ATTIC INSULATION INSTALLATION GUIDE

KNAUF INSULATION®

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BUILDER PRE-INSULATION QUESTIONS

All areas to be insulated are built to allow code minimum insulation requirements, (e.g. use of raised-heal truss to allow the full thickness of minimum required insulation, plus minimum required vent space)

All attic facing walls are backed with rigid material, and sealed for air infiltration (e.g. knee walls to attic, wall to porch roof, skylight shaft, etc.)

Top and bottom plates, and/or appropriate blocking (e.g. blocking in rafters above knee wall top plates), are installed in all walls, including knee walls.

Floor cavities are blocked between conditioned and unconditioned areas (e.g. bonus room to attic, second floor to garage, rim/band joists, etc.)

Dropped soffits directly below attic space are backed with rigid material and air sealed

All shafts/chases between different elevations in ceilings and/or floors are capped with rigid material and air sealed

All electrical, plumbing, air sealing, HVAC and framing work has been completed, and the house has been inspected and approved for insulation

INSULATION INSTALLER CHECKLIST QUESTIONS

Joints and penetrations from the attic to conditioned and buffered spaces are fully air sealed

***Seal top plate to attic, around all blocking, shafts, plumbing, electrical, lighting, etc.**

Insulation is installed to Grade I; Insulation is in full contact with ceiling drywall, and completely fills around obstructions (plumbing electrical, blocking, etc.)

Attic access panels, knee wall access, drop down stairs are weather stripped and insulated to same R-value as surrounding area

Inaccessible attic spaces are insulated to the required minimum attic R-value

Attic soffit vents and/or baffles are installed correctly and permanently fixed in place per the manufacturer's recommendations and best available science

Approved vapor retarder is installed, if necessary

Attic card is filled out and permanently fastened to insulation dam; All other required paperwork is filled out and filed with the appropriate parties for documentation and/or future inspections

The insulation manufacturer's attic ruler for the product being installed are placed according to code

BEFORE YOU START

WEAR PROPER PPE

- Headlamp
- Hardhat/Bump Cap
- Dust Mask/Respirator
- Gloves
- Long Sleeves
- Long Pants
- Hi-vis Clothing
- Close-toed
- Shoes

  Kneepads
- Ear/Hearing Protection (When Loading Machine)

TOP: BUMP CAP CLOSE- UP

BEFORE YOU START

KNOW THE WORK ORDER

- What R-value is to be installed?
- What's the square footage of the job?
- How many bags will need to be installed to reach the desired R-value?
- Are there inaccessible attic spaces, or vaulted ceilings?
    - **Most insulation manufacturers do not recommend installing loosefill insulation on anything greater than a 4/12 slope or pitch; these areas will need to be batted.**

SLOPED CEILING, BATTED

BEFORE YOU START

EXAMINE THE ATTIC SPACE

Are there any safety hazards to take specific note of?

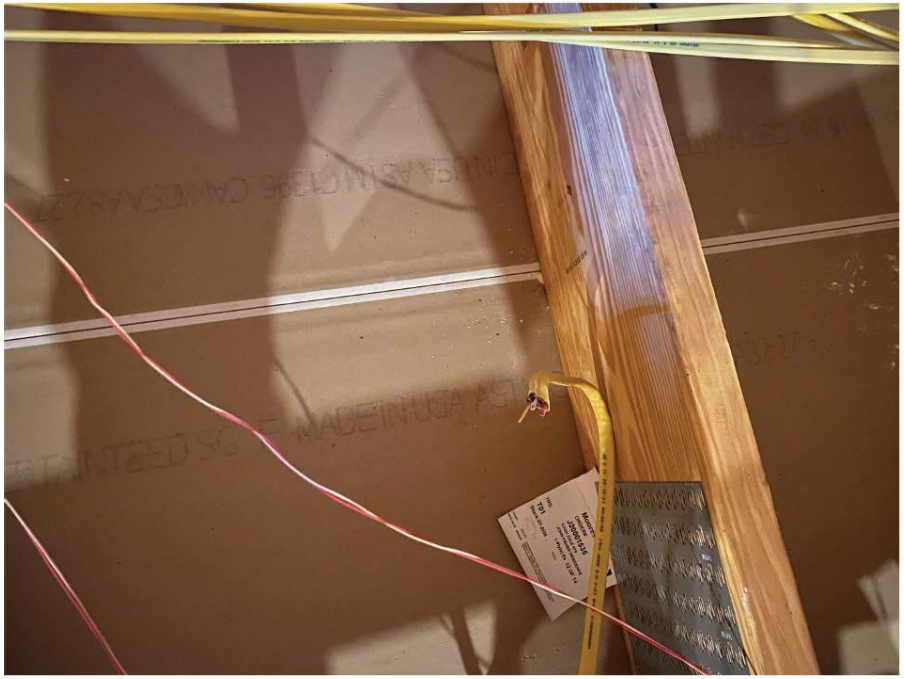
- **Nails often penetrate the roof deck, but look down; are there any sticking through top plate where you will step?**

BEFORE YOU START

EXAMINE THE ATTIC SPACE

Arethereanysafetyhazardstotakespecificnoteof?

- **Loose wires or open junction boxes?**



BEFORE YOU START

EXAMINE THE ATTIC SPACE

Are there any safety hazards to take specific note of?

- **Combustion exhaust and/or chimneys have the required minimum clearance to combustibles per the flue or chimney manufacturer, for installing non-combustible insulation around**
- **Any and all recessed lighting is labeled and rated both airtight, and insulation contact. Those that do not have the required labeling will need to be covered with an approved cover by the appliance manufacturer's recommendation**

A dam is placed around the attic access

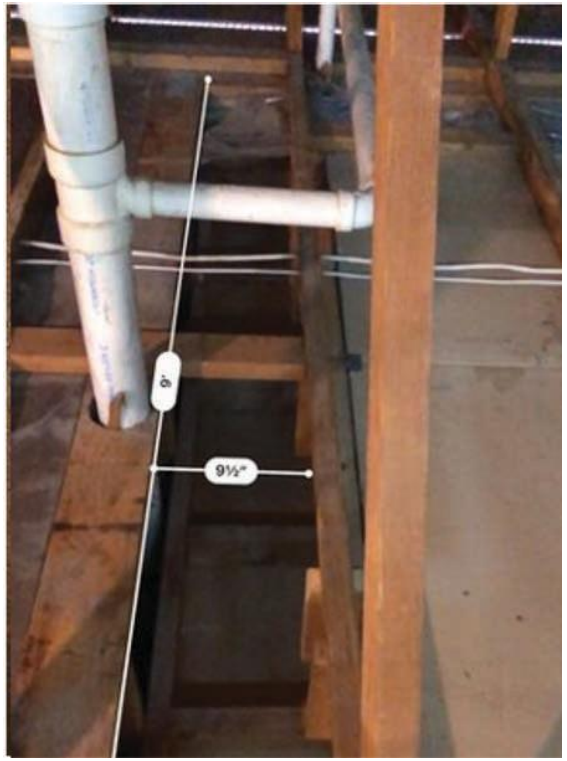
- **Insulation dam must be constructed out of rigid material such as OSB, plywood, or other board product**
- **This prevents the loose-fill insulation from falling into the access and/or living space when the access is opened and provides a permanent means of maintaining the installed R-value around the access**

BEFORE YOU START

EXAMINE THE ATTIC SPACE

Are there open soffits, chases, or dropped ceilings?

- **These should be covered with a rigid material, and air sealed to surrounding drywall**
- **Permanently installing air permeable insulation such as batts over dropped soffits/chases may be a standard practice before blowing insulation, but will do nothing to stop air leakage between the house and attic, and should not be used in favor of rigid materials and proper sealing**



BEFORE YOU START

EXAMINE THE ATTIC SPACE

Are the vent chutes/baffles correctly installed, extending over the full height of the required depth of insulation?

- **Baffles and vent chutes serve three important functions: 1) To direct air from the soffit vents up and over the insulation for a vented roof assembly, 2) To prevent high wind events from dislodging the insulation away from the top plate (i.e. "windwashing"), and direct air currents above the insulation and 3) To keep insulation from blocking convective air flow across the underside of the roof sheathing**

CAPPED CHASE

BAFFLES INSTALLED CORRECTLY

BEFORE YOU START

EXAMINE THE ATTIC SPACE

Attic rulers are installed no more than 300 square feet apart

- **It is critical to install the attic ruler that matches the insulation product that is being installed**
- **Insulation manufacturers may have different coverage or requirements from one another; one manufacturer's product might require a depth of 13" for R-38, while another requires 15". Using the incorrect ruler could result in a drastic loss in coverage and/or R-value**

ATTIC RULERS CORRECLY INSTALLED

BEFORE YOU START

PLAN YOUR ACCESS

Where are you able, and allowed, to park?

Where is the attic access?

- **If the access is inside the living space (not in the garage) and the site is muddy or wet, do not drag your hose through the mud and into the house**

- **Where will you run your hose?**
  - **Be sure to protect all areas of the house where hose makes contact with corners, window openings and finished surfaces with semi-rigid plastic, cardboard, or other protective cover**

ONCE YOU START

You are required to keep an accurate bag count to be able to accurately fill out the attic card, ensuring that you installed the correct R-value and density.

You should have a work order that states the R-value being installed, the square footage of the job, and how many bags of insulation are required to complete the job.

One helpful tip is to keep track of your bag count throughout the attic by sectioning it off; this will help determine if you have a machine or coverage issue right away instead of finding out at the end of the job.

- Example: if you have a 1200 square foot attic that calls for 30 bags, divide the square footage and bag count evenly to determine your coverage throughout the job. In this example, we will divide the attic square footage and the number of bags needed by 3, because both the square footage and the number of bags are easily divisible by 3.
  - 1,200'/3 = 400 square feet
  - 30 bags/3 = 10 bags
  - So every 400 square feet should take 10 bags

ONCE YOU START

KEEP AN ACCURATE BAG COUNT

ATTIC AND CAVITY WALL CARD

Jet Stream® ULTRA Blowing Insulation

KNAUF INSULATION
FOR THE WORLD WE LIVE IN™

HOMEOWNERS NAME: _____ JOB SITE ADDRESS: _____

CITY: _____ STATE: _____ ZIP: _____

BUILDER'S INSULATION STATEMENT

Jet Stream ULTRA has been installed in conformance with the included recommendations to provide a thermal resistance of:

LOCATION	R-VALUE	NO. OF BAGS	MINIMUM THICKNESS		TO COVER	
Attic Area	R-		at	inches		sq. ft
Sloped Ceilings	R-		at	inches		sq. ft
Walls	R-		at	inches		sq. ft
Floors (over an unheated crawl space	R-		at	inches		sq. ft
Crawl Space Perimeter	R-		at	inches		sq. ft

BLOWING INSULATION

Prior to installing the insulation, it is critical to inspect the attic, using the steps in "Examine the Attic space" (found above), to ensure that all parts of the attic are ready for insulation

Check all machine settings for the proper feed gate and air flow settings according to the insulation manufacturer's recommended settings

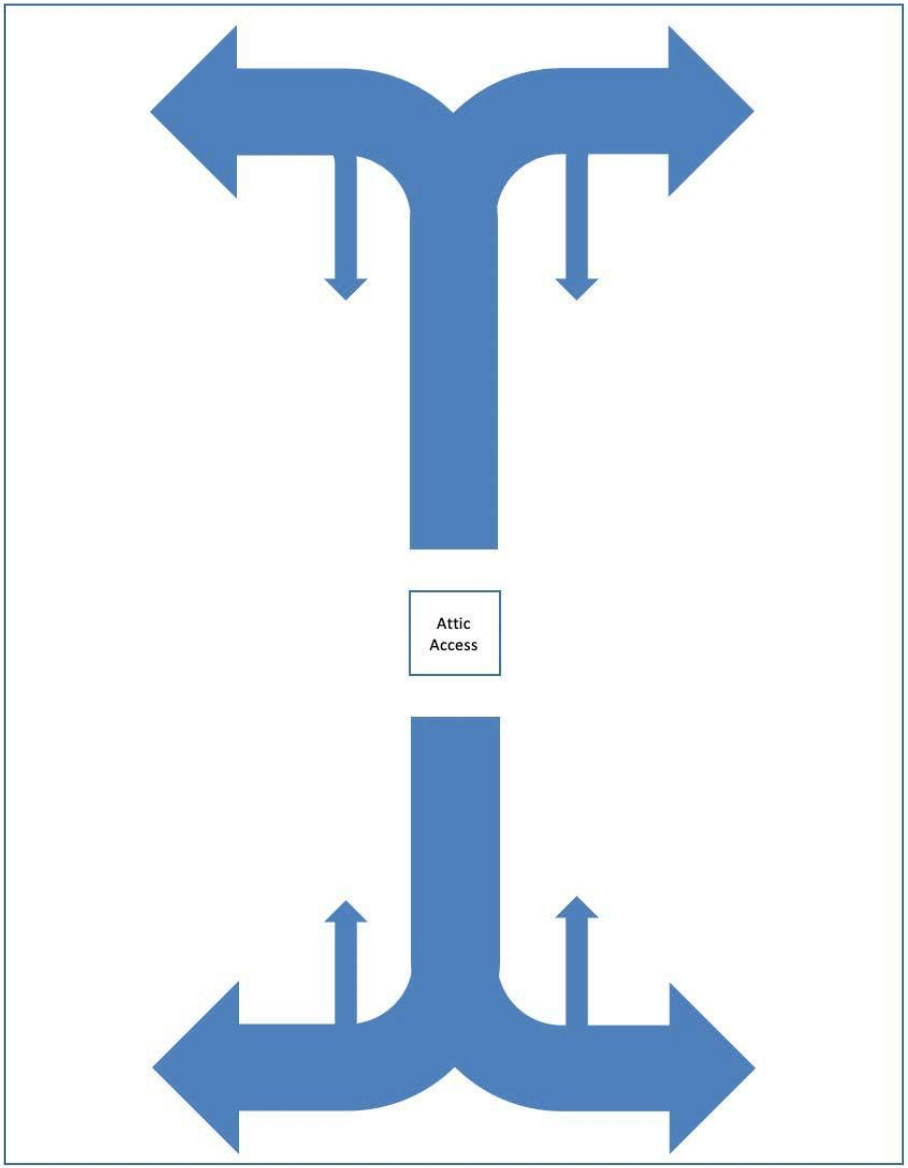
Attach the correct length and diameter of hose per the insulation manufacturer's recommendation. These settings and recommendations can be found on the insulation bag label or product data sheet

BLOWING INSULATION

Start at the farthest point from attic access, and work your way back

- If access is in the middle of the attic, start at the farthest point from access and work your way back, towards the access, passing it and moving to the farthest point from the access on the opposite end of the attic, and work your way back towards the access to finish

Begin blowing insulation over the exterior wall top plates along the attic sides, and work your way back towards the middle of the attic to achieve even coverage



BLOWING INSULATION

ESTABLISH HEIGHT EARLY

Establish your height early, with the help of an attic ruler, and maintain a consistent level throughout the attic

BLOWING INSULATION

HOLD HOSE PARALLEL TO ATTIC FLOOR

BLOWING INSULATION

BLOW DOWN CENTER OF JOISTS, NOT ACCROSS

BLOWING INSULATION

DON'T BOUNCE INSULATION OFF OF SURFACES

(i.e. truss members, roof deck, etc.)

FINISHING THE JOB

Insulate the access panel to the same R-value of that required for the attic.

- Glue, staple, tie, or otherwise securely fasten insulation material to the back of the access panel.
- Weatherstrip around the panel to ensure it provides an air tight seal. Install weatherstrip on the top of the ledge that the access panel will rest on.

If any appliances with drip pans are located in the attic, clean the drip pan thoroughly

- This ensures insulation will not clog the drain line, causing an overflow

Fill out the attic card and place it where the inspector can see it; a good spot is in the access facing side of the insulation dam.

FINISHED JOB

MACHINE SET-UP

The below recommendations are general guidelines and not meant to supersede recommendations made by machine manufacturers. Always remember to exercise caution and use proper safety protocols around machines. Make sure every employee is trained on the operation, maintenance and safety of the insulation machine; don't assume that because a new employee has experience that they have the right experience.

It is also important to check the insulation manufacturer's coverage charts (listed on the bag, data sheets, and attic cards) to see what settings were used to gain the coverage listed. Every insulation manufacturer will have slightly different machine settings to get the best coverage, and not every machine can be run on the highest settings and achieve the highest yield.

- Always check that emergency shut-offs are operational before starting job
- NEVER reach inside or work on a machine while in operation, or that has power running to it.
- Have a stable platform to work from when loading the machine (i.e. do not stand on bags of insulation)
- Run a minimum of 150' of internally corrugated hose
  - The internal corrugations in the hose cause the material to tumble, and further conditions the fiber; worn hose average a 10% drop in coverage
    - New hoses pay for themselves quickly
  - All hoses should be a minimum of 25' before stepping down
    - Only step down in 1/2" increments
      - 4" to 3 1/2" to 3", etc.
      - Ideally, the hose ends in a diameter that is easy for the installer to handle in the attic
- Use thin-walled metal or plastic transitions or reducers, and hose clamps, between hose sections
  - Taping hoses together may offer a temporary fix but is not a permanent connection

MACHINE SET-UP

STABLE PLATFORM

MACHINE SET-UP

INSULATION MANUFACTURER'S RECOMMENDATIONS

OPEN ATTIC APPLICATION					
R-Value*	Min. Bags/ 1,000 Sq. Ft.	Max. Coverage/Bag	Net Min. Weight/ Sq. Ft.	Initial Installed Thickness	Min. Settled Thickness**
To obtain a thermal resistance of:	Number of bags per 1,000 square feet of net area should not be less than:	Contents of this bag should not cover more than:	Weight per square foot of installed insulation should not be less than:	Installed insulation should not be less than:	Installed insulation should not be less than:
R-60	29.7	33.6 sq. ft.	0.952 lbs.	19.750"	19.750"
R-49	23.5	42.5 sq. ft.	0.753 lbs.	16.375"	16.375"
R-44	20.9	47.8 sq. ft.	0.670 lbs.	14.875"	14.875"
R-38	17.8	56.2 sq. ft.	0.569 lbs.	13.000"	13.000"
R-30	13.6	73.3 sq. ft.	0.437 lbs.	10.375"	10.375"
R-26	11.8	85.0 sq. ft.	0.377 lbs.	9.125"	9.125"
R-22	9.8	102.2 sq. ft.	0.313 lbs.	7.750"	7.750"
R-19	8.4	119.3 sq. ft.	0.268 lbs.	6.750"	6.750"
R-13	5.7	175.3 sq. ft.	0.183 lbs.	4.750"	4.750"
R-11	4.7	210.8 sq. ft.	0.152 lbs.	4.000"	4.000"

Bag Net Weight - Nominal 32 lbs., Minimum 31 lbs.

Coverage and installation data were determined using a Volu-Matic® II blowing machine in third gear with 13" gate opening, 2.5–3.0 PSI air pressure, 150' of 3" diameter internally-corrugated hose. Volu-Matic II is a registered trademark of CertainTeed Corporation.

*"R" means resistance to heat flow. The higher the R-value, the greater the insulating power. To get the marked R-value, it is essential that this insulation be installed properly. If you do it yourself, get instructions and follow them carefully. Instructions do not come with this package.

**Based on Third Party 10-year settling study, the predicted settlement over a 20-year period would be 1 percent or less. This amount of settling is thermally insignificant. Therefore, the installed and settled thicknesses are effectively the same.

MACHINE SET-UP

PROPER HOSE REDUCERS & COUPLERS

MACHINE SET-UP

GATE SETTING

Not every fiber manufacturer recommends the same gate setting. Check the insulation manufacturer's recommended gate setting. Having the gate open may make you feel like you're able to work faster, but it may also negatively impact the coverage of the material, as well as the overall R-value of the attic.

The gate opening can dramatically impact coverage and production times by:

- Allowing too much material to flow through, causing clogs or loss of tumbling in the hose, thereby losing coverage and R-value

- OR not allowing enough material to flow through, causing an over conditioning of fiber in the hopper, resulting in an improper density, and incorrect R-value installed

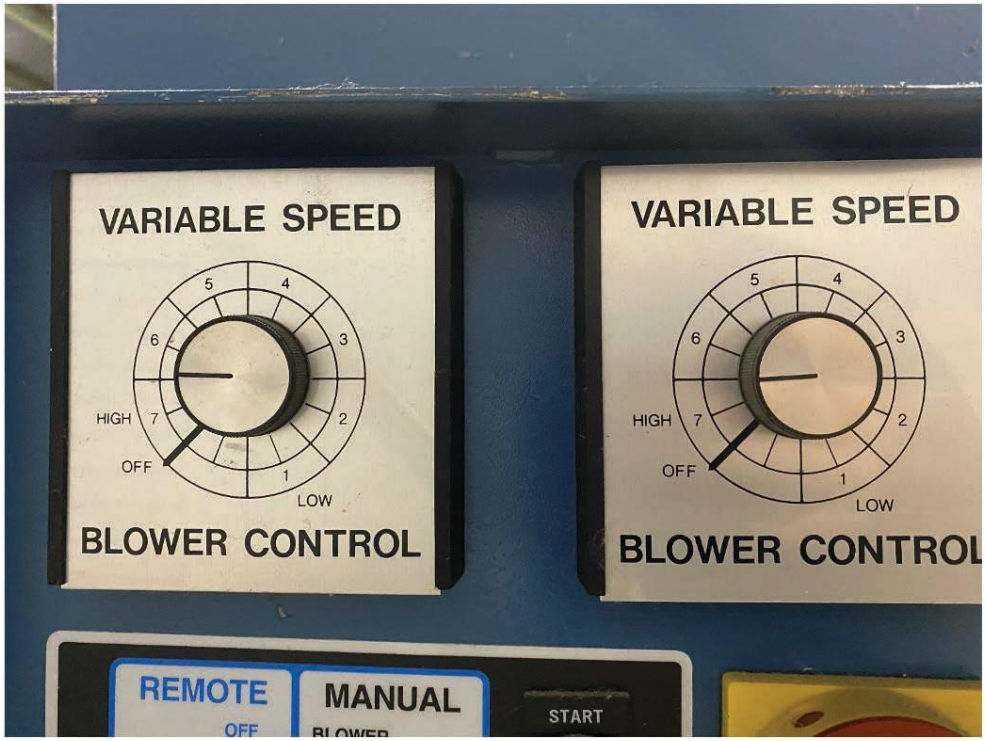
MACHINE SET-UP

AIR PRESSURE

Air pressure settings have a direct impact on production rates, and need to be adjusted based on hose dimensions (wider and longer hoses have more cubic volume), and how the hose is run (is it traveling up several stories?)

Improper air settings could result in clogs, slower production, fluffing, and coverage issues

It's a good idea to mark on the machine where the air works best, and use that as a starting point to adjust the presure setting as required to achieve the expected performance for both coverage and R-value.



MACHINE SET-UP

TRANSMISSION (WHEN APPLICABLE)

Machines with transmissions need to be set in the correct gear for the material and application. You cannot always run in the highest gear and expect the best results

Machines in the wrong gear could result in slower production, fluffing, coverage issues, and reduction of overall R-value

MACHINE SET-UP

RULE OF 3'S

If you are on an unfamiliar machine, or the settings are completely wrong, follow the below basic settings as a starting point, and adjust each as necessary:

- **Slide Gate: 3/4 Open**
- **AirPressure: 3/4 Closed**
- **Transmission: 3rd Gear**