



INSTALLATION GUIDE

COMMON FACTS/ISSUES

Hardwood floors are made from beautiful trees that each contain the diverse wood that we have come to know and appreciate. It is reasonable to expect variations in grain and shades of color from board to board. It is this variation that provides its unique natural beauty and value. Flooring should not be delivered to the jobsite until the building has been closed in with windows and doors in place and until cement and all other “wet” work is completed and dry. This includes interior sheet rock, finishing, painting, and final sub-floor installation. Prefinished flooring is a finished product so care must be taken before installation to ensure the completed product is not damaged by other work being completed within the home. Our wood floors are manufactured in accordance with industry standards for grades and quality, ensuring the customer receives the expected product. As with all finished wood products being installed in a set area you should add a minimum of 5% to the actual square footage needed to allow for waste caused by cutting pieces to fit, and color grading. This is standard within the wood flooring industry. The installer assumes the responsibility for final inspection as to grade, quality, manufacture, color and finish. Do not start the installation until the homeowner approves the delivered product. Inspection of all flooring material must be done prior to installation. Should an individual piece be doubtful as to grade, manufacture or factory finish, the installer should not use the piece. The installer must use reasonable selectivity and set aside or trim pieces with any deficiencies. If the installer determines that the material is not acceptable, the seller should be contacted immediately before starting the installation. Once the floor is installed it is considered accepted by the installer and customer. Solid wood flooring must be installed on or above grade level, never below grade level. Prior to installation of hardwood flooring, the installer must determine that the jobsite environment and the sub-surfaces involved meet all applicable building code standards. Recommendations of the construction and materials industries as well as local codes must be followed. These instructions recommend that the construction and subfloor be dry, stiff and flat. The manufacturer declines any responsibility for poor results caused by sub-surface, sub-flooring or job-site deficiencies. The use of putty sticks, stain or filler for finish work is standard installation practice, as is the use of proper materials for filling sub-floor voids.

SPECIAL NOTE REGARDING RADIANT FLOORING SYSTEMS

Solid hardwood flooring is not compatible with sub-floor radiant heating systems. Retailers and installers are strongly encouraged to contact the National Wood Flooring Association for full details.

SUGGESTED TOOLS AND MATERIALS FOR TYPICAL INSTALLATIONS

• Hammer • Saw • Nail Set • Chalk Line • Measuring Tape • 16g - 18g Cleats 1 ½” - 2 ¼” • Drill with 1/16” Bit • Flooring Cleaner • Wood Flooring Moisture Meter – Species Specific • Broom • 2” Blind Fastening Machine • Underlayment • Jamb Saw • 6-7d Screw Shank Nails • Hardwood Flooring • Earplugs • Safety Glasses



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JOB SITE REQUIREMENTS:

- The building should be closed with all doors and windows in place. All interior paint, sheet rock finishing, and other wall coverings should be complete along with all high moisture work such as concrete and masonry should be thoroughly dry. Delay installation of base moldings until flooring installation is complete. Basements and crawl spaces must be dry and well ventilated.
- If possible, hold sheet rock up 1" from sub-floor for extra expansion area to wall plate, a must if quarter round molding will not be used in junction with base molding.
- All gutters and downspouts should be installed to keep moisture away from the building.
- Ensure basement and foundation drains are working properly. The basement should be dry and free from standing moisture, if not, delay the installation until you can ensure a dry basement (wet basement equals wet sub-floor if installing on first floor).
- Outside grading should provide surfaces drainage to direct water flow away from the building. Ensure foundation drains are working properly keeping basement and or cellar dry at all times.
- Crawl spaces should be a minimum of two feet from the ground to 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 a perimeter venting equal to a minimum of 1.5% of the crawl space square footage. These vents should be properly located to foster cross ventilation. Where necessary, local regulations and codes prevail.
- Sub-floor must be checked for moisture content using the appropriate testing method. Ideal Sub-floor moisture content should be 10% or less and never exceed 12%. If sub-floor moisture measurements exceed 12% do not install your hardwood flooring. Use a dehumidifier to lower moisture content in sub-floor to desired range and be able to maintain it prior to installing the wood floor. Sub-floor and hardwood Flooring should be within 2% moisture content prior to installation.
- Permanent air conditioning and heating systems should be in place and operational. The installation site should have a consistent room temperature of 60-80 degrees F and humidity range within 30-50% for 14 days prior to and during the installation, to allow for proper acclimation of your hardwood flooring to its new environment.

STORAGE OF FLOORING PRIOR TO INSTALLATION

Unload and handle cartons with care. Wood flooring should be stored in a dry place on site, in the same room of installation if possible, for at least seventy-two hours prior to installation to allow the material to acclimate and equalize to the conditions of the home. If material is stored on a concrete floor leave an air space under cartons by using wood blocks (2x4's) to keep boxes off of the floor. At the start of the installation, the moisture content of the wood floor and sub-floor should be within 2%.

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Note: Minor occasional noises in mechanically fastened floors are not abnormal due to structural movement caused by changes in environmental conditions. Following these instructions can minimize these factors but offers no guarantee that the floor will not create minor occasional noises.



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General information for Fastening Nailers and or Machines:

- Avoid striking the edge of the factory-finished hardwood flooring products with the fasteners mallet. You may crush the finished wood edge, causing unsightly cracks and splinters. Use a set block to hammer against and set the floorboard if necessary, a scrap piece of floor works very well.
- Fastener faceplates should be covered with protective materials to prevent damage to the surface of the flooring. Plastic faceplates are made to provide a protective surface between metal base and the finish floor and should always be used when installing prefinished hardwood flooring.

Manual Fastening Machines:

Improper adapter plate and selection can cause severe edge damage. Ascertain that the proper adapter has been selected and properly installed for $\frac{3}{4}$ " flooring. Many manufacturers make a plastic plate adapter for their fastening machines to protect the finished floors. Ensure that you use the correct one for $\frac{3}{4}$ " prefinished flooring.

Pneumatic Fastening Machines:

Improper pressure settings and failure to use proper faceplate adapters can cause severe damage to the flooring. The correct adapter plate and air pressure setting will properly set the fastener in the nail pocket and protect the finished surface of the floor. Low air pressures may fail to properly set the staple and damage adjoining boards. Air pressure set too high may cause damage to the tongue, preventing installation of adjoining boards and cause blisters on the face of the flooring. Make certain that the air compressor has a regulator in-line with the air hose for proper adjustment. Set pressure at 70 PSI to begin with and adjust until proper staple setting occurs. Use a sample board to work with and remove the board once the desired settings of the fastener has been obtained.

Sub-Floor Considerations:

- Clean-scrape, broom clean, and smooth – free from wax, paint, oil, sealers, adhesives, curing agents, and other debris.
- Level & Flat – within $\frac{3}{16}$ " in 10' and/or $\frac{1}{8}$ " in 6'. Sand high area or joints. Flatten low spots with layers of 15# builders felt (or other suitable moisture retardant), plywood or shims (not leveling compounds).
- Structurally Sound – nail or screw any loose areas that squeak. Replace any water-damaged, swollen, or delaminated sub flooring or underlayment. Avoid sub-floors that have excessive vertical movement.
- Dry-check moisture content of the sub- floor with the appropriate moisture meter. Sub-floor should be within 2% moisture content of wood flooring.
- Do not install solid hardwood flooring over radiant heated subfloors
- Laminated rosin paper or 15# builders felt acts as a moisture retarder and may be used to reduce movement caused by changes in sub-floor moisture, thereby reducing cupping and warping. The use of these materials can give the flooring a more solid feeling, reduce sound transfer, prevent noise caused by minor irregularities and debris, and make it easier to slide the wood together across the surface of the sub-floor.

Wood Sub-Floors:



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Plywood: Must be a minimum of $\frac{3}{4}$ " APA grade rated sheathing or CDX minimum. Oriented Strand Board (OSB) Must be Ps2 rated and installed sealed down. Do not install over particleboard, wafer board, pressed wood or fiberboard. Make sure the existing floor or sub-floor is dry and well nailed or screwed down every 6" along each joist to avoid squeaking or popping before the floor is installed. The wood sub-floor must not exceed 12% moisture content. Measure the moisture content of both the sub-floor and wood flooring to determine proper moisture content with a reliable wood moisture meter. The difference between the wood subfloor and the wood flooring must not exceed 2%. Most sub-floors are delivered to the jobsite at or near 20% moisture, actions must be taken to reduce the moisture to at least 6% - 12% range. These may include running the central conditioning or heating units or using a dehumidifier prior to installation to help draw out the moisture on site. Optimum performance of hardwood floor covering products occurs when there is a little horizontal or vertical movement of the sub-floor. If the sub-floor has excessive vertical movement (deflection) before installation of the flooring it is likely it will do so after installation of the flooring is complete. Deflection may cause the floor to become loose creating a noisy floor or cause premature finish wear. Avoid installations over sub floors that do not meet this minimum criterion. As flooring manufacturers, we are unable to evaluate each engineered system. Other spaces and spans as well as their engineering methods are the responsibility of the builder, architect or consumer who is better able to evaluate the expected result based on the site related performance.

Concrete Slabs: Solid flooring can only be installed over NWFA approved subfloor. If installing over a concrete slab, appropriate nailing surface must be installed. Concrete must be of high compressive strength. All concrete sub-floors should be tested for moisture content. Visual checks are not reliable.

Note: Test several areas, especially near exterior walls and walls containing plumbing to obtain a true average moisture content of the sub-floor. A dry slab, as defined by these tests can be wet at other times of the year. These tests do not guarantee a dry slab. All concrete slabs should have a minimum of 6 Mil-Polyethylene film moisture barriers between the ground and the concrete.

Sub-floor Systems over Concrete Slabs:

Bonded: Install suitable moisture retardant followed by a sub-floor with a minimum thickness of $\frac{3}{4}$ ". Allow $\frac{3}{4}$ " expansion space around all vertical objects and $\frac{1}{8}$ " between all flooring panels. The panel must be properly attached to the sub-floor using a minimum of one fastener per square foot and more if necessary. Use pneumatic or powder actuated fasteners. Do not nail the sub-floor by hand with concrete nails. Install a moisture retardant barrier with joints lapped 6" and begin installation of flooring using $1\frac{1}{2}$ " fasteners.

Floating: Install suitable moisture retardant following by an NWFA approved plywood subfloor.

Allow $\frac{3}{4}$ " expansion space around all vertical objects and $\frac{1}{8}$ " between all flooring panels. Install a moisture retardant barrier with joints lapped 6" and begin installation of flooring.



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HARDWOOD FLOORING INSTALLATION

General Hardwood Flooring Installation Tip – Floor should be installed from several cartons at the same time to ensure good color and shade mixture. Rack several boxes out at the same time to ensure the mixture of color and character you desire. Be attentive to staggering the ends of boards at least 6" when possible in adjacent rows. This will help ensure a more favorable overall appearance of the floor. Large spans may require additional expansion. This can be accomplished by using spacers, such as small washers, every 10-15 rows inserted above the tongue and removed after several adjoining rows have been fastened.

STEP 1: Doorway and Wall Preparation Remove any existing base molding, shoe mold or doorway thresholds. These items can be replaced after installation is complete. All door casing should be undercut to avoid difficult scribe cuts while installing the hardwood floor.

STEP 2: Establish a Starting Point, Wall-to-Wall Installation. Installation parallel to the longest wall is recommended for best visual effects, however, the floor should be installed perpendicular to the flooring joists unless sub-floor has been reinforced to reduce sub-floor sagging. Find appropriate sub-floor from "sub-floor type" section of this instruction manual. If a moisture retardant material is to be used, such as 15# felt (see NOTE, Sub-floor requirements), install this material before proceeding, lapping joints 6" and stapling if necessary. • Measure the width of the product being installed. For random or alternate width products, use the widest plank for the first started row in the room. • Add 1" to your measured width to allow for $\frac{3}{4}$ " floor expansion and the width of the tongue to the starter measurement. This takes into account the standard base and quarter round finish molding. If only baseboard used, then cut sheet rock up 1" from sub-floor to gain another $\frac{1}{2}$ " (width of sheet rock) expansion gap to the wall plate. • Using this measurement, in at least two places, measure out equal distances from the starting wall and 12" – 18" from the corners and snap a chalk line to use as a straight edge aligning the starter strip of flooring with the room.

STEP 3: Installing First rows Wall-to Wall • Use the longest, straightest boards for the first two rows of flooring in the room. • Align tongue of first row on chalk line. The groove should be facing the starting wall. • Pre-drill the nail holes 1" from back (groove) edge, 1" – 2" from each end, and at 6" intervals at a 45-degree angle down through the nailing "pocket" on top of the tongue. • Face-nail the groove side where pre-drilled. When complete, blind nail at a 45 degree angle the tongue through the first row. Fasten using 6d or 8d nails. Countersink nails to ensure flush engagement of groove. Avoid bruising the wood by using a nail set to drive the nails at least $\frac{1}{2}$ " into the tongue.

• Continue blind nailing using this method with following rows until stapler or nailer cannot be used. • End-joints of adjacent rows should be staggered a minimum of 6" to ensure a more favorable overall appearance. • Beginning rows, may be blind nailed where clearance allows using a pneumatic finish nailer with 15 gauge, 1 $\frac{1}{2}$ " minimum nails in lieu above.



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STEP 2 & 3: Center to Wall Installation (Alternative to above method) • Snap a chalk line down the center of the room. • Install a sacrificial row that extends the entire length of the room along the centerline. • Install three rows of flooring. • Remove the sacrificial row and insert a slip tongue (spline) in the open groove. • Always glue and nail the slip tongue in place

STEP 4: Racking the Floor (Recommended to achieve the best color and character combinations within your hardwood floor.) • “Dry” lay (rack) materials to cover approximately 2/3 of the room. Being dry laying (racking) approximately 6” from the edge of the previously installed rows. Avoid pulling boards too tightly together on the sides, as they must move freely when fastening begins. • Mark the final board on each row and cut to proper length allowing for expansion. Wait to cut pieces until you have laid the row to make sure proper expansion gap can be obtained without cutting board to short. • Visually inspect flooring for color variations and layout of design, setting aside boards that need to have natural character flaws cut out. Use these boards for starting and finishing row after objectionable characteristics have been removed.

STEP 5: Installing the Floor Fasten a sacrificial board to the floor to test your fastener. Check for surface damage of finished floorboard, air pressure setting, tongue damage, etc. before proceeding. Make all adjustments and corrections before installation begins. Once proper adjustments have been made, remove and destroy the board. • Begin flooring installation with several rows at a time, fastening each board with a minimum of at least two fasteners, 6” – 8” apart and 1 – 3” from the ends (to avoid splitting). Tighten boards as necessary to reduce gaps before fastening. Use a set block to tap floor mallet against for setting each board, not the floor mallet to the finished floor, so as not to damage finished board surfaces. • End-joints of adjacent rows should be staggered at least 6” when possible to ensure a more favorable overall appearance. • The last 1-2 rows will need to be face nailed where clearance does not permit blind nailing with stapler or nailer. Pre-drill and face-nail on the tongue side following the nailing pattern used for the first row. • Rip final row to fit and face nail. If the final row is less than 1” in width, it should be glued to the previous uninstalled row and the two joined units should be face nailed as one.

STEP 6: Completing the Job • Clean the floor is a product specifically made for the wood flooring you are installing. Do not use products that contain wax, wax can dull and remove the finish of your floor. • Install any transition pieces that may be needed, such as Reducer Strips, T-Moldings or Thresholds. • Re-install all baseboards and/or quarter round moldings. Nail moldings into the wall, not the floor. • To prevent surface damage avoid rolling heavy appliances or furniture on the floor. • Install furniture pads on all furniture in the room, as well as place any needed throw rugs to protect the floor. • Use plywood, hardboard, or appliance lifts if necessary to protect floor when moving heavy items. • Save a small amount of “attic stock” in case a board replacement is needed in the future. Leave warranty and floor care information with owner. Advise them of the product name and code number of the flooring they purchased. Give the owner a box end with the Wood Floor Lot # clearly visible in case needed for future reference.