City of Portland, Maine - Building or Use Permit Application

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

Permit No:	Issue Date:	CBL:
06-0303	PERMIT ISSUED JUN - 6 CITY OF PORTLAND	032 R001001

Location of Construction:	Owner Name:	Owner Address:	Phone:
428 FORE ST	NICHOLAS BRENDA S	42 CHAMBERLAIN AVE	
Business Name:	**Contractor Name:**	**Contractor Address:**	**Phone**
	W H Demmons		
Lessee/Buyer's Name	**Phone:**		

Past Use:	Proposed Use:	Permit Fee:	Cost of Work:	CEO District:
Commercial	Commercial/ install a Evecon GB90 Hanging gas direct vent furnace			

FIRE DEPT: ☑ Approved ☐ Denied

TO NFPA 54

INSPECTION: Use Group: NA Type:

6/8/06

Signature:

Proposed Project Description:
install a Evecon GB90 Hanging gas direct vent furnace

Action: ☐ Approved ☐ Approved w/Conditions ☐ Denied

Signature: Date:

Permit Taken By:	Date Applied For:
ldobson	05/26/2006

1.
2.
3.

Zoning Approval

Special Zone or Reviews	Zoning Appeal	Historic Preservation
☐ Shoreland	☐ Variance	☐ Not in District or Landmark
☐ Wetland	☐ Miscellaneous	☐ Does Not Require Review
☐ Flood Zone	☐ Conditional Use	☐ Requires Review
☐ Subdivision	☐ Interpretation	☐ Approved
☐ Site Plan	☐ Approved	☐ Approved w/Conditions
Maj ☐ Minor ☐ MM ☐	☐ Denied	☐ Denied
late:	late:	late:

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.

SIGNATURE OF APPLICANT | ADDRESS | DATE | PHONE

RESPONSIBLE PERSON IN CHARGE OF WORK, TITLE | DATE | PHONE

FILL IN AND SIGN WITH INK

PERMIT ISSUED
JUN - 6 2006
CITY OF PORTLAND

APPLICATION FOR PERMIT
HEATING OR POWER EQUIPMENT

32 R 1

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 37B Wharf St 428 Fore St Use of Building Retail Date 5/25/06

Name and address of owner of appliance Ron Nichols, 428 Fore St., Portland, 04101

Installer's name and address W H Demmons, 93 Warren Ave. Portland, 04103 Telephone 797-7468

Location of appliance:
- ☐ Basement
- ☑ Floor
- ☐ Attic
- ☐ Roof

Type of Fuel:
- ☑ Gas
- ☐ Oil
- ☐ Solid

Appliance Name: Evecon GB40

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 4676
- ☐ 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

N/A

Size of Tank

Number of Tanks

Distance from Tank to Center of Flame feet.

Cost of Work: $ 4790

Permit Fee: $ 150.66

DEPT. OF BUILDING INSPECTION CITY OF PORTLAND, MAINE

Approved

Fire:

Ele.:

Bldg.: 6/6/06

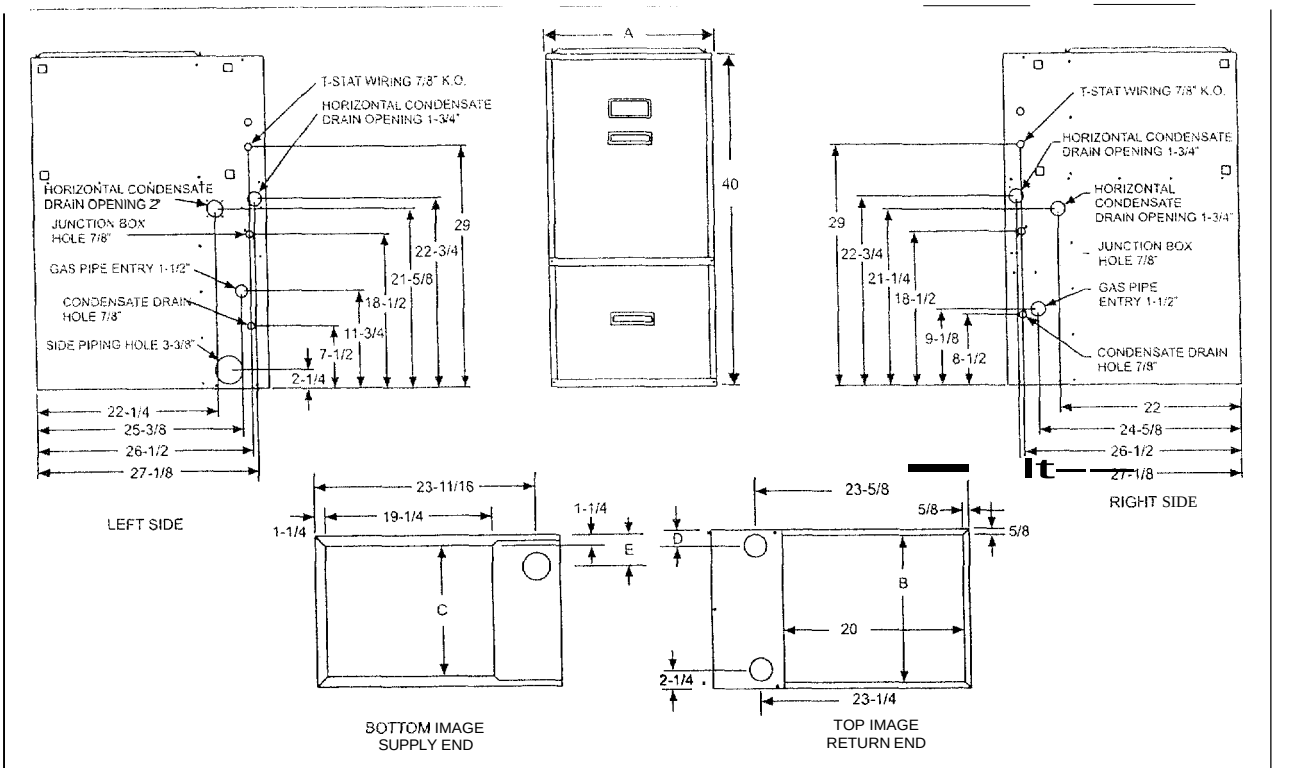
Approved with Conditions

☐ See attached letter or requirement

Inspector's Signature Date Approved

Signature of Installer

White - Inspection Yellow - File Pink - Applicant's Gold - Assessor's Copy



Models	CFM	Cabinet Size	Cabinet Dimension				
			A (in.)	B (in.)	C (in.)	D (in.)	E (in.)
GM9S040A12DH11	1200 (33 98)	A B	14-112	13-1/4	12	1-3/4	2-318
GM9S060B12DH11	1200 (34.0)		17-112	16-114	15	1-314	2-3/8
GM9S080B12DH11	1200 (34 0)	B	17-1/2	16-114	15	1-314	2-318
GM9S080C16DH11	1600 (45 3)	C	21	19-314	18-112	2-118	2-314
GM9S100C16DH11	1600 (45 31)	C	21	19-3/4	18-112	2-118	2-3/4
GM9S100C20DH11	2000 (56 6)	C	21	19-314	18-1/2	2-1/8	2-314
GM9S120D20DH11	2000 (56 6)	D	24-112	23-114	22	2-112	3

COMBUSTION AIR SUPPLY AND VENT PIPING

MAXIMUM ELBOWS AND VENT LENGTHS										
Models Input BTUH	Pipe Size Inches	Maximum Number of Elbows*								Minimum Length
		1	2	3	4	5	6	7	8	
40,000	1-1/2	25	20	15	10	N/A	N/A	N/A	N/A	5
40,000	2	60	55	50	45	40	30	20	N/A	5
40,000	3	85	80	75	70	65	60	50	40	20
60,000	1-1/2	15	10	N/A	N/A	N/A	N/A	N/A	N/A	5
60,000	2	60	55	50	45	40	35	25	15	5
60,000	3	85	80	75	70	65	60	50	40	20
80,000/1200	2	60	55	50	45	40	35	25	15	5
80,000/1200	3	85	80	75	70	65	60	50	40	20
80,000/1600	2	60	55	50	45	40	35	25	15	5
80,000/1600	3	85	80	75	70	65	60	50	40	20
100,000	2	25	20	15	10	N/A	N/A	N/A	N/A	5
100,000	3	80	75	70	65	60	55	45	35	5
120,000	3	55	50	45	40	35	25	15	N/A	5

* Three elbows (two in vent pipe and one in the air intake pipe) are already accounted for and need not be included in the elbow count from the Table above.

ELECTRICAL AND PERFORMANCE DATA

Model	Input/ Cabinet	Output	Nominal Airflow	Cabinet Width	AFUE	Air Temp. Rise	Approx. Oper. Weight
	MBH	MBH	CFM	In.	%	°F	
GM9S040A12DH11	40/A	37	1200	14-1/2	94	35 - 65	120
GM9S060B12DH11	60/B	55	1200	17-1/2	92	35 - 65	130
GM9S080B12DH11	8018	74	1200	17-1/2	92	35 - 65	145
GM9S080C16DH11	801C	74	1600	21	92	35 - 65	155
GM9S100C16DH11	100/C	93	1600	21	92	35 - 65	170
GM9S100C20DH11	100/C	93	2000	21	92	35 - 65	175
GM9S120D20DH11	120/D	112	2000	24-1/2	92	35 - 65	180

Model	Max. Outlet Air Temp.	Blower		Blower Size	Total Unit	Max. Over-current Protect	Min. Wire Size (awg) @ 75 ft. One Way
	°F	HP	Amps	In	Amps		
GM9S040A12DH11	165	1/2	7.0	11 x 8	9	20	14
GM9S060B12DH11	165	1/2	7.0	11 x 8	9	20	14
GM9S080B12DH11	165	1/2	7.0	11 x 8	9	20	14
GM9S080C16DH11	165	3/4	10.2	11 x 10	12	20	14
GM9S100C16DH11	165	3/4	10.2	11 x 10	12	20	14
GM9S100C20DH11	165	1	12.7	11 x 11	14	20	12
GM9S120D20DH11	165	1	12.7	11 x 11	14	20	12

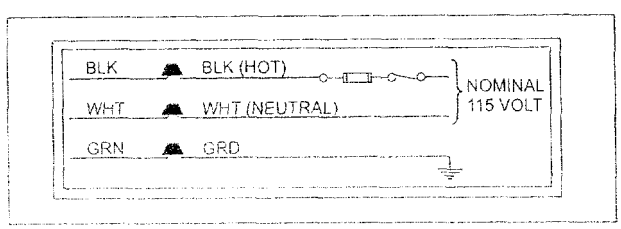
Annual Fuel Utilization Efficiency (AFUE) numbers are determined in accordance with DOE Test procedures
Wire size and over current protection must comply with the National Electrical Code (NFPA-70-latest edition) and all local codes
The furnace shall be installed so that the electrical components are protected from water
Wire size and overcurrent protection must comply with the National Electric Code

NOTES

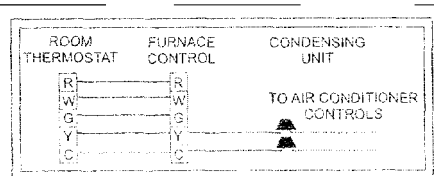
1 For altitudes above 2000 ft reduce capacity 4% for each 1000 ft above sea level
2 Wire size based on copper conductors, 60°C, 3% voltage drop
3 Continuous return air temperature must not be below 55°F
4 All filters must be high velocity cleanable type

Input / Output BTU/H (kW)	CFM (m^3/min)	Cabinet size	Top Return Filter in(cm)
40137 (11.72/10.84)	1200 (34)	A	(2) 14 x 20 (36 x 51)
60/55 (17.57/16.10)	1200 (34)		
80/75 (23.42/21.96)	1200 (34)	B	(2) 14 x 20 (36 x 51)
80/75 (23.42/21.96)	1600 (45)	C	(2) 14 x 20 (36 x 51)
100/95 (29.28/27.82)	1600 (45)	C	(2) 14 x 20 (36 x 51)
100195 (29.28/27.82)	2000 (57)	C	(2) 14 x 20 (36 x 51)
1201112 (35 14/32 80)	2000 (57)	D	(2) 14 x 20 (36 x 51)

FIELD WIRING DIAGRAMS



POWER WIRING



permissible between lines are formed by the intersection of the top and two sides of the furnace and the building joists, studs or framing. This line may be in contact with combustible material.

IMPORTANT: In either a horizontal left or right installation, a minimum of 8" (20.3 cm) clearance is required beneath the furnace to allow for the installation of the condensate trap and drain pipe. Refer to "CONDENSATE PIPING" section of this manual for more information.

⚠WARNING

When a furnace is installed in an attic or other insulated space, keep all insulating materials at least 12 inches (30.5 cm) away from furnace and burner combustion air openings.

⚠ CAUTION

If this furnace is installed over a finished space, a condensate safety pan must be installed.

SUSPENDED FURNACE / CRAWL SPACE INSTALLATION

The furnace can be hung from floor hoists or installed on suitable blocks or pad. Blocks or pad installations shall provide adequate height to ensure the unit will not be subject to water damage. Units may also be suspended from rafters or floor joists using rods, pipe angle supports or straps. Angle supports should be placed at the supply air end and near the blower deck. Do not support at return air end of unit. All four suspension points must be level to ensure quite furnace operation. When suspending the furnace use a secure a platforin constructed of plywood or other building material secured to the floor joists. Refer to Figure 6 for typical crawl space installation.

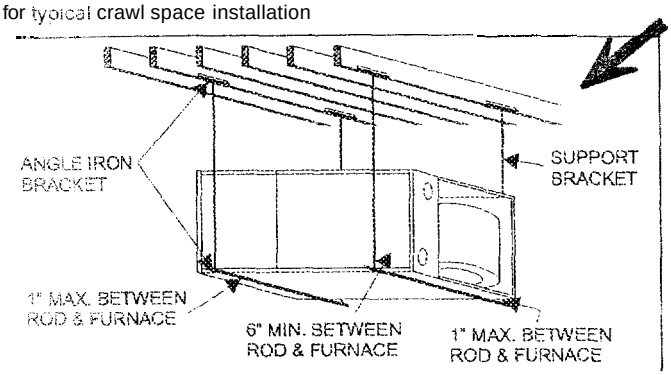


FIGURE 6: Typical Suspended Furnace / Crawl Space Installation

⚠ CAUTION

In any application where temperatures below freezing are possible see "BELOW FREEZING LOCATIONS

SECTION IV: GAS PIPING

GAS SAFETY

⚠DANGER

An overpressure protection device, such as a pressure regulator, must be installed in the gas piping system upstream of the furnace and must act to limit the downstream pressure to the gas valve so it does not exceed 0.5 PSI (14" w.c. (3.48 kPa)). Pressures exceeding 0.5 PSI (14" w.c. (3.48 kPa)) at the gas valve will cause damage to the gas valve, resulting in a fire or explosion or cause damage to the furnace or some of its components that will result in property damage and loss of life.

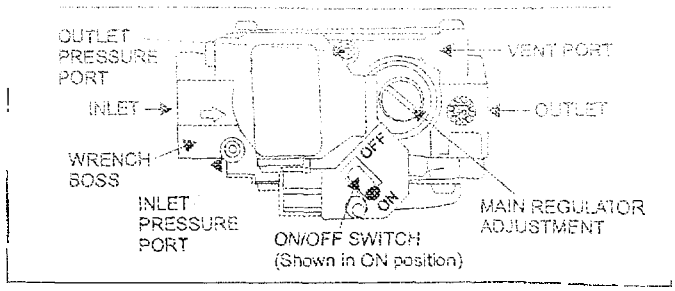


FIGURE 7: Gas Valve

IMPORTANT Plan your gas supply before determining the correct gas pipe entry. Use 90-degree service elbow(s), or short nipples and conventional 90-degree elbow(s) to enter through the cabinet access holes.

GAS PIPING INSTALLATION

Properly sized wrought iron, approved flexible or steel pipe must be used when making gas connections to the unit. If local codes allow the use of a flexible gas appliance connection, always use a new listed connector. Do not use a connector that has previously serviced another gas appliance.

Some utility companies or local codes require pipe sizes larger than the minimum sizes listed in these instructions and in the codes. The furnace rating plate and the instructions in this section specify the type of gas approved for this furnace - only use those approved gases. The installation of a drip leg and ground union is required. Refer to Figure 8.

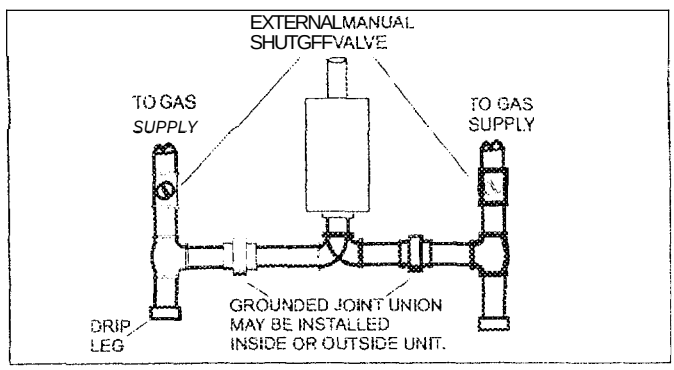


FIGURE 8: Downflow Gas Piping

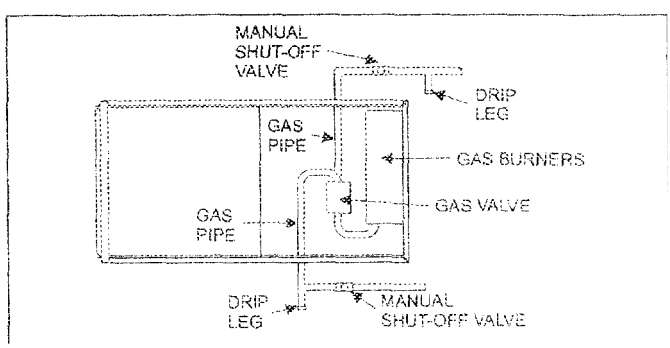


FIGURE 9: Horizontal Gas Piping

IMPORTANT: An accessible manual shutoff valve must be installed upstream of the furnace gas controls and within 6 feet (1.8 m) of the furnace.

The furnace must be isolated from the gas supply piping system by closing its individual external manual shutoff valve during any pressure testing of the gas supply piping system at pressures equal to or less than 1/2 psig (3.5 kPa).

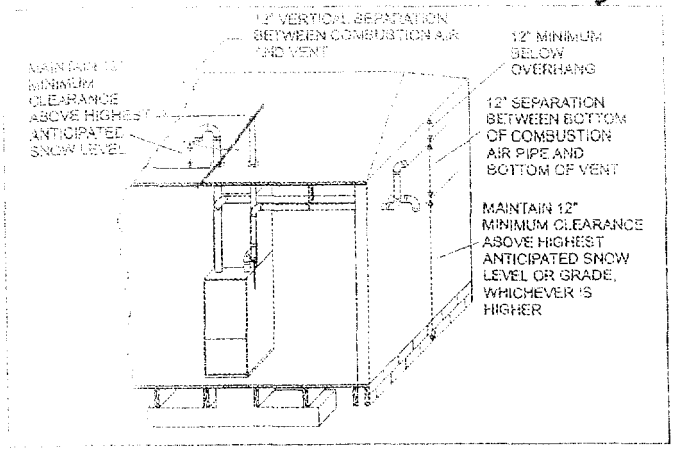


FIGURE 20: Termination Configuration - 2 Pipe

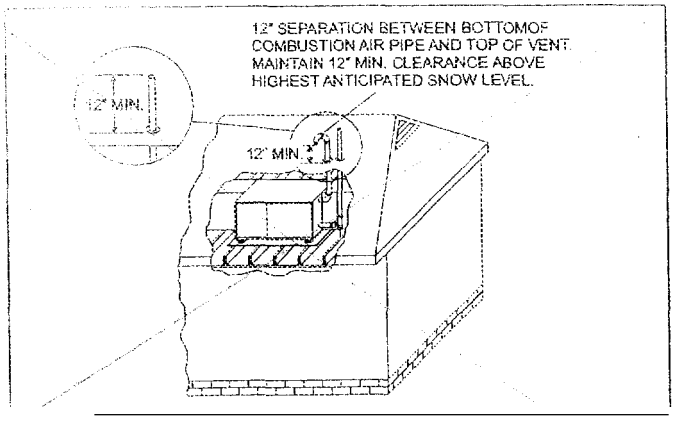


FIGURE 21: Termination Configuration - 2 Pipe Horizontal

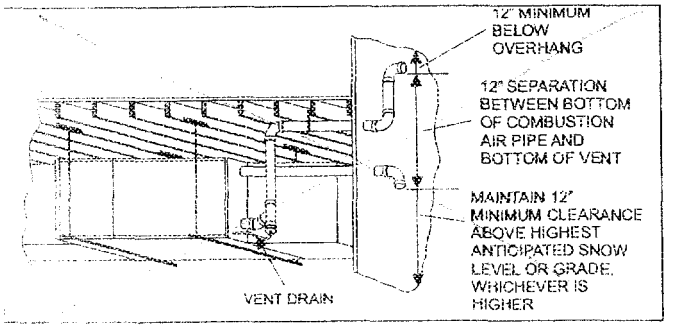


FIGURE 22: Crawl Space Termination Configuration - 2Pipe

VERTICAL VENT APPLICATIONS AND TERMINATION

Roof mounted vertical terminals may be field fabricated. Standard PVC/ SRD fittings may be used. If installing a vertical venting system through any unconditioned space such as an attic or crawl space it must be insulated.

1. Observe all clearances listed in vent clearances in these instructions.
2. Termination should be positioned where vent vapors are not objectionable.
3. Termination should be located where it will not be affected by wind gusts, light snow, or allow recirculation of flue gases.
4. Termination should be located where it cannot be damaged, plugged or restricted by tree limbs, leaves and branches.
5. Horizontal portions of the vent system must slope upwards and be supported to prevent sagging. The vent system may be supported by the use of clamps or hangers secured to a permanent part of the structure every 5 ft (1.52 m).

A vent drain is required when vent passes through any unconditioned space such as an attic or crawl space in order to prevent the accumulation of excess condensate in the inducer motor during operational cycles. See Figure 18.

VENTING MULTIPLE UNITS

Only the sealed combustion system can be used for installations requiring more than one furnace in a structure. A separate sealed combustion air pipe and a separate vent pipe must be installed for each furnace. Do not connect more than one furnace to a combustion air pipe or a vent pipe. The combustion air and vent termination must be located as shown in Figures 23 or 24.

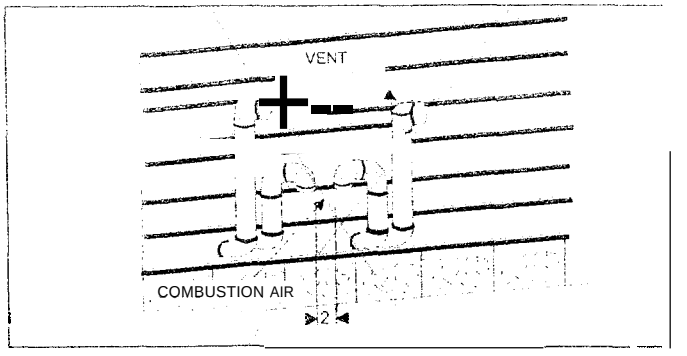


FIGURE 23: Double Horizontal Sealed Combustion Air and Vent Termination

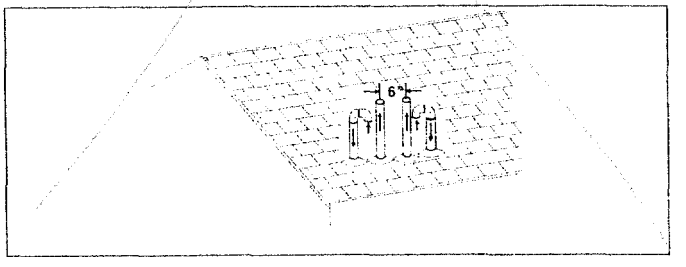


FIGURE 24: Double Vertical Sealed Combustion Air and Vent Termination

COMBUSTION AIR SUPPLY

All installations must comply with Section 5 3, Air for Combustion and Ventilation of the National Fuel Gas Code, ANSI Z223 1 or Secrions 7 2, 7 3 or 7 4 of CAN/CGA 8149 1 or 2 Installation Code - latest editions

This furnace is certified to be installed with one of three possible combustion air intake configurations

1. **OUTDOOR COMBUSTION AIR:** This is a sealed combustion air configuration where the combustion air is supplied through a PVC or ARS pipe that is connected to the PVC coupling attached to the burner box and is terminated in the same atmospheric zone as the vent. This type of installation is approved on all models. Refer to Figures 25 & 27
2. **AMBIENT COMBUSTION AIR:** Combustion air is supplied from the area surrounding the furnace through the combustion air pipe in the furnace casing. The combustion air and the vent pipes are not terminated in the same atmospheric zone. Refer to Figures 19 & 26 for vent terminations. Refer to "AMBIENT COMBUSTION AIR SUPPLY" and "VENT AND SUPPLY OUTSIDE AIR SAFETY CHECK PROCEDURE" for proper installation.
3. **VENTILATED COMBUSTION AIR:** Combustion air is supplied through a PVC or ABS pipe that is connected to the PVC coupling attached to the burner box and is terminated in a ventilated attic or crawl space. The combustion air and the vent pipes are not terminated in the same atmospheric zone. Refer to Figure 28 for crawl space and attic termination. Only the combustion air intake may terminate in the attic. The vent must terminate outside.

⚠ WARNING

This furnace may not be common vented with any other appliance, since it requires separate, properly sized air intake and vent lines. The furnace shall not be connected to any type of B, BW or L vent or vent connector, and not connected to any portion of a factory-built or masonry chimney.

The furnace shall not be connected to a chimney flue serving a separate appliance designed to burn solid fuel.

⚠ CAUTION

When combustion air pipe is installed above a suspended ceiling or when it passes through a warm and humid space the pipe must be insulated with 1/2" Armaflex or other heat resistant type insulation. Vent piping must be insulated with 1/2" insulation if it will be subjected to freezing temperatures such as routing through unheated areas or through an unused chimney.

COMBUSTION AIR/VENT PIPE SIZING

Select the correct size from Table 9. The size will be determined by a combination of furnace model, total length of run, and the number of elbows required. The following rules must also be observed.

1. Long radius (sweep) elbows are required for all units.
2. Elbows are assumed to be 90 degrees. Two 45-degree elbows count as one 90-degree elbow.
3. Elbow count refers to combustion air piping and vent piping separately. For example, if the table allows for 5 elbows, this will allow a maximum of 5 elbows in the combustion air piping and a maximum of 5 elbows in the vent piping.
4. Three vent terminal elbows (two for vent pipe and one for air intake pipe) are already accounted for as vent termination.
5. Combustion air and vent piping must be of the same diameter.

National Standards Institute (ANSI) standards and American Society for Testing and Materials (ASTM) standards D1785 (Schedule 40 PVC), D2665 (PVC-DWV), F891 (PVC DWV Cellular Core), D2241 (SDR-21 and SDR-26 PVC), D2261 (ABS-DWV), or F628 (Schedule 40 ABS). Pipe cement and primer must conform to ASTM Standards D2564 (PVC) or D2235 (ABS).

The use of flexible connectors or no hub connectors in the vent system is not allowed. This type connection is allowed in the combustion air pipe near the furnace for air conditioning coil accessibility.

8. Sidewall horizontal vent terminals and roof mounted vertical terminals may be field fabricated. Standard PVC/SRD fittings may be used. Terminal configuration must comply as detailed in this section.

IMPORTANT Accessory concentric vent / intake termination kits 1CT0302, 1CT0303and 1HT0901 are available and approved for use with these furnaces.

IMPORTANT: For the minimum vent length see Table 9
For the maximum vent length see Table 9

TABLE 8: Combustion Air Intake and Vent Connection Size at Furnace (All Models)

FURNACE VENT CONNECTION SIZES	
Furnace Input	40 - 120 MBH (11.72-35.17 kW)
Intake Pipe Size	2" (5.08 cm)
Vent Pipe Size	2" (5.08 cm)

* Vent pipe size *must* be increased to 3" diameter after connection to furnace on this model.

IMPORTANT: Furnace vent pipe connections are sized for 2" (5.08 cm) pipe. Any pipe size change must be made outside the furnace casing in a vertical pipe section to allow proper drainage of condensate. An offset using two 45° (degree) elbows will be required for plenum clearance when the vent is increased to 3" (7.62 cm).

TABLE 9: Combustion Air Supply and Vent Piping

MAXIMUM ELBOWS AND VENT LENGTHS										
Models Input BTUH (kW)	Pipe Size Inches (mm)	Maximum Number of Elbows*								Minimum Length
		1	2	3	4	5	6	7	8	
40,000 (11.7)	1-1/2 (38)	25	20	15	10	N/A	NIA	N/A	NIA	5
40,000 (11.7)	2 (51)	60	55	50	45	40	30	20	N/A	5
40,000 (11.7)	3 (76)	85	80	75	70	65	60	50	40	20
60,000 (17.6)	1-1/2 (38)	15	10	N/A	NIA	N/A	NIA	NIA	NIA	5
60,000 (17.6)	2 (51)	60	55	50	45	40	35	25	15	5
60,000 (17.6)	3 (76)	85	80	75	70	65	60	50	40	20
80,000 (23.4)/1200	2 (51)	60	55	50	45	40	35	25	15	5
80,000 (23.4)/1200	3 (76)	85	80	75	70	65	60	50	40	20
80,000 (23.4)/1600	2 (51)	60	55	50	45	40	35	25	15	5
80,000 (23.4)/1600	3 (76)	85	80	75	70	65	60	50	40	20
100,000 (29.3)	2 (51)	25	20	15	10	N/A	N/A	N/A	N/A	5
100,000 (29.3)	3 (76)	80	75	70	65	60	55	45	35	5
120,000 (35.1)	3 (76)	55	50	45	40	35	25	15	N/A	5

* Elbow count does not include the elbows required for the termination. See Step 4 under Combustion Air/Vent Pipe Sizing.

NOTE:
If installing furnace at altitudes between 2000 - 4500 ft. (1609.6 - 1371.6 m) intake and vent pipe length must be reduced by 10 ft. (3.05 m). If the installation requires the maximum allowable intake and vent pipe length, the furnace must be converted for high altitude operation.

City of Portland, Maine - Building or Use Permit

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

Permit No:	Date Applied For:	CBL:
06-0803	05/26/2006	032 R001001

Location of Construction:	Owner Name:	Owner Address:	Phone:
428 FORE ST	NICHOLAS BRENDA S	**42** CHAMBERLAIN AVE	
Business Name:	**Contractor Name:**	**Contractor Address:**	**Phone**
	W H Demmons	93 Warren Ave Portland	(207) 797-7468
Lessee/Buyer's Name	**Phone:**	**Permit Type:**	
		HVAC	

Proposed Use:	Proposed Project Description:
Commercial/ install a Evecon GB90 Hanging gas direct vent furnace	install a Evecon GB90 Hanging gas direct vent furnace

☑

Dept: Fire **Status:** Approved with Conditions **Reviewer:** Cptn Greg Cass **Approval Date:** 06/05/2006

Note: **Ok to Issue:** ☐

1) Install shall comply with NFPA 54

Comments:

6/8/2006-mjn: need info regarding the weight and installation of the unit.