

**Installation Instructions  
3/4" Solid Plank & Strip Products  
For Nail-Down Installation**

**INSTALLER/OWNER RESPONSIBILITY**

Beautiful hardwood floors are a product of nature and therefore, not perfect. Our wood floors are manufactured in accordance with accepted industry standards, which permit a defect tolerance not to exceed 5%. The defects may be of a manufacturing or natural type.

- The installer assumes all responsibility for final inspection of product quality. This inspection of all flooring should be done before installation. Carefully examine flooring for color, finish and quality before installing it. If material is not acceptable, do not install it and contact the seller immediately.
- Prior to installation of any hardwood-flooring product, the installer must determine that the job-site environment and the sub-surfaces 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 environment deficiencies.
- Prior to installation, the installer/owner has final inspection responsibility as to grade, manufacture and factory finish. The installer must use reasonable selectivity and hold out or cut off pieces with defects, whatever the cause.
- Use of stain, filler or putty stick for defect correction during installation should be accepted as normal procedure.
- When flooring is ordered, 5% must be added to the actual square footage needed for cutting and grading allowance.
- Should an individual piece be doubtful as to grade, manufacture or factory finish, the installer should not use the piece.

**TOOLS & ACCESSORIES NEEDED**

**NOTE:** IT IS EXTREMELY IMPORTANT TO USE THE PROPER ADAPTERS AS WELL AS STAPLES OR CLEATS. IMPROPER FASTENERS, MACHINES AND AIR PRESSURE CAN CAUSE SEVERE DAMAGE. THE MANUFACTURER OF THIS FLOORING PRODUCT IS NOT RESPONSIBLE FOR DAMAGE CAUSED BY USE OF IMPROPER TOOLS OR MISUSE.

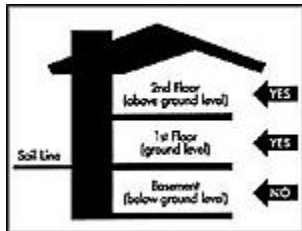
- Broom
- Drill with 1/16" drill bit
- Table saw, jig saw, or circular saw
- Tape Measure
- Hammer
- Moisture meter (wood, concrete or both)
- Chalk line & chalk
- Recommended Hardwood Flooring Cleaner
- 6-8d finishing nails

- Hand saw
- Nail Set
- ¾" "Blind" fastening machine

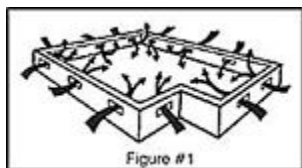
## PRE-INSTALLATION PROCEDURES

### Job Site Inspection

- The building should be closed in with all outside doors and windows in place. All concrete, masonry, framing members, drywall, paint and other "wet" work should be thoroughly dry.
- The wall coverings should be in place and the painting completed except for the final coat on the base molding. When possible, delay installation of base molding until flooring installation is complete.
- Exterior grading should be complete with surface drainage directing water away from the building. All gutters and downspouts should be in place.
- Solid flooring can only be installed on or above grade level. Do not install in full bathrooms.



- Basements and crawl spaces must be dry and well ventilated.
- Crawl space must be a minimum of 24" (600 mm) from the ground to underside of joists. A ground cover of 6-8 mil black polyethylene film is essential as a vapor barrier with joints lapped six inches and taped. The crawl space should have perimeter venting equal to a minimum of 1.5% of the crawl space square footage. These vents should be properly located to foster cross ventilation (see figure #1).



- Subfloor must be checked for moisture content using the appropriate testing method.
- Permanent air conditioning and heating systems should be in place and operational. The installation site should have a consistent room temperature of 60-75 degrees F and humidity of 35-55% for 14 days prior, during and until occupied, to allow for proper acclimation.

## STORAGE AND HANDLING

Solid products should be stored in the environment in which they are expected to perform. Deliver the materials to an environmentally controlled site. Materials should be allowed to acclimate for as long as necessary to meet minimum installation requirements for moisture content. Handle and unload with care. Store in a dry place being sure to provide at least a four-inch air space under cartons which are stored upon "on-grade" concrete floors. Flooring should not be delivered until the building has been closed in with windows and doors in place and until cement work, plastering and

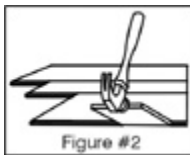
all other "wet" work is completed and dry. Concrete should be at least 60 days old. Air conditioning/heating systems should be in place and in operation at least 14 days prior, during and after installation of the flooring.

### INSTALLATION APPLICATIONS

**NOTE:** MINOR SQUEAKING OF MECHANICALLY FASTENED FLOORS IS NOT ABNORMAL DUE TO STRUCTURAL MOVEMENT CAUSED BY CHANGES IN ENVIRONMENTAL CONDITIONS. FOLLOWING THESE INSTRUCTIONS CAN MINIMIZE THESE FACTORS, BUT OFFER NO GUARANTEE THAT THE FLOOR WILL NOT SQUEAK.

#### General Information for Fastening Machines:

Avoid striking the edge of prefinished products with the fastener's mallet. Edge crushing can occur causing unsightly cracks and splinters. Use a block to hammer against if necessary (figure #2). Faceplates should be covered with protective materials to prevent damage to the surface of the flooring.



#### General Information for Manual Fastening Machines:

Improper adapter plate selection can cause severe edge damage. Ascertain that the proper adapter has been selected and properly installed for 3/4" flooring.

#### General Information for Pneumatic Fastening Machines:

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 (figure #3). Low air pressures may fail to properly set the fastener and damage adjoining boards.

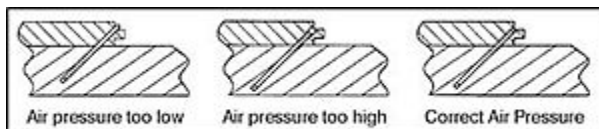


Figure #3

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 pressure at 70-75 PSI to begin with and adjust until proper fastener setting occurs.

### SUBFLOOR REQUIREMENTS

**NOTE:** Laminated rosin paper or 15# builders felt (tarpaper) acts as a moisture retarder and may be used to reduce movement caused by changes in subfloor moisture, thereby reducing cupping and warping. (This is especially helpful over crawl spaces and basements) In addition, the use of these materials can give the flooring a more solid feeling, reduce sound transfer, prevent noise caused by minor irregularities and debris, and make it easier to slide the wood together across the surface of the subfloor. Kraft paper may be used to make installation easier but DOES NOT serve any other purpose.

#### SUBFLOORS MUST BE:

- **CLEAN** - Scrape, broom clean, and smooth. Free of wax, paint, oil or debris.

- **LEVEL/FLAT** - Within 3/16" in 10' and/or 1/8" in 6'. Sand high areas or joints. Low spots can be flattened using shims or layers of builders felt between the wood and the subfloor during installation.
- **STRUCTURALLY SOUND** - Nail or screw any loose areas that squeak. Replace any water-damaged, swollen or delaminated subflooring or underlayments, as they are unable to properly hold fasteners. Avoid subfloor with excessive vertical movement unless they have been properly stiffened prior to the installation of the wood flooring.
- **DRY** - Check moisture content of subfloor. Moisture content of wood subfloor must not exceed 13% on a wood moisture meter, or read more than a 4% difference (3% for plank) than moisture level of product being installed.

#### RECOMMENDED SUBFLOOR SURFACES

- **PREFERRED:** 3/4" (19 mm) CDX grade plywood  
3/4" (23/32") OSB PS2 rated underlayment  
**MINIMUM:** 5/8" CDX grade plywood
- Existing solid wood flooring
- Screeds
- T&G wood subflooring

#### SUBFLOOR TYPES:

**NOTE:** Do Not Install Solid Wood Plank or Strip Over Radiant Heated Subfloors

#### WOOD SUBFLOORS & WOOD STRUCTURAL PANEL SUBFLOORS

- **Plywood:** Must be minimum APA grade rated sheathing or CDX.
- **Oriented Strand Board (OSB):** Must be PS2 rated installed sealed side down. Do Not install over particleboard, waferboard, pressed wood or fiber board.

Make sure existing floor or subfloor is dry and well nailed or screwed down every 6" along each joist to avoid squeaking or popping before the floor is installed. Measure moisture content of both subfloor and wood flooring to determine proper moisture content with a reliable wood moisture meter (figure #4). The wood subfloor must not exceed 13% moisture content as measured with a reliable wood moisture meter. The difference between the moisture content of the wood subfloor and the wood flooring must not exceed 4%. (3% for plank)



Figure #4

Optimum performance of hardwood floor covering products occurs when there is no horizontal or vertical movement of the subfloor. The MINIMUM subfloor recommendations described above are for

16" O/C joist spacing. The thicker, PREFERRED subfloor recommendations described above will allow 19.2" joist spacing if the joist manufacturer's recommended span is not exceeded. Spacing in excess of 19.2" O/C may not offer optimum results. Install flooring perpendicular to the floor joists when possible. Installations should not be made parallel to the floor joists or on joist spacing that exceeds 19.2" O/C unless the subfloor has been properly stiffened. Stiffening may require the addition of a second layer of subflooring material to bring the overall thickness to at least 1-1/8".

All underlayment panels should be spaced 1/8" apart to insure adequate expansion space. This can be achieved by using a circular saw set at the depth of the underlayment and cutting around the perimeter of the panel. T&G panels normally have built in expansion; DO NOT cut around the perimeter of T&G panels. Do not install over existing glue-down floors. Do not install over nailed floors that exceed 3-1/4" in width. Wide width floors must be overlaid with plywood. When installing over existing wood floors parallel with the flooring, it may be necessary to install an additional 1/4" layer of plywood to stabilize the flooring or install the wood floor at right angles. Applicable standards and recommendations of the construction and materials industries must be met or exceeded.

### CONCRETE SLABS

Solid flooring can be installed over concrete once the appropriate nailing surface has been installed. The concrete must be of high compressive strength. All concrete subfloors should be tested for moisture content. Visual checks are not reliable. Acceptable test methods for subfloor moisture content include:

**NOTE:** Test several areas, especially near exterior walls and walls containing plumbing.

- A 3% Phenolphthalein in Anhydrous alcohol solution. Chip the concrete at least 1/4" deep (do not apply directly to the concrete surface) and apply several drops of the solution to the chipped area. If any color change occurs, further testing is required.
- Calcium Chloride test. The maximum moisture transfer must not exceed 3 lbs./1000 square feet with this test.
- Tramex Concrete Moisture Encounter meter (figure #5). Moisture readings should not exceed 4.5 on the upper scale. (Figure #5 shows an unacceptable reading of over 4.5)



Figure #5

A "DRY" SLAB, AS DEFINED BY THESE TESTS CAN BE WET AT OTHER TIMES OF THE YEAR. THESE TESTS DO NOT GUARANTEE A DRY SLAB. ALL CONCRETE SLABS SHOULD HAVE A MINIMUM OF 6 MIL POLY FILM MOISTURE BARRIER BETWEEN THE GROUND AND THE CONCRETE.

Moisture Retardant System: If moisture is present, install 6-mil poly to the surface of the concrete BEFORE installing the subfloor. Several layers of laminated rosin paper or builders felt (tarpaper) may also be used. All materials should have joints lapped 6". If you have any questions regarding installation or the handling of moisture problems, please contact the distributor/retailer from whom the goods were purchased.

## Subfloor Systems

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

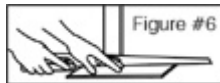
**Floating:** Install a suitable moisture retardant followed by a plywood subfloor with a minimum of  $\frac{3}{8}$ ". Allow  $\frac{1}{2}$ " expansion space around all vertical objects and  $\frac{1}{8}$ " between all flooring panels. Install a second layer of  $\frac{3}{8}$ " plywood at a right angle to the previous panels, offsetting the joints 2'. Staple together with staples that will not penetrate the first layer of subfloor with a crown width of  $\frac{3}{8}$ " or more. Install a moisture retardant barrier as above and begin installation of flooring.

### RESILIENT TILE & RESILIENT SHEET VINYL

Make sure the vinyl or tile is well bonded to the subfloor. Do not install over more than one layer, which does not exceed  $\frac{1}{8}$ " in thickness over suitable subfloor.

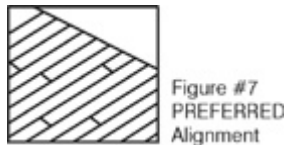
### DOORWAY AND WALL PREPARATION

Undercut door casings. Remove any existing base, shoe mold or doorway thresholds. These items can be replaced after installation. All door casings should be notched out (figure #6) or undercut to avoid difficult scribe cuts.



### GENERAL INSTALLATION TIPS

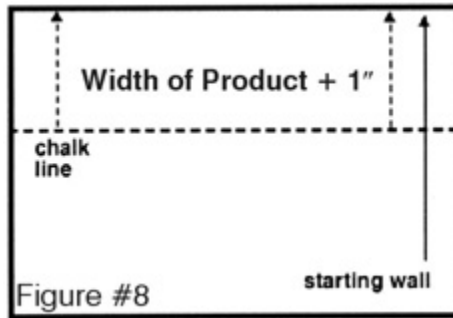
- Floor should be installed from several cartons at the same time to ensure good color and shade mixture.
- Be attentive to staggering the ends of boards at least 6", when possible, in adjacent rows (figure #7). This will help ensure a more favorable overall appearance of the floor.
- Large spans in areas of high humidity may require the addition of internal or field expansion. This can be accomplished by using spacers, such as small washers, every 10-20 rows inserted above the tongue and removed after several adjoining rows have been fastened



### STEP 1: ESTABLISH A STARTING POINT - WALL TO WALL INSTALLATION

- Installation parallel to the longest wall is recommended for best visual effects, however, the floor should be installed perpendicular to the flooring joists unless subfloor has been reinforced to reduce subfloor sagging. Find appropriate subfloor from "Subfloor Type" section in this instruction manual.
- If a moisture retardant material is to be used, such as Laminated Rosin Paper (see NOTE, Subfloor Requirements), install this material before proceeding, lapping joints 6" and stapling if necessary.
- Measure the width of the product being installed. For random or alternate width products, use the widest plank for the first row.
- Add 1" to allow for  $\frac{3}{4}$ " expansion and the width of the tongue.

- Using this measurement, in at least two places, measure out equal distance from the starting wall and 12"-18" from the corners (figure #8) and snap a chalk line.



## STEP 2: INSTALLING FIRST ROWS - WALL TO WALL INSTALLATION

**NOTE:** Always end glue wide width (4" or more) planks with a good construction adhesive.

- Use the longest, straightest boards available for the first two rows. Align tongue of first row on chalk line. The groove should be facing the starting wall. Pre-drill the nail holes 1/2" from back (groove) edge, 1-2" from each end, and at 6" intervals at a 45-degree angle down through the nailing "pocket" on top of the tongue (figure #9).

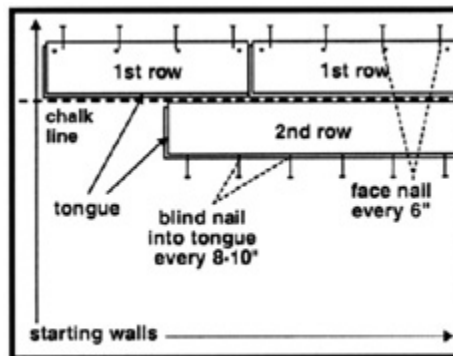


Figure #9

- Face-nail the groove side where pre-drilled. When complete, blind-nail at a 45-degree angle through the tongue of the first row. Fasten using 6 or 8d nails. Countersink nails to ensure flush engagement of groove. Avoid bruising the wood by using a nail set to drive the nails the last 1/4" into the tongue. Continue blind-nailing using this method with following rows until stapler or nailer can be used.
- End-joints of adjacent rows should be staggered a minimum of 6" to ensure a more favorable overall appearance.
- Beginning rows may be blind-nailed where clearance allows using a pneumatic finish nailer with 15 gauge, 1-1/2" (minimum) nails.

## STEP 1 & 2: CENTER TO WALL INSTALLATION

- Snap a chalk line down the center of the room.
- Install a sacrificial row that extends the entire length of the room on the center line.
- Install three rows of flooring.
- Remove the sacrificial row and insert a slip tongue in the open groove.

### **STEP 3: RACKING THE FLOOR**

- "Dry" lay materials to cover approximately 2/3 of the room. Begin dry laying approximately 6" from the edge of the previously installed rows. Avoid pulling boards too tightly together on the sides, as they must move freely when fastening begins.
- Mark the final board in each row and cut to proper length allowing for expansion. Visually inspect flooring, setting aside boards that need to have natural character flaws cut out. Use these boards for starting and finishing row after objectionable characteristics have been removed.

### **STEP 4: INSTALLING THE FLOOR**

- Fasten a sacrificial board to the floor. Check for surface damage, air pressure setting, tongue damage, etc. before proceeding. Make all adjustments and corrections before installation begins. Once proper adjustments have been made, remove and destroy the board.
- Begin installation with several rows at a time, fastening each board with at least two fasteners, 8-10" apart and 2-3" from the ends (to avoid splitting). Tighten boards as necessary to reduce gaps before fastening.
- End-joints of adjacent rows should be staggered 6" when possible to ensure a more favorable overall appearance.
- The last 1-2 rows will need to be face-nailed where clearance does not permit blind nailing with stapler or brad nailer. Pre-drill and face-nail on the tongue side following the nailing pattern used for the first row.
- Rip final row to fit and face-nail. If the final row is less than 1" in width, it should first be glued to the previous UNINSTALLED row and the two joined units should be face-nailed as one.

### **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 35-55% range. To protect your investment and to assure that your floors provide lasting satisfaction, we have provided our recommendations below.

- Heating Season (Dry) - A humidifier is recommended to prevent excessive shrinkage in wood floors due to low humidity levels. Wood stoves and electric heat 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.

#### **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.

### **ALL INSTALLATIONS**

#### **STEP 5: COMPLETING THE JOB**

- Clean floor with the recommended wood flooring cleaner.
- Re-install any transition pieces that may be needed, such as Reducer Strips, T-moldings, or Thresholds. The products are available pre-finished to blend with your flooring. (See moldings below)
- Re-install all base and/or quarter round moldings. Nail moldings into the wall, not the floor. Inspect the floor, filling all minor gaps with the appropriate blended filler.
- If the floor is to be covered, use a breathable material such as cardboard. Do not cover with plastic.
- Leave warranty and floor care information with the owner. Advise them of the product name and code number of the flooring they purchased.
- To prevent surface damage avoid rolling heavy appliances and furniture on the floor. Use plywood, hardboard or appliance lifts if necessary.

## MOLDINGS

- **Reducer Strip:** a teardrop shaped molding. Used around fireplaces, doorways, as a room divider, or as a transition between Parquet and adjacent floor coverings that are thinner. Fasten down with adhesive or double-faced tape.
- **Threshold:** a molding undercut for use against sliding door tracks, fireplaces, carpet, ceramic tile, or existing thresholds to allow for expansion space and to provide a smooth transition in height difference. Fasten to subfloor with adhesive and/or nails through the heel. Pre-drill nail holes to prevent splitting. Always leave expansion beneath the undercut.
- **Stair Nosing:** a molding undercut for use as a stair landings trim, elevated floor perimeters, and stair steps. Fasten down firmly with adhesive and nails or screws. Pre-drill nail holes to prevent splitting.
- **Quarter Round:** a molding used to cover expansion space next to baseboards, case goods, and stair steps. Pre-drill and nail to the vertical surface, not into the floor.
- **Combination Base and Shoe:** a molding used when a base is desired. Used to cover expansion space between the floor and the wall. Pre-drill and nail into the wall, not the floor.
- **T-Molding:** a molding used as a transition piece from one flooring to another or to gain expansion spaces. Fasten at the heel in the center of the molding. Leave expansion beneath the undercut on both sides.