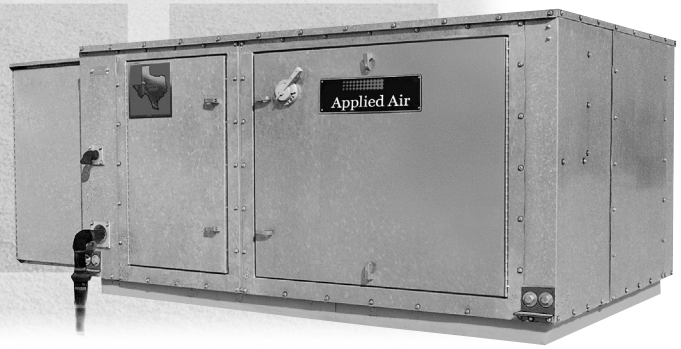
DFC Direct Fired Gas Heating System

Technical Guide for:

Outdoor Mounted Units
To 100,000 CFM
And 14M BTUH



Applied Air

Keeps You

Warm

Featuring the Patented AdaptAire controlled Circulation System

Applied Air

DFC Direct Fired Gas Heating System Technical Guide

Applied Air

In the business of commercial and industrial operations, efficient and low-cost heating is essential. Applied Air keeps you warm for less.

Since 1975, Applied Air has been providing cost-effective, reliable gas heating solutions. Our proven Direct Fired Gas Heating System adds warm, fresh and clean air to your work environment for greater comfort and productivity. Add evaporative cooling modules for year-round performance.

This Technical Guide will help you choose an Applied Air Direct Fired Gas Heating System to provide efficient, cost-effective heating for your kitchen, warehouse, factory or process operation. The Guide covers:

- Technical Specifications — Configure the right system components (e.g., burner, motors, drive, filter, options, etc.) to meet your needs.
- Installation Information — Plan details of on-site installation with dimensional information, unit weights and cabinet arrangement diagrams.

If you have questions, please contact Applied Air's Customer Service Department at 214-638-6010. We'll be glad to help.

To add evaporative cooling, refer to the Applied Air ECS Evaporative Cooling System brochure.

Applied Air

Keeps You

Warm

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Applied Air

Air Delivery Table

Single Blower Models

Unit Model	SCFM	FPM Outlet Velocity	Total External Static Pressure (W.C.) 1/4″ HP	3/8″ HP	1/2″ HP	3/4″ HP	1″ HP	1-1/4″ HP	1-1/2″ HP	2″ HP
109	1600	1915	1	1	1	1	—	—	—	—
	1800	2155	1	1	1	1-1/2	1-1/2	1-1/2	—	—
	2000	2390	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	2	2	—
	2250	2690	1-1/2	1-1/2	1-1/2	2	2	2	2	3
	2500	2990	2	2	2	2	2	3	3	3
	2750	3290	2	2	2	3	3	3	3	3
	3000	3590	3	3	3	3	3	3	5	5
112	3250	2255	1-1/2	2	2	2	3	3	3	3
	3500	2430	2	2	2	3	3	3	3	5
	3750	2605	2	2	3	3	3	3	3	5
	4000	2775	3	3	3	3	3	3	5	5
	4250	2950	3	3	3	3	3	5	5	5
115	4500	2240	2	2	3	3	3	3	5	—
	5000	2485	3	3	3	3	3	5	5	5
	5500	2735	3	3	3	5	5	5	5	5
	6000	2985	5	5	5	5	5	5	5	7-1/2
118	6500	2265	3	5	5	5	5	5	5	7-1/2
	7000	2440	5	5	5	5	5	5	7-1/2	7-1/2
	7500	2615	5	5	5	5	5	7-1/2	7-1/2	7-1/2
	8000	2785	5	5	5	7-1/2	7-1/2	7-1/2	7-1/2	7-1/2
	8500	2960	5	5	7-1/2	7-1/2	7-1/2	7-1/2	7-1/2	10
120	9000	2145	5	5	5	5	7-1/2	7-1/2	7-1/2	—
	9500	2260	5	5	5	7-1/2	7-1/2	7-1/2	7-1/2	—
	10,000	2380	5	5	5	7-1/2	7-1/2	7-1/2	7-1/2	10
	10,500	2500	5	7-1/2	7-1/2	7-1/2	7-1/2	7-1/2	10	10
	11,000	2620	7-1/2	7-1/2	7-1/2	7-1/2	7-1/2	10	10	10
122	11,000	2155	5	7-1/2	7-1/2	7-1/2	7-1/2	7-1/2	10	—
	12,000	2355	7-1/2	7-1/2	7-1/2	7-1/2	7-1/2	10	10	15
	13,000	2550	7-1/2	7-1/2	7-1/2	10	10	10	10	15
	14,000	2745	7-1/2	10	10	10	10	15	15	15
	15,000	2940	10	10	10	10	15	15	15	15
125	14,000	2085	7-1/2	7-1/2	7-1/2	7-1/2	10	—	—	—
	15,000	2235	7-1/2	7-1/2	7-1/2	10	10	10	15	—
	16,000	2385	7-1/2	7-1/2	7-1/2	10	10	10	15	—
	18,000	2685	10	10	10	10	15	15	15	15
	20,000	2980	10	15	15	15	15	15	20	20
130	22,000	2365	10	10	10	15	15	15	15	—
	24,000	2580	10	15	15	15	15	15	20	20
	26,000	2795	15	15	15	15	20	20	20	25
	28,000	3010	15	15	15	20	20	20	20	25
	30,000	3225	20	20	20	20	20	25	25	30

NOTE:
Horsepower selections are based on system external static pressure. One or more of the following must be added when applicable.

A.	Fresh Air Inlet Hood & Birdscreen	.13″ W.C.	G. 5F and 5R Discharge	pg 28, 29
B.	Fresh Air Inlet Hood with Filters	.25″ W.C.	H. 8F and 8R Discharge	pg 30, 31
C.	Motor Operated Inlet Damper	.13″ W.C.	I. 4 Row DX Coils	pg 32, 33
D.	Motor Operated Discharge Damper	.50″ W.C.	J. 6 Row DX Coils	pg 34, 35
E.	V-Bank Filter Section	.25″ W.C.	K. 4 Row CW Coils	pg 36, 37
F.	Discharge Louver	.13″ W.C.	L. 6 Row CW Coils	pg 38, 39

SELECTION GUIDE

1. Determine the required amount of replacement air (CFM) by computing the total amount of air being exhausted. (Restaurants should be sized for 90% of exhaust air to minimize food odors.)
2. Determine the total external static pressure by adding the pressure drops through all accessories and ducts.
3. Select unit size and motor horsepower from table.

Air Delivery Table

Twin Blower Models

Unit Model	SCFM	FPM Outlet Velocity	Total External Static Pressure (W.C.) 1/4″ HP	3/8″ HP	1/2″ HP	3/4″ HP	1″ HP	1-1/4″ HP	1-1/2″ HP	2″ HP
215	9000	2240	5	5	5	5	7-1/2	—	—	—
	9500	2365	5	5	5	5	7-1/2	7-1/2	—	—
	10,000	2485	5	5	5	7-1/2	7-1/2	7-1/2	7-1/2	—
	10,500	2610	5	5	7-1/2	7-1/2	7-1/2	7-1/2	7-1/2	—
	11,000	2735	7-1/2	7-1/2	7-1/2	7-1/2	7-1/2	7-1/2	10	10
	11,500	2860	7-1/2	7-1/2	7-1/2	7-1/2	7-1/2	10	10	10
	12,000	2985	7-1/2	7-1/2	7-1/2	7-1/2	10	10	10	15
218	12,500	2175	7-1/2	7-1/2	7-1/2	7-1/2	7-1/2	—	—	—
	13,000	2265	7-1/2	7-1/2	7-1/2	7-1/2	10	10	—	—
	14,000	2440	7-1/2	7-1/2	7-1/2	10	10	10	15	—
	15,000	2615	7-1/2	10	10	10	10	15	15	15
	16,000	2785	10	10	10	10	15	15	15	15
	17,000	2960	10	10	10	15	15	15	15	20
220	18,000	2140	7-1/2	10	10	10	15	15	15	—
	19,000	2260	10	10	10	10	15	15	15	—
	20,000	2380	10	10	10	15	15	15	15	20
	21,000	2500	10	15	15	15	15	15	20	20
	22,000	2620	15	15	15	15	15	20	20	20
	23,000	2740	15	15	15	15	15	20	20	20
	24,000	2860	15	15	15	15	20	20	20	25
	25,000	2980	15	15	15	20	20	20	20	25
	26,000	3100	15	20	20	20	20	20	25	25
222	25,000	2450	15	15	15	15	20	20	20	25
	26,000	2550	15	15	15	20	20	20	20	25
	27,000	2650	15	15	15	20	20	20	25	25
	28,000	2750	15	20	20	20	20	25	25	30
	29,000	2850	20	20	20	20	25	25	25	30
	30,000	2950	20	20	20	20	25	25	25	30
	31,000	3040	20	20	20	25	25	25	30	30
225	30,000	2235	15	15	15	15	20	20	—	—
	32,000	2385	15	15	15	20	20	20	25	—
	34,000	2535	15	20	20	20	20	25	25	30
	36,000	2685	20	20	20	20	25	25	30	30
	38,000	2835	20	20	20	25	25	30	30	40
	40,000	2980	20	25	25	25	30	30	30	40
	42,000	3130	25	25	25	30	30	40	40	40
	44,000	3280	25	30	30	30	40	40	40	40
	46,000	3430	30	30	30	40	40	40	40	50
230	44,000	2365	20	20	20	25	25	30	—	—
	48,000	2580	20	25	25	25	30	30	40	—
	52,000	2800	25	25	30	30	40	40	40	50
	56,000	3010	30	30	30	40	40	40	40	50
	60,000	3225	40	40	40	40	40	50	50	50
	64,000	3440	40	40	40	50	50	50	50	60
233	60,000	2490	30	30	30	40	40	40	50	—
	65,000	2695	40	40	40	40	40	50	50	60
	70,000	2905	40	40	40	50	50	50	60	60
	75,000	3110	50	50	50	50	60	60	60	75
240	70,000	2305	30	30	40	40	40	50	50	60
	75,000	2470	40	40	40	40	50	50	60	60
	80,000	2635	40	40	40	50	50	60	60	75
	85,000	2795	40	50	50	50	60	60	60	75
	90,000	2960	50	50	50	60	60	60	75	75
	95,000	3125	50	60	60	60	75	75	75	100
	100,000	3290	60	60	60	75	75	75	100	100

Burner Performance Table

Single Blower Models — MBH Input

Unit Model	SCFM	70° Rise	80° Rise	90° Rise	100° Rise	110° Rise	120° Rise	130° Rise
109	1600	142	159	175	191	206	221	235
	1800	160	179	197	215	232	248	264
	2000	177	199	219	239	258	276	294
	2250	200	224	247	269	290	311	330
	2500	222	248	274	299	322	345	367
	2750	244	273	301	328	354	380	404
	3000	266	298	329	358	387	414	440
112	3250	288	323	356	388	419	449	477
	3500	311	348	384	418	451	483	514
	3750	333	373	411	448	483	518	550
	4000	355	397	438	478	516	552	587
	4250	377	422	466	508	548	587	624
115	4500	399	447	493	537	580	621	661
	5000	444	497	548	597	644	690	734
	5500	488	546	603	657	709	759	807
	6000	533	596	658	717	773	828	881
118	6500	577	646	712	776	838	897	954
	7000	621	696	767	836	902	966	1027
	7500	665	745	822	896	967	1035	1101
	8000	710	795	877	955	1031	1104	1174
	8500	754	845	932	1015	1096	1173	1248
120	9000	798	894	986	1075	1160	1242	1321
	9500	843	944	1041	1135	1224	1311	1394
	10,000	887	994	1096	1194	1289	1380	1468
	10,500	932	1043	1151	1254	1353	1449	1541
	11,000	976	1093	1205	1314	1418	1518	1615
122	11,000	976	1093	1205	1314	1418	1518	1615
	12,000	1065	1192	1315	1433	1547	1656	1761
	13,000	1153	1292	1425	1553	1676	1794	1908
	14,000	1242	1391	1534	1672	1804	1932	2055
	15,000	1331	1490	1644	1791	1933	2070	2202
125	14,000	1242	1391	1534	1672	1804	1932	2055
	15,000	1331	1490	1644	1791	1933	2070	2202
	16,000	1419	1590	1753	1911	2062	2208	2349
	18,000	1597	1788	1973	2150	2320	2484	2642
	20,000	1774	1987	2192	2388	2578	2760	2936
130	22,000	1952	2186	2411	2627	2836	3036	3229
	24,000	2129	2385	2630	2866	3093	3312	3523
	26,000	2307	2583	2849	3105	3351	3588	3816
	28,000	2484	2782	3069	3344	3609	3864	4110
	30,000	2661	2981	3288	3583	3867	4140	4404

SELECTION GUIDE

1. Determine the temperature rise required through the heater by subtracting the winter design temperature from the desired indoor temperature.
2. Values shown in above MBH Input Tables are based on -40° F Inlet Temperature. MBH input shown on unit rating plate will be corrected for actual air density.
3. Natural gas units are limited to 130° F temperature rise, propane units are limited to 100° F temperature rise.

Burner Performance Table

Twin Blower Models — MBH Input

Unit Model	SCFM	70° Rise	80° Rise	90° Rise	100° Rise	110° Rise	120° Rise	130° Rise
215	9000	798	894	986	1075	1160	1242	1321
	9500	843	944	1041	1135	1224	1311	1394
	10,000	887	994	1096	1194	1289	1380	1468
	10,500	932	1043	1151	1254	1353	1449	1541
	11,000	976	1093	1205	1314	1418	1518	1615
	11,500	1020	1143	1260	1373	1482	1587	1688
	12,000	1065	1192	1315	1433	1547	1656	1761
218	12,500	1109	1242	1370	1493	1611	1725	1835
	13,000	1153	1292	1425	1553	1676	1794	1908
	14,000	1242	1391	1534	1672	1804	1932	2055
	15,000	1331	1490	1644	1791	1933	2070	2202
	16,000	1419	1590	1753	1911	2062	2208	2349
	17,000	1508	1689	1863	2030	2191	2346	2495
220	18,000	1597	1788	1973	2150	2320	2484	2642
	19,000	1686	1888	2082	2269	2449	2622	2789
	20,000	1774	1987	2192	2388	2578	2760	2936
	21,000	1863	2087	2301	2508	2707	2898	3082
	22,000	1952	2186	2411	2627	2836	3036	3229
	23,000	2040	2285	2521	2747	2964	3174	3376
	24,000	2129	2385	2630	2866	3093	3312	3523
	25,000	2218	2484	2740	2986	3222	3450	3670
	26,000	2307	2583	2849	3105	3351	3588	3816
222	25,000	2218	2484	2740	2986	3222	3450	3670
	26,000	2307	2583	2849	3105	3351	3588	3816
	27,000	2395	2683	2959	3224	3480	3726	3963
	28,000	2484	2782	3069	3344	3609	3864	4110
	29,000	2573	2881	3178	3463	3738	4002	4257
	30,000	2661	2981	3288	3583	3867	4140	4404
	31,000	2750	3080	3397	3702	3996	4278	4550
225	30,000	2661	2981	3288	3583	3867	4140	4404
	32,000	2839	3180	3507	3822	4124	4416	4697
	34,000	3016	3378	3726	4060	4382	4692	4991
	36,000	3194	3577	3945	4299	4640	4968	5284
	38,000	3371	3776	4164	4538	4898	5244	5578
	40,000	3549	3974	4384	4777	5156	5520	5871
	42,000	3726	4173	4603	5016	5413	5796	6165
	44,000	3903	4372	4822	5255	5671	6072	6458
	46,000	4081	4571	5041	5494	5929	6348	6752
230	44,000	3903	4372	4822	5255	5671	6072	6458
	48,000	4258	4769	5260	5732	6187	6624	7046
	52,000	4613	5167	5699	6210	6702	7176	7633
	56,000	4968	5564	6137	6688	7218	7728	8220
	60,000	5323	5962	6575	7165	7733	8280	8807
	64,000	5678	6359	7014	7643	8249	8832	9394
233	60,000	5323	5962	6575	7165	7733	8280	8807
	65,000	5766	6458	7123	7763	8378	8970	9541
	70,000	6210	6955	7671	8360	9022	9660	10,275
	75,000	6654	7452	8219	8957	9667	10,350	11,009
240	70,000	6210	6955	7671	8360	9022	9660	10,275
	75,000	6654	7452	8219	8957	9667	10,350	11,009
	80,000	7097	7949	8767	9554	10,311	11,040	12,743
	85,000	7541	8446	9315	10,151	10,955	11,730	12,477
	90,000	7984	8942	9863	10,784	11,600	12,420	13,211
	95,000	8428	9439	10,411	11,345	12,244	13,110	13,944
	100,000	8872	9936	10,959	11,942	12,889	13,800	14,678

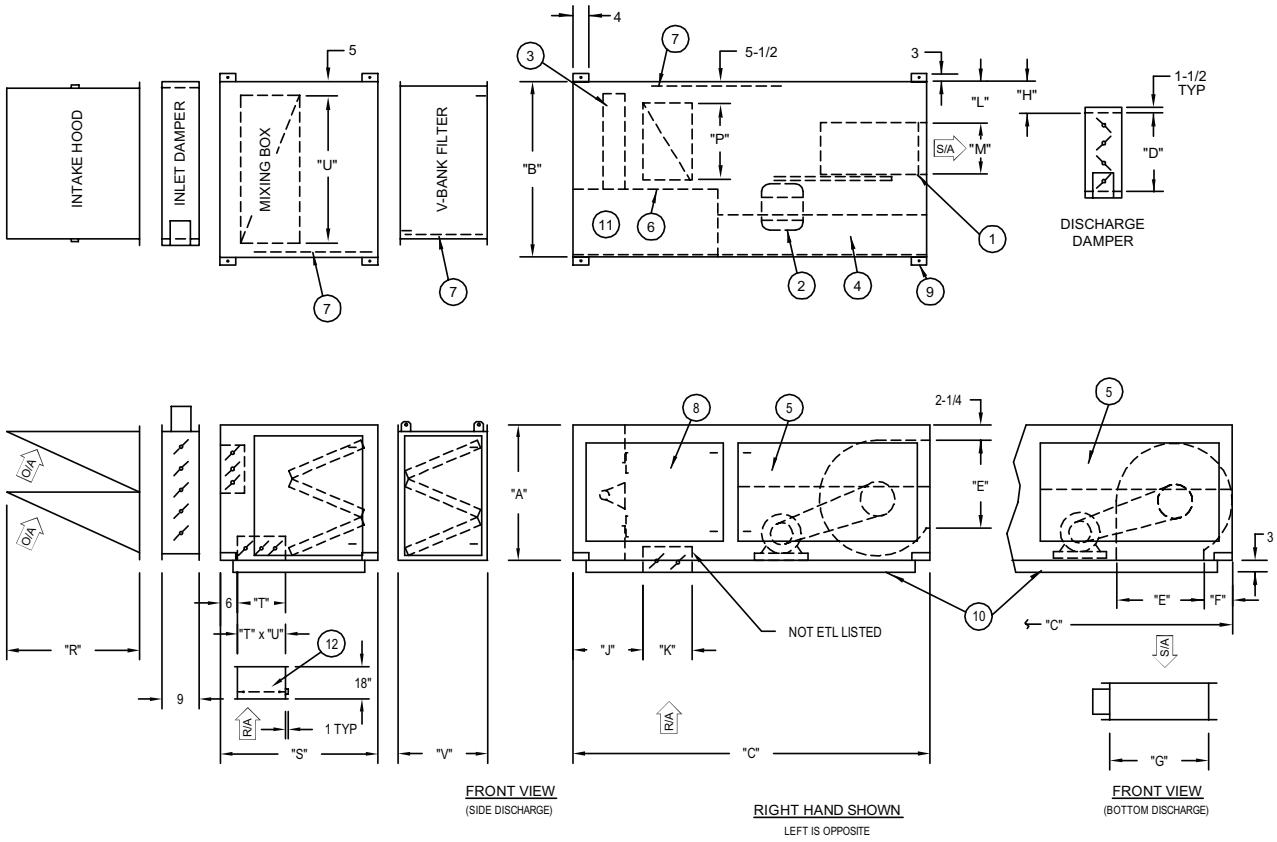
Dimensions

Single Blower Models — Sizes 109 Through 130

C000465A

UNIT COMPONENTS

1. Centrifugal supply fan
2. Fan motor
3. Line burner
4. Control cabinet
5. Hinged control cabinet access door
6. Observation port
7. Access door
8. Access door (piping compartment)
9. Lifting lug
10. Unit base
11. Manifold compartment
12. Return air flow station (required for ETL listed Return Air Unit)



Model	Dimensions								
	A	B	C	D	E	F	G	H	J
109	36	52	77	17 13/16	10 3/8	15 1/8	14 7/16	11 9/16	19
112	36	52	77	17 13/16	13 9/16	13 9/16	14 7/16	11 9/16	19
115	36	52	77	23 15/16	16	12 3/8	19 7/8	8 5/8	19
118	36	52	77	23 15/16	19	12 3/8	19 7/8	6 15/16	19
120	48	78	96	29 1/2	24 7/8	13 3/16	28 1/4	10 5/32	19
122	48	78	96	29 1/2	27 3/8	13 3/16	28 1/4	11 13/32	19
125	60	91	96	38 7/8	31 3/8	17 9/16	37 3/4	11 11/16	12 5/16
130	60	91	96	38 7/8	36 7/8	17 9/16	37 3/4	14 7/16	12 5/16

Model	Dimensions								
	K	L	M	P	R	S	T	U	V
109	14 1/4	14 1/2	11 15/16	27 3/4	32	54	20 1/4	42	22
112	14 1/4	12 1/2	15 15/16	27 3/4	32	54	20 1/4	42	22
115	14 1/4	11 1/8	18 15/16	27 3/4	32	54	20 1/4	42	22
118	14 1/4	7 1/8	22 1/16	27 3/4	32	54	20 1/4	42	22
120	14 1/4	12 3/8	25 1/16	48	38 1/2	60	20 1/4	68	22
122	14 1/4	12 3/8	27 9/16	48	38 1/2	60	20 1/4	68	22
125	20 1/4	15 3/8	31 1/2	49	53	65	26 1/2	81	28
130	20 1/4	15 3/8	37	49	53	65	26 1/2	81	28

NOTE: *All dimensions in inches subject to manufacturing tolerances.*

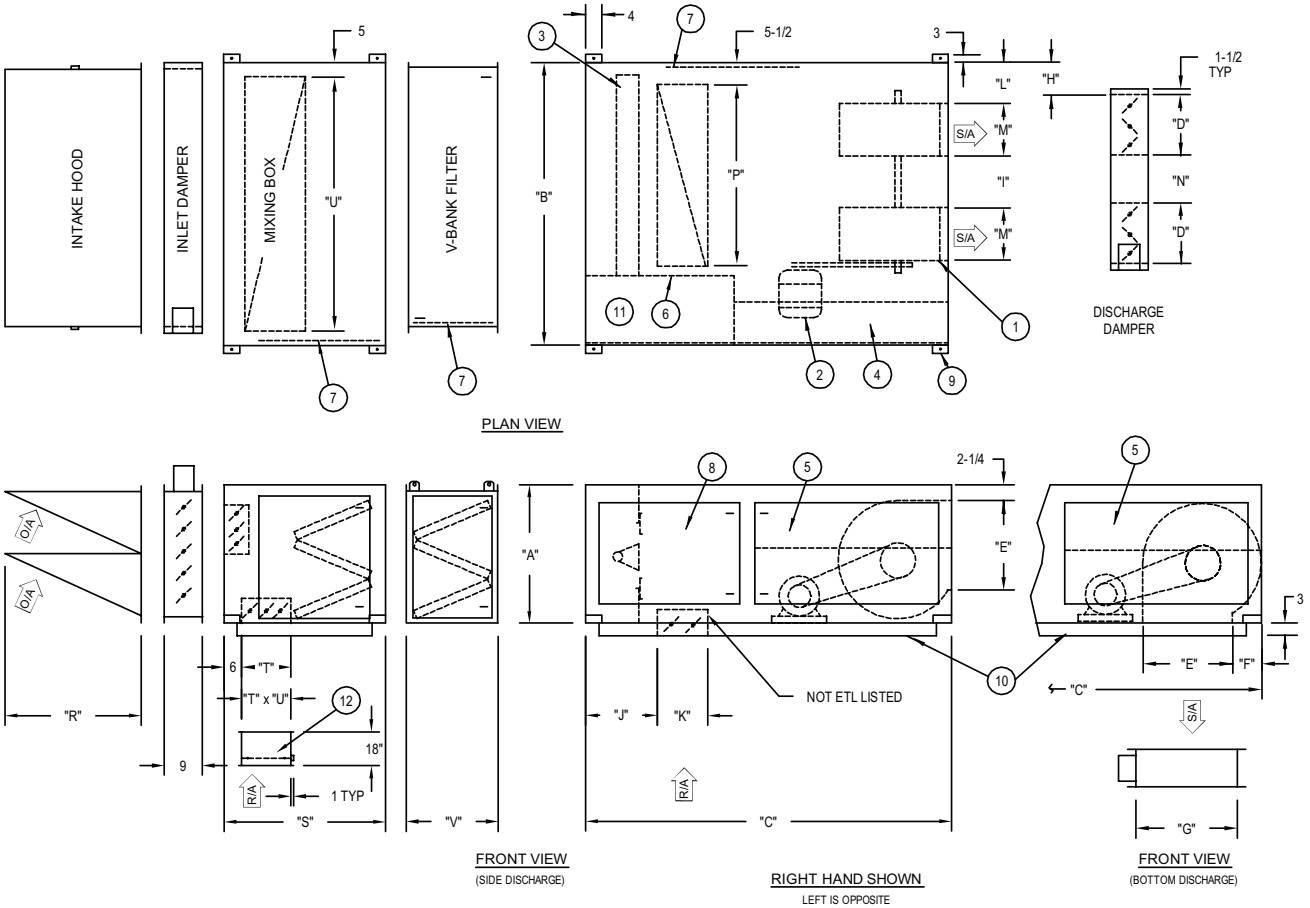
Dimensions

Twin Blower Models — Sizes 215 Through 230

C000466A

UNIT COMPONENTS

1. Centrifugal supply fan
2. Fan motor
3. Line burner
4. Control cabinet
5. Hinged control cabinet access door
6. Observation port
7. Access door
8. Access door (piping compartment)
9. Lifting lug
10. Unit base
11. Manifold compartment
12. Return air flow station (required for ETL listed Return Air Unit)



Model	Dimensions									
	A	B	C	D	E	F	G	H	I	J
215	36	94	77	23 15/16	16	12 3/8	19 7/8	6 15/16	22 1/4	19
218	36	94	77	23 15/16	19	12 3/8	19 7/8	6 15/16	16	19
220	48	130	96	29 7/16	24 7/8	13 3/16	28 1/4	11 7/16	29 5/8	19
222	48	130	96	29 7/16	27 3/8	13 3/16	28 1/4	11 7/16	24 5/8	19
225	60	154	96	38 7/8	31 3/8	17 9/16	37 3/4	14 7/16	37 5/8	12 5/16
230	60	154	96	38 7/8	36 7/8	17 9/16	37 3/4	14 7/16	26 5/8	12 5/16

Model	Dimensions									
	K	L	M	N	P	R	S	T	U	V
215	14 1/4	7 7/8	18 15/16	14	65 3/4	32	54	20 1/4	84	22
218	14 1/4	7 7/8	22 1/16	14	65 3/4	32	54	20 1/4	84	22
220	14 1/4	12 3/8	25 1/16	22 5/8	87 3/8	44 1/2	60	20 1/4	120	22
222	14 1/4	12 3/8	27 9/16	22 5/8	87 3/8	44 1/2	60	20 1/4	120	22
225	20 1/4	15 3/8	31 1/2	24 5/8	111 3/8	56 1/2	65	26 1/2	144	28
230	20 1/4	15 3/8	37	24 5/8	111 3/8	56 1/2	65	26 1/2	144	28

NOTE: *All dimensions in inches subject to manufacturing tolerances.*

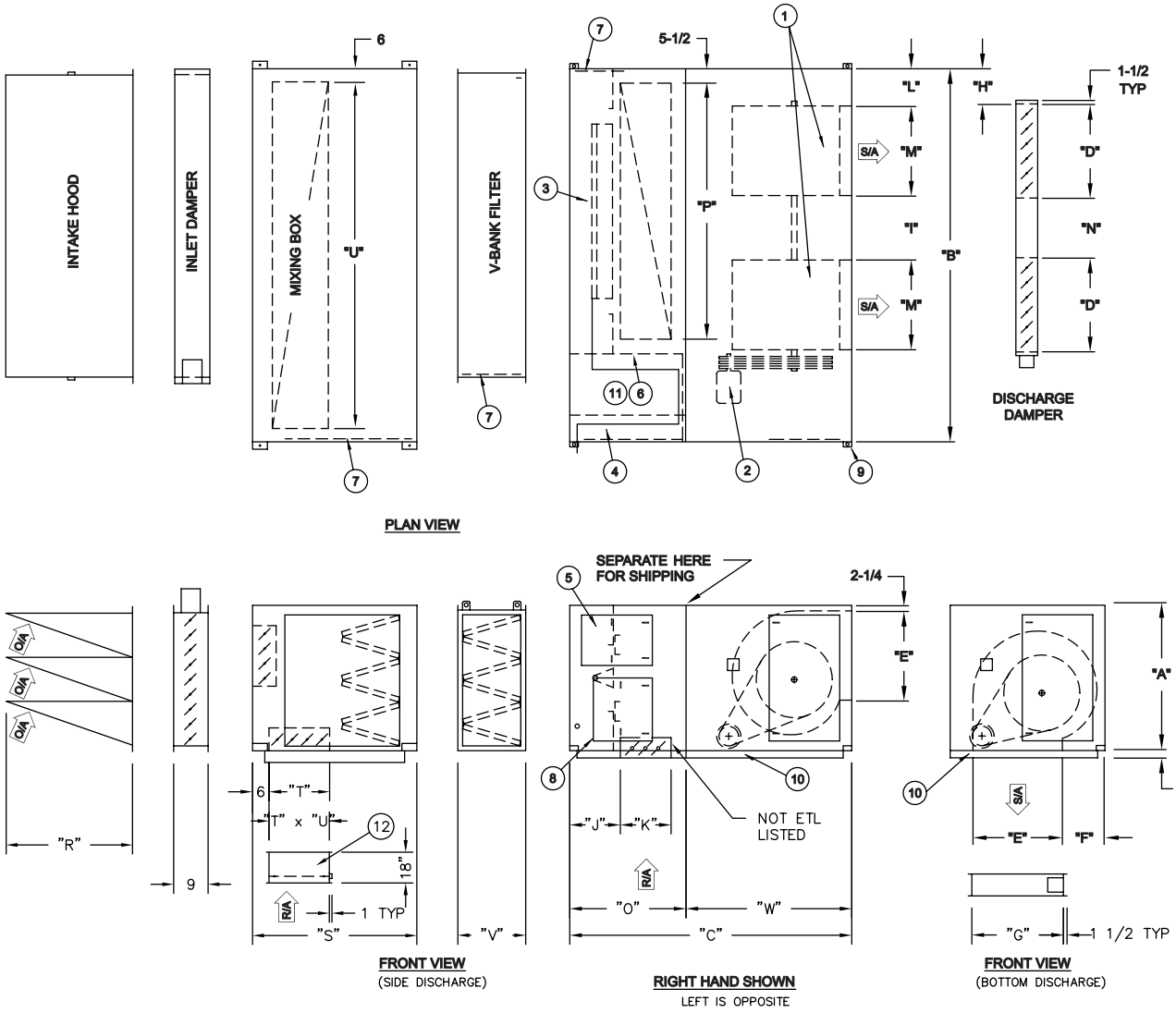
Dimensions

Twin Blower Models — Sizes 233 And 240

C000200B

UNIT COMPONENTS

1. Centrifugal supply fan
2. Fan motor
3. Line burner
4. Control cabinet
5. Hinged control cabinet access door
6. Observation port
7. Access door
8. Access door (piping compartment)
9. Lifting lug
10. Unit base
11. Manifold compartment
12. Return air flow station (required for ETL listed Return Air Unit)



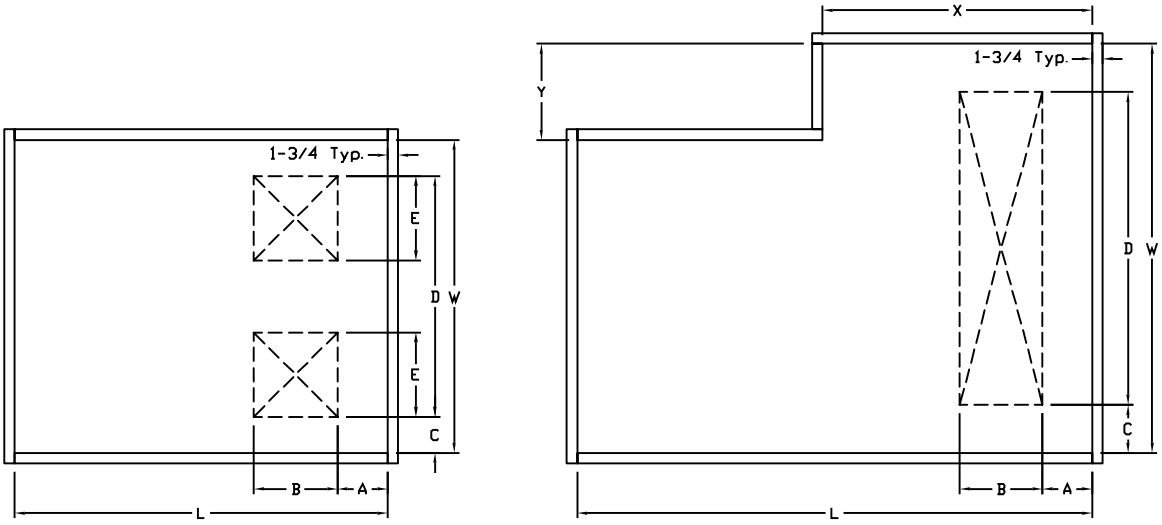
Model	Dimensions										
	A	B	C	D	E	F	G	H	I	J	K
233	68	175	117	41¾	43 1/16	19 7/16	44	16 1/16	36	20	20¼
240	79¼	210	131	55¾	41	33	42	19 1/16	39⅞	20	20¼
Model	**Dimensions**										
	L	M	N	O	P	R	S	T	U	V	W
233	17	39⅞	34⅛	45	130	56½	70	31¼	163	28	72
240	20	53⅞	38	45	166	51½	70	31¼	198	28	86

NOTE: *All dimensions in inches subject to manufacturing tolerances.*

Dimensions

Roof Curbs For 100% Make-Up Air Units

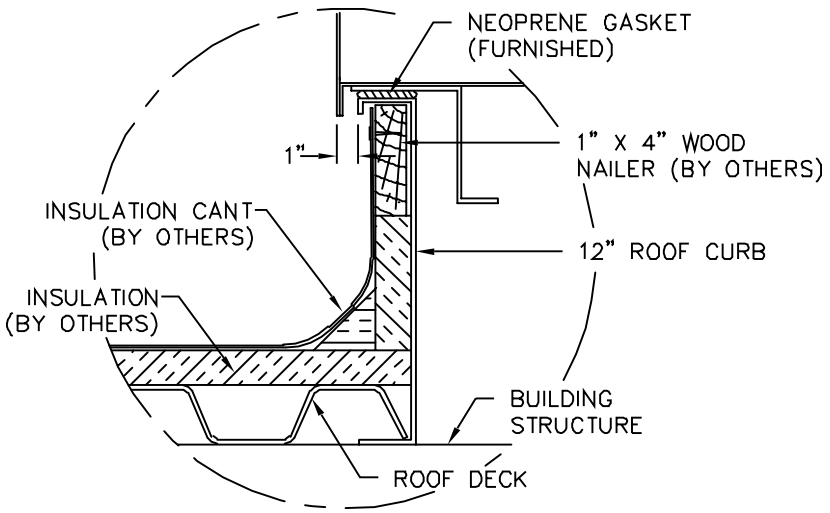
C000555



Model	Without Cooling							With CW or DX Cooling							
	A	B	C	D	E	L	W	A	B	C	D	L	W	X	Y
109	12⅜	10⅜	22 13/16	11 15/16	N/A	71½	46½	3¼	18	3¼	40	153½	46½	76½	0
112	10 13/16	13 9/16	20 13/16	15 15/16	N/A	71½	46½	3¼	18	3¼	40	153½	46½	76½	0
115	9⅝	16	19 3/16	18 15/16	N/A	71½	46½	3¼	18	3¼	52	181½	58½	104½	12
118	9⅝	19	19 5/16	22 1/16	N/A	71½	46½	3¼	18	3¼	52	181½	58½	104½	12
120	10 7/16	24⅞	37 13/16	25 1/16	N/A	90½	72½	3¼	26	3¼	86	214½	92½	118½	20
122	10 7/16	27⅜	35 5/16	27 9/16	N/A	90½	72½	3¼	26	3¼	86	214½	92½	118½	20
125	14 13/16	31⅜	41⅜	31½	N/A	90½	85½	3¼	34½	3¼	104	246½	110½	150½	25
130	14 13/16	36⅞	35⅞	37	N/A	90½	85½	3¼	34½	3¼	104	246½	110½	150½	25
215	9⅝	16	23¼	60⅛	18 15/16	71½	88½	3¼	18	3¼	94	181½	100½	104½	12
218	9⅝	19	23¼	60⅛	22 1/16	71½	88½	3¼	18	3¼	94	181½	100½	104½	12
220	10 7/16	24⅞	35⅛	79¾	25 1/16	90½	124½	3¼	26	3¼	142	214½	148½	118½	24
222	10 7/16	27⅜	35⅛	79¾	27 9/16	90½	124½	3¼	26	3¼	142	214½	148½	118½	24
225	14 13/16	31⅜	35¼	100⅝	31½	90½	148½	3¼	34½	3¼	167	246½	173½	150½	25
230	14 13/16	36⅞	35¼	100⅝	37	90½	148½	3¼	34½	3¼	167	246½	173½	150½	25
233	16 1/16	43 1/16	39½	115¾	39⅞	111½	169½	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
240	30¼	41	39⅝	147⅝	53⅞	125½	204½	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

NOTES:

1. All dimensions in inches subject to manufacturing tolerances.
2. Curb to be shipped loose and assembled in the field.
3. Curb must be installed square and level.
4. Curb requires intermediate structural support and is not to be corner post mounted.
5. Gaskets to be shipped with unit.
6. Bolting accessories shipped with curb.
7. Curb drawings shown are for units which have controls on the "standard" side.
8. Available on horizontal units only.

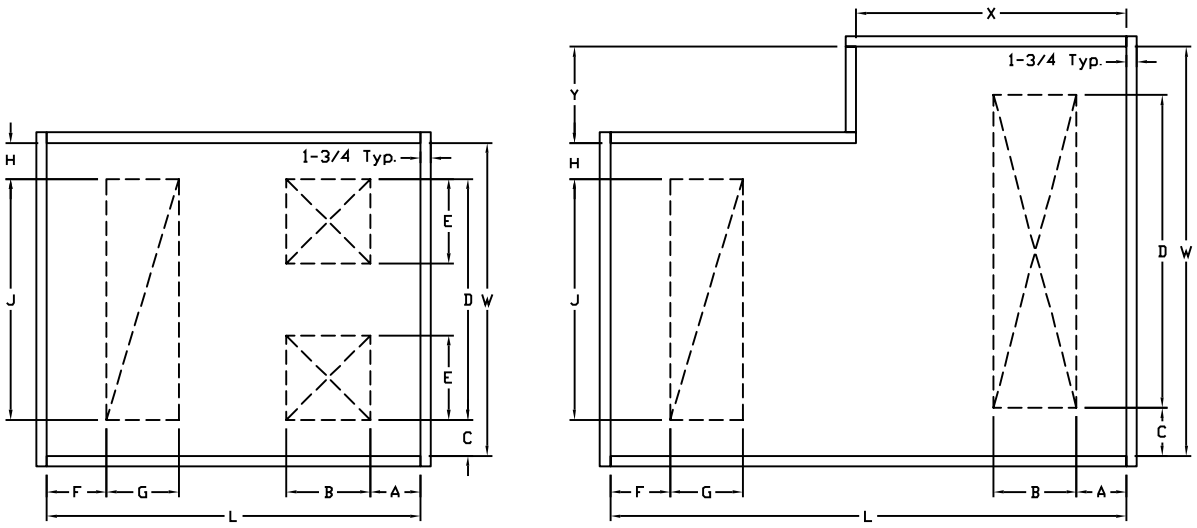


ROOF CURB DETAIL

Dimensions

Roof Curbs For Base Units With Return Air After Burner

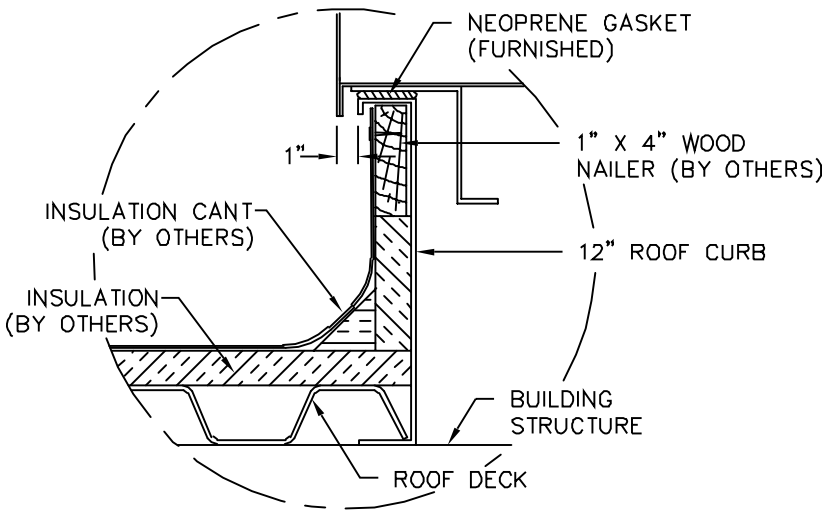
C000556



Model	Without Cooling							With CW or DX Cooling								All Models			
	A	B	C	D	E	L	W	A	B	C	D	L	W	X	Y	F	G	H	J
109	12 3/8	10 3/8	22 13/16	11 15/16	N/A	71 1/2	46 1/2	3 1/4	18	3 1/4	40	153 1/2	46 1/2	76 1/2	0	16 1/4	14 1/4	2 3/4	27 3/4
112	10 13/16	13 9/16	20 13/16	15 15/16	N/A	71 1/2	46 1/2	3 1/4	18	3 1/4	40	153 1/2	46 1/2	76 1/2	0	16 1/4	14 1/4	2 3/4	27 3/4
115	9 5/8	16	19 3/16	18 15/16	N/A	71 1/2	46 1/2	3 1/4	18	3 1/4	52	181 1/2	58 1/2	104 1/2	12	16 1/4	14 1/4	2 3/4	27 3/4
118	9 5/8	19	19 5/16	22 1/16	N/A	71 1/2	46 1/2	3 1/4	18	3 1/4	52	181 1/2	58 1/2	104 1/2	12	16 1/4	14 1/4	2 3/4	27 3/4
120	10 7/16	24 7/8	37 13/16	25 1/16	N/A	90 1/2	72 1/2	3 1/4	26	3 1/4	86	214 1/2	92 1/2	118 1/2	20	16 1/4	14 1/4	2 3/4	48
122	10 7/16	27 3/8	35 5/16	27 9/16	N/A	90 1/2	72 1/2	3 1/4	26	3 1/4	86	214 1/2	92 1/2	118 1/2	20	16 1/4	14 1/4	2 3/4	48
125	14 13/16	31 3/8	41 3/8	31 1/2	N/A	90 1/2	85 1/2	3 1/4	34 1/2	3 1/4	104	246 1/2	110 1/2	150 1/2	25	9 9/16	20 1/4	2 3/4	49
130	14 13/16	36 7/8	35 7/8	37	N/A	90 1/2	85 1/2	3 1/4	34 1/2	3 1/4	104	246 1/2	110 1/2	150 1/2	25	9 9/16	20 1/4	2 3/4	49
215	9 5/8	16	23 1/4	60 1/8	18 15/16	71 1/2	88 1/2	3 1/4	18	3 1/4	94	181 1/2	100 1/2	104 1/2	12	16 1/4	14 1/4	2 3/4	65 3/4
218	9 5/8	19	23 1/4	60 1/8	22 1/16	71 1/2	88 1/2	3 1/4	18	3 1/4	94	181 1/2	100 1/2	104 1/2	12	16 1/4	14 1/4	2 3/4	65 3/4
220	10 7/16	24 7/8	35 1/8	79 3/4	25 1/16	90 1/2	124 1/2	3 1/4	26	3 1/4	142	214 1/2	148 1/2	118 1/2	24	16 1/4	14 1/4	2 3/4	87 3/8
222	10 7/16	27 3/8	35 1/8	79 3/4	27 9/16	90 1/2	124 1/2	3 1/4	26	3 1/4	142	214 1/2	148 1/2	118 1/2	24	16 1/4	14 1/4	2 3/4	87 3/8
225	14 13/16	31 3/8	35 1/4	100 5/8	31 1/2	90 1/2	148 1/2	3 1/4	34 1/2	3 1/4	167	246 1/2	173 1/2	150 1/2	25	9 9/16	20 1/4	2 3/4	111 3/8
230	14 13/16	36 7/8	35 1/4	100 5/8	37	90 1/2	148 1/2	3 1/4	34 1/2	3 1/4	167	246 1/2	173 1/2	150 1/2	25	9 9/16	20 1/4	2 3/4	111 3/8
233	16 11/16	43 1/16	39 1/2	115 3/4	39 7/8	111 1/2	169 1/2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	17 1/4	20 1/4	2 3/4	130
240	30 1/4	41	39 5/8	147 5/8	53 7/8	125 1/2	204 1/2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	17 1/4	20 1/4	2 3/4	166

NOTES:

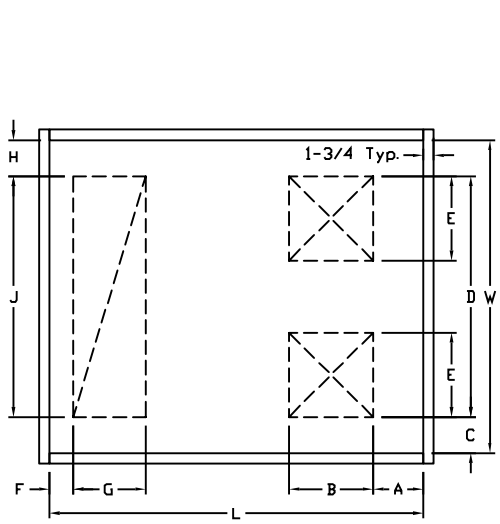
1. All dimensions in inches subject to manufacturing tolerances.
2. Curb to be shipped loose and assembled in the field.
3. Curb must be installed square and level.
4. Curb requires intermediate structural support and is not to be corner post mounted.
5. Gaskets to be shipped with unit.
6. Bolting accessories shipped with curb.
7. Curb drawings shown are for units which have controls on the "standard" side.
8. Available on horizontal units only.

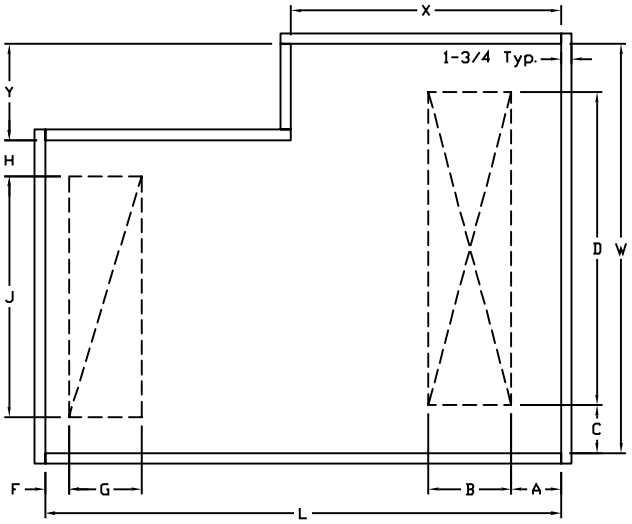


ROOF CURB DETAIL

Roof Curbs For Base Units With Return Air Before Burner

C000557

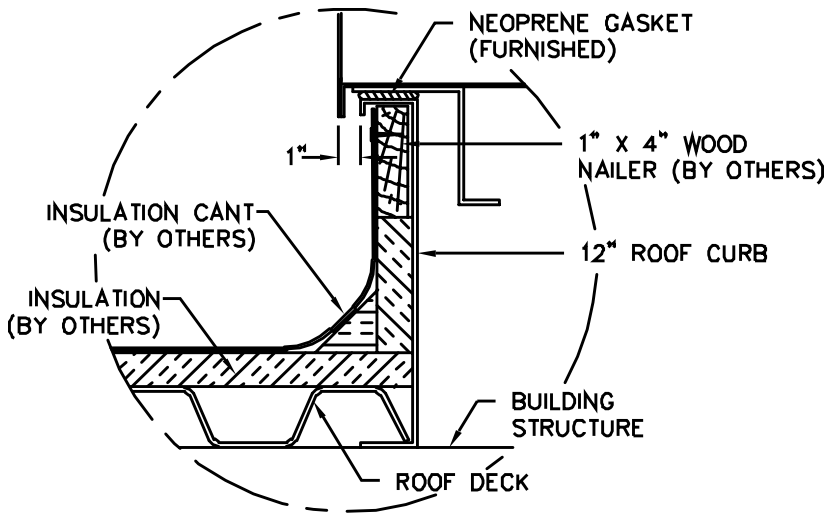




Model	Without Cooling							With CW or DX Cooling								All Models			
	A	B	C	D	E	L	W	A	B	C	D	L	W	X	Y	F	G	H	J
109	12 3/8	10 3/8	22 13/16	11 15/16	N/A	125 1/2	46 1/2	3 1/4	18	3 1/4	40	207 1/2	46 1/2	76 1/2	0	3 1/4	20 1/4	2 1/4	42
112	10 13/16	13 9/16	20 13/16	15 15/16	N/A	125 1/2	46 1/2	3 1/4	18	3 1/4	40	207 1/2	46 1/2	76 1/2	0	3 1/4	20 1/4	2 1/4	42
115	9 5/8	16	19 3/16	18 15/16	N/A	125 1/2	46 1/2	3 1/4	18	3 1/4	52	235 1/2	58 1/2	104 1/2	12	3 1/4	20 1/4	2 1/4	42
118	9 5/8	19	19 5/16	22 1/16	N/A	125 1/2	46 1/2	3 1/4	18	3 1/4	52	235 1/2	58 1/2	104 1/2	12	3 1/4	20 1/4	2 1/4	42
120	10 7/16	24 7/8	37 13/16	25 1/16	N/A	150 1/2	72 1/2	3 1/4	26	3 1/4	86	274 1/2	92 1/2	118 1/2	20	3 1/4	20 1/4	2 1/4	68
122	10 7/16	27 3/8	35 5/16	27 9/16	N/A	150 1/2	72 1/2	3 1/4	26	3 1/4	86	274 1/2	92 1/2	118 1/2	20	3 1/4	20 1/4	2 1/4	68
125	14 13/16	31 3/8	41 3/8	31 1/2	N/A	155 1/2	85 1/2	3 1/4	34 1/2	3 1/4	104	311 1/2	110 1/2	150 1/2	25	3 1/4	26 1/2	2 1/4	81
130	14 13/16	36 7/8	35 7/8	37	N/A	155 1/2	85 1/2	3 1/4	34 1/2	3 1/4	104	311 1/2	110 1/2	150 1/2	25	3 1/4	26 1/2	2 1/4	81
215	9 5/8	16	23 1/4	60 1/8	18 15/16	125 1/2	88 1/2	3 1/4	18	3 1/4	94	235 1/2	100 1/2	104 1/2	12	3 1/4	20 1/4	2 1/4	84
218	9 5/8	19	23 1/4	60 1/8	22 1/16	125 1/2	88 1/2	3 1/4	18	3 1/4	94	235 1/2	100 1/2	104 1/2	12	3 1/4	20 1/4	2 1/4	84
220	10 7/16	24 7/8	35 1/8	79 3/4	25 1/16	150 1/2	124 1/2	3 1/4	26	3 1/4	142	274 1/2	148 1/2	118 1/2	24	3 1/4	20 1/4	2 1/4	120
222	10 7/16	27 3/8	35 1/8	79 3/4	27 9/16	150 1/2	124 1/2	3 1/4	26	3 1/4	142	274 1/2	148 1/2	118 1/2	24	3 1/4	20 1/4	2 1/4	120
225	14 13/16	31 3/8	35 1/4	100 5/8	31 1/2	155 1/2	148 1/2	3 1/4	34 1/2	3 1/4	167	311 1/2	173 1/2	150 1/2	25	3 1/4	26 1/2	2 1/4	144
230	14 13/16	36 7/8	35 1/4	100 5/8	37	155 1/2	148 1/2	3 1/4	34 1/2	3 1/4	167	311 1/2	173 1/2	150 1/2	25	3 1/4	26 1/2	2 1/4	144
233	16 11/16	43 1/16	39 1/2	115 3/4	39 7/8	181 1/2	169 1/2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3 1/4	31 1/4	3 1/4	163
240	30 1/4	41	39 5/8	147 5/8	53 7/8	195 1/2	204 1/2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3 1/4	31 1/4	3 1/4	198

NOTES:

1. All dimensions in inches subject to manufacturing tolerances.
2. Curb to be shipped loose and assembled in the field.
3. Curb must be installed square and level.
4. Curb requires intermediate structural support and is not to be corner post mounted.
5. Gaskets to be shipped with unit.
6. Bolting accessories shipped with curb.
7. Curb drawings shown are for units which have controls on the "standard" side.
8. Available on horizontal units only.



ROOF CURB DETAIL

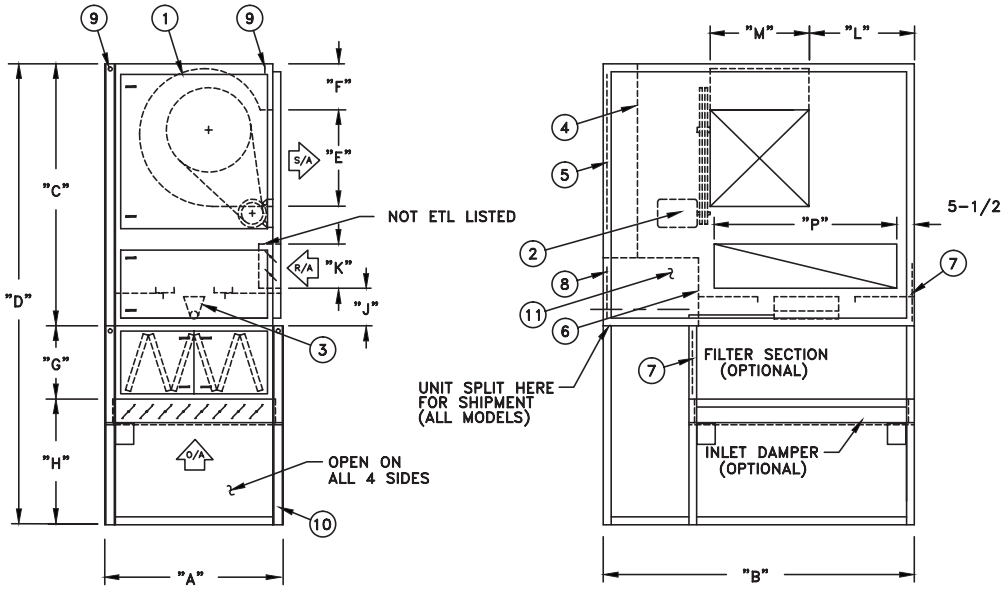
Dimensions

Vertical Models — Sizes 109 Through 130

C000496A

UNIT COMPONENTS

1. Centrifugal supply fan
2. Fan motor
3. Line burner
4. Control cabinet
5. Hinged control cabinet access door
6. Observation port
7. Access door
8. Access door (piping compartment)
9. Lifting lug
10. Unit base
11. Manifold compartment



FRONT VIEW (SIDE DISCHARGE) — RIGHT HAND SHOWN, LEFT IS OPPOSITE — SIDE VIEW

Model	Dimensions						
	A	B	C	D	E	F	G
109	42	52	77	135	10 3/8	15 1/8	22
112	42	52	77	135	13 9/16	13 9/16	22
115	42	52	77	135	16	12 3/8	22
118	42	52	77	135	19	12 3/8	22
120	56	78	96	166	24 7/8	13 3/16	22
122	56	78	96	166	27 3/8	13 3/16	22
125	68	91	96	172	31 3/8	17 9/16	28
130	68	91	96	172	36 7/8	17 9/16	28

Model	Dimensions					
	H	J	K	L	M	P
109	36	19	14 1/4	14 1/2	11 15/16	27 3/4
112	36	19	14 1/4	12 1/2	15 15/16	27 3/4
115	36	19	14 1/4	11 1/8	18 15/16	27 3/4
118	36	19	14 1/4	7 7/8	22 1/16	27 3/4
120	48	19	14 1/4	12 3/8	25 1/16	48
122	48	19	14 1/4	12 3/8	27 9/16	48
125	48	12 5/16	20 1/4	15 3/8	31 1/2	49
130	48	12 5/16	20 1/4	15 3/8	37	49

NOTE: *All dimensions in inches subject to manufacturing tolerances.*

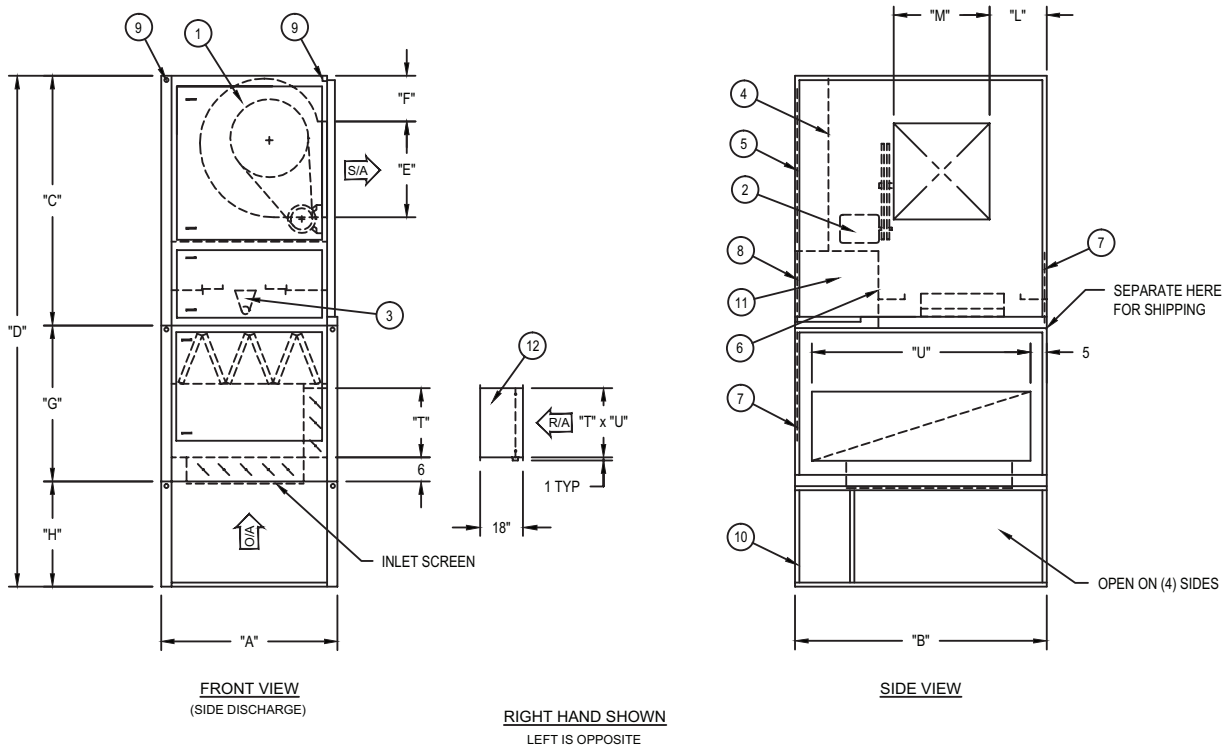
Dimensions

Vertical Models — Sizes 109 Through 130 with Mixing Box

C000550B

UNIT COMPONENTS

1. Centrifugal supply fan
2. Fan motor
3. Line burner
4. Control cabinet
5. Hinged control cabinet access door
6. Observation port
7. Access door
8. Access door (piping compartment)
9. Lifting lug
10. Unit support stand
11. Manifold compartment
12. AdaptAire air flow station (required for ETL listed Return Air Unit)



FRONT VIEW
(SIDE DISCHARGE)

RIGHT HAND SHOWN
LEFT IS OPPOSITE

SIDE VIEW

Model	Dimensions					
	A	B	C	D	E	F
109	42	52	77	167	10 3/8	15 1/8
112	42	52	77	167	13 9/16	13 9/16
115	42	52	77	167	16	12 3/8
118	42	52	77	167	19	12 3/8
120	56	78	96	204	24 7/8	13 3/16
122	56	78	96	204	27 3/8	13 3/16
125	68	91	96	209	31 3/8	17 9/16
130	68	91	96	209	36 7/8	17 9/16

Model	Dimensions					
	G	H	L	M	T	U
109	54	36	14 1/2	11 15/16	20 1/4	42
112	54	36	12 1/2	15 15/16	20 1/4	42
115	54	36	11 1/8	18 15/16	20 1/4	42
118	54	36	7 7/8	22 1/16	20 1/4	42
120	60	48	12 3/8	25 1/16	20 1/4	68
122	60	48	12 3/8	27 9/16	20 1/4	68
125	65	48	15 3/8	31 1/2	26 1/2	81
130	65	48	15 3/8	37	26 1/2	81

NOTE: *All dimensions in inches subject to manufacturing tolerances.*

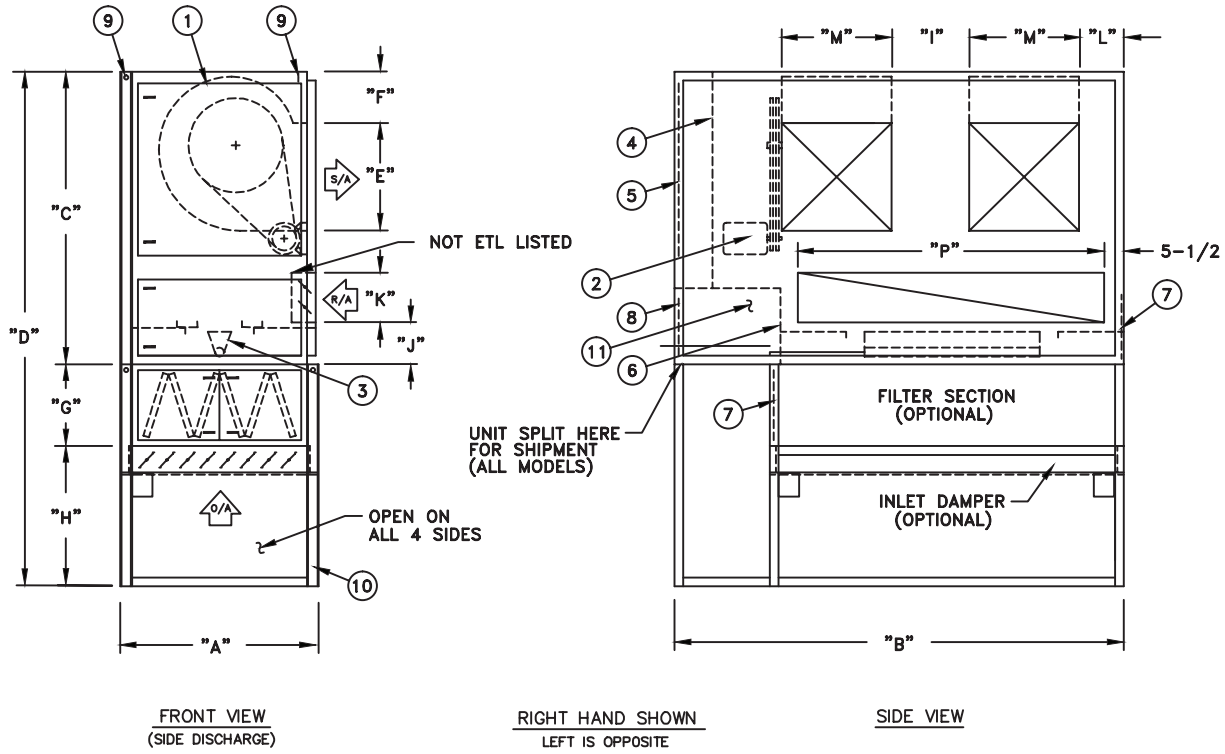
Dimensions

Vertical Models — Sizes 215 Through 230

C000464A

UNIT COMPONENTS

1. Centrifugal supply fan
2. Fan motor
3. Line burner
4. Control cabinet
5. Hinged control cabinet access door
6. Observation port
7. Access door
8. Access door (piping compartment)
9. Lifting lug
10. Unit support stand
11. Manifold compartment



FRONT VIEW (SIDE DISCHARGE)

RIGHT HAND SHOWN
LEFT IS OPPOSITE

SIDE VIEW

Model	Dimensions							
	A	B	C	D	E	F	G	H
215	42	94	77	135	16	12 3/8	22	36
218	42	94	77	135	19	12 3/8	22	36
220	56	130	96	166	24 7/8	13 3/16	22	48
222	56	130	96	166	27 3/8	13 3/16	22	48
225	68	154	96	172	31 3/8	17 9/16	28	48
230	68	154	96	172	36 7/8	17 9/16	28	48

Model	Dimensions					
	I	J	K	L	M	P
215	22 1/4	19	14 1/4	7 7/8	18 15/16	65 3/4
218	16	19	14 1/4	7 7/8	22 1/16	65 3/4
220	29 5/8	19	14 1/4	12 3/8	25 1/16	87 3/8
222	24 5/8	19	14 1/4	12 3/8	27 9/16	87 3/8
225	37 5/8	12 5/16	20 1/4	15 3/8	31 1/2	111 3/8
230	26 5/8	12 5/16	20 1/4	15 3/8	37	111 3/8

NOTE: *All dimensions in inches subject to manufacturing tolerances.*

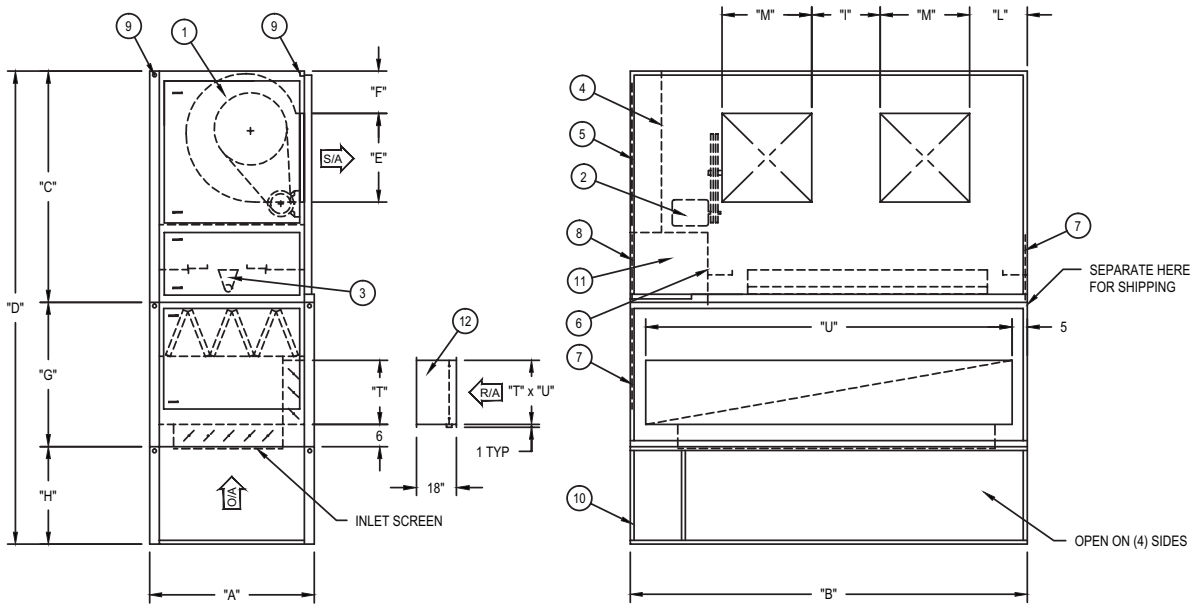
Dimensions

Vertical Models — Sizes 215 Through 230 with Mixing Box

C000551C

UNIT COMPONENTS

1. Centrifugal supply fan
2. Fan motor
3. Line burner
4. Control cabinet
5. Hinged control cabinet access door
6. Observation port
7. Access door
8. Access door (piping compartment)
9. Lifting lug
10. Unit support stand
11. Manifold compartment
12. AdaptAire air flow station (required for ETL listed Return Air Unit)



FRONT VIEW
(SIDE DISCHARGE)

SIDE VIEW

RIGHT HAND SHOWN
LEFT IS OPPOSITE

Model	Dimensions						
	A	B	C	D	E	F	G
215	42	94	77	167	16	12 3/8	54
218	42	94	77	167	19	12 3/8	54
220	56	130	96	204	24 7/8	13 3/16	60
222	56	130	96	204	27 3/8	13 3/16	60
225	68	154	96	209	31 3/8	17 9/16	65
230	68	154	96	209	36 7/8	17 9/16	65

Model	Dimensions					
	H	I	L	M	T	U
215	36	22 1/4	7 7/8	18 15/16	20 1/4	84
218	36	16	7 7/8	22 1/16	20 1/4	84
220	48	29 5/8	12 3/8	25 1/16	20 1/4	120
222	48	24 5/8	12 3/8	27 9/16	20 1/4	120
225	48	37 5/8	15 3/8	31 1/2	26 1/2	144
230	48	26 5/8	15 3/8	37	26 1/2	144

NOTE: *All dimensions in inches subject to manufacturing tolerances.*

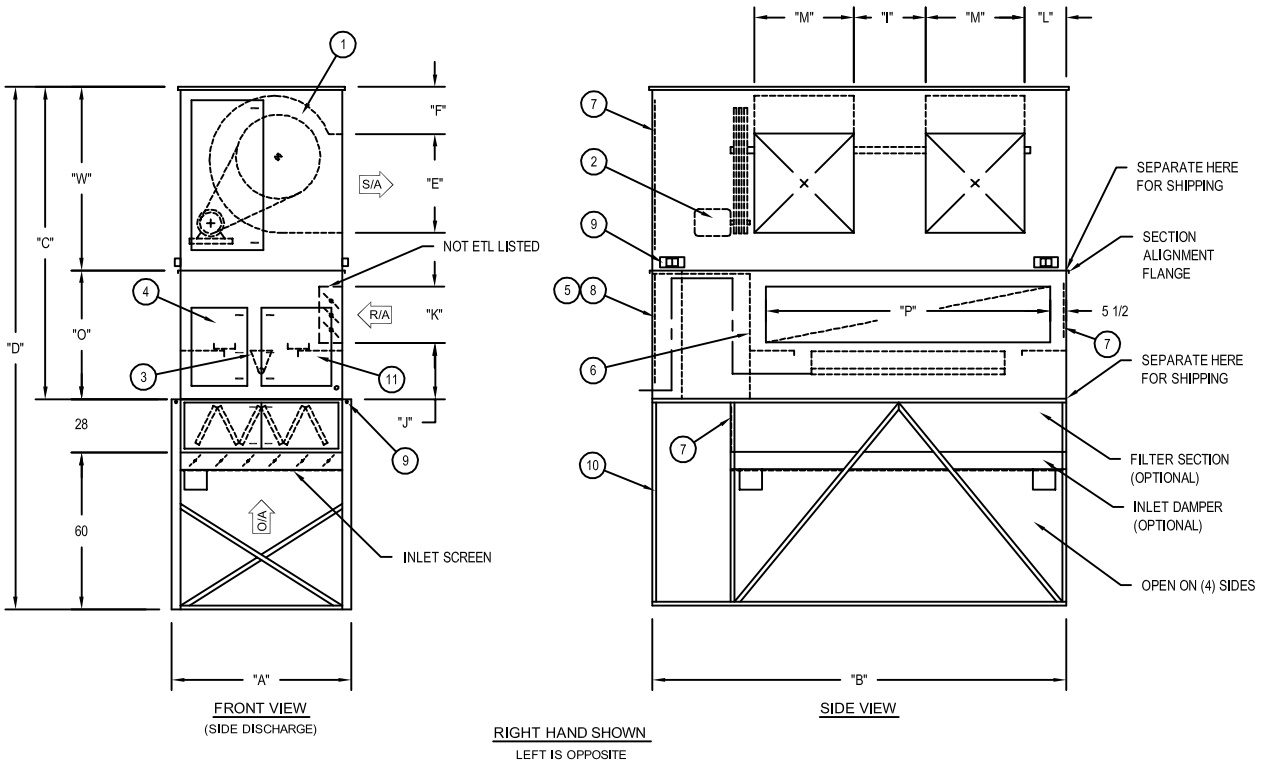
Dimensions

Vertical Models — Sizes 233 and 240

C000463

UNIT COMPONENTS

1. Centrifugal supply fan
2. Fan motor
3. Line burner
4. Control cabinet
5. Hinged control cabinet access door
6. Observation port
7. Access door
8. Access door (piping compartment)
9. Lifting lug
10. Unit support stand
11. Manifold compartment



Model	Dimensions						
	A	B	C	D	E	F	I
233	76	175	117	205	43 1/16	19 7/16	36
240	87 1/4	210	131	219	41	33	39 7/8
Model	Dimensions						
	J	K	L	M	O	P	W
233	20	20 1/4	17	39 7/8	45	130	72
240	20	20 1/4	20	53 7/8	45	166	86

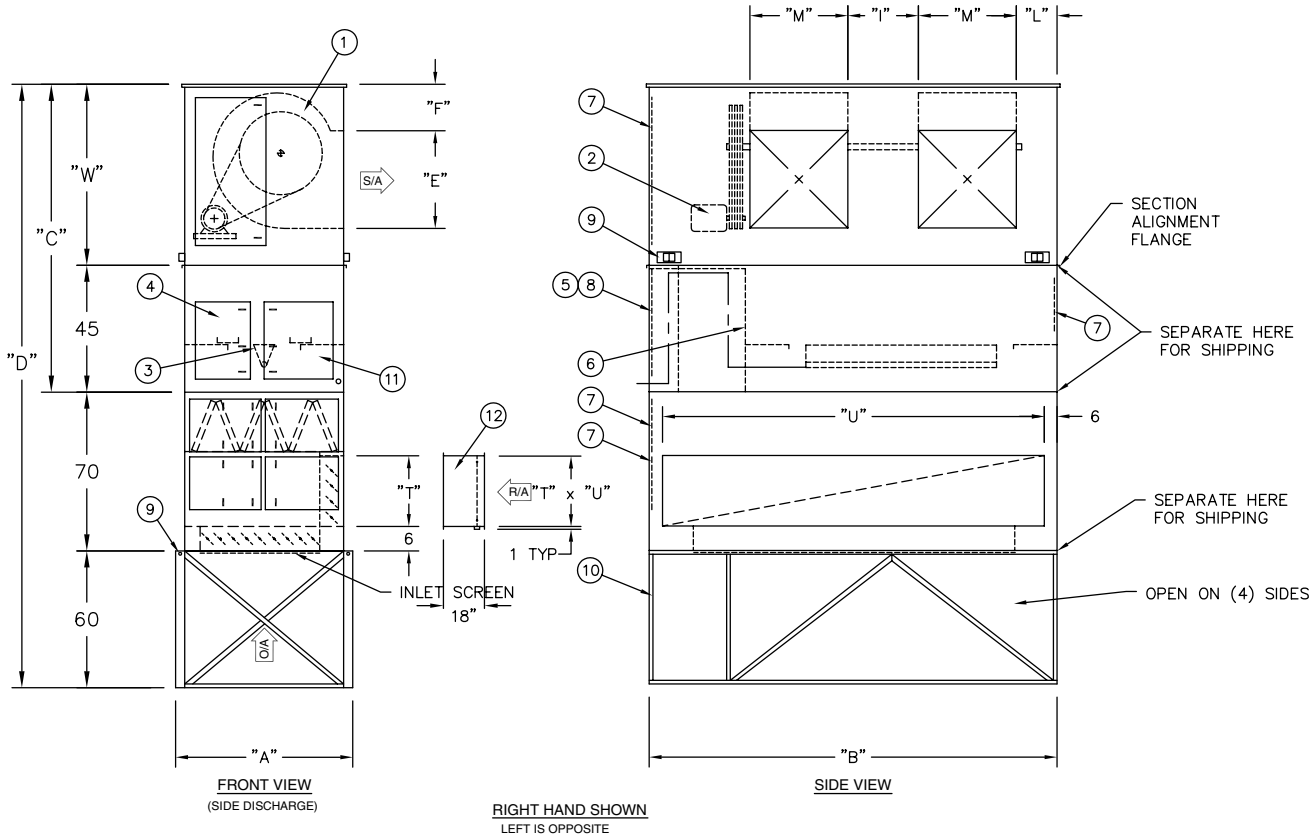
NOTE: *All dimensions in inches subject to manufacturing tolerances.*

Vertical Models — Sizes 233 and 240 with Mixing Box

C000549A

UNIT COMPONENTS

1. Centrifugal supply fan
2. Fan motor
3. Line burner
4. Control cabinet
5. Hinged control cabinet access door
6. Observation port
7. Access door
8. Access door (piping compartment)
9. Lifting lug
10. Unit support stand
11. Manifold compartment
12. Return air flow station (required for ETL listed Return Air Unit)



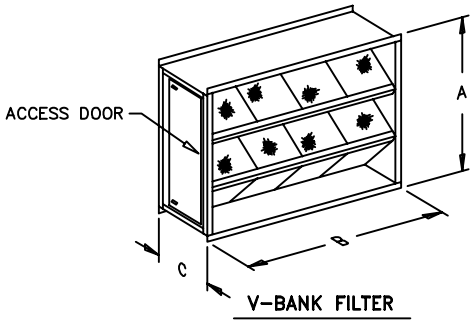
Model	Dimensions					
	A	B	C	D	E	F
233	76	175	117	247	43 1/16	19 7/16
240	87 1/4	210	131	261	41	33
Model	**Dimensions**					
	I	L	M	T	U	W
233	36	17	39 7/8	31 1/4	163	72
240	39 7/8	20	58 7/8	31 1/4	198	86

NOTE: *All dimensions in inches subject to manufacturing tolerances.*

Dimensions

V-Bank Filter and Filter Information

C000469



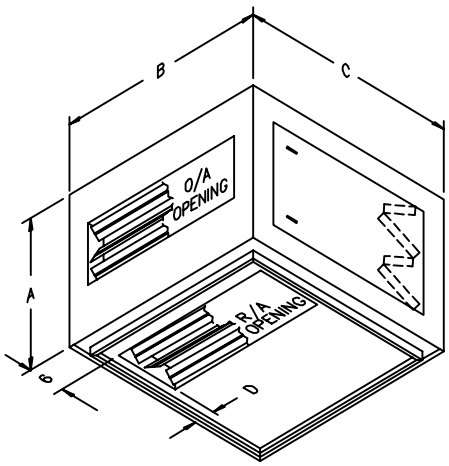
Dimension	MODEL										
	109-112	115-118	120	122	125	130	215-218	220-222	225-230	233	240
A	36	36	48	48	60	60	36	48	60	68	79¼
B	47¼	47¼	62⅜	62⅜	63	63	91½	101⅝	121⅜	141½	177
C	22	22	22	22	28	28	22	22	28	28	28

Model	109-112	115-118	120-122	125-130	215-218	220-222	225-230	233	240
Filter Qty. & Size	(9) 15 x 20 x 2	(9) 15 x 20 x 2	(15) 20 x 20 x 2	(18) 20 x 25 x 2	(18) 15 x 20 x 2	(25) 20 x 20 x 2	(36) 20 x 25 x 2	(49) 20 x 25 x 2	(88) 16 x 25 x 2

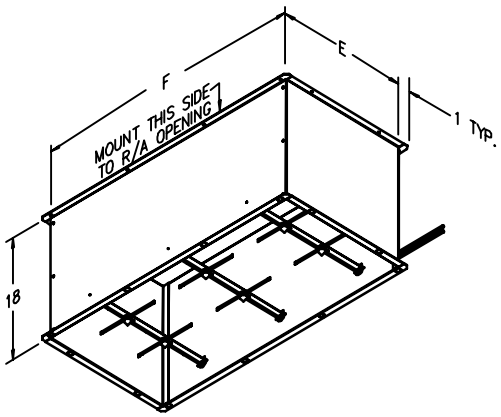
NOTE: *All dimensions in inches subject to manufacturing tolerances.*

Mixing Box and Filter Information

C000469



MIXING BOX



RETURN AIR FLOW STATION

Dimension	Model										
	109-112	115-118	120	122	125	130	215-218	220-222	225-230	233	240
A	36	36	48	48	60	60	36	48	60	68	79¼
B	52	52	78	78	91	91	94	130	154	175	210
C	54	54	60	60	65	65	54	60	65	70	70
D	5	5	5	5	5	5	5	5	5	6	6
E	20¼	20¼	20¼	20¼	26½	26½	20¼	20¼	26½	31¼	31¼
F	42	42	68	68	81	81	84	120	144	163	198

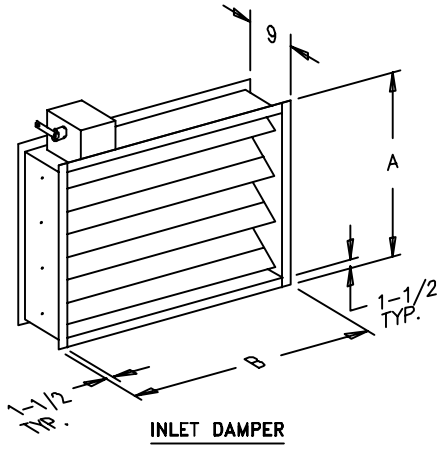
Model	109-118	120	122	125	130	215-218	220-222	225-230	233	240
R/A - I.D.	42 x 20¼	68 x 20¼	68 x 20¼	81 x 26½	81 x 26½	84 x 20¼	120 x 20¼	144 x 26½	163 x 31¼	198 x 31¼
O/A - I.D.	42 x 20¼	44 x 32¼	44 x 32¼	51 x 44¼	51 x 44¼	84 x 20¼	96 x 32¼	114 x 44¼	130 x 52	165 x 52

NOTES: *1) Refer to V-bank information above for filter quantity and size.*
2) All dimensions in inches subject to manufacturing tolerances.

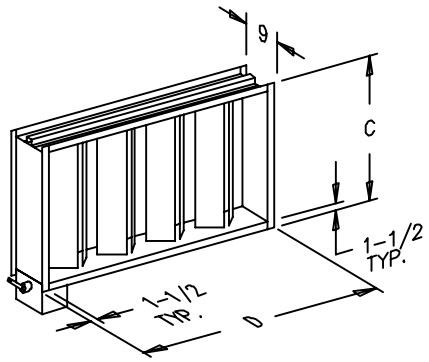
Dimensions

Dampers

C000468



INLET DAMPER



DISCHARGE DAMPER

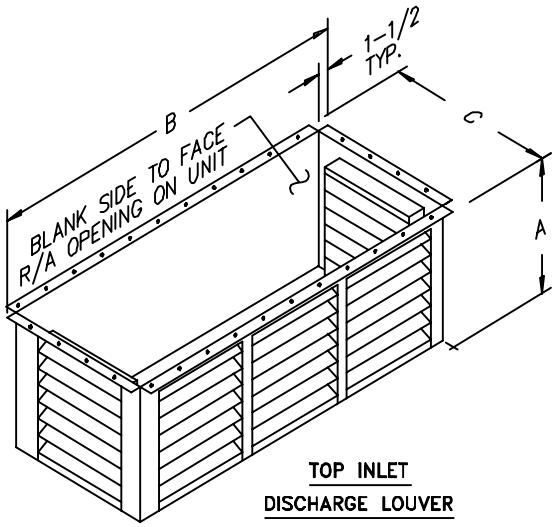
Dimension	Model								
	109-112	115-118	120-122	125-130	215-218	220-222	225-230	233	240*
A	36	36	48	60	36	48	60	68	79¼
B	47¼	47¼	62⅜	63	91½	101⅝	121⅜	141½	177
C	17 7/16	22⅞	31¼	40¾	22⅞	31¼	40¾	47	45
D	20 13/16	26 15/16	32½	41⅞	64⅞	84½	105⅜	120⅝	58¾

**On 240 discharge damper ONLY, there are two (2) dampers side by side. Dimensions shown are for each damper. Overall width of 240 discharge damper is 152½".*

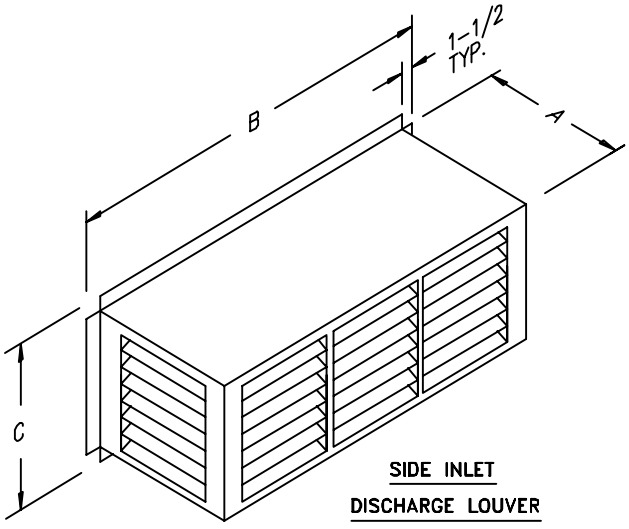
NOTE: *All dimensions in inches subject to manufacturing tolerances.*

Discharge Louvers

C000468



TOP INLET
DISCHARGE LOUVER



SIDE INLET
DISCHARGE LOUVER

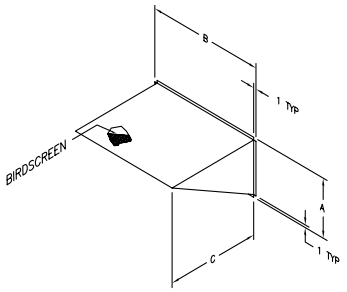
Dimension	Model								
	109-112	115-118	120-122	125-130	215-218	220-222	225-230	233	240
A	21	24	45	45	24	45	45	45	45
B	20 13/16	26 15/16	32½	41⅞	64⅞	84½	105⅜	120⅝	152½
C	17 7/16	23	31¼	40¾	23	31¼	40¾	47	45

NOTE: *All dimensions in inches subject to manufacturing tolerances.*

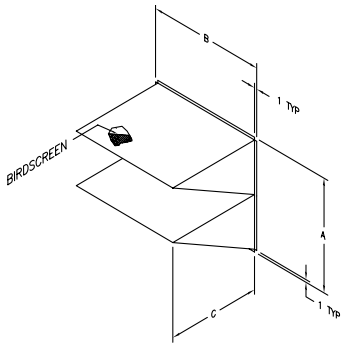
Dimensions

Intake Hoods and Filter Information

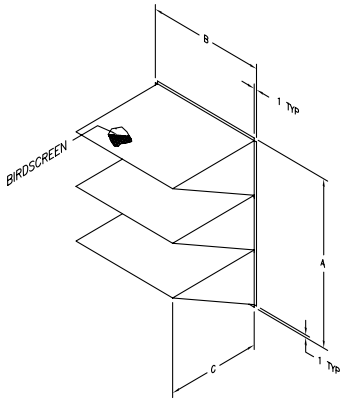
C000482A



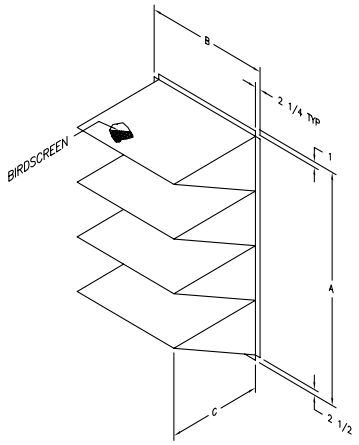
FOR MODELS 109-112



FOR MODELS 115-118, 120-122, 215-218, 220-222



FOR MODELS 125-130, 225-230, 233



FOR MODEL 240

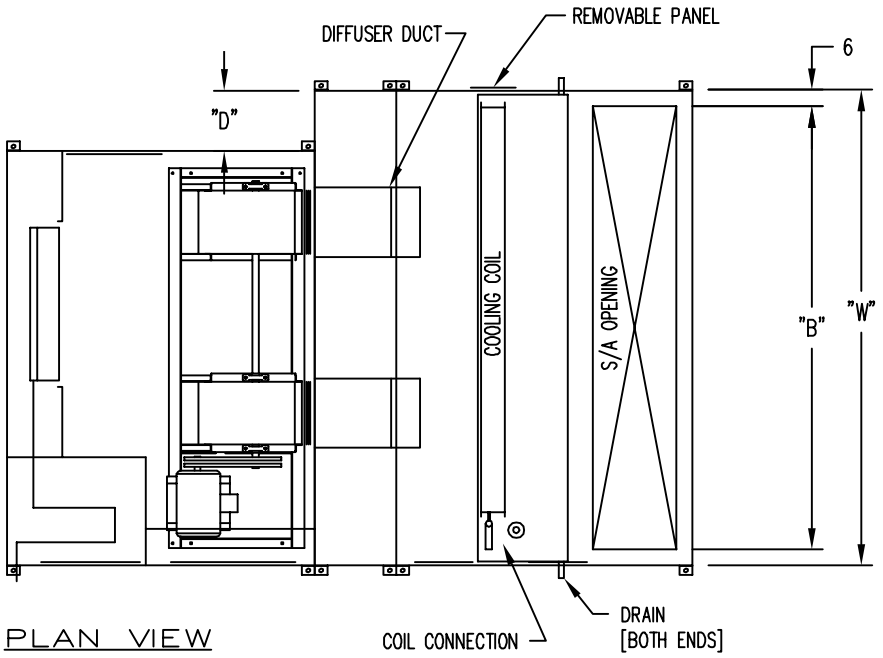
Dimension	Model								
	109-112	115-118	120-122	125-130	215-218	220-222	225-230	233	240
A	36	36	48	60	36	48	60	68	79
B	47¼	47¼	62⅜	63	91½	101⅝	121⅜	140½	177
C	32	32	38½	53	32	44½	56½	56½	51½
Filter Qty. & Size	(4) 16 x 20	(8) 16 x 20	(12) 20 x 20	(30) 15 x 20	(16) 16 x 20	(18) 20 x 25	(66) 15 x 20	(75) 15 x 20	(64) 20 x 25

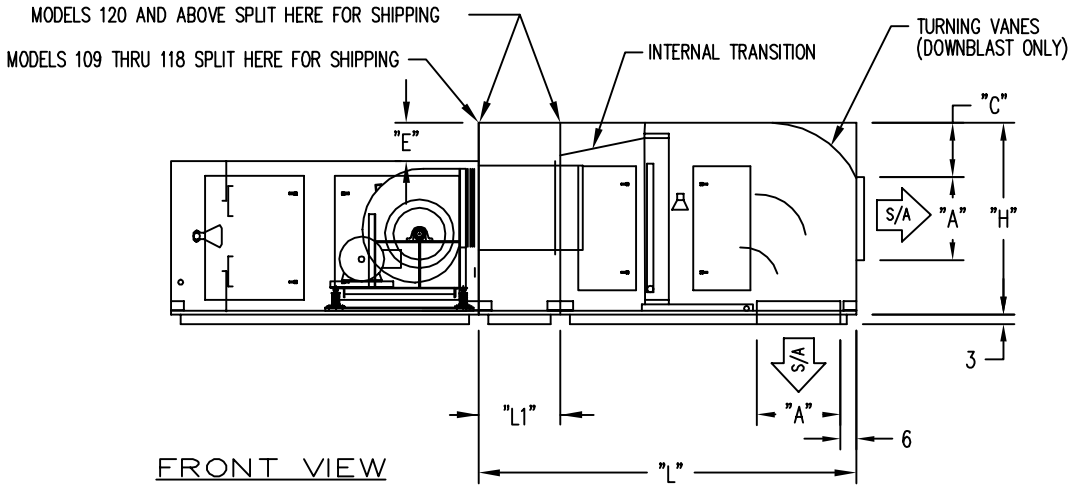
NOTE: *All dimensions in inches subject to manufacturing tolerances.*

Dimensions

Cooling Coil Section

P000882





Notes:
1. Shipped separate and assembled in the field.
2. Dual blower unit shown, single blower unit similar.

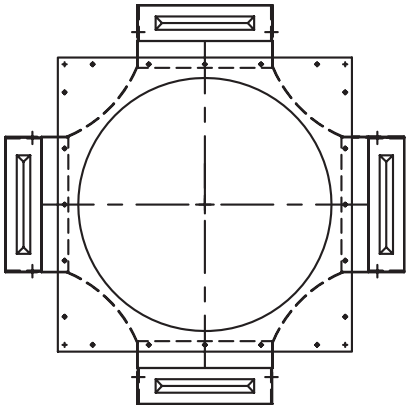
Model	Dimensions									Max Coil Size
	L	L1	W	H	A	B	C	D	E	FH x FL
109-112	82	—	52	42	18	40	12	0	6	33 x40
115-118	110	—	64	60	18	52	21	12	24	51 x 51
120-122	124	24	98	60	26	86	23	20	12	51 x 85
125-130	156	56	116	93	34½	104	29	25	33	84 x 103
215-218	110	17	106	60	18	94	21	12	24	51 x 93
220-222	124	24	154	72	26	142	23	24	24	63 x 141
225-230	156	56	179	93	34½	167	29	25	33	84 x 166 @ 50,000
233	—	—	—	—	—	—	—	—	—	N/A
240	—	—	—	—	—	—	—	—	—	N/A

NOTE: *All dimensions in inches subject to manufacturing tolerances.*

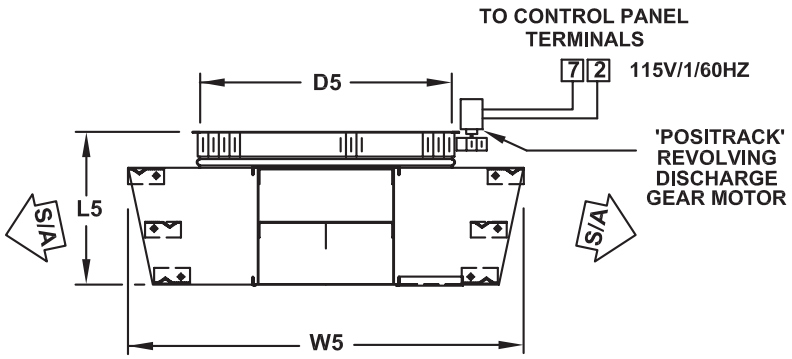
5F and 5R Discharge Dimensions and Weights

C000781

FIXED AND REVOLVING DISCHARGES TYPE 5F AND 5R FOR DIRECT FIRED VERTICAL DOWN BLAST UNITS



PLAN VIEW



SIDE ELEVATION

5F AND 5R DISCHARGES

A FOUR OUTLET DISCHARGE DESIGNED FOR FULL AIR DISTRIBUTION.

DISCHARGE VANES ARE ADJUSTABLE.

DISCHARGE DESIGNED FOR LOW CEILING HEIGHT APPLICATIONS.

Dimensions

5F and 5R Discharge Dimensions and Weights

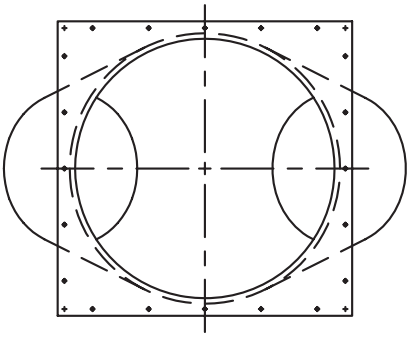
DISCHARGE DIMENSIONS AND WEIGHT						
Model Size	Discharge Size	5F and 5R Discharge				
		D5	L5	W5	Weight 5F	Weight 5R
109	17	17-23/32	9-1/4	25-1/2	45	100
112	22	25-23/32	11	34-1/2	60	110
115	25	31-5/32	14	40	65	120
118	28	36-17/32	16-5/8	50	90	160
120	36	42-17/32	18-1/4	57	110	185
122	40	49-17/32	20-1/8	66-1/2	120	200
125	44	49-17/32	22	66-1/2	160	245
130	44	49-17/32	22	66-1/2	160	245
215	36	42-17/32	18-1/4	57	110	185
218	40	49-17/32	20-1/8	66-1/2	120	200
220	44	49-17/32	22	66-1/2	160	245
222	44	49-17/32	22	66-1/2	160	245
225	44	49-17/32	22	66-1/2	160	245

NOTES:
1. All dimensions are in inches.
2. All weights are in pounds.

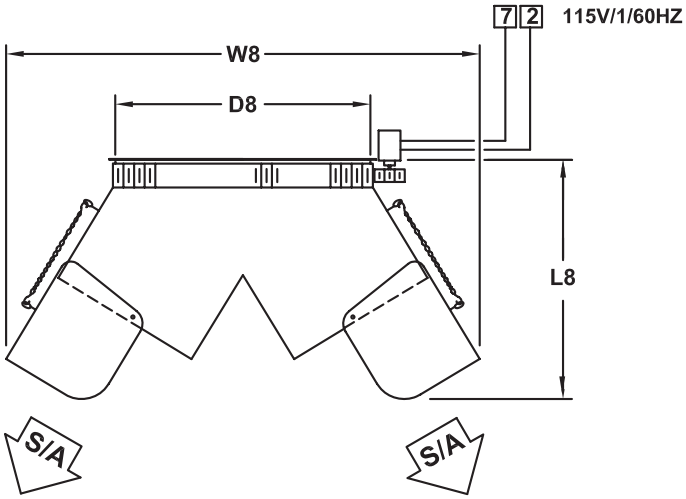
8F and 8R Discharge Dimensions and Weights

C000782

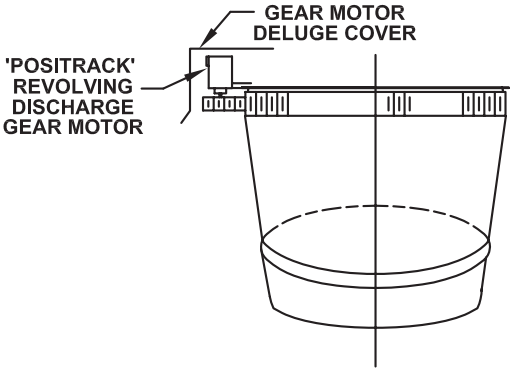
FIXED AND REVOLVING DISCHARGES TYPE 8F AND 8R FOR DIRECT FIRED VERTICAL DOWN BLAST UNITS



PLAN VIEW



SIDE ELEVATION



END ELEVATION

8F AND 8R DISCHARGE

A TWO OUTLET DISCHARGE DESIGNED FOR FULL AIR DISTRIBUTION.

DISCHARGE DESIGNED FOR HIGH MOUNTING APPLICATIONS.

Dimensions

8F and 8R Discharge Dimensions and Weights

DISCHARGE DIMENSIONS AND WEIGHT						
Model Size	Discharge Size	8F and 8R Discharge				
		D8	L8	W8	Weight 8F	Weight 8R
109	22	25-23/32	29-7/8	47-1/2	80	100
112	22	25-23/32	29-7/8	47-1/2	80	100
115	22	25-23/32	29-7/8	47-1/2	80	100
118	28	36-17/32	35-1/2	64	100	125
120	36	42-17/32	47-1/16	77	120	145
122	40	49-17/32	54-9/16	89-1/2	140	165
125	44	49-17/32	53-7/16	86	160	195
130	44	49-17/32	53-7/16	86	160	195
215	36	42-17/32	47-1/16	77	120	145
218	40	49-17/32	54-9/16	89-1/2	140	165
220	44	49-17/32	53-7/16	86	160	195
222	44	49-17/32	53-7/16	86	160	195
225	44	49-17/32	53-7/16	86	160	195

NOTES:
1. All dimensions are in inches.
2. All weights are in pounds.

Discharge Options

5F and 5R Discharge Pressure Drop and Coverage

Model	SCFM	Discharge Size	Air Pressure Drop	Mounting Height	Fixed Coverage	Revolving Coverage
109	1600	17	0.05	9	58 x 58	58 x 58
	1800		0.06	9	59 x 59	59 x 59
	2000		0.07	10	61 x 61	61 x 61
	2250		0.09	10	63 x 63	63 x 63
	2500		0.11	10	65 x 65	65 x 65
	2750		0.13	11	67 x 67	67 x 67
	3000		0.16	11	69 x 69	69 x 69
112	3250	22	0.06	13	75 x 75	75 x 75
	3500		0.07	13	76 x 76	76 x 76
	3750		0.09	14	77 x 77	77 x 77
	4000		0.10	14	77 x 77	77 x 77
	4250		0.11	14	78 x 78	78 x 78
115	4500	25	0.06	13	86 x 86	86 x 86
	5000		0.07	13	87 x 87	87 x 87
	5500		0.08	14	89 x 89	89 x 89
	6000		0.10	14	90 x 90	90 x 90
118	6500	28	0.07	14	92 x 92	92 x 92
	7000		0.08	15	96 x 96	96 x 96
	7500		0.09	15	101 x 101	101 x 101
	8000		0.10	16	105 x 105	105 x 105
	8500		0.11	16	109 x 109	109 x 109
120	9000	36	0.06	14	92 x 92	92 x 92
	9500		0.07	15	100 x 100	100 x 100
	10000		0.07	16	107 x 107	107 x 107
	10500		0.08	16	115 x 115	115 x 115
	11000		0.09	17	122 x 122	122 x 122
122	11000	40	0.05	17	122 x 122	122 x 122
	12000		0.06	18	125 x 125	125 x 125
	13000		0.07	18	127 x 127	127 x 127
	14000		0.08	19	130 x 130	130 x 130
	15000		0.09	19	132 x 132	132 x 132
125	14000	44	0.05	18	129 x 129	129 x 129
	15000		0.06	19	132 x 132	132 x 132
	16000		0.07	20	134 x 134	134 x 134
	18000		0.09	21	140 x 140	140 x 140
	20000		0.11	23	145 x 145	145 x 145
130	22000	44	0.13	19	132 x 132	132 x 132
	24000		0.16	21	137 x 137	137 x 137
	26000		0.19	22	141 x 141	141 x 141
	28000		0.22	24	146 x 146	146 x 146
	30000		0.25	25	150 x 150	150 x 150

Discharge Options

5F and 5R Discharge Pressure Drop and Coverage

Model	SCFM	Discharge Size	Air Pressure Drop	Mounting Height	Fixed Coverage	Revolving Coverage
215	9000	36	0.06	16	109 x 109	109 x 109
	9500		0.07	16	111 x 111	111 x 111
	10000		0.07	17	114 x 114	114 x 114
	10500		0.08	17	116 x 116	116 x 116
	11000		0.09	17	118 x 118	118 x 118
	11500		0.10	18	121 x 121	121 x 121
	12000		0.11	18	123 x 123	123 x 123
218	12500	40	0.07	18	123 x 123	123 x 123
	13000		0.07	18	124 x 124	124 x 124
	14000		0.08	18	126 x 126	126 x 126
	15000		0.10	19	128 x 128	128 x 128
	16000		0.11	19	130 x 130	130 x 130
	17000		0.12	19	132 x 132	132 x 132
220	18000	44	0.09	22	135 x 135	135 x 135
	19000		0.10	23	139 x 139	139 x 139
	20000		0.11	23	142 x 142	142 x 142
	21000		0.12	24	146 x 146	146 x 146
	22000		0.14	25	150 x 150	150 x 150
	23000		0.15	25	153 x 153	153 x 153
	24000		0.16	26	157 x 157	157 x 157
	25000		0.18	26	160 x 160	160 x 160
	26000		0.19	27	164 x 164	164 x 164
222	25000	44	0.18	27	160 x 160	160 x 160
	26000		0.19	27	163 x 163	163 x 163
	27000		0.21	28	166 x 166	166 x 166
	28000		0.22	28	169 x 169	169 x 169
	29000		0.24	28	171 x 171	171 x 171
	30000		0.25	29	174 x 174	174 x 174
	31000		0.27	29	177 x 177	177 x 177
225	30000	44	0.25	28	170 x 170	170 x 170
	32000		0.29	29	176 x 176	176 x 176
	34000		0.33	30	184 x 184	184 x 184
	36000		0.36	30	187 x 187	187 x 187
	38000		0.41	31	192 x 192	192 x 192
	40000		0.45	32	198 x 198	198 x 198

Discharge Options

8F and 8R Discharge Pressure Drop and Coverage

Model	SCFM	Discharge Size	Air Pressure Drop	Mounting Height	Fixed Coverage	Revolving Coverage
109	1600	22	0.03	14	24 x 47	47 x 47
	1800		0.04	14	25 x 50	50 x 50
	2000		0.05	15	27 x 53	53 x 53
	2250		0.07	16	28 x 56	56 x 56
	2500		0.08	17	30 x 59	59 x 59
	2750		0.10	17	31 x 63	63 x 63
	3000		0.12	18	33 x 66	66 x 66
112	3250	22	0.14	18	33 x 66	66 x 66
	3500		0.17	19	34 x 68	68 x 68
	3750		0.19	19	36 x 71	71 x 71
	4000		0.22	20	37 x 73	73 x 73
	4250		0.25	20	38 x 75	75 x 75
115	4500	22	0.28	20	39 x 78	78 x 78
	5000		0.34	21	40 x 79	79 x 79
	5500		0.41	22	40 x 80	80 x 80
	6000		0.49	23	41 x 81	81 x 81
118	6500	28	0.17	26	42 x 84	84 x 84
	7000		0.20	27	44 x 87	87 x 87
	7500		0.23	28	45 x 90	90 x 90
	8000		0.26	28	47 x 92	92 x 92
	8500		0.29	29	48 x 95	95 x 95
120	9000	36	0.18	30	49 x 97	97 x 97
	9500		0.20	31	51 x 100	100 x 100
	10000		0.22	33	52 x 104	104 x 104
	10500		0.25	34	54 x 107	107 x 107
	11000		0.27	35	55 x 110	110 x 110
122	11000	40	0.14	35	55 x 110	110 x 110
	12000		0.17	37	56 x 112	112 x 112
	13000		0.20	39	57 x 113	113 x 113
	14000		0.23	41	57 x 115	115 x 115
	15000		0.26	43	58 x 116	116 X 116
125	14000	44	0.14	40	57 x 114	114 x 114
	15000		0.15	43	58 x 117	117 x 117
	16000		0.17	46	60 x 119	119 x 119
	18000		0.22	52	62 x 125	125 x 125
	20000		0.27	58	65 x 130	130 x 130
130	22000	44	0.33	42	59 x 116	116 x 116
	24000		0.39	47	61 x 120	120 x 120
	26000		0.46	51	63 x 124	124 x 124
	28000		0.53	56	64 x 128	128 x 128
	30000		0.61	60	66 x 132	132 x 132

Discharge Options

8F and 8R Discharge Pressure Drop and Coverage

Model	SCFM	Discharge Size	Air Pressure Drop	Mounting Height	Fixed Coverage	Revolving Coverage
215	9000	36	0.18	30	49 x 97	97 x 97
	9500		0.20	31	50 x 100	100 x 100
	10000		0.22	32	51 x 103	103 x 103
	10500		0.25	34	53 x 105	105 x 105
	11000		0.27	35	54 x 107	107 x 107
	11500		0.29	36	55 x 110	110 x 110
	12000		0.32	37	56 x 112	112 x 112
218	12500	40	0.18	38	56 x 112	112 x 112
	13000		0.19	39	56 x 113	113 x 113
	14000		0.22	40	57 x 115	115 x 115
	15000		0.25	41	58 x 116	116 x 116
	16000		0.29	43	59 x 118	118 x 118
	17000		0.33	44	60 x 120	120 x 120
220	18000	44	0.23	54	64 X 126	126 x 126
	19000		0.25	57	65 x 129	129 x 129
	20000		0.28	60	66 x 131	131 x 131
	21000		0.31	62	67 x 134	134 x 134
	22000		0.34	65	69 x 136	136 x 136
	23000		0.37	68	70 x 140	140 x 140
	24000		0.40	71	71 x 141	141 x 141
	25000		0.43	73	72 X 144	144 x 144
	26000		0.47	76	73 X 146	146 X 146
222	25000	44	0.43	75	72 X 144	144 x 144
	26000		0.46	77	73 x 146	146 X 146
	27000		0.50	79	74 x 149	149 x 149
	28000		0.54	81	76 x 151	151 x 151
	29000		0.58	82	77 x 153	153 x 153
	30000		0.62	84	78 x 156	156 x 156
	31000		0.66	86	79 x 158	158 x 158
225	30000	44	0.62	81	75 x 151	151 x 151
	32000		0.70	85	78 x 157	157 x 157
	34000		0.79	92	82 x 165	165 x 165
	36000		0.89	94	85 x 170	170 x 170
	38000		0.99	99	88 x 177	177 x 177
	40000		1.10	103	91 x 183	183 x 183

Performance Table

Four Row DX Coil Data

Model No.	Coil Face Area Qty) FH x FL	SCFM	Face Velocity (FPM)	Cabinet Loss (2) (3)	4 Row DX		
					Total MBH (1)	LAT	Air P.D. (3)
109	1) 21 x 24	1,600	457	0.31	66.75	68.8/66.6	0.39
	1) 24 x 24	1,800	450	0.34	75.32	68.7/66.5	0.38
	1) 24 x 24	2,000	500	0.36	81.98	69.2/66.8	0.45
	1) 27 x 27	2,250	444	0.39	107.40	67.0/64.8	0.37
	1) 27 x 27	2,500	494	0.43	116.44	67.5/65.2	0.45
	1) 27 x 33	2,750	444	0.47	152.08	64.6/62.5	0.37
	1) 27 x 33	3,000	485	0.49	162.03	65.1/62.9	0.43
112	1) 27 x 36	3,250	481	0.35	181.41	64.5/62.4	0.43
	1) 27 x 40	3,500	467	0.36	173.81	66.4/64.3	0.41
	1) 30 x 40	3,750	450	0.38	177.75	67.1/64.9	0.38
	1) 30 x 40	4,000	480	0.40	186.56	67.4/65.1	0.42
	1) 33 x 40	4,250	464	0.42	210.33	66.5/64.3	0.40
115	1) 36 x 38	4,500	474	0.35	256.55	64.1/62.0	0.42
	1) 36 x 42	5,000	476	0.37	249.13	66.4/64.2	0.42
	1) 39 x 43	5,500	472	0.39	283.55	65.9/63.7	0.41
	1) 39 x 47	6,000	471	0.43	324.54	65.0/62.9	0.41
118	1) 42 x 48	6,500	464	0.35	352.37	65.0/62.9	0.40
	1) 45 x 48	7,000	467	0.37	382.79	64.0/62.7	0.41
	1) 45 x 51	7,500	471	0.38	419.74	64.4/62.3	0.41
	1) 48 x 51	8,000	471	0.40	443.59	64.6/62.5	0.41
	1) 48 x 51	8,500	500	0.43	463.18	65.0/62.8	0.45
120	1) 39 x 66	9,000	503	0.34	485.25	65.2/63.0	0.46
	1) 42 x 66	9,500	494	0.35	515.03	65.1/62.9	0.45
	1) 42 x 68	10,000	504	0.36	545.65	65.0/62.8	0.46
	1) 45 x 68	10,500	494	0.37	576.37	64.9/62.7	0.45
	1) 45 x 71	11,000	496	0.38	613.08	64.6/62.4	0.45
122	1) 45 x 71	11,000	496	0.34	613.08	64.6/62.4	0.45
	1) 45 x 78	12,000	492	0.36	689.82	64.0/61.9	0.44
	1) 48 x 79	13,000	494	0.37	749.09	64.0/61.8	0.45
	1) 45 x 85	14,000	494	0.39	819.55	63.6/61.5	0.45
	1) 51 x 85	15,000	498	0.42	876.03	63.7/61.6	0.45
125	2) 30 x 68	14,000	494	0.33	768.50	64.9/62.7	0.45
	2) 30 x 72	15,000	500	0.35	837.88	64.6/62.4	0.45
	2) 30 x 77	16,000	499	0.36	912.86	64.2/62.0	0.45
	2) 33 x 79	18,000	497	0.39	1034.90	64.0/61.9	0.45
	2) 36 x 80	20,000	500	0.43	1151.28	64.0/61.8	0.45
130	2) 36 x 88	22,000	500	0.36	1123.82	66.1/63.8	0.45
	2) 36 x 96	24,000	500	0.38	1283.00	65.3/63.1	0.45
	2) 39 x 96	26,000	500	0.40	1389.92	65.3/63.1	0.45
	2) 39 x 103	28,000	502	0.43	1541.84	64.8/62.6	0.46
	2) 42 x 103	30,000	499	0.46	1654.46	64.8/62.6	0.45

(1) Nominal cooling capacity based on 4 row/8 FPI DX coil with 45° suction temperature and 95°/77° entering air temperature.

(2) Cabinet Loss includes loss for centrifugal blower plenum effect and diffuser(s). This factor must be added to all units.

(3) Calculating Cooling Coil Section Pressure Drop:

A. Cabinet Loss ___" W.C.

B. Coil Air P.D. ___" W.C.

C. Downturn Plenum (if applicable) 0.10" W.C.

Cooling Coil Section Pressure Drop ___" W.C.

Refer to Blower HP Charts for Total External Static pressure available.

Performance Table

Four Row DX Coil Data

Model No.	Coil Face Area Qty) FH x FL	SCFM	Face Velocity (FPM)	Cabinet Loss (2) (3)	4 Row DX		
					Total MBH (1)	LAT	Air P.D. (3)
215	1) 42 x 62	9,000	498	0.35	472.57	65.6/63.4	0.45
	1) 42 x 65	9,500	501	0.36	509.32	65.3/63.1	0.46
	1) 42 x 68	10,000	504	0.37	545.65	65.0/62.8	0.46
	1) 42 x 72	10,500	500	0.38	586.52	64.6/62.4	0.45
	1) 42 x 76	11,000	496	0.39	626.29	64.2/62.0	0.45
	1) 42 x 79	11,500	499	0.41	660.35	64.0/61.9	0.45
	1) 42 x 80	12,000	514	0.43	684.48	64.2/62.0	0.48
218	1) 45 x 80	12,500	500	0.34	719.55	64.0/61.8	0.45
	1) 45 x 83	13,000	501	0.35	753.89	63.8/61.7	0.46
	1) 45 x 90	14,000	498	0.36	724.49	65.9/63.6	0.45
	1) 48 x 90	15,000	500	0.38	775.31	65.9/63.6	0.45
	1) 51 x 93	16,000	486	0.40	847.85	65.4/63.3	0.43
	1) 51 x 93	17,000	516	0.43	886.57	65.8/63.5	0.48
220	2) 30 x 86	18,000	502	0.34	903.82	66.4/64.1	0.46
	2) 30 x 91	19,000	501	0.35	987.60	65.8/63.6	0.46
	2) 30 x 96	20,000	500	0.36	1069.16	65.3/63.1	0.45
	2) 30 x 101	21,000	499	0.37	1149.16	64.9/62.7	0.45
	2) 30 x 106	22,000	498	0.38	1227.38	64.6/62.4	0.45
	2) 30 x 111	23,000	497	0.39	1304.04	64.3/62.1	0.45
	2) 30 x 111	24,000	519	0.41	1342.96	64.6/62.3	0.48
	2) 30 x 120	25,000	500	0.43	1446.28	63.9/61.8	0.45
	2) 30 x 125	26,000	499	0.44	1519.00	63.7/61.6	0.45
222	2) 30 x 120	25,000	500	0.36	1446.28	63.9/61.8	0.45
	2) 30 x 125	26,000	499	0.37	1519.00	63.7/61.6	0.45
	2) 30 x 130	27,000	498	0.38	1590.44	63.5/61.4	0.45
	2) 30 x 135	28,000	498	0.39	1537.80	64.9/62.7	0.45
	2) 30 x 141	29,000	494	0.41	1624.16	64.5/62.3	0.45
	2) 31 1/2 x 139	30,000	493	0.42	1671.42	64.6/62.4	0.44
	2) 31 1/2 x 139	31,000	510	0.44	1701.50	64.8/62.6	0.47
225	2) 39 x 111	30,000	499	0.35	1699.20	64.3/62.1	0.45
	2) 39 x 118	32,000	501	0.36	1842.66	64.0/61.8	0.46
	2) 39 x 125	34,000	502	0.37	1982.60	63.7/61.6	0.46
	2) 39 x 133	36,000	500	0.38	2127.22	63.5/61.4	0.45
	2) 39 x 140	38,000	501	0.41	2113.16	64.6/62.5	0.46
	2) 39 x 147	40,000	502	0.43	2260.98	64.3/62.2	0.46
	2) 39 x 155	42,000	500	0.45	2415.24	64.0/61.9	0.46
	2) 42 x 151	44,000	500	0.47	2512.38	64.1/62.0	0.45
	2) 42 x 158	46,000	499	0.48	2660.82	63.9/61.8	0.45
230	2) 42 x 151	44,000	500	0.36	2512.38	64.1/62.0	0.45
	2) 42 x 166	48,000	496	0.38	2815.64	63.6/61.5	0.45
	2) 42 x 166	50,000	516	0.39	2894.58	63.9/61.7	0.48

(1) Nominal cooling capacity based on 4 row/8 FPI DX coil with 45° suction temperature and 95°/77° entering air temperature.

(2) Cabinet Loss includes loss for centrifugal blower plenum effect and diffuser(s). This factor must be added to all units.

(3) Calculating Cooling Coil Section Pressure Drop:

A. Cabinet Loss ___" W.C.

B. Coil Air P.D. ___" W.C.

C. Downturn Plenum (if applicable) 0.10" W.C.

Cooling Coil Section Pressure Drop ___" W.C.

Refer to Blower HP Charts for Total External Static pressure available.

Performance Table

Six Row DX Coil Data

Model No.	Coil Face Area Qty) FH x FL	SCFM	Face Velocity (FPM)	Cabinet Loss (2) (3)	6 Row DX		
					Total MBH (1)	LAT	Air P.D. (3)
109	1) 21 x 24	1,600	457	0.31	107.03	59.6/58.8	0.59
	1) 24 x 24	1,800	450	0.34	121.02	59.5/58.7	0.57
	1) 24 x 24	2,000	500	0.36	131.23	60.1/59.2	0.68
	1) 27 x 27	2,250	444	0.39	157.03	58.6/57.8	0.56
	1) 27 x 27	2,500	494	0.43	170.23	59.3/58.4	0.67
	1) 27 x 33	2,750	444	0.47	183.15	59.7/58.9	0.56
	1) 27 x 33	3,000	485	0.49	196.04	60.2/59.3	0.65
112	1) 27 x 36	3,250	481	0.35	219.51	59.5/58.6	0.64
	1) 27 x 40	3,500	467	0.36	244.97	58.6/57.8	0.61
	1) 30 x 40	3,750	450	0.38	262.28	58.6/57.8	0.57
	1) 30 x 40	4,000	480	0.40	275.82	59.0/58.1	0.64
	1) 33 x 40	4,250	464	0.42	297.36	58.6/57.6	0.60
115	1) 36 x 38	4,500	474	0.35	306.73	59.2/58.4	0.61
	1) 36 x 42	5,000	476	0.37	349.25	58.6/57.8	0.63
	1) 39 x 43	5,500	472	0.39	389.13	58.3/57.5	0.62
	1) 39 x 47	6,000	471	0.43	401.25	59.7/58.8	0.62
118	1) 42 x 48	6,500	464	0.35	438.69	59.4/58.6	0.60
	1) 45 x 48	7,000	467	0.37	471.96	59.5/58.6	0.61
	1) 45 x 51	7,500	471	0.38	515.33	59.0/58.2	0.62
	1) 48 x 51	8,000	471	0.40	549.69	59.0/58.2	0.62
	1) 48 x 51	8,500	500	0.43	576.37	59.4/58.5	0.68
120	1) 39 x 66	9,000	503	0.34	579.05	60.6/59.7	0.69
	1) 42 x 66	9,500	494	0.35	613.63	60.5/59.6	0.67
	1) 42 x 68	10,000	504	0.36	651.95	60.3/59.4	0.69
	1) 45 x 68	10,500	494	0.37	687.35	60.2/59.3	0.67
	1) 45 x 71	11,000	496	0.38	732.48	59.8/58.9	0.67
122	1) 45 x 71	11,000	496	0.34	732.48	59.8/58.9	0.67
	1) 45 x 78	12,000	492	0.36	825.31	59.0/58.2	0.66
	1) 48 x 79	13,000	494	0.37	896.82	59.0/58.1	0.67
	1) 45 x 85	14,000	494	0.39	983.19	58.5/57.7	0.67
	1) 51 x 85	15,000	498	0.42	1051.45	58.6/57.7	0.68
125	2) 30 x 68	14,000	494	0.33	916.46	60.2/59.3	0.67
	2) 30 x 72	15,000	500	0.35	1001.52	59.7/58.9	0.68
	2) 30 x 77	16,000	499	0.36	1093.12	59.2/58.3	0.68
	2) 33 x 79	18,000	497	0.39	1239.56	59.0/58.2	0.68
	2) 36 x 80	20,000	500	0.43	1381.78	59.0/58.1	0.68
130	2) 36 x 88	22,000	500	0.36	1552.12	58.4/57.6	0.68
	2) 36 x 96	24,000	500	0.38	1716.36	58.1/57.2	0.68
	2) 39 x 96	26,000	500	0.40	1859.40	58.1/57.2	0.68
	2) 39 x 103	28,000	502	0.43	1846.80	60.0/59.1	0.69
	2) 42 x 103	30,000	499	0.46	1837.26	61.6/60.7	0.69

(1) Nominal cooling capacity based on 6 row/8 FPI DX coil with 45° suction temperature and 95°/77° entering air temperature.

(2) Cabinet Loss includes loss for centrifugal blower plenum effect and diffuser(s). This factor must be added to all units.

(3) Calculating Cooling Coil Section Pressure Drop:

A. Cabinet Loss ___" W.C.

B. Coil Air P.D. ___" W.C.

C. Downturn Plenum (if applicable) 0.10" W.C.

Cooling Coil Section Pressure Drop ___" W.C.

Refer to Blower HP Charts for Total External Static pressure available.

Performance Table

Six Row DX Coil Data

Model No.	Coil Face Area Qty) FH x FL	SCFM	Face Velocity (FPM)	Cabinet Loss (2) (3)	6 Row DX		
					Total MBH (1)	LAT	Air P.D. (3)
215	1) 42 x 62	9,000	498	0.35	549.69	61.7/60.7	0.68
	1) 42 x 65	9,500	501	0.36	607.31	60.7/59.8	0.69
	1) 42 x 68	10,000	504	0.37	651.95	60.3/59.4	0.69
	1) 42 x 72	10,500	500	0.38	701.06	59.7/58.9	0.68
	1) 42 x 76	11,000	496	0.39	749.29	59.3/58.4	0.67
	1) 42 x 79	11,500	499	0.41	791.24	59.0/58.2	0.68
	1) 42 x 80	12,000	514	0.43	822.89	59.1/58.3	0.72
218	1) 45 x 80	12,500	500	0.34	862.65	59.0/58.1	0.68
	1) 45 x 83	13,000	501	0.35	905.04	58.8/57.9	0.69
	1) 45 x 90	14,000	498	0.36	993.00	58.3/57.4	0.68
	1) 48 x 90	15,000	500	0.38	1062.17	58.3/57.5	0.68
	1) 51 x 93	16,000	486	0.40	1146.98	58.0/57.2	0.65
	1) 51 x 93	17,000	516	0.43	1201.00	58.4/57.5	0.72
220	2) 30 x 86	18,000	502	0.34	1262.58	58.6/57.7	0.69
	2) 30 x 91	19,000	501	0.35	1347.22	58.3/57.5	0.69
	2) 30 x 96	20,000	500	0.36	1430.30	58.1/57.2	0.68
		21,000		0.37	CF		
		22,000		0.38			
		23,000		0.39			
		24,000		0.41			
		25,000		0.43			
		26,000		0.44			
222		25,000		0.36	CF		
		26,000		0.37			
		27,000		0.38			
		28,000		0.39			
		29,000		0.41			
		30,000		0.42			
		31,000		0.44			
225		30,000		0.35	CF		
		32,000		0.36			
		34,000		0.37			
		36,000		0.38			
		38,000		0.41			
		40,000		0.43			
		42,000		0.45			
		44,000		0.47			
		46,000		0.48			
230		44,000		0.36	CF		
		48,000		0.38			
		50,000		0.39			

(1) Nominal cooling capacity based on 6 row/8 FPI DX coil with 45° suction temperature and 95°/77° entering air temperature.

(2) Cabinet Loss includes loss for centrifugal blower plenum effect and diffuser(s). This factor must be added to all units.

(3) Calculating Cooling Coil Section Pressure Drop:

A. Cabinet Loss ___'' W.C.

B. Coil Air P.D. ___'' W.C.

C. Downturn Plenum (if applicable) 0.10'' W.C.

Cooling Coil Section Pressure Drop ___'' W.C.

Refer to Blower HP Charts for Total External Static pressure available.

Performance Table

Four Row CW Coil Data

Model No.	Coil Face Area Qty) FH x FL	SCFM	Face Velocity (FPM)	Cabinet Loss (2) (3)	4 Row CW				
					Total MBH (1)	LAT	Air P.D. (3)	GPM	FPD (ft)
109	1) 21 x 24	1,600	457	0.31	83.35	65.6/63.5	0.39	16.7	3.28
	1) 24 x 24	1,800	450	0.34	94.20	65.5/63.5	0.38	18.8	3.20
	1) 24 x 24	2,000	500	0.36	100.06	66.4/64.1	0.45	20.0	3.57
	1) 27 x 27	2,250	444	0.39	121.61	65.0/62.9	0.37	24.3	4.23
	1) 27 x 27	2,500	494	0.43	129.92	65.8/63.6	0.45	26.0	4.76
	1) 27 x 33	2,750	444	0.47	157.67	63.9/61.9	0.37	31.5	7.11
	1) 27 x 33	3,000	485	0.49	165.98	64.7/62.5	0.43	33.0	7.72
112	1) 27 x 36	3,250	481	0.35	150.67	67.5/65.2	0.46	30.0	1.25
	1) 27 x 40	3,500	467	0.36	170.61	66.7/64.5	0.41	34.0	1.61
	1) 30 x 40	3,750	450	0.38	185.61	66.4/64.3	0.38	37.0	1.55
	1) 30 x 40	4,000	480	0.40	192.87	66.9/64.7	0.42	38.5	1.67
	1) 33 x 40	4,250	464	0.42	207.91	66.7/64.5	0.40	41.5	1.61
115	1) 36 x 38	4,500	474	0.35	214.78	67.1/64.8	0.42	43.0	1.44
	1) 36 x 42	5,000	476	0.37	245.65	66.6/64.4	0.42	49.0	1.88
	1) 39 x 43	5,500	472	0.39	273.01	66.5/64.3	0.41	54.4	1.98
	1) 39 x 47	6,000	471	0.43	305.26	66.1/63.9	0.41	61.0	2.50
118	1) 42 x 48	6,500	464	0.35	334.88	65.8/63.7	0.40	67.0	2.61
	1) 45 x 48	7,000	467	0.37	359.91	65.9/63.7	0.41	72.0	2.62
	1) 45 x 51	7,500	471	0.38	390.67	65.7/63.5	0.41	78.0	3.09
	1) 48 x 51	8,000	471	0.40	416.40	65.7/63.5	0.41	83.0	3.07
	1) 51 x 51	8,500	471	0.43	442.19	65.7/63.5	0.41	88.0	3.06
120	1) 39 x 66	9,000	503	0.34	488.31	65.1/62.9	0.46	98.0	6.58
	1) 42 x 66	9,500	494	0.35	517.72	65.0/62.8	0.45	103.0	6.31
	1) 42 x 68	10,000	504	0.36	551.01	64.8/62.6	0.46	110.0	7.17
	1) 45 x 68	10,500	494	0.37	583.47	64.6/62.5	0.45	117.0	7.08
	1) 45 x 71	11,000	496	0.38	614.90	64.5/62.4	0.45	123.0	7.88
122	1) 45 x 71	11,000	496	0.34	614.90	64.5/62.4	0.45	123.0	7.88
	1) 45 x 78	12,000	492	0.36	683.97	64.2/62.0	0.44	137.0	9.94
	1) 48 x 79	13,000	494	0.37	741.07	64.2/62.0	0.45	148.0	10.22
	1) 48 x 85	14,000	494	0.39	808.06	63.9/61.8	0.45	162.0	12.40
	1) 51 x 85	15,000	498	0.42	863.09	64.0/61.9	0.45	173.0	12.52
125	2) 30 x 68	14,000	494	0.33	691.30	66.6/64.3	0.45	138.0	2.17
	2) 30 x 72	15,000	500	0.35	750.46	66.4/64.1	0.45	150.0	2.57
	2) 30 x 77	16,000	499	0.36	814.74	66.1/63.9	0.45	162.0	3.02
	2) 33 x 79	18,000	497	0.39	1012.98	64.4/62.3	0.46	202.0	3.82
	2) 36 x 80	20,000	500	0.43	1127.12	64.4/62.2	0.46	226.0	3.49
130	2) 36 x 88	22,000	500	0.36	1264.46	64.0/61.9	0.46	252.0	5.06
	2) 36 x 96	24,000	500	0.38	1405.18	63.0/61.5	0.46	280.0	6.34
	2) 39 x 96	26,000	500	0.40	1523.18	63.7/61.5	0.46	304.0	6.36
	2) 39 x 103	28,000	502	0.43	1658.30	63.4/61.3	0.47	330.0	7.59
	2) 42 x 103	30,000	499	0.46	1782.18	63.4/61.3	0.46	356.0	7.62

(1) Nominal cooling capacity based on 4 row/8 FPI CW coil with 45°EWT, 55° LWT, and 95°/77° entering air temperature.

(2) Cabinet Loss includes loss for centrifugal blower plenum effect and diffuser(s). This factor must be added to all units.

(3) Calculating Cooling Coil Section Pressure Drop:

A. Cabinet Loss ___'' W.C.

B. Coil Air P.D. ___'' W.C.

C. Downturn Plenum (if applicable) 0.10'' W.C.

Cooling Coil Section Pressure Drop ___'' W.C.

Refer to Blower HP Charts for Total External Static pressure available.

Performance Table

Four Row CW Coil Data

Model No.	Coil Face Area Qty) FH x FL	SCFM	Face Velocity (FPM)	Cabinet Loss (2) (3)	4 Row CW				
					Total MBH (1)	LAT	Air P.D. (3)	GPM	FPD (ft)
215	1) 42 x 62	9,000	492	0.35	481.50	65.3/63.1	0.45	96.0	5.43
	1) 42 x 65	9,500	501	0.36	514.30	65.1/62.9	0.46	103.0	6.27
	1) 42 x 68	10,000	504	0.37	490.19	66.8/64.4	0.46	98.0	2.22
	1) 42 x 72	10,500	500	0.38	525.33	66.4/64.1	0.45	105.0	2.57
	1) 42 x 76	11,000	496	0.39	560.49	66.1/63.9	0.45	112.0	2.94
	1) 42 x 79	11,500	499	0.41	590.73	66.0/63.7	0.45	118.0	3.28
	1) 42 x 80	12,000	514	0.43	611.02	66.2/63.9	0.48	122.0	3.49
218	1) 45 x 80	12,500	500	0.34	644.41	65.9/63.7	0.45	129.0	3.41
	1) 45 x 83	13,000	501	0.35	675.48	65.8/63.6	0.46	135.0	3.76
	1) 45 x 90	14,000	498	0.36	742.98	65.5/63.2	0.45	148.0	4.58
	1) 48 x 90	15,000	500	0.38	794.23	65.5/63.3	0.45	158.0	4.58
	1) 51 x 93	16,000	486	0.40	865.12	65.1/62.9	0.43	173.0	4.90
	1) 51 x 93	17,000	516	0.43	895.44	65.6/63.4	0.48	178.0	5.16
220	2) 30 x 86	18,000	502	0.34	869.42	67.0/64.7	0.46	174.0	1.82
	2) 30 x 91	19,000	501	0.35	933.28	66.7/64.4	0.46	186.0	2.10
	2) 30 x 96	20,000	500	0.36	1000.62	66.4/64.1	0.45	200.0	2.44
	2) 30 x 101	21,000	499	0.37	1064.86	66.2/63.9	0.45	212.0	2.95
	2) 30 x 106	22,000	498	0.38	1132.42	66.0/63.7	0.45	226.0	3.16
	2) 30 x 111	23,000	497	0.39	1200.04	65.7/63.5	0.45	240.0	3.59
	2) 30 x 116	24,000	497	0.41	1264.74	65.6/63.3	0.45	252.0	3.99
	2) 30 x 120	25,000	500	0.43	1324.70	65.5/63.3	0.45	264.0	3.67
	2) 30 x 125	26,000	499	0.44	1395.50	65.3/63.0	0.45	280.0	4.98
222	2) 30 x 120	25,000	500	0.36	1324.70	65.5/63.3	0.45	264.0	3.67
	2) 30 x 125	26,000	499	0.37	1395.50	65.3/63.0	0.45	280.0	4.98
	2) 30 x 130	27,000	498	0.38	1457.68	65.2/63.0	0.45	290.0	5.39
	2) 30 x 135	28,000	498	0.39	1549.50	64.7/62.5	0.45	310.0	6.18
	2) 30 x 141	29,000	494	0.41	1621.16	64.5/62.4	0.45	324.0	6.83
	2) 31½ x 139	30,000	493	0.42	1675.10	64.5/62.4	0.44	336.0	6.63
	2) 31½ x 141	31,000	503	0.44	1718.74	64.7/62.5	0.46	342.0	4.53
225	2) 39 x 111	30,000	499	0.35	1559.20	65.8/63.6	0.45	310.0	3.55
	2) 39 x 118	32,000	501	0.36	1685.38	65.6/63.3	0.46	336.0	4.21
	2) 39 x 125	34,000	502	0.37	1815.88	65.4/63.1	0.46	362.0	4.93
	2) 39 x 133	36,000	500	0.38	1956.82	65.0/62.8	0.45	390.0	5.79
	2) 39 x 140	38,000	501	0.41	2107.46	64.7/62.5	0.46	420.0	6.77
	2) 39 x 147	40,000	502	0.43	2236.58	64.5/62.4	0.46	446.0	7.71
	2) 39 x 155	42,000	500	0.45	2377.04	64.3/62.1	0.46	476.0	8.88
	2) 42 x 151	44,000	500	0.47	2482.12	64.4/62.2	0.45	498.0	8.33
	2) 42 x 158	46,000	499	0.48	2614.64	64.2/62.1	0.45	499.0	9.33
230	2) 42 x 151	44,000	500	0.36	2482.12	64.4/62.2	0.45	498.0	8.33
	2) 42 x 166	48,000	496	0.38	2753.88	64.0/61.9	0.45	550.0	10.42
	2) 42 x 166	50,000	516	0.39	2813.78	64.5/62.2	0.48	562.0	10.83

(1) Nominal cooling capacity based on 4 row/8 FPI CW coil with 45° EWT, 55° LWT, and 95°/77° entering air temperature.

(2) Cabinet Loss includes loss for centrifugal blower plenum effect and diffuser(s). This factor must be added to all units.

(3) Calculating Cooling Coil Section Pressure Drop:

A. Cabinet Loss ___'' W.C.

B. Coil Air P.D. ___'' W.C.

C. Downturn Plenum (if applicable) 0.10'' W.C.

Cooling Coil Section Pressure Drop ___'' W.C.

Refer to Blower HP Charts for Total External Static pressure available.

Performance Table

Six Row CW Coil Data

Model No.	Coil Face Area Qty) FH x FL	SCFM	Face Velocity (FPM)	Cabinet Loss (2) (3)	6 Row CW				
					Total MBH (1)	LAT	Air P.D. (3)	GPM	FPD (ft)
109	1) 21 x 24	1,600	457	0.31	95.27	62.1/61.2	0.59	19.0	1.00
	1) 24 x 24	1,800	450	0.34	107.95	61.9/61.1	0.57	21.6	0.99
	1) 24 x 24	2,000	500	0.36	115.38	62.8/61.8	0.68	26.0	1.11
	1) 27 x 27	2,250	444	0.39	140.26	61.2/60.3	0.56	28.0	1.31
	1) 27 x 27	2,500	494	0.43	150.02	62.0/61.1	0.67	30.0	1.48
	1) 27 x 33	2,750	444	0.47	180.59	60.0/59.2	0.56	36.0	2.17
	1) 27 x 33	3,000	485	0.49	191.14	60.8/59.9	0.65	68.0	2.39
112	1) 27 x 36	3,250	481	0.35	212.50	60.2/59.3	0.64	42.6	3.01
	1) 27 x 40	3,500	467	0.36	235.74	59.5/58.7	0.61	47.0	3.71
	1) 30 x 40	3,750	450	0.38	255.30	59.2/58.4	0.57	51.0	3.56
	1) 30 x 40	4,000	480	0.40	267.48	59.7/58.8	0.64	53.5	3.87
	1) 33 x 40	4,250	464	0.42	286.55	59.5/58.6	0.60	57.0	3.66
115	1) 36 x 38	4,500	474	0.35	299.17	59.8/59.0	0.62	60.0	3.37
	1) 36 x 42	5,000	476	0.37	338.18	59.4/58.6	0.63	67.5	4.30
	1) 39 x 43	5,500	472	0.39	374.89	59.2/58.4	0.62	75.0	4.54
	1) 39 x 47	6,000	471	0.43	415.61	58.8/58.0	0.62	83.0	5.62
118	1) 42 x 48	6,500	464	0.35	454.29	58.6/57.8	0.60	91.0	5.84
	1) 45 x 48	7,000	467	0.37	487.50	58.7/57.9	0.61	97.0	5.79
	1) 45 x 51	7,500	471	0.38	528.11	58.4/57.6	0.62	105.0	6.82
	1) 48 x 51	8,000	471	0.40	568.41	58.2/57.4	0.62	114.0	7.04
	1) 51 x 51	8,500	471	0.43	601.36	58.3/57.5	0.62	120.0	6.92
120	1) 39 x 66	9,000	503	0.34	603.74	59.6/58.8	0.69	120.0	4.59
	1) 42 x 66	9,500	494	0.35	642.20	59.5/58.6	0.67	128.0	4.52
	1) 42 x 68	10,000	504	0.36	675.44	59.5/58.6	0.69	135.0	5.03
	1) 45 x 68	10,500	494	0.37	713.59	59.3/58.5	0.67	143.0	4.93
	1) 45 x 71	11,000	496	0.38	751.54	59.2/58.3	0.67	150.0	5.46
122	1) 45 x 71	11,000	496	0.34	751.54	59.2/58.3	0.67	150.0	5.46
	1) 45 x 78	12,000	492	0.36	842.59	58.5/57.7	0.66	168.0	6.96
	1) 48 x 79	13,000	494	0.37	913.52	58.5/57.7	0.67	182.0	7.19
	1) 48 x 85	14,000	494	0.39	993.95	58.3/57.4	0.67	198.0	8.64
	1) 51 x 85	15,000	498	0.42	1062.76	58.3/57.5	0.68	212.0	8.75
125	2) 30 x 68	14,000	494	0.33	951.70	59.3/58.5	0.67	190.0	4.90
	2) 30 x 72	15,000	500	0.35	1023.92	59.2/58.4	0.68	204.0	3.79
	2) 30 x 77	16,000	499	0.36	1105.24	58.9/58.1	0.68	220.0	6.70
	2) 33 x 79	18,000	497	0.39	1331.98	57.2/56.4	0.69	266.0	8.01
	2) 36 x 80	20,000	500	0.43	1480.84	57.2/56.4	0.70	296.0	8.35
130	2) 36 x 88	22,000	500	0.36	1564.46	58.2/57.4	0.68	312.0	9.58
	2) 36 x 96	24,000	500	0.38	1821.12	56.5/55.7	0.70	364.0	13.12
	2) 39 x 96	26,000	500	0.40	1876.34	57.9/57.0	0.68	376.0	12.06
	2) 39 x 103	28,000	502	0.43	2036.22	57.7/56.8	0.69	408.0	14.44
	2) 42 x 103	30,000	499	0.46	2297.58	56.3/55.5	0.69	460.0	15.66

(1) Nominal cooling capacity based on 6 row/8 FPI CW coil with 45°EWT, 55° LWT, and 95°/77° entering air temperature.

(2) Cabinet Loss includes loss for centrifugal blower plenum effect and diffuser(s). This factor must be added to all units.

(3) Calculating Cooling Coil Section Pressure Drop:

A. Cabinet Loss ___'' W.C.

B. Coil Air P.D. ___'' W.C.

C. Downturn Plenum (if applicable) 0.10'' W.C.

Cooling Coil Section Pressure Drop ___'' W.C.

Refer to Blower HP Charts for Total External Static pressure available.

Performance Table

Six Row CW Coil Data

Model No.	Coil Face Area Qty) FH x FL	SCFM	Face Velocity (FPM)	Cabinet Loss (2) (3)	6 Row CW				
					Total MBH (1)	LAT	Air P.D. (3)	GPM	FPD (ft)
215	1) 42 x 62	9,000	498	0.35	598.85	59.8/58.9	0.68	119.0	3.87
	1) 42 x 65	9,500	501	0.36	637.10	59.6/58.8	0.69	127.0	4.43
	1) 42 x 68	10,000	504	0.37	675.44	59.5/58.6	0.69	135.0	5.03
	1) 42 x 72	10,500	500	0.38	718.19	59.2/58.3	0.68	144.0	5.78
	1) 42 x 76	11,000	496	0.39	760.42	58.9/58.1	0.67	152.0	6.51
	1) 42 x 79	11,500	499	0.41	801.86	58.7/57.9	0.68	160.0	7.25
	1) 42 x 80	12,000	514	0.43	837.96	58.7/57.8	0.72	168.0	7.95
218	1) 45 x 80	12,500	500	0.34	879.17	58.5/57.7	0.68	175.0	7.56
	1) 45 x 83	13,000	501	0.35	916.59	58.5/57.6	0.69	183.0	8.33
	1) 45 x 90	14,000	498	0.36	1002.10	58.1/57.2	0.68	200.0	10.12
	1) 48 x 90	15,000	500	0.38	1073.22	58.1/57.2	0.68	215.0	10.27
	1) 51 x 93	16,000	486	0.40	1155.22	57.8/57.0	0.65	230.0	10.56
	1) 51 x 93	17,000	516	0.43	1207.03	58.3/57.4	0.72	240.0	11.38
220	2) 30 x 86	18,000	502	0.34	1276.26	58.3/57.5	0.69	256.0	9.22
	2) 30 x 91	19,000	501	0.35	1357.80	58.1/57.3	0.69	270.0	10.40
	2) 30 x 96	20,000	500	0.36	1442.08	57.9/57.0	0.68	288.0	11.97
	2) 30 x 101	21,000	499	0.37	1526.44	57.7/56.8	0.68	306.0	13.67
	2) 30 x 106	22,000	498	0.38	1605.04	57.6/56.7	0.68	322.0	15.33
		23,000		0.39	CF				
		24,000		0.41					
		25,000		0.43					
		26,000		0.44					
222		25,000		0.36	CF				
		26,000		0.37					
		27,000		0.38					
		28,000		0.39					
		29,000		0.41					
		30,000		0.42					
		31,000		0.44					
225		30,000		0.35					
		32,000		0.36					
		34,000		0.37					
		36,000		0.38	CF				
		38,000		0.41					
		40,000		0.43					
		42,000		0.45					
		44,000		0.47					
		46,000		0.48					
230		44,000		0.36	CF				
		48,000		0.38					
		50,000		0.39					

(1) Nominal cooling capacity based on 6 row/8 FPI CW coil with 45° EWT, 55° LWT, and 95°/77° entering air temperature.

(2) Cabinet Loss includes loss for centrifugal blower plenum effect and diffuser(s). This factor must be added to all units.

(3) Calculating Cooling Coil Section Pressure Drop:

A. Cabinet Loss ___'' W.C.

B. Coil Air P.D. ___'' W.C.

C. Downturn Plenum (if applicable) 0.10'' W.C.

Cooling Coil Section Pressure Drop ___'' W.C.

Refer to Blower HP Charts for Total External Static pressure available.

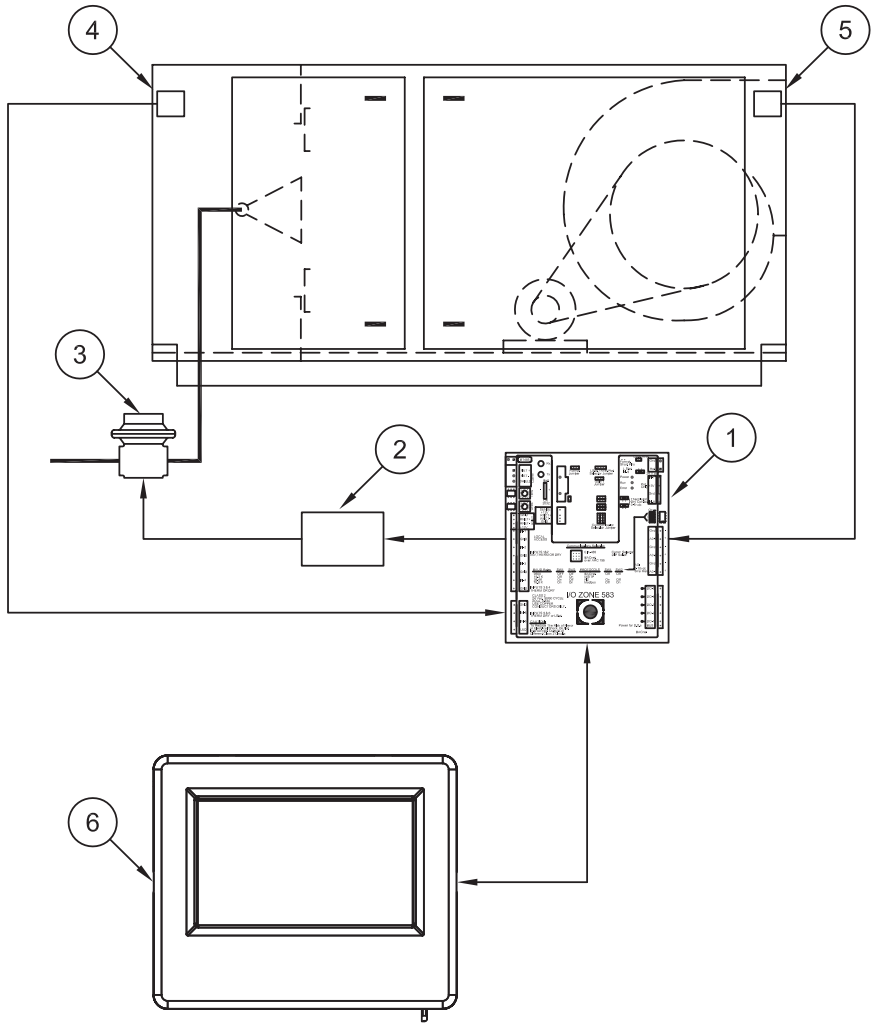
MDT Touch Control System

C000775

Application:	Includes:
Modulating Discharge Temperature Control with Equipment Touch Touchscreen controller allowing after hours unit enable, discharge setpoint adjustment, operating feedback, monitoring of alarm status and digital temperature readout.	Discharge air sensor ⑤ mounted in unit discharge with remote mounted Equipment Touch Touchscreen controller ⑥ to set discharge temp, operating schedules, and optional damper control setpoints. Service information, operating feedback and alarm status can also be monitored.

COMPONENT I.D.

1. Unit DDC Controller
2. Signal Conditioner
3. Modulating Gas Valve
4. Inlet Air Sensor
5. Discharge Air Sensor
6. Equipment Touch Touchscreen Interface



Discharge Temperature SET Here

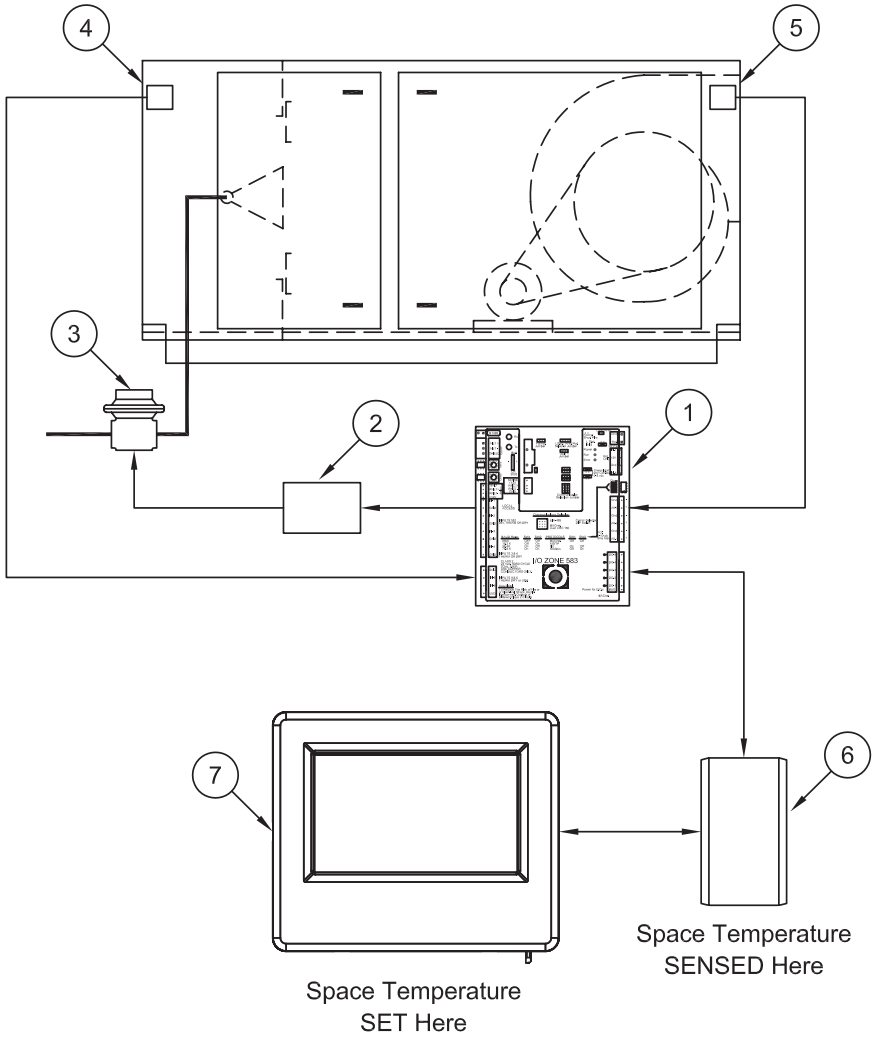
MRT Touch Control System

C000774

Application:	Includes:
Modulating Room Temperature Control with Equipment Touch Touchscreen controller allowing after hours unit enable, room setpoint adjustment, operating feedback, monitoring of alarm status and digital temperature readout with ZS-Standard room sensor.	Discharge air sensor ⑤ mounted in unit discharge with remote mounted Equipment Touch Touchscreen controller ⑦ to set space temp, operating schedules, and optional damper control setpoints. Service information, operating feedback and alarm status can also be monitored. Also includes a ZS-Standard room sensor ⑥.

COMPONENT I.D.

1. Unit DDC Controller
2. Signal Conditioner
3. Modulating Gas Valve
4. Inlet Air Sensor
5. Discharge Air Sensor
6. Room Thermostat
7. Equipment Touch Touchscreen Interface



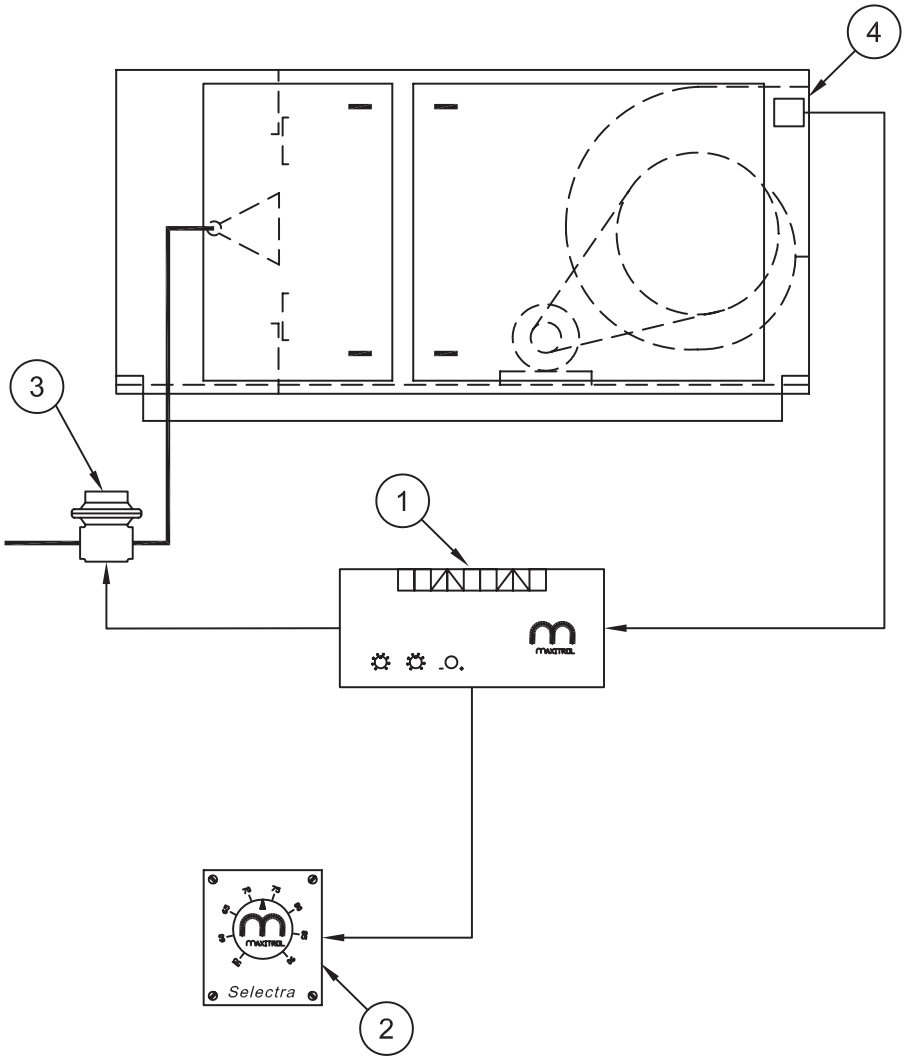
System 14

C000779

Application:	Includes:
Non-DDC Modulating Discharge Temperature Control	System 14 Amplifier ① compares signals from Discharge Air Sensor ④ mounted in unit discharge and Remote Temperature Selector ② mounted in space. Modulating Gas Valve ③ receives signal from amplifier and adjusts gas pressure to maintain constant discharge air temperature.

COMPONENT I.D.

1. Amplifier (System14)
2. Remote Temperature Selector
3. Modulating Gas Valve
4. Discharge Air Sensor



Discharge Temperature
SET Here

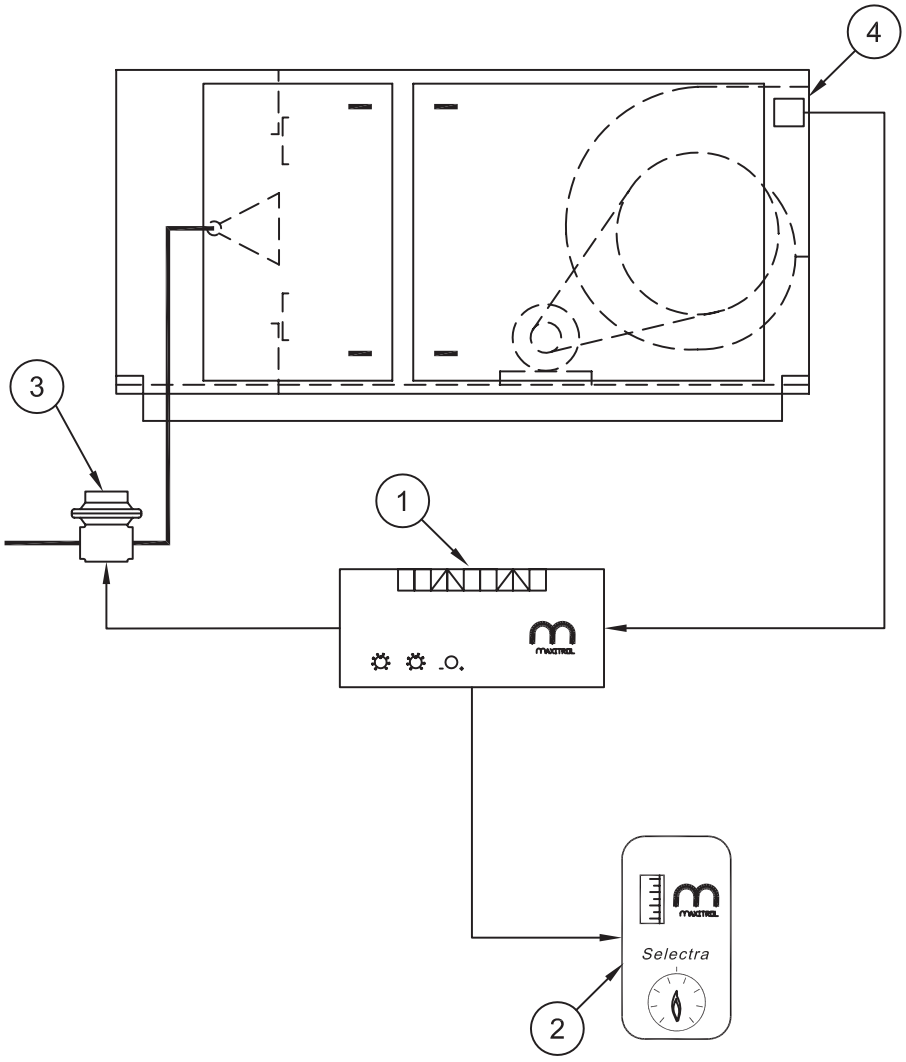
System 44

C000780

Application:	Includes:
Non-DDC Modulating Room Temperature Control	System 44 Amplifier ① compares signals from Discharge Air Sensor ④ mounted in unit discharge and Remote Room Thermostat ② mounted in space and sends signal to Modulating Gas Valve ③ to adjust gas pressure for desired space temperature while maintaining preset minimum and maximum discharge air temperature settings.

COMPONENT I.D.

1. Amplifier (System44)
2. Room Thermostat
3. Modulating Gas Valve
4. Discharge Air Sensor



Space Temperature
SENSED & SET Here

Electrical Data and Sequence of Operation

Amp Draw Table

ITEM	SOURCE		MOTOR HORSEPOWER							
		Amps	1	1 1/2	2	3	5	7 1/2	10	15
A	Blower Motor	AMPS for 208V 3 Ph.	4.6	6.6	7.5	10.6	16.7	24.2	30.8	46.2
		AMPS for 230V 3 Ph.	4.2	6.0	6.8	9.6	15.3	22.0	28.8	42.0
		AMPS for 460V 3 Ph.	2.1	3.0	3.4	4.8	7.6	11.0	14.4	21.0
		AMPS for 575V 3 Ph.	1.7	2.4	2.7	3.9	6.1	9.0	11.5	17.0
			MOTOR HORSEPOWER							
		Amps	20	25	30	40	50	60	75	100
		AMPS for 208V 3 Ph.	59.4	74.8	88.0	114.0	143.0	169.0	211.0	273.0
		AMPS for 230V 3 Ph.	54.0	68.0	80.0	104.0	130.0	154.0	192.0	248.0
		AMPS for 460V 3 Ph.	27.0	34.0	40.0	52.0	65.0	77.0	96.0	124.0
		AMPS for 575V 3 Ph.	22.0	27.0	32.0	41.0	52.0	62.0	77.0	99.0

			CONTROL CIRCUIT AMPS			
		Amps	Heating Unit Only	Heating Unit w/One Evap. Module	Heating Unit w/Two Evap. Module	Heating Unit w/Three Evap. Module
B	Control Transformer	AMPS for 208V 3 Ph.	2.4	7.2	9.6	12.0
		AMPS for 230V 3 Ph.	2.2	6.5	8.7	10.9
		AMPS for 460V 3 Ph.	1.1	3.3	4.3	5.4
		AMPS for 575V 3 Ph.	0.9	2.6	3.5	4.3

NOTES: *1) Above motor amps are based on 2011 edition of NEC.*
2) Control circuit amps are based on standard controls.

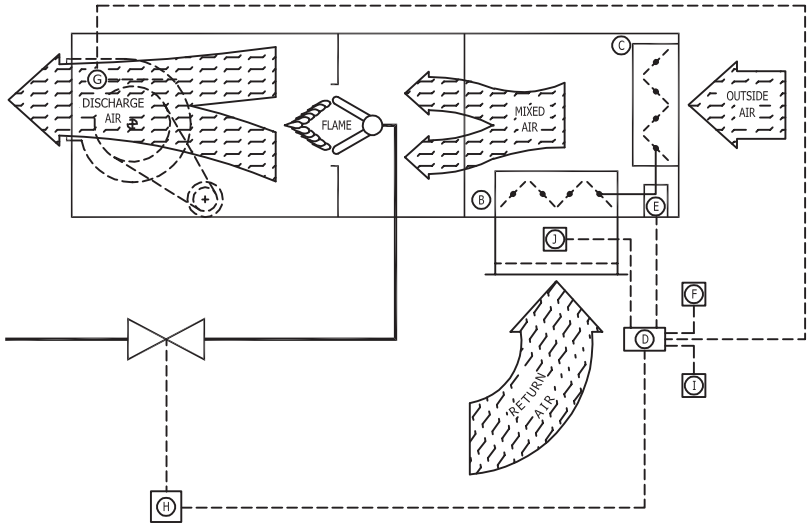
Steps to size optional disconnect switch:

1. Find the blower motor HP required from tables on pages 4 and 5.
2. Find amp draw for required motor HP from chart in item A above.
3. Find amps for control circuit from chart in item B above.
4. Add amps from step 2 and step 3, then multiply by 1.25.

Sequence of Operation – Return Air Units

P000621

OPERATION WITH RETURN AIR UPSTREAM OF BURNER



Signal from remote control I to AdaptAire Controller D, sets operational parameters for dampers B and C, and burner. Damper operation can be manual, building pressure or mixed air temperature.

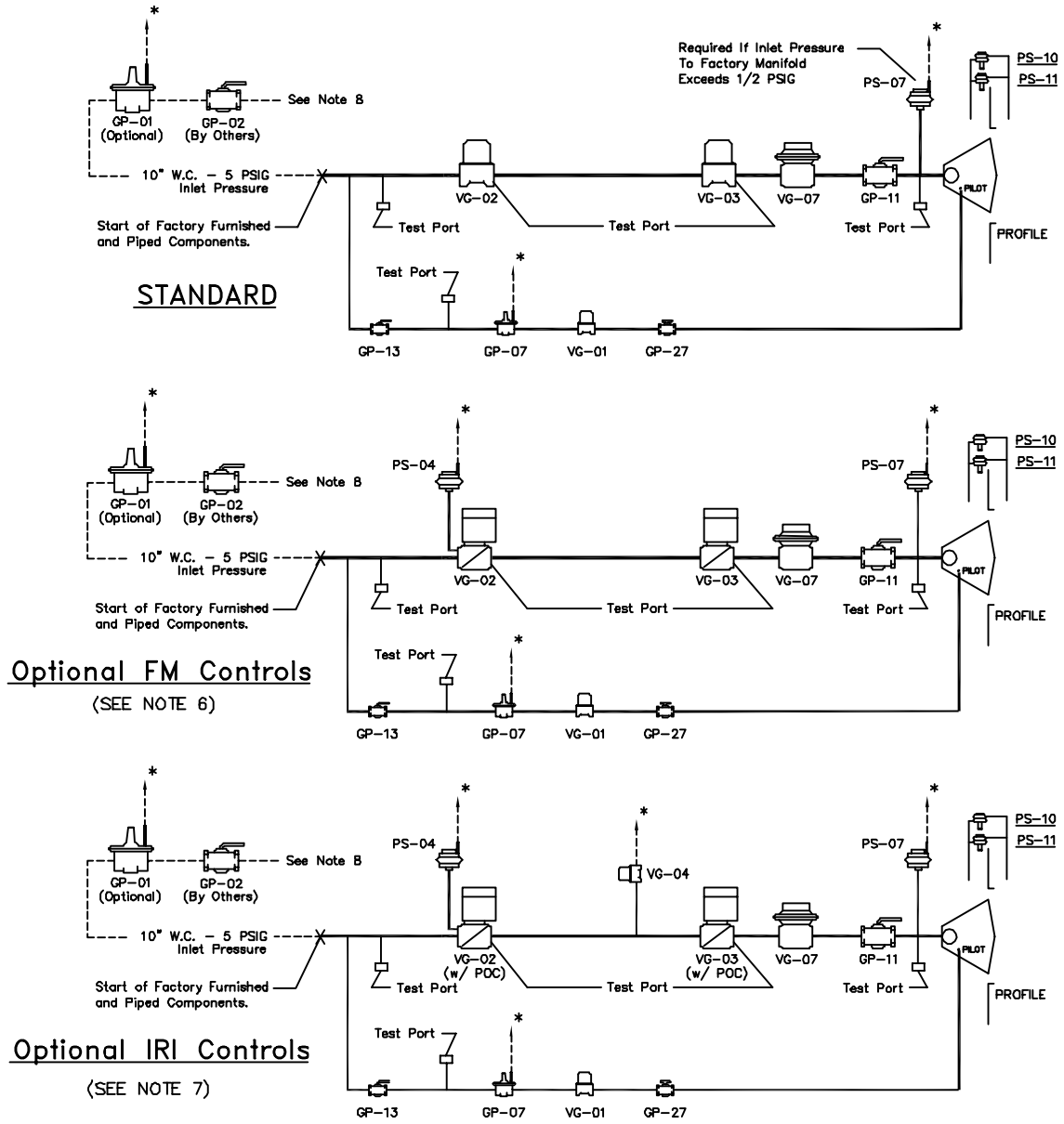
Return air dampers B, and outside air dampers C, are interlocked to move together. As one opens, the other closes. As the return air dampers open, allowing more return air to enter the unit, the outside air dampers move toward the closed position, decreasing the amount of outside air. Pressure sensor and flow station J, senses change in return airflow and signals AdaptAire Controller D.

Modulating gas valve H, regulates gas supply in response to signal from AdaptAire Controller D. AdaptAire Controller D, varies signal based on input from room temperature sensor F, discharge temperature sensor G, and airflow sensor J. Gas valve H can provide approximately 4% to 100% of rated burner capacity.

Gas Piping Layout

Schematic Component Diagrams

C000148



COMPONENT IDENTIFICATION

GP-01	HIGH GAS PRESSURE REGULATOR
GP-02	MAIN GAS SHUT-OFF VALVE
GP-09	PILOT GAS PRESSURE REGULATOR
GP-11	MAIN TEST FIRING SHUT-OFF VALVE
GP-13	PILOT GAS SHUT-OFF VALVE
GP-27	ORIFICED NEEDLE VALVE
VG-01	PILOT GAS VALVE
VG-02	MAIN GAS VALVE
VG-03	AUXILIARY GAS VALVE
VG-04	NORMALLY OPEN VENT VALVE
VG-07	MODULATING VALVE
PS-04	LOW GAS PRESSURE SWITCH
PS-07	HIGH GAS PRESSURE SWITCH
PS-10	HIGH VELOCITY PRESSURE SWITCH
PS-11	LOW VELOCITY PRESSURE SWITCH

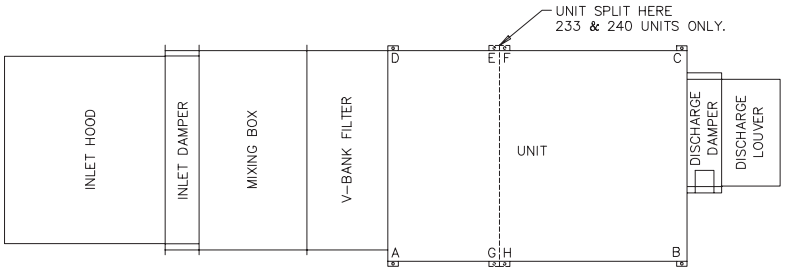
NOTES:

1. Vent limiting devices provided wherever possible, when venting is required* the venting to outside is by others on indoor units and furnished by factory on outdoor units.
2. Units with 900 MBH and less use a pressure regulator (not shown) for high fire setting.
3. For inlet pressures under 10'' W.C. – Please contact factory.
4. 3,300 MBH and above will require a minimum inlet pressure of 1 PSIG. For inlet pressures under 1 PSIG – Please contact factory.
5. Units that are listed to Z83.4 standard (100% make-up air) carry both ETL and CETL approvals.
6. **The standard manifold meets FM requirements for inputs under 2,500 MBH for ETL listed units.**
7. **The standard manifold meets IRI requirements for ETL listed units.**
8. High gas pressure regulator required if inlet pressure exceeds 1/2 PSIG for inputs up to and including 900 MBH or inlet pressures over 5 PSIG for inputs greater than 900 MBH.

Weights

Unit Weights (Approximate)

C000473



PLAN VIEW

Note: Cooling coil section weights include 6 row dry coil.

MODEL	Basic Frame: Total Unit Weight	Corner Weights: A	B	C	D	E	F	G	H	Inlet Hood (No Filters)	Inlet Damper	V-Bank Filter	Mixing Box
109	760	215	215	185	145	–	–	–	–	170	75	105	480
112	760	215	215	185	145	–	–	–	–	170	75	105	480
115	760	215	215	185	145	–	–	–	–	170	75	105	480
118	810	225	225	200	160	–	–	–	–	170	75	105	480
120	1185	331	331	272	251	–	–	–	–	270	125	175	700
122	1227	344	344	282	257	–	–	–	–	270	125	175	700
125	1824	510	510	420	384	–	–	–	–	290	140	240	950
130	1920	538	538	442	402	–	–	–	–	290	140	240	950
215	1180	342	342	274	222	–	–	–	–	275	135	175	700
218	1300	378	378	311	233	–	–	–	–	275	135	175	700
220	2280	625	625	555	475	–	–	–	–	320	200	230	980
222	2370	675	675	545	475	–	–	–	–	320	200	230	980
225	2990	824	824	732	610	–	–	–	–	500	275	340	1270
230	3130	863	863	731	673	–	–	–	–	720	275	340	1270
233	6393	517	1139	936	421	382	973	490	1535	775	350	550	2200
240	8675	557	1625	1361	451	413	1395	529	2344	1050	500	675	2750

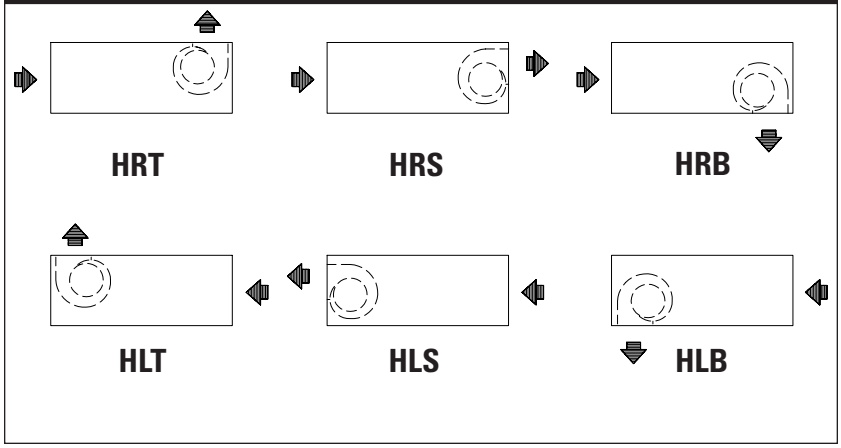
MODEL	Air Flow Station	Discharge Damper	Discharge Louver	Cooling Coil Section	Add For Vertical Units	Roof Curb: 12" High: Basic Frame	Basic Frame w/Mixing Box	Basic Frame w/Cooling Coil Box	Basic Frame w/ Mixing Box & Cooling Coil Box	Roof Curb: 18" High: Basic Frame	Basic Frame w/ Mixing Box	Basic Frame w/Cooling Coil Box	Basic Frame w/ Mixing Box & Cooling Coil Box
109	47	30	70	1010	224	160	230	300	380	215	315	416	530
112	47	30	70	1010	224	160	230	300	380	215	315	416	530
115	47	30	70	1500	224	160	230	360	440	215	315	500	615
118	47	30	70	1500	224	160	230	360	440	215	315	500	615
120	68	55	85	2580	475	215	300	460	550	300	410	640	765
122	68	55	85	2580	475	215	300	460	550	300	410	640	765
125	80	85	140	4180	590	235	320	535	630	320	440	745	890
130	80	85	140	4180	590	235	320	535	630	320	440	745	890
215	80	100	150	2420	427	215	285	425	505	295	395	590	700
218	80	100	150	2420	427	215	285	425	505	295	395	590	700
220	111	145	215	3405	899	285	365	545	635	395	505	755	880
222	111	145	215	3405	899	285	365	545	635	395	505	755	880
225	135	210	230	5420	1145	320	405	630	730	440	560	875	1010
230	135	210	230	5420	1145	320	405	630	730	440	560	875	1010
233	190	230	300	NA	1100	375	470	NA	NA	515	645	NA	NA
240	221	250	350	NA	1300	450	535	NA	NA	605	735	NA	NA

APPROXIMATE WEIGHT (LBS.)

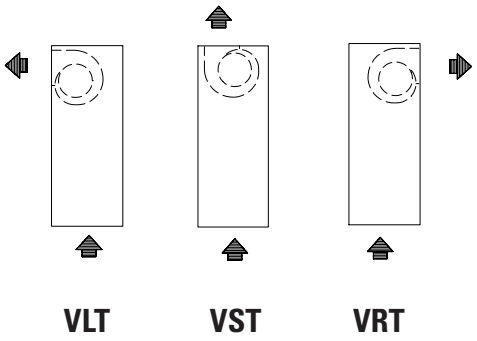
Note: See pages 24-27 for weights of 4 (F, R) and 8 (F, R) discharge options.

Cabinet Arrangements

Horizontal Discharge



Vertical Discharge



For all arrangements shown, controls are on near side.

Guide Specification – Base Unit

Applied Air

Base Bid Applied Air model DFC _____ make-up air unit(s) designed for outdoor application. The unit discharge shall be designed for easy adaptation to external duct work or optional accessories. The unit(s) shall be capable of delivering ___ cfm at ___ ESP using a ___ horsepower (ODP) (TEFC) motor operating on (208/3/60) (230/3/60) (460/3/60).

BURNER SECTION
The line burner shall be capable of delivering ___BTUH firing on (natural gas) (propane) at an inlet pressure of ___ (inches water column) (PSIG). The standard ETL listed unit will meet ANSI, FM, and IRI requirements. Both burner and blower shall be compensated for an altitude of ___ feet above sea level. Manifold to be located outside of air stream and shielded from atmospheric conditions by means of a protective compartment with hinged access. An observation port shall be located to provide view of pilot and main flame.

Unit(s) shall be supplied with a wide range burner with a modulating turndown ratio of up to 25:1. Adjustable profile plates shall be provided and sized to maintain the require velocity across the line burner. The operation of the burner shall be programmed through the flame safeguard with timed prepurge and flame-sensed by means of an ultra violet scanner.

The burner assembly and gas manifold shall be completely prepiped and factory tested prior to shipment.

The unit shall be controlled by:
(One of Three options, Choose one)

Option 1
AdaptAire DDC control module with full BACnet compatibility. Unit shall have the AdaptAire (pick one):

1. **MDT-Touch Modulating Discharge Temperature Control System.**
2. **MRT-Touch Modulating Room Temperature Control System.**

The AdaptAire DDC control system shall include but not be limited to the following controls required for standard operation:

- Electronic time clock with normal, holiday, and override schedules.
- Timed freeze protection to prevent heater from discharging unheated air into the building.
- Inlet On-Off sensor which will turn burner off when inlet temperature equals desired discharge air temperature as fuel savings mode.
- On-Off night setback thermostat for lower operating temperatures in unoccupied mode as fuel savings mode.

Option 2
System 14 Discharge Temperature Control. The System 14 control system shall include but not be limited to the following controls required for standard operation:

- Amplifier mounted in electrical control panel with sensitivity adjustments and one (1) calibrating potentiometer.
- Remote temperature selector mounted on optional Remote Control Panel and can be installed in any convenient location for remote adjustment of leaving air temperature between 55° to 90°F.
- Timed freeze protection to prevent heater from discharging unheated air into the building.
- Modulator/Regulator valve mounted in gas piping manifold that receives electrical signal from amplifier and adjusts gas pressure to maintain desired leaving air temperature.

Option 3
System 44 Room Temperature Control. The System 44 control system shall include but not be limited to the following controls required for standard operation:

- Amplifier mounted in electrical control panel contains adjustments for maximum and minimum discharge air temperature, three (3) calibrating potentiometers and a sensitivity adjustment.
- Remote temperature Selectrastat mounted on optional Remote Control Panel and installed in heated area for adjustment of room temperature between 55° to 90°F.
- Timed freeze protection to prevent heater from discharging unheated air into the building.
- Modulator/Regulator valve mounted in gas piping manifold that receives electrical signal from amplifier and adjusts gas pressure to maintain desired room air temperature.

UNIT CASING
Unit casing and accessories shall be fabricated from heavy-gauge bright spangled galvanized steel suitably reinforced to insure rigidity. The base of the unit shall be adaptable for curb mounting. All casings shall be airtight and weatherproof. Roof panels shall be convex to prevent ponding, and designed with a standing seam to prevent water entrainment. Cabinet shall be designed with roof eaves to prevent water for getting into wall panels. Complete access shall be provided to all components though gasketed, hinged access doors. This includes the motor, blower, burner, and electrical components and manifold sections.

Guide Specification – Base Unit

Applied Air

BLOWER SECTION
Each unit shall be supplied with centrifugal forward curve, DWDI fan(s) rated in accordance with AMCA standards. The fan or fans shall be mounted on a heavy-duty polished steel shaft designed for a maximum operating speed not to exceed 75% of its first critical speed. Bearings are to be heavy-duty industrial prelubricated type. Blowers to be driven by a V-belt package sized with a capacity of 25% greater than the motor horsepower. Multiple belt applications will be matched sets. Drives are to be (fixed) (adjustable). Maximum outlet velocity _____ FPM. Motor to be mounted on adjustable slide base. Motor cover shall be provided for protection when control cabinet door is open.

CONTROL ENCLOSURE
The units(s) shall be supplied with a control compartment and all controls mounted within this compartment are to be wired to a numbered terminal strip. All wiring is to be color coded and in accordance with the NEC. A circuit diagram is to be laminated to the inside of the control Cabinet door. All electrical components shall bear a recognized label.

CONTROLS
1. Main fan starters and overloads
2. Control circuit fuses
3. High temperature limit switch
4. Flame safeguard with alarm contacts
5. UV flame detection
6. Ignition transformer
7. Automatic pilot valve
8. Main gas automatic safety shutoff valve
9. Air proving differential switch
10. Control transformer

OPTIONAL EQUIPMENT
1. V-Bank filter box with 2" filters
2. Inlet hood and birdscreen with or without filters
3. Insulation
4. Full perimeter roof curb (horizontal units only)
5. Vibration feet
6. Clogged filter indication
7. Disconnect switch
8. High gas pressure regulator (required for inlet pressure over 1/2 PSIG)
9. Vertical arrangement with support stand and birdscreen
10. Mixing dampers with or without return air flow station
11. Return air after the burner
12. Evaporative cooling module(s) with transitions
13. CW or DX cooling coil section (up to 50,000 CFM)
14. Internal blower/motor isolation
15. Firestat
16. 115 Volt service receptacle
17. Touchscreen (for DDC Control systems only)
18. FM or IRI controls
19. Fixed or revolving discharge
20. Electronic time clock (Not available with Touch DDC Control Systems)
21. On-off night setback thermostat (Not available with Touch DDC Control Systems)
22. NEMA 1 or NEMA 12 remote control panel (System 14 or System 44 controls only)
23. VFD controller
24. Exhaust interlock
25. Interlocking relay

Guide Specification – Mixing Dampers with Return Flow Station

Applied Air

Unit(s) shall have outside air and return air dampers with modulating actuator controlled by AdaptAire DDC control system (Patent #7,059,536). The AdaptAire DDC control system shall have capability to digitally control the outside air quantity from a nominal minimum of 20% to 100% with integrated gas valve control at all room concentrations of CO_2.

The return air inlet shall include a self-calibrating flow measuring station with a grid of velocity pressure probes with spacing no greater than 12" over the entire face of the return air opening and sampled every second. Samples are averaged to provide smooth, accurate data that is delivered to the AdaptAire DDC control system every second. The DDC control system shall be capable of electronically displaying the return air/outside air ratio within 5% accuracy at all damper positions.

The AdaptAire DDC control system shall be capable of controlling mixing dampers in: (Choose One)
MANUAL MODE:
The "Manual" mode allows manual positioning of the outside air (O.A.) damper and return air (R.A.) damper by changing the damper position setpoint.

MIXED AIR TEMPERATURE MODE:
The "Mixed Air Temperature" mode shall provide automatic control of the mixed air temperature by modulating the outside air (O.A.) damper and return air (R.A.) damper to maintain the mixed air temperature setpoint.

BUILDING PRESSURE MODE:
The "Building Pressure" mode shall provide automatic building pressure control by modulating the outside air (O.A.) damper and return air (R.A.) damper to maintain the indoor building pressure setpoint. As the building pressure decreases below the setpoint more outside air will be introduced.

Guide Specification – Touchscreen Controller

Applied Air

The display functions of the remote touchscreen display for the AdaptAire DDC control system shall include but not be limited to the following:

- Return air temperature
- Outside air temperature
- Discharge air temperature
- Mixed air temperature
- Maximum allowable temperature rise
- Actual temperature rise
- Current percent of outside air
- Current building pressure (optional)
- Current damper input voltage (optional)
- Current burner input voltage
- Fan operating hours since last reset
- Fan start cycle count since last reset
- Burner operating hours since last reset
- Burner start cycle count since last reset
- Cooling interlock operating hours since last reset
- Cooling interlock cycle count since last reset
- Critical alarm conditions:
  – Airflow switch failure
  – Unit on, fan off
  – Unit off, fan on
  – Low discharge temperature
  – Safety circuit open
  – Burner jumped

The control settings available on the remote touchscreen display for the AdaptAire DDC control system shall include but not be limited to the following:

- Heating setpoint
- Cooling setpoint
- Economizer setpoint
- Setback setpoint
- Freeze protection setpoint
- Maximum discharge air temperature setpoint
- Minimum discharge air temperature setpoint
- Minimum ventilation option and setpoint
- Time of day schedule selection and setpoints
  – Normal 5/7 schedule
  – Holiday schedule
  – Manual override

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- Constantly replace contaminated indoor air with fresh, heated outside air
- Optional evaporative cooling
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- Simple, inexpensive installation
- Applied Air, a leader in research, engineering, and customer service since 1975
- Fans tested to AMCA standards to insure rated airflow

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