GREENHECK

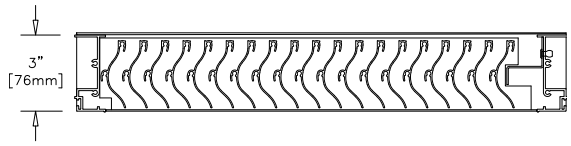
EVH-302D

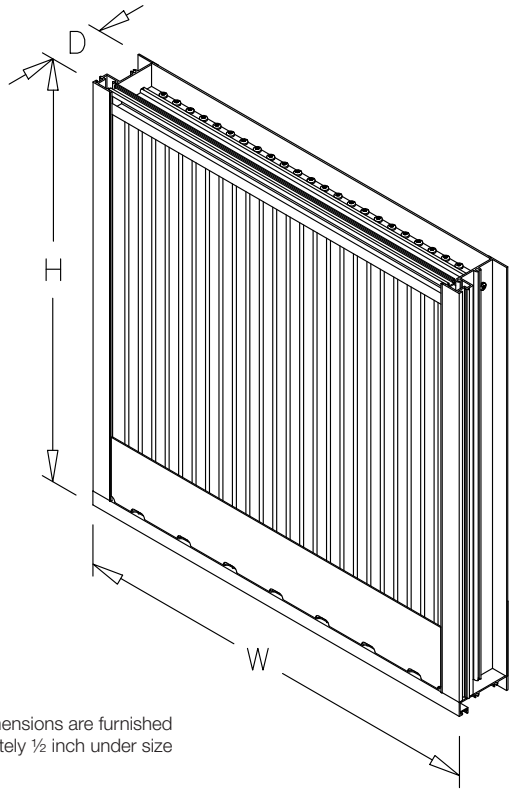
Florida Product Approval No.: 29694
Miami-Dade, FL NOA No.: 19-0708.12 EXP. 6/6/2024
AMCA 540 and 550 Listed
Maximum Wind-load: 100 PSF

Miami-Dade Qualified
Wind-Driven Rain Louver

Application and Design

EVH-302D 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-302D is tested in accordance with AMCA 500-L Air Performance, Water Penetration and Wind Driven Rain. EVH-302D is tested in accordance with AMCA 540 Test Method for Louvers Impacted by Wind Borne Debris (Basic Protection, Missile Level D). EVH-302D is tested in accordance with AMCA 550 Test Method for High Velocity Wind Driven Rain Resistant Louvers. EVH-302D is licensed to bear the AMCA seal allowing design professionals to select and apply with confidence. EVH-302D is tested and qualified per the following Florida test protocols: TAS 201 (Large Missile Impact), TAS 202 (Uniform Static Air Pressure) and TAS 203 (Cyclic Wind Loading). Per Miami-Dade D.R.E.R, the EVH-302D 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.





"*Width and height dimensions are furnished approximately ½ inch under size

Standard Construction

Jambs . . . . . Heavy gauge extruded aluminum, 3 in. x 0.081 in. nominal wall thickness

Head/Sill . . . . . Heavy gauge extruded aluminum, 3 in. x 0.062 in. nominal wall thickness

Blades . . . . . Vertical rain resistant design, heavy gauge extruded 6063-T5 aluminum, 0.050 in. nominal wall thickness, positioned on approximately 7/8 in. blade spacing

Construction . . . . . Mechanically fastened

Birdscreen . . . . . 3/4 in. x 0.051 flattened expanded aluminum removable frame, inside mount (rear)

Finish . . . . . Mill

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

Maximum Rough Opening Size . . . . Unlimited W x 96 in H

Maximum Single Section Size . . . . . 60 in. W x 96 in. H

Options *(at additional cost)*

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

PERFORMANCE DATA

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Wind-Driven Rain Performance

75mm/h (3 in/hr) Rainfall & 13 m/s (29 mph) Wind Velocity				200mm/h (8 in/hr) Rainfall & 22 m/s (50 mph) Wind Velocity			
Ventilation Air Core Velocity m/s (fpm)	Free Area Ventilation Rate (fpm)	Water Pen. Effectivness %	Water Pen. Classification	Ventilation Air Core Velocity m/s (fpm)	Free Area Ventilation Rate (fpm)	Water Pen. Effectivness %	Water Pen. Classification
0.0 (0)	0.0 (0)			0.0 (0)	0.0 (0)		
0.5 (98)	0.8 (161)			0.5 (98)	0.8 (161)		
1.0 (197)	1.6 (324)			1.0 (197)	1.6 (324)		
1.5 (295)	2.5 (486)			1.5 (295)	2.5 (486)		
2.0 (394)	3.3 (649)			2.0 (394)	3.3 (649)		
2.5 (492)	4.1 (810)			2.5 (492)	4.1 (810)		
3.0 (591)	4.9 (973)			3.0 (591)	4.9 (973)		
3.5 (689)	5.8 (1134)			3.5 (695)	5.8 (1144)	99.6	A
4.0 (788)	6.6 (1297)	100.0	A	3.9 (776)	6.5 (1277)	99.4	A
4.5 (882)	7.4 (1452)	99.9	A	4.5 (886)	7.4 (1458)	99.4	A
5.0 (983)	8.2 (1618)	99.8	A	5.0 (978)	8.2 (1610)	97.3	B

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.

Greenheck Fan Corporation certifies that the EVH-302D 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.

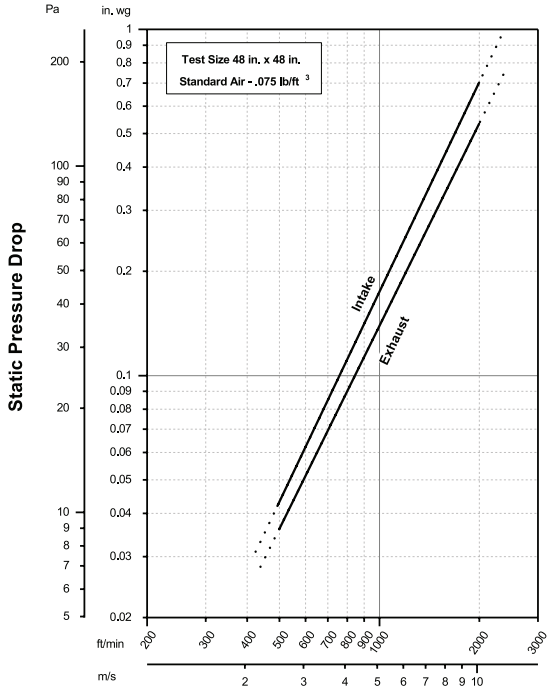
HIGH VELOCITY RAIN RESISTANT WITH BLADES FULLY OPEN AND IMPACT RESISTANT LOUVER
Basic Protection Level D
See www.AMCA.org for all certified or listed products
This label does not signify AMCA airflow performance certification.

Greenheck Fan Corporation certifies that the EVH-302D louvers shown herein are approved to bear the AMCA Listing Label. The Ratings shown are based on tests and procedures performaned 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

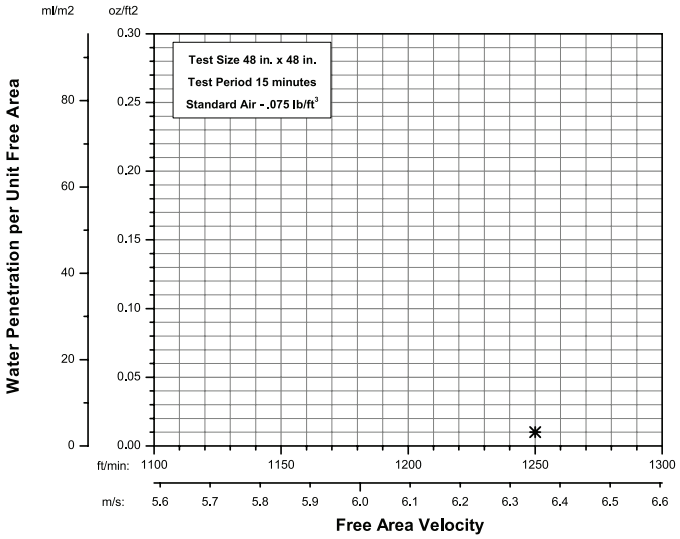
Airflow Resistance (Standard Air - .075 lb/ft³)



Model EVH-302D 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)

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-302D 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.

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Free Area Chart (sq. ft.)

Louver Height Inches	Louver Width in Inches								
	12	18	24	30	36	42	48	54	60
12	0.21	0.36	0.51	0.66	0.82	0.95	1.10	1.25	1.40
18	0.43	0.75	1.06	1.37	1.69	1.96	2.27	2.58	2.90
24	0.66	1.13	1.61	2.08	2.56	2.97	3.44	3.92	4.39
30	0.88	1.52	2.15	2.79	3.43	3.98	4.61	5.25	5.89
36	1.10	1.90	2.70	3.50	4.30	4.99	5.79	6.59	7.39
42	1.33	2.29	3.25	4.21	5.17	6.00	6.96	7.92	8.88
48	1.55	2.67	3.80	4.92	6.04	7.01	**8.13**	9.25	10.38
54	1.70	2.93	4.16	5.40	6.63	7.68	8.92	10.15	11.38
60	1.92	3.32	4.71	6.10	7.50	8.69	10.09	11.48	12.88
66	2.15	3.70	5.26	6.81	8.37	9.70	11.26	12.82	14.37
72	2.37	4.09	5.80	7.52	9.24	10.71	12.43	14.15	15.87
78	2.59	4.47	6.35	8.23	10.11	11.72	13.60	15.48	17.36
84	2.82	4.86	6.90	8.94	10.98	12.73	14.78	16.82	18.86
90	3.04	5.24	7.45	9.65	11.85	13.74	15.95	18.15	20.36
96	3.26	5.63	7.99	10.36	12.73	14.75	17.12	19.49	21.85

Core Area Chart (sq. ft.)

Louver Height Inches	Louver Width in Inches								
	12	18	24	30	36	42	48	54	60
12	0.40	0.66	0.91	1.17	1.43	1.68	1.94	2.19	2.45
18	0.80	1.31	1.81	2.32	2.82	3.33	3.83	4.34	4.84
24	1.20	1.95	2.71	3.46	4.22	4.97	5.73	6.49	7.24
30	1.59	2.60	3.60	4.61	5.62	6.62	7.63	8.63	9.64
36	1.99	3.24	4.50	5.76	7.01	8.27	9.52	10.78	12.04
42	2.38	3.89	5.40	6.90	8.41	9.91	11.42	12.93	14.43
48	2.78	4.54	6.29	8.05	9.80	11.56	**13.32**	15.07	16.83
54	3.18	5.18	7.19	9.20	11.20	13.21	15.21	17.22	19.23
60	3.57	5.83	8.09	10.34	12.60	14.85	17.11	19.37	21.62
66	3.97	6.48	8.98	11.49	13.99	16.50	19.01	21.51	24.02
72	4.36	7.12	9.88	12.63	15.39	18.15	20.90	23.66	26.42
78	4.76	7.77	10.77	13.78	16.79	19.79	22.80	25.81	28.81
84	5.16	8.41	11.67	14.93	18.18	21.44	24.70	27.95	31.21
90	5.55	9.06	12.57	16.07	19.58	23.09	26.59	30.10	33.61
96	5.95	9.71	13.46	17.22	20.98	24.73	28.49	32.25	36.01

INSTALLATION DETAILS

EVH-302D

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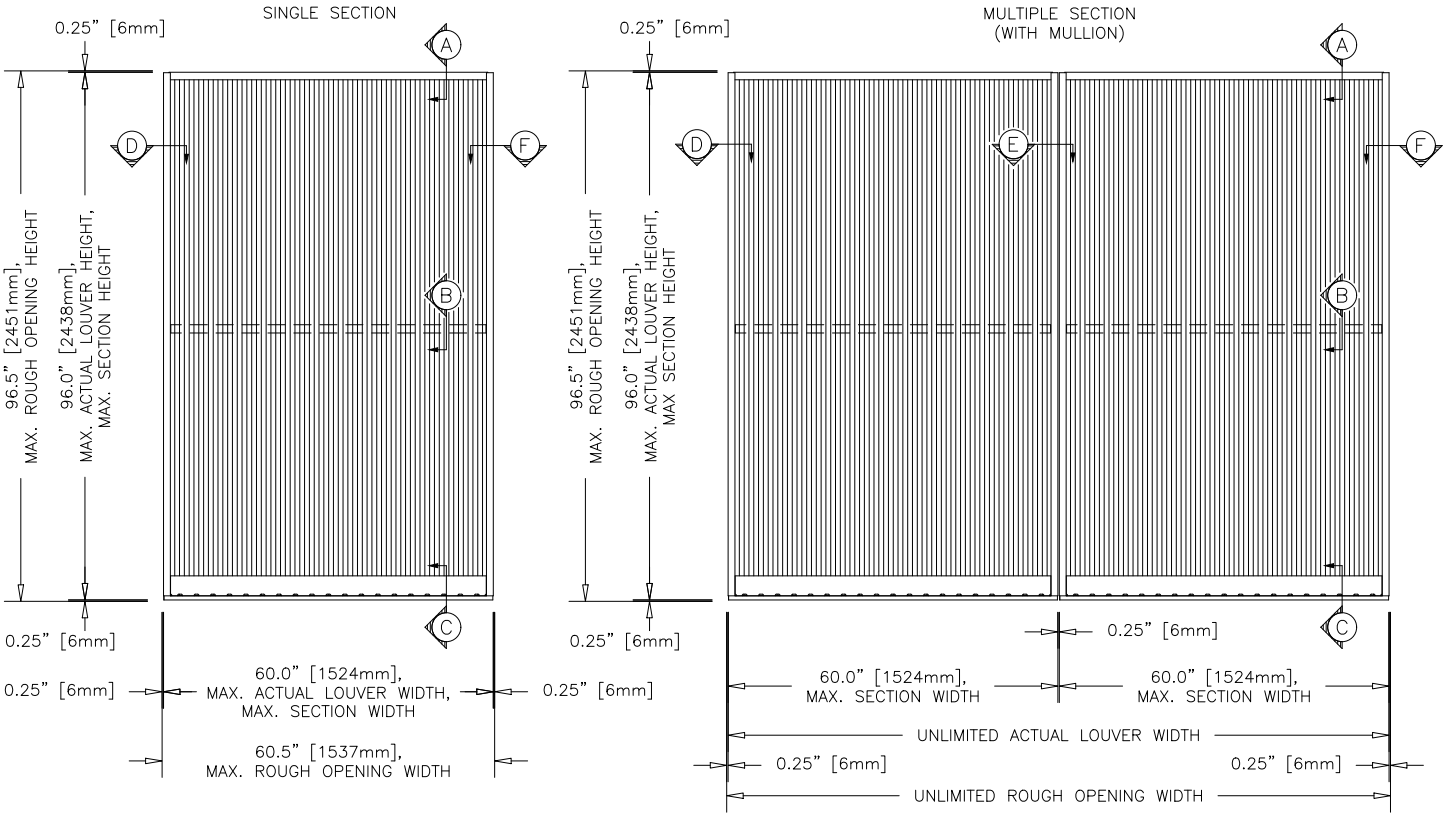
Maximum Size and Installation Information

Model EVH-302D is a Miami-Dade Qualified and Florida Product Approved louver and must be installed in accordance with the installation instructions shown in the Miami-Dade NOA. Model EVH-302D is qualified for installation within concrete/masonry, steel, aluminum or wood substrate. Model EVH-302D is tested and qualified to withstand positive and negative wind pressure loads up to 100 PSF. The maximum single section width is 60 in. The maximum single section height is 96 in. Multi-wide assemblies are permitted without any additional reinforcing provided the maximum rough opening height is not exceeded. 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	Maximum Rough Opening Single Section Size
12 in. W x 12 in. H	60 1/2 in. W x 96 1/2 in. H

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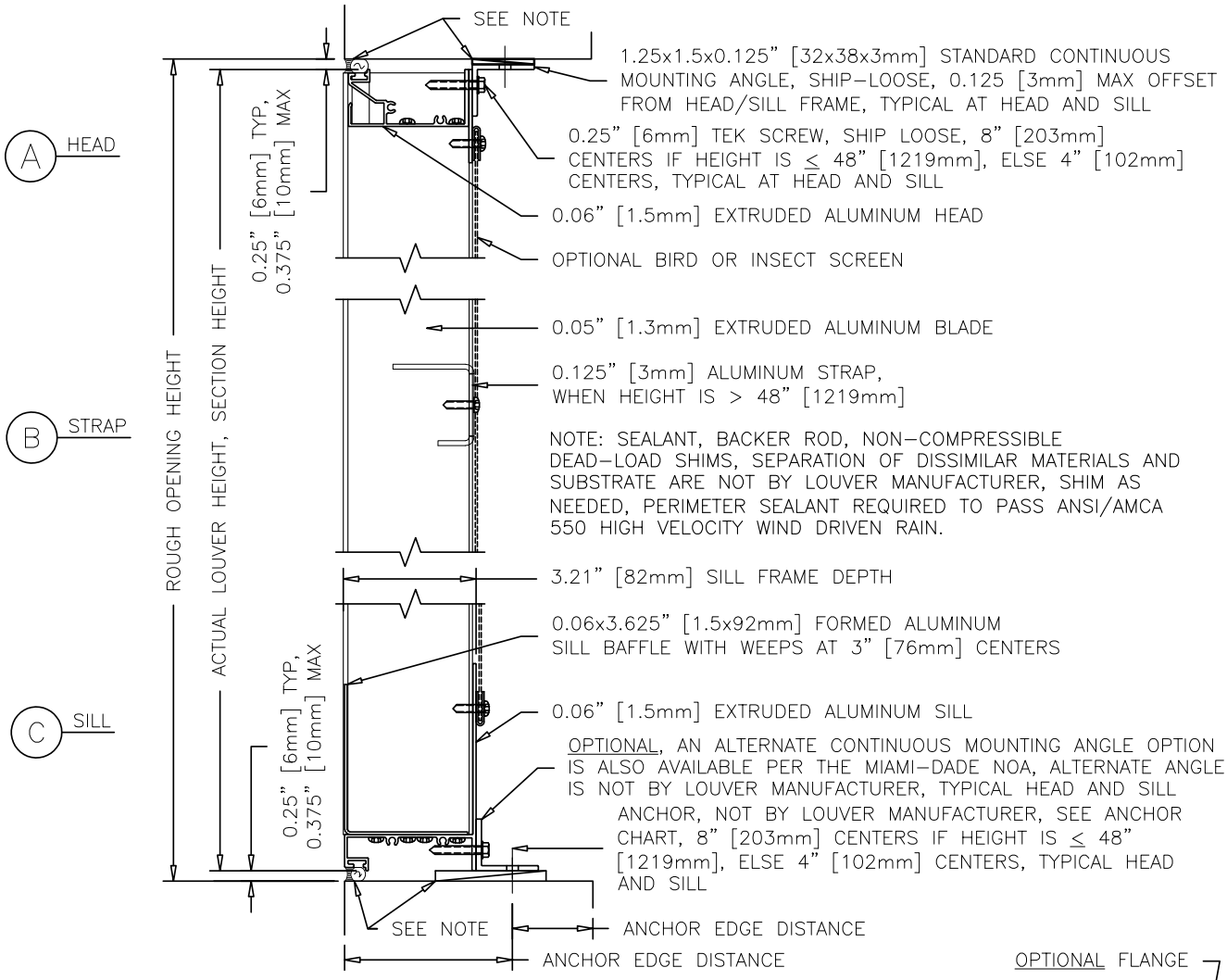

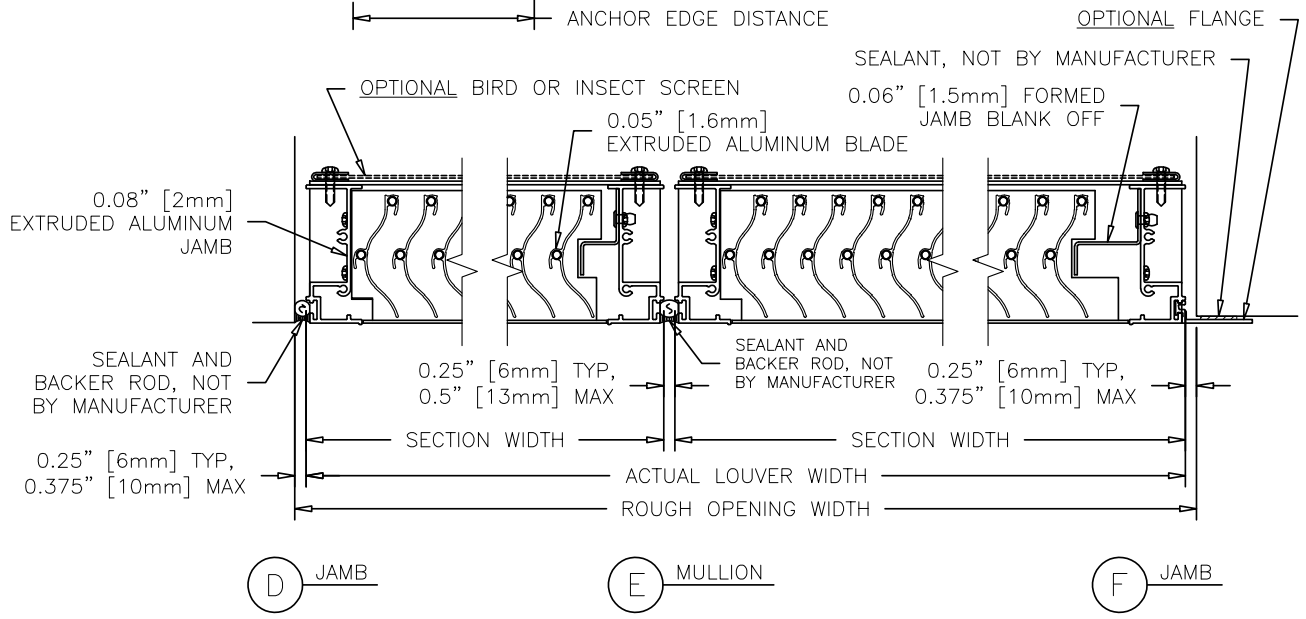

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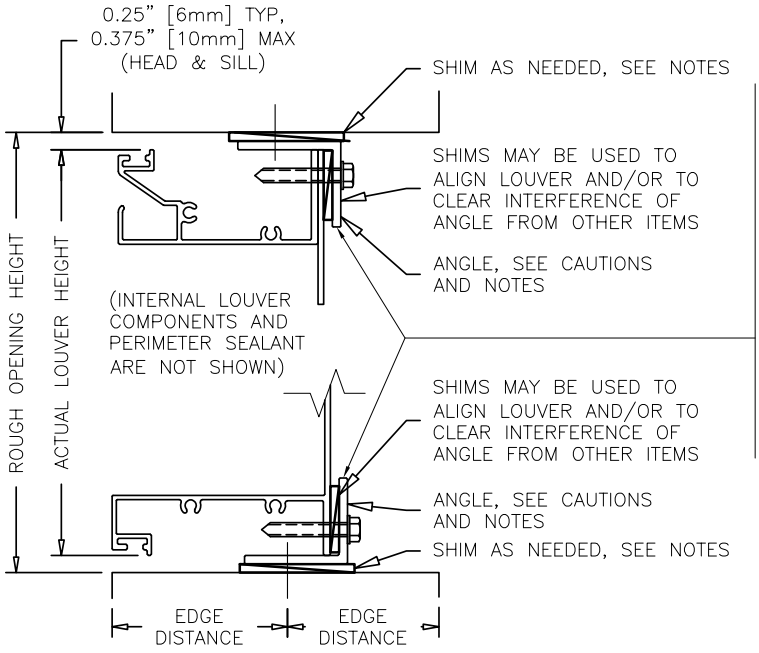
OPTIONAL INVERTED CONTINUOUS MOUNTING ANGLE: SETUPS, CAUTIONS, & NOTES



NOTES: INVERTED ANGLE OPTION SHOWN UTILIZING THE THE MANUFACTURER PROVIDED STANDARD CONTINUOUS MOUNTING ANGEL AT THE HEAD/SILL. THE STANDARD ANGEL SHALL NOT EXTEND MORE THAN 0.125" [3mm] PAST THE TOP OF THE HEAD/SILL.

THE STANDARD CONTINUOUS MOUNTING ANGLE CANNOT BE USED IN THE INVERTED POSITION AT BOTH THE HEAD AND SILL LOCATIONS. SEE CAUTION NOTES.

AN ALTERNATE CONTINUOUS MOUNTING ANGLE MAY BE USED FOR OTHER NEEDED SETUPS. AN ALTERNATE ANGLE CAN EXTEND MORE THAN 0.125" [3mm] PAST THE TOP OF THE HEAD/SILL. REFER TO THE LOUVER'S MIAMI-DADE NOA "ALTERNATE CONTINUOUS MOUNTING ANGLE ALLOWABLE SETUPS" TABLE FOR ALLOWABLE DESIGNS OF THE ALTERNATE ANGLE.

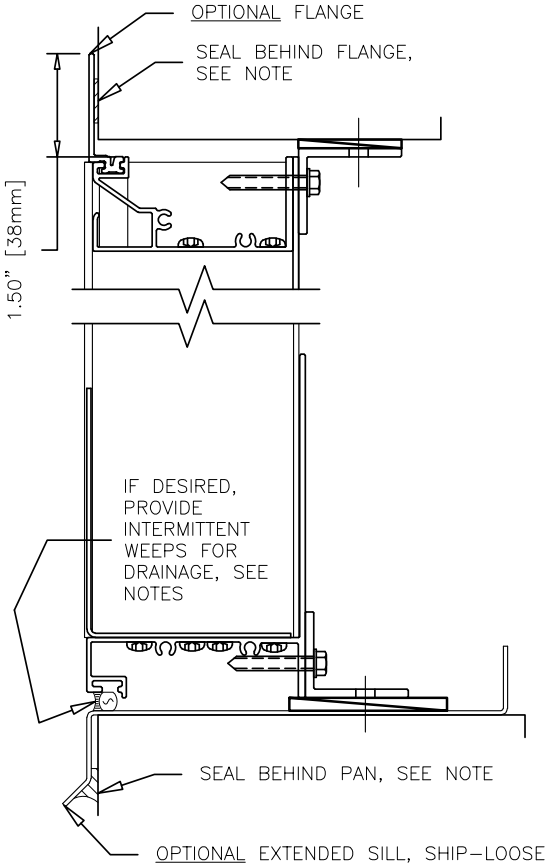
CAUTION! THE MANUFACTURER PROVIDED STANDARD CONTINUOUS MOUNTING ANGLES CAN ONLY BE USED IN THE INVERTED POSITION IF ONLY ONE OF THE STANDARD ANGLES IS INVERTED. EITHER AT THE HEAD OR AT THE SILL, NOT BOTH.

WHY: DUE TO REQUIRED OFFSETS, USE OF THE FACTORY PUNCHED HOLES IN THE STANDARD CONTINUOUS MOUNTING ANGLE WILL POSITION THE HORIZONTAL LEG OF THE STANDARD ANGLE UP AGAINST THE HEAD/SILL FRAME MEMBER (AS SHOWN ON THIS PAGE). THEREFORE, IT IS IMPOSSIBLE TO PRE-MOUNT BOTH STANDARD ANGLES TO THE SUBSTRATE IN THE INVERTED POSITION AND STILL HAVE CLEARANCE FOR THE LOUVER HEAD AND/OR SILL FRAME TO SLIDE OVER AND PAST THE ANCHOR HEADS ON THE INVERTED ANGLES.

SOLUTION: TO OVERCOME THE ABOVE ISSUE, AN ALTERNATE CONTINUOUS MOUNTING ANGLE (NOT BY MANUFACTURER) MUST BE USED AT EITHER THE HEAD AND/OR SILL. THE ALTERNATE ANGLE CAN SPAN A LARGER GAP BETWEEN THE LOUVER FRAME AND THE SUBSTRATE, WHICH ALLOWS FOR MORE CLEARANCE BETWEEN THE LOUVER FRAME AND THE ANCHOR. REFER TO THE "ALTERNATE CONTINUOUS MOUNTING ANGLE ALLOWABLE SETUPS" TABLE FOR DESIGN INFORMATION. NOTE THAT THE STANDARD CONTINUOUS MOUNTING ANGLE CAN HAVE ITS FRAME FASTENER HOLES DRILLED IN A NEW LOCATION OF UP TO 0.75" [19mm] AWAY FROM THE OUTSIDE CORNER OF THE STANDARD ANGLE (SEE NOTES 1 & 2 ON THE LOUVER'S MIAMI-DADE NOA "ALTERNATE CONTINUOUS MOUNTING ANGLE ALLOWABLE SETUPS" TABLE).

CAUTION! NO MATTER WHAT TYPE OF CONTINUOUS MOUNTING ANGLE IS USED IN AN INVERTED SETUP, A LARGER THAN TYPICAL HEAD/SILL SUBSTRATE GAP CLEARANCE SHOULD BE CONSIDERED WHEN SIZING THE LOUVER IN ORDER TO MAKE SURE THE HEAD/SILL FRAME CAN SLIDE OVER AND PAST THE ANCHOR HEADS ON THE INVERTED MOUNTING ANGLE(S).

ANGLE PROVIDER: THE MANUFACTURER PROVIDES STANDARD CONTINUOUS MOUNTING ANGLES ONLY. ANY NEEDED ALTERNATE CONTINUOUS MOUNTING ANGLE IS BY OTHERS.



NOTE: SEALANT, BACKER ROD, NON-COMPRESSIBLE DEAD-LOAD SHIMS, SEPARATION OF DISSIMILAR MATERIALS AND SUBSTRATE ARE NOT BY LOUVER MANUFACTURER, SHIM AS NEEDED, PERIMETER SEALANT REQUIRED TO PASS ANSI/AMCA 550 HIGH VELOCITY WIND DRIVEN RAIN.

FASTENER CHART

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SUBSTRATE ANCHOR SPACING		
ACTUAL HEIGHT	**≤ 48 IN.**	**> 48 IN.**
ANCHOR SPACING	**8 IN.**	**4 IN.**

	SUBSTRATE MINIMUMS			ANCHOR MINIMUMS				
SUBSTRATE TYPE	**THICKNESS (IN.)**	**PROPERTY**	**ANCHOR TYPE**	**OVERALL LENGTH (IN.)**	**THREADED LENGTH (IN.)**	**EMBEDMENT (IN.)**	**TO EDGE (IN.)**	**Fy, Fu (KSI)**
WOOD	3	SG 0.42	1/4 IN. LAG SCREW, COATED STEEL	3	2 1/2	2 1/2	1 1/2	70, 105
			1/4 IN. LAG SCREW, 300 SERIES STAINLESS (1)					65, 100
			1/4 IN. SPAX POWERLAG, HEX OR T-STAR WASHER HEAD, COATED STEEL		1 3/4			-
			6 MM SPAX TIMBER SCREW, WASHER HEAD, 300 SERIES STAINLESS	80 mm	61 mm	2 11/16		
STEEL	16 GA	Fy 33 KSI	1/4-14 ELCO DRIL-FLEX SCREW, COATED STEEL	VARIES (2)	VARIES (2)	FULL	1/2	65, -
			1/4-14 SCREW, 300 SERIES STAINLESS (1)					
			1/4-20 BOLT, 300 SERIES STAINLESS (1)			BOLTED		
ALUMINUM	1/8	Fy 25 KSI	1/4-20 ELCO DRIL-FLEX SCREW, COATED STEEL	VARIES (2)	VARIES (2)	FULL	1/2	65, -
			1/4-20 SCREW OR THRU BOLT, 300 SERIES STAINLESS (1)			FULL/BOLTED		
CONCRETE (3)	3	Fc 2.5 KSI	1/4 IN. DEWALT SCREW-BOLT+, COATED STEEL	VARIES (2)	VARIES (2)	2 1/2 NOM.	2	-
	4		3/8 IN. HILTI KWIK BOLT TZ EXPANSION, 304 OR 316 STAINLESS (5)			2 5/16 NOM.	3	
CRACKED CONCRETE (3)	4	Fc 2.5 KSI	3/8 IN. HILTI KWIK BOLT TZ EXPANSION, 304 OR 316 STAINLESS (5)	VARIES (2)	VARIES (2)	2 5/16 NOM.	3	-
GROUT FILLED CMU (4)	4x4x16	Fm 1.5 KSI	3/8 IN. DEWALT SCREW-BOLT+, COATED STEEL (5)	VARIES (2)	VARIES (2)	3 1/4 NOM.	1 1/2	-
			1/2 IN. THREADED ROD W/ HIT-HY 270 ADHESIVE, 300 SERIES STAINLESS (5)			4 1/2 EFF.	1 3/4	65, -

1) ANCHOR MANUFACTURING PROCESS IS COLD-WORKED.

2) AS NEEDED TO COMPLY WITH THE EMBEDMENT WHILE ACCOUNTING FOR THE THICKNESS OF THE CONTINUOUS MOUNTING ANGLE, SHIM(S), ETC.

3) NORMAL WEIGHT CONCRETE, INCLUDING PRE-CAST.

4) LIGHT/MEDIUM/NORMAL-WEIGHT CMU CONFORMING TO ASTM C90, TYPE II, GROUT FILLED CONFORMING TO C476.

5) THE 1/4 IN. DIA. ANCHOR CLEARANCE HOLES IN THE MANUFACTURER PROVIDED STANDARD CONTINUOUS MOUNTING ANGLE (ITEM 5) WILL NEED TO BE FIELD ENLARGED TO ACCEPT THE ANCHOR.

OPTION DRAWINGS

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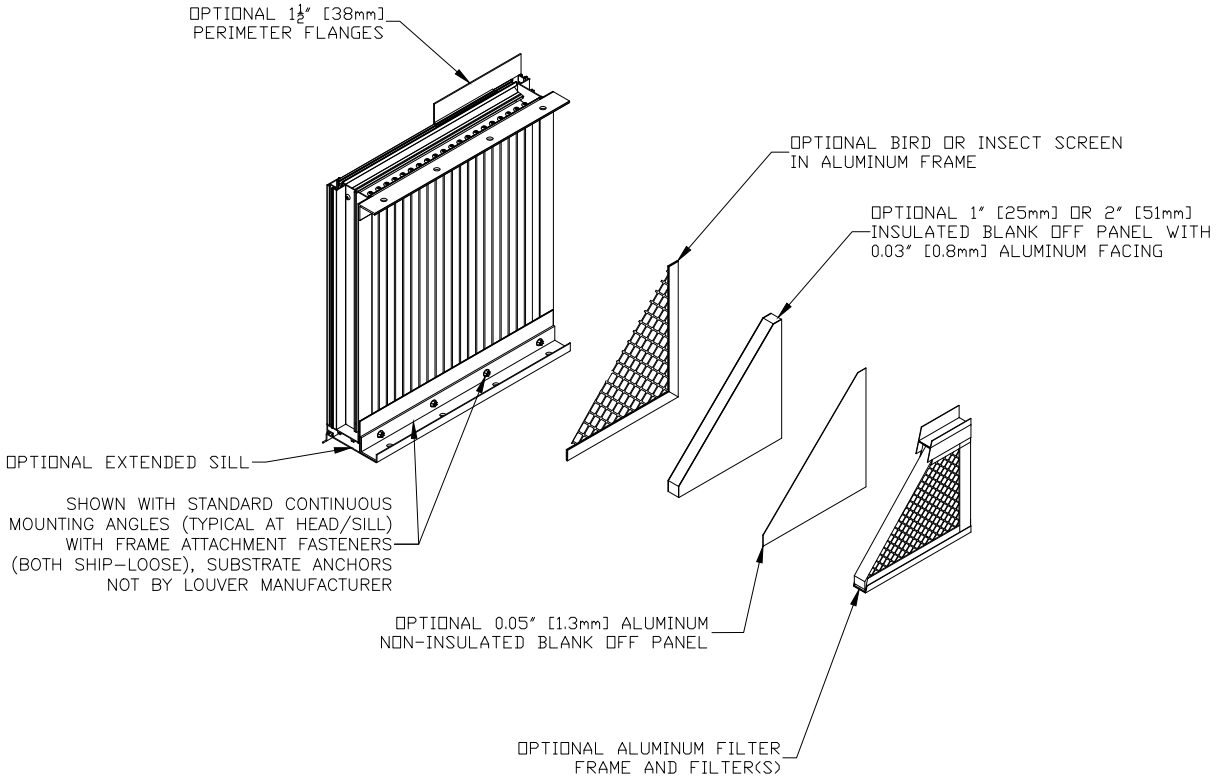

FINISHES

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. **Mica Colors:** Greenheck offers 6 standard Mica colors for 70% Kynar® or 100% Fluoropolymer. **Custom Colors:** Custom color matching is available. Consult your Greenheck representative for cost and/or lead-time implications if a custom color is required.	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.		5 Years
AAMA 2603 Baked Enamel	***"Good."*** Provides good adhesion and resistance to weathering, corrosion and chemical stain.		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.

GREENHECK®

P.O. Box 410 • Schofield, WI 54476-0410 • 715.359.6171 • greenheck.com

EVH-302D February 2020