

Miami-Dade Qualified Wind-Driven Rain Louver

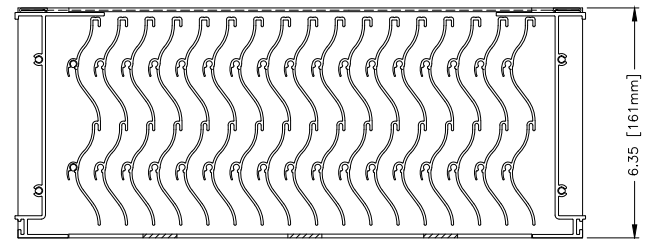
Application and Design

EVH-660D is a Florida Product Approved and Miami-Dade Qualified stationary vertical blade wind driven rain extruded aluminum louver designed to protect air intake and exhaust openings in building exterior walls. EVH-660D is tested in accordance with AMCA 500-L Air Performance, Water Penetration and Wind Driven Rain. EVH-660D is tested in accordance with AMCA 540 Test Method for Louvers Impacted by Wind Borne Debris (Basic Protection, Missile Level D and Enhanced Protection, Missile Level E). EVH-660D is tested in accordance with AMCA 550 Test Method for High Velocity Wind Driven Rain Resistant Louvers. EVH-660D is licensed to bear the AMCA seal allowing design professionals to select and apply with confidence. EVH-660D is tested and qualified per the following Florida test protocols: TAS 201 (Large Missile Impact), TAS 202 (Uniform Static Air Pressure), TAS 203 (Cyclic Wind Loading) and TAS 100A (Wind Driven Rain). Per Miami-Dade EVH-660D may be installed in locations where the room behind the louver is NOT designed to drain water penetrating into the room or the room will house non-water resistant or water proof equipment components or supplies.



HIGH VELOCITY RAIN
 RESISTANT WITH BLADES
 FULLY OPEN AND
 IMPACT RESISTANT LOUVER
 Enhanced Protection Level E
See www.AMCA.org for all certified or listed products

This label does not signify
 AMCA airflow performance
 certification.

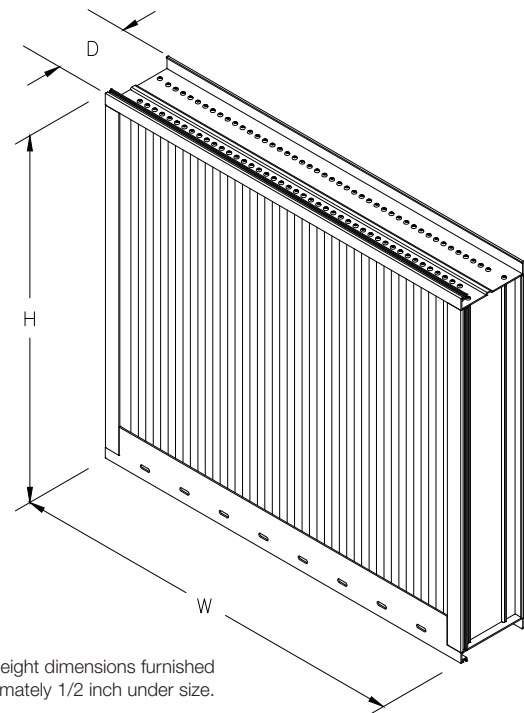


Standard Construction

- Frame** Heavy gauge extruded 6063T5 aluminum, 6 in. x 0.095 in. nominal wall thickness
- Blades** Vertical rain resistant design, heavy gauge extruded 6063T5 aluminum, 0.063 in. nominal wall thickness, positioned on approximately 0.75 in. centers
- Construction** Mechanically fastened
- Birdscreen** 3/4 in. x 0.051 flattened expanded aluminum removable frame, inside mount (rear)
- Finish** Mill
- Anchor Clips** Heavy gauge extruded aluminum, mill finish, continuous mounting angels (head and sill only)
- Minimum Rough Opening Size** 12 in. W x 12 in. H
- Maximum Rough Opening Size** Unlimited W x 120 1/2 in. H
- Maximum Rough Opening Single Section Size** 48 1/2 in. W x 120 1/2 in. H

Options (at additional cost)

- A variety of bird and insect screens
- Blank-off panels
- Extended sill
- Filter racks
- Flanged frame
- Security bars
- Factory attached VCD-40 damper
- A variety of architectural finishes including:
 - Clear anodize
 - Integral color anodize
 - Baked enamel
 - Kynar



*Width and height dimensions furnished approximately 1/2 inch under size.

NOTE: Lifting lugs will be shipped with all units over 10 sq. ft.

PERFORMANCE DATA

EVH-660D

Florida Product Approval No.: 16785.1
 Miami-Dade, FL NOA No.: 17-0807.20 EXP. 10/4/22
 AMCA 540 and 550 Listed
 TDI Approval No.: LVR-07
 Maximum Wind-load: 150 PSF

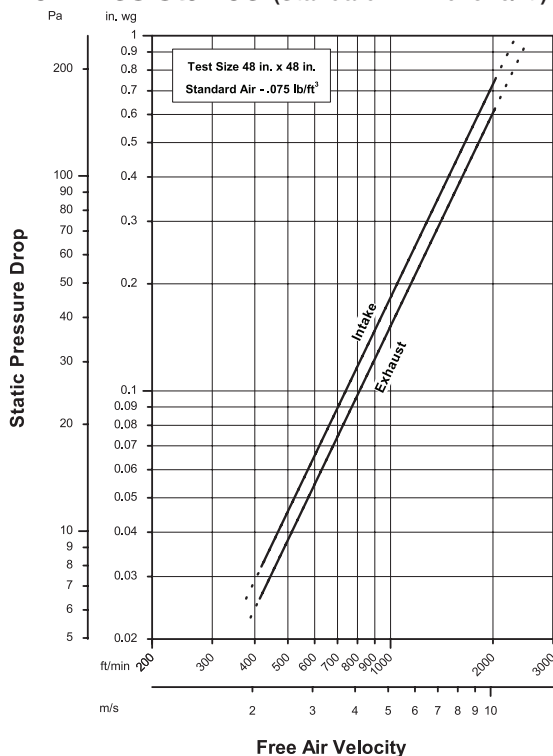
Wind-Driven Rain Performance

75 mm/h (3 in./hr) Rainfall & 13 m/s (29 mph) Wind Velocity				202 mm/h (8 in./hr) Rainfall & 22 m/s (50 mph) Wind Velocity							
Free Area Velocity		Ventilation Air Core Velocity		Water Penetration		Free Area Velocity		Ventilation Air Core Velocity		Water Penetration	
(fpm)	(m/s)	(fpm)	(m/s)	Effective	Class	(fpm)	(m/s)	(fpm)	(m/s)	Effective	Class
0.0 (0)	0.0 (0)				A	0.0 (0)	0.0 (0)				A
0.9 (185)	0.5 (98)				A	0.9 (185)	0.5 (98)				A
1.9 (371)	1.0 (197)				A	1.9 (371)	1.0 (197)				A
2.8 (556)	1.5 (295)				A	2.8 (556)	1.5 (295)				A
3.8 (742)	2.0 (394)				A	3.8 (742)	2.0 (394)				A
4.7 (927)	2.5 (492)				A	4.7 (927)	2.5 (492)				A
5.7 (1113)	3.0 (591)				A	5.7 (1113)	3.0 (591)				A
6.6 (1298)	3.5 (689)				A	6.6 (1298)	3.5 (689)				A
7.5 (1483)	4.0 (787)				A	7.5 (1483)	4.0 (787)				A
8.5 (1669)	4.5 (886)				A	8.5 (1669)	4.5 (886)				A
9.4 (1852)	5.0 (983)	100.0			A	9.4 (1856)	5.0 (985)	100.0			A

Discharge Loss Coefficient Class (Intake) = 2

Weather louvers shall be classified by their ability to reject simulated rain. The table shows different classifications based on the maximum simulated rain penetration per square meter (square feet) of louver. Water penetration rating at a given louver face velocity is determined by the water penetration while the louver is subjected to a selected simulated rainfall rate and wind velocity.

Airflow Resistance (Standard Air - .075 lb/ft³)



Model EVH-660D resistance to airflow (pressure drop) varies depending on louver application (air intake or air exhaust). Free area velocities (shown) are higher than average velocity through the overall louver size. See louver selection information. (Test Figure 5.5-6.5)



Greenheck Fan Corporation certifies that the EVH-660D louvers shown herein are licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 511 and comply with the requirements of the AMCA Certified Ratings Program. The AMCA Certified Ratings Seal applies to air performance, water penetration, and wind-driven rain ratings.



HIGH VELOCITY RAIN RESISTANT WITH BLADES FULLY OPEN AND IMPACT RESISTANT LOUVER
 Enhanced Protection Level E
 See www.AMCA.org for all certified or listed products

This label does not signify AMCA airflow performance certification.

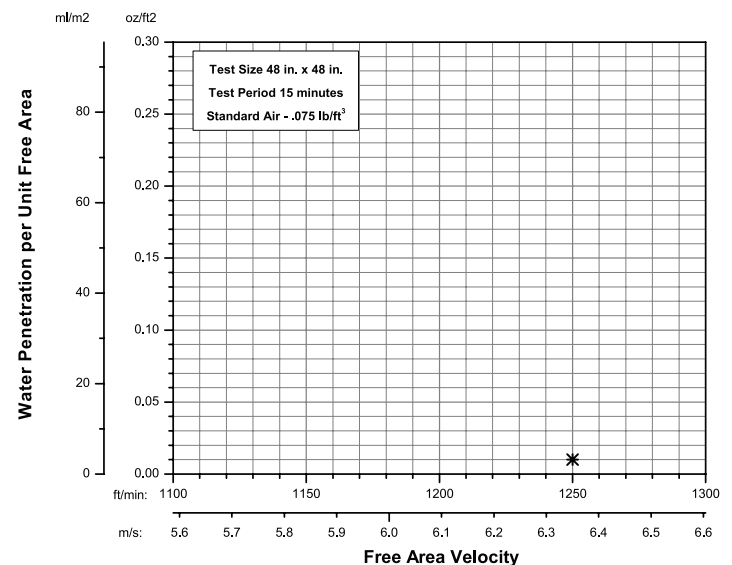
Greenheck Fan Corporation certifies that the EVH-660D louvers shown herein are approved to bear the AMCA Listing Label. The Ratings shown are based on tests and procedures performed in accordance with AMCA Publications and comply with the requirements of the AMCA Listing Label Program. The AMCA Listing Label applies to Wind Borne Debris Impact Resistant and High Velocity Rain Resistant Louvers.

Discharge Loss Coefficient Classifications	
Class	Discharge Loss Coefficient
1	0.4 and Above
2	0.3 to 0.399
3	0.2 to 0.299
4	0.199 and Below

Wind-driven Rain Penetration Classes	
Class	Effectiveness
A	1 to 0.99
B	0.989 to 0.95
C	0.949 to 0.80
D	Below 0.80

Water Penetration

Test Size 48 in. x 48 in. Test Duration of 15 min.



The AMCA Water Penetration Test provides a method for comparing various louver models and designs as to their efficiency in resisting the penetration of rainfall under specific laboratory test conditions. The beginning point of water penetration is defined as that velocity where the water penetration curve projects through 0.01 oz. of water (penetration) per sq. ft. of louver free area. ***The beginning point of water penetration for Model EVH-660D is above 1250 fpm free area velocity.** These performance ratings do not guarantee a louver to be weather-proof or stormproof and should be used in combination with other factors including good engineering judgement in selecting louvers.



PERFORMANCE DATA

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 Maximum Wind-load: 150 PSF

Free Area Chart (sq. ft.)

Louver Height Inches	Louver Width in Inches						
	12	18	24	30	36	42	48
12	0.17	0.34	0.52	0.70	0.88	1.06	1.23
18	0.30	0.63	0.95	1.27	1.60	1.92	2.24
24	0.44	0.91	1.38	1.84	2.31	2.78	3.25
30	0.58	1.19	1.80	2.42	3.03	3.65	4.26
36	0.71	1.47	2.23	2.99	3.75	4.51	5.27
42	0.85	1.75	2.66	3.56	4.47	5.37	6.28
48	0.98	2.03	3.09	4.14	5.19	6.24	7.29
54	1.12	2.32	3.51	4.71	5.90	7.10	8.29
60	1.26	2.60	3.94	5.28	6.62	7.96	9.30
66	1.39	2.88	4.37	5.85	7.34	8.83	10.31
72	1.53	3.16	4.79	6.43	8.06	9.69	11.32
78	1.67	3.44	5.22	7.00	8.78	10.55	12.33
84	1.80	3.73	5.65	7.57	9.49	11.42	13.34
90	1.94	4.01	6.08	8.14	10.21	12.28	14.35
96	2.08	4.29	6.50	8.72	10.93	13.14	15.36
102	2.21	4.57	6.93	9.29	11.65	14.01	16.37
108	2.35	4.85	7.36	9.86	12.37	14.87	17.37
114	2.48	5.13	7.78	10.43	13.08	15.73	18.38
120	2.62	5.42	8.21	11.01	13.80	16.60	19.39

Core Area Chart (sq. ft.)

Louver Height Inches	Louver Width in Inches						
	12	18	24	30	36	42	48
12	0.44	0.73	1.03	1.33	1.62	1.92	2.22
18	0.80	1.35	1.90	2.44	2.99	3.54	4.09
24	1.17	1.97	2.77	3.56	4.36	5.16	5.95
30	1.54	2.59	3.63	4.68	5.73	6.77	7.82
36	1.91	3.20	4.50	5.80	7.09	8.39	9.69
42	2.27	3.82	5.37	6.91	8.46	10.01	11.56
48	2.64	4.44	6.24	8.03	9.83	11.63	13.42
54	3.01	5.06	7.10	9.15	11.20	13.24	15.29
60	3.38	5.67	7.97	10.27	12.56	14.86	17.16
66	3.68	6.19	8.69	11.20	13.70	16.21	18.71
72	4.05	6.81	9.56	12.32	15.07	17.83	20.58
78	4.42	7.42	10.43	13.43	16.44	19.44	22.45
84	4.79	8.04	11.30	14.55	17.81	21.06	24.32
90	5.15	8.66	12.16	15.67	19.17	22.68	26.18
96	5.52	9.28	13.03	16.79	20.54	24.30	28.05
102	5.89	9.89	13.90	17.90	21.91	25.91	29.92
108	6.26	10.51	14.77	19.02	23.28	27.53	31.79
114	6.62	11.13	15.63	20.14	24.64	29.15	33.65
120	6.99	11.75	16.50	21.26	26.01	30.77	35.52



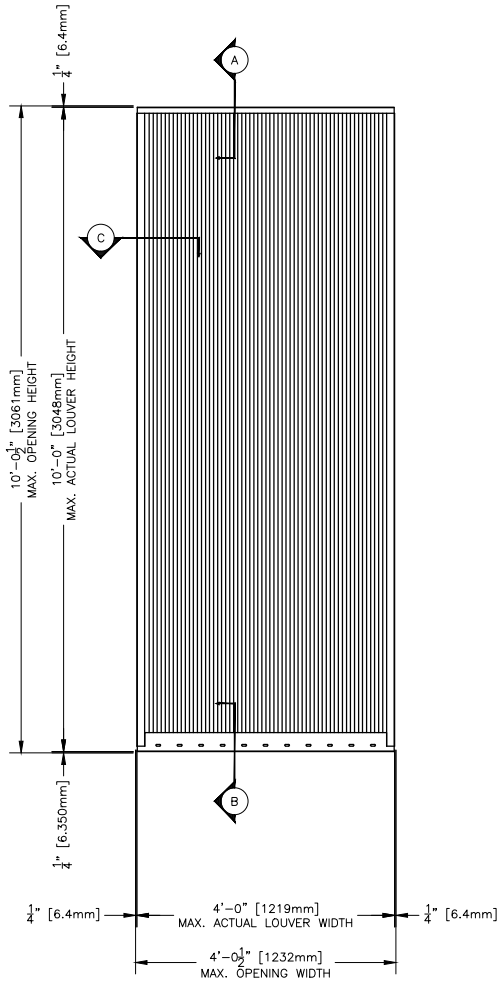
INSTALLATION DETAILS

EVH-660D

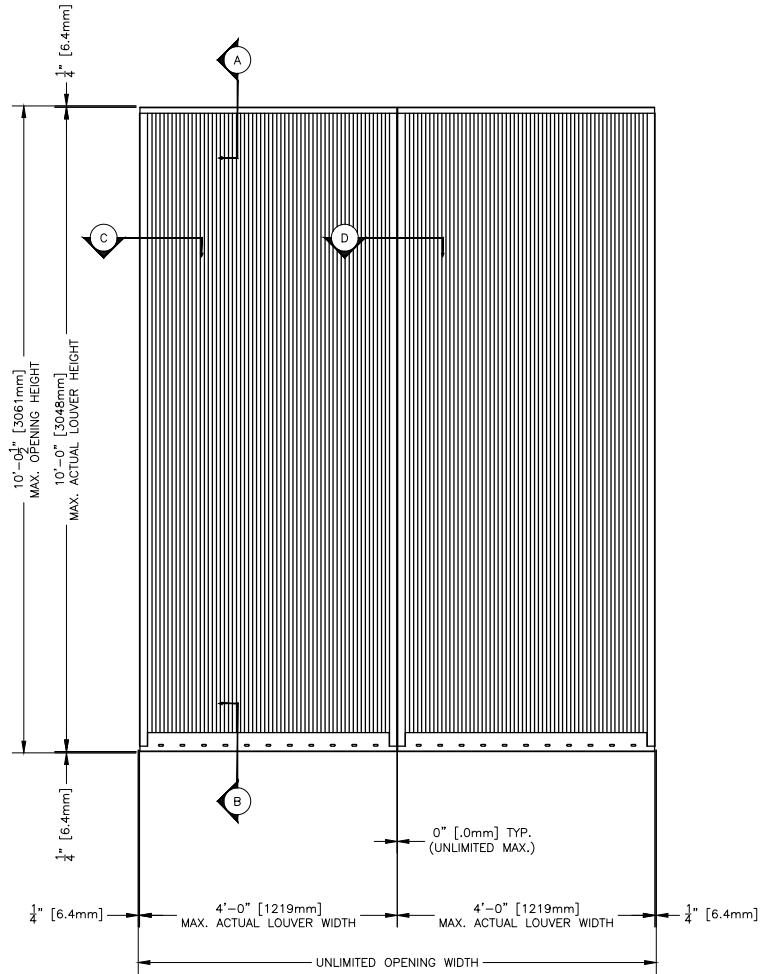
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 Maximum Wind-load: 150 PSF

Maximum Size and Installation Information

Model EVH-660D is a Miami-Dade Qualified and Florida Product Approved louver and must be installed in accordance with the installation instructions shown herein. Model EVH-660D is qualified for installation within concrete/masonry, steel stud, structural steel or wood framed building conditions. Model EVH-660D is structurally calculated to withstand positive and negative wind-loads up to 150 PSF. The maximum single section width is 48 in. The maximum single section height is 120 in. While the maximum section height is limited to 120 in., the width may be unlimited as multiple sections may be installed side by side in accordance with installation instructions. Structural reinforcing members along with any associated installation hardware is not provided by Greenheck unless indicated otherwise by Greenheck. Options and are not subject to structural analysis unless indicated otherwise by Greenheck.



**Minimum
 Rough Opening Size**
 12 in. W x 12 in. H



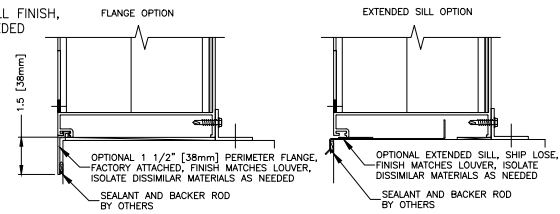
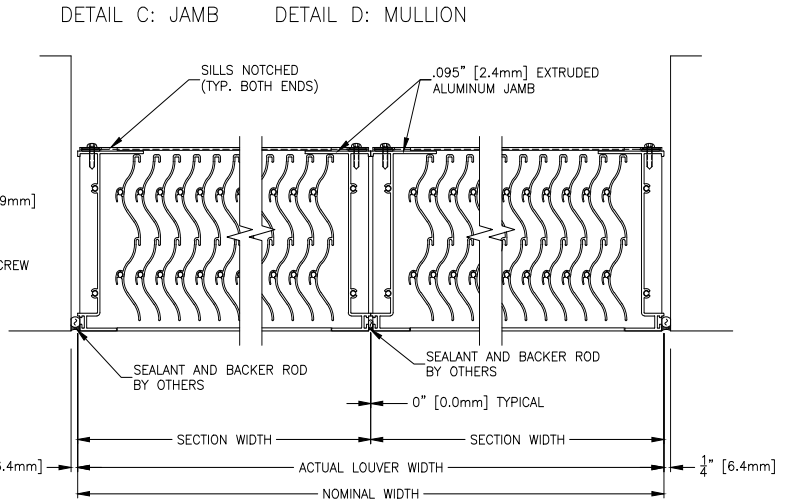
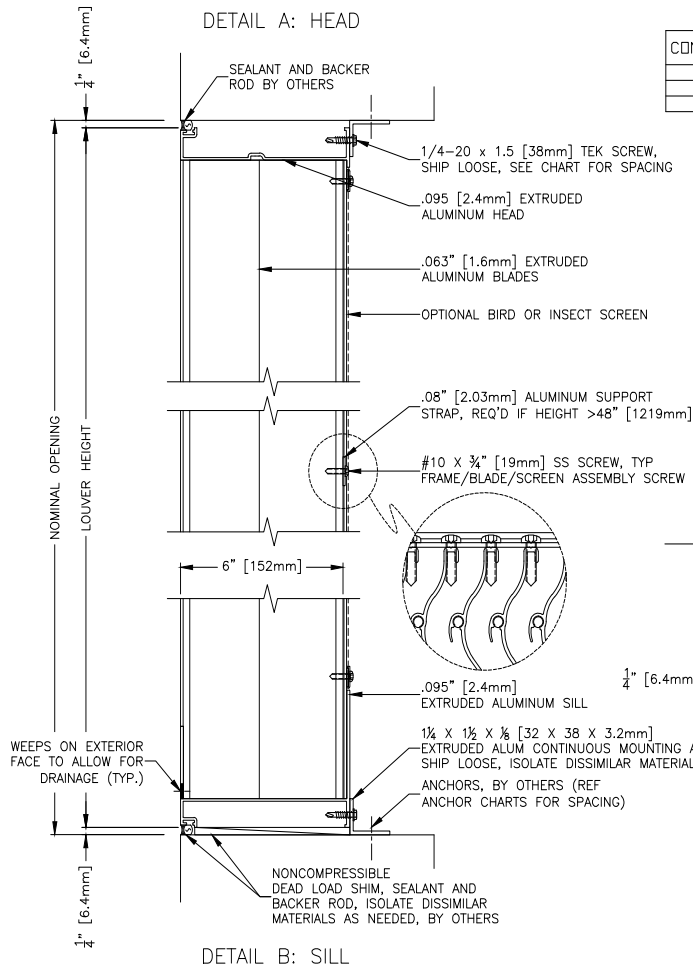
**Maximum Rough Opening
 Single Section Size**
 48 1/2 in. W x 120 1/2 in. H

PRODUCT DETAILS

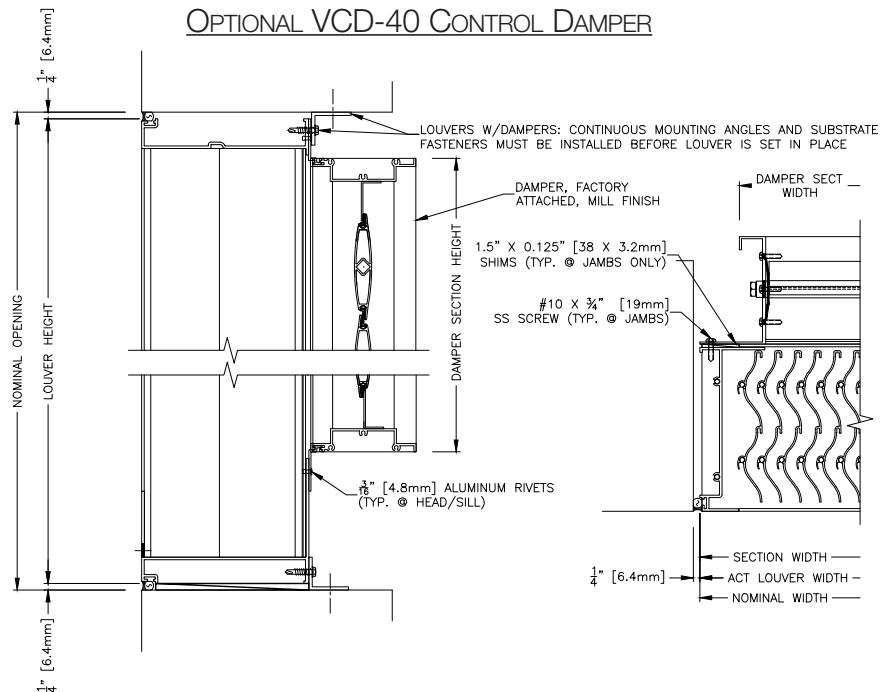
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CONTINUOUS ANGLE TO LOUVER FRAME SCREW	
LOUVER HEIGHT (IN.)	SPACING (IN.)
>84	2
≤84	4



OPTIONAL VCD-40 CONTROL DAMPER



FASTENER CHART

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CONCRETE OR CMU ANCHORING			
1/4" TAPCON SCREW FASTENER TABLE			
DESCRIPTION	1/4" TAPCON		
SUBSTRATE	CONCRETE OR CMU (GROUT FILLED)		
MINIMUM	3.192 KSI CONCRETE OR 3.192 KSI GROUT		
EDGE DISTANCE <MIN>	1 IN	1 1/2 IN	2 1/2 IN
PENETRATION <MIN>	1 3/4 IN		
LOUVER HEIGHT <IN>	SPACING <IN>		
>108 & ≤120	2	2	4
>96 & ≤108		4	
>72 & ≤96		4	6
>48 & ≤72	6		
>0 & ≤48	6		

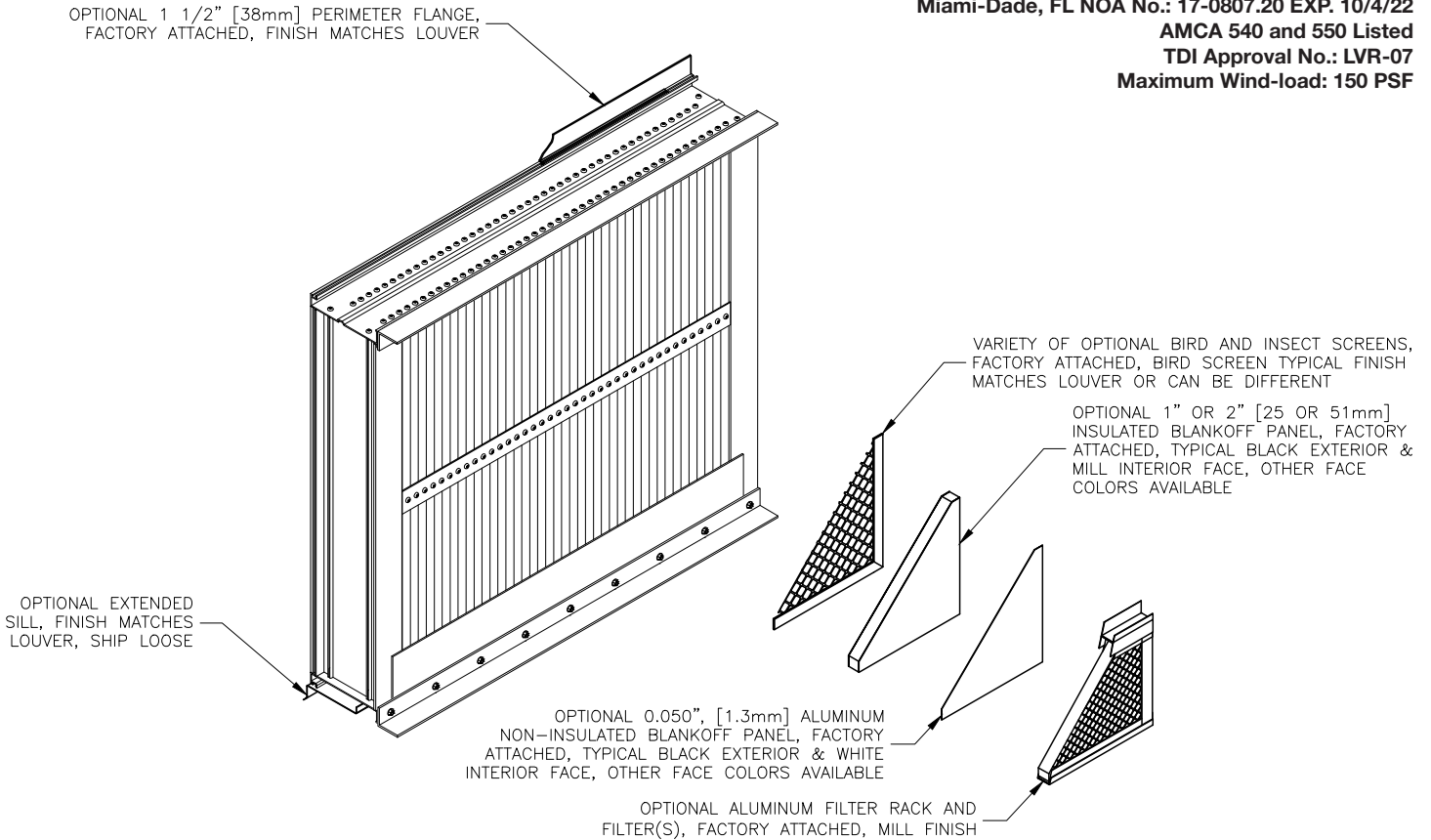
CONCRETE OR CMU ANCHORING					
3/8" POWERS WEDGE BOLT FASTENER TABLE					
DESCRIPTION	3/8" POWERS WEDGE BOLT				
SUBSTRATE	NORMAL WEIGHT CONCRETE			CMU <1.5 KSI GROUT FILLED>	
MINIMUM	2.5 KSI			6" WIDE, GRADE N, TYPE II, LIGHT/MEDIUM/NORMAL WEIGHT CMU CONFORMING TO ASTM C90	
EDGE DISTANCE <MIN>	2 IN	3 IN	4 1/2 IN	1 1/2 IN	2 IN
PENETRATION <MIN>	2 1/8 IN			2 1/2 IN	
LOUVER HEIGHT <IN>	SPACING <IN>			SPACING <IN>	
>108 & ≤120	4	6	6	NOT ALLOWED	NOT ALLOWED
>72 & ≤108	6				6
>36 & ≤72					
>0 & ≤36				6	6

WOOD OR STEEL ANCHORING			
LAG SCREW, SCREW, & BOLT W/NUT FASTENER TABLE			
DESCRIPTION	3/8" LAG SCREW	1/4" LAG SCREW	1/4"-20 SCREW OR BOLT W/NUT
SUBSTRATE	WOOD		STEEL
MINIMUM	G ≥ 0.42		A36 STEEL OR Fy ≥ 36 KSI
EDGE DISTANCE <MIN>	1 1/2 IN		1/2 IN
PENETRATION <MIN>	2 3/4 IN		16 GA <0.06 IN> 3/16 IN
LOUVER HEIGHT <IN>	SPACING <IN>		SPACING <IN>
>84 & ≤120	6	4	6
>0 & ≤84		6	

OPTION DRAWINGS

EVH-660D

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FINISHES

Finish Type	Description/Application	Color Selection	Standard Warranty (Aluminum)
AAMA 2605 100% Fluoropolymer (FEVE) 2-Coat 70% Kynar® (PVDF) 3-Coat 70% Kynar® (PVDF) 4-Coat 70% Kynar® (PVDF)	"Best." The premier finish for extruded aluminum. Tough, long-lasting coating has superior color retention and abrasive properties. Resists chalking, fading, chemical abrasion and weathering.	Standard Colors: Any of the 27 standard colors shown can be furnished in 70% or 50% Kynar®, 100% Fluoropolymer or Baked Enamel.	10 Years (20 Years Optional)
AAMA 2604 50% Kynar® / Acroflur®	"Better." Tough, long-lasting coating has excellent color retention and abrasive properties. Resists chalking, fading, chemical abrasion and weathering.	Mica Colors: Greenheck offers 6 standard Mica colors for 70% Kynar® or 100% Fluoropolymer.	5 Years
AAMA 2603 Baked Enamel	"Good." Provides good adhesion and resistance to weathering, corrosion and chemical stain.	Custom Colors: Custom color matching is available. Consult your Greenheck representative for cost and/or lead-time implications if a custom color is required.	1 Year
AA-M10C22A42 Integral Color Anodize	"Two-step" anodizing is produced by following the normal anodizing step with a second, colorfast process.	Light, Medium, Dark or Extra Dark Bronze; Champagne; Black	5 years
AA-M10C22A41 Clear Anodize 215 R-1	Clear, colorless and hard oxide aluminum coating that resists weathering and chemical attack.	Clear	5 years
AA-M10C22A31 Clear Anodize 204	Clear, colorless and hard oxide aluminum coating that resists weathering and chemical attack.	Clear	1 Year
Prime Coat	Louvers or architectural products shall be cleaned, pre-treated and receive a prime coat finish suitable for field painting. Greenheck does not recommend prime coat or field painting of materials.		n/a
Mill	Materials may be supplied in natural aluminum or galvanized steel finish when normal weathering is acceptable and there is no concern for color or color change.		n/a

Finishes meet or exceed AAMA 2605, AAMA 2604, and AAMA 2603 requirements. Please consult www.greenheck.com for complete information on standard and extended paint warranties. Paint finish warranties are not applicable to steel products.

