HOW-TO BOOKLET #3126

INSTALL PLANK FLOORING

TOOL & MATERIAL CHECKLIST

❏ Underlayment
❏ Nails
❏ Power Nailer
❏ Pry Bar
❏ Sander/Sandpaper

❏ Building Paper or Polyethylene Sheet
❏ Stain/Wood Finish
❏ Snap Line
❏ Hammer
❏ Drill

❏ Stapler/Staples
❏ Compass/Scribe Tool
❏ Saw(s)
❏ Nail Punch

Read This Entire How-To Booklet for Specific Tools and Materials Not Noted in the Basics Listed Above.
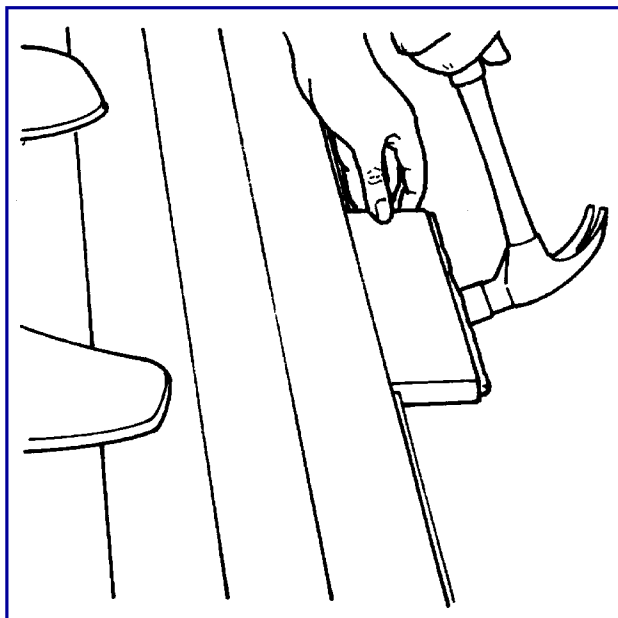
The durability, warmth, and beauty of wood make it one of the most popular of all flooring materials. They can be constructed of either hardwood—red and white oak, hickory, maple, pecan, walnut, and teak—or softwood—pine, redwood, and Douglas fir. It is important to keep in mind that softwoods will tend to scratch and pit much more easily than hardwoods.

Wood flooring is available in three basic types: strip, plank, and parquet blocks. Strip flooring has a standard thickness of 3/4" with widths of 1 1/2", 2", 2 1/4", and   3-1/4". The strips come in random lengths from 9" to 8 1/2'. The strips are bundled by approximate average length. Strips must be laid on a sturdy subfloor. Plank flooring also has a standard thickness of 3/4" with widths that vary from 3" to 8". Parquet flooring, the third type, consists of wood blocks laid with the grains of the blocks perpendicular to those of adjacent blocks, resulting in an interesting mosaic. Since the installation of parquet squares is covered in How-to-Booklet #3115, this booklet will cover the installation of only strip and plank wood flooring.

CODES AND PERMITS

Codes do not usually cover wood flooring itself. They do, however, require subflooring, joists, and moisture barriers to be up to current codes. Installation over concrete, for example, may have special code requirements in your area. Always call before proceeding with your project to determine whether any local codes or permits are required.

CHOOSING MATERIALS

Wood flooring can be purchased prefinished as well as unfinished. The installation is basically the same. Because unfinished flooring must be sanded later, you can install it a little faster than prefinished flooring. The prefinished flooring requires a slower installation to prevent damage to the finished surface. However, once this flooring is laid, the job is done. No finishing is required.

CHOOSING FLOORING

As already stated, there are a number of woods from which to choose. Also, there are different grades within each type of wood as well. In fact, one of the most difficult tasks is selecting the proper grade of flooring.

Unfinished oak flooring, for instance, ranges from the best, designated as "Clear," through "Select and Better," "Select," "No. 1 Common," and "No. 2 Common." Some of these grades are subdivided into "Red" and "White" and also "Plain Sawn" (flat-grained), and "Quarter Sawn" (edge-grained). "Standard and Better," "Standard," "Tavern and Better," and "Tavern."

Sizes of flooring can also vary according to the type and grade of flooring used as well as the quality of the subfloor. A 3/4" by 2-1/4" oak plank, No. 1 Common, for example, might be okay over a plywood subfloor but too thin for installation over furring strips. Check with your local retailer first to determine which types and grades of flooring you want and what kind of subflooring or base is needed.

Fig. 1

Polyethylene Sheet

Building Paper

Sleeper
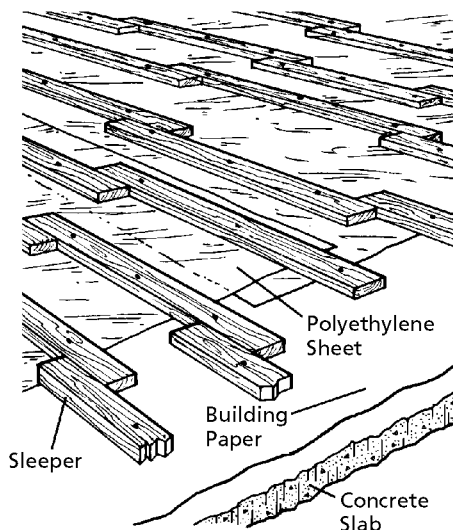
Concrete Slab

Sleepers are held in place with expansion bolts, power-driven pins, or special concrete nails. Sleepers are pressure-treated furring strips made for contact with concrete.

CONCRETE SUBFLOORS

Wood flooring may be laid on an existing concrete slab if it is dry and level. To check for slab dampness, cut a piece 1 square foot of polyethylene sheet; tape its edges to the slab to make an airtight seal. After a couple of days, if the sheet shows no condensation droplets or cloudiness on its underside, the slab is dry. To install sleepers or screens on a concrete slab, proceed as follows:

1 Check local codes for concrete installation requirements, such as vapor barriers or treated wood.

2 If the concrete is uneven, use a leveling compound to smooth the area before proceeding with step 3. Check local codes for approved compounds in your area.

3 Lay the approved vapor barrier, such as polyethylene sheet or building paper, over the concrete floor. Glue or fasten the barrier to prevent shifting and tearing.

4 Snap lines in the vapor barrier representing the layout for 2x4 sleepers. Use a 16" on-center (O.C.) layout unless codes or manufacturer specifies otherwise. The first sleeper is 15 1/4" spaced from the second, while the remaining are 16" on center. This means that measuring from center to center or outside to inside of a sleeper will always be 16", except for the first one (**Fig. 1**).

5 Using pressure-treated 2x4's or other approved wood, lay the sleepers along the layout lines for the entire area before fastening them to the concrete.

6 Install the sleepers using one of the following methods, or as determined by local codes:

• Drill both through the wood and then the concrete every 24". Afterward, install expansion bolts.

• Shoot pins through the wood and into the concrete every 16" with a power nailer, which you can rent.

• Drill and nail the wood to the concrete with special concrete nails every 8" to 10".

SAFETY NOTE: Using explosive charges, hammering case hardened steel nails or drilling concrete can cause chips and debris to fly all around. Wear protective eye goggles and clothing at all times. Follow all manufacturer instructions regarding the use of the fasteners and fastening equipment!

7 Install the subflooring over the sleepers if you are not installing the planks directly to them. Stagger the seams of the subflooring and use only a code-approved subflooring, spacing, and nailing schedule. An example of code-approved subflooring might be tongue and groove (T&G) 5/8" CDX plywood on 16" O.C. spacing, nailed every 8" with ring-shank #8 nails.
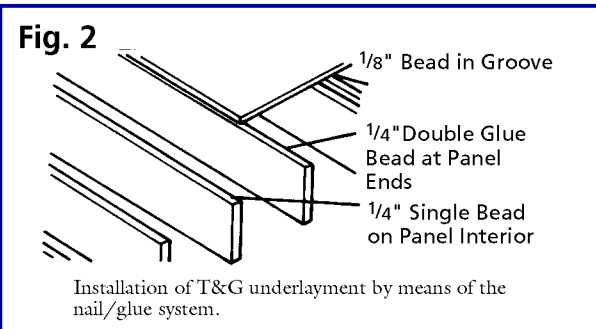
NO SUBFLOOR

When applying wood flooring to an area with exposed joists and no existing floor, such as in an attic or a new addition, a subfloor must be laid down before installing the wood flooring. A common underlayment is 5/8" T&G CDX plywood covered with 15-lb. building paper or polyethylene sheet as a vapor barrier.

1 Begin the underlayment by checking the framing system for squareness. Snap a chalk line across the joists 4' in from the outside wall to establish a panel edge alignment for the first course.

2 Make sure panels can be laid square to joists and panel edges fall in the center of support members. Install the first panel with the tongue side to the outside wall. Nail in place.

3 Continue laying full panels in the first course to complete the run.

4 Start the second row with a half panel (4' x 4'), then continue with full panels. This system allows staggered end joints. Leave a 1/8" gap at the panel ends.

5 Panels should be laid at right angles to framing members with panel ends falling on one-half of the framing member. Stagger the end joints from adjoining courses. Don't force panels together.

6 A tongue-and-groove profile allows for a slight gap along the top joint. To help align properly, tap the T&T panels into position using a hammer and protective wood block against the grooved edge.

The subfloor may be applied directly to the floor joists with a 6d ring or screw shank nail or 8d at 6" intervals. However, glue-nailing is recommended to produce a superior floor system.

When installing panels using the glue nail system, be sure to spread only enough glue to lay one or two panels at a time. Check the glue

Fig. 2

1/8" Bead in Groove

1/4" Double Glue Bead at Panel Ends

1/4" Single Bead on Panel Interior

Installation of T&G underlayment by means of the nail/glue system.

manufacturer's recommendations for open time. Complete all nailing of each panel before the glue sets. Apply a continuous line of glue, approximately 1/4" in diameter to the sill and nominal 2" framing members. When using wider framing, apply glue in a snake-like pattern. Two lines of glue should be laid down on joists where panel ends butt (**Fig. 2**). Glue and nail the first row of panels in place. Spread a 1/8"-diameter line of glue in the panel groove. Tap the second row panels into place using a wood block and hammer. Stagger end joints in each succeeding row, leaving a 1/8" gap at all panel ends.

INSTALLING T&G STRIP AND PLANK FLOORING

Tongue-and-groove strip or plank flooring - the most common type of wood flooring - is laid in the following manner:

1 Stretch a string across the room as a guide for laying the first course of flooring. Lay the first boards with the groove toward the wall, leaving a gap of 1/2" between the first course and wall. This will be covered by molding.

2 Drill a hole slightly smaller than the nail to be used in the board. Then face-nail the first boards to within 1/2" of the wall.

3 For appearance's sake, avoid laying out the floorboards so that too many joints appear in one area. It is best to lay the boards out in a dry run before doing the actual nailing.

4 Tap the second run course to fit snug with the first course, using either a scrap of T&G plank (**Fig. 3**) or a rubber mallet. Fasten with a rented power nailer (**Fig. 4**) or by toe-nailing (**Fig. 5**).

5 Measure a piece of flooring in order to fill out a course. If the flooring you are using has a tongue on its width, make sure you cut off this end as the waste.

6 To meet other rooms with carpet or vinyl, rip the groove off a plank as long as the doorway is wide, and taper the tongue side of the plank if the plank flooring is higher than the other finished surfaces. Now butt the end cuts of the planks to point in the doorway where the tapered piece will make the transition to the planks of the other surface.

7 Sand the exposed edge if laying on top of a hard surface like vinyl and lay the piece at a 90-degree angle to the planks or boards. To fit flooring around a door frame, make a cardboard pattern to fit around the frame. Then use the cardboard as a template and cut the flooring to fit (**Fig. 6**).
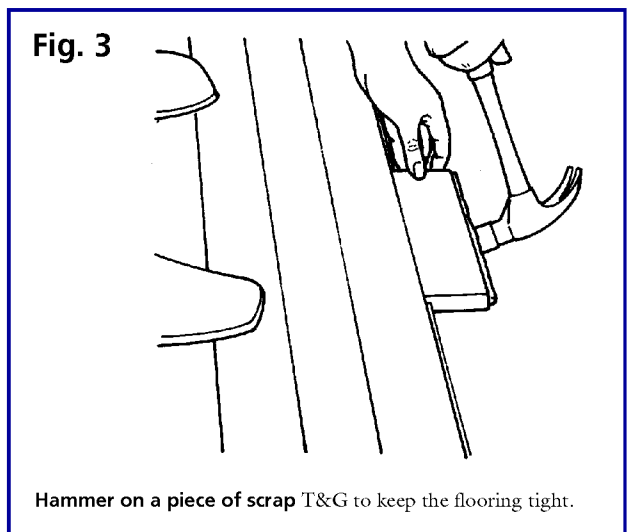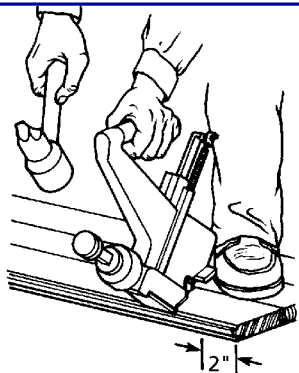
Fig. 3

Hammer on a piece of scrap T&G to keep the flooring tight.

Fig. 4

A power nailer has a spring-fed device that shoots barbed floor staples when struck with a rubber mallet. Loaded with a supply of staples, this tool blind-nails flooring correctly without the need for predrilled holes.

8 To border around obstacles such as a fireplace hearth, reverse the flooring so that the groove goes to a groove. You can scribe the border to fit snug against the hearth. Plan to remove the tongue when calculating the distance from an end plank to a border. Some manufacturers offer a slip tongue to place into a groove to offer support to another groove.

9 Since the last course, and sometimes the one next to it, cannot be blind-nailed, face-nail them in place. Pull them up tight with a pry bar and sink the nail heads (**Fig. 7**).

FINISHING WOOD FLOORS

Finishing a wood floor involves filling nail holes (if face-nailing is used), sanding it smooth, applying sealer or stain, and covering it with a durable finish, usually a polyurethane.

Because of the dirt and dust created and the skill required, many do-it-yourselfers prefer to hire a professional to sand the newly laid floor. However, if you choose to do the job yourself, floor sanding equipment can be rented.
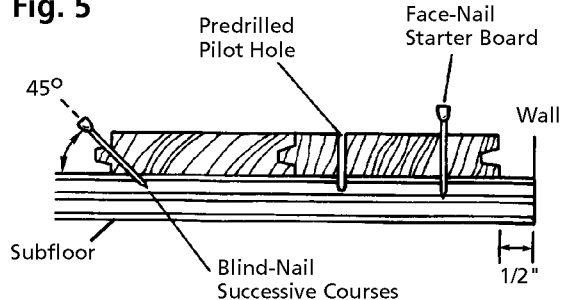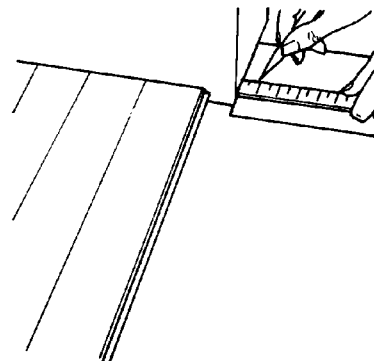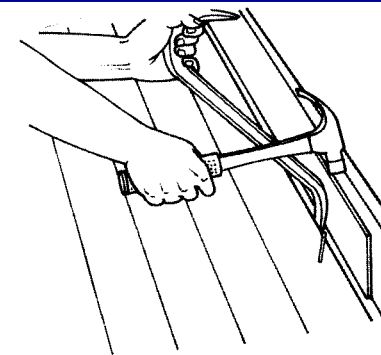
Follow the sanding sequence shown in **Fig. 8**, checking the abrasive sheets every so often to make sure they're not clogged. Caution: Avoid "resting" during a pass, because you risk gouging the boards. When using the edge sander, run it in the direction of the grain wherever possible, and keep it flat to avoid score marks. Take care not to scrape the disk against the baseboard. When doing any sanding, wear a dust mask, and eye and hearing protection.

Before sealing or staining the surface, vacuum the floor thoroughly, along with the baseboard, door and window frames, and any other places where dust might have collected. Immediately before staining or sealing, wipe over the floor with a cloth soaked in mineral spirits (don't use water because this raises the wood grain). Apply the stain or sealer as directed by the manufacturer.

Fig. 7

A pry bar may be used to hold the strips of flooring in the final row for secure nailing. Protect the wall or the existing baseboard with a block of wood. Face-nail the strip and leave an expansion gap of 3/4".

Fig. 8
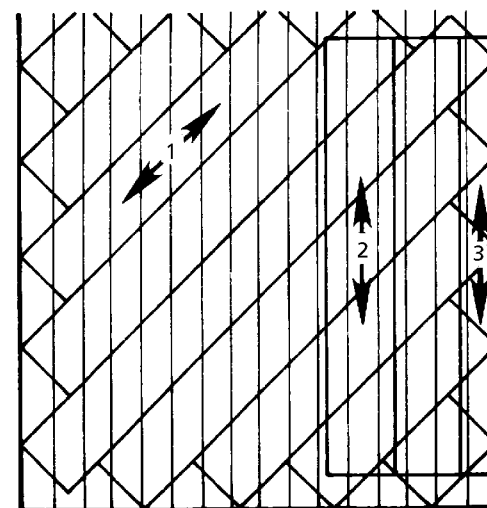
Correct sanding sequence: Start with the floor sander and work diagonally across the boards using coarse, then medium, abrasives. Next, run along the grain of the boards using medium, then fine, abrasives. Switch to the edge sander and use coarse and medium abrasives to clear the marks; fine to finish.

Fig. 5

Predrilled Pilot Hole

Face-Nail Starter Board

45°

Wall

Subfloor

Blind-Nail Successive Courses

1/2"

Each T&G board is secured to the next one by blind-nailing diagonally through the tongue.

Fig. 6

Using a cardboard template for a door cutout.