

AIR ZONE INTERNATIONAL

Custom Features - Modular Versatility



Quality Modular Air Handling Equipment

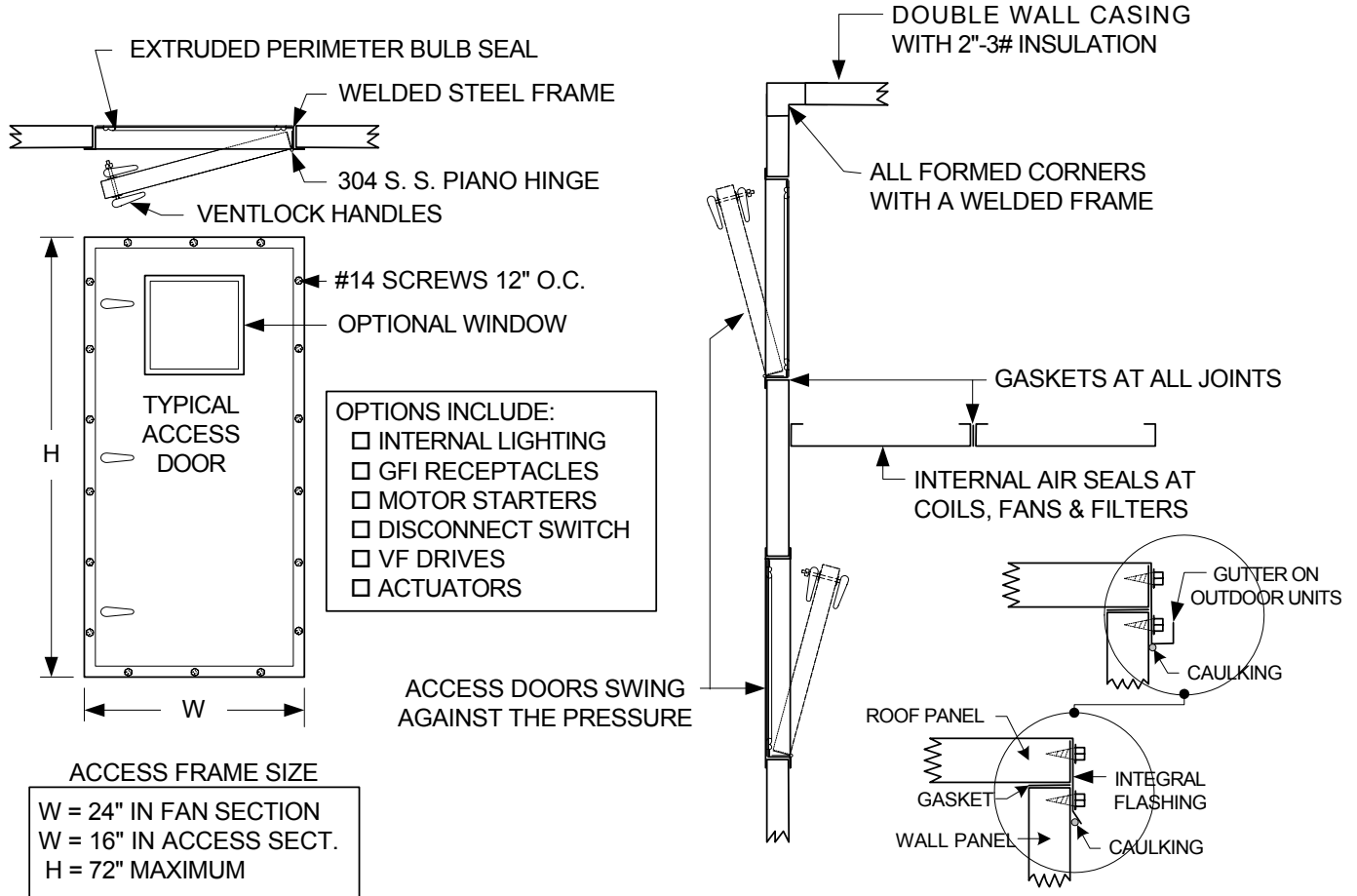
1,000 to 60,000 CFM

ETL Certified

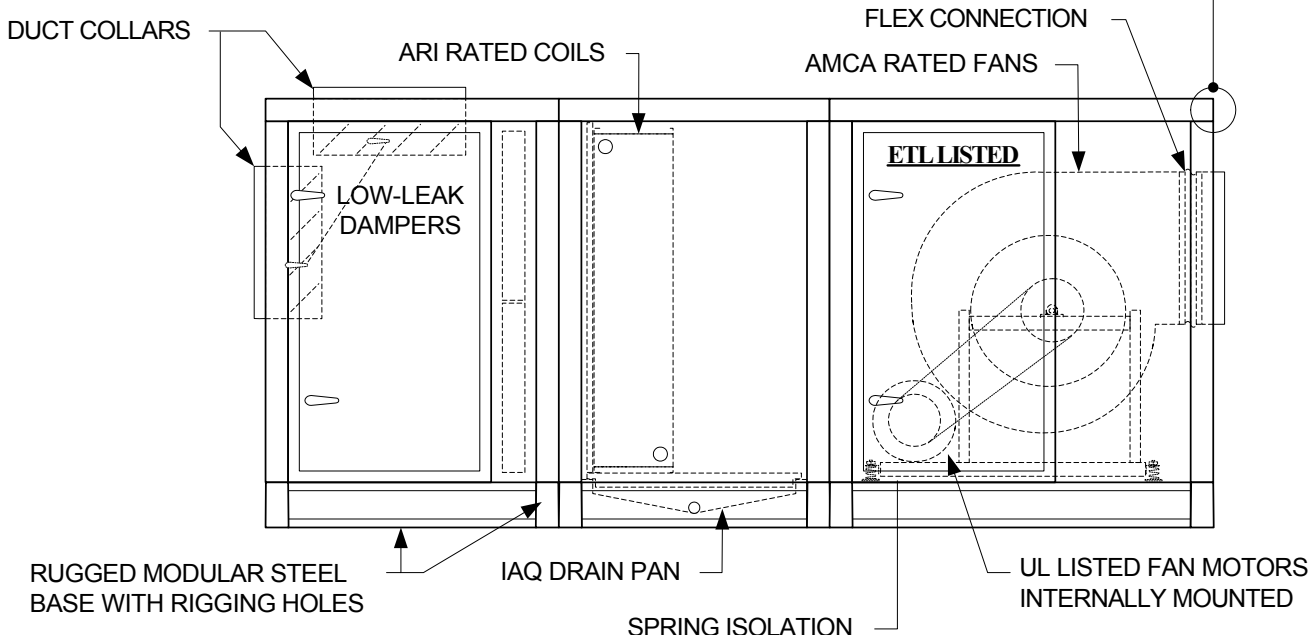
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STANDARD DESIGN FEATURES



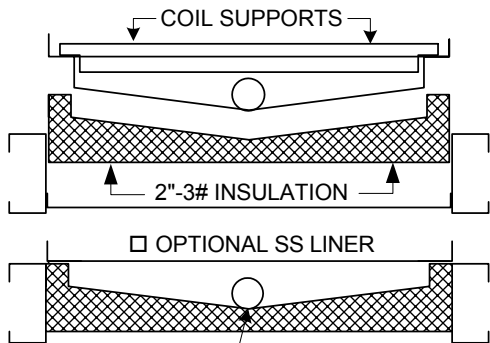
INDEPENDENTLY TESTED UP TO 12" W.G.



SUPERIOR DESIGN + CERTIFIED COMPONENTS = DEPENDABLE QUALITY AIR UNITS

STANDARD DESIGN FEATURES

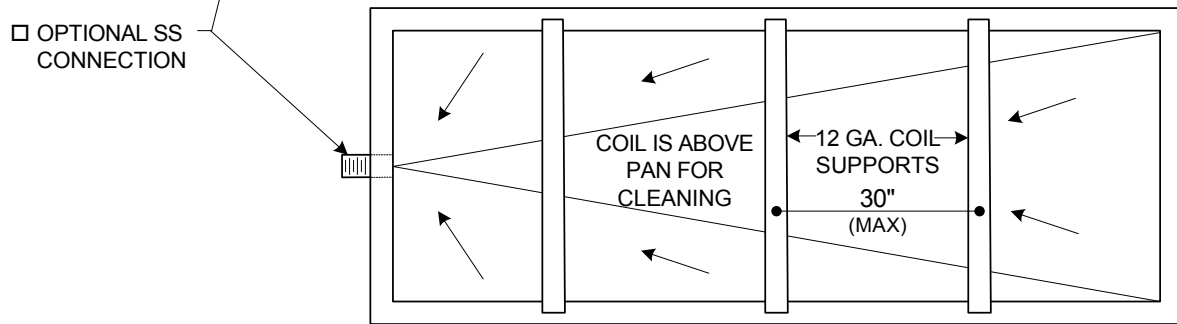
DRAIN PAN DETAILS



DRAIN PAN CONSTRUCTION

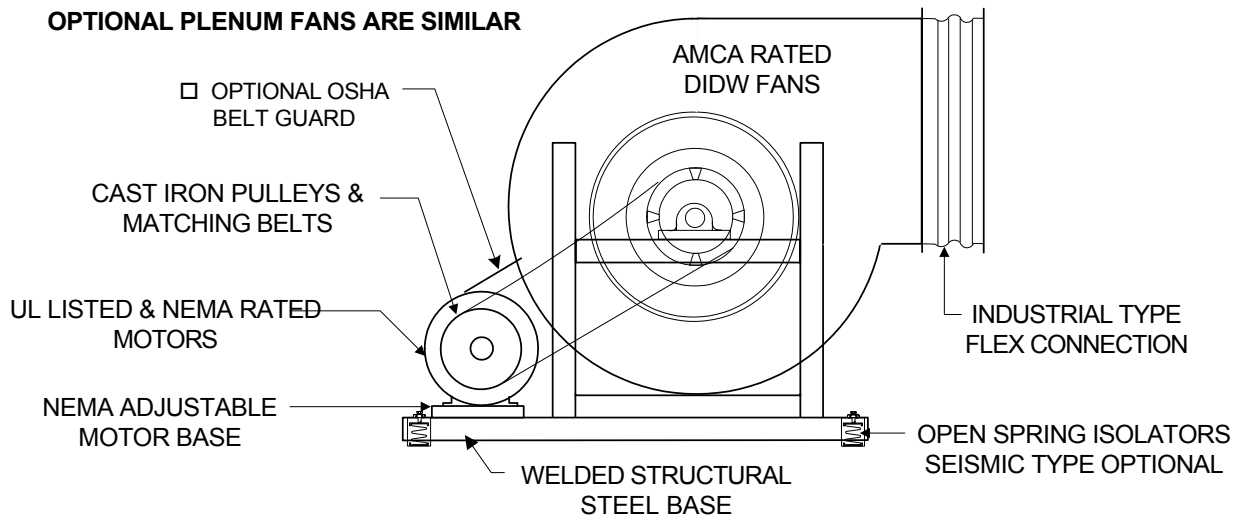
- GALVANIZED DOUBLE SKIN - IAQ DRAIN PAN STANDARD
- OPTIONAL 304 & 316 STAINLESS STEEL DRAIN PANS
- COIL IS ABOVE PAN WITH SUPPORTS 24" ON CENTER
- 2"-3# INSULATION ENCAPSULATED & SURROUNDING PAN
- RUGGED STEEL CHANNEL BASE WITH SOLID BOTTOM
- WELDED UNITIZED ASSEMBLY-FACTORY LEAK TESTED
- 1 1/4" MPT DRAIN CONNECTION AT THE LOWEST POINT
- DRAIN DRY DESIGN IN ACCORDANCE WITH ARI & ASHRAE

DOUBLE SLOPE DESIGN IN ACCORDANCE WITH IAQ STANDARDS



PLAN VIEW OF STANDARD DRAIN PAN

OPTIONAL PLENUM FANS ARE SIMILAR



FAN ASSEMBLY DETAILS

SELECTION PROCEDURE

- Step 1:** Determine unit type and arrangement from the Basic Unit Arrangement diagrams.
- Step 2:** Determine unit size based on CFM, coil face area and the desired face velocity. Normally a face velocity between 500 and 550 FPM is acceptable for most applications. A careful review of the purchasers specifications should be made to determine if a maximum face velocity is required.
- Step 3:** Select cooling and heating coils that meet the required face velocity & provide performance as required. Utilize the computerized coil selection program to select the required coil rows and fin type.
- Step 4:** Review the basic unit and accessories to determine if the selected model will fit within the available space. See the dimensional drawings contained in this catalog when selecting each section.
- Step 5:** Select a fan type suitable for the application and utilize the computerized fan selection program.
- Step 6:** A complete selection procedure may require factory assistance. If you need assistance with a selection or if training is required contact the factory by fax or E-mail.

PHYSICAL DATA

UNIT SIZE		04	07	10	13	15	17	21	26	30
COOLING COIL	LARGE COIL	3.89	7.64	10.50	13.32	15.31	17.01	21.39	25.94	30.21
	FH x FW	20 x 28	25 x 44	27.5 x 55	32.5 x 59	35 x 63	35 x 70	40 x 77	45 x 83	50 x 87
	MED. COIL	3.40	6.88	9.55	11.27	13.13	14.58	18.72	23.06	27.19
	FH x FW	17.5 x 28	22.5 x 44	25 x 55	27.5 x 59	30 x 63	30 x 70	35 x 77	40 x 83	45 x 87
	SMALL COIL	2.92	5.35	7.64	9.22	10.94	12.15	16.04	18.73	22.66
	FH x FW	15 x 28	17.5 x 44	20 x 55	22.5 x 59	25 x 63	25 x 70	30 x 77	32.5 x 83	37.5 x 87
HEATING COIL	LARGE COIL	3.89	7.64	10.50	13.32	15.31	17.01	21.39	25.94	30.21
	FH x FW	20 x 28	25 x 44	27.5 x 55	32.5 x 59	35 x 63	35 x 70	40 x 77	45 x 83	50 x 87
	MED. COIL	3.40	6.88	9.55	11.27	13.13	14.58	18.72	23.06	27.19
	FH x FW	17.5 x 28	22.5 x 44	25 x 55	27.5 x 59	30 x 63	30 x 70	35 x 77	40 x 83	45 x 87
	SMALL COIL	2.92	5.35	7.64	9.22	10.94	12.15	16.04	20.17	22.66
	FH x FW	15 x 28	17.5 x 44	20 x 55	22.5 x 59	25 x 63	25 x 70	30 x 77	32.5 x 83	37.5 x 87
	MULTI-ZONE	1.94	3.82	5.73	7.17	7.66	8.51	10.69	12.97	15.10
FH x FW	10 x 28	12.5 x 44	15 x 55	17.5 x 59	17.5 x 63	17.5 x 70	20 x 77	22.5 x 83	25 x 87	
CFM _(D) LARGE COIL	350 FPM	1,362	2,674	3,675	4,662	5,359	5,954	7,487	9,079	10,574
	400 FPM	1,556	3,056	4,200	5,328	6,124	6,804	8,556	10,376	12,084
	450 FPM	1,751	3,438	4,725	5,994	6,890	7,655	9,626	11,673	13,595
	500 FPM	1,945	3,820	5,250	6,660	7,655	8,505	10,695	12,970	15,105
	550 FPM	2,140	4,202	5,775	7,326	8,421	9,356	11,765	14,267	16,616
	600 FPM	2,334	4,584	6,300	7,992	9,186	10,206	12,834	15,564	18,126
UNIT SIZE		33	36	40	51	59	69	77	85	103
COOLING COIL	LARGE COIL	32.64	35.90	40.10	51.04	58.33	69.27	76.56	85.31	103.02
	FH x FW	50 x 94	55 x 94	55 x 105	70* x 105	80* x 105	95* x 105	105* x 105	105* x 117	115* x 129
	MED. COIL	29.38	32.64	36.46	43.75	54.69	61.98	65.63	70.83	94.06
	FH x FW	45 x 94	50 x 94	50 x 105	60* x 105	75* x 105	85* x 105	90* x 105	90* x 117	105* x 129
	SMALL COIL	24.48	26.11	29.16	38.28	43.75	51.04	58.33	65.00	76.15
	FH x FW	37.5 x 94	40 x 94	40 x 105	52.5 x 105	60* x 105	70* x 105	80* x 105	80* x 117	85* x 129
HEATING COIL	LARGE COIL	32.64	35.90	40.10	51.04	54.69	65.63	72.92	81.25	89.58
	FH x FW	50 x 94	55 x 94	55 x 105	70 x 105	75 x 105	90* x 105	100* x 105	100* x 117	100* x 129
	MED. COIL	29.38	32.64	36.46	43.75	54.69	54.69	61.98	70.83	80.63
	FH x FW	45 x 94	50 x 94	50 x 105	60 x 105	75 x 105	75 x 105	85* x 105	90* x 117	90* x 129
	SMALL COIL	24.48	26.11	29.17	38.28	43.75	51.04	54.69	60.94	71.67
	FH x FW	37.5 x 94	40 x 94	40 x 105	52.5 x 105	60 x 105	70 x 105	75 x 105	75 x 117	80* x 129
	MULT-IZONE	16.32	17.95	20.05	25.52	29.17	34.64	40.1	44.69	51.51
FH x FW	25 x 94	27.5 x 94	27.5 x 105	35 x 105	40 x 105	47.5 x 105	55 x 105	55 x 117	57.5 x 129	
CFM _(D) LARGE COIL	350 FPM	11,424	12,565	14,035	17,864	20,416	24,245	26,796	29,859	36,057
	400 FPM	13,056	14,360	16,040	20,416	23,332	27,708	30,624	34,124	41,208
	450 FPM	14,688	16,155	18,045	22,968	26,249	31,172	34,452	38,390	46,359
	500 FPM	16,320	17,950	20,050	25,520	29,165	34,635	38,280	42,655	51,510
	550 FPM	17,952	19,745	22,055	28,072	32,082	38,099	42,108	46,921	56,661
	600 FPM	19,584	21,540	24,060	30,624	34,998	41,562	45,936	51,186	61,812

NOTES:

- A. Coils with an * are divided into two or more coils that are stacked or staggered. Cooling coils also have an intermediate drain pan.
- B. The small coil is used for internal face & by-pass. Heating coils may be full height to allow heating to by-pass over cooling.
- C. The Multi-Zone coil is the standard heating coil utilized in Multi-Zone, Dual Dal Duct units and Triple Deck Units.
- D. The nominal CFM shown above is based on the large cooling coil
- E. All coil FH dimensions are based on coils with 1/2" tubes; if coils with 5/8" tubes are used coil height must be based on 1.5" tube centers.

STANDARD FANS

		UNIT SIZE	04	07	10	13	15	17	21	26	30
CFM^(A) RANGE	350 FPM	1,362	2,674	3,675	4,662	5,359	5,954	7,487	9,079	10,574	
	400 FPM	1,556	3,056	4,200	5,328	6,124	6,804	8,556	10,376	12,084	
	450 FPM	1,751	3,438	4,725	5,994	6,890	7,655	9,626	11,673	13,595	
	500 FPM	1,945	3,820	5,250	6,660	7,655	8,505	10,695	12,970	15,105	
	550 FPM	2,140	4,202	5,775	7,326	8,421	9,356	11,765	14,267	16,616	
	600 FPM	2,334	4,584	6,300	7,992	9,186	10,206	12,834	15,564	18,126	

SUPPLY FANS

FC^(B)	Min.	9"	10"	12"	12"	15"	18"	18"	20"	20"
	Max	10"	15"	18"	18"	20"	20"	22"	25"	25"
	Max. HP	5	10	15	20	20	20	30	30	40
AF / BI^(C)	Max. Fan	12"	12"	15"	16.5"	18"	20"	22"	24"	27"
	Max. HP	5	10	15	20	20	20	30	30	40
PLENUM	Max. Fan	12"	12"	15"	18"	22.5"	25"	26.5"	30"	33"
	Max. HP	5	10	15	20	20	20	30	30	40

RETURN FANS

FC^(B)	Max. Fan	10"	15"	18"	18"	20"	20"	22"	25"	25"
	Max. HP	3	5	7.5	7.5	10	10	10	15	15
AF / BI^(C)	Max. Fan	NOT RECOMMENDED; CONSULT FACTORY								
	Max. HP									
PLENUM^(D)	Max. Fan	12"	12"	15"	18"	22.5"	25"	26.5"	30"	33"
	Max. HP	3	5	7.5	7.5	10	10	10	15	15

		UNIT SIZE	33	36	40	51	59	69	77	85	103
CFM^(A) RANGE	350 FPM	11,424	12,565	14,035	17,864	20,416	24,245	26,796	29,859	36,057	
	400 FPM	13,056	14,360	16,040	20,416	23,332	27,708	30,624	34,124	41,208	
	450 FPM	14,688	16,155	18,045	22,968	26,249	31,172	34,452	38,390	46,359	
	500 FPM	16,320	17,950	20,050	25,520	29,165	34,635	38,280	42,655	51,510	
	550 FPM	17,952	19,745	22,055	28,072	32,082	38,099	42,108	46,921	56,661	
	600 FPM	19,584	21,540	24,060	30,624	34,998	41,562	45,936	51,186	61,812	

SUPPLY FANS

FC^(B)	Min.	22"	22"	25"	28"	32"	32"	36"	36"	40"
	Max.	28"	28"	32"	36"	40"	40"	40"	40"	Use AF
	Max. HP	50	50	50	60	60	60	75	75	100
AF / BI^(C)	Max. Fan	26.5"	30"	30"	33"	36.5"	36.5"	40"	40"	44.5"
	Max. HP	50	60	60	60	75	75	75	75	100
PLENUM^(D)	Max. Fan	33"	36.5"	40"	44"	49"	49"	55"	55"	63"
	Max. HP	50	50	50	60	60	60	75	75	100

RETURN FANS

FC^(B)	Max. Fan	28"	28"	32"	36"	40"	40"	40"	40"	40" or BI
	Max. HP	15	15	15	20	25	25	30	30	40
AF / BI^(C)	Max. Fan	NOT RECOMMENDED; CONSULT FACTORY								
	Max. HP									
PLENUM^(D)	Max. Fan	33"	36.5"	40"	44"	49"	49"	55"	55"	63"
	Max. HP	15	15	15	20	25	25	30	30	40

NOTES:

- A. The nominal CFM shown above is based on the large cooling coil.
- B. The FC (Forward Curved) Supply Fan is recommended for use between 1.0 and 5.0" of TSP.
- C. The BI & AF (Backward Inclined & Airfoil) Supply Fan is recommended for use between 3.5 and 6.0" TSP.
- D. The Plenum Supply Fan is recommended for use between 2.5 and 6.0" of TSP.

FILTER DATA

UNIT SIZE		04	07	10	13	15	17	21	26	30
FLAT FILTER SECTION	SQ. FT	6.00	8.00	10.00	18.00	18.00	18.00	28.00	28.00	32.00
	(QTY) SIZE	(1) 12 x 24 (1) 24 x 24	(2) 24 x 24	(1) 12 x 24 (2) 24 x 24	(3) 12 x 24 (3) 24 x 24	(3) 12 x 24 (3) 24 x 24	(3) 12 x 24 (3) 24 x 24	(2) 12 x 24 (6) 24 x 24	(2) 12 x 24 (6) 24 x 24	(8) 24 x 24
BAG FILTER SECTION	SQ. FT	6.00	8.00	10.00	18.00	18.00	18.00	28.00	28.00	32.00
	(QTY) SIZE	(1) 12 x 24 (1) 24 x 24	(2) 24 x 24	(1) 12 x 24 (2) 24 x 24	(3) 12 x 24 (3) 24 x 24	(3) 12 x 24 (3) 24 x 24	(3) 12 x 24 (3) 24 x 24	(2) 12 x 24 (6) 24 x 24	(2) 12 x 24 (6) 24 x 24	(8) 24 x 24
RIGID FILTER SECTION	SQ. FT	6.00	8.00	10.00	18.00	18.00	18.00	28.00	28.00	32.00
	(QTY) SIZE	(1) 12 x 24 (1) 24 x 24	(2) 24 x 24	(1) 12 x 24 (2) 24 x 24	(3) 12 x 24 (3) 24 x 24	(3) 12 x 24 (3) 24 x 24	(3) 12 x 24 (3) 24 x 24	(2) 12 x 24 (6) 24 x 24	(2) 12 x 24 (6) 24 x 24	(8) 24 x 24
ANGLE FILTER SECTION	(QTY) SIZE	12.00	16.00	20.00	36.00	36.00	36.00	56.00	56.00	64.00
		(2) 12 x 24 (2) 24 x 24	(4) 24 X 24	(2) 12 x 24 (4) 24 x 24	(6) 12 x 24 (6) 24 x 24	(6) 12 x 24 (6) 24 x 24	(6) 12 x 24 (6) 24 x 24	(4) 12 x 24 (12) 24 x 24	(4) 12 x 24 (12) 24 x 24	(16) 24 X 24

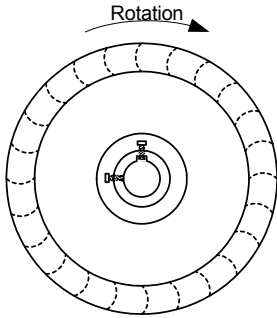
UNIT SIZE		33	36	40	51	59	69	77	85	103
FLAT FILTER SECTION	SQ. FT	40.00	40.00	48.00	54.00	62.00	72.00	90.00	90.00	98.00
	(QTY) SIZE	(4) 12 x 24 (8) 24 x 24	(4) 12 x 24 (8) 24 x 24	(12) 24 X 24	(3) 12 X 24 (12) 24 x 24	(7) 12 X 24 (12) 24 x 24	(4) 12 X 24 (16) 24 x 24	(5) 12 X 24 (20) 24 x 24	(5) 12 X 24 (20) 24 x 24	(9) 12 X 24 (20) 24 x 24
BAG FILTER SECTION	SQ. FT.	40.00	40.00	48.00	54.00	62.00	72.00	90.00	90.00	98.00
	(QTY) SIZE	(4) 12 x 24 (8) 24 x 24	(4) 12 x 24 (8) 24 x 24	(12) 24 X 24	(3) 12 X 24 (12) 24 x 24	(7) 12 X 24 (12) 24 x 24	(4) 12 X 24 (16) 24 x 24	(5) 12 X 24 (20) 24 x 24	(5) 12 X 24 (20) 24 x 24	(9) 12 X 24 (20) 24 x 24
RIGID FILTER SECTION	(QTY) SIZE	40.00	40.00	48.00	54.00	62.00	72.00	90.00	90.00	98.00
		(4) 12 x 24 (8) 24 x 24	(4) 12 x 24 (8) 24 x 24	(12) 24 X 24	(3) 12 X 24 (12) 24 x 24	(7) 12 X 24 (12) 24 x 24	(4) 12 X 24 (16) 24 x 24	(5) 12 X 24 (20) 24 x 24	(5) 12 X 24 (20) 24 x 24	(9) 12 X 24 (20) 24 x 24
ANGLE FILTER SECTION	(QTY) SIZE	80.00	80.00	96.00	108.00	124.00	144.00	180.00	180.00	196.00
		(8) 12 x 24 (16) 24 x 24	(8) 12 x 24 (16) 24 x 24	(24) 24 X 24	(6) 12 X 24 (24) 24 x 24	(14) 12 X 24 (24) 24 x 24	(8) 12 X 24 (32) 24 x 24	(10) 12 X 24 (40) 24 x 24	(10) 12 X 24 (40) 24 x 24	(18) 12 X 24 (40) 24 x 24

NOTES:

- A. Purchaser must specify a 2", 4" or 6" filter; if desired there may be a 2" pre-filter & 4" final filter if a 6" FFS is ordered.
- B. The standard bag filter is 15" with header; the 22" filter may be ordered if specified.
- C. The standard rigid filter is 12" deep with header & gaskets.
- D. Rigid HEPA filters are box type with gaskets.
- E. Any flat, bag type or rigid filter may be serviced from upstream provided the upstream section has an access door.
- F. For downstream service purchase access section and specify the filter service required.
- F. A diffuser section is suggested upstream of any final filter placed in the blow thru position.
- G. The filter angle is sized for approximately 250 FPM; if a lower velocity is required contact the factory.

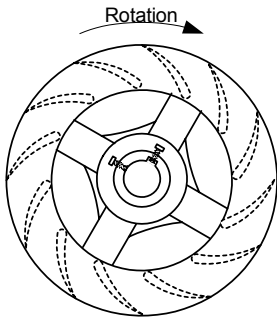
FAN DESIGN and SELECTION

All fans are rated according to AMCA 210 and sound rated according to AMCA 301. All shafts are solid and designed not to pass through a critical speed when approaching the operating RPM. All fans are both statically and dynamically balanced with L-50 200,000 hour bearings as standard. All power transmission equipment is rated 125% over the BHP.



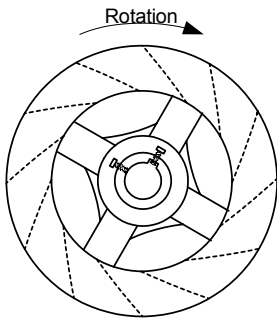
FORWARD FANS

- ◆ FC Wheels have blades curved toward the direction of airflow.
- ◆ Double-inlet wheel design [DIDW]
- ◆ Quality performance at low to medium pressure [0 - 6.0" W.G.]
- ◆ Motor BHP increases with increased airflow or reduced pressure.
- ◆ Standard in Air Zone Models 04 through 66.



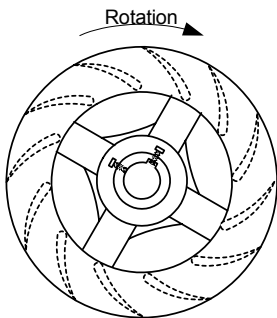
AIRFOIL FANS

- ◆ AF Wheels have blades curved away from the direction of rotation.
- ◆ Double-inlet wheel design [DIDW].
- ◆ Aerodynamic high efficient, non-overloading wheel design.
- ◆ Used for high capacity or medium to high pressure [3.0 -12" W.G.].
- ◆ Standard in Air Zone Models 82 through 100.
- ◆ AF Wheels are optional on Models 07 through 66.



BACKWARD INCLINED FANS

- ◆ BI Wheels have blades inclined away from the direction of rotation.
- ◆ Double-inlet wheel design [DIDW].
- ◆ Flat blade design that is high efficient and non-overloading.
- ◆ Used for high capacity or medium to high pressure [3.0 -12" W.G.].
- ◆ Ideal where low volume is required at medium to high pressure.
- ◆ BI Wheels are optional on Models 04 through 66.

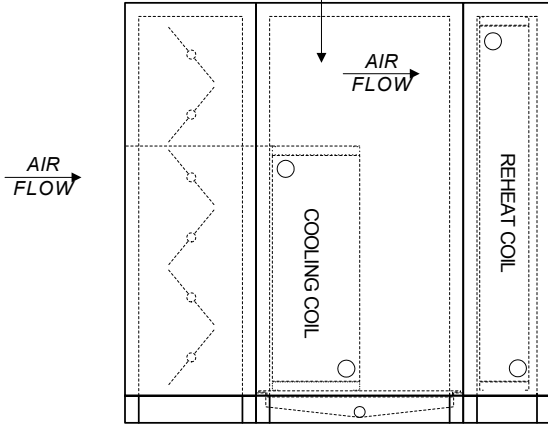


PLENUM AIRFOIL FANS

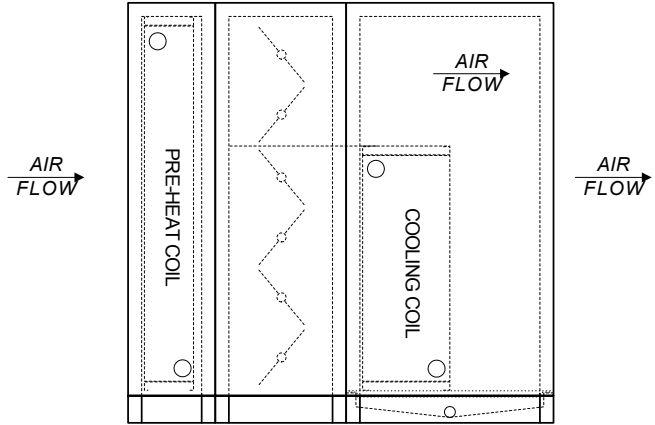
- ◆ AF Wheels have blades curved away from the direction of rotation.
- ◆ Single-inlet wheel design [SISW].
- ◆ Aerodynamic high efficient, non-overloading wheel design.
- ◆ Used for high capacity or medium to high pressure [3.0 -12" W.G.].
- ◆ Ideal where space is limited or multiple outlets are required.
- ◆ Optional in Air Zone Models 04 through 100.

INTERNAL FACE & BY-PASS ARRANGEMENTS

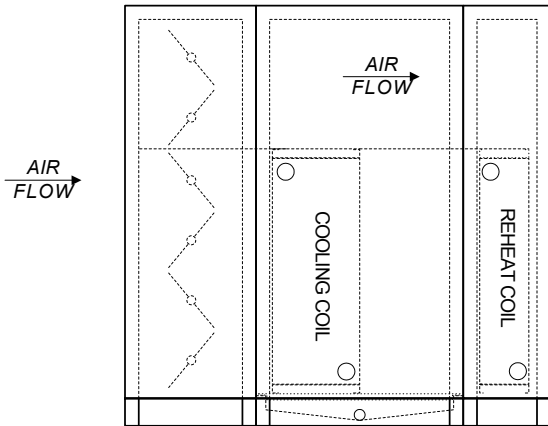
TYPICAL INTERNAL BY-PASS



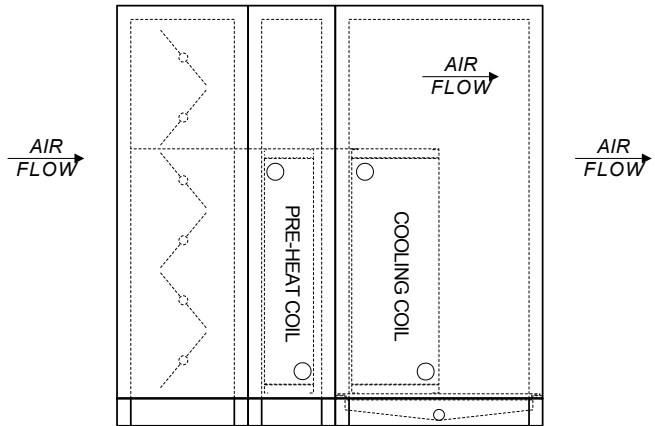
IFB-1 BY-PASS OVER COOLING WITH FULL REHEAT



IFB-2 BY-PASS OVER COOLING WITH FULL PRE-HEAT

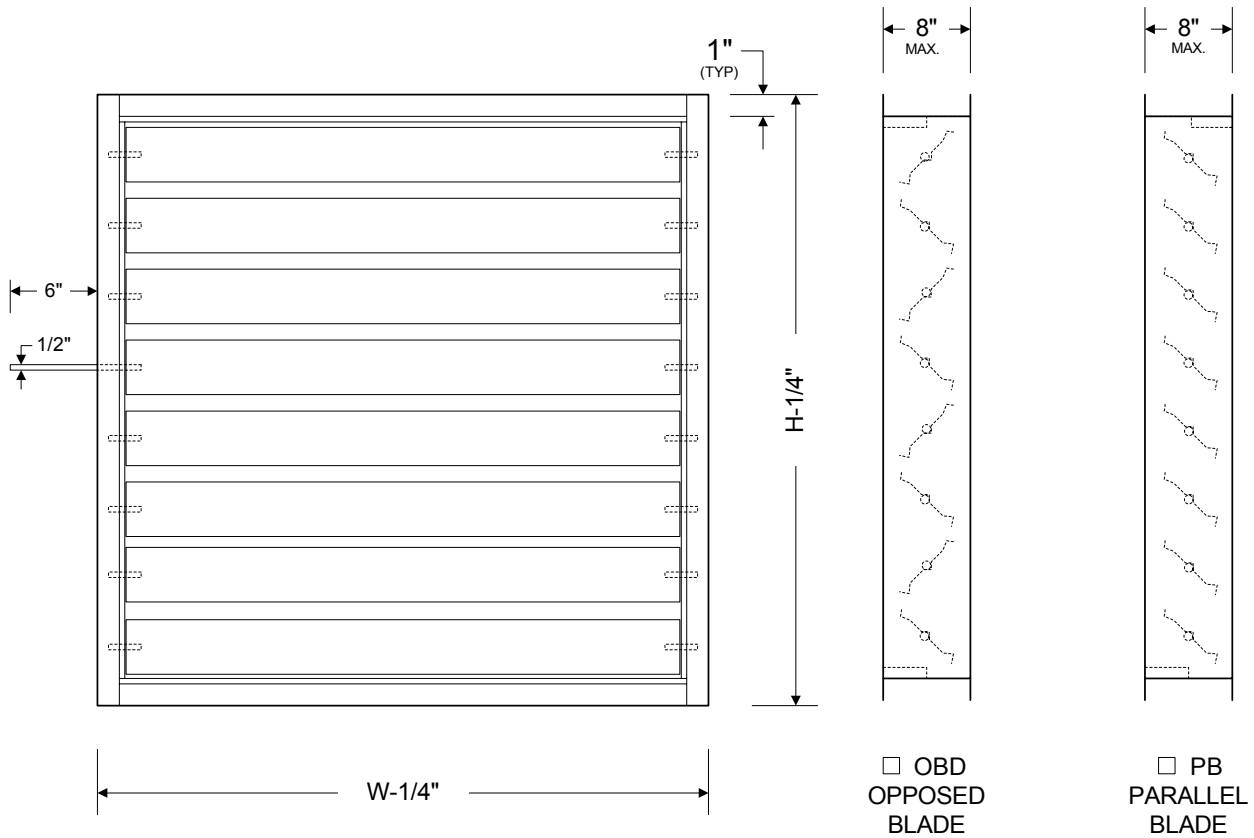


IFB-3 BY-PASS OVER COOLING AND REHEAT



IFB-4 BY-PASS OVER PRE-HEAT AND COOLING

STANDARD DAMPER CONSTRUCTION



SPECIFICATIONS

Blades are die formed galvanized steel with integral blade stops to provide a rugged design of superior quality and high performance. The frame is galvanized steel, all hardware is zinc plated and all pivot points are brass for maximum protection. Bearings are permanently lubricated and pressed into the frame. Blades are permanently attached to solid shafts to prevent blade slipping. Blade seals are extruded and side seals are 304 stainless steel. See the options below for the exact project requirements .

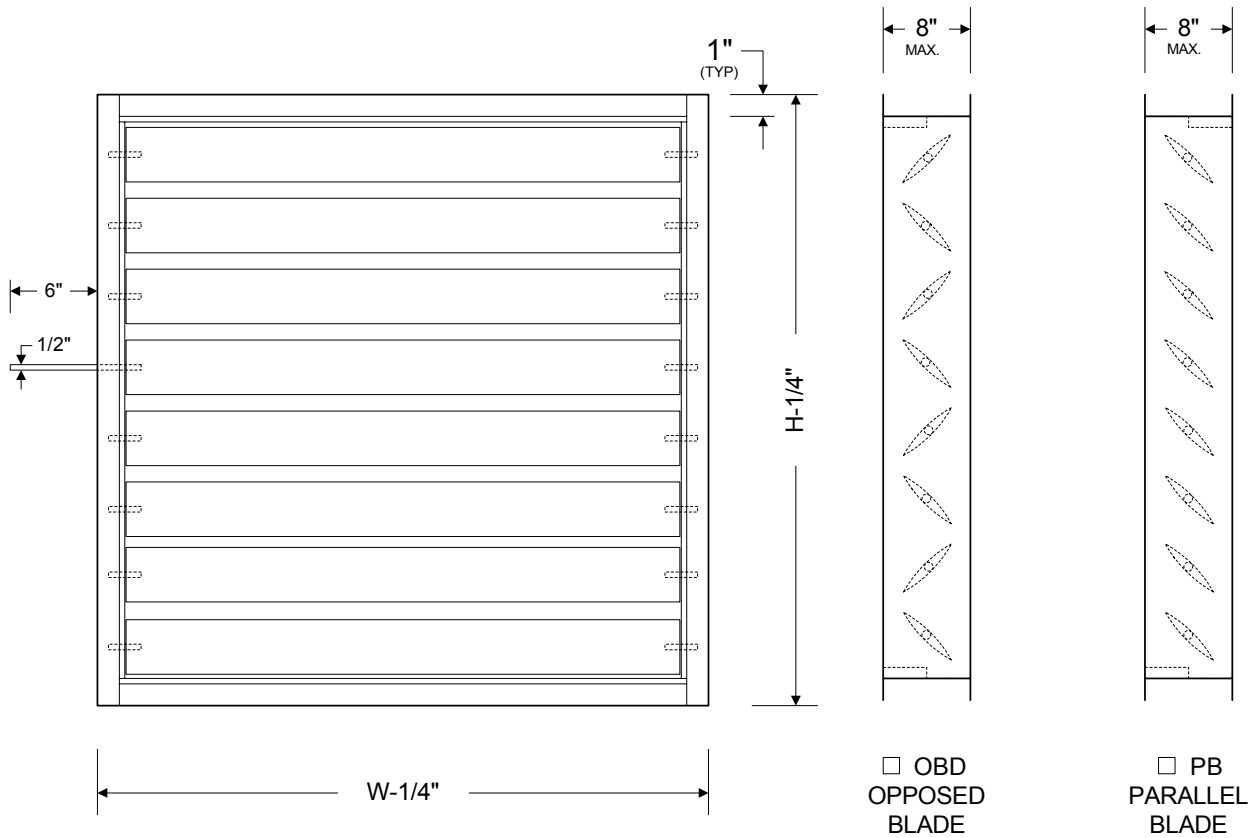
DESIGN OPTIONS:

- PARALLEL BLADE
 OPPOSED BLADE
 COUNTER-BALANCED

ACTUATOR OPTIONS:

- FACTORY MOUNT
 NORMALLY OPEN
 PNEUMATIC
 FIELD MOUNTED
 NORMALLY CLOSED
 24v ACTUATOR

AIRFOIL DAMPER CONSTRUCTION



SPECIFICATIONS

Blades are extruded aluminum with integral blade stops to provide a rugged design of superior quality and high performance. The frame is galvanized steel, all hardware is zinc plated and all pivot points are brass for maximum protection. Bearings are permanently lubricated and pressed into the frame. Blades are permanently attached to solid shafts to prevent blade slipping. Blade seals are extruded and side seals are 304 stainless steel. See the options below for the exact project requirements .

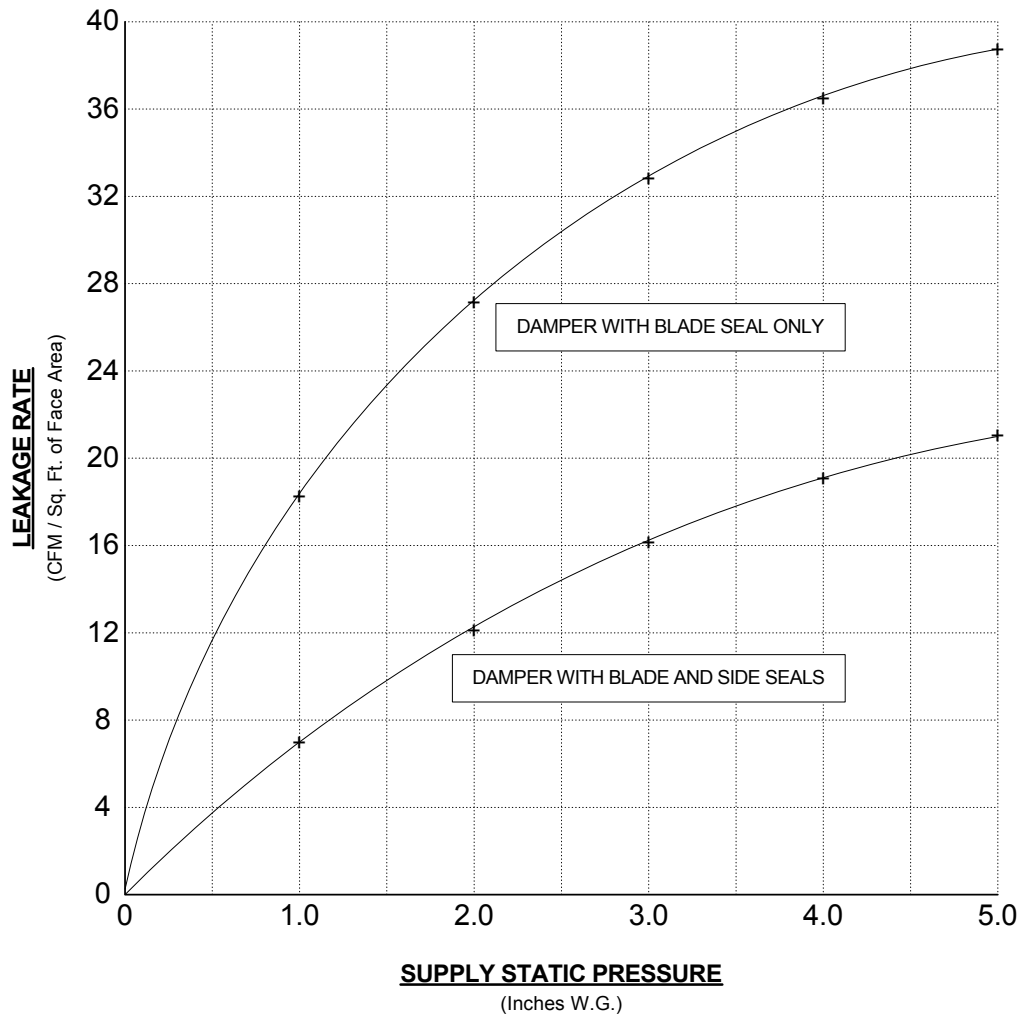
DESIGN OPTIONS:

- PARALLEL BLADE OPPOSED BLADE COUNTER-BALANCED

ACTUATOR OPTIONS:

- FACTORY MOUNT NORMALLY OPEN PNEUMATIC
 FIELD MOUNTED NORMALLY CLOSED 24v ACTUATOR

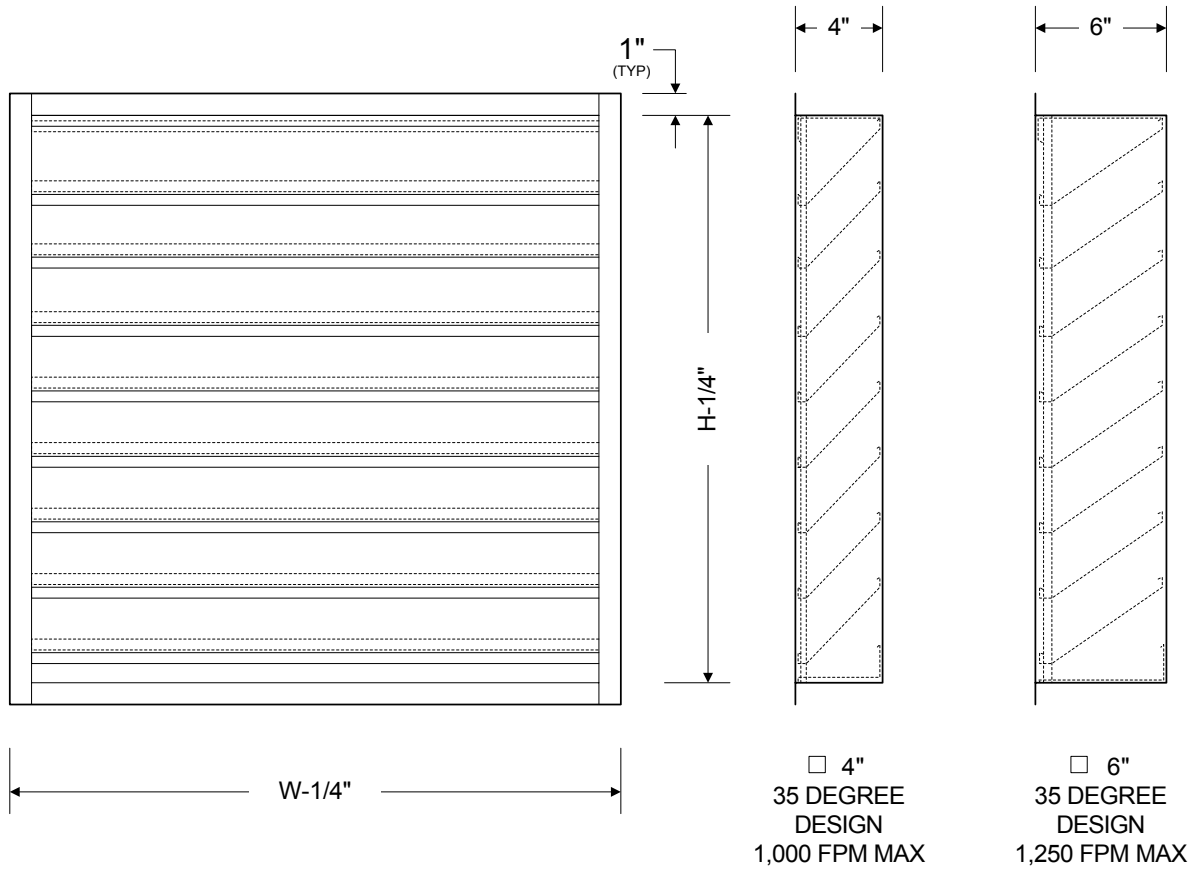
DAMPER PERFORMANCE DATA



PERFORMANCE SPECIFICATIONS

Leakage rate shown at 2000 FPM approach velocity and 5 In-Lbs/sq. ft. closing torque. rated in accordance with AMCA standard number 500. Test sample 24" x 24", closing torque rated at 6 In-Lb/sq. .ft. at 1.25 In WG and 9 In-Lb/sq. ft. at 3.0 In WG with 25% SF - 400°f is Max temp.

STORM PROOF LOUVER DIMENSIONS



SPECIFICATIONS

Blades and frame are formed of galvanized steel with integral blade drain to provide a rugged design of superior quality and high performance. A drainable blade design insures moisture is trapped and drained prior to entering the structure. The full head with jambs and sill with blades are contained within a louver rugged louver frame and offer quality protection against unwanted moisture. Optional features include all aluminum construction with bird screen or insect screen. See the options listed below.

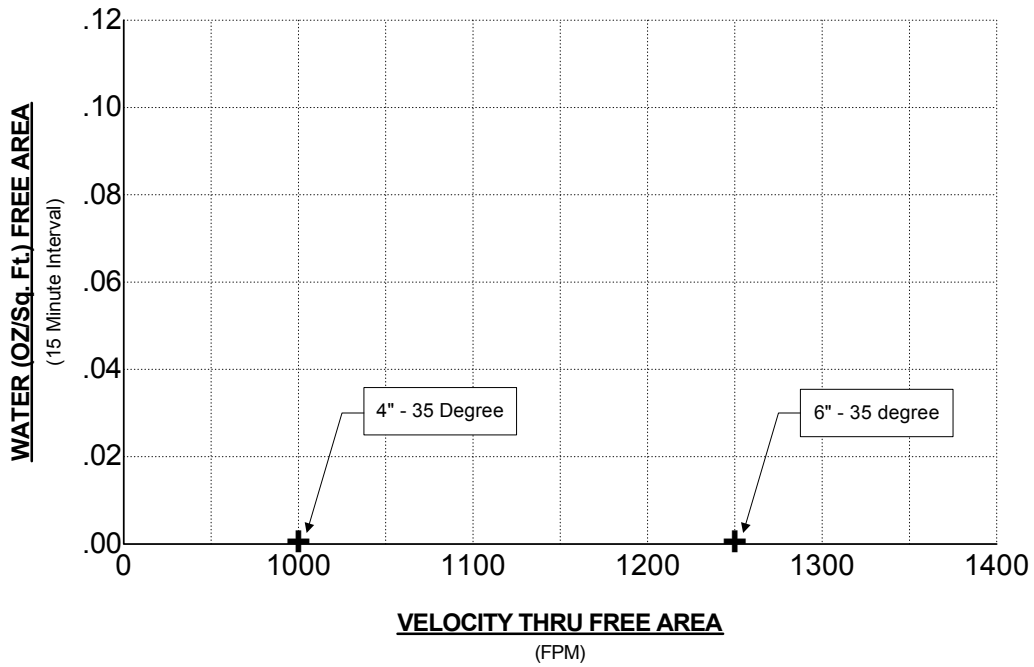
DESIGN OPTIONS:

- 4" DESIGN
 6" DESIGN
 ALL ALUMINUM
 ALL 304 STAINLESS

SCREEN OPTIONS:

- 1/2" GALVANIZED
 1/2" ALUMINUM
 1/2" 304 STAINLESS
 1/4" GALVANIZED
 1/4" ALUMINUM
 1/4" 304 STAINLESS

STORM PROOF LOUVER DATA

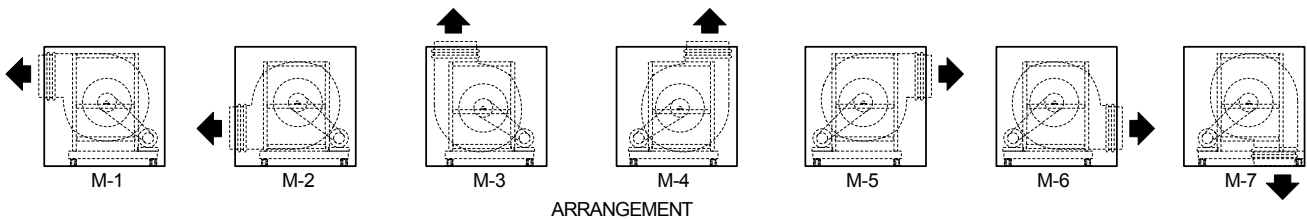
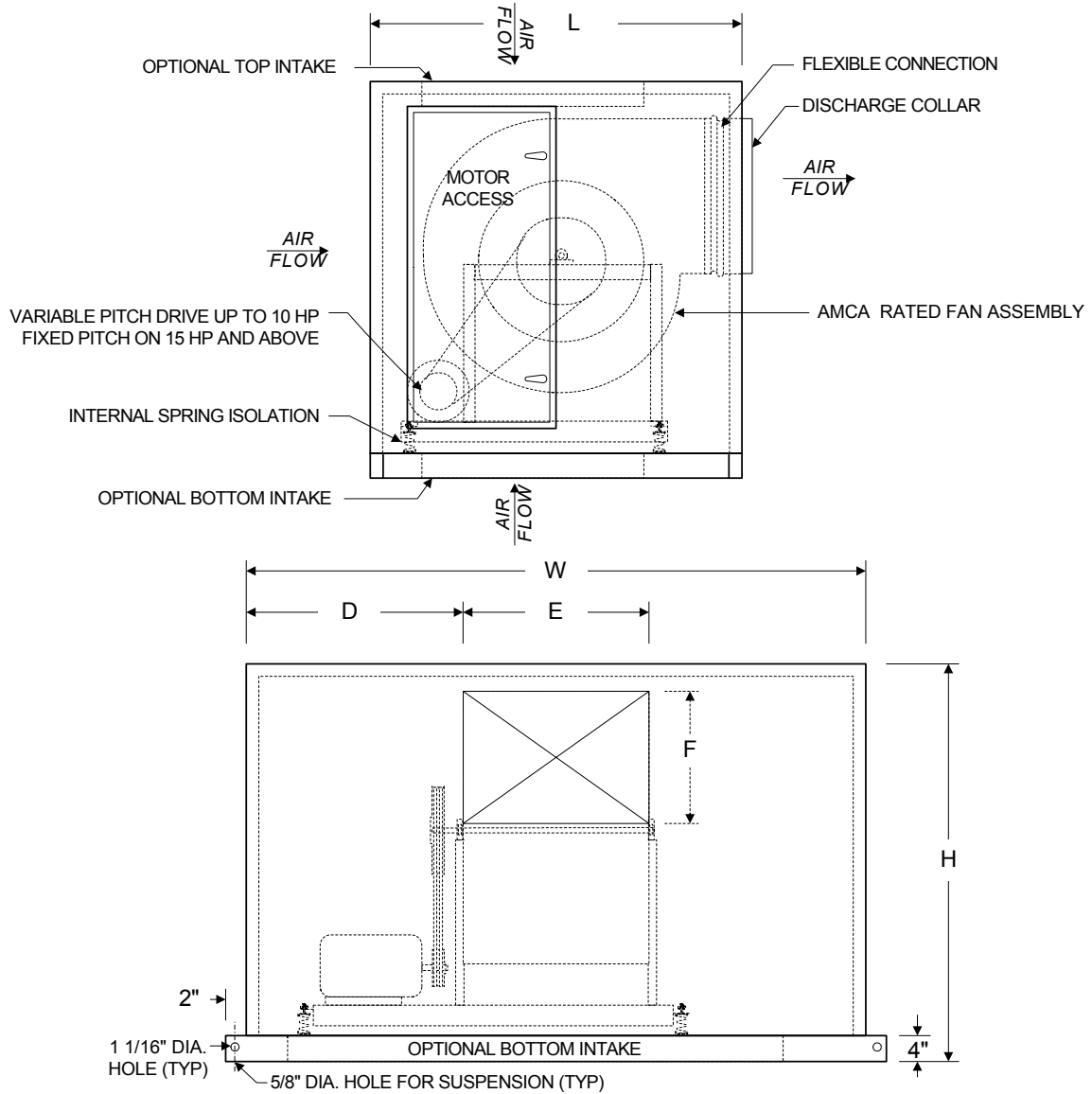


PERFORMANCE SPECIFICATIONS

AMCA standard number 500 limits testing of water penetration to either a maximum velocity of 1250 FPM or 2.5 ounces of water per square foot of louver free area. A + mark is the beginning point of water penetration.

		FREE AREA (SQ.,FT.)								
		WIDTH								
		12"	18"	24"	30"	36"	42"	48"	54"	60"
HEIGHT	12"	0.33	0.52	0.72	0.91	1.11	1.31	1.50	1.70	1.89
	24"	0.82	1.32	1.81	2.31	2.80	3.30	3.79	4.29	4.78
	36"	1.30	2.08	2.86	3.64	4.42	5.20	5.98	6.76	7.54
	48"	1.89	3.02	4.15	5.28	6.41	7.54	8.84	9.81	10.94
	60"	2.32	3.70	5.09	6.48	7.87	9.26	10.65	12.04	13.43
	72"	2.89	4.63	6.37	8.10	9.84	11.58	13.32	15.05	16.79
	84"	3.39	5.42	7.45	9.48	11.52	13.55	15.58	17.61	19.64
	96"	3.90	6.24	8.59	10.93	13.27	15.61	17.95	20.30	22.64

MODULAR CENTRIFUGAL FAN SECTIONS



DIMENSIONS

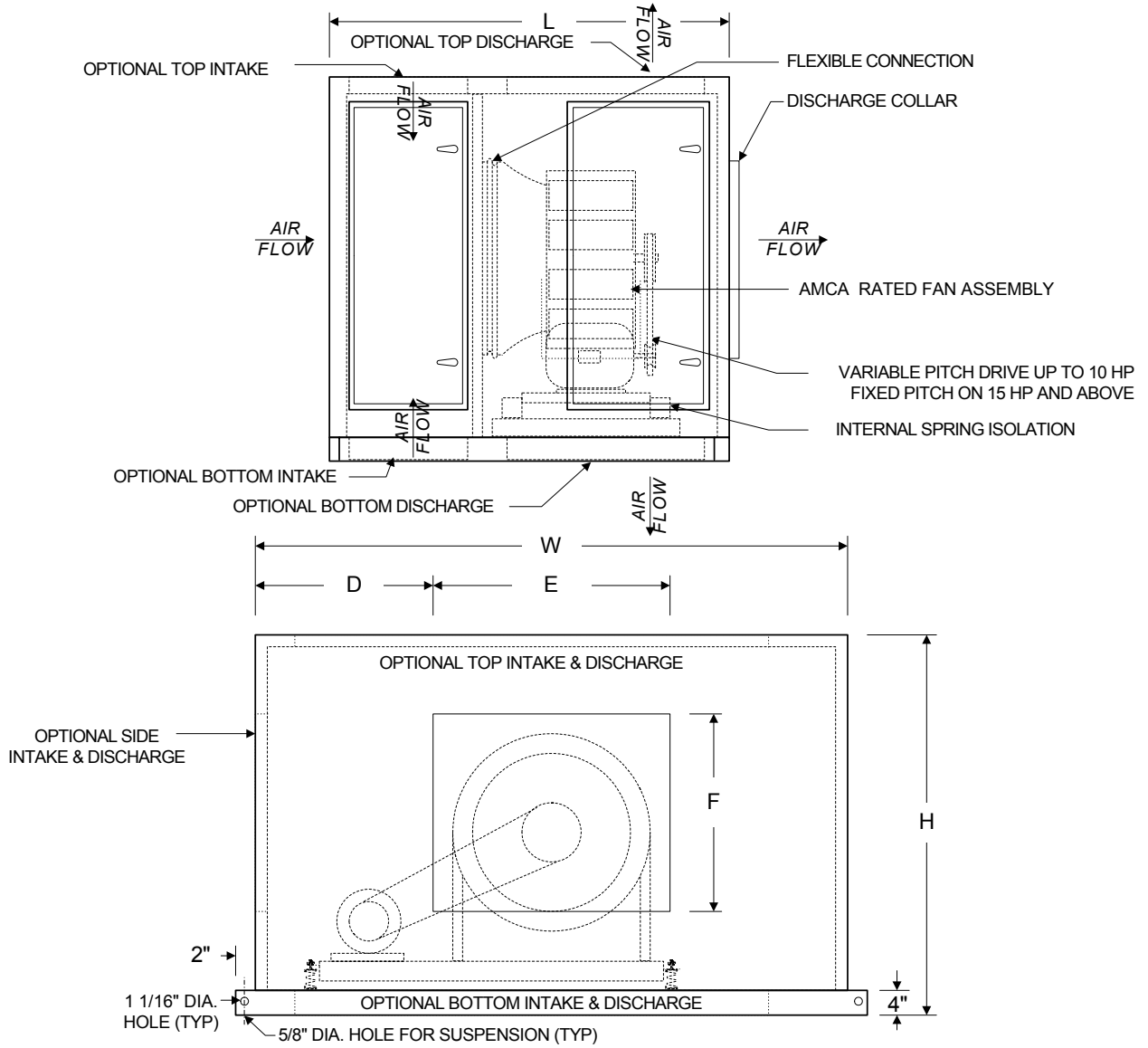
COMPONENT MODULE	MODULE DIMENSIONS	MODEL SIZE																	
		04	07	10	13	15	17	21	26	30	33	36	40	51	59	69	77	85	103
FSF, FRF (1)	L	36	42	42	47	50	53	57	61	67	67	74	80	90	96	108	108	120	120
	W	41	57	68	76	76	83	90	96	101	107	107	118	118	118	118	132	136	143
FSA, FRA (2)	H	32	37	42	45	48	52	56	60	65	66	71	78	83	90	102	114	114	114
	D	16	19	24	25	25	27	29	30	31	34	34	35	35	35	35	36	38	38
	E	16	19	20	26	26	29	32	36	39	39	43	49	52	52	52	60	67	70
	F	12	13	14	16	20	22	24	26	29	29	32	32	39	39	43	43	48	52

All dimensions are in inches.

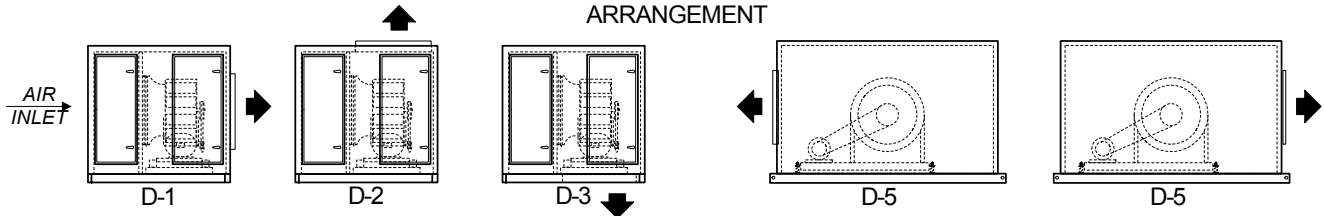
(1) Forward Curved Supply or Return Fan Sect.

(2) Airfoil or BI Supply or Return Fan Sect.

MODULAR PLENUM FAN SECTIONS



ARRANGEMENT

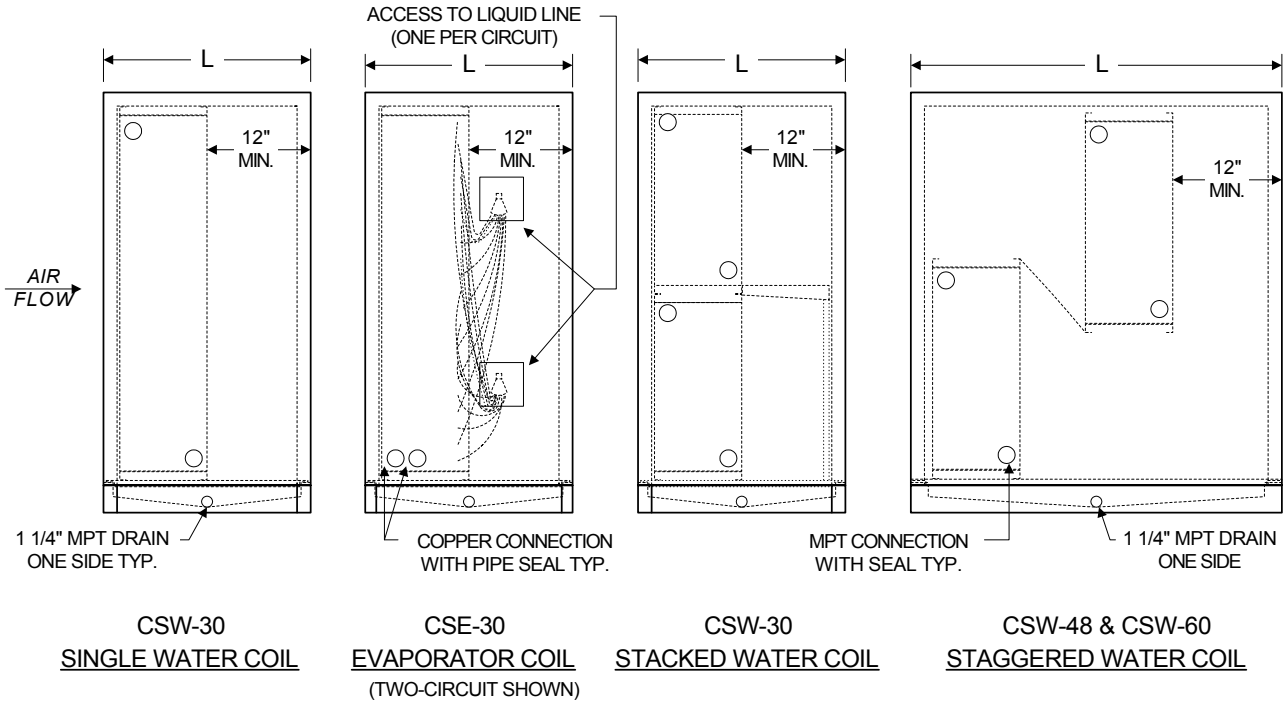


DIMENSIONS

COMPONENT MODULE	MODULE DIMENSIONS	MODEL SIZE																	
		04	07	10	13	15	17	21	26	30	33	36	40	51	59	69	77	85	103
FSP / FSR	L	56	62	62	67	70	73	77	81	87	87	94	100	110	116	128	128	140	140
	W	41	57	68	76	76	83	90	96	101	107	107	118	118	118	118	132	136	143
	H	32	37	42	45	48	52	56	60	65	66	71	78	83	90	102	114	114	114
	D	18	18	24	25	25	27	31	32	33	36	36	38	38	38	38	38	38	38
	E	18	24	30	36	42	42	48	54	60	66	72	78	84	96	103	103	117	128
	F	13	19	21	22	22	24	27	29	30	30	30	31	36	36	40	45	44	48

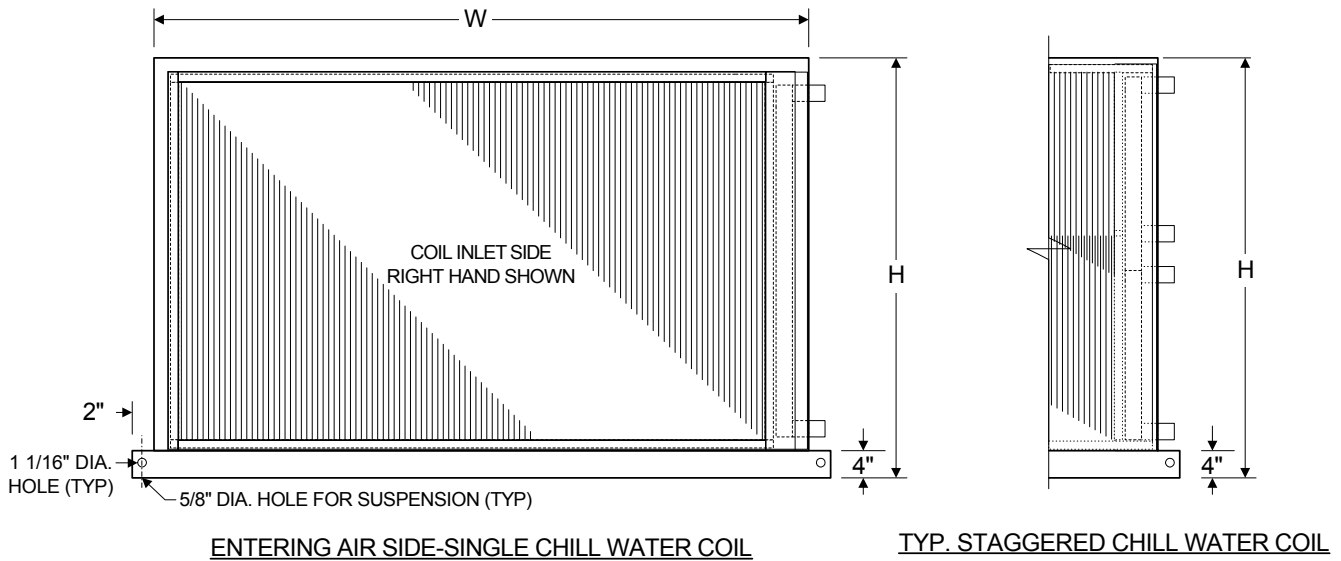
All dimensions are in inches.

MODULAR COOLING COIL SECTIONS



NOTE:

CVS - COIL SECTION FOR VERTICAL UNITS WHERE COIL SECTION LENGTH = LENGTH OF FAN SECTION ABOVE.



NOTE:

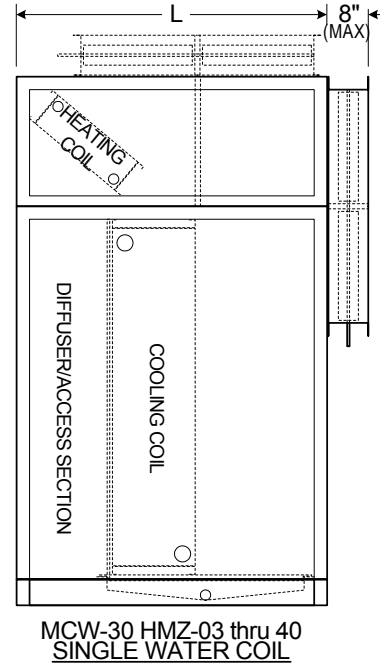
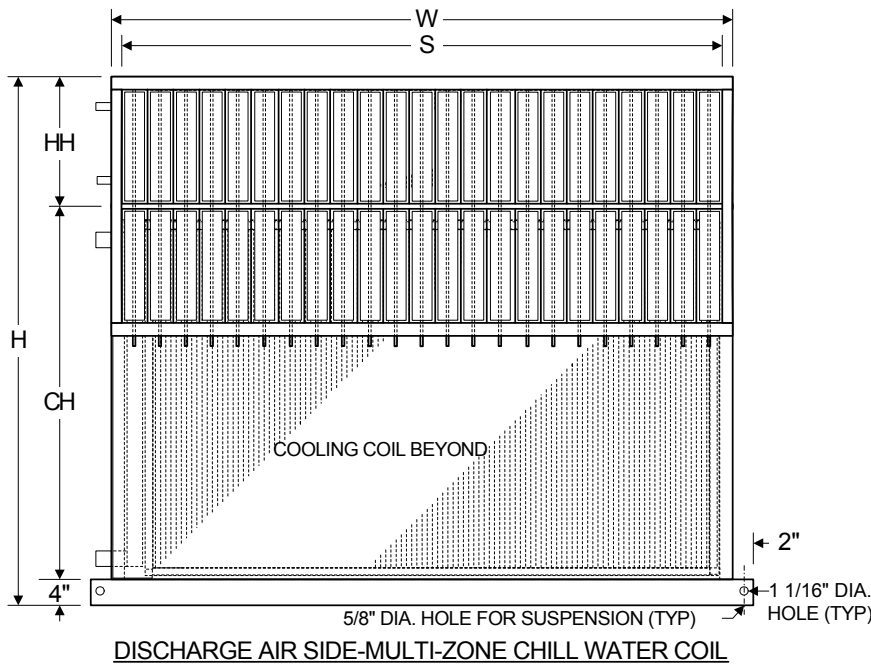
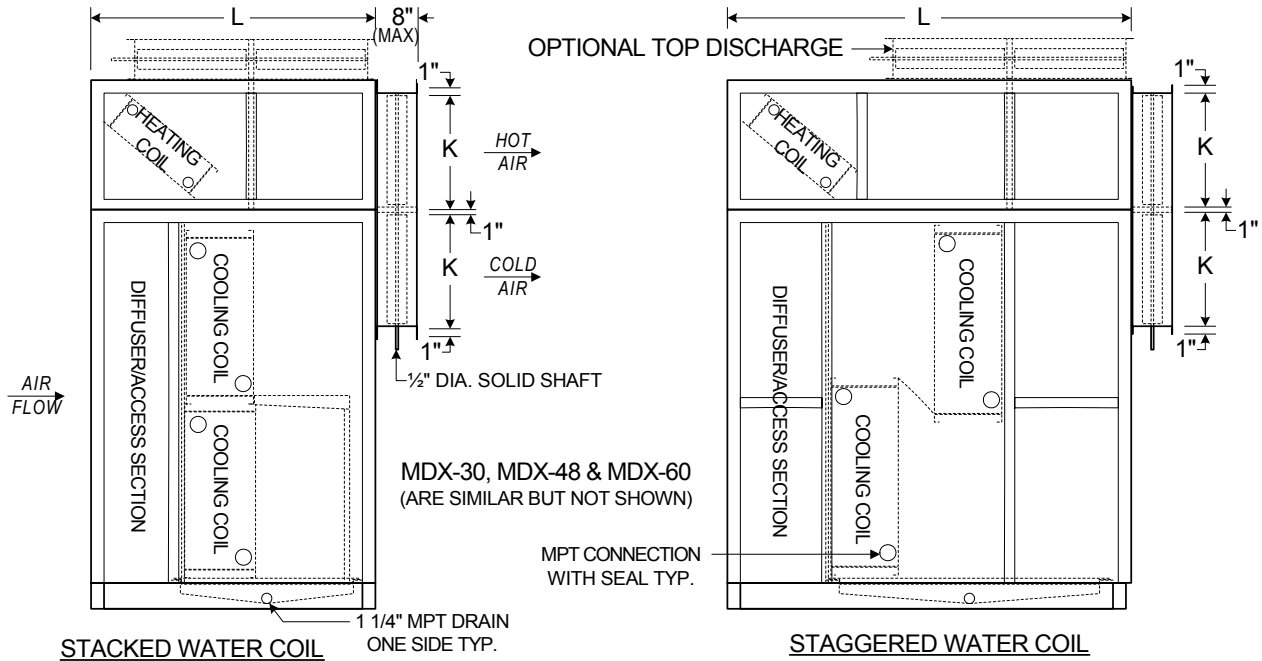
CVS - COIL SECTION FOR VERTICAL UNITS

DIMENSIONS

COMPONENT MODULE	MODULE DIMENSIONS	MODEL SIZE																	
		04	07	10	13	15	17	21	26	30	33	36	40	51	59	69	77	85	103
CSV	L	36	42	42	47	50	53	57	61	67	67	74	80	90	96	108	108	120	120
	CS30	L	30	30	30	30	30	30	30	30	30	30	30	30	-	-	-	-	-
CS48 & CS 60	L	-	-	-	-	-	-	-	-	-	-	-	-	-	48	48	48	48	60
	W	41	57	68	76	76	83	90	96	101	107	107	118	118	118	118	132	136	143
	H	32	37	42	45	48	52	56	60	65	66	71	78	83	90	102	114	114	114

All dimensions are in inches.

MULTI-ZONE COIL SECTION



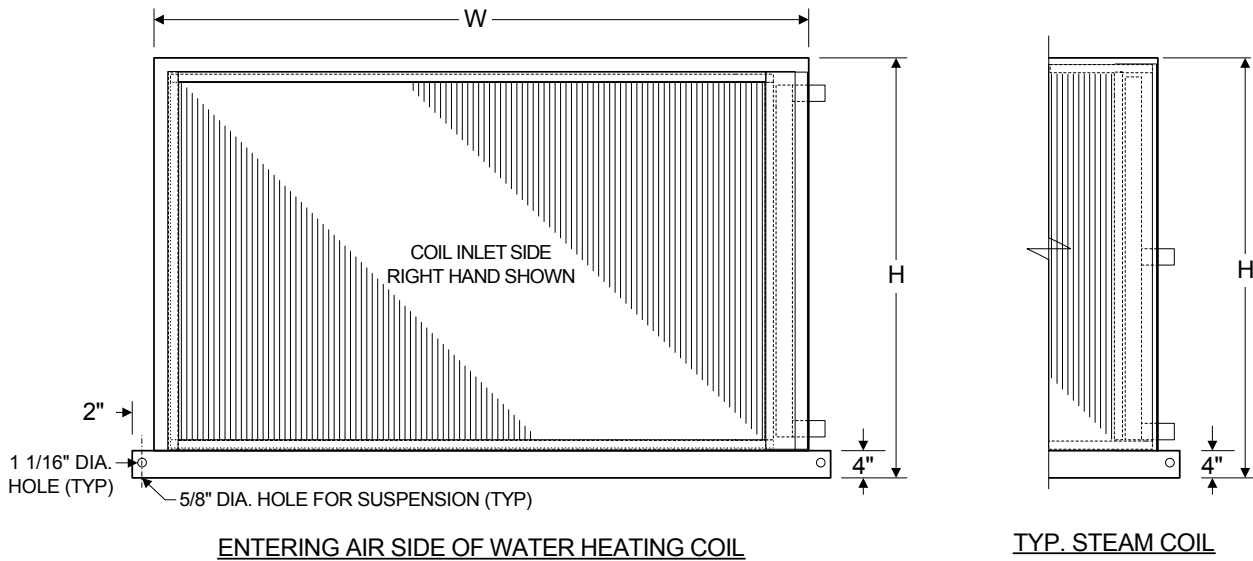
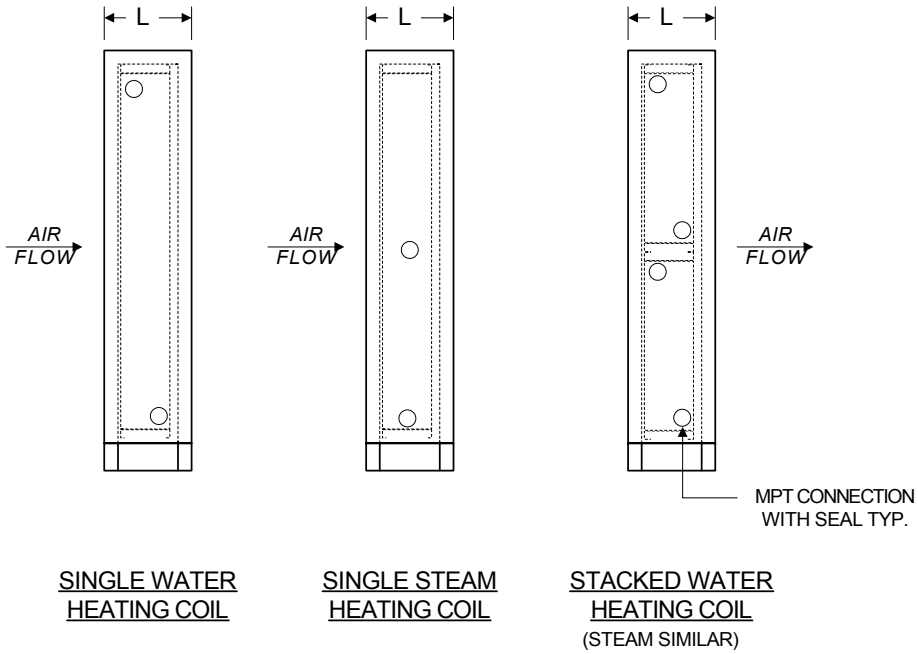
DIMENSIONS

COMPONENT MODULE	MODULE DIMENSIONS	MODEL SIZE																	
		04	07	10	13	15	17	21	26	30	33	36	40	51	59	69	77	85	103
	L	50	50	50	50	50	50	50	50	50	50	63	63	68	90	95	104	104	114
	W	41	57	68	76	76	83	90	96	101	107	107	118	118	118	132	136	143	
MCW & MDX-30	H	51	57	63	67	70	74	80	85	92	93	100	107	118	129	146	158	160	166
MCW & MDX-48	HC	32	37	42	45	48	52	56	60	65	66	71	78	83	90	102	114	114	114
MCW & MDX-60	HH	15	16	17	18	18	18	20	21	23	23	25	25	31	35	40	40	42	48
	K	12.5	13.5	14.5	15.5	15.5	15.5	17.5	18.5	20.5	20.5	22.5	22.5	28.5	32.5	37.5	37.5	39.5	45.5
	S*	33 1/8	53	66 1/4	72 7/8	72 7/8	79 1/2	86 1/8	92 3/4	99 3/8	106	106	112 5/8	112 5/8	112 5/8	112 5/8	125 7/8	132 1/2	139 1/8
	MAX. ZONES	5	8	10	11	11	12	13	14	15	16	16	17	17	17	17	19	20	21

All dimensions are in inches.

*Based on a Zone Width of 6.625"

MODULAR HEATING COIL SECTIONS

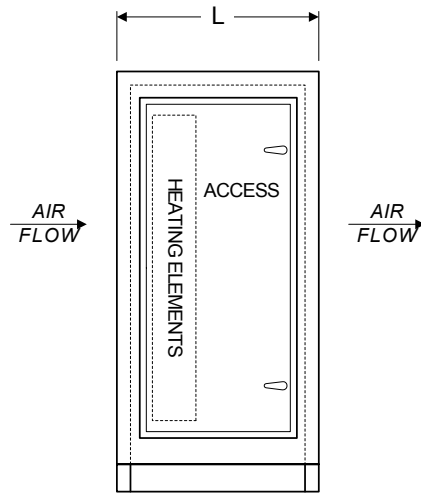


DIMENSIONS

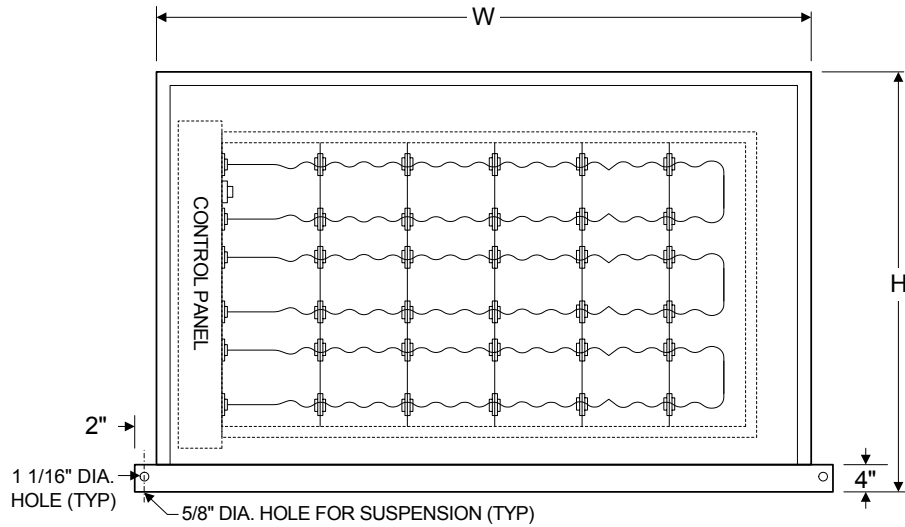
COMPONENT MODULE	MODULE DIMENSIONS	MODEL SIZE																	
		04	07	10	13	15	17	21	26	30	33	36	40	51	59	69	77	85	103
HCS	L	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
	W	41	57	68	76	76	83	90	96	101	107	107	118	118	118	118	132	136	143
	H	32	37	42	45	48	52	56	60	65	66	71	78	83	90	102	114	114	114

All dimensions are in inches.

ELECTRIC HEATING COIL SECTION



ELECTRIC HEATER SECTION

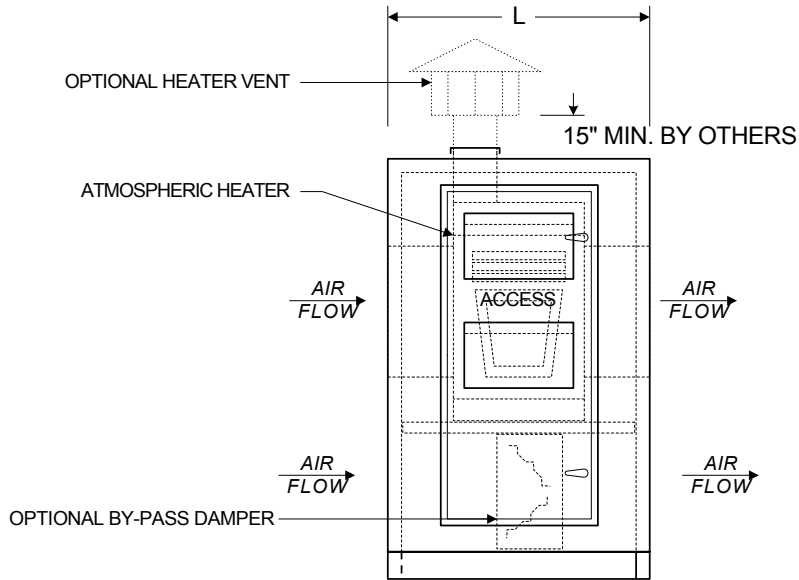


LEAVING AIR SIDE ACCESS SECTION

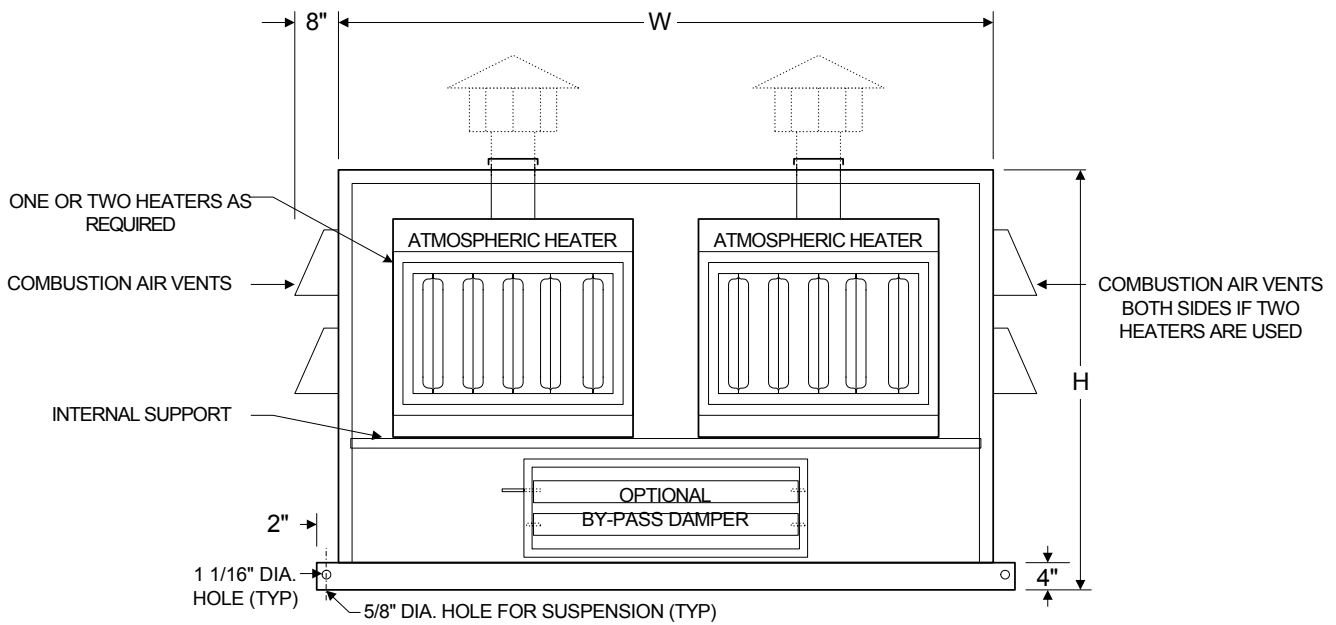
		DIMENSIONS																	
COMPONENT MODULE	MODULE DIMENSIONS	MODEL SIZE																	
		04	07	10	13	15	17	21	26	30	33	36	40	51	59	69	77	85	103
EHS	L	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
	W	41	57	68	76	76	83	90	96	101	107	107	118	118	118	118	132	136	143
	H	32	37	42	45	48	52	56	60	65	66	71	78	83	90	102	114	114	114

All dimensions are in inches.

ATMOSPHERIC GAS HEATING SECTION



ATMOSPHERIC HEATER SECTION



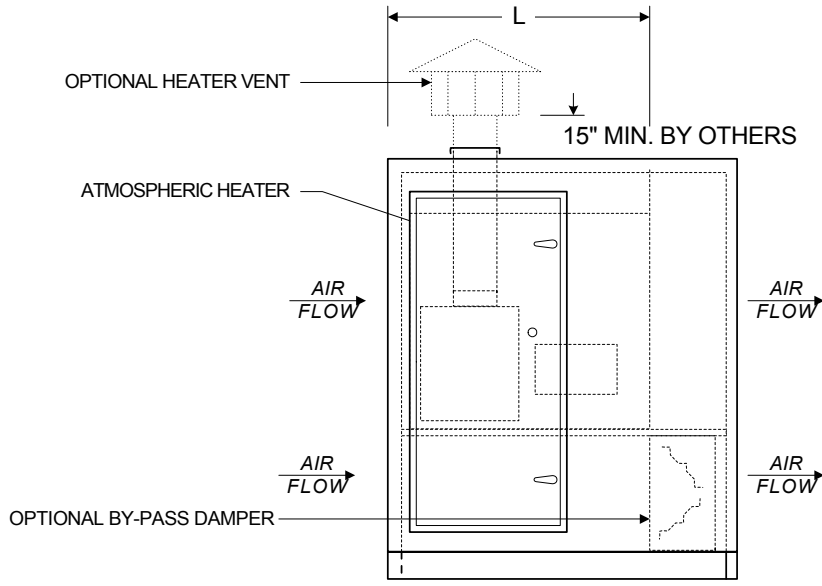
LEAVING AIR SIDE ATMOSPHERIC HEATER SECTION

DIMENSIONS

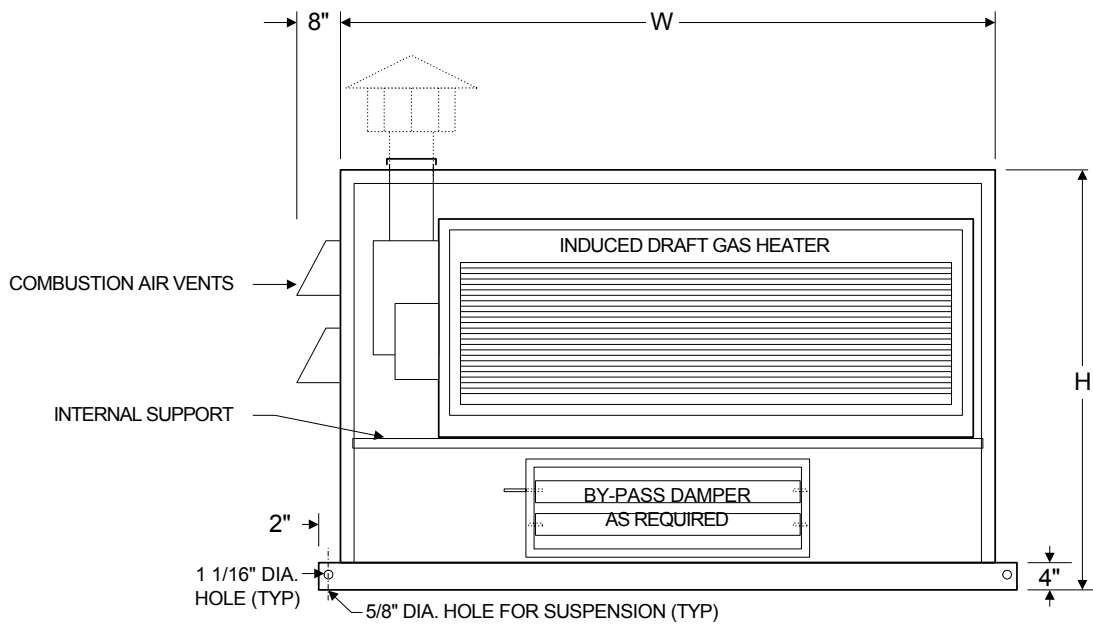
COMPONENT MODULE	MODULE DIMENSIONS	MODEL SIZE																	
		04	07	10	13	15	17	21	26	30	33	36	40	51	59	69	77	85	103
AHS	L	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48
	W	41	57	68	76	76	83	90	96	101	107	107	118	118	118	118	132	136	143
	H	32	37	42	45	48	52	56	60	65	66	71	78	83	90	102	114	114	114

All dimensions are in inches.

INDUCED DRAFT GAS HEATING SECTION



ATMOSPHERIC HEATER SECTION



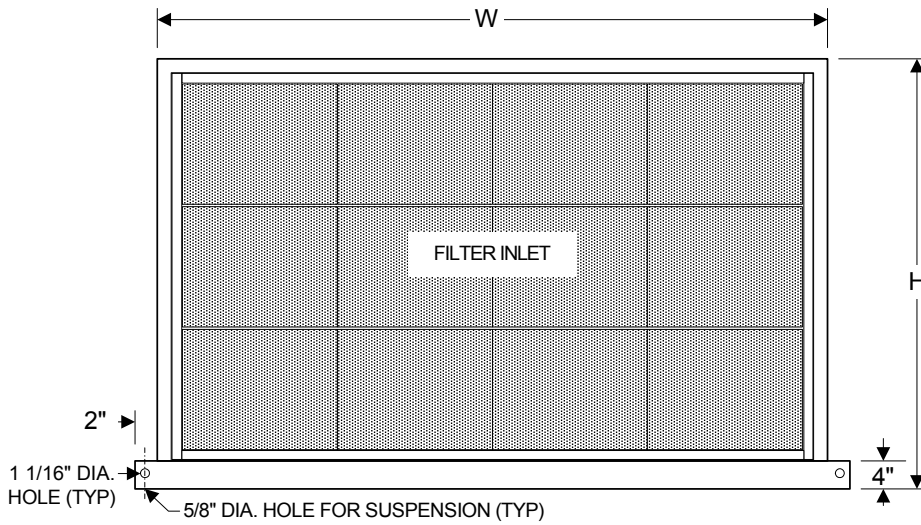
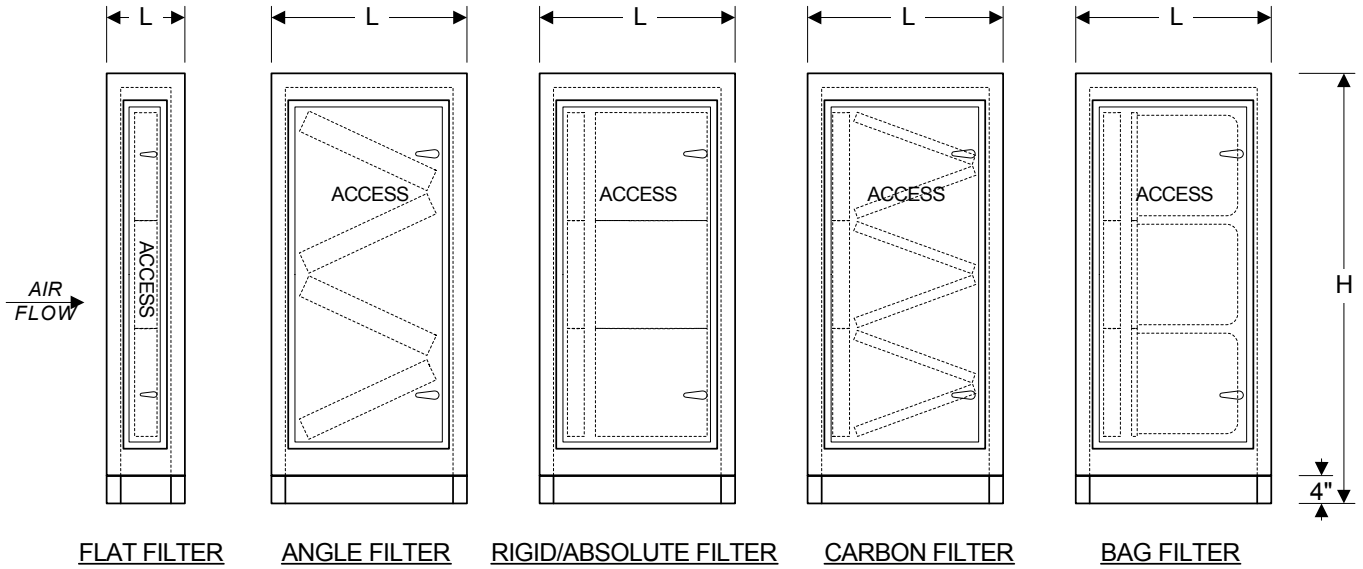
LEAVING AIR SIDE ATMOSPHERIC HEATER SECTION

DIMENSIONS

COMPONENT MODULE	MODULE DIMENSIONS	MODEL SIZE																	
		04	07	10	13	15	17	21	26	30	33	36	40	51	59	69	77	85	103
IDH	L	60	60	60	72	72	72	84	84	84	84	84	84	84	96	96	96	96	96
	W	41	57	68	76	76	83	90	96	101	107	107	118	118	118	118	132	136	143
	H	32	37	42	45	48	52	56	60	65	66	71	78	83	90	102	114	114	114

All dimensions are in inches.

MODULAR FILTER SECTION

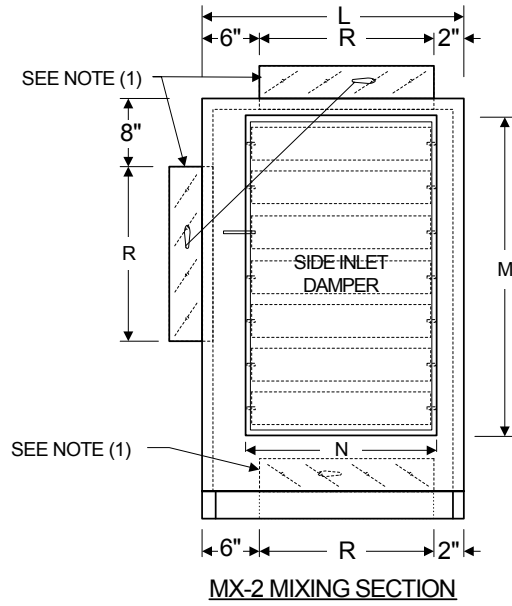
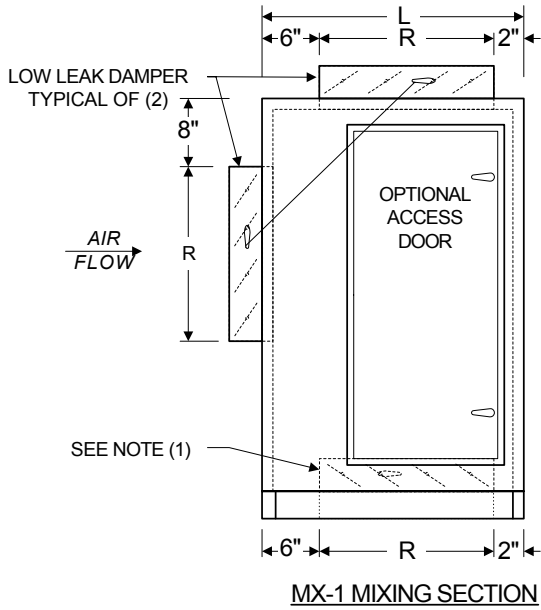


DIMENSIONS

COMPONENT MODULE	MODULE DIMENSIONS	MODEL SIZE																	
		04	07	10	13	15	17	21	26	30	33	36	40	51	59	69	77	85	103
FF2 / FF4	L	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
FF6	L	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
AFS	L	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
RFS / AFS	L	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
B15	L	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
B22	L	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36
	W	41	57	68	76	76	83	90	96	101	107	107	118	118	118	118	132	136	143
	H	32	37	42	45	48	52	56	60	65	66	71	78	83	90	102	114	114	114

All dimensions are in inches.

MODULAR MIXING SECTIONS

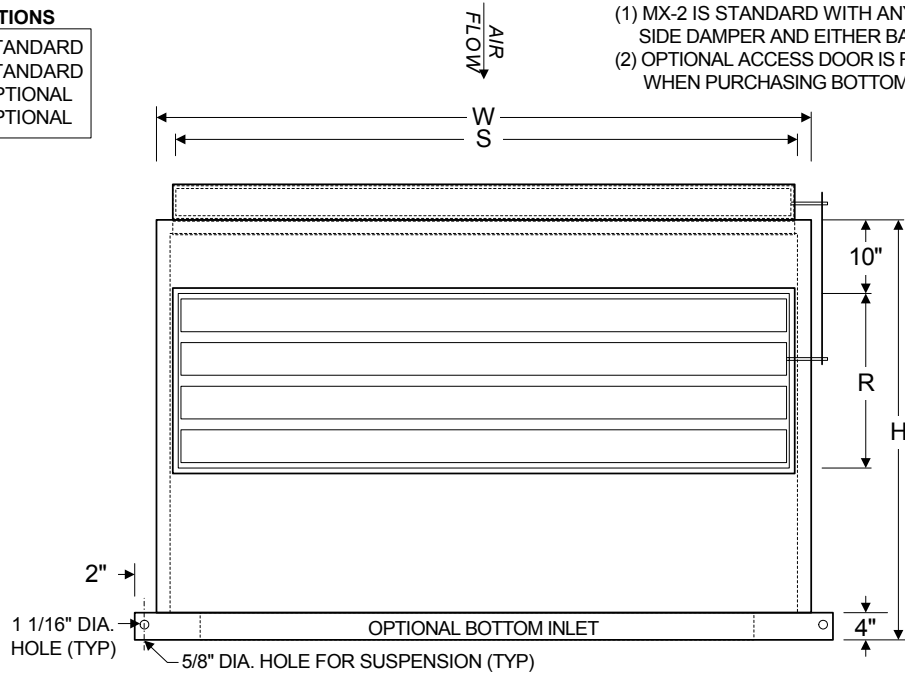


DAMPER LOCATIONS

TOP	- MX-1 STANDARD
REAR	- MX-1 STANDARD
BOTTOM	- MX-1 OPTIONAL
SIDE	- MX-2 OPTIONAL

NOTES:

- (1) MX-2 IS STANDARD WITH ANY TWO DAMPERS; THE SIDE DAMPER AND EITHER BACK, TOP OR FLOOR.
- (2) OPTIONAL ACCESS DOOR IS RECOMMENDED WHEN PURCHASING BOTTOM RETURN.

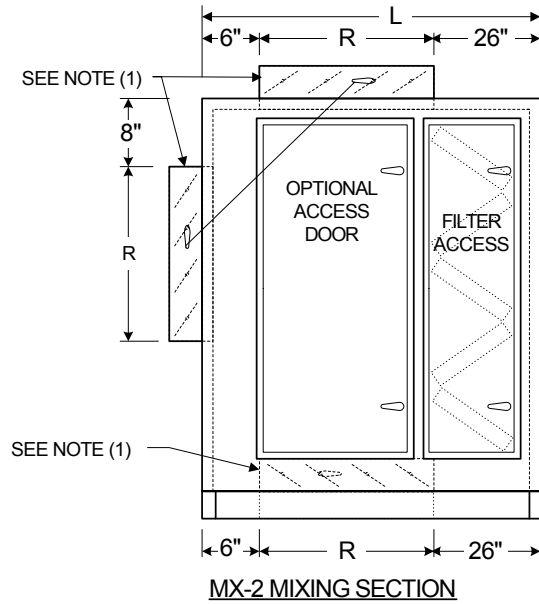
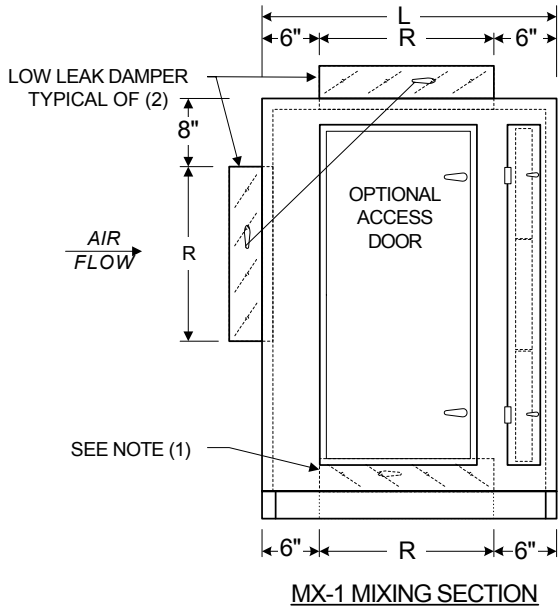


DIMENSIONS

COMPONENT MODULE	MODULE DIMENSIONS	MODEL SIZE																	
		04	07	10	13	15	17	21	26	30	33	36	40	51	59	69	77	85	103
MX1	L	16	18	20	20	22	22	24	26	29	30	32	35	43	48	55	50	55	64
	R	8	10	12	12	14	14	16	18	21	22	24	27	35	40	47	42	47	56
	S	36	48	60	72	72	79	86	92	96	96	96	96	96	96	96	120	120	120
MX2	L	20	27	29	33	34	35	38	42	44	46	47	54	56	57	56	62	73	
	M	22	27	32	35	38	42	46	50	55	56	61	68	73	80	92	104	104	104
	N	12	19	21	25	26	27	30	34	36	38	39	39	46	48	49	48	54	65
MX1 / MX2	W	41	57	68	76	76	83	90	96	101	107	107	118	118	118	118	132	136	143
	H	32	37	42	45	48	52	56	60	65	66	71	78	83	90	102	114	114	114

All dimensions are in inches.

FILTER / MIXING SECTIONS

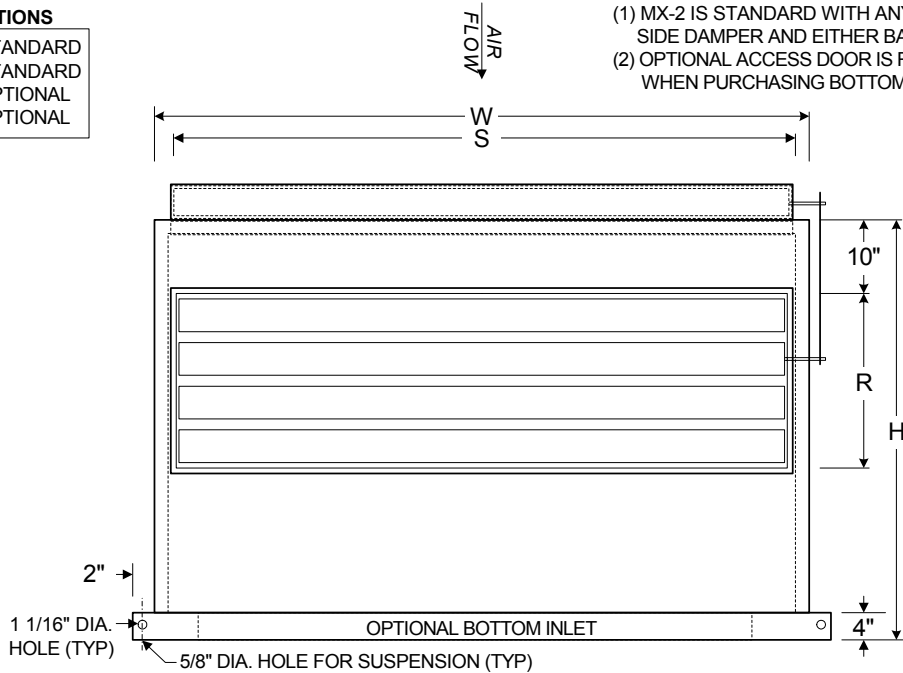


DAMPER LOCATIONS

TOP	- MX-1 STANDARD
REAR	- MX-1 STANDARD
BOTTOM	- MX-1 OPTIONAL
SIDE	- MX-2 OPTIONAL

NOTES:

- (1) MX-2 IS STANDARD WITH ANY TWO DAMPERS; THE SIDE DAMPER AND EITHER BACK, TOP OR FLOOR.
- (2) OPTIONAL ACCESS DOOR IS RECOMMENDED WHEN PURCHASING BOTTOM RETURN.

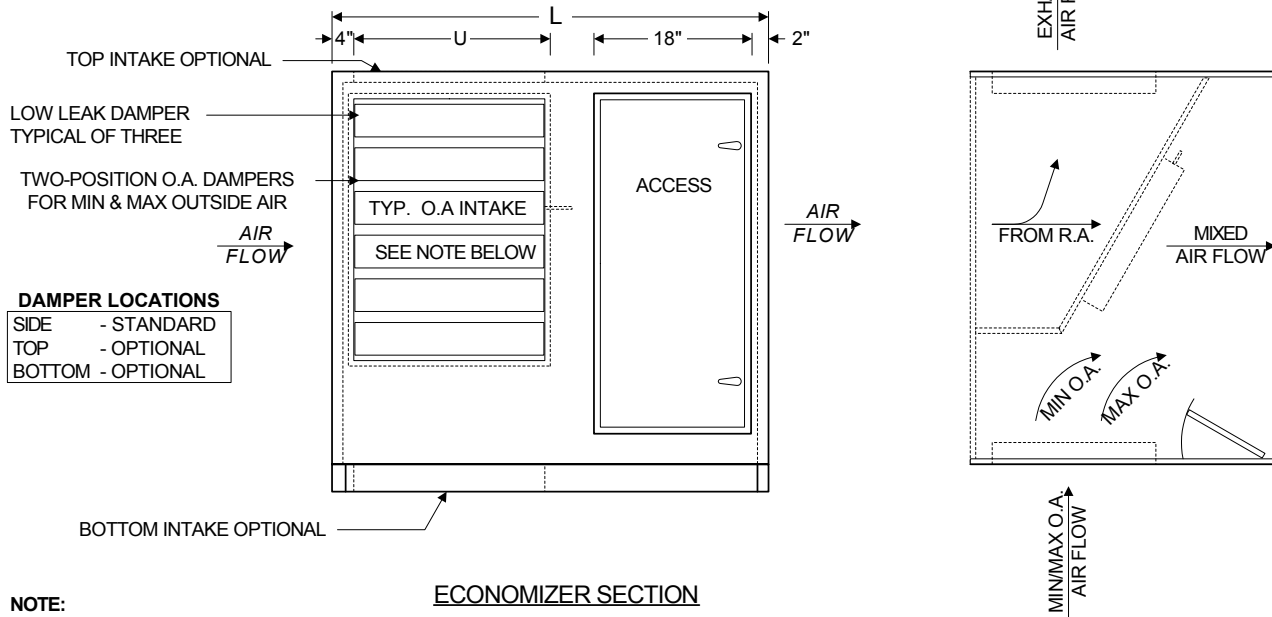


DIMENSIONS

COMPONENT MODULE	MODULE DIMENSIONS	MODEL SIZE																	
		04	07	10	13	15	17	21	26	30	33	36	40	51	59	69	77	85	103
FMS	L	20	22	24	24	26	26	28	30	33	34	36	39	47	52	59	54	59	68
	AMS	34	36	38	38	40	40	42	44	47	48	50	53	61	66	73	68	73	82
	W	41	57	68	76	76	83	90	96	101	107	107	118	118	118	132	136	143	
	H	32	37	42	45	48	52	56	60	65	66	71	78	83	90	102	114	114	114
	R	8	10	12	12	14	14	16	18	21	22	24	27	35	40	47	42	47	56
	S	36	48	60	72	72	79	86	92	96	96	96	96	96	96	96	120	120	120

All dimensions are in inches.

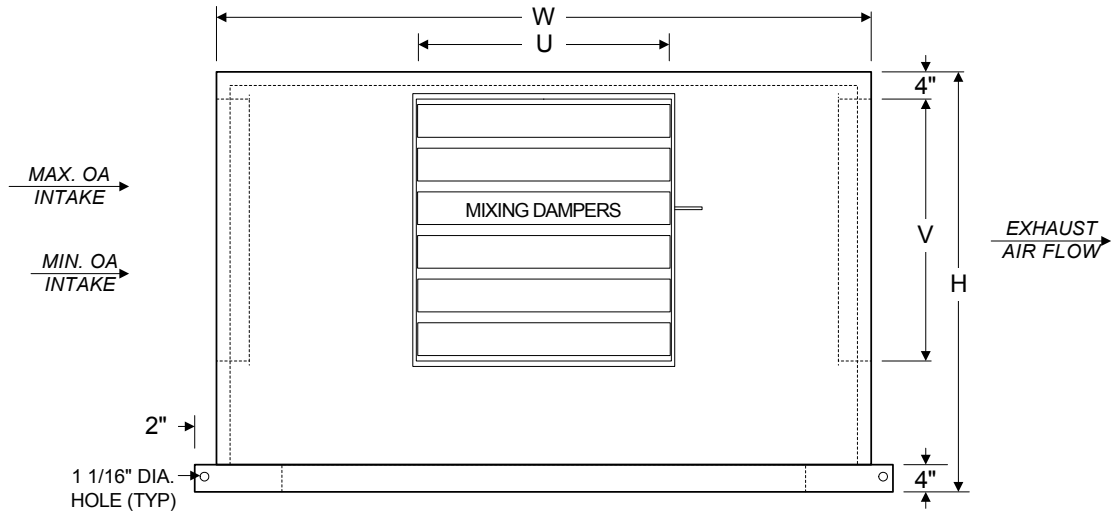
OUTSIDE AIR ECONOMIZER SECTIONS



NOTE:
INTAKE HOOD (NOT SHOWN) USUALLY
REQUIRED FOR OUTDOOR INSTALLATION

ECONOMIZER SECTION

**PLAN VIEW OF
DIAGRAM OF FLOW**



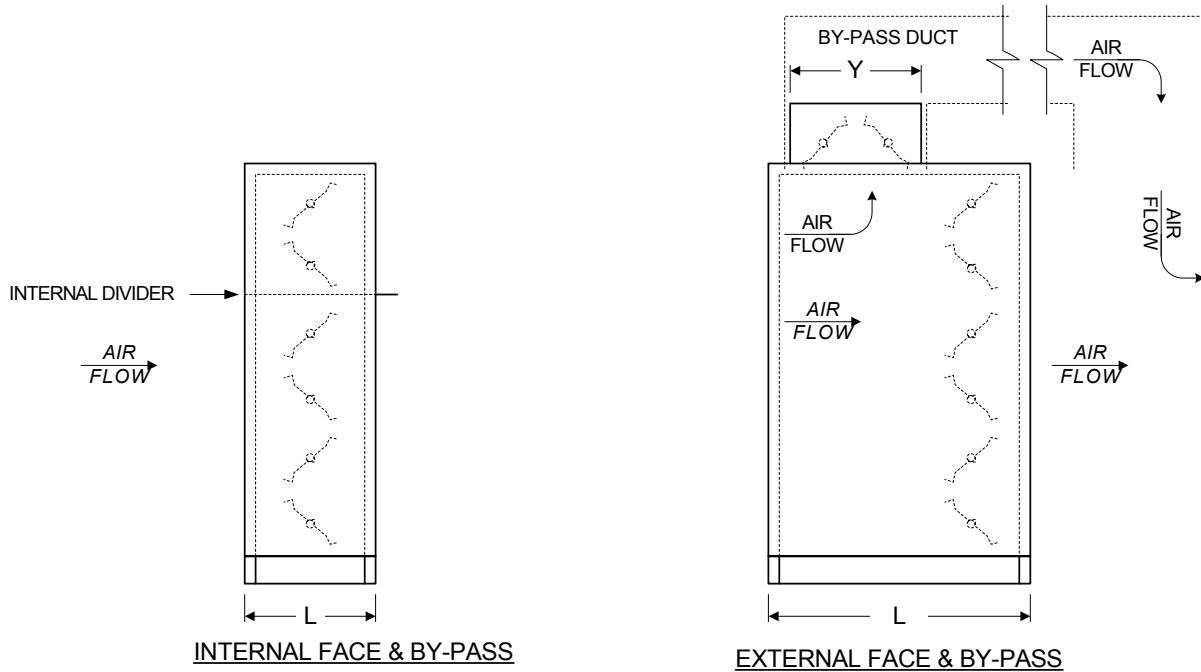
ENTERING AIR SIDE ECONOMIZER SECTION

DIMENSIONS

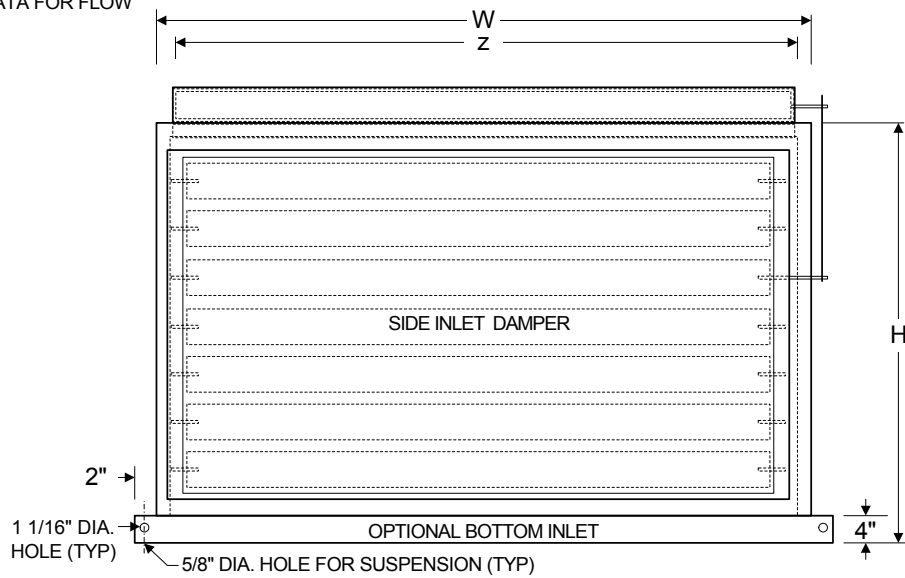
COMPONENT MODULE	MODULE DIMENSIONS	MODEL SIZE																	
		04	07	10	13	15	17	21	26	30	33	36	40	51	59	69	77	85	103
OAE	L	44	48	52	56	58	58	62	68	70	72	72	72	80	86	86	94	96	102
	W	41	57	68	76	76	83	90	96	101	107	107	118	118	118	118	132	136	143
	H	32	37	42	45	48	52	56	60	65	66	71	78	83	90	102	114	114	114
	U	12	16	20	24	26	26	30	36	38	40	40	40	48	54	54	62	64	70
	V	24	36	38	40	42	48	52	52	58	60	64	72	76	78	92	92	96	106

All dimensions are in inches.

FACE & BY-PASS SECTIONS



Note:
SEE INTERNAL FACE & BY-PASS
ARRANGEMENT DATA FOR FLOW
DIAGRAMS.

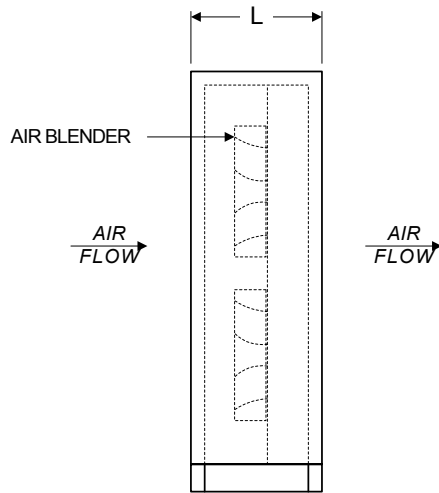


ENTERING AIR SIDE FACE & BY-PASS SECTION

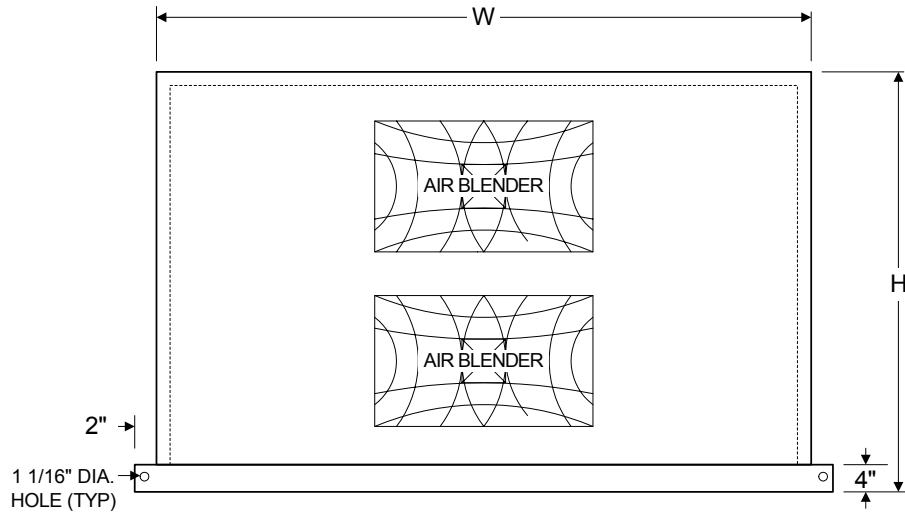
COMPONENT MODULE	MODULE DIMENSIONS	DIMENSIONS MODEL SIZE																	
		04	07	10	13	15	17	21	26	30	33	36	40	51	59	69	77	85	103
IFB EFB	L	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
	Y	8	8	10	12	12	12	14	16	16	16	16	18	18	24	26	32	34	345
	Z	28	44	55	59	63	70	77	83	87	94	94	105	105	105	105	105	117	129
	W	41	57	68	76	76	83	90	96	101	107	107	118	118	118	118	132	136	143
	H	32	37	42	45	48	52	56	60	65	66	71	78	83	90	102	114	114	114

All dimensions are in inches.

BLENDER SECTION



AIR BLENDER SECTION

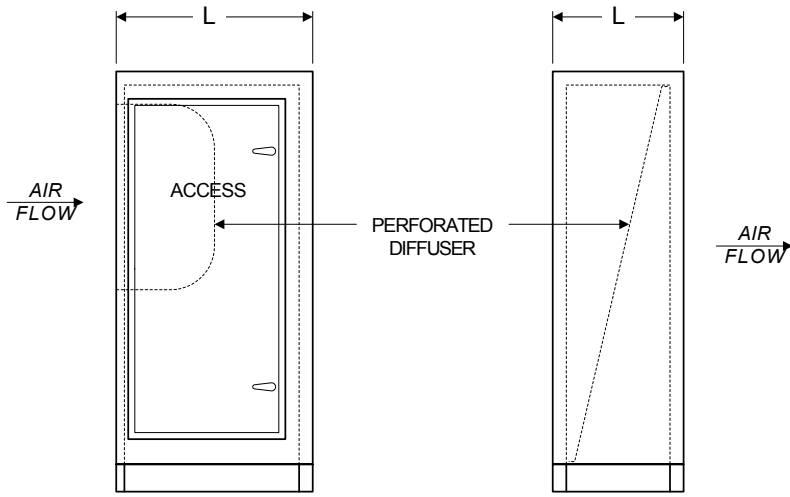


ENTERING AIR SIDE AIR BLENDER SECTION

COMPONENT	MODULE	DIMENSIONS																	
		MODEL SIZE																	
MODULE	DIMENSIONS	04	07	10	13	15	17	21	26	30	33	36	40	51	59	69	77	85	103
BLS	L	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
	W	41	57	68	76	76	83	90	96	101	107	107	118	118	118	118	132	136	143
	H	32	37	42	45	48	52	56	60	65	66	71	78	83	90	102	114	114	114

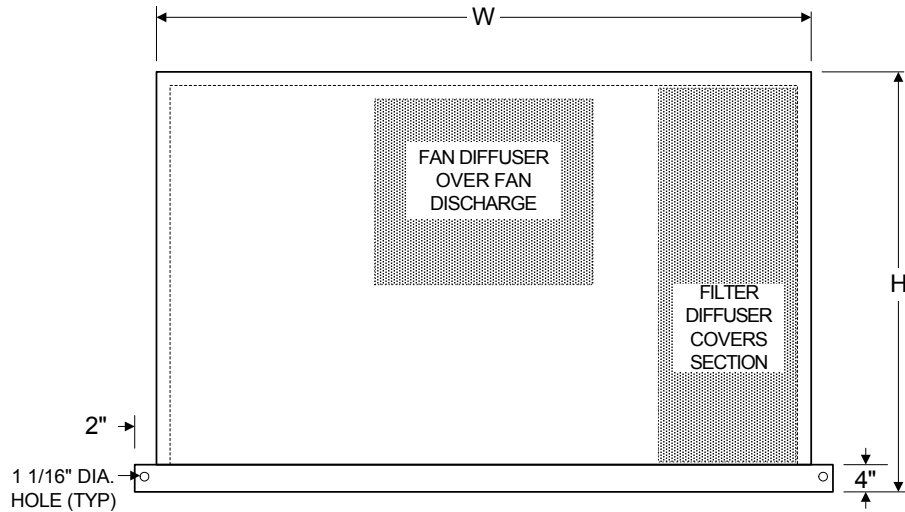
All dimensions are in inches.

DIFFUSER SECTIONS



FAN DIFFUSER SECTION

FILTER DIFFUSER SECTION



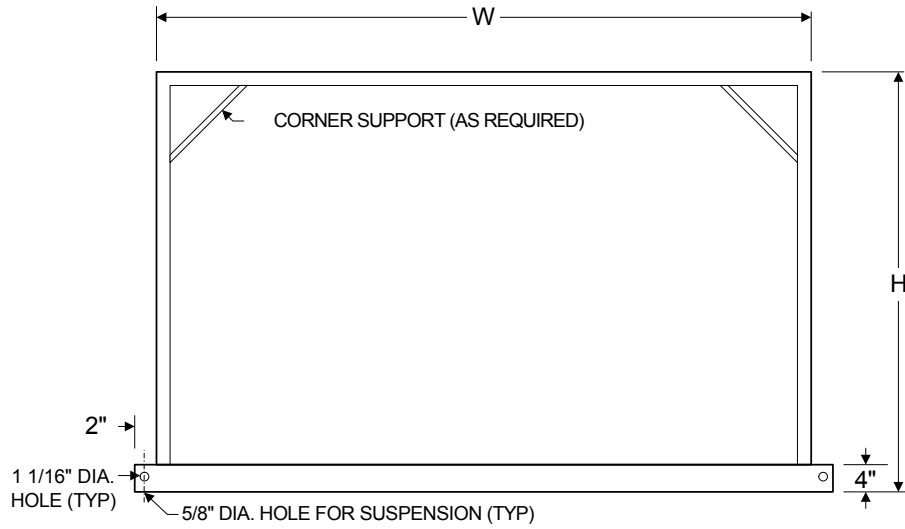
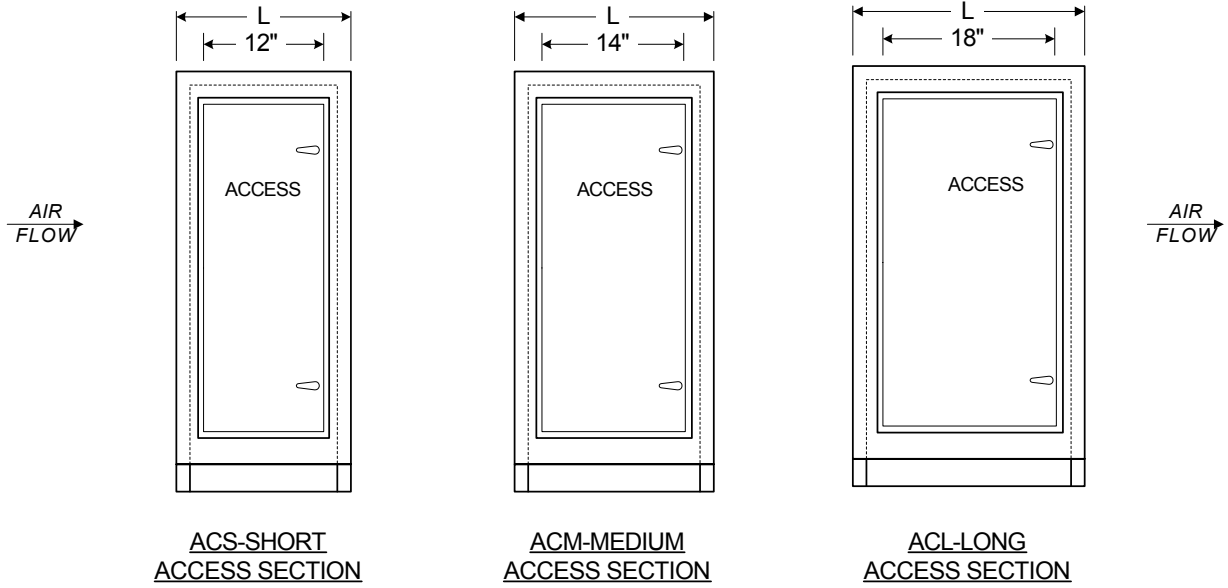
ENTERING AIR SIDE DIFFUSER SECTION

DIMENSIONS

COMPONENT MODULE	MODULE DIMENSIONS	MODEL SIZE																	
		04	07	10	13	15	17	21	26	30	33	36	40	51	59	69	77	85	103
FD FAD	L	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
	L	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
	W	41	57	68	76	76	83	90	96	101	107	107	118	118	118	118	132	136	143
	H	32	37	42	45	48	52	56	60	65	66	71	78	83	90	102	114	114	114

All dimensions are in inches.

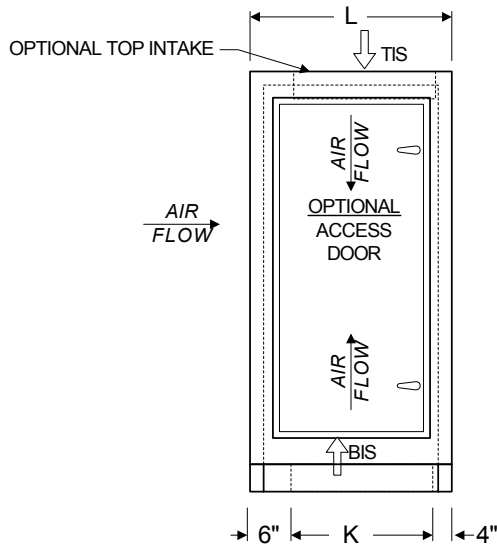
MODULAR ACCESS SECTIONS



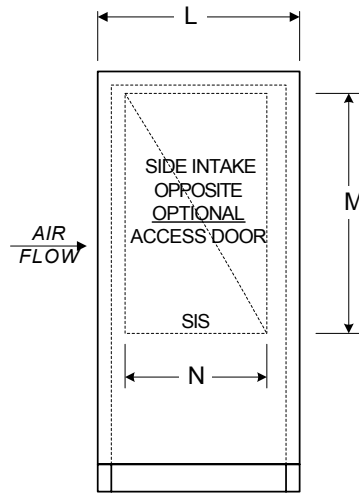
COMPONENT MODULE	MODULE DIMENSIONS	DIMENSIONS																	
		MODEL SIZE																	
		04	07	10	13	15	17	21	26	30	33	36	40	51	59	69	77	85	103
ACS	L	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
ACM	L	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
ACL	L	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
	W	41	57	68	76	76	83	90	96	101	107	107	118	118	118	118	132	136	143
	H	32	37	42	45	48	52	56	60	65	66	71	78	83	90	102	114	114	114

All dimensions are in inches.

MODULAR INTAKE SECTION



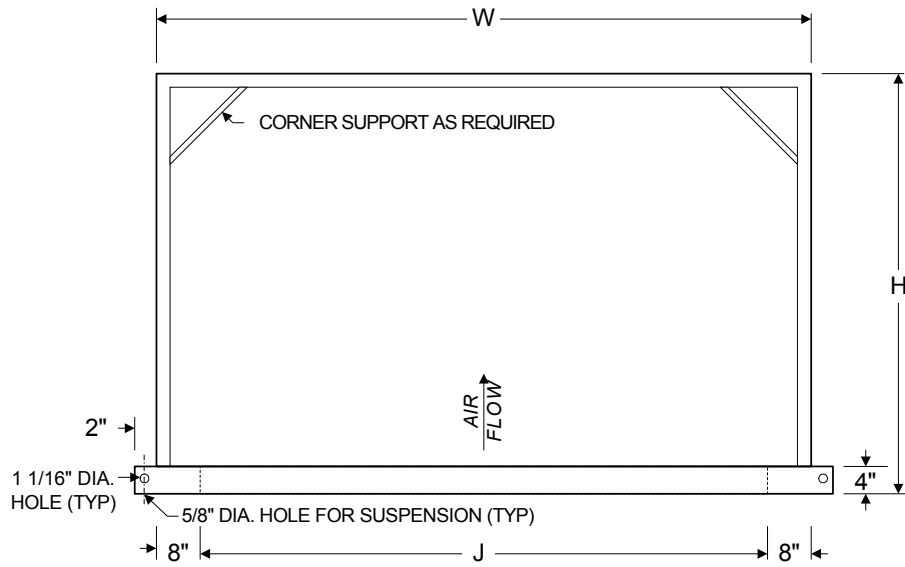
TOP / BOTTOM OR FRONT INTAKE



SIDE INTAKE

OUTLET LOCATIONS

- BOTTOM - BIS (Standard)
- TOP - TIS (Optional)
- SIDE - SIS (Optional)



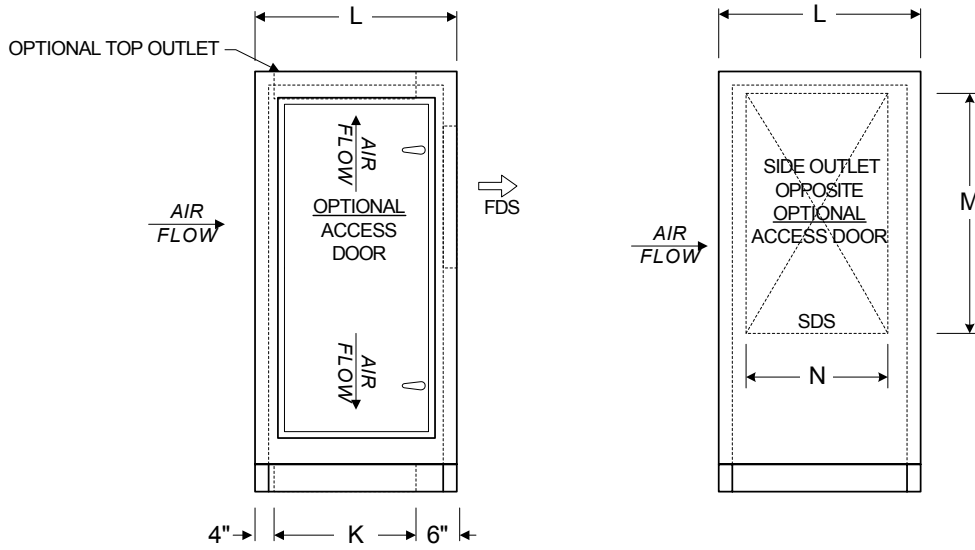
ENTERING AIR SIDE INTAKE SECTION

DIMENSIONS

COMPONENT MODULE	MODULE DIMENSIONS	MODEL SIZE																	
		04	07	10	13	15	17	21	26	30	33	36	40	51	59	69	77	85	103
TIS / BIS	L	16	18	20	20	22	22	24	26	29	30	32	35	43	48	55	50	55	64
	J	8	10	12	12	14	14	16	18	21	22	24	27	35	40	47	42	47	56
	K	36	48	60	9	11	13	17	22	96	96	96	96	96	96	96	120	120	120
SIS	L	20	27	29	33	34	35	38	42	44	46	47	54	56	57	56	62	73	
	M	22	27	32	35	38	42	46	50	55	56	61	68	73	80	92	104	104	104
	N	12	19	21	25	26	27	30	34	36	38	39	39	46	48	49	48	54	65
TIS / BIS SIS	W	41	57	68	76	76	83	90	96	101	107	107	118	118	118	118	132	136	143
	H	32	37	42	45	48	52	56	60	65	66	71	78	83	90	102	114	114	114

All dimensions are in inches.

MODULAR DISCHARGE SECTION

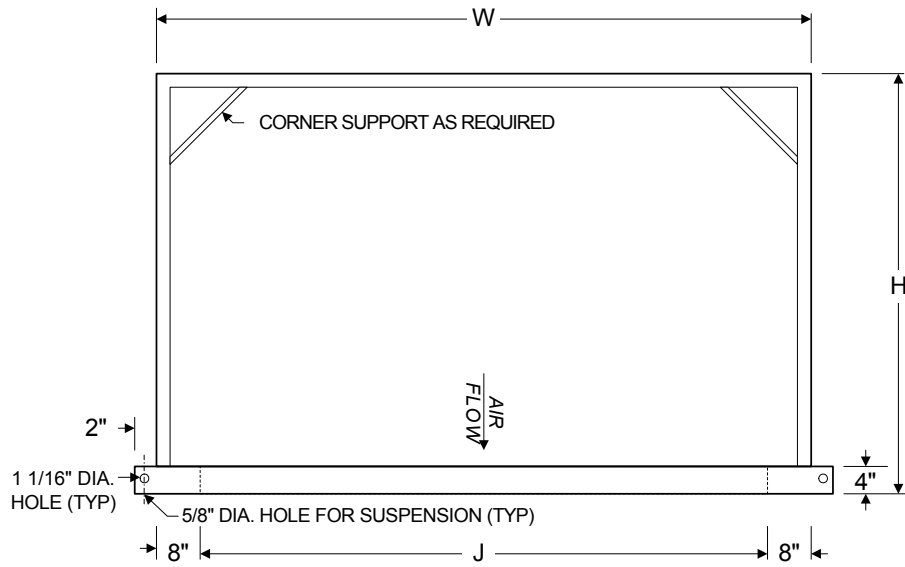


TOP / BOTTOM OR FRONT DISCHARGE

SIDE DISCHARGE

OUTLET LOCATIONS

- BOTTOM - BDS (Standard)
- TOP - TDS (Optional)
- SIDE - SDS (Optional)



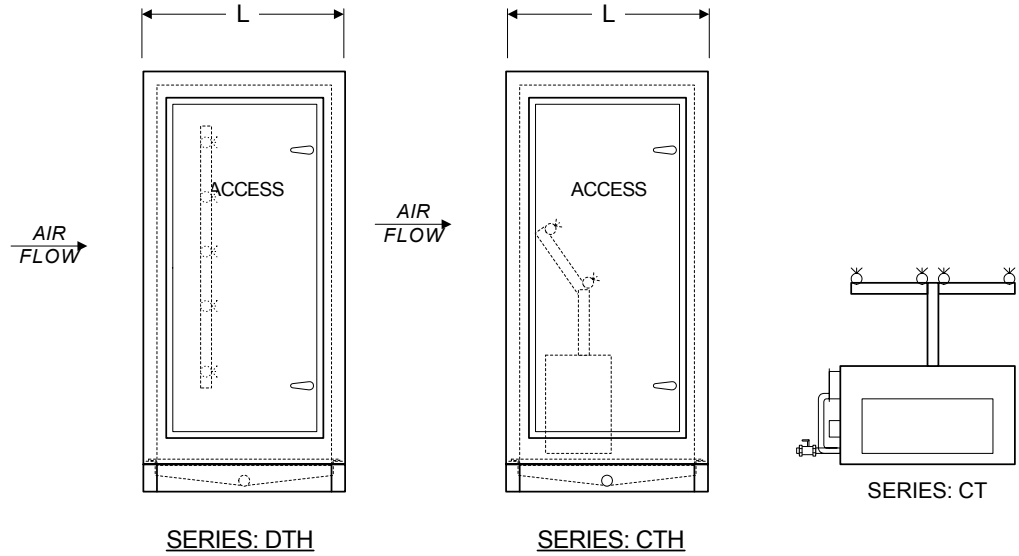
ENTERING AIR SIDE DISCHARGE SECTION

DIMENSIONS

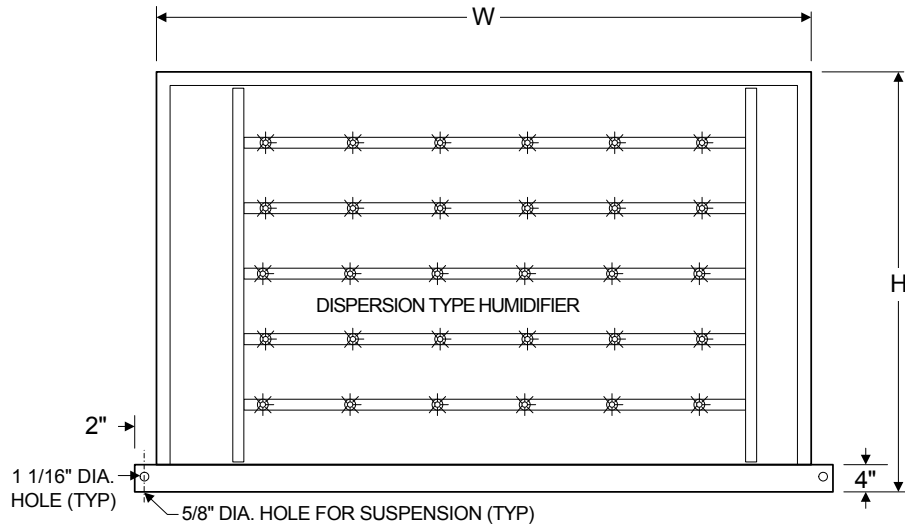
COMPONENT MODULE	MODULE DIMENSIONS	MODEL SIZE																	
		04	07	10	13	15	17	21	26	30	33	36	40	51	59	69	77	85	103
BDS / TDS / FDS	L	16	18	20	20	22	22	24	26	29	30	32	35	43	48	55	50	55	64
	J	8	10	12	12	14	14	16	18	21	22	24	27	35	40	47	42	47	56
	K	36	48	60	9	11	13	17	22	96	96	96	96	96	96	96	120	120	120
SDS	L	20	27	29	33	34	35	38	42	44	46	47	47	54	56	57	56	62	73
	M	22	27	32	35	38	42	46	50	55	56	61	68	73	80	92	104	104	104
	N	12	19	21	25	26	27	30	34	36	38	39	39	46	48	49	48	54	65
BDS / TDS / FDS SDS	W	41	57	68	76	76	83	90	96	101	107	107	118	118	118	118	132	136	143
	H	32	37	42	45	48	52	56	60	65	66	71	78	83	90	102	114	114	114

All dimensions are in inches.

HUMIDIFIER SECTIONS



HUMIDIFIER SECTION



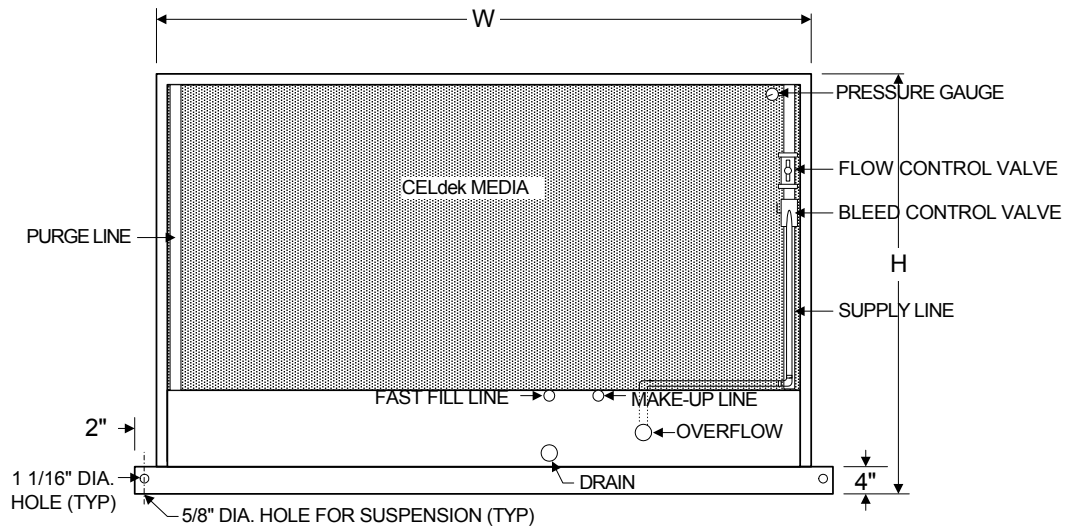
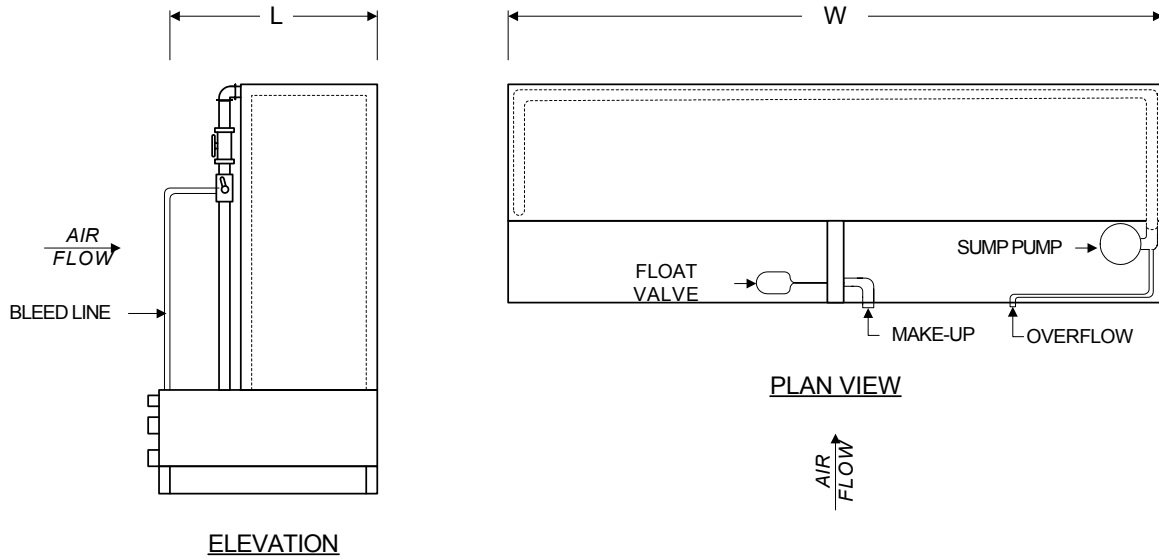
ENTERING AIR SIDE HUMIDIFIER SECTION

DIMENSIONS

COMPONENT MODULE	MODULE DIMENSIONS	MODEL SIZE																	
		04	07	10	13	15	17	21	26	30	33	36	40	51	59	69	77	85	103
DTH	L	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
	CTY	L	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48
	W	41	57	68	76	76	83	90	96	101	107	107	118	118	118	118	132	136	143
	H	32	37	42	45	48	52	56	60	65	66	71	78	83	90	102	114	114	114

All dimensions are in inches.

EVAPORATIVE COOLER SECTIONS



DIMENSIONS

COMPONENT MODULE	MODULE DIMENSIONS	MODEL SIZE																	
		04	07	10	13	15	17	21	26	30	33	36	40	51	59	69	77	85	103
EVP	L	36	36	36	36	36	36	36	36	36	36	36	36	36	48	48	48	48	48
	W	41	57	68	76	76	83	90	96	101	107	107	118	118	118	118	132	136	143
	H	32	37	42	45	48	52	56	60	65	66	71	78	83	90	102	114	114	114

All dimensions are in inches.

ELECTRIC HEATER SELECTION DATA

Model 04 thru 30

MODEL	(1) FACE	CFM	STAGES	(2) KW	HEATER AMPS			(3) KW	HEATER AMPS		
	VELOCITY			SUPPLY	MAXIMUM	MAXIMUM	208/1/60	240/1/60	MAXIMUM	208/3/60	240/3/60
04	350	1,362	3	11	52	45	22	60	52	26	
	400	1,556	3	12	59	51	25	68	59	30	
	450	1,751	3	14	67	58	28	77	67	33	
	500	1,945	3	15	74	64	31	86	74	37	
	550	2,140	3	17	81	71	34	94	82	41	
	600	2,334	3	18	89	77	37	103	89	44	
07	350	2,674	3	21	102	88	42	118	102	51	
	400	3,056	4	24	116	101	48	134	116	58	
	450	3,438	5	27	131	113	54	151	131	66	
	500	3,820	5	30	145	126	60	168	146	73	
	550	4,202	5	33	160	139	66	185	160	80	
	600	4,584	5	36	174	151	73	202	175	87	
10	350	3,675	3	29	140	121	58	162	140	70	
	400	4,200	4	33	160	138	66	185	160	80	
	450	4,725	5	37	180	156	75	NR	180	90	
	500	5,250	5	42	200	173	83	NR	200	100	
	550	5,775	5	46	220	190	91	NR	NR	110	
	600	6,300	5	50	240	208	100	NR	NR	120	
13	350	4,662	3	NR	NR	NR	74	NR	178	89	
	400	5,328	3	NR	NR	NR	84	NR	NR	102	
	450	5,994	6	NR	NR	NR	95	NR	NR	114	
	500	6,660	6	NR	NR	NR	105	NR	NR	127	
	550	7,326	8	NR	NR	NR	116	NR	NR	140	
	600	7,992	8	NR	NR	NR	126	NR	NR	152	
15	350	5,359	3	NR	NR	NR	85	NR	NR	102	
	400	6,124	3	NR	NR	NR	97	NR	NR	117	
	450	6,890	6	NR	NR	NR	109	NR	NR	131	
	500	7,655	6	NR	NR	NR	121	NR	NR	146	
	550	8,421	8	NR	NR	NR	133	NR	NR	160	
	600	9,186	8	NR	NR	NR	145	NR	NR	175	
17	350	5,954	3	NR	NR	NR	94	NR	NR	113	
	400	6,804	3	NR	NR	NR	108	NR	NR	130	
	450	7,655	6	NR	NR	NR	121	NR	NR	146	
	500	8,505	6	NR	NR	NR	135	NR	NR	162	
	550	9,356	8	NR	NR	NR	148	NR	NR	178	
	600	10,206	8	NR	NR	NR	161	NR	NR	194	
21	350	7,487	3	NR	NR	NR	118	NR	NR	143	
	400	8,556	3	NR	NR	NR	135	NR	NR	163	
	450	9,626	6	NR	NR	NR	152	NR	NR	183	
	500	10,695	6	NR	NR	NR	169	NR	NR	204	
	550	11,765	8	NR	NR	NR	186	NR	NR	224	
	600	12,834	8	NR	NR	NR	203	NR	NR	245	
26	350	9,079	3	NR	NR	NR	144	NR	NR	173	
	400	10,376	3	NR	NR	NR	164	NR	NR	198	
	450	11,673	6	NR	NR	NR	185	NR	NR	222	
	500	12,970	6	NR	NR	NR	205	NR	NR	247	
	550	14,267	8	NR	NR	NR	226	NR	NR	272	
	600	15,564	8	NR	NR	NR	246	NR	NR	297	
30	350	10,574	3	NR	NR	NR	167	NR	NR	201	
	400	12,084	3	NR	NR	NR	191	NR	NR	230	
	450	13,595	6	NR	NR	NR	215	NR	NR	259	
	500	15,105	6	NR	NR	NR	239	NR	NR	288	
	550	16,616	8	NR	NR	NR	263	NR	NR	317	
	600	18,126	8	NR	NR	NR	287	NR	NR	345	

Notes: (1) Based on large cooling coil. (2) Based on 25 degrees rise. (3) Based on 50 degree rise.

ELECTRIC HEATER SELECTION DATA

Model 33 thru 103

MODEL SIZE	(1) FACE VELOCITY	CFM SUPPLY	STAGES MAXIMUM	(2) KW MAXIMUM	HEATER AMPS		(3) KW MAXIMUM	HEATER AMPS		
					208/1/60	240/1/60		208/3/60	240/3/60	480/3/60
33	350	11,424	4	NR	NR	NR	181	NR	NR	218
	400	13,056	6	NR	NR	NR	207	NR	NR	249
	450	14,688	6	NR	NR	NR	232	NR	NR	280
	500	16,320	8	NR	NR	NR	258	NR	NR	311
	550	17,952	8	NR	NR	NR	284	NR	NR	342
600	19,584	8	NR	NR	NR	310	NR	NR	373	
36	350	12,565	4	NR	NR	NR	199	NR	NR	239
	400	14,360	6	NR	NR	NR	227	NR	NR	274
	450	16,155	6	NR	NR	NR	256	NR	NR	308
	500	17,950	8	NR	NR	NR	284	NR	NR	342
	550	19,745	8	NR	NR	NR	312	NR	NR	376
600	21,540	8	NR	NR	NR	341	NR	NR	410	
40	350	14,035	4	NR	NR	NR	222	NR	NR	267
	400	16,040	6	NR	NR	NR	254	NR	NR	306
	450	18,045	6	NR	NR	NR	286	NR	NR	344
	500	20,050	8	NR	NR	NR	317	NR	NR	382
	550	22,055	8	NR	NR	NR	349	NR	NR	420
600	24,060	8	NR	NR	NR	381	NR	NR	458	
51	350	17,864	6	NR	NR	NR	283	NR	NR	340
	400	20,416	6	NR	NR	NR	323	NR	NR	389
	450	22,968	8	NR	NR	NR	363	NR	NR	438
	500	25,520	8	NR	NR	NR	404	NR	NR	486
	550	28,072	10	NR	NR	NR	444	NR	NR	535
600	30,624	10	NR	NR	NR	485	NR	NR	584	
59	350	20,416	6	NR	NR	NR	323	NR	NR	389
	400	23,332	8	NR	NR	NR	369	NR	NR	445
	450	26,249	10	NR	NR	NR	415	NR	NR	500
	500	29,165	10	NR	NR	NR	461	NR	NR	556
	550	32,082	12	NR	NR	NR	508	NR	NR	611
600	34,998	12	NR	NR	NR	554	NR	NR	667	
69	350	24,245	8	NR	NR	NR	384	NR	NR	462
	400	27,708	10	NR	NR	NR	438	NR	NR	528
	450	31,172	10	NR	NR	NR	493	NR	NR	594
	500	34,635	12	NR	NR	NR	548	NR	NR	660
	550	38,099	12	NR	NR	NR	603	NR	NR	726
600	41,562	12	NR	NR	NR	658	NR	NR	792	
77	350	26,796	10	NR	NR	NR	424	NR	NR	511
	400	30,624	12	NR	NR	NR	485	NR	NR	584
	450	34,452	12	NR	NR	NR	545	NR	NR	656
	500	38,280	12	NR	NR	NR	606	NR	NR	729
	550	42,108	12	NR	NR	NR	666	NR	NR	802
600	45,936	12	NR	NR	NR	727	NR	NR	875	
85	350	29,859	10	NR	NR	NR	472	NR	NR	569
	400	34,124	12	NR	NR	NR	540	NR	NR	650
	450	38,390	12	NR	NR	NR	607	NR	NR	731
	500	42,655	12	NR	NR	NR	675	NR	NR	813
	550	46,921	12	NR	NR	NR	742	NR	NR	894
600	51,186	12	NR	NR	NR	810	NR	NR	975	
103	350	36,057	12	NR	NR	NR	571	NR	NR	687
	400	41,208	12	NR	NR	NR	652	NR	NR	785
	450	46,359	12	NR	NR	NR	734	NR	NR	883
	500	51,510	12	NR	NR	NR	815	NR	NR	981
	550	56,661	NR	NR	NR	NR	897	NR	NR	NR
600	61,812	NR	NR	NR	NR	978	NR	NR	NR	

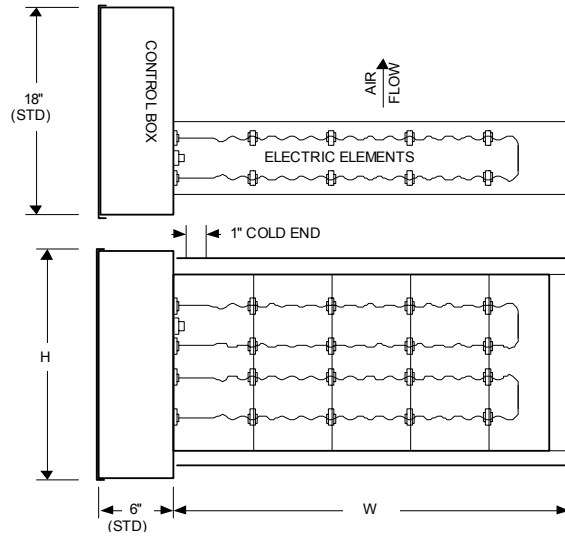
Notes: (1) Based on large coil. (2) Based on 25 degrees rise. (3) Based on 50 degree rise.

ELECTRIC HEAT SELECTION PROCEDURE

1. Define the requirements of unit air volume, velocity, heating requirements and voltage.

Example:

CFM	8,505
Ent. Air Temp.	50 F
Lvg. Air Temp.	75 F
Air Velocity	500
Elect. Service	480/3/60



2. Calculate the load in BTH/Hr.

$$\text{CFM} \times 1.08 \times \text{Temp. Diff.} = \text{Heating BTU/Hr}$$

$$8,505 \times 1.08 \times 25 = 229,635 \text{ BTU/Hr}$$

3. Calculate KW equal to BTU/Hr

$$\frac{\text{CFM} \times \text{Temp. Diff.}}{3,160} = \text{KW}$$

$$\frac{8,505 \times 25}{3,160} = 67.29 \text{ KW}$$

4. Select unit size from Heater Selection Data:

Heating coils may operate from 350 to 900 FPM.
If used with cooling units the face velocity is often selected at 500 FPM.
Therefore:

$$\frac{\text{CFM}}{500} = \text{Face Area of Coil}$$

$$\frac{8,505}{500} = 17.01 \text{ Face Area}$$

Therefore:

The Physical Data Tables show that the Air Zone Model 17 has 17.01 Sq. Ft. of face area.
From the Heater Selection Data the Model 17 produces 8,505 CFM at 500 FPM face velocity.
The maximum KW allowed for this model is 135 KW; therefore the selection is valid.

5. Calculate the Electric Heater amps:

Three Phase:

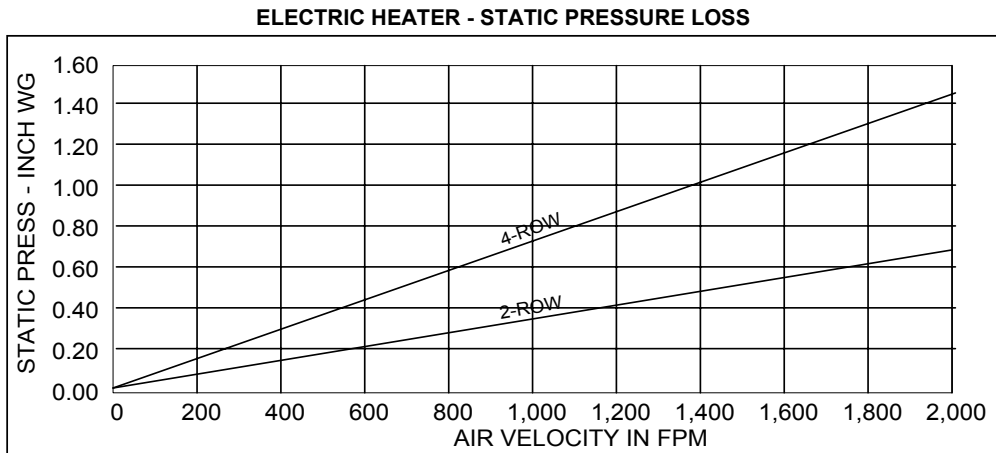
$$\frac{\text{KW} \times 1000}{\text{Volts} \times 1.73} = \text{Amps}$$

$$\frac{67.29 \times 1000}{480 \times 1.73} = 81.03 \text{ Amps}$$

Single Phase:

$$\frac{\text{KW} \times 1000}{\text{Volts}} = \text{Amps}$$

6. Determine the static pressure loss across the electric heater from the graph below:



GAS HEAT SELECTION DATA

Atmospheric Gas Heater Models:

Model / Size	75	100	125	150	175	200	225	250	300	350	400
BTU/H Input	75,000	100,000	125,000	150,000	175,000	200,000	225,000	250,000	300,000	350,000	400,000
Thermal Output	60,000	80,000	100,000	120,000	140,000	160,000	180,000	200,000	240,000	280,000	320,000
CFM Min.	735	980	1,225	1,475	1,720	1,965	2,210	2,455	2,945	3,440	3,930
CFM Max.	2,765	3,685	4,605	5,530	6,450	7,370	8,295	9,215	11,060	12,900	14,745
Gas Conn. Size	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	3/4"	3/4"	3/4"
Flue Size	5"	6"	7"	8"	8"	8"	8"	10"	10"	12"	12"

AGA Ratings for altitudes to 2,000 feet. Above 2,000 feet de-rate by orifice change, 4% for each 1,000 feet above sea level.

CGA Ratings for altitudes to 2,000 feet. High altitude units (2,001 to 4,500 ft.) de-rate by 10% of maximum input.

Gas connection sizes are for single stage Natural Gas only; Line sizes and 2-stage are not shown, see installation data.

GAS HEAT SELECTION DATA:

- 1 Define the requirements of unit air volume, velocity AND heating requirements.

Example:

CFM 10,695 Air Zone Model 21 will produce the required CFM at 500 FPM face velocity.
 Ent. Air Temp. 50 F
 Lvg. Air Temp. 75 F
 Air Velocity 500
 Gas Service Natural

- 2 Calculate the load in BTH/Hr.

$$\text{CFM} \times 1.08 \times \text{Temp} = \text{Heating BTU/Hr}$$

$$10,695 \times 1.08 \times 25 = 288,765 \text{ BTU/Hr (Heater Output)}$$

- 3 Calculate Heater Input BTU/Hr minimum requirement.

BTU/Hr Output Required / divided by .80 (80%)

$$288,765 / 0.80 = 360,965 \text{ Minimum Input required}$$

- 4 Select unit size from Heater Table above a Model 400 with 400,000 BTU/Hr Input and 320,000 BTU/Hr Output.

- 5 Calculate final leaving temperature: BTU/Hr
 (1.08 x CFM)

$$320,000 \text{ BTU/Hr} / 1.08 / 10,695 = 36.96 \text{ degrees Temperature Rise}$$

Therefore: If entering air is 50 degrees f + 36.96 rise; then the leaving air temperature = 86.96 degrees f.

Note:

The conventional Atmospheric Gas Heater currently has an AGA limitation of 400,000 BTU/Hr input. Dual Atmospheric Gas Heaters may be applied to Air Zone units to obtain additional capacity when required.

AZI Model No.	04 -- 21	Single Heater only
	26 & 30	Dual Heaters up to 225,000 MBH Input
	33 & 36	Dual Heaters up to 300,000 MBH Input
	40 -- 85	Dual Heaters up to 350,000 MBH Input
	103	Dual Heaters up to 400,000 MBH Input

See following data for air pressure loss.
 The above selection example has a pressure loss of 0.68 In. W.G. based on interpolation.

Pressure Loss Table:

Model / Size	75	100	125	150	175	200	225	250	300	350	400
Temp. Rise	CFM / PD	CFM / PD	CFM / PD	CFM / PD	CFM / PD	CFM / PD	CFM / PD	CFM / PD	CFM / PD	CFM / PD	CFM / PD
20 Deg. F	2765/0.62	3685/1.08	4605/1.16	5530/0.85	6450/1.19	7370/1.00	8295/1.28	9215/0.90	11060/1.26	12900/1.23	14745/1.23
30 Deg. F	1840/0.28	2455/0.50	3070/0.53	3685/0.39	4300/0.54	4915/0.45	5530/0.58	6140/0.41	7370/0.57	8600/0.56	9830/0.56
40 Deg. F	1380/0.18	1840/0.28	2300/0.28	2765/0.21	3225/0.29	3685/0.25	4145/0.31	4605/0.22	5530/0.32	6450/0.31	7370/0.31
50 Deg. F	1105/0.12	1475/0.16	1840/0.21	2210/0.15	2580/0.18	2945/0.16	3315/0.21	3685/0.15	4420/0.21	5160/0.19	5895/0.19
60 Deg. F	920/0.10	1225/0.14	1535/0.15	1840/0.12	2150/0.15	2455/0.12	2765/0.15	3070/0.11	3685/0.15	4300/0.14	4915/0.15
70 Deg. F	735/0.10	980/0.12	1225/0.12	1475/0.11	1720/0.12	1965/0.11	2210/0.12	2455/0.08	2945/0.11	3440/0.11	3930/0.11

HUMIDIFIER SELECTION DATA

Calculate the Humidification Load using the following formula:

$$\frac{CFM}{1,000} \times [RMF - OMF] = \text{Lbs. / Hr.}$$

Where:

CFM = Volume of Air in Cubic Feet per Minute*

RMF = Room Moisture Factor

OMF = Outside Air Moisture Factor

Lb. / Hr. = Humidification Load

* The Greater of the Amount of Outside Air or the Amount of Exhaust Air.

Outside Air can be estimated using the following formula:

$$\frac{\text{Cu. Ft. of Space Volume} \times \text{Air Changes per Hr.}}{60} = \text{CFM}$$

Number of Air Changes Required:

1.0 = New Constr. with high "R" value & vapor barrier.

1.5 = Average "R" value & vapor barrier.

2.5 = Low "R" value & no vapor barrier.

Moisture Factor Chart:

Sturation % RH	DESIGN AIR TEMPERATURE [Degrees F]																			
	-20 F	-10 F	0 F	10 F	20 F	30 F	40 F	50 F	55 F	60 F	65 F	68 F	69 F	70 F	71 F	72 F	73 F	74 F	75 F	80 F
20%	0.29	0.49	0.82	1.33	2.13	3.34	4.93	7.07	8.42	9.98	11.79	13.01	13.44	13.88	14.33	14.80	15.28	15.77	16.28	19.03
25%	0.36	0.61	1.02	1.66	2.66	4.18	6.16	8.84	10.52	12.48	14.74	16.26	16.80	17.35	17.92	18.50	19.10	19.71	20.35	23.78
30%	0.43	0.73	1.22	2.00	3.19	5.01	7.39	10.61	12.63	14.97	17.69	19.51	20.16	20.82	21.50	22.20	22.92	23.66	24.42	28.54
35%	0.50	0.85	1.43	2.33	3.73	5.85	8.63	12.38	14.73	17.47	20.64	22.77	23.52	24.29	25.08	25.90	26.74	27.60	28.49	33.30
40%	0.57	0.98	1.63	2.66	4.26	6.68	9.86	14.14	16.84	19.96	23.58	26.02	26.88	27.76	28.67	29.60	30.56	31.54	32.56	38.06
45%	0.64	1.10	1.84	3.00	4.79	7.52	11.09	15.91	18.94	22.46	26.53	29.27	30.24	31.23	32.25	33.30	34.38	35.49	36.53	42.81
50%	0.71	1.22	2.04	3.33	5.32	8.35	12.32	17.68	21.04	24.95	29.48	32.52	33.59	34.70	35.83	37.00	38.20	39.43	40.70	47.57
55%	0.79	1.34	2.24	3.66	5.86	9.19	13.56	19.45	23.15	27.45	32.43	35.78	36.95	38.17	39.42	40.70	42.02	43.37	44.77	52.33
60%	0.86	1.46	2.45	4.00	6.39	10.03	14.79	21.22	25.25	29.95	35.38	39.03	40.31	41.64	43.00	44.40	45.84	47.32	48.84	57.08
65%	0.93	1.59	2.65	4.33	6.92	10.86	16.02	22.98	27.36	32.44	38.32	42.28	43.67	45.11	46.59	48.10	49.66	51.26	52.91	61.84
70%	1.00	1.71	2.86	4.66	7.45	11.70	17.25	24.75	29.46	34.94	41.27	45.53	47.03	48.58	50.17	51.80	53.48	55.20	56.98	66.61
80%	1.14	1.95	3.26	5.33	8.52	13.37	19.72	28.29	33.67	39.93	47.17	52.04	53.75	55.52	57.34	59.20	61.12	63.09	65.12	76.11
90%	1.29	2.20	3.67	5.99	9.58	15.04	22.18	31.82	37.88	44.92	53.06	58.54	60.47	62.46	64.50	66.61	68.76	70.97	73.26	85.63
100%	1.43	2.44	4.08	6.67	10.65	16.71	24.65	35.36	42.09	49.91	58.96	65.05	67.19	69.40	71.67	74.00	76.45	78.86	81.40	95.14

Humidifier Types: Both SS and ES are available in the Series DT or CT

Type SS = Steam to Steam

Humidifiers may be selected for Standard Water or

Type ES = Electric Steam

Deionized, Demineralized or Reverse Osmosis Water

Type SI = Steam Injection

Type SS Available Sizes:

Model	Steam Press. @ Valve			
Size	5 #	10#	13#	15#
SS-1	32	76	100	122
SS-2	52	108	140	169
SS-3	102	228	292	348
SS-4	192	484	655	753

Type ES are available in the following KW sizes:

KW	3.0	4.5	5.5	7.5	11.0	14.0	15.0	16.5	19.5	22.0	28.0	30.0
# / Hr	9.0	13.5	16.5	22.5	31.5	40.5	45.0	49.5	58.5	63.0	81.0	90.0

KW	33.0	39.0	42	45	49.5	58.5	63	66	78	84	102
# / Hr	99.0	117.0	126.0	135.0	148.5	175.5	189.0	198.0	234.0	252.0	306.0

Type SI = Steam Injection

Unit Size	04	07	10	13	15	17	21	26	30	33	36	40	51	59	69	77	85	103	
Steam	2	45	67	115	160	190	230	255	305	410	435	460	455	455	455	550	605	605	
Grid	5	72	112	185	255	295	357	410	485	645	685	735	725	725	725	875	965	965	
Press.	10	94	169	260	360	412	518	575	690	915	965	1040	1030	1025	1025	1225	1365	1365	
PSIG	15	115	195	315	420	510	631	705	850	1125	1205	1270	1260	1265	1265	1265	1215	1670	1670

QUALITY AIR HANDLING EQUIPMENT

Compact Air Units

Series: HDT / VDT-FC

Available 600 thru 8,800 CFM
Horizontal or Vertical
Enclosed Cabinet Type
Belt or Direct Drive
Single or Double Wall

Multi-Zone Air Units

Series: HMZ/VMZ

Available 600 through 60,000 CFM
Modular Design up to 12.0" TSP
FC, BI, AF or Plenum Fans
Indoor, Outdoor or Roof Top Design
Single or Double Wall

Custom Air Units

Series: VDT-CU

Available 5,000 through 20,000 CFM
Modular Design Under Floor Units
Ultra Quiet Direct-Drive Plenum Fans
DDC Controls and VF Drive
Double Wall Design-Laboratory Tested

Commercial Roof-Top Units

Series: HDT-RT

Available 600 through 60,000 CFM
Modular Design up to 6.0" TSP
FC, BI, AF, Plenum or Vane Axial Fans
IRoof Ready Roof-Top Units
Single or Double Wall

Partial List of Installations

ABN-AMBRO 30-Story Tower

Chicago, IL

Atlas Refinery

Lake Charles, LA

ARCO Refinery

Long Beach, CA

Atlantic Surgery Center

Atlantic City, NJ

Bernhard College

New York, NY

Bio-Immune Laboratory

Long Island, New York

Bristol Meyers Squibb

Philadelphia, PA

Computer Associates Hdq.

Dallas, Texas

Duke University

Durham, NC

E.I Du Ponte

Orange, Texas

Empire State Building

New York, NY

Enron 33-Story Office Tower

Houston, Texas

FAA LAB & Tech. Center

Atlantic City, NJ

Firestone Rubber

Orange, Texas

Fluor-5-Office Buildings

Houston, Texas

First India Place

New Delhi, India

Ft. Bend 2-Schools

Houston, Texas

General Electric Corp.

Mt. Vernon, IN

Huntsman Industries

Philadelphia, PA

Legacy Bank

Dallas, Texas

Middleton Tobacco Co.

Philadelphia, PA

Mitertek Headquarters

Chicago, IL

Merck & Co. Laboratories

Philadelphia, PA

Methodist Hospital

Houston, Texas

Mobil Refinery

Port Naches, Texas

Moses Industries

Fairfield, NJ

Mulholand School

Los Angeles, CA

Naval Foundry

Philadelphia, PA

N. E. School District

El Paso, Texas

Pennzoil Office Towers

Houston, Texas

Phibro, USA

Deer Park, Texas

QVC Sound Studio

Philadelphia, PA

Randolph AFB

San Antonio, Texas

River Oaks Baptist Sch.

Houston, Texas

SVGL Lithography

Ridgefield, CT

Sunny Farmingdale

Farmingdale, NY

Thomas Jefferson Univ.

Philadelphia, PA

San Antonio ISD

San Antonio, Texas

Sam Houston Univ.

Huntsville, Texas

San Jacinto College

Houston, Texas

Top Flight Corp.

Philadelphia, PA

University of Texas

Galveston, Texas

TSU University

Dallas, Texas

U.S. Navy

Virginia Beach, VA

Univ. of Pennsylvania

Philadelphia, PA

USA Today Hdq.

Mc Lean, VA

VA Hospital

Philadelphia, PA

US Navy

Okinawa, Japan