

## Application

The XAV-545 aluminum grille is designed in accordance with ICC 500 (2014), FEMA P-361 (2015) and FEMA P-320 (2014) guidelines for storm shelters and safe rooms. It offers exceptional protection against wind pressures and debris impacts produced by tornadoes and hurricanes. The XAV-545 is a UL Classified Windstorm Rated Assembly with a design pressure of 300 psf and has been impact-tested using 15-lb 2 x 4 timbers launched at 100 mph.

For the default flange-mount installation method, the XAV-545 may be sized to cantilever forward of the wall opening (external mount) or slip into the opening (internal mount). The XAV-545 is also available with a non-flanged frame and continuous angles for installation.

## Standard Construction

**Material:** Aluminum.

**Frame:** 5½" deep x 0.25" thick (140 x 6).

**Blades:** 0.25" (6) Inverted V.

**Screen:** 18 x 16 aluminum mesh overlaid with ⅝" x 0.050" (15.9 x 1.3) expanded and flattened aluminum.

**Mullion:** Visible.

**Flange:** Single section: 5½" (140) on jambs.  
Multiple section: Single section high - 5½" (140)  
on top and bottom.  
Single section wide - 5½" (140)  
on jambs.

**Factory Finish:** Mill.

**Minimum Size:** 12" x 12" (305 x 305)

**Maximum Size:** Single section: 48" x 96" (1219 x 2438)  
Multiple section: Unlimited width x single  
section high  
Single section wide x unlimited height

**Mount Direction:** Internal (flange at front).

## Options

- ☐ Alternate Factory finish:
  - ☐ High Performance Fluoropolymer 100% resin Newlar®/70% resin Kynar®
  - ☐ Polyester Powder
  - ☐ Baked Enamel
  - ☐ Prime Coat
- ☐ Alternate Flange Configurations:
  - ☐ Top/bottom flange (single section high only)
  - ☐ Non-Flanged (includes continuous angles for installation)
  - ☐ Four-sided flange (single section only)
- ☐ External Mount (flange at rear)

## Ratings

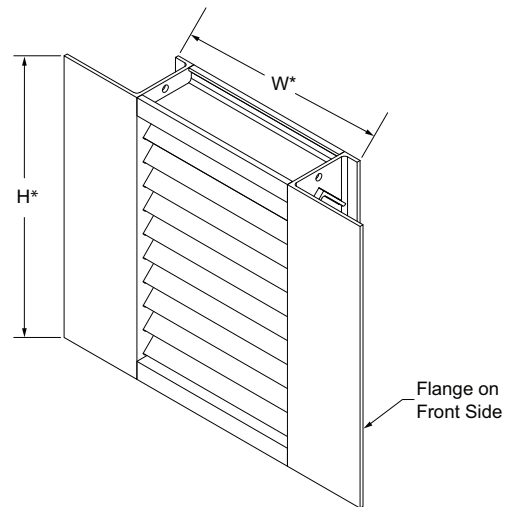
**Free Area:** [48" x 48" (1219 x 1219) unit]: 7.6 ft² (0.69 m²)  
47.3%

### Performance @ Beginning Point of Water Penetration

**Free Area Velocity:** 578 fpm (2.82 m/s)  
**Air Volume Delivered:** 4368 cfm (1.96 m³/s)  
**Pressure Loss:** 0.09 in.wg. (23 Pa)

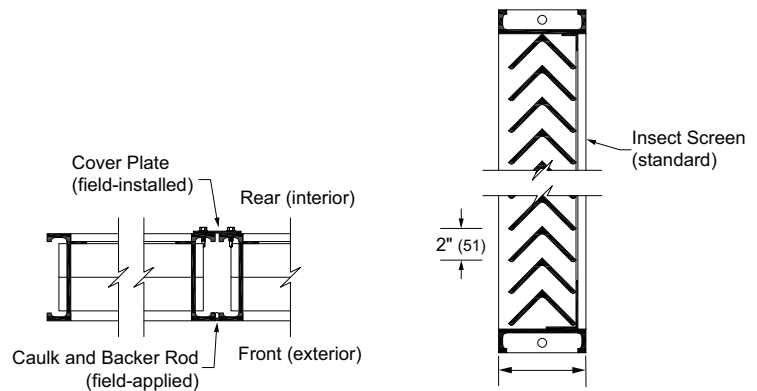
**Design Pressure:** 740 psf (3.76 m/s)

Classified as a UL Windstorm Rated Assembly for static pressure, cyclic pressure, and impact resistance.



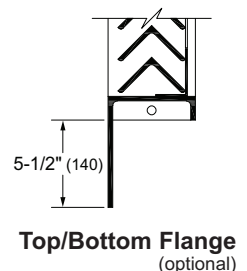
**Jamb Flange/Internal Mount**  
(Standard for single section assemblies)

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



**Visible Vertical Mullion**  
(standard)

**Vertical Section**  
(Standard)

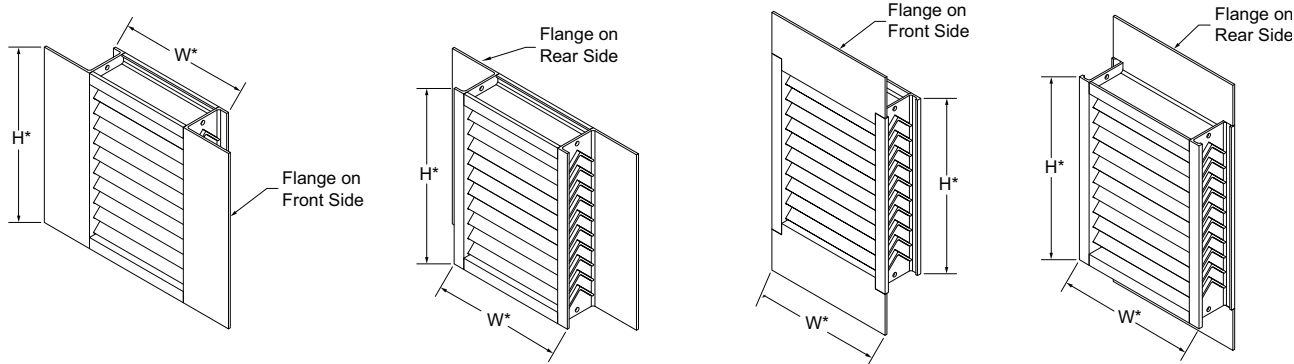


**Top/Bottom Flange**  
(optional)



### Certified Ratings:

Pottorff certifies that the model XAV-545 shown herein is licensed to bear the AMCA seal. The ratings shown are based on test 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 water penetration and air performance ratings.

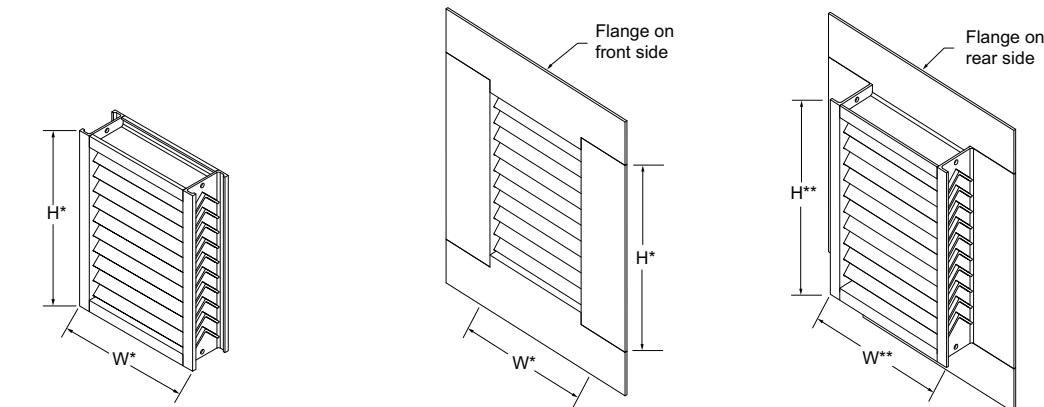


**Jamb Flange/Internal Mount**  
(single section wide only)  
\*Grille dimensions furnished  
approximately 1/2" (13) undersize

**Jamb Flange/External Mount**  
(single section wide only)  
\*Grille dimensions furnished  
approximately 1/2" (13) oversize

**Top/Bottom Flange  
Internal Mount**  
(single section high only)  
\*Grille dimensions furnished  
approximately 1/2" (13) undersize

**Top/Bottom Flange  
External Mount**  
(single section high only)  
\*Grille dimensions furnished  
approximately 1/2" (13) oversize



**Non-Flanged**  
\*Grille dimensions furnished  
approximately 1/2" (13)  
undersize

**Four-Sided Flange  
Internal Mount**  
(single section only)  
\*Grille dimensions furnished  
approximately 1/2" (13) undersize

**Four-Sided Flange  
External Mount**  
(single section only)  
\*\*Grille dimensions furnished  
approximately 1/2" (13) oversize

**Anchor Requirements**

Attachment Method	Attachment Location	Building Substrate	Anchor Type	Min. Edge Distance	Max. Spacing	Min. Embedment
Flange-Mounted (Internal or External Mount)	Jambs	Grout-Filled CMU ( $f_m \geq 1500$ psi)	3/8" x 4" Hilti Kwik HUS-EZ Screw Anchor	4"	7"	3 1/4"
		Concrete ( $f_c \geq 4000$ psi)	3/8" x 4" Hilti Kwik HUS-EZ Screw Anchor	1 1/2"	12"	3 1/4"
		Steel (Min. 3/16" Thick, $F_y \geq 36$ ksi)	3/8" x 1" Self-Tapping Screw*	3/4"	8"	3/16"
	Top/Bottom	Grout-Filled CMU ( $f_m \geq 1500$ psi)	1/2" Through-Bolt w/ Nut & Flat Washer	3 3/8"	7"	Full
		Concrete ( $f_c \geq 4000$ psi)	3/8" x 4" Hilti Kwik HUS-EZ Screw Anchor	1 1/2"	7"	3 1/4"
		Steel (Min. 3/16" Thick, $F_y \geq 36$ ksi)	3/8" x 1" Self-Tapping Screw*	3/4"	4 1/2"	3/16"
Continuous Angles (Non-Flanged, Internal Mount Only)	Jambs	Grout-Filled CMU ( $f_m \geq 1500$ psi)	1/2" x 5" Hilti Kwik HUS-EZ Screw Anchor	4"	8"	4 1/4"
		Concrete ( $f_c \geq 4000$ psi)	3/8" x 4" Hilti Kwik HUS-EZ Screw Anchor	2 1/4"	12"	3 1/4"
		Steel (Min. 3/16" Thick, $F_y \geq 36$ ksi)	3/8" x 1" Self-Tapping Screw*	3/4"	10"	3/16"
	Top/Bottom	Grout-Filled CMU ( $f_m \geq 1500$ psi)	1/2" Through-Bolt w/ Nut & Flat Washer	3 3/8"	8"	Full
		Concrete ( $f_c \geq 4000$ psi)	5/8" x 4" Hilti Kwik HUS-EZ Screw Anchor	2 1/4"	7"	3 1/4"
		Steel (Min. 3/16" Thick, $F_y \geq 36$ ksi)	3/8" x 1" Self-Tapping Screw*	3/4"	8"	3/16"

\*Note: It is acceptable to substitute 3/8-16 bolts, nuts, and flat washers instead of 3/8" self-tapping screws.

Aluminum Grille **XAV-545** (2/3) March 2021

**Free Area (ft<sup>2</sup>)**

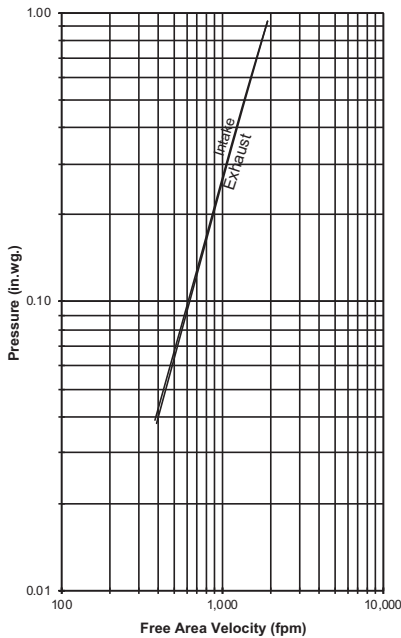
		Width (Inches)						
		12	18	24	30	36	42	48
Height (Inches)	12	0.2	0.4	0.5	0.6	0.8	0.9	1.1
	18	0.4	0.7	1.0	1.3	1.6	1.9	2.2
	24	0.6	1.1	1.5	1.9	2.4	2.8	3.2
	30	0.8	1.4	2.0	2.6	3.2	3.7	4.3
	36	1.1	1.8	2.5	3.2	4.0	4.7	5.4
	42	1.3	2.1	3.0	3.9	4.7	5.6	6.5
	48	1.5	2.5	3.5	4.5	5.5	6.5	7.6
	54	1.7	2.8	4.0	5.2	6.3	7.5	8.6
	60	1.9	3.2	4.5	5.8	7.1	8.4	9.7
	66	2.1	3.6	5.0	6.5	7.9	9.4	10.8
	72	2.3	3.9	5.5	7.1	8.7	10.3	11.9
	78	2.5	4.3	6.0	7.7	9.5	11.2	13.0
	84	2.7	4.6	6.5	8.4	10.3	12.2	14.0
	90	3.0	5.0	7.0	9.0	11.1	13.1	15.1
	96	3.2	5.3	7.5	9.7	11.9	14.0	16.2

**Weights** (Approximate weight in lbs.)

		Width (Inches)						
		12	18	24	30	36	42	48
Height (Inches)	12	20	28	37	45	53	62	70
	18	29	38	49	60	71	82	93
	24	38	49	61	74	88	102	115
	30	47	61	75	89	105	121	137
	36	56	72	89	106	122	141	160
	42	65	84	103	122	142	161	182
	48	73	95	117	139	161	183	204
	54	82	107	131	156	180	204	229
	60	91	118	145	172	199	226	253
	66	100	130	159	189	218	248	277
	72	109	141	173	205	238	270	302
	78	118	153	188	222	257	291	326
	84	127	165	202	239	276	313	350
	90	136	176	216	255	295	335	374
	96	145	188	230	272	314	356	399

**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 500-L.

**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. Pottorff 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.

**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.

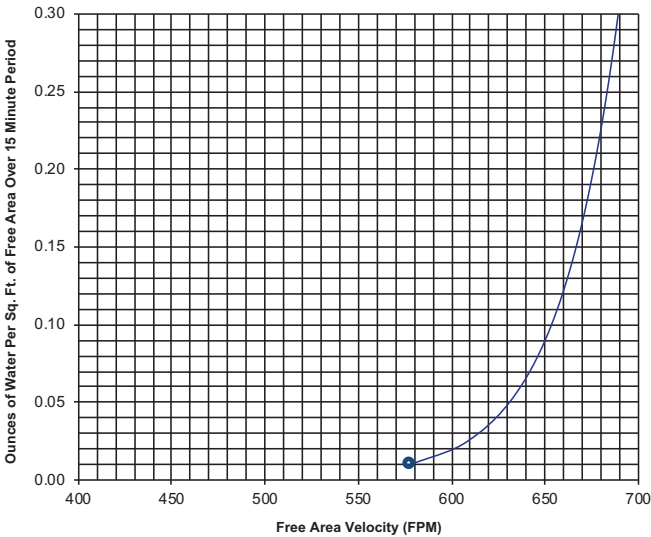
1. Determine the Free Area Velocity (FAV) at the maximum allowable pressure loss using the *Pressure Loss* chart to the left. While job conditions vary, typically, the maximum allowable pressure loss should not exceed 0.15 in.wg., and the FAV for 0.15 in.wg. pressure loss is listed on the front page of this sheet.
2. **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.
3. Calculate the total louver square footage required using the following equation.  
$$\frac{\text{Required Air Volume}}{\text{FAV}} \div \frac{\text{fpm}}{\text{ft}^2} = \text{Required Louver (Free-Area) Size in ft}^2$$
4. Using the *Free Area* chart above, select a louver width and height that yields a free area ft<sup>2</sup> greater than or equal to the required louver size calculated in step 3.



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**Water Penetration**

Beginning Point of Water Penetration = 578 fpm



Louver Test Size = 48" x 48" (1219 x 1219)