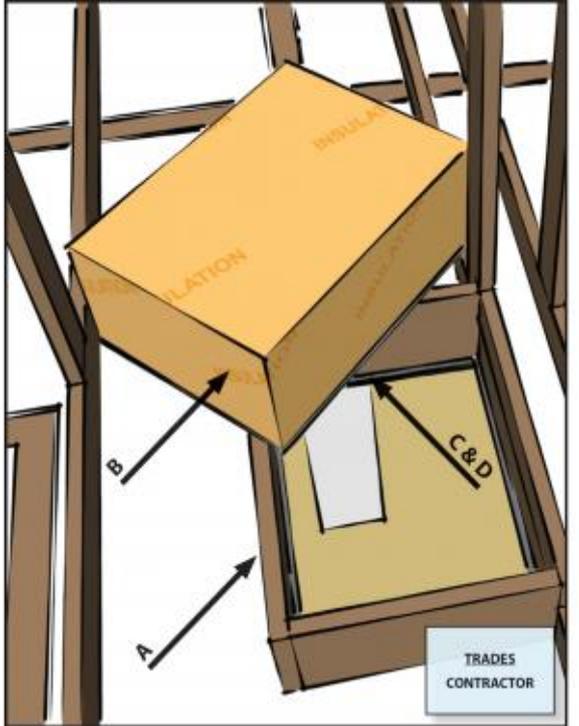


# Air Sealing Attic Access Panels/Doors/Stairs

Last Updated: 03/13/2018

## Scope



Air seal attic access panels and drop-down stairs to minimize air leakage.

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- Install a gasket around attic access openings to air seal between the opening and the panel covering. Insulate the cover with rigid foam that is glued in place or batt insulation that is mechanically fastened, e.g., with wires and screws.
- Install a durable, insulated cover for drop-down stairs that provide attic access and install an air-sealing gasket around the rim of the panel.
- Install blocking around the staircase or panel to serve as an insulation dam.

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.

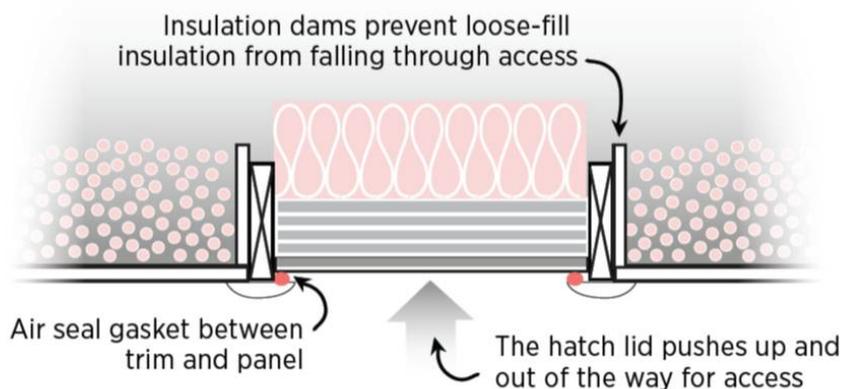
## Description

Good air-sealing and a continuous air barrier between the attic and the home's conditioned (living) space are important, not only to save energy and reduce fuel bills, but also to prevent moisture problems in the attic. Sealing holes in the attic ceiling reduces the house's "suction" (or stack effect) so less contaminants are drawn up into the house from the ground such as radon and other soil gases (Lstiburek 2010). Openings used for access to the attic such as access panels, doors into kneewalls, or dropdown stairs should be air sealed and insulated. To air seal, weather stripping should be added to either the frame or panel of the attic access panel or door and latch bolts or mechanical fastener should be installed that will pull the access door tight to the weatherstripping for an airtight seal. To reduce heat loss, these access panels, doors, or stairs should be insulated. Panels and doors can be insulated by gluing rigid foam to the panel or attaching batt insulation with bolts and wiring or metal strapping. Pull-down stair kits can be purchased with rigid insulation already attached to the panel. Alternatively some pull-down stair kits come with rigid insulation already attached to the inside of the back door panel, between the panel and the stairs. Or a rigid foam box-shaped cover can be constructed or purchased that fits over the stairs and is lifted and placed out of the way when accessing the attic.

The insulated and gasketed attic cover might be installed by the framer or the insulation contractor. This task should be included in the contract for the appropriate trade depending on the workflow at the specific job site.

### How to Air Seal Attic Access Panels

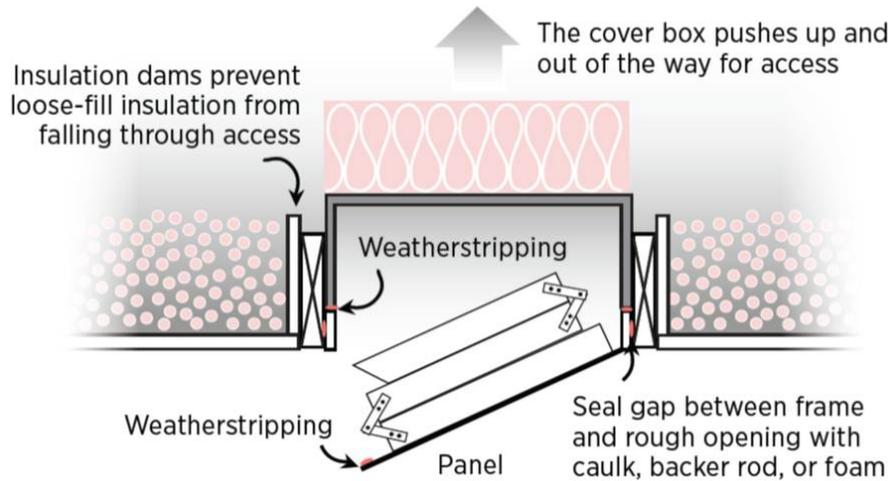
1. Install wood trim pieces on the ceiling side of attic access hole framing. The trim should extend one-half inch to one inch around the inside edge of the access hole forming a ledge. The access panel will rest on this trim.
2. Install weather stripping along the top of this ledge.
3. Cut the access panel with even edges and one-quarter inch to one-half inch of clearance around the edges.
4. Insulate the top of the access panel with rigid foam or fiberglass batt insulation that is glued or fastened with bolts and wires to the panel.



**Figure 1** - Air seal the attic access panel with a continuous gasket of weather stripping. (Image Source: [Air Sealing](#).)

### How to Air Seal Attic Pull-Down Stairs

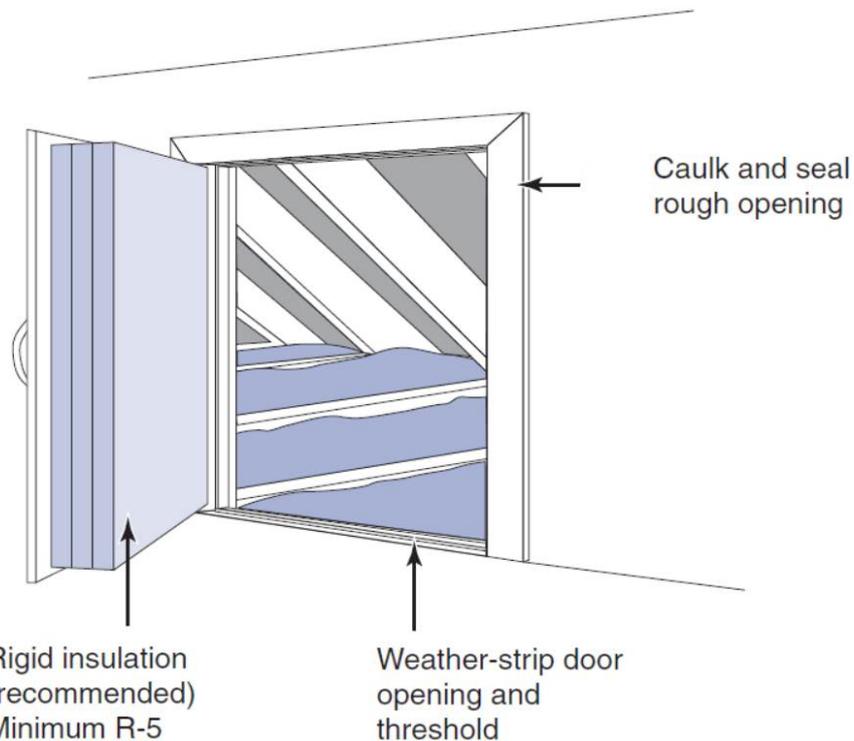
1. Install 1x2 or 1x3 wood trim pieces to surround the inside edge of the access hole framing. When closed, the back panel of the stairs will be rest up against this trim, so recess the trim enough to ensure the back panel will be flush with the ceiling.
2. Install weather stripping along the bottom edge of this trim or along the inside top edge of the back panel to act as a continuous gasket.
3. Install additional weather stripping along the top of this trim to provide air sealing for a box-shaped cover that will insulate the stairs.
  - a. Construct or purchase a box made of rigid foam insulation sized to fit the access hole. This box can be lifted and placed out of the way when accessing the attic. Additional batt insulation can be attached to the top of this box if desired.
  - b. Alternatively some pull-down stair kits come with rigid insulation already attached to the inside of the back door panel, between the panel and the stairs.
4. Add 1x8s or plywood strips cut to desired height to each side of the drop-down stairs framing to act as insulation dams to keep blown-in attic insulation from falling into the stairs.



**Figure 2** - Air seal the attic access pull-down stairs opening with weather stripping and construct or purchase a rigid foam box to insulate the opening. (Image Source: [Air Sealing.](#))

### How to Air Seal an Attic Door

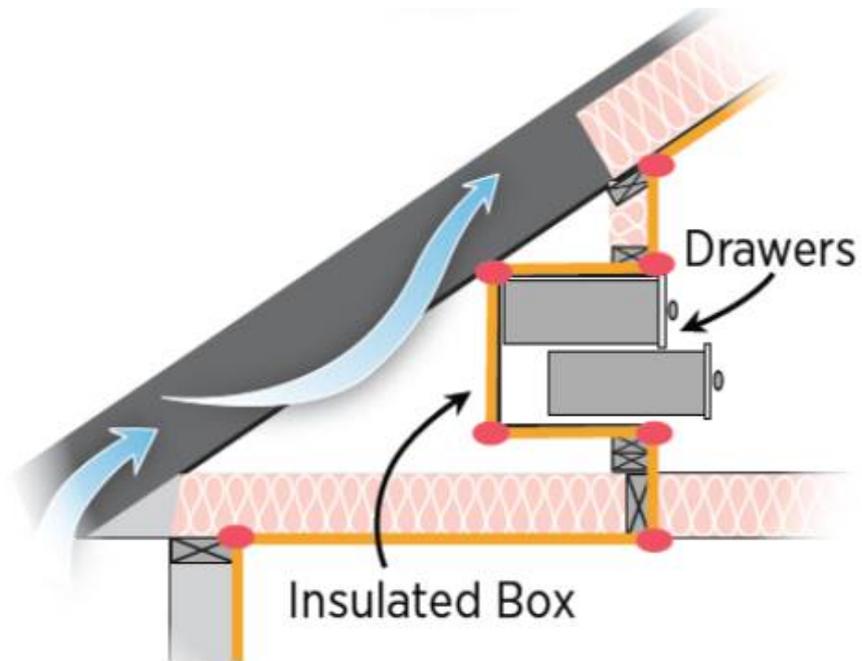
1. Install weather stripping along the inside door frame and threshold.
2. Install a latch that will pull the door tight to the frame and the weather stripping. Do not undercut the door.
3. Insulate the attic side of the door by gluing rigid foam to it or attaching batt insulation with screws and wire.



**Figure 3** - Air seal the attic kneewall door opening with weather stripping and insulate the door panel. (Image Source: [Air Sealing.](#))

### How to Air Seal an Attic Kneewall Drawer or Closet

1. Build framing for the drawer or closet box.
2. Insulate the framing rigid foam.
3. Line the box with drywall, OSB, or plywood that is caulked at the seams.



**Figure 4** - Build an airtight box around any drawers or closets built into attic knee walls that extend into uninsulated attic space. Insulate along air barrier (shown in yellow on drawing). Caulk at seams (red dots). (Image Source: [Air Sealing.](#))

## Ensuring Success

Consider installing attic access panels or drop-down stairs in unconditioned parts of the home, such as a garage or porch ceiling. If an attic access is installed in a conditioned room of the home, visually inspect that weather stripping has been installed around the opening and that the door or panel closes tightly along its entire perimeter. Air leakage can be detected during a blower door test with a smoke pencil, IR camera, or by feeling air flow with the hand.

## Climate

No climate specific information applies.

# Training

## Right and Wrong Images



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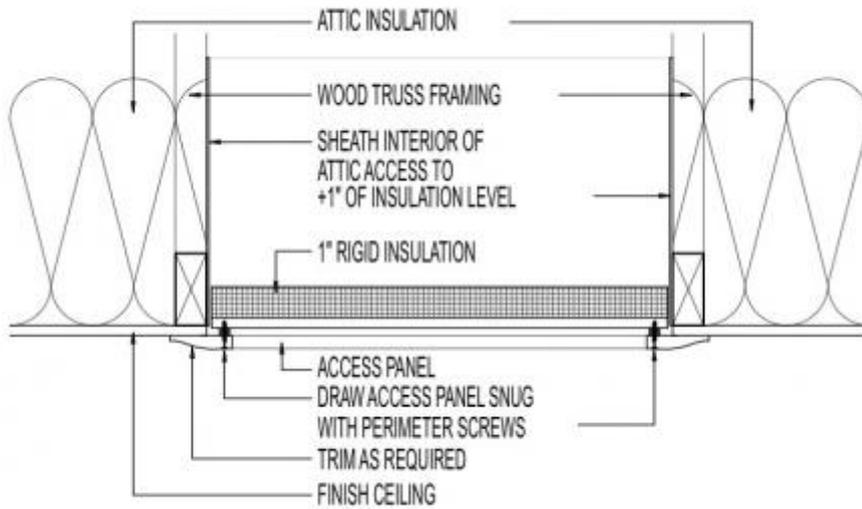


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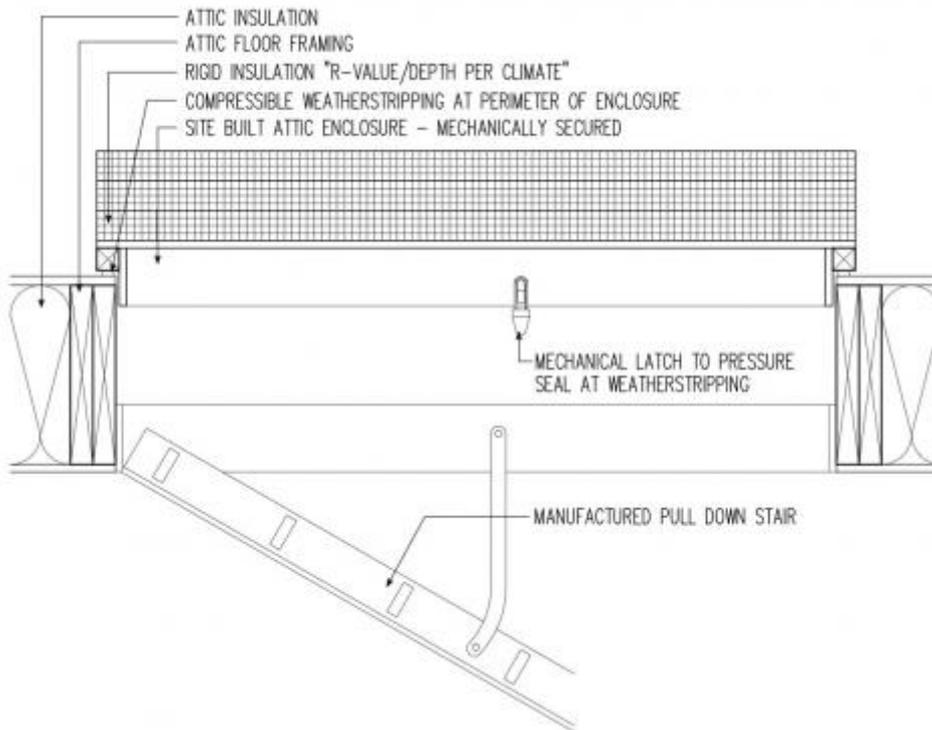
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# CAD



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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](#) if you find broken links.

## [ENERGY STAR Certified Homes](#)

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

Thermal Enclosure System:

4. Air Sealing (Unless otherwise noted below, "sealed" indicates the use of caulk, foam, or equivalent material)

4.10 Attic access panels, drop-down stairs, & whole-house fans equipped with durable ? R-10 cover that is gasketed (i.e., not caulked). Fan covers either installed on house side or mechanically operated.<sup>28</sup>

Footnotes:

(28) Examples of durable covers include, but are not limited to, pre-fabricated covers with integral insulation, rigid foam adhered to cover with adhesive, or batt insulation mechanically fastened to the cover (e.g., using bolts, metal wire, or metal strapping).

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

### [2009 IECC](#)

Section 402.2.3 Access hatches and doors. Access doors separating conditioned from unconditioned space are weather-stripped and insulated (without insulation compression or damage) to at least the level of insulation on the surrounding surfaces.

### [2012, 2015, and 2018 IECC](#)

Table R402.4.1.1 Air Barrier and Insulation Installation, Ceiling/attic: Access openings, drop down stairs or knee wall doors to unconditioned attic spaces are insulated and sealed.

#### **Retrofit:** [2009](#), [2012](#), [2015](#), and [2018 IECC](#)

Section R101.4.3 (Section R501.1.1 in 2015 and 2018 IECC). Additions, alterations, renovations, or repairs shall conform to the provisions of this code, without requiring the unaltered portions of the existing building to comply with this code. (See code for additional requirements and exceptions.)

### [2009 IRC](#)

Section N1102.2.3 Access hatches and doors. Access doors separating conditioned from unconditioned space are weather-stripped and insulated (without insulation compression or damage) to at least the level of insulation on the surrounding surfaces.

### [2012, 2015, and 2018 IRC](#)

Section N1102.2.4 Access hatches and doors. Access doors separating conditioned from unconditioned space are weather-stripped and insulated (without insulation compression or damage) to at least the level of insulation on the surrounding surfaces. Table N1102.4.1.1 Air Barrier and Insulation Installation, Ceiling/attic: Access openings, drop down stairs or knee wall doors to unconditioned attic spaces are insulated and sealed.

#### **Retrofit:** [2009](#), [2012](#), [2015](#), and [2018 IRC](#)

Section N1101.3 (Section N1107.1.1 in 2015 and 2018 IRC). Additions, alterations, renovations, or repairs shall conform to the provisions of this code, without requiring the unaltered portions of the existing building to comply with this code. (See code for additional requirements and exceptions.)

Appendix J regulates the repair, renovation, alteration, and reconstruction of existing buildings and is intended to encourage their continued safe use.

## 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

1. [New Whole-House Solutions Case Study: Schneider Homes, Inc., Village at Miller Creek, Burien, WA](#)  
(893KB)  
**Author(s):** PNNL  
**Organization(s):** PNNL  
**Publication Date:** February, 2013  
*Case study about new home construction in the marine climate that achieved 50% savings over the 2004 IECC.*
2. [New Whole-House Solutions Case Study: Tom Walsh & Co., New Columbia, Portland, OR](#)  
(867KB)  
**Author(s):** PNNL  
**Organization(s):** PNNL  
**Publication Date:** February, 2013  
*Case study about a new construction building project of 20 homes that earned HERS scores that represent greater than 50% energy savings in heating and cooling over the 2004 IECC.*

### References and Resources\*

1. [Building America Best Practices Series, Volume 10: Retrofit Techniques and Technologies: Air Sealing](#)  
**Author(s):** Baechler, Gilbride, Hefty, Cole, Williamson, Love  
**Organization(s):** Pacific Northwest National Laboratory, Oak Ridge National Laboratory  
**Publication Date:** April, 2010  
*Report identifying the steps to take, with the help of a qualified home performance contractor, to seal unwanted air leaks while ensuring healthy levels of ventilation and avoiding sources of indoor air pollution.*
2. [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.*
3. [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).*
4. [Guide to Attic Air Sealing](#)  
**Author(s):** Lstiburek  
**Organization(s):** Building Science Corporation  
**Publication Date:** January, 2010  
*Fact sheet providing detailed information about air sealing attics.*
5. [Thermal Enclosure System Rater Checklist Guidebook](#)  
**Author(s):** U.S. Environmental Protection Agency  
**Organization(s):** EPA  
**Publication Date:** October, 2011  
*Guide describing details that serve as a visual reference for each of the line items in the Thermal Enclosure System Rater Checklist.*

\*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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