

## **Angle/Angle Locking Laminate Planks - Wood and Tile Visuals Installation Instructions**

### **A. LAMINATE TOOLS & MATERIALS**

- Laminate Flooring
- Armstrong Quiet Comfort Premium Underlayment S-1836 (if pad not attached)
- Armstrong Quiet Comfort Underlayment S-1837 (if pad not attached)
- Armstrong Moisture Barrier Sheeting S-1831A
- Armstrong Laminate Flooring Accessories
- Armstrong 99 Adhesive
- Bruce EverSeal Adhesive
- Tapping Block
- Pull Bar
- Spacers
- Laminate Flooring Coordinated Transitions & Molding Pieces
- Carpenter's Square
- Tape Measure
- Polyethylene Tape
- Hammer
- Utility Knife
- Safety Glasses
- NIOSH-Designated Dust Mask
- Saw (see optional tools)
- 100% Silicone Caulk (for bathroom & high moisture installations)
- Touch-Up Kit/Filler Kit
- Splines 7mm, 8mm, 12mm

### **B. OPTIONAL TOOLS & MATERIALS**

- Router
- Drill
- Saws
  - Table Saw
  - Miter Saw
  - Circular Saw
  - Hand Saw
  - Jigsaw
  - Undercut Saw
- Dividers
- Chalk Line
- Armstrong Hardwood & Laminate Floor Cleaner (S-302) or Bruce Hardwood & Laminate Floor Cleaner
- Armstrong VapArrest Professional Moisture Retardant System S-135
- Trowel (Glue Down Installations)
- Bruce Equalizer Premium Urethane Adhesive
- Armstrong 57 Premium Urethane Adhesive
- Armstrong ProConnect Flooring Adhesive
- Pocket Plane

### **! CAUTION WOOD DUST**

**Sawing, sanding or 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.

**Always follow the manufacturer's recommended safety instructions and practices when using power tools.**

**Precautionary Measures if Power Tools Are Used:**

The power tools must be equipped with a dust collector. If high dust levels are encountered, use the appropriate NIOSH-designated dust mask. Avoid dust contact with eyes and skin.

**First Aid Measures in Case of Irritation:**

Flush eyes and skin with water for at least 15 minutes. Seek medical attention if irritation persists.

**IMPORTANT HEALTH NOTICE FOR MINNESOTA RESIDENTS ONLY:**

These building materials emit formaldehyde. Eye, nose, and throat irritation, headache, nausea and a variety of asthma-like symptoms, including shortness of breath, have been reported as a result of formaldehyde exposure. Elderly persons and young children, as well as anyone with a history of asthma, allergies, or lung problems, may be at greater risk. Research is continuing on the possible long-term effects of exposure to formaldehyde.

Reduced ventilation may allow formaldehyde and other contaminants to accumulate in the indoor air. High indoor temperatures and humidity raise formaldehyde levels. When a home is to be located in areas subject to extreme summer temperatures, an air-conditioning system can be used to control indoor temperature levels. Other means of controlled mechanical ventilation can be used to reduce levels of formaldehyde and other indoor air contaminants.

If you have any questions regarding the health effects of formaldehyde, consult your doctor or local health department.

**C. INTRODUCTION**

**Floating Floor Structure**

Armstrong Laminate Flooring is considered a "floating" floor and is installed using a floating floor system. These floors are intended for indoor use only and can be installed over virtually any existing floor structure. Since these floors are composed of natural cellulose fibers, they will expand and contract with changes in relative humidity.

- Do not attach to the subfloor at any point, unless a full spread glue down option is desired.
- Do not fit flush against any fixed vertical surfaces like walls, pipes, passageways or staircases.
- Relative humidity must be maintained between 35% and 55%.
- A minimum 1/4" (6.35 mm) to 1/2" (12.7 mm) expansion zone is required around the perimeter of the room as well as against any fixed objects. This zone accounts for the normal movement of the floor system.
- Where the room is larger than 40' (12.19 m) but less than 80' (24.38 m) in plank length or wider than 26' (7.92 m) but less than 52' (15.85 m) in plank width, a minimum of 1/2" (12.7 mm) expansion zone is required around the perimeter of the room as well as against any fixed objects or T-moldings must be used to compensate for this movement. Refer to Section I, Coordinated Transitions & Molding Pieces, for further details.
- Temperature changes will have little effect on the movement of these floors.
- The number of square feet of laminate required is not equal to the number of square feet in the area of the room because the laminate must be fit to walls and objects. An approximate cutting allowance of 10% for wood visuals and 15% for tile visuals must be added to the square footage estimate.

**Flooring Glue (Armstrong 99 or Bruce EverSeal)**

- Specifically designed to create a strong, water-resistant bond between the tongue and groove.
- The integrity of the floor installation depends on the use of the appropriate glue, the amount of glue and the proper installation techniques.
- Use for all Laminate installations in full bathrooms and high moisture areas.
- Easy cleanup.
- Coverage for using flooring glue: up to 150 sq. ft. (500 Lin. ft.)/16 ounce bottle.

**Glue-down Laminate installation**

- Laminate may be fully adhered to approved substrates using Armstrong ProConnect Wood Flooring Adhesive, Bruce EVERBOND Wood Flooring Adhesive, Bruce Equalizer or Armstrong 57 urethane adhesives. (For full installation instructions, refer to the instructions on the adhesive label.)
- For installations over VapArrest S-135 Professional Moisture retardant system, use Bruce Equalizer or Armstrong 57.

- Maximum adhesive working times: Urethane adhesive- 60 minutes; Armstrong ProConnect Professional Hardwood Flooring Adhesive- 60 minutes. When not in use, keep the adhesive container tightly closed to prevent thickening. Thickening will cause difficulty in spreading the adhesive.
- Open times and curing times of ALL adhesives vary depending upon subfloor porosity, air movement, humidity and room temperature. Urethane adhesive has a shortened working time in high humidity environments, whereas the working time for ProConnect™ and polymeric resin adhesives will be lengthened. In areas of low humidity, open times will be longer with urethane adhesives and shorter with ProConnect. Adjust the amount of adhesive spread on the subfloor accordingly. The adhesive should not be applied if subfloor or room temperature is below 60°F (16°C). **WORKING TIME WILL VARY DEPENDING ON JOBSITE CONDITIONS.**
- Hold trowel at a minimum 45° angle firmly against the subfloor to obtain a 50-60 ft.<sup>2</sup> (4-5.5 m<sup>2</sup>) per gallon spread rate. The trowel will leave ridges of adhesive and very little adhesive between the ridges. This will allow you to still see the chalk lines between the ridges and provide the recommended spread rate.
- For additional application instructions, follow the recommendations on the adhesive container.
- Proper ventilation within the room must be provided. An electric fan is helpful.
- Rolling is not required, but if desired, do not do so until the adhesive has cured for 2 hours.
- **SPREAD THE ADHESIVE (Glue-Down Applications)**
- Spread sufficient amounts of the recommended adhesive with the recommended trowel in an area that can be covered in 60 minutes (see adhesive information).
- If necessary, nail a sacrificial row with 1" (2.5 cm) nails on the dry side of your chalk line to help hold the first row in place.
- **NOTE: Avoid installing on the surface of the flooring. If necessary, distribute weight using a kneeler board.**

### Moisture Barrier Sheeting

- Recommended under all laminate flooring with attached underlayment when installed over concrete.
- 006" (.127 mm) polyethylene film.
- Acts as a moisture barrier when seams are taped together with polyethylene tape.
- Coverage: 30" x 40' roll—100 sq. ft./roll  
60" x 400' roll—2,000 sq. ft./roll

## D. SUBFLOOR REQUIREMENTS

Armstrong Laminate Flooring can be installed over most subfloors and existing floors on all grade levels.

All substrates must:

- meet applicable building codes
- be structurally sound
- show minimal deflection
- be dry, clean and flat

### Precautions:

- Armstrong Laminate Flooring may be installed in bathrooms following the guidelines outlined in the Bathroom Installation Section I.
- Armstrong Laminate Flooring is not recommended in high-humidity areas where the floor is normally wet- e.g., steam rooms, or saunas.
- The slope should not exceed 1" in 6' (2.54 cm in 1.83 m).
- Variations in subfloor flatness should not exceed 3/16" in 10' (4.76 mm in 3.05 m) or 1/8" in 6' (3.17 mm in 1.83 m). Level floors with a suitable cement-based self-leveling underlayment following the manufacturer's recommended guidelines.
- Radiant heated subfloors should not exceed 85°F (29°C).

### Concrete Subfloors

- Concrete floors must be cured properly and allowed to dry for at least 60 days after the curing process.
- Concrete floors must not show any signs of moisture or alkali.
- Use Quiet Comfort or Quiet Comfort Premium Underlayments for Laminate with no-attached backing (or Moisture Barrier Sheeting for laminate with attached backing), butt the edges together and tape the seams with polyethylene tape.

*Test for moisture in concrete prior to installation. Too much moisture can cause significant damage to laminate flooring.*

- Tape 3' x 3' (91 cm x 91 cm) pieces of polyethylene film to the subfloor.
- After 24 hours, if moisture condensation appears on the film or the concrete appears dark-colored, it is likely excessive moisture is present and a Calcium Chloride test must be run.

**NOTE: The following tests are required in commercial applications. Either or both tests are acceptable.**

- **Calcium Chloride Test (ASTM F 1869):** The maximum moisture transfer must not exceed 5 lbs./1000 ft.<sup>2</sup> in 24 hrs. With this test.
- **RH Levels in Concrete Using In-situ Probes (ASTM F 2170-09)** should not exceed 80%.
- If excessive moisture is present or anticipated, use Armstrong VapArrest Professional Moisture Retardant System S-135

**NOTE: DO NOT use Armstrong Proconnect™ Professional Hardwood Flooring Adhesive when using Armstrong VapArrest Professional Moisture Retardant System S-135 or sheet vinyl as a moisture retardant. Use only Bruce® Equalizer™, Armstrong® 57 Premium Urethane Adhesive.**

### Wood Subfloors

- Wood subfloors must be suspended and have a minimum of 18" (45.7 cm) of well-ventilated crawl space.
- Regardless of grade level, do not install over wood subfloors applied directly to concrete or on sleepers over concrete.
- Installation of a polyethylene film vapor barrier such as Armstrong Moisture Barrier Sheeting over the ground in the crawl space is recommended. The polyethylene film acts as a moisture barrier when seams are taped together with polyethylene tape.
- Use Quiet Comfort or Quiet Comfort Premium Underlayment for Laminate with no attached backing. No additional underlayment is needed for Laminate with attached backing.

### Underlayment Boards

- Armstrong Laminate Flooring can be installed over any wood, cement or gypsum-based underlayment boards that are installed according to the manufacturer's recommended guidelines.
- Use Quiet Comfort or Quiet Comfort Premium Underlayment for Laminate with no attached backing. No additional underlayment is needed for Laminate with attached backing.

### Wood Flooring

- All wood flooring must be dry, level, flat and installed over suspended subfloors.
- The wood subflooring materials must not exceed 13% moisture content. Using a reliable wood moisture meter, measure the moisture content of the subfloor.
- Sand any ridges or uneven portions and repair squeaks.
- Use Quiet Comfort or Quiet Comfort Premium Underlayment for Laminate with no attached backing. No additional underlayment is needed for Laminate with attached backing.
- Install Armstrong Laminate Flooring at a 90° angle to existing wood plank flooring.
- Wood flooring over concrete must be removed.

### Ceramic and Resilient Tile

- *Tile installed over concrete:*  
Use Quiet Comfort or Quiet Comfort Premium Underlayment for Laminate with no attached backing (or Armstrong Moisture Barrier Sheeting for laminate with attached backing). All grout joints and broken corners that exceed 3/16" (5 mm) must be filled with a cementitious leveling compound such as Armstrong S-194 Patch, Underlayment & Embossing Leveler with S-195 Underlayment Additive. The surface should be cleaned and abraded to create a good bonding surface for the adhesive. Loose tiles must be re-adhered to the subfloor or filled as above. Remove all sealers and surface treatments. Always check for adequate adhesive bond.
- *Tile installed over wood:*  
Use Quiet Comfort or Quiet Comfort Premium Underlayment for Laminate with no attached backing. No additional underlayment is needed for Laminate with attached backing. All grout joints and broken corners that exceed 3/16" (5 mm) must be filled with a cementitious leveling compound such as Armstrong S-194 Patch, Underlayment & Embossing Leveler with S-195 Underlayment Additive. The surface should be cleaned and abraded to create a good bonding surface for the adhesive. Loose tiles must be re-adhered to the subfloor or filled as above. Remove

all sealers and surface treatments. Always check for adequate adhesive bond.

### Vinyl Sheet

- *Vinyl sheet installed over concrete:*  
Use Quiet Comfort or Quiet Comfort Premium Underlayment for Laminate with no attached backing (or Armstrong Moisture Barrier Sheeting for laminate with attached backing).
- *Vinyl sheet installed over wood:*  
Use Quiet Comfort or Quiet Comfort Premium Underlayment for Laminate with no attached backing. No additional underlayment is needed for Laminate with attached backing.

### Carpet

- **Fully adhered, maximum 1/4" (6.35 mm) carpet over a suspended wood subfloor is a suitable substrate.**
- All other carpet and any carpet pad must be removed. If the carpet was glued in place, remove all remaining debris and excessive adhesive residue. Do not install laminate over carpet adhered to concrete.
- Quiet Comfort or Quiet Comfort Premium Underlayment is not recommended.
- Use moisture barrier sheeting over the carpet. The seams do not need to be taped.

## E. ROOM PREPARATION

### Conditioning

1. Though Armstrong Laminate floors do not require acclimation, depending on storage conditions, it is advised that product being installed be within the same temperature range of room during service conditions.
2. The room temperature should be at a minimum of 65°F (18°C) for 48 hours before, during, and 48 hours after installation.
3. During and after installation, the room temperature should not exceed a maximum of 100°F (38°C).

### Preparation

1. Removal of existing wall base, millwork or trim is optional.
2. Door trims and doorjamb must be undercut to allow the floor to move freely. Use a discarded piece of floor and foam underlayment to support the saw blade at the correct height for undercutting (Fig.1).

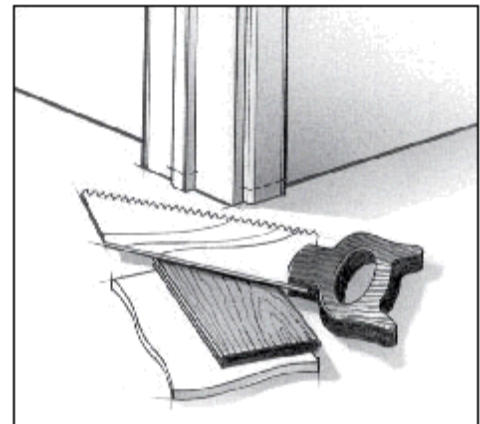


Fig. 1

3. Sweep the subfloor and remove all dust and debris.
4. If the drywall is slightly elevated at the floor and wall juncture, create a solid wall surface by fastening a 2" to 3" (5 cm to 7.6 cm) wide facing strip (such as 1/4" (6.35 mm) plywood) to the wall at the stud location.
5. New wall base or molding must be installed at the end of the job to cover the 1/4" (6.35 mm) to 1/2" (12.7 mm) expansion zone around the perimeter of the floor.
6. It may be necessary to plane or cut the bottom of the door to accommodate the change in floor height.
7. Handle and unload with care. Store in a dry place, being sure to provide at least a 4" air space under cartons which are stored upon "on-grade" concrete floors. Flooring should not be delivered until the building has been enclosed with windows, doors are in place and cement work, plastering and all other "wet" work is completed and dry.
8. Although it is not necessary to acclimate Laminate flooring, prior to the installation it is best to store it in the environment in which it is expected to perform. Check adhesive label for adhesive storage limitations.

## Layout

Install parallel to incoming light from any windows or, if lighting is not a concern, parallel to the longest wall in the room (Fig.2).

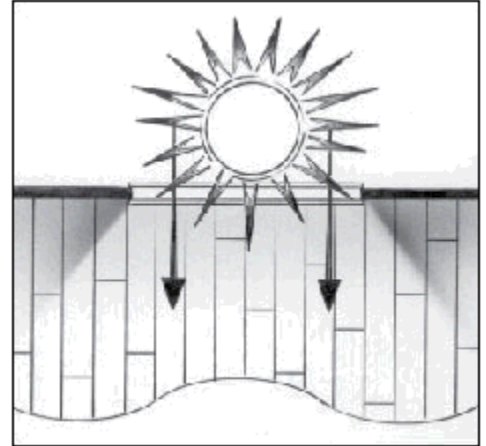


Fig. 2

## High Moisture Areas

It is a good idea to use 100% silicone caulk in areas of rooms where excessive moisture may be present, such as at kitchen sinks, dishwashers and ice makers.

## Getting Started:

*Always check each board for damage before installing.*

1. Avoid narrow pieces at the finish wall. Measure the distance between the starting wall and the finish wall.
2. Divide this number by the width of the board.
3. If the remainder is less than 2-1/2" (6.35 cm), cut off 2-1/2" (6.35 cm) from the width of the first row or to balance the room add the difference to the plank width and divide by two.

## Installing Underlayments: (if pad is not attached to product)

1. Roll out Armstrong Quiet Comfort or Quiet Comfort Premium Underlayment or Armstrong Moisture Barrier Sheeting along the starting wall logo side up, and cut to length (Fig. 3). Kitchen and bathroom installations require folding the underlayment up the wall 2" (5 cm).
2. Place additional sections with butt seams as the installation progresses. If subfloor is concrete or for any existing floor over concrete, tape the seams with clear plastic tape (Fig. 4).

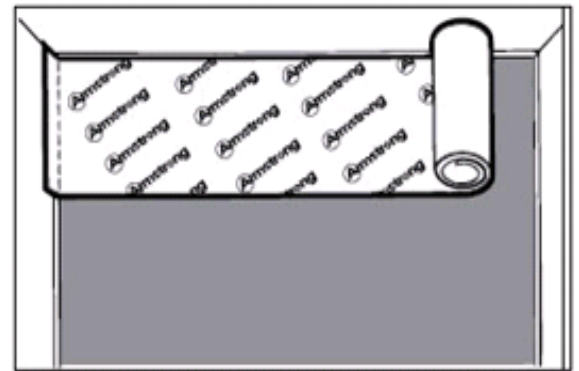


Fig. 3

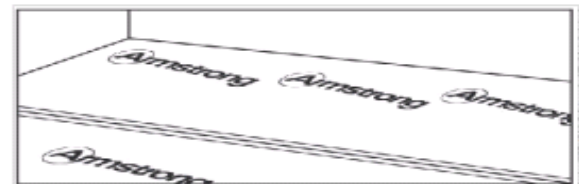


Fig. 4

## Wall Irregularities

1. All wall irregularities require cutting the first or last row of boards to fit the contour of the wall.
2. Use dividers or a 1" (2.54 cm) spacer turned sideways to mark the contour (Fig. 5).
3. Cut to shape.
4. Position the cut piece, using the pull bar to tighten the last piece in place.
5. Place a spacer between the end of the board and the side wall.

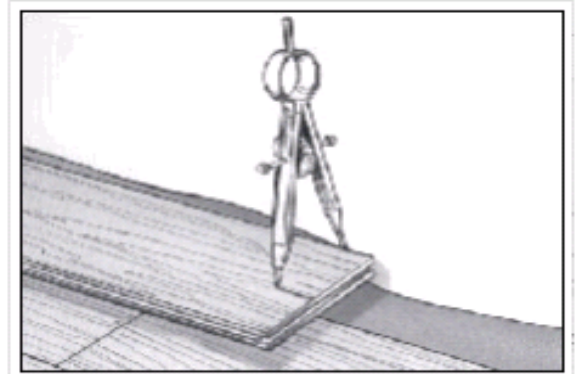


Fig. 5

6. Two tapered spacers can be used as wedges to accommodate irregular walls (Fig. 6).

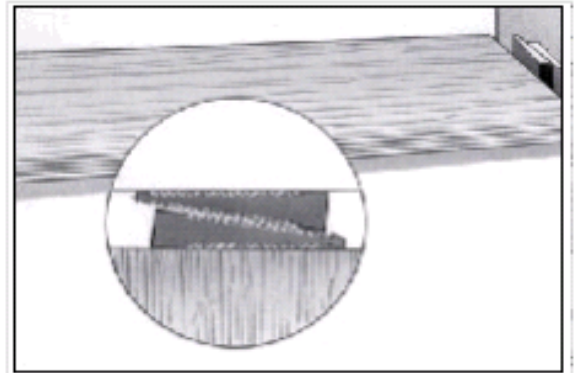


Fig. 6

## Cutting

1. A good quality carbide-tipped cutting blade that has been designed for composition and laminate materials such as melamine, coreboard or other hard, dense, man-made materials is recommended. When extra clean-cut edges are required- e.g., custom installations- you may need more elaborate cutting equipment.
2. When using a hand saw, cut with the decorative side of the board facing up.
3. When using power saws, the direction of blade must cut into the decorative side of the board to minimize chipping.
4. Use a square to keep your cut line straight.
5. Cut the marked piece in another area to keep the sawdust away from the installation site.

## Installing Under a Door Jamb or Toe Kick

Installation of locking laminate through a door jamb or under a toe kick requires the lip of the groove to be reduced in size.

1. Using a small plane or utility knife, plane or shave off 75% of the ledge of the groove (Fig. 7).
2. Be careful not to trim too much. Excessive reduction can weaken the joint.
3. After the groove ledge has been trimmed, place the board in position laterally and lightly pull the board into place using the pull bar.
4. Sometimes, more than one passing may be necessary in order to trim the ledge of the groove to the correct height.
5. Joint should be tight with no movement; however, a thin 3/32" (2.4 mm) bead of glue on top of tongue only should

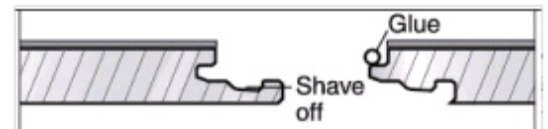


Fig. 7



be used at this juncture to ensure joint integrity.

## Installing the First Row

*To minimize pattern repeats in the floor, always pull from at least three cartons of flooring while installing.*

1. Begin on the left side of the room and work right.
2. Lay the first full piece with the small, tongue side facing the wall (Fig. 8).

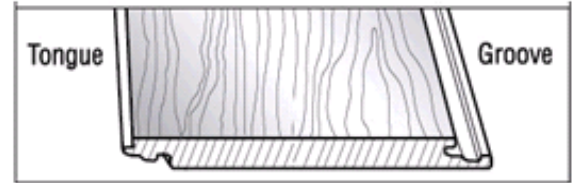


Fig. 8

3. Install second and subsequent full pieces in the first row by aligning short ends of boards and locking into place (Fig. 9).
4. Use spacers along all sides that butt up against walls to maintain 1/4" (6.35 mm) to 1/2" (12.7 mm) expansion zone (Fig. 9 and 10).

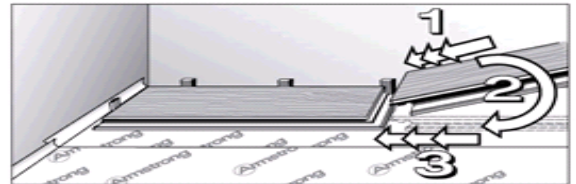


Fig. 9

5. Continue laying boards in the first row until you need to cut the last piece.
6. Measure the distance between the wall and the face surface of the last board. Subtract 1/4" (6.35 mm) and cut the board. (See cutting instructions above.)
7. If this distance is less than 8" (20.32 cm) go back to the first full plank and cut approximately 8" (20.32 cm) from the end closest to the starting wall. This will leave a longer piece at the end of the first row.
8. When installing tile visuals, grout lines can be aligned or off-set. If the tiles are being balanced in the room with equal-sized tile along each wall, measurements and adjustments should be done before proceeding to the second row.

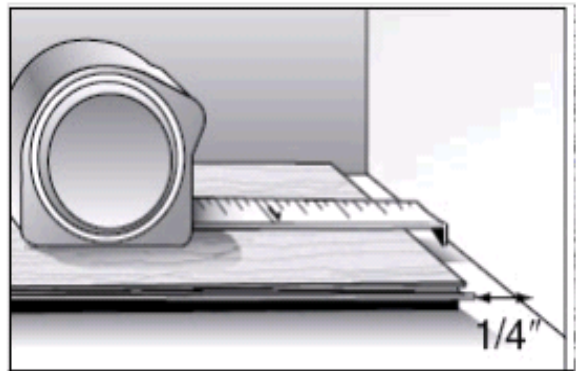


Fig. 10

## Installing Remaining Rows

9. Begin the second row of planks with the piece cut from the last piece in the first row. If the piece is shorter than 8" (20.32 cm), cut a new plank in half and use it to begin the second row. Whenever practical, use the piece cut from the preceding row to start the next row. End joints of all boards should be staggered 8" (20.32 cm) or more. Grout lines on planks with tile visuals can be aligned, or off-set as long as end joints are staggered (Fig. 11).

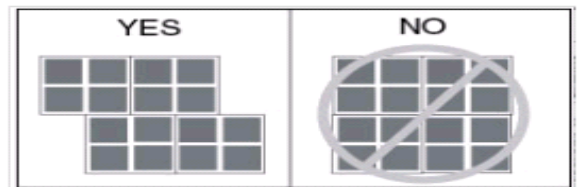


Fig. 11

10. Install the long end of the first board at an angle to the board in the previous row. Keep this board at its natural angle slightly raised off the subfloor (Fig. 12). Use a scrap piece of laminate to support the row if needed.

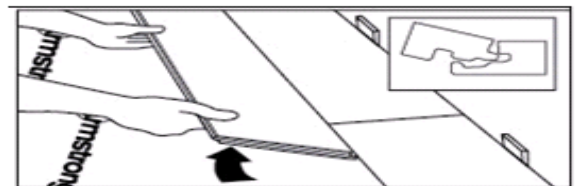


Fig. 12



11. Continue installing full boards in the second row by angling the short end of the next board in the row to lock into the previous board (Fig. 13). Position the board so that the long side of the board is close to boards in the previous row and overlapping the groove of the boards in the previous row.

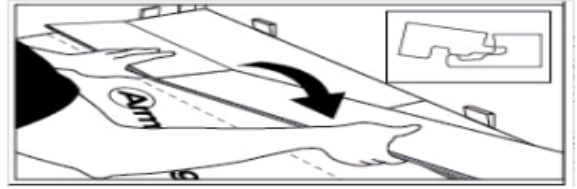


Fig. 13

12. Angle up and push forward until the boards lock together (Fig. 14).

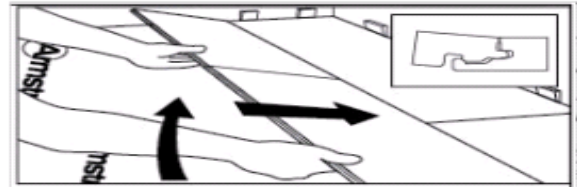


Fig. 14

13. Continue installing full boards in the second and subsequent rows until you reach the wall on your right.

14. Mark the last piece, cut and install. After all boards in the row are installed, press or walk all boards flat to the subfloor to begin the next row (Fig. 15).

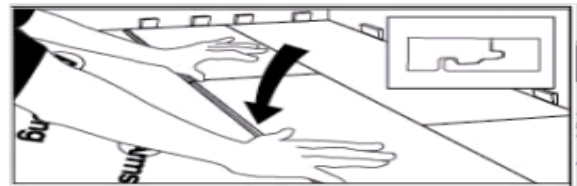


Fig. 15

15. Use a pull bar when necessary to ensure joints are tight (Fig. 16).

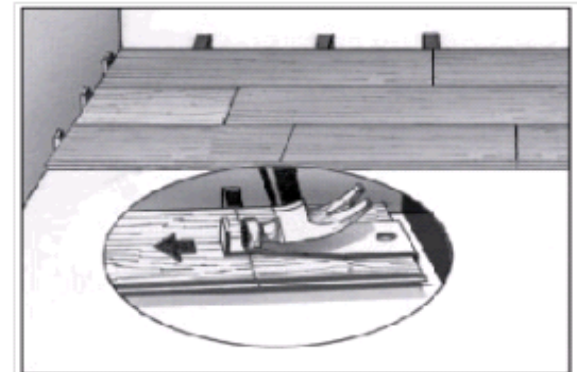


Fig. 16

## Installing the Last Row

16. The last row in the installation may need to be cut lengthwise.
17. Place the row of planks to be fit on top of the last row of installed planks. Use a divider or a piece of the plank as a scribe to trace the contour of the wall (Fig. 17).
18. Be sure to place a spacer between the marking pen and "scribe" piece of board. This adds the 1/4" (6.35 mm) to 1/2" (12.7 mm) space you need at the finish wall (Fig. 17).
19. Mark where the board should be cut.
20. If the fit at the finish wall is simple and straight, just measure for the correct width and cut. If not, see above for instructions on wall irregularities.

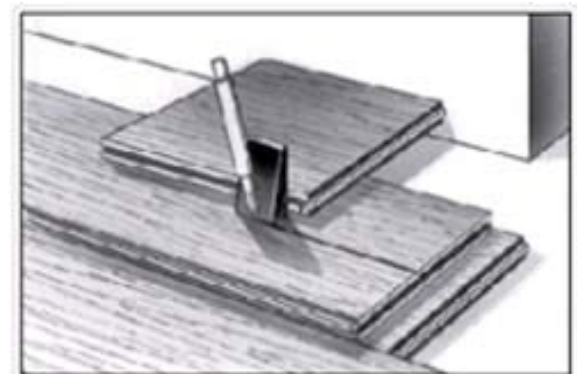


Fig. 17

21. After the last row is installed, use the pull bar to tighten the joints.

When appropriate, cut the underlayment even with the top of the floor (Fig. 18).



Fig. 18

### Finishing the Installation

22. Remove spacers and install molding pieces.
23. Always predrill transitions or moldings prior to nailing. To allow the floating floor to move freely, **do not** fasten the trim to the laminate flooring (Fig. 19).
24. For routine cleaning, vacuum or damp mop. To remove excessive dirt buildup, Bruce Hardwood & Laminate Floor Cleaner.
25. **DO NOT WAX OR POLISH** your floor.

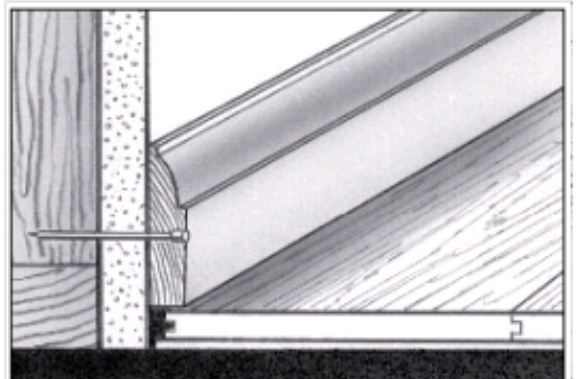


Fig. 19

### FOOTNOTE

Questions about Armstrong Laminate Flooring should be directed to our Customer Relations and Technical Services at 1 800 233 3823.