

# INSTALLATION GUIDE

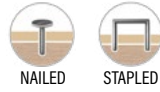
## SOLID HARDWOOD | GENERAL INFORMATION



### INSTALLATION LOCATIONS

- ✓ 2<sup>ND</sup> FLOOR
- ✓ 1<sup>ST</sup> FLOOR
- ✓ BASEMENT

### INSTALLATION TYPES



### INSTALLATION OVER A RADIANT HEATING SYSTEM

Solid hardwood flooring **less than 5 inches (127 mm)** in width can be installed over a radiant heating system.

#### ATTENTION!

**These installation guidelines provide minimal requirements. However, the installer must ensure compliance with legislation in effect in the country where the products are installed. Any installation that does not comply with these guidelines may void the warranty.**

**The installation of flooring should be the last step in the construction or renovation of a house.**

**Carefully read instructions and warranty information before preparing and installing your floor.**

## RESPONSIBILITY OF THE INSTALLER AND OWNER

The installer must examine each board before laying it down. Any board installed (nailed or stapled) is deemed to have been accepted by the installer and/or owner. Such boards may not be claimed under warranty on the basis of manufacturing defects or classification errors. If the owner hires a third party to install the flooring and cannot be present during the installation, the owner is responsible for the judgment of this third party. The installer should be able to evaluate wood quality (grade and shape) and lay out colours according to the natural variations of the species chosen.

PG Flooring cannot be held responsible for errors resulting from poor judgment on the part of the installer. It is the responsibility of the owner to ensure that the wood delivered is what was chosen and ordered.

If you notice any defect in the grade, structural quality, or finish of the wood, please stop the installation and contact your distributor immediately. Discard any board with a visible defect rather than installing it and compromising the overall appearance of the floor.

Before installing wood flooring, the installer must ensure that the worksite and subfloors meet or exceed all applicable standards in the installation guide. PG Flooring declines any liability for problems resulting from defects in the subfloor, its surface, or the worksite itself.

#### FOR NAILED INSTALLATION:

Manufacturers offer consumers a range of flooring nailers for hardwood floors to choose from, including manual and pneumatic (air-powered) models. It is the installer's responsibility to ensure that the fastener is properly driven into the flooring and that the spacing between nails complies with the recommendations outlined in this installation guide. Improper nail installation may result in a "telegraphing" effect—bumps caused by wood fibre compression from the nails—which is not considered a manufacturing defect. It is recommended to test a few boards: nail them and inspect the joints where the boards meet, especially for installations at a 90° angle to an exterior wall where daylight falls directly onto the floor.

#### FOR INSTALLATION OVER A RADIANT HEATING SYSTEM:

Installation of flooring over a radiant heating system must be done according to the standards outlined in our installation guide or those approved by the National Wood Flooring Association (NWFA).

# INSTALLATION GUIDE

## SOLID HARDWOOD | PREPARATION

### TOOLS AND MATERIAL REQUIRED

- Broom or vacuum
- Ambient air and wood moisture indicators
- Mitre saw
- Hand saw
- Measuring tape
- Hammer
- Pull bar and tapping block
- Chalk line
- Putty knife
- Table saw
- Square and T-bevel
- Slip tongue and wood glue (if needed)
- PG Flooring maintenance kit
- Touch-up marker (selected to match your stain colour)
- Pneumatic hardwood flooring nailer and air compressor
- Hand drill and 3/32 in (2 mm) drill bits
- Nail punch
- Finishing air-hammer
- 2 in (5 cm) spiral finish nails
- Flooring screws
- Non-tarred vapour barrier paper
- "L" or "T" flooring nails, or "U" staples

"L" OR "T" NAILS	"U" STAPLES	LENGHT	SPACING	DISTANCE FROM BOARD'S ENDS
15.5 ga to 18 ga	15.5 ga to 18 ga	1 1/2 in (38 mm)	6 to 8 in (152 mm to 203 mm)	2 in (51 mm)

### ENVIRONMENT PREPARATION

#### TEMPERATURE AND HUMIDITY LEVELS

To ensure optimal installation, the installer must verify that the environment meets ideal conditions.

- During the week prior to installation, the home must be maintained at a constant temperature of 22 °C (72 °F) to stabilize both temperature and humidity.
- A few days before installation, ensure that the relative humidity level is stable and between 37% and 45%.
- At the time of installation, the ideal ambient temperature is 22 °C (72 °F).

#### STORAGE OF BOXES

Proper storage of hardwood flooring boxes is essential. Boxes must be delivered to the site at least 48 hours before installation to allow the wood to acclimate to ambient conditions. Boards should remain in their boxes, on the same floor where they will be installed, and kept away from exterior walls. Do not stack more than three boxes high, and leave space between each stack.

# INSTALLATION GUIDE

## SOLID HARDWOOD | PREPARATION

### SUBFLOOR PREPARATION | PLYWOOD OR ORIENTED STRAND BOARD (OSB)

#### MATERIAL SELECTION BASED ON JOIST SPACING

Before installing your hardwood floor, ensure that the subfloor is made of appropriate plywood or OSB. The thickness and type of subfloor material depend on the spacing between joists. Particle board is not recommended.

**If joist spacing is 12 in (30.5 cm):**

- minimum 5/8 in (16 mm) thick plywood;
- minimum 3/4 in (19 mm) thick OSB.

**If joist spacing is 16 in (40.6 cm):**

- minimum 5/8 in (16 mm) thick plywood;
- minimum 3/4 in (19 mm) thick OSB;
- 5/8 in (16 mm) CDX plywood.

**If joist spacing is 19 in (48.3 cm):**

- minimum 3/4 in (19 mm) thick plywood;
- minimum 3/4 in (19 mm) thick OSB.

#### PLYWOOD OR OSB SUBFLOOR PREPARATION

Once the old flooring has been removed, the subfloor must be thoroughly inspected across the entire surface area. This inspection helps identify imperfections and potential sources of squeaking, allowing for necessary corrections.

Start by removing any glue residue, staples, or protruding nails by properly driving them in. Then, level the surface by sanding down any irregularities.

If needed, reinforce the subfloor panels or boards to the joists using screws spaced 8 in (20 cm) apart. For optimum fastening, use smooth-shank screws to ensure better adhesion to the joists.

After inspection and corrections, the subfloor must be flat and even, free of height variations. Keep in mind that hardwood flooring does not hide structural defects in the subfloor. Careful preparation is essential before installation.

At the time of installation, the subfloor's relative humidity must be 12% or less.

#### INSTALLATION OF NON-TARRED VAPOUR BARRIER PAPER

Using non-tarred vapour barrier paper is **strongly recommended** for nailed or stapled installations. This paper acts as an insulator and slows down potential moisture transfer from the basement to the wood boards. Staple the vapour barrier paper to the subfloor parallel to the direction of the boards. Make sure to overlap the strips by 2 to 3 in (5 to 8 cm) to ensure consistent moisture protection.

# INSTALLATION GUIDE

## SOLID HARDWOOD | PREPARATION

### SUBFLOOR PREPARATION | CONCRETE

**Due to major fluctuations in humidity levels, hardwood flooring installed in basements or at ground level should be laid as follows:**

#### CHECKING RELATIVE HUMIDITY LEVELS

Before measuring humidity, the concrete surface must have dried for at least 60 days at a stable room temperature of 22 °C (72 °F) and under relative humidity conditions between 37% and 45%.

Check the concrete's moisture level using a concrete moisture meter such as the Wagner C575. The reading must not exceed 12% (or 4% if the meter measures water content by volume). You may also perform additional tests using 24 in<sup>2</sup> (60 cm<sup>2</sup>) plastic sheets placed every 200 ft<sup>2</sup> (18.6 m<sup>2</sup>) of concrete surface, or conduct a calcium chloride test. The moisture emission rate must not exceed 3 lbs (1.4 kg) per 1,000 ft<sup>3</sup> (28.3 m<sup>3</sup>) over 24 hours.

If the emission rate is between 3 lbs (1.4 kg) and 7 lbs (3.26 kg) per 1,000 ft<sup>3</sup> (28.3 m<sup>3</sup>), an approved moisture barrier membrane must be used over the concrete. Never install flooring if the calcium chloride test result exceeds 7 lbs (3.26 kg) per 1,000 ft<sup>3</sup> (28.3 m<sup>3</sup>)

It is recommended to apply a liquid concrete sealer that is compatible with the adhesive being used, directly on the slab, to prevent long-term moisture buildup.

#### CHECKING THE LEVEL OF THE CONCRETE SLAB

The level of the concrete slab must be verified. Variations must not exceed 5/32 in (0.4 cm) over 8 ft (2.4 m). If depressions need to be filled, use a cement-based, water-free leveling compound with a compressive strength of 3,000 psi. Be careful not to exceed the manufacturer's recommended maximum thickness, as overfilling low spots may result in a surface that is too weak to support heavy objects.

#### CONCRETE SUBFLOOR PREPARATION

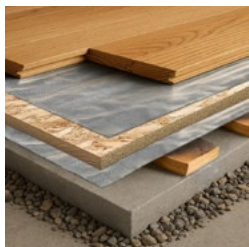
There are different methods for preparing your concrete subfloor before installing your hardwood flooring. Choose a method that is compatible with your type of installation.



##### FIRST METHOD

Hardwood flooring can be nailed to sleepers that are themselves attached to the concrete.

- Attach the sleepers (glued or nailed) every 12 in (30 cm), centre to centre, overlapping their ends by at least 4 in (10 cm).
- Then cover the sleepers with a polyethylene film, overlapping the strips by 2 to 3 in (5 to 8 cm).
- Proceed with the installation of the hardwood boards by fastening them to the sleepers.



##### SECOND METHOD

Another approach is to install a tongue-and-groove plywood subfloor over the concrete using sleepers.

- Attach the sleepers (glued or nailed) around the perimeter of the room and space them 16 in (40 cm) apart, centre to centre, perpendicular to the direction of the hardwood boards.
- Lay a polyethylene film, overlapping the strips by 2 to 3 in (5 to 8 cm).
- Fasten tongue-and-groove plywood to the sleepers, then add a non-tarred vapour barrier paper over the plywood.
- Proceed with the installation of the hardwood flooring.

# INSTALLATION GUIDE

## SOLID HARDWOOD | PREPARATION

### PRE-INSTALLATION PREPARATIONS



Before beginning work, ensure that the premises benefit from sufficient natural lighting.

#### BOARDS ORIENTATION

To optimize the structural stability of the floor, it is strongly recommended to install the boards perpendicular to the joists.

#### PARALLELISM AND SQUARENESS

When installing hardwood flooring, squareness must be measured throughout the entire home. This step helps identify walls that are not parallel and allows the installation to be adjusted accordingly.

By using exterior walls as reference points, you ensure accurate verification of the alignment of interior walls and obstacles (such as tile, stairwells, fireplaces, etc.), avoiding reliance on potentially misaligned structures from previous renovations.

#### BENCHMARKS

The starting point for installation is often influenced by the squareness line. Ideally, begin along the most visible wall in the room—unless another feature, such as a tiled surface, offers a more strategic starting point.

For installations covering the entire home, it is recommended to start in the longest room, typically a hallway.

#### BASEBOARDS AND QUARTER ROUNDS

To remove baseboards and quarter rounds without damaging the walls, it is recommended to use a putty knife.

Once the floor is installed, baseboards and quarter rounds must be nailed to the wall, not the floor, to avoid restricting the natural movement of the wood.

It is also advisable to undercut door casings to allow planks to slide underneath, ensuring a clean finish.

**If you choose not to use quarter rounds and the baseboard is not wide enough to cover the recommended expansion gap, you may cut a strip of drywall at the base of the wall to fill the gap.**

#### EXPANSION SPACE

The expansion space around the perimeter of the room is a key element in ensuring the floor's durability. It allows the wood to respond to humidity changes and prevents aesthetic or structural damage.

**According to standards, the expansion gap should be:**

- $\frac{3}{4}$  in (1.9 cm) across the width of the boards;
- $\frac{1}{4}$  in (0.6 cm) along the length of the boards.

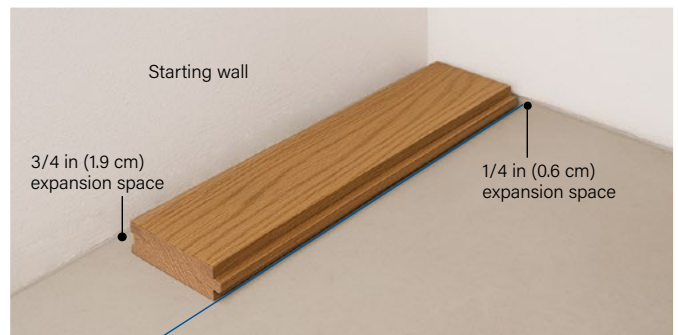
Strict adherence to these dimensions ensures the floor's stability in response to climate variations and the natural movement of wood.

#### BOARD SELECTION

Board selection allows you to create a representative sample of the final look. This is the time to define a harmonious layout by coordinating tone and size variations to visualize the finished floor.

Note that the industry standard of 5% acceptable imperfections does not include boards that must be discarded during installation.

Boards must be inspected by the installer before being installed. Each board that is installed (nailed or stapled) is considered accepted by the installer and/or the owner and therefore cannot be subject to a warranty claim for manufacturing or grading defects.



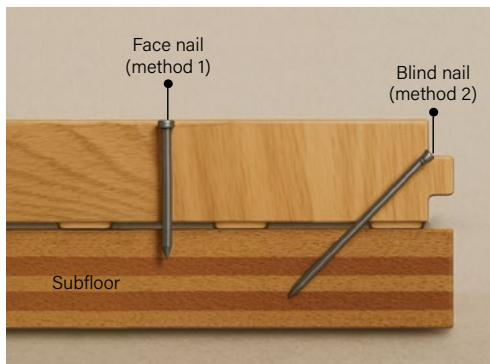
# INSTALLATION GUIDE

## SOLID HARDWOOD | INSTALLATION

### INSTALLING THE FIRST ROW

To make the installation of the first row easier, snap a chalk line that is parallel to the starting wall, at a distance of  $\frac{3}{4}$  in (1.9 cm) plus the width of your hardwood boards. The first row should be installed along this guide line.

There are two methods for installing the first row of boards:



#### METHOD 1: WITH FACE NAIL

This method consists of hammering a nail into the top of the board 1 in (2.5 cm) from the side of the wall. Ensure that the nail is well hammered in and hide it with your touch-up marker.

#### METHOD 2: WITHOUT FACE NAIL

This method is used when one does not want boards nailed down as in the first method. Glue is applied to the underside of the board at 6 in (15 cm) intervals. The type of glue used should respect wood expansion properties. Do not use woodworking glue. This method ensures board stability without any surface retention, which would prevent future expansion or contraction.

The first boards of the first row are also held in place by nails driven into the tongue at 45° using the finishing air-hammer.

### INSTALLING SUBSEQUENT ROWS

The boards in the second row should also be fastened using a finishing air-hammer, to avoid disturbing the alignment of the first row. For the following rows, boards are nailed in the same way—at a 45° angle through the tongue—but using a standard flooring nailer instead of a finish nailer.

Each board, in both the first and subsequent rows, must be secured with at least two nails, ideally spaced 6 to 8 in (15 to 20 cm) apart, depending on the board length. Avoid nailing too close to the ends (less than 2 in or 5 cm), as this may cause the board to split.

"L" OR "T" NAILS	"U" STAPLES	LENGHT	SPACING	DISTANCE FROM BOARD'S ENDS
15.5 ga to 18 ga	15.5 ga to 18 ga	1 1/2 in (38 mm)	6 to 8 in (152 mm to 203 mm)	2 in (51 mm)

Stagger the joints of each row by at least 6 in (15 cm) from the previous row.

If a board must be cut to finish a row, it is best to use the remaining piece to start the next row, ensuring it is longer than 6 1/2 in (16.5 cm).

### AIR-HAMMER AND RUBBER Mallet

When laying down a board, it is important to distinguish between adjustment and nailing down. Adjustments are made solely using the rubber mallet. The mallet serves to move the board slightly, without damaging the wood. The air-hammer is used only to secure the board in place after adjustment. The force applied with the air-hammer must be measured with this sole aim in mind.

### AESTHETIC TIPS

The joints between boards in each row should be staggered by at least 6 in (15 cm) from those in the previous row. This not only enhances the visual appeal of the floor but also improves its stability in response to humidity changes, allowing for even pressure distribution during wood expansion or contraction. For aesthetic reasons, avoid aligning joints of two boards with only one row between them (H-joint pattern). Also avoid creating step patterns, where joints of three or more boards are spaced at equal intervals

Joints too close together



H-joint pattern



Step pattern



# INSTALLATION GUIDE

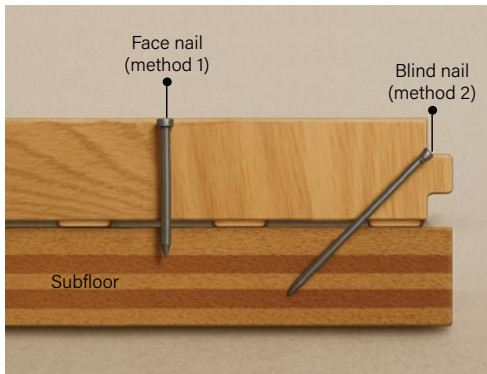
## SOLID HARDWOOD | FINISHING

### FINISHING

When the wall prevents the use of a flooring nailer—typically for the last three rows—you can proceed as follows:

- Drill holes at a 45° angle along the tongue side of the board.
- Fasten the board using finishing nails and a manual hammer.
- Set the nail heads using a nail punch.
- Use a crowbar to adjust the final board, as the rubber mallet cannot be used at this stage.

To fasten the last row of boards, there are two methods, similar to the installation of the first row:



#### METHOD 1: WITH FACE NAIL

This method consists of hammering a nail into the top of the board 1 in (2.5 cm) from the side of the wall. Ensure that the nail is well hammered in and hide it with your touch-up marker.

#### METHOD 2: WITHOUT FACE NAIL

This method is used when we do not want boards nailed down as in the first method. Glue is applied to the underside of the board at 6 in (15 cm) intervals, and a nail is driven into the tongue at the end of the board at a 45° angle.

Boards in the second row should be secured in place using the finishing air hammer to avoid affecting the alignment of the first row.

Pieces of wood wedged between the last row of boards and the wall may be used to hold the wood in place until the glue has bonded.

### MOULDING INSTALLATION

Cut the mouldings to the appropriate length and glue them to the floor using wood glue.

### CLEANING

Once the installation is complete, vacuum and inspect the flooring surface. Then apply cleaning products offered or recommended by PG Flooring and follow instructions.

### APPROVAL OF WORK

If you are a contractor, we recommend that you have your work approved by the owner or person in charge of the premises.



# INSTALLATION GUIDE

## SOLID HARDWOOD | SPECIAL CASES

### SPECIAL CASES

#### REVERSE INSTALLATION

Sometimes flooring laid down from one room to another requires that boards be installed in reverse order using a slip tongue. The slip tongue transforms a board groove into a tongue, making it possible to lay a board down in the opposite direction.

- Drill holes into the female groove of the last installed board and secure it with finishing nails.
- Apply wood glue to the slip tongue and insert it into the groove.
- Fit a new board onto the tongue and continue installation in the opposite direction.

#### WALLS AT 45°

Walls at 45° decrease the amount of support provided to subsequent rows of boards by the first rows. In order to avoid possible misalignment, use a finishing air-hammer or ordinary hammer to nail in finishing nails for added support. Do not forget to avoid hammering in nails within 2 in (5 cm) of board ends.

#### ABUTTING CERAMIC SURFACES

At junctions with ceramic flooring, we recommend that a board of the same species of wood as the flooring be used to limit ceramic flooring contours.

#### NOSING

Special boards called nosing can demarcate flooring at a landing. Glued and nailed in vertically, they provide a solid end to flooring.

#### REDUCER STRIPS

Room level may vary from one room to the next. Reducer strips solve the problem. Glued and then nailed at 45°, they provide the junction between two heights and compensate for a change in level between rooms.

#### INSTALLATION OVER A RADIANT HEATING SYSTEM

Solid hardwood flooring **less than 5 inches (127 mm)** in width can be installed over a radiant heating system. Because radiant heating causes faster changes in wood moisture than traditional heating systems, it is mandatory to control the ambient humidity level, keeping it between 37% and 45% year-round. Depending on the season, this may require the use of a humidifier or dehumidifier.

If you are installing your solid hardwood flooring over a radiant heating system:

- Ensure that a heat and pressure test has been performed.
- The system must be turned on and off several times over a few weeks prior to installation.
- The heating system must be turned off and at room temperature before installation begins.
- After installation, gradually increase the system temperature by no more than 3 °C (5.4 °F) per day.
- The surface temperature of the radiant heating system should never exceed 28 °C (82.4 °F).