GENERAL INSTALLATION GUIDE

STORAGE

Always store the floor and moldings in normal ambient living conditions, i.e. between 35% and 55% relative humidity. Do not store in a garage, basement or other locations where the wood would be exposed to the effects of uncontrolled humidity. Avoid uselessly opening the boxes. Do not open the boxes ends.

RESPONSIBILITY OF INSTALLER AND OWNER

The installation of a hardwood floor should be done according to the floor industry's best practices. This is why we are recommending that you contact qualified professionals that are familiar with the industry's installation norms and guidelines (for example: NWFA, NOFMA, etc.) for your floor's installation.

Before the installation

Ensure and confirm that the work environment and the subfloor meet the minimal conditions of this document;

- Inspect the subfloor and verify its moisture content (MC);
- Install your product in normal living conditions; between 35% and 55% relative humidity

Perform final inspection and approbation of floor components with respect to their grade, finish, color and manufacturing quality prior to the permanent installation;

- Any installed floor component will be considered as accepted by the installer and the owner – whether or not the owner is present during installation – and consequently will not be covered by our warranty.

Subfloor

Before proceeding with the installation of your wood floor, carefully inspect the work location in order to determine whether the subfloor and the building's ambient environmental conditions are acceptable. Verify the following :

- For houses that have a crawlspace or a pillar foundation
    - Vents shall ensure a transverse ventilation so that air can freely circulate everywhere;
    - The foundation shall have a minimum of two vents that are open year-round and whose combined cross-section area is equal or greater than 1.5% of the crawlspace area;

- Cover the crawlspace floor with a black polyethylene vapor barrier of 6 mil (6/1000 in or 0,15 mm).

- The wood subfloor shall be structurally sound and solidly affixed to the joists.
- For plywood subfloors or OSB, they shall conform to the norm “U.S. Voluntary Product Standard PS1-07, Construction and Industrial Plywood” and/or “US Voluntary PS 2-04” and/or the standard Canadian performance norm CAN/CSA 0325.0-92
- Subfloor plywood thickness is determined by the joist spacing:
  - A joist spacing of 16 in requires a plywood of 5/8 in or OSB 23/32 in or more
  - A joist spacing of 19 in requires a tongue and groove plywood of 23/32 in or OSB 23/32 in or more
- If the subfloor is a wood surface, the floor components shall be installed either perpendicular or at 45 degrees with respect to the joists.
- If the subfloor is a concrete surface, the concrete shall have a minimum compressive strength of 3000 psi.
- The subfloor must be clean, flat, smooth and free of debris of any kind. Flatness tolerance is a maximum of 1/4 in (6 mm) within a radius of 10 ft. (3 m).
- For nailed or stapled installations, the installation of a wood subfloor vapor barrier is recommended. Acceptable vapor barrier must be a membrane with a vapor permeability 6 (infiltration coefficient) equal or greater than 0.7 and equal or lower than 10 when tested as per ASTM E-96 A. The installation of a vapor barrier will reduce the migration of humidity and related vapor problems, but it is not a guarantee that it will eliminate them.
- For glued installations, a sealer or a glue containing a sealer are acceptable solutions; if this is the chosen mode of installation, refer to the manufacturer’s technical specifications (either for the sealer or the glue containing a sealer) to know the vapor permeability properties. If a combination of glue and sealer is used, make sure that the two products are compatible.

Subfloor moisture

- The wood subfloor moisture shall not exceed 12%.
- The moisture difference between the wood subfloor and the floor itself shall be :
  - No more than 4% in floors less than 3 in wide
  - No more than 2% in floors wider than 3 in wide
- The moisture evaporation rate for concrete is at most 3 lbs per 1000 ft^2 / 24 hrs (ASTM- F1869 calcium chloride test). If it is higher than that, use a sealer/retarder appropriate for the specific installation.

INSTALLATION – GENERAL REMARKS

For nailed or stapled installation: it is best to start from the middle of the room for rooms less than 20 ft. wide and mandatory to start from the middle of the room for rooms wider than 20 ft. in order to spread out the expansion. Please make sure to allow enough expansion space, min 3/4 in for solid and 1/2 in for engineered.

Given the natural wood color variations, the installer shall work at all times with three or four open boxes in order to harmonize the overall look of the floor.

1- Draw a guiding line parallel to the installation orientation

2- Fix a straight support block in order to guide and facilitate the installation of the first rows.

3- Remove the support block and glue and nail – or staple – (depending on the chosen mode of installation) a tongue reversal piece in the groove of the first installed row and continue with the installation.

4- To complete a row, pick a floorboard that has a length difference of at least 6 in (15 cm) with the first floorboard of the previous row, in order to avoid aligning the joints. Install the floorboard and then use its sawed-off section to start the next row.

5- Avoid joint alignment:

- For products of 4 in (width) or less, make sure that the joints are at least
  4 in (10 cm) away from each other;
- For products of more than 4 in (width), make sure the joints are away from each other by more than the product width;

6- Install moldings and quarter rounds by nailing them in the wall, NEVER IN THE FLOOR.

PARTICULARS OF INSTALLATION TYPES

NAILED OR STAPLED INSTALLATION

Using a stapler is impossible when working next to a wall. Those rows will have to be done manually, either by using a manual nailer from the top of the floorboard or by using flexible glue. Using nonflexible glue might interfere with the natural expansion of the wood and cause permanent damage not covered by the warranty.

Make sure you follow the recommended spacing of nails or staples; please refer to the table in Annex A “MANDATORY INSTALLATION CONDITIONS BY PRODUCT TYPE”.

Ensure that each floor board is fixed at least at two different locations, no matter what length it is.

GLUED INSTALLATION

Not recommended for solid floors

Use an adhesive designed for engineered floor, but not a water-based adhesive.

Refer to the glue manufacturer’s instructions to select the proper trowel.

Read the glue manufacturer’s instructions to ensure its proper application.

INSTALLATION OVER A RADIANT HEAT SYSTEM

1. Starting up an integrated radiant heat system in a concrete sub-floor before the concrete has completely cured might negatively impact its structural integrity.
2. Start the heating system at 2/3 of its maximum capacity for 14 to 16 days in order to get rid of any excessive humidity. Midway through the 14 to 16 days period, raise the temperature to its maximum for 2 days.
3. Once the concrete slab or the sub-floor has completely cured and is dry, shut the heating system down for 1 to 2 days prior to installing the wood floor. Sub-floor temperature shall not exceed 68 ºF (20 ºC) at installation time.
4. Install the wood floor according to the appropriate installation guide directions.
5. 24 to 48 hours after installation, gradually increase the heating system temperature by increments of 10 ºF (5 ºC). Avoid a drastic and sudden raise of temperature, as it might result in permanent damage not covered by the warranty.
6. Floor temperature shall not exceed 80 ºF (26 ºC) once the floor is installed
7. Do not install rugs, carpets or furniture without any air gaps, that will not let the floor breath.

REMARK: Refer to the table in Annex A “MANDATORY INSTALLATION CONDITIONS BY PRODUCT TYPE” in order to determine whether your floor is compatible with a radiant heat system.

FLOATING INSTALLATION
Not recommended for solid floors
Multiple lengths with Micro-V only

Membrane

A membrane is required for installation of a floating floor. We recommend the “Tuplex” membrane, or an equivalent product. For installation, refer to the membrane manufacturer’s instructions.

Floor

1. Accurately measure the room's dimensions and figure out the way the floor boards will be laid out while making sure the parallel sides are equal and at the same distance from the walls. Leave a gap of at least ½ in (12 mm) between the floor boards and the walls for lateral expansion and ¼ in (6 mm) at the ends of the rows for longitudinal expansion.

2. Plywood floor boards will be installed from left to right with the grooves oriented towards the starting wall. Start by installing the first two rows simultaneously. Position a long board in a corner on the left side of the installation.

3. Apply glue on the lower side of the lateral groove of the second board and join the second board to the first one. The new board should be at least 5 in (13 cm) shorter than the first one.

4. Apply glue on the lower side of the end groove of the third board and join that third board to the end of the first board.

5. Continue the installation of the first two rows by applying glue to the lower side of the lateral and end grooves. Those rows must be perfectly straight. Keep a distance of ½ in (12 mm) from the starting wall by using small spacer blocks. Those spacers will also prevent floor boards movement during the rest of the installation.

6. Stagger the end joints of the floating floor boards by a distance equal or larger than the boards´ width. Allow for at least three rows between end joints that are even. Firmly press the floor boards together manually, or by using a small block designed for it. Clean and remove the excess glue with a wet rag or mineral spirit. Painter tape that can be quickly removed - like the 3M blue 2080 tape – can also be used to fix the boards together.

7. Allow the glue to dry between the first two rows before starting installation of the other rows. Remove the painter tape – if used – within two hours of its application. A lever bar can be used to press boards together after a row has been added.

8. When the first two rows are firmly in place, proceed with the rest of the installation while leaving a ½ in gap all around the room. Clean and remove excess glue. Stagger the end joints by at least 5 in (13 cm) throughout the installation. Use the starting boards to vary the location of end joints. Starting boards shall have a minimum length of at least 6 in (15 cm).

9. The last row against the wall will rarely be the same width as the other rows. Cut the boards lengthwise so that the last row matches the available space (while respecting the ½ in gap between it and the wall). Apply glue and use a lever bar to press it into place.

10. Cut off the excess membrane so that it will not be visible after installing the moldings.

Expansion rules for floating floor installation

1. Plan for an expansion space next to walls, doors and vertical obstacles. The minimum required space is ½ in (12 mm) for continuous surfaces up to 24 ft. (7 m). A continuous surface is defined as an area without separation or expansion joints. If the installed floor is directly joined to adjacent rooms' floors, by a hallway or an entrance without T-shaped molding, the width of the continuous area is the sum of the separate rooms widths or the entrance. Obstacles include cabinets, islands and the wall opposite to the starting wall.

2. No continuous floor can spread more than 40 ft. (12m) of width.
3. Adjacent rooms more than 16 ft. (5 m) in width connected by a door 3 ft wide or less shall be separated by a T-shape molding.

Width of continuous surface	Required expansion space
Up to 24 ft. (7 m)	½ in (12 mm)
From 24 to 40 ft. (7 to 12 m)	¾ in (20 mm)

HERRINGBONE PATTERN INSTALLATION
Glued installation only

1. Guiding lines set-up at 90° angle (illustration 1).

Herringbone or wickerwork boards can be installed from any starting point within a room. However, usual installation guidelines suggest starting from the middle of the room.

Should you want to use SI system units (metric) in the following examples, do not convert the imperial unit figures into metric units. The indicated metric measurements in parenthesis do not correspond exactly to the imperial measurements. In order to ensure accurate 90° et 45° angles, the metric measurements were adjusted accordingly. You can thus use either units, as indicated below.

Lines X and Y must form a perfect 90° angle. In order to obtain this angle, proceed as follows:

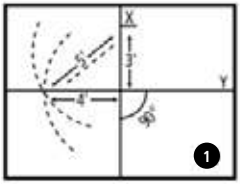
a) Draw the X line in the middle of the room using a chalk line.

b) Put a tick mark in the middle of the X line. Then put another tick mark on the same X line at 3 ft. (1.2 m) from the first tick mark.

c) From this second tick mark, draw a 5 ft. (2 m) radius arc in the general area where the Y line will be drawn.

d) From the central tick mark on the X line, draw a second arc with a 4 ft. (1.6 m) radius that will intersect the arc drawn in step 3.

- The line going from the central tick mark on the X line to the intersection of the two arcs forms a perfect 90° angle with the X line. Verify the accuracy of all measurements (3,4 and 5 ft. / 1,2 m, 1,6 m and 2 m).
- If all measurements are accurate, draw a line from one wall to another, going through the central tick mark on the X line and the intersection of the two arcs; this is your Y line.

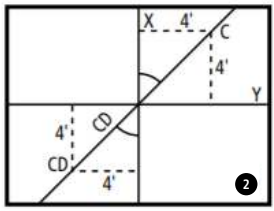


2. For a 45° angle installation, you will have to draw a 45° angle working line (illustration 2).

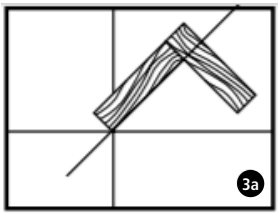
a) From the intersection of the X and Y lines, put 2 tick marks on each line at 4 ft. (1.6 m) from the central point, for a total of 4 tick marks.

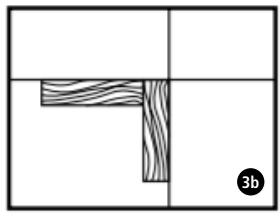
b) From each of these four tick marks (4 ft. (1.6 m) from the central point), draw a 4 ft. (1.6 m) arc in the general area where the 45° line will be drawn. A line going through the central point to the intersection of the two arcs will form a 45° angle with the X and Y lines. Verify the accuracy of all 4 ft. (1,6 m) measurements.

c) If the measurements are accurate, draw a line from the central point to the intersection of the two arcs. This line will be at a 45° angle with respect to both the X and Y lines. This is your working line.



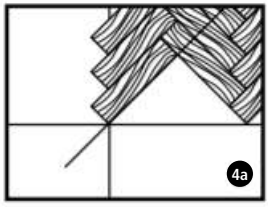
3. Floor boards disposition. Each box of herringbone boards contains an equal quantity of boards with tongues on the left hand side and tongues on the right hand side. When installing herringbone or wickerwork floor boards, it is important not to slide the floor boards on one another. Sliding the floor boards against one another might accumulate glue on the leading edge, preventing a good mesh between the boards.
4. Install a floor board with glue on the right tongue. Position the floor board so that the edge is exactly on the working line (illustration 3a and 3b).





5. Install the second-floor board (tongue on the left) at a right angle with the first board (tongue on the right) to form an arrow-shaped pattern (illustration 4a and 4b) pointing in the right direction. The installation of all other floor boards will follow the same procedure.

SUGGESTION: Once the first two floor boards are installed, remove all the remaining boards from the box and position them as they will be installed. This will avoid mixing up the two board types during installation. Use easy to remove painter tape like 2080M (blue tape) to hold the boards together. NEVER USE regular tape since it will leave glue residue on the boards that is very difficult to remove. Remove the tape once the installation is complete



ANNEX A MANDATORY INSTALLATION CONDITIONS BY PRODUCT TYPE

It is essential to control the pressure generated by installation tools; we strongly recommend to try various pressures on a board to determine the right one. The head of the nail or staple should rest on the tongue without penetrating it.

Product	Solid ¾ in (19 mm)	Engineered Expert ¾ in (19 mm)	Engineered up to 7/16 in (11 mm)	Engineered greater than 7/16 in (11mm)
Installation location	Ground floor and up	All floors	All floors	All floors
Compatible with radiant heat floor	No	Yes See note 2	Yes See note 4	Yes See note 4
Allowed installation method	Nailed Stapled See note 1	Glued Stapled See note 3	Nailed Stapled Glued Floating See notes 5 & 6	Nailed Stapled Glued Floating See notes 5 & 6
Fasteners	Min 1½ in (3.5 cm) 16 to 22 Ga	Min 1½ in (3.5 cm)18 to 22 Ga	Min 1¼ in (3 cm) 18 to 22 Ga	Min 1½ in (3.5 cm)18 to 22 Ga
Fasteners spacing	6-8 in (15 -20 cm)	6-8 in (15 -20 cm) OR 4 in (10 cm) for products more than 5 in (13 cm)	4-6 in (10-15cm) OR 4 in (10 cm) for products more than 5 in (13 cm)	4-6 in (10-15cm) OR 4 in (10 cm) for products more than 5 in (13 cm)
Fasteners spacing from board's end	1-3 in (2.5-7.5cm)	1-3 in (2.5-7.5cm)	1-2 in (2.5-5cm)	1-2 in (2.5-5cm)
Relative humidity, at all times	35-55%	30-80%	35-65%	35-65%

NOTES

1. In order to minimize the risk of cracks and other structural failures that might be caused by humidity fluctuations, we recommend the use of cleats.
2. The thickness of floor boards might act as thermal insulation and impact the performance of radiant heat floors.
3. Glued installation; using straps is strongly recommended to avoid gaps between floor boards.
4. A floating floor might act as a thermal insulator and impact the performance of radiant heat floors.
5. A floating floor installation is not recommended for square edges products.
6. For nailed or stapled installation, all the products more than 4 in (10 cm) wide, the manufacturer recommends to put a glue bead in a serpentine pattern, either on the subfloor or on the back of the board, in order to maximize the floor's stability. Please note that the glue assist won't perform is used with moisture retarder.