

1 Ventilation Checklist 1: Forced Air Systems

SENTENCE 9.32.3.4(2)

Use this Checklist where forced air heating system ducts intake and distributes ventilation air.

Civic Address:				Permit No.	
Climate Zone:	5	Number of bedrooms		(A)	A bedroom is a room with an openable window (minimum dimensions apply), a closet and a closing interior door.
		Total floor area of living space		ft² (B)	
		Total interior Volume of dwelling		ft³	Total volume includes all heated interior spaces (including crawlspace if heated).
0.5 ACH (air changes/hr) = Volume x 0.5 ÷ 60 =				cfm (C)	Exhaust appliances exceeding .5 ACH may require make-up air.

1. Principal ventilation system exhaust fan minimum airflow rate

Use bedroom count from box (A) & total square footage from box (B), & Table 9.32.3.5. to determine:

Minimum required principal exhaust system capacity: cfm (D)

2. Principal system fan selection:

Continuous exhaust fan:	Make:		Model:		Sone Rating:	
Location:			Capacity @ 0.2"wc ESP:	cfm (E)		
			*If CEV: Capacity @ 0.4 ESP Must be ≥ box (D)			

3. Fan duct size and equivalent length:

Length of duct	ft	Using: eL (F) & volume (E), determine duct size according to table 9.32.3.8 (3)	in. Ø
Hood termination	+ 30 ft		
Elbows x 10 ft. each	ft	→ Total equivalent length (eL)	ft. (F)
			FLEX RIGID

4. Outdoor Air (OA) must be ducted from outside to return air of forced air heating for distribution.

☐ a) OA duct connected between 10' & 15' upstream of the heating appliance, unless a flow control device used	
☐ b) OA intake duct to RA: Insulate & vapour barrier entire length,	OA Pipe Size: 4"Ø rigid: ☐ 5"Ø flex: ☐
☐ c) Furnace fan runs continuously	

5. Forced air heating system is distributed:

☐ Duct system supplies outdoor air to every bedroom and any level without a bedroom

6. If heated crawlspace present, (choose one)

☐ Minimum of one RA grille in crawlspace ☐ No RA grille in crawlspace: Option 1,2, or 3, BCBC 9.32.3.7(2)

7. Make-Up Air Requirements: Naturally Aspirated Fuel Fired Vented Appliance (NAFFVA) present? (9.32.4.1)

☐ No, Omit Step 8 ☐ Yes, Proceed to Step 8

8. Exhaust appliance present which exceeds Box C 0.5 ACH:

☐ No ☐ Yes, Complete "Large Exhaust Make-up Air Checklist"

1 Ventilation Checklist 1: Forced Air Systems

SENTENCE 9.32.3.4(2)

9. Required kitchen and bathroom exhaust fans:

Re-list below if Principal exhaust fan meets all or part of kitchen/bathroom exhaust requirements

ROOM	REQ. EXHAUST RATE ¹	EXHAUST EQUIPMENT						
		FAN MAKE & MODEL	CFM @ 0.2 ESP	Duct Sizing ²			Principal System CFM (Exhaust Fan or CRV)	
				Duct Dia (in Ø)		Max. Equiv. Length		Installed Equiv. Length
				rigid	flex			
¹ See table 9.32.3.6								TOTAL (must equal Box E)
² See table 9.32.3.8(3); Fan capacities exceeding 175cfm, follow manufacturer's installation instructions or good engineering practice to size duct. Refer to <i>Ventilation Guidelines Appendix page 16-A, Duct Sizing for Larger Fans</i>								
0								

TOTAL
(must equal Box E)

Installer Certification:

I hereby certify that the design and installation of the ventilation system complies with the 2024 B.C. Building Code.

Date _____

Print Name _____

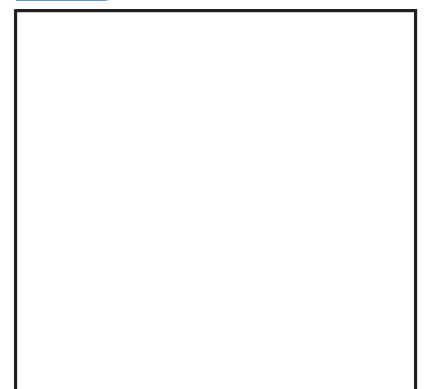
Signature _____

Company _____

Phone _____



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2 Ventilation Checklist 2: HRV|ERV Systems SENTENCE 9.32.3.4(3) & (4)

Use this Checklist when a **centrally ducted HRV or ERV** (heat or energy recovery ventilator) is used alone or in with a forced air heating system to meet principal ventilation system requirements.

Civic Address: _____		Permit No. _____	
Climate Zone: 5	Number of bedrooms	(A)	A bedroom is a room with an openable window (minimum dimensions apply), a closet and a closing interior door.
	Total floor area of living space	ft² (B)	
	Total interior Volume of dwelling	ft³	Total volume includes all heated interior spaces (including crawlspace if heated).
0.5 ACH (air changes/hr) = Volume x 0.5 ÷ 60 =		cfm (C)	
			Exhaust appliances exceeding .5 ACH may require make-up air.

1. Principal ventilation system exhaust fan minimum airflow rate

Use bedroom count from box (A) & total square footage from box (B), & Table 9.32.3.5. to determine:

Minimum required principal exhaust system capacity:

cfm (D)

2. HRV / ERV selection:

HRV or ERV: Make: _____

Model: _____

Location: _____

Capacity @ 0.4 ESP:

cfm (E)

Must be ≥ box (D)

3. Exhaust grille locations: 1 minimum @ 6 ft. or higher from floor of uppermost level

_____	_____	_____
_____	_____	_____
_____	_____	_____

4. HRV/ERV fresh air distribution (Select one)

☐ a) Supply air from HRV/ERV is directly connected to the return air of a forced air heating system

☐ FA system fan and HRV are wired/programmed for continuous operation, and

☐ FA supply is ducted to every bedroom and each floor level without a bedroom

☐ b) Supply air from HRV is dedicated ductwork

☐ Ducted to each bedroom and each floor level without a bedroom, and

☐ HRV is wired/programmed for continuous operation

5. If heated crawlspace present, (choose one)

☐ Minimum of one RA grille located in crawlspace

☐ No RA grille in crawlspace: Crawlspace ventilation option 1,2, or 3 per BCBC 9.32.3.7(2)

6. Make-Up Air Requirements: Naturally Aspirated Fuel Fired Vented Appliance (NAFFVA) present? (9.32.4.1)

☐ No, Omit Step 7

☐ Yes, Proceed to Step 7

7. Exhaust appliance present which exceeds Box C 0.5 ACH:

☐ No

☐ Yes, Complete "Large Exhaust Make-up Air Checklist"

2 Ventilation Checklist 2: HRV|ERV Systems SENTENCE 9.32.3.4(3) & (4)

8. Required kitchen and bathroom exhaust fans:

Re-list below if Principal exhaust fan meets all or part of kitchen/bathroom exhaust requirements

ROOM	REQ. EXHAUST RATE ¹	EXHAUST EQUIPMENT						Principal System CFM
		FAN MAKE & MODEL	CFM @ 0.2 ESP	Duct Sizing ²				
				Duct Dia (in Ø)		Max. Equiv. Length	Installed Equiv. Length	
				rigid	flex			
¹ See table 9.32.3.6 ² See table 9.32.3.8(3); Fan capacities exceeding 175cfm, follow manufacturer's installation instructions or good engineering practice to size duct. Refer to <i>Ventilation Guidelines Appendix page 16-A, Duct Sizing for Larger Fans</i>								TOTAL (must equal Box E) 0

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Company_____

Phone

3 Ventilation Checklist 3: CRV Systems

SENTENCE 9.32.3.4(5)

Use this Checklist when a **ducted CRV** (central recirculating ventilator) is used to meet the fresh air intake and distribution requirements and a principal exhaust fan meets the exhaust requirements.

Civic Address: _____		Permit No. _____	
Climate Zone: 5	Number of bedrooms	(A)	A bedroom is a room with an openable window (minimum dimensions apply), a closet and a closing interior door.
	Total floor area of living space	ft² (B)	
	Total interior Volume of dwelling	ft³	Total volume includes all heated interior spaces (including crawlspace if heated).
0.5 ACH (air changes/hr) = Volume x 0.5 ÷ 60 =		cfm (C)	
			Exhaust appliances exceeding .5 ACH may require make-up air.

1. Principal ventilation system exhaust fan minimum airflow rate

Use bedroom count from box (A) & total square footage from box (B), & Table 9.32.3.5. to determine:

Minimum required principal exhaust system capacity:

2. Principal exhaust fan selection:

Continuous Exhaust fan: Make: _____

Model: _____

Sone Rating: _____

Location: _____

Capacity @ 0.2 ESP: _____

If CEV, capacity @ 0.4 ESP

Must be ≥ box (D)

3. Fan duct size and equivalent length:

Length of duct _____ ft.

Using: eL (F) & volume (E), determine duct size according to table 9.32.3.8 (3)

Hood termination + 30 ft.

Elbows x 10 ft. each _____ ft.

→ Total equivalent length (eL)

FLEX

RIGID

4. CRV fresh air intake & mixing fan minimum airflow rate and selection:

Winter Design Temperature: _____ °F

Minimum Capacity: ☐ if ≥ 5°F (Box E x 2), or
(select one) ☐ if < 5°F (Box E x 3)

Make: _____

Model: _____

Sone Rating: _____

Location: _____

Capacity @ 0.4 ESP: _____

☐ OA intake duct to RA: Insulate & vapour barrier entire length,

OA Pipe Size:

4"Ø rigid: ☐

5"Ø flex: ☐

5. CRV fresh air circulation (choose one)

☐ Draw air from bedrooms & supply to common areas

☐ Draw from common areas & supply air to bedrooms

6. If heated crawlspace present, (choose one)

☐ Minimum of one RA grille in crawlspace

☐ No RA grille in crawlspace: Option 1,2, or 3, BCBC 9.32.3.7(2)

7. Make-Up Air Requirements: Naturally Aspirated Fuel Fired Vented Appliance (NAFFVA) present? (9.32.4.1)

☐ No, Omit Step 8

☐ Yes, Proceed to Step 8

8. Exhaust appliance present which exceeds Box C 0.5 ACH:

☐ No

☐ Yes, Complete "Large Exhaust Make-up Air Checklist"

3 Ventilation Checklist 3: CRV Systems

SENTENCE 9.32.3.4(5)

9. Required kitchen and bathroom exhaust fans:

Re-list below if Principal exhaust fan meets all or part of kitchen/bathroom exhaust requirements

ROOM	REQ. EXHAUST RATE ¹	EXHAUST EQUIPMENT						Principal System CFM
		FAN MAKE & MODEL	CFM @ 0.2 ESP	Duct Sizing ²				
				Duct Dia (in Ø)		Max. Equiv. Length	Installed Equiv. Length	
				rigid	flex			
1 See table 9.32.3.6								TOTAL (must equal Box E)
2 See table 9.32.3.8(3); Fan capacities exceeding 175cfm, follow manufacturer's installation instructions or good engineering practice to size duct. Refer to <i>Ventilation Guidelines Appendix page 16-A. Duct Sizing for Larger Fans</i>								
								0

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4 Ventilation Checklist 4: Passive Inlets

SENTENCE 9.32.3.4(6)

Use this checklist for **small** ($\leq 1800 \text{ ft}^2$), **single level**, **non-forced air heated** dwellings located in mild coastal & moderate interior climates where **winter 2.5% design temperature is warmer than -20°C**

Civic Address: _____		Permit No. _____	
Climate Zone: 5	Number of bedrooms	(A)	A bedroom is a room with an openable window (minimum dimensions apply), a closet and a closing interior door.
Total floor area of living space		ft² (B)	
Total interior Volume of dwelling		ft³	Total volume includes all heated interior spaces (including crawlspace if heated).
0.5 ACH (air changes/hr) = Volume x 0.5 ÷ 60 =		cfm (C)	Exhaust appliances exceeding .5 ACH may require make-up air.

1. Principal ventilation system exhaust fan minimum airflow rate

Use bedroom count from box (A) & total square footage from box (B), & Table 9.32.3.5. to determine:

Minimum required principal exhaust system capacity:

cfm (D)

2. Principal system fan selection:

Continuous exhaust fan: Make: _____

Model: _____

Sone Rating: _____

Location: _____

Capacity @ 0.2"wc ESP: _____

cfm (E)

*If CEV: Capacity @ 0.4 ESP

Must be $\geq$ box (D)

3. Fan duct size and equivalent length:

Length of duct _____ ft

Using: eL (F) & volume (E), determine duct size according to table 9.32.3.8 (3)

in. Ø

Hood termination + 30 ft

Elbows x 10 ft. each _____ ft → Total equivalent length (eL)

ft. (F)

FLEX

RIGID

4. Requirements for passive inlets to supply outdoor air (OA) to dwelling

- ☐ a) Inlet is located high on the wall, minimum 6' above the floor, and
- ☐ b) One inlet is located in each bedroom & at least one common area, and
- ☐ c) Inlet free area is greater than, or equal to 4 in²

5. If heated crawlspace present

- ☐ Option 1,2, or 3, per BCBC 9.32.3.7(2) ☐ No heated crawlspace present

6. Make-Up Air Requirements: Naturally Aspirated Fuel Fired Vented Appliance (NAFFVA) present? (9.32.4.1)

- ☐ No, Omit Step 8 ☐ Yes, Proceed to Step 8

8. Exhaust appliance present which exceeds Box C 0.5 ACH:

- ☐ No ☐ Yes, Complete "Large Exhaust Make-up Air Checklist"

4 Ventilation Checklist 4: Passive Inlets

SENTENCE 9.32.3.4(6)

9. Required kitchen and bathroom exhaust fans:

Re-list below if Principal exhaust fan meets all or part of kitchen/bathroom exhaust requirements

ROOM	REQ. EXHAUST RATE ¹	EXHAUST EQUIPMENT						
		FAN MAKE & MODEL	CFM @ 0.2 ESP	Duct Sizing ²			Principal System CFM (Exhaust Fan or CEV)	
				Duct Dia (in Ø)		Max. Equiv. Length		Installed Equiv. Length
				rigid	flex			
¹ See table 9.32.3.6 ² See table 9.32.3.8(3); Fan capacities exceeding 175cfm, follow manufacturer's installation instructions or good engineering practice to size duct. Refer to <i>Ventilation Guidelines Appendix page 16-A, Duct Sizing for Larger Fans</i>								TOTAL (must equal Box E)
								0

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Make-up Air Checklist: Large Exhaust

SENTENCE 9.32.4.1

Use this checklist as a supplement to checklists 1-4 where the checklists indicate there is a make-up air requirement, **OR** when completing a renovation such as a kitchen which requires a large exhaust fan.

Civic Address: _____	Permit No. _____
Total floor area of living space	ft ² (B)
Total interior Volume of dwelling	ft ³
Total volume includes all heated interior spaces (including crawlspace if heated).	
0.5 ACH (air changes/hr) = Volume x 0.5 ÷ 60 =	cfm (C)
Exhaust appliances exceeding .5 ACH may require make-up air.	

ROOM	REQ. EXHAUST RATE (9.32.3.6)	SINGLE EXHAUST FAN WITH LARGEST CAPACITY					
		FAN MAKE & MODEL	CFM ² @ 0.2 ESP	Duct Sizing ¹			
				Duct Dia (in Ø)		Max. Equiv. Length	Installed Equiv. Length
				rigid	flex		

¹ See table 9.32.3.8(3); Fan capacities **exceeding** 175cfm, follow manufacturer's installation instructions or good engineering practice to size duct. Refer to *Ventilation Guidelines Appendix page 16-A, Duct Sizing for Larger Fans*

² Where no manufacturer's rating (fan curve or performance table) is available for the kitchen exhaust appliance, assume that as stated in 9.32.4.1.(1), it "discharges air to the exterior at an installed rate" of 60% of the free air or claimed rating.

1. Make-Up air requirements: Naturally Aspirated Fuel Fired Vented Appliance (NAFFVA) present? (9.32.4.1)

☐ No, MUA not required for exhaust fan ☐ Yes, Proceed to Step 2

2. Exhaust appliance present exceeds Box C 0.5 ACH:

☐ No ☐ Yes, Continue with steps 3 – 5*

*An Authorities having Jurisdiction (AHJ) may accept proof of safe building pressurization by following the steps for a de-pressurization test outlined on the next page, thereby not requiring an MUA fan. Confirm with AHJ prior to proceeding with this alternate compliance method.

3. Make-up air fan required:

Make-up air fan: Make: _____ Model: _____ Sone Rating: _____

Location: _____ Capacity @ 0.4"wc ESP: CFM (E)

☐ Fan is required to be interconnected with exhaust appliance Must be ≥ exhaust CFM

4. Fan duct size and equivalent length:

Length of duct _____ ft Using: eL (F) & volume (E), determine duct size according to table 9.32.3.8 (3) in. Ø

Hood intake _____ + 30 ft

Elbows x 10 ft. each _____ ft → Total equivalent length (eL) ft. (F) FLEX RIGID

5. Supply air tempering:

Area make-up air delivered to: ☐ Occupied area Required supply temp. 54°F (12°C) ☐ Unoccupied area** Required supply temp. 34°F (1°C)

Heating load for tempering: MUA CFM X 1.08 X (°F - °F) = BTUH

Req. SA Temp 2.5% Design Temp

÷ 3412 = kW

[BTUH/kW]

****If make-up air is delivered to normally unoccupied area, complete this area to indicate method for transfer into occupied space:**

CFM X 1.08 X °F = BTUH ÷ 3412 = kW

Typ. ΔT (54°F - 34°F)

Additional heating & air path provided by: _____

Depressurization Test Procedure:

Rational of Requirement:

- The safe operation of NAFFVA equipment relies on the thermal buoyancy of its vent products. The operation of a high-volume exhaust fan in a small or tightly constructed dwelling can draw the venting flue gasses back into the dwelling, causing harm.
- This test will determine if the safe threshold of -5 Pa ($-0.02'' \text{ WC}$) is exceeded with the fan running.

Consider this procedure only if the authority having jurisdiction (AHJ) **has agreed in advance to the acceptability of this alternative method** (equivalency) as proof that chimney safety to 9.32.4.1 is maintained.

This test must be carried out exactly as outlined in the steps below. The repeated measurements in Steps 3 - 5 are required for accuracy when measuring very low pressures with a manometer.

Date: _____ Time: _____

☐ AHJ has approved this procedure as an equivalent method to proving chimney safety (9.32.4.1)

☐ Renovation contractor accepts risk of retrofitting a make-up air system if dwelling fails this test

1. Close ALL exterior doors, windows, hatches, & fireplace dampers etc. Open combustion / make-up air ducts.

2. Zero the manometer

3. Measure indoor air pressure with all exhaust equipment off:

in. w.c. (A)

4. Measure indoor air pressure with large exhaust appliance on:

in. w.c. (B)

5. Measure pressure with all exhaust equipment off:

in. w.c. (C)

6. Averaged indoor air pressure with exhaust equipment off: $= \frac{A + C}{2}$

in. w.c. (D)

7. Net indoor air pressure with large exhaust appliance on: $= B - D$

in. w.c. (E)

8. Box E is: ☐ $\leq 0.02 \text{ in. w.c. (5 Pa)}$ – make-up air for this exhaust appliance is not required

☐ $> 0.02 \text{ in. w.c. (5 Pa)}$ – make-up air is required – complete steps 3-5 on previous page

Installer Certification:

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Signature _____

Company _____

Phone _____



Table 9.32.3.5. Principal Ventilation System Exhaust Fan Minimum Air-flow Rate Forming part of Sentence 9.32.3.5.(1)											
Floor Area		Minimum Air-flow Rate, L/s and cf/m									
		Number of Bedrooms									
		0-1		2-3		4-5		6-7		>7	
m ²	ft ²	L/s	cf/m	L/s	cf/m	L/s	cf/m	L/s	cf/m	L/s	cf/m
< 140	< 1507	14	30	21	45	28	59	35	74	42	89
140-280	1507- 3014	21	45	28	59	35	74	42	89	49	104
281-420	3015-4521	28	59	35	74	42	89	49	104	56	119
421-560	4522-6028	35	74	42	89	49	104	56	119	64	136
561-700	6029-7535	42	89	49	104	56	119	64	136	71	150
> 700	>7535	49	104	56	119	64	136	71	150	78	165

Table 9.32.3.6. Kitchen/Bathroom Exhaust Fan Minimum Air-flow Rate Forming part of Sentence 9.32.3.6.(1)				
Room	Minimum Exhaust Fan Air-flow Rate, L/s and cf/m			
	Intermittent		Continuous	
	L/s	cf/m	L/s	cf/m
Kitchen	47	100	N/A	N/A
Bathroom	23	49	9	19

Table 9.32.3.8.(3) Maximum Equivalent Duct Length, m Forming part of Sentence 9.32.3.8.(3)													
Flexible Duct													
Equivalent Diameter (Cross Section Area for Rectangular Ducts)				Fan Capacity, L/s and cf/m									
mm (cm ²)		in (ft ²)		L/s	cf/m	L/s	cf/m	L/s	cf/m	L/s	cf/m	L/s	cf/m
				25	53	40	85	50	106	60	127	70	148
125	(123)	4.92	(0.13)	32		15		-		-		-	
150	(177)	5.91	(0.19)	46		40		28		18		13	
175	(240)	6.89	(0.26)	46		46		46		46		46	24
200	(314)	7.87	(0.34)	46		46		46		46		46	46
Rigid Duct													
Equivalent Diameter (Cross Section Area for Rectangular Ducts)				Fan Capacity, L/s and cf/m									
mm (cm ²)		in (ft ²)		L/s	cf/m	L/s	cf/m	L/s	cf/m	L/s	cf/m	L/s	cf/m
				25	53	40	85	50	106	60	127	70	148
100	(79)	3.94	(0.09)	32		15		-		-		-	
125	(123)	4.92	(0.13)	46		40		28		18		13	
150	(177)	5.91	(0.19)	46		46		46		42		34	24
175	(240)	6.89	(0.26)	46		46		46		46		46	46