

BRANDON & AREA PLANNING DISTRICT

Residential Ventilation Summary PART 9

Fundamental Elements of Part 9

Have a total ventilation system capacity (the ability to ventilate at a rate) determined by the number and type of room and spaces in the dwelling as per Table 9.32.2.3.

Have a principal exhaust system capable of continuous operation at an air flow rate of not less than 50% of the total ventilation capacity (TVC).

Include a means to distribute outdoor air to certain areas of the house, i.e. each bedroom, all storeys and living room areas.

Base fan selection on ability to provide the required air flows.

Use exhaust and ventilation system fans, which meet specific sone (noise) ratings.

Provide carbon monoxide (CO) detectors/alarms to every building that contains a residential occupancy and also contains:

- a) a fuel burning appliance
- b) a storage garage as per Art. 9.32.3.9.

Provide carbon monoxide (CO) detectors/alarms in rooms with solid-fuel burning appliances if these do not have doors that substantially close off the firebox or if the make-up air is not provided for large exhaust devices.

Submittal Form

The City of Brandon form will be used showing Designer and Installer of the ventilation system.

HRAI certification number may be shown on the form, but is not required (certification shows contractors commitment to good engineering practices).

Back of the form to be used for a simple line drawing of the ventilation system showing principal exhaust fan, supplemental exhaust fan(s), kitchen range hood, air flows, pipe sizes and location of grilles and inlets.

City inspection will be compliance to form submitted.

Exhaust Devices

Exhaust loads are not cumulative.

Each home will have provisions for a cloth dryer.

Additional exhaust devices will be listed on the form.

If a single appliance exhaust load exceeds 75I/s (160 cfm), makeup air is required and shall be introduced to a normally unoccupied area in the dwelling or tempered to at least 12 ° C before being introduced to occupied areas or to a supply duct system.

Large exhaust devices in custom or upscale homes will be treated individually as identified by the homeowner, the builder, and the contractor.

Only fans required for TVC must meet sound ratings.

An outdoor makeup air supply fan shall be wired so that it is activated whenever the device for which it supplies outdoor makeup air is activated.

Duct Sizing

Minimum outdoor air duct sizes (Table 9.33.4.) will be used. Duct and piping thickness shall comply to 9.33.6.5.

Outdoor airflow will be measured by the Heating/Ventilation contractor and fixed by means of a damper.

Recorded flow to be submitted to the builder for final inspection.

Basic Systems

Option #1 – Exhaust fan(s) combined with outside air to forced air return.

A principal exhaust fan, which provides between 50 and 75% of the TVC.

If larger than 75%, must be able to be speed controlled to 45 – 55% of the TVC. Must be controlled centrally by a switch marked “VENTILATION FAN”.

Additional supplemental exhaust fans may be required to bring actual ventilation capacity to the TVC.

A supplemental exhaust fan of at least 50-CFM capacity is required in bathrooms or a connection to the principal fan is required. Art. 9.32.3.7.(4).

A supplemental exhaust fan of at least 100-CFM is required in the kitchen or the principal exhaust fan must withdraw all of its air from here. Art. 9.32.3.7.(1).

A forced air system must exist and must be interlocked with the principal exhaust fan so the furnace blower operated at the same time as the principal fan (interlock must be done by a qualified person in accordance with the furnace manufacturer’s instructions).

Must be equipped with an outside air duct to the furnace return air matching the flow of the principal fan without lowering the mixed temperature below the recommendations of the furnace manufacturer. Not less than 3m upstream of the plenum connection to the furnace. Art. 9.32.3.4.(5).

Option #2 – Exhaust fans combined with outside air supply coupled to forced air return.

Similar to Option #1 but the furnace blower, principal exhaust fan and auxiliary supply fan are interlocked and operate at the same time.

Outside air duct to the furnace return has a powered auxiliary supply fan.

Mixed air temperature must meet the manufacturer’s requirements and fan must be rated for winter outdoor air temperatures.

WARNING – It is possible for levels of unbalanced exhaust permitted in the NBC to cause significant levels of combustion appliance spillage, particularly in small or airtight houses. It is possible that depressurization will exceed the levels permitted in the codes regulating the installation of vented combustion appliances. (E.g. CAN/CGA B149). The most effective ways to avoid this risk are to:

Install combustion appliances, which are resistant to pressure-induced spillage.

Avoid using unbalanced exhaust appliances.

Install make-up air systems so exhaust airflows are balanced at all times by an equal supply of make-up airflow.

Option #3 – Ventilation system is not used in conjunction with forced air heating Art. 9.32.3.5.

LOCATION

BUILDER

Roll # _____
 Permit # _____
 Plan # _____

Name: _____
 Address: _____
 City: _____ Province: _____ Postal Code: _____
 Telephone: _____ Cell: _____ Fax: _____

Civic Address: _____

INSTALLING CONTRACTOR

COMBUSTION APPLIANCES

Name: _____
 FIRA# (if applicable) _____
 Address: _____
 City: _____ Province: _____ Postal Code: _____
 Telephone: _____ Fax: _____

a) Chimney-connected non-solid fuel
 b) Non-Chimney connected non-solid fuel
 c) Solid Fuel with Firebox doors
 d) Solid fuel without Firebox doors
 e) No combustion appliances

HEATING SYSTEMS/OTHER

Forced Air Heating Non-Forced Air Heating Soil Gas is a Problem
SYSTEM DESIGN OPTION
 1. Exhaust Fan(s) with Outside air duct to Force Air Return
 2. Exhaust Fan(s) with Outside Air Supply Fan to Forced Air Return
 3. HRV - supply Connected to Forced Air Return with Extended Exhaust Ducts
 4. HRV - Supply and Exhaust Connected to Forced Air Return (Simplified System)
 5. Exhaust Fan(s) with Outside Air Supply Fan (Not Connected to Forced Air System)
 6. HRV - Not Connected Forced Air System (Stand-alone)

TOTAL VENTILATION CAPACITY 9.32.2.3
 Basement and Master Bedroom _____ L/s
 @ 10 L/s
 Other Bedroom _____ L/s
 @ 5 L/s
 Bathrooms and Kitchen _____ L/s
 @ 5 L/s
 Other Rooms _____ L/s
 @ 10 L/s
 Total Ventilation Capacity (TVC) _____ L/s

Design to CSA-F326-M91
PRINCIPAL EXHAUST FAN 9.32.3.3
 Maximum Capacity - TVC x 50% _____

SUPPLEMENTAL VENTILATION CAPACITY
 Total Ventilation Capacity (TVC) _____ L/s
 Less Principal Exhaust Fan Capacity _____ L/s
 Equals Supplemental Capacity _____ L/s
HEAT RECOVERY VENTILATOR
 Manufacturer: _____ Model: _____
 _____ L/s high
 _____ L/s low

Actual Capacity _____
 Manufacturer: _____ Model: HVI
 Location: _____

HVI
SUPPLEMENTAL FANS 9.32.3.7
 3. location: _____ L/s _____ L/s
 manufacturer model _____ L/s
 4. location: _____ L/s _____ L/s
 manufacturer model _____ L/s

SUPPLEMENTAL FANS 9.32.3.7
 1. location: _____ L/s _____ L/s
 manufacturer model _____ L/s
 2. location: _____ L/s _____ L/s
 manufacturer model _____ L/s

Adequate make up air shall be provided for all systems that exhaust air to outdoors (MBC 6.2.3.1)(clothes dryers, central vacuum systems, kitchen exhaust systems that are not part of total ventilation system design).

NOTE: tempering of make up air may be required (MBC 6.2.3.1)

CERTIFICATION

I certify this ventilation system design to be in accordance with:
 NBC 9.32.3
 CSA-F326-M91

Name: _____
 Address: _____
 City: _____ Province: _____ Postal Code: _____
 Telephone: _____ Fax: _____
 Signature: _____

PRINCIPAL EXHAUST

FAN: Make _____ Model _____

Design Gross Air Flow: _____

Design Exterior Static Pressure: _____

FORCED AIR FURNACE

Total Air Flow: _____

(At low speed) _____

INTAKE AIR DUCT HEATERS

Make: _____ Model: _____ Static Pressure Loss: _____

SUPPLY SYSTEM SCHEMATIC

EXHAUST SYSTEM SCHEMATIC

SUPPLEMENTAL EXHAUST

FAN: Make _____ Model _____

Design Gross Air Flow: _____

Design Exterior Static Pressure: _____