



HOW-TO BOOKLET #3104

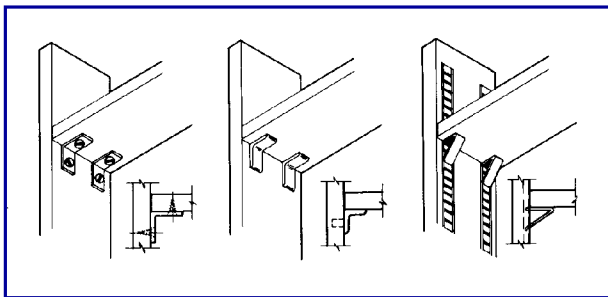
SHELVING YOU HANG



TOOL & MATERIAL CHECKLIST

- Building Materials (See Projects Inside)
- Hammer
- Crosscut Saw
- Square
- Nailset
- Chalkline
- Plumb Bob
- Shelf Hardware
- Adhesive
- Finishing Materials (Paint, Stain, Brushes, Abrasives)

Building shelves for books, knickknacks, a television set, VCR, and your own stereo can be a hand tool, fast-to-fabricate project if you keep the design simple. In this How-To Booklet you'll find how to hang shelving boards on a wall (probably the easiest way to install shelving), the type of lumber used for shelving, standard shelving hardware, and, as a bonus, a simple shelving project: A bookcase plus display shelves. All necessary materials may be purchased at most home center, building material, and selected hardware retailers.



SHELVING BOARDS

Many retailers now inventory "shelving boards," i.e., boards that have been specially cut—and even sometimes finished—for shelving purposes. These shelves may be pine, spruce, or fir. Or, they may be cut from plywood, particleboard, or similar 4x8-ft. sheet materials. The fancy shelving can even be walnut, cherry, or a similar hardwood; or the shelving can be cut from hardwood/plywood panels; the hardwood is a veneer bonded to a plywood core. Expect to pay a premium for solid hardwood shelving; the veneers and lesser wood species are moderate to very inexpensive in price.

In a store, many retailers have a special shelving area. Otherwise, you'll probably find shelving in the Lumber or Building Materials Department.

Boards. Shelving boards (pine, fir, and other softwood species) are 3/4-inch thick by 7-1/2 to 11-1/2 inches wide (actual measurement). As a rule, shelving will be graded as 1 and 2 clear; B and better; C select, and D. The wood will be free of knots in the top grade to imperfections that may be covered with paint in the D classification. You can, of course, use construction and standard grade boards, but the surfaces will be knotty, if this is not a consideration. The lowest grade, but still a perfectly good wood, is Common. Common will have more than a few blemishes and knots. It is often used where the project will be painted or covered in some way.

Pine shelving is good shelving. White pine is available in shelving sizes; it is soft and easy to work with hard or power tools; it is easy to finish. Other softwoods that may be used for shelving include redwood and cedar. These species look good, and are very easy to work and finish, although both look super without a finish of any sort.

Hardwood Shelving. Hardwood is so expensive that it may be prohibitive as shelving, although there is no other reason why it can't be used for this purpose; finding it in inventory might be a problem. In general, hardwoods (oak, mahogany, walnut, cherry, birch, maple) come in lengths from 8 to 16 feet, and widths from 4 to 12 inches. You may want to consider hardwood for built-in shelving projects—as illustrated in this Booklet—but for wall-hanging shelving a less expensive wood could be a better choice. For example, a 1x8-inch walnut board 8 feet long can cost nearly \$100.00!

Hardwood that you will buy will be clear; retailers that stock it usually do not stock other grades. Hardwoods are generally better-looking than softwoods: hardwoods have nicer grain and color, and are easier to tool than softwood. Finishes are easy to apply.

Plywood. Plywood is usually sold in 4x8-foot sheets. Faces of plywood are graded A, B, C, and D. The A face being the best—without objectionable blemishes. D being the low grade—faces with holes, plugs, knots, and other defects. Plywood for shelving purposes—sold in many home center and building material outlets—is pre-cut to length and width and the faces usually are A and C, i.e., a good face and a face with small knots and knot-holes as well as splits. Thickness also may vary from 1/2-, 3/8-, and 3/4-inch.

If the stores in your area don't stock these "Ready-Cuts," as they're often called, you can buy plywood in sheet form and cut shelving from it. The trick here is to re-plan the project so you don't buy more plywood than you need for the shelving. In theory you can buy any combination of faces (letters) desired. In practice, the grades most often found are AC interior; AD interior; AC exterior; plus CD which is used for house sheathing. The panels will be marked INT for interior and EXT for exterior. You can, of course, order different face combinations such as AA, but this is considered a special order and you will pay extra for it—usually for shipping charges—plus the additional cost of a better grade.

The key money-saving tip when selecting plywood for shelving is to buy and use only what is just good enough for the project. If you will have one face showing, then all that is required is plywood with one good side or face. If you will paint the plywood, then buy something smooth enough to be painted. Grain of the wood really isn't important.

Shelving projects with plywood look better when the edge of the plywood that shows is covered. There are two good ways to do this: with plywood edging tape, a thin wood veneer or simulated veneer that is glued on with contact adhesive, or wood molding or trim pieces.

Particleboard. Particleboard is stocked in stores under various names, e.g., pressboard, chipboard, flakeboard. The material basically is made from wood chips and sawdust glued together under very high pressure. Particleboard is extremely dense and heavy—if this is a consideration. It is available in thicknesses ranging from 1/4- to 1 7/8 inches in 4x8 foot panels. Like plywood, many retailers cut it into a range of sizes for shelving purposes.

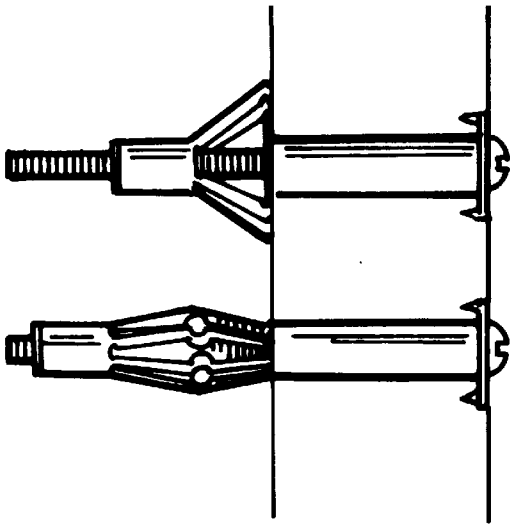
SHELVING HARDWARE

Hardware for hanging shelves, or fabricating it as in a cased bookshelf, abounds. Besides the nails and screws, there are all types of metal (sometimes wooden) brackets that project from walls and other vertical surfaces (as well as into them) to support shelving boards. Some examples include:

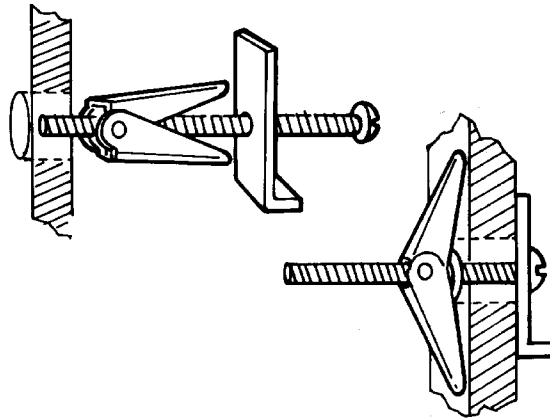
Standards and brackets. A good use for these is to vary shelf heights to create maximum storage areas. The standard is the 3-sided metal strip with vertical slots that accept the bracket hooks which slip in. The shelves rest on the brackets.

The standards have holes for receiving screws, usually spaced 6 to 8 inches apart. After screwing the standard to the wall or back of the cabinet or bookcase, the brackets are just hooked in place in parallel slots and the shelves are set on them. The standards and brackets are available in many different finishes. They can accept shelves up to 18 inches wide, since the brackets the shelf rests on range in size from 4 to 18 inches, in 2-inch increments. Shelves on these hangers may be used to support stereo and other heavy equipment as well as books, so long as the material the screws are being driven into is solid—such as 2x4 framing in back of gypsumboard.

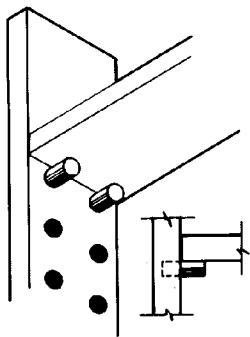
Pilasters are similar to standards and brackets. They have two metal strips with horizontal slots. These strips screw to the cabinet or bookcase. Short clips fit into the slots. When the shelf has been laid across a pair of pilasters, the weight locks



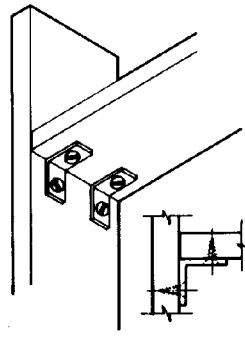
Expandable wall anchors (Molly) are for hollow gypsumboard walls. You drill a hole, insert the anchor, expand it with a screwdriver by turning the bolt, remove the bolt, and hang the object. Many sizes are made for weight.



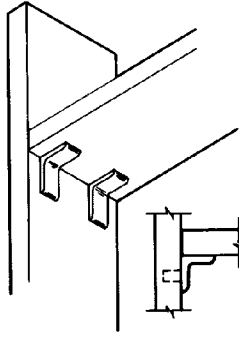
Toggle bolts also are for hollow walls. You drill a hole. Then you slip object to be hung on the bolt, thread the bolt on the expansion wings and push the wings through hole where wings open. If you remove bolt, fastener is lost.



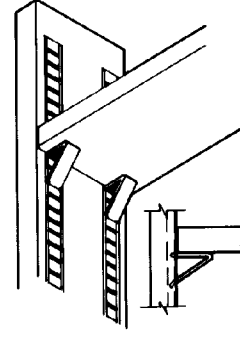
Dowel Supports



Angle irons



Clip Supports



Pilasters and clips

Different types of shelf supports are shown above. Dowel supports and clip supports are probably the most difficult to fabricate since the holes and alignment must be accurate. Standards and bracket type (not pictured) are easy to install; so are cleats. With standards and brackets, make sure the brackets are firmly anchored into the standards. There are many other varieties of shelf supports for sale in Hardware or Shelf Departments of home center, hardware, and building material outlets. Check the inventory before you buy.

the pilasters in place. As with standards and brackets, pilasters may be positioned in different slots to vary shelf height as needed. Pilasters are made from steel and aluminum metals.

Clip supports are small clips with 1/4 inch diameter projections. The clips are designed to be mounted in 1/4-inch holes drilled into the sides of a cabinet. The shelves are then laid across the clips and the weight locks them into place.

The holes for this type of clip must be drilled precisely. You will need a jig set-up of some sort.

Cleats are not really hardware, but they are important to shelf mounting. Cleats are simply blocks of wood that are screwed and glued to both sides of a cabinet with shelves. The shelf is then placed across the cleats. Cleats can be any size you want, but 1x1-inch size will give plenty support.

Toggles, Mollies, Anchors. These are fastening devices that may be used to fasten shelving with brackets or backs to wall surfaces. These products are readily available, inexpensive, and made in various lengths and gauges. An expansion shield is a type of anchor, made from lead or fiber, that is used in concrete walls for hanging. You drill a hole in the masonry wall, insert the anchor, and then drive a screw or lag bolt, after it has been inserted in the object to be hung, into the anchor.

When drilling into concrete with either a star drill and baby sledge hammer or a portable electric drill and masonry bit, be sure to wear safety goggles and wear gloves. Masonry can chip and fly and hurt.

DISPLAY SHELVES THAT YOU CAN BUILD

This bookcase, with a large shelf for magazines on the bottom, proves that a bookcase need not have a complicated design to be handsome. Butt joints are used to assemble the boards, but for a finished look, strips of 1x2 redwood with mitered corner joints have been used as an edging around the front. Another 1x2 serves as a retainer for magazines.

The construction. Cut the members to the sizes shown in the illustration. The pieces are cut square at the ends. Assemble with finishing nails and glue.

Nail a piece of 1x2 39 1/2 inches long to the long back edge of each side piece, nailing through 1x2 into edge of each 1x10 side piece. Butt join top to side pieces with front edges flush and 3/4 inch overhang at the back. Measure and mark locations for shelves; nail them in place through the sides. Install shelf supports, nailing each support from above and below into the shelf. Fit each back piece flush against the next and nail into shelf edges from back. Nail through top into each backboard and into 1x2s at the corners.

Next, add the retainer along the bottom for magazines. Then cut and fasten the 1x2 facing strips around the edge. Set all nailheads, fill with wood putty, and finish to your liking.

Materials List

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|---|------------|--|
| 4 | 1"x10"x10' | Back* and sides for 12 pcs. 39 1/4" each. |
| 3 | 1"x10"x8' | Shelves for 3 pcs. 94 1/2" each. |
| 1 | 1"x12"x8' | Top for 1 pc. 96" |
| 7 | 1"x2"x8' | Facing for 2 pcs. 40"; 4 pcs. 93"; 1 pc. 96"; 2 pcs. 39 1/4" |
| 1 | 1"x4"x8' | Shelf supports for 5 pcs. 11 1/4"; 2 pcs. 12 1/4" |

Saw, hammer, square, white glue, #5 finishing nails.

*For a less expensive, but not quite as attractive result, use a single sheet of 3/4" plywood for the back.

