



# E<sup>3</sup>A: Insulating Bellies

## STEP 7

### Steps in the Mobile Home Series

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E3A-MH.7  
Printed February 2013  
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### Preparation Work

Prior to insulating the belly, all preparation work must be completed. The ductwork should be sealed, all utility penetrations into the house should be plugged and sealed, and the belly wrap repaired with approved materials. (Factsheets #5 and #6.)

While under the mobile home, check the ductwork in areas where it is exposed by torn belly wrap. If pressure pan readings have determined that the furnace to trunk line connection or main trunk line to lateral duct connections are very leaky, consider opening up the belly wrap to expose and repair those leaks. An R-14 batt or 2" insulation board installed below the main trunk line is also recommended.

Check all the water and drain lines for leaks. All water lines should be above the insulation, just under the floor joists. Where utility penetrations enter the heated space above, such as at sinks and tubs, plug the spaces around those lines with rolled up fiberglass batts. Finally, repair all holes or tears in the belly wrap larger than a fist in size.

Mobiles are insulated with fiberglass insulation because it is lightweight and doesn't hold water. Typically chopped fiberglass is installed at 1.5 to 1.6 #s per cubic feet although higher densities can be used around the perimeter. Track the number of bags that are used to maintain the correct finished density. Be careful not to over pressurize and blow out the belly as it is being filled and also do not insulate above the water lines. A typical single wide mobile will use about 15 to 20 bags and can be insulated in about 4 hours.

### Decide on the Insulating Method

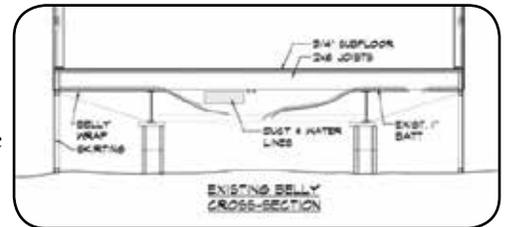
There are two methods for insulating (blowing) the belly, the "Belly Blow" which is done from underneath and the "Side Blow."

When blowing insulation from underneath, you will be laying on your back, inserting an insulation hose or wall tube through cuts in the belly fabric into the floor joist cavity and filling that cavity. Depending on the configuration of the floor joists and the location of utilities, you may cut just one hole in each joist bay and blow insulation in both directions. More likely, you will cut 3 holes in each bay, one each on the sides, and one in the center between the steel beams. Then, of course,



The prep work for insulating Mobile Home floors can be done by anyone who has some practical experience, a few hand tools and a tolerance for getting dirty. Often, this is work that insulation contractors don't want to do, but it will pay big dividends in comfort and energy savings. An insulation blower with hoses and pipes is needed for installing the insulation.

Watch Weatherization crews insulate bellies on your computer at <http://wxtvonline.org/2010/06/mobileinsulation-belly/>.



Source: Jim Baerg



Photo source: WAPTAC

you'll have a lot of holes to patch. If the joists run lengthwise, then you may cut holes every 8 feet or so in each joist bay.

Working underneath is generally warranted if the weather is extremely cold and windy, if the siding is too difficult to remove from the rim joist, or if there isn't enough room adjacent to the home to work. Often however, working from below is difficult, with tight quarters, falling insulation and dirty conditions.

The Side Blow has become the most common method of insulating floor joists. In this method, the siding at the edge of the floor framing is unscrewed and lifted, the rim joist is drilled and insulation is blown into the joist cavity using a long pipe connected to the insulation hose.

Access is a prime concern. There must be sufficient room adjacent to the mobile home for the crews to lay out and insert the rigid insulation pipes. This is especially true if the joists run in the long direction of the mobile. Then you will need at least 30 feet of clearance. Fences, steps and landings, automobiles and occupant possessions may need to be removed prior to the work.

Evaluate the lower edge of the siding at the level of the floor joists and make sure that the screws can be removed and that the siding can be lifted up and away.



Photo: Jim Baerg



Source: Tony Gill, DOE

Once the siding is lifted, drill a 2-9/16" or 3" hole at the center of each joist bay. Inspect the cavity with a flashlight. Insert the rigid pipe (usually 2" muffler pipe or 2" grey PVC pipe) carefully the whole length, checking for unexpected obstructions such as ducts and wiring.

Turn on the insulation machine, feed insulation through the hose until the rate begins to slow down. At that point remove the pipe at a slow, constant pace. Stop pulling the pipe when it is within 6 inches of the end so that the last 2 feet of the joist bay is packed to a higher density.

On homes with transverse joists dense pack the last 2 feet of the joist bay, but leave the area in the center of the home with loose fill insulation. This allows the insulation to settle down around the ductwork and water pipes, insulating them from the cold air below the belly wrap.

Once the insulation is installed, plug each hole with a caulked wooden plug or a "peel n stick" patch. Then re-install the siding, taking care that the finished assembly sheds water. You may want to use slightly larger screws in the old siding holes so that the screws really grab.

That's it. You've successfully accomplished a difficult job. Your home will be much warmer as a result.

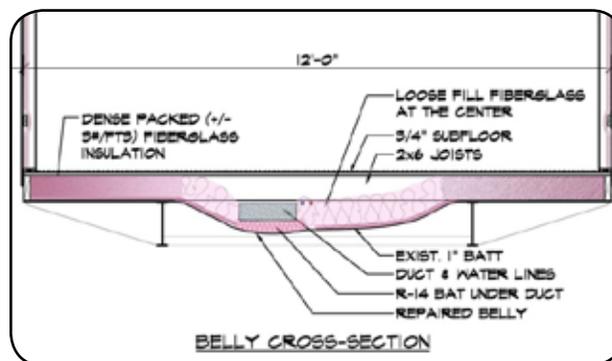
Now, on to the next project!



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Source: Jim Baerg