

CHOICE OF PATTERN, REFERENCE MARKINGS & PROJECTILES

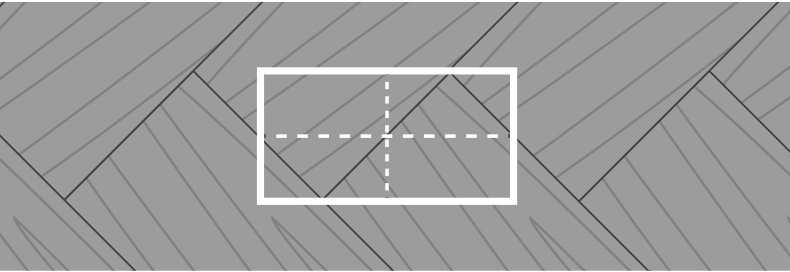
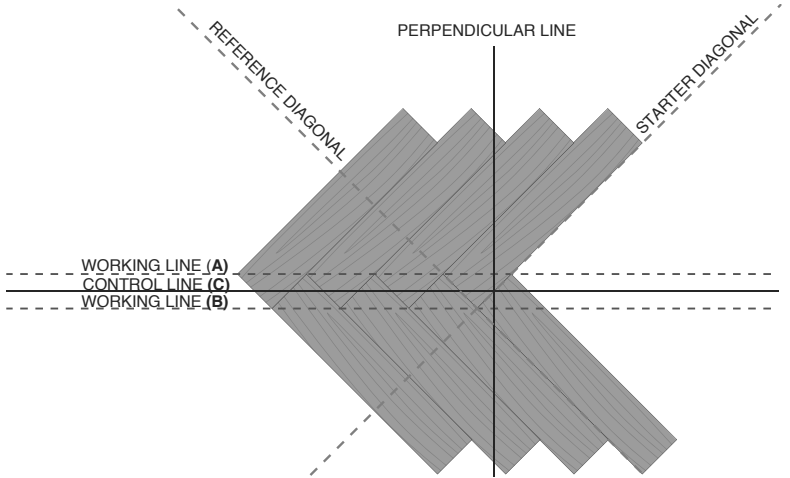
The laying out of the hardwood flooring must be carefully considered before beginning the installation process. This will depend on the type of pattern chosen. When choosing the brick pattern, it is an advantage to install the strips lengthwise to the main source of light, so as to take into account the angle of incidence. When other patterns are chosen, installation should begin at the center of the room which is determined by laying out guide strings from opposite walls. It is essential that an expansion gap of 3/8" is left between the edge of the floor and all walls and projectiles. To avoid "curving" in larger rooms, it is advisable to use a template during installation. To avoid so-called, bow tension, i.e. gaps forming between strips in large rooms, a staggered installation is recommended (refer to drawing).

HERRINGBONE

Herringbone directions should be installed in accordance with client preference. The Pattern may look best with the points in the direction of the longest dimension of the room, or towards a major focal point. Flatness of the subfloor is especially critical in herringbone installation, so ensure that the subfloor is flat to within specified tolerances – typically within 1/8" over 10'.

- Measure out the room for center and strike the main control, perpendicular and diagonal reference lines.
- Measure for true centre on the herringbone pattern to establish working lines.
- Strike two working lines alongside the main control line.
- Transfer the diagonal lines to the working lines.
- Dry lay a small section and measure to confirm a balances layout.

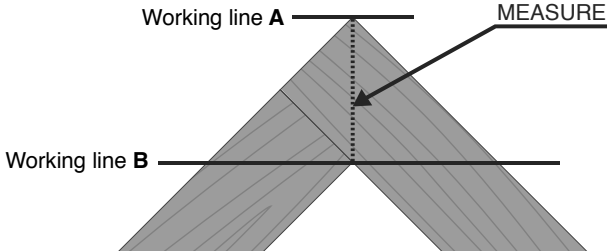
The herringbone floor pattern is installed along working lines.



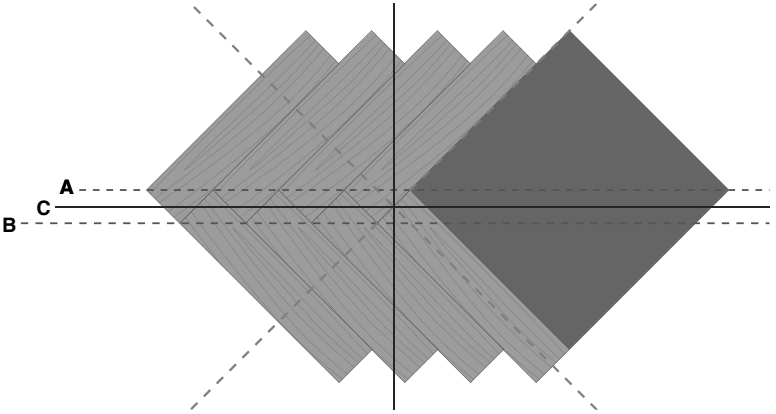
DETERMINING THE DIAGONAL DIMENSION OF THE FLOORING

This measurement will vary according to the width of the flooring.

- Divide the diagonal measurement by four.
- This is the dimension used to establish the working lines A and B on both sides of the control line (C).



- Once the working lines are established the installation can begin.
- To keep the installation square, cut a square piece of plywood the size of the herringbone pattern and anchor it at the intersection of the working lines and diagonal lines.



INSTALLING A HERRINGBONE PATTERN

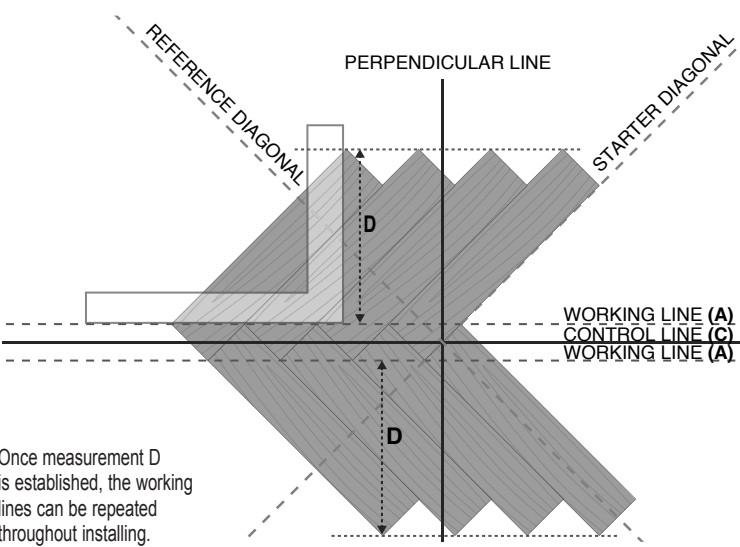
- The starting point must have working lines and diagonal lines.
- For direct glue make sure working lines are visible.
- Start with the tongue towards the build direction.
- Install pattern one row at a time.
- Periodically check alignment.

SLIP TONGUE

- Each carton provides two 24" slip tongues.
- Cut slip tongue to 4" length.
- Insert slip tongue where end groove meets side groove.

TO CONTINUE THE PATTERN

- Dry lay eight boards.
- Lay a framing square from the points on the working line to the outermost point.
- Record measurement A, this becomes your working line for the next coarse.

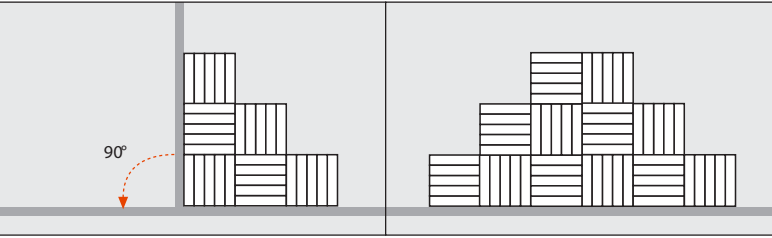


Once measurement D is established, the working lines can be repeated throughout installing.

BLOCK PATTERN

INSTALLING BLOCK PATTERN

It is important to ensure that the overall visual affect is aesthetic. If the room is relatively small then begin installation at the center point of the wall. If the room is large, begin in the center. Remember to allow an 3/8" expansion gap along all walls. When starting along the wall, fix a 90° angle template to the sub- floor at the center point of the wall. When installation begins in the center of the room, start by finding the center point of the room and fix a template to the floor at this point, parallel to the wall. Each square is made up of 5 strips. Start installing the strips in the corner of the template, completing 1 square at a time. The second square is installed at right angles to the first square. Install approx. 3' x 3' and allow hardwood flooring to adhere to the sub-floor (refer to the adhesive manufacturers' instructions), before removing the perpendicular board. Continue installation from the center point but in the opposite direction, working in a staggered pattern outwards towards the walls. **Important! Check the guide string regularly during installation.**



SLIP TONGUE

- Each carton provides two 24" slip tongues.
- Use slip tongue in full length.
- Insert slip tongue where end grooves meet side groove.

GLUE-DOWN AND NAIL-DOWN DETAILS

RADIANT HEAT HEATING

Parquet multi-layer hardwood flooring is suitable for gluing to a sub-floor which incorporates an under-floor heating system. The surface temperature of the hardwood flooring must not exceed 80°F. The heating system must distribute the heat evenly throughout the entire floor irrespective of the heat setting.

CAUTION! Carpets and rugs with backings made of insulating materials (e.g. rubber/foam) must not be used, as they cause an accumulation of heat which can damage the wood.

GLUING

The multi-layer hardwood flooring must always be glued directly to the sub-floor. The tongue and groove must NOT be glued. The choice of adhesive is dependent on the type of sub-floor and conditions associated with the buildings' construction. See first page and follow mfg recommendations. The adhesive is applied using a course toothed spatula. Do not apply more adhesive than can be "worked" in the course of 10 – 15 minutes.

NAIL DOWN

SUBFLOOR PREPARATION

Remove all dirt and rough areas by thoroughly cleaning, sanding and leveling. **Note: particle board is not a suitable subfloor** for nail- or staple-down installation. The clean subfloor should be covered wall-to-wall with 15 lb resin paper, overlapping 4" along the edges.

GENERAL INFORMATION FOR PNEUMATIC FASTENING MACHINES

Note: Use pneumatic staplers with correct shoe base for thickness of the product.

Improper pressure settings and failure to use proper adapters can cause severe damage to the flooring. The correct adapter and air pressure setting will properly set the fastener in the nail pocket. Low air pressures may fail to properly set the fastener and damage adjoining boards. Air pressures set too high may cause damage to the tongue which may dramatically reduce the holding power of the fastener causing loose, squeaky floors. Make certain that the compressor has a regulator in-line with the air hose for proper adjustment. Set the compressor pressure to recommended PSI and adjust accordingly using a "practice" board. Check for surface and tongue damage before proceeding with installation. Manual Model 250 Powermailer can also be used.

INSTALLATION

Depending upon pattern, to begin either establish two straight boards perpendicular to each other or work to the line as required by your pattern.

Begin installation with several patterns at a time, tightening boards as necessary to reduce gaps before fastening. Attach each board with fasteners every 6"-8" and 3" from the ends. Staples must be at least 1-3/4" long with a 1/2" crown.

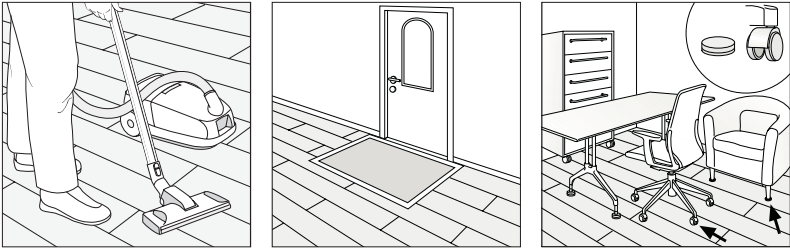
The last 1-2 rows will need to be face nailed where clearance does not allow blind nailing with stapler or brad nailer. Brad nail or face nail on tongue side. Rip the final row to fit and face nail. If the final row is less than 1" width, it should be edge-glued to the previous row, before installation. The two joined rows can be face nailed as one board.

Remove any starting blocks and complete other sections using 6d nails, counter sunk and filled.

ALL INSTALLATIONS: COMPLETING THE JOB

- Remove spacer wedges.
- Cover all expansion gaps along walls and vertical protrusions with base board, quarter round or pocket moldings. Nail moldings to wall, never to the flooring.
- Clean, sweep and vacuum installed flooring before use.
- Use of stain, filler or putty stick for defect correction during installation should be accepted as normal procedure.
- If the floor is to be covered, use a breathable material such as cardboard. Do not cover with plastic or any other material acting as a vapor barrier.

FLOOR CARE GUIDE



PREVENTATIVE MAINTENANCE

To ensure the full benefit of warranties and to extend the beauty of your new hardwood floor, we recommend the following preventative maintenance steps for your hardwood floor.

- Use floor mats at all entrances to help keep dirt and moisture from being tracked in. Area rugs are recommended in high traffic areas and at sinks. Mats and area rugs should be slip resistant with backing that will not discolor the floor.
- To help guard against scratches and dents, install felt floor protectors under furniture legs and equipment.
- Use soft rubber castors for rolling furniture.

- Remove high heels or shoes that need repair. Some types of high heel shoes can severely damage the surface of any floor covering.
- Maintain a healthy humidity at 40–60%. Certain regions within North America have extreme changes in humidity levels that can affect all wood floors. To maintain the humidity at the healthy range of 40–60%, it may require either a humidifier or a dehumidifier.

REGULAR MAINTENANCE

- Do not let sand, dirt and grit build up on your floors.
- Periodically change/move area rugs and furniture to minimize the effects of direct sunlight.
- Dust, sweep and vacuum floors regularly.
- Area rugs should be moved occasionally, as they block sunlight and may give the appearance of discoloration under the rug.
- For normal cleaning use a sponge mop with clear water, squeezed very dry. **DO NOT wet mop your hardwood floor.**
- All newly installed flooring needs to be swept or vacuumed, removing any dirt or debris before using liquid flooring cleaner. For heavier cleaning, use hardwood floor cleaner specified for polyurethane coated hardwood floors with a sponge or sponge mop. Hardwood floor cleaner is available at most local hardware stores. **DO NOT use a steam cleaner and never use wax!**



5/8" ENGINEERED
HERRINGBONE & PATTERN
INSTALLATION
INSTRUCTIONS

STOP! READ BEFORE INSTALLING THIS PRODUCT

The installer assumes all responsibility for final inspection of product quality PRIOR TO INSTALLATION. It is imperative that you inspect the products size, profile, quantity, style, color, and any other natural variation to ensure that the product is satisfactory and meets your specifications. Also be sure to check each board during installation for any visible defects such as mis-milled planks and blotches.

This flooring is manufactured in accordance with accepted industry standards, which permit a defect tolerance not to exceed 5%. The defects may be manufacturing or natural. The installer must use reasonable selectivity and hold out or cut off pieces with defects, whatever the cause.

Do not install the product if there is any concern about its quality or specifications. If material is not acceptable, contact the seller immediately. **Requests for replacement, refund or compensation made AFTER installation will NOT be honored.**

This is a rustic product! Hardwood flooring is a product of nature and its inherent beauty stems from the fact that each piece is unique with no two pieces the same. This product may have very high color / character variation. This wood grade allows for some open wood character which may need some touch up after the installation is complete. Inspect each board for loose or rough wood character and cull out pieces appropriately.

- When flooring is ordered, **10% or more for pattern installations to the actual square footage needed** for cutting and grading allowance. See the "Pattern Material Ordering Details" document for more information.
- Prior to installation of any hardwood-flooring product, the installer must **determine that the jobsite environment and the subfloors involved meet or exceed all applicable standards** and recommendations of the construction and materials industries. These instructions recommend that the construction and subfloor be dry, stiff and flat. The manufacturer declines any responsibility for job failure resulting from or associated with sub-surface or job-site environmental deficiencies.

IMPORTANT

Read the following information and instructions in their entirety before proceeding with installation.

- To ensure the full benefit of warranties, these instructions and maintenance procedures must be followed.
- Subfloors must be dry, level and clean.
- Both room and flooring must be properly acclimated to temperature and humidity conditions.
- Installers: Inform your customers of the details in "Installer/Owner Responsibility", "Installers - Advise Your Customer Of The Following", and "Floor Care Guide Sections".
- Do not open flooring packages until you are ready to begin installation.
- Work out of several cartons at the same time to ensure color and shade mix.
- When finished moldings are required for the project, pre-select the plank(s) that best coordinates with the color of the adjacent molding piece(s).
- This flooring may be laid over radiant heating provided there is effective and uniform heat distribution over the entire floor. The floor's surface temperature must never exceed 80°F. in any place.
- Do not use water based adhesives over sheet vapor barriers or sound insulation.
- Not recommended for bathroom or other high moisture installations.
- Use of stain, filler or putty stick for defect correction during installation should be accepted as normal procedure.

INSTALLER/OWNER RESPONSIBILITY

Due to the fact that this flooring is a product of nature, the installer and/or owner, have the following responsibilities:

Understanding how the floor will look once installed – the installer and consumer must meet prior to installation to review expectations:

- **How was the floor chosen?** Review the control samples, (the samples from which the floor was chosen), and compare to the actual flooring batch (if there are multiple batches open a carton for each unique batch number and compare and blend during installation) onsite prior to installation making sure it meets the owner's expectations as to:

- **Grade – Is it the correct grade?** Also grade from batch to batch may vary slightly so make sure the owner is happy with this batch of flooring you are about to install.

- **Color/Graining** – Do certain dark/light pieces or wild grained need to be graded out to meet the owners expectations?

- **Color Variation, Batch to Batch** – Inspect the production run of flooring you received and make sure it meets your expectations. Wood from different locales can have varying colors and grains and differ from the samples from which the floor was chosen. Tint colors may also vary slightly batch to batch. Make sure the owner will be happy with the batch they received.

- **Color Change – Do they understand how the wood will change color over time?** The owner may have chosen their floor from samples that have aged so they need to understand in advance of installation the color change to be expected in this wood.

- **Finish Issues:**
 1. Is the gloss correct?
 2. Does the look of the finish meet the owners expectations?
 3. Does the owner understand that the finish will scratch and wear and that care must be taken during installation, move-in and in-use?

INSTALLERS - ADVISE YOUR CUSTOMER OF THE FOLLOWING

SEASONS: HEATING AND NON-HEATING

Recognizing that wood floor dimensions will be slightly affected by varying levels of humidity within your building, care should be taken to control humidity levels within the 30 – 60% and 60° – 75° Fahrenheit temperature range. To protect your investment and to assure that your floors provide lasting satisfaction, we recommend the following:

- **Heating Season (Dry)** - A humidifier is recommended to prevent excessive shrinkage in wood floors due to low humidity levels. Wood stoves and electric heat, in particular, tend to create very dry conditions.
- **Non-Heating Season (Humid, Wet)** - Proper humidity levels can be maintained by use of an air conditioner, dehumidifier, or by turning on your heating system periodically during the summer months. Avoid excessive exposure to water from tracking during periods of inclement weather. Do not obstruct in any way the expansion joint around the perimeter of your floor.

RADIANT HEATING

See the "Installing Over Radiant Heat" and "Exclusions To Warranty: Radiant Heat" sections for specific details to inform your customers about radiant heating.

FLOOR REPAIR

Minor damage can be repaired with a touch-up kit or filler. Major damage will require board replacement, which can be done by a professional floor installer.

TOOLS NEEDED FOR INSTALLATION

- Handsaw, circular saw or jigsaw
- Chalk line
- Hammer
- Tape measure
- Pull bar
- Tapping block
- Wooden or plastic spacer wedges
- Moisture meter (wood, concrete or both)

For glue-down installations, use Mapei, SikaBond, DriTac 9200, Parabond® Millennium 2002, Bostik Best®, Taylor 2071 or equivalent flooring adhesive (See your distributor for adhesive recommendations.) Follow manufacturer's guidelines and tool recommendations when using adhesive. Do not use water based adhesives over sheet vapor barriers or sound insulation.

For nail-down or staple-down installations, use the proper nailer. Staples must be at least 1-3/4" long with a 1/2" crown See Nail-Down or Staple-Down Installation.

CAUTION: By not using proper tools, "puckering" may result on the face of the plank. The manufacturer is not responsible for problems caused by use of improper tools. See your distributor for tool recommendations and use.

Never hit the planks directly with a hammer. Always use a wooden block to protect board edges.

ATTENTION INSTALLERS CAUTION: WOOD DUST

Sawing, sanding and machining wood products can produce wood dust. Airborne wood dust can cause respiratory, eye and skin irritation. The International Agency for Research on Cancer (IARC) has classified wood dust as a nasal carcinogen in humans.

Precautionary Measures: If power tools are used, they should be equipped with a dust collector. If high dust levels are encountered, use an appropriate NIOSH-designated dust mask. Avoid dust contact with eye and skin.

First Aid Measures: In case of irritation, flush eyes or skin with water for at least 15 minutes.

Material Safety Data Sheets are available upon request.

PRE-INSTALLATION PROCEDURES

ACCLIMATING THE HARDWOOD FLOORING

HVAC systems should be fully operational at least 14 days prior to flooring installation, maintaining a consistent room temperature between 60° – 75° Fahrenheit and relative humidity between 30 – 60%. This not only stabilizes the building's interior environment, but also is essential when acclimating hardwood flooring to the job site.

Hardwood flooring should be unloaded and handled with care and stored within the environmentally controlled site. Flooring stored upon "on-grade" concrete floors should be elevated at least four inches to allow air circulation under cartons. Cartons should be spaced out, not stacked or stored on pallets. **Leave hardwood flooring in closed cartons during acclimation period.** Typical applications require at least a 48-hour acclimation period.

ROOM PREPARATION

Remove existing baseboards, quarter rounds, thresholds and undercut door jambs, using a piece of flooring material as a guide. Door frames and other wooden elements should be sawed off at the bottom in order to be able to push the panels under them.

PRE-INSTALLATION INSPECTION

It is the responsibility of the installer to inspect each board for visible defects before installation. Any board with visible defects will be replaced at no cost. If the defective board has been installed, no cost of labor will be paid for repair or replacement of defect.

SUBFLOOR TYPE

The manufacturer can be installed over the following subfloors if properly prepared. For other types of subfloors please contact your distributor.

- **Concrete:** On, above or below grade installations are acceptable. Must be clean, dry and smooth within 3/16" over 10'.
- **Acoustic Cork:** Must be bonded to the surface. Density must be between 11.4 and 13 lbs/cubic foot. Cork must be a maximum of 1/4" thick, made from pure cork with polyurethane binders.
- **Terrazzo and Ceramic Tile:** Should be lightly sanded and cleaned with mineral spirits. Allow the mineral spirits to dry prior to spreading the adhesive. If grout lines are too deep they need to be filled and allowed to dry before installation.
- **Wood Type Subfloors:** Includes plywood, OSB and underlayment particle board and tongue and groove boards. Must be smooth and dry. Squeaks and popping areas should be screwed prior to spreading adhesive.
- **Vinyl:** Includes sheet and vinyl tile. Vinyl must be securely fastened to the subfloor with full spread adhesive. Loose laid or perimeter glued sheet vinyl must be removed. Lightly sand vinyl, clean with mineral spirits and allow to dry prior to spreading adhesive.

SUBFLOOR PREPARATION

- Subfloor must be clean and free of wax, paint, oil, and debris. Scrape smooth and sweep.
- Subfloor should be flat to 3/16" over 10'. If subfloor prep work is required, "hills" should be sanded down and "valleys" filled with an underlayment patch, developed by a reputable manufacturer for use with hardwood flooring. Do not sand sub-surfaces such as vinyl or synthetic tiles that may contain asbestos. For depressions less than 1/4", it is possible to use dry sand as a leveler.
- Subfloor must be structurally sound prior to installation. Screw loose areas to reduce squeaking and replace water damaged or delaminated sub-flooring or underlayments.

WOOD SUBFLOOR MOISTURE TESTING

Check moisture content of subfloor especially adjacent to exterior walls and plumbing fixtures. **Moisture content of subfloor must not exceed 12% or have more than a 4% difference than moisture level of product being installed.** If more than a 4% difference, do not install. First determine the source of moisture and remedy prior to installation.

CONCRETE SUBFLOOR MOISTURE TESTING

Several tests are outlined below. These tests do not guarantee a dry concrete slab year round. With that in mind, a moisture barrier using a minimum of 6 mil poly film should have been installed between the ground and concrete. See "Moisture Barrier System" below.

- **3% Phenolphthalein in Anhydrous Alcohol Solution**
Do not apply solution directly to concrete surface. First, chip 1/4" deep into concrete test area and apply several drops of the solution. If any change in color is observed, further testing is required.
- **Calcium Chloride**
Moisture transfer should not exceed 3 lbs/1,000 square feet with this test. One test must be performed every 250 square feet.
- **Tramex Concrete Moisture Encounter Meter**
Moisture readings using a metering device should not exceed 4.5 on the upper scale.

MOISTURE BARRIER SYSTEM

If the above tests reveal unacceptable moisture levels, install sheet vinyl (PVC) directly to concrete slab. Follow instructions from sheet vinyl manufacturer, using a premium grade alkaline resistant adhesive and full spread application system to bond vinyl to subfloor. Do not use water based adhesives over sheet vapor barriers or sound insulation.

SET UP

- In order to have sufficient material on hand, **calculate area and add 10% for parquet patterns** of material to allow for cutting waste and minor natural or manufacturer's defects.
- **Work out of several cartons at the same time** to ensure color and shade mix.

INSTALLATION OVER RADIANT

INSTALLERS—ADVISE YOUR CUSTOMER OF THE FOLLOWING

- Maximum allowable wood surface temperature is 80° Fahrenheit. Note that rugs can increase surface temperatures 5° Fahrenheit or more.
- Maintain 30 – 60% humidity at all times. Use humidifiers, if needed.
- Room temperature should not vary more than 15° Fahrenheit season to season.

HEATING SYSTEM REQUIREMENTS

- Only low temperature radiant heating systems with accurate control systems that assure that the floor's surface temperatures never exceed 80°F are permitted.
- The entire floor area must be evenly heated. Even with perimeter heating systems the floor's surface temperature must never exceed 80°F.

SETTING THE HEATING SYSTEM FOR INSTALLATION

- System must be fully operating at normal temperature for a minimum of 21 days prior to floor installation.
- System must be turned off 24 hours prior to installation and must remain off for 24 hours after installation.
- Starting 24 hours after completion of installation, turn on the heating system and gradually increase the temperature over a 7-day period to normal operating level. Never allow the floor surface temperature to exceed 80° Fahrenheit.

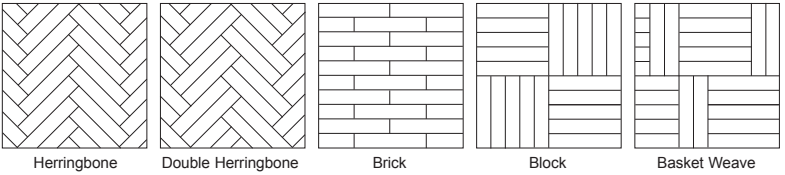
SUBFLOOR

- The floor construction should have a heat dissipating layer that provides an even temperature across the entire floor area and avoids high temperatures in any area. Under plywood subfloors heat transfer plates or insulation must be in place.
- The subfloor should be completely dry. Moisture on a dry weight basis must not exceed 1.5% for concrete, 0.3% or less for gypsum and 6–12% for wood subfloors.
- A vapor barrier should be installed on all concrete, stone, mineral or wood subfloors. It must be directly under and as close to the flooring as possible.
- Heating pipes must be covered with 1" of concrete or be a minimum of 1/8" below bottom of plywood subfloor.
- The wood floor must lie tight against the sub-surface without an air gap that can cause considerable drying out of the wood.

LAYOUT

- Separate adjoining radiant heated and non-radiant heated areas with expansion joints.

PARQUET PATTERN INSTALLATIONS



In order to have sufficient material on hand, calculate area and add 10% of material for cutting waste and minor natural or manufacturer's defects. Some patterns have larger waste factors. See the "Material for Pattern Floors: Calculation Formulas" document for guidelines.

Work out of several cartons at the same time to ensure color and shade mix.

INSTALLATION GUIDELINES

The cartons must only be opened directly before installation work begins. Our quality controllers have graded and inspected the hardwood flooring prior to packaging. Any questions or claims regarding grading or visual defects must be made prior to the installation of the floor. We cannot accept any subsequent claims. Remember that the end result is the responsibility of the installer.

Installation should be carried out in accordance with NOFMA and NWFA installation guidelines

In general – and particularly in the case of new buildings – it is preferable to install the hardwood flooring as one of the last tasks. If this is not possible, it is essential that the surface of the floor be protected using builders paper, hardboard or cardboard. (Never use plastic film, as this does not allow for the diffusion of moisture.)

The laying out of the floor must be carefully considered before beginning the installation process. This will depend on the type of pattern chosen.

To obtain a good final result it is very important to be precise in the installation of the first rows of strips. The strips are always placed in the adhesive in front of the previous row and pushed and rotated into place along the side and end of each strip.

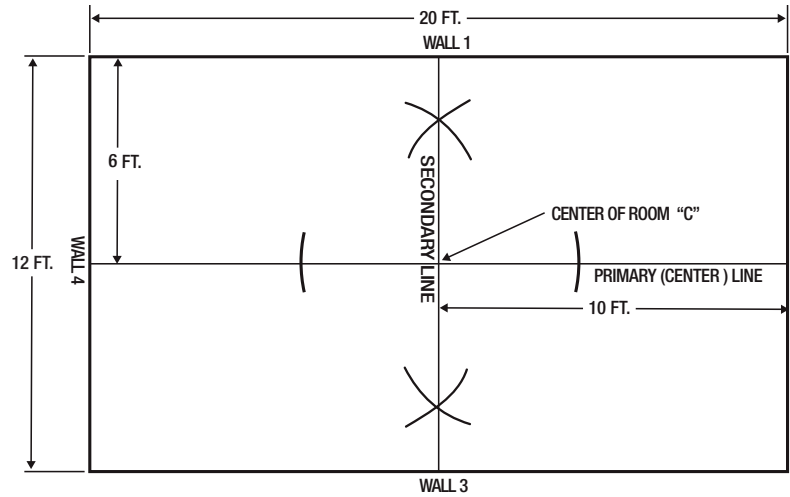
PERIMETER WORKING LINES

- Establish working lines at the perimeter of the room, which will represent the estimated inside working lines of the border.
- Perimeter working lines should be equal to a multiple of the width of the materials being installed, and should be equidistant from their adjacent walls. These lines should be adjusted to fit the width and the aesthetics of the border design. If the number of pattern repeats in the field is uneven, adjust the center working line so that the pattern is even on each side of the room.
- Using a chalk line, snap parallel lines representing the inside of the border.
- Working from the center of the room, build the field of the floor toward the perimeter working lines. Periodically check the measurements and make adjustments to ensure that the field will meet the perimeter working lines without the need for unsightly cuts or rips.

PARALLEL LAYOUT

For parallel layouts, begin with 90-degree working lines at the center of the room. There are three methods for doing this. Choose one of the following options:

OPTION 1: THE TRAMMEL POINT METHOD (preferred method)



- The Secondary Line must be exactly 90 degrees to the Primary Line. The directions below describe using trammel points and measurements of 3, 4 and 5 feet in a room measuring 12 by 20 feet. However, larger rooms may require doubling, tripling or even quadrupling those dimensions.

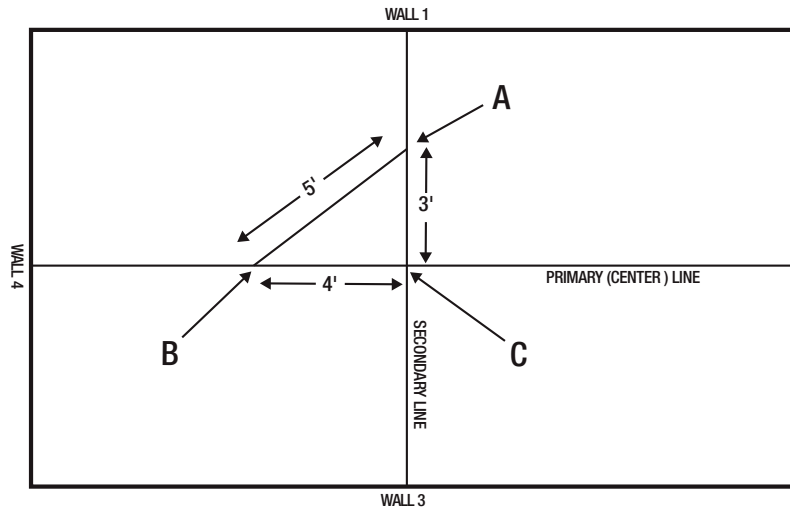
TO DETERMINE THE PRIMARY LINE

- 1) Measure Wall 2 to find the center point, and mark that point on the subfloor and wall.
- 2) Measure Wall 4 to find the center point, and mark that point on the subfloor and wall.
- 3) Snap a chalk line between those two points. This represents the Primary (center) working line.

TO DETERMINE THE SECONDARY LINE

- 1) Measure to find the center point on the Primary working line. Mark that point C.
- 2) Using a 6-foot trammel point beam or bar compass set at 4 feet, scribe arcs on the Primary working line to the right and left of center point C.
- 3) From the points at which the arcs intersect with the Primary working line, adjust the trammel point beam or bar compass to 5 feet and scribe arcs in the general area of where the 90-degree Secondary Line will be. Do this both above and below the Primary working line.
- 4) Snap a line between the points where the arcs intersect, extending the line from Wall 1 to Wall 3.
- 3) Also make a mark on each wall where the Secondary Line meets the walls. This line will be the Secondary working line and should be at a 90-degree angle to the Primary working line.
- 5) Verify all measurements using the 3-4-5 method before proceeding.

OPTION 2: THE 3-4-5 METHOD (Pythagorean Theorem)



- The Secondary Line must be exactly 90 degrees to the Primary Line. These directions describe using measurements of 3, 4 and 5 feet. However, larger rooms may require doubling, tripling or even quadrupling those dimensions.

To determine the Primary Line:

- 1) Measure Wall 2 to find the center point, and mark that point on the subfloor and wall.
- 2) Measure Wall 4 to find the center point, and mark that point on the subfloor and wall.
- 3) Snap a chalk line between those two points. This represents the Primary (center) working line.

TO DETERMINE THE SECONDARY LINE:

- 1) Measure to find the center point on the Primary working line. Mark that point C.
- 2) From the center point C, measure 4 feet along the Primary Line and mark that point B.
- 3) From the same center point, measure 3 feet in the general direction of where the Secondary Line will be and scribe an arc.
- 4) Return to the original 4-foot mark (point B) on the Primary Line and measure 5 feet, scribing an arc that crosses the 3-foot arc made in the previous step. Mark that point A.
- 5) Verify all measurements before proceeding.
- 6) Snap a chalk line through the conjunction of the two arcs (point A) and the center point (point C) of the Primary Line. This will be the Secondary Line.

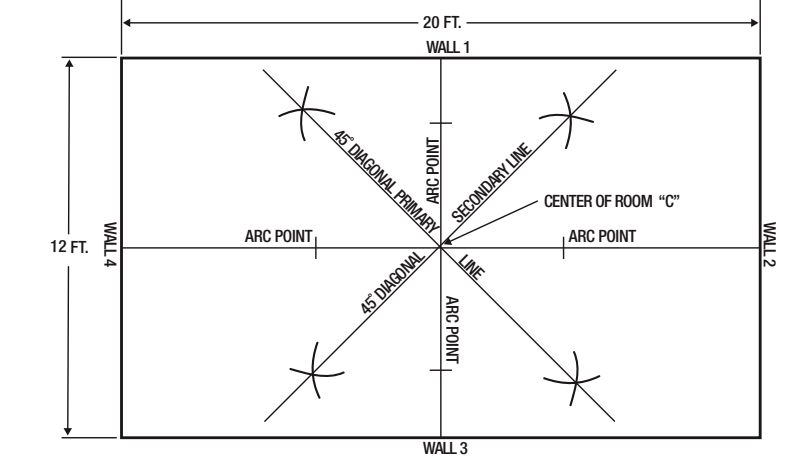
OPTION 3: USING A LASER TO DETERMINE WORKING LINES

Today's laser layout tools can assist in accuracy and speed in floor layout. Most laser layout tools have a primary beam line and a perpendicular beam, and often incorporate a 45-degree beam, as well. More advanced lasers also have lights to align floor layout to tray ceilings, chandeliers and other features above the floor. Follow the manufacturers' directions and cautions on the use of any laser. General rules for using a laser layout tool are to:

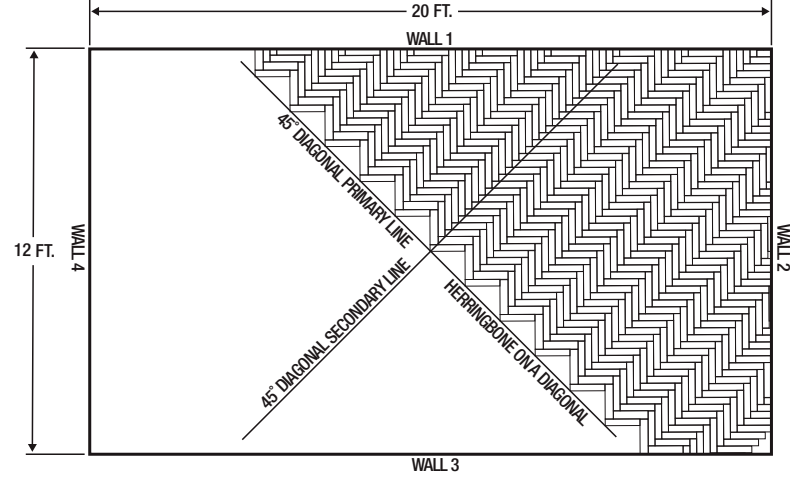
- 1) Mark the center of Walls 2 and 4 at the base.
- 2) Align the laser to target both marks.
- 3) Turn on the perpendicular lines and/or 45-degree lines.
- 4) Mark lines accordingly and snap chalk lines.

Not all lasers can establish diagonal lines. To establish a diagonal working line, trammel points or the method described in the following section, "Diagonal layout," can be used.

DIAGONAL LAYOUT



- Using the established Primary and Secondary Lines, set the trammel point beam or bar compass at 4 feet and scribe arcs on the Primary and Secondary Lines on both sides of the center point of the room (C).
- Extend the trammel point beam or bar compass to 5 feet. Starting from the arc points on the Primary and Secondary Lines, scribe arcs in the approximate areas where the 45-degree working line will be located.
- Snap lines between the points where the arcs intersect, extending from Wall 1 to Wall 3, and also make marks on the walls where the lines meet the walls.
- These lines will represent the diagonal working lines and should be at a 45-degree angle to the Primary and Secondary working lines.
- Verify all measurements before proceeding.



- These diagonal working lines may be sufficient for laying herringbone units or other manufactured parquet patterns on a diagonal. However, additional working lines must be used when installing herringbone in a slat-by-slat method.