

City of Portland, Maine - Building or Use Permit Application

389 Congress Street, 04101 Tel: (207) 874-8703, Fax: (207) 874-8716

Permit No: 09-1307	Issue Date:	CBL: 063 A003001
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Location of Construction: 23 BRAMHALL ST	Owner Name: MMC REALTY CORP	Owner Address: 22 BRAMHALL ST	Phone:
Business Name:	Contractor Name: Dan Libby	Contractor Address: 271 Milt Brown Rd. Standish	Phone: 2076424768
Lessee/Buyer's Name	Phone:	Permit Type: HVAC	Zone: R-6

Past Use: Commercial - Multi-Family Legal use - 8 du.	Proposed Use: Commercial - Install Temporary Heating System building vacant Multi-family	Permit Fee: \$80.00	Cost of Work: \$6,000.00	CEO District: 2
Proposed Project Description: Install Temporary Heating System building vacant		FIRE DEPT: w/ conditions 11/18/2009 <input checked="" type="checkbox"/> Approved <input type="checkbox"/> Denied Signature: <i>[Signature]</i>	INSPECTION: Use Group: HVAC Type: Signature: <i>[Signature]</i>	
		PEDESTRIAN ACTIVITIES DISTRICT (P.A.D.) Action: <input type="checkbox"/> Approved <input type="checkbox"/> Approved w/Conditions <input type="checkbox"/> Denied Signature: _____ Date: _____		

Permit Taken By: Ldobson	Date Applied For: 11/16/2009	Zoning Approval		
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<ol style="list-style-type: none"> This permit application does not preclude the Applicant(s) from meeting applicable State and Federal Rules. Building permits do not include plumbing, septic or electrical work. Building permits are void if work is not started within six (6) months of the date of issuance. False information may invalidate a building permit and stop all work.. 	Special Zone or Reviews <input type="checkbox"/> Shoreland <input type="checkbox"/> Wetland <input type="checkbox"/> Flood Zone <input type="checkbox"/> Subdivision <input type="checkbox"/> Site Plan Maj <input type="checkbox"/> Minor <input type="checkbox"/> MM <input type="checkbox"/> Ok w/ conditions Date: 11/17/09 <i>APU</i>	Zoning Appeal <input type="checkbox"/> Variance <input type="checkbox"/> Miscellaneous <input type="checkbox"/> Conditional Use <input type="checkbox"/> Interpretation <input type="checkbox"/> Approved <input type="checkbox"/> Denied Date: _____	Historic Preservation Yes <input type="checkbox"/> Not in District or Landmark <input type="checkbox"/> Does Not Require Review <input type="checkbox"/> Requires Review <input type="checkbox"/> Approved <input type="checkbox"/> Approved w/Conditions <input type="checkbox"/> Denied Any exterior work Date: requires a separate review & approval thru. Historic
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CERTIFICATION

I hereby certify that I am the owner of record of the named property, or that the proposed work is authorized by the owner of record and that I have been authorized by the owner to make this application as his authorized agent and I agree to conform to all applicable laws of this jurisdiction. In addition, if a permit for work described in the application is issued, I certify that the code official's authorized representative shall have the authority to enter all areas covered by such permit at any reasonable hour to enforce the provision of the code(s) applicable to such permit.

PERMIT ISSUED

SIGNATURE OF APPLICANT	ADDRESS	DATE	PHONE
		DEC 1 2009	
RESPONSIBLE PERSON IN CHARGE OF WORK, TITLE		DATE	PHONE

City of Portland

City of Portland, Maine - Building or Use Permit

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Permit No: 09-1307	Date Applied For: 11/16/2009	CBL: 063 A003001
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Location of Construction: 23 BRAMHALL ST	Owner Name: MMC REALTY CORP	Owner Address: 22 BRAMHALL ST	Phone:
Business Name:	Contractor Name: Dan Libby	Contractor Address: 271 Milt Brown Rd. Standish	Phone: (207) 642-4768
Lessee/Buyer's Name	Phone:	Permit Type: HVAC	

Proposed Use: Multi-family - Install Temporary Heating System -building vacant	Proposed Project Description: Install Temporary Heating System building vacant
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Dept: Zoning **Status:** Approved with Conditions **Reviewer:** Ann Machado **Approval Date:** 11/17/2009

Note: **Ok to Issue:**

- 1) ANY exterior work requires a separate review and approval thru Historic Preservation. This property is located within an Historic District.
- 2) This property shall remain a eight family dwelling. Any change of use shall require a separate permit application for review and approval.
- 3) This permit is being approved on the basis of plans submitted. Any deviations shall require a separate approval before starting that work.

Dept: Building **Status:** Approved with Conditions **Reviewer:** Tammy Munson **Approval Date:** 12/01/2009

Note: **Ok to Issue:**

- 1) The installation must comply with the State of Maine Gas Regulations.

Dept: Fire **Status:** Approved with Conditions **Reviewer:** Ben Wallace Jr. **Approval Date:** 11/18/2009

Note: Temporary installation of heating units. **Ok to Issue:**

- 1) The installation shall be approved as temporary only: less then 6 months from installation.
- 2) The protection of vertical openings for the effected stairs shall be maintained. Temporary doors with 5/8" type-x sheetrock installed on both sides shall be acceptable. Penetrations for the duct work shall be through listed fire dampers in the temporary doors.
- 3) The sprinkler system shall be maintained at all times.
- 4) The uneffected stair must be maintained for full immediate use. Temporary exit signage on the upper floors shall be provided to direct people to that stair.
- 5) Prior to work commencing, floors above first floor shall be posted against occupancy. The 2 effected stairs shall not be considered required exits.
- 6) All equipment must be UL listed. Unvented fuel fired heaters are prohibited by State Law.
- 7) Work shall comply with NFPA 1 chapter 11 and section 69.3.2; NFPA 58; NFPA 70; and NFPA 211.

PERMIT ISSUED

DEC 1 2009

City of Portland

BUILDING PERMIT INSPECTION PROCEDURES

Please call 874-8703 or 874-8693 (ONLY)

to schedule your inspections as agreed upon

Permits expire in 6 months, if the project is not started or ceases for 6 months.

The Owner or their designee is required to notify the inspections office for the following inspections and provide adequate notice. Notice must be called in 48-72 hours in advance in order to schedule an inspection:

By initializing at each inspection time, you are agreeing that you understand the inspection procedure and additional fees from a "Stop Work Order" and "Stop Work Order Release" will be incurred if the procedure is not followed as stated below.

A Pre-construction Meeting will take place upon receipt of your building permit.

 X **Final inspection required at completion of work.**

Certificate of Occupancy is not required for certain projects. Your inspector can advise you if your project requires a Certificate of Occupancy. All projects DO require a final inspection.

If any of the inspections do not occur, the project cannot go on to the next phase, REGARDLESS OF THE NOTICE OR CIRCUMSTANCES.

CERIFICATE OF OCCUPANICES MUST BE ISSUED AND PAID FOR, BEFORE THE SPACE MAY BE OCCUPIED.

Signature of Applicant/Designee

Date

Signature of Inspections Official

Date

PERMIT ISSUED

DEC 1

City of Portland



FILL IN AND SIGN WITH INK

APPLICATION FOR PERMIT HEATING OR POWER EQUIPMENT

PERMIT ISSUED
DEC 1 2009

City of Portland

To the INSPECTOR OF BUILDINGS, PORTLAND, ME.

The undersigned hereby applies for a permit to install the following heating, cooking or power equipment in accordance with the Laws of Maine, the Building Code of the City of Portland, and the following specifications:

Location / CBL 23 Bramhall Use of Building 63-A-3 Date 11-16-09
Name and address of owner of appliance Maive Med.

Installer's name and address Dan Libby Refrigeration/Heating/AC
271 Mill Brown Rd Standish, Me. 04084 Telephone 207-642-4768

Location of appliance:

- Basement
- Attic
- Floor
- Roof

Type of Fuel:

- Gas
- Oil
- Solid

Temp Heat 6 months

Appliance Name: _____

U.L. Approved Yes No

Will appliance be installed in accordance with the manufacture's installation instructions? Yes No

IF NO Explain: _____

The Type of License of Installer:

- Master Plumber # _____
- Solid Fuel # _____
- Oil # _____
- Gas # PNT 56
- Other _____

Type of Chimney:

- Masonry Lined
Factory built _____
- Metal
Factory Built U.L. Listing # _____

Direct Vent

Type PVC UL# _____

Type of Fuel Tank

- Oil
- Gas LP

Size of Tank 120 Gal

Number of Tanks 4 to 6

Distance from Tank to Center of Flame _____ feet.

Cost of Work: \$ 42,000

Permit Fee: \$ 80

Approved

Fire: _____
Ele.: _____
Bldg.: _____

Approved with Conditions

- See attached letter or requirement

Signature of Installer

Daniel Libby

Inspector's Signature

Date Approved

From: Benjamin Wallace
To: Jeanie Bourke; Keith Gautreau
Date: 11/16/2009 2:23:19 PM
Subject: 23 Bramhall

Good afternoon,

An HVAC contractor needs to install temporary heating units for a Maine Med building at 23 Bramhall St. The building is 3 stories (I think), sprinklered, and only the first floor is occupied. It will be for 6 months and will consist of an HVAC unit at the bottom landing of 2 out of the 3 stairs, with duct work leading to each floor.

I agreed that we would allow it with the following conditions:

The sprinkler system shall be maintained;

Those stairs shall not be treated as exits as the upper floors shall be posted against occupancy;

The contractor plans to remove the fire doors on the stairs and replace them with unrated doors with 5/8" type-x sheetrock secured to each side and a fire damper installed where the ducts penetrate them.

This will leave the 3rd stair available for use.

The permit is not yet in the system, and so has not been approved.

Ben

23 Branhall

I propose to install Temporary heat in this building, for the winter. (Vacant)

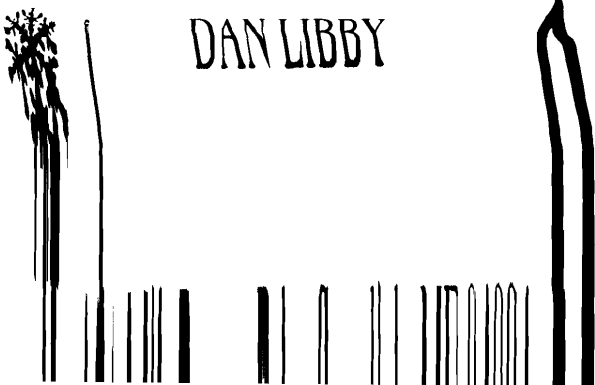
The boiler is cracked, Webber Energy refuses to replace it under their contract. Maine Med owns this building, and is planning to renovate it. They would like to keep it tempered to preserve it,

The temp heat would be three L.P. gas furnaces, one in the basement, and one in the front stairwell and one in the back stairwell with flex duct to each floor and pre vent out 3 windows.

I will also install Renna Space heaters in the one occupied space.

DAN LIBBY

ew Lobby



12. Slope combustion air piping (if applicable) and vent piping downward towards furnace a minimum of 1/4 in. per linear ft with no sags between hangers.
13. Horizontal portions of the venting system shall be installed so as to prevent the accumulation of condensate.
14. Use appropriate methods to seal openings where combustion air pipe (if applicable) and vent pipe pass through roof or sidewall.

→

EXAMPLE:

An 100-14 size furnace located in Indianapolis, elevation 650 ft above sea level, could be installed as either a direct vent/2-pipe system that requires 3 elbows and 28 ft of vent pipe, along with 5 elbows and 34 ft of combustion-air pipe OR a non-direct vent/1-pipe system that requires 3 elbows and 28 ft vent pipe.

For a direct vent/2-pipe system, Table 11 indicates this application would allow a 2-in. diameter vent pipe, but require a 2-1/2 in. diameter combustion air pipe. According to Table 11, 2-in. diameter pipe is good for 30 ft with 3 elbows, but only 20 ft with 5 elbows. Therefore, 2-1/2 in. diameter pipe must be used for both vent and combustion-air pipes since larger required diameter must always be used for both pipes.

For a non-direct vent/1-pipe system, Table 11 indicates that this application would allow a 2-in. diameter vent pipe. If same installations were in Albuquerque, elevation 5250 ft above sea level:

For a direct vent/2-pipe system, Table 11 indicates that 2-1/2 in. diameter vent pipe and combustion-air pipe are required.

For a non-direct vent/1-pipe system, Table 11 indicates that 2-1/2-in. diameter vent pipe is required.

If same applications are to be installed at 5001- to 6000 ft elevation:

For a direct vent/2-pipe system, 2-in. pipe is only good for 23 ft (with 3 elbows) and 13 ft (with 5 elbows). Therefore, 2-1/2 in. diameter combustion air and vent pipe must be used.

For a non-direct vent/1-pipe system, a 2-in. diameter pipe is only good for 23 ft with 3 elbows. A 2-1/2-in. diameter vent pipe must be used.

→ **VENT TERMINATION**

General

Combustion-air (direct vent/2-pipe system only) and vent pipe must terminate outside structure, either through sidewall or roof. For vent termination clearance, refer to Table 8 for Direct Vent/2-Pipe system and Table 9 for Non-direct Vent/1-Pipe system. For exterior piping arrangements, refer to Fig. 43 for Direct Vent/2-Pipe system and Fig. 44 for Non-Direct/1-Pipe system.

Roof termination is preferred since it is less susceptible to damage or contamination, and it has less visible vent vapors. Sidewall termination require sealing or shielding of building surfaces with a corrosive resistance material due to corrosive combustion products of vent system.

NOTE: (Direct Vent/2-Pipe system ONLY) A factory accessory termination kit **MUST** be used. See section "Vent Termination Kit (Direct Vent/2-Pipe System Only)" in this instruction.

When determining appropriate location for termination, consider the following guidelines:

1. Comply with all clearance requirements stated in Table 8 or Table 9 per application.

2. Termination or termination kit should be positioned so that it will not be affected by wind eddy, such as inside building corners, nor by recirculation of flue gases, airborne leaves, or light snow.
3. Termination or termination kit should be positioned where it will not be damaged by or subjected to foreign objects such as stones, balls, etc.
4. Termination or termination kit should be positioned where vent vapors are not objectionable.

Extended Exposed Sidewall Pipes

Sidewall combustion air pipe termination (direct vent/2-pipe system only) and vent pipe termination may be extended beyond area shown in Fig. 43 or in Fig. 44 per application in outside ambient by insulating pipe as indicated in Table 10.

1. Determine combustion air pipe diameter (direct vent/2-pipe system only) and vent pipe diameter, as stated above, using total pipe length and number of elbows.
2. Using winter design temperature (used in load calculations), find appropriate temperature for your application and furnace model.
3. Determine required insulation thickness for exposed pipe length(s).

NOTE: Pipe length(ft) specified for maximum pipe lengths located in unconditioned spaces cannot exceed total allowable pipe length as specified in Table 8.

Vent Termination Kit (Direct Vent/2-Pipe System Only)

NOTE: Always refer to the instructions in termination kit for the latest version.

Combustion air and vent pipes **MUST** terminate outside structure. A factory accessory termination kit must be installed as shown in Table 12. There are four options of vent/combustion air termination kits available as shown in Table 12.

NOTE: Combustion air pipe must have the same diameter as vent pipe.

Concentric Vent/Combustion Air Termination Kit (Direct Vent/2-Pipe System Only)

Determine an appropriate location for termination kit using the guidelines provided in section "Vent Termination: General" in this instruction.

1. Cut one 4-in. diameter hole for 2-in. kit, or one 5-in. diameter hole for 3-in. kit.
2. Loosely assemble concentric vent/combustion air termination components together using instructions in kit.
3. Slide assembled kit with rain shield **REMOVED** through hole.

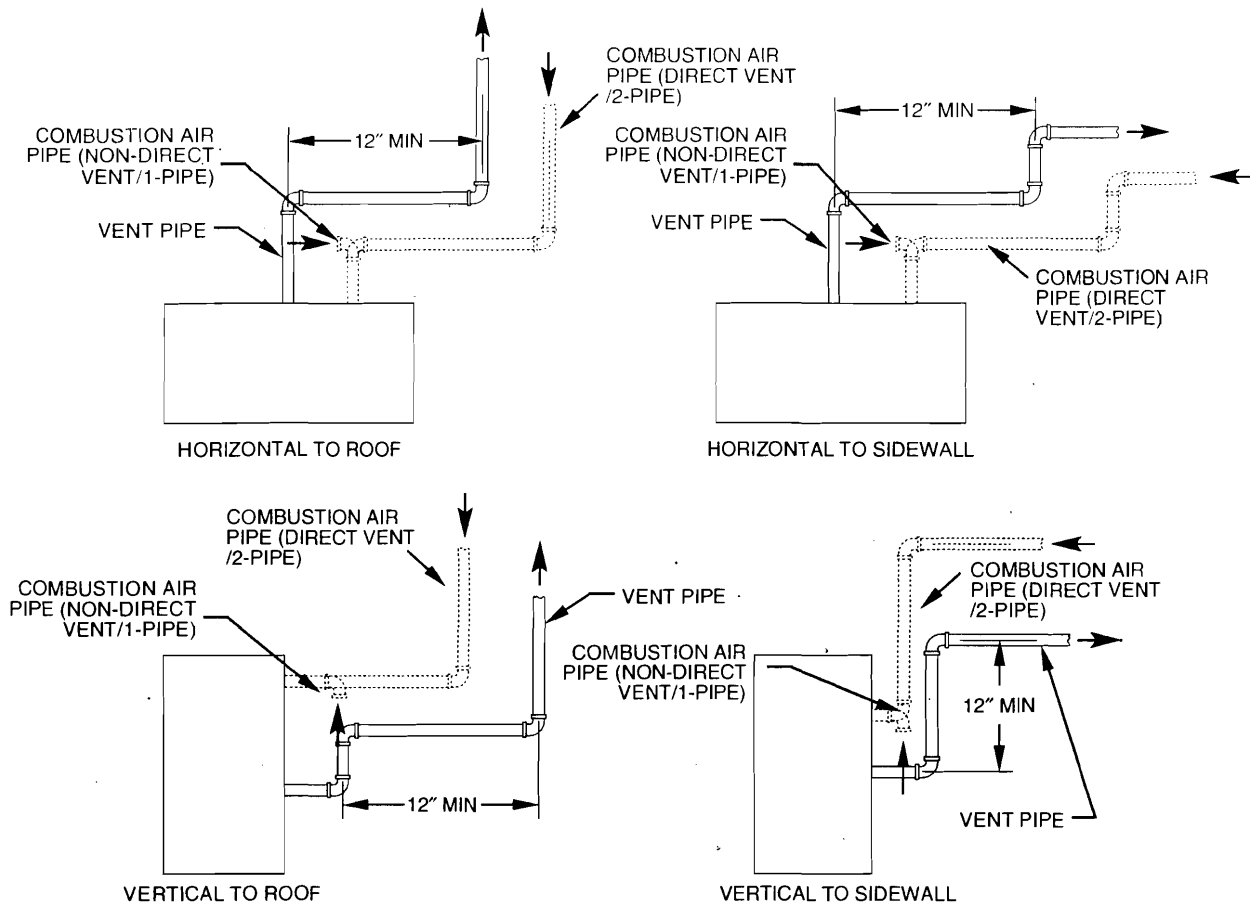
NOTE: Do not allow insulation or other materials to accumulate inside of pipe assembly when installing it through hole.

Roof terminations—Locate assembly through roof to appropriate height as shown in Fig. 43 and 44.

Sidewall terminations—Locate assembly through sidewall with rain shield positioned no more than 1-in. from wall as shown in Fig. 43 and 44.

4. Disassemble loose pipe fittings. Clean and cement using same procedures as used for system piping.

5. Check required dimensions as shown in Fig. 43.



NOTE: A 12-in. minimum offset pipe section is recommended with short (5-ft. to 8-ft) vent systems. This recommendation is to reduce excessive condensate droplets from exiting the vent pipe.

A05094

Fig. 42—Short Vent (5 to 8 Ft) System

Two-Pipe Termination Kit (Direct Vent/2-Pipe System Only)

Determine an appropriate location for termination kit using the guidelines provided in section "Vent Termination: General" in this instruction.

1. Cut 2 holes, 1 for each pipe, of appropriate size for pipe size being used.
2. Loosely install elbow in bracket and place assembly on combustion-air pipe.

Roof terminations—Loosely install pipe coupling on properly cut vent pipe. Coupling must be positioned so bracket will mount as shown in Fig. 43.

For applications using combustion-air pipe option, indicated by dashed lines in Fig. 43, install 90° street elbow into 90° elbow, making a U-fitting. A 180° U-fitting may be used.

Sidewall terminations—Install bracket as shown in Fig. 43.

For applications using vent pipe option indicated by dashed lines in Fig. 40, rotate vent elbow 90° from position shown in Fig. 40.

3. Disassemble loose pipe fittings. Clean and cement using same procedures as used for system piping.
4. Check required dimensions as shown in Fig. 43.

Multiventing and Vent Terminations

When 2 or more 58MVB Furnaces are vented near each other, each furnace must be individually vented. NEVER common vent or breach vent 58MVB furnaces.

(Direct Vent/2-Pipe System ONLY)-When 2 or more 58MVB

furnaces are vented near each other, 2 vent terminations may be installed as shown in Fig. 43, but next vent termination must be at least 36 in. away from first 2 terminations. It is important that vent terminations be made as shown in Fig. 43 to avoid recirculation of flue gases.

Step 11—Condensate Drain

GENERAL

Condensate trap is shipped installed in the blower shelf and factory connected for UPFLOW applications. Condensate trap must be RELOCATED for use in DOWNFLOW and HORIZONTAL applications.

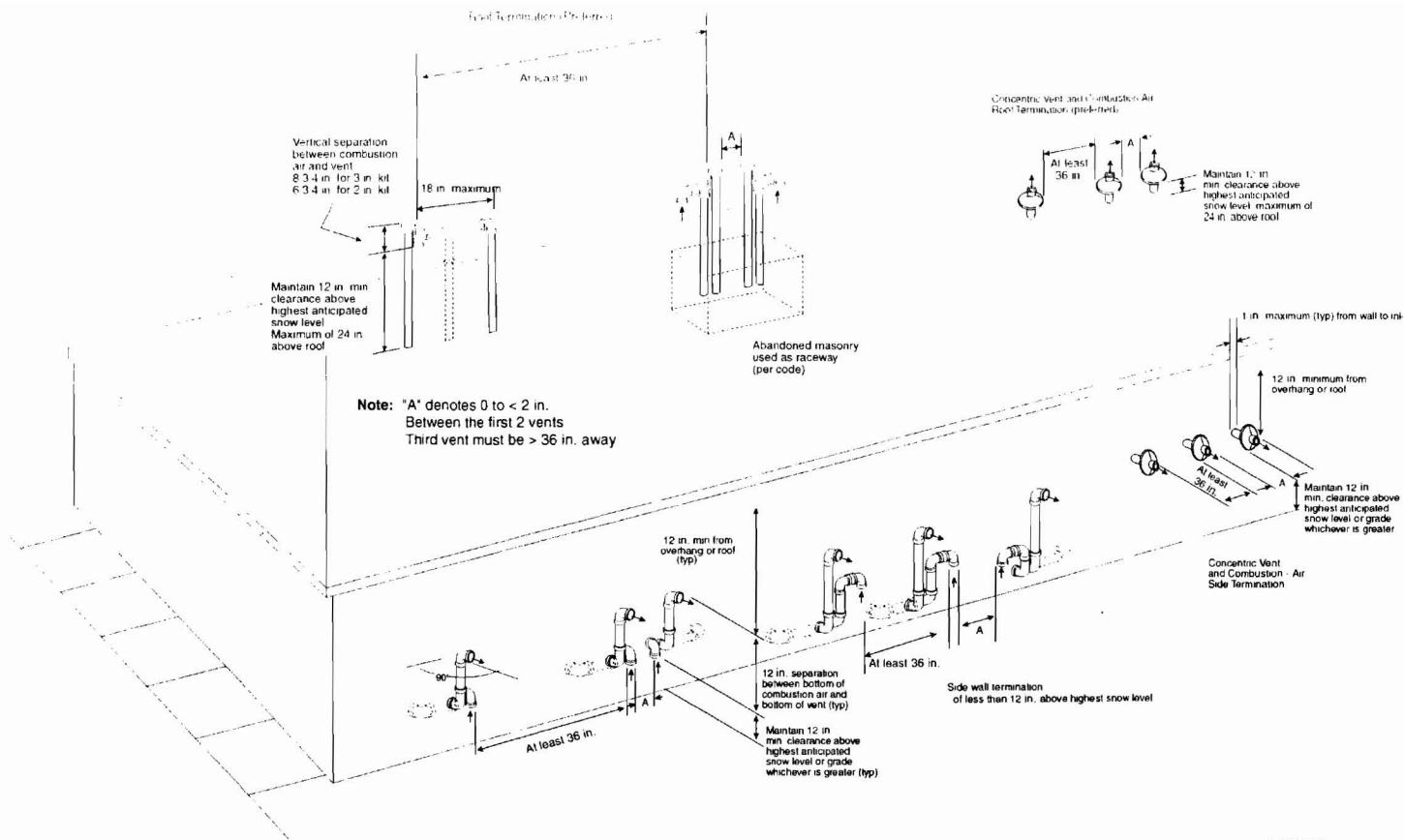
Condensate trap MUST be used for all applications.

An external trap is not required when connecting the field drain to this condensate trap.

The field drain connection (condensate trap or drain tube coupling) is sized for 1/2-in. CPVC, 1/2-in. PVC, or 5/8-in. ID tube connection.

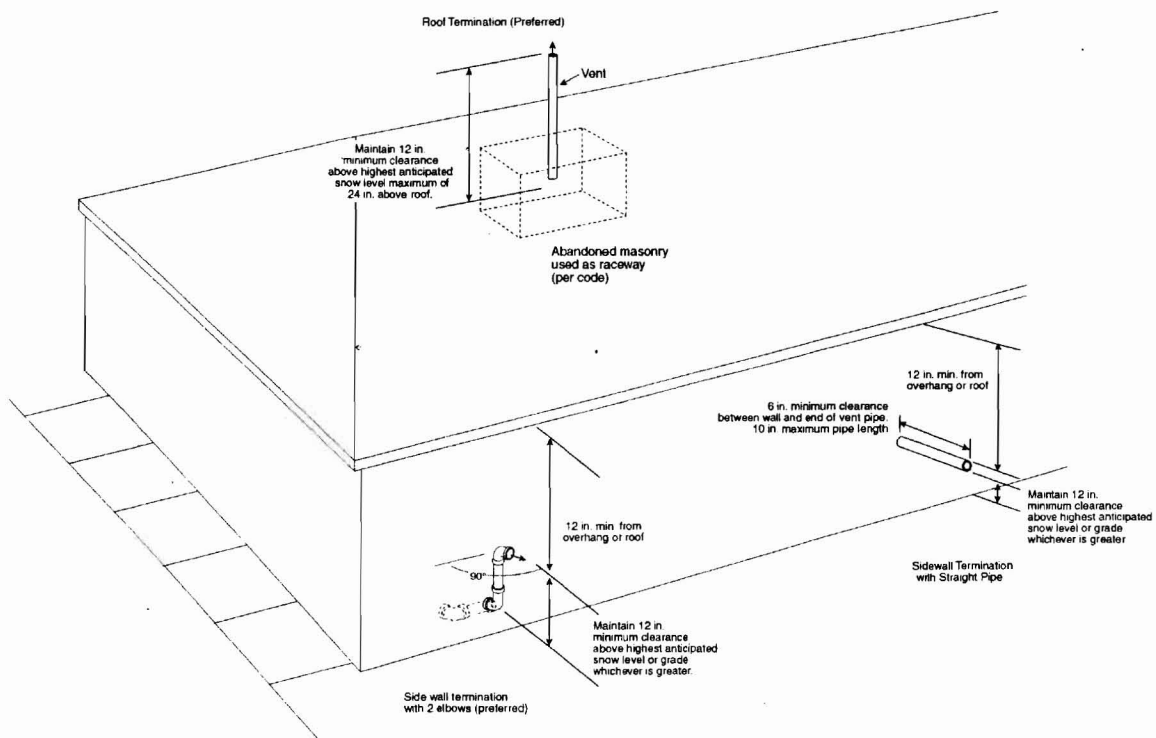
Drain pipe and fittings must conform to ANSI standards and ASTM D1785, D2466, or D2846. CPVC or PVC cement must conform to ASTM D2564 or F493. Primer must conform to ASTM F656. In Canada, use CSA or ULC certified schedule 40 CPVC or PVC drain pipe, fittings, and cement.

When a condensate pump is required, select a pump which is approved for condensing furnace applications. To avoid condensate spillage, select a pump with an overflow switch.



A05090

Fig. 43—Combustion Air and Vent Pipe Termination for Direct Vent (2-pipe) System (All Sizes)



A05091

Fig. 44—Vent Pipe Termination for Non-Direct Vent (1-pipe) System (Sizes 040 Through 120 Only)

Furnace condensate is mildly acidic, typically in the pH range of 3.2 to 4.5. Due to corrosive nature of this condensate, a condensate pH neutralizing filter may be desired. Check with local authorities to determine if a pH neutralizer is required.

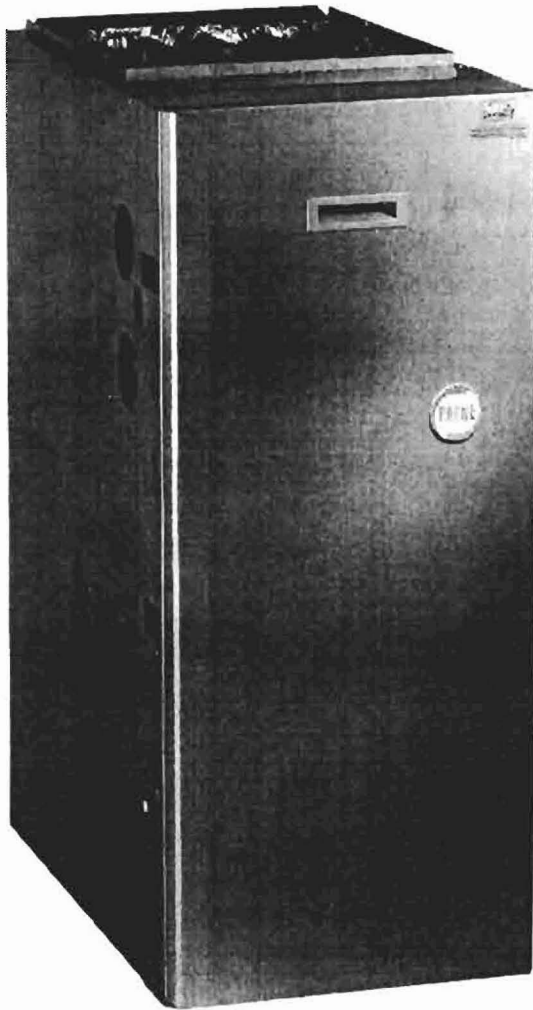
APPLICATION

The furnace, A/C, and humidifier drains may be combined and drained together. The A/C drain must have an external, field-supplied trap prior to the furnace drain connection. All drain



PG9MAB MULTIPOISE CONDENSING GAS FURNACE

Product Data



INSTALLATION FLEXIBILITY

The 4-way multipoise design allows a model PG9MAB to be installed in an upflow, downflow, or horizontal orientation. All sizes of the PG9MAB may be installed in direct vent (2-pipe) applications. All sizes except the 140 size may be installed in non-direct vent (1-pipe) applications. The 140 size also has an elevation limitation of 7,000 ft. See "Combustion Air and Vent Pipe" table for more information.

CASING

The casing also has the required openings for left- or right-side connection of gas, electric, drain, and vent connections.

COMBUSTION SYSTEM

Enclosed burner assembly isolates operating noise without the expense of sound deadening devices.

3-PASS PRIMARY HEAT EXCHANGERS

This design accelerates heat transfer and extracts heat that conventional heat exchangers waste up the flue. The primary heat exchanger is made of aluminized steel for corrosion resistance.

FLOW-THROUGH SECONDARY HEAT EXCHANGERS

Each cell is laminated with our patented polypropylene for greater corrosion resistance to help extend the life of the furnace for years of dependable performance. The heat exchanger is positioned in the furnace to extract additional heat from the combustion products regardless of furnace orientation.

LIMITED WARRANTY

Twenty Year Limited Warranty on the heat exchangers and a 5-year Warranty on all other parts.

MONOPORT INSHOT BURNERS

Produce precise air-to-gas mixture which gives a clean burn. The large monoport on the inshot or injection-type burners seldom, if ever, needs cleaning.

INTEGRATED CONTROL CENTER

The printed-circuit board has convenient terminals which permit quick-connection of a thermostat, air conditioning control circuits, a humidifier, or an air cleaner. The control has a built-in status indicator and self-test feature. A self-test feature allows for a complete check of the major components in about 60 seconds. The control also features an adjustable blower off delay.

COMBUSTION AIR AND VENTILATION

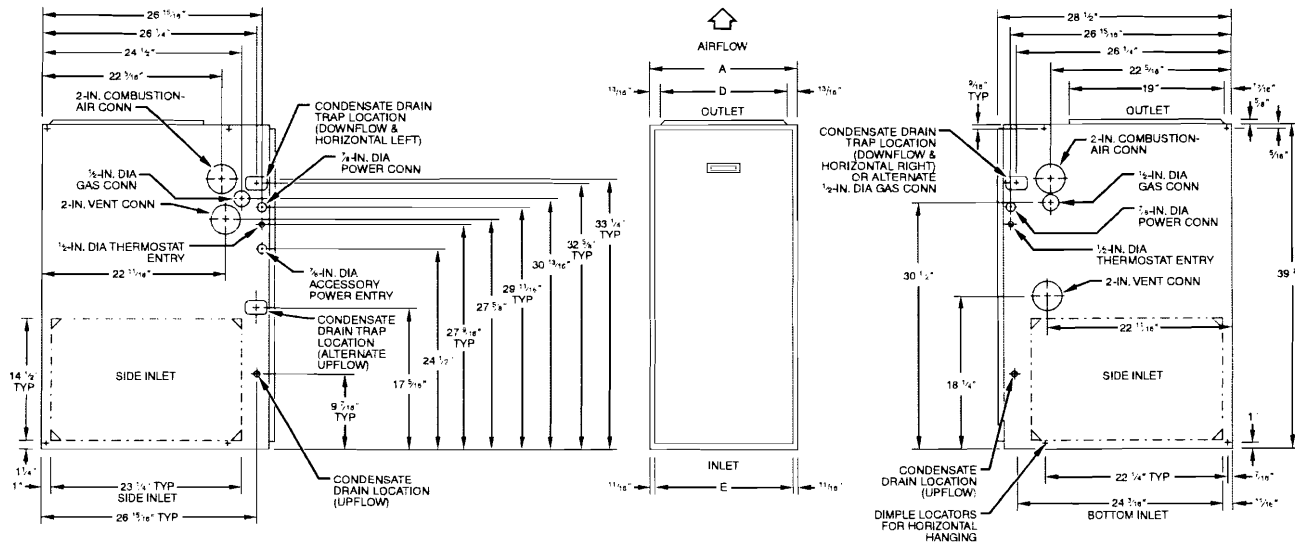
The PG9MAB advanced design allows Schedule 40 PVC, Schedule 40 CPVC pipe and fittings, PVC-DWV, SDR-21 PVC, SDR-26 PVC (not approved in Canada), ABS-DWV, or ABSF628 Schedule 40 pipe to bring air into the furnace for combustion and to be used for venting combustion products outside the structure. The vent pipe can terminate through a sidewall or through the roof.

CERTIFICATIONS

The PG9MAB units are CSA (formerly A.G.A. and C.G.A.) design certified for use with natural and propane gases, as well as GAMA efficiency rating certified. The furnace is factory-shipped for use with natural gas. A CSA (formerly A.G.A. and C.G.A.) listed gas conversion kit is required to convert furnace for use with propane gas. The model PG9MAA meets California Air Quality Management District emission requirements.

QUALITY REGISTRATION

The quality systems for this product have been registered by UL to ISO 9001 Standards.



NOTES: Minimum return-air opening at furnace, based on metal duct. If flex duct is used, see flex duct manufacturer's recommendation for equivalent diameters:

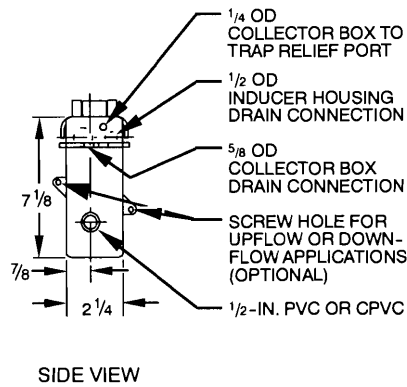
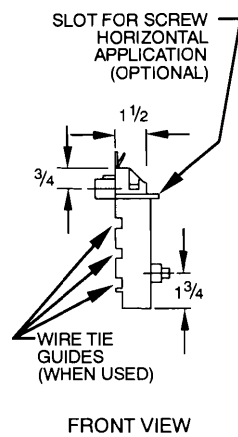
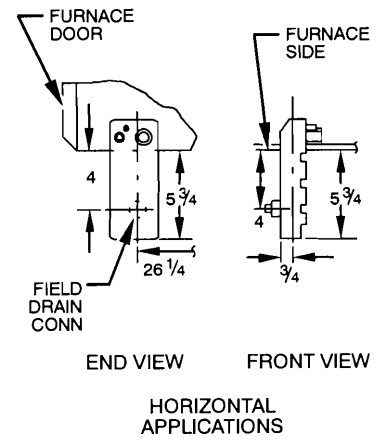
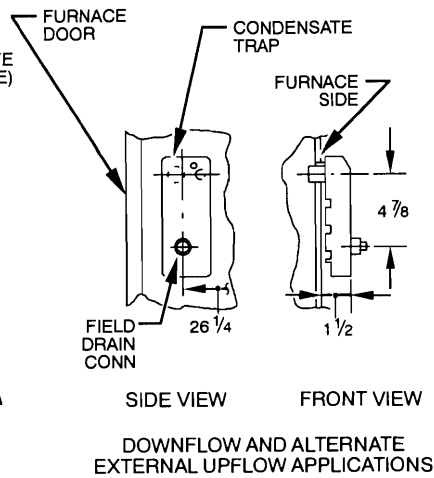
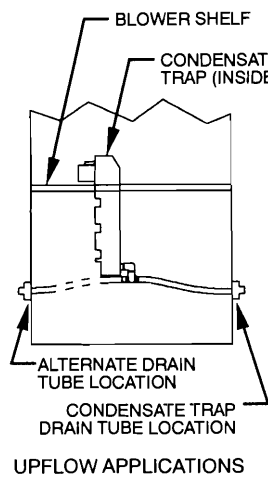
1. For 800 CFM 16-in. round or 14-1/2 X 12-in. rectangle.
2. For 1200 CFM 20-in. round or 14-1/2 X 19-1/2 in. rectangle.
3. For 1600 CFM 22-in. round or 14-1/2 X 23-1/4 in. rectangle.
4. For airflow requirements above 1800 CFM, see Air Delivery Table in product Specification Sheet for specific use of single side inlets. The use of both side inlets, a combination of 1 side and the bottom, or the bottom only will ensure adequate return-air openings for airflow requirements above 1800 CFM at 0.5" W.C. ESP.

2

A02185

DIMENSIONS (In.)

UNIT SIZE	A	D	E	SHIP. WEIGHT (Lb)
024040	17-1/2	15-7/8	16	165
036040	17-1/2	15-7/8	16	166
024060	17-1/2	15-7/8	16	172
036060	17-1/2	15-7/8	16	174
048060	17-1/2	15-7/8	16	174
036080	17-1/2	15-7/8	16	188
048080	17-1/2	15-7/8	16	194
060080	21	19-3/8	19-1/2	206
048100	21	19-3/8	19-1/2	219
060100	21	19-3/8	19-1/2	221
060120	24-1/2	22-7/8	23	250
060140	24-1/2	22-7/8	23	250



PG9MAB

A93026



MEETS DOE RESIDENTIAL CONSERVATION SERVICES PROGRAM STANDARDS.

Before purchasing this appliance, read important energy cost and efficiency information available from your retailer.



As an ENERGY STAR® partner, Payne Heating & Cooling has determined that this product meets the ENERGY STAR® guidelines for energy efficiency.

SPECIFICATIONS

PG9MAB

UNIT SIZE		024040	036040	024060	036060	048060	036080	
RATINGS AND PERFORMANCE								
Input Btuh*		40,000	40,000	60,000	60,000	60,000	80,000	
Output Capacity BTUH* (ICS) (Shaded capacities are specified on rating plate)	Direct Vent (2-Pipe)	Upflow	37,000	37,000	56,000	56,000	56,000	74,000
		Downflow	37,000	37,000	56,000	56,000	56,000	74,000
		Horizontal	37,000	37,000	56,000	56,000	56,000	74,000
	Non-Direct Vent (1-Pipe)	Upflow	37,000	37,000	56,000	56,000	56,000	74,000
		Downflow	37,000	37,000	56,000	56,000	56,000	74,000
		Horizontal	37,000	37,000	56,000	56,000	56,000	74,000
AFUE%† Nonweatherized ICS	Direct Vent (2-Pipe)	Upflow	92.1	92.1	92.1	92.1	92.1	92.1
		Downflow	91	91	91	91	91	91
		Horizontal	92.1	92.1	92.1	92.1	92.1	92.1
	Non-Direct Vent (1-Pipe)	Upflow	90					
		Downflow	90					
		Horizontal	90					
Certified Temperature Rise Range °F		30-60	15-45	45-75	30-60	20-50	40-70	
Certified External Static Pressure		Heating	0.10	0.10	0.12	0.12	0.15	
		Cooling	0.50	0.50	0.50	0.50	0.50	0.50
Airflow CFM‡		Heating	850	1125	885	1065	1320	1190
		Cooling	895	1215	900	1200	1545	1245
ELECTRICAL								
Unit Volts-Hertz-Phase		115-60-1						
Operating Voltage Range Min-Max**		104-127						
Maximum Unit Amps		6.1	7.4	6.1	7.2	9.6	7.7	
Unit Ampacity††		8.4	10.0	8.4	9.8	12.8	10.4	
Minimum Wire Size		14	14	14	14	14	14	
Maximum Wire Length (Ft)‡‡		44	37	44	38	29	36	
Maximum Fuse Size or Ckt Bkr Amps (Time-Delay Type Recommended)		15	15	15	15	15	15	
Transformer (24v)		40va						
External Control		Heating		12va				
Power Available		Cooling		21va				
Air Conditioning Blower Relay		Standard						
CONTROLS								
Limit Control		SPST						
Heating Blower Control (Off Delay)		Selectable 90, 120, 150, or 180						
Burners (Monoport)		2	2	3	3	3	4	
Gas Connection Size		1/2-in. NPT						
GAS CONTROLS								
Gas Valve (Redundant)		Manufacturer		White-Rodgers				
		Minimum Inlet Pressure (In. wc)		4.5 (Natural Gas)				
		Maximum Inlet Pressure (In. wc)		13.6 (Natural Gas)				
Ignition Device		Hot Surface						
BLOWER DATA								
Direct-Drive Motor HP (Permanent Split Capacitor)		1/5	1/3	1/5	1/3	1/2	1/3	
Motor Full Load Amps		4.9	5.8	4.9	5.8	7.9	5.8	
RPM (Nominal)-Speeds		1075-3	1075-4	1075-3	1075-4			
Blower Wheel Diameter x Width (In.)		10 X 6	10 X 7	10 X 6	10 X 7	11 X 8	10 X 7	
Filter Size (In.)-Permanent Washable		(1) 16 X 25 X 1						
Filter Size (In.)-Permanent Washable		(1) 20 X 25 X 1						
FACTORY-AUTHORIZED AND LISTED, DEALER-INSTALLED OPTIONS								
Gas Conversion Kit-Natural-to-Propane		KGANP4001ALL						
Gas Conversion Kit-Propane-to-Natural		KGAPN3301ALL						
Twinning Kit		N/A				KGATW0 601 HSI	N/A	
Manufactured (Mobile) Home Kit†††		KGAH0102KIT						
Downflow Base***		KGASB0201ALL						
Vent Termination Kit (Bracket Only for 2 Pipes)†††		2-in.-KGAVT0101BRA		3-in.-KGAVT0201BRA				
Concentric Vent Termination Kit (Single Exit)†††		2-in.-KGAVT0501CVT		3-in.-KGAVT0601CVT				
Condensate Freeze Protection Kit		KGAHT0101CFP						
Side Filter Rack (Without Filter)-Upflow ONLY		KGAFR0206ALL						
Thermostat-Programmable		For Use With Air Conditioner-TSTATPPSAC01						
Thermostat-Non-Programmable		For Use With Air Conditioner-TSTATPPBAC01-B						
Condensate Neutralizer Kit (obtained thru RCD)		P908-0001						
Door Gasket Kit		KGBAC0110DGK						

* Gas input ratings are certified for elevations to 2000 ft. For elevations above 2000 ft, reduce ratings 2 percent for each 1000 ft above sea level. In Canada, derate the unit 5 percent from 2000 to 4500 ft above sea level.

† Capacity and AFUE in accordance with U.S. Government DOE test procedures.

‡ Airflow shown is for bottom only return-air supply. For air delivery above 1800 CFM, see Air Delivery table for other options. A filter is required for each return-air supply.

** Permissible voltage limits for proper furnace operation.

†† Unit ampacity = 125 percent of full load amps of largest components plus 100 percent full load amps of all other potential operating components (EAC, humidifier, etc.).

‡‡ Length shown is measured 1 way along wire path between unit and service panel for maximum 2 percent voltage drop.

*** Required for installation on combustible floors when no coil box is used, or when any coil box other than a Payne CD5, CK5 or KCAKC cased coil is used.

††† For direct vent applications only.

N/A-Not Applicable. Unit is not allowed in this installation application.

ICS-Isolated Combustion System

SPECIFICATIONS (CONTINUED)

PG9MAB

UNIT SIZE		048080	060080	048100	060100	060120	060140		
RATINGS AND PERFORMANCE									
Input Btuh*		80,000	80,000	100,000	100,000	120,000	138,000		
Output Capacity BTUH* (ICS) (Shaded capacities are specified on rating plate)	Direct Vent (2-Pipe)	Upflow	74,000	74,000	93,000	93,000	112,000	127,000	
		Downflow	74,000	74,000	93,000	93,000	112,000	127,000	
		Horizontal	74,000	74,000	93,000	93,000	112,000	127,000	
	Non-Direct Vent (1-Pipe)	Upflow	74,000	74,000	93,000	93,000	112,000	NA	
		Downflow	74,000	74,000	93,000	93,000	112,000	NA	
		Horizontal	74,000	74,000	93,000	93,000	112,000	NA	
AFUE%* Nonweatherized ICS	Direct Vent (2-Pipe)	Upflow	92.1	92.1	92.1	92.1	92.1	92.1	
		Downflow	91	91	91	91	91	90	
		Horizontal	92.1	92.1	92.1	92.1	92.1	92	
	Non-Direct Vent (1-Pipe)	Upflow						90	NA
		Downflow						90	NA
		Horizontal						90	NA
Certified Temperature Rise Range °F		30-60	20-50	45-75	30-60	40-70	50-80		
Certified External Static Pressure		Heating	0.15	0.15	0.20	0.20	0.20		
		Cooling	0.50	0.50	0.50	0.50	0.50		
Airflow CFM‡		Heating	1285	1785	1315	1690	1720		
		Cooling	1525	1925/2035	1570	1930/2130	2000/2130		
							1990/2045		
ELECTRICAL									
Unit Volts—Hertz—Phase		115—60—1							
Operating Voltage Range Min—Max**		104—127							
Maximum Unit Amps		10.1	14.1	10.2	14.8	14.6	14.6		
Unit Ampacity††		13.4	18.4	13.5	19.3	19.1	18.8		
Minimum Wire Size		14	12	14	12	12	12		
Maximum Wire Length (Ft)‡‡		28	31	27	30	30	30		
Maximum Fuse Size or Ckt Bkr Amps (Time-Delay Type Recommended)		15	20	15	20	20	20		
Transformer (24v)		40va							
External Control		Heating		12va					
Power Available		Cooling		21va					
Air Conditioning Blower Relay		Standard							
CONTROLS									
Limit Control		SPST							
Heating Blower Control (Off Delay)		Selectable 90, 120, 150, or 180							
Burners (Monoport)		4	4	5	5	6	6		
Gas Connection Size		1/2-in. NPT							
GAS CONTROLS									
Gas Valve (Redundant)		Manufacturer		White-Rodgers					
		Minimum Inlet Pressure (In. wc)		4.5 (Natural Gas)					
		Maximum Inlet Pressure (In. wc)		13.6 (Natural Gas)					
Ignition Device		Hot Surface							
BLOWER DATA									
Direct-Drive Motor HP (Permanent Split Capacitor)		1/2	3/4	1/2	3/4	3/4	3/4		
Motor Full Load Amps		7.9	11.1	7.9	11.1	11.1	11.1		
RPM (Nominal)—Speeds		1075—4							
Blower Wheel Diameter x Width (In.)		11 X 8	11 X 10	11 X 8	11 X 10	11 X 10	11 X 10		
Filter Size (In.)—Permanent Washable		(1) 20 X 25 X 1				(1) 24 X 25 X 1			
FACTORY—AUTHORIZED AND LISTED, DEALER—INSTALLED OPTIONS									
Gas Conversion Kit—Natural—to—Propane		KGANP4001ALL*							
Gas Conversion Kit—Propane—to—Natural		KGAPN3301ALL							
Twinning Kit		KGATW0601HSI					N/A		
Manufactured (Mobile) Home Kit†††		KGAMH0102KIT					N/A		
Downflow Base***		KGASB0201ALL							
Vent Termination Kit (Bracket Only for 2 Pipes)†††		2-in.—KGAVT0101BRA		3-in.—KGAVT0201BRA					
Concentric Vent Termination Kit (Single Exit)†††		2-in.—KGAVT0501CVT		3-in.—KGAVT0601CVT					
Condensate Freeze Protection Kit		KGAHT0101CFP							
Side Filter Rack (Without Filter)—Upflow ONLY		KGAFR0206ALL							
Thermostat—Programmable		For Use With Air Conditioner—TSTATPPSAC01							
Thermostat—Non—Programmable		For Use With Air Conditioner—TSTATPPBAC01—B							
Condensate Neutralizer Kit (obtained thru RCD)		P908—0001							
Door Gasket Kit		KGBAC0110D GK							

* Gas input ratings are certified for elevations to 2000 ft. For elevations above 2000 ft, reduce ratings 2 percent for each 1000 ft above sea level. In Canada, derate the unit 5 percent from 2000 to 4500 ft above sea level.

† Capacity and AFUE in accordance with U.S. Government DOE test procedures.

‡ Airflow shown is for bottom only return-air supply. For air delivery above 1800 CFM, see Air Delivery table for other options. A filter is required for each return-air supply.

** Permissible voltage limits for proper furnace operation.

†† Unit ampacity = 125 percent of full load amps of largest components plus 100 percent full load amps of all other potential operating components (EAC, humidifier, etc.).

‡‡ Length shown is measured 1 way along wire path between unit and service panel for maximum 2 percent voltage drop.

*** Required for installation on combustible floors when no coil box is used, or when any coil box other than a Payne CD5, CK5 or KCAKC cased coil is used.

††† For direct vent applications only.

N/A— Not Applicable. Unit is not allowed in this installation application.

ICS— Isolated Combustion System

COMBUSTION-AIR AND VENT PIPING FOR DIRECT VENT (2 PIPE) AND NON DIRECT VENT (1-PIPE) APPLICATIONS

Maximum Allowable Vent Pipe Length (Ft)

PG9MAB

ALTITUDE (FT)	UNIT SIZE (BTUH)	DIRECT VENT (2-PIPE) ONLY		NON-DIRECT VENT (1-PIPE) ONLY	NUMBER OF 90° ELBOWS						
		TERMINATION TYPE	PIPE DIA (IN.)*	PIPE DIA (IN.)*	1	2	3	4	5	6	
0 to 2000	40,000	2 Pipe or 2-in Concentric	1	1	5	NA	NA	NA	NA	NA	NA
			1-1/2	1-1/2	70	70	65	60	60	55	
			2	2	70	70	70	70	70	70	
	60,000	2 Pipe or 2-in Concentric	1-1/2	1-1/2	20	15	10	5	NA	NA	
			2	2	70	70	70	70	70	70	
	80,000	2 Pipe or 2-in Concentric	1-1/2	1-1/2	10	NA	NA	NA	NA	NA	
			2	2	55	50	35	30	30	20	
			2-1/2	2-1/2	70	70	70	70	70	70	
	100,000	2 Pipe or 3-in Concentric	2	2	5	NA	NA	NA	NA	NA	
			2-1/2	2-1/2	40	30	20	20	10	NA	
			3	3	70	70	70	70	70	70	
	120,000	2 Pipe or 3-in Concentric	2-1/2 one disk	2-1/2	10	NA	NA	NA	NA	NA	
			3†	NA	45	40	35	30	25	20	
			3† no disk	3†	70	70	70	70	70	70	
2-1/2 one disk			NA	5	NA	NA	NA	NA	NA		
3† one disk			NA	40	35	30	25	20	15		
140,000	2 Pipe or 3-in Concentric	3† no disk	NA	60	56	52	48	44	40		
		4† no disk	NA	70	70	70	70	70	70		
		NA	NA	70	70	70	70	70	70		
ALTITUDE (FT)	UNIT SIZE (BTUH)	DIRECT VENT (2-PIPE) ONLY		NON-DIRECT VENT (1-PIPE) ONLY	NUMBER OF 90° ELBOWS						
		TERMINATION TYPE	PIPE DIA (IN.)*	PIPE DIA (IN.)*	1	2	3	4	5	6	
2001 to 3000	40,000	2 Pipe or 2-in Concentric	1-1/2	1-1/2	67	62	57	52	52	47	
			2	2	70	70	70	70	70	70	
	60,000	2 Pipe or 2-in Concentric	1-1/2	1-1/2	17	12	7	NA	NA	NA	
			2	2	70	67	66	61	61	61	
	80,000	2 Pipe or 2-in Concentric	2	2	49	44	30	25	25	15	
			2-1/2	2-1/2	70	70	70	70	70	70	
	100,000	2 Pipe or 3-in Concentric	2-1/2	2-1/2	35	26	16	16	6	NA	
			3	3	70	70	70	70	66	61	
	120,000	2 Pipe or 3-in Concentric	3	NA	14	9	NA	NA	NA	NA	
			NA	3†	63	62	62	61	61	61	
			3† no disk	NA	70	70	63	56	50	43	
			4† no disk	4† no disk	70	70	70	70	70	70	
	140,000	2 Pipe or 3-in Concentric	3† one disk	NA	20	15	10	5	NA	NA	
			3† no disk	NA	39	35	31	27	23	19	
4† no disk			NA	70	70	70	70	70	70		
ALTITUDE (FT)	UNIT SIZE (BTUH)	DIRECT VENT (2-PIPE) ONLY		NON-DIRECT VENT (1-PIPE) ONLY	NUMBER OF 90° ELBOWS						
		TERMINATION TYPE	PIPE DIA (IN.)*	PIPE DIA (IN.)*	1	2	3	4	5	6	
3001 to 4000	40,000	2 Pipe or 2-in Concentric	1-1/2	1-1/2	64	59	54	49	48	43	
			2	2	70	70	70	70	70	70	
	60,000	2 Pipe or 2-in Concentric	1-1/2	1-1/2	16	11	6	NA	NA	NA	
			2	2	68	63	62	57	57	56	
	80,000	2 Pipe or 2-in Concentric	2	2	46	41	28	23	22	13	
			2-1/2	2-1/2	70	70	70	70	70	70	
	100,000	2 Pipe or 3-in Concentric	2-1/2	2-1/2	33	24	15	14	5	NA	
			3	3	70	70	70	66	61	56	
	120,000	2 Pipe or 3-in Concentric	3† no disk	NA	65	58	51	44	38	31	
			NA	3†	59	59	58	57	57	56	
	140,000	2 Pipe or 3-in Concentric	4† no disk	4† no disk	70	70	70	70	70	70	
			3† one disk	NA	11	6	NA	NA	NA	NA	
			3† no disk	NA	30	26	22	18	14	10	
			4† no disk	NA	70	70	70	70	70	70	

See notes at end of table

COMBUSTION-AIR AND VENT PIPING FOR DIRECT VENT (2 PIPE) AND NON DIRECT VENT (1-PIPE) APPLICATIONS

Maximum Allowable Vent Pipe Length (Ft)

ALTITUDE (FT)	UNIT SIZE (BTUH)	DIRECT VENT (2-PIPE) ONLY		NON-DIRECT VENT (1-PIPE) ONLY	NUMBER OF 90° ELBOWS					
		TERMINATION TYPE	PIPE DIA (IN.)*	PIPE DIA (IN.)*	1	2	3	4	5	6
4001 to 5000‡	40,000	2 Pipe or 2-in Concentric	1-1/2	1-1/2	60	55	50	45	44	39
			2	2	70	70	70	70	70	70
	60,000	2 Pipe or 2-in Concentric	1-1/2	1-1/2	15	10	5	NA	NA	NA
			2	2	64	59	58	53	52	52
	80,000	2 Pipe or 2-in Concentric	2	2	44	39	26	21	20	11
			2-1/2	2-1/2	70	70	70	70	70	70
	100,000	2 Pipe or 3-in Concentric	2-1/2	2-1/2	31	22	13	12	NA	NA
			3	3	70	70	67	62	57	52
	120,000	2 Pipe or 3-in Concentric	3† no disk	NA	53	46	40	33	26	20
			NA	3†	56	55	54	53	52	52
	140,000	2 Pipe or 3-in Concentric	4† no disk	4† no disk	70	70	70	70	70	70
			3† no disk	NA	21	17	13	9	5	NA
		4† no disk	NA	69	64	59	54	49	44	
ALTITUDE (FT)	UNIT SIZE (BTUH)	DIRECT VENT (2-PIPE) ONLY		NON-DIRECT VENT (1-PIPE) ONLY	NUMBER OF 90° ELBOWS					
		TERMINATION TYPE	PIPE DIA (IN.)*	PIPE DIA (IN.)*	1	2	3	4	5	6
5001 to 6000‡	40,000	2 Pipe or 2-in Concentric	1-1/2	1-1/2	57	52	47	42	40	35
			2	2	70	70	70	70	70	70
	60,000	2 Pipe or 2-in Concentric	1-1/2	1-1/2	14	9	NA	NA	NA	NA
			2	2	60	55	54	49	48	47
	80,000	2 Pipe or 2-in Concentric	2	2	41	36	23	18	17	8
			2-1/2	2-1/2	70	70	70	70	70	70
	100,000	2 Pipe or 3-in Concentric	2-1/2	2-1/2	29	21	12	11	NA	NA
			3	3	70	67	62	57	52	47
	120,000	2 Pipe or 3-in Concentric	3† no disk	NA	42	35	29	22	15	9
			NA	3†	53	52	50	49	48	47
	140,000	2 Pipe or 3-in Concentric	4† no disk	4† no disk	70	70	70	70	70	70
			3† no disk	NA	12	8	NA	NA	NA	NA
		4† no disk	NA	42	37	32	27	22	17	
ALTITUDE (FT)	UNIT SIZE (BTUH)	DIRECT VENT (2-PIPE) ONLY		NON-DIRECT VENT (1-PIPE) ONLY	NUMBER OF 90° ELBOWS					
		TERMINATION TYPE	PIPE DIA (IN.)*	PIPE DIA (IN.)*	1	2	3	4	5	6
6001 to 7000‡	40,000	2 Pipe or 2-in Concentric	1-1/2	1-1/2	53	48	43	38	37	32
			2	2	70	70	68	67	66	64
	60,000	2 Pipe or 2-in Concentric	1-1/2	1-1/2	13	8	NA	NA	NA	NA
			2	2	57	52	50	45	44	43
	80,000	2 Pipe or 2-in Concentric	2	2	38	33	21	16	15	6
			2-1/2	2-1/2	70	70	68	67	66	64
	100,000	2 Pipe or 3-in Concentric	2-1/2	2-1/2	27	19	10	9	NA	NA
			3	3	68	63	58	53	48	43
	120,000	2 Pipe or 3-in Concentric	3† no disk	NA	31	24	18	11	NA	NA
			NA	3†	49	48	47	45	44	43
	140,000	2 Pipe or 3-in Concentric	4† no disk	4† no disk	70	70	70	70	67	62
			4† no disk	NA	17	12	7	NA	NA	NA

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See notes at end of table

COMBUSTION-AIR AND VENT PIPING FOR DIRECT VENT (2 PIPE) AND NON DIRECT VENT (1-PIPE APPLICATIONS)

Maximum Allowable Vent Pipe Length (Ft)

PG9MAB

ALTITUDE (FT)	UNIT SIZE (BTUH)	DIRECT VENT (2-PIPE) ONLY		NON-DIRECT VENT (1-PIPE) ONLY	NUMBER OF 90° ELBOWS					
		TERMINATION TYPE	PIPE DIA (IN.)*	PIPE DIA (IN.)*	1	2	3	4	5	6
7001 to 8000‡	40,000	2 Pipe or 2-in Concentric	1-1/2	1-1/2	49	44	39	34	33	28
			2	2	66	65	63	62	60	59
	60,000	2 Pipe or 2-in Concentric	1-1/2	1-1/2	12	7	NA	NA	NA	NA
			2	2	53	48	46	41	40	38
	80,000	2 Pipe or 2-in Concentric	2	2	36	31	19	14	12	NA
			2-1/2	2-1/2	66	65	63	62	60	59
	100,000	2 Pipe or 3-in Concentric	2-1/2	2-1/2	25	17	8	7	NA	NA
			3	3	63	58	53	48	43	38
			3† no disk	NA	20	13	7	NA	NA	NA
	120,000	2 Pipe or 3-in Concentric	NA	3†	46	44	43	41	40	38
4† no disk			4† no disk	61	56	51	46	41	36	
140,000										NA
8001 to 9000‡	40,000	2 Pipe or 2-in Concentric	1-1/2	1-1/2	46	41	36	31	29	24
			2	2	62	60	58	56	55	53
	60,000	2 Pipe or 2-in Concentric	1-1/2	1-1/2	11	6	NA	NA	NA	NA
			2	2	49	44	42	37	35	34
	80,000	2 Pipe or 2-in Concentric	2	2	33	28	17	12	10	NA
			2-1/2	2-1/2	62	60	58	56	55	53
	100,000	2 Pipe or 3-in Concentric	2-1/2	2-1/2	23	15	7	5	NA	NA
			3	3	59	54	49	44	39	34
	120,000	2 Pipe or 3-in Concentric	3† no disk	NA	10	NA	NA	NA	NA	NA
			NA	3†	43	41	39	37	35	34
140,000										NA
9001 to 10,000‡	40,000	2 Pipe or 2-in Concentric	1-1/2	1-1/2	42	37	32	27	25	20
			2	2	57	55	53	51	49	47
	60,000	2 Pipe or 2-in Concentric	2	2	45	40	38	33	31	29
			2	2	30	25	14	9	7	NA
	80,000	2 Pipe or 2-in Concentric	2-1/2	2-1/2	57	55	53	51	49	47
			2-1/2	2-1/2	21	13	5	NA	NA	NA
	100,000	2 Pipe or 3-in Concentric	3	3	54	49	44	39	34	29
			NA	3†	39	37	35	33	31	29
	120,000	2 Pipe or 3-in Concentric	4† no disk	4† no disk	10	5	NA	NA	NA	NA

*Disk usage - Unless otherwise specified, use perforated disk assembly (factory-supplied in loose parts bag). If one disk is stated, separate 2 halves of perforated disk assembly and use shouldered disk half. When using shouldered disk half, install screen side toward inlet box.

†Long sweep bend elbow.

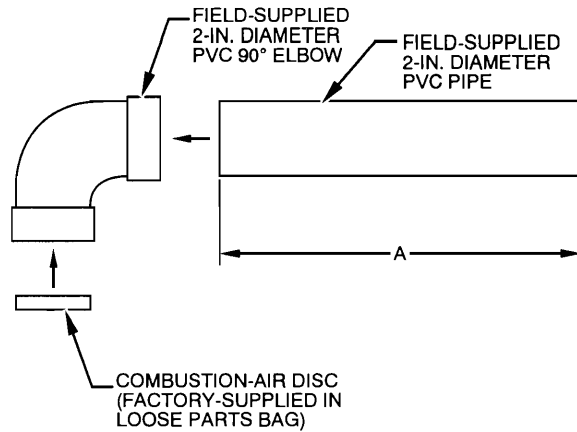
‡Vent sizing for Canadian installations over 4500 ft (1370 m) above sea level are subject to acceptance by the local authorities having jurisdiction.

NA - Not Allowed; pressure switch will not make.

NOTES:

1. Do not use pipe size greater than those specified in table or incomplete combustion, flame disturbance, or flame sense lockout may occur.
2. Size both the combustion-air and vent pipe independently, then use the larger diameter for both pipes.
3. Assume two 45° elbows equal one 90° elbow. Long radius elbows are desirable and may be required in some cases.
4. Elbows and pipe sections within the furnace casing and at the vent termination should not be included in vent length or elbow count.
5. The minimum pipe length is 5 ft for all applications.
6. Use 3-in. diameter vent termination kit for installations requiring 4-in diameter pipe.

**COMBUSTION-AIR PIPE FOR NON-DIRECT VENT (1-PIPE) APPLICATIONS
(Sizes 040 through 120 only)**



A96211

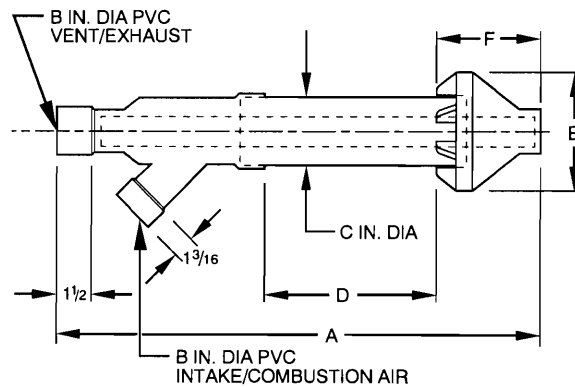
PG9MAB

Length of straight pipe portion of combustion-air inlet pipe assembly (in.)

CASING WIDTH	A
17-1/2	8-1/2 ± 1/2
21	10-1/2 ± 1/2
24-1/2	12 ± 1/2

ACCESSORIES

Concentric Vent for Direct-Vent (2-pipe) Application (All Model Sizes)



A97110

DIMENSIONS (In.)

PART NO.	A*	B	C	D†	E	F
KGAVT0501CVT	33-3/8	2	3-1/2	16-5/8	6-1/4	5-3/4
KGAVT0601CVT	38-7/8	3	4-1/2	21-1/8	7-3/8	6-1/2

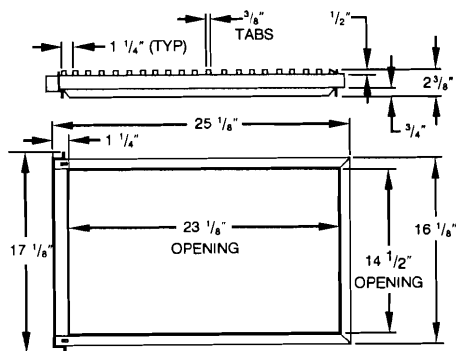
* Dimension A will change accordingly as dimension D is lengthened or shortened.

† Dimension D may be lengthened to 60 in. maximum. Dimension D may also be shortened by cutting the pipes provided in the kit to 12 in. minimum.

Note: See furnace Installation Instructions when venting multiple furnaces near each other.

DIMENSIONS (In.)

Side Filter Rack*

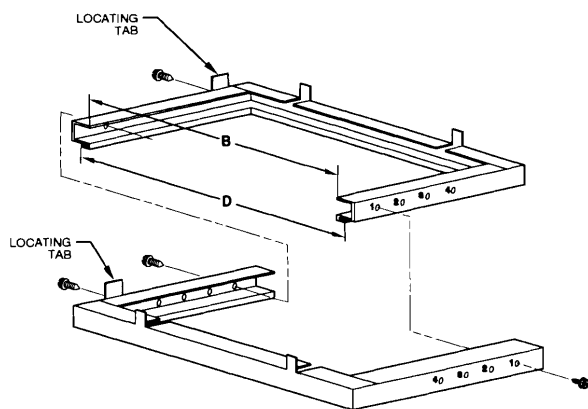


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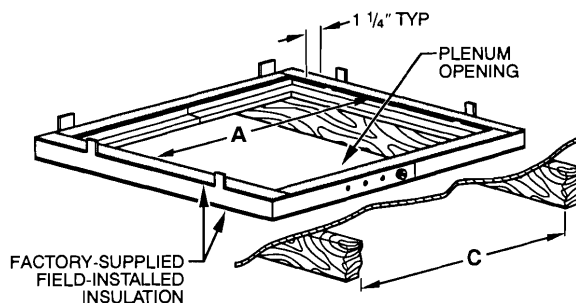
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*Accepts one 16 x 25 x 1 in. filter.

ACCESSORY DOWNFLOW SUBBASE



A88207



A97427

Disassembled

Assembled

FURNACE CASING WIDTH	FURNACE IN DOWNFLOW APPLICATION	PLENUM OPENING*		FLOOR OPENING		HOLE NO. FOR WIDTH ADJUSTMENT
		A	B	C	D	
17-1/2	Furnace with or without Cased Coil Assembly or Coil Box	15-1/8	19	16-3/4	20-3/8	3
21	Furnace with or without Cased Coil Assembly or Coil Box	18-5/8	19	20-1/4	20-3/8	2
24-1/2	Furnace with or without Cased Coil Assembly or Coil Box	22-1/8	19	23-3/4	20-3/8	1

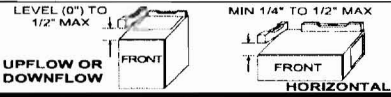
*The plenum should be constructed 1/4-in. smaller in width and depth than the plenum dimensions shown above.

INSTALLATION

- This forced air furnace is equipped for use with natural gas at altitudes 0 - 10,000 ft (0 - 3,050m), except 140 size furnaces are only approved for altitudes 0 - 7,000 ft (0 - 2,135m).
- An accessory kit, supplied by the manufacturer, shall be used to convert to propane gas use or may be required for some natural gas applications.
- This furnace is for indoor installation in a building constructed on site. This furnace may be installed in a manufactured (mobile) home when stated on rating plate and using factory authorized kit.
- This furnace may be installed on combustible flooring in alcove or closet at **Minimum Inches Clearance To Combustible Construction** as described below.
- This furnace requires a special venting system. Refer to the installation instructions for parts list and method of installation. This furnace is for use with schedule-40 PVC, PVC-DWV, CPVC, or ABS-DWV pipe, and must not be vented in common with other gas-fired appliances. Construction through which vent/air intake pipes may be installed is maximum 24 inches (610 mm), minimum 3/4 inches (19 mm) thickness (including roofing materials).
- Cette fournaise à air pulsé est équipée pour utilisation avec gaz naturel et altitudes comprises entre 0 - 3,050m (0 - 10,000 pi), excepté queles fournaises de 140 taille sont pour altitudes comprises entre 0 - 2,135m (0 - 7,000pi).
- Utiliser une trousse de conversion, fournie par le fabricant, pour passer au gaz propane ou pour certaines installations au gaz naturel.
- Cette fournaise à air pulsé est pour installation à l'intérieur dans un bâtiment construit sur place. Cette fournaise à air pulsé peut être installée dans une maison préfabriquée (maison mobile) si prescrit par la plaque signalétique et si on utilise une trousse spécifiée par le fabricant.
- Cette fournaise peut être installée sur un plancher combustible dans un enfoncement ou un placard en observant les **Dégagement Minimum En Pouces Avec Éléments De Construction Combustibles**.
- Cette fournaise nécessite un système d'évacuation spécial. La méthode d'installation et la liste des pièces nécessaires figurent dans les instructions d'installation. Cette fournaise doit s'utiliser avec la tuyauterie des nomenclatures 40 PVC, PVC-DWV, CPVC, ou ABS-DWV et elle ne peut pas être ventilée conjointement avec d'autres appareils à gaz. Épaisseur de la construction au travers de laquelle il est possible de faire passer les tuyaux d'aération (admission/évacuation): 24 po (610 mm) maximum, 3/4 po (19mm) minimum (y compris la toiture).

For upflow and downflow applications, furnace must be installed level, or pitched within 1/2" of level. For a horizontal application, the furnace must be pitched minimum 1/4" to maximum of 1/2" forward for proper drainage. See Installation Manual for IMPORTANT unit support details on horizontal applications.

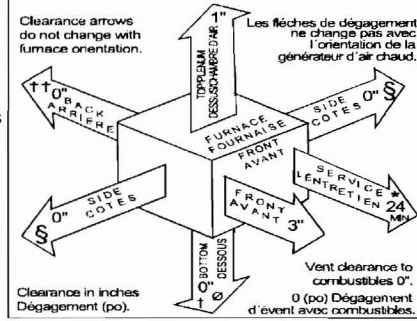
Pour des applications de flux ascendant et descendant, la fournaise doit être installée de niveau ou inclinée à pas plus de 1/2" du niveau. Pour une application horizontale, la fournaise doit être inclinée entre minimum 1/4" et maximum 1/2" du niveau pour le drainage approprié. En cas d'installation en position horizontale, consulter les renseignements IMPORTANTS sur le support dans le manuel d'installation.



MINIMUM INCHES CLEARANCE TO COMBUSTIBLE CONSTRUCTION

- ALL POSITIONS:**
- ★ Minimum front clearance for service 24 inches (610mm).
 - † † 140 size furnaces require 1 inch back clearance to combustible materials.
- DOWNFLOW POSITIONS:**
- † For installation on combustible floors only when installed on special base No. KGASB0201ALL, Coil Assembly, Part No. CD5 or CK5, or Coil Casing, Part No. KCAKC.
- HORIZONTAL POSITIONS:**
- Line contact is permissible only between lines formed by intersections of top and two sides of furnace jacket, and building joists, studs, or framing.
 - Clearance shown is for air inlet and air outlet ends.
 - 120 and 140 size furnaces require 1 inch bottom clearance to combustible materials.
- DÉGAGEMENT MINIMUM EN POUCES AVEC ÉLÉMENTS DE CONSTRUCTION COMBUSTIBLES POUR TOUTS LES POSITIONS:**
- ★ Dégagement avant minimum de 24 po (610mm) pour l'entretien.
 - † † Pour les fournaises de 140 taille, 1 po (25mm) dégagement des matériaux combustibles est requis au-dessus.
- POUR LA POSITION COURANT DESCENDANT:**
- † Pour l'installation sur le plancher combustible seulement quand on utilise la base spéciale, pièce n° KGASB0201ALL, l'ensemble serpentin, pièce n° CD5 ou CK5, ou le carter de serpentin, pièce n° KCAKC.
- POUR LA POSITION HORIZONTALE:**
- Le contact n'est permis qu'entre les lignes formées par les intersections du dessus et des deux côtés de la chemise de la fournaise, et des solives, des montants ou de la charpente du bâtiment.
 - La distance indiquée concerne l'extrémité du tuyau d'arrivée d'air et l'extrémité du tuyau de sortie d'air.
 - Ø Pour les fournaises de 120 et 140 taille, 1 po (25mm) dégagement des matériaux combustibles est requis au-dessous.

This furnace is approved for UPFLOW, DOWNFLOW and HORIZONTAL installations. Cette fournaise est approuvée pour l'installation HORIZONTALE et la circulation d'air VERS LE HAUT et VERS LE BAS.



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TUBE ROUTING

Furnace is shipped from factory in upflow configuration. Pressure tube and drain tube routing MUST match the diagrams below.

<p>Condensate Trap, Factory Installed in Blower Shelf</p> <p>(Blower access panel removed)</p> <p>Labels: COLLECTOR BOX TUBE (PINK), COLLECTOR BOX TUBE (GREEN), INDUCER HOUSING (MOULED) DRAIN TUBE (BEHIND COLLECTOR BOX DRAIN TUBE), COLLECTOR BOX DRAIN TUBE (BLUE), FIELD-INSTALLED FACTORY-SUPPLIED DRAIN TUBE COUPLINGS (LEFT DRAIN OPTION), FIELD-INSTALLED FACTORY-SUPPLIED DRAIN TUBE, BURNER ENCLOSURE PRESSURE REFERENCE TUBE ASSEMBLY, CAP, PLUG, COLLECTOR BOX DRAIN TUBE (BLUE & WHITE STRIPED), CONDENSATE TRAP, FIELD-INSTALLED FACTORY-SUPPLIED DRAIN TUBE COUPLING (RIGHT DRAIN OPTION), FIELD-INSTALLED FACTORY-SUPPLIED 1/2 IN. CPVC STRIPED ELBOWS (Ø) FOR LEFT DRAIN OPTION.</p>	<p>Tube location when used in UPFLOW application</p> <p>Labels: COLLECTOR BOX TUBE (PINK), COLLECTOR BOX TUBE (GREEN), COLLECTOR BOX DRAIN TUBE (BLUE), CONDENSATE TRAP, BURNER ENCLOSURE PRESSURE REFERENCE TUBE ASSEMBLY, CAP, PLUG, COLLECTOR BOX DRAIN TUBE (BLUE & WHITE STRIPED), INDUCER HOUSING DRAIN TUBE (MOULET).</p>
<p>Condensate Trap on LEFT Side</p> <p>Labels: CAP, COLLECTOR BOX DRAIN TUBE (BLUE), COLLECTOR BOX TUBE (GREEN), COLLECTOR BOX DRAIN TUBE (BLUE & WHITE STRIPED), COLLECTOR BOX EXTENSION TUBE, CONDENSATE TRAP, BURNER ENCLOSURE PRESSURE REFERENCE TUBE ASSEMBLY, INDUCER HOUSING DRAIN TUBE (MOULET), COLLECTOR BOX TUBE (PINK), COLLECTOR BOX EXTENSION TUBE.</p>	<p>Tube location when used in DOWNFLOW application</p> <p>Labels: PLUG, CAP, COLLECTOR BOX DRAIN TUBE (BLUE), COLLECTOR BOX TUBE (PINK), COLLECTOR BOX TUBE (GREEN), COLLECTOR BOX EXTENSION TUBE, BURNER ENCLOSURE PRESSURE REFERENCE TUBE ASSEMBLY, CONDENSATE TRAP, COLLECTOR BOX EXTENSION DRAIN TUBE, GAS VALVE, DRAIN TUBE COUPLING, DRAIN TUBES ROUTED IN FRONT OF GAS VALVE.</p>
<p>Tube location when used on HORIZONTAL - LEFT application</p> <p>Labels: PLUG, CAP, BURNER ENCLOSURE PRESSURE REFERENCE TUBE ASSEMBLY, COLLECTOR BOX EXTENSION TUBE, CONDENSATE TRAP, COLLECTOR BOX EXTENSION DRAIN TUBE, DRAIN TUBE COUPLING, COLLECTOR BOX TUBE (PINK), COLLECTOR BOX TUBE (BLUE), INDUCER HOUSING DRAIN TUBE (MOULET), COLLECTOR BOX TUBE (GREEN).</p>	<p>Tube location when used on HORIZONTAL - RIGHT application</p> <p>Labels: COLLECTOR BOX DRAIN TUBE (BLUE), COLLECTOR BOX EXTENSION TUBE, COLLECTOR BOX TUBE (PINK), PLUG, CAP, BURNER ENCLOSURE PRESSURE REFERENCE TUBE ASSEMBLY, COLLECTOR BOX EXTENSION TUBE, COLLECTOR BOX TUBE (GREEN), COLLECTOR BOX DRAIN TUBE (BLUE AND WHITE STRIPED), INDUCER HOUSING DRAIN TUBE (MOULET), CONDENSATE TRAP, AUXILIARY 'J' BOX RELOCATED HERE.</p>

NOTE:

1. All tubing must be connected securely and routed to avoid kinks and traps.
2. Pressure tubing must always slope away from pressure switch to collector box connection as shown.
3. HORIZONTAL-LEFT installations require the collector box pressure tube to be relocated between the inducer housing and the blower shelf to prevent a trap. Refer to the Installation Instructions for further details.

328066-201 REV. C

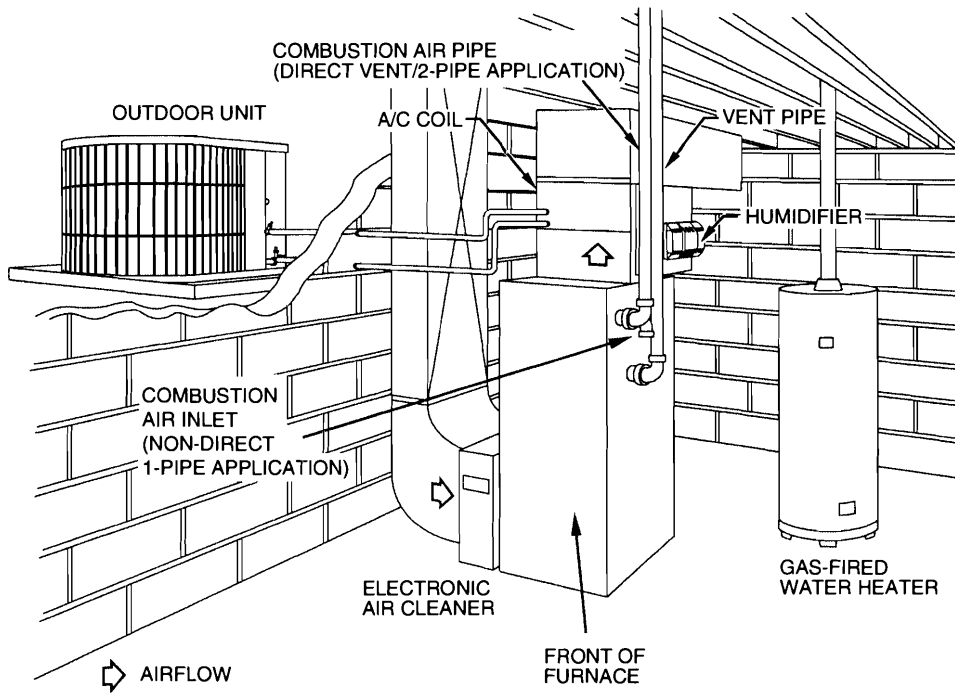
AIR DELIVERY – CFM (With Filter)*

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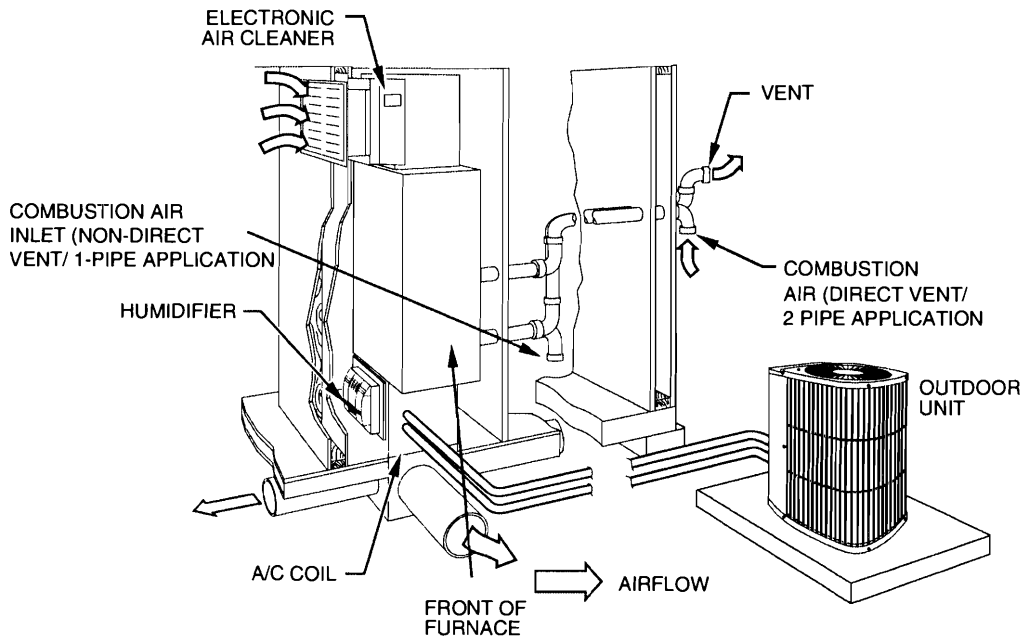
UNIT SIZE	RETURN-AIR SUPPLY	SPEED	EXTERNAL STATIC PRESSURE (In. wc)							
			0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8
024040	1 side or bottom	High	1075	1040	995	945	895	840	760	670
		Med-Low	850	825	780	740	685	635	560	480
		Low	740	700	650	620	565	515	455	385
036040	1 side or bottom	High	1470	1415	1400	1285	1215	1120	995	890
		Med-High	1315	1280	1235	1180	1115	1035	930	825
		Med-Low	1125	1110	1085	1045	990	915	830	740
024060	1 side or bottom	High	1100	1065	1005	945	900	805	730	610
		Med-Low	890	865	810	765	705	620	540	475
		Low	745	710	670	625	565	505	425	360
036060	1 side or bottom	High	1430	1375	1325	1275	1200	1135	1040	935
		Med-High	1270	1260	1215	1160	1105	1035	950	850
		Med-Low	1070	1055	1045	1015	975	920	850	750
048060	1 side or bottom	High	1700	1695	1640	1580	1545	1450	1380	1310
		Med-High	1500	1465	1435	1385	1355	1300	1250	1185
		Med-Low	1325	1295	1265	1230	1190	1150	1105	1050
036080	1 side or bottom	High	1535	1470	1405	1330	1245	1160	1065	935
		Med-High	1395	1350	1300	1225	1155	1080	985	880
		Med-Low	1200	1175	1125	1065	1030	970	890	780
048080	1 side or bottom	High	1750	1685	1635	1575	1525	1445	1380	1310
		Med-High	1495	1455	1405	1355	1305	1250	1185	1120
		Med-Low	1310	1260	1225	1170	1125	1095	1040	980
060080	1 side or bottom	High	2200	2175	2085	2025	1925	1820	1735	1635
		Med-High	2100	2025	1945	1865	1785	1700	1620	1540
		Med-Low	1815	1760	1720	1670	1620	1550	1480	1405
048100	1 side or bottom	High	2360	2280	2210	2130	2035	1960	1875	1790
		Med-High	1965	1925	1870	1830	1760	1710	1670	1575
		High	1740	1705	1660	1615	1570	1500	1425	1355
060100	1 side or bottom	Med-High	1500	1470	1445	1410	1375	1330	1280	1210
		Med-Low	1340	1315	1300	1270	1235	1200	1140	1095
		Low	1195	1175	1165	1130	1100	1070	1030	975
060120	bottom only	High	2250	2175	2090	2020	1930	1855	1760	1670
		Med-High	2020	1950	1900	1840	1790	1710	1640	1545
		Med-Low	1725	1690	1660	1630	1575	1520	1460	1370
060140	both sides or 1 side and bottom	Low	1490	1480	1460	1440	1380	1340	1295	1230
		High	2360	2315	2265	2200	2130	2055	1965	1890
		Med-High	1960	1940	1930	1900	1850	1800	1740	1660
060120	both sides or 1 side and bottom	High	2350	2250	2160	2070	2000	1885	1790	1635
		Med-High	2100	2015	1955	1875	1810	1710	1650	1540
		Med-Low	1770	1720	1675	1620	1575	1515	1450	1365
060120	1 side only	Low	1545	1520	1465	1415	1365	1325	1265	1185
		High	2435	2360	2285	2220	2130	2050	1965	1875
		Med-High	2040	2000	1950	1905	1835	1790	1725	1650
060140	bottom only	High	2255	2190	2115	2045	1965	1890	1800	1710
		Med-High	1985	1930	1890	1840	1780	1720	1645	1560
		High	2285	2210	2140	2065	1990	1910	1830	1745
060140	both sides or 1 side and bottom	Med-High	2020	1970	1920	1870	1805	1730	1660	1590
		Med-Low	1675	1650	1620	1590	1560	1510	1450	1390
		Low	1460	1445	1430	1400	1370	1320	1275	1230
060140	1 side only	High	2310	2255	2185	2120	2045	1965	1880	1800
		Med-High	1975	1945	1900	1860	1835	1775	1720	1640
		High	2140	2080	2025	1945	1875	1795	1725	1625
060140	1 side only	Med-High	1930	1850	1800	1740	1725	1660	1580	1495

* A filter is required for each return-air supply.

* For horizontal and downflow applications, use "1 side or bottom" or "bottom only" as airflow reference.

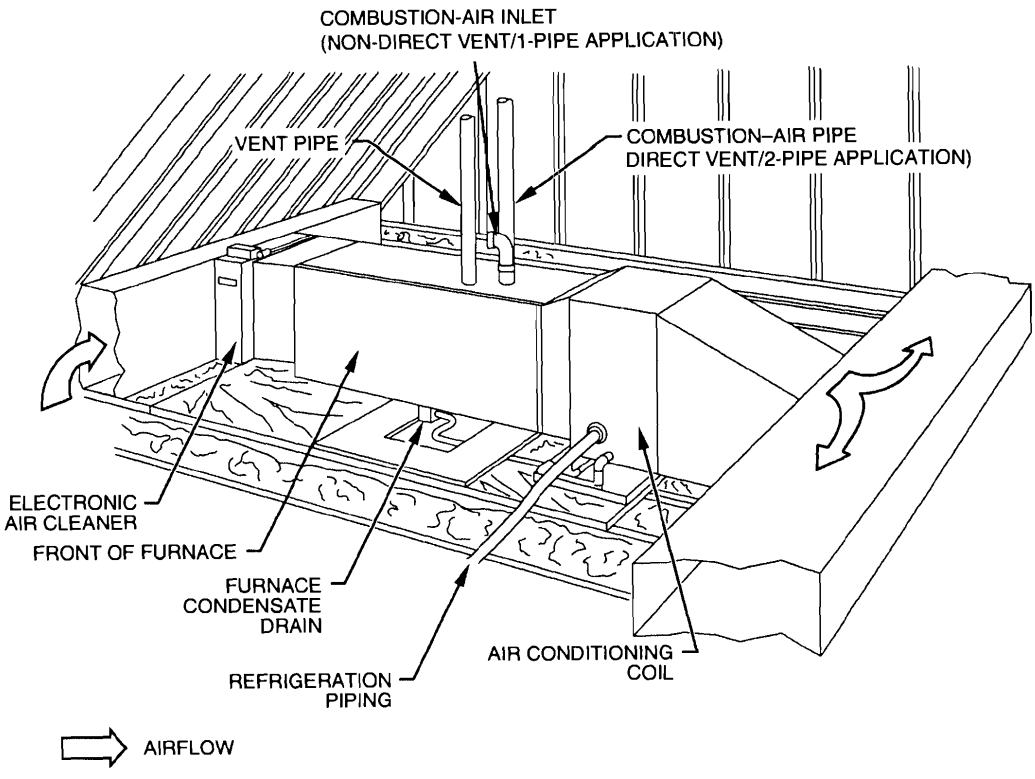


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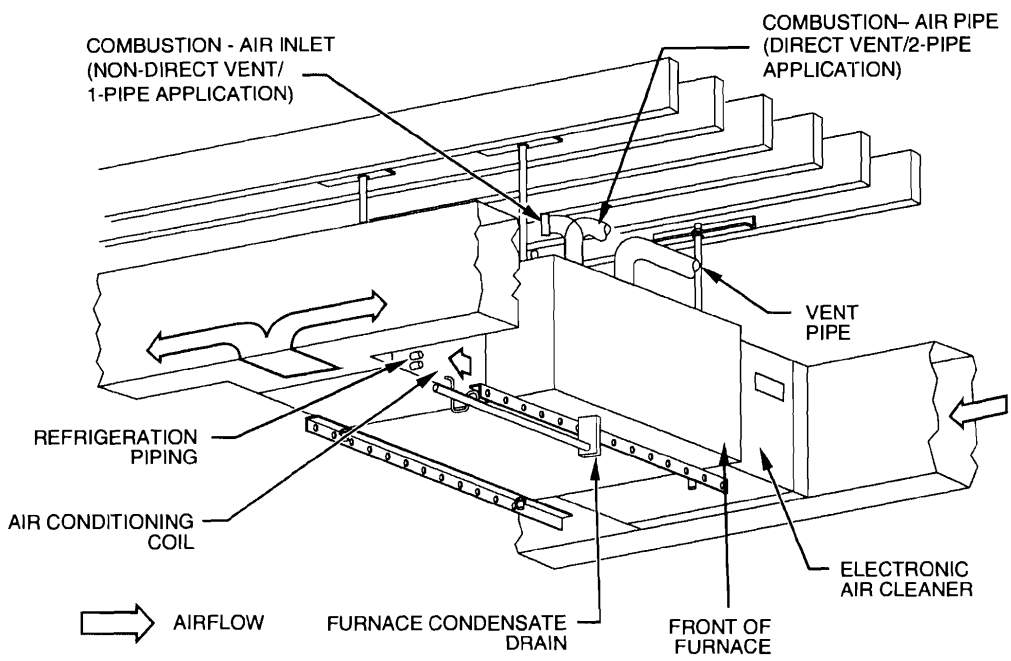


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LINE NO.	PRODUCT AND DESCRIPTION	BIN LOCATION	QUANTITY ORDERED	QTY SHIPPED	QUANTITY B.O.	RECEIVED
1	FA4CNF036000 F/C BASE R22 3.0T	W4/C4/ /	2.00	2.00	0.00	

1	◀ LINES TOTAL	# OF LINES NOT PRINTED ▶	0	QTY. SHIPPED TOTAL ▶	2.00	
PICKED BY	PACKED BY	CHECKED BY	CUBE	WEIGHT	FREIGHT CHARGE	
			0.00000	244.00000		
					RECEIVED BY	DATE RECEIVED

Last Page

Gas Furnaces

Installation Instructions

*SC Series 92.1% Upflow/Horizontal Condensing Furnace

*SL Series 92.1% Downflow Condensing Furnace



Upflow/Horizontal Model



Downflow Model



WARNING:

FIRE OR EXPLOSION HAZARD

- Failure to follow safety warnings exactly could result in serious injury or property damage.
- Installation and service must be performed by a qualified installer, service agency or the gas supplier.
- Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.

WHAT TO DO IF YOU SMELL GAS

- Do not try to light any appliance.
- Do not touch any electrical switch; do not use any phone in your building.
- Leave the building immediately.
- Immediately call your gas supplier from a neighbors phone. Follow the gas suppliers instructions.
- If you cannot reach your gas supplier, call the fire department.



WARNING:

This furnace is not approved for installation in mobile homes. Installing this furnace in a mobile home could cause fire, property damage, and/or personal injury.



WARNING:

PROPOSITION 65 WARNING: This product contains chemicals known to the state of California to cause cancer, birth defects or other reproductive harm.

ATTENTION INSTALLERS:

It is your responsibility to know this product better than your customer. This includes being able to install the product according to strict safety guidelines and instructing the customer on how to operate and maintain the equipment for the life of the product. Safety should always be the deciding factor when installing this product and using common sense plays an important role as well. Pay attention to all safety warnings and any other special notes highlighted in the manual. Improper installation of the furnace or failure to follow safety warnings could result in serious injury, death, or property damage. These instructions are primarily intended to assist qualified individuals experienced in the proper installation of this appliance. Some local codes require licensed installation/service personnel for this type of equipment. Please read all instructions carefully before starting the installation. Keep this manual in a safe place for future reference.

VENTING REQUIREMENTS

WARNING:

This furnace must not be vented with other appliances, even if that appliance is of the condensing type. Common venting can result in severe corrosion of other appliances or their venting and can allow combustion gases to escape through such appliances or vents. Do not vent the furnace to a fireplace chimney or building chase.

This furnace is classified as a "Category IV" appliance, which requires special venting materials and installation procedures.

- This furnace must be vented in compliance with the current revision of the National Fuel Gas Code (ANSI-Z223.1/NFPA54) and the instructions provided below. **Consult local codes for special requirements.**
- In Canada, venting shall conform to the requirements of the current (CAN/CGA B149.1 or .2) installation codes. **Consult local codes for special requirements.**
- Additional reference information for US and Canadian installations can be found in the Combustion and Ventilation Air section on page 5.

This section specifies installation requirements for Conventional (1-pipe) and Direct Vent (2-pipe) piping. For 1-pipe installations, install vent piping per this section and provide air for combustion and ventilation per the previous section. Table 13 on page 42 contains the length of vent and combustion air piping for either type of installation.

Category IV appliances operate with positive vent pressure and therefore require vent systems which are thoroughly sealed. They also produce liquid condensate, which is slightly acidic and can cause severe corrosion of ordinary venting materials. Furnace operation can be adversely affected by restrictive vent and combustion air piping.

The inducer assembly on this furnace can be rotated to vent the flue products out of the top, left or right side. This increases the flexibility of which direction the vent pipe can exit the furnace.

WARNING:

Upon completion of the furnace installation, carefully inspect the entire flue system both inside and outside the furnace to assure it is properly sealed. Leaks in the flue system can result in serious personal injury or death due to exposure of flue products, including carbon monoxide.

Vent Pipe Material

Vent and combustion air pipe and fittings must be one of the following materials and must conform to the indicated ANSI/ASTM standards. In Canada, all plastic vent pipes and fittings including any cement, cleaners, or primers must be certified as a system to ULC S636.

Material	Standard
Schedule 40PVC	D1785
PVC-DWV	D2665
SDR-21 & SDR-26	D2241
ABS-DWV	D2661
Schedule 40 ABS	F628
Foam/Cellular Core PVC	F891

Cement and primer must conform to ATSM Standard D2564 for PVC and Standard D2235 for ABS. When joining PVC piping to ABS, use PVC solvent cement. (See procedure specified in ASTM Standard D3138).

Vent Pipe Length and Diameter

In order for the furnace to operate properly, the combustion air and vent piping must not be excessively restrictive.

- The venting system should be designed to have the minimum number of elbows or turns.
- All horizontal runs must slope upwards from the furnace at 1/4 inch minimum per running foot of vent.
- Transition to the final vent diameter should be done as close to the furnace outlet as practical.
- Always use the same size or a larger pipe for combustion air that is used for the exhaust vent.

Table 13 on page 42 indicates the maximum allowable pipe length for a furnace of known input rate, when installed with piping of selected diameter and number of elbows. To use the table, the furnace input rate, the centerline length and the number of elbows on each pipe must be known.

When estimating the length of vent runs, consideration must be made to the effect of elbows and other fittings. This is conveniently handled using the idea of "equivalent length." This means the fittings are assigned a linear length that accounts for the pressure drop they will cause. For example: a 2" diameter, long radius elbow is worth the equivalent of 2.5 feet of linear run. A 90 degree tee is worth 7 ft.

Using Table 13, measure the linear length of your vent run and then add in the equivalent length of each fitting. The total length, including the equivalent fitting lengths, must be less than the maximum length in Table 13.

Condensing furnace combustion products have very little buoyancy, so Table 13 is to be used without consideration of any vertical rise in the piping.

Vent Pipe Installation



Combustion air must not be drawn from a corrosive atmosphere.

This furnace has been certified for installation with zero clearance between vent piping and combustible surfaces. However, it is good practice to allow space for convenience in installation and service.

- The quality of outdoor air must also be considered. Be sure that the combustion air intake is not located near a source of solvent fumes or other chemicals which can cause corrosion of the furnace combustion system. (See list of substances on page 6).
- Route piping as direct as possible between the furnace and the outdoors. Longer vent runs require larger diameters.
- If a Direct Vent (2-pipe) system is used, the combustion air intake and the vent exhaust must be located in the same atmospheric pressure zone. This means both pipes must exit the building through the same portion of exterior wall or roof as shown in Figure 29, Page 41. Vent piping must be sloped upwards 1/4" per foot in the direction from the furnace to the terminal. This is to ensure that any condensate flows back to the condensate disposal system.
- Piping must be mechanically supported so that its weight does not bear on the furnace. Pipe supports must be installed a minimum of every five feet along the vent run to ensure no displacement after installation. Supports may be at shorter intervals if necessary to ensure that there are no sagging sections that can trap condensate. It is recommended to install couplings along the vent pipe, on either side of the exterior wall (Figure 29). These couplings may be required by local code.
- If breakable connections are required in the combustion air inlet pipe (if present) and exhaust vent piping, then straight neoprene couplings for 2" or 3" piping with hose clamps can be used. These couplings can be ordered through your local furnace distributor. To install a coupling:
 1. Slide the rubber coupling over the end of the pipe that is attached to the furnace and secure it with one of the hose clamps.
 2. Slide the other end of the rubber coupling onto the other pipe from the vent.
 3. Secure the coupling with the second hose clamp, ensuring that the connection is tight and leak free.

Outdoor Terminations - Horizontal Venting

Vent and combustion air intake terminations shall be installed as shown in Figures 6 & 7 on page 13 and in accordance with these instructions:

- Vent termination clearances must be consistent with the NFPA, ANSI 2223.1/NFPA 54 and/or the CSA B149.1, Natural Gas and Propane Installation Code.
- All minimum clearances must be maintained to protect building materials from degradation by flue gases as shown in Figure 7.
- Vent and combustion air intake terminations must be located to ensure proper furnace operation and conformance to applicable codes. Table 12 on page 36 lists the necessary distances from the vent termination to windows and building air intakes. In Canada, CSA B149.1 takes precedence over these instructions.
- For optimal performance, vent the furnace through a wall that experiences the least exposure to winter winds.
- The vent termination shall be located at least three ft. horizontally from any electric meter, gas meter, regulator and any relief equipment. These distances apply ONLY to U.S. installations. In Canada, CSA B149.1 takes precedence over these instructions.
- Do not install the vent terminal such that exhaust is directed into window wells, stairwells, under decks or into alcoves or similar recessed areas, and do not terminate above any public walkways.
- If venting horizontally, a side wall vent kit is available according to the pipe diameter size of the installation. For 2 inch pipe use side wall vent kit #904617, and for 3 inch pipe use kit #904349. **Please follow the instructions provided with the kit.**
- Concentric vent termination kits are available for use with these furnaces. For 2 Inch pipe use kit #904177 and for 3 inch pipe use kit # 904176. **Please follow the instructions provided with the kit.**
- When the vent pipe must exit an exterior wall close to the grade or expected snow level where it is not possible to obtain clearances shown in Figure 6, a riser may be provided as shown in Figure 9 on page 13. Insulation is required to prevent freezing of this section of pipe. See Table 1 on page 13 for vent freezing protection.

Outdoor Terminations - Vertical Venting

Termination spacing requirements from the roof and from each other are shown in Figure 9 on page 13. The roof penetration must be properly flashed and waterproofed with a plumbing roof boot or equivalent flashing. Vent and combustion air piping may be installed in an existing chimney which is not in use provided that:

- Both the exhaust vent and air intake run the length of the chimney.
- The top of the chimney is sealed and weatherproofed.
- The termination clearances shown in Figure 9 are maintained.
- No other gas fired or fuel-burning equipment is vented through the chimney.

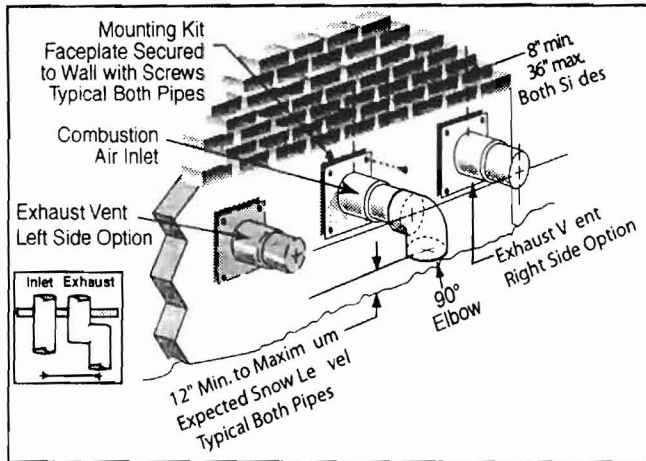


Figure 6. Exhaust and Combustion Air Pipe Clearances

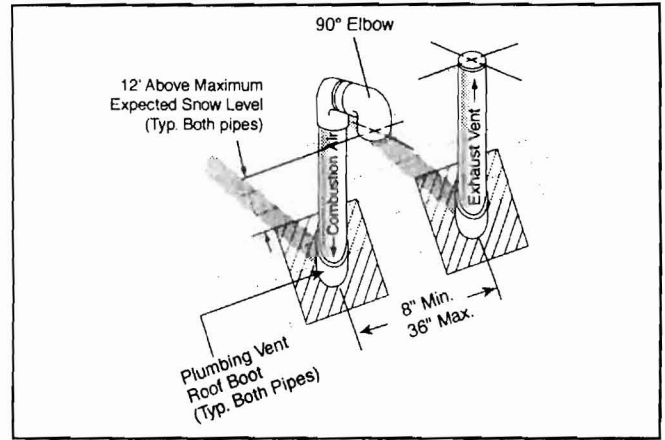


Figure 9. Vertical Vent Termination

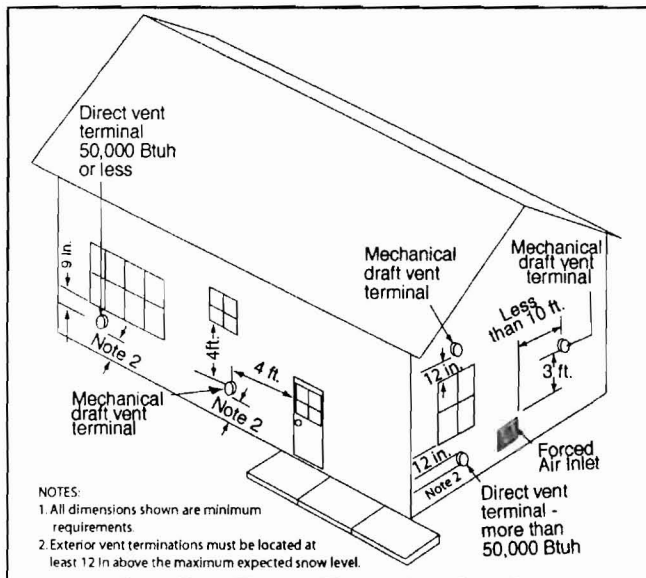


Figure 7 Vent Locations

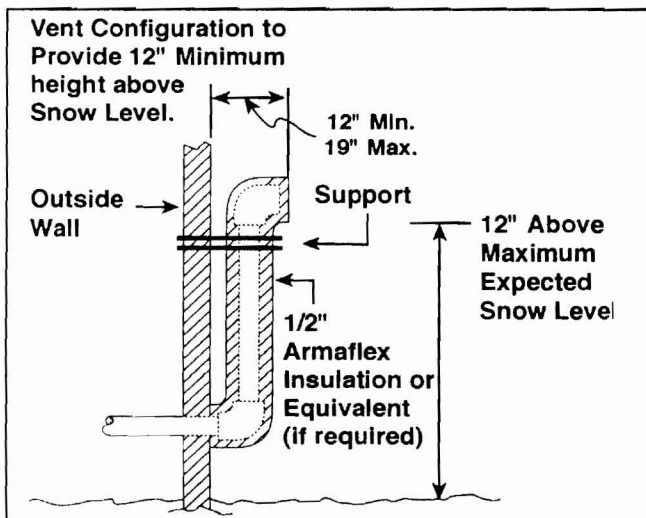


Figure 8. Alternate Horizontal Vent Installation

Vent Freezing Protection

When the vent pipe is exposed to temperatures below freezing (i.e., when it passes through unheated spaces, chimneys, etc.) the pipe must be insulated with 1/2 inch thick sponge rubber insulation, Armaflex-type insulation or equivalent. Insulating pipe is important to avoid condensate icing.

Table 1 describes the maximum length of flue pipe that can travel through an unconditioned space or an exterior space. The total vent length must not exceed the lengths noted in Table 13 on page 42. For Canadian installations please refer to the Canadian Installation Code (CAN/CGA-B149.1 or 2) and/or local codes.

Winter Design Temperature	Maximum Flue Pipe Length in Unconditioned and Exterior Spaces	
	Without Insulation (feet)	With Insulation (feet)*
20	45	70
0	20	70
-20	10	60

* = Insulation thickness greater than 3/8 inch, based on an R value of 3.5 (ft x F x hr) / (BTU x in.)

Table 1. Vent Protection

Condensate Disposal

The method for disposing of condensate varies according to local codes. Consult your local code code or authority having jurisdiction. Neutralizer kit P/N 902377 is available for use with this furnace. **Please follow the instructions provided with the kit.**

This furnace has multiple options for positioning the vent pipe as described in the section, Vent and Inducer Assembly Options. Each of the condensate drain lines must be J-trapped using field supplied parts. After the condensate lines are J-trapped, they may be combined together when routed to the drain.

Existing Installations

When an existing furnace is removed from a vent system serving other appliances, the existing vent system may not be sized properly to vent the remaining appliances (For example: water heater). An improperly sized venting system can result in the formation of condensate, leakage, or spillage. The existing vent system should be checked to make sure it is in compliance with NFGC and must be brought into compliance before installing the furnace.

IMPORTANT NOTE: If replacing an existing furnace, it is possible you will encounter an existing plastic venting system that is subject to a Consumer Product Safety Commission recall. The pipes involved in the recall are High Temperature Plastic Vent (HTPV). **If your venting system contains these pipes DO NOT reuse this venting system!** This recall does not apply to other plastic vent pipes, such as white PVC or CPVC. Check for details on the CPSC website or call their toll-free number (800) 758-3688.

FURNACE INSTALLATION

General Requirements

*SC series gas furnaces are shipped ready for installation in the upflow or horizontal right or left positions. Only the *SL series gas furnace may be used for downflow operation.

- The furnace must be leveled at installation and attached to a properly installed duct system. See Table 3 on page 27 for the required clearances needed to move the furnace to its installation point (hallways, doorways, stairs, etc).
- The furnace must be installed so that all electrical components are protected from water.
- The furnace must be installed upstream from a refrigeration system.
- The cabinet plug must always be used to close the hole in the side of the furnace when rotating the inducer.
- Additional reference information for US and Canadian installations can be found in the General Installation section on page 5.

Vent and Inducer Assembly Options

*SC series gas furnaces offer a wide range of installation options, including installation in the upflow or horizontal positions with either right, left, or upflow return air. The *SL series gas furnaces may only be installed as a down flow application.

Innovatively, the Inducer Assembly can be rotated up to 3 different positions, increasing installation flexibility. Each variation has slightly different requirements with regard to condensate disposal and, in some cases, the need to seal the furnace cabinet.

NOTE: The Inducer Assembly must never be positioned to vent downwards on horizontal installs.

To use Table 2, the number of pipes (1-pipe or 2-pipe) connected to the furnace must be known. Find the proper furnace style (upflow, horizontal, or downflow) and then the side that the pipes will exit from the furnace. Finally select the option that properly matches your installation type from Figures 25-28 on pages 37-40.

Conventional (1 Pipe)				
Vent	Upflow	Horizontal Right	Horizontal Left	Downflow
Up	Option 1	Option 7	Option 10	Option 15
Right	Option 2	Option 8	N/A	Option 16
Left	Option 3	N/A	Option 9	Option 17
Direct Vent (2 Pipe)				
Vent	Upflow	Horizontal Right	Horizontal Left	Downflow
Up	Option 4	Option 12*	Option 14*	Option 18
Right	Option 5*	Option 11	N/A	Option 19*
Left	Option 6*	N/A	Option 13	Option 20*

* Requires a 2 inch PVC endcap.

Table 2. Vent and Inducer Blower Options

Inducer Assembly Rotation



WARNING:

Inducer rotation must be completed before the furnace is connected to gas and electric. If both utilities have been connected, follow the shutdown procedures printed on the furnace label and disconnect the electrical supply.

1. Disconnect the electrical harness (1) from the inducer assembly (2) as shown in Figure 10 on page 15.
2. Remove the inducer assembly ground wire (3) from the blower deck (4) or door.
3. Remove three screws (5) securing the inducer assembly (2) to the header box (6).
4. Rotate the inducer assembly (2) to its new position.
5. Secure the inducer assembly (2) to the header box (6) by reinstalling the three screws (5). If the inducer assembly is rotated to the left or right side of the furnace, use the extra screw provided in the parts package.
6. Remove the cabinet plug (7) from side of furnace and reinstall in hole on opposite side of cabinet.
7. Install in-line drain assembly and tubing as shown in Figures 25-28 on pages 37-40.
8. If applicable, install the condensate drain as shown in Figures 25-28 on pages 37-40.
9. Reconnect the electrical harness (1) to the inducer assembly (2).
10. Reconnect the inducer assembly ground wire (3) to the blower deck (4) or door.
11. Verify operation as detailed on the furnace label.

23 Bramhall Street



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**PRELIMINARY
 NOT FOR
 CONSTRUCTION**

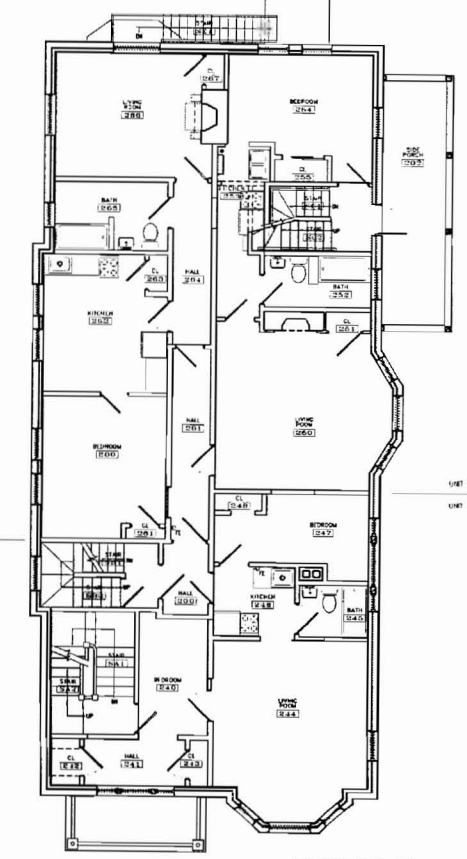
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 23 Bramhall Street
 Portland, ME 04101

JOB: 09014

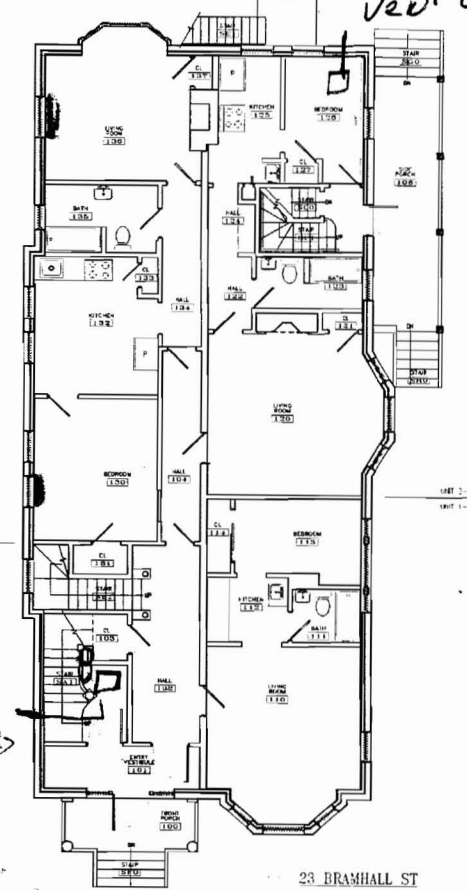
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Preliminary	05-21-09
Pricing	-
Construction	-
REV. 1	-
REV. 2	-
CDs	-

ALL AREA CALCS
 SUBJECT TO FIELD
 VERIFICATION

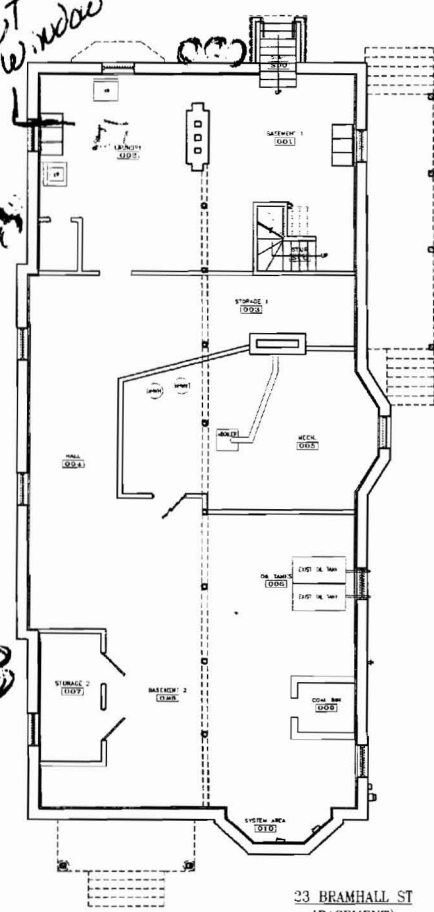
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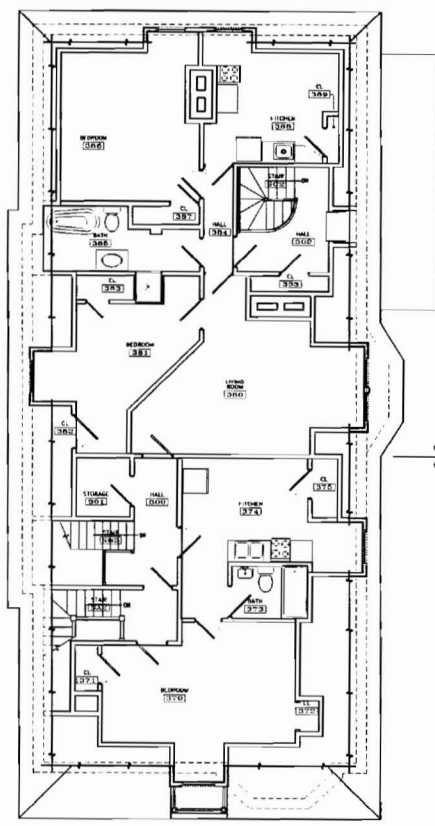
23 BRAMHALL ST
 (SECOND FLOOR)
 SECOND FLOOR PLAN
 SCALE: 1/8" = 1'-0"



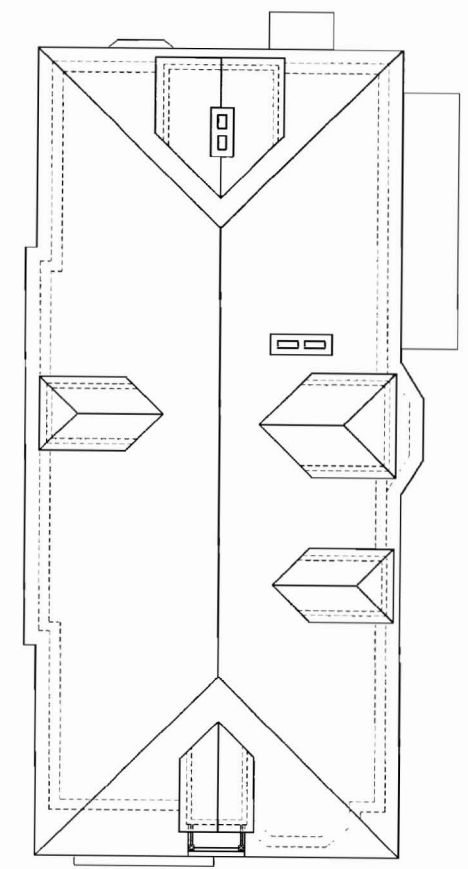
23 BRAMHALL ST
 (FIRST FLOOR)
 FIRST FLOOR PLAN
 SCALE: 1/8" = 1'-0"



23 BRAMHALL ST
 (BASEMENT)
 BASEMENT PLAN
 SCALE: 1/8" = 1'-0"



23 BRAMHALL ST
 (THIRD FLOOR)
 ATTIC LEVEL PLAN
 SCALE: 1/8" = 1'-0"



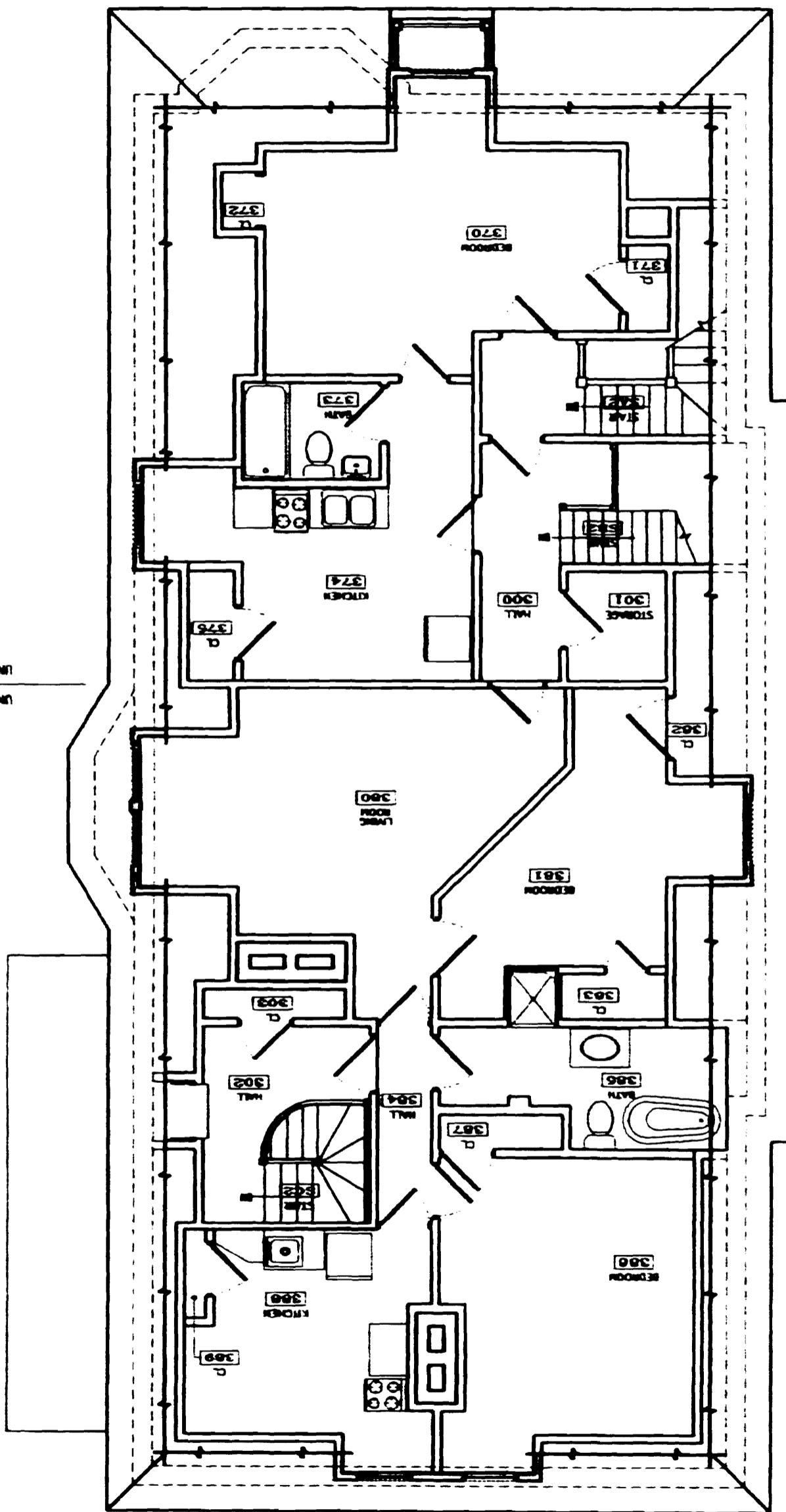
23 BRAMHALL ST
 (ROOF)
 ROOF PLAN
 SCALE: 1/8" = 1'-0"



07-31-09

- O - Possible LP Tank Locations
- - Furnace Locations
- - Rinnai Locations

23 BRANHALL ST
 (THIRD FLOOR)
 ATTIC LEVEL PLAN

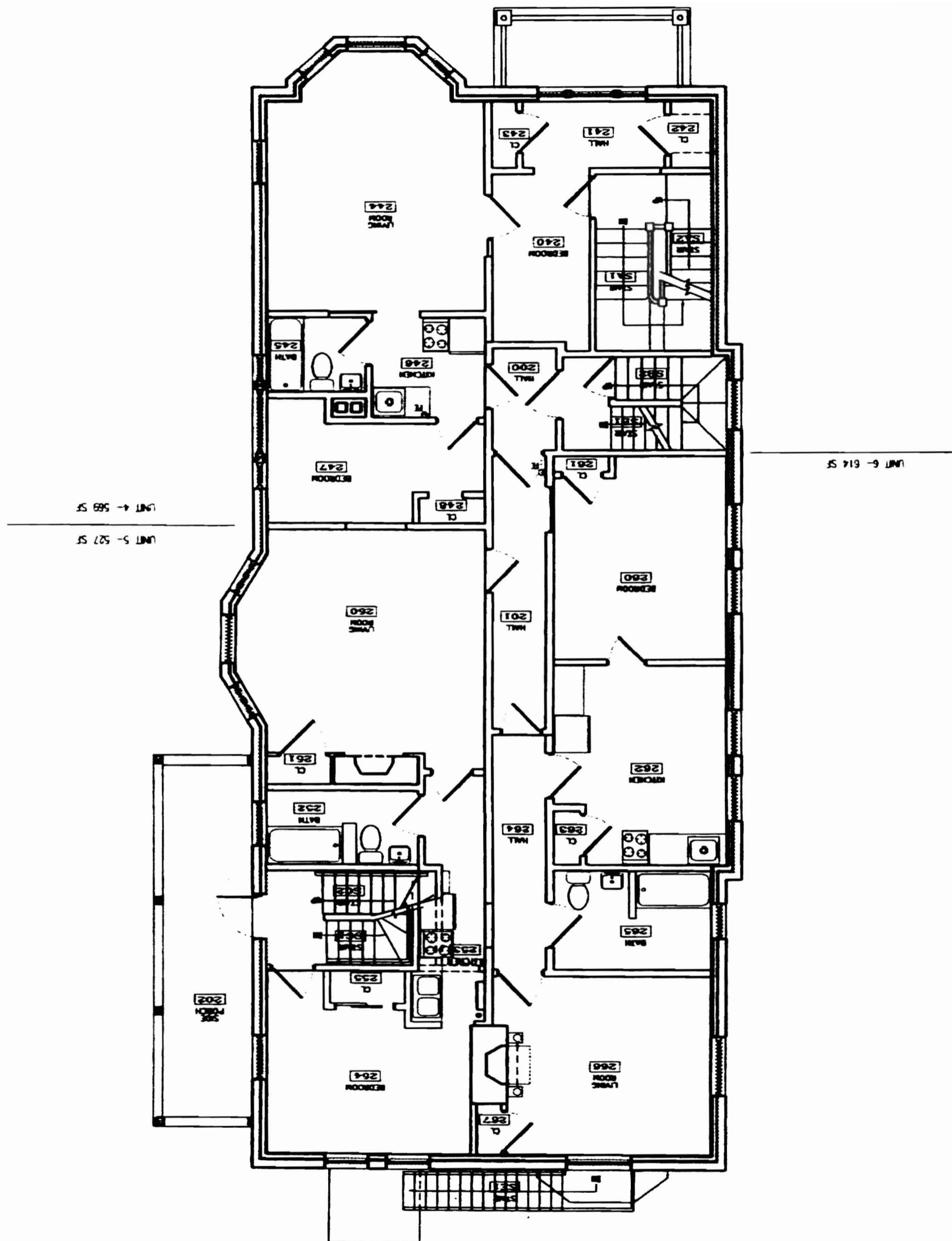


PROJECTED PLAN
 SCALE: 1/8" = 1'-0"

UNIT 8
 UNIT 7

UNIT 8-877 ST
 UNIT 7-451 ST

23 Bramhall Street



1st Floor
23 BRAMHALL ST

