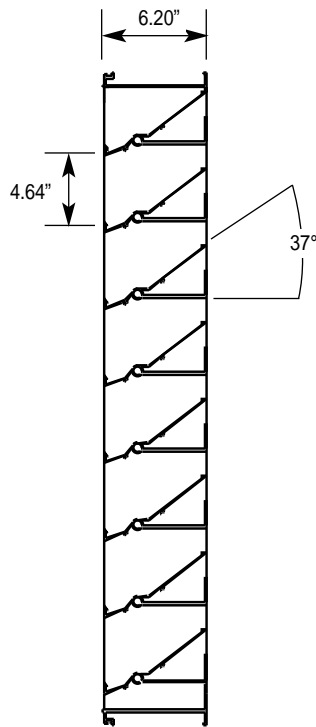
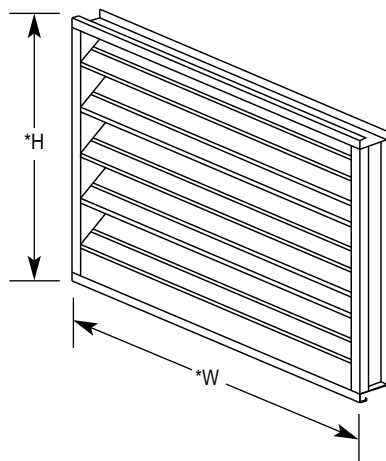


## Extruded Aluminum 6" Deep Hurricane Louver Miami-Dade Approved

Model: FHLB Channel Frame, FGLB Flanged Frame



Section View



**Note:** Please specify the following for proper construction of mounting hardware.  
Wall Thickness  
Design Wind Load  
Substrate (Wood, Steel, Poured Concrete or Concrete Block)

### Horizontal Hurricane Louver

Miami-Dade Approved

Miami-Dade County, Florida Notice of Acceptance #: 12-0201.03

(Expires 01-17-16)

Florida Building Code Product Approval #: FL3284-R2

### Model FHLB

#### ▼ Standard Specifications

**Frame:** .125 extruded aluminum 6.20" deep

**Blades:** .081 extruded aluminum positioned on a 37° angle on approximately 4.64" centers

**Screen:** 3/4" x .051 flattened aluminum in removable frame. Screen is mounted on inside (rear) as looking from exterior of building.

**Finish:** mill aluminum (standard)

**Maximum Panel Size:** 72"w x 72"h

Larger sizes made in multiple sections with vertical mullions.

**Minimum Panel Size:** 12"w x 12"h

Maximum Design Pressure Rating

+150.0, -150.0 psf

Large Missile Impact Resistance

Product approval in accordance with 2007 edition-Florida Building Code. Design wind loads shall be determined as per section 1619 of the above mentioned code, for basic wind speed of 146 mph and in accordance with ASCE-7-98 Standard.

\*Width and height dimensions are approximately 1/4" under listed size.



The Carnes Company certifies that the model FHLB/FGLB louver shown herein is 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 ratings and water penetration ratings.

## Model FHLB and FGLB

### Specification

Furnish and install louver as hereinafter specified where shown on plans or as described in schedules. Louver shall be Miami-Dade approved, hurricane resistant, stationary drainable type with drain gutters in each blade and downspouts in jambs and mullions. Stationary drainable blades shall be contained within a 6.20" frame. Louver components (heads, jambs, sills, blades, and mullions) shall be factory assembled by the louver manufacturer. Louver sizes too large for shipping shall be built up by the contractor from factory assembled louver sections and mullion support tubes to provide overall sizes required. Louver design shall incorporate structural supports required to withstand a wind load 150 psf.

Louvers shall be Carnes FHLB extruded aluminum construction as follows:

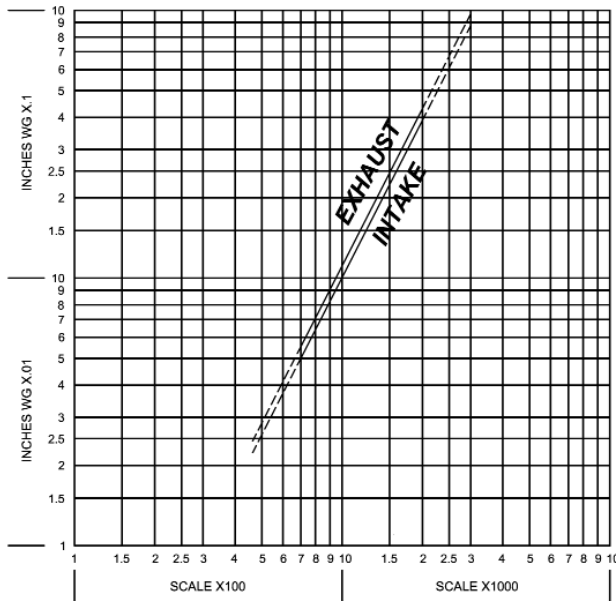
- Frame: 6.20" deep, .125 nominal wall thickness
- Blades: .081 nominal wall thickness. Drainable. Blades are positioned at 37-degree angle and spaced approximately 4.64 center to center.
- Screen: 3/4" x .051" (19 x 1.3) expanded, flattened aluminum in removable frame.

### Performance Data

AMCA Standard 500 provides a reasonable basis for testing and rating louvers. Testing to AMCA 500 is performed under a certain set of laboratory conditions. This does not guarantee that other conditions will not occur in the actual environment where louvers must operate.

The louver system should be designed with a reasonable safety factor for louver performance. To ensure protection from water carryover, design with a performance level somewhat below maximum desired pressure drop and .01 oz./sq.ft. of water penetration.

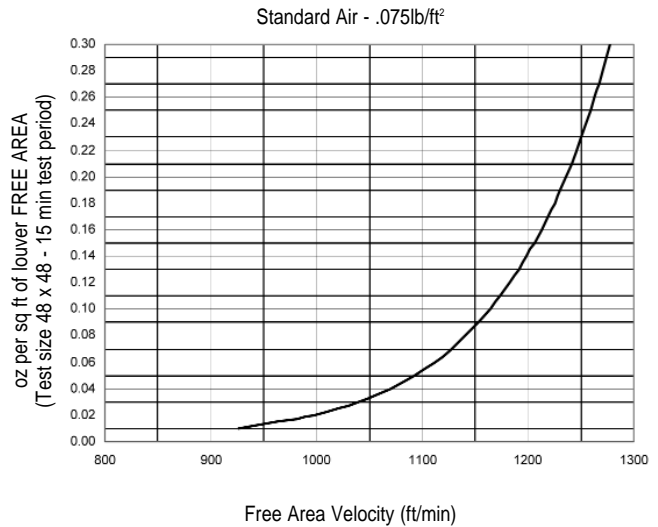
### Pressure Drop



#### FREE AREA VELOCITY (FT/MIN)

Standard air - .075 lbs per cu ft  
 Ratings do not include the effects of a wire birdscreen  
 Test based on a 48" x 48" test size, 15 min test duration

### Water Penetration



Beginning point of WATER PENETRATION is 922 fpm free area velocity at .01 oz. of water penetration

## Model FHLB and FGLB

### Free Area in Square Feet

HEIGHT INCHES	WIDTH IN INCHES										
	12	18	24	30	36	42	48	54	60	66	72
12	0.27	0.44	0.61	0.78	0.95	1.11	1.28	1.45	1.62	1.79	1.95
18	0.54	0.87	1.2	1.54	1.87	2.2	2.53	2.86	3.2	3.53	3.86
24	0.79	1.27	1.76	2.24	2.72	3.21	3.69	4.18	4.66	5.14	5.63
30	1.06	1.72	2.37	3.03	3.68	4.34	4.99	5.65	6.3	6.96	7.61
36	1.27	2.06	2.84	3.62	4.4	5.19	5.97	6.75	7.54	8.32	9.1
42	1.51	2.44	3.37	4.29	5.22	6.15	7.08	8.01	8.94	9.86	10.79
48	1.82	2.95	4.07	5.19	6.31	7.43	8.56	9.68	10.8	11.92	13.04
54	1.99	3.22	4.45	5.68	6.9	8.13	9.36	10.59	11.81	13.04	14.27
60	2.24	3.62	5	6.39	7.77	9.15	10.53	11.91	13.29	14.67	16.05
66	2.5	4.05	5.59	7.13	8.67	10.21	11.75	13.29	14.83	16.37	17.92
72	2.72	4.4	6.07	7.75	9.42	11.1	12.77	14.45	16.12	17.8	19.47
78	2.99	4.82	6.66	8.5	10.33	12.17	14.01	15.85	17.68	19.52	21.36
84	3.22	5.21	7.19	9.18	11.16	13.15	15.13	17.12	19.1	21.09	23.07
90	3.5	5.66	7.81	9.97	12.12	14.28	16.43	18.59	20.74	22.9	25.05
96	3.72	6.01	8.29	10.58	12.87	15.16	17.45	19.73	22.02	24.31	26.6
102	3.96	6.4	8.84	11.27	13.71	16.15	18.58	21.02	23.46	25.9	28.33
108	4.23	6.83	9.43	12.03	14.63	17.23	19.83	22.43	25.03	27.63	30.23
114	4.44	7.17	9.9	12.63	15.36	18.09	20.82	23.55	26.28	29.01	31.74
120	4.7	7.6	10.49	13.39	16.28	19.18	22.07	24.96	27.86	30.75	33.65

### FHLB Selection and Examples

#### Example 1:

Airflow given as 10,000 cfm - select louver size.

A. Determine louver free area by dividing airflow by free area velocity (do not exceed 922 fpm on intake louver application).

$$\frac{\text{Airflow}}{\text{Free Area Velocity}} = \frac{\text{Required Louver}}{\text{Free Area}}$$

$$\frac{10,000 \text{ cfm}}{922 \text{ fpm}} = 10.85 \text{ sq. ft.}$$

B. Select a louver with at least the required louver free area from Free Area Chart above.

66" w x 42" h

9.86 ft. free area

1015 fpm free area velocity (10,000) cfm ÷ 9.86 sq. ft. F.A.

(Other selections available - See Free Area Chart above.)

C. Check the pressure drop of the selected louver at the selected louver given airflow (Intake Pressure Drop Chart on previous pg).

$$\Delta P \text{ at } 1015 \text{ fpm} = \frac{\text{Free Area Velocity}}{\text{Pressure Drop}} = 0.11 \text{ in w.g.}$$

#### Example 2:

Louver size given as 42 x 72 intake - determine maximum airflow.

A. Use Free Area Chart to determine

$$\text{Free Area} = 11.10 \text{ sq. ft.}$$

B. Multiply Free Area x Free Area Velocity (do not exceed 1032 fpm on intake louver applications).

$$\text{Free Area} \times \text{Free Area Velocity} = \text{Maximum Airflow}$$

$$11.10 \text{ sq. ft.} \times 922 \text{ fpm} = 10,206 \text{ cfm}$$

C. Check the pressure drop of the selected louver at the given airflow (Intake Pressure Drop Chart on previous page).

$$\Delta P \text{ at } 922 \text{ fpm} = \frac{\text{Free Area Velocity}}{\text{Pressure Drop}} = 0.12 \text{ in w.g.}$$

## Model FHLB and FGLB

### Miami-Dade County Hurricane Structural Test Performance

Size Tested: 146"w x 72"h

DCBCCD PA 201-94 Large Missile Impact Test:

MISSILE TYPE	VELOCITY IN FT./SEC. (M/SEC)	IMPACTS
9 lb. Southern Yellow Pine 2" x 4" x 88-1/2" long	50 (15.24)	4

DCBCCD PA 202-94 Uniform Static Air Pressure Test:

LOAD IN PSF (kPA)	LOAD DURATION	LOUVER RECOVERY
+112.5 (+5.38)	30 Seconds	100%
-112.5 (-5.38)	30 Seconds	100%
+150 (+7.18)	30 Seconds	100%
-150 (-7.18)	30 Seconds	100%
+225 (+10.76)	30 Seconds	100%
-225 (-10.76)	30 Seconds	100%

DCBCCD PA 203-94 Fatigue Loading Test:

CYCLES	LOAD IN PSF (kPA)	LOAD DURATION CYCLE	LOUVER RECOVERY
600	+75 (+3.59)	1 to 3 Seconds	100%
600	-75 (-3.59)	1 to 3 Seconds	100%
70	+90 (+4.31)	1 to 3 Seconds	100%
70	-90 (-4.31)	1 to 3 Seconds	100%
1	+195 (+9.33)	1 to 3 Seconds	100%
1	-195 (-9.33)	1 to 3 Seconds	100%

### Installation Details

