

### Introduction: AFL

The Krueger AFL Ceiling Mounted Displacement Diffusers are designed to supply air at a low velocity from a suspended ceiling application. The AFL discharges air evenly across the face in a laminar flow pattern with minimal induction of room air. This Lay-in style diffuser installs quickly and easily in a standard T-bar ceiling, ideal in retrofit applications where there is no room for wall or floor mounted diffusers.

#### MODEL

AFL - Flat-faced, Lay-in, Ceiling Mount,  
 Low-Velocity Displacement Diffuser

#### FEATURES

- Square or rectangular sizes available
- For lay-in T-bar ceilings
- Supplies air at low velocities
- Galvanized steel and aluminum extrusion construction
- Standard hanger tabs located on each corner of plenum
- Round duct connection at top of unit

#### PANEL SIZES \*

- |           |           |           |
|-----------|-----------|-----------|
| • 12 x 24 | • 24 x 24 | • 36 x 36 |
| • 12 x 36 | • 24 x 36 | • 36 x 48 |
| • 12 x 48 | • 24 x 48 | • 36 x 60 |
| • 12 x 60 | • 24 x 60 | • 36 x 72 |
| • 12 x 72 | • 24 x 72 |           |

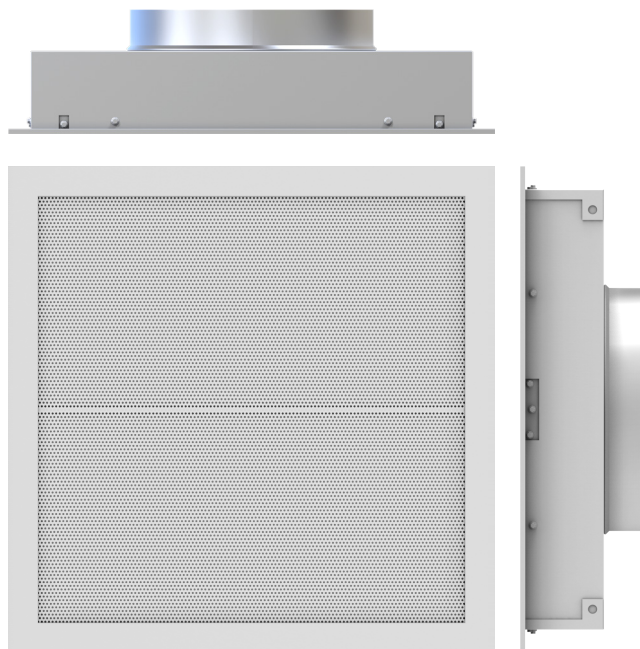
#### OPTIONS

- Stainless steel construction
- 1" insulation
- Front face panel thickness of 20 gauge (not available in stainless steel)

#### FINISHES

- Standard finish is 44 white for galvanized steel and aluminum material
- Standard finish is 90 mill finish for stainless steel
- Custom colors available

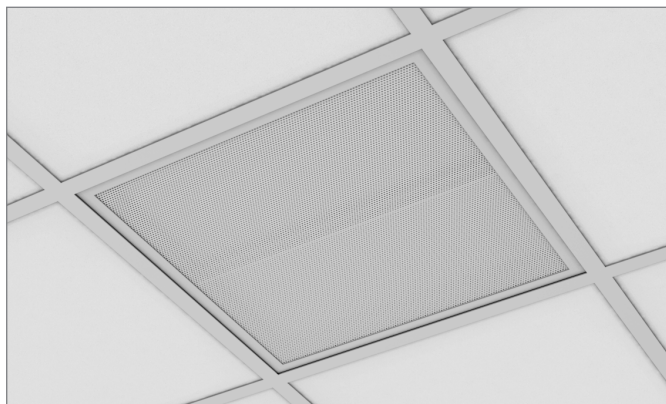
\* Inlet size availability per panel provided on next page.



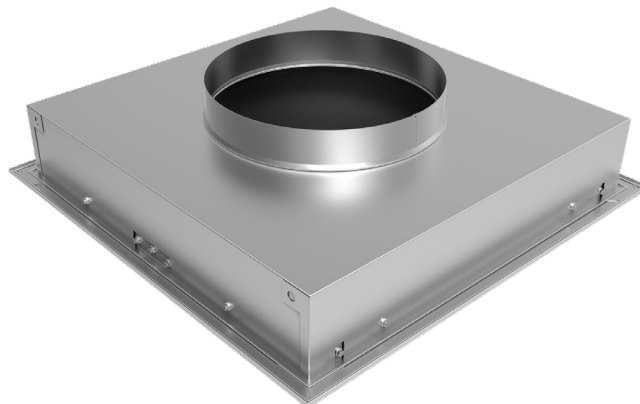
AFL Face and Side Views



AFL Isometric Face View



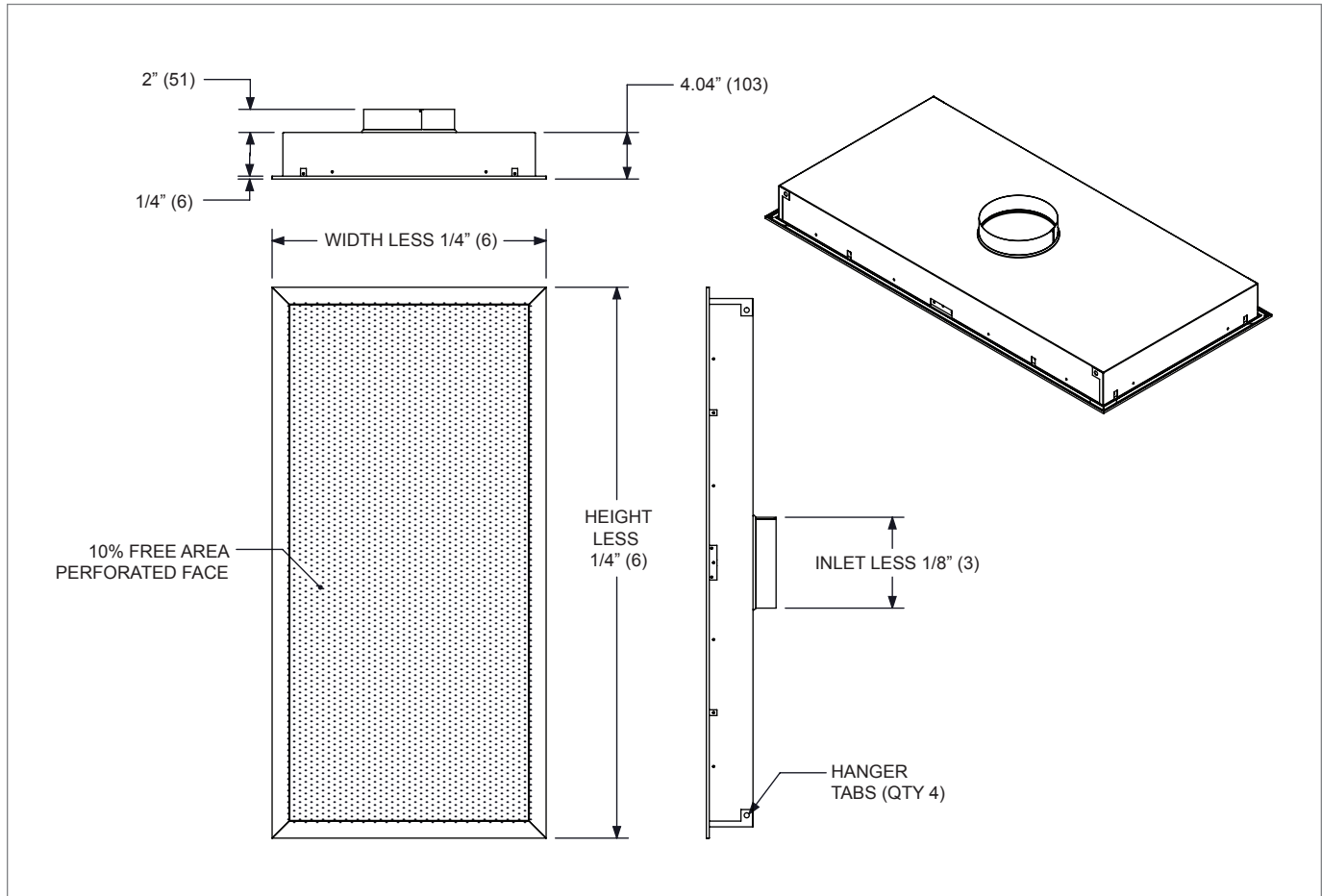
AFL Installation View



AFL Isometric Plenum View

**AFL Dimensional Information**

**AFL FRONT, SIDE, AND ISOMETRIC VIEWS**



NOTES: Dimensions in parentheses are mm.

**AFL PANEL AND INLET SIZES**

Panel Size	Inlet Size Availability							
	6"	8"	10"	12"	14"	16"	18"	20"
12" x 24"	x	x						
12" x 36"	x	x						
12" x 48"	x	x						
12" x 60"	x	x						
12" x 72"	x	x						
24" x 24"	x	x	x	x	x	x	x	
24" x 36"	x	x	x	x	x	x	x	
24" x 48"	x	x	x	x	x	x	x	
24" x 60"	x	x	x	x	x	x	x	
24" x 72"	x	x	x	x	x	x	x	
36" x 36"	x	x	x	x	x	x	x	x
36" x 48"	x	x	x	x	x	x	x	x
36" x 60"	x	x	x	x	x	x	x	x
36" x 72"	x	x	x	x	x	x	x	x

DISPLACEMENT VENTILATION

AFL

## AFL Application & Installation

### INSTALLATIONEXPLODEDVIEW



### INSTALLATION

Perform the installation in order.

1. Locate AFL in suspended ceiling grid.
2. Bend out hanger tabs at each corner and attach to structural support above.

### FUNCTION

Air is discharged into the space through the face of the unit, normally at a slightly lower temperature than setpoint.

The supply air flows down to floor level and gradually pervades through the occupied space before rising due to the convection of warm surfaces.

The low velocity flow pattern is directed perpendicular to the face.

## AFL Performance Data

### IP/METRIC DATA: AFL SERIES

Unit Size	Inlet Size	Face Velocity	Airflow	Total Pressure	Static Pressure	Noise Criteria	Adjacent Zone (40 fpm)	
							$\Delta T = -5^\circ F$ Radius (ft)	$\Delta T = -10^\circ F$ Radius (ft)
24x12	6	20	25	.004	.003	5	-	-
		30	38	.009	.007	6	2	3
		40	51	.017	.013	6	3	4
		50	64	.027	.020	7	4	5
24x24	8	20	60	.012	.010	5	2	3
		30	90	.028	.023	7	3	4
		40	120	.049	.042	9	4	5
		50	150	.077	.065	10	5	6
48x24	10	20	124	.014	.012	7	4	5
		30	185	.031	.027	12	5	6
		40	247	.055	.048	16	6	6
		50	309	.085	.076	20	6	7

NOTES: Diffuser was mounted in a 9 ft. ceiling with no sidewall entrainment. Adjacent Zone size represents the throw distance in feet from on the floor directly under the diffuser to a terminal velocity of 40 fpm measured at 1" above the floor.  $\Delta T$  is the temperature difference between the supply air and the room temperature measured at 42" above the floor. NC values are based on Octave Band 2 - 7 sound power levels minus a room absorption of 10dB. Dash in space denotes a NC or dB value of less than 10. Data was obtained from tests conducted in accordance with ANSI / ASHRAE Standard 70-1991.

**AFL Suggested Specification & Configuration**

**A. General:**

1. Furnish and install Krueger AFL ceiling mounted lay-in displacement diffuser with the sizes, capacities, and options as indicated on the plans and air outlet schedule.
2. The displacement diffuser shall deliver air to the occupied space at low noise levels, with uniform, low velocity across the diffuser face in all ducting configurations without the use of nozzles.

**B. Construction:**

1. The ceiling mounted displacement diffuser shall include an equalization baffle behind the perforated diffuser face for uniform, low velocity distribution of supply air. Both the equalization baffle and the face shall be securely retained in the diffuser frames.
2. The diffuser plenum shall be 20 gauge [steel] or [aluminum] diffuser frame shall be constructed of high strength [aluminum extrusion] or [steel] for rigidity and protection of the perforated face and side panels. The perforated front panel shall be constructed of 20 gauge perforated [steel] or [aluminum], and the frame shall be painted 20 gauge [steel] or [aluminum].
3. The diffuser shall not have visible fasteners on the frame and border.
4. The diffuser inlet shall be available for duct connection at the top of the plenum assembly.
5. Plastic nozzle arrays are not acceptable.
6. The diffuser shall be available in the following module sizes:
  - 12"x24" with 6" or 8" diameter inlet
  - 12"x36" with 6" or 8" diameter inlet
  - 12"x48" with 6" or 8" diameter inlet
  - 12"x60" with 6" or 8" diameter inlet
  - 12"x72" with 6" or 8" diameter inlet
  - 24"x24" with 8", 10", 12", 14", 16", or 18" diameter inlet
  - 24"x36" with 8", 10", 12", 14", 16", or 18" diameter inlet
  - 24"x48" with 8", 10", 12", 14", 16", or 18" diameter inlet
  - 24"x60" with 8", 10", 12", 14", 16", or 18" diameter inlet
  - 24"x72" with 8", 10", 12", 14", 16", or 18" diameter inlet
  - 36"x36" with 8", 10", 12", 14", 16", 18", or 20" diameter inlet
  - 36"x48" with 8", 10", 12", 14", 16", 18", or 20" diameter inlet
  - 36"x60" with 8", 10", 12", 14", 16", 18", or 20" diameter inlet
  - 36"x72" with 8", 10", 12", 14", 16", 18", or 20" diameter inlet

**C. Diffuser finish shall be (select one):**

1. All steel components shall have #44 White baked-on powder coat finish. Visible non-metallic components shall not be acceptable.
  - The paint film thickness shall be a minimum of 0.002".
  - The finish shall have a minimum hardness of H.
  - The finish shall withstand a minimum salt spray exposure of 1000 hours with no measurable creep in accordance with ASTM D1654, and 1000 hours of exposure with no rusting or blistering as per ASTM D610 and ASTM D714.
  - The finish shall have an impact resistance of 80 inch-pounds.
2. All stainless steel face components shall have #90 mill finish on exposed surfaces.

1. **MODEL: (XXX)**  
AFL - Flat-faced, Lay-in, Ceiling Mount, Low-Velocity Displacement Diffuser
  2. **PANEL SIZE: (XXxXX)**

12"x24"	24"x24"	36"x36"
12"x36"	24"x36"	36"x48"
12"x48"	24"x48"	36"x60"
12"x60"	24"x60"	36"x72"
12"x72"	24"x72"	
  3. **INLET: (XX)**  
6" to 20" in 2" Increments \*
  4. **FRAME STYLE: (XXX)**  
F22 - Surface Mount  
F23 - Lay-in T-bar
  5. **MATERIAL: (X)**  
GS - Galvanized Steel  
SS - 316 Stainless Steel
  6. **FRONT PANEL THICKNESS: (XX)**  
20 - 20 Gauge
  7. **INSULATION: (X)**  
0 - None  
W - 1" External Foil Faced Insulation
  8. **FINISH: (XX)**  
01 - Mill  
1A - Antimicrobial Alumican  
4A - Antimicrobial British White  
10 - Alumican  
44 - British White  
49 - Off White  
35 - Black  
90 - Polished  
07 - Custom
- \* See page D3-42 for inlet size availability for panel sizes.

**D. Mounting/Fastening:**

1. The diffuser shall integrate into a standard T-bar ceiling and shall have no visible fasteners.

**E. Options:**

1. Insulation: AFL – The diffuser shall be externally insulated with 1 inch fiberglass with foil/scrim vapor barrier which meets the requirements of UL 181 and NFPA 90A.

**SAMPLE CONFIGURATION: AFL - 24x24 - 10 - F23 - GS - 20 - 0 - 44**

DISPLACEMENT VENTILATION

AFL

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