DFL Direct Fired Gas Heating System

Technical Guide for:

Outdoor or Indoor Mounted Units To 16,000 CFM And 1.97M BTUH

Applied Air

Keeps You

Warm

Featuring the Patented AdaptAire controlled Circulation System

Applied Air

DFL 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.

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.

Applied Air

Keeps You

Warm

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Applied Air

Air Delivery Table

035 & 070 Models

Unit Model	SCFM	Total Static Pressure (W.C.) 1¼" HP	1½" HP	1¾" HP	2" HP	2¼" HP	2½" HP	2¾" HP	3" HP	3¼" HP	3½" HP
Model 035 10 x 10 Wheel	2000	1	1	1-1/2	1-1/2	1-1/2	2	2	NSA	NSA	NSA
	2250	1-1/2	1-1/2	1-1/2	1-1/2	2	2	2	2	3	3
	2500	1-1/2	1-1/2	1-1/2	2	2	2	3	3	3	3
	2750	1-1/2	2	2	2	3	3	3	3	3	3
	3000	2	2	2	3	3	3	3	3	3	5
	3250	NSA	3	3	3	3	3	3	5	5	5
	3500	NSA	NSA	3	3	3	5	5	5	5	5
Model 070 15 x 15 Wheel	3750	2	2	2	3	3	3	NSA	NSA	NSA	NSA
	4000	2	2	3	3	3	3	5	NSA	NSA	NSA
	4250	2	3	3	3	3	5	5	5	5	NSA
	4500	2	3	3	3	5	5	5	5	5	5
	4750	3	3	3	3	5	5	5	5	5	5
	5000	3	3	3	5	5	5	5	5	5	7-1/2
	5250	3	3	5	5	5	5	5	5	7-1/2	7-1/2
	5500	3	5	5	5	5	5	5	5	7-1/2	7-1/2
	5750	3	5	5	5	5	5	5	7-1/2	7-1/2	7-1/2
	6000	5	5	5	5	5	5	7-1/2	7-1/2	7-1/2	7-1/2
	6250	NSA	5	5	5	5	7-1/2	7-1/2	7-1/2	7-1/2	7-1/2
	6500	NSA	5	5	5	7-1/2	7-1/2	7-1/2	7-1/2	7-1/2	7-1/2
	6750	NSA	5	5	7-1/2	7-1/2	7-1/2	7-1/2	7-1/2	7-1/2	7-1/2
	7000	NSA	NSA	7-1/2	7-1/2	7-1/2	7-1/2	7-1/2	7-1/2	7-1/2	10

NSA = No Selection Available

NOTE:
Horsepower selections are based on system total static pressure. One or more of the following must be added when applicable. See pressure drops on page 6 for burner section and optional inlet hood and V-bank sections.

A. Fresh Air Inlet Hood & Birdscreen — W.C.

B. Fresh Air Inlet Hood with Filters — W.C.

C. V-Bank Filter Section — W.C.

D. Burner Section — W.C.

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

110 & 160 Models

Unit Model	SCFM	Total Static Pressure (W.C.)									
		1¼″ HP	1½″ HP	1¾″ HP	2″ HP	2¼″ HP	2½″ HP	2¾″ HP	3″ HP	3¼″ HP	3½″ HP
Model 110 18 x 18 Wheel	7,250	5	5	5	5	7-1/2	7-1/2	7-1/2	7-1/2	7-1/2	7-1/2
	7,500	5	5	5	5	7-1/2	7-1/2	7-1/2	7-1/2	7-1/2	10
	7,750	5	5	5	7-1/2	7-1/2	7-1/2	7-1/2	7-1/2	7-1/2	10
	8,000	5	5	5	7-1/2	7-1/2	7-1/2	7-1/2	7-1/2	10	10
	8,250	5	5	7-1/2	7-1/2	7-1/2	7-1/2	7-1/2	10	10	10
	8,500	5	7-1/2	7-1/2	7-1/2	7-1/2	7-1/2	7-1/2	10	10	10
	8,750	5	7-1/2	7-1/2	7-1/2	7-1/2	7-1/2	10	10	10	10
	9,000	NSA	7-1/2	7-1/2	7-1/2	7-1/2	10	10	10	10	10
	9,250	NSA	7-1/2	7-1/2	7-1/2	7-1/2	10	10	10	10	15
	9,500	NSA	7-1/2	7-1/2	7-1/2	10	10	10	10	10	15
	9,750	NSA	NSA	7-1/2	10	10	10	10	10	15	15
	10,000	NSA	NSA	7-1/2	10	10	10	10	15	15	15
	10,500	NSA	NSA	NSA	10	10	10	15	15	15	15
	11,000	NSA	NSA	NSA	10	15	15	15	15	15	15
Model 160 22 x 22 Wheel	11,500	7-1/2	7-1/2	7-1/2	7-1/2	7-1/2	10	10	10	15	15
	12,000	7-1/2	7-1/2	7-1/2	7-1/2	10	10	10	10	15	15
	12,500	7-1/2	7-1/2	7-1/2	10	10	10	10	15	15	15
	13,000	7-1/2	7-1/2	10	10	10	10	15	15	15	15
	13,500	7-1/2	10	10	10	10	15	15	15	15	15
	14,000	7-1/2	10	10	10	15	15	15	15	15	15
	14,500	10	10	10	15	15	15	15	15	15	15
	15,000	10	10	10	15	15	15	15	15	15	20
	15,500	10	10	15	15	15	15	15	15	20	20
	16,000	10	15	15	15	15	15	15	20	20	20

NSA = No Selection Available

Air Pressure Drop Table

All Models

Unit Model	SCFM	Inlet Hood			Filter Section							Discharge Options		
		No Filters	With 1″ Cleanable Filters	With 2″ Cleanable Filters	No Filters	With 1″ TAW Filters	With 1″ Pleated Filters	With 1″ Cleanable Filters	With 2″ TAW Filters	With 2″ Pleated Filters	With 2″ Cleanable Filters	Nozzles	5F and 5R	8F and 8R
035	2000	0.01	0.04	0.05	0.01	0.03	0.06	0.02	0.03	0.03	0.04	0.13	0.03	0.05
	2250	0.01	0.06	0.07	0.01	0.04	0.08	0.04	0.05	0.05	0.05	0.16	0.03	0.07
	2500	0.01	0.08	0.09	0.01	0.05	0.11	0.05	0.06	0.06	0.06	0.20	0.04	0.08
	2750	0.01	0.10	0.11	0.01	0.06	0.13	0.06	0.08	0.08	0.07	0.24	0.05	0.10
	3000	0.01	0.12	0.13	0.01	0.07	0.15	0.07	0.09	0.10	0.09	0.29	0.06	0.12
	3250	0.01	0.13	0.15	0.01	0.08	0.18	0.08	0.11	0.11	0.10	0.34	0.07	0.14
	3500	0.01	0.15	0.17	0.01	0.09	0.20	0.09	0.12	0.13	0.11	0.39	0.08	0.16
070	3750	0.01	0.06	0.04	0.00	0.07	0.10	0.05	0.06	0.11	0.06	0.12	0.02	0.06
	4000	0.01	0.07	0.06	0.00	0.08	0.12	0.06	0.08	0.12	0.07	0.14	0.02	0.07
	4250	0.01	0.07	0.07	0.00	0.09	0.14	0.07	0.09	0.14	0.08	0.15	0.03	0.07
	4500	0.01	0.08	0.08	0.00	0.10	0.16	0.08	0.10	0.16	0.09	0.17	0.03	0.08
	4750	0.01	0.09	0.10	0.00	0.12	0.18	0.10	0.11	0.18	0.11	0.19	0.03	0.09
	5000	0.02	0.10	0.11	0.00	0.13	0.19	0.11	0.13	0.19	0.12	0.21	0.03	0.10
	5250	0.02	0.11	0.13	0.00	0.14	0.21	0.12	0.14	0.21	0.13	0.24	0.04	0.11
	5500	0.02	0.13	0.14	0.00	0.15	0.23	0.13	0.15	0.23	0.14	0.26	0.04	0.12
	5750	0.02	0.14	0.15	0.00	0.16	0.25	0.15	0.17	0.25	0.15	0.28	0.05	0.13
	6000	0.02	0.15	0.16	0.00	0.18	0.27	0.16	0.18	0.26	0.17	0.31	0.05	0.14
	6250	0.02	0.17	0.18	0.00	0.19	0.28	0.17	0.19	0.28	0.18	0.33	0.05	0.15
	6500	0.02	0.19	0.19	0.00	0.20	0.31	0.18	0.21	0.30	0.19	0.36	0.06	0.16
	6750	0.03	0.20	0.21	0.00	0.21	0.33	0.20	0.22	0.31	0.20	0.39	0.06	0.18
	7000	0.03	0.21	0.22	0.00	0.22	0.35	0.21	0.23	0.33	0.21	0.42	0.07	0.19
110	7250	0.08	0.18	0.19	0.00	0.10	0.28	0.14	0.16	0.21	0.15	0.19	0.04	0.12
	7500	0.09	0.19	0.21	0.00	0.10	0.30	0.15	0.17	0.23	0.15	0.20	0.04	0.13
	7750	0.09	0.21	0.22	0.00	0.11	0.32	0.16	0.19	0.24	0.16	0.22	0.04	0.13
	8000	0.10	0.23	0.24	0.00	0.11	0.34	0.18	0.20	0.26	0.18	0.23	0.05	0.14
	8250	0.11	0.24	0.26	0.00	0.12	0.36	0.19	0.21	0.28	0.19	0.25	0.05	0.15
	8500	0.12	0.26	0.28	0.00	0.13	0.38	0.20	0.23	0.29	0.20	0.26	0.05	0.16
	8750	0.12	0.28	0.30	0.00	0.13	0.40	0.22	0.24	0.31	0.22	0.28	0.06	0.17
	9000	0.13	0.29	0.31	0.00	0.14	0.41	0.23	0.25	0.33	0.23	0.29	0.06	0.18
	9250	0.14	0.31	0.33	0.00	0.14	0.43	0.24	0.27	0.34	0.24	0.31	0.06	0.19
	9500	0.14	0.33	0.35	0.00	0.15	0.45	0.25	0.28	0.36	0.25	0.33	0.07	0.20
	9750	0.15	0.34	0.37	0.00	0.15	0.47	0.27	0.29	0.38	0.27	0.35	0.07	0.21
	10,000	0.16	0.36	0.38	0.00	0.16	0.49	0.28	0.31	0.40	0.28	0.36	0.07	0.22
	10,500	0.16	0.38	0.41	0.00	0.16	0.51	0.29	0.32	0.41	0.29	0.40	0.08	0.25
	11,000	0.17	0.39	0.45	0.00	0.17	0.53	0.31	0.33	0.43	0.31	0.44	0.09	0.27
160	11,500	0.11	0.13	0.13	0.02	0.15	0.26	0.15	0.15	0.23	0.18	0.24	0.06	0.15
	12,000	0.12	0.15	0.15	0.03	0.18	0.30	0.18	0.19	0.27	0.21	0.26	0.06	0.17
	12,500	0.13	0.16	0.17	0.04	0.19	0.32	0.20	0.21	0.29	0.23	0.29	0.07	0.18
	13,000	0.14	0.17	0.18	0.04	0.21	0.34	0.21	0.24	0.30	0.25	0.31	0.07	0.20
	13,500	0.14	0.18	0.20	0.04	0.23	0.36	0.23	0.26	0.32	0.26	0.33	0.08	0.21
	14,000	0.15	0.19	0.22	0.05	0.24	0.39	0.24	0.28	0.34	0.28	0.36	0.09	0.23
	14,500	0.16	0.20	0.23	0.05	0.26	0.41	0.26	0.30	0.36	0.30	0.39	0.09	0.24
	15,000	0.17	0.21	0.25	0.06	0.28	0.43	0.28	0.32	0.37	0.32	0.41	0.10	0.26
	15,500	0.18	0.23	0.27	0.06	0.29	0.45	0.29	0.34	0.39	0.33	0.44	0.11	0.27
	16,000	0.19	0.24	0.28	0.06	0.31	0.47	0.31	0.36	0.41	0.35	0.47	0.11	0.29

Burner Section - 1.0″ W.C. (All Sizes)

Burner Performance Table

All Models

Unit Size	SCFM	70° Rise	80° Rise	90° Rise	100° Rise	110° Rise	120° Rise	130° Rise
Model 035	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
	3250	288	323	356	388	419	449	477
	3500	311	348	384	418	451	483	514
Model 070	3750	333	373	411	448	483	518	550
	4000	355	397	438	478	516	552	587
	4250	377	422	466	508	548	587	624
	4500	399	447	493	537	580	621	661
	4750	421	472	521	567	612	656	697
	5000	444	497	548	597	644	690	734
	5250	466	522	575	627	677	725	771
	5500	488	546	603	657	709	759	807
	5750	510	571	630	687	741	794	844
	6000	532	596	658	717	773	828	881
	6250	554	621	685	746	806	863	917
	6500	577	646	712	776	838	897	954
	6750	599	671	740	806	870	932	991
	7000	621	696	767	836	902	966	1027
Model 110	7250	643	720	795	866	934	1001	1064
	7500	665	745	822	896	967	1035	1101
	7750	688	770	849	926	999	1070	1138
	8000	710	795	877	955	1031	1104	1174
	8250	732	820	904	985	1063	1139	1211
	8500	754	845	932	1015	1096	1173	1248
	8750	776	869	959	1045	1128	1208	1284
	9000	798	894	986	1075	1160	1242	1321
	9250	821	919	1014	1105	1192	1277	1358
	9500	843	944	1041	1135	1224	1311	1394
	9750	865	969	1068	1164	1257	1346	1431
	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
Model 160	11,500	1020	1143	1260	1373	1482	1587	1688
	12,000	1065	1192	1315	1433	1547	1656	1761
	12,500	1109	1242	1370	1493	1611	1725	1835
	13,000	1153	1292	1425	1553	1676	1794	1908
	13,500	1198	1341	1479	1612	1740	1863	—
	14,000	1242	1391	1534	1672	1804	1932	—
	14,500	1286	1441	1589	1732	1869	—	—
	15,000	1331	1490	1644	1791	1933	—	—
	15,500	1375	1540	1699	1851	—	—	—
	16,000	1419	1590	1753	1911	—	—	—

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 Table 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.

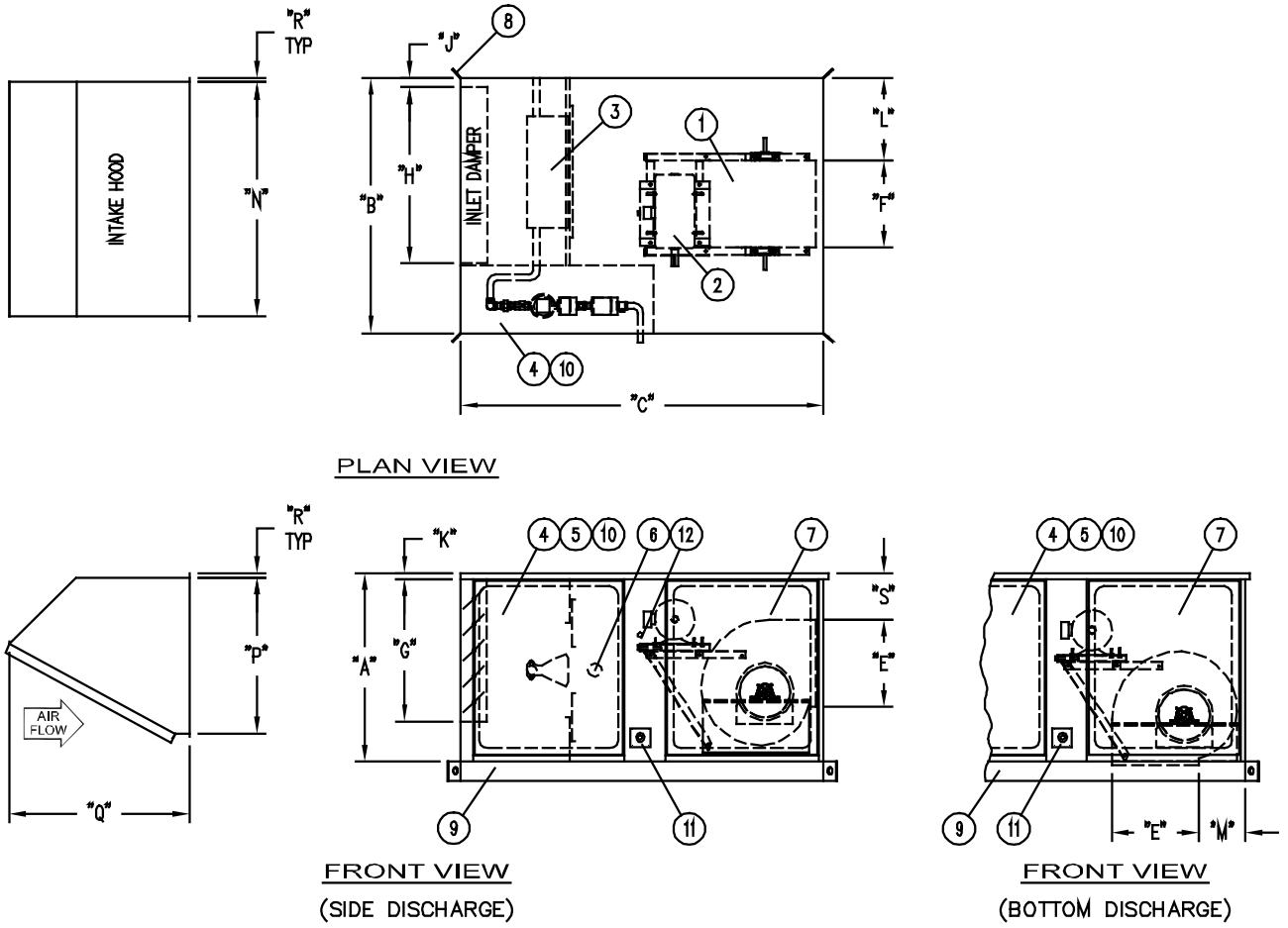
Dimensions

Horizontal Base Unit without V-Bank

C000506

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. Lifting lug
9. Unit base
10. Manifold compartment
11. Gas connection
12. Electrical connection



RIGHT HAND SHOWN, LEFT HAND IS OPPOSITE

Model	Blower Size	Dimensions								
		A	B	C	E	F	G	H	J	K
035	10″ x 10″	36	42	68	11 3/8	13 1/8	25 1/2	27	1 1/4	1 5/16
070	15″ x 15″	40	52	76	15 7/8	18 5/8	30 1/4	37 1/2	1 1/4	1 5/16
110	18″ x 18″	48	64	82	18 7/8	21 7/8	35 1/4	47 3/8	1 1/4	1 5/16
160	22″ x 22″	48	64	92	27 1/4	27 1/4	39 1/4	47 3/8	1 1/4	1 5/16

Model	Blower Size	Dimensions							
		L	M	N	P	Q	R	S	Filters Hood Qty - Size
035	10″ x 10″	14 7/16	8 1/8	40 1/16	25 5/8	27 7/16	7/8	16 7/16	2) 20″ x 25″
070	15″ x 15″	16 11/16	10 11/16	50 1/16	30 5/8	41 13/16	7/8	13 5/16	6) 16″ x 20″
110	18″ x 18″	19 5/8	12 5/16	62 1/16	35 5/8	48 7/8	7/8	16 11/16	6) 20″ x 25″
160	22″ x 22″	18 3/8	14 1/16	62 1/16	44 7/8	72 3/4	7/8	6 1/2	9) 20″ x 25″

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

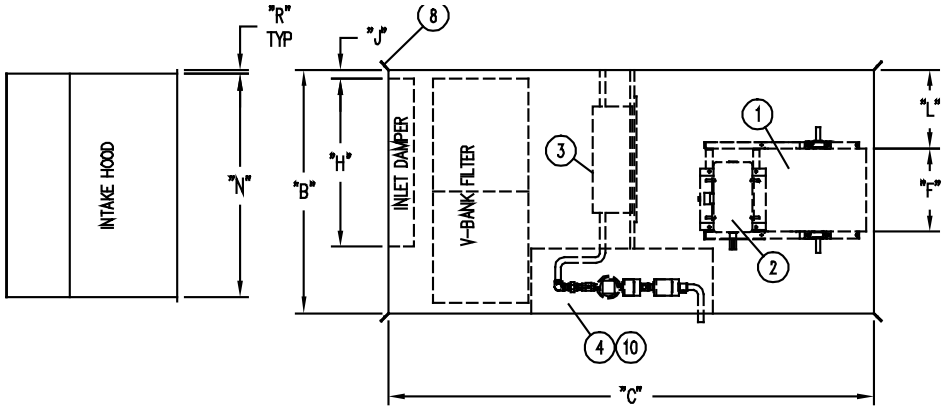
Dimensions

Horizontal Base Unit with V-Bank

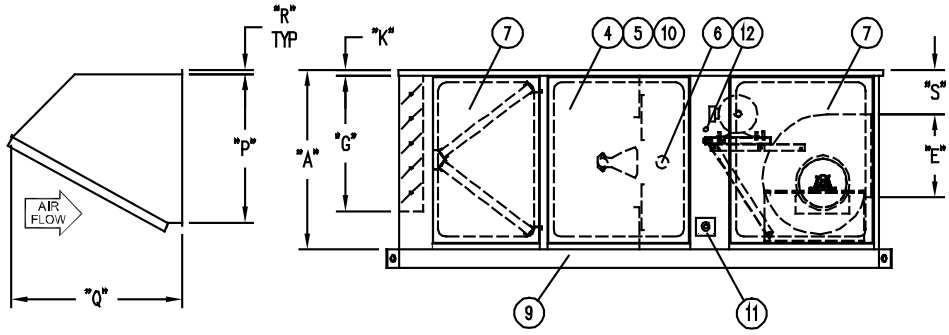
C000505

UNIT COMPONENTS

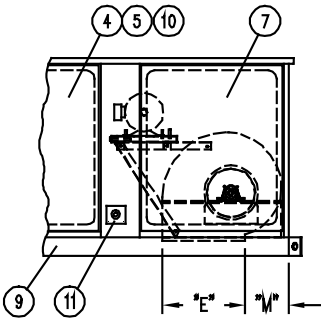
1. Centrifugal supply fan
2. Fan motor
3. Line burner
4. Control cabinet
5. Hinged control cabinet access door
6. Observation port
7. Access door
8. Lifting lug
9. Unit base
10. Manifold compartment
11. Gas connection
12. Electrical connection



PLAN VIEW



FRONT VIEW
(SIDE DISCHARGE)



FRONT VIEW
(BOTTOM DISCHARGE)

RIGHT HAND SHOWN, LEFT HAND IS OPPOSITE

Model	Blower Size	Dimensions								
		A	B	C	E	F	G	H	J	K
035	10" x 10"	36	42	100	11 3/8	13 1/8	25 1/2	27	1 1/4	1 5/16
070	15" x 15"	40	52	108	15 7/8	18 5/8	30 1/4	37 1/2	1 1/4	1 5/16
110	18" x 18"	48	64	114	18 7/8	21 7/8	35 1/4	47 3/8	1 1/4	1 5/16
160	22" x 22"	48	64	124	27 1/4	27 1/4	39 1/4	47 3/8	1 1/4	1 5/16

Model	Blower Size	Dimensions								
		L	M	N	P	Q	R	S	Filter Hood Qty - Size	Filter V-Bank Qty - Size
035	10" x 10"	14 7/16	8 1/8	40 1/16	25 5/8	27 7/16	7/8	16 7/16	2) 20" x 25"	4) 20" x 20"
070	15" x 15"	16 11/16	10 11/16	50 1/16	30 5/8	41 13/16	7/8	13 5/16	6) 16" x 20"	6) 16" x 25"
110	18" x 18"	21 1/16	12 5/16	62 1/16	35 5/8	48 7/8	7/8	16 11/16	6) 20" x 25"	6) 20" x 25"
160	22" x 22"	18 3/8	14 1/16	62 1/16	44 7/8	72 3/4	7/8	6 1/2	9) 20" x 25"	12) 20" x 20"

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

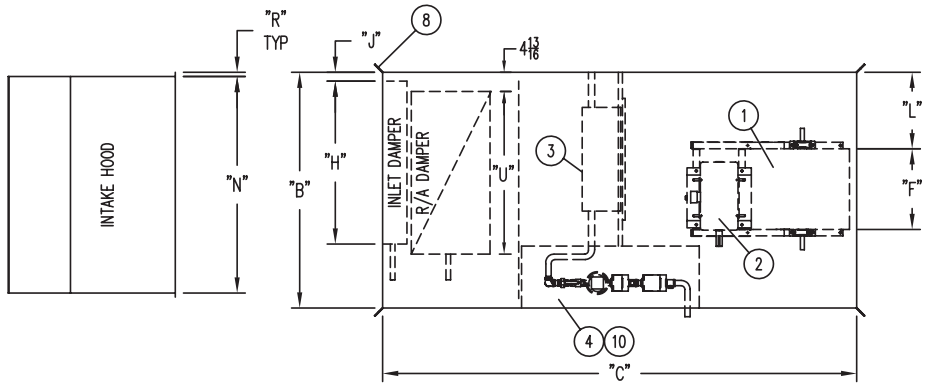
Dimensions

Horizontal Base Unit with V-Bank and Mixing Dampers

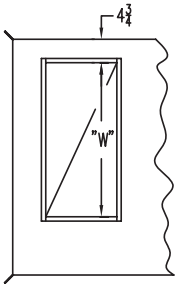
C000544A

UNIT COMPONENTS

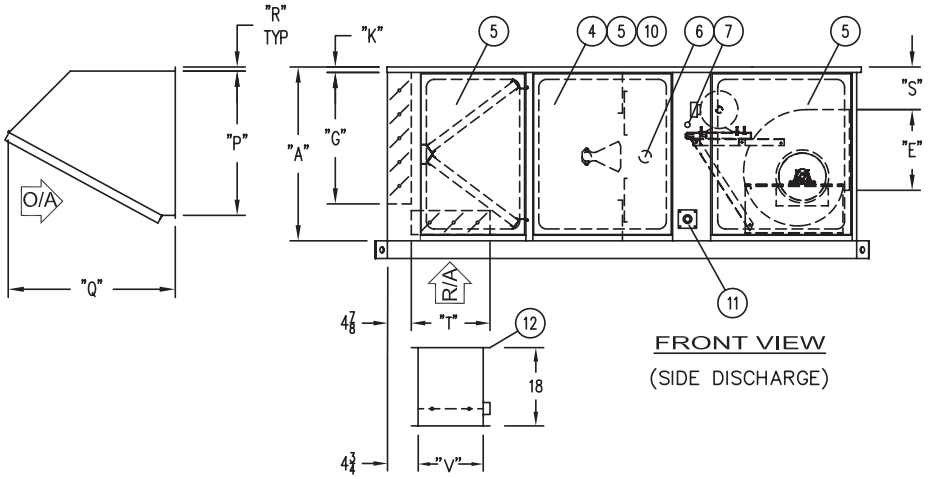
1. Centrifugal supply fan
2. Fan motor
3. Line burner
4. Control cabinet
5. Hinged access door
6. Observation port
7. Electrical connection
8. Lifting lug
9. Unit base
10. Manifold compartment
11. Gas connection
12. Airflow station



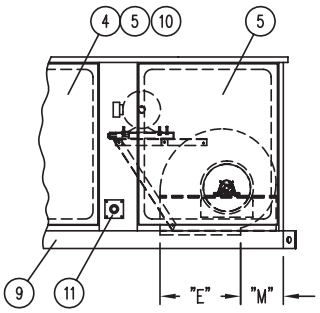
PLAN VIEW



PLAN SECTION
(AIRFLOW STATION LOCATION)



FRONT VIEW
(SIDE DISCHARGE)



FRONT VIEW
(BOTTOM DISCHARGE)

RIGHT HAND SHOWN, LEFT HAND IS OPPOSITE

Model	Blower Size	Dimensions										
		A	B	C	E	F	G	H	J	K	L	M
035	10″ x 10″	36	42	100	11 3/8	13 1/8	25 1/2	27	1 1/4	1 5/16	14 7/16	8 1/8
070	15″ x 15″	40	52	108	15 7/8	18 5/8	30 1/4	37 1/2	1 1/4	1 5/16	16 11/16	10 11/16
110	18″ x 18″	48	64	114	18 7/8	21 7/8	35 1/4	47 3/8	1 1/4	1 5/16	21 1/16	12 5/16
160	22″ x 22″	48	64	134	27 1/4	27 1/4	39 1/4	47 3/8	1 1/4	1 5/16	18 3/8	14 1/16

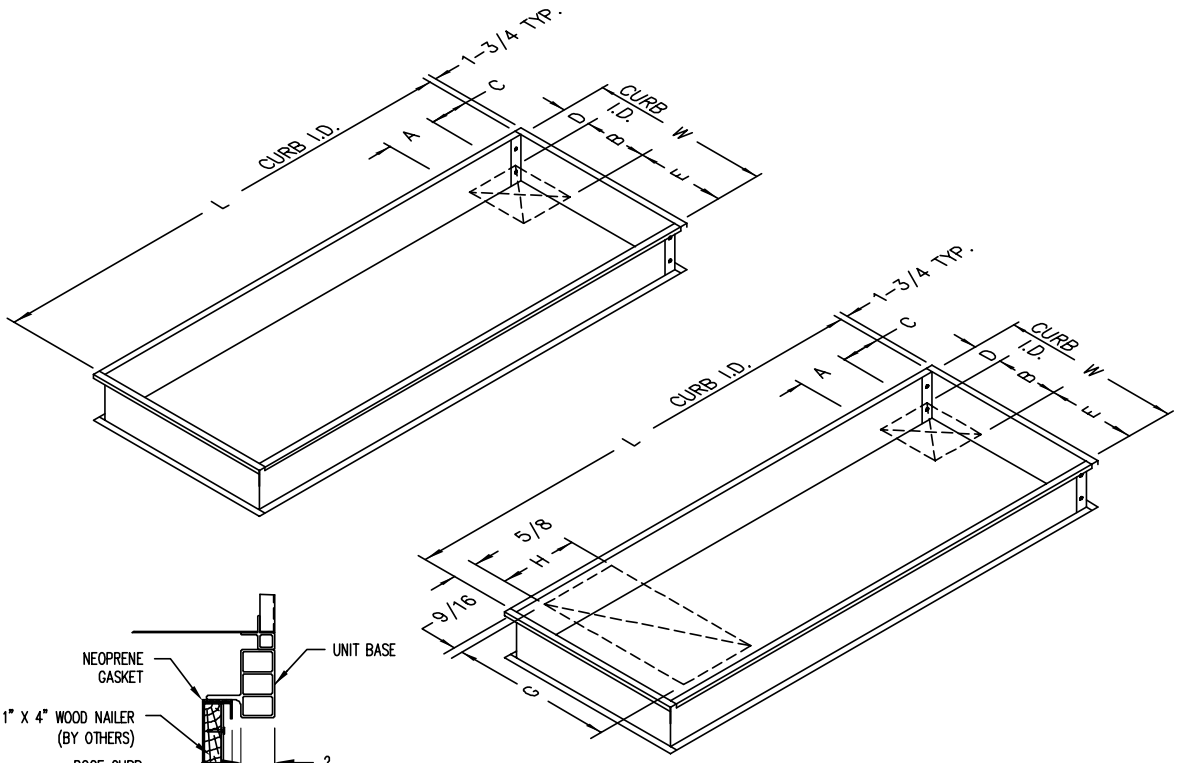
Model	Blower Size	Dimensions										
		N	P	Q	R	S	T	U	V	W	Filter Hood Qty - Size	Filter V-Bank Qty - Size
035	10″ x 10″	40 1/16	25 5/8	27 7/16	7/8	16 7/16	18 7/8	26 7/8	19	27	2) 20″ x 25″	4) 20″ x 20″
070	15″ x 15″	50 1/16	30 5/8	41 13/16	7/8	13 5/16	18 7/8	37 7/8	19	38	6) 16″ x 20″	6) 16″ x 25″
110	18″ x 18″	62 1/16	35 5/8	48 7/8	7/8	16 11/16	19 7/8	47 7/8	20	48	6) 20″ x 25″	6) 20″ x 25″
160	22″ x 22″	62 1/16	44 7/8	72 3/4	7/8	6 1/2	24 7/8	47 7/8	24 7/8	48	9) 20″ x 25″	12) 20″ x 20″

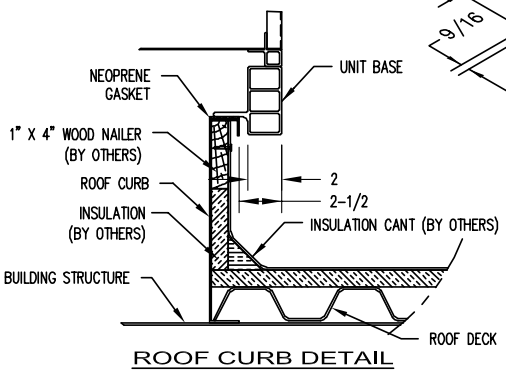
NOTE: *All dimensions in inches subject to manufacturing tolerances.*

Dimensions

Roof Curbs

C000507





ROOF CURB DETAIL

Model	Blower Size	Dimensions						
		A	B	C	D	E	F_1 Standard Height	F_2 Optional Height
035	10" x 10"	11 3/8	13 1/8	3 7/8	10 3/16	10 3/16	12	18
070	15" x 15"	15 7/8	18 5/8	6 7/16	12 7/16	12 7/16	12	18
110	18" x 18"	18 7/8	21 7/8	8 1/16	16 13/16	16 13/16	12	18
160	22" x 22"	27 1/4	27 1/4	9 13/16	14 1/8	14 1/8	12	18

Model	Blower Size	Dimensions							
		Base Unit Only		Base Unit w/V-Bank		Base Unit w/V-Bank & Return Air			
		L_1	W_1	L_2	W_2	G	H	L_3	W_3
035	10" x 10"	59 1/2	33 1/2	91 1/2	33 1/2	26 7/8	18 7/8	91 1/2	33 1/2
070	15" x 15"	67 1/2	43 1/2	99 1/2	43 1/2	37 7/8	18 7/8	99 1/2	43 1/2
110	18" x 18"	73 1/2	55 1/2	105 1/2	55 1/2	47 7/8	19 7/8	105 1/2	55 1/2
160	22" x 22"	83 1/2	55 1/2	115 1/2	55 1/2	47 7/8	24 7/8	125 1/2	55 1/2

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

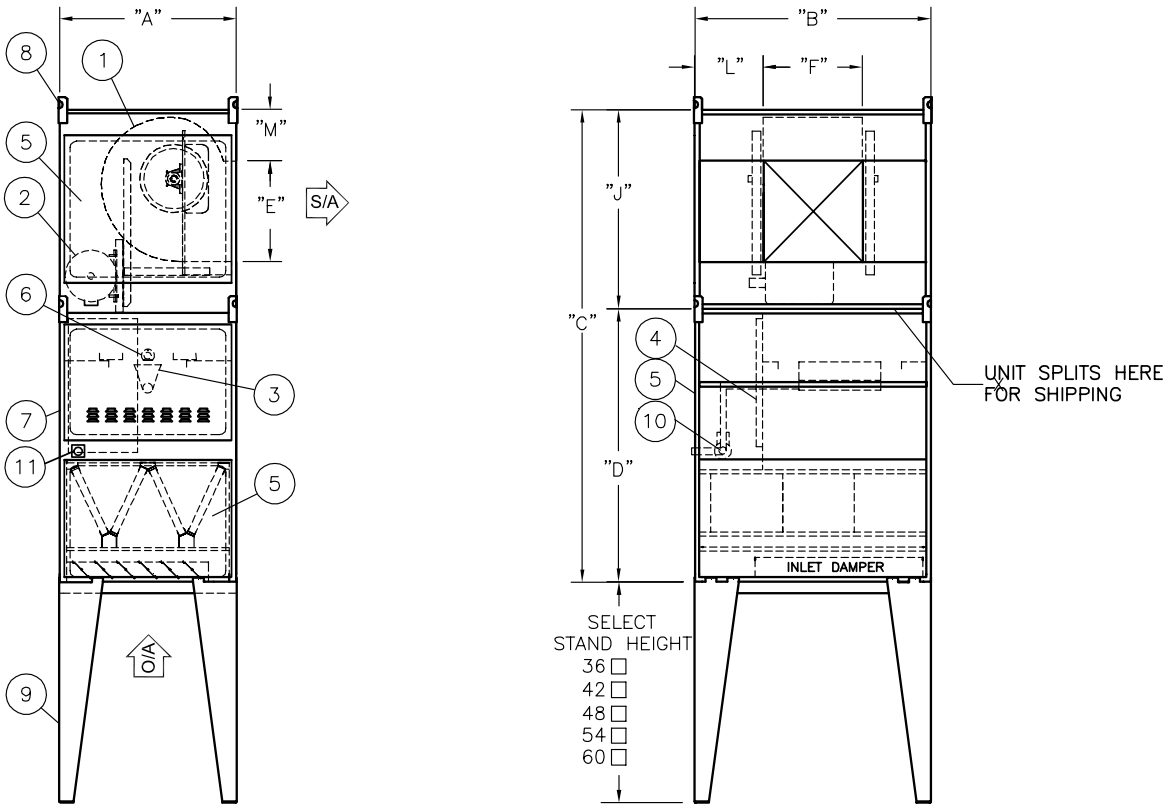
Dimensions

Vertical Base Unit with V-Bank

C000547

UNIT COMPONENTS

1. Centrifugal supply fan
2. Fan motor
3. Line burner
4. Control cabinet
5. Hinged access door
6. Observation port
7. Electrical connection
8. Lifting lug
9. Support stand
10. Manifold compartment
11. Gas connection



FRONT VIEW

SIDE VIEW

RIGHT HAND SHOWN, LEFT HAND IS OPPOSITE

Model	Blower Size	Dimensions				
		A	B	C	D	E
035	10" x 10"	36	42	106	76	11 3/8
070	15" x 15"	40	52	124	84	15 7/8
110	18" x 18"	48	64	122	74	18 7/8
160	22" x 22"	48	64	128	74	27 1/4

Model	Blower Size	Dimensions				
		F	J	L	M	Filters V-Bank Qty - Size
035	10" x 10"	13 1/8	30	14 7/16	8 1/8	4) 20" x 20"
070	15" x 15"	18 5/8	40	16 11/16	10 11/16	6) 16" x 25"
110	18" x 18"	21 7/8	48	21 1/16	12 5/16	6) 20" x 25"
160	22" x 22"	27 1/4	54	18 3/8	17 11/32	12) 20" x 20"

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

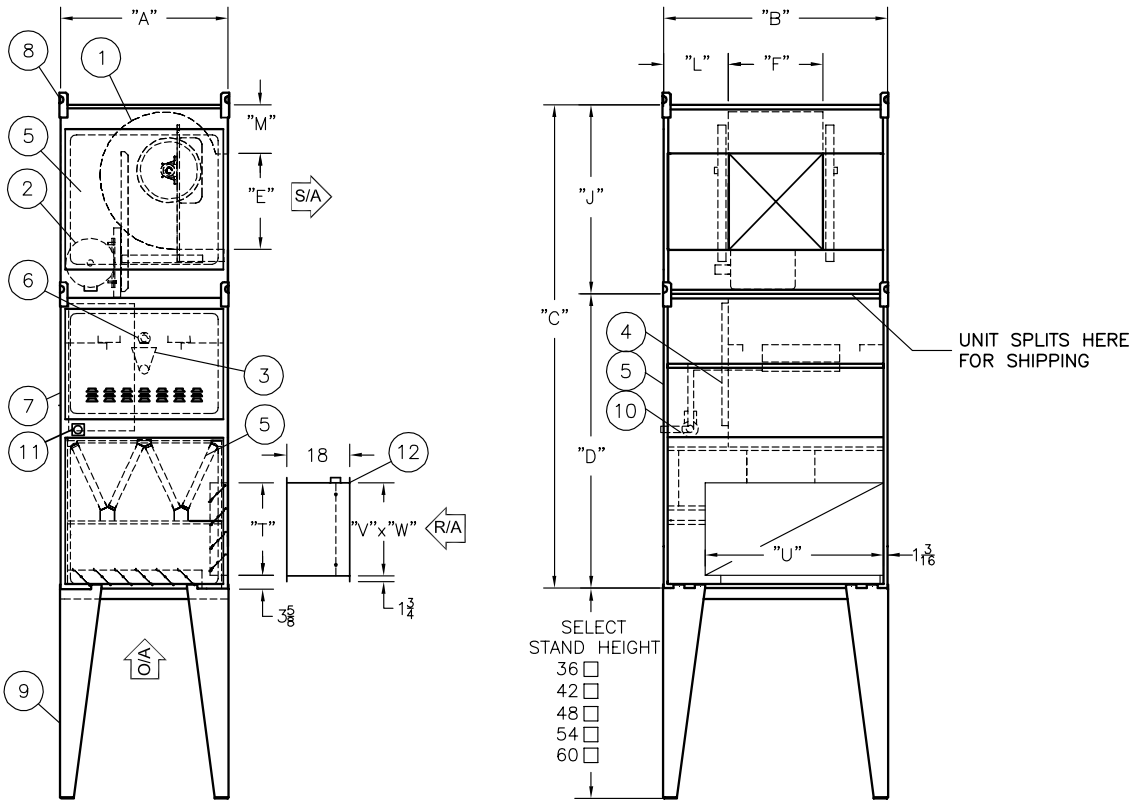
Dimensions

Vertical Base Unit with V-Bank and Mixing Dampers

C000548

UNIT COMPONENTS

1. Centrifugal supply fan
2. Fan motor
3. Line burner
4. Control cabinet
5. Hinged access door
6. Observation port
7. Electrical connection
8. Lifting lug
9. Support stand
10. Manifold compartment
11. Gas connection
12. Airflow station



FRONT VIEW SIDE VIEW

RIGHT HAND SHOWN, LEFT HAND IS OPPOSITE

Model	Blower Size	Dimensions						
		A	B	C	D	E	F	J
035	10" x 10"	36	42	106	76	11⅜	13⅛	30
070	15" x 15"	40	52	124	84	15⅞	18⅝	40
110	18" x 18"	48	64	132	84	18⅞	21⅞	48
160	22" x 22"	48	64	138	84	27¼	27¼	54

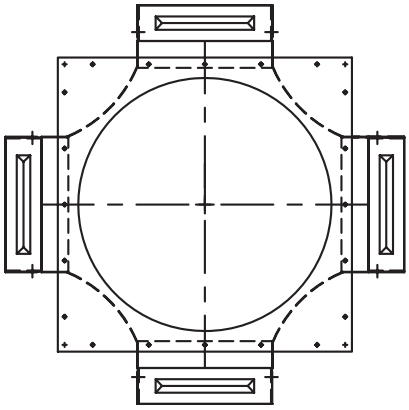
Model	Blower Size	Dimensions						
		L	M	T	U	V	W	Filters V-Bank Qty - Size
035	10" x 10"	14 7/16	8⅛	20½	28½	19	27	4) 20" x 20"
070	15" x 15"	16 11/16	10 11/16	20½	39½	19	38	6) 16" x 25"
110	18" x 18"	21 1/16	12 5/16	21½	49½	20	48	6) 20" x 25"
160	22" x 22"	18⅜	17 11/32	26½	49½	24⅞	48	12) 20" x 20"

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

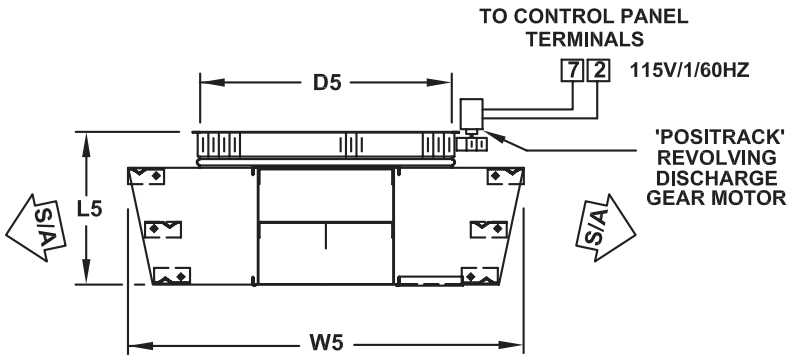
5F and 5R Discharge Dimensions and Weights

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.

Discharge Dimensions and Weight

Model Size	Discharge Size	5F and 5R Discharge				
		D5	L5	W5	Weight 5F	Weight 5R
035	22	25-23/32	11	34-1/2	60	110
070	28	36-17/32	16-5/8	50	90	160
110	36	42-17/32	18-1/4	57	110	185
160	40	49-17/32	20-1/8	66-1/2	120	200

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

Discharge Options

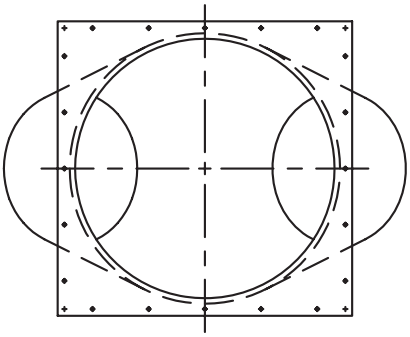
5F and 5R Discharge Coverage

Model	SCFM	Discharge Size	Mounting Height	Fixed Coverage	Revolving Coverage
035	2000	22	12	70 X 70	70 X 70
035	2250	22	12	71 x 71	71 x 71
035	2500	22	12	72 x 72	72 x 72
035	2750	22	13	73 x 73	73 x 73
035	3000	22	13	74 x 74	74 x 74
035	3250	22	13	75 x 75	75 x 75
035	3500	22	13	76 X 76	76 X 76
070	3750	28	12	82 X 82	82 X 82
070	4000	28	12	83 x 83	83 x 83
070	4250	28	12	84 x 84	84 x 84
070	4500	28	13	85 x 85	85 x 85
070	4750	28	13	86 x 86	86 x 86
070	5000	28	13	88 x 88	88 x 88
070	5250	28	13	89 x 89	89 x 89
070	5500	28	14	90 x 90	90 x 90
070	5750	28	14	91 x 91	91 x 91
070	6000	28	14	92 x 92	92 x 92
070	6250	28	14	94 x 94	94 x 94
070	6500	28	14	96 x 96	96 x 96
070	6750	28	15	98 x 98	98 x 98
070	7000	28	15	101 X 101	101 X 101
110	7250	36	15	103 X 103	103 X 103
110	7500	36	16	105 x 105	105 x 105
110	7750	36	16	107 x 107	107 x 107
110	8000	36	16	109 x 109	109 x 109
110	8250	36	16	110 x 110	110 x 110
110	8500	36	16	111 x 111	111 x 111
110	8750	36	16	112 x 112	112 x 112
110	9000	36	17	113 x 113	113 x 113
110	9250	36	17	113 x 113	113 x 113
110	9500	36	17	114 x 114	114 x 114
110	9750	36	17	115 x 115	115 x 115
110	10,000	36	17	116 x 116	116 x 116
110	10,500	36	17	118 x 118	118 x 118
110	11,000	36	18	120 X 120	120 X 120
160	11,500	40	18	121 x 121	121 x 121
160	12,000	40	18	123 x 123	123 x 123
160	12,500	40	18	124 x 124	124 x 124
160	13,000	40	18	125 x 125	125 x 125
160	13,500	40	18	126 x 126	126 x 126
160	14,000	40	18	128 x 128	128 x 128
160	14,500	40	19	129 x 129	129 x 129
160	15,000	40	19	130 x 130	130 x 130
160	15,500	40	19	131 x 131	131 x 131
160	16,000	40	19	132 x 132	132 x 132

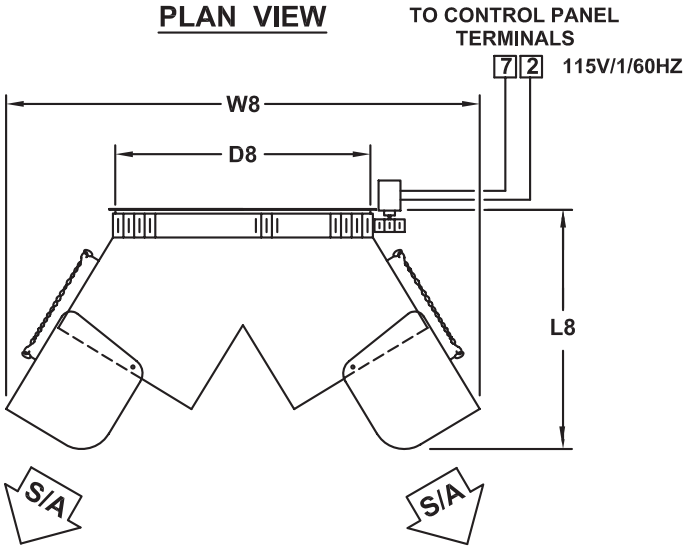
8F and 8R Discharge Dimensions and Weights

C000782

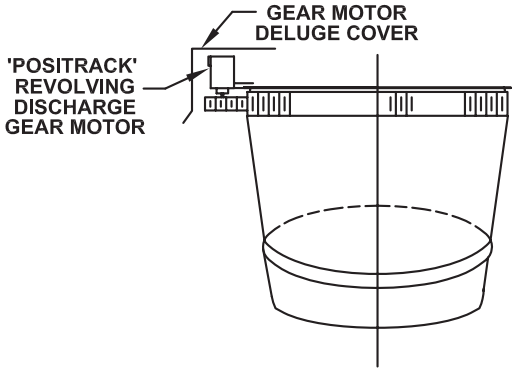
FIXED AND REVOLVING DISCHARGES TYPE 8F AND 8R FOR DIRECT FIRED VERTICAL DOWN BLAST UNITS



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.

Discharge Dimensions and Weight						
Model Size	Discharge Size	8F and 8R Discharge				
		D8	L8	W8	Weight 8F	Weight 8R
035	22	25-23/32	29-7/8	47-1/2	80	100
070	28	36-17/32	35-1/2	64	100	125
110	36	42-17/32	47-1/16	77	120	145
160	40	49-17/32	54-9/16	89-1/2	140	165

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

Discharge Options

8F and 8R Discharge Coverage

Model	SCFM	Discharge Size	Mounting Height	Fixed Coverage	Revolving Coverage
035	2000	22	16	28 X 57	57 X 57
035	2250	22	17	29 x 59	59 x 59
035	2500	22	17	31 x 62	62 x 62
035	2750	22	18	32 x 64	64 x 64
035	3000	22	18	33 x 66	66 x 66
035	3250	22	18	34 x 68	68 x 68
035	3500	22	19	35 x 70	70 x 70
070	3750	28	19	37 x 74	74 X 74
070	4000	28	20	38 x 75	75 X 75
070	4250	28	21	39 x 76	76 x 76
070	4500	28	22	39 x 77	77 x 77
070	4750	28	22	40 x 78	78 x 78
070	5000	28	23	40 x 80	80 x 80
070	5250	28	24	41 x 81	81 x 81
070	5500	28	25	41 x 82	82 x 82
070	5750	28	25	42 x 83	83 x 83
070	6000	28	26	42 x 84	84 x 84
070	6250	28	26	43 x 85	85 x 85
070	6500	28	27	44 x 87	87 x 87
070	6750	28	27	44 x 88	88 x 88
070	7000	28	28	45 x 90	90 X 90
110	7250	36	29	46 X 92	92 X 92
110	7500	36	29	47 x 94	94 x 94
110	7750	36	30	48 x 95	95 x 95
110	8000	36	30	49 x 97	97 x 97
110	8250	36	30	49 x 98	98 X 98
110	8500	36	31	50 x 99	99 x 99
110	8750	36	31	50 x 100	100 x 100
110	9000	36	32	51 x 101	101 x 101
110	9250	36	32	51 x 102	102 x 102
110	9500	36	33	52 x 103	103 x 103
110	9750	36	33	52 x 104	104 x 104
110	10,000	36	34	53 x 105	105 x 105
110	10,500	36	34	53 x 106	106 x 106
110	11,000	36	35	54 X 108	108 X 108
160	11,500	40	36	55 X 111	111 x 111
160	12,000	40	37	56 x 112	112 x 112
160	12,500	40	38	56 x 112	112 x 112
160	13,000	40	39	57 x 113	113 x 113
160	13,500	40	40	57 x 114	114 x 114
160	14,000	40	41	58 X 115	115 x 115
160	14,500	40	41	58 X 116	116 x 116
160	15,000	40	42	59 x 118	118 x 118
160	15,500	40	42	59 x 119	119 x 119
160	16,000	40	43	60 X 120	120 X 120

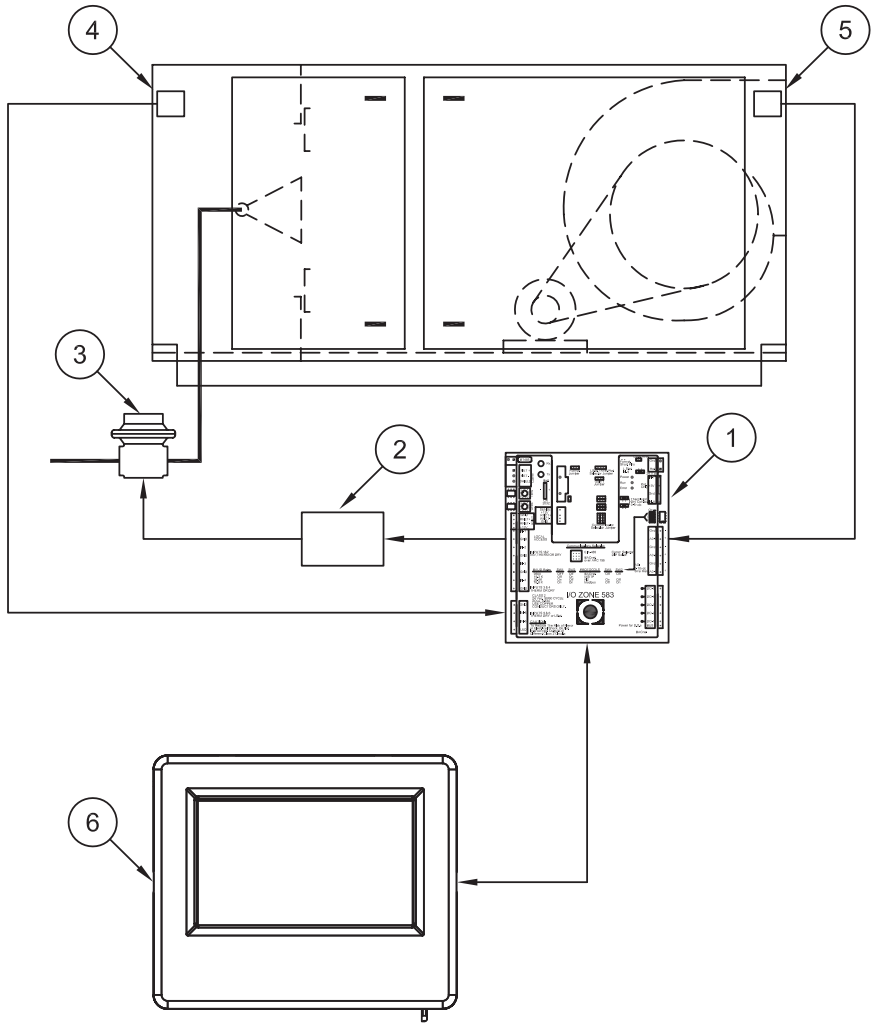
MDT Touch Control System

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



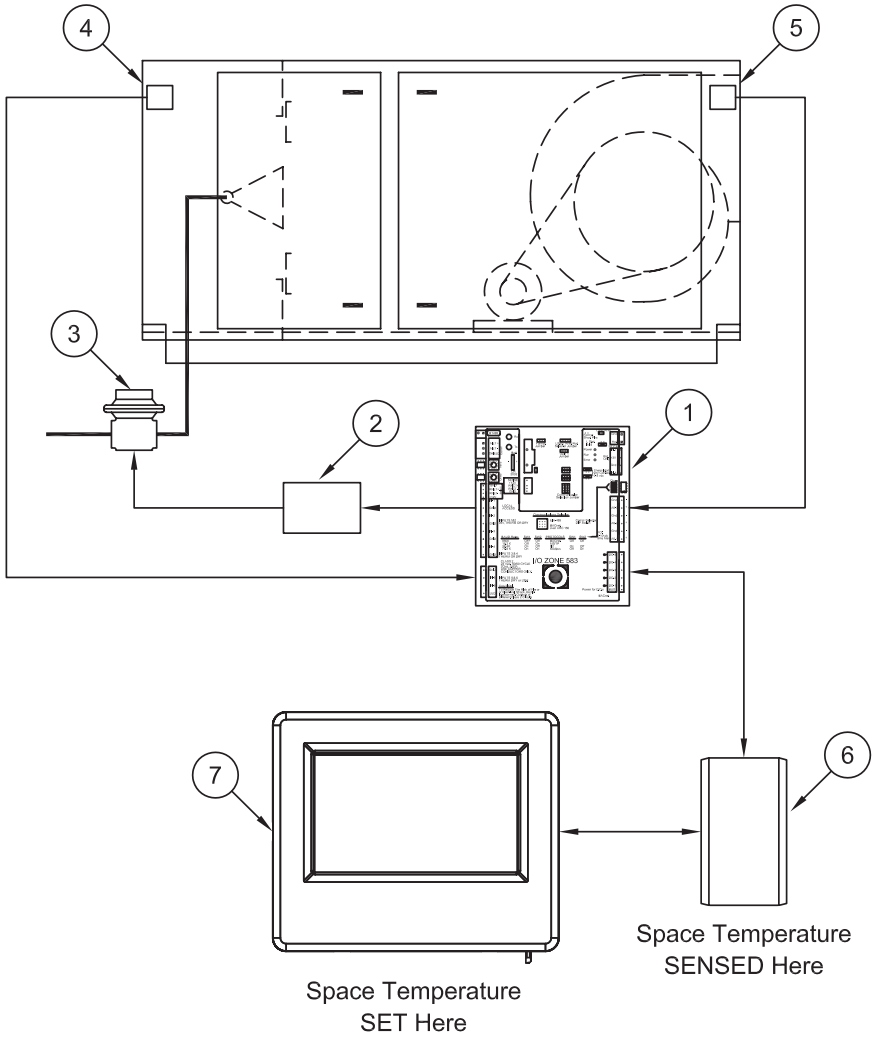
MRT Touch Control System

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



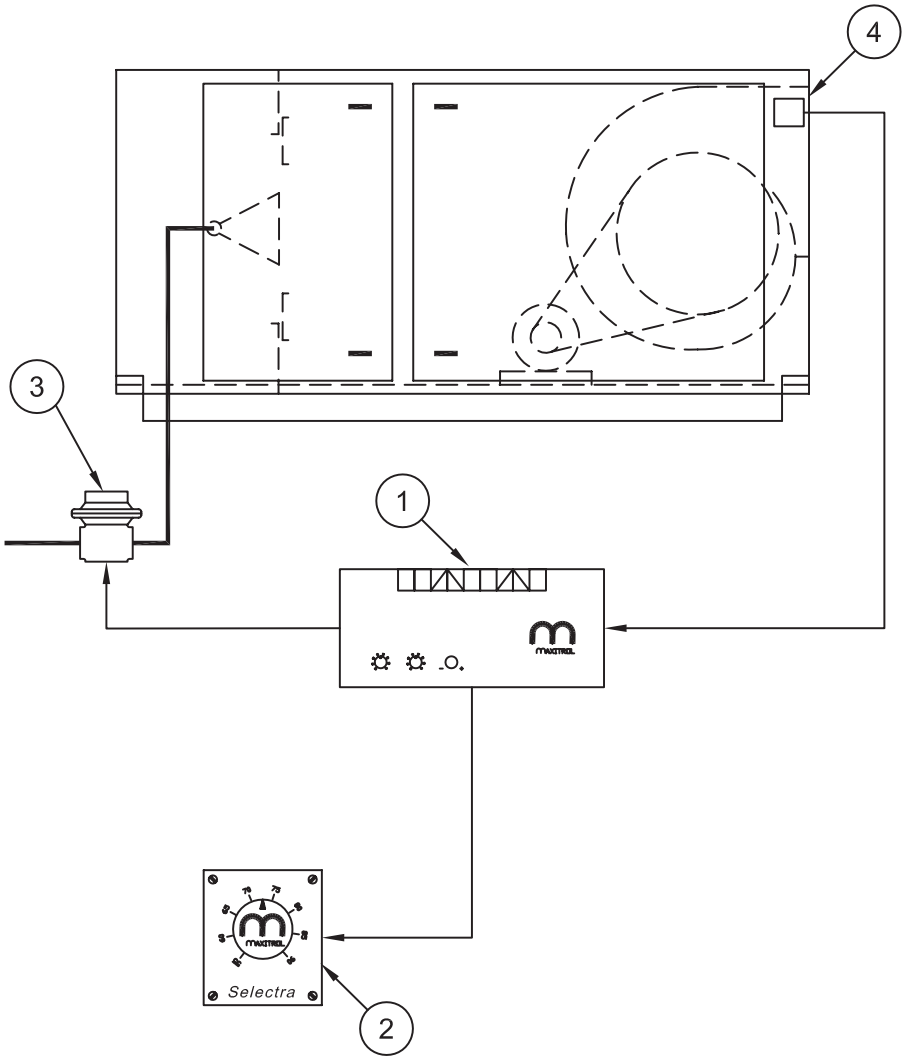
System 14

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

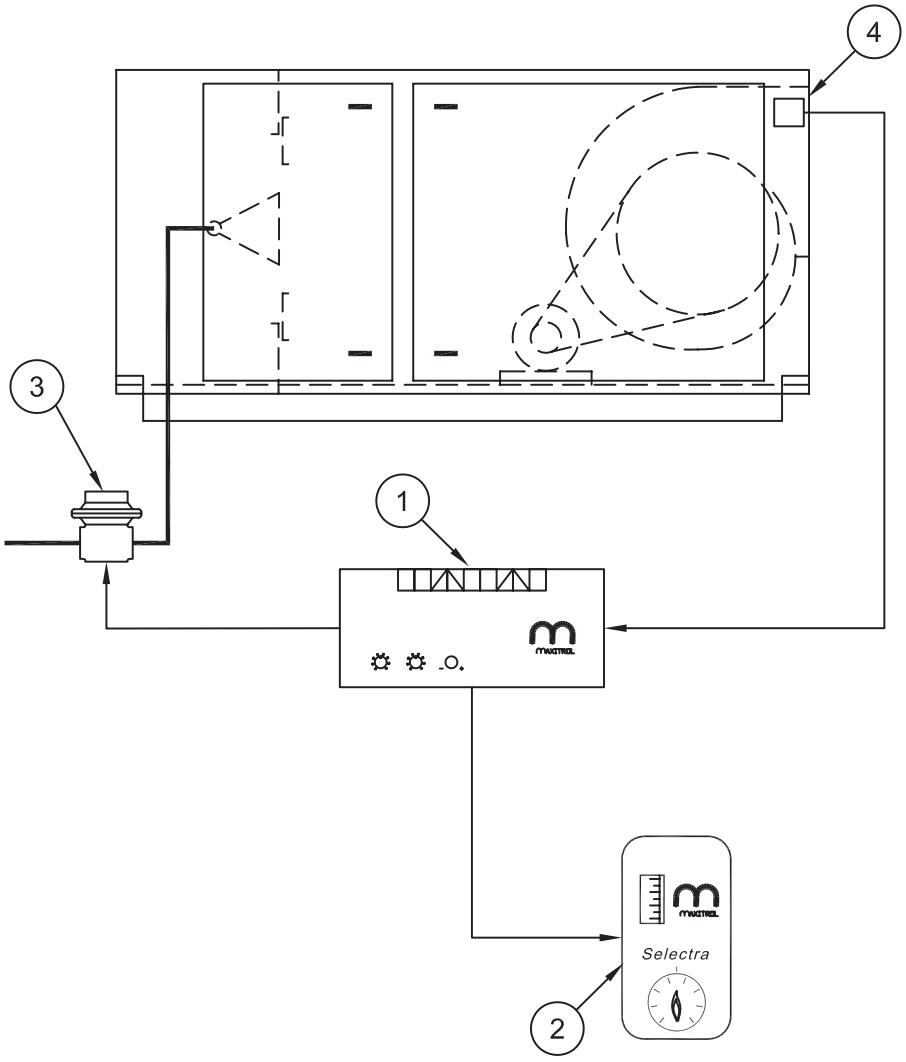
System 44

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

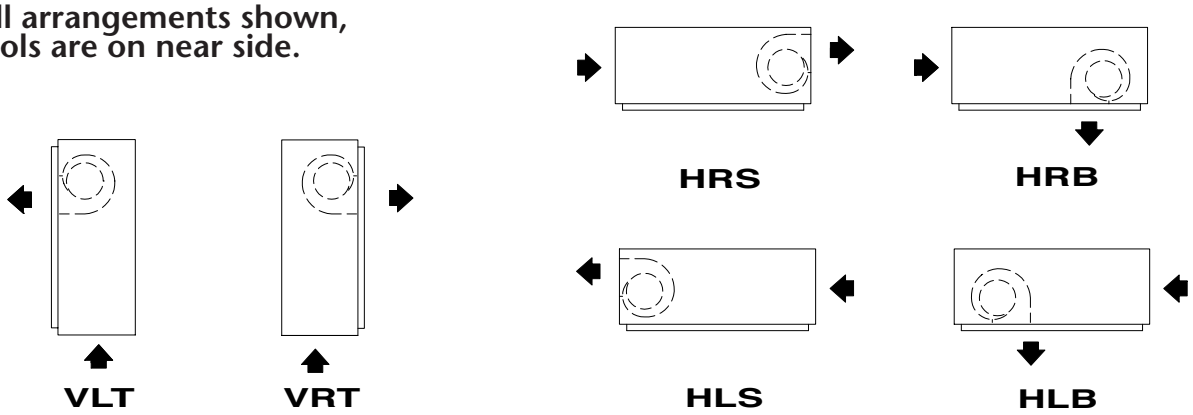


Space Temperature
SENSED & SET Here

Cabinet Arrangements and Electrical Data

Cabinet Arrangement

For all arrangements shown, controls are on near side.



Amp Draw Table

Item A

SOURCE	AMPS (2)	MOTOR HORSEPOWER				
		1	1-1/2	2	3	5
Blower Motor	115V 1 PH	16.0	20.0	24.0	34.0	NA
	230V 1 PH	8.0	10.0	12.0	17.0	NA
	208V 3 PH	4.6	6.6	7.5	10.6	16.7
	230V 3 PH	4.2	6.0	6.8	9.6	15.3
	460V 3PH	2.1	3.0	3.4	4.8	7.6
	575V 3 PH	1.7	2.4	2.7	3.9	6.1

SOURCE	AMPS (2)	MOTOR HORSEPOWER			
		7-1/2	10	15	20
Blower Motor	208V 3 PH	24.2	30.8	46.2	59.4
	230V 3 PH	22.0	28.8	42.0	54.0
	460V 3PH	11.0	14.4	21.0	27.0
	575V 3 PH	9.0	11.5	17.0	22.0

Item B

SOURCE	AMPS	ALL SIZES
Controls	Allow 2 Amps Maximum	

NOTES: 1) NA = Not Available

2) Motor amps are based on 2011 edition of NEC.

Steps to Size Optional Disconnect Switch:

1. Find Blower Motor HP from tables on pages 4 -5.
2. Find amp draw for Blower Motor HP from chart in Item A above.
3. Add 2 amps for Controls from Item B above.
4. Add amps from steps 2, and 3, then multipy by 1.25.

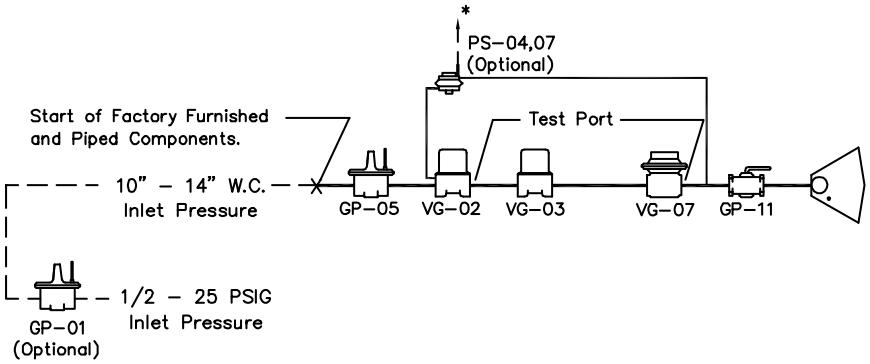
Pre-Purge Timing

The standard unit is provided with a 10 second pre-purge timer which is good for all rooftop units without inlet duct work. If inlet duct is attached to heater, ANSI requirements stipulate that the inlet duct must be purged four times prior to trial for ignition. to calculate the maximum allowable inlet duct lenth, use:

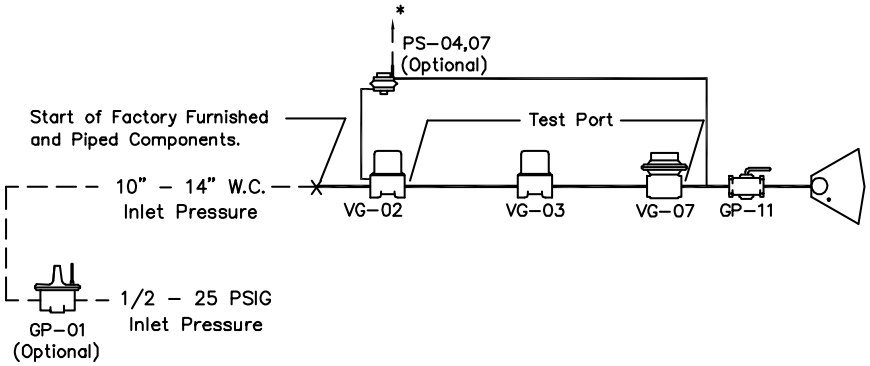
Maximum Inlet Duct Length (feet) = Inlet Duct Velocity (FPM) / 24

Schematic Component Diagrams

C000504



MODULATING GAS TRAIN UP TO 950 MBH



MODULATING GAS TRAIN OVER 950 MBH

COMPONENT IDENTIFICATION

GP–01	HIGH GAS PRESSURE REGULATOR
GP–05	MAIN GAS PRESSURE REGULATOR
GP–11	MAIN GAS SHUT–OFF VALVE
VG–02	MAIN GAS VALVE
VG–03	AUXILIARY GAS VALVE
VG–07	MODULATING VALVE
PS–04	LOW GAS PRESSURE SWITCH
PS–07	HIGH GAS 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. For inlet pressures under 10" W.C. – Please consult factory.
3. **The standard ETL listed unit meets ANSI, FM and IRI requirements.**

Weights

Horizontal Unit Weights (Approximate)

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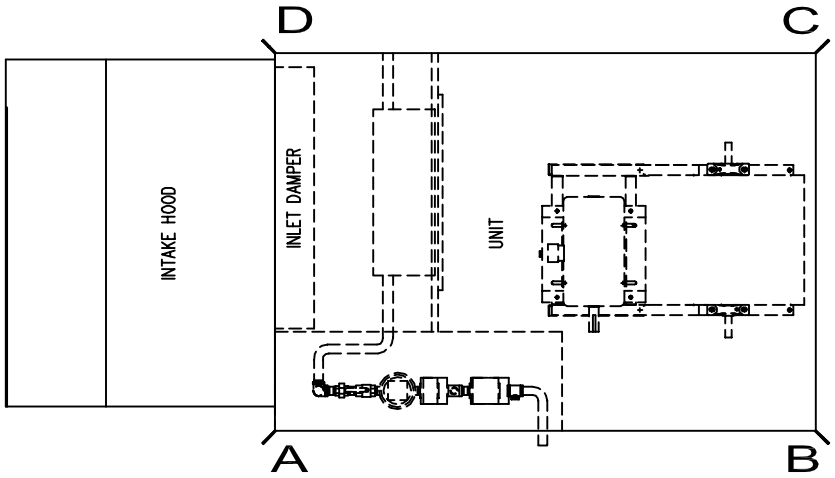


PLAN VIEW HORIZONTAL UNIT
WITHOUT V-BANK

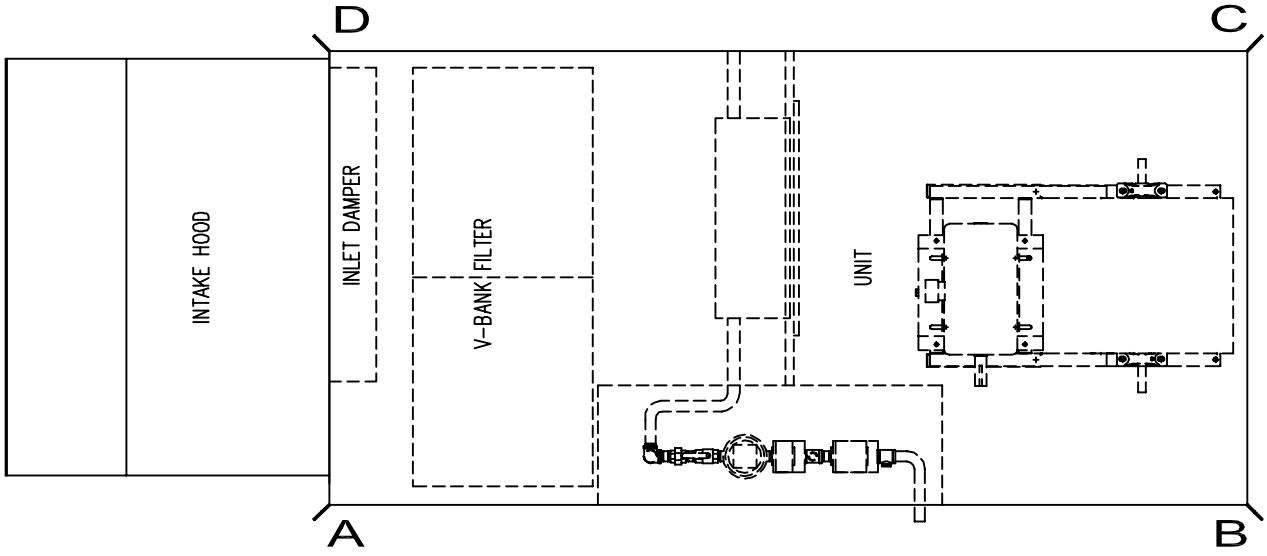
Model	Base Unit without V-Bank					Shipping Crate	Inlet Hood (No Filters)
	Total (Base Unit)	Corner Weights					
		A	B	C	D		
035	685	199 White	195 White	141 Red	150 Red	253	65
070	912	256 White	260 White	192 White	204 White	311	120
110	1370	363 Yellow	382 Yellow	325 Yellow	300 Yellow	402	167
160	1576	453 Yellow	430 Yellow	328 Yellow	365 Yellow	449	259

NOTE: *Color shown under corner weights indicates proper optional hanger isolator.*

Weights

Horizontal Unit Weights (Approximate)

C000508



PLAN VIEW HORIZONTAL UNIT
WITH V-BANK

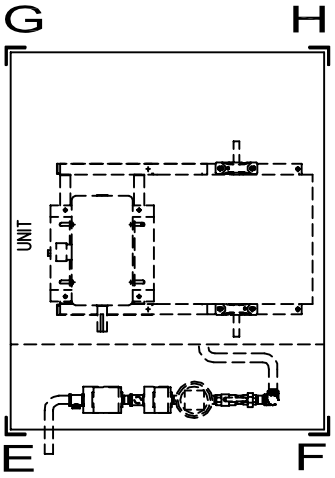
Model	Base Unit with V-Bank					Shipping Crate	Inlet Hood (No Filters)
	Total (Base Unit)	Corner Weights					
		A	B	C	D		
035	838	223 White	259 White	183 White	173 Red	316	65
070	1107	297 White	334 White	242 White	234 White	402	120
110	1601	399 Yellow	478 Yellow	396 Yellow	328 Yellow	535	167
160	1845	491 Yellow	543 Yellow	410 Yellow	401 Yellow	576	259
Model	Base Unit with V-Bank & Return Damper					Shipping Crate	Inlet Hood (No Filters)
	Total (Base Unit)	Corner Weights					
		A	B	C	D		
035	862	235 White	259 White	183 White	185 Red	316	65
070	1141	314 White	334 White	242 White	251 White	402	120
110	1699	448 Yellow	478 Yellow	396 Yellow	377 Yellow	535	167
160	1965	551 Yellow	543 Yellow	410 Yellow	461 Yellow	576	259

NOTE: *Color shown under corner weights indicates proper optional hanger isolator.*

Weights

Vertical Unit Weights (Approximate)

C000508



PLAN VIEW VERTICAL UNIT

Model	Base Unit with V-Bank					Shipping Crate	36″ Stand (See Note)
	Total (Base Unit)	Corner Weights					
		E	F	G	H		
035	779	234	214	151	180	316	178
070	1218	354	337	263	264	402	183
110	1685	508	435	349	393	535	190
160	1959	627	487	389	456	576	190
Model	Base Unit with V-Bank & Return Damper					Shipping Crate	36″ Stand (See Note)
	Total (Base Unit)	Corner Weights					
		E	F	G	H		
035	802	239	219	164	180	316	178
070	1252	363	346	271	272	402	183
110	1783	535	462	371	415	535	190
160	2078	659	520	416	483	576	190

NOTE: *Multiply times following factors for other heights: 42″ - 1.17, 48″ - 1.33, 54″ - 1.50, 60″ - 1.67*

Guide Specification – Base Unit

Applied Air

Base Bid Applied Air Model DFL _____ make-up air unit(s) designed for outdoor application. The unit discharge shall be designed for easy adaptation to external ductwork or optional accessories. The unit(s) shall be capable of delivering _____SCFM at _____TSP using a _____horsepower (ODP) (TEFC) motor operating on (115/1/60)(230/1/60) (208/3/60) (230/3/60) (460/3/60)(575/3/60).

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 main flame.

Unit(s) shall be supplied with wide range burner with a modulating turndown ratio of 25:1. Adjustable profile plates shall be provided and sized to maintain the required velocity across the line burner. The operation of the burner shall be programmed through the ignition controller with timed prepurge and flame sensed by means of a flame rod.

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 galvanized steel panels and extruded aluminum frame. The base of the unit shall be formed of heavy-gauge galvanized steel with built in curb adapter (horizontal units only). 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 from getting into wall panels. Complete access shall be provided to all components through gasketed, hinged access doors. This includes the motor, blower, burner, electrical components and manifold sections.

Guide Specification – Base Unit (con't)

Applied Air

BLOWER SECTION
Each unit shall be supplied with centrifugal forward curve, DWDI fan rated in accordance with AMCA standards. The fan 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). Motor to be mounted on adjustable base. Door safety interlock switch shall be provided for protection when blower access door is opened.

CONTROL ENCLOSURE
The unit(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 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 starter and overloads
2. Control circuit fusing
3. High temperature limit switch
4. Flame rod sensor
5. Ignition module
6. Main gas automatic shutoff valves
7. Air proving differential switches
8. Factory wired motorized inlet damper complete with end switch
9. Control transformer
10. Remote control panel with DDC controls

OPTIONAL EQUIPMENT
1. V-Bank filter box with 1" or 2" filters
2. Inlet hood and birdscreen with or without filters
3. Insulation
4. Full perimeter roof curb (horizontal units only)
5. Vibration hangers
6. Clogged filter indication
7. Disconnect switch
8. 20 gauge liners
9. High gas pressure regulator (required for inlet pressure over 1/2 PSIG)
10. Vertical arrangement with support stand and birdscreen
11. Mixing dampers with return air flow station
12. Internal blower/motor isolation (horizontal units only)
13. Discharge nozzles
14. Firestat
15. 115 Volt service receptacle
16. High/low gas pressure switch
17. Fixed or revolving discharge
18. Electronic time clock (Not Available with Touch DDC Control Systems)
19. On-off night setback thermostat (Not Available with Touch DDC Control Systems)
20. NEMA 1 or NEMA 12 remote control panel (System 14 or System 44 controls only)
21. VFD controller
22. Exhaust interlock
23. Interlocking relay

Guide Specification – Mixing Dampers With Return Air 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 CO2.

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.

Sequence of Operation – Return Air Units

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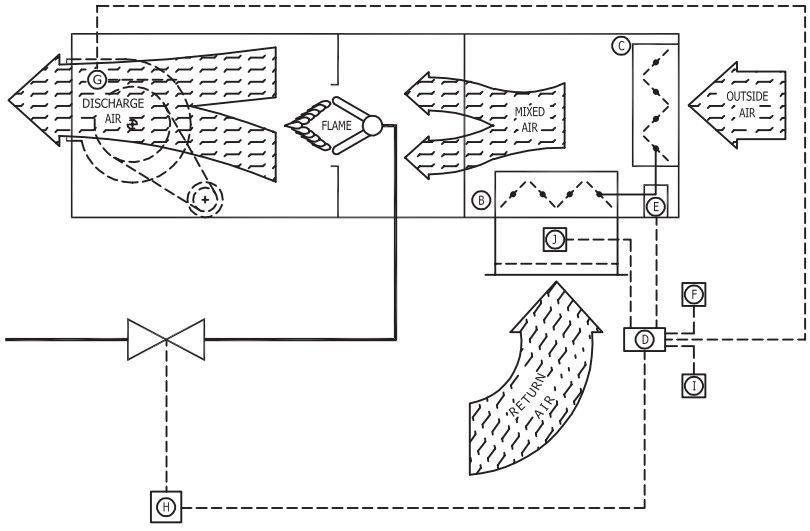
OPERATION WITH RETURN AIR UPSTREAM OF BURNER



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.

Guide Specification – Touchscreen Controller

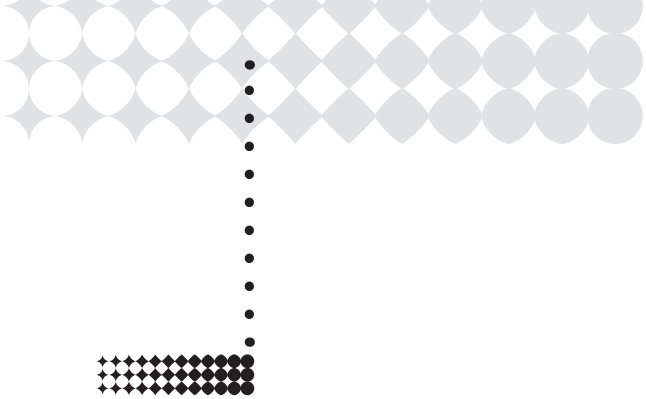
Applied Air

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:
  - o Airflow switch failure
  - o Unit on, fan off
  - o Unit off, fan on
  - o Low discharge temperature
  - o Safety circuit open
  - o 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 options
- 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
  - o Normal 5/7 schedule
  - o Holiday schedule
  - o Manual override



Applied Air

Applied Air

Efficient Direct Fired Gas Heating System

Choose Applied Air Direct Fired Gas Heating

- Heat large or small spaces with 100% combustion efficiency
- Constantly replace contaminated indoor air with fresh, heated outside air
- Optional evaporative cooling
- Low operating and maintenance costs
- Fresh air ventilation anytime — just turn off the gas heating system
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- Fans tested to AMCA standards to insure rated airflow

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