintenance or after named storm, all screws, cabinet components, clips and anchor bolts are to be verified by the A/C contractor. All damaged cabinet components, loose, corroded, broken tech screws or anchor bolts shall be replaced to ensure structural integrity for hurricane wind forces.

Note: Calculations performed according to the information provided by the Client. Screw quantities were checked to reinforce unit panels as needed. They shall be spaced evenly at the panel bottom, validating that the screw joins the panel with the panel and base pan. Panel integrity is optional and at discretion of AHJ.