Continuous Supply/Exhaust Fan Ratings

Last Updated: 03/14/2016

Scope

**ENERGY STAR Certified Homes** (Version 3.0, Revision 08) requires that exhaust fans used continuously to meet code-required ventilation levels must have a sound rating of ≤ 1 sone as rated by the manufacturer.

- ENERGY STAR exempts the following from this ≤ 1 sone requirement:
  - HVAC air handler fans
  - Fans with a rated flow of ≤ 400 CFM
  - Fans that are remotely mounted, i.e., with 4 feet of ductwork between the fan and the intake grill, and with the fan located outside of the living space (e.g., in the attic).

- Fans that are set for intermittent operation to meet code-required ventilation levels must have a manufacturer-rated sound rating of ≤ 3 sones.

See the [Compliance Tab](#) for related codes and standards requirements, and criteria to meet national programs such as DOE’s Zero Energy Ready Home program, ENERGY STAR Certified Homes, and Indoor airPLUS.
Description

To meet ASHRAE 62.2 ventilation requirements, the HVAC designer may specify that an exhaust fan should be set for continuous operation. Fans that are overly noisy are more likely to be turned off by the home owner, circumventing the fan’s intended purpose of providing required whole-house ventilation. To encourage continual use, quiet fans should be specified and installed. Fan noise is measured in sones; the lower the sone, the quieter the fan. Exhaust or supply fans installed for continuous use should have a sone rating of 1.0 sones or less. For comparison, a quiet refrigerator operates at about 1.0 sones.

Fans exempted from this requirement include HVAC air handlers, and remote-mounted fans. To be considered exempt, a remote-mounted fan must be mounted outside the habitable spaces, including bathrooms and hallways, and there must be at least 4 feet of ductwork between the fan and intake grill.

For more on continuously operating exhaust fans and ASHRAE 62.2 requirements, see Continuously Operating Ventilation and Exhaust Fans.

How to Select 1.0 Sone Supply and Exhaust Fans

1. When specifying and purchasing bathroom fans that will be exhaust or supply fans that will be used continuously, select quiet fans with a sone rating of 1.0 or less. The sone rating should be listed on the product label or in the manufacturer’s literature.

![Figure 1](image_url) - The manufacturer’s label found on this exhaust fan housing shows a sone rating of 1.0.
Ensuring Success

In homes where an exhaust or supply fan is installed that will operate continuously, the HERS rater should inspect to ensure that the fan’s noise level is rated at less than or equal to 1.0 sone by the manufacturer.
Climate

No climate specific information applies.
Training

Right and Wrong Images

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NuTone

CINCINNATI, OHIO 45227

MODEL 769RL "B" UNIT
120V 60Hz 2.0 AMPS

FOR USE WITH MODELS
763RL/769RL "A" UNIT ONLY
TYPE IC - INHERENTLY PROTECTED
70 CFM

3.0 SONES

87558

PATENT PENDING

SONES

1.5

LISTED FANS
969Q
E17814

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Compliance

The Compliance tab contains both program and code information. Code language is excerpted and summarized below. For exact code language, refer to the applicable code, which may require purchase from the publisher. While we continually update our database, links may have changed since posting. Please contact our [webmaster](mailto:webmaster) if you find broken links.

**ENERGY STAR Certified Homes**

ENERGY STAR Certified Homes (Version 3/3.1, Revision 08), Rater Field Checklist

7. Whole-House Mechanical Ventilation System

7.4 System fan rated ? 3 sones if intermittent and ? 1 sone if continuous, or exempted

8. Local Mechanical Exhaust - In each kitchen and bathroom, a system is installed that exhausts directly to the outdoors and meets one of the following Rater-measured airflow and manufacturer-rated sound level standards:

8.1 Kitchen Airflow at Continuous Rate: ? 5 ACH, based on kitchen volume

8.1 Kitchen Sound at Recommended Continuous Rate: ? 1 sone

8.2 Bathroom Airflow at Continuous Rate: ? 20 CFM

8.2 Bathroom Sound at Required Continuous Rate: ? 1 sone

Footnotes:

(42) The whole-house ventilation air flow and local exhaust air flows shall be measured by the Rater using RESNET Standard 380 upon publication and, in the interim, a flow hood, flow grid, anemometer, or substantially equivalent method.

(43) Whole-house mechanical ventilation fans shall be rated for sound at no less than the airflow rate in Item 2.3 of the HVAC Design Report. Fans exempted from this requirement include HVAC air handler fans, remote-mounted fans, and intermittent fans rated ? 400 CFM. To be considered for this exemption, a remote-mounted fan must be mounted outside the habitable spaces, bathrooms, toilets, and hallways and there shall be ? 4 ft. ductwork between the fan and intake grill. Per ASHRAE 62.2-2010, habitable spaces are intended for continual human occupancy; such space generally includes areas used for living, sleeping, dining, and cooking but does not generally include bathrooms, toilets, hallways, storage areas, closets, or utility rooms.

(47) Continuous bathroom local mechanical exhaust fans shall be rated for sound at no less than the airflow rate in Item 8.2. Intermittent bathroom and both intermittent and continuous kitchen local mechanical exhaust fans are recommended, but not required, to be rated for sound at no less than the airflow rate in Items 8.1 and 8.2. Per ASHRAE 62.2-2010, an exhaust system is one or more fans that remove air from the building, causing outdoor air to enter by ventilation inlets or normal leakage paths through the building envelope (e.g., bath exhaust fans, range hoods, clothes dryers). Per ASHRAE 62.2-2010, a bathroom is any room containing a bathtub, shower, spa, or similar source of moisture.

(49) Kitchen volume shall be determined by drawing the smallest possible rectangle on the floor plan that encompasses all cabinets, pantries, islands, and peninsulas and multiplying by the average ceiling height for this area. Cabinet volume shall be included in the kitchen volume.

(50) For homes permitted through 01/01/2014: Homes are permitted to be certified without enforcement of this Item to provide partners with additional time to integrate this feature into their homes. For homes permitted on or after 01/01/2014: Homes shall meet this Item. Alternatively, the prescriptive duct sizing requirements in Table 5.3 of ASHRAE 62.2-2010 are permitted to be used for kitchen exhaust fans based upon the rated airflow of the fan at 0.25 IWC. If the rated airflow is unknown, ? 6 in. smooth duct shall be used, with a rectangular to round duct transition as needed. Guidance to assist partners with these alternatives is available at [energystar.gov/newhomesresources](https://energystar.gov/newhomesresources). As an alternative to Item 8.1, homes that are PHIUS+ certified are permitted to use a continuous kitchen exhaust rate of 25 CFM per 2009 IRC Table M1507.3.

ENERGY STAR Revision 08 requirements are required for homes permitted starting 07/01/2016.

**DOE Zero Energy Ready Home**

Exhibit 1: Mandatory Requirements. Certified under ENERGY STAR Qualified Homes Version 3.

**ASHRAE 62.2-2010, ASHRAE 62.2-2013, and ASHRAE 62.2-2016**

Ventilation and Acceptable Indoor Air Quality in Low-Rise Residential Buildings. The standard applies to spaces intended for human occupancy in single-family homes and multifamily homes that are three stories or less, including manufactured and modular homes. The standard provides minimum acceptable requirements for mechanical and natural ventilation in these spaces.

**2009, 2012, 2015, and 2018 IECC**

This topic is not specifically addressed in the IECC.

**2009, 2012, 2015, and 2018 IRC**

This topic is not specifically addressed in the IRC.
More Info.

Access to some references may require purchase from the publisher. While we continually update our database, links may have changed since posting. Please contact our webmaster if you find broken links.

Case Studies
None Available

References and Resources*

1. **DOE Zero Energy Ready Home National Program Requirements**
   - **Author(s):** Department of Energy
   - **Organization(s):** DOE
   - **Publication Date:** April, 2017
   - Standard requirements for DOE's Zero Energy Ready Home national program certification.

2. **ENERGY STAR Certified Homes, Version 3 (Rev. 08) National Program Requirements**
   - **Author(s):** U.S. Environmental Protection Agency
   - **Organization(s):** EPA
   - **Publication Date:** December, 2015
   - Webpage with links to Document outlining the program requirements for ENERGY STAR Certified Homes, Version 3 and 3.1 (Rev. 08).

3. **Fans, Ventilating for Consumers**
   - **Author(s):** Department of Energy, U.S. Environmental Protection Agency
   - **Organization(s):** DOE, EPA
   - **Publication Date:** January, 2013
   - Information sheet about the benefits of purchasing and installing ENERGY STAR rated fans and ventilation products.

*Publication dates are shown for formal documents. Dates are not shown for non-dated media. Access dates for referenced, non-dated media, such as web sites, are shown in the measure guide text.

Contributors to this Guide
The following authors and organizations contributed to the content in this Guide.

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