



Installation Guide

GENERAL INFORMATION & AWARENESS

- **Hardwood flooring from LW Flooring:** manufactured and packed in carton box at moisture content lower than 8%. Since Hardwood flooring is a natural product, the natural expansion and contraction, which is induced by the change of the ambient humidity and/or temperature, of each plank through seasons is considered normal and acceptable.
- **Acclimation of Hardwood flooring on the job site:** especially required for the application in a dry climate. A two to four week time frame for the job-site acclimation is recommended for the pre-finished regular Hardwood flooring, such as laminated solid Hardwood flooring. However, for the pre-finished strand woven (high-density) Hardwood flooring, four to six week time frame is what LW Flooring would like to suggest. This on-site acclimation process may be longer for a radiant heat system floor. LW Flooring would also like to encourage our customers "having the planks out of the carton box and placing them in a good ventilation room; and, making sure that the heating/venting system is turned on as usual operation in the acclimation process". While racking or stacking the planks, avoid surface finish shin change of the exposed area from the unexposed area. Such shin variation is not covered under LW Flooring material and product warranty.
- **Difference in moisture content between the Hardwood flooring and the sub-floor:** within 2%. For instance, if the Hardwood flooring is at 7% moisture content, the moisture content of the sub-floor must be between 5% and 9%. Remember, acclimation of the Hardwood flooring on the job site is our customer's full responsibility for any unpleasant shrinkage or expansion of the Hardwood planks. Also, remember that the Hardwood flooring is a natural product
- **Industry standard of LW Flooring:** applied for the grading deficiencies of up to 5%, regardless of whether the deficiency is of a nature or manufacturing.
- **Inspection of all purchased LW Flooring:** done by the Installer prior to the installation. Do not install any material that has defects in quality, such as: color, finish, and/or structure, and notify LW Flooring immediately.
- **Responsibilities of the owner, builder, contractor, or installer:** ensure that the job site environment, including the sub floor and its surface, meets all applicable standards before installing Hardwood flooring.
- **Temperature and humidity levels at the job site:** set to normal living conditions as least for 7 days before the Hardwood flooring installation and must be maintained at those levels after installation.

Recommended LW Hardwood Flooring Products (unfinished and pre-finished):

- Nail-Down Installation: Antique (Hand scraped) Hardwood Flooring, Strand Woven Hardwood Flooring, Horizontal, Vertical, and Engineered Hardwood Flooring.
- Floating Floor Installation: Engineered Hardwood Flooring

- Glue Down Installation: Antique (Hand scraped) Hardwood Flooring, Strand Woven Hardwood Flooring, Horizontal, Vertical, and Engineered Hardwood Flooring

Recommended LW Flooring Building Products:

- Stairs: Hardwood Structural Stair Tread, Hardwood Stair Tread, Hardwood Stair Riser
- Railings: Hardwood Newel Post, Baluster, Handrail, Post mounting kit, Post top finial.
- Floor: Flush-mount floor vent, Top-mount floor vent.
- Molding: Hardwood Baseboard, Hardwood Door/window Casing, Shoe-mold, Hardwood Strip
- Transition: Reducer, T-mold, Nosing
- Underlayment: Hardwood Charcoal Fabric, and 3-in-1 (or 2-in-1) Underlayment
- Wall: Hardwood Wall Covering
- Office/Space: Hardwood Screens

PREPARATION

Job Site Conditions

- The Hardwood flooring should not be delivered to the job site until all doors and windows are in place, all wet work is complete (cement, drywall, painting, etc.) and the permanent heating and cooling system is operational.
- The Hardwood flooring must be allowed to acclimate at as close to "Normal Environmental Conditions" as possible for at least 2-3 weeks before installation. See section on "Normal Environmental Conditions" for details.
- Remove baseboard (when applicable) where it intersects with the new flooring area. Be sure to cut the caulk at the top of the base board first and be careful not to damage the wall or the base board during removal.
- Remove existing flooring, underlayment, and associated fasteners. Note: Depending on the lay out of the job site, it may be beneficial to remove the existing flooring in stages to avoid having to move furniture multiple times.

Sub Floor

- Inspect sub floor and/or sub surface for any height variation greater than 1/16".
- Scrape, sand, plane, level, or shim any variations greater than 1/16".
- Ensure that the sub floor is structurally sound. Screw any areas that are loose or squeak. Replace any areas that are damaged or weak.
- Check the moisture content of the sub floor/sub surface with the appropriate test equipment to ensure that it meets industry standards.
- Sweep and clean the entire floor.
- A vapor barrier, such as 6-mil polyethylene film, must be placed in crawl spaces.
- A moisture barrier foam pad is necessary for any concerns that moisture underneath the sub floor may come up.

Concrete (Gypcrete) Slab:

- * Inspect for any height variation greater than 1/16".
- * Scrape and/or level any variations greater than 1/16".
- * Sweep and clean the entire floor.
- Have all cracks and holes filled with a cemented-based patching material, and it must be tested for moisture. Calcium Chloride test method is recommended and flooring must not be installed if the vapor pressure exceeds 3 lbs. per 1000 sq. ft. in 24 hours. Concrete slab younger than 60 days are generally too wet for installing Hardwood flooring.
- For nail down approach, 5/8" to 3/4" plywood is installed over the concrete or gypcrete slab with PL adhesive and nail. It is recommended to have at least 24 nails (4x6) distributed along edges and field of each piece of plywood.
- It is also recommended to lay moisture barrier underlayment on top of plywood prior to installing Hardwood flooring.
- For other considerations of health and a clean environment, the underlayment can act as a sound barrier, cushion, and/or absorber of toxic and/or obnoxious fumes, e.g., Hardwood charcoal fabric.

Sub Floor with Radiant Heat

- Be sure that the heating system is designed and controlled for Hardwood floors to avoid any damage due to excessive heat and inconsistent temperatures. This includes calculating the heat load of the system and heat loss of the room.
- The heating system should be operational and on for about 7 days, and the flooring must acclimate for 2 to 6 weeks depending upon the style of Hardwood flooring to be installed, as well as upon the heating system.
- Turn heat off and allow the sub floor to cool to room temperature before installing Hardwood flooring.
- After the Hardwood flooring installation, wait two days before turning the heat back on. Gradually raise heat to the desired temperature over the period of one week. The surface temperature of your floor should never exceed 85 F (29C). Radiant heat floor generate dry heat. It may be necessary to use humidifier(s) to maintain "Normal Environmental Conditions". It is especially important that humidity levels (35-55%) and room temperature (55-85 F) are maintained in the interior of your home or place of business at all times during the year.

Recommended Tools and Accessories for Installing Hardwood Flooring:

- **Power Tools:**

Miter saw w/ stand, Table saw, Circular saw, Fine cut saw, Toe kick saw, Jig saw, Air compressor, Cleat/staple nail gun, 16 gauge finish nail gun, 18 gauge brad nail gun, Carpet staple gun, Belt Sander, Shop Vacuum

- **Hand Tools:**

Hammer, Mallet, Flat bar, Nail set, Tape measure, Speed square, Framing square, Razor Knife, Fine tooth file, Chalk Line, Chisel, Putty knife, Caulk gun, Earplugs, Safety Glasses, Extension cord, Air compressor hose, Strap clamps (for Floating and Glue Down Installations)

• Accessories:

Underlayment : rosin paper (for nail down)

Foam Pad : by Shaw (Green; Grey; Blue) for moisture/sound barrier + cushion (for nail down and floating)

Adhesive : Ever-seal by Bruce (floating), Bostik's Best or Franklin's 811 Plus (glue down); Liquid Nails

Nails : 16 gauge Cleats or Staples, 16 gauge or 18 gauge finish nails

Installation Approaches:

- **Nail Down Installation:** Use rosin paper or foam pad under the Hardwood flooring with cleat nails to hold the planks. Rosin paper is for the situation of no considerable moisture migrating from the substrate. Foam pad will provide cushion effect and it will also be used in the situation of considering the possible moisture migration from the substrate. Use the right length of cleat nails for the thickness of the sub-floor. No guarantee is applied to Hardwood flooring installed over or onto particleboard (OSB is the exception). See details below.
- **Floating Floor Installation:** Use non-absorbent moisture barrier foam pad under the Hardwood flooring with Bruce ever seal glue in tongue and groove. Keep the installed floor from traffic for at least 24 hours while the glue is setting up. See details below.
- **Glue Down Installation:** Do not use a water-based adhesive, but urethane based, e.g. Bostik's Best or Franklin's 811 Plus, which are moisture-resistance wood flooring adhesives. Also, for faster drying time, use Sika Floor Adhesive. Following manufacturer's instructions, apply adhesive to substrate with suitable trowel. Immediately place plank onto "wet" adhesive. Roll finished installation immediately with 150-lb roller. Use a releasable tape or strap clamps to hold planks together from creeping apart from one another and keep the installed floor from traffic for at least 24 hours while the adhesive is setting up.

INSTALLING HARDWOOD FLOORING

General Installation Tips

- Be sure to mix boards from several different boxes at a time to compensate for natural color variation and avoid a clustered look.
- Be attentive to stagger adjacent rows by a minimum of 6". Avoid staggering rows uniformly to avoid a stair step look.
- Allow a minimum of 1/4" expansion gap around all vertical obstructions.
- When face nailing a plank or accessories, always pre drill first.
- Allow a maximum of 1/8" expansion between the Hardwood flooring and any other flooring material or other exposed finished surface (i.e. tile, sliding door, etc.)

Step-by-Step Installation

Step 1: Door ways - Undercut door casing and jams to avoid difficult scribe cuts. Note: remember to include any moisture barrier in the trim-up height. This means that the Hardwood flooring should be able to run under the door casing instead of cutting the flooring to go around it.

Step 2: Starter Row - Choose the longest most consistent possible wall that is perpendicular to the room to begin the first row, ideally running the planks perpendicular to the floor joists. Before you install any planks, stop and look at the room. Walk through the installation in your head and make sure

that you are starting from the most appropriate wall. Make sure that you are not going to have problems later on in the installation.

Nail Down Installation

- Using a chalk line, establish a straight line the width of one board away from your starting wall. Don't assume that the wall you are starting on is straight or perpendicular to the room.
- Begin from left to right gluing or face nailing the first row to the sub floor, tongue facing away from the wall. Use shims between the wall and the plank to keep each plank straight with your chalk line.
- After the first row is in place, straight and shimmed against the wall, blind nail through the top of the tongue at approximately a 45 degree angle using a 16 gauge finish nail gun, placing the nails 6" to 8" apart.

Floating Floor Installation

- Roll out the foam underlayment as close to all walls as possible. Tape the pads together using Duct Tape.
- Begin by gluing together five rows of material, staggering all end joints by at least six inches. Apply glue to the *top of the tongue* along the *entire length* of the plank and on the end of the plank. A little glue should squeeze out of every joint. When cleaning excess glue, allow it to dry 10 to 20 min then easily peel the glue off the surface with a putty knife and wipe the remainder with a damp rag.
- Tape or strap together the rows you have laid so far making sure that all joints fit together tightly. This will make one large plank ensuring that you have a straight field to start from.
- Push the entire field up against the wall using shims to make up for variation in the wall. Note: this method can be difficult when you are dealing with a long starting wall because of the weight of the starter field. In this case you will need to make sure that your starting field is parallel to the wall and perpendicular to the room as you go.

Step 3: Installing the floor

Nail Down Installation

- After the first row is in place, roll out the rosin paper underlayment or other moisture barrier as close as possible to the first row. If you are using anything thicker than rosin paper you will need to start it in the middle to outside edge of the second row to avoid any height difference at the joint.
- Use the finish nail gun to blind nail the second and third rows, ensuring that each new row is seated tightly against the previous row and that the ends of each board fit together tightly.
- After you have installed the first three rows, continue as previously described using a Power Cleat fastener, spacing the fasteners 10" to 12" apart with a minimum of two fasteners per plank.

Floating Floor Installation

- Continue laying the floor, applying the glue to the top of the tongue the entire length of the plank and on the end of the plank. Glue should squeeze out of every joint. After laying five to seven rows stop, move your strap clamps and peel/clean the excess. Note: after you have tightened the strap clamps, tap them with the mallet to cause planks to pull together.
- Use enough strap clamps so that you have at least one per plank. Always keep entire floor strapped over night and avoid excessive traffic for at least 24 hours until the glue has cured.

Step 4: Final Rows

Nail Down Installation

- As you finish a room and get close to the wall on the opposite side you will need to go back to blind nailing with the finish nail gun. When you can no longer use the finish nail gun at a 45 degree angle, glue or face nail the final rows directly to the sub floor.

Floating Floor Installation

- Use shims between the final row and the wall to keep all joints tight while the glue dries. Keep all shims in place for at least 12 hrs.

Other Hardwood Flooring Installation Tips

- Use a fine file to take the sharp edge off of the cut end of a plank butting into a factory finish and on all exposed cut ends. Do not file miter joints.
- Always glue any transition or free end that does not interlock with the tongue and groove to the sub floor to keep it from becoming dislodged later.
- When transitioning from Hardwood to another flooring material, e.g. tile, keep height difference to a maximum of 1/8". Any transition over 1/8" should be beveled or filed down at a 45 degree angle. Any thing over 1/4" will need some type of transition piece.

Normal Environmental Conditions - Normal environmental conditions are here defined as temperature between 55F and 85F and humidity levels between 35% and 55%. Humidifiers and fans should be run as necessary to maintain normal humidity.