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Tool Tip... **Page 1**

A Simple Hydraulic Press

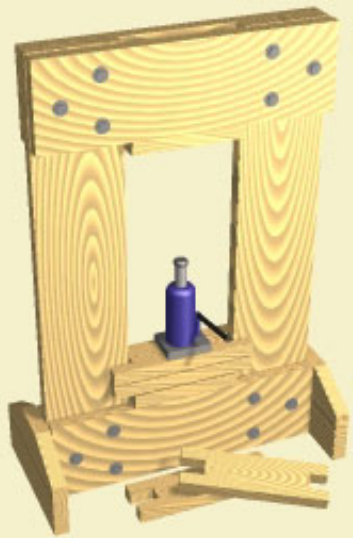
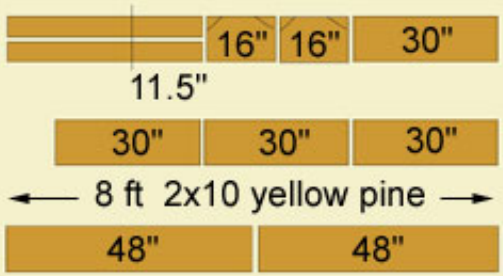


Figure 1: A simple wooden frame with bottle jack.

Introduction:
Since metal 'H' frame hydraulic presses are relatively cheap ($100 for a typical frame suitable for pyrotechnics) it may not seem worth it to make your own. However, some people may not be able to buy a press locally or have a tight pyro budget, so I thought this wooden version that can be easily built was worth showing.

The press shown here is probably overkill in the amount of pressure it can handle, but I just wanted to be sure it wouldn't come apart. It is made from 2x10 yellow pine lumber and held together by 3/8" bolts that run all the way through the timbers. You could probably get away with using 2x6 yellow pine and 1/2" bolts to get the cost down further. The 30" cross members would have to be shortened accordingly if switching the lumber dimension. Be sure to avoid spruce lumber, which is lighter and not nearly as strong as yellow pine. Using pressure treated (PT)lumber will insure you have good strong wood as well.



Materials:

- (3) 8 ft long 2x10s, yellow pine or PT
- (12) 5" long 3/8" bolts
- (12) 3/8" nuts
- (24) 3/8" washers
- (16) 3" long 1/4" lag screws
- (16) 1/4" washers

Tools:

- skill saw
- 3/16" drill bit
- 7/16" spade bit
- 3/4" spade bit
- drill

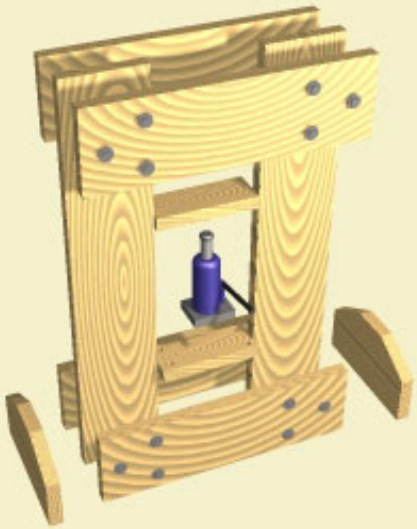


Figure 2: Exploded view of frame.

Construction:
Start by making all the cross cuts shown on the cut sheet above, then make the one rip cut shown exactly down the center of the board. This will give you two 4.5" wide pieces, from which you will cross cut two 11.5" long pieces. Cutting the bevels on the two 16" pieces is just for looks and you can make the angle anything you want.

Figure 2 shows how all these pieces go together. It is easiest to assemble the frame pieces, square them up and hold them in place with bar clamps before drilling the 7/16" holes for the bolts to pass through. This way you will be drilling through all the boards at once and not have to worry about holes lining up later. Be sure to use a washer on each side of the bolt when bolting the pieces together.

Once the frame is bolted together, take the two 11.5" pieces, which are the top and bottom plates of the press, and counter sink a 3/4" hole in each corner about 3/4" from the edge. The countersink should be about 1/2" deep, then the remainder of the hole should be drilled with the 3/16" bit.

Now the two plates are placed as shown in Figure 3 and secured with the 1/4" lag screws with washers under the head. The side support legs are also held in place with 1/4" lag screws.

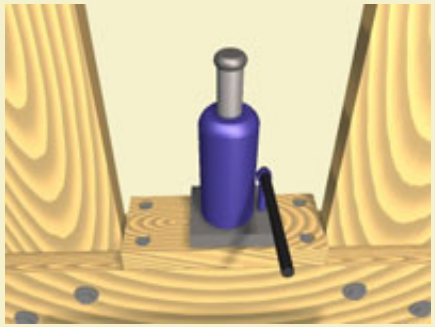


Figure 3: Bottom and top plates held down with countersunk lag screws.

The remaining pieces of 4.5" wide boards can be used to stack up under the bottle jack for adjusting its height to fit whatever is being pressed. You will probably need at least four stacker boards, depending on what you are pressing. I prefer to cut them a little long and then notch the ends so that they lock onto the side timbers, as seen in Figure 1. This prevents them from sliding around or falling behind the press when setting it up.

Now go to an auto parts store and pick up a 12 ton bottle jack and you are ready to go!

Figure 4: Pressing a 4" comet.