



Make-Up Air Heaters

Direct Fired Indoor/Modular
Model DFIA





Introduction

Why Use Trane Make-Up Air Units?

The direct fired modular units provide the flexibility to “mix and match” various modules for almost any indoor application, for indoor suspension or floor mounting.

- 14 standard model sizes
- 1,600 to 64,000 cfm
- 82 to 9,016 MBh.

Single blower units provide

- 1,600 to 30,000 cfm
- double blower units 9,000 to 64,000 cfm.

Larger jobs can usually be handled with multiple units without sacrificing either economy or performance.

What Is Make-Up Air?

Make-up air is an outside air supply that is brought in to relieve “air starvation.” Without make-up air, a building is under a “negative” condition and the following will occur:

- Backdrafts in natural flues, ventilators and stacks.
- Reduced air volume handled by the exhaust fans and subsequently inadequate removal of contaminants.
- Dispersal of contaminants throughout the work area by high velocity cross-currents from uncontrolled outside air sources.
- Uncomfortable and unhealthy working conditions.
- Pilot outages.

When Is It Required?

Make-up air is required whenever exhaust fans are used. This need for a building “air change” arises when there are:

- Processes which generate contaminants in the form of noxious fumes or dust.
- Activities which create excessive heat or undesirable odors.
- Hazardous material storage areas.
- Ventilation requirements for a building’s inhabitants.
- State and local code requirements.

Why Use Make-Up Air Units?

Outside air should not be allowed to drift in through windows, door cracks and other openings – creating a strain on the heating system. Outside air should be controlled, tempered and coordinated with the exhaust by a make-up air unit. The latter is reliable, efficient and does not disrupt building activities.

Why Use Direct Gas-Firing?

Maximum economy is realized with direct gas-firing because the incoming air is heated directly in the burner chamber. This provides 100 percent efficiency (92 percent sensible,

8 percent latent) while eliminating a heat exchanger or combustion chamber that could burn out or corrode.

Trane direct-fired units are factory tested, include the necessary controls for operating the system and generally cost less than alternate systems.

Installation is simple since the unit, (when shipping permits), is shipped as a complete package.

The burner is fully modulating, with a minimum firing rate of four percent of full input. This characteristic results in just the right amount of heat under all operating conditions.

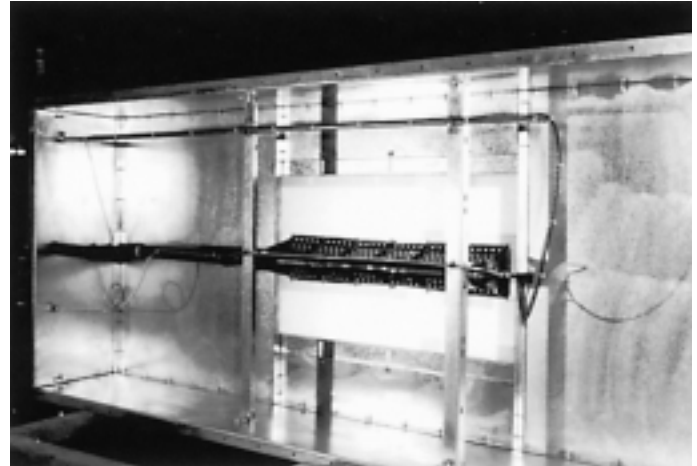
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Features and Benefits



Discharge of fan section



Gas burner section



V-bank filter with hinged access door



Gas manifold and control cabinet

Feature:
Basic unit is factory assembled and wired
Benefit:
Reduces field installation cost

Feature:
Factory tested
Benefit:
Eliminates majority of field start-up problem caused by defective controls

Feature:
Adjustable motor mount
Benefit:
Belt tension can be field adjusted for maximum belt life

Feature:
All fuses factory furnished
Benefit:
Delay at start-up eliminated

Feature:
Maxitrol System 14 and System 44
Benefit:
Fast acting temperature control systems available

Feature:
Return air cycle capability
Benefit:
Return air cycle results in fuel economy for pressurized heating systems and eliminates need for two-speed fan operation
Minimizes heating cost



Features and Benefits

Reliable Operation

The standard unit includes all of the controls needed for trouble-free operation.

If the designer does not utilize a master panel for consolidating mechanical equipment, an optional remote control station should be ordered. This device includes switches and signal lights for operating the make-up air unit and monitoring its performance from any convenient location.

While rare, malfunctions can occur because a belt breaks, local power is interrupted or a component fails. If this should happen, the unit's control system is designed to take over. Its overlapping fail-safe protective devices will turn on an alarm light and prevent burner operation until the problem has been corrected.

Because of this attention to detail, combustion will be clean and odorless under the most adverse conditions. The incoming "make-up air" will be at least five times purer than the requirements set down by the U.S. Bureau of Standards.

Equipment Approval Options

Owners and specifiers have three very important reasons for wanting equipment approvals. One reason is to establish a manufacturer's reliability.

A second looks for conformance with equipment standards if any have been established for the particular product. And finally, there may be requirements set down by an industrial user's insurance carrier.

Trane has gone to great lengths to satisfy these needs. In the first case, reliability is established for our standard unit through conservative design and the use of U.L. listed components.

For industrial applications, the unit can also be furnished with special gas controls to comply with FM or IRI. The latter is available for applications where the exact insurance approval agency has not been established.

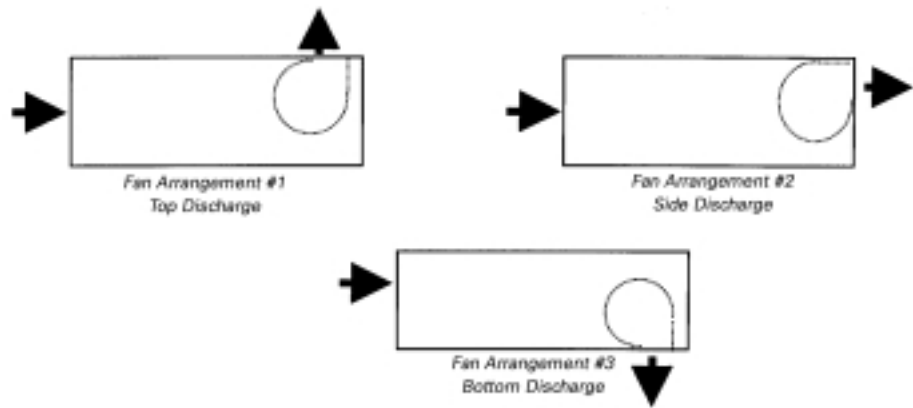
Special Construction Features

- External bearings for easy service and lubrication.
- External motor for ease of service and belt maintenance.
- External bearings and motor allow the unit to operate up to 170 F without any modifications and up to 300 F with minor alterations making it perfect for many process applications.
- Hollow fan shaft on double blower models eliminate the need for a center bearing which is difficult to service.
- Enlarged filter sections increasing filter life and reducing service time.
- Hinged filter access door.
- Service platform available as an option for easy maintenance on suspended units.

Unit Configurations

Horizontal Configurations

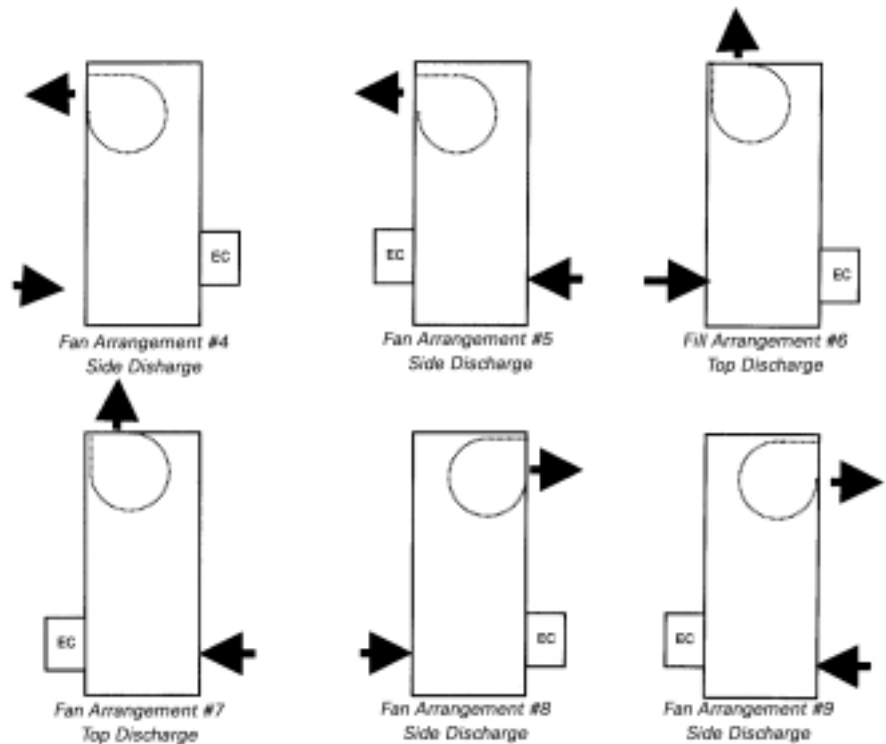
For all arrangements shown, controls, gas piping and fan motor are on the near side. Selected horizontal units are available with special options — cooling coils (DX, chilled water), steam and electric coils, no burner section. Contact your Trane representative for availability and pricing.



Unit Configurations

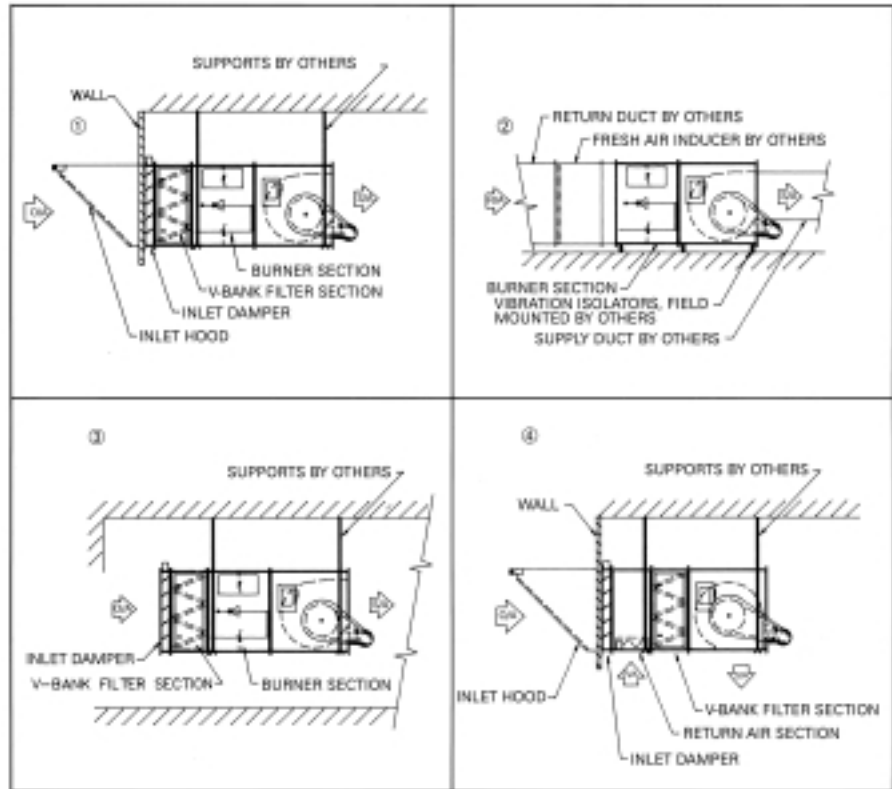
Vertical Configurations

For all arrangements shown, the gas piping is on the near side. The electric control cabinet (EC) and disconnect are on the side opposite the air entering side. Selected vertical units are available with special options – steam and electric coils, no burner section. Contact your Trane representative for availability.



Application Considerations

Application and Various Modular Arrangements



1
Make-up air units are typically used to compensate for air being exhausted from a building or other structure.

2
Application for closed systems such as ovens or paint booths (consult home office).

3
For use as a door heater where outside air is heated and not prevented from infiltrating.

4
The DFI can be used as an air handler, no burner section. Can also be used with DX, electric, indirect fired section, CW, HW and steam coils. Contact your Trane representative.



Selection Procedure

Selection Procedure

Calculating Total External Static Pressure to Determine Fan Motor Horsepower

To determine the fan motor horsepower, use the following steps:

1. Select Unit

Determine cabinet size and cfm

2. Determine Static Pressure of Optional Accessories

Add the static pressures of the optional accessories.

3. Determine External Static Pressure

Calculate external static pressure of system due to ductwork, grilles, etc. This is the static pressure external to the DFIA unit and is up to the system designer to determine.

4. Calculate Total External Static Pressure

Add the static pressures of the optional accessories to the external static pressure to determine total external static pressure.

5. Use Tables PD-1 and PD-2 to determine the fan motor horsepower.

Example:

1. Specification calls for a 40,000 cfm unit. Select a size 225.

2. Unit will require an inlet hood, inlet damper and a v-bank filter. Therefore, the static pressure of the optional accessories is 0.51" WC

Fresh Air Inlet Hood and Birdscreen	0.13" WC
Motor Operated Inlet Damper	0.13" WC
V-bank Filter Section	0.25" WC
<hr/>	
Static Pressure of Optional Accessories	0.51" WC

3. Engineer has determined that the external static pressure due to the ductwork is 0.75" WC.

4. Static Pressure of optional accessories	0.51" WC
External static pressure	0.75" WC
<hr/>	
Total External Static Pressure	1.26" WC

5. For a size 225 unit at 40,000 cfm and 1.26" total external static pressure, a 30 hp fan motor will be required



Model Number Description

DFI A 109 1 A D N A 1 AA B 1 2 0 0 0 AH
 1,2,3 4 5,6,7 8 9 10 11 12 13 14,15 16 17 18 19 20 21 22

Digits 1,2,3 — Unit Description

DFI = Direct Fired Indoor Unit

Digit 4 — Development Sequence

A = First Generation

Digits 5,6,7 — Fan Section

- 109 = Unit Size 109
- 112 = Unit Size 112
- 115 = Unit Size 115
- 118 = Unit Size 118
- 120 = Unit Size 120
- 122 = Unit Size 122
- 125 = Unit Size 125
- 130 = Unit Size 130
- 215 = Unit Size 215
- 218 = Unit Size 218
- 220 = Unit Size 220
- 222 = Unit Size 222
- 225 = Unit Size 225
- 230 = Unit Size 230
- SSS = Special Unit Size

Digit 8 — Burner Section

- 0 = Without Burner Section
- 1 = With Burner Section

Digit 9 — Main Power Supply

- 0 = No Selection
- A = 115/60/1
- B = 230/60/1
- C = 208/60/1
- D = 208/60/3
- E = 230/60/3
- F = 460/60/3
- S = Special

Digit 10 — Design Sequence

D = Design Sequence

Digit 11 — Fuel

- 0 = No Selection
- N = Natural Gas
- P = LP Gas (Propane)
- S = Special

Digit 12 — Gas Control Option

- A = Series 14 Constant Discharge Temp
- B = Series 44 SpaceTemp Control
- S = Special

Digit 13 — Gas Train Approvals

- 1 = Standard
- 3 = IRI
- 4 = FM
- S = Special

Digit 14,15 — Burner Input Rating (MBH)

- 00= No Selection
- AA = 275 MBH Input
- AB = 550 MBH Input
- AC = 825 MBH Input
- AD = 990 MBH Input
- AE = 1100 MBH Input
- AF = 1375 MBH Input
- AG = 1650 MBH Input
- AH = 1925 MBH Input
- AJ = 2200 MBH Input
- AK = 2475 MBH Input
- AL = 2750 MBH Input
- AN = 3025 MBH Input
- AP = 3300 MBH Input
- AQ = 3575 MBH Input
- AR = 3850 MBH Input
- AT = 4125 MBH Input
- AV = 4400 MBH Input
- AW = 4675 MBH Input
- AX = 4950 MBH Input
- AY = 5225 MBH Input
- AZ = 5500 MBH Input
- A1 = 5775 MBH Input
- A2 = 6050 MBH Input
- A3 = 6325 MBH Input
- A4 = 6600 MBH Input
- A5 = 6875 MBH Input
- A6 = 7150 MBH Input
- A7 = 7425 MBH Input
- A8 = 7700 MBH Input
- A9 = 7975 MBH Input
- BA = 8250 MBH Input
- BB = 8525 MBH Input
- BC = 8800 MBH Input
- BD = 9075 MBH Input
- SS = Special



Model Number Description

DFI A 109 1 A D N A 1 AA B 1 2 0 0 0 AH
 1,2,3 4 5,6,7 8 9 10 11 12 13 14,15 16 17 18 19 20 21 22

Digit 16 — Blower Motor HP

- 0 = No Selection
- B = ¼ HP Motor
- C = 1 HP Motor
- D = 1 ½ HP
- E = 2 HP Motor
- F = 3 HP Motor
- G = 5 HP Motor
- H = 7 ½ HP Motor
- J = 10 HP Motor
- K = 15 HP Motor
- L = 20 HP Motor
- M = 25 HP Motor
- P = 30 HP Motor
- Q = 40 HP Motor
- R = 50 HP Motor
- T = 60 HP Motor
- S = Special

Digit 17 — Motor Speed and Starter

- 0 = No Selection
- 1 = Single Speed ODP 1800 RPM
- 2 = Single Speed TEFC 1800 RPM
- 3 = Single Speed Energy Effic ODP 1800 RPM
- 4 = Single Speed Energy Effic TEFC 1800 RPM
- 5 = 2S1W ODP 1800/900 RPM
- 6 = 2S2W ODP 1800/1200 RPM
- S = Special

Digit 18 — Fan Discharge*

Horizontal Arrangement

- 1 = Arrangement 1, Top
- 2 = Arrangement 2, Side
- 3 = Arrangement 3, Bottom

Vertical Arrangement

- 4 = Arrangement 4, Side
- 5 = Arrangement 5, Side
- 6 = Arrangement 6, Top
- 7 = Arrangement 7, Top
- 8 = Arrangement 8, Side
- 9 = Arrangement 9, Side

*Select arrangements from pages 6 and 7.

Digit 19 — Inlet Hood and Birdscreen

- 0 = None
- A = Inlet Hood and Birdscreen with Permanent Filters
- B = Inlet Hood and Birdscreen without Filters

Digit 20 — V-Bank Filter Section

- 0 = No Selection
- A = V-Bank Filter Section with Permanent Filters
- B = V-Bank Filter Section without Filters
- C = V-Bank Filter Section with Throwaway Filters

Digit 21 — Dampers/Mixing Box

- 0 = No Selection
- A = Motorized RA Damper
- B = Motorized 75/25 Damper
- C = Mixing Box – Temperature Control
- D = Mixing Box – Building Pressure Control
- E = Mixing Box – Manual Control

Digit 22 — Miscellaneous Options

- AA = Controls opposite from standard
- AB = Motorized Inlet Damper
- AC = Insulation on Blower Section
- AD = Insulation on Burner Section
- AE = Insulation on Return Air Section
- AF = Insulation on Filter Section
- AG = Inlet On-Off Duct Stat
- AJ = 115V Duplex Service Receptacle with Power Transformer
- AK = Circuit Analyzer
- AL = UV Flame Sensor
- AN = Clogged Filter Switch with Light
- AP = Exhaust Interlock
- AQ = Interlocking Relay
- AR = City of Chicago Controls
- AT = Omit Disconnect Switch
- AV = High Gas Pressure Regulator 1-5 PSIG
- AW = High Gas Pressure Regulator 5-10 PSIG
- AX = Adjustable Drive
- AY = Discharge Louver
- AZ = Painted Blower Cabinet
- A1 = Painted Burner Section
- A2 = Painted Return Air Section
- A3 = Painted Filter Section
- A4 = Painted Discharge Louver
- BJ = Low Gas Pressure Burner
- SS = Special



Performance Data

Table PD-1 — Direct Fired Indoor Unit Performance Data

Models	Blower DFI Size	CFM	FPM	Total External Static Pressure (WC)							
		Std Air @ 70	Outlet Velocity	¼"	3/8"	½"	¾"	1"	1 ¼"	1 ½"	2"
109	1-9"	1600	1914	¾	1	1	1	—	—	—	—
		1900	2273	1	1	1 ½	1 ½	1 ½	1 ½	2	—
		2200	2632	1 ½	1 ½	1 ½	1 ½	2	2	2	3
		2600	3110	2	2	2	2	3	3	3	3
		3000	3589	3	3	3	3	3	3	5	5
112	1-12"	3250	2257	1 ½	2	2	2	3	3	3	3
		3500	2431	2	2	2	3	3	3	3	5
		3750	2604	2	2	3	3	3	3	3	5
		4000	2778	3	3	3	3	3	3	5	5
		4250	2951	3	3	3	3	3	5	5	5
115	1-15"	4500	2239	2	2	3	3	3	3	5	—
		5000	2488	3	3	3	3	3	5	5	5
		5500	2736	3	3	3	5	5	5	5	5
		6000	2985	5	5	5	5	5	5	5	7 ½
118	1-18"	6500	2265	3	5	5	5	5	5	5	7 ½
		7000	2439	5	5	5	5	5	5	7 ½	7 ½
		7500	2613	5	5	5	5	5	7 ½	7 ½	7 ½
		8000	2787	5	5	5	7 ½	7 ½	7 ½	7 ½	7 ½
		8500	2962	5	5	7 ½	7 ½	7 ½	7 ½	7 ½	10
120	1-20"	9000	2143	5	5	5	5	7 ½	7 ½	7 ½	—
		9500	2262	5	5	5	7 ½	7 ½	7 ½	7 ½	—
		10000	2381	5	5	5	7 ½	7 ½	7 ½	7 ½	10
		10500	2500	5	7 ½	7 ½	7 ½	7 ½	7 ½	10	10
		11000	2619	7 ½	7 ½	7 ½	7 ½	7 ½	10	10	10
122	1-22"	11000	2157	5	5	7 ½	7 ½	7 ½	7 ½	10	—
		12000	2353	7 ½	7 ½	7 ½	7 ½	7 ½	10	10	15
		13000	2549	7 ½	7 ½	7 ½	10	10	10	10	15
		14000	2745	7 ½	10	10	10	10	15	15	15
		15000	2941	—	10	10	10	15	15	15	15
125	1-25"	14000	2086	7 ½	7 ½	7 ½	7 ½	10	—	—	—
		15000	2235	7 ½	7 ½	7 ½	10	10	10	15	—
		16000	2385	7 ½	7 ½	7 ½	10	10	15	15	—
		18000	2683	10	10	10	10	15	15	15	15
		20000	2981	10	15	15	15	15	15	15	20
130	1-30"	22000	2486	10	10	10	15	15	15	15	—
		24000	2581	10	15	15	15	15	15	20	20
		26000	2796	15	15	15	15	20	20	20	25
		28000	3011	15	15	15	20	20	20	20	25
		30000	3226	20	20	20	20	25	25	25	30
215	2-15"	9000	2239	5	5	5	5	7 ½	—	—	—
		9500	2363	5	5	5	5	7 ½	7 ½	—	—
		10000	2488	5	5	5	7 ½	7 ½	7 ½	—	—
		10500	2612	5	5	7 ½	7 ½	7 ½	7 ½	7 ½	—
		11000	2736	7 ½	7 ½	7 ½	7 ½	7 ½	7 ½	10	10
		11500	2861	7 ½	7 ½	7 ½	7 ½	7 ½	7 ½	10	10
218	2-18"	12000	2985	7 ½	7 ½	7 ½	7 ½	10	10	10	15
		12500	2178	7 ½	7 ½	7 ½	7 ½	7 ½	—	—	—
		13000	2265	7 ½	7 ½	7 ½	7 ½	10	10	7 ½	—
		14000	2439	7 ½	7 ½	7 ½	10	10	10	15	—
		15000	2613	7 ½	10	10	10	10	15	15	15
		16000	2787	10	10	10	10	15	15	15	15
220	2-20"	17000	2962	10	10	10	15	15	15	15	20
		18000	2143	7 ½	10	10	10	15	15	15	—
		19000	2262	10	10	10	10	15	15	15	—
		20000	2381	10	10	10	15	15	15	15	20
		21000	2500	10	15	15	15	15	15	20	20
		22000	2619	15	15	15	15	15	20	20	20
		23000	2738	15	15	15	15	15	20	20	20
		24000	2857	15	15	15	15	20	20	20	25
		25000	2976	15	15	15	20	20	20	20	25
		26000	3095	15	20	20	20	20	20	25	25



Performance Data

Table PD-2 — Direct Fired Indoor Unit Performance Data

Models	Blower Size	CFM Std Air @ 70	FPM Outlet Velocity	Total External Static Pressure (WC)							
				1/4"	3/8"	1/2"	3/4"	1"	1 1/2"	1 1/2"	2"
222	2-22"	25000	2451	15	15	15	15	20	20	20	25
		26000	2549	15	15	15	20	20	20	20	25
		27000	2647	15	15	15	20	20	20	25	25
		28000	2745	15	20	20	20	20	25	25	30
		29000	2843	20	20	20	20	25	25	25	30
		30000	2941	20	20	20	20	25	25	25	30
		31000	3039	20	20	20	25	25	25	30	30
225	2-25"	30000	2235	15	15	15	15	20	20	—	—
		32000	2385	15	15	15	20	20	20	25	—
		34000	2534	15	20	20	20	20	25	25	30
		36000	2683	20	20	20	20	25	25	25	30
		38000	2832	20	20	20	25	25	25	30	40
		40000	2981	20	25	25	25	30	30	30	40
		42000	3130	25	25	25	30	30	30	40	40
		44000	3279	25	30	30	30	30	40	40	40
		46000	3428	30	30	30	40	40	40	50	
230	2-30"	44000	2366	20	20	20	25	25	30	—	—
		48000	2581	20	25	25	25	30	30	40	—
		52000	2796	25	25	25	30	30	40	40	50
		56000	3011	30	30	30	40	40	40	40	50
		60000	3226	30	40	40	40	40	50	50	50
		64000	3441	40	40	40	40	50	50	50	60

Notes:

- Use the following static pressures for the optional accessories:

Fresh Air Inlet Hood and Birdscreen	0.13" WC
Fresh Air Inlet Hood with Filters	0.25" WC
Motor Operated Inlet Damper	0.13" WC
V-Bank Filter Section	0.25" WC
Mixing Box	0.40" WC
Discharge Louver	0.13" WC



Performance Data

Table PD-3 — Direct Fired Indoor Unit — Burner Selection Table (MBH Input)

DFI Model	CFM Std. Air 70°	70° Rise	80° Rise	90° Rise	100° Rise	110° Rise	120° Rise
109	1600	131	150	169	188	207	225
	1900	156	178	201	223	245	268
	2200	181	207	232	258	284	310
	2600	214	244	275	305	336	366
	3000	247	282	317	352	387	423
112	3250	267	305	343	382	420	458
	3500	288	329	370	411	452	493
	3750	308	352	396	440	484	528
	4000	329	376	423	470	517	563
	4250	349	399	449	499	549	599
115	4500	370	423	475	528	581	634
	5000	411	470	528	587	646	704
	5500	452	517	581	646	710	775
	6000	493	563	634	704	775	845
118	6500	534	610	687	763	839	916
	7000	575	657	740	822	904	986
	7500	616	704	792	880	968	1057
	8000	657	751	845	939	1033	1127
	8500	698	798	898	998	1098	1197
120	9000	740	845	951	1057	1162	1268
	9500	781	892	1004	1115	1227	1338
	10000	822	939	1057	1174	1291	1409
	10500	863	986	1109	1233	1356	1479
	11000	904	1033	1162	1291	1420	1550
122	11000	904	1033	1162	1291	1420	1550
	12000	986	1127	1268	1409	1550	1690
	13000	1068	1221	1373	1526	1679	1831
	14000	1150	1315	1479	1643	1808	1972
	15000	1233	1409	1585	1761	1937	2113
125	14000	1150	1315	1479	1643	1808	1972
	15000	1233	1409	1585	1761	1937	2113
	16000	1315	1503	1690	1878	2066	2254
	17000	1397	1597	1796	1996	2195	2395
	18000	1479	1690	1902	2113	2324	2536
	20000	1643	1878	2113	2348	2583	2817
130	22000	1808	2066	2324	2583	2841	3099
	24000	1972	2254	2536	2817	3099	3381
	26000	2137	2442	2747	3052	3357	3663
	28000	2301	2630	2958	3287	3616	3944
	30000	2465	2817	3170	3522	3874	4226
215	9000	740	845	951	1057	1162	1268
	9500	781	892	1004	1115	1227	1338
	10000	822	939	1057	1174	1291	1409
	10500	863	986	1109	1233	1356	1479
	11000	904	1033	1162	1291	1420	1550
	11500	945	1080	1215	1350	1485	1620
12000	986	1127	1268	1409	1550	1690	



Performance Data

Table PD-4 — Direct Fired Indoor Unit — Burner Selection Table (MBH Input)

DFI Model	CFM Std. Air 70°	70° Rise	80° Rise	90° Rise	100° Rise	110° Rise	120° Rise
218	13000	1068	1221	1373	1526	1679	1831
	14000	1150	1315	1479	1643	1808	1972
	15000	1233	1409	1585	1761	1937	2113
	16000	1315	1503	1690	1878	2066	2254
	17000	1397	1597	1796	1996	2195	2395
	18000	1479	1690	1902	2113	2324	2536
220	18000	1479	1690	1902	2113	2324	2536
	19000	1561	1784	2007	2230	2453	2677
	20000	1643	1876	2113	2348	2583	2817
	21000	1726	1972	2219	2465	2712	2958
	22000	1808	2066	2324	2583	2841	3099
	23000	1890	2160	2430	2700	2970	3240
	24000	1972	2254	2536	2817	3099	3381
	25000	2054	2348	2641	2935	3228	3522
26000	2137	2442	2747	3052	3357	3663	
222	25000	2054	2348	2641	2935	3228	3522
	26000	2137	2442	2747	3052	3357	3663
	27000	2219	2536	2853	3170	3487	3803
	28000	2301	2630	2958	3287	3616	3944
	29000	2383	2723	3064	3404	3745	4085
	30000	2465	2817	3170	3522	3874	4226
	31000	2547	2911	3275	3639	4003	4367
225	30000	2465	2817	3170	3522	3874	4226
	32000	2630	3005	3381	3757	4132	4508
	34000	2794	3193	3592	3991	4390	4790
	36000	2958	3381	3803	4226	4649	5071
	38000	3123	3569	4015	4461	4907	5353
	40000	3287	3757	4226	4696	5165	5635
	42000	3451	3944	4437	4930	5423	5917
	44000	3616	4132	4649	5165	5682	6198
46000	3780	4320	4860	5400	5940	6480	
230	44000	3616	4132	4649	5165	5682	6198
	48000	3944	4508	5071	5635	6198	6762
	52000	4273	4883	5494	6104	6715	7325
	56000	4602	5259	5917	6574	7231	7889
	60000	4930	5635	6339	7043	7748	8452
	64000	5259	6010	6762	7513	8264	9016

Notes:

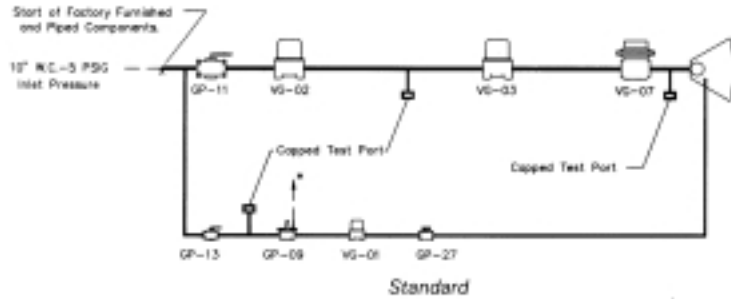
1. Determine the temperature rise required through the heater by subtracting winter design temperature from the desired indoor temperature.

2. Select burner required: $BTUH = \frac{CFM \times \Delta T \times 1.08}{.92}$

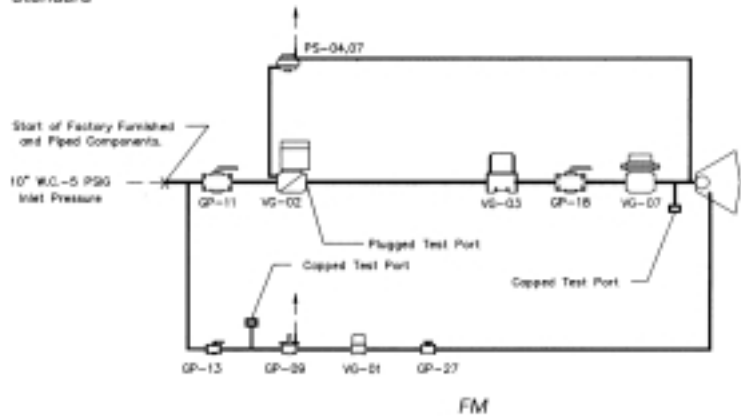
Formula includes 1.08 constant for heat content of air and .92 factor, which is an average ratio of net and gross heating values of common fuel gases (92% sensible, 8% Latent)

3. Contact your Trane representative on temperature rise requirements greater than 120 F.

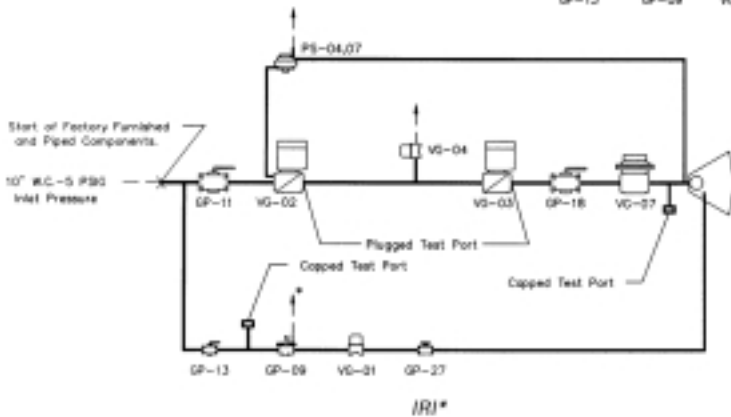
Gas Piping



Standard



FM



IRI*

Component Identification

GP-09	Pilot Gas Pressure Regulator
GP-11	Main Gas Shutoff Valve
GP-13	Pilot Gas Shutoff Valve
GP-17	Auxiliary Gas Shutoff Valve
GP-18	Auxiliary Gas Shutoff Valve
GP-27	Orificed Needle Valve
VG-01	Pilot Gas Valve
VG-02	Main Gas Valve
VG-03	Auxiliary Gas Valve
VG-04	N/O Vent Valve
VG-07	Maxitrol Modulating Valve
PS-04	Low Gas Pressure Switch
PS-07	High Gas Pressure Switch

Notes:

- 1 Vents to outside by others.
- 2 Under 825 MBh will require an additional gas pressure regulator if inlet pressure exceeds 1 psig.
- 3 4400 MBh and above will require a minimum inlet pressure of 1 psig. For inlet pressure under 1 psig, contact factory.

4

Contact factory for manifold required for CGA.

*Items PS-04, PS-07, VG-04 and GP-18 are not required to meet IRI requirements if the unit is ETL approved.

Gas Piping

Table GP-1 — Gas Pressure Regulator Selection

If Burner Size (BS) Is:	And Gas Pressure (GP) Is:	Then:
BS ≤ 825	GP < 7" WC	Call factory to verify availability and pricing
	7" WC ≤ GP < 10" WC	Use low gas pressure burner
	10" WC ≤ GP < 1 PSI	No low gas pressure burner or high gas pressure regulator required
	1 PSI ≤ GP ≤ 5 PSI	Use high gas pressure regulator 1-5 PSI
	5 PSI < GP ≤ 10 PSI	Use high gas pressure regulator 5-10 PSI
	10 PSI < GP ≤ 50 PSI	Use high gas pressure regulator over 10 PSI
990 ≤ BS ≤ 4125	50 PSI < GP	Call factory to verify availability and pricing
	GP < 7" WC	Call factory to verify availability and pricing
	7" WC ≤ GP < 10" WC	Use low gas pressure burner
	10" WC ≤ GP ≤ 5 PSI	No low gas pressure burner or high gas pressure regulator required
	5 PSI < GP ≤ 10 PSI	Use high gas pressure regulator 5-10 PSI
4400 ≤ BS ≤ 9075	10 PSI < GP ≤ 50 PSI	Use high gas pressure regulator over 10 PSI
	50 PSI < GP	Call factory to verify availability and pricing
	GP < 1 PSI	Call factory to verify availability and pricing
	1 PSI ≤ GP ≤ 5 PSI	No low gas pressure burner or high gas pressure regulator required
	5 PSI < GP ≤ 10 PSI	Use high gas pressure regulator 5-10 PSI
	10 PSI < GP ≤ 50 PSI	Use high gas pressure regulator over 10 PSI
	50 PSI < GP	Call factory to verify availability and pricing



Gas Piping

Table GP-2 — Gas Pipe Connection Size — Direct-Fired Units — IRI Gas Train — R/A Meeting ETL

MBH	Inlet Gas Pressure (inches of water column)									
	6-7"	8-11"	12-14"	15-20"	21-27"	1 psi	2 psi	3 psi	4 psi	5 psi
275	1"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"
550	1 1/4"	1"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"
825	2"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"
1,100	2"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"
1,375	2"	1 1/2"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"
1,650	N/A	1 1/2"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"
1,925	N/A	2"	1 1/2"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"
2,200	N/A	2"	1 1/2"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"
2,475	2 1/2"	2"	2"	1 1/2"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"
2,750	3"	2"	2"	1 1/2"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"
3,025	3"	2 1/2"	2"	2"	1 1/2"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"
3,300	N/A	2 1/2"	2"	2"	2"	2"	2"	2"	2"	2"
3,575	N/A	2 1/2"	2"	2"	2"	2"	2"	2"	2"	2"
3,850	N/A	2 1/2"	2"	2"	2"	2"	2"	2"	2"	2"
4,125	N/A	2 1/2"	2"	2"	2"	2"	2"	2"	2"	2"
4,400	N/A	2 1/2"	2"	2"	2"	2"	2"	2"	2"	2"
4,675	N/A	3"	2 1/2"	2"	2"	2"	2"	2"	2"	2"
4,950	N/A	3"	2 1/2"	2"	2"	2"	2"	2"	2"	2"
5,225	N/A	3"	2 1/2"	2"	2"	2"	2"	2"	2"	2"
5,500	N/A	3"	2 1/2"	2 1/2"	2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
5,775	N/A	N/A	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
6,050	N/A	N/A	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
6,325	N/A	N/A	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
6,600	N/A	N/A	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
6,875	N/A	N/A	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
7,150	N/A	N/A	3"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
7,700	N/A	N/A	3"	2 1/2"	2 1/2"	3"	3"	3"	3"	3"
8,250	N/A	N/A	3"	3"	2 1/2"	3"	3"	3"	3"	3"
8,800	N/A	N/A	N/A	3"	3"	3"	3"	3"	3"	3"
9,350	N/A	N/A	N/A	3"	3"	3"	3"	3"	3"	3"
9,900	N/A	N/A	N/A	3"	3"	3"	3"	3"	3"	3"
10,450	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
11,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
11,550	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A



Gas Piping

Table GP-3 — Gas Pipe Connection Size — Direct-Fired Units — FM Gas Train — R/A Meeting ETL

MBH	Inlet Gas Pressure (inches of water column)									
	6-7"	8-11"	12-14"	15-20"	21-27"	1 psi	2 psi	3 psi	4 psi	5 psi
275	1"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"
550	1 1/4"	1"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"
825	1 1/2"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"
1,100	2"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"
1,375	2"	1 1/2"	1 1/2"	1 1/2"	1 1/2"	1 1/2"	1 1/2"	1 1/2"	1 1/2"	1 1/2"
1,650	2"	1 1/2"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"
1,925	2"	2"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"
2,200	N/A	2"	1 1/2"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"
2,475	N/A	2"	1 1/2"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"
2,750	N/A	2"	2"	1 1/2"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"
3,025	N/A	2"	2"	1 1/2"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"
3,300	N/A	2 1/2"	2"	2"	2"	2"	2"	2"	2"	2"
3,575	N/A	3"	2"	2"	2"	2"	2"	2"	2"	2"
3,850	N/A	3"	2"	2"	2"	2"	2"	2"	2"	2"
4,125	N/A	3"	2"	2"	2"	2"	2"	2"	2"	2"
4,400	N/A	3"	2"	2"	2"	2"	2"	2"	2"	2"
4,675	N/A	3"	2"	2"	2"	2"	2"	2"	2"	2"
4,950	N/A	3"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
5,225	N/A	3"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
5,500	N/A	3"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
5,775	N/A	N/A	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
6,050	N/A	N/A	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
6,325	N/A	N/A	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
6,600	N/A	N/A	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
6,875	N/A	N/A	3"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
7,150	N/A	N/A	3"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
7,700	N/A	N/A	3"	3"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
8,250	N/A	N/A	3"	3"	3"	3"	3"	3"	3"	3"
8,800	N/A	N/A	N/A	3"	3"	3"	3"	3"	3"	3"
9,350	N/A	N/A	N/A	3"	3"	3"	3"	3"	3"	3"
9,900	N/A	N/A	N/A	3"	3"	3"	3"	3"	3"	3"
10,450	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
11,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
11,550	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A



Gas Piping

Table GP-4 — Gas Pipe Connection Size — Direct-Fired Units — Standard Gas Train — R/A Meeting ETL

MBH	Inlet Gas Pressure (inches of water column)									
	6-7"	8-11"	12-14"	15-20"	21-27"	1 psi	2 psi	3 psi	4 psi	5 psi
275	1"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"
550	1 1/4"	1"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"
825	1 1/2"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"
1,100	2"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"
1,375	2"	1 1/2"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"
1,650	2"	1 1/2"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"
1,925	2 1/2"	2"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"
2,200	2 1/2"	2"	1 1/2"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"
2,475	2 1/2"	2"	1 1/2"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"
2,750	2 1/2"	2"	2"	1 1/2"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"
3,025	2 1/2"	2"	2"	1 1/2"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"
3,300	2 1/2"	2"	2"	2"	2"	2"	2"	2"	2"	2"
3,575	3"	2 1/2"	2"	2"	2"	2"	2"	2"	2"	2"
3,850	3"	2 1/2"	2"	2"	2"	2"	2"	2"	2"	2"
4,125	N/A	2 1/2"	2"	2"	2"	2"	2"	2"	2"	2"
4,400	N/A	2 1/2"	2"	2"	2"	2"	2"	2"	2"	2"
4,675	N/A	2 1/2"	2"	2"	2"	2"	2"	2"	2"	2"
4,950	N/A	2 1/2"	2"	2"	2"	2"	2"	2"	2"	2"
5,225	N/A	2 1/2"	2 1/2"	2"	2"	2"	2"	2"	2"	2"
5,500	N/A	2 1/2"	2 1/2"	2"	2"	2"	2"	2"	2"	2"
5,775	N/A	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
6,050	N/A	3	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
6,325	N/A	3	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
6,600	N/A	3	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
6,875	N/A	3	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
7,150	N/A	N/A	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
7,700	N/A	N/A	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
8,250	N/A	N/A	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
8,800	N/A	N/A	3	3	3	3	3	3	3	3
9,350	N/A	N/A	3	3	3	3	3	3	3	3
9,900	N/A	N/A	3	3	3	3	3	3	3	3
10,450	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
11,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
11,550	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A



Gas Piping

Table GP-5 — Gas Pipe Connection Size — Direct-Fired Units — IRI Gas Train — 100% OA or R/A Not ETL

MBH	Inlet Gas Pressure (inches of water column)									
	6-7"	8-11"	12-14"	15-20"	21-27"	1 psi	2 psi	3 psi	4 psi	5 psi
275	1 1/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"
550	N/A	1"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"
825	N/A	N/A	1"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"
1,100	N/A	1 1/2"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"
1,375	N/A	2"	1 1/2"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"
1,650	N/A	N/A	1 1/2"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"
1,925	N/A	N/A	2"	1 1/2"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"
2,200	N/A	N/A	2"	1 1/2"	1 1/2"	1 1/2"	1 1/2"	1 1/2"	1 1/2"	1 1/2"
2,475	N/A	N/A	2"	2"	1 1/2"	1 1/2"	1 1/2"	1 1/2"	1 1/2"	1 1/2"
2,750	N/A	N/A	2"	2"	1 1/2"	1 1/2"	1 1/2"	1 1/2"	1 1/2"	1 1/2"
3,025	N/A	N/A	2"	2"	2"	2"	2"	2"	2"	2"
3,300	N/A	N/A	2"	2"	2"	2"	2"	2"	2"	2"
3,575	N/A	N/A	2 1/2"	2"	2"	2"	2"	2"	2"	2"
3,850	N/A	N/A	2 1/2"	2"	2"	2"	2"	2"	2"	2"
4,125	N/A	N/A	2 1/2"	2"	2"	2"	2"	2"	2"	2"
4,400	N/A	N/A	2 1/2"	2 1/2"	2"	2"	2"	2"	2"	2"
4,675	N/A	N/A	2 1/2"	2 1/2"	2"	2"	2"	2"	2"	2"
4,950	N/A	N/A	2 1/2"	2 1/2"	2"	2"	2"	2"	2"	2"
5,225	N/A	N/A	3"	2 1/2"	2"	2"	2"	2"	2"	2"
5,500	N/A	N/A	3"	2 1/2"	2 1/2"	2"	2"	2"	2"	2"
5,775	N/A	N/A	3"	2 1/2"	2 1/2"	2"	2"	2"	2"	2"
6,050	N/A	N/A	3"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
6,325	N/A	N/A	N/A	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
6,600	N/A	N/A	N/A	3"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
6,875	N/A	N/A	N/A	3"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
7,150	N/A	N/A	N/A	3"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
7,700	N/A	N/A	N/A	3"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
8,250	N/A	N/A	N/A	N/A	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
8,800	N/A	N/A	N/A	N/A	3"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
9,350	N/A	N/A	N/A	N/A	3"	3"	3"	3"	3"	3"
9,900	N/A	N/A	N/A	N/A	3"	3"	3"	3"	3"	3"
10,450	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
11,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
11,550	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
12,100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A



Gas Piping

Table GP-6 — Gas Pipe Connection Size — Direct-Fired Units — FM Gas Train — 100% OA or R/A Not ETL

MBH	Inlet Gas Pressure (inches of water column)									
	6-7"	8-11"	12-14"	15-20"	21-27"	1 psi	2 psi	3 psi	4 psi	5 psi
275	1 1/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"
550	N/A	1"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"
825	N/A	1 1/4"	1"	1"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"
1,100	N/A	2"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"
1,375	N/A	2"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"
1,650	N/A	2"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"
1,925	N/A	2"	1 1/2"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"
2,200	N/A	N/A	2"	1 1/2"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"
2,475	N/A	N/A	2"	1 1/2"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"
2,750	N/A	N/A	2"	2"	2"	1 1/2"	1 1/2"	1 1/2"	1 1/2"	1 1/2"
3,025	N/A	N/A	2"	2"	2"	2"	2"	2"	2"	2"
3,300	N/A	N/A	2"	2"	2"	2"	2"	2"	2"	2"
3,575	N/A	N/A	2"	2"	2"	2"	2"	2"	2"	2"
3,850	N/A	N/A	2"	2"	2"	2"	2"	2"	2"	2"
4,125	N/A	N/A	2"	2 1/2"	2"	2"	2"	2"	2"	2"
4,400	N/A	N/A	3"	2"	2"	2"	2"	2"	2"	2"
4,675	N/A	N/A	3"	2 1/2"	2"	2"	2"	2"	2"	2"
4,950	N/A	N/A	3"	2 1/2"	2"	2"	2"	2"	2"	2"
5,225	N/A	N/A	3"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
5,500	N/A	N/A	3"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
5,775	N/A	N/A	3"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
6,050	N/A	N/A	3"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
6,325	N/A	N/A	N/A	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
6,600	N/A	N/A	N/A	3"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
6,875	N/A	N/A	N/A	3"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
7,150	N/A	N/A	N/A	3"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
7,700	N/A	N/A	N/A	3"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
8,250	N/A	N/A	N/A	N/A	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
8,800	N/A	N/A	N/A	N/A	3"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
9,350	N/A	N/A	N/A	N/A	3"	3"	3"	3"	3"	3"
9,900	N/A	N/A	N/A	N/A	3"	3"	3"	3"	3"	3"
10,450	N/A	N/A	N/A	N/A	3"	3"	3"	3"	3"	3"
11,000	N/A	N/A	N/A	N/A	N/A	3"	3"	3"	3"	3"
11,550	N/A	N/A	N/A	N/A	N/A	CF	CF	CF	CF	CF
12,100	N/A	N/A	N/A	N/A	N/A	CF	CF	CF	CF	CF

Note:
CF = Contact Factory



Gas Piping

Table GP-7 — Gas Pipe Connection Size — Direct-Fired Units — Standard Gas Train — 100% OA or R/A Not ETL

MBH	Inlet Gas Pressure (inches of water column)									
	6-7"	8-11"	12-14"	15-20"	21-27"	1 psi	2 psi	3 psi	4 psi	5 psi
275	1 1/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"
550	1 1/4"	1"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"
825	N/A	N/A	1"	1"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"
1,100	N/A	2"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"
1,375	N/A	2"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"
1,650	N/A	2"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"
1,925	N/A	N/A	1 1/2"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"
2,200	N/A	2 1/2"	2"	1 1/2"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"
2,475	N/A	2 1/2"	2"	1 1/2"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"
2,750	N/A	2 1/2"	2"	1 1/2"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"
3,025	N/A	2 1/2"	2"	2"	2"	2"	2"	2"	2"	2"
3,300	N/A	3"	2"	2"	2"	2"	2"	2"	2"	2"
3,575	N/A	3"	2"	2"	2"	2"	2"	2"	2"	2"
3,850	N/A	N/A	2"	2"	2"	2"	2"	2"	2"	2"
4,125	N/A	N/A	2 1/2"	2"	2"	2"	2"	2"	2"	2"
4,400	N/A	N/A	2 1/2"	2"	2"	2"	2"	2"	2"	2"
4,675	N/A	N/A	2 1/2"	2"	2"	2"	2"	2"	2"	2"
4,950	N/A	N/A	2 1/2"	2 1/2"	2"	2"	2"	2"	2"	2"
5,225	N/A	N/A	2 1/2"	2 1/2"	2"	2"	2"	2"	2"	2"
5,500	N/A	N/A	2 1/2"	2 1/2"	2"	2"	2"	2"	2"	2"
5,775	N/A	N/A	2 1/2"	2 1/2"	2"	2"	2"	2"	2"	2"
6,050	N/A	N/A	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
6,325	N/A	N/A	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
6,600	N/A	N/A	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
6,875	N/A	N/A	3"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
7,150	N/A	N/A	3"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
7,700	N/A	N/A	3"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
8,250	N/A	N/A	N/A	3"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
8,800	N/A	N/A	N/A	3"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
9,350	N/A	N/A	N/A	3"	3"	3"	3"	3"	3"	3"
9,900	N/A	N/A	N/A	N/A	3"	3"	3"	3"	3"	3"
10,450	N/A	N/A	N/A	N/A	3"	3"	3"	3"	3"	3"
11,000	N/A	N/A	N/A	N/A	3"	3"	3"	3"	3"	3"
11,550	N/A	N/A	N/A	N/A	N/A	CF	CF	CF	CF	CF
12,100	N/A	N/A	N/A	N/A	N/A	CF	CF	CF	CF	CF

Note:
CF = Contact Factory



Approvals

CGA Approval Requirements

A DFIA unit with no mixing box, motorized RA damper, or motorized 75/25 damper can bear the CGA label if:

- 1
The unit SCFM is less than the Maximum SCFM given below.
- 2
The unit input is less than the Maximum Input BTUH given below.
- 3
The static pressure is in the range given below.
- 4
Unit discharge temperature is 75 F maximum.
- 5
The unit has a maximum temperature rise of 90 F for single blower units and 100 F for double blower units.
- 6
The unit minimum input rating is 1/25 of the Max. Input BTUH given below.
- 7
The fuel is natural gas.
- 8
The motor is a single speed motor.
- 9
Unit components are standard (there are exceptions to this).

Model No.	Static (in W.C.)	Max. SCFM	Max. Input. (BTUH)
DFIA 109	0-4.0	3,000	325,500
DFIA 112	0-4.0	4,250	461,125
DFIA 115	0-4.0	6,000	651,000
DFIA 118	0-4.0	8,500	922,250
DFIA 120	0-4.0	11,000	1,193,500
DFIA 122	0-4.0	15,000	1,627,500
DFIA 125	0-4.0	20,000	2,170,000
DFIA 130	0-3.5	30,000	3,255,000
DFIA 215	0-4.0	12,000	1,302,000
DFIA 218	0-4.0	17,000	1,844,500
DFIA 220	0-4.0	26,000	2,821,000
DFIA 222	0-4.0	31,000	3,363,500
DFIA 225	0-4.0	46,000	4,991,000
DFIA 230	0-3.5	64,000	6,944,000

These requirements were current when this catalog was printed. Please contact your Trane representative for the most current data available.

ETL Labeling Requirements

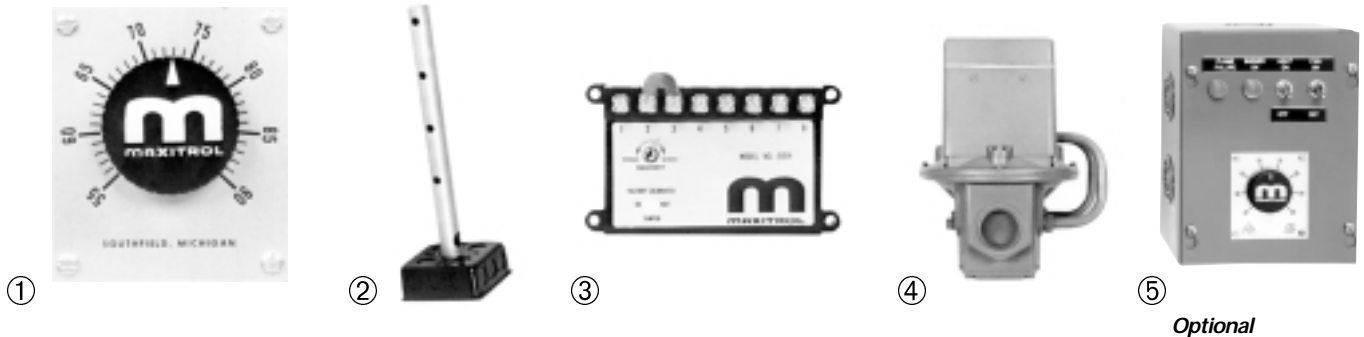
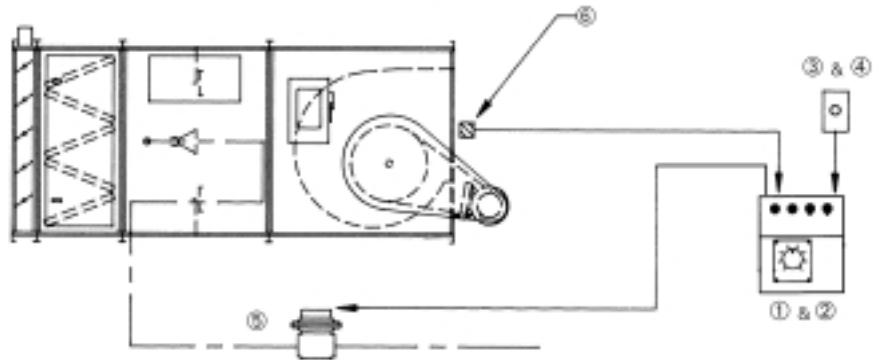
A DFIA unit can bear the ETL label if:

- 1
The unit SCFM is less than the Maximum SCFM given below.
- 2
The unit input is less than the Maximum BTUH rating given below.
- 3
The unit temperature rise is less than the Maximum Temperature Rise given below.
- 4
The fuel is natural gas.
- 5
The motor is a single speed motor.
- 6
Unit components are standard (there are exceptions to this).

Model No.	Max. SCFM	Max. BTUH	Max. Temp. Rise
DFIA 109	3,000	291,262	100 F
DFIA 112	4,250	412,621	100 F
DFIA 115	6,000	582,524	100 F
DFIA 118	8,500	680,000	100 F
DFIA 120	11,000	1,061,413	100 F
DFIA 122	15,000	1,200,000	100 F
DFIA 125	20,000	1,941,748	100 F
DFIA 130	30,000	2,400,000	100 F
DFIA 215	12,000	1,349,831	100 F
DFIA 218	18,000	1,800,000	100 F
DFIA 220	26,000	2,924,634	100 F
DFIA 222	31,000	3,100,000	100 F
DFIA 225	46,000	5,174,353	100 F
DFIA 230	64,000	6,400,000	100 F

Controls

System 14 — Constant Discharge Air Temperatures



Optional

Component Description

- 1 Remote Temperature Selector
Not temperature sensitive. Mounted on remote control station.
- 2 Air Sensor
Installed in blower discharge.
- 3 Amplifier
Installed in electrical control panel. Contains wiring terminals, sensitivity adjustments and one calibrating potentiometer.
- 4 Modulator/Regulator Valve
Mounted in gas piping manifold. Receives electrical signal from amplifier and adjusts gas pressure to maintain desired temperature.
- 5 Remote Control Station
Optional

System 14 Applications

Controls discharge air temperature with instantaneous response and is ideal for industrial areas and commercial spaces such as kitchens, hotels, restaurants and boiler rooms.

Control Operation

Desired temperature at ② is set at the remote temperature selector ①. The air sensor ② senses leaving air temperature and sends an electrical signal to the amplifier ③. The amplifier then sends an electrical signal to the modulator/regulator valve ④, which adjusts gas pressure to the burner, maintaining the desired temperature at ②.

Control Sequence with Fan and Heat Switches

Fan and heat switches are included when a remote control station is ordered as an option.

Fan Switch On

Optional damper opens, damper end switch closes, fan motor starter is energized, fan runs.

The freeze-stat will stop the fan if the discharge leaving air temperature is below 45 F, three minutes after the fan is turned on.

Fan Switch Off

Optional damper closes, damper end switch opens, fan motor starter is de-energized, fan is off.

Heat Switch On

If the fan switch is on, and the air flow switch closes, power is applied to the flame failure safeguard relay to begin predetermined ignition sequence.

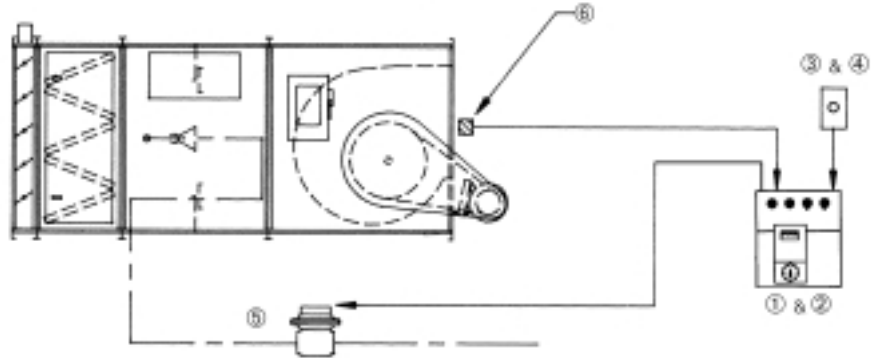
Note: The fan switch must be on, or the burner will not light, even if the heat switch is on.

Heat Switch Off

Heat is off.

Controls

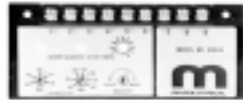
System 44 — Space Temperature Control



(1)



(2)



(3)



(4)



Optional

(5)

Component Description

- 1
Selectrastat™
Mounted on remote control station in heated area where temperature is sensed. Temperature range 55 F to 90 F.
- 2
Air Monitor
Installed in blower discharge. Senses temperature.
- 3
Amplifier
Installed in electrical control panel. Contains adjustments for maximum and minimum discharge air temperature, three calibrating potentiometers and a sensitivity adjustment.
- 4
Modulator/Regulator Valve
Mounts in gas piping manifold. Receives electrical signal from amplifier and adjusts gas pressure to maintain desired temperature.
- 5
Remote Control Station
Optional

System 44 Applications

Provides space temperature control electronically and is ideal for commercial and industrial buildings.

Temperature Control Operation

Desired temperature at (1) is set at the Selectrastat on the remote control station. The Selectrastat controls the discharge air temperature as long as this temperature remains within preset maximum and minimum limits. If the discharge air temperature approaches either of the set limits, the discharge air monitor (2) will signal the amplifier (3), which will adjust the discharge air temperature to a higher or lower level via the modulator/regulator valve (4). When the space temperature approaches the assigned setting, the Selectrastat resumes control.

Control Sequence with Fan and Heat Switches

Fan and heat switches are included when the remote control station is ordered as an option.

Fan Switch On

Optional damper opens, damper end switch closes, fan motor starter is energized, fan runs.

The freeze-stat will stop the fan if the discharge leaving air temperature is below 45 F, three minutes after the fan is turned on.

Fan Switch Off

Optional damper closes, damper end switch opens, fan motor starter is de-energized, fan is off.

Heat Switch On

If the fan switch is on, and the air flow switch closes, power is applied to the flame failure safeguard relay to begin predetermined ignition sequence.

Note: The fan switch must be on, or the burner will not light, even if the heat switch is on.

Heat Switch Off — Heat is off.



Electric Power

Table EP-1 — Motor Electrical Data — Single-Speed Motor

HP	ODP — 1800 RPM						Energy-Effic. ODP 1800 RPM			TEFC 1800 RPM			Energy-Effic. TEFC 1800 RPM		
	Single-Phase			3-Phase			3-Phase			3-Phase			3-Phase		
HP	115	208	230	208	230	460	208	230	460	208	230	460	208	230	460
¾	11.0	5.4	5.5	2.5	2.6	1.3	NA	NA	NA	3.2	3.0	1.5	NA	NA	NA
1	12.6	6.2	6.3	3.5	2.8	1.4	3.1	2.7	1.4	3.6	2.8	1.4	3.1	2.7	1.35
1½	20.0	10.5	10.0	5.0	4.2	2.1	4.5	3.9	2.0	5.0	4.2	2.1	4.5	3.9	1.95
2	21.0	12.6	10.5	6.3	5.6	2.8	6.0	5.2	2.6	6.5	5.6	2.8	6.1	5.3	2.65
3	32.0	16.8	16.0	9.5	8.0	4.0	8.7	7.8	3.9	8.5	8.2	4.1	8.8	7.6	3.8
5	NA	25.0	23.0	15.4	13.2	6.6	13.8	12.0	6.0	15.0	13.4	6.7	14.2	12.4	6.2
7½	NA	33.0	31.0	22.0	20.0	10.0	22.5	19.6	9.8	21.5	19.2	9.6	21.4	18.6	9.3
10	NA	NA	42.0	26.4	25.2	12.6	28.0	24.4	12.2	28.0	25.2	12.6	29.0	25.0	12.5
15	NA	NA	NA	42.0	40.6	20.3	42.1	36.6	18.3	NA	38.8	19.4	41.2	36.6	18.3
20	NA	NA	NA	53.0	50.0	25.0	55.2	48.0	24.0	NA	48.0	24.0	53.8	49.0	24.5
25	NA	NA	NA	72.0	59.0	29.5	67.3	57.0	28.5	NA	60.0	30.0	63.5	57.0	28.5
30	NA	NA	NA	78.0	71.0	35.5	81.0	69.0	34.5	NA	76.0	38.0	79.8	69.0	34.5
40	NA	NA	NA	108.0	95.6	47.8	NA	92.0	46.0	NA	94.0	47.0	NA	92.0	46.0
50	NA	NA	NA	140.0	120.0	60.0	NA	116.0	58.0	NA	120.0	60.0	NA	116.0	58.0
60	NA	NA	NA	NA	145.0	72.5	NA	144.0	72.0	NA	140.0	70.0	NA	142.0	71.0

Notes:
 NA = Not Available
 FLA based on NEC ratings

Table EP-2 — Motor Electrical Data — Two-Speed Motor

HP	2-Speed/1-Winding 1800/900 RPM			2-Speed/2-Winding 1800/1200 RPM		
	3-Phase			3-Phase		
HP	208	230	460	208	230	460
¾	NA	NA	NA	NA	NA	NA
1	3.5/1.5	3.4/1.6	1.8/ .75	3.2/1.8	3.4/2.2	1.7/1.1
1½	5.0/2.1	4.8/2.1	2.25/.95	5.0/2.9	4.9/2.8	2.4/1.4
2	6.2/2.6	6.4/2.7	3.0/1.3	6.1/3.5	5.9/3.8	3.4/2.1
3	9.1/3.3	8.3/3.3	4.9/1.9	9.0/4.8	8.4/4.8	4.6/2.6
5	14.7/5.2	13.4/5.1	7.0/2.7	16.9/9.7	15.5/10.2	7.1/4.8
7½	24.0/10.0	24.5/11.0	10.5/4.2	22.0/12.3	19.5/12.3	10.0/6.0
10	29.5/11.3	30.0/12.4	13.0/5.5	30.0/17.0	28.0/17.5	13.5/7.5
15	43.0/15.2	40.0/14.0	19.4/7.2	47.0/22.0	54.0/21.0	19.0/11.0
20	56.0/20.0	54.0/21.0	26.0/10.0	56.0/29.0	51.0/27.0	24.0/12.0
25	NA	NA	31.0/10.0	NA	NA	30.0/17.0
30	NA	NA	36.6/12.4	NA	NA	38.0/18.0
40	NA	NA	50.0/16.5	NA	NA	48.0/24.0
50	NA	NA	59.0/21.0	NA	NA	59.0/30.0
60	NA	NA	NA	NA	NA	NA

Notes:
 NA = Not Available
 FLA based on NEC ratings

Dimension and Weights

Horizontal Arrangement — Single Blower 109 112 115 118 120 122 125 130

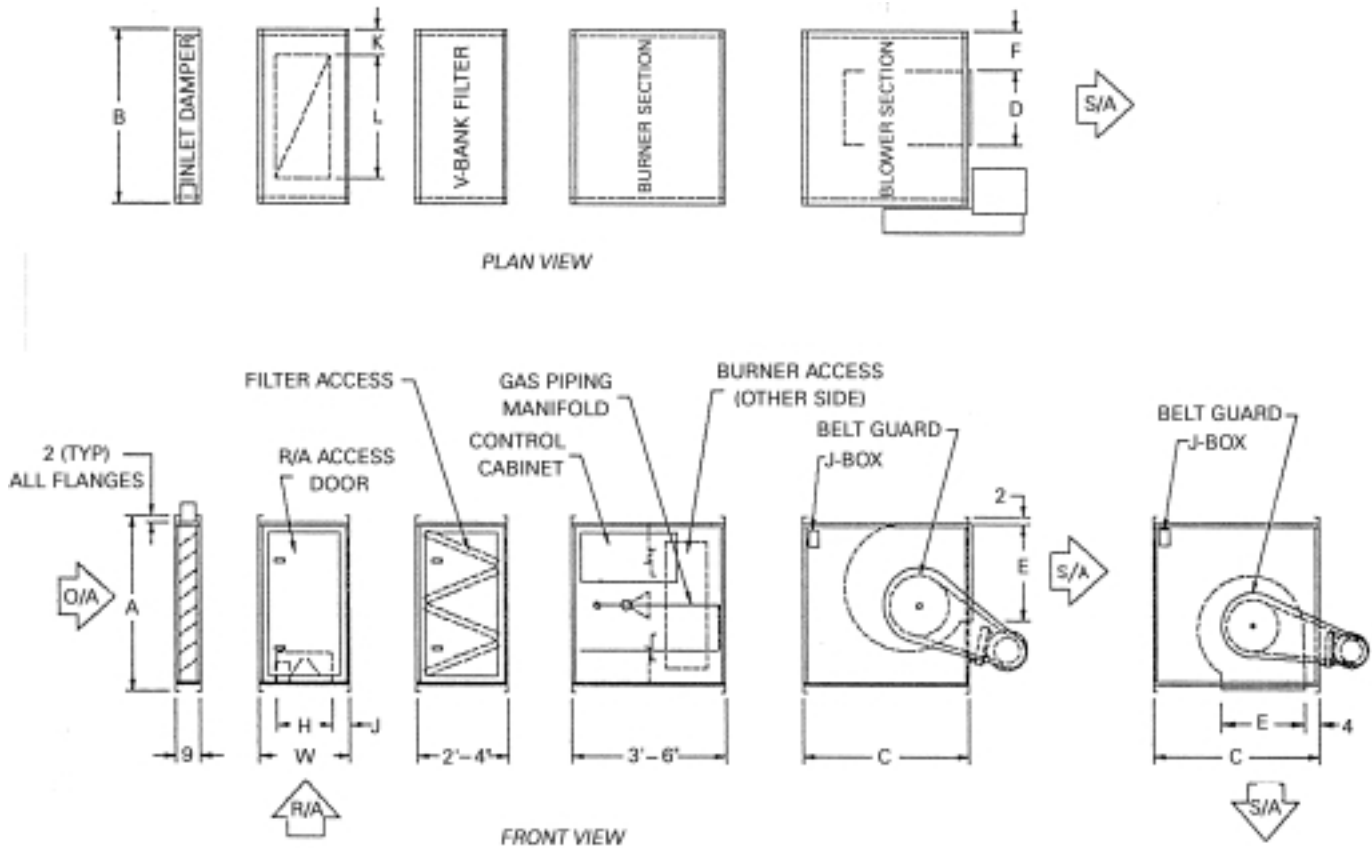


Table DW-1

Model	A	B	C	D	E	F	H	J	K	L	Access Door Dimensions
109	2' 5"	3' 9"	2' 9"	11 ¹³ / ₁₆ "	10 ¹ / ₄ "	1' 4 ⁹ / ₁₆ "	8 ¹ / ₄ "	9 ⁷ / ₈ "	7 ¹ / ₂ "	2' 6"	1' 8 ¹ / ₂ " x 1' 8 ³ / ₄ "
112	2' 5"	3' 9"	2' 9"	1' 13 ¹³ / ₁₆ "	1' 1 ⁷ / ₁₆ "	1' 2 ⁹ / ₁₆ "	8 ¹ / ₄ "	9 ⁷ / ₈ "	7 ¹ / ₂ "	2' 6"	1' 8 ¹ / ₂ " x 1' 8 ³ / ₄ "
115	3' 1 ¹ / ₄ "	4' 3"	3' 7"	1' 6 ¹³ / ₁₆ "	1' 4 ⁷ / ₈ "	1' 4 ¹ / ₁₆ "	1' 2 ¹ / ₄ "	6 ⁷ / ₈ "	10 ¹ / ₂ "	2' 6"	2' 4 ³ / ₄ " x 1' 8 ³ / ₄ "
118	3' 1 ¹ / ₄ "	4' 3"	3' 7"	1' 9 ¹⁵ / ₁₆ "	1' 6 ⁷ / ₈ "	1' 2 ¹ / ₂ "	1' 2 ¹ / ₄ "	6 ⁷ / ₈ "	10 ¹ / ₂ "	2' 6"	2' 4 ³ / ₄ " x 1' 8 ³ / ₄ "
120	4' 6"	5' 0"	4' 4"	2' 15 ¹ / ₁₆ "	2' 3 ¹ / ₄ "	1' 5 ¹ / ₂ "	1' 2 ¹ / ₄ "	6 ⁷ / ₈ "	6"	4'	3' 10 ¹ / ₄ " x 1' 8 ³ / ₄ "
122	4' 6"	5' 0"	4' 4"	2' 3 ⁷ / ₁₆ "	2' 3 ¹ / ₄ "	1' 4 ¹ / ₄ "	1' 2 ¹ / ₄ "	6 ⁷ / ₈ "	6"	4'	3' 10 ¹ / ₄ " x 1' 8 ³ / ₄ "
125	5' 6"	6' 0"	5' 0"	2' 7 ³ / ₈ "	2' 7 ¹ / ₄ "	1' 8 ⁵ / ₈ "	1' 8 ¹ / ₄ "	3 ⁷ / ₈ "	6"	5'	4' 9 ¹ / ₂ " x 1' 8 ³ / ₄ "
130	5' 6"	6' 0"	5' 0"	3' 7 ⁸ / ₁₆ "	3' 3 ¹ / ₄ "	1' 5 ⁹ / ₁₆ "	1' 8 ¹ / ₄ "	3 ⁷ / ₈ "	6"	5'	4' 9 ¹ / ₂ " x 1' 8 ³ / ₄ "

Notes:

1. To permit blower shaft replacement, the side opposite the controls should have clearance equal to the unit width.
2. Minimum of 3' for serviceability clearance.

Dimension and Weights

Horizontal Arrangement — Double Blower 215 218 220 222 225 230

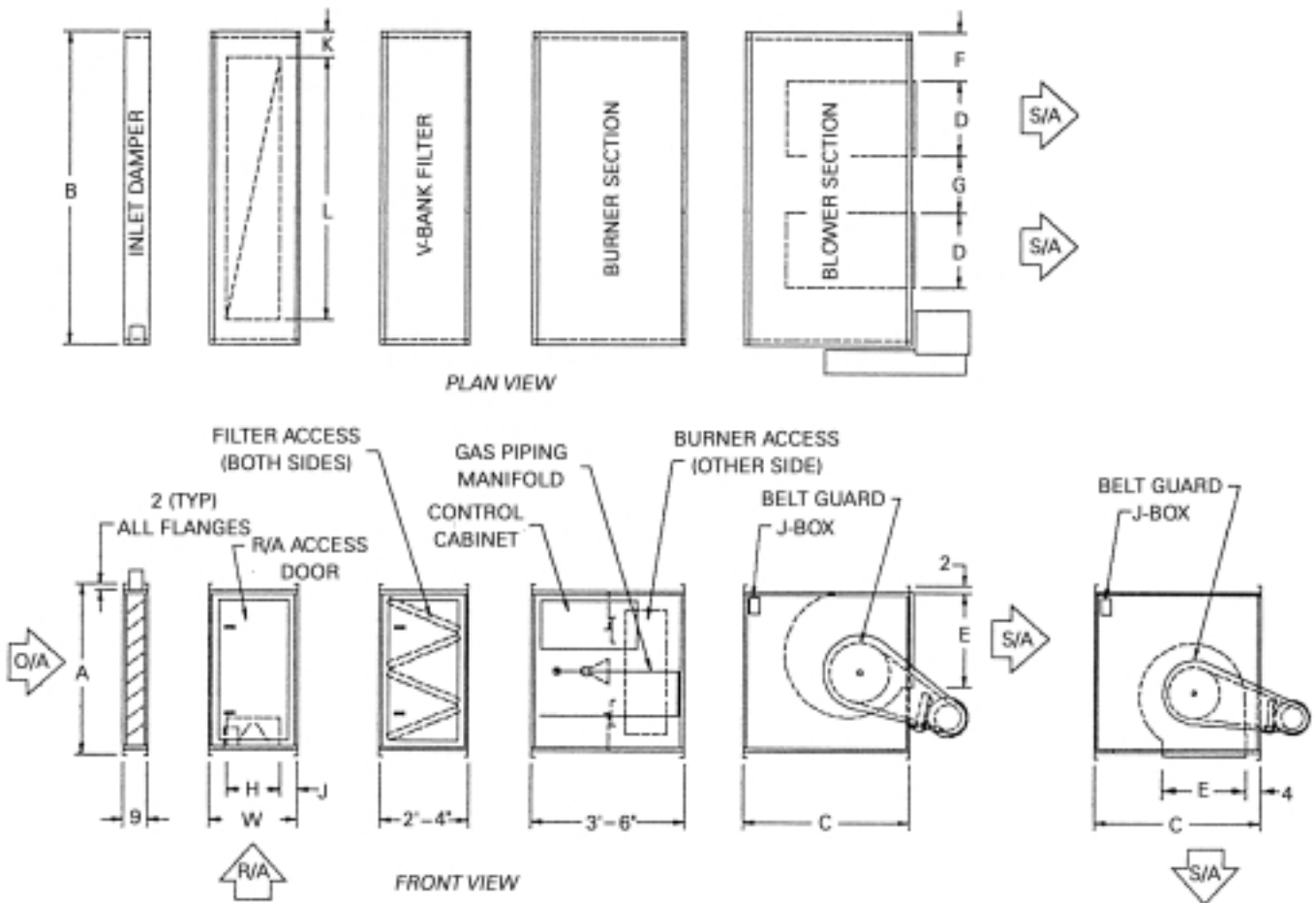


Table DW-2

Model	A	B	C	D	E	F	G	H	J	K	L	Access Door Dimensions
215	3' 1¼"	7' 9"	3' 7"	1' 6 ^{13/16} "	1' 3 ^{7/8} "	1' 4½"	1' 10½"	1' 2¼"	6 ^{7/8} "	1' 4½"	5'	2' 4¾" x 1' 8¾"
218	3' 1¼"	7' 9"	3' 7"	1' 9 ^{15/16} "	1' 6 ^{7/8} "	1' 1¼"	1' 10½"	1' 2¼"	6 ^{7/8} "	1' 4½"	5'	2' 4¾" x 1' 8¾"
220	4' 6"	10' 0"	4' 4"	2' 15 ^{1/16} "	2' ¾"	1' 8 ^{5/16} "	2' 5 ^{5/8} "	1' 2¼"	6 ^{7/8} "	1' 3"	7' 6"	3' 10¼" x 1' 8¾"
222	4' 6"	10' 0"	4' 4"	2' 3 ^{7/16} "	2' ¾"	1' 5 ^{13/16} "	2' 5 ^{5/8} "	1' 2¼"	6 ^{7/8} "	1' 3"	7' 6"	3' 10¼" x 1' 8¾"
225	5' 6"	12' 0"	5' 0"	2' 7 ^{3/8} "	2' 7¼"	1' 9 ^{13/16} "	3' 1 ^{5/8} "	1' 8¼"	3 ^{7/8} "	1'	10'	4' 9½" x 1' 8¾"
230	5' 6"	12' 0"	5' 0"	3' 7 ⁸ "	3¾"	1' 6 ^{5/8} "	2' 9"	1' 8¼"	3 ^{7/8} "	1'	10'	4' 9½" x 1' 8¾"

Notes:

1. To permit blower shaft replacement, the side opposite the controls should have clearance equal to the unit width.
2. Minimum of 3' for serviceability clearance.

Dimension and Weights

**Horizontal Arrangement — Single Blower
With Mixing Box**
109 112 115 118 120 122 125 130

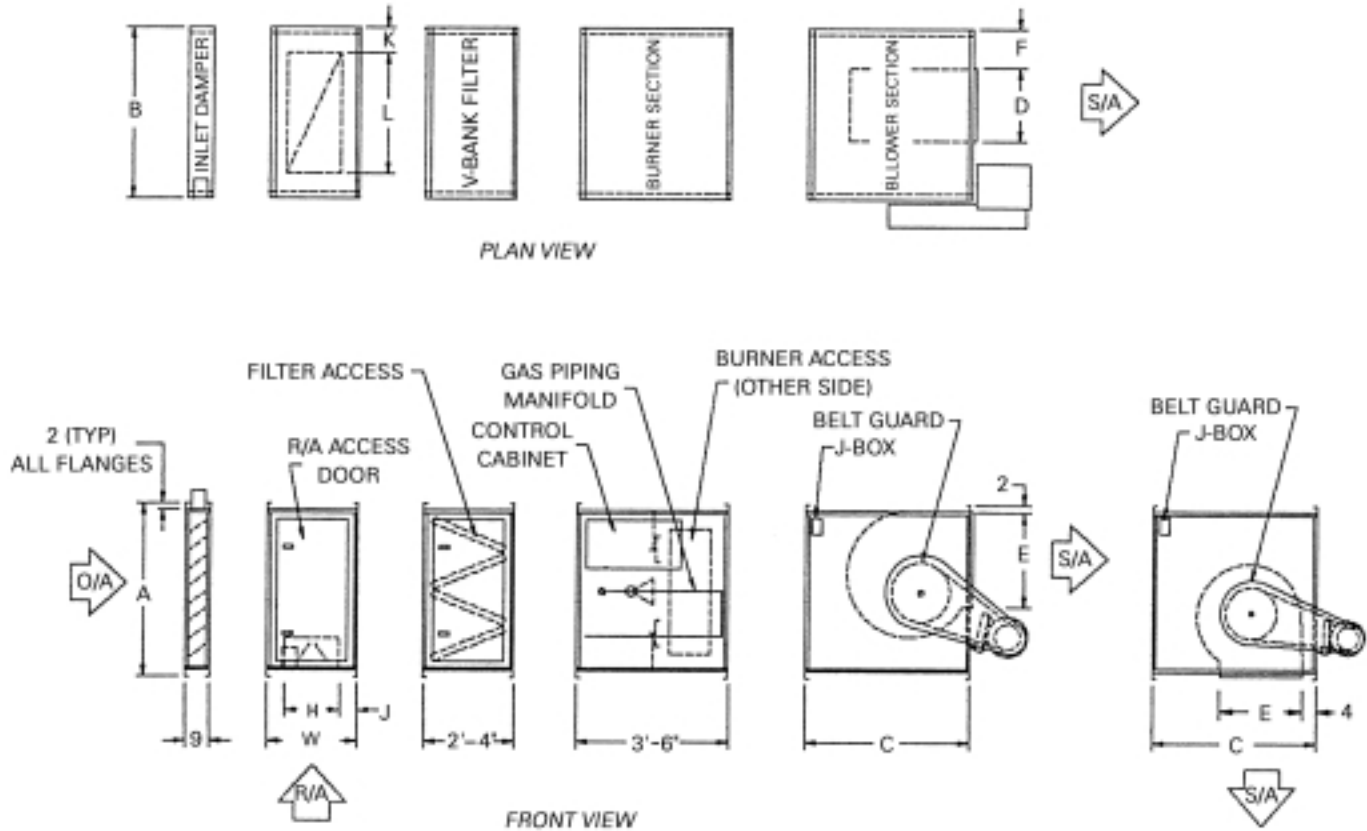


Table DW-3

Model	A	B	C	D	E	F	H	J	K	L	W	Access Door Dimensions
109	2' 5"	3' 9"	2' 9"	11 ¹³ / ₁₆ "	10 ¹ / ₄ "	1' 4 ⁹ / ₁₆ "	2' 3/4"	1 5/8"	5 1/2"	2' 10"	2' 4"	1' 8 1/2" x 1' 8 3/4"
112	2' 5"	3' 9"	2' 9"	1' 3 ¹³ / ₁₆ "	1' 1 ⁷ / ₁₆ "	1' 2 ⁹ / ₁₆ "	2' 3/4"	1 5/8"	5 1/2"	2' 10"	2' 4"	1' 8 1/2" x 1' 8 3/4"
115	3' 1 1/4"	4' 3"	3' 7"	1' 6 ¹³ / ₁₆ "	1' 4 ⁷ / ₈ "	1' 4 ¹ / ₁₆ "	3' 3 3/4"	1 5/8"	5 1/2"	3' 4"	3' 7"	2' 4 3/4" x 1' 8 3/4"
118	3' 1 1/4"	4' 3"	3' 7"	1' 9 ¹⁵ / ₁₆ "	1' 6 ⁷ / ₈ "	1' 2 1/2"	3' 3 3/4"	1 5/8"	5 1/2"	3' 4"	3' 7"	2' 4 3/4" x 1' 8 3/4"
120	4' 6"	5' 0"	4' 4"	2' 15 ¹ / ₁₆ "	2' 3/4"	1' 5 1/2"	4' 3/4"	1 5/8"	5 1/2"	4' 1"	4' 4"	3' 10 1/4" x 1' 8 3/4"
122	4' 6"	5' 0"	4' 4"	2' 3 ⁷ / ₁₆ "	2' 3/4"	1' 4 1/4"	4' 3/4"	1 5/8"	5 1/2"	4' 1"	4' 4"	3' 10 1/4" x 1' 8 3/4"
125	5' 6"	6' 0"	5' 0"	2' 7 ³ / ₈ "	2' 7 1/4"	1' 8 ⁵ / ₈ "	4' 3/4"	1 5/8"	5 1/2"	5' 1"	4' 4"	4' 9 1/2" x 1' 8 3/4"
130	5' 6"	6' 0"	5' 0"	3' 7 ⁸ / ₁₆ "	3' 3/4"	1' 5 ⁹ / ₁₆ "	4' 3/4"	1 5/8"	5 1/2"	5' 1"	4' 4"	4' 9 1/2" x 1' 8 3/4"

Notes:
 1. To permit blower shaft replacement, the side opposite the controls should have clearance equal to the unit width.
 2. Minimum of 3' for serviceability clearance.

Dimension and Weights

**Horizontal Arrangement — Double Blower
With Mixing Box**
215 218 220 222 225 230

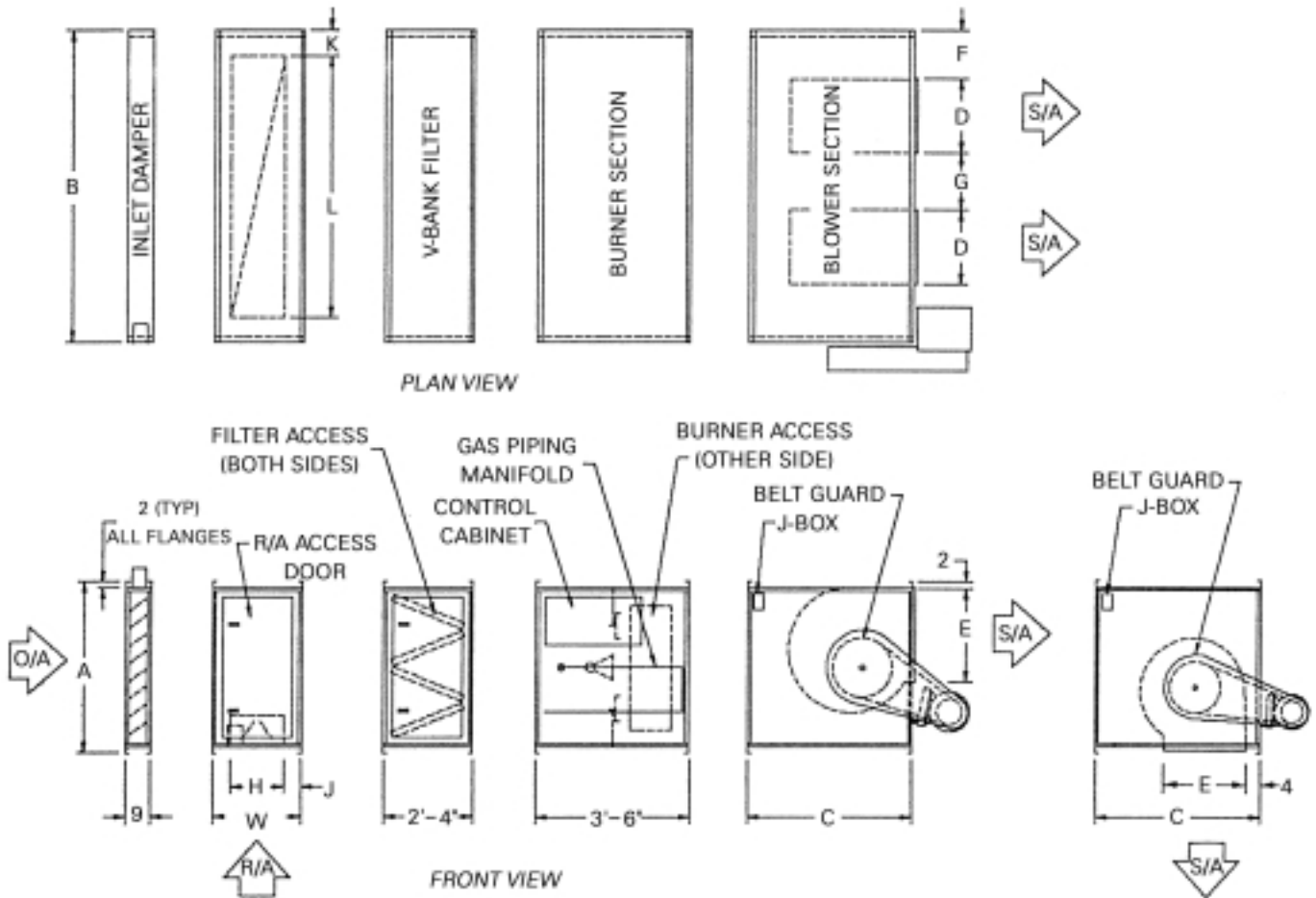


Table DW-4

Model	A	B	C	D	E	F	G	H	J	K	L	W	Access Door Dimensions
215	3' 1¼"	7' 9"	3' 7"	1' 6 ^{13/16} "	1' 3 ^{7/8} "	1' 4½"	1' 10½"	3' 3¾"	1 5/8"	5 ½"	6' 10"	3' 7"	2' 4 ¾" x 1' 8 ¾"
218	3' 1¼"	7' 9"	3' 7"	1' 9 ^{15/16} "	1' 6 ^{7/8} "	1' 1¼"	1' 10½"	3' 3¾"	1 5/8"	5 ½"	6' 10"	3' 7"	2' 4 ¾" x 1' 8 ¾"
220	4' 6"	10' 0"	4' 4"	2' 15/16"	2' ¾"	1' 8 ^{5/16} "	2' 5 ^{5/8} "	4' ¾"	1 5/8"	5 ½"	9' 1"	4' 4"	3' 10 ¼" x 1' 8 ¾"
222	4' 6"	10' 0"	4' 4"	2' 3 ^{7/16} "	2' ¾"	1' 5 ^{13/16} "	2' 5 ^{5/8} "	4' ¾"	1 5/8"	5 ½"	9' 1"	4' 4"	3' 10 ¼" x 1' 8 ¾"
225	5' 6"	12' 0"	5' 0"	2' 7 ^{3/8} "	2' 7¼"	1' 9 ^{13/16} "	3' 1 ^{5/8} "	4' ¾"	1 5/8"	5 ½"	11' 1"	4' 4"	4' 9 ½" x 1' 8 ¾"
230	5' 6"	12' 0"	5' 0"	3' 7/8"	3¾"	1' 6 ^{5/8} "	2' 9"	4' ¾"	1 5/8"	5 ½"	11' 1"	4' 4"	4' 9 ½" x 1' 8 ¾"

Notes:

- To permit blower shaft replacement, the side opposite the controls should have clearance equal to the unit width.
- Minimum of 3' for serviceability clearance.

Dimension and Weights

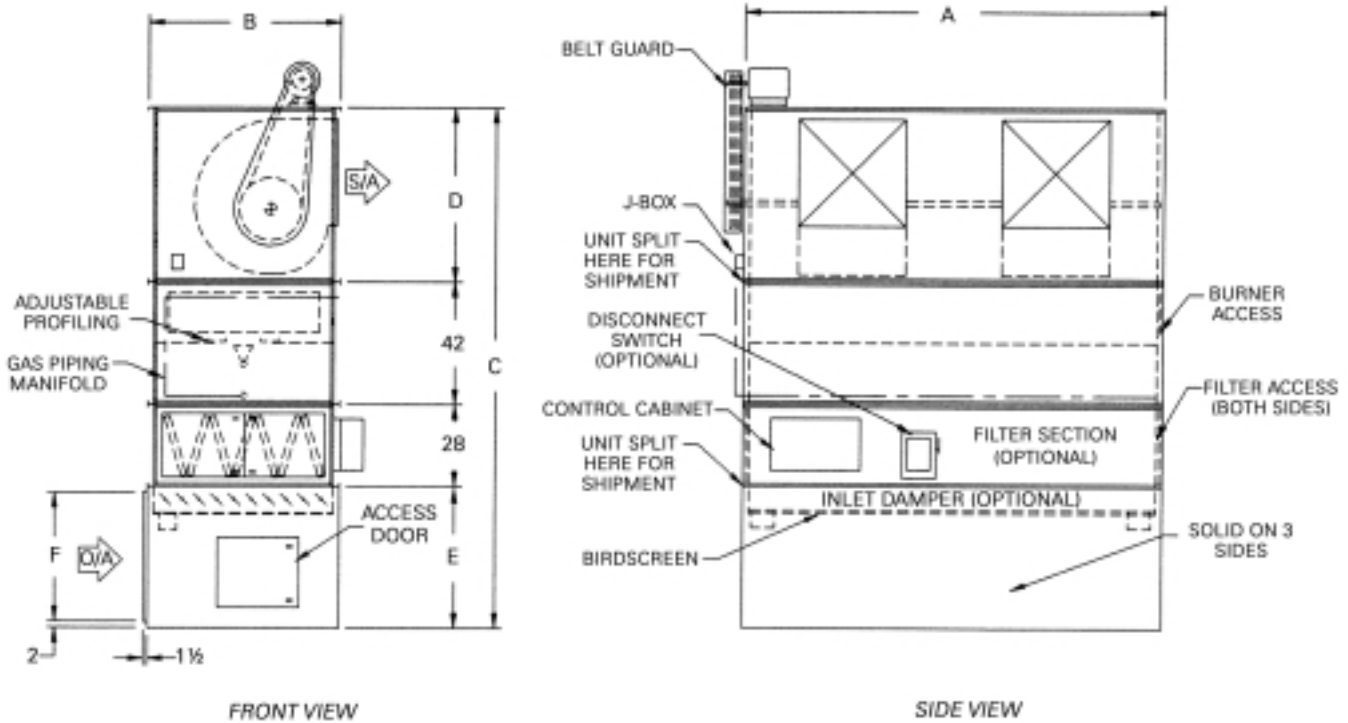


Table DW-5

Model	A	B	C	D	E	F
109	3' 9"	2' 5"	11' 7"	2' 9"	3'	2' 8"
112	3' 9"	2' 5"	11' 7"	2' 9"	3'	2' 8"
115	4' 3"	3' 1 1/4"	12' 5"	3' 7"	3'	2' 8"
118	4' 3"	3' 1 1/4"	12' 5"	3' 7"	3'	2' 8"
120	5'	4' 6"	14' 2"	4' 4"	4'	3' 8"
122	5'	4' 6"	14' 2"	4' 4"	4'	3' 8"
125	6'	5' 6"	14' 10"	5'	4'	3' 8"
130	6'	5' 6"	14' 10"	5'	4'	3' 8"
215	7' 9"	3' 1 1/4"	12' 5"	3' 7"	3'	2' 8"
218	7' 9"	3' 1 1/4"	12' 5"	3' 7"	3'	2' 8"
220	10'	4' 6"	14' 2"	4' 4"	4'	3' 8"
222	10'	4' 6"	14' 2"	4' 4"	4'	3' 8"
225	12'	5' 6"	14' 10"	5'	4'	3' 8"
230	12'	5' 6"	14' 10"	5'	4'	3' 8"

Notes:

1. Unit suitable for indoor application.
2. Factory furnished support stand shipped separate for field mounting by others.
3. Unit to have v-bank shipped mounted to burner.
4. Unit to have inlet damper mounted in support stand.
5. Refer to DFIA catalog for supply duct dimensions and unit weights.
6. Unit shown is a two blower unit. Single blower unit is similar.
7. V-bank and inlet damper shown are optional components.
8. Unit to have burner section shipped separate for field mounting by others.

Dimension and Weights

Accessories Dimensional Data

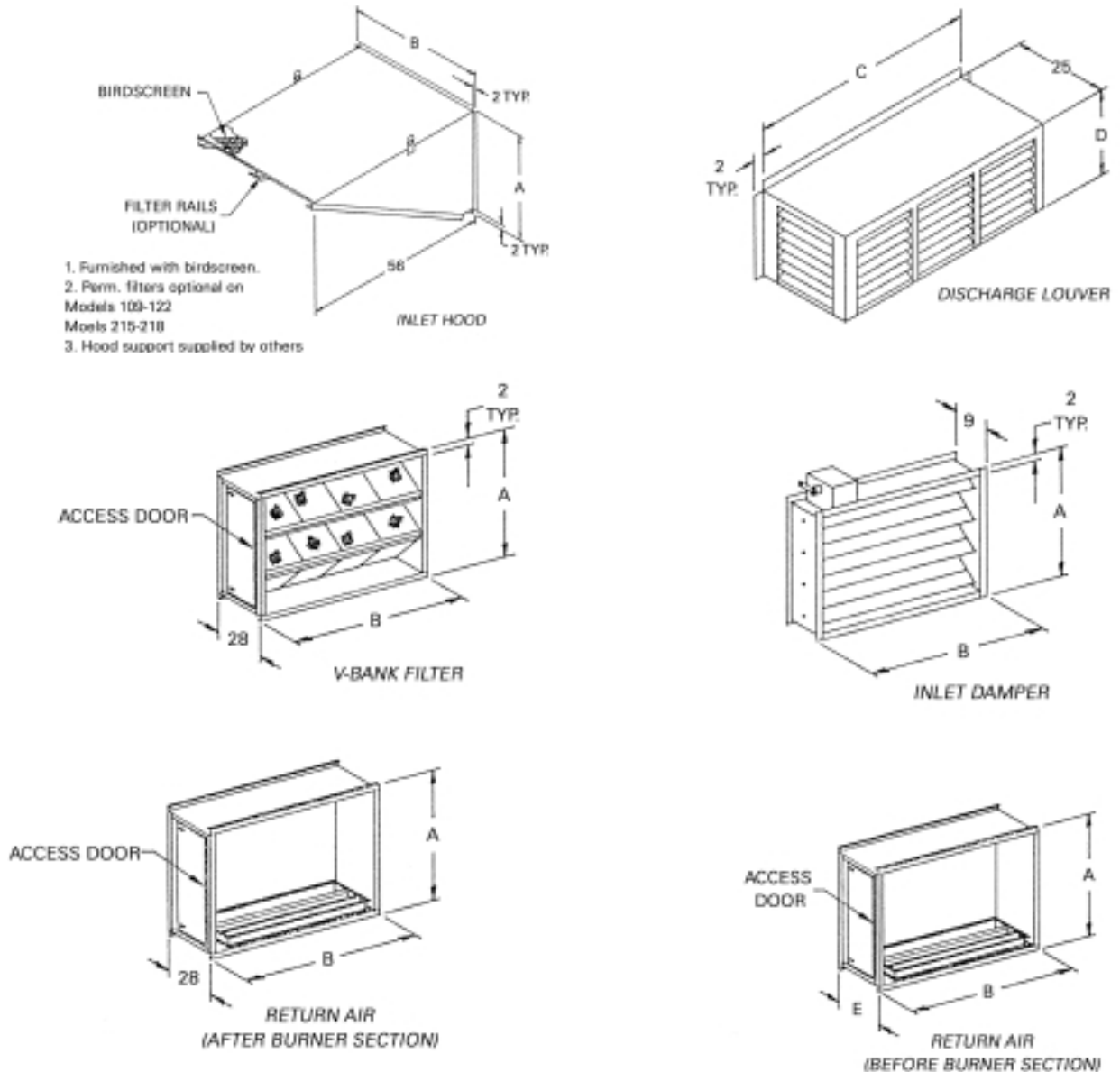


Table DW-6

Model	A	B	C	D	E	Filters — Qty/Size
109-112	2' 5"	3' 9"	1' 5¼"	1' 2 ³ / ₈ "	2' 5"	(4) 20" x 20" x 2"
115-118	3' 1¼"	4' 3"	1' 11"	1' 8 ³ / ₈ "	3' 7"	(9) 20" x 16" x 2"
120-122	4' 6"	5' 0"	2' 4½"	1' 8 ³ / ₈ "	4' 4"	(10) 20" x 25" x 2"
125-130	5' 6"	6' 0"	3' 4 ¹ / ₈ "	3' 3¼"	4' 4"	(24) 20" x 16" x 2"
215-218	3' 1¼"	7' 9"	5' 7¾"	1' 8 ³ / ₈ "	3' 7"	(18) 20" x 15" x 2"
220-222	4' 6"	10' 0"	7' 1¾"	3' 3¼"	4' 4"	(35) 20" x 16" x 2"
225-230	5' 6"	12' 0"	9' 1 ⁷ / ₈ "	3' 3¼"	4' 4"	(42) 20" x 20" x 2"

Weights

Approximate Weights

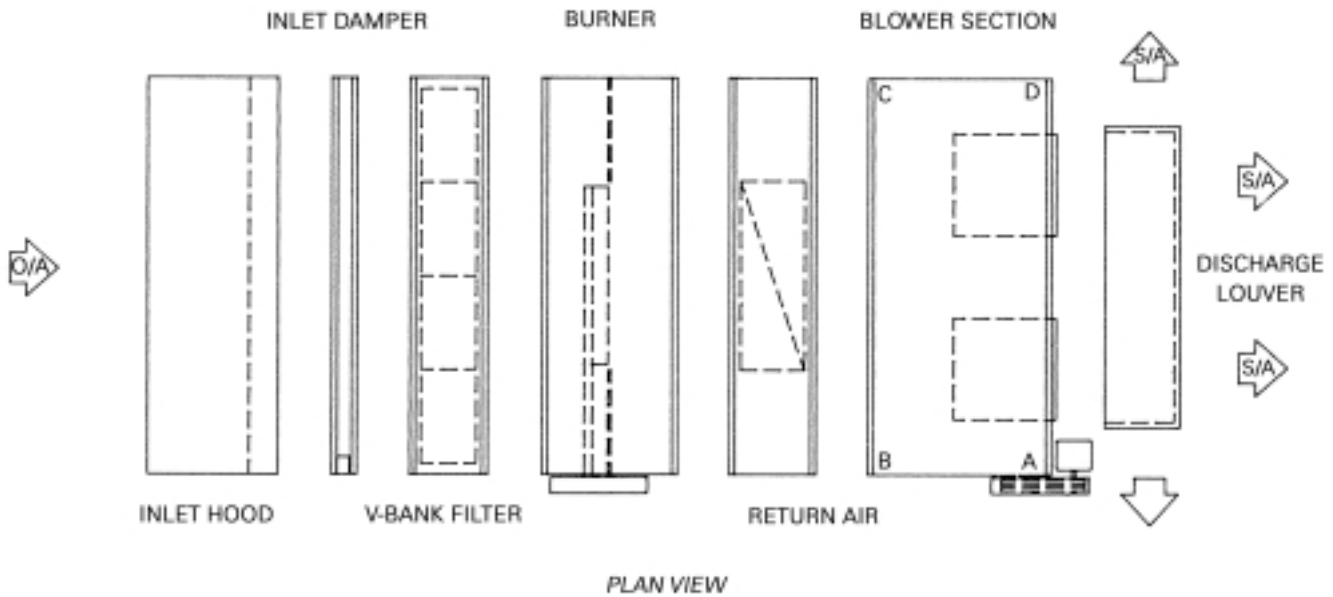


Table W-1

Unit Size	Blower Section	Vertical Support Stand	Inlet Hood	Inlet ¹ Damper	V-Bank ¹ Filter	Burner Section	Return ¹ Air	Discharge Louver	A	B	C	D
109	350	180	140	55	165	260	104	70	149	67	67	67
112	350	180	140	55	165	260	104	70	149	67	67	67
115	535	210	150	70	185	375	116	80	253	94	94	94
118	535	210	150	70	185	375	116	80	253	94	94	94
120	916	420	183	120	275	550	151	110	439	159	159	159
122	916	420	183	120	275	550	151	110	439	159	159	159
125	1262	570	216	155	310	700	208	125	590	224	224	224
130	1262	570	216	155	310	700	208	125	590	224	224	224
215	912	500	224	125	275	510	141	150	438	158	158	158
218	912	500	224	125	275	510	141	150	438	158	158	158
220	1501	625	290	233	410	735	226	215	697	268	268	268
222	1501	625	290	233	410	735	226	215	697	268	268	268
225	2117	845	350	340	500	1010	302	230	953	388	388	388
230	2117	845	350	340	500	1010	302	230	953	388	388	388

Notes:
 1. When a mixing box option is ordered — these three accessory weights need to be totaled.
 *Contact factory for shipping weights on models exceeding 50,000 cfm.

Mechanical Specifications

General

BASIC unit is factory assembled, wired, and test fired. DEPENDING UPON OPTIONS, UNIT MAY SHIP IN SECTIONS DUE TO PHYSICAL SIZE OF EQUIPMENT. Designed for indoor mounting only. Units are available for operation on either natural or LP (Propane) gas.

Casing

Blower section casings are fabricated of die formed 16-gauge, galvanized steel. Includes cabinet designed for indoor application, shaft and fan(s). Basic air handler also requires motor, starter and drive selection.

All casings shall be air tight. Complete access shall be provided to all components through gasketed access panels and doors. This includes the blower, burner and electrical components.

Fans

Supply fans shall be double width, double inlet centrifugal type with FC fan wheels. Fans are tested in accordance with AMCA 210. The fan or fans shall be mounted on a solid shaft for single blowers and a hollow shaft for double blowers. The shaft shall be designed for a maximum operating speed not to exceed 75 percent of its first critical speed. Bearings are to be external heavy duty industrial prelubricated type. 100,000 hour life of the bearings.

Blowers to be driven by a V-belt package sized with a capacity of 25 percent greater than the motor horsepower. Multiple belt applications will be matched sets. Drives are adjustable pitched diameter type up through 7 ½ hp, fixed on motors over 7 ½ hp. Motors to be externally mounted on an adjustable slide base. Belt guard shall be provided.

Burner Section

Burner section shall be constructed of 16-gauge galvanized steel. Includes a cabinet only to house a line burner.

Line Burner

Line burner section shall contain a Maxon NP burner constructed of rust resistant cast iron bodies (which serve as the gas manifold) drilled to discharge the fuel between diverging stainless steel mixing plates. The entire burner assembly is mounted directly in the air stream being heated. The fresh air stream passes through the mixing plates and mixes with the fuel as combustion air: thus all available heat from the gaseous fuel is released directly into the air stream. Air velocities across the burner assemblies are established by the use of profile plates.

Manifold is located outside of air stream. An observation port shall be located to provide view of pilot and main flame.

Units shall be supplied with a wide range burner with a modulating turndown ratio of 25 to 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 flame safeguard with timed prepurge and flame sensing.

Control Enclosure

Units shall be provided with a control compartment. 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 NEC. A circuit diagram of the approved electrical drawing shall be provided with the unit. All electrical components shall bear the UL label.

Controls

Unit controls shall consist of a spark ignition system with flame rod sensing of flame, high temperature limit switch set at 185 degrees, timed freeze protection (factory set at 45 with a three-minute time delay) flame safeguard with alarm contacts, ignition transformer, air proving differential switch and a series 14 or 44 modulating control system.

Unit shall also contain main fan starter, overloads and control circuit fuses.

Gas Train Approvals

The standard gas train consists of a main manual gas shutoff valve, a motorized electric main gas valve, the Maxitrol modulating gas valve, a manual pilot gas shutoff valve, a manual pilot gas pressure regulator, a pilot gas valve, an orificed needle valve and auxiliary gas valve.

The Factory Mutual (FM) gas train consists of a manual main gas shutoff valve, a motorized electric main gas valve, the Maxitrol modulating gas valve, a manual pilot gas shut-off valve, a manual pilot gas pressure regulator, a pilot gas valve, an orificed needle valve, a high/low gas pressure switch, a manual auxiliary gas shutoff valve, and an auxiliary gas valve. (Optional)

The Industrial Risk Insurers (IRI) gas train consists of a manual main gas shutoff valve, a motorized electric main gas valve, the Maxitrol modulating gas valve, a manual pilot gas shutoff valve, a manual pilot gas pressure regulator, a pilot gas valve, an orificed needle valve, a high/low gas pressure switch, a manual auxiliary gas shutoff valve, a normally open vent valve, and an auxiliary gas valve. (Optional)

Timed Freeze Protection

Consists of an on-off discharge duct stat and timer. Prevents continued discharge of cold air if burner is not functioning. Factory set at 45 degrees. If the discharge air temperature is below 45 deg., 3 minutes after burner is first called to come on, the unit is shut off. The timers purpose is to keep the thermostat from shutting off during the purge cycle.



Options

Motorized Return Air Damper

Purpose

To provide a way for recirculating return air.

Operation

A two position switch controls the return air damper.

When the two position switch is in the "RA" position, the RA damper opens. Fifty percent of supply air is RA, 50 percent of supply air is OA.

RA damper can be set to allow from 0 percent to 50 percent return air by field adjustment of the linkage rods. The gas valve opening is restricted when the RA damper is open.

Code requires that outside ventilation air be provided to the space in the amount of 4 cfm per 1 MBh of burner rated input.

All units are provided with a means that will allow the customer to interlock OA fans when the amount of OA provided by the unit is not sufficient to meet the 4 cfm per 1 MBh requirement.

When the two position switch is in the "OA" position, the RA damper is closed, and 100 percent of supply air is OA.

Note: This option cannot be used with a two speed fan motor.

Note: This option can be used with either the Motorized Inlet Damper option or the Motorized Outlet Damper option.

Option Includes:

- Return air damper
- Two position damper motor
- Damper switch

Motorized 75/25 Damper

Purpose

To provide a way for recirculating return air and letting building pressure control the amount of air which is recirculated.

Operation

If building pressure is less than desired, the RA damper modulates to a more closed position and the interlocked burner profile damper modulates to a more open position. More OA is brought into building.

If building pressure is greater than desired, the RA damper modulates to a more open position and the interlocked burner profile damper modulates to a more closed position. Less OA is brought into building.

At no time will the unit provide less than 25 percent OA to the building. In general terms, the minimum OA is 25 percent; however, there are cases where it can be as high as 40-50 percent, depending upon unit size, burner size, gas train type and gas pressure.

Code requires that outside ventilation air be provided to the space in the amount of 4 cfm per 1 MBh of burner rated input.

All units are provided with a means that will allow the customer to interlock OA fans when the amount of OA provided by the unit is not sufficient to meet the 4 cfm per 1 MBh requirement.

Note: This option cannot be used with a two speed fan motor.

Note: This option can be used with either the Motorized Inlet Damper option or the Motorized Outlet Damper option.

Option Includes:

- Return air section with damper
- Burner profile damper
- Linkage
- Modulating damper motor(s)
- Photohelic differential pressure gauge

Options

Mixing Box — Temperature Control

Purpose

To provide a way for recirculating return air and letting mixed air temperature determine the amount of OA/RA.

Operation

A temperature sensor located after the V-bank filter modulates the OA and RA dampers to maintain a set temperature.

If temperature at sensor is cooler than setting, OA damper modulates to a more closed position, and RA damper modulates to a more open position.

If temperature at sensor is warmer than setting, OA damper modulates to a more open position, and RA damper modulates to a more closed position.

The minimum OA damper position is factory set with a potentiometer. The minimum OA damper position is set at 4 cfm per 1 MBh of burner rated input, or 25 percent supply air, whichever is larger.

The desired temperature at the temperature sensor is set at the control cabinet at the unit.

Option Includes:

- Inlet damper
- Return air section with damper
- Modulating damper motor(s)
- V-bank filter with throwaway filters
- Temperature sensor

Mixing Box — Manual Control

Purpose

To provide a way for recirculating return air and using manual control to determine the amount of OA/RA.

Operation

A manual potentiometer located at the remote control station determines the OA/RA setting. The minimum OA damper position is factory set with a potentiometer. The minimum OA damper opening is set at 4 cfm per 1 MBh of burner rated input, or 25 percent supply air, whichever is larger.

Option Includes:

- Inlet damper
- Return air section with damper
- Modulating damper motor(s)
- V-bank filter with throwaway filters
- Manual potentiometer (Note: Remote control station not included)

Mixing Box — Building Pressure Control

Purpose

To provide a way for recirculating return air and letting building pressure control the amount of air which is recirculated.

Operation

If building pressure is less than desired, the RA damper modulates to a more closed position and the OA damper modulates to a more open position. More OA is brought into building.

If building pressure is greater than desired, the RA damper modulates to a more open position and the OA damper modulates to a more closed position. Less OA is brought into building.

The minimum OA damper position is factory set with a potentiometer. The minimum OA damper position is set at 4 cfm per 1 MBh of burner rated input, or 25 percent supply air, whichever is larger.

The desired pressure differential is set at the photohelic.

Option Includes:

- Inlet damper
- Return air section with damper
- V-bank filter with throwaway filters
- Modulating damper motor(s)
- Photohelic differential pressure gauge

Motorized Inlet Damper

Purpose

To provide a shut-off damper.

Operation

When the fan switch is on, the inlet damper begins to open. As the inlet damper approaches the full open position, a built-in end switch located inside the damper motor closes. The closed end switch starts the fan motor. When the fan switch is turned to the "off" position, or if there is a power failure, the inlet damper closes.

Option Includes:

- Damper
- Two position damper motor(s) with built-in end switch and spring return
- Linkage



Options

Exhaust Interlock

The exhaust interlock is a pair of contacts on the unit that will close when the unit is "on." The customer can wire the exhaust fan to the contacts so that when the heating unit is "on," the exhaust fan will also be "on." Note the heating unit turns on the exhaust fan.

The auxiliary contacts on the fan motor starter are the contacts which are used as the exhaust interlock. The auxiliary contacts are wired to the numbered terminal strip. The customer can wire the indicated terminals into the control circuit of the exhaust fan.

Note: *If the customer wants the exhaust fan to turn the heating unit "on," he/she has to provide a pair of contacts that will close when the exhaust fan is "on."*

Interlocking Relay

The interlocking relay is two pair of contacts, one normally open and the other normally closed. The contacts switch positions when the unit is "on." The contacts are wired to the numbered terminal strip. The customer can wire a wide range of devices to the interlocking relay by wiring to the indicated terminals.

Seven-Day Timeclock/ Night Setback Thermostat

The seven-day timeclock is used primarily for either one of the following:

1
Start and stop the unit at preset times
Example: A building is occupied at 8:00 AM. At 4:30 PM, people leave the building. The timeclock could be set to turn the unit on at 7:30 AM and off at 5:00 PM.

2
The timeclock can be used with an on-off night setback thermostat (NSB thermostat). The timeclock and NSB thermostat would be wired so that during the night, the NSB thermostat would turn the unit on and off.

Example: Same as example above, only at 5:00 PM the NSB thermostat would turn the unit on and off. If the temperature in the space fell below the setting of the NSB thermostat, the unit would come "on." If the temperature rose above the setting, the unit would go "off."

Inlet On-Off Duct Stat

Automatically turns burner off when inlet air temperature equals setting of control. Works as a lockout for the burner.

Example: If we want the burner to be "off" if the entering air temperature is 65 degrees, the inlet on-off duct stat would be set at 65 degrees.

Without the inlet on-off duct stat, if the fan switch and heat switch are both "on," no matter how warm the incoming air, the burner will go as low as low fire, but will not go "off."

UV Flame Sensor (UV Mini-Peeper)

Flame sensor checks to make sure the pilot flame has ignited before gas is sent to the main burner. Operates by sensing the light of the pilot flame.

If the flame sensor does not sense the pilot flame, the unit shuts down (fan and burner go off) and the flame failure light on the optional remote panel goes on.

The unit has to be reset by pushing the reset button on the burner relay.

Differences between UV Flame Sensor and Flame Rod:

Both are used for the same purpose — to check if the pilot flame is on. The flame rod is "standard." The UV sensor needs to be ordered as an option.

If condensation forms on the flame rod while the unit is off, it may give a false signal and prevent the unit from coming on. The wet flame rod does not sense the pilot flame and shuts the unit down. This nuisance tripping can be avoided with the UV flame sensor.

Optional Gas Controls

Series 14 — Constant Discharge Temperature

The constant discharge temperature, gas modulating control system consists of the Maxitrol electronic gas modulating system (55 to 90 F range), which includes a discharge air sensor located in the blower discharge, a modulator/regulator valve mounted in the gas piping manifold, an amplifier installed in the electrical control panel, a 115 to 24 volt transformer, and a remote temperature selector.

Series 44 — Space Temperature Control

The space temperature control, gas modulating control system consists of the Maxitrol electronic gas modulating system, which includes a Series 44 discharge air sensor (55 to 90 F range) mounted in the blower discharge, a modulator regulator valve mounted in the gas piping manifold, an amplifier installed in the electric control panel, a 115 to 24 volt transformer, and a Selectrstat mounted in the area where the temperature is to be sensed.



Options

Factory Installed Options

Motors — General

All motors are provided as standard, with a starter for external overload protection, a control transformer, and a fusible disconnect switch.

Open Drip-Proof Motor 60 Hz/1800 Rpm

Single Phase

Optional 115V motors are available in ¾ to 3 hp models. Optional 208V motors are available in ¾ to 7 ½ hp models. Optional 230V motors are available in ¾ to 10 hp models. All motors have rigid base construction and ball bearings. Class A insulation is on all motors up to and including 3 hp models. Class B insulation is on 5 hp and above models.

Three-Phase

Optional 208, 230, 460V available in 1 to 60 hp models. All models have rigid base construction and ball bearings. Class B insulation is on all three-phase motors.

Energy Efficient ODP 60 Hz/1800 Rpm Three-Phase Only

Optional 208V motors are available in 1 to 30 hp models. 230 and 460V motors are available in 1 to 60 hp models. All motors have rigid base construction and ball bearings. Class B insulation is on all motors.

Totally Enclosed Motor 60 Hz/1800 Rpm

Three-Phase Only

Optional 208V motors are available in ¾ to 20 hp models. Optional 230 and 460V motors are available in ¾ to 60 hp models. All motors have rigid base construction and ball bearings.

Energy Efficient TEFC 60 Hz/1800 Rpm

Three-Phase Only

Optional 208V motors are available in 1 to 30 hp models. 230 and 460V motors are available in 1 to 60 hp models. All motors have rigid base construction and ball bearings. Class B insulation is on all motors.

Two-Speed/One Winding Motors 60 Hz/1800/900 Rpm

Three-Phase Only

Optional 208 and 230V motors available on 1 to 20 hp models. Optional 460V motors are available on 1 to 50 hp models. All motors have rigid base construction and ball bearings. Class B insulation is on all motors.

Two-Speed/Two Winding Motors 60 Hz/1800/1200 Rpm

Three-Phase Only

Optional 208 and 230V motors available on 1 to 20 hp models. Optional 460V motors are available on 1 to 50 hp models. All motors have rigid base construction and ball bearings. Class B insulation is on all motors.

Additional Options*

Inlet Hood and Birdscreen

Hood constructed of 18-gauge galvanized steel. Birdscreen is 18-gauge galvanized steel with one-inch square openings.

V-Bank Filter Section

Not required when a mixing box is specified. Constructed of 18-gauge galvanized steel.

Dampers and Mixing Box

Motorized Return Air Damper

This option provides a way to recirculate air, with the return air opening downstream of the burner. This option includes return air damper, a two-position damper motor, linkage and damper switch. It is not available with two-speed motors.

Motorized 75/25 Damper

This option provides a way for recirculating return air and allows building pressure to control the amount of air that is recirculated. This option includes a return air damper, burner profile plate damper, damper linkage, and modulating pressure controller. It is not available with two-speed motors.

Mixing Box — Temperature Control

This option provides a way for recirculating return air and allows mixed air temperature to determine the amount of OA/RA. This option includes mixing box with filter section, dampers, damper actuator(s), and damper controls.

Mixing Box — Building Pressure Control

This option provides a way for recirculating return air and allows building pressure to control the amount of air which is recirculated. This option includes a mixing box with filter section, dampers, damper actuator(s), and damper controls (including a photohelic differential pressure gauge).

Mixing Box — Manual Control

This option provides a way for recirculating return air and using manual control to determine the amount of OA/RA. This option includes a mixing box with filter section, dampers, damper actuator(s), and a manual potentiometer.

Motorized Inlet Damper

This option provides a shutoff damper. This option includes an outside air damper, damper motor with built-in end switch, and linkage. It is not available with a mixing box.

***Based on unit design, some options can ship factory installed or field installed. Contact the factory for verification.**



Options

Additional Factory Installed Options

High Gas Pressure Regulator 1-5 Psig

Units 825 MBh and less require an additional gas pressure regulator if inlet pressure exceeds 1 psig. Inlet pressure at the job must be specified.

5-10 Psig

An additional regulator is furnished. Inlet pressure at the job must be specified.

Insulation

One-inch, 1½ lb. fiberglass insulation pin spotted to casing.

Insulation on Blower Section

Insulation on Burner Section

Insulation on Return Air Section

Insulation on Filter Section

Controls Opposite from Standard

Applicable only to horizontal configurations. Locates controls, gas piping and fan motor on fan side of the unit.

Inlet On-Off Duct Stat

This automatically turns the burner off when inlet air temperature equals desired discharge air temperature. It works as a lockout for the burner. Temperature range of 25 to 225 SPDT.

115V Duplex Receptacle

This option includes a transformer and disconnect switch for the receptacle. Components are mounted in the gas piping manifold.

Circuit Analyzer

Provides indicator lights for maintenance troubleshooting. If the unit is not functioning properly, the service person will want to know which circuits are open and which are closed. The circuit analyzer will tell the service person, at a glance, the status (open or closed) of the different circuits. If an indicating light is lit, the circuit is in its correct operating mode. It mounts on the control panel of the unit. The number of lights and functions depends on the control options of the unit.

UV Flame Sensor

The flame sensor checks to make sure the pilot flame has ignited before gas is sent to the main burner. It operates by sensing the light of the pilot flame.

Clogged Filter Switch

This option includes a pressure sensing switch which senses the pressure drop across the filters. When the pressure drop reaches the setpoint, the switch trips and lights the clogged filter light. It is not required when City of Chicago controls are ordered.

Exhaust Fan Interlock

This option includes a pilot duty rated normally open contact on the main supply fan motor starter that will close simultaneously with the starter (10 amp contacts).

Interlocking Relay

This option is energized by an auxiliary contact on the supply fan motor starter that can be used for additional equipment that may need to run when the supply fan is running (12 amp contacts).

City of Chicago Controls

This option includes an access door interlock switch, an alarm horn with silence switch, low temperature limit, and a clogged filter switch.

Painted Blower Section

Painted Burner Section

Painted Return Air Section

Painted Filter Section

Field Installed Accessories

Vibration Feet

Rubber-in-shear vibration isolators cannot be ordered with a roof curb – they ship unmounted.

Vibration Feet — Blower Section

Vibration Feet — Burner Section

Vibration Feet — Return Air Section

Vibration Feet — Filter Section

Vibration Hangers

Option includes rubber-in-shear vibration isolators, shipped unmounted.

Vibration Hangers — Blower Section

Vibration Hangers — Burner Section

Vibration Hangers — Return Air Section

Vibration Hangers — Filter Section

Seven-Day Time Clock

This option includes a Paragon seven-day general purpose time control with a four-pole switch.

100 DBL Alarm Horn and Silencing Switch

The alarm horn and silencing switch are field-wired so that if the pilot flame does not ignite, the alarm sounds. To silence the alarm, the push button silencing switch is pushed.

Remote Control Station

Option includes fan and heat switches, burner on light, alarm light, and Maxitrol Selector or Selectrastat.

On-Off Night Setback Thermostat

This option will shut unit off when space temperature is above setpoint. This is a 115 V thermostat with a temperature range of 50 to 80 F. Option is normally used together with the seven-day timeclock option.

High Gas Pressure Regulator Over 10 Psig

Specify inlet pressure at the jobsite. This is required for selection of the regulator.

Discharge Louver — Horizontal Vanes Adjustable

Painted Discharge Louver



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