
NOTICE TO GAS FIRED HEATING INSTALLERS AND BUILDERS

RESIDENTIAL UNITS WITH INDIVIDUAL SELF-CONTAINED HEATING SYSTEMS

In accordance with the Provincial Gas Safety Branch Directive DC 36.1, the following requirements are applicable in the District of North Vancouver to gas-fired, warm air heating systems.

Heat loss calculations shall be done for all heating installations. The heating appliance selection shall be based on the heat loss calculation which is the calculated "output of the heating appliance". The calculations shall be made in accordance with good engineering practices. Acceptable methods may include, but are not limited to, HVCI, HRAI, ASHRAE, SMACNA, CSA Standard F280.

The heating system (supply, return air duct, heating outlets, grills and registers) shall be sized in accordance with good engineering practices. The supply air duct system shall be designed to maintain a positive static pressure in the system.

A completed **Heating Appliance Selection Worksheet** shall be submitted with the gas permit application (see attached form).

The following documents shall be left with the owner's manual attached to the appliance:

- a) **Supply Air System, Layout and Summary** (see attached Worksheet 1).
- b) **Return Air System, Layout and Summary** (see attached Worksheet 2).

For replacement of heating appliances only, the following documentation will be required:

- a) **Heating Appliance Selection Worksheet.**

When possible, the selection of the replacement appliance should take into account changes that have been made to the building.

Duct sizing shall be checked to ensure that the sizing is adequate for the requirements of the appliance (Supply and Return Air Duct).

Vent sizing and configuration shall be checked to minimize the possibility of condensation when installing higher efficiency appliances.

The replacement appliance must operate in accordance with the manufacturer's specification.

Heating Appliance Worksheets – New System

COMPLETION: To ensure legibility, please complete (type) online then print. Sign the printed copy and submit to the department and address indicated above.

**Worksheet 2
Return Air System
Layout & Summary**

Permit # _____ Address _____

Date _____ Completed by _____

Show all trunks and branches		Wall construction	2 x 4	2 x 6	2 x 4	2 x 6	2 x 4	2 x 6
SKETCH		Return Air Grill Size	14 x 18	14 x 8	24 x 6	24 x 8	30 x 6	30 x 8
		Maximum CFM Capacity	200	260	350	460	425	580
Supply Register Summary Per RG		Sub-totals For Trunk Sizing						
Trunk Duct Sizes								
#1	#3							
#2	#4	= Box B	a	b	c	d	e	f
Return Air Drop Size:			a+b+c+d+e+f =			CFM	Box B ≥ Box A	

Heating Appliance Worksheets – New System

Worksheet 1
Supply Air System
Layout & Summary

Permit # _____ Address _____

Date _____ Completed by _____

Total Supply Air required = _____ A

Max Supply Air delivered = _____ B

Trunk Duct Adjustment: _____

Box A _____ = _____ C

Box B _____

Multiply sub-totals for trunk sizing by Box C to adjust trunk duct sizes for actual cfm carried

SKETCH Show all trunks and branches		Branch Duct Size	4" Ø			5" Ø			6" Ø		
		Number of fittings per branch	3 ftg	5 ftg	7 ftg	3 ftg	5 ftg	7 ftg	3 ftg	5 ftg	7 ftg
		Maximum CFM per branch	35	30	25	65	55	45	100	90	75
floor level		Sub-totals for Trunk Sizing									
Trunk Duct Sizes											
#1	#4	= Box B	a	b	c	d	e	f	g	h	i
#2	#5	a+b+c+d+e+f+g+h+i				CFM	B	Box B ≥ Box A			
#3	#6										

Heating Appliance Worksheets – New System

HEAT LOSS SUMMARY & CFM DISTRIBUTION WORKSHEET

Permit # _____ Address _____

Name _____ QF # _____

Signature _____

Phone _____

Step 2: Enter the Room Heat Loss for each room on this summary sheet. Add Column 2 to find base dwelling heat loss and enter in Box 1.

Step 3: 10% Setback Pick-up Factor:
Multiply .10 x Box 1 BTUH

= BTUH Box 2

Step 4: Regionally adjusted outdoor air load from 4" Ø ventilation air duct or HRV directly connected to the RA Plenum:

@ 3000BTUH x _____ RTA
(from Design Temp Chart)

= BTUH Box 3

Step 5: Total Dwelling Heat loss for Appliance Selection Box 1 + Box 2 + Box 3

= BTUH Box 4

CFM Distribution Factor

Step 1: Select Furnace

Use Box 4 BTUH to select heating Appliance with the *Appliance Selection Worksheet* in Part 3.

Step 2: CFM Distribution Factor

Use Appliance CFM from *Appliance Selection Worksheet*. Either Box H (Heating CFM) or Box J (Cooling CFM) Divided by Base Dwelling Heat Loss (Box 1 of this page).

Box H or J _____ CFM
_____ = Box 5
Box 1 _____ BTUH CFM/BTUH

Box 5 is the CFM Distribution Factor.

Step 3: CFM per Room

Multiply each Room Heat Loss by the CFM Distribution Factor to determine The actual CFM required by that room.

Column 1 Room Name	Column 2 Room Heat Loss	Column 3 CFM Dist Factor	Column 4 Room CFM	
			Calculated	Rounded
Base Dwelling Heat Loss =	BTUH	<div style="display: flex; align-items: center; justify-content: center;"> <div style="border: 1px solid black; padding: 5px; margin: 0 auto;">Box 5²</div> <div style="flex-grow: 1; border-left: 1px solid black; border-right: 1px solid black; position: relative;"> <div style="position: absolute; top: -10px; left: 50%; transform: translate(-50%, -100%);">↑</div> <div style="position: absolute; bottom: -10px; left: 50%; transform: translate(-50%, 100%);">↓</div> </div> </div>	Total System CFM ³	CFM

¹ Column 4 calculated CFM may be rounded ± 5% for individual run sizing.
² Box 5 – CFM Distribution Factor must be carried to four (4) decimal points.
³ Column 4 Total System CFM will equal Furnace CFM (Box H or J – Appliance Selection Worksheet).

Heating Appliance Worksheets – New System

**Heating Appliance
Selection Worksheet
Forced Air Heating systems**

Date _____

Job Address _____
 Completed By _____
 Phone _____ Quality First # _____
 Signature _____

Total Heated Floor Area of Dwelling sq ft

Step 1 (Box 4 – Heat Loss Summary Worksheet) = BTUH **A**

Step 2 Use manufacturer's specification tables to select an Appliance With a BTUH Output of at least the value of Box A (or one (1) size larger **ONLY**).

Make _____ Input = BTUH **B**

Model _____ **Output** = BTUH **C**

High altitude Two-Stage Furnace-Size to High-Fire Input and Output

Step 3 Selected Appliance Air Circulation (CFM)

Duct Static Pressure @ .3" W.C. External Static Pressure (ESP) = **D**

Add ESP (inches W.C.) per manufacturer's data for installed cooling coil = **E**

Add ESP (inches W.C.) per manufacturer's data for installed High Efficiency Air Filter = **F**

Total System ESP (Box D + Box E + Box F) = **G**

Motor Speed Selected _____ @ _____ ESP (Box G) = Heating CFM **H**
HEATING CFM

Step 4 Temperature Rise:

Furnace OUTPUT (Box C) _____ BTUH

$\frac{\text{HEATING CFM} \times 1.1}{\text{(Box H) } ______ \text{ CFM} \times 1.1} = \frac{______ \text{ BTUH}}{______ \text{ CFM} \times 1.1} = \text{_____ } ^\circ\text{F}$ **I**
TEMPERATURE RISE

Temperature Rise Range from Manufacturer's Technical Specifications _____ $^\circ\text{F}$
 (Box I) MUST fall within this range

Step 5 Duct System Designed for Cooling _____ CFM CFM **J**
COOLING CFM

COOLING CAPACITY @ 400 CFM/TON	Tons	1.5	2.0	2.5	3.0	4.0	5.0
	CFM	600	800	1000	1200	1600	2000

Step 6 Retro-Fit installation (Attach worksheets if required by Inspection Authority) Estimated Capacity of existing duct system = CFM **K**
RETRO-FIT CFM



Test Certificate A Forced Air Heating Systems

District of North Vancouver
Building Department - 355 West Queens Rd, North Vancouver, BC V7N 4N5

Questions about this form: Phone: 604-990-2480 or Email: building@dnv.org
Form submission: Submit to address above or Fax: 604-984-9683

COMPLETION: To ensure legibility, please complete (type) online then print. Sign the printed copy and submit to the department and address indicated above.

Date _____ Permit Number _____

Address of Installation _____

TEST CERTIFICATE MUST BE SUBMITTED TO THE BUILDING DEPARTMENT PRIOR TO FINAL GAS INSPECTION

1. Flue Product Temperature within 24 inches of the induced draft fan _____
2. Manufacturer's recommended temperature rise across heat exchanger
 Minimum _____ Maximum _____
3. Actual temperature rise across heat exchanger _____
4. Clocked Meter Reading _____

I do hereby certify that I have tested the operation of the appliances and have determined, by testing to Gas Safety Branch Directive No. DC32.2, that the appliances are operating correctly.

Placed in service this _____(day) of _____(month) _____(year)

Gas Fitter's Name _____ Gas Fitter's Number _____

Gas Fitter's Signature _____

Note:

This is NOT a call for inspection. All work must be inspected prior to covering. Inspection calls are to be made by telephone at 604-990-2444 before 4:00 p.m. for an inspection the following business day.

The personal information collected on this form is done so pursuant to the Community Charter and/or the Local Government Act and in accordance with the Freedom of Information and Protection of Privacy Act. The personal information collected herein will be used only for the purpose of processing this application or request and for no other purpose unless its release is authorized by its owner, the information is part of a record series commonly available to the public, or is compelled by a Court or an agent duly authorized under another Act. Further information may be obtained by speaking with The District of North Vancouver's Manager of Administrative Services at 604-990-2207 or at 355 W Queens Road, North Vancouver.