

Application

The ECD-445 offers exceptional protection against wind-driven rain under the most severe conditions and is ideally suited for high wind areas or applications that are sensitive to wind-driven rain penetration. The ECD-445 incorporates horizontal blades and is available in a wide array of anodized and painted finishes including custom color matching.

Standard Construction

Material: Mill finish 6063-T5 extruded aluminum.

Frame: 4" deep × 0.081" thick (102 × 2.1) channel.

Blades: 45° × 0.060" (1.5) thick horizontal style.

Screen: 1/2" × 0.063" (12.7 × 1.6) expanded and flattened aluminum.

Mullion: Visible.

Minimum Size: 6" × 8" (152 × 203)

Maximum Size: Single section: 60" × 120" (1524 × 3048)
 120" × 60" (3048 × 1524)
 Multiple section: Unlimited

Options

- Factory finish:
 - High Performance 70% Fluoropolymer (Kynar®)
 - Baked Enamel
 - Clear Anodize
 - Integral Color Anodize
 - Prime Coat
- Hidden vertical mullion for continuous blade appearance.
- Flange frame:
 - 1 1/2" (38) flange
 - Custom-size flange
 - Stucco flange
 - Glazing frame
- Welded construction
- Alternate bird or insect screens
- Insulated or non-insulated blank-off panels
- Filter racks
- Hinged frame
- Head and/or sill flashing
- Installation hardware:
 - Clip angles
 - Continuous angles
- Burglar bars
- Frame closure

Ratings

Free Area: [48" × 48" (1219 × 1219) unit]: 6.8 ft² (0.63 m²)
 42.7%

Performance @ Beginning Point of Water Penetration

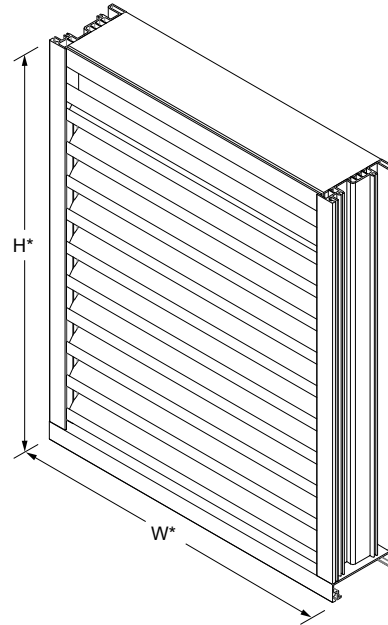
Free Area Velocity: Above 1250 fpm (6.35 m/s)

Air Volume Delivered: Above 8538 cfm (4.03 m³/s)

Pressure Loss: 0.32 in.wg. (79 Pa)

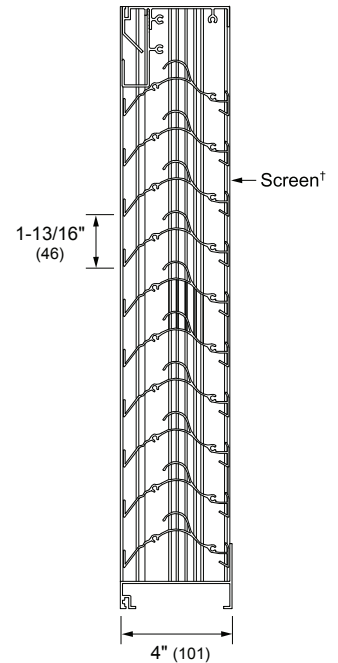
Velocity @ 0.15 in.wg. Pressure Loss: 845 fpm (4.29 m/s)

Design Load: 30 psf



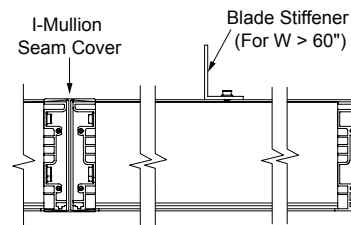
Model **ECD-445**
 (standard)

*Louver dimensions furnished approximately 1/2" (13) undersize.

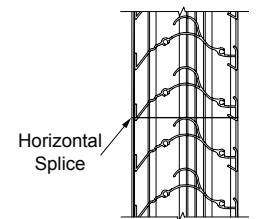


Vertical Section

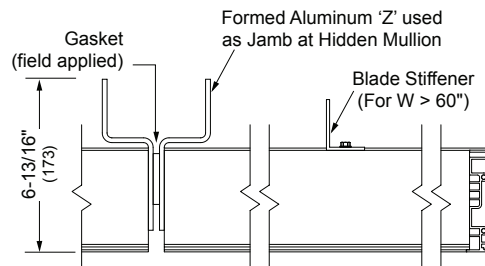
¹Screen adds approximately 3/16" (5) to louver depth.



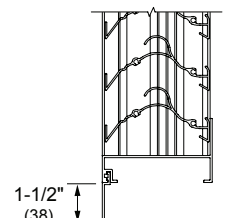
Visible Vertical Mullion
 (standard)



Horizontal Mullion
 (standard)



Hidden Vertical Mullion
 (optional)



Flange Frame
 (optional)

Certified Ratings:

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Free Area (ft²)

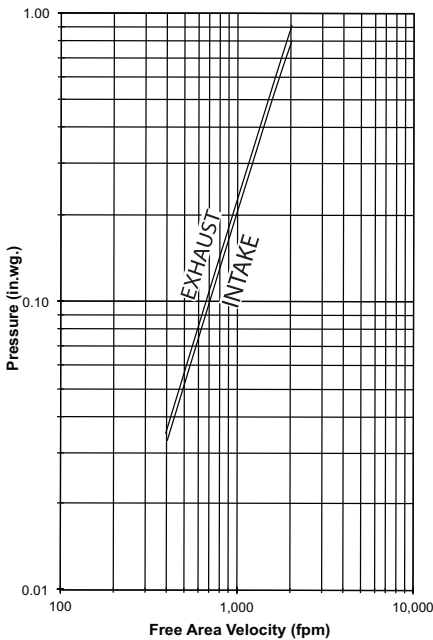
Height (Inches)	Width (Inches)																			
	6	12	18	24	30	36	42	48	54	60	66	72	78	84	90	96	102	108	114	120
8	0.1	0.1	0.2	0.3	0.4	0.4	0.5	0.6	0.7	0.7	0.8	0.9	1.0	1.1	1.1	1.2	1.3	1.4	1.4	1.5
12	0.1	0.3	0.4	0.6	0.7	0.9	1.0	1.2	1.3	1.5	1.7	1.8	2.0	2.1	2.3	2.4	2.6	2.7	2.9	3.0
18	0.2	0.5	0.7	1.0	1.3	1.5	1.8	2.1	2.3	2.6	2.9	3.2	3.4	3.7	4.0	4.2	4.5	4.8	5.1	5.3
24	0.3	0.6	1.0	1.4	1.8	2.2	2.6	3.0	3.4	3.7	4.1	4.5	4.9	5.3	5.7	6.1	6.5	6.8	7.2	7.6
30	0.4	0.9	1.4	2.0	2.5	3.1	3.6	4.2	4.7	5.2	5.8	6.3	6.9	7.4	7.9	8.5	9.0	9.6	10.1	10.7
36	0.4	1.1	1.8	2.4	3.1	3.7	4.4	5.0	5.7	6.4	7.0	7.7	8.3	9.0	9.7	10.3	11.0	11.6	12.3	12.9
42	0.5	1.3	2.1	2.8	3.6	4.4	5.2	5.9	6.7	7.5	8.3	9.0	9.8	10.6	11.4	12.1	12.9	13.7	14.5	15.2
48	0.6	1.5	2.4	3.3	4.2	5.0	5.9	6.8	7.7	8.6	9.5	10.4	11.3	12.2	13.1	13.9	14.8	15.7	16.6	17.5
54	0.7	1.7	2.8	3.8	4.9	5.9	7.0	8.0	9.1	10.1	11.1	12.2	13.2	14.3	15.3	16.4	17.4	18.5	19.5	20.6
60	0.8	1.9	3.1	4.3	5.4	6.6	7.7	8.9	10.1	11.2	12.4	13.5	14.7	15.9	17.0	18.2	19.4	20.5	21.7	22.8
66	0.9	2.1	3.4	4.7	6.0	7.2	8.5	9.8	11.1	12.3	13.6	14.9	16.2	17.5	18.7	20.0	21.3	22.6	23.8	25.1
72	1.0	2.4	3.8	5.3	6.7	8.1	9.5	11.0	12.4	13.8	15.3	16.7	18.1	19.6	21.0	22.4	23.9	25.3	26.7	28.2
78	1.0	2.6	4.1	5.7	7.2	8.8	10.3	11.9	13.4	15.0	16.5	18.1	19.6	21.2	22.7	24.3	25.8	27.4	28.9	30.5
84	1.1	2.8	4.4	6.1	7.8	9.4	11.1	12.8	14.4	16.1	17.8	19.4	21.1	22.7	24.4	26.1	27.7	29.4	31.1	32.7
90	1.2	3.0	4.7	6.5	8.3	10.1	11.9	13.7	15.4	17.2	19.0	20.8	22.6	24.3	26.1	27.9	29.7	31.5	33.2	35.0
96	1.3	3.2	5.2	7.1	9.0	11.0	12.9	14.8	16.8	18.7	20.6	22.6	24.5	26.5	28.4	30.3	32.3	34.2	36.1	38.1
102	1.4	3.4	5.5	7.5	9.6	11.6	13.7	15.7	17.8	19.8	21.9	23.9	26.0	28.0	30.1	32.1	34.2	36.2	38.3	40.3
108	1.4	3.6	5.8	7.9	10.1	12.3	14.5	16.6	18.8	21.0	23.1	25.3	27.5	29.6	31.8	34.0	36.1	38.3	40.5	42.6
114	1.5	3.8	6.1	8.4	10.7	12.9	15.2	17.5	19.8	22.1	24.4	26.6	28.9	31.2	33.5	35.8	38.1	40.3	42.6	44.9
120	1.6	4.1	6.5	8.9	11.4	13.8	16.3	18.7	21.1	23.6	26.0	28.5	30.9	33.3	35.8	38.2	40.6	43.1	45.5	48.0



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Pressure Loss

(Data corrected to standard air density)



Louver test size = 48" x 48" (1219 x 1219)
Pressure loss tested in accordance with Figure 5.5 of AMCA Standard 500L.

Selection Criteria

Follow the steps listed below to calculate the louver size needed to satisfy the required air volume while minimizing the adverse effects of water penetration and pressure loss.

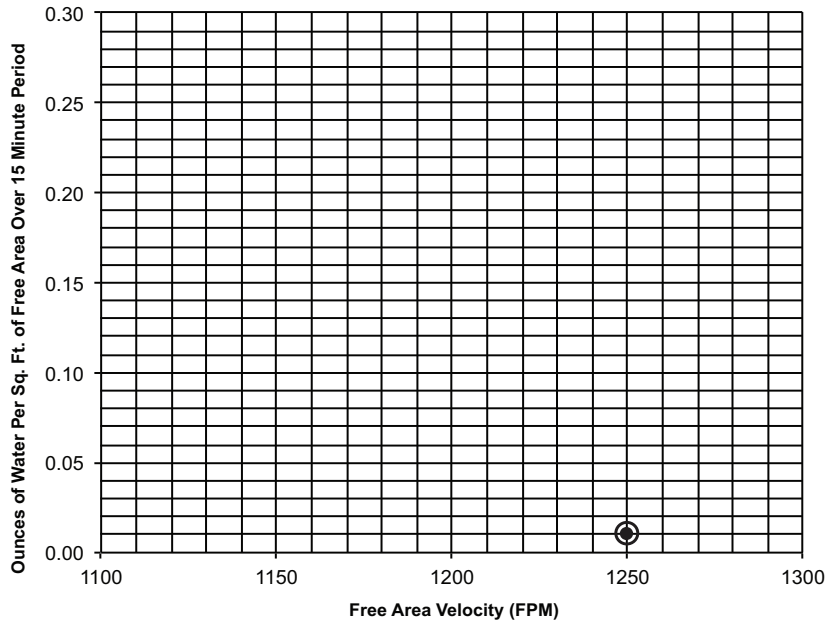
- Determine the Free Area Velocity (FAV) at the maximum allowable pressure loss using the *Pressure Loss* chart to the left. While job conditions vary, typically, the maximum allowable pressure loss should not exceed 0.15 in.wg., and the FAV for 0.15 in.wg. pressure loss is listed on the front page of this sheet.
- Intake Applications** If the FAV at the Beginning Point of Water Penetration (shown below) is less than the FAV from step 1, then use the FAV at the Beginning Point of Water Penetration in step 3, otherwise use the FAV from step 1.
- Exhaust Applications** Use the FAV from step 1 in step 3.
- Calculate the total louver square footage required using the following equation.

$$\frac{\text{Required Air Volume}}{\text{cfm}} + \frac{\text{Required Louver (Free-Area) Size in ft}^2}{\text{FAV}} = \text{Required Louver (Free-Area) Size in ft}^2$$

- Using the *Free Area* chart above, select a louver width and height that yields a free area ft² greater than or equal to the required louver size calculated in step 3.

Water Penetration

Beginning Point of Water Penetration = Above 1250 fpm



Water Penetration

AMCA defines the beginning point of water penetration as the free area velocity at the intersection of a simple linear regression of test data and the line of 0.01 ounces of water per square foot of free area measured through a 48" x 48" louver during a 15 minute period. The AMCA water penetration test provides a method for comparing louver models and designs as to their efficiency in resisting the penetration of rainfall under specific lab conditions. All-Lite recommends that intake louvers are selected with a reasonable margin of safety below the beginning point of water penetration in order to avoid unwanted penetration during severe storm conditions.

Wind Driven Rain Performance — AMCA 500L Wind-Driven Rain Test

3 in/hr Rainfall & 29 mph Wind Speed				8 in/hr Rainfall & 50 mph Wind Speed			
Airflow	Core Velocity	Effectiveness	Class ²	Airflow	Core Velocity	Effectiveness	Class ²
4274 cfm	397 fpm	99%	A	3088 cfm	195 fpm	99%	A
7435 cfm	691 fpm	97%	B	6352 cfm	590 fpm	96%	B
Discharge Loss Coefficient Class³ (Intake) = 3							



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NOTES

1. Core Area is the open area of the louver face (face area less louver frame). Test louver core area is 39-3/8" x 39 3/8" (1000 x 1000).

2. Wind-Driven Rain Penetration Classes:

Class	Effectiveness
A	99% and Above
B	95% to 98.9%
C	80% to 94.9%
D	Below 80%

3. Discharge Loss Coefficient Classes:

Class	Effectiveness
1	0.4 and Above
2	0.3 to 0.399
3	0.2 to 0.299
4	Below 0.2

Discharge Loss Coefficient is calculated by dividing the louver's actual airflow rate by the theoretical airflow rate for an unobstructed opening. The higher the coefficient, the lower the resistance to airflow.