

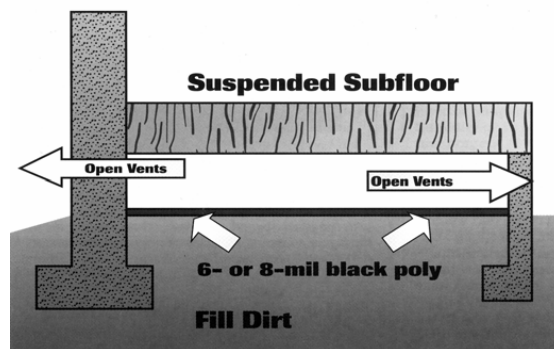


Engineered Wood Installation Instructions Mechanically Fasten, Glue-down, Floating

Inspect the job site carefully before you begin the installation. Some conditions require specific installation methods. A level, flat, clean, dry, and firm subfloor is always necessary. All L.W. Mountain, Inc. products are manufactured in accordance with accepted industry standards, which permit grading deficiencies not to exceed 5%. If the material is not acceptable, do not install it and contact the seller immediately.

Climate and Pre-installation Procedures

- Material should be stored on the job site in rooms where installation is to occur.
- Garages and exterior patios are not suitable for storing wood flooring.
- DO NOT remove the product from the cartons.
- DO NOT open just the ends of the cartons.
- HVAC systems MUST be installed and operating before the flooring is delivered to the jobsite.
- All concrete, masonry, framing members, drywall, paint and other “wet” work should be thoroughly dry.
- Exterior Grading should be complete with surface drainage offering a minimum drop of 3’ in 10’.
- Crawl spaces must be a minimum of 24” from the ground to the underside of the joists. A ground cover of 6-8 mil black polyethylene film is essential as a vapor barrier with joints lapped six inches and taped. The crawl space should have perimeter venting equal to 1.5% of the crawl space square footage.



Make sure the room environment is set at a normal living range 55 – 80 degrees and 35 – 55% humidity. **Normal living conditions** should be achieved and maintained a minimum of fourteen days before flooring is brought into the living area for acclimation purposes. It should be maintained during and after the installation as well. **Proper acclimation is not a measurement of time; it is a measurement of moisture levels.** It requires taking moisture readings of the flooring and the subflooring. The flooring is acclimated and ready for installation when it has reached a moisture level consistent with the job site and **normal living conditions**. Using a moisture meter, test the subfloor and hardwood flooring for moisture content. Moisture content of the subfloor should be 6-12% depending on your area. When wood flooring is produced for the North American market, it has a moisture content of between 6-9%. For solid strip flooring (less than 3” wide), there should be no more than 4 percent moisture content difference between properly acclimated wood flooring and subflooring materials. For wide-width solid flooring (3” or wider), there should be no more than 2 percent difference in moisture content between properly acclimated wood flooring and subflooring materials.

The customer is responsible for maintaining normal humidity conditions (35-55%) within the home throughout the year. L.W. Mountain, Inc. is not responsible for environmental conditions that cause excessive expansion and contraction.

Appropriate Subfloors

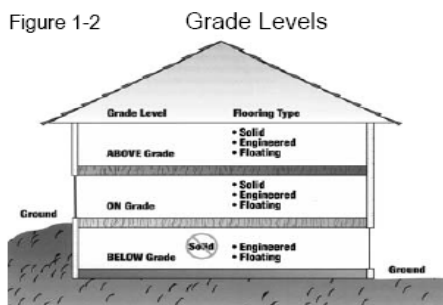
1. Preferred Subfloor
 1. ¾ inch plywood in 4 x 8 foot sheets
 2. ¾ inch OSB in 4 x 8 foot sheets
2. Existing wood floors
3. Sheet vinyl or resilient tile as long as it is installed over one of the preferred subfloors.
4. Concrete slabs – Installation should be done by installer with substantial knowledge of N.W.F.A. (National Wood Flooring Association) recommended alternatives for installing over concrete slabs.
5. In-floor Radiant Heat: With radiant heat, heat source is directly beneath the flooring, so flooring may gain moisture or dry out faster than in a home with conventional heating system. For this installation, once slab has cured, turn heat on, regardless of season, and leave it on for at least 5-6 days before installation. Maximum surface temperature should never be more than 85 degrees Fahrenheit (30 degrees Celsius).

Radiant Heated Floors – L.W. Mountain, Inc. only recommends, and warranties certain engineered flooring be installed over in-floor radiant heated subfloors. Contact us for recommended floors. Our SOLID should NEVER be installed over any kind of radiant heat system.

Subfloor Preparation

1. Subfloors must be cleaned. This can be scraping or sanding the floor to remove all foreign materials.
2. Subfloors must be flat. ¼ inch in 10 feet. Sand all seams and high spots.
3. Subfloors must be free of loose areas and squeaks before installation can start. Renail or screw down sections that are loose or squeak. Replace any subfloor that is damaged.
4. The subfloor must be dry before you begin your installation.

Figure 1-2



If the soil surrounding a structure is 3 inches or more above the floor of any level, consider that level below grade. This includes walk-out basements. In addition, the surrounding soil should be sloped away from the structure.

Above Grade- Engineered and Solid floors can be installed

On Grade- Engineered and Solid floors can be installed. L.W. Mountain, Inc. does not recommend gluing down solid wood on concrete slabs. Solid Bamboo can be glued with appropriate adhesives. *See Technical Letter*

Below Grade- Engineered floors can be installed. Solid wood and bamboo should not be installed below grade.

Important Notice

The installer is the final inspector of this product. Once a board is nailed or glued to the floor, it is deemed to be acceptable to the installer and homeowner. If the installer is not sure whether or not the floor's milling or grading is acceptable, work should stop immediately, and a call should be made to the person that sold the floor.

L.W. Mountain, Inc. Engineered flooring with a traditional tongue and groove can be installed by three different methods depending upon the application.

- 1. Mechanically Fasten to a wood subfloor.**
- 2. Glue-Down/Full-Spread – usually over concrete.**
- 3. Glued-Joint Floating – multiple subfloors.**

METHOD 1 - Mechanically Fasten

L.W. Mountain, Inc. REQUIRES using only wood flooring nail guns designed specifically for engineered floors.

Mechanical Fastener Selection - Staples or cleats may be used for our other flooring, however, be aware that ALL cleats are made to install wood flooring, only certain staples are made exclusively for use with flooring. Using staples which are not directly intended for flooring can lead to loose and squeaking floors. This would be considered improper installation and void the warranty.

For flooring thicknesses 3/8”: 18 – 20 gauge 1 ¼” or longer staples

For flooring thicknesses 1/2” – 9/16”: 18 – 20 gauge 1 3/8” or longer staples

For flooring thicknesses 5/8”: 16 – 18 gauge 1 ½” or longer staples

TEST THE NAILER: Using one of the recommended type nail guns, test by fastening a sacrificial board to the floor. Check for surface damage in a **well-lighted area**, verify air pressure setting and tongue damage, make all adjustments and corrections before installation begins, remove the test board. **Tongue fracture** and **surface dimpling** during installation is common and can be minimized by (1) using the correct nail thickness, (2) using the recommended shoe adaptor, or (3) changing the angle of nail entry. Many installers will temporarily adjust the nailer angle by applying layers of duct tape to the bottom foot plate of the nailer. The use of the over-size base plate in order to distribute the driving force is encouraged. If, however, surface dimpling or tongue fracture still occurs, drilling pilot holes and hand nailing may be required. Pounding boards together during assembly with a rubber mallet may damage unprotected board edges. *When using a Trigger-only activated gun, make sure to apply appropriate downward pressure to assure the board is set tightly to the subfloor. Failure to do this can lead to movement causing squeaks.*

Note: Only use flooring nailers that are fully adjustable and that engage the top profile over the tongue at the appropriate angle. Make sure that the flooring nailer is in good working condition and seats properly against the board to prevent top edge and surface dimple damage



Important: Set air compressor pressure to allow appropriate fastener penetration. **Test and adjust** the air pressure to ensure proper setting of fasteners. If tongue damage occurs, lower the air pressure.

L.W. Mountain, Inc. only requires using proper mechanical fastening techniques for our wood flooring. The use of “Glue-assist” is an option. This can help reduce the possibility of squeaky floors. Please contact us for proper “Glue-assist” techniques and recommended adhesives.

- A. Before installing wood flooring, place an approved vapor retarder. Some examples of acceptable vapor retarders over wood subfloors include:
 1. An asphalt laminated paper meeting UU-B-790a, Grade B, Type 1, Style 1a.
 2. Asphalt-saturated kraft paper of #15 or #30 felt that meets ASTM standard D-4869 or UU-B-790, Grade D
 3. Red Rosin Paper
- B. All flooring should be installed perpendicular to joists or on a diagonal for any single layer subfloor.
- C. Wall Line Layout
 1. Choose a starting wall according to the most aesthetically or architecturally important elements in the room, taking into consideration fireplaces, doors, cabinets, and transitions, as well as the squareness of the room. Outside walls of homes are generally the straightest. The starting wall will often be the longest unbroken wall in the room.

2. Snap a working line parallel to the starting wall, allowing a ¾ inch expansion space between the starting wall and the edge of the first run.
3. As a general rule, a 1/2-inch expansion space must be left around the perimeter and at all vertical obstructions.
4. Lay one row of flooring along the entire length of the working line.
5. Blind-nail the first row (hand-nail if necessary), using appropriate fasteners. Each succeeding row should be blind-nailed with the nailing machine whenever possible. All nailing should begin and end approximately 2" from the ends of each board and continue every 6-8". At the finishing wall and other obstructions, it may be necessary to blind-nail by hand or glue-down with subfloor adhesive, the final rows.
6. Racking rule of thumb: Stagger end joints in adjacent rows at least twice the width of the boards, as product allows. Avoid End-Joint line up and H-joints. See figure A-1.
7. Nailing: Blind-nail through the tongue. Fasteners should be spaced every 6-8 inches on blind-nailing.
8. Complete the final rows by either blind-nailing or gluing them down with subfloor adhesive. **L.W. Mountain, Inc. does not recommend top-nailing any prefinished flooring due to visual aspects.**

METHOD 2 – Glue-Down/Full-Spread

• L.W. Mountain, Inc. recommends **moisture testing** and the use of **moisture barriers**. Only **100% urethane and MS Polymer wood flooring adhesives** should be used.

NOTE: If installing over radiant heated subfloor, the adhesive MUST be approved for use over radiant heat.

L.W. Mountain, Inc. ZENITH Urethane and APEX MS Polymer adhesives meet all our installation recommendations.

• To ensure glue transfer, glue manufacturers recommend rolling the flooring throughout installation using an **85-100 lb. roller**

• For the best result, do not mix adhesive products. Use moisture barriers and adhesives from the same manufacturer's product line.

• Use the trowel size recommended by the adhesive company to get required spread rate and ridging height. Typically, trowel size is determined by board type, size and surface texture. (Ensure a 95% min glue-to-board glue transfer).

• During constant use trowel teeth will wear down. For best glue coverage use a new trowel with each new container of adhesive.

• Discard twisted or warped boards.

• Follow the glue manufacturer's labeling instructions regarding adhesive set time, correct trowel size, removal of surface sealers or contaminants and use of moisture barriers.

• Intermix product from several cartons as you install the floor to insure color, grain and shade mix.

• Install the flooring parallel to the longest wall in the room. Keep the flooring straight using a chalk line.

Blue painter tape #2080 can be used to keep rows or sections of floor boards together until the adhesive has cured. (incorrect tape can harm the finish.) Tape together 4 or 5 rows at 18" intervals.

*Many installers choose to use straps or clamps in an effort to force board rows tighter together during installation. Be aware that **over-strapping** may adversely affect the floor and can result in glue-bond failure, seam peaking, twisted boards, or out-of-square flooring board alignment.*

Cured adhesive can cloud, chemically damage or etch the floor's finish. Clean fresh adhesive from the surface of the floor immediately with mineral spirits or manufacturer-recommended remover. Use clean towels, changing frequently to prevent haze and adhesive residue.

STARTING INSTALLATION

(1) Determine the starting wall, usually the longest foundation wall. At the two opposite ends of this wall, measure out and mark on the floor the width of several rows of boards, (this could be 12" to 24") include the expansion gap.

(2) Next, use a chalk line to connect the two marks. Follow this chalked line when applying both the adhesive and boards. **THE FIRST ROWS MUST BE STRAIGHT.**

(3) Using an approved trowel and wood flooring adhesive, glue the first few rows in the dry area, between the wall and chalk line.

(4) Start first row by placing the groove side towards the wall with the tongue side facing outwards. Lay flooring into the adhesive following the straight line. Stay off the new hardwood while working.

(5) Progressively lay-in the next boards by engaging the tongue and groove then drop board into adhesive. Avoid dragging or sliding boards together as this can trap or squeeze glue up in between the boards creating gaps. Continue working 4 or 5 rows together, then measure and cut the last boards as needed to complete the rows.

(6) The balance of a board cut is used to start a new row, discard lengths under 6". Avoid clustering of end joints. Stagger the ends of the boards correctly. Smaller boards should be intermixed throughout the installed floor. A tapping block can be used to gently tap the boards into proper position. During installation, end gaps between boards can be minimized by temporarily locking a completed row in place by using spacers placed between the wall and the last board of each row, remove when glue has dried.

(7) Repeat the process. Chalk new lines, spread adhesive and continue working 4 or 5 rows together until completed.

INSTALLING THE LAST ROW

- Most often, the entire length of the last row will need to be trimmed so that it is narrow enough to fit the remaining space. It should be glued and wedged into place. Leave all spacers in the expansion space until the adhesive has cured, then remove. Keep the floor free from foot traffic, until adhesive has cured.
- Be sure not to spread adhesive too far ahead of your work area.
- If the adhesive skins over and fails to transfer, remove and spread new adhesive to achieve proper bonding to the subfloor. Occasionally lift a board and check for adhesive transfer. Adequate adhesive transfer is necessary to ensure sufficient holding strength.
- When not in use, keep the adhesive container tightly closed to prevent thickening and difficulty in spreading the adhesive. Proper ventilation within the room should be provided. Follow the recommendations on the adhesive container.
- After installation, allow glue to cure for 24 hrs. before replacing furniture and foot traffic. • For matching milling and finish sheen, save a box of flooring in case of future repairs.

METHOD 3 – Floating Glue-Joint

Maximum room dimensions for an **engineered** floating floor are **25ft.** across the boards or **40 ft.** lengthwise. Floors exceeding either of these dimensions require use of "T-Molding." A minimum of one butt seam is required in every other row, regardless of width (e.g. hallways).

Never attach any permanent object through the flooring, affixing it to the subfloor. Never install kitchen cabinets on top of floating floors. A float-in floor must be free to expand and contract in all directions.

Step 1

If installing over concrete, a 6-mil plastic moisture barrier **MUST** be layed over entire subfloor before any other underlayments. Overlap plastic seams 8 inches.

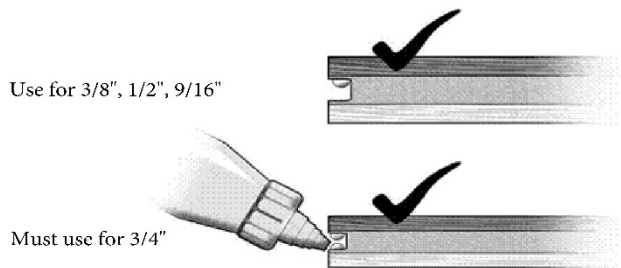
Layout 2in underlayment foam or other sound deadening underlayment, butting seams.

Step 2

Begin installation from the longest straightest wall, usually an outside wall. Start in the corner and lay first row, with groove ends and sides toward wall. Proper expansion space can be achieved by pulling floor away from wall once first three rows have been installed. Use spacers to maintain a proper expansion space of 1/2 inch.

Step 3

Apply a 1/8-inch bead of Floating Floor Adhesive to the top edge of the end groove of the second board. Engage groove onto tongue of the first board. Continue in this manner for entire first row.



Step 4

Cut end board in first row to correct length and start second row with left-over piece (if possible). End joints must be staggered by at least 12 inches. Butt seam must be placed in each row regardless of width, e.g. hallways.

Step 5

Apply 1/8-inch bead of Floating Floor Adhesive to top edge of the side groove. Engage the groove onto the tongue of the previous row and press together.

Step 6

For full boards, apply 1/8-inch bead of Floating Floor Adhesive to the top edge of the end and the side grooves. Engage short end of new board keeping long side in line with tongue of adjacent board.

Step 7

Using tapping block, carefully tap long edges together until they are closed. **DO NOT** tap too hard or over-engage. **Never** tap directly against wearlayer. Continue this process until you reach the end wall.

Blue painter tape #2080 can be used to keep rows or sections of floor boards together until the adhesive has cured. (incorrect tape can harm the finish.) Tape together 4 or 5 rows at 18" intervals. Many installers choose to use straps or clamps in an effort to force board rows tighter together during installation. Be aware that **over-strapping** may adversely affect the floor and can result in glue-bond failure, seam peaking, twisted boards, or out-of-square flooring board alignment.

Step 8

Cut last board to correct width. Place last board on top of second-to-last board. Mark board with help of piece of board. Use floor pull bar and mallet to engage the long side of planks.

ALL METHODS

Remember that all walls and other vertical structures in the room must have a 1/2-inch expansion space left between it and the floor. If your drywall stops at least 3/4" above the floor, the thickness of the drywall can be considered part of the 1/2" expansion space requirement.

- Once the floor has been completed, the base and the quarter round can be reinstalled into the room. This will cover the expansion gaps left between the wall and the floor.
- Sweep or vacuum the floor using a soft brush attachment.
- Finish by cleaning the floor with an approved hardwood floor **cleaner**.
- Enjoy your new hard wood floor.

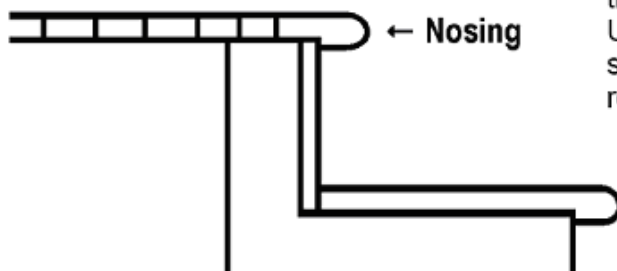
Trims and Transitions

There is a variety of trims and transitions to accent a floor by covering expansion gaps or transitioning from one flooring surface to another. Before completing your floor, it is important to know what trim pieces you will need for your floor.



- T-Mold- The molding is used mostly between tiled surfaces and wood floors. Also used for connecting to existing wood floors.
- Overlap Reducer (MUST be used with Floating method) - Used with floors to other floor coverings with lower vertical heights. Also used to transition to carpet.
- Overlap Stairnose (MUST be used with Floating method) - Used to transition for step down and staircases.
- Threshold- Used to finish the flooring up to vertical objects and carpet.
- Quarter Round- Used to cover expansion around walls next to base boards.
- Flush Reducer - Used with floors to other floor coverings with lower vertical heights. Also used to transition to carpet.
- Flush Stairnose - Used to transition for step down and staircases.

STAIRS/STEPS



- NOSING -- also called stair nosing, bull nose, stairwell trim, landing tread. Thickness same as flooring. Used to create finished edge on top step, around stairwell, sunken living room, etc.

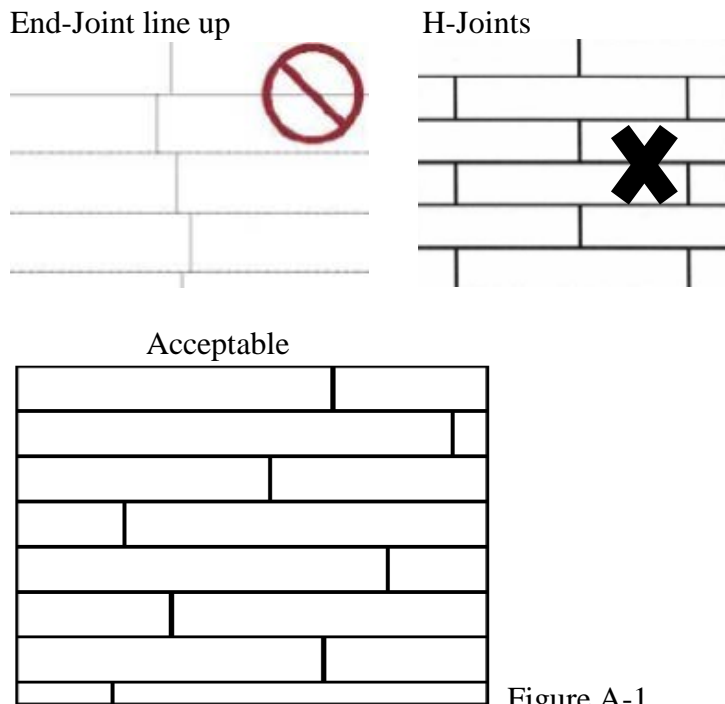


Figure A-1

Additional Information

Waste Factor

Additional square footage ordered for an installation is commonly referred to as a waste factor. During installation, boards are cut to specifically fit your floor. In addition, some boards may not be suitable for installation because of milling or color preferences which means it becomes waste. Finally, unfortunate damage during the life of your floor may call for replacing a board, and having spare flooring from the same stock can help to keep your floor's appearance. The standard in the flooring industry is to order five - ten percent of additional flooring to cover cuts and other waste.

AFTER INSTALLATION

L.W. Mountain, Inc. does not recommend covering the flooring for any extended period. If covering is needed to protect the flooring from additional work, it should be immediately uncovered after the work is performed. Covering the flooring can give other trades the perception that no damage will occur no matter what they do. In addition, foreign matter between the flooring and the cover can cause abrasions to the surface.

This is especially true in NEW home construction. Covering a newly installed floor over a recently poured concrete basement with fresh paint and dry-wall can cause moisture to be trapped under the covering and causing major damage to the new flooring.