Ventilation



Building Approvals Department 6911 No. 3 Road, Richmond, BC V6Y 2C1

www.richmond.ca

Section 9.32

The BC Building Code, Section 9.32 requires that a contractor building a new home must install a ventilating system with a proven capacity. The system must have an ability to provide a complete air change in a house within two hours. The system must be rated and installed to deliver the actual amount of air that is necessary to ventilate the structure.

Good ventilating requires a system that will provide fresh air to a home on a continuing basis. This is particularly important in homes with open fireplaces and unsealed furnaces. Stale air is extracted from certain rooms such as kitchens and bathrooms, by the use of humidity-control extraction outlets. This ensures the removal of odours and other pollutants in the air, as well as excess moisture. Without proper ventilation, there can be a heavy accumulation of polluted air. With modern construction methods, most new homes today are more air-tight than before and there is less natural circulation of air than there used to be.

Enclosed is a set of Mechanical Ventilation Checklists which have been developed by TECA for the convenience of the residential construction industry. The main purpose of the checklists is to ensure that Municipal Building Departments are provided with the required ventilation information. It is intended that these checklists will provide a high level of consistency on Code interpretation throughout the Lower Mainland.

For those interested, additional training and certification is available to the industry through the TECA (telephone 1-888-577-3818). Please contact this division for copies of the forms. Building Inspectors will be pleased to answer questions or provide further clarification.

TECA (Thermal Environmental Comfort Association)

Ventilation Checklist 1—Forced Air Systems Sentence 9.32.3.4(6)

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

Civic Address					Per	mit N	0	
Climate Zone	:	Number of Bedrooms		(A)	window (minimum dimensions app			
То	tal Floor	area of conditioned space	ft^2	(B)	closet and a clo	sing into	erior door.	
	Total Into	erior Volume of Dwelling	ft ³		Total volume spaces	includes	all heated interior	
.5 ACH (air c	hanges/h	r) = Volume x $0.5 \div 60 =$	2	(C)	Exhaust appliant .5 ACH may re		~	
1. Principal V	entilation	n System Exhaust Fan Mi	nimum Air-fl	ow R	ate			
	om count	from Box (A) and Total squa	re footage from	n Box	(B) above an	d Table	e 9.32.3.5. to	
determine Minim	um Requ	nired Prinicpal Exhaust S	ystem Capac	ity		cfm	(D)	
2. Principal Sy	,							
a) Exhaust Fa	an contin	uous running Make		odel_		S	one Rating	
τ			Capacit		cfm	(F)	Must be \geq than Box (D)	
Location:					y @0.4ESP	(L)	what be <u>_</u> than box (b)	
3 Fan Duct Si	zo and E	Equivalent Length	II CE V, C	арасп	y @0.4ESF			
		ox(E) above and Table 9.32.3	.8 (3) [See note	at bott	tom of page for	larger	fan duct sizingl.	
		Et + Exterior hood 30ft + numl						
,		Iaximum Equivalent Length a					1	
b) Fan Duct si		_inches Ø Duct type:Ri						
		• •			D: : 1E			
-		nd Bathroom Exhaust Far m spot Exhaust requiremen		ow 1f	Principal Ex	thaust	Fan meets all or	
	Required	EXH	IAUST EQUIP	MENT	1			
	EXHAUST RATE	Spot Exhaust I	Kitchen & Bath	WALL	/CEILING FAI	NS	Ex.Fan/CEV	
D0016	Table	Fan Make & Model	CFM *Duct	Sizing	per Table 9.32	2.3.8.(3)	Principal	

	REQUIRED	EXHAUST EQUIPMENT						
	EXHAUST RATE	Spot Exha	ust Kitcher	& Bath	WALL	/CEILING	FANS	Ex.Fan/CEV
ROOM	Table 9.32.3.6	Fan Make & Model	CFM @ 0.2 ESP Manf. Rated			per Table ! Max. Equiv.	9.32.3.8.(3)	Principal System CFM
	9.32.3.0			Duct Dirigid	flex	Length per table	Installed Equiv. Length	System Crivi
* For fan capa	* For fan capacities exceeding 175cfm in Table 9 32 3 8(3), follow manufacturer's							

See Ventilation Guidelines Appendix page 16-A

installation instructions or use good engineering practice to size duct.

* For fan capacities **exceeding** 175cfm in Table 9.32.3.8(3), follow manufacturer's

(must =

Box E)

5. Fresh Air must be ducted from outside to Return Air of furnace f	for distribution.
a) Duct length from this connection to furnace cabinet must be 15 ft r	
unless a flow control device is used. Duct length confirmed at _	feet.
b) Duct Size for Fresh Air intake to RA:	
4" Ø minimum for Rigid Duct. Must be insulated & vapour barrier 5"Ø minimum for insulated, vapour barriered Flex Duct con	_
6. Forced Air Furnace system ducted to supply air to every bedroom	
bedroom confirmed.	
7. If Heated Crawlspace present, state method of ventilating	
MAKE-UP AIR Requirements	W 40 G 4 0 22 4 4
1. NAFFVA (Naturally Aspirated Fuel Fired Vented Appliance) or radon present in dw Yes, Proceed to Step 2	No, Omit Steps 2 & 3
2. Exhaust Appliance present which exceeds Box C 0.5 ACH:	
	such appliance. Omit Step 3
Depressurization Test (See CAUTION	
3. Use Active Make-up Air for Exhaust Appliance.	, TECH vent Manual pg 24)
11	Actual Installed Cfm
Fan Make Model Ma	ake-up Air Fan Cfm
Duct diameterinches	
Fan Location Fan ducted to a) Active Make-up Air delivered to an Unoccupied Area first (not directly	y to room containing the appliance)
i) Tempering Required per 9.32.4.1.(4)(a):	y to room containing the apphance).
Show calculation & describe how make-up air will be tempered to at least 34°F	(1°C) before entering unoccupied area.
ii) Transfer Grill Required: Size 1 sq in of gross area per 2 cfm):	
Transfer grill size sq. in. Location	
iii) Additional Tempering Required per 9.32.4.1.(4)(b) before transfer to oc	ccupied area: Show calculation and
describe how make-up air will be further tempered to at least 54°F (12°C).	
OR b) Active Make-up Air delivered to an Occupied Area: Tempering R	Required. Show calculation and describe
how make-up air will be tempered to at least 54°F (12°C).	
Installer Certification: Date	s
I hereby certify that the design and installation of the ventilation system complies with	
	Ventilation Certification Stamp
Г	
Print Name	
Signature	
Company	
Phone	

2

Ventilation Checklist 2—HRV Systems Sentence 9.32.3.4 (3) & (4)

Use this checklist when a centrally ducted HRV (heat recovery ventilator) is used alone or in combination with a Forced Air furnace to meet principal ventilation system requirements.

Civic Address		Permit No	
Climate Zone: Number of Bedrooms	(A)	A bedroom is a room with an ope window (minimum dimensions app	
Total Floor area of conditioned space	ft ² (B)	closet and a closing interior door.	
Total Interior Volume of Dwelling	ft^3	Total volume includes all heated in spaces	terior
.5 ACH (air changes/hr) = Volume x $0.5 \div 60 =$	cfm (C)	Exhaust appliances exceeding .5 ACH may require make-up air.	
1. Use the bedroom count (Box A above) and tot minimum principal Air Flow rate required by T		(Box B above) to determine	the
Minii	num Required Ra	te cfm	(D)
2. HRV Make N	/Iodel		, ,
3. HRV Capacity: CFM @ 0.4 ESP. Box E must me	eet Box D requirement.	cfm	(E)
4. List Exhaust Grilles Locations: 1 minimum @	6ft or higher from	floor of uppermost level.	

5. Required Kitchen and Bathroom Exhaust

If HRV used to meet all or part of Kitchen/Bathroom spot exhuast requirements list below.

	REQUIRED EXHAUST EQUIPMENT							
	EXHAUST RATE	Spot Exha	ust Kitcher	n & Bath	n WALL	/CEILING	FANS	HRV
ROOM	Table	Fan Make & Model	CFM @ 0.2 ESP				9.32.3.8.(3)	Principal
110 0111	9.32.3.6		Manf. Rated	Duct D rigid	ia (in Ø) flex	Max. Equiv. Length per table	Installed Equiv. Length	System CFM
·								
			· · · · · ·				TOTAL	

* For fan capacities **exceeding** 175cfm in Table 9.32.3.8(3), follow manufacturer's installation instructions or use good engineering practice to size duct. See *Ventilation Guidelines* Appendix page 16-A

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(must = Box E)

A) Supply Air from HRV direction Furnace Fan continuous operate bedroom and any level without B) Supply Air from HRV distant bedroom and to a heated crawless.	ect connect to Returnation: yes and Force to a bedroom: yes attrubuted independent	n Air of a Forced ed Air system duction heated crawlsantly to every bedro	eted to supply air to every apce: yes
MAKE-UP AIR Requirements 1. NAFFVA (Naturally Aspirated Fuel Fire Yes, Proceed to Step 2		_	elling unit? Sentence 9.32.4.1 No, Omit Steps 2 & 3
 2. Exhaust Appliance present w Yes, Proceed to Step 3 3. Use Active Make-up Air for Exhaust Appliance present w 	Yes, Commit to Depressurization	□ No s	such appliance. Omit Step 3 TECA Vent Manual pg 24)
_	- -	xhaust Appliance A	Actual Installed Cfm
Fan Make	Model	Ma	Actual Installed Cfm ke-up Air Fan Cfm
Duct diameterinche	es		
ii) Transfer Grill Required: Siz	make-up air will be temp te 1 sq in of gross area per sq. in. Lo nired per 9.32.4.1.(4)(b) k	2 cfm): ocation oefore transfer to occ	(1°C) before entering unoccupied area
OR b) Active Make-up Air delive how make-up air will be temped	vered to an Occupied A	Area: Tempering Re	equired. Show calculation and describ
Installer Certification: I hereby certify that the design and instance Section 9.32 Amendment.	allation of the ventilation	Date system complies with	the 2012 B.C. Building Code, 2014 Yentilation Certification Stamp
Print Name			
Signature			
Company			
Phone			

3

Ventilation Checklist 3—Distributed CRV Systems Sentence 9.32.3.4(5)

Use this Checklist when a ducted Central Recirculating Ventilator (CRV) 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: Number of Bedrooms	(A)	A bedroom is a room w window (minimum dimen	nsions apply), a
Total Floor area of conditioned space	ft ² (B)	closet and a closing interio	or door.
Total Interior Volume of Dwelling	ft ³	Total volume includes all spaces	l heated interior
.5 ACH (air changes/hr) = Volume x $0.5 \div 60 =$	cfm (C)	Exhaust appliances exceed .5 ACH may require make	
1. Principal Ventilation System Exhaust Fan Mi	nimum Air-flow R	ate	
Use the bedroom count from Box (A) and Total squa			.32.3.5. to
determine	C		
Minimum Required Prinicpal Exhaust S	ystem Capacity	cfm (D)
2. Principal System Fan Choice			
a) Exhaust Fan continuous running Make	Model	Son	e Rating
	Capacity		
Location:		$\operatorname{cfm}(E)$ Must be $\geq t$	han Box (D)
Must be \geq than Box (D)	If CEV, capacit		
3. Fan Duct Size and Equivalent Length	- '/ 1	3	
Use actual fan cfm in Box(E) above and Table 9.32.3	.8 (3) [See note at bott	tom of page for larger fan	duct sizing].
a) Length of ductft + Exterior hood 30ft + numb Maximum Equivalent Length a			ivalent Length
b) Fan Duct size:inches Ø Duct type:Sm	noothFlex		
4. Required Kitchen and Bathroom Exhaust Far		Principal Exhaust Fa	n meets all or
part of Kitchen/Bathroom spot Exhaust requiremen Required EXH		,	
EXHAUST EXHAUST	IAUST EQUIPMENT		
	7', 1 0 D /1 TT/ATT	CEIL DIC EARIC	L P P /OPI

	REQUIRED	F	EXHAUST EQUIPMENT						
	EXHAUST RATE	Spot Exhau	ıst Kitcher	& Bath	WALL	/CEILING	CEILING FANS Ex.Fa		
ROOM	Table	Fan Make & Model	CFM				9.32.3.8.(3)	Principal	
110 0111	9.32.3.6		@ 0.2 ESP Manf. Rated	Duct Dirigid	flex	Max. Equiv. Length per table	Installed Equiv. Length	System CFM	

^{*} For fan capacities **exceeding** 175cfm in Table 9.32.3.8(3), follow manufacturer's installation instructions or use good engineering practice to size duct. See *Ventilation Guidelines* Appendix page 16-A

TOTAL	
(must =	
Box E)	
Ch	ecklist 3, pg1of2

5. CRV Rec	irculation and	Fresh Air Intake	Capacity @	
Make		Model	0.4 ESP	cfm (F)
	minimum 2 ti	mes Box D cfm for	+5°F and warmer winter de	sign temperature. Confirmed
			than +5°F winter design tem	
				, or 5", flex duct
		ion (Choose optio		
		ns and Supply air		
List location	on of supply gr	ılle	and location	of each bedroom return grille
b) Draw a	ir from commo	n area and Supply	air to bedrooms.	
List location	on of return gri	lle	and location of	of each bedroom supply grille
7. If Heated	Crawlspace p	resent, state met	hod of ventilating	
MAKE-UP	AIR Requiren	ients		
1. NAFFVA	(Naturally Aspirated I	Fuel Fired Vented Applianc	e) or radon present in dw	velling unit? Sentence 9.32.4.1
	roceed to Step			■ No , Omit Steps 2 & 3
			s Box C 0.5 ACH:	
\square Yes, Pr	oceed to Step	3 \square Yes, Comm	it to \square No	such appliance. Omit Step 3
		-	zation Test (See CAUTION,	TECA Vent Manual pg 24)
3. Use Active	e Make-up Air	for Exhaust Appli		
Make-up A	Air Fan require	d :	Exhaust Appliance	Actual Installed Cfm
Fan Ma	ıke	Model _	Ma	ake-up Air Fan Cfm
	ameter			
Fan Loc	cation		Fan ducted to	
				y to room containing the appliance).
		l per 9.32.4.1.(4)(a):		
Show cal	culation & describ	be how make-up air w	rill be tempered to at least 34°F	(1°C) before entering unoccupied area
ii) Trans	sfer Grill Require	ed: Size 1 sq in of gro	ss area per 2 cfm):	
Transf	fer grill size	sg. in.	Location	
			· · · · · · · · · · · · · · · · · · ·	ccupied area: Show calculation and
descri	be how make-up a	ir will be further tem	pered to at least 54°F (12°C).	_
		r delivered to an O		Required. Show calculation and describe
Installer Ce	rtification:		Date	
		nd installation of the v		h the 2012 B.C. Building Code, 2014
Section 9.32 A	mendment.		2014 TECA	Ventilation Certification Stamp
Print Name				
Time ivanie				
Signature				
Company				
Phone				
Checklist 2 na	r20f2			
Checklist 3, pg	,2012		L	



Ventilation Checklist 4—Exhaust Fan & Passive Inlets Sentence 9.32.3.4(6)

Use this checklist for small (≤ 1800 sqft), single level, non-forced air heated dwellings located in coastal climate areas where winter design temperature is warmer than -13°F.

	Cillia	te areas where wither desi	ign temp	Ciatai	- 15 W C	illici tilai	1 13 1.		
Civic Address	S					·	Permit No		
Climate Zone	»:	Number of Bedrooms			(A)	A bedroom is a room wi window (minimum dimen		nsions apply), a	
То	Total Floor area of conditioned spa			ft²	(B)	closet and a closing interior door.			
	erior Volume of Dwelling		ft ³		Total volui spaces	heated interior			
.5 ACH (air o	.5 ACH (air changes/hr) = Volume x $0.5 \div 60 =$			cfm	(C)		pliances exceed y require make-		
1. Principal V	entilation	n System Exhaust Fan M	Iinimu	n Air-1	flow R	ate			
	oom count	from Box (A) and Total squ	uare foo	tage fro	m Box	(B) above	and Table 9.	32.3.5. to	
determine Minim	ıum Requ	iired Prinicpal Exhaust	System	Capac	city		cfm (l	D)	
2. Principal S	•								
a) Exhaust F	an contin	nuous running Make					Sone	e Rating	
Location: _			8	Capaci it 0.2 E	SP	cf y @0.4ES		st be \geq than Box (D)	
Use actual fa	n cfm in B luct	Equivalent Length Sox(E) above and Table 9.32 ft + Exterior hood 30ft + num Maximum Equivalent Length	mber of	90° elbo	ows	X 10 ft =	=Equi		
b) Fan Duct s		_inches Ø Duct type:S							
-		nd Bathroom Exhaust Form spot Exhaust requirement		-list be	low if	Principal	Exhaust Fa	n meets all or	
	REQUIRED	EΣ	XHAUST	EQUIF	PMENT				
	EXHAUST RATE	Spot Exhaus	st Kitcher	& Bath	WALL	/CEILING	FANS	Ex.Fan/CEV	
ROOM	Table	I dil ividice de iviodei	CFM @ 0.2 ESP			ng per Table 9.32.3.8.(3)		Principal System CFM	
	9.32.3.6		Manf. Rated	Duct Di rigid	flex	Max. Equiv. Length per table	Installed Equiv. Length	System Crivi	

See Ventilation Guidelines Appendix page 16-A

installation instructions or use good engineering practice to size duct.

* For fan capacities exceeding 175cfm in Table 9.32.3.8(3), follow manufacturer's

TOTAL (must =

Box E)

5. Required Inlets for passive Ventilation Air Supply a) Location: High wall (minimum 6 ft above floor) List all rooms with inlets: Required in each bedroom, and at least one common area
b) Inlet Size: Free Area must be greater than or equal to 4 Sq In
6. If Heated Crawlspace present, state method of ventilating
MAKE-UP AIR Requirements 1. NAFFVA (Naturally Aspirated Fuel Fired Vented Appliance) or radon present in dwelling unit? Sentence 9.32.4.1 Yes, Proceed to Step 2 Do, Omit Steps 2 & 3 2. Exhaust Appliance present which exceeds Box C 0.5 ACH: Yes, Proceed to Step 3 Yes, Commit to No such appliance. Omit Step 3 Depressurization Test (See CAUTION, TECA Vent Manual pg 24)
3. Use Active Make-up Air for Exhaust Appliance.
Make-up Air Fan required: Exhaust Appliance Actual Installed Cfm
Fan Make Model Make-up Air Fan Cfm
Duct diameterinches
Fan Location Fan ducted to a) Active Make-up Air delivered to an Unoccupied Area first (not directly to room containing the appliance). i) Tempering Required per 9.32.4.1.(4)(a): Show calculation & describe how make-up air will be tempered to at least 34°F (1°C) before entering unoccupied are ii) Transfer Grill Required: Size 1 sq in of gross area per 2 cfm): Transfer grill size sq. in. Location iii) Additional Tempering Required per 9.32.4.1.(4)(b) before transfer to occupied area: Show calculation and
describe how make-up air will be further tempered to at least 54°F (12°C). OR b) Active Make-up Air delivered to an Occupied Area: Tempering Required. Show calculation and described how make-up air will be tempered to at least 54°F (12°C).
Installer Certification: I hereby certify that the design and installation of the ventilation system complies with the 2012 B.C. Building Code, 2014 Section 9.32 Amendment. 2014 TECA Ventilation Certification Stamp Print Name
Signature
Company
Phone
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