

Workbench Instructions

Materials Needed:

- 1) One 2' x 4' piece of $\frac{3}{4}$ inch sanded plywood
- 2) Two 1"x4"x 8 foot long boards
- 3) Two 2"x2" x 8 foot long boards for the legs (I used pressure treated boards from Home Depot that measured about 1 $\frac{1}{4}$ " square)
- 4) One 1"x12"x48" long shelf board
- 5) Sixteen #8 1 $\frac{1}{2}$ " wood screws
- 6) Eight $\frac{1}{4}$ " x 2 $\frac{1}{2}$ " long carriage bolts
- 7) Eight $\frac{1}{4}$ " flat washers
- 8) Eight $\frac{1}{4}$ " split ring lock washers
- 9) Eight $\frac{1}{4}$ " nuts
- 10) Sixteen 1" L-brackets with screws

Tools Needed:

- 1) Handsaw or power saw
- 2) Drill and drill bits
- 3) Screwdriver (or screwdriver bits for the drill)
- 4) Adjustable wrench
- 5) A sturdy 6 inch C-clamp is very helpful

Step by Step Instructions:

A. Cut out the parts

- 1) Cut one of the 1"x4" boards into two 47" pieces
- 2) Cut four 22" pieces from the other 1"x4" board
- 3) Cut four 24" legs from one of the 2"x2" boards
- 4) Cut two 10 $\frac{1}{2}$ " cleats from the other 2"x2" board

B. Assemble the frame that will support the top

- 1) Stand one of the 22" boards vertically on end. Place the 47" board horizontally so that one end of the 47" board rests on the top of the 22" board to form a 90 degree corner.
- 2) You will use two 1 $\frac{1}{2}$ " wood screws to join the two boards. I used a $\frac{3}{32}$ " drill for a pilot hole through 47" piece and vertically into the 22" piece. Then I used a $\frac{1}{8}$ " drill to make a clearance hole through the 47" piece only. Screw the two pieces together to form a 90 degree joint.
- 3) Repeat this step to form a rectangular frame. NOTE: At all four corners, the holes are drilled through the 47" pieces and into the 22" pieces; when facing the 22" pieces, no screws are visible.

C. Mount the legs to the frame

- 1) Clamp one of the legs into a corner of the frame so that the top of the leg is flush with the edge of the frame. NOTE: one jaw of the clamp will rest against the leg and the other against the 22" side piece.
- 2) Drill two $\frac{1}{4}$ " holes through the face of the 47" piece and all the way through the leg. These holes should be about $\frac{3}{4}$ " from the top and bottom of the 1"x4" frame and centered on the 2"x2" leg.
- 3) Place a 2 $\frac{1}{2}$ " carriage bolt into each hole with the head of the bolts on the outside of the frame.
- 4) Place a flat washer, then a lock washer and then the nut on each bolt on the inside of the frame and tighten.
- 5) Repeat steps C-1 thru C-4 for the other three legs, ensuring all the bolts are tightened.

D. Mount the Shelf Support Boards

- 1) Mount one of the remaining 22" boards to the outside of the legs on one side so that the top of the boards are 6" from the bottom of the legs. The ends of the 22" board should be flush with the edge of the legs. Use two 1 $\frac{1}{2}$ " screws on each end of the board. Again, I drilled a $\frac{3}{32}$ " pilot hole 1 $\frac{1}{2}$ " deep and then used a $\frac{1}{8}$ " drill to make a clearance hole through the 22" piece only.
- 2) Fasten with 1 $\frac{1}{2}$ " wood screws
- 3) Repeat for the other side

E. Mount the Top

- 1) Place the frame upside down on a flat surface with the legs pointing up.
- 2) Screw the 1" L brackets to the inside of the frame so that they are flush with the ground. Mount three brackets along the 22" sides with one in the middle and the other two close to the corners. Mount five along the 47" boards with one toward each corner and the others spaced evenly.
- 3) Place the plywood top with the best side down on a flat surface. You may want to use a drop cloth to keep it from getting scratched.
- 4) Place the inverted frame on the top and line it up so that it is flush with what will be the back edge of the workbench. Center it left and right so that there will be about a $\frac{1}{2}$ ' overhang on the front and two sides.
- 5) Screw the brackets to the top.
- 6) Stand the bench upright.

F. Attach the Cleats to the Shelf

- 1) Place one of the 10 $\frac{1}{4}$ " cleats under one end of the 48" shelf 1 $\frac{1}{4}$ " from the end of the shelf board and with about $\frac{3}{4}$ " overhang at each end of the cleat. Drill $\frac{3}{32}$ " by 1 $\frac{1}{2}$ " deep pilot holes through both pieces and a $\frac{1}{8}$ " clearance holes through the shelf board. use two 1 $\frac{1}{2}$ " screws to fasten the shelf to the cleat.
- 2) Repeat on the other end of the cleat.
- 3) NOTE: the distance from the outside of one cleat to the outside of the other should be 45 $\frac{1}{2}$ inches.

- 4) Place the shelf on the two 22" shelf support boards so that the cleats fit on the inside of each board.
- 5) The workbench is done!