

## System 1 or System 2

### Ventilation System Design Form for Section 9.32 (2015 National Building Code of Canada)

Information and Drawing Requirements

<b>Design to conform to NBC 2015 Section 9.32</b>		<b>LOCATION (Address):</b>																									
Builder Name:		Ventilation Contractor:																									
Address:		Address:																									
<b>Normal Operating Exhaust Capacity (NOEC) of Principal Ventilation Fan</b> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <thead> <tr> <th>Number of Bedrooms</th> <th>Minimum</th> <th>Maximum</th> </tr> </thead> <tbody> <tr><td>1</td><td>16</td><td>24</td></tr> <tr><td>2</td><td>18</td><td>28</td></tr> <tr><td>3</td><td>22</td><td>32</td></tr> <tr><td>4</td><td>26</td><td>38</td></tr> <tr><td>5</td><td>30</td><td>45</td></tr> <tr><td>6</td><td>34</td><td>45</td></tr> <tr><td>7</td><td>38</td><td>45</td></tr> </tbody> </table>		Number of Bedrooms	Minimum	Maximum	1	16	24	2	18	28	3	22	32	4	26	38	5	30	45	6	34	45	7	38	45	Actual Number of Bedrooms _____	
Number of Bedrooms	Minimum	Maximum																									
1	16	24																									
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7	38	45																									
<table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <tr> <td style="width: 50%;">Minimum Capacity Permitted _____ L/s</td> <td style="width: 5%;">01</td> <td style="width: 50%;">Maximum Capacity Permitted _____ L/s</td> <td style="width: 5%;">02</td> </tr> </table>		Minimum Capacity Permitted _____ L/s	01	Maximum Capacity Permitted _____ L/s	02	<p>Note: It is recommended that the NOEC falls within range of current and future bedrooms. If more than 5 bedrooms, a kitchen supplemental exhaust fan &gt; 50 l/s will be required. If there are more than 7 bedrooms, this form cannot be used and the ventilation system must be designed to CAN/CSA F326-M.</p>																					
Minimum Capacity Permitted _____ L/s	01	Maximum Capacity Permitted _____ L/s	02																								
<b>Actual Normal Operating Exhaust Capacity (NOEC) of Principal Exhaust Fan (see page 2)</b> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <tr> <td style="width: 80%;">Actual NOEC _____ L/s</td> <td style="width: 20%;">03</td> </tr> </table>		Actual NOEC _____ L/s	03																								
Actual NOEC _____ L/s	03																										
Confirm that Line 03 ≥ Line 01 and ≤ Line 02    Y <input type="checkbox"/> N <input type="checkbox"/>		04																									
<b>Two Speed Principal Exhaust Fan</b>																											
Maximum Operating Exhaust Capacity = _____ L/s		05																									
High speed of 2 speed fan (2.5 x Line 01) = _____ L/s		06																									
Line 05 - Line 06 = _____ L/s		07																									
<b>Untempered Outdoor Air to Return Side of Furnace (see page 2)</b>																											
Maximum Permitted Outdoor Air Supply (MPOAS) = _____ L/s		08																									
Line 08 - Line 03 = _____ L/s		09																									
If Line 9 < 0, tempering of outdoor air is required prior to introducing it to the return air plenum of the furnace		10																									
<b>Outdoor Air Supply</b>																											
Excluding solid fuel burning appliances, are there any fuel fired space or water heating units that are not direct vented or mechanically vented?    Y <input type="checkbox"/> N <input type="checkbox"/>		10																									
If Line 10 is yes, unless a spillage test is performed as per Sentence 9.32.3.8.(7), make-up air is required for any mechanical air exhausting device, excluding the principal ventilation fan operating at its NOEC. The make-up air shall be delivered to the dwelling unit at a rate equal to or not more than 10% greater than the exhaust capacity of the device.																											
<b>System Design (check one)</b> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <tr> <td style="width: 5%;"><input type="checkbox"/></td> <td style="width: 5%;"><b>S1</b></td> <td style="width: 90%;">Exhaust fans with outdoor air supply to forced air furnace return **</td> <td style="width: 5%;"></td> </tr> <tr> <td><input type="checkbox"/></td> <td><b>S2</b></td> <td>Exhaust fans with outdoor air supply fan to forced air furnace return **</td> <td></td> </tr> </table> <p>** The outdoor air supply duct shall not be less than 3m upstream of the furnace return air plenum connection to the furnace or through an acceptable mixing device in the return air plenum as per Sentence 9.32.3.4.(5) and downstream of all return branch connections as per Sentence 9.32.3.4.(7).</p>				<input type="checkbox"/>	<b>S1</b>	Exhaust fans with outdoor air supply to forced air furnace return **		<input type="checkbox"/>	<b>S2</b>	Exhaust fans with outdoor air supply fan to forced air furnace return **																	
<input type="checkbox"/>	<b>S1</b>	Exhaust fans with outdoor air supply to forced air furnace return **																									
<input type="checkbox"/>	<b>S2</b>	Exhaust fans with outdoor air supply fan to forced air furnace return **																									
<b>Kitchen Supplementary Exhaust Fan</b>																											
Kitchen supplementary exhaust fan capacity = _____ L/s Minimum capacity for separate exhaust fan for kitchen = 50 L/s except where the principal exhaust fan draws from the kitchen only, or where it draws from the kitchen and other rooms and Line 07 ≥ 0.																											
<b>Bathroom Supplementary Exhaust Fan</b>																											
Bathroom supplementary exhaust fan capacity = _____ L/s Bathroom minimum exhaust fan capacity = 25 L/s per room																											
<b>Controls (see the NBC for other requirements)</b>																											
A switch marked VENTILATION FAN is required in the living area. If more than one fan is used for the principal exhaust system they must be interconnected and all controlled by the switch in sentence 1 above. The principal exhaust fan must be interconnected with the furnace fan. If the kitchen exhaust is provided only by the principal exhaust fan, a switch must be located in the kitchen to activate the high exhaust rate of the principal exhaust fan. <b>The switch is to be labelled "Kitchen Exhaust" as per Clause 9.32.3.7(3)(b).</b>																											

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Information and Drawing Requirements

Principal Exhaust Fan(s)				
Fan #	Sone	Location of Inlet	Normal Operating Exhaust Capacity (NOEC) (L/s)	Maximum Operating Exhaust Capacity (MOEC)(L/s)
NOEC				
Outdoor Air Supply (OAS) For Principal Exhaust Fan(s)				MOEC with 2 speed fans used
Confirm OAS = NOEC Y <input type="checkbox"/> N <input type="checkbox"/>				

All ducts (supply, exhaust, and make-up air) shall be sized according to Article 9.32.3.11 and Table 9.32.3.11.A. Grease filters are required on all range hoods, range top fans, and all exhaust intakes located within 3m horizontally of a range. Principal ventilation fans are required to have a maximum sone rating of 2.0. If more than one fan is used to provide the required normal operating exhaust capacity, the switch(es) shall be interconnected to control all fans as per Sentence 9.32.3.3.(3).

**COMPLETE THIS SECTION IF YOU DO NOT HAVE AN HRV AS PART OF THE PRINCIPAL VENTILATION WHERE OUTDOOR AIR IS PROVIDED TO THE RETURN SIDE OF THE FURNACE**

Maximum Permitted Outdoor Air Supply (MPOAS) (L/s)					
Label 2 \ Label 1	5°C	10°C	12°C	15°C	
0	0	0	0	0	
100	30	21	17	12	
200	60	42	35	25	
300	90	63	53	37	
400	120	84	70	49	

The outdoor air supply duct connected to the return air plenum of the furnace is to be sized to provide an outdoor air supply within 10% of the NOEC. A manual damper is required in the duct and measurements are required to be done by the installer to verify the air flow and permanently set the damper (See Article 9.32.3.4.10).

Outdoor intake and exhaust openings shall comply with article 9.32.3.13. If a fan is used in conjunction with outdoor air it must be approved by the manufacturer for untempered outdoor air and continuous operation.

Outdoor air must be tempered when one of the following conditions exists:

1. The calculated mixed air temperature at the furnace exceeds that permitted by the manufacturer.
2. Outdoor air supply is supplied directly to habitable spaces.

Label 1 - Furnace air flow (low speed) L/s

Label 2 - Minimum recommended mixed air temperature for furnace by manufacturer.

NOEC must be ≤ MPOAS or tempering of air is required

Enter data for the following: Label 1 \_\_\_\_\_ L/s Label 2 \_\_\_\_\_ °C NOEC \_\_\_\_\_ L/s MPOAS \_\_\_\_\_ L/s

Make-up air is required where there is one or more fuel burning appliances not direct vented or mechanically vented types (exception may apply if a successful spillage test is conducted).

The make-up air fan must be approved by the manufacturer for the supply of the untempered outdoor and continuous operation.

Supplemental & Other Mechanical Exhaust Fans			
Fan #	Sone	Location of Inlet	Capacity (L/s)

Outdoor Make-Up Air Fan(s)				
Fan #	Sone	Location of Inlet	Capacity (L/s)	Pre-Heat Outdoor Air (Y/N)

### DECLARATION

I declare that this system has been designed in accordance with requirements of the 2015 National Building Code of Canada Subsection 9.32

Name:	Telephone:
Company:	Telephone:
Address:	Signature: