



Seal Ducts With Mastic

Job Aid for Air Seal Ducted Distribution System Badge

Aligns With Standard Work Specifications 5.0106.1, 6.0101.2, 6.0101.3, (5.0105.1, 5.0105.2, 5.0105.3)

METHOD A: For small gaps (less than 1/4 inch) including all joints, seams, and cracks in duct system



Apply fiberglass mesh tape over all gaps, seams, joints, etc.



Apply mastic over all mesh tape and all gaps, seams, joints, etc.

METHOD B: For medium gaps (1/4–3/4 inch) such as minor holes and penetrations in duct system



Small holes and penetrations require one additional step.



Apply temporary UL-listed or mesh tape as a backer to hold mastic.



Apply mastic over the tape.

METHOD B: Continued

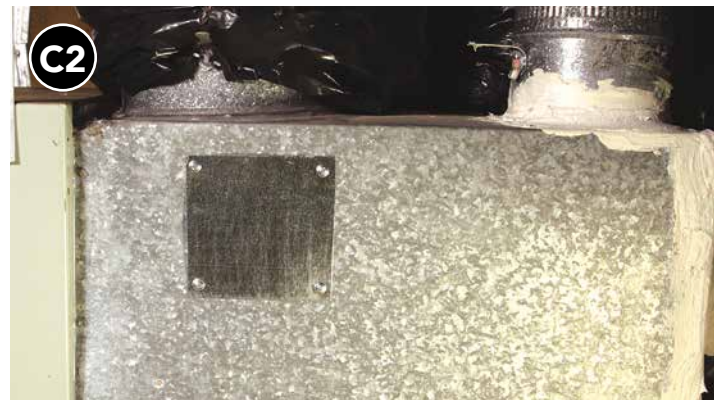
Push fiberglass mesh into the mastic.



Apply additional mastic over mesh and tape, extending at least 1 inch past edges of tape in all directions.

METHOD C: For larger gaps or holes (more than 3/4 inch)

Larger holes require a different process.



Cut patch that will extend over entire gap or hole and affix with mechanical fasteners.



Apply mastic over edges and fasteners of patch and push fiberglass mesh into it.



Apply additional mastic over mesh, extending at least 1 inch past tape and seam in all directions.

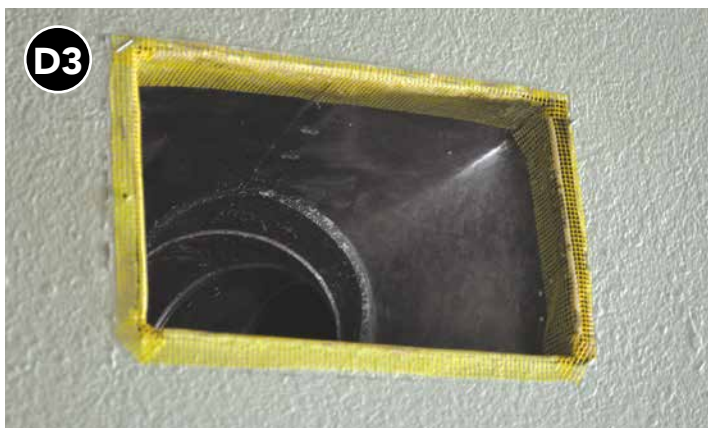
METHOD D: For connections between duct boot and surface



Often, holes for duct boots are cut too large and leave gaps around the boot that permit air leakage.



Clean the area around the duct boot to allow for better adhesion of fiberglass mesh tape.



Apply fiberglass mesh tape bridging from duct boot interior to surface, taking care not to extend past what will be covered by register.



Apply mastic over mesh tape and allow to dry completely before reinstalling register.

METHOD E: At the air handler



Ensure that filter slot covers are installed where missing. Covers should seal the opening and be easily removable so the occupant can change the filter.



Seal unnecessary holes in air handler cabinet with UL-listed butyl tape.



Checklist

Air seal ducted distribution system

DESIRED OUTCOME

Duct leakage and connections between conditioned/unconditioned space is reduced, air is efficiently delivered from appliance to home and back.¹

Preparing for the work

- ☐ Existing insulation cleared away as needed.
- ☐ Ducts are connected for durability according to DUCT CONNECTIONS table on the following page.
- ☐ Ducts are supported for durability according to relevant Standard Work Specifications:
 - ☐ Flex duct and duct boards are supported every 4 feet using 1½ inch wide material.
 - ☐ Metal ducts are supported every 10 feet or less using ½ inch wide 18-gauge metal straps or 12-gauge galvanized wire (or other approved means).
 - ☐ Support materials do not cause the interior dimensions of the ductwork to be smaller than specified.
- ☐ Holes are patched.
- ☐ If flex duct, any damaged sections removed and replaced with sealed spliced collar.
- ☐ Duct surfaces to receive applied sealant are clean.
- ☐ Supply boots are fastened to subfloor with mechanical fasteners.

Duct sealing²

- ☐ Seams of each supply boot sealed.
- ☐ Gaps between the subfloor or ceiling and the supply boot sealed.
- ☐ Seams of each return box sealed.
- ☐ All gaps between the subfloor, wall, or ceiling and the return box sealed.
- ☐ Panned returns sealed.
- ☐ Air handler panels taped or gasketed.
- ☐ Air handler penetrations sealed or gasketed.
- ☐ The following connections are mechanically fastened and sealed:
 - ☐ Connections between the air handler and the plenums.
 - ☐ Supply plenum seams and end caps.
 - ☐ Inner liner of all supply ducts to supply take-off collars/supply boots.
 - ☐ Connections between supply take-off collars and plenums.
 - ☐ Sectioned metal elbows to supply ducts and take-off collars.
- ☐ Connections between supply take-off collars and plenums sealed.

Checklist

Air seal ducted distribution system

HVAC DUCT CONNECTIONS	
DUCT TYPES	CONNECTION REQUIREMENTS
Metal to metal	Round ducts mechanically fastened to maintain alignment Other shaped ducts securely fastened and sealed with welds, gaskets, mastics (adhesives), mastic-plus-embedded-fabric systems, or tapes
Flex to metal	Tie bands using a tie band tensioning tool
Duct board to duct board	Clinch stapler/staples
Flex duct to duct board	Metal take-off collar attached in accordance with International Residential Code

1. Relevant Standards: 5.0106.1, 6.0101.2, 6.0101.3, 5.0105.1, 5.0105.2, 5.0105.3

2. This checklist assumes ducts are in unconditioned space.

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For more information, visit: energy.gov/scep

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