A Few Remarks about the Scrap Wood Storage Rack

Robert Penoyer

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A WARNING – PLEASE READ

Woodworking can be dangerous! It's up to you to determine if you can safely use the tools and perform the tasks needed to complete this and any other woodworking project. If you are unsure, STOP! Get advice from someone knowledgeable or do some careful studying on your own. Be safe!

Always wear at least an appropriate N95 dust mask or respirator when sanding or spraying paint. For advice about dust masks and respirators, visit this link:
https://woodworkingtoolkit.com/best-dust-masks-respirators/

READ, UNDERSTAND, AND FOLLOW ALL OF THE INSTRUCTIONS AND WARNINGS THAT CAME WITH YOUR TOOLS. BE CAREFUL!

This Is Not Standard Documentation – Fill In the Blanks

I generated the original material in this ZIP package just for me, not for a general audience. This gave me the freedom to create a minimal amount of written design documentation. And it allowed the documentation to be technically incomplete. I simply carried some ideas around in my head.

So I suggest that if you want to build the Glue Tote, carefully look things over and determine ahead of time if you have enough information to go forward.

It might be sufficient to simply guess at any needed information if you can't find it in the included files.

Please be aware that there might be mistakes in the documentation that I accounted for during the build but failed to note in the documentation.

Non-standard Dimensioning

My attitude toward dimensioning is to make it "good enough." Professional mechanical designers follow certain conventions regarding dimensioning. I'm not that careful. So understand this ahead of time when you find any dimensioning that is unconventional.

The Scrap Wood Storage Rack

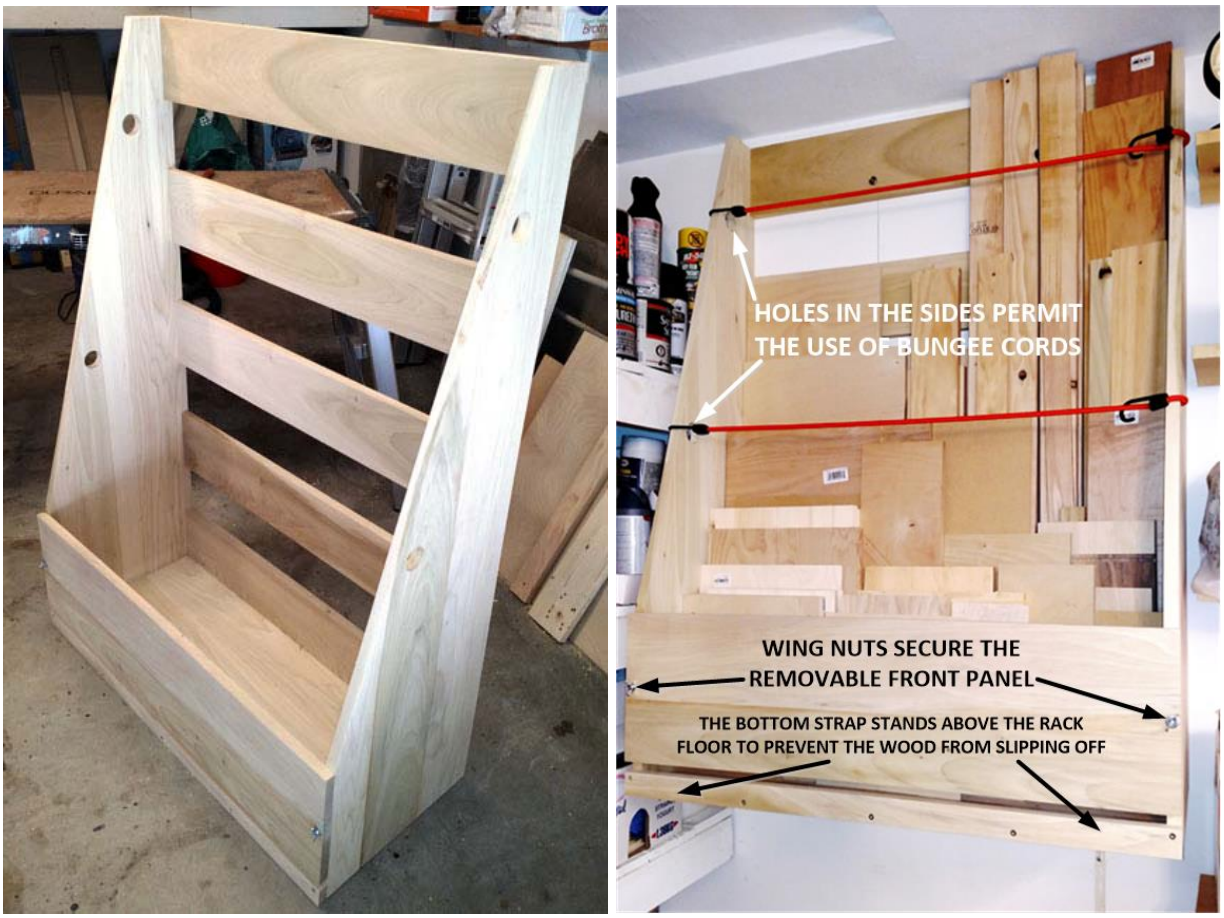

Figure 1. The Scrap Wood Storage Rack, as-built, and mounted to a wall in-use

The Scrap Wood Storage Rack was made as a convenient device for storing leftover wood. It keeps the wood off of the floor so that it stays relatively clean. The rack is both small enough to fit into available space on the wall of a one-car garage, and big enough to store a substantial amount of wood while providing the ability to organize the wood.

Basic Features:

- Width: 34"
- Height: 48"
- Depth: 14 3/4"
- Joinery: Dowel joints and pocket screws, primarily
- Materials: 3/4" popular
- Glue: Titebond II or equivalent
- Screws: Various
- Finish: None

Special Features (See Figure 1):

- Holes are provided along the sides so that bungee cords can be stretched across the stored wood to prevent it from falling forward
- A removable front panel is simply secured by wingnuts so that it's easy to remove to get access to the stored wood as needed
- A narrow strap is mounted to the bottom edge of the front with its top edge above the floor of the rack to prevent any stored wood from sliding off of the rack

<u>A SketchUp File and an Equivalent PDF File</u>

File *Wood_Rack_08.skp* is the SketchUp design for the Scrap Wood Storage Rack. This file is useful since I think all of the necessary details are incorporated here. So, for example, if you find a dimension or other detail missing, it can be determined by examining this file. And, you can orbit and move the model around for a better look at everything.

File *Wood_Rack_08.pdf* contains all of the images and dimensions from the SketchUp file. Use this if you're not familiar with SketchUp.

<u>Certain Details are Deliberately Missing</u>

The hanger bolts where the wingnuts are secured are not shown in the design drawing. Refer to the photographs and the description found here.

The locations of screws used to mount the Scrap Wood Storage Rack to the wall are not shown in the design drawings.

The Details

The information that follows will help to make clear the details of some of the components and construction so that possible misunderstandings might be avoided. Use the included SketchUp or PDF file to follow along with these descriptions.

3/4 View

Look at the 3/4 View to see the overall configuration of the Scrap Wood Storage Rack.

Notice that wide panels are made by joining narrower panels along their edges. This is done using dowels and glue. It should be clear from the drawing that each side comprises 3 boards, the bottom comprises 3 boards, and the removable front panel is made up of 2 boards.

The back of the rack is made of 5 separate boards.

The removable front panel is secured to the front of the rack using two wing nuts attached to hanger bolts along with two flat washers. This makes it easy to remove the front panel to get easier access to the stored wood.

A narrow strap is mounted across the bottom edge of the front of the rack, just below the front panel. This creates a lip that helps to prevent the stored wood from sliding out of the rack.

Side View

Look at the Side View. Three boards are used to construct each side: two are 5 1/2" wide; one is 3" wide. The short board (Side C) is joined to the middle board (Side B) using four 3/8" diameter dowels. The middle board (Side B) is joined to the long board (Side A) using seven 3/8" diameter dowels. Each dowel is 2" long and each is inserted into a 3/8" hole drilled slightly deeper than 1" so that the dowels don't bottom out.

The notation for the dowels says this: DOWEL HOLES 3/8" DIA, 1" DEEP AT 2" SPACED 5", 11 DOWELS EACH SIDE. This note means this:

- Each bottom dowel hole is centered 2" above the bottom of the board
- The other dowel holes are spaced on 5" centers
- The sides are duplicates of one another and each contains a total of 11 dowels

Two 1 1/2" diameter holes are cut into each side to provide anchors for bungee cords that prevent the taller stored wood from tipping out of the rack. <u>These holes should be drilled after the three boards comprising each side are assembled. Also, the taper along the front edge should be cut after the three boards have been assembled.</u>

<u>Back View</u>

Look at the Back View. The back comprises six boards 5 1/2" wide by 32 1/2" long. They are mounted between the sides and on top of the bottom. Pocket-hole joinery is used to assemble the back to the sides as shown in Figure 2.

Figure 2. Back assembly

Bottom View

Look at the Bottom View. As with the Side View, three boards are used to construct each side: two are 5 1/2" wide; one is 3" wide.

The narrow board (Bottom C) is joined to the middle wide board (Bottom B) using five 3/8" diameter dowels. The middle board (Bottom B) is joined to the other wide board (Bottom A) using five 3/8" diameter dowels. Each dowel is 2" long and each is inserted into a 3/8" hole drilled slightly deeper than 1" so that the dowels don't bottom out.

The notation for the dowels says this: DOWEL HOLES 3/8" DIA, 1" DEEP LOCATED AT 2", SPACED 7 1/8", 10 DOWELS. This note means this:

- The end dowel hole is centered 2" from the end of the board
- The other dowel holes are spaced on 7 1/8" centers
- There is a total of 10 dowels joining the boards that form the bottom of the rack

The arrangement of the boards forming the bottom of the rack is the same as the arrangement of boards forming the sides of the rack. That is, the narrow board is toward the front and the wide boards are toward the middle and back.

The bottom is sandwiched between the sides. It's joined to the sides using a total of 14 pocket screws as shown in Figure 3. It's important that the pocket screws be arranged as they are in the figure; that is, use 2 at each end of the narrow board (Bottom C), 3 at each end of the middle board (Bottom B), and 2 at each end of the back board (Bottom A). The two in the back board (Bottom A) must be located toward the front, away from the back of the rack.

Notice in Figure 3 that 5 evenly spaced screws pass through the back board on the bottom into the bottom back board. These are #8 x 1 5/8" countersunk deck screws.

Figure 3. Bottom assembly

Front View

Look at the Front View.

FRONT PANEL: You can see the two boards that were combined to create the removable front panel. That is, a board 5 1/2″ wide (Door A) is joined to a board 4″ wide board (Door B) using five 3/8″ dowels.

The notation for the dowels says this: DOWEL HOLES 3/8" DIA, 1" DEEP LOCATED AT 2", SPACED 7 1/2", 5 DOWELS. This note means this:

- The end dowel hole is centered 2" from the end of the board
- The other dowel holes are spaced on 7 1/2" centers
- There is a total of 5 dowels joining the boards that form the removable front panel

Clearance holes that are 5/16" in diameter are drilled where indicated in Board A to accommodate the two 1/4" hanger bolts that are mounted permanently into the sides of the rack 7 1/4" from the bottom of each side. Wingnuts with 1/4" flat washers are used to hold the front panel in place as shown in Figure 4.

Figure 4. The Edge Guard and removable Front Panel

EDGE GUARD: The Edge Guard is a 1 1/2" wide board that lies across the bottom of the front of the rack. Its bottom edge is flush with the bottom of rack so that its top is 3/4" higher than the top surface of the 3/4" boards that comprise bottom assembly. This arrangement creates a lip that helps to prevent wood stored in the rack from sliding over the front edge of the bottom when the front panel is removed. The Edge Guard is joined to the front of the rack using five #8 x 1 5/8" countersunk deck screws as shown in Figure 4.

Additional Considerations

Hanger Bolts

A hanger bolt must be screwed into the center of the front edge of each side 7 1/4" above the bottom of the side. You should drill a properly sized pilot hole for the 1/4" wood thread first to avoid splitting the wood.

Figure 5 shows a typical hanger bolt. It has a wood thread at one end that is permanently screwed into the front edge of each side of the rack. The 1/4-20 machine thread on the other end accepts a 1/4" flat washer and a 1/4-20 wingnut to hold the front panel in place, thus making the front panel easy to remove to get access to the wood stored in the rack.

Figure 5. Example of a 1/4-20 x 2 hanger bolt

There is a tool bit available called a "hanger bolt driver" which can be used to screw the wood threads into the sides of the rack using either a drill-driver or an impact driver.

I recommend that a 1/4-20 nut be screwed onto the threads before using the hanger bolt driver. The nut can clean up the ends of the thread if they become damaged when the hanger bolt driver drives the bolt into the wood.

Mounting on a Wall

The Scrap Wood Storage Rack can be ***very heavy*** when it's filled with wood! Therefore, you must use substantial means to attach the rack to a wall. Figure 6 shows how I did it.

Figure 6. Mount the rack to the wall at the studs

Two studs in the wall were located and marked. A #10 x 4" countersunk screw penetrates near the bottom of each Back Panel into each of the two studs. To strengthen the hold of each screw (that is, to prevent the screw heads from pulling through the wood), a countersunk washer was used under each screw to spread the force over a wider area on each Back Panel board. The head of a screw on a countersunk washer is shown in Figure 7.

Figure 7. Countersunk screw with countersunk washer

Finish

No finish was used on the rack in the figures. You might want to add a finish.