Permits applied for after 01 December 2015

2014 Amendment to Section 9.32 Ventilation

Ventilation Checklist 1—Forced Air Systems SENTENCE 9.32.3.4(2)

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

Civic Address		Perr	nit No		
Climate Zone: <u>5</u> Number of Bedrooms	(A)	A bedroom is a window (minim	a room with an openable uum dimensions apply), a		
Total Floor area of living space	ft ² (B)	closet and a clos	ing interior door.		
Total Interior Volume of Dwelling	ft ³	Total volume includes all heated inte spaces (including crawlspace if heated)			
.5 ACH (air changes/hr) = Volume x $0.5 \div 60 =$	cfm (C)	(C) Exhaust appliances exceeding .5 ACH may require make-up air.			
1. Principal Ventilation System Exhaust Fan Mi	nimum Air-flow	Rate			
Use the bedroom count from Box (A) and Total squa	are footage from Bo	ox (B) above and	Table 9.32.3.5. to		
determine	8				
Minimum Required Prinicpal Exhaust S	ystem Capacity	с	efm (D)		
2. Principal System Fan Choice					
a) Exhaust Fan continuous running Make	Model	L	Sone Rating		
	Capacity [
Location:	at 0.2 ESP	cfm	(E) Must be \geq than Box (D)		
	If CEV, capac	tity @0.4ESP			
3. Fan Duct Size and Equivalent Length					
a) Installed Equivalent Length:					
Length of duct $ft + Ext. hood 30 ft + ($	# elbows at 10) ft each =	$\underline{}) = \underline{} ft (F)$		
b) Choose type of duct:	Flex duct	or Rigid (s	smooth) duct		
c) Duct size required to flow Box E cfm through B Use Table 9.32.3.8 (3) to determine duct size.	ox F equivalent le	ngth of duct	= in Ø		

4. **Required Kitchen and Bathroom Exhaust Fans:** Re-list below if Principal Exhaust Fan meets all or part of Kitchen/Bathroom spot Exhaust requirements.

	REQUIRED	E	EXHAUST EQUIPMENT							
	EXHAUST RATE	Spot Exhau	Spot Exhaust Kitchen & Bath WALL/CEILING FANS Ex.Fan/CEV							
ROOM	Table	Fan Make & Model	CFM	*Duc	et Sizing	g per Table	9.32.3.8.(3)	Principal		
9.32.3.6			@ 0.2 ESP Manf.	Duct D	ia (in Ø)	Max. Equiv.	Installed Equiv.	System CFM		
			Rated	rigid	flex	table	Length			
* 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, Duct Sizing for Larger Fans. © March 2015 TECA All Rights Reserved Checklist 1, pg1of2

 5. Fresh Air must be ducted from outside to Return Air of Forced Air Heating a) Ventilation air duct is connected not more than 15ft, nor less than 10ft upstream of the 	ng for distribution. he heating appliance, unless a flow control						
device is used. b) Duct Size for Fresh Air intake to RA. Choose one.							
Rigid Duct: 4" Ø minimum, must be insulated & vapour barriered for full length, OR Elex Duct: 5"Ø minimum, must be insulated & vapour barriered for full length							
<i>c) Furnace fan continuous operation.</i>							
6. Forced Air Heating System is ducted to supply air to every bedroom and	any level without a bedroom.						
7. If Heated Crawlspace present, (Choose one)							
<u>No</u> RA grille in crawlspace, choose ventilation Option 1, 2, or 3 per sentence 9	0.32.3.7 (2)						
MAKE-UP AIR Requirements							
 1. NAFFVA (Naturally Aspirated Fuel Fired Vented Appliance) present in dwelling No, Omit Steps 2 & 3 Yes. Proceed to Step 2 	g unit? (per Sentence 9.32.4.1)						
2. Exhaust Appliance present which exceeds Box C 0.5 ACH:							
No such appliance . Omit Step 3	2.0						
Yes, Commit to Depressurization Test (See CAUTION, TECA Vent Manual pg Yes, Proceed to Step 3	(24)						
3. Use Active Make-up Air for Exhaust Appliance. (Choose a or b)							
Make-up Air Fan required:Exhaust Appliance	Actual Installed Cfm						
Fan Make Model M	lake-up Air Fan Cim						
Fan interconnected with exhaust appliance fan Fan Location							
a) Active Make-up Air delivered to an Unoccupied Area first (not directly to roo	om containing the appliance).						
i) Tempering Required per 9.32.4.1.(4)(a):	6 · · · · · ·						
Show calculation how make-up air will be tempered to at least $34^{\circ}F(1^{\circ}C)$ be	fore entering unoccupied area.						
$\frac{\text{Make-up Fan cfm}}{\text{X 1.08 X (34^{\circ} F ^{\circ} F \text{ Winter Design Temp})}}$	your location) = (kw)						
3412 BTUH/kw ii) Transfer Grill Required: Size 1 sq in of gross area per 2 cfm: Transfer grill siz	Duct Heater						
iii) Additional Tempering Required per 9.32.4.1.(4)(b) before transfer to occupie	d area: Show calculation and describe						
how make-up air will be further tempered to at least 54°F (12°C).							
$\frac{\text{Make-up Fan} _ \text{cfm x } 1.08 \text{ x } (54^{\circ} \text{ F} - 34^{\circ} \text{F})}{2.412 \text{ pfm ut}} = _$	(kw) Heat from unoccupied area						
3412 BTUH/kw	required to raise temp by 20°F						
Tempered by: OB b) Active Make-up Air delivered to an Occupied Area: Tempering Peculies	d Show calculation how make up air will						
be tempered to at least 54°F (12°C).	u. Show calculation now make-up an win						
Make-up Fan cfm x 1.08 x (54° F $-$ °F Winter Design Temp	your location) = (kw)						
3412 BTUH/kw	Duct Heater						
	© March 2015 TECA All Rights Reserved						
Installer Certification:	2012 TECA Ventilation						
I hereby certify that the design and installation of the ventilation system	Certification Stamp						
complies with the 2012 B.C. Building Code, 2014 Section 9.32 Amendment.							
Date							
Print Name							
Signature							
Company							
Phone							

Permits applied for after 01 December 2015

2014 Amendment to Section 9.32 Ventilation

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 Heating System to meet principal ventilation system requirements.

Civic Address		Permit No
Climate Zone: <u>5</u> Number of Bedrooms	(A	A) A bedroom is a room with an openable window (minimum dimensions apply), a
Total Floor area of living space	ft ² (E	closet and a closing interior door. 3)
Total Interior Volume of Dwelling	ft ³	Total volume includes all heated interior spaces (including crawlspace if heated).
.5 ACH (air changes/hr) = Volume x $0.5 \div 60 =$	cfm ((Exhaust appliances exceeding .5 ACH may require make-up air.
1. Use the bedroom count (Box A above) and tot	al square foota	ge (Box B above) to determine the

Minimum principal Air Flow rate required by Table 9.32.3.5 Minimum Required Rate	cfm	(D)
2. HRV Make Model		
3. HRV Capacity: CFM @ 0.4 ESP. Box E must meet Box D requirement.	cfm	(E)

4. List Exhaust Grilles Locations: 1 minimum @ 6 ft 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 exhaust requirements list below.

	REQUIRED	E	EXHAUST EQUIPMENT							
	EXHAUST RATE	Spot Exhau	Spot Exhaust Kitchen & Bath WALL/CEILING FANS HRV							
POOM Table		Fan Make & Model	CFM	*Duc	et Sizing	per Table	9.32.3.8.(3)	Principal		
9.3	9.32.3.6		(a) 0.2 ESP Manf. Rated	Duct D rigid	ia (in Ø) flex	Max. Equiv. Length per table	Installed Equiv. Length	System CFM		
* Easter com	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*

(must = Box E)

Guidelines Appendix page 16-A, Duct Sizing for Larger Fans. © March 2015 TECA All Rights Reserved Checklist 2, pg1of2

6. HRV Fresh Air Distribution (Choose a or b)						
a) Supply Air from HRV direct connect to Return Air of a Force	ed Air Heating System:					
FA system fan and HRV fan continuous operation and						
FA system ducted to supply air to every bedroom and each floor level without a bedroom						
b) Supply Air from HRV distributed independently						
Ducted to every bedroom and each floor level without a bedroom an	nd					
HRV fan continuous operation						
7. If Heated Crawlspace present, (Choose one)						
Minimum of one Forced Air System RA grille located in the crawlspace, OR						
<u>No</u> RA grille in crawlspace, choose ventilation Option 1, 2, or 3 per sentence 9.32	2.3.7 (2)					
MAKE-UP AIR Requirements						
1. NAFFVA (Naturally Aspirated Fuel Fired Vented Appliance) present in dwelling	g unit? (per Sentence 9.32.4.1)					
No, Omit Steps 2 & 3						
Yes, Proceed to Step 2						
2. Exhaust Appliance present which exceeds Box C 0.5 ACH:						
No such appliance . Umit Step 5 Ves Commit to Depressurization Test (See CAUTION TECA Vent Manual ng '	24)					
Yes. Proceed to Step 3	24)					
3 Use Active Make-up Air for Exhaust Appliance (Choose a or b)						
Make-up Air Fan required: Exhaust Appliance /	Actual Installed Cfm					
Fan Make Model M	ake-up Air Fan Cfm					
Duct diameter inches Fan Location						
Fan interconnected with exhaust appliance fan Fan ducted to						
a) Active Make-up Air delivered to an Unoccupied Area first (not directly to roor	n containing the appliance)					
i) Tempering Required per 9.32.4.1.(4)(a):	in containing the appriance).					
Show calculation how make-up air will be tempered to at least 34°F (1°C) before	ore entering unoccupied area.					
Make up Fan cfm X 1.08 X (34° F °F Winter Design Temp v	our location) (1)					
Make-up Fan cfm X 1.08 X (34° F – °F Winter Design Temp y	$\frac{\text{rour location}}{\text{Duct Heater}} = \frac{1}{10000000000000000000000000000000000$					
Make-up Fan cfm X 1.08 X (34° F – °F Winter Design Temp y 3412 BTUH/kw	$\frac{\text{rour location}}{\text{Duct Heater}} = \frac{1}{\text{Duct Heater}}$					
Make-up Fan cfm X 1.08 X (34° F – °F Winter Design Temp y 3412 BTUH/kw ii) Transfer Grill Required: Size 1 sq in of gross area per 2 cfm: Transfer grill size iii) Additional Tempering Required per 9.32.4.1.(4)(b) before transfer to occupied	rour location) = (kw) Duct Heater esq. in. Location d area: Show calculation and describe					
 Make-up Fan cfm X 1.08 X (34° F – °F Winter Design Temp y 3412 BTUH/kw ii) Transfer Grill Required: Size 1 sq in of gross area per 2 cfm: Transfer grill size iii) Additional Tempering Required per 9.32.4.1.(4)(b) before transfer to occupied how make-up air will be further tempered to at least 54°F (12°C). 	$\frac{\text{rour location}}{\text{Duct Heater}} = \frac{\text{(kw)}}{\text{Duct Heater}}$ $\frac{\text{sq. in. Location}}{\text{d area: Show calculation and describe}}$					
Make-up Fan cfm X 1.08 X (34° F – °F Winter Design Temp y 3412 BTUH/kw ii) Transfer Grill Required: Size 1 sq in of gross area per 2 cfm: Transfer grill size iii) Additional Tempering Required per 9.32.4.1.(4)(b) before transfer to occupied how make-up air will be further tempered to at least 54°F (12°C). Make-up Fancfm x 1.08 x (54° F – 34°F) =	<u>rour location</u>) =(kw) Duct Heater esq. in. Location d area: Show calculation and describe (kw) Heat from unoccupied area					
$ \underline{\text{Make-up Fan cfm}}_X 1.08 \text{ X } (34^{\circ} \text{ F} - \underline{}_{\circ} ^{\circ} \text{F Winter Design Temp y } 3412 \text{ BTUH/kw} $ ii) Transfer Grill Required: Size 1 sq in of gross area per 2 cfm: Transfer grill size iii) Additional Tempering Required per 9.32.4.1.(4)(b) before transfer to occupied how make-up air will be further tempered to at least 54°F (12°C). Make-up Fancfm x 1.08 x (54° F - 34°F) = 3412 \text{ BTUH/kw}	<u>rour location</u>) =(kw) Duct Heater esq. in. Location d area: Show calculation and describe (kw) Heat from unoccupied area required to raise temp by 20°F					
Make-up Fan cfm X 1.08 X (34° F – °F Winter Design Temp y 3412 BTUH/kw ii) Transfer Grill Required: Size 1 sq in of gross area per 2 cfm: Transfer grill size iii) Additional Tempering Required per 9.32.4.1.(4)(b) before transfer to occupied how make-up air will be further tempered to at least 54°F (12°C). Make-up Fan cfm x 1.08 x (54° F – 34°F) = 3412 BTUH/kw	<u>rour location</u>) =(kw) Duct Heater esq. in. Location d area: Show calculation and describe (kw) Heat from unoccupied area required to raise temp by 20°F					
$ \underline{\text{Make-up Fan cfm}}_X 1.08 \text{ X } (34^{\circ} \text{ F} - \underline{\qquad} ^{\circ} \text{F Winter Design Temp y} 3412 \text{ BTUH/kw} $ ii) Transfer Grill Required: Size 1 sq in of gross area per 2 cfm: Transfer grill size iii) Additional Tempering Required per 9.32.4.1.(4)(b) before transfer to occupied how make-up air will be further tempered to at least 54°F (12°C). Make-up Fancfm x 1.08 x (54° F - 34°F) =3412 \text{ BTUH/kw} $ \underline{\text{Tempered by:}} \underline{\qquad} \\ \underline{\text{Tempered by:}} \underline{\qquad} \\ \underline{\text{CD b}} Active Make-up Air delivered for a second for the second $	<u>rour location</u>) =(kw) Duct Heater esq. in. Location d area: Show calculation and describe (kw) Heat from unoccupied area required to raise temp by 20°F					
$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$	<u>rour location</u>) =(kw) Duct Heater esq. in. Location d area: Show calculation and describe (kw) Heat from unoccupied area required to raise temp by 20°F d. Show calculation how make-up air will					
$\underline{Make-up \ Fan \ cfm}_X \ 1.08 \ X \ (34^{\circ} \ F - \underline{ \ }^{\circ} F \ Winter \ Design \ Temp \ y} \ 3412 \ BTUH/kw$ ii) Transfer Grill Required: Size 1 sq in of gross area per 2 cfm: Transfer grill size iii) Additional Tempering Required per 9.32.4.1.(4)(b) before transfer to occupied how make-up air will be further tempered to at least 54^{\circ} F (12^{\circ} C). Make-up \ Fan \ \underline{ \ }^{\circ} Grmma \ x \ 1.08 \ x \ (54^{\circ} \ F \ - \ 34^{\circ} F) \ = \underline{ \ }^{\circ} 3412 \ BTUH/kw Tempered by: $\underline{ \ }^{\circ} GR \ b) \ Active \ Make-up \ Air \ delivered \ to \ an \ Occupied \ Area: \ Tempering \ Required \ be tempered to at least \ 54^{\circ} F \ (12^{\circ} C).$ $\underline{ \ }^{\circ} GR \ b) \ Active \ Make-up \ Air \ delivered \ to \ an \ Occupied \ Area: \ Tempering \ Required \ be tempered \ to \ at least \ 54^{\circ} F \ (12^{\circ} C).$ $\underline{ \ }^{\circ} F \ (12^{\circ} C).$	<u>rour location</u>) =(kw) Duct Heater esq. in. Location d area: Show calculation and describe (kw) Heat from unoccupied area required to raise temp by 20°F d. Show calculation how make-up air will					
$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$	<pre>rour location) =(kw) Duct Heater esq. in. Location area: Show calculation and describe(kw) Heat from unoccupied area required to raise temp by 20°F d. Show calculation how make-up air will rour location) =(kw) </pre>					
$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$	$\frac{\text{rour location}}{\text{Duct Heater}} = \underline{\qquad} (\text{kw})$ $\frac{\text{Duct Heater}}{\text{Duct Heater}}$ $\frac{\text{sq. in. Location}}{\text{d area: Show calculation and describe}$ $\underline{\qquad} (\text{kw}) \text{ Heat from unoccupied area}$ $\frac{\text{required to raise temp by 20°F}}{\text{d. Show calculation how make-up air will}}$ $\frac{\text{rour location}}{\text{Duct Heater}} = \underline{\qquad} (\text{kw})$					
$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$	$\frac{\text{your location}}{\text{Duct Heater}} = \underline{\qquad} (\text{kw})$ $\frac{\text{Duct Heater}}{\text{Duct Heater}}$ $\frac{\text{sq. in. Location}}{\text{d area: Show calculation and describe}$ $\underline{\qquad} (\text{kw}) \text{ Heat from unoccupied area}$ $\frac{\text{required to raise temp by 20°F}}{\text{d. Show calculation how make-up air will}}$ $\frac{\text{rour location}}{\text{Duct Heater}} = \underline{\qquad} (\text{kw})$ $\frac{\text{2012 TECA Ventilation}}{\text{calculation}}$					
$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$	$\frac{\text{your location}}{\text{Duct Heater}} = \underline{\qquad} (\text{kw})$ $\frac{\text{Duct Heater}}{\text{Duct Heater}}$ $\frac{\text{sq. in. Location}}{\text{d area: Show calculation and describe}$ $\underline{\qquad} (\text{kw}) \text{ Heat from unoccupied area} \text{ required to raise temp by 20°F}$ $\frac{\text{d. Show calculation how make-up air will}}{\text{cour location}} = \underline{\qquad} (\text{kw}) \text{ Duct Heater}}$ $\frac{2012 \text{ TECA Ventilation} \text{ Certification Stamp}}{\text{Certification Stamp}}$					
$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$	$\frac{\text{your location}}{\text{Duct Heater}} = \underline{\qquad} (\text{kw})$ $\frac{\text{Duct Heater}}{\text{Duct Heater}}$ $\frac{\text{sq. in. Location}}{\text{d area: Show calculation and describe}$ $\underline{\qquad} (\text{kw}) \text{ Heat from unoccupied area}$ $\text{required to raise temp by 20°F}$ $\frac{\text{d. Show calculation how make-up air will}}{\text{cour location}} = \underline{\qquad} (\text{kw})$ $\underline{\text{Duct Heater}}$ $\frac{2012 \text{ TECA Ventilation}}{\text{Certification Stamp}}$					
$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$	$\frac{\text{your location}}{\text{Duct Heater}} = \underline{\qquad} (\text{kw})$ $\frac{\text{Duct Heater}}{\text{Duct Heater}}$ $\frac{\text{sq. in. Location}}{\text{d area: Show calculation and describe}$ $\underline{\qquad} (\text{kw}) \text{ Heat from unoccupied area} \text{ required to raise temp by 20°F}$ $\frac{\text{d. Show calculation how make-up air will}}{\text{cour location}} = \underline{\qquad} (\text{kw}) \text{ Duct Heater}}$ $\frac{2012 \text{ TECA Ventilation} \text{ Certification Stamp}}{\text{Certification Stamp}}$					
$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$	$\frac{\text{your location}}{\text{Duct Heater}} = \underline{\qquad} (\text{kw})$ $\frac{\text{Duct Heater}}{\text{Duct Heater}}$ $\frac{\text{sq. in. Location}}{\text{d area: Show calculation and describe}}$ $\underline{\qquad} (\text{kw}) \text{ Heat from unoccupied area} \text{ required to raise temp by 20°F}}$ $\frac{\text{d. Show calculation how make-up air will}}{\text{cour location}} = \underline{\qquad} (\text{kw}) \text{Duct Heater}}$ $\frac{2012 \text{ TECA Ventilation} \text{ Certification Stamp}}{\text{Certification Stamp}}$					
$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$	$\frac{\text{your location}}{\text{Duct Heater}} = \underline{\qquad} (\text{kw})$ $\frac{\text{Duct Heater}}{\text{Duct Heater}}$ $\frac{\text{sq. in. Location}}{\text{d area: Show calculation and describe}}$ $\underline{\qquad} (\text{kw}) \text{ Heat from unoccupied area} \text{ required to raise temp by 20°F}$ $\frac{\text{d. Show calculation how make-up air will}}{\text{cour location}} = \underline{\qquad} (\text{kw}) \text{Duct Heater}}$ $\frac{2012 \text{ TECA Ventilation} \text{Certification Stamp}}{\text{Certification Stamp}}$					
Make-up Fan cfmX 1.08 X (34° F – °F Winter Design Temp y 3412 BTUH/kw ii) Transfer Grill Required: Size 1 sq in of gross area per 2 cfm: Transfer grill size iii) Additional Tempering Required per 9.32.4.1.(4)(b) before transfer to occupied how make-up air will be further tempered to at least 54°F (12°C). Make-up Fancfm x 1.08 x (54° F – 34°F) = 3412 BTUH/kw Tempered by: OR b) Active Make-up Air delivered to an Occupied Area: Tempering Required be tempered to at least 54°F (12°C). Make-up Fan cfm x 1.08 x (54° F –°F Winter Design Temp y @ March 2015 TECA All Rights Reserved 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. Date Print Name	$\frac{\text{your location}}{\text{Duct Heater}} = \underline{\qquad} (\text{kw})$ $\frac{\text{Duct Heater}}{\text{Duct Heater}}$ $\frac{\text{sq. in. Location}}{\text{d area: Show calculation and describe}$ $\underline{\qquad} (\text{kw}) \text{ Heat from unoccupied area} \text{ required to raise temp by 20°F}$ $\frac{\text{d. Show calculation how make-up air will}}{\text{cour location}} = \underline{\qquad} (\text{kw}) \text{ Duct Heater}}$ $\frac{2012 \text{ TECA Ventilation} \text{ Certification Stamp}}{\text{Certification Stamp}}$					
Make-up Fan cfmX 1.08 X ($34^\circ F - $ °F Winter Design Temp y 3412 BTUH/kw ii) Transfer Grill Required: Size 1 sq in of gross area per 2 cfm: Transfer grill size iii) Additional Tempering Required per 9.32.4.1.(4)(b) before transfer to occupied how make-up air will be further tempered to at least 54°F (12°C). Make-up Fancfm x 1.08 x ($54^\circ F - 34^\circ F$) 3412 BTUH/kw Tempered by: OR b) Active Make-up Air delivered to an Occupied Area: Tempering Required be tempered to at least 54°F (12°C). Make-up Fan cfm x 1.08 x ($54^\circ F - $ °F Winter Design Temp y 3412 BTUH/kw © March 2015 TECA All Rights Reserved 3412 BTUH/kw Print Name Print Name Signature	$\frac{\text{your location}}{\text{Duct Heater}} = \underline{\qquad} (\text{kw})$ $\frac{\text{Duct Heater}}{\text{Duct Heater}}$ $\frac{\text{sq. in. Location}}{\text{d area: Show calculation and describe}}$ $\underline{\qquad} (\text{kw}) \text{ Heat from unoccupied area} \text{ required to raise temp by 20°F}}$ $\frac{\text{d. Show calculation how make-up air will}}{\text{cour location}} = \underline{\qquad} (\text{kw}) \text{Duct Heater}}$ $\frac{\text{2012 TECA Ventilation} \text{Certification Stamp}}$					
$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$	$\frac{\text{your location}}{\text{Duct Heater}} = \underline{\qquad} (\text{kw})$ $\frac{\text{Duct Heater}}{\text{Duct Heater}}$ $\frac{\text{sq. in. Location}}{\text{d area: Show calculation and describe}}$ $\underline{\qquad} (\text{kw}) \text{ Heat from unoccupied area required to raise temp by 20°F}$ $\frac{\text{d. Show calculation how make-up air will}}{\text{rour location}} = \underline{\qquad} (\text{kw})$ $\underline{\text{Duct Heater}}$ $\frac{2012 \text{ TECA Ventilation Certification Stamp}}{\text{Certification Stamp}}$					
Make-up Fan cfmX 1.08 X (34° F – °F Winter Design Temp y 3412 BTUH/kw ii) Transfer Grill Required: Size 1 sq in of gross area per 2 cfm: Transfer grill size iii) Additional Tempering Required per 9.32.4.1.(4)(b) before transfer to occupied how make-up air will be further tempered to at least 54°F (12°C). Make-up Fancfm x 1.08 x (54° F – 34°F) 3412 BTUH/kw Tempered by:	$\frac{\text{your location}}{\text{Duct Heater}} = \underline{\qquad} (\text{kw})$ $\frac{\text{Duct Heater}}{\text{Duct Heater}}$ $\frac{\text{sq. in. Location}}{\text{d area: Show calculation and describe}$ $\underline{\qquad} (\text{kw}) \text{ Heat from unoccupied area} \text{ required to raise temp by 20°F}$ $\frac{\text{d. Show calculation how make-up air will}}{\text{cour location}} = \underline{\qquad} (\text{kw}) \text{ Duct Heater}}$ $\frac{2012 \text{ TECA Ventilation} \text{ Certification Stamp}}{\text{Certification Stamp}}$					
Make-up Fan cfm X 1.08 X (34° F – °F Winter Design Temp y 3412 BTUH/kw ii) Transfer Grill Required: Size 1 sq in of gross area per 2 cfm: Transfer grill size iii) Additional Tempering Required per 9.32.4.1.(4)(b) before transfer to occupied how make-up air will be further tempered to at least 54°F (12°C). Make-up Fan cfm x 1.08 x (54° F – 34°F)	$\frac{\text{your location}}{\text{Duct Heater}} = \underline{\qquad} (\text{kw})$ $\frac{\text{Duct Heater}}{\text{Duct Heater}}$ $\frac{\text{sq. in. Location}}{\text{l area: Show calculation and describe}}$ $\underline{\qquad} (\text{kw}) \text{ Heat from unoccupied area required to raise temp by 20°F}$ $\frac{\text{I. Show calculation how make-up air will}}{\text{rour location}} = \underline{\qquad} (\text{kw})$ $\underline{\text{Duct Heater}}$ $\frac{\text{2012 TECA Ventilation Stamp}}{\text{Certification Stamp}}$					
Make-up Fan cfmX 1.08 X (34° F – °F Winter Design Temp y 3412 BTUH/kw ii) Transfer Grill Required: Size 1 sq in of gross area per 2 cfm: Transfer grill size iii) Additional Tempering Required per 9.32.4.1.(4)(b) before transfer to occupied how make-up air will be further tempered to at least 54°F (12°C). Make-up Fancfm x 1.08 x (54° F – 34°F) _ = 3412 BTUH/kw Tempered by:	$\frac{\text{pour location}}{\text{Duct Heater}} = \underline{\qquad} (kw)$ $\frac{\text{pour location}}{\text{larea: Show calculation and describe}}$ $\underline{\qquad} (kw) \text{ Heat from unoccupied area required to raise temp by 20°F}$ $\frac{\text{d. Show calculation how make-up air will}}{\text{pour location}} = \underline{\qquad} (kw)$ $\underline{\text{Duct Heater}}$ $\frac{2012 \text{ TECA Ventilation Certification Stamp}}{}$					

© Dec 2015 TECA 2015 Code Amendment Edition **3** Ventilation Ch

2014 Amendment to Section 9.32 Ventilation

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: <u>5</u> Number of Bedrooms	(A)	A bedroom is a room with an openable window (minimum dimensions apply), a
Total Floor area of living space	ft ² (B)	closet and a closing interior door.
Total Interior Volume of Dwelling	ft ³	Total volume includes all heated interior spaces (including crawlspace if heated).
.5 ACH (air changes/hr) = Volume x $0.5 \div 60 =$	cfm (C)	Exhaust appliances exceeding .5 ACH may require make-up air.
1. Principal Ventilation System Exhaust Fan Mi	nimum Air-flow Ra	ate
Use the bedroom count from Box (A) and Total sour	are footage from Box ((B) above and Table 9.32.3.5 to
determine		
Minimum Required Prinicpal Exhaust S	ystem Capacity	cfm (D)
2. Principal System Fan Choice	L	
a) Exhaust Fan continuous running Make	Model	Sone Rating
· · · · · · · · · · · · · · · · · · ·	Capacity [
Location:	at 0.2 ESP	cfm (E) Must be \geq than Box (D)
	If CEV capacity	7 @0.4ESP
3. Fan Duct Size and Equivalent Length	II CL , capacity	
a) Installed Equivalent Length:		
Length of duct $ft + Fxt hood 30 ft + ($	# elbows at 10 fr	t each =) = ft (F)
b) Choose type of duct:	Fley duct	or Rigid (smooth) duct \Box
$ = \frac{1}{2} \sum_{i=1}^{n} \frac$		
Use Table 9.32.3.8 (3) to determine duct size.	Box F equivalent le	ength of duct = $in \emptyset$

4. **Required Kitchen and Bathroom Exhaust Fans:** Re-list below if Principal Exhaust Fan meets all or part of Kitchen/Bathroom spot Exhaust requirements.

	REQUIRED	E	EXHAUST EQUIPMENT						
	EXHAUST R ATE	Spot Exhau	Spot Exhaust Kitchen & Bath WALL/CEILING FANS Ex.Fan/CEV						
ROOM	Table	Fan Make & Model	CFM	*Duc	et Sizing	g per Table	9.32.3.8.(3)	Principal	
9.32.3.6			@ 0.2 ESP Manf.	Duct Dia (in Ø)		Max. Equiv.	Installed Equiv.	System CFM	
			Rated	rigid	flex	table	Length		
* For fan capacities exceeding 175cfm in Table 9.32.3.8(3), follow manufacturer's nstallation instructions or use good engineering practice to size duct. See <i>Ventilation</i>									

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5. CRV Fresh Air Intake & Mixi a) Box G CFM is minimum 2 to b) Box G CFM is minimum 2 to	ing Fan (Choose a or b) times Box E cfm for +5°F	and warmer winter des	sign temperature.	
D) Box G CFM is minimum 3	Model	+5°F winter design tem	perature.	
c) Duct Size for Fresh Air intal	ke into return air of CRV:	Capacity @ 0.4 ESP	cfm	(G)
Min 4"Ø rigid duct, must be Min 5"Ø, flex duct, must be	insulated & vapour barriered	l for full length, OR	CIIII	(0)
6. CRV Fresh Air Circulation (C	Thoose a or b)			
a) Draw air from bedrooms andb) Draw air from common area	d Supply air to common a a and Supply air to bedroo	rea. ms.		
7. If Heated Crawlspace present				
Choose ventilation option 1, 2 MAKE-UP AIR Requirement	, or 3 per sentence 9.32.3.7 ents	7 (2).		
1. NAFFVA (Naturally Aspirated No, Omit Steps 2 & 3	Fuel Fired Vented Appliar	nce) present in dwelling	unit? (per Sentence	9.32.4.1)
Tes , Proceed to Step 2		CH .		
2. Exhaust Appliance present wi	nch exceeds Box C 0.5 A	CH:		
Yes, Commit to Depressurizat	tion Test (See CAUTION,	TECA Vent Manual pg 2	24)	
3. Use Active Make-up Air for Ex	haust Appliance. (Choose	a or b)		
Make-up Air Fan required:		Exhaust Appliance A	ctual Installed Cfr	n
Fan Make	Model	M a	ake-up Air Fan Cfr	n
Duct diameterind	ches Fan L	ocation		
a) Active Make-up Air delivered i) Tempering Required per 9.32 Show calculation how make	to an Unoccupied Area .4.1.(4)(a): -up air will be tempered to	first (not directly to room o at least 34°F (1°C) befo	n containing the app ore entering unoccur	liance). vied area.
Make-up Fan cfm X	X 1.08 X (34° F –°	F Winter Design Temp y	our location)	= (kw)
	3412 B	TUH/kw		Duct Heater
ii) Transfer Grill Required: Sizeiii) Additional Tempering Requhow make-up air will be fu	e 1 sq in of gross area per ired per 9.32.4.1.(4)(b) be arther tempered to at leas	2 cfm: Transfer grill size fore transfer to occupied at 54°F (12°C).	sq. in. Locatio area: Show calculat	n ion and describe
Make-up Fan	cfm x 1.08 x (54° F	$-34^{\circ}F) = $	(kw) Heat from	n unoccupied area
	3412 BTUH/kw		required to ra	uise temp by 20°F
Tempered by: OR b) Active Make-up Air deliv be tempered to at least 54°	ered to an Occupied Are F (12°C).	a: Tempering Required	Show calculation h	now make-up air will
Make-up Fan cim x	$1.08 \times (54^{\circ} \mathbf{F} - \underline{})$	F winter Design Temp y	$(our location) = _$	(kw)
© March 2015 TECA All Rights Res	3412 BTU	H/kw	Dı	ict Heater
Installer Certification: I hereby certify that the design and complies with the 2012 B.C. Build	d installation of the ventila ling Code, 2014 Section 9	ation system .32 Amendment.	2012 TECA V Certification	entilation Stamp
Date				
Print Name				
Signature				
Company				
Phone				
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Permits applied for after 01 December 2015

2014 Amendment to Section 9.32 Ventilation

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

Use this checklist for small (\leq 1800 sqft), single level, **non-forced air** heated dwellings located in *mild coastal & moderate interior climates where winter design temperature is warmer than* $-4^{\circ}F$.

Civic Address		Permi	it No		
Climate Zone: <u>5</u> Number of Bedrooms	(A) A bedroom is a room with an openal window (minimum dimensions apply)				
Total Floor area of living space	ft ² (B)	closet and a closing interior door.			
Total Interior Volume of Dwelling	ft ³	Total volume incl spaces (including c	ludes all heated interior crawlspace if heated).		
.5 ACH (air changes/hr) = Volume x $0.5 \div 60 =$	cfm (C)	Exhaust appliances exceeding .5 ACH may require make-up air.			
1. Principal Ventilation System Exhaust Fan Min	nimum Air-flow R	ate			
Use the bedroom count from Box (A) and Total squa	re footage from Box	(B) above and T	Table 9.32.3.5. to		
determine	U				
Minimum Required Prinicpal Exhaust S	ystem Capacity	cfr	m (D)		
2. Principal System Fan Choice					
a) Exhaust Fan continuous running Make	Model_		_ Sone Rating		
	Capacity [-		
Location:	at 0.2 ESP	cfm ((E) Must be \geq than Box (D)		
	If CEV, capacit	y @0.4ESP			
3. Fan Duct Size and Equivalent Length	_				
a) Installed Equivalent Length:					
Length of ductft + Ext. hood $30 \text{ ft} + ($	# elbows at 10	ft each =) = ft (F)		
b) Choose type of duct:	Flex duct] or Rigid (sn	nooth) duct 🗌		
c) Duct size required to flow Box E cfm through Use Table 9.32.3.8 (3) to determine duct size.	Box F equivalent l	ength of duct	= in Ø		

4. **Required Kitchen and Bathroom Exhaust Fans:** Re-list below if Principal Exhaust Fan meets all or part of Kitchen/Bathroom spot Exhaust requirements.

	REQUIRED	E	EXHAUST EQUIPMENT						
	EXHAUST RATE	Spot Exhau	Spot Exhaust Kitchen & Bath WALL/CEILING FANS						
POOM	Table	Fan Make & Model	CFM	*Duc	et Sizing	g per Table	9.32.3.8.(3)	Principal	
KOOM	9.32.3.6		@ 0.2 ESP Manf.	Duct D	ia (in Ø)	Max. Equiv. Length per	Installed Equiv.	System CFM	
			Rated	rigid	flex	table	Length		
* For fan capacities exceeding 175cfm in Table 9.32.3.8(3), follow manufacturer's nstallation instructions or use good engineering practice to size duct. See <i>Ventilation</i>									

Guidelines Appendix page 16-A, Duct Sizing for Larger Fans. © March 2015 TECA All Rights Reserved Checklist 4, pg1 of 2

 5. Required Inlets for passive Ventilation Air Supply a) High wall installation (minimum 6 ft above floor) b) Located in each bedroom and at least one common area c) Inlet Free Area greater than or equal to 4 Sq In 	
 6. If Heated Crawlspace present Choose ventilation option 1, 2, or 3 per sentence 9.32.3.7 (2). 	
 MAKE-UP AIR Requirements 1. NAFFVA (Naturally Aspirated Fuel Fired Vented Appliance) present in dwelling unit? (per Sentence 9.32.4.1) No, Omit Steps 2 & 3 Yes, Proceed to Step 2 	
 2. Exhaust Appliance present which exceeds Box C 0.5 ACH: No such appliance. Omit Step 3 Yes, Commit to Depressurization Test (See CAUTION, TECA Vent Manual pg 24) Yes, Proceed to Step 3 	
3. Use Active Make-up Air for Exhaust Appliance. (Choose a or b) Make-up Air Fan required: Exhaust Appliance Actual Installed Cfm Fan Make Model Make-up Air Fan Cfm	
Duct diameterinches Fan Location	
 Fan interconnected with exhaust appliance fan. Fan ducted to	
Make-up Fan cfm X 1.08 X (34° F – °F Winter Design Temp your location) = (I	KW)
3412 BTUH/kw Duct Heate	
	r
 ii) Transfer Grill Required: Size 1 sq in of gross area per 2 cfm: Transfer grill sizesq. in. Location iii) Additional Tempering Required per 9.32.4.1.(4)(b) before transfer to occupied area: Show calculation and describ how make-up air will be further tempered to at least 54°F (12°C). Make-up Fancfm x 1.08 x (54° F = 34°F) (kw) Heat from uppequired area 	r e
 ii) Transfer Grill Required: Size 1 sq in of gross area per 2 cfm: Transfer grill sizesq. in. Location iii) Additional Tempering Required per 9.32.4.1.(4)(b) before transfer to occupied area: Show calculation and describ how make-up air will be further tempered to at least 54°F (12°C). Make-up Fancfm x 1.08 x (54° F - 34°F) =(kw) Heat from unoccupied area 3412 BTUH/kw 	r e xa F
 ii) Transfer Grill Required: Size 1 sq in of gross area per 2 cfm: Transfer grill sizesq. in. Location iii) Additional Tempering Required per 9.32.4.1.(4)(b) before transfer to occupied area: Show calculation and describ how make-up air will be further tempered to at least 54°F (12°C). Make-up Fancfm x 1.08 x (54° F - 34°F) =(kw) Heat from unoccupied area 3412 BTUH/kw Tempered but 	r e ea F
ii) Transfer Grill Required: Size 1 sq in of gross area per 2 cfm: Transfer grill sizesq. in. Locationiii) Additional Tempering Required per 9.32.4.1.(4)(b) before transfer to occupied area: Show calculation and describ how make-up air will be further tempered to at least 54°F (12°C). Make-up Fancfm x 1.08 x (54° F - 34°F) =(kw) Heat from unoccupied area 3412 BTUH/kw required to raise temp by 20° Tempered by: OR b) Active Make-up Air delivered to an Occupied Area: Tempering Required. Show calculation how make-up air be tempered to at least 54°F (12°C). Make-up Fan cfm x 1.08 x (54° F°F Winter Design Temp your location) (hw)	r e F T will

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Table 9.32.3.5. Principal Ventilation System Exbaust Fan Minimum Air-flow Rate													
Forming part of Sentence 9.32.3.5.(1)													
Minimum Air-flow Rate, L/s and cf/m													
Floor	r Area	Number of Bedrooms											
		0	0-1 2-3		-3	4-5		6-7		>7			
m²	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	28 59		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	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)									
	Minimum Exhaust Fan Air-flow Rate, L/s and cf/m								
Room	Intern	nittent	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			Fan Capacity, L/s and cf/m												
(Cross Section Area for Rectangular Ducts)															
mm (cm²) in (ft²)		1421	L/s	cf/m	L/s	cf/m	L/s	cf/m	L/s	cf/m	L/s	cf/m	L/s	cf/m	
		in (ft ⁻)		25	53	40	85	50	106	60	127	70	148	80	170
125	(123)	4.92	(0.13)	32		1	15	-		-		-		-	
150	(177)	5.91	(0.19)	46		4	10	28		18		13		_	
175	(240)	6.89	(0.26)	46		4	16	46		46		46		24	
200	(314)	7.87	(0.34)	46		2	46 46		46		46		46		
					I	Rigid D)uct								
Equivalent Diameter				Fan Canacity 1/s and of/m											
(Cross Section Area for Rectangular Ducts)				ran capacity, L/s and Ci/m											
mm (cm²)		in (ft²)		L/s	cf/m	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	80	170
100	(79)	3.94 (0.09)		3	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		4	46	46		46		46		46	