



Residential HVAC Equipment Design Form – One or Two Family

Complete and submit this form with **your Mechanical Permit application** to certify the proposed mechanical equipment for a one- or two-family and townhouse has been sized and the whole-house mechanical ventilation system meets IECC minimum airflow and efficacy requirements.

Permit Application Information

Provide the full address of property and the Permit Application Number

A

Property Address: _____

Permit Application Number: _____

Applicant / Owner

Provide the contact information for the Owner / Applicant

B

Property Owner Name: _____

Applicant Name: _____ Phone Number: _____

HVAC Equipment Design for One- or Two-Family, and townhouses of any height.

I. Equipment Sizing and Selection Checklist Items

Check the items in the table to certify the proposed mechanical equipment has been sized and selected in accordance with ACCA Manuals J and S.

Note: Homes pursuing ENERGY STAR certification may attach a completed ENERGY STAR National HVAC Design Report in lieu of completing the remainder of this form.

C

HVAC Equipment Design for One- or Two-Family and Townhouses

I. Equipment Sizing and Selection Checklist Items

Certify the following required items are compliant:

N1103.1.1 [R403.1.1] Thermostats are programmable	<input type="checkbox"/>
N1103.3.1 [R403.3.1] Ducts $\geq 3"$ diameter located outside conditioned spaces shall be insulated to \geq R-8	<input type="checkbox"/>
N1103.3.1 [R403.3.1] Ducts $< 3"$ diameter located outside conditioned spaces shall be insulated to \geq R-6	<input type="checkbox"/>
N1103.3.4.1 [R403.3.4.1] Air handler shall have a manufacturer's designation of $\leq 2\%$ air leakage when tested per ASHRAE 193	<input type="checkbox"/>
N1103.3.5 [R403.3.5] The <i>Duct and Envelope Testing</i> form shall be completed and submitted to the inspector	<input type="checkbox"/>
N1103.4 [R403.4] HVAC pipe insulation is R-3 minimum (e.g. hydronic systems, refrigerant lines) and outdoor insulation is protected	<input type="checkbox"/>
N1103.7 [R403.7] Manual J report, including heating and cooling design loads, shall be submitted to the inspector	<input type="checkbox"/>
N1103.7 [R403.7] Heating and cooling equipment shall be selected in accordance with Manual S, based on loads calculated in accordance with Manual J	<input type="checkbox"/>
Manual S. Specified cooling equipment capacity shall be ≤ 1.15 times the design load or the next larger nominal size, whichever is greater. (Exception: Heat pumps may exceed the design load by 1.25 times or the next nominal size)	<input type="checkbox"/>
Manual S. Specified heating equipment capacity shall be ≤ 1.40 times the design load or the next larger nominal size, whichever is greater	<input type="checkbox"/>
M1505.4 Whole-house mechanical ventilation worksheet has been completed (Section II)	<input type="checkbox"/>



(Continued)

II. Whole House Mechanical Ventilation

Complete this section to certify a whole-house mechanical ventilation system has been specified and the fan meets IECC minimum airflow (CFM) and efficacy (Watts/CFM) requirements.

**A balanced ventilation system is required to have concurrently operating mechanical exhaust and mechanical supply whereby the total mechanical exhaust airflow rate is within 10% of the total mechanical supply airflow rate.

II. Whole House Mechanical Ventilation

1. Fill in the conditioned floor area and number of bedrooms for the dwelling:
Conditioned Floor Area = _____ ft² Number of bedrooms: _____
2. Will the fan operate continuously or intermittently: Continuous Intermittent
3. **If the fan will be operated intermittently**, multiply the airflow value from Table M1505.4.3(1) by the appropriate value in Table 1505.4.3(2) below. Note: The fan must operate on a **pre-set schedule**.

IRC Table M1505.4.3(1)

Continuous Whole-House Mechanical Ventilation System Airflow Rate Requirements

Dwelling Unit Floor Area (square feet)	Number of Bedrooms				
	0-1	2-3	4-5	6-7	>7
Airflow in CFM					
<1,500	30	45	60	75	90
1,501 – 3,000	45	60	75	90	105
3,001 – 4,500	60	75	90	105	120
4,501 – 6,000	75	90	105	120	135
6,001 – 7,500	90	105	120	135	150
>7,500	105	120	135	150	165

IRC Table M1505.4.3(2)

Intermittent Whole-House Mechanical Ventilation Rate Factors

Run-time Percentage in Each 4-hour Segment	25%	33%	50%	66%	75%	100%
Factor	4.0	3.0	2.0	1.5	1.3	1.0

4. Enter the required airflow = _____ CFM**
 - The fan's rated air flow rate meets or exceeds the value in Item 4.
 - The fan's rated efficacy meets or exceeds the appropriate value below:
 - HRV or ERV fans, and Air-handler that is integrated to tested & listed HVAC Equipment: **1.2 cfm/watt**
 - In-line supply or exhaust fan: **3.8 cfm/watt**
 - Other exhaust fans 90 cfm or greater: **3.5 cfm/watt**
 - Other exhaust fans less than 90 cfm: **2.8 cfm/watt**

**Where exception for minimum mechanical ventilation rate reductions are proposed by up to 30% per 2021 IRC, Section M1505.4.3, the following conditions must be met for the ventilation system:

- Whole house ventilation system is a *balanced ventilation system***.
- Ducted system supplies ventilation air directly to each bedroom, and to one or more of the following rooms (select one or more of the following):
 - Living Room
 - Dining Room
 - Kitchen

Design Professional / Mechanical Contractor's Name: _____

Design Professional / Mechanical Contractor's Signature: _____ Date: _____