

Duct Sealing Guidance

Ducts inside the building envelope

Site built home

- 1) A visual inspection of all accessible ducts will be completed as part of the energy audit process. Any gaps or holes greater than ¼" must be sealed; and
- 2) A Combustion Appliance Zone (CAZ) test will be completed as part of the energy audit process and again during the quality control inspection. If, during the worst case CAZ Test, the air handler causes a pressure difference in the CAZ that is negative two (-2) Pascal's or more (negative) the pressure must be relieved through either return duct sealing or pressure relief venting between the CAZ and the rest of the dwelling.

All duct sealing must be done in accordance with SWS 3.1602.1. The method of duct sealing will depend on the location of the leak in the duct system (see "**Methods for Sealing Rigid Metal Ducts**" below).

In modeling duct sealing inside the building envelope in the Weather Assistant (WA) software:

- Include duct sealing as part of a furnace replacement measure, or
- Model duct sealing as an itemized cost with health and safety as the measure type.

Ducts outside the building envelope

Site built home

Ducts outside the building envelope will be modeled for duct sealing in Weatherization Assistant National Energy Audit Tool (WA-NEAT) as an energy conservation measure. All ducts that have a savings to investment ratio (SIR) of 1.0 or greater will be sealed in accordance with SWS 3.1602.1. The method of duct sealing will depend on the location of the leak in the duct system (see "**Methods for Sealing Rigid Metal Ducts**" below). Ducts must be sealed prior to insulating to comply with SWS 4.1601.2b.

In modeling duct sealing and duct insulation for site built homes in WA-NEAT:

- An HVAC measure to insulate and air seal ducts can be created using the Uninsulated Supply Ducts button in the Heating Tab; or
- Duct sealing and duct insulation can be included as part of a furnace replacement measure;

Additional options for duct sealing only:

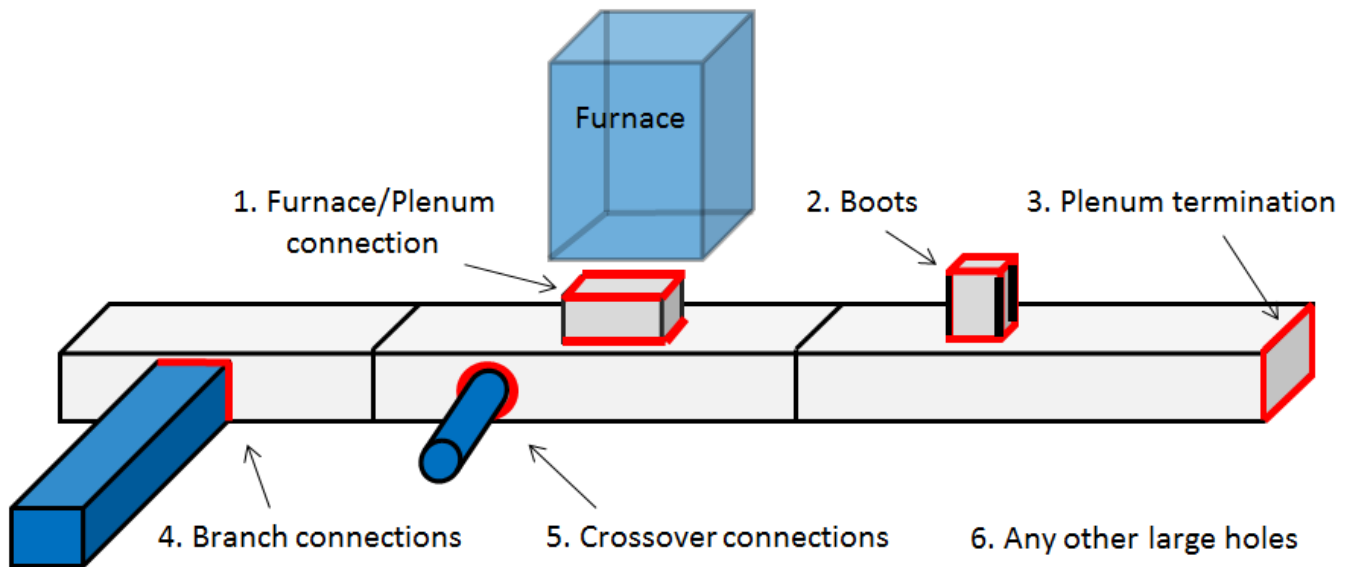
- Duct sealing outside the building envelope can also be a part of an infiltration reduction measure, or
- Duct sealing may be modeled as a health and safety measure.

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Manufactured home

Ducts in the floor or attic cavities are considered outside the building envelope and will be modeled in Weatherization Assistant Manufactured Home Energy Audit (WA-MHEA) tool as an energy conservation measure. All ducts that have a SIR of 1.0 or greater will be sealed in accordance with SWS 3.1602.11. The method of duct sealing will depend on the location of the leak in the duct system (see “**Methods for Sealing Rigid Metal Ducts**” below).

Seal the following areas (shown in red) as SIR allows in the following order:



In modeling duct sealing and duct insulation outside the building envelope in WA-MHEA:

- Model duct sealing in the air infiltration tab following the MHEA Duct Leakage Modeling Guidance (MN WAP Policy Manual - Appendix C);
- Include duct sealing as part of a furnace replacement measure;
- Include duct sealing as part of an infiltration reduction measure; or
- Model as an itemized cost with health and safety as the measure type.

Methods for Sealing Rigid Metal Ducts (per SWS 3.1602.1 Single-Family Homes and SWS 3.1602.11 Manufactured Housing)

- Gaps <1/4":
 - Gaps up to 10 feet from furnace air handler: All seams, cracks, joints, holes, and penetrations shall be sealed using fiberglass mesh and mastic.
 - Gaps 10 feet or more from furnace air handler: All seams, cracks, joints, holes, and penetrations shall be sealed using mastic.
- Gaps 1/4" - 3/4":
 - All seams, cracks, joints, holes, and penetrations shall be sealed in two steps:
- They will be backed using temporary tape (e.g., foil tape) as a support prior to sealing

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2) They will be sealed using fiberglass mesh and mastic.

- Gaps >3/4":
 - All seams, cracks, joints, holes, and penetrations will be repaired using rigid duct material. Fiberglass mesh and mastic will overlap repair joint by at least 1" on all sides. Fiberglass mesh and mastic will be the primary seal.

Additional Considerations:

- New component to new component ducts should be sealed according to 2012 IRC M1601.4.1 (Minnesota Mechanical and Fuel Gas code 603.9).
- Duct tape unlisted for a given application shall not be permitted as a sealant on any duct

Filter Rack and Filter Rack Cover

Filter racks and covers should be modified or replaced as needed to ensure that they are air tight; keep the filter firmly in place; do not allow air to flow around the filter; and allow for easy filter replacement. (See Weatherization Field Guide 8.3.1 for more details).