

DISPLACEMENT VENTILATION ENGINEERING

Displacement Ventilation System.....D3-3
 Application OverviewD3-5
 System Design.....D3-6
 References.....D3-8

AFA

IntroductionD3-9
 Dimensional Data.....D3-11
 Reference Chart & Performance DataD3-12
 Engineering Specifications.....D3-13

AFB

IntroductionD3-14
 Dimensional Data & Reference Chart.....D3-16
 Performance Data.....D3-17
 Engineering Specifications.....D3-18

AFC

IntroductionD3-19
 Dimensional Data & Reference Chart.....D3-21
 Performance Data.....D3-22
 Engineering Specifications.....D3-23

AFD

IntroductionD3-24
 Dimensional Data & Reference Chart.....D3-26
 Performance Data.....D3-27
 Engineering Specifications.....D3-28

AFE

IntroductionD3-29
 Dimensional Data & Reference Chart.....D3-31
 Performance Data.....D3-32
 Engineering Specifications.....D3-32

AFF

IntroductionD3-33
 Dimensional Data & Reference Chart.....D3-35
 Performance Data.....D3-36
 Engineering Specifications.....D3-37

AFP

IntroductionD3-38
 Dimensional Data.....D3-39
 Reference Chart & Performance DataD3-40
 Engineering Specifications.....D3-41

AFQ

IntroductionD3-42
 Dimensional Data & Reference Chart.....D3-44
 Performance Data.....D3-45
 Engineering Specifications.....D3-46

Introduction: AFF

The *Krueger by Halton AFF* provides a low velocity 180° discharge pattern and is ideal for shallow, wall mounted installations, with floor level discharge. The shallow depth curved face is an excellent addition to the architectural side where maximum performance is key, such as classrooms, single offices, and waiting areas. The detachable face facilitates cleaning of the internal baffle and duct connections.

MODEL

AFF - Half Flat Oval, Low-Velocity Supply Unit

FEATURES

- 20 gage front panel.
- Horizontal low velocity discharge at floor level.
- Shallow footprint.
- Large airflow rates with low residual velocities in the occupied zone due to large front plate.
- Detachable front plate and removable baffle enables cleaning of the unit and duct work.
- Rectangular duct connection on top/bottom of the unit.

OPTIONS

- Stainless steel (AISI 316) design.
- 16 gage front panel.
- Duct cover (solid or perforated).
- Installation base (2", 4", 6").
- Vinyl trim in white or black.
- Metal trim (painted to match).

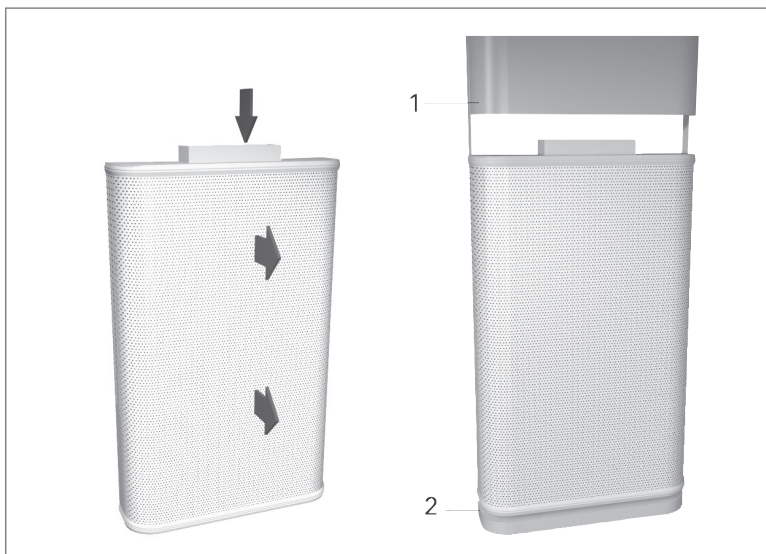
FINISHES

- Standard is Polyester Painted White (RAL 9010).
- Custom colors available.



AFF

AFF Application



FUNCTION

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

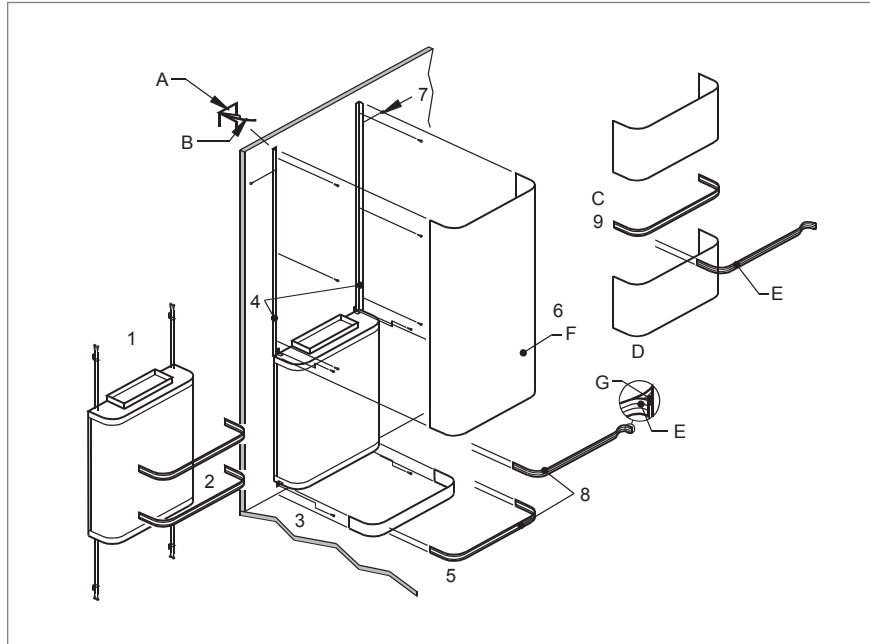
The supply air flows at floor level and gradually pervades through the occupied space before rising due to the convection of warm surfaces.

The low velocity flow pattern is semi-circular (180°).

NOTES: The flow pattern data has been defined for floor installation. (1) Duct cover is for covering the duct work and is optional. (2) Installation base is used to raise the unit off the floor and is also optional.

AFF Installation

INSTALLATION EXPLODED VIEW



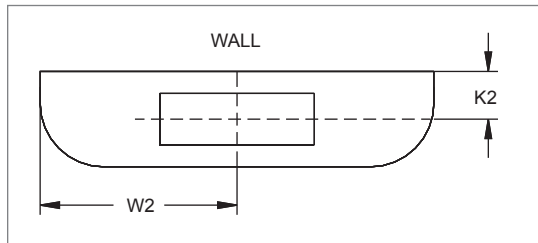
INSTALLATION

Perform the installation in order.

1. Fix mounting brackets (4 places) to low velocity unit.
2. Remove trim (E) from unit.
3. Locate unit against wall and secure through mounting brackets.
4. Fix duct cover support brackets (A) to wall between unit and ceiling.
5. Position base against lower flange of the unit.
6. After installation of duct work, locate duct cover as follows: Locate duct cover section (F) on top flange (G) of unit and firmly push into support brackets fixed to wall (B).
7. Secure duct cover with screws through cover into support brackets.
8. Re-fit trim between duct cover and unit, and between base and unit by bending trim back on itself (E) and pressing bead into groove in flange (G).
9. When multiple sections of duct cover are used (D), an aluminium coupling flange (C) is needed.

DISPLACEMENT VENTILATION

DUCT INSTALLATION



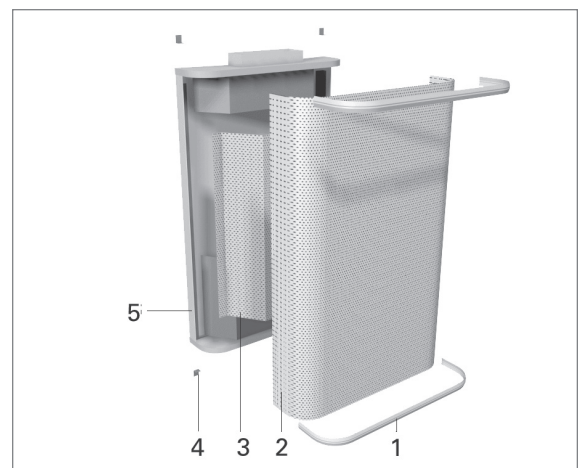
AFF Size	W2	K2
12"x04"	14 3/4"	2 13/16"
24"x04"	18 11/16"	2 13/16"
24"x08"	20 11/16"	4 3/4"
32"x10"	23 5/8"	5 11/16"
40"x12"	29 1/2"	6 11/16"
40"x20"	35 7/16"	10 5/8"

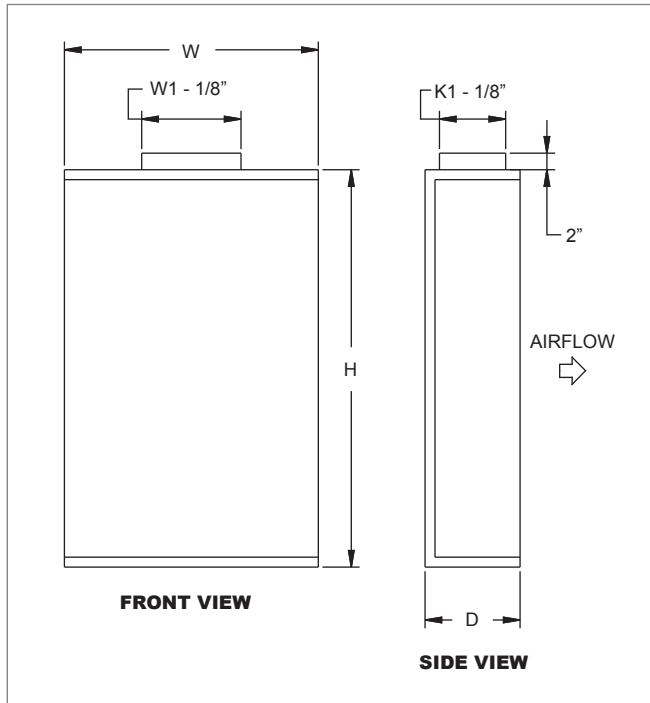
AFF Service & Maintenance

SERVICING

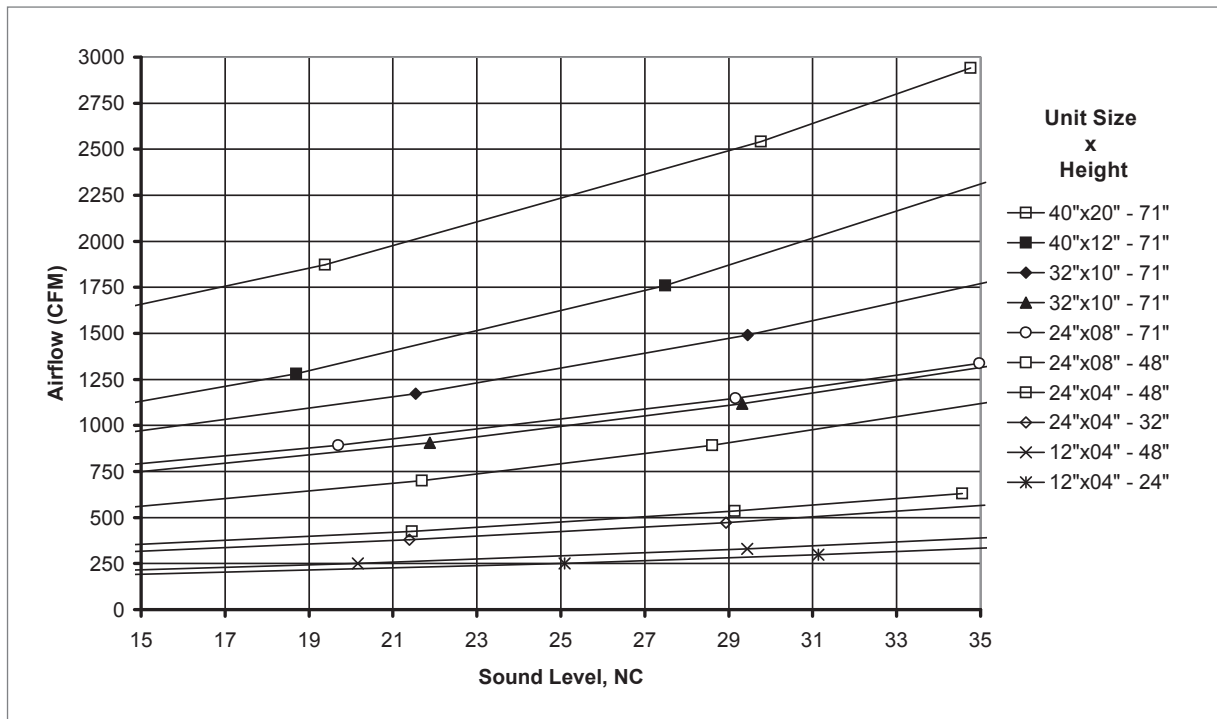
Open the front panel (2) by first removing the trim (1) and unscrew the screws. Pull out the front panel. If required, the internal baffle (3) can be detached by unscrewing the fixing screws. Pull out the inner structure. Clean the parts with a brush or a damp cloth. After cleaning, reassemble in reverse order.

Code	Description
1	Trim
2	Front Panel
3	Internal Baffle
4	Assembly Brackets
5	Casing



AFF Dimensional Information
AFF FRONT AND SIDE VIEWS

AFF DIMENSIONAL REFERENCES

AFF Size	W	H	D	W1	K1
12"x04"	30 3/16"	23 13/16"	7 3/8"	12"	4"
12"x04"	30 3/16"	47 7/16"	7 3/8"	12"	4"
24"x04"	38 1/16"	31 11/16"	7 3/8"	24"	4"
24"x04"	38 1/16"	47 7/16"	7 3/8"	24"	4"
24"x08"	42"	47 7/16"	11 5/16"	24"	8"
24"x08"	42"	71 1/16"	11 5/16"	24"	8"
32"x10"	47 15/16"	47 7/16"	13 1/4"	32"	10"
32"x10"	47 15/16"	71 1/16"	13 1/4"	32"	10"
40"x12"	59 3/4"	71 1/16"	15 1/4"	40"	12"
40"x20"	71 9/16"	71 1/16"	23 7/8"	40"	20"

AFF Reference Chart
AIRFLOW VS. NC LEVEL: AFF SERIES


AFF | Half Flat Oval, Low-Velocity Supply

AFF Performance Data

IP/METRIC DATA: AFF SERIES

Unit Size	IP Data						NC	Metric Data						Octave Band, dB						
	Neck Vel	Air Flow	Pt	Ps	Near T ₅₀ @ 4 ft	T ₅₀ @ Floor		Neck Vel	Air Flow	Pt	Ps	Near T _{.25} @ 1.1 m	T _{.25} @ Floor							
	FPM	CFM	"WG	"WG	ft	ft		m/s	L/s	Pa	Pa	m	m							
12"x04" 24" H	550	173	.039	0.020	0	5	12	2.79	82	9.8	5.1	0.1	1.6	17	27	21	12	-	-	
	800	251	.083	0.043	1	8	25	4.06	119	20.7	10.8	0.2	2.4	31	36	34	28	12	15	
	950	299	.117	0.061	1	9	31	4.83	141	29.2	15.2	0.2	2.8	37	40	40	36	23	19	
	1100	346	.157	0.082	1	10	36	5.59	163	39.2	20.4	0.3	3.0	43	44	45	42	33	22	
12"x04" 48" H	650	204	.058	0.032	1	6	13	3.30	96	14.4	7.9	0.2	1.9	23	22	23	15	-	-	
	800	251	.088	0.048	1	8	20	4.06	119	21.9	11.9	0.3	2.3	28	28	29	23	-	13	
	1050	330	.151	0.083	2	9	29	5.33	156	37.7	20.6	0.6	2.9	33	35	37	34	23	20	
	1250	393	.214	0.117	3	10	35	6.35	185	53.4	29.1	0.8	3.1	37	39	43	41	33	25	
24"x04" 32" H	450	284	.048	0.035	0	7	12	2.29	134	11.9	8.7	0.2	2.0	24	24	21	13	-	14	
	600	378	.085	0.062	1	9	21	3.05	179	21.1	15.5	0.3	2.7	29	31	30	25	-	17	
	750	473	.132	0.097	1	11	29	3.81	223	33.0	24.2	0.4	3.3	32	37	38	33	22	19	
	900	568	.191	0.140	2	13	35	4.57	268	47.5	34.9	0.6	4.0	36	41	44	41	32	21	
24"x04" 48" H	500	315	.050	0.034	1	7	11	2.54	149	12.4	8.5	0.3	2.0	22	23	21	-	-	18	
	675	426	.091	0.062	2	9	21	3.43	201	22.6	15.5	0.6	2.7	28	30	30	21	-	19	
	850	536	.144	0.099	3	11	29	4.32	253	35.8	24.6	0.9	3.5	33	35	37	32	21	20	
	1000	631	.199	0.137	4	13	35	5.08	298	49.6	34.0	1.2	4.0	36	39	42	40	28	20	
24"x08" 48" H	400	510	.045	0.035	1	8	13	2.03	241	11.1	8.7	0.4	2.3	31	26	20	-	-	15	
	550	701	.085	0.066	2	10	22	2.79	331	21.1	16.4	0.7	3.2	33	32	29	23	14	18	
	700	892	.137	0.106	4	13	29	3.56	421	34.1	26.5	1.2	3.9	35	36	35	33	25	20	
	900	1147	.226	0.176	7	15	36	4.57	541	56.4	43.8	2.0	4.4	36	41	42	43	37	22	
24"x08" 71" H	550	701	.046	0.027	3	12	11	2.79	331	11.4	6.7	1.0	3.7	23	20	20	-	-	15	
	700	892	.074	0.044	5	16	20	3.56	421	18.5	10.9	1.6	4.8	27	28	29	20	-	17	
	900	1147	.123	0.072	9	18	29	4.57	541	30.5	18.0	2.7	5.4	32	36	38	33	24	20	
	1050	1338	.167	0.098	12	19	35	5.33	632	41.6	24.4	3.7	5.9	34	41	44	42	33	22	
32"x10" 48" H	325	692	.056	0.050	4	10	12	1.65	327	14.0	12.4	1.1	3.1	26	27	22	16	-	15	
	425	905	.096	0.085	6	13	22	2.16	427	24.0	21.2	1.9	4.0	32	34	31	26	12	19	
	525	1118	.147	0.130	10	16	29	2.67	528	36.6	32.3	2.9	5.0	36	39	37	35	22	22	
	625	1331	.208	0.184	14	20	35	3.18	628	51.9	45.8	4.2	6.0	40	43	43	41	30	25	
32"x10" 71" H	400	852	.035	0.025	3	9	11	2.03	402	8.7	6.2	1.0	2.8	28	21	15	-	-	13	
	550	1172	.066	0.047	5	13	22	2.79	553	16.5	11.8	1.4	3.9	34	31	28	18	12	18	
	700	1491	.107	0.077	6	15	29	3.56	704	26.7	19.1	1.8	4.7	38	38	38	33	24	23	
	850	1811	.158	0.113	7	17	36	4.32	855	39.4	28.2	2.2	5.2	41	44	46	45	33	26	
40"x12" 71" H	300	960	.031	0.025	2	9	11	1.52	453	7.7	6.3	0.5	2.8	30	25	11	-	-	-	
	400	1280	.055	0.045	3	12	19	2.03	604	13.7	11.2	0.8	3.8	36	33	23	-	-	-	
	550	1761	.104	0.085	5	16	27	2.79	831	25.8	21.1	1.6	4.8	43	41	35	21	12	17	
	725	2321	.180	0.147	9	18	35	3.68	1095	44.9	36.7	2.7	5.5	48	48	46	39	22	24	
40"x20" 71" H	275	1471	.046	0.041	4	15	11	1.40	694	11.5	10.3	1.3	4.5	38	26	-	-	-	-	
	350	1872	.075	0.067	7	19	19	1.78	884	18.6	16.7	2.2	5.7	44	34	12	-	-	-	
	475	2541	.138	0.123	13	22	30	2.41	1199	34.2	30.7	4.0	6.6	51	45	36	29	22	22	
	550	2942	.184	0.166	18	23	35	2.79	1389	45.9	41.2	5.4	7.1	54	51	47	38	28	28	

NOTES: Throw values are given for terminal velocities of 50 fpm (0.25 m/s). Throw values are given for -6°F (-3°C) ΔT conditions. N.C. values are based on Octave Band 2 - 7 sound power levels minus a room absorption of 4dB. 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.

DISPLACEMENT VENTILATION

AFF

© KRUEGER 2012

AFF Suggested Specification & Configuration

1. **MODEL: (XXX)**
AFF - Half Flat Oval, Low-Velocity Supply Unit
2. **UNIT SIZE: (XXxXX)**
12x04 - Nominal
24x04 - Nominal
24x08 - Nominal
32x10 - Nominal
40x12 - Nominal
40x20 - Nominal
3. **HEIGHT: (XX) ***
24 - Nominal
32 - Nominal
48 - Nominal
72 - Nominal
4. **MATERIAL: (XX)**
GS - Steel
SS - 316 Stainless Steel **
5. **FRONT PANEL THICKNESS: (XX)**
20 - 20 Gage (Standard)
16 - 16 Gage
6. **TRIM: (XXX)**
WHT - White
BLK - Black
MTL - Metal, Painted to Match
7. **DUCT COVER: (XX)**
00 - None
DP - Perforated Duct Cover
DS - Solid Sheet Duct Cover
8. **DUCT COVER LENGTH: (XXX.XXX)**
xxx.xxx - Length in Inches
9. **INSTALLATION BASE: (XX)**
00 - None
B2 - 2" Base Cover
B4 - 4" Base Cover
B6 - 6" Base Cover
10. **FINISH: (XX)**
44 - White (RAL-9010)
35 - Black
90 - Polished ***
07 - Custom

* See dimensional information for unit and inlet size offerings.

** Material Code SS (316 stainless steel) not available with Front Panel Thickness code 16 (16 gage). Material Code SS (316 stainless steel) only available with Finish code 90 (polished). If Material Code SS (Stainless Steel) is selected, the Duct Cover and Installation Base, if selected will be Stainless Steel.

*** Finish code 90 (polished) not available with Material Code GS (steel).

AFF

Furnish and install Krueger by Halton AFF displacement diffuser as indicated on the drawings and diffuser schedule.

The half flat oval low velocity diffuser shall be made of galvanized steel with a polyester powder coat finish. The unit shall include a detachable perforated front panel and include an internal equalization baffle. The front panel shall have holes on a staggered pattern providing a well-balanced appearance and enhancement to performance. Both the internal baffle and diffuser face shall be attached securely to the extruded aluminum frame or galvanized housing. The diffuser design will be robust, rigid and sturdy with a 20ga. face and cabinet. The unit shall have a rectangular duct connection as required by the diffuser schedule. The horizontal edges of the diffuser shall include a vinyl or metal trim for aesthetic appeal. Mounting brackets shall be included with the unit for installation.

BASE

Furnish and install the base as indicated on the drawings and diffuser schedule. The base shall be manufactured of 20ga. steel to match the footprint of the displacement diffuser. The base height will be indicated on the drawings and diffuser schedule. The base will be independently removable from the diffuser allowing access to the duct if supplied from below; or to the area beneath the diffuser. The base finish will match the diffuser.

DUCT COVER

Furnish and install the duct cover as indicated on the drawings and diffuser schedule. The duct cover will be supplied in either a solid or perforated 20ga. steel material. The perforated material will match the diffuser in pattern and stagger. The duct cover will be supplied with mounting angles and trim pieces for installation. The duct cover finish will match the diffuser.

PERFORMANCE

Unit performance shall be tested in accordance with the following standards: Air flow rate, EN-ISO 5167-1; Pressure Difference, EN-ISO 5135; Sound Power Level, EN-ISO 7235.