

# Air Turnover

Temperature Distribution

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# **Air Turnover** Temperature Distribution System

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## **Air Turnover Unit Product Details**

### **PRODUCT DESCRIPTION**

The Air Turnover Unit efficiently heats large industrial spaces with a minimal amount of equipment. The system pulls the hot air from the higher elevations back to the floor level where it is the most beneficial. This ensures warm air circulates throughout the building, instead of getting trapped at the ceiling, to improve overall building temperatures and worker comfort. The system is designed to maximize efficiency, provide long-lasting, reliable heating, and minimize noise.

### **STANDARD FEATURES**

- Frame: Welded structural iron frame, primed with epoxy rust inhibitor.
- Sheet Metal: Bonderized G90 zinc rich “paint grip” 18-gauge sheet metal
- Finish: Industrial alkyd enamel machine gray 3 mil thick casing finish
- Screen: Expanded metal inlet/discharge screen (recommended for heating)
- Casing: Two-inch-thick Insulated casing with perforated “sound trap” liner
- Propeller: High efficiency six bladed airfoil turbine prop moves high volumes of air with lowest HP and sound.
- Drum: Continuously welded stainless-steel four pass drum and tube heat exchanger with 80+% efficiency and unsurpassed longevity.

### **OPTIONAL FEATURES**

- Grills: Adjustable industrial steel discharge grilles (recommended for cooling applications)
- Combustion: Sealed to allow burner operation in negative pressure or contaminated space.
- Induced Draft Blower: Improves flue venting on horizontal applications (DIDM Furnace only)
- Gas Train: Factory Mutual (FM) or Industrial Risk Insurers (IRI) w/ hydraulic shut-off valve & controls
- Burner: On/off, two stage or full modulation forced draft burner
- Programmability: Full occupied/unoccupied seven-day
- Mix Box Section: Includes motorized dampers to provide ventilation.
- Economizer: Honeywell™ W710 electronic fully integrated economizer with enthalpy sensor
- Temperature Controls: Packages includes DDC interfacing or computer control

### **PRODUCT BENEFITS**

- Uniform space temperatures provide more comfort and reduced building stratification. Heat loss and fuel consumption are reduced to a minimum with even space temperatures.
- Reduced operating costs with a highly efficient propeller fan for the lowest electrical consumption to distribute air throughout a building. Outside air is not required for operation, the air turnover unit can re-circulate up to 100% space air.
- Lower installation costs with base mounted air turnover units. Each unit only requires a few hours to stack and wire. The units do not have to be hung or supported and do not require ductwork.
- Rapid temperature recovery through constant air circulation. Large volumes of air provide rapid response to temperatures deviating from a set-point.
- Outstanding indoor air quality (IAQ) to prevent stagnation as the air is constantly rotated throughout the building.

### **INDUSTRY APPLICATIONS**

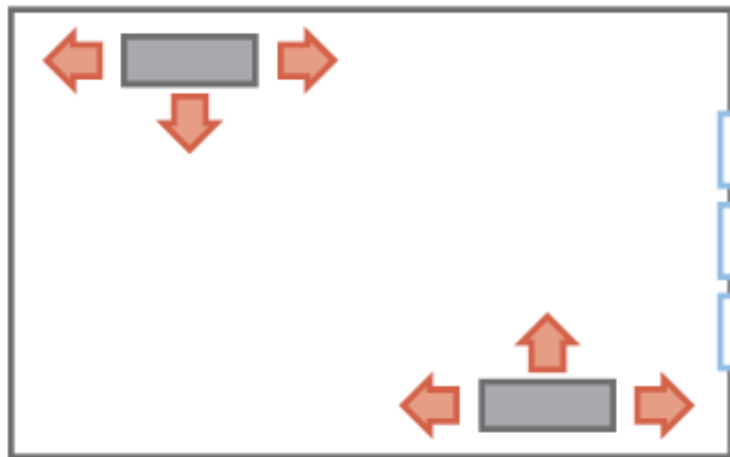
- Manufacturing
- Distribution
- Warehouse
- Steel Mills
- Pharmaceutical
- Food
- Merchandise Storage

# Air Turnover Temperature Distribution System

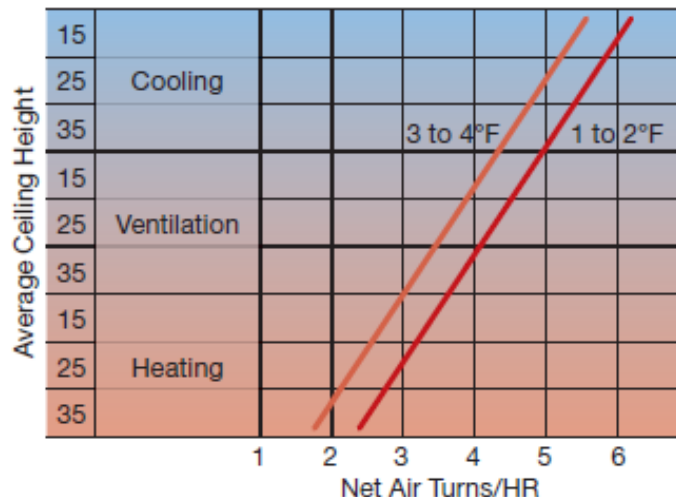
## Air Turnover Unit Design Flexibility

- All capacities are engineered, specifically, for the application.
- Furnace capacities are designed, manufactured, tested, and verified.
- Heat transfer coils are designed and manufactured, specifically, for each unit.
- Numerous configurations are available including.
  - Single or multiple discharge/inlet openings
  - 20% outdoor inlet opening with motorized damper.
  - Full mix box with 100% outside air capability. Available with two position summer/winter ventilation mode or integrated modulating economizer.
  - Indoor/outdoor construction
  - V-bank filter section with pleated filters and hinged access doors
  - Direct expansion or chilled water-cooling coils are available in blow through or draw through arrangements.
  - Electric, hot water or steam heating coils

Typical Unit Length



Recommended Air Turns  
Temperature Differential

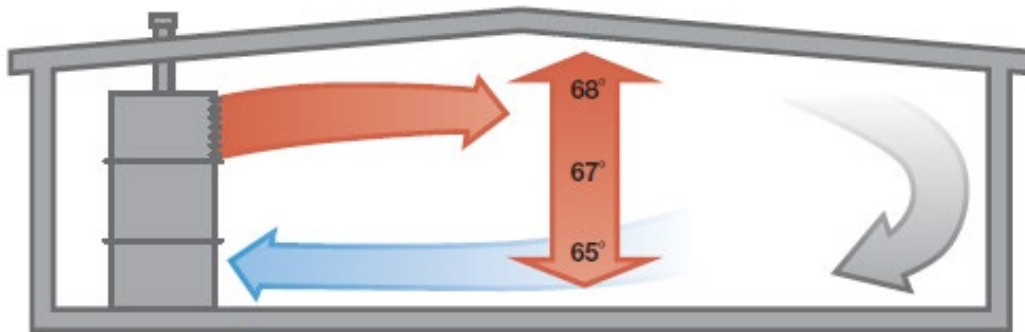


# Air Turnover Temperature Distribution System

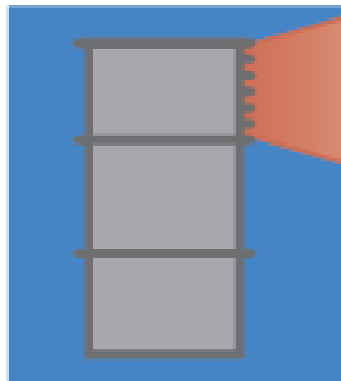
## Air Turnover Unit Design

Air turnover units are effective at heating and cooling large buildings. Just a few units can cover large areas, providing even temperatures throughout the facility. An air turnover system requires no discharge ductwork, so the units can virtually be placed anywhere. A unit located near a dock door can provide quick recovery from infiltration. The system performs consistently even with full storage areas.

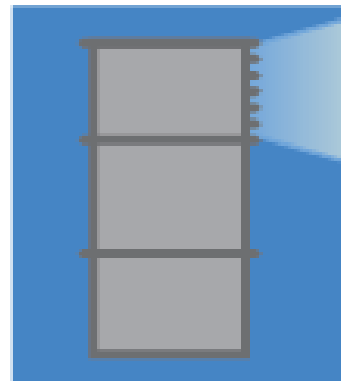
Air Turnover System Diagram



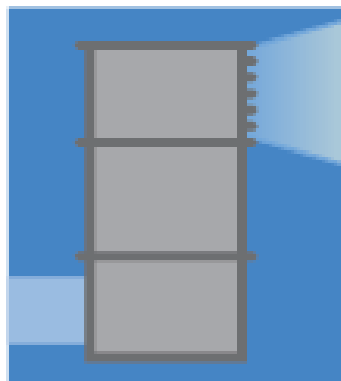
Additional System Options



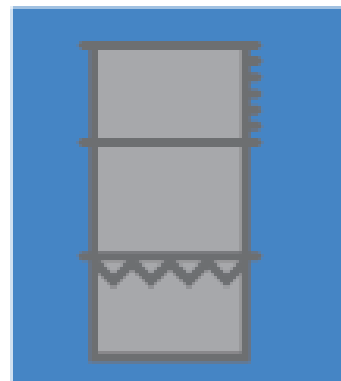
HEATING



COOLING



VENTILATION



FILTRATION

# Air Turnover Temperature Distribution System

## Air Turnover Unit Furnace Sections

PowerFlame™ forced draft industrial burner provides excellent combustion with low maintenance.

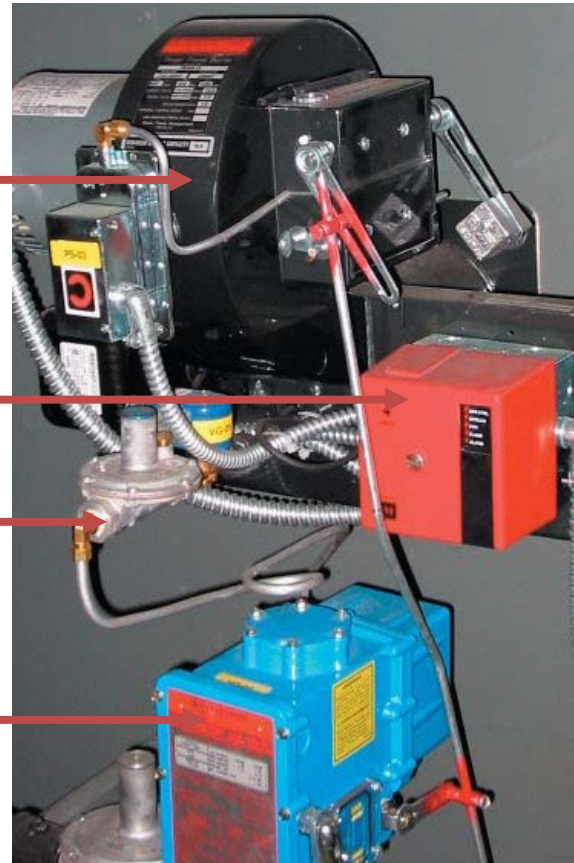
Fireye™ flame safeguard provides the safest and most reliable flame monitoring available.

Maxitrol™ regulators

Hydraulic main gas safety shut-off valve.

Unit Mounted Control Enclosure standard Dead-front safety Disconnect Switch

Four-Pass Drum & Tube Heat Exchanger; continuously welded, w/ 80+% efficiency and unsurpassed longevity.



# **Air Turnover** Temperature Distribution System

## **Air Turnover Unit Sound Attenuation**

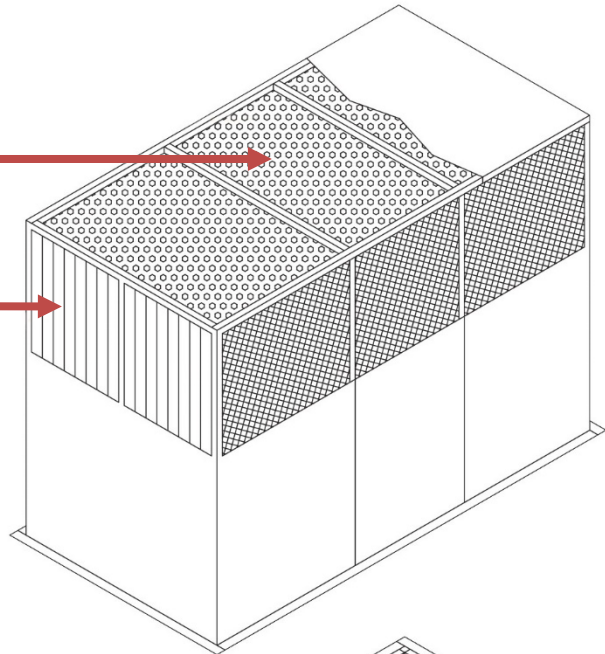
Sound attenuation is optional on all AC Series units. Units supplied with cooling include the sound attenuation features as standard.

### **INSULATION**

Two-inch-thick insulation with perforated liner in top of discharge section

### **AIR GRILLS**

Cooling units are provided with adjustable supply air grilles as standard. Heating units have expanded metal screens on discharge, grilles are optional.

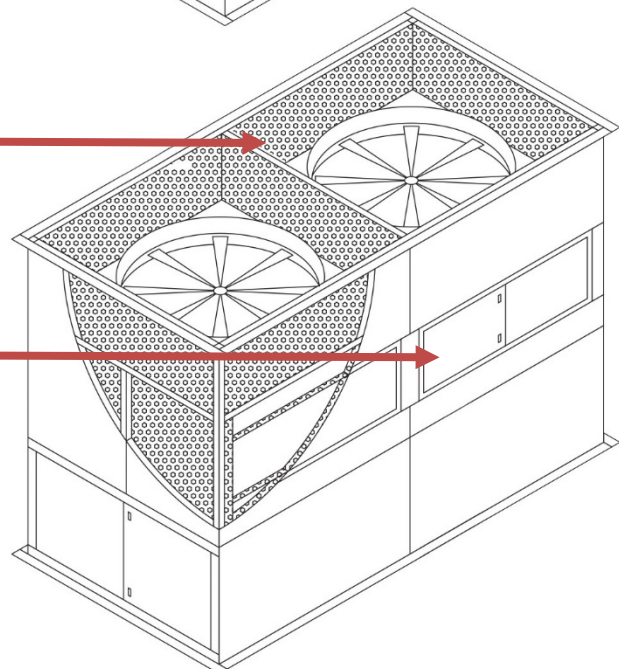


### **SOUND ATTENUATION PACKAGE**

Perforated liners are provided on the fan section, including the fan divider partitions. The liners muffle sound using its the two-inch-thick fiberglass insulation.

### **HINGED FAN / MOTOR ACCESS DOORS**

Doors provide easy access to internal components for maintenance and repair.



# Air Turnover Temperature Distribution System

## Air Turnover Unit Specifications

Model	CFM	Fan Qty	Fan Dia.	Fan HP			H/X Model	Heat Output (BTUH)	Draft**		Burner HP		Gas Conn. Size		
				w/o Filters	w/ Filters	w/ Cooling			Inducer HP	Gas	Oil	8-14" w.c.	1-5 psi	Stack Size (in.)	
AC-2-24	8,000	2	24	½	¾	1	20	200,000	½	¼	⅓	1	1	8	
	10,000			½	¾	1	30	300,000	½	⅓	⅓	1	1	8	
	14,000			¾	1	1½	40	400,000	½	⅓	⅓	1	1	8	
AC-2-30	12,000	2	24	½	¾	1	50	500,000	½	⅓	⅓	1	1	8	
	15,000			¾	1	1½	65	650,000	½	⅓	⅓	1¼	1¼	10	
	18,000			1	1½	2	75	750,000	½	⅓	⅓	1¼	1¼	10	
AC-2-42	22,000	2	36	1½	2	3	85	850,000	½	⅓	⅓	1½	1¼	10	
	30,000			2	3	5	100	1,000,000	½	⅓	⅓	1½	1¼	10	
	36,000			3	5	7½	125	1,250,000	1½	½	1	1¼	1¼	12	
AC-2-48	40,000	2	48	2	3	5	150	1,500,000	1½	½	1	1½	1½	12	
	45,000			3	5	7½	175	1,750,000	1½	½	1	2	1½	12	
	50,000			3*	5	7½	200	2,000,000	2	1	2	1½	1½	14	
AC-2-54	50,000	2	54	3	5	7½	225	2,250,000	2	1	2	1½	1½	14	
	60,000			5	7½	10	250	2,500,000	2	1	2	2	1½	14	
	65,000			5	7½	10	275	2,750,000	3	1½	2	2½	2	16	

Model	CFM	Fan Qty	Fan Dia.	Fan HP			H/X Model	Heat Output (BTUH)	Draft**		Burner HP		Gas Conn. Size		
				w/o Filters	w/ Filters	w/ Cooling			Inducer HP	Gas	Oil	8-14" w.c.	1-5 psi	Stack Size (in.)	
AC-2-60	72,000	2	60	5	7½	10	125	1,250,000	1½	1½	1	1¼	1¼	12	
							150	1,500,000	1½	1½	1	1½	1½	12	
	85,000			10	15	175	1,750,000	1½	1½	1	2	1½	12		
	200					2,000,000	2	1	2	1½	1½	14			
	225					2,225,000	2	1	2	1½	1½	14			
100,000	250	2,500,000	2	1	2	2	1½	14							
AC-2-6360	92,000	3	60	5	7½	10	275	2,750,000	3	1½	2	2½	2	16	
							300	3,000,000	3	1½	2	2½	2	16	
	130,000			10	15	325	3,250,000	3	1½	2	2½	2	16		
	350					3,500,000	3	3	3	2½	2	16			
	400					4,000,000	3	3	3	3	2	16			
150,000	425	4,250,000	3	3	3	3	2	16							
AC-2-6460	160,000	4	60	7½	7½	10	500	5,000,000	5	5	5	3	3	18	
							550	5,500,000	5	5	5	3	3	18	
	180,000			10	15	600	6,000,000	5	5	5	3	3	18		
	650					6,500,000	6	3	4	(2) 2½	(2) 2	(2) 16			
	700					7,000,000	6	6	6	(2) 2½	(2) 2	(2) 18			
200,000	800	8,000,000	6	6	6	(2) 3	(2) 2	(2) 18							

1. All dimensions are displayed in inches.
2. All capacities are ETL™ certified. Choose from eight standard model sizes.
3. Heat exchanger performance 80% efficient minimum.
4. Maximum furnace size shown for each model, smaller furnaces can be selected.
5. Contact factory for oil, LP, and combination unit performance specifications.

\* Larger propeller supplied

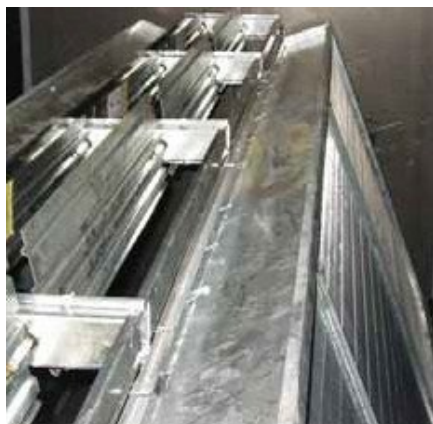
\*\* Optional – induced draft blower

# Air Turnover Temperature Distribution System

## Air Turnover Unit Specifications

	Nominal			Fan HP				Coil Performance			
	Airflow Capacity CFM	Cooling Tons	Bypass CFM	Net CFM	FL (in.)	FH (in.)	Qty	Total MBH	Sensible MBH	LAT DB / WB	APD (in. w.c.)
AC-2-24	8,000	16	0	8,000		18	2	194	141	62 / 58	0.34
	10,000	21	0	10,000	68	24	2	250	182	61 / 58	0.30
	14,000	30	0	14,000		33	2	360	262	61 / 58	0.28
AC-2-30	12,000	20	0	12,000		18	2	240	177	64 / 60	0.32
	15,000	30	0	15,000	88	30	2	360	264	62 / 58	0.27
	18,000	40	0	18,000		33	2	480	348	60 / 57	0.34
AC-2-42	22,000	40	0	22,000		36	2	480	350	63 / 59	0.27
	30,000	60	0	30,000	98	48	2	720	560	61 / 58	0.34
	36,000	70	0	36,000		54	2	840	615	62 / 58	0.30
AC-2-48	40,000	80	8,000	32,000		48	2	960	673	59 / 56	0.31
	45,000	90	9,000	36,000	110	51	2	1080	765	56 / 55	0.35
	50,000	100	10,000	40,000		54	2	1200	865	58 / 56	0.34
AC-2-54	50,000	100	10,000	40,000		48	2	1200	865	58 / 56	0.34
	60,000	120	12,000	48,000	130	57	2	1440	1038	58 / 56	0.36
	65,000	130	13,000	52,000		30	4	1560	1135	58 / 56	0.36
AC-2-60	72,000	140	16,000	56,000		54	2	1680	1225	58 / 56	0.34
	85,000	170	17,000	68,000	169	33	4	2040	1432	59 / 56	0.31
	100,000	200	20,000	80,000		39	4	2400	1680	59 / 56	0.31
AC-2-6260	72,000	160	8,000	64,000		54	2	1920	1347	58 / 56	0.32
	85,000	190	9,000	76,000	190	33	4	2280	1643	58 / 56	0.31
	100,000	225	10,000	90,000		36	4	2700	1895	59 / 56	0.33
AC-2-6360	92,000	180	20,000	72,000		57	2	2160	1557	58 / 56	0.30
	130,000	260	26,000	104,000	209	42	4	3120	2250	58 / 56	0.29
	150,000	300	30,000	120,000		48	4	3600	2600	58 / 56	0.30
AC-2-6460	160,000	320	32,000	128,000	200	51	4	3840	2696	59 / 56	0.30
	180,000	360	36,000	144,000	230	54	4	4320	3032	58 / 56	0.33
	200,000	400	40,000	160,000	284	54	4	4800	3530	58 / 56	0.28

- Notes: Performance based on 78°F DB & 66°F WB entering air saturated suction temperatures of 45°F using R-22 Refrigerant
- Cooling Selection: Choose up to 400 tons of cooling per unit.



Blow through coil w/ air bypass damper.

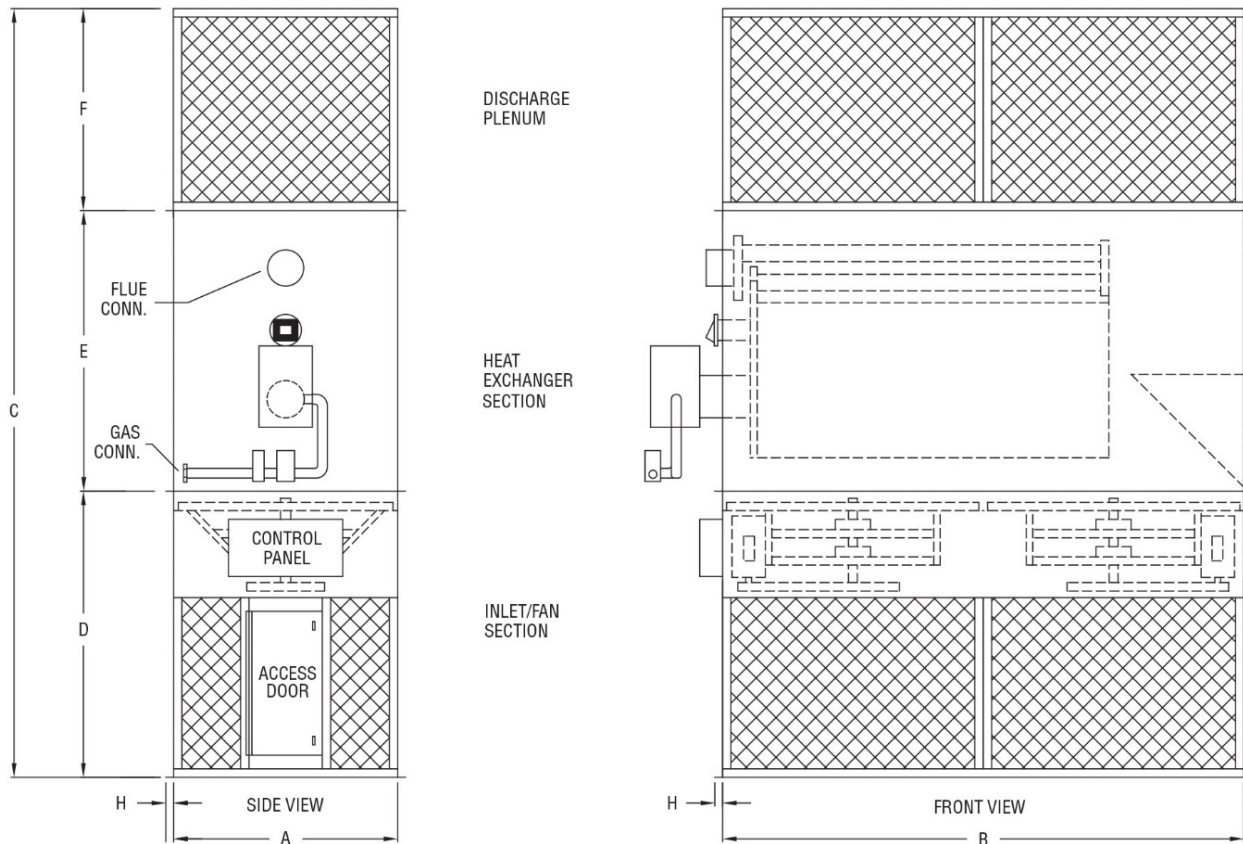


Draw through coil configuration.

Single and double deflection adjustable grills.



## Air Turnover Unit, Vertical, Heating Specifications

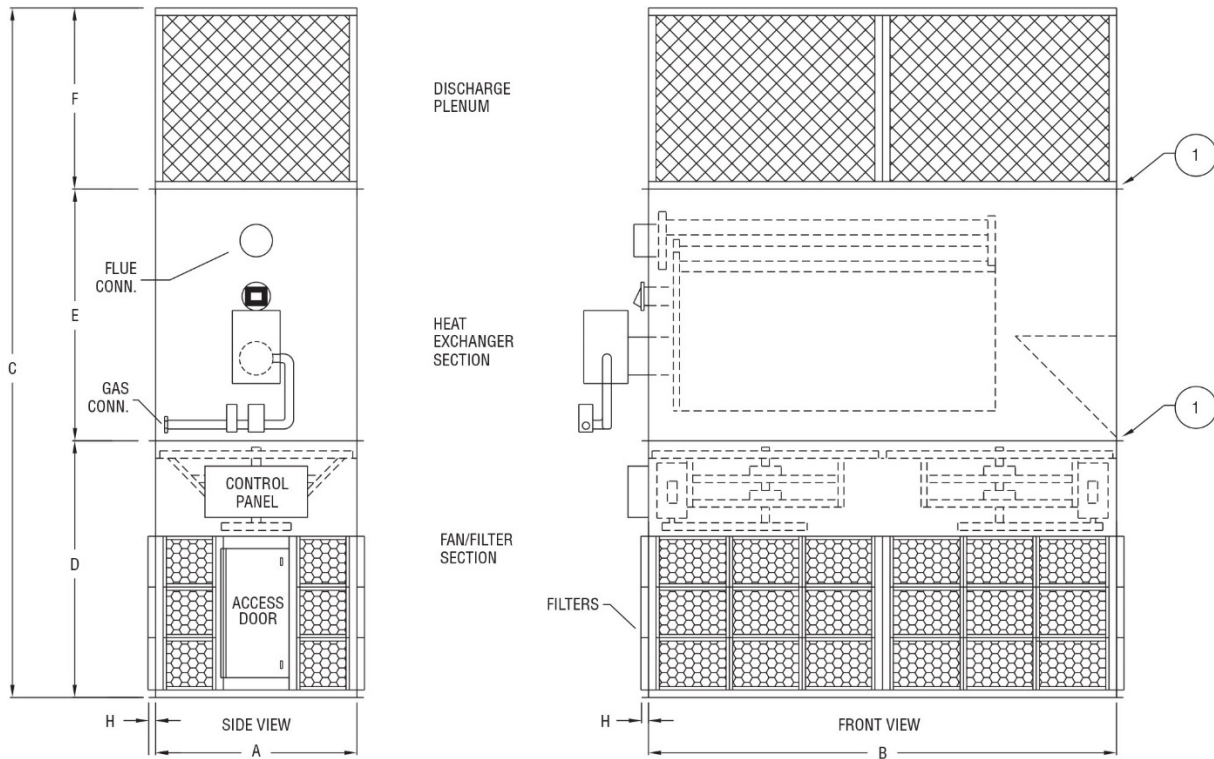


MODEL	HEATING OUTPUT MBH RANGE	A	B	C		D	E	F		H	WEIGHT LBS.
				1 WAY	2,3,4 WAY			1 WAY	2,3,4 WAY		
AC-2-24	200-400	35	70	149	143	72	47	30	24	1-3/4	2,200
AC-2-30	450-750	41	82	163	157	72	55	36	30	1-3/4	2,600
AC-2-42	650-1,250	53	106	190	180	78	62	50	40	1-3/4	3,600
AC-2-48	650-2,000	59	118	205	194	78	72	55	44	1-3/4	4,350
AC-2-54	850-2,750	65	130	222	212	92	72	58	48	1-3/4	7,525
AC-2-60	1,250-2,500	72	144	258	246	102	84	72	60	2-3/4	8,875
AC-2-6360	1,750-3,250	75	216	276	246	102	84	90	60	2-3/4	10,400
AC-2-6360	3,000-4,250	75	216	292	262	102	100	90	60	2-3/4	12,450
AC-2-6460	1,750-3,250	75	276	276	246	102	84	90	60	2-3/4	13,000
AC-2-6460	3,000-4,250	75	276	292	262	102	100	90	60	2-3/4	15,250
AC-2-6460	5,000-6,000	85	276	333	303	102	141	90	60	2-3/4	16,500

1. All dimensions are displayed in inches.
2. Vertical air turnover unit-heating
3. Unit split for shipment; field bolting required.
4. Consult factory for heating output greater than 6,000 mbh

# Air Turnover Temperature Distribution System

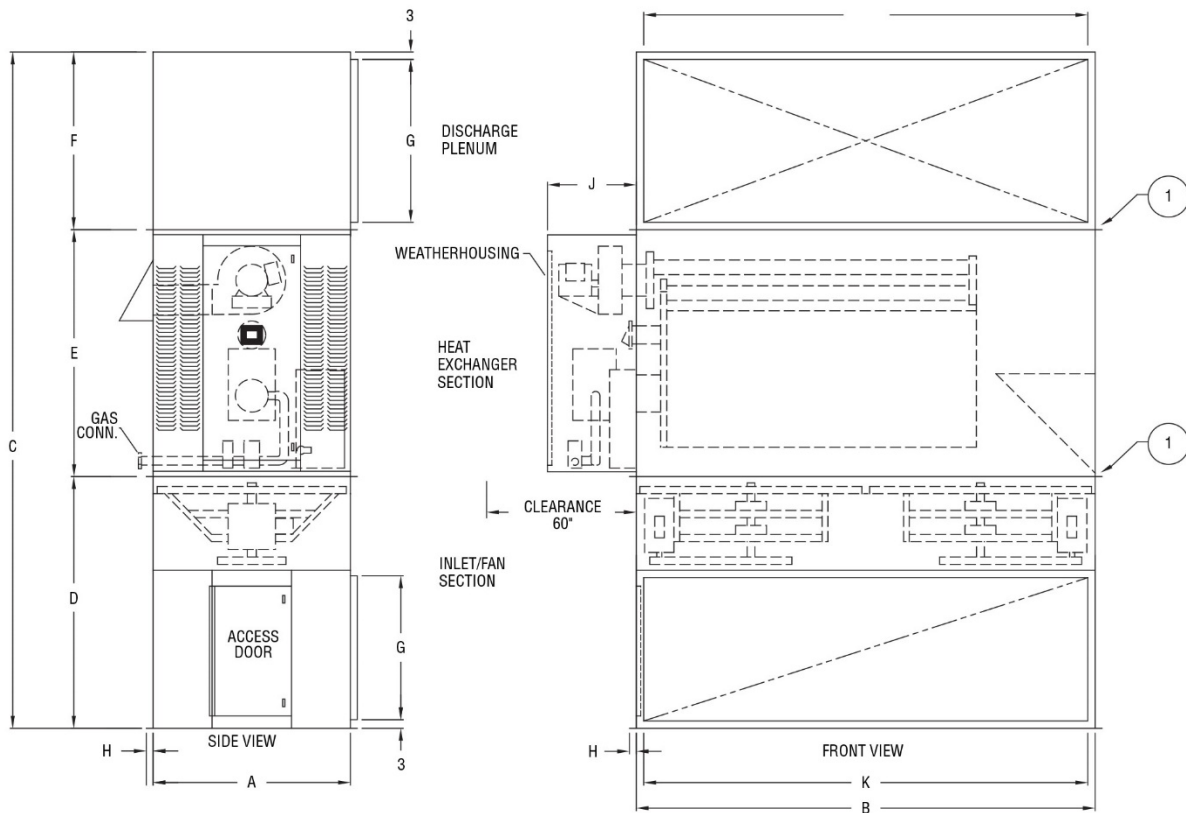
## Air Turnover Unit, Vertical, Heating w/ Flat Filter Specification



MODEL	HEATING OUTPUT MBH RANGE	A		C		D	E	F		H	WEIGHT LBS.
		1 WAY	2,3,4 WAY	1 WAY	2,3,4 WAY						
AC-2-24	200-400	35	70	149	143	72	47	30	24	1-3/4	2,200
AC-2-30	450-750	41	82	163	157	72	55	36	30	1-3/4	2,600
AC-2-42	650-1,250	53	106	190	180	78	62	50	40	1-3/4	3,600
AC-2-48	650-2,000	59	118	205	194	78	72	55	44	1-3/4	4,350
AC-2-54	850-2,750	65	130	222	212	92	72	58	48	1-3/4	7,525
AC-2-60	1,250-2,500	72	144	258	246	102	84	72	60	2-3/4	8,875
AC-2-6360	1,750-3,250	75	216	276	246	102	84	90	60	2-3/4	10,400
AC-2-6360	3,000-4,250	75	216	292	262	102	100	90	60	2-3/4	12,450
AC-2-6460	1,750-3,250	75	276	276	246	102	84	90	60	2-3/4	13,000
AC-2-6460	3,000-4,250	75	276	292	262	102	100	90	60	2-3/4	15,250
AC-2-6460	5,000-6,000	85	276	333	303	102	141	90	60	2-3/4	16,500

1. All dimensions are displayed in inches.
2. Unit split for shipment; field bolting required
2. Consult factory for heating output greater than 6,000 mbh
3. \*6360 size flat filter bank not to exceed 130,000 cfm
4. \*6460 size flat filter bank not to exceed 160,000 cfm

## Air Turnover Unit, Vertical, Heating, Outdoor Specifications

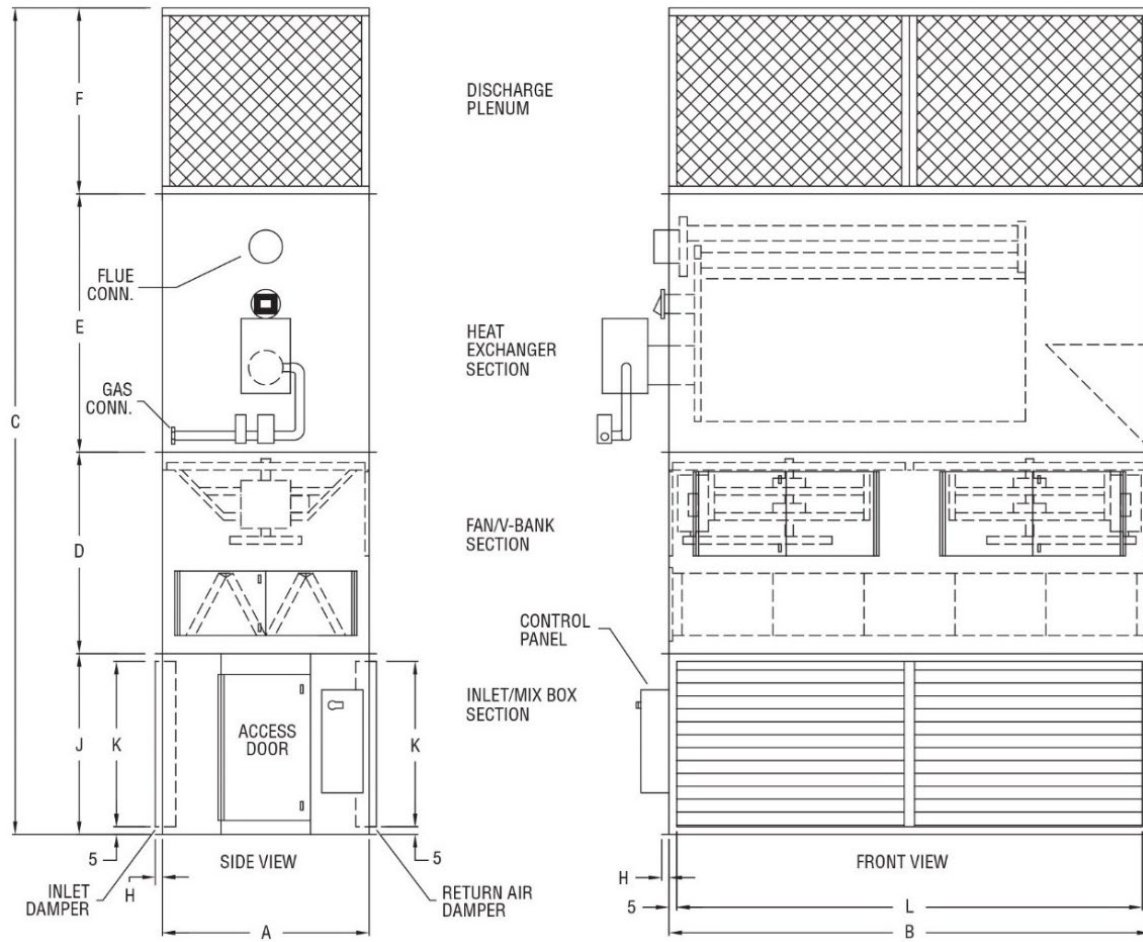


1. All dimensions are displayed in inches.
2. Unit split for shipment; field bolting required.
3. Right hand unit shown, left hand opposite shown.
4. Consult factory for heating output greater than 6,000 mbh

MODEL	HEATING OUTPUT MBH RANGE	A	B	C		D	E	F		H	WEIGHT LBS.
				1 WAY	2,3,4 WAY			1 WAY	2,3,4 WAY		
AC-2-24	200-400	35	70	149	143	72	47	30	24	1-3/4	2,200
AC-2-30	450-750	41	82	163	157	72	55	36	30	1-3/4	2,600
AC-2-42	650-1,250	53	106	190	180	78	62	50	40	1-3/4	3,600
AC-2-48	650-2,000	59	118	205	194	78	72	55	44	1-3/4	4,350
AC-2-54	850-2,750	65	130	222	212	92	72	58	48	1-3/4	7,525
AC-2-60	1,250-2,500	72	144	258	246	102	84	72	60	2-3/4	8,875
AC-2-6360	1,750-3,250	75	216	276	246	102	84	90	60	2-3/4	10,400
AC-2-6360	3,000-4,250	75	216	292	262	102	100	90	60	2-3/4	12,450
AC-2-6460	1,750-3,250	75	276	276	246	102	84	90	60	2-3/4	13,000
AC-2-6460	3,000-4,250	75	276	292	262	102	100	90	60	2-3/4	15,250
AC-2-6460	5,000-6,000	85	276	333	303	102	141	90	60	2-3/4	16,500

# Air Turnover Temperature Distribution System

## Air Turnover Unit, Vertical, Heating Specifications

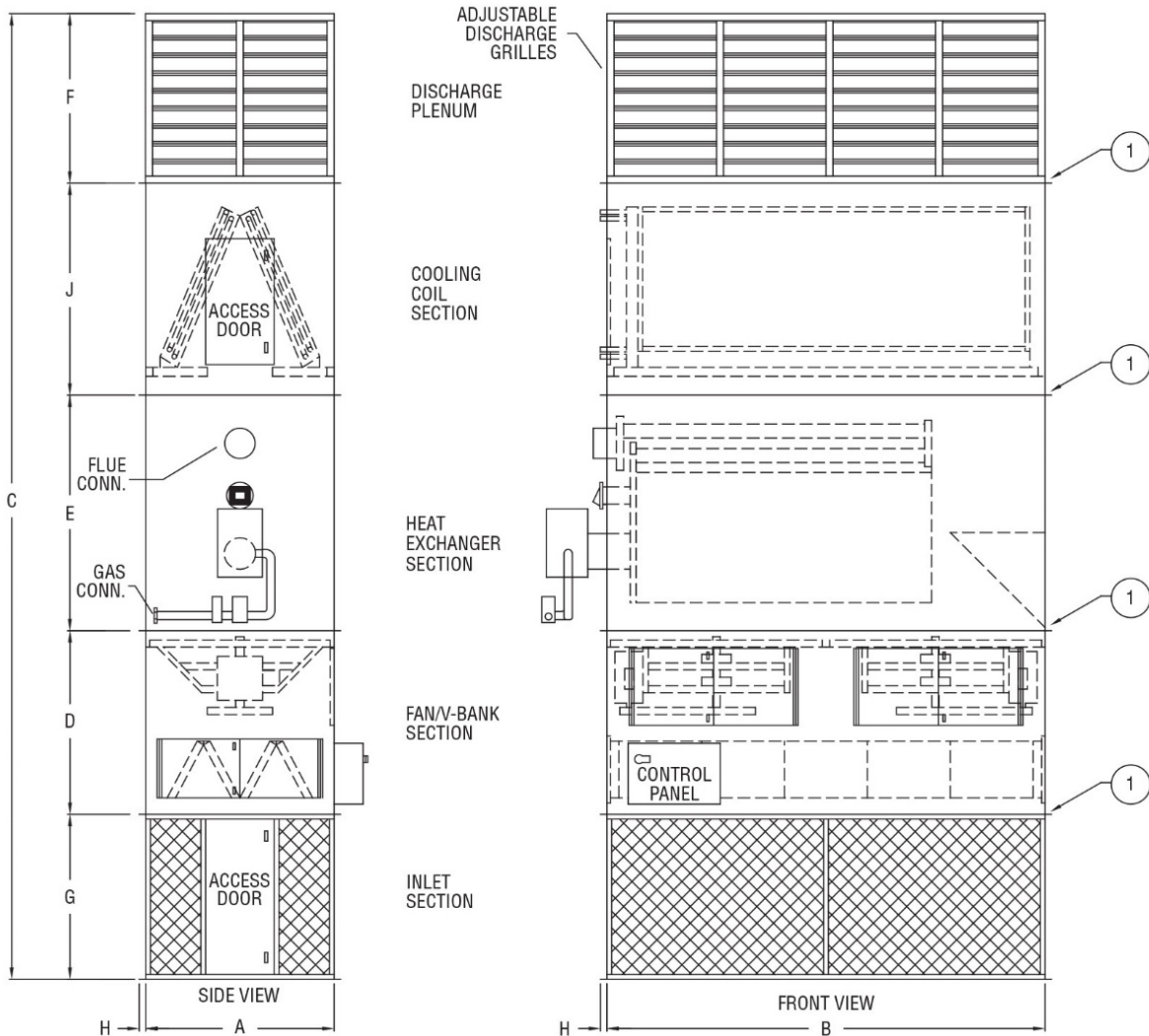


MODEL	HEATING OUTPUT MBH RANGE	C				F					V-BANK FILTERS QTY / SIZE X 2"	MAX. COIL SIZE X 2		
		A	B	1 WAY	2,3,4 WAY	D	E	1 WAY	2,3,4 WAY	G			H	J
AC-2-24	200-400	39	84	214	208	65	47	30	24	36	1-3/4	36	12-20X25	30 X 68
AC-2-30	450-750	45	104	234	228	65	55	36	30	42	1-3/4	36	15-20X25	30 X 86
AC-2-42	650-1,250	57	114	296	286	70	62	50	40	54	1-3/4	60	20-20X25	54 X 96
AC-2-48	650-2,000	63	126	326	315	75	72	55	44	54	1-3/4	70	30-20X25	65 X 108
AC-2-54	850-2,750	70	146	335	325	75	72	58	48	60	1-3/4	70	40-20X25	65 X 128
AC-2-60	1,250-2,500	80	185	394	382	78	84	72	60	70	2-3/4	90	63-20X25	81 X 168
AC-2-6360	1,750-3,250	85	225	432	402	78	84	90	60	90	2-3/4	90	90-20X25	81 X 207
AC-2-6360	3,000-4,250	85	225	448	418	78	100	90	60	90	2-3/4	90	90-20X25	81 X 207
AC-2-6460	1,750-3,250	85	300	432	402	78	84	90	60	90	2-3/4	90	120-20X25	81 X 282
AC-2-6460	3,000-4,250	85	300	448	418	78	100	90	60	90	2-3/4	90	120-20X25	81 X 282
AC-2-6460	5,000-6,000	95	300	489	459	78	141	90	60	90	2-3/4	90	120-20X25	81 X 282

1. All dimensions are displayed in inches.
2. Unit split for shipment; field bolting required.
3. Consult factory for heating output greater than 6,000 mbh

# Air Turnover Temperature Distribution System

## Air Turnover Unit, Vertical, Heating & Cooling w/ V-Bank Filters Specifications

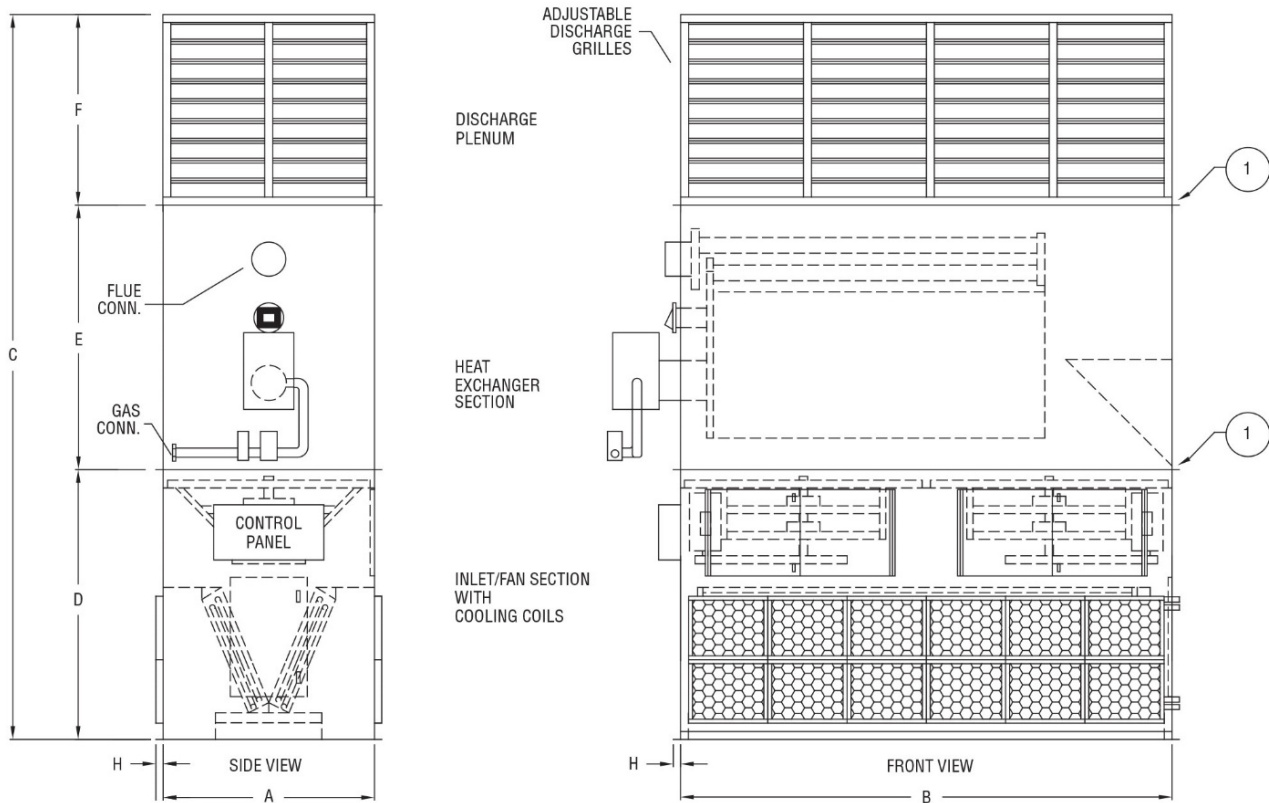


MODEL	HEATING OUTPUT MBH RANGE	C				E				G	H	J	V-BANK FILTERS QTY / SIZE x 2"	MAX. COIL SIZE x 2
		A	B	1 WAY	2,3,4 WAY	D	E	1 WAY	2,3,4 WAY					
AC-2-24	200-400	39	84	214	208	65	47	30	24	36	1-3/4	36	12-20x25	30 X 68
AC-2-30	450-750	45	104	234	228	65	55	36	30	42	1-3/4	36	15-20x25	30 X 86
AC-2-42	650-1,250	57	114	296	286	70	62	50	40	54	1-3/4	60	20-20x25	54 X 96
AC-2-48	650-2,000	63	126	326	315	75	72	55	44	54	1-3/4	70	30-20x25	65 X 108
AC-2-54	850-2,750	70	146	335	325	75	72	58	48	60	1-3/4	70	40-20x25	65 X 128
AC-2-60	1,250-2,500	80	185	394	382	78	84	72	60	70	2-3/4	90	63-20x25	81 X 168
AC-2-6360	1,750-3,250	85	225	432	402	78	84	90	60	90	2-3/4	90	90-20x25	81 X 207
AC-2-6360	3,000-4,250	85	225	448	418	78	100	90	60	90	2-3/4	90	90-20x25	81 X 207
AC-2-6460	1,750-3,250	85	300	432	402	78	84	90	60	90	2-3/4	90	120-20x25	81 X 282
AC-2-6460	3,000-4,250	85	300	448	418	78	100	90	60	90	2-3/4	90	120-20x25	81 X 282
AC-2-6460	5,000-6,000	95	300	489	459	78	141	90	60	90	2-3/4	90	120-20x25	81 X 282

1. All dimensions are displayed in inches.
2. Unit split for shipment; field bolting required.
3. Consult factory for heating output greater than 6,000 mbh

# Air Turnover Temperature Distribution System

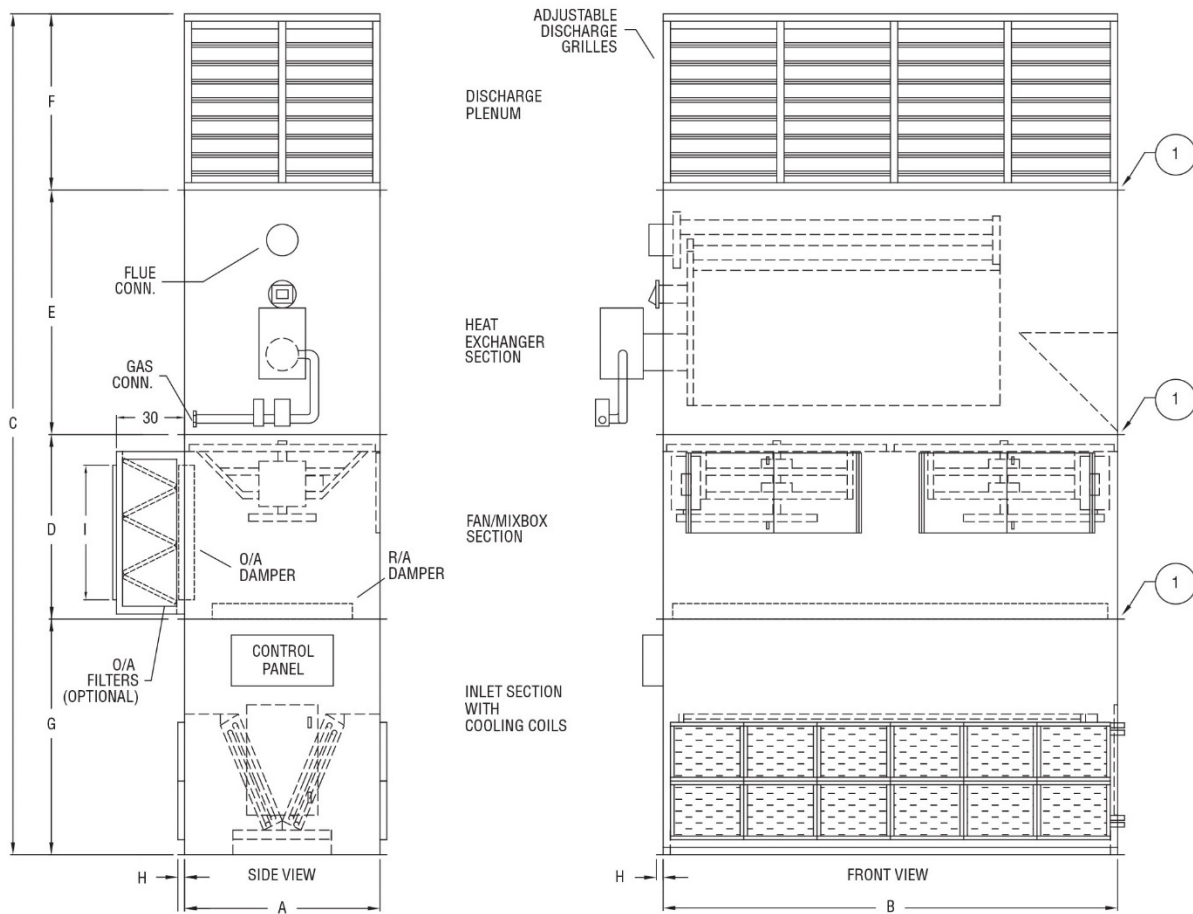
## Air Turnover Unit, Vertical, Heating & Cooling Low-Unit Height Option Specifications



MODEL	HEATING OUTPUT MBH RANGE	C				F				FLAT FILTER QTY/SIZE X 2"	MAX. COIL SIZE X 2	
		A	B	1 WAY	2,3,4 WAY	D	E	1 WAY	2,3,4 WAY			H
AC-2-24	200-400	39	84	149	143	72	47	30	24	1-3/4	16-20X25	30 X 68
AC-2-30	450-750	45	104	163	157	72	55	36	30	1-3/4	20-20X25	30 X 86
AC-2-42	650-1,250	57	114	197	187	85	62	50	40	1-3/4	26-20X25	54 X 96
AC-2-48	650-2,000	63	126	222	211	95	72	55	44	1-3/4	32-20X25	65 X 108
AC-2-54	850-2,750	70	146	225	215	95	72	58	48	1-3/4	42-20X25	65 X 128
AC-2-60	1,250-2,500	80	185	258	246	102	84	72	60	2-3/4	63-20X25	81 X 168
AC-2-6360	1,750-3,250	85	225	276	246	102	84	90	60	2-3/4	*68-20X25	81 X 207
AC-2-6360	3,000-4,250	85	225	292	262	102	100	90	60	2-3/4	*68-20X25	81 X 207
AC-2-6460	1,750-3,250	85	300	276	246	102	84	90	60	2-3/4	*81-20X25	81 X 282
AC-2-6460	3,000-4,250	85	300	292	262	102	100	90	60	2-3/4	*81-20X25	81 X 282
AC-2-6460	5,000-6,000	95	300	333	303	102	141	90	60	2-3/4	*81-20X25	81 X 282

1. All dimensions are displayed in inches.
2. Unit split for shipment; field bolting required.
3. Consult factory for heating output greater than 6,000 mbh
4. \*6360 size flat filter bank not to exceed 130,000 cfm
5. \*6460 size flat filter bank not to exceed 160,000 cfm

## Tolerances Specifications

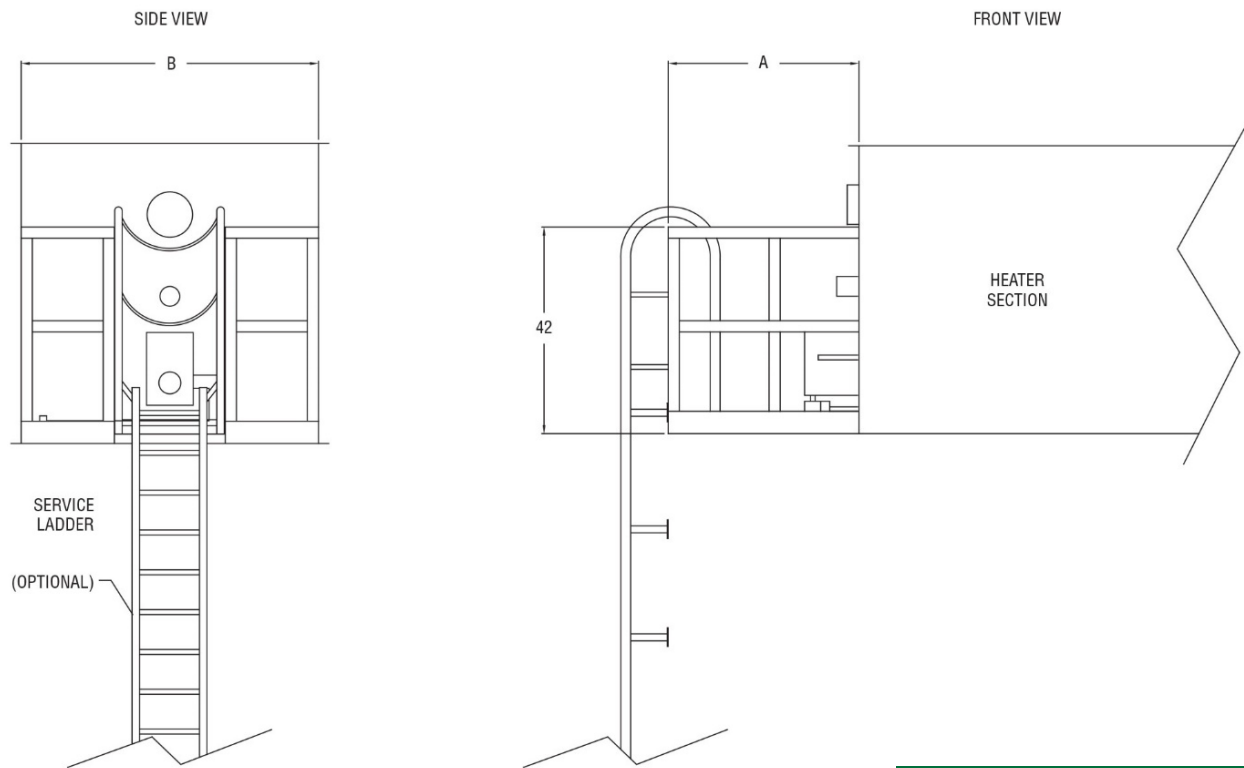


MODEL	HEATING OUTPUT MBH RANGE	C				E					FLAT FILTER QTY/SIZE X 2"	MAX. COIL SIZE X 2	
		A	B	1 WAY	2,3,4 WAY	D	E	1 WAY	2,3,4 WAY	G			H
AC-2-24	200-400	39	84	149	143	72	47	30	24		1-3/4	16-20X25	30 X 68
AC-2-30	450-750	45	104	163	157	72	55	36	30		1-3/4	20-20X25	30 X 86
AC-2-42	650-1,250	57	114	197	187	85	62	50	40		1-3/4	26-20X25	54 X 96
AC-2-48	650-2,000	63	126	222	211	95	72	55	44		1-3/4	32-20X25	65 X 108
AC-2-54	850-2,750	70	146	225	215	95	72	58	48		1-3/4	42-20X25	65 X 128
AC-2-60	1,250-2,500	80	185	258	246	102	84	72	60		2-3/4	63-20X25	81 X 168
AC-2-6360	1,750-3,250	85	225	276	246	102	84	90	60		2-3/4	*68-20X25	81 X 207
AC-2-6360	3,000-4,250	85	225	292	262	102	100	90	60		2-3/4	*68-20X25	81 X 207
AC-2-6460	1,750-3,250	85	300	276	246	102	84	90	60		2-3/4	*81-20X25	81 X 282
AC-2-6460	3,000-4,250	85	300	292	262	102	100	90	60		2-3/4	*81-20X25	81 X 282
AC-2-6460	5,000-6,000	95	300	333	303	102	141	90	60		2-3/4	*81-20X25	81 X 282

1. All dimensions are displayed in inches.
2. Unit split for shipment; field bolting required.
3. Consult factory for heating output greater than 6,000 mbh
4. \*6360 size flat filter bank not to exceed 130,000 cfm
5. \*6460 size flat filter bank not to exceed 160,000 cfm

# Air Turnover Temperature Distribution System

## Service Platform Option Specifications

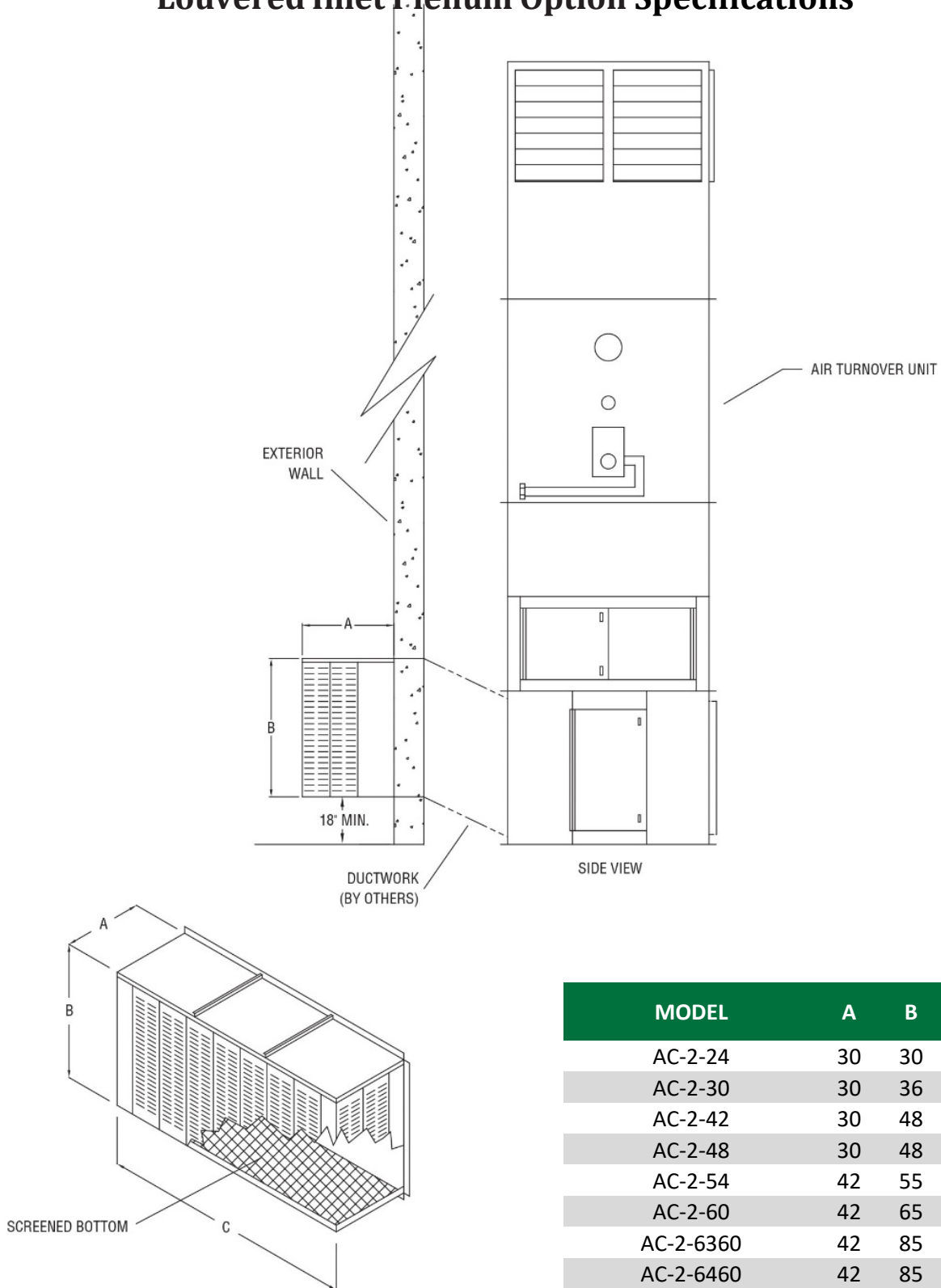


MODEL	A	B
AC-2-24	42	39
AC-2-30	42	45
AC-2-42	42	57
AC-2-48	42	63
AC-2-54	42	70
AC-2-60	42	80
AC-2-6360	60	85
AC-2-6460	60	85
AC-2-6460	60	95

1. All dimensions are displayed in inches.



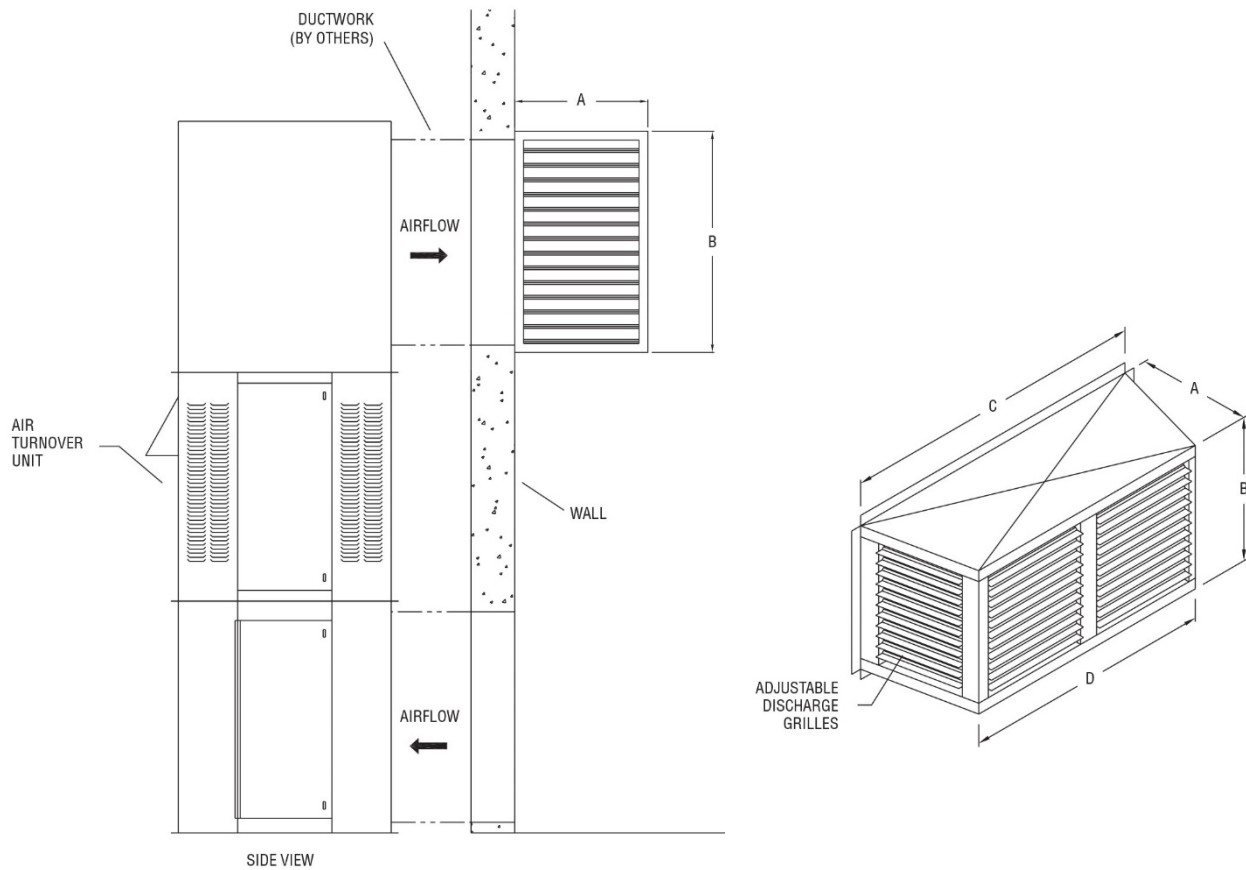
## Louvered Inlet Plenum Option Specifications



MODEL	A	B	C
AC-2-24	30	30	80
AC-2-30	30	36	100
AC-2-42	30	48	110
AC-2-48	30	48	120
AC-2-54	42	55	140
AC-2-60	42	65	180
AC-2-6360	42	85	220
AC-2-6460	42	85	295

1. All dimensions are displayed in inches.

## Air Turnover Unit, Vertical Specifications

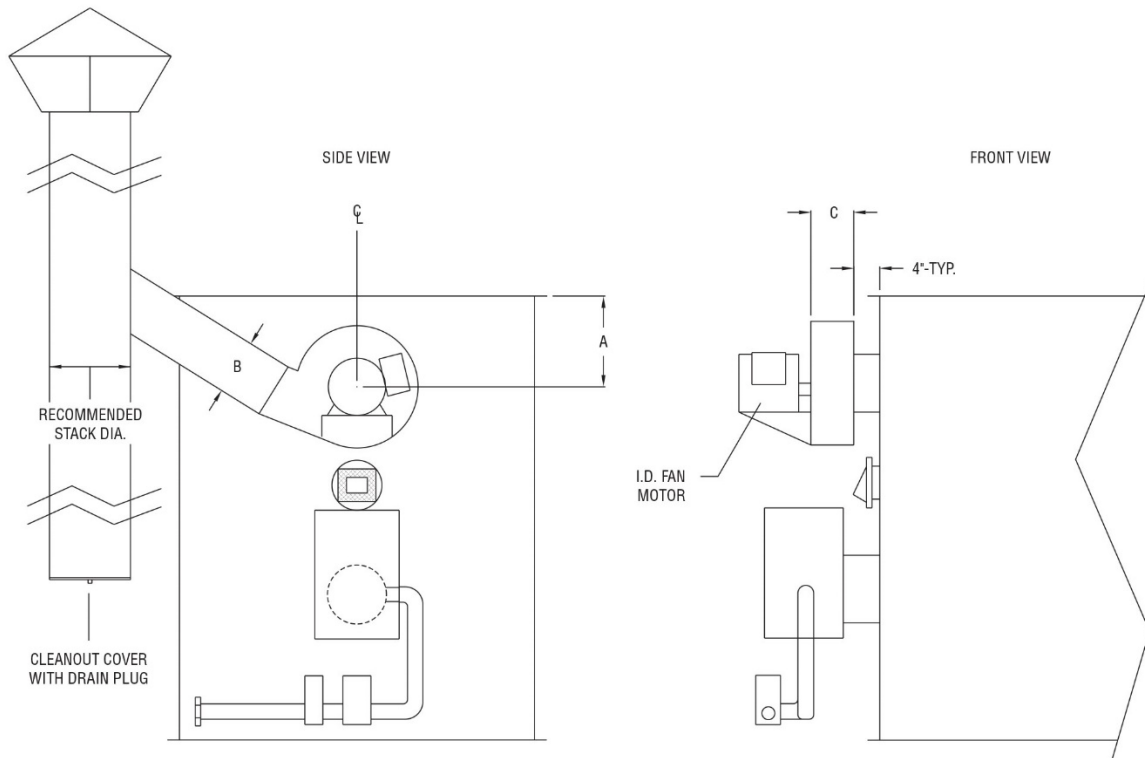


MODEL	A	B	C	D
AC-2-24	30	30	75	60
AC-2-30	30	30	86	75
AC-2-42	42	44	110	102
AC-2-48	42	50	120	110
AC-2-54	42	55	130	120
AC-2-60	60	66	144	130
AC-2-6360	60	90	220	200
AC-2-6460	60	90	280	260

1. All dimensions are displayed in inches.

# Air Turnover Temperature Distribution System

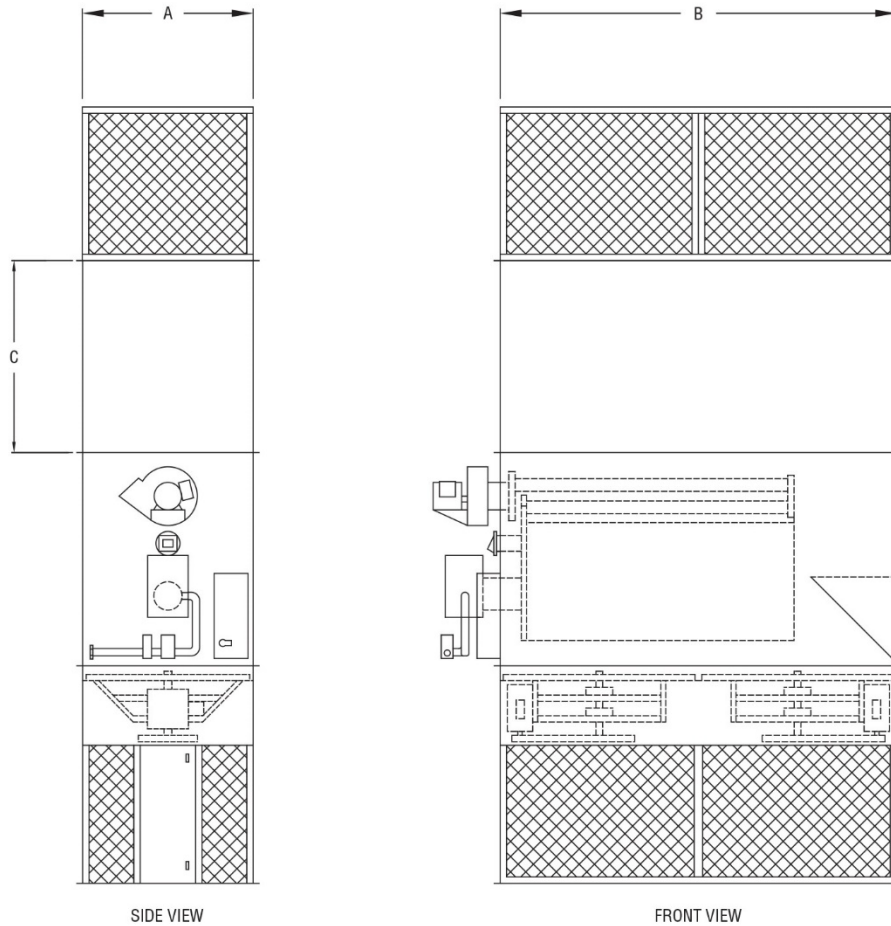
## Air Turnover Unit, Vertical, Induced Draft Fan Option



MODEL	HEATER SIZE	I.D FAN WHEEL DIA.	A	B	C	RECOMMENDED STACK DIA.
AC-2-24	20-30	12"	10	6-1/2	6-1/2	8"
AC-2-24	35-40	12"	10	6-1/2	6-1/2	8"
AC-2-30	45-60	12"	12	6-1/2	6-1/2	8"
AC-2-30	65-75	12"	12	6-1/2	6-1/2	10"
AC-2-42	85-100	14"	12	7-1/2	7-1/2	10"
AC-2-42	125-175	18"	12-1/2	9-1/2	9-1/2	12"
AC-2-48	125-175	18"	12-1/2	9-1/2	9-1/2	12"
AC-2-48	200-250	18"	12-1/2	9-1/2	9-1/2	14"
AC-2-54	200-250	18"	12-1/2	9-1/2	9-1/2	14"
AC-2-54	275-325	21"	14	11-1/2	11-1/2	16"
AC-2-60	125-175	18"	12-1/2	9-1/2	9-1/2	12"
AC-2-60	200-250	18"	12-1/2	9-1/2	9-1/2	14"
AC-2-6360	275-325	21"	14	11-1/2	11-1/2	16"
AC-2-6360	350-425	21"	12	11-1/2	11-1/2	16"

1. All dimensions are displayed in inches.

## Air Turnover Unit, Vertical, Induced Draft Fan Option Specifications

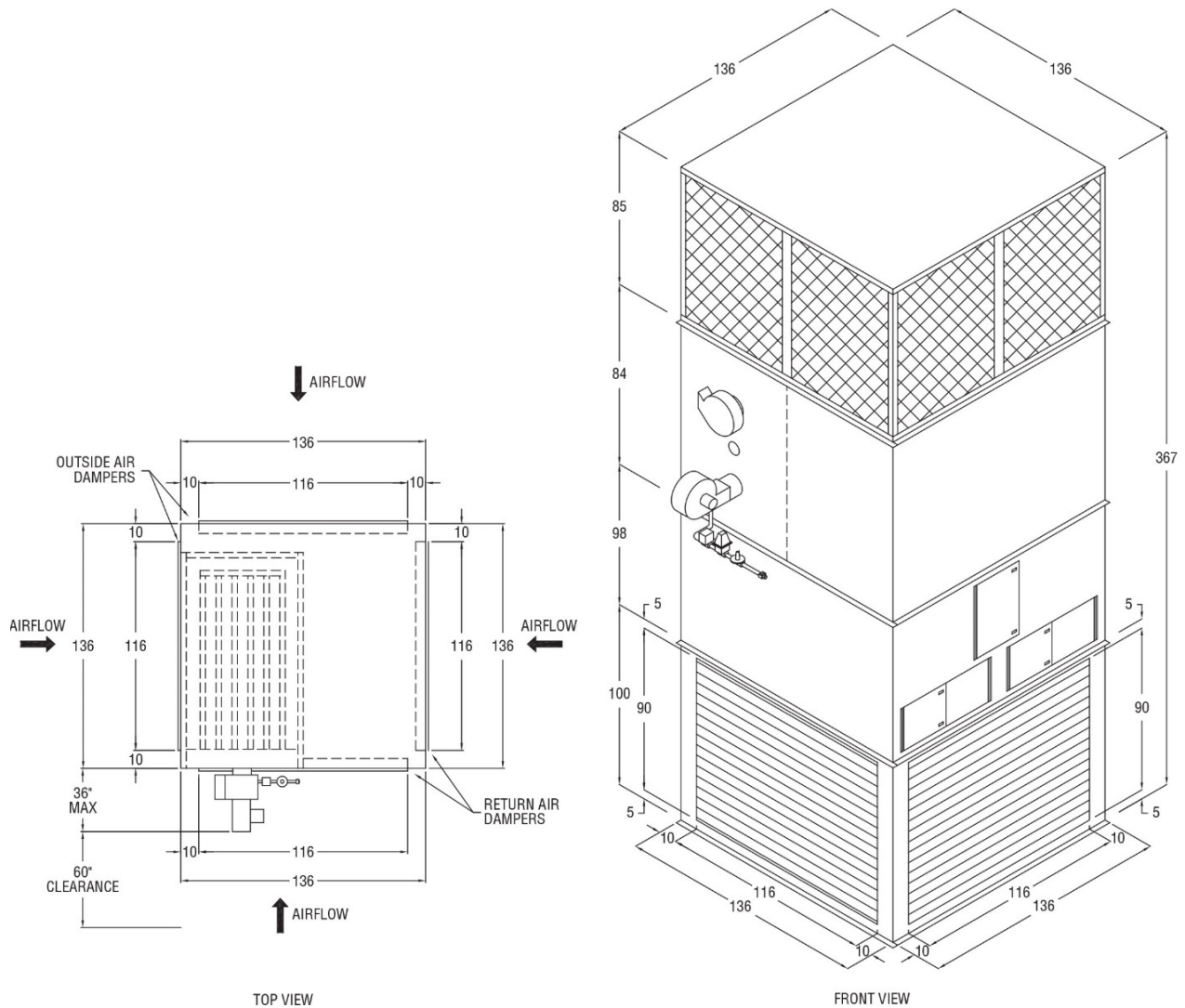


MODEL	A	B	C
AC-2-24	39	84	36-102
AC-2-30	45	104	36-102
AC-2-42	57	114	36-102
AC-2-48	63	126	36-102
AC-2-54	70	146	36-102
AC-2-60	80	185	36-102
AC-2-6360	85	225	36-102
AC-2-6460	85	300	36-102

1. All dimensions are displayed in inches.
2. Standard section heights as "c", special sizes also available consult factory for details
3. Multiple extension ducts may be used up to 30 feet. Data subject to change without notice.
4. Dimensions are subject to manufacturing tolerances.
5. Extensions may be incorporated into other section heights consult factory for details.

# Air Turnover Temperature Distribution System

## Air Turnover Unit, Heating AC-6460 Output – 1,000-3,250 Mbh

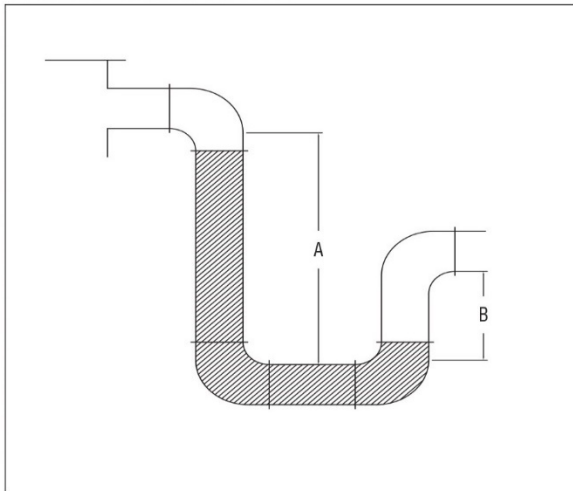


1. All dimensions are displayed in inches.

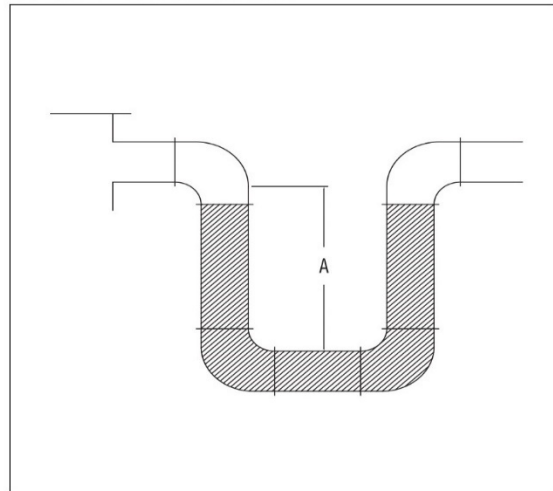
## Air Turnover Unit Drainpipe Trap

Condensate from the cooling coils runs into a drain pan. A trap is required at the outlet of the pan to allow the condensate to drain freely. Since the pressure inside the unit can be either positive or negative, different arrangements are recommended for trapping.

DRAW-THRU UNITS



BLOW-THRU UNITS



Minimum dimensions:

- A.  $1 \frac{1}{2}$  times operating suction (kpa x 0.102) + 51 mm
- B.  $\frac{1}{2}$  of operating suction (kpa x 0.102) + 25.4 mm

A - operating pressure suction (kpa x 0.102) + 25.4 mm  
Operating pressure (in water) + 1"

- A. A -  $1 \frac{1}{2}$  times operating suction (in. Water) + 2"
- B. B -  $\frac{1}{2}$  of operating suction (in. Water) + 1"

## Air Turnover Unit Standard Specification

### Part 1 – General

Moffitt Model AC size \_\_\_\_\_ indirect fired air turnover unit. Unit(s) is to be designed for (indoor) (outdoor) installation. The capacity and configuration shall be as detailed in the drawings. The unit shall be capable of delivering \_\_\_\_\_ cfm using a qty of \_/ \_\_\_\_\_ Hp motors operating on \_\_\_\_\_ volts \_\_\_\_ ph 60 hz. The power burner capacity shall be capable of \_\_\_\_\_ btu/hr. firing on natural gas. The 4-pass heat exchanger shall have a minimum efficiency of 80%. The heater shall have an output of \_\_\_\_\_ btu/hr. in accordance with ANSI requirements. The entire unit shall be ETL certified, listed, and labeled.

#### TESTING

Unit to be factory run tested. An instantaneous flow meter shall be used to confirm the firing rate. A full combustion test is to be conducted complete with analyzer computer printout. A detailed test report and installation and maintenance manual shall be sent with the unit.

### Part 2 – Products

#### 2.1 UNIT CASING

- A. Unit exterior casing shall be constructed of heavy gauge galvanized steel. The unit shall incorporate a minimum two-inch structural iron welded support frame. The entire structural iron frame shall be primed with a high build epoxy rust inhibitor. Formed and bolted sheet metal structural frames are not acceptable.
- B. The propeller fan deck is to be insulated w/ 1 in. 2# density fiberglass insulation for sound retention. The insulation shall be placed in perforated liners to provide sound attenuation. All fans shall be secured on two-inch wide ¼ in. thick full perimeter neoprene isolation. To ensure the casing is airtight all panels shall overlap and be caulked.
- C. Each section of the unit shall have pre-punched structural angle mating flanges for final assembly. All hardware and gasket is to be provided by the factory and sent with each unit. After assembly the entire unit is to be wiped with solvent and de-greased.
- D. Finally, a minimum of 3 mm coat of chain stop alkyd enamel paint shall be cured on at a minimum temperature of 140 Deg F. Units are to be finished machinery grey color or as requested by building owner.

#### 2.2 BLOWER / MOTOR SECTION

- A. The unit shall be supplied with (two) (three) (four) low noise propeller fans. Each propeller fan shall have a minimum of six airfoil blades. Four blade props are not acceptable due to RPM, excessive tip speed and potential dynamic imbalance. The unit shall be statically and dynamically balanced at the factory.
- B. The fan wheel shall be mounted on a heavy duty machined and polished solid steel shaft. The shaft's maximum operating speed is not to exceed 75% of its first critical speed. The propeller motors shall be T-frame ODP type with a 1.15 s.f. The motors shall be mounted on a fully adjustable base.
- C. The bearings are to be heavy duty pillow block type. Fan bearings shall have an L-10 bearing life base of 100,000 hours. The propellers are to be driven with adjustable 1.5 s.f. V-belt drives up to 7½ Hp.
- D. The unit shall have a hinged and gasketed fan access door with heavy duty roller action, full compression latches to provide easy access to maintain and inspect motors, belts & bearings. Each door is to be equipped with electric safety door switches. Lift off panels are not acceptable.

#### 2.3 HEAT EXCHANGER SECTION

- A. The heat exchanger shall be four pass design. Minimum efficiency shall be ETL certified to be no less than 80% at full firing rate. The heat exchanger manufacturer shall have a minimum of ten years' experience fabricating and producing furnaces.
- B. Internal baffling of the secondary tubes is not acceptable. The heat exchangers primary and secondary heat transfer surfaces shall be constructed of 409 series stainless steel. Units shall be provided with multiple condensate drains when modulating. The heat exchanger section shall have an internal radiation shield to maintain a jacket loss of less than 2% of the rated output.
- C. All heat transfer surfaces, including headers and the front collector box, shall be inside the casing and in the air stream. The construction of the heat exchanger shall permit free, unrestricted lateral, vertical and peripheral expansion during the heating and cooling cycle without damage or strain to any part.
- D. The heater shall be equipped with an optional direct drive radial blade induced draft blower. The combustion chamber is to operate under a negative pressure. The fan is to be adequately sized to insure proper draft conditions. When high turndown modulations is required the unit is to be capable of 15:1 modulation. A discharge damper on the induced draft fan is to be mechanically interlocked to the main gas actuator to proportion exhaust with intake. The induced draft fan shall be directly connected to an airtight collar and collector box header located inside the heat exchanger casing.
- E. The unit shall be equipped with an (on/off) (2 stage) (full modulation) power burner. On modulating units the main firing rate shall be factory adjusted and certified for a minimum turndown ratio of 15:1. The burner shall be equipped with a combustion air proving switch, removable pilot assembly and positive pilot combustion air supply. The combustion air damper shall be interlocked with the main gas valve to insure a proper air/gas mixture.
- F. A solid-state programmable safeguard relay with (flame rod) (ultraviolet scanner) and purge card shall continuously monitor main and pilot flame. The main and pilot valve train to the burner shall be completely factory pre-piped This assembly shall be wired and include the following minimum components; main and pilot manual shut-off valves, main and pilot pressure regulators, main and pilot automatic shut-off valves and adequate unions and test ports for unconstrained service.

#### 2.4 CONTROL/MANIFOLD COMPARTMENT

- A. Unit controls shall be contained within a hinged enclosure. The control enclosure shall have a dead front fused disconnect switch. Terminal strip, components and all wiring shall be labeled and/or numbered. Wiring in the control panel shall be run in PANDUIT wiring duct. The controls for the heater shall include:

# Air Turnover Temperature Distribution System

- Blower motor starter w/ambient compensated overloads and auxiliary contact(s).
  - Primary to 120v control transformer
  - 6,000-volt ignition transformer
  - Control fuse block w/ slow blow fuse
  - Fireeye flame safeguard relay w/ LED status, ultra-violet flame detection & pre-purge cycle
  - Discharge and/or return air temperature control sensor
  - Solid state temperature control circuit w/ space proportional adjustable thermostat
  - Manual reset temperature high limit safety switch
  - Differential air proving safety switch
  - High and low gas pressure safety switches
  - Fan switch
- B.** All wiring shall comply with the latest N.E.C. standard. External wiring to control enclosure shall be run in conduit. The gas manifold shall be approved by ANSI and include.
- High gas pressure regulator
  - Manual shutoff & test firing lubricated valves
  - Main gas motorized automatic shutoff valve w/ proof of closure switch
  - Auxiliary main gas motorized automatic shutoff valve
  - Pressure regulating valve
  - MIDCO modulating control valve
  - Pilot pressure regulator
  - Pilot automatic shutoff valve
  - Pilot manual shutoff valve
  - Pilot needle valve
  - Multiple test ports
- C.** Manifold pipe shall be painted with a rust inhibitor. Units are to be complete with a 10-point diagnostic center. The lights are to include power, control fuse, blower, burner, burner airflow switch, ignition, pilot gas valve, main gas valve, safety limits & flame failure.

## 3.5 CONTROL PANEL

- A.** Control panel shall consist of an enclosure w/ lamicaid identification label, control switches. Control panel shall include:
- Blower light
  - Burner light
  - Flame failure light
  - System on-off switch
  - Summer/winter switch
  - Temperature selector

## Part 3 – Optional Accessories

### 3.1 INDUCED DRAFT BLOWER

- A.** The heater shall be equipped with an optional direct drive radial blade induced draft blower. The combustion chamber is to operate under a negative pressure. The fan is to be adequately sized to insure proper draft conditions. A manual locking discharge damper quadrant is to be provided for adjusting furnace pressure. When full modulation is required the discharge damper is to be electronically interlocked to the main gas valve to control draft from low to high fire.

### 3.2 V-BANK FILTER SECTION

- A.** V-Bank filter section shall be provided with hinged access doors on both sides. Access doors are to be fully gasketed and supplied with the same industrial compression latches used with the rest of the unit.
- B.** Flat filter sections visually showing loaded filters on unit exterior are unacceptable. Angular racks shall hold 2 in. thick 30% efficient pleated type filters. Filters shall have an average arrestance of 76.4% in accordance with ASHRAE standard 52.1 Filter velocities not to exceed 500 FPM.
- C.** The filter section is to be an integral section of the unit finished with the same casings.
- D.** A complete additional set of construction filters shall be provided for each unit.

### 3.3 FLAT FILTER SECTION

- A.** A flat filter section shall be provided with lift out filter tracks. Flat filter sections are utilized only when the unit height is a concern. The flat filter section reduces the overall height of a unit when provided with filters. Filters shall have an average arrestance of 76.4% in accordance with ASHRAE standard 52.1 Filter velocities not to exceed 500 FPM.
- B.** Expanded metal shall be supplied around the perimeter of the unit to provide support to all filters and eliminate the possibility of a filter being pulled into the fan section.
- C.** A complete additional set of construction filters shall be provided for each unit.

### 3.4 AUTOMATIC INLET DAMPER

- A.** An inlet damper shall provide up to twenty percent outdoor air. The damper shall be provided with a flanged duct connection. The direct drive spring return actuator is provided with an adjustable clutch to balance the percentage of outdoor air required.

### 3.5 MIXBOX AND DAMPER SECTION

- A.** A mix box integral section shall support the unit and provide access to the dampers. Return air and inlet dampers are to be of galvanized steel construction. A minimum of six breaks per blade shall be provided to strengthen the blades. Maximum leakage rate not to exceed 20 cfm per square foot at 4 in. w.c. differential pressure. Dampers are to be operated with direct drive spring return actuators.



# Air Turnover Temperature Distribution System

- B. Optional – low leak aluminum airfoil dampers are to be provided. Dampers are to be complete with blade and jam seals. Maximum leakage rate not to exceed 5 cfm per square foot at 4 in. w.c. differential pressure. Dampers are to be operated with direct drive actuators.
- C. Optional – low leak insulated aluminum airfoil dampers recommended when outdoor design is below 0 Deg F. Maximum leakage rate not to exceed 5 cfm per square foot at 4 in. w.c. differential pressure. Dampers are to be operated with a direct drive actuator. Standard air leakage data is certified under the AMCA ratings program. Dampers are to be designed for operation down to -40 Deg F.
- D. Blades are to be internally insulated with expanded polyurethane foam and thermally broken. The complete blade shall have an insulating factor of R-2.29 and temperature index of 55.

## 3.6 COOLING COIL SECTION

- A. Cooling coil plenum shall consist of double wall construction, single wall coil sections are not acceptable. The coil section shall be insulated with (1) (2) inch thick fiberglass insulation.
- B. The plenum shall feature a double sloped 304 stainless steel condensate pan with drain. All pans are to be minimum 18-gauge 304 stainless steel continuously TIG welded. Multiple coils shall be stacked horizontally and include intermediate drain pans to reduce refrigerant pressure drop and possibility of water carry over.
- C. Coils shall feature 0.020 in. minimum copper tube wall thickness. The fins shall be rippled and made of a minimum of 0.006 in. aluminum sheet. Coils shall feature (direct expansion interlaced multi-circuit design) (chilled water). Coils to be pressure tested to 250 psig to ensure no refrigerant leaks. Coils are to be designed around 400 CFM per ton. Coil bypass with manual adjustment damper shall be provided to prevent CFM per ton ratio exceeding .500. The differential air pressure drop over the coil shall not exceed 0.33 in. w.c.
- D. Discharge section top shall be double lined with two-inch-thick insulation and perforated liner. The discharge section shall acoustically attenuate airborne noise and provide (single) (dual) directional control. Minimum 2 in. thick steel blades shall be painted with industrial paint to match the unit. Each blade shall be individually adjustable. When a dual bank of airfoil type blades is provided, they will provide vertical and horizontal air diffusion control.

## 3.7 OPTIONAL – HOT WATER COIL SECTION

## 3.8 OPTIONAL – ELECTRIC COIL SECTION

## 3.9 OUTSIDE AIR PLENUM

- A. An integral plenum shall be included with the unit to introduce outside air prior to the filters. The plenum casings shall be constructed the same as the unit and finished to match. Inlet plenum is to be designed to prevent water from entering the unit.
- B. When the plenum is exterior wall mounted, customer shall advise color suitable for the building. A wall mount flange with gasket will run the perimeter of the inlet plenum. The inlet velocity into the louvered plenum is to be less than 500 FPM free area. The louvered inlet plenum is to be equipped with expanded metal where necessary.

## 3.10 INTEGRAL SERVICE PLATFORM W/ LADDER

- A. A full OSHA approved service platform is to be provided for complete access to burner and gas manifold. The service platform features a 12-gauge expanded metal screen and a welded 3 in. structural iron frame. The service platform is to be equipped with a four in. high kick plate and locking chains.
- B. Optional – OSHA approved ladder is to include hand guide rails and concrete securing feet.

## 3.11 OPTIONAL – DISCHARGE SECTION

- A. For outdoor units an interior trapezoidal shaped discharge section shall be provided to distribute air inside the building. The discharge shall be double lined with two-inch-thick insulation and perforated liner. The discharge section shall acoustically attenuate airborne noise.
- B. Diffuser screens are to be located at the front of the discharge. The discharge plenum shall be equipped with (single) (double) adjustable air double deflection airfoil type blades.

## 3.12 OPTIONAL – AUTOMATIC GREASING CANISTER

- A. Bearings are to be equipped with automatic greasing canisters. Microprocessor controlled greasing canisters shall deliver 350 psig lubrication on a precision cycle to increase bearing longevity and practically eliminate bearing maintenance.
- B. All (four) (six) (eight) unit bearings are to be automatically lubricated every second day from a 240-cc lubrication canister. The greasing canisters with pump driven microprocessors are to be in the main control panel for ease of adjustment. The grease canister shall contain a minimum quantity of grease to ensure two-year supply prior to canister tank replacement.

## 3.13 OPTIONAL – SEALED COMBUSTION

- A. A duct sleeve shall be provided directly on the burner to mount an outdoor combustion duct. The burner shall draw all air for combustion from outside.

## 3.14 OPTIONAL – HUMIDIFICATION PLENUM

- A. Unit is to have a double lined humidification discharge plenum. The internal liner is to be minimum 22-gauge G90 galvanized steel. The unit shall include the humidifier mounted, wired, and tested from the factory.
- B. **Gas to steam** microprocessor-controlled humidifier. The humidifier is to automatically cools discharged hot water to 140 °F to meet governing code requirements and to prevent damage to PVC drain piping.
  - Control to ±3% RH
  - Steam output rangeability up to 40 to 1 closely tracks humidity set point.
  - Low nitrogen oxide (NOx) emissions of less than 20 ppm
  - Diagnostic test at unit start-up verifies system performance.
  - 82% burner efficiency rating
  - Variable speed blowers and modulating gas valves provide consistent humidity output.
  - Full burner modulation and PID control provide accurate, responsive, and adjustable RH control.
  - The temperature sensor enables the controller to hold water at a preset temperature allowing rapid response to a call for humidity, enables freeze protection, and allows rapid warm up.