

Industrial Bench Instructional

By Ben DeRocker



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Materials Required

Tools Required

- 4x Wood – (2”x4”x4’) x4
- 4x Square Steel – 16” bar x4 and 14” bar x4
- 16x Washers
- 8x Nuts – (1/2” – 13) Thread
- 8x Bolts – (3 1/2” Long by (1/2”-13) Thread)
- 1x Can of Polyurethane
- 1x Brush

- Drill/Drill Press
- Band Saw
- Welder
- Magnetic Right Angle

Safety Equipment Required

- A welding mask and protective clothing are required when doing any form of welding.
- Eye glasses should be worn at all times when working on this project.
- Reading and taking into account all additional safety measures the manufacturers of any equipment used.

Introduction

This document will help you to create an industrial style bench as shown on the page above. While this is a simple design, it does require a few specialized tools, such as a welder and protective gear. If you have all the tools above, you should be ready to purchase the materials listed above. (Note make sure you are buying stock that will accommodate the dimensions listed in the materials sections above.)

Procedure

Step 1: Purchasing the Materials

When purchasing the required materials, one of the most important parts is finding 2x4s that are straight. While you could use a planer to level the 2x4s after the fact, it is just better if you are careful with your purchasing and select already straight boards. Also be aware that some 2x4s are label as such but are not actually 2 in. x 4 in. so be careful to purchase boards that are actually 2 in. x 4 in. Any type of wood will do, just pick the type you like best.

Step 2: Cutting to Length

The wood planks and iron pipe will both need to be cut to length using the band saw. Be sure to measure the lengths more then once before cutting to insure accuracy as failure to do so may mean that you will have to buy more supplies. The 2x4s should be cut to 4 feet long and you should end up with 4 of them. For the iron pipe you should end up with 4 pipes of a length of 14 inches and 4 pipes of a length of 16 inches. Be sure to account for the material the blade of the saw will remove in your final measurements.

Step 3: Drilling

1/2 inch holes should be drilled in the wood planks and two of the 16 inch iron pipes as specified in the figures below:

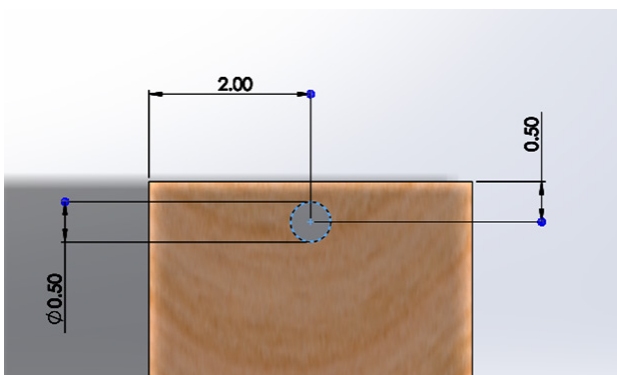


Figure 1: Wood Plank Holes
(Note this needs to be done to both sides)

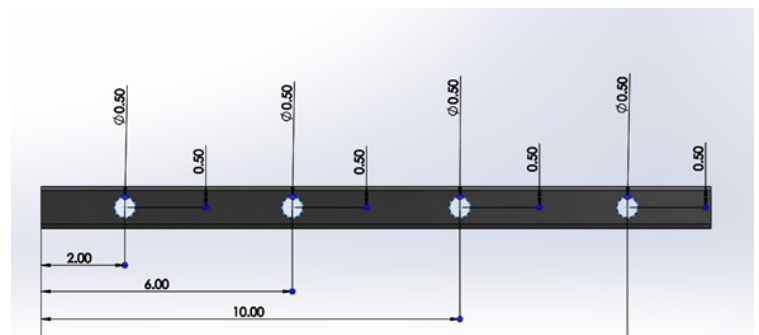


Figure 2: 16 Inch Iron Pipe Holes

Step 4: Welding the Frame

Welding should only be performed by those that are trained to do it. To ensure strong welds, the ends that will be fused should be cleaned before welding like so:



Figure 3: Cleaned Welding Contact Points

Once cleaned, the parts should then be aligned. To do this, use a magnetic right angle to ensure a proper contact as seen below:



Figure 4: Pipes Fitted to Right Angle

Lastly the weld will be made using this jig. It may be helpful the tack weld all sides before laying the full bead. Try to clean the weld clean and uniform as a messy weld may require additional cleaning.

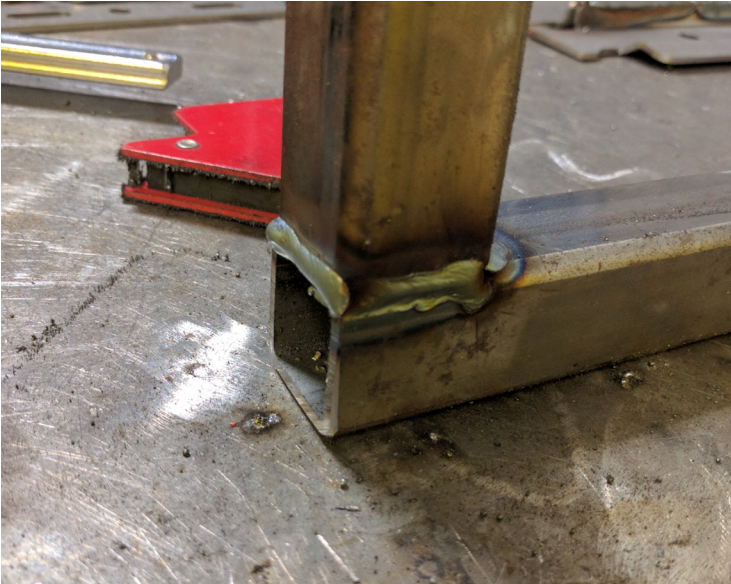


Figure 5: Example of a Good Weld

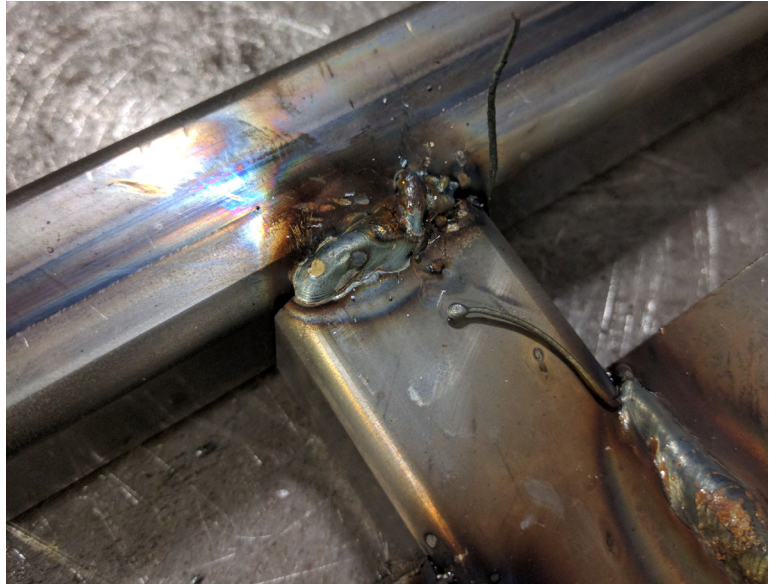


Figure 6: Example of a Bad Weld

Step 5: Assembling

Once all the holes are drilled and the frame is welded, the final step is to assemble the bench. Be sure to check and make sure everything is straight and fits before final assembly. To assemble the bench, follow the guide provided below:

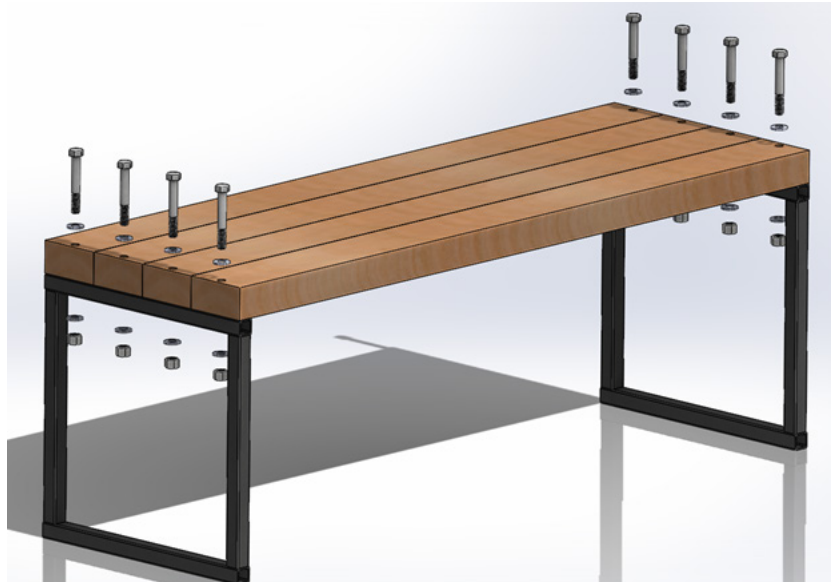


Figure 7: Final Assembly

Step 6: Finishing and Conclusion

With the bench assembled, all that is left to do is finish the surfaces. I would recommend sanding the wood before applying any surface finishes to it. A clear polyurethane should add a nice finish to the wood and iron completely the project but this is all a matter of personal taste and you should finish the bench as you see fit. That's it! You have now completed this Industrial Bench Project.

