

WHOLE HOUSE VENTILATION WORKSHEET

WHOLE HOUSE VENTILATION USING PRESCRIPTIVE METHOD TO BE COMPLETED FOR NEW HOMES & REMODELS OF 750 SQ. FT. OR MORE

INDICATE WHICH ACCEPTED WHOLE HOUSE FAN YOU WILL BE USING: →

(LIST PROVIDED AT BOTTOM OF REFERENCE TABLES)

REQUIRED

Check one box below to describe which one of the four prescriptive Whole House Ventilation Systems you will be using.

Option 1 – Intermittent Whole House Ventilation Using **Exhaust Fans** (IRC M1508.4)

- ____ CFM Exhaust Fan Flow Rating per Table 1 (Reference Tables). Location of whole house fan(s) must be shown on the plans. **(Indicate on the blank line, which CFM Rating you are choosing)**
- Fan Controls: 24 hour clock timer with capability of continuous operation, manual and automatic control & accessible.
- Whole house fans located 4 feet or less from the interior grille shall have a sone of 1.0 or less at 0.1 inches w.g.
- Outdoor air shall be distributed to each habitable room by individual outdoor air inlets. Where outdoor air supplies are separated from exhaust points by doors, provisions shall be made to ensure air flow by installation of distribution ducts, undercutting doors, grilles, transoms, or similar means. Doors shall be undercut a minimum of ½" above the floor covering.
- Prescriptive exhaust duct size as per Table 2.

Option 2 – Intermittent Whole House Ventilation Integrated with a **Forced Air Heating System** (IRC M1508.5)

- Integrated whole house ventilation systems shall provide outdoor air at the rate calculated using Section M1508.3. The delivered ventilation rate for intermittently operating ventilation systems shall be the combination of its delivered capacity from Table 1, and its ventilation effectiveness and daily fractional operation time from Table M1508.3.
- The system shall distribute outdoor air to each habitable room through the forced air systems ducts with an outdoor air inlet duct connected at the return air plenum of the forced air system, at a point within 4 feet upstream of the air handler.
- The system shall be equipped with a motorized damper connected to the automatic damper. The timer shall be capable of operating without energizing other energy-consuming appliances.
- At the time of final inspection, the automatic control timer shall be set to operate the whole house ventilation system for at least 8 hours a day.

Option 3 – Intermittent Whole House Ventilation Using a **Supply Fan** (IRC M1508.6)

- Outdoor air shall be distributed through the forced-air system ducts or through dedicated ducts to habitable rooms. Supply fans shall have the capacity to provide the amount of air specified in Table 1 and air must be filtered before delivery.
- ____ inch outdoor air inlet duct, connected to the furnace supply air stream or return, sized per Table 4. **(Indicate on the blank line, which size you are choosing)**
- All supply ducts in the conditioned space shall be insulated to a minimum of R-4.
- Fresh Air Inlet duct Back-draft Damper Selection: **(Choose one)**
 - Calibrated manual volume damper installed and set to meet the measured flow rates in Table 1 by field testing with a pressure gauge and/or following manufacturer's instructions.
 - A manual volume damper installed and set to meet the measured flow rates specified in Table 1 by field testing with a flow hood or flow measuring station.
 - An automatic flow-regulating device sized to the specified flow rate in Table 1, which provides constant flow over a pressure range of 0.20 to 0.60 inches water gauge.
- At the time of final inspection, the automatic control timer shall be set to operate the whole house ventilation system for at least 8 hours a day.

Option 4 – Whole House Ventilation Using a **Heat Recovery Ventilation System** (IRC M1508.7)

- All duct work in heat recovery system shall be sized and installed per the manufacturer's instructions.
- System minimum flow rating shall not be less than specified in Table 1.
- Heat recovery ventilation systems shall have a filter on the upstream side of the heat exchange in both the intake and exhaust airstreams with a minimum efficiency ratings value of (MERV) 6.
- Outdoor air inlets shall be screened or otherwise protected from entry by leaves or other material and located per M1508.7.4.
- Ventilation supply ducts in the conditioned space upstream of the heat exchanger shall be insulated to a min. of R-4.

REFERENCE TABLES

Table 1: Ventilation Rates for all Group R Occupancies four stories and less*

Minimum and Maximum Ventilation Rates: Cubic Feet per Minute (CFM)

Floor Area, ft ²	Number of Bedrooms													
	2 or Less		3		4		5		6		7		8	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
<500	50	75	65	98	80	120	95	143	110	165	125	188	140	210
501-1000	55	83	70	105	85	128	100	150	115	173	130	195	145	218
1001-1500	60	90	75	113	90	135	105	158	120	180	135	203	150	225
1501-2000	65	98	80	120	95	143	110	165	125	188	140	210	155	233
2001-2500	70	105	85	128	100	150	115	173	130	195	145	218	160	240
2501-3000	75	113	90	135	105	158	120	180	135	203	150	225	165	248
3001-3500	80	120	95	143	110	165	125	188	140	210	155	233	170	255
3501-3500	85	128	100	150	115	173	130	195	145	218	160	240	175	263
3501-4000	95	143	110	165	125	188	140	210	155	233	170	255	185	278

*For residences that exceed 8 bedrooms, increase the minimum requirement listed for 8 bedrooms by an additional 15 CFM per bedroom. The maximum CFM is equal to 1.5 times the minimum.

Table 2: Prescriptive Exhaust Duct Sizing

Fan Tested CFM @ 0.25" W.G	Min. Flex Diameter	Max. Length (feet)	Min. Smooth Diameter	Max. Length Feet	Max. Elbows ¹
50	4 inch	25	4 inch	70	3
50	5 inch	90	5 inch	100	3
50	6 inch	No Limit	6 inch	No Limit	3
80	4 inch ²	N.A.	4 inch	20	3
80	5 inch	15	5 inch	100	3
80	6 inch	90	6 inch	No Limit	3
100	5 inch ²	N.A.	5 inch	50	3
100	6 inch	15	6 inch	No Limit	3
125	6 inch	15	6 inch	No Limit	3
125	7 inch	70	7 inch	No Limit	3

- For each additional elbow subtract 10 feet from maximum length
- Flex ducts of this diameter are not permitted with fans of this size.

Table 3: Prescriptive Integrated Forced Air Supply Duct Sizing

Required Flow (CFM) Per Table 3-2	Min. Smooth Duct Diameter	Min. Flexible Duct Diameter	Max. Length ¹	Max. # of Elbows ²
50-80	6"	7"	20'	3
80-125	7"	8"	20'	3
115-175	8"	10"	20'	3
170-240	9"	11"	20'	3

1. For lengths over 20' increase duct diameter 1 inch
2. For elbows numbering more than 3 increase duct diameter 1 inch

Table 4: Prescriptive Supply Fan Duct Sizing

Supply Fan Tested at 0.40" W.G.		
Specified Volume from Table 3-2	Minimum Smooth Duct Diameter	Minimum Flexible Duct Diameter
50 – 90 CFM	4 inch	5 inch
90 – 150 CFM	5 inch	6 inch
150 – 250 CFM	6 inch	7 inch
250 – 400 CFM	7 inch	8 inch

Examples of Accepted Whole House Fans at .25 w.g.*

Model	Series	CFM	Sones	
Air King	AKF80L-LS	70	1.0	
Air King	AKF50LS	33	0.3	
Air King	AK80LS	64	0.6	
Air King	AK80LS1	68	1.0	
Air King	AK150LS	116	0.8	
Reversomatic	QCF-110	84	1.0	
Reversomatic	QCF-125CO	112	1.0	
Nutone	LS-80	55	0.8	
Nutone	LS-80L	55	0.8	
Nutone	LS80LF	55	0.8	
Nutone	LS80SE	68	0.9	
Nutone	LS100SE	90	0.9	
Nutone	QTRNO80L	80	1.0	
Panasonic	FV-07VFL1	4" Duct	54	0.9
Panasonic	FV-11VHL1	96	1.0	
Panasonic	FV-07VQ2	50	0.3	
Panasonic	FV-08VQ2	73	0.7	
Panasonic	FV11VQD2LS+	51	<0.3	
Panasonic	FV-07VQL3	50	<0.3	
Panasonic	FV-08VQL3	76	0.6	

Table M1508.3: Ventilation Effectiveness for Intermittent Fans

Qf = Qr/(εf) Where: Qf = Outdoor air flow rate Qr = Ventilation air requirement (from Table 1) ε = Ventilation effectiveness (from Table 1508.3) f = Fractional operation time (from Table M1508.3)	Daily Fractional Operation Time, f	Ventilation Effectiveness, ε
	f ≤ 35%	0.33
	35% ≤ f < 60%	0.50
	60% ≤ f < 80%	0.75
	80% ≤ f	1.0

For systems designed to operate at least once every three hours, ventilation effectiveness can be 1.0.

***Fan list** was derived from the "February 2012 HVI-Certified Products Directory". **This list may change periodically – You are required to indicate on the top of page 5 an Acceptable Whole House Fan**

You may search this list by going to this link:

http://www.hvi.org/proddirectory/HVICPD_Sec1_1Feb2012.pdf

Please note this is not a complete list of accepted fans. Other specific brands and models may be accepted with proper documentation verifying minimum ratings.

Be sure to indicate which fan you are choosing.

2009 I.M.C. Alternate Whole house Exhaust Only System Whole House Exhaust Only Ventilation Systems designed in accordance with ASHRAE Standard 62.2-2007 shall be permitted.