Starting to design with FreeCAD: Producing Technical Drawings

Intended Audience

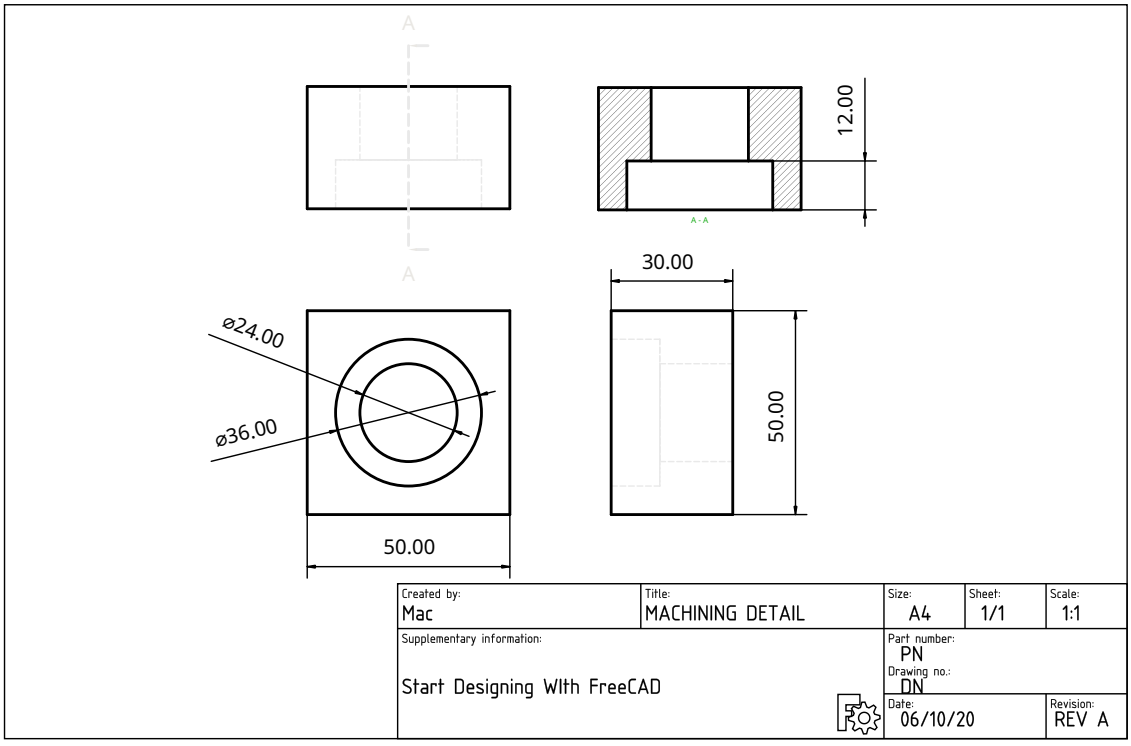
It’s important to clarify that this document is not for the seasoned, or even intermediate user of FreeCAD who already has personal preferences for workbenches and design techniques. The intent is to provide new users guidance through what initially appears as a dizzying maze of workbenches. Along the way some general design techniques, as well as, FreeCAD specific techniques may also be discussed. This document continues the on from the example developed in StartingToDesignWithFreeCAD

Introduction

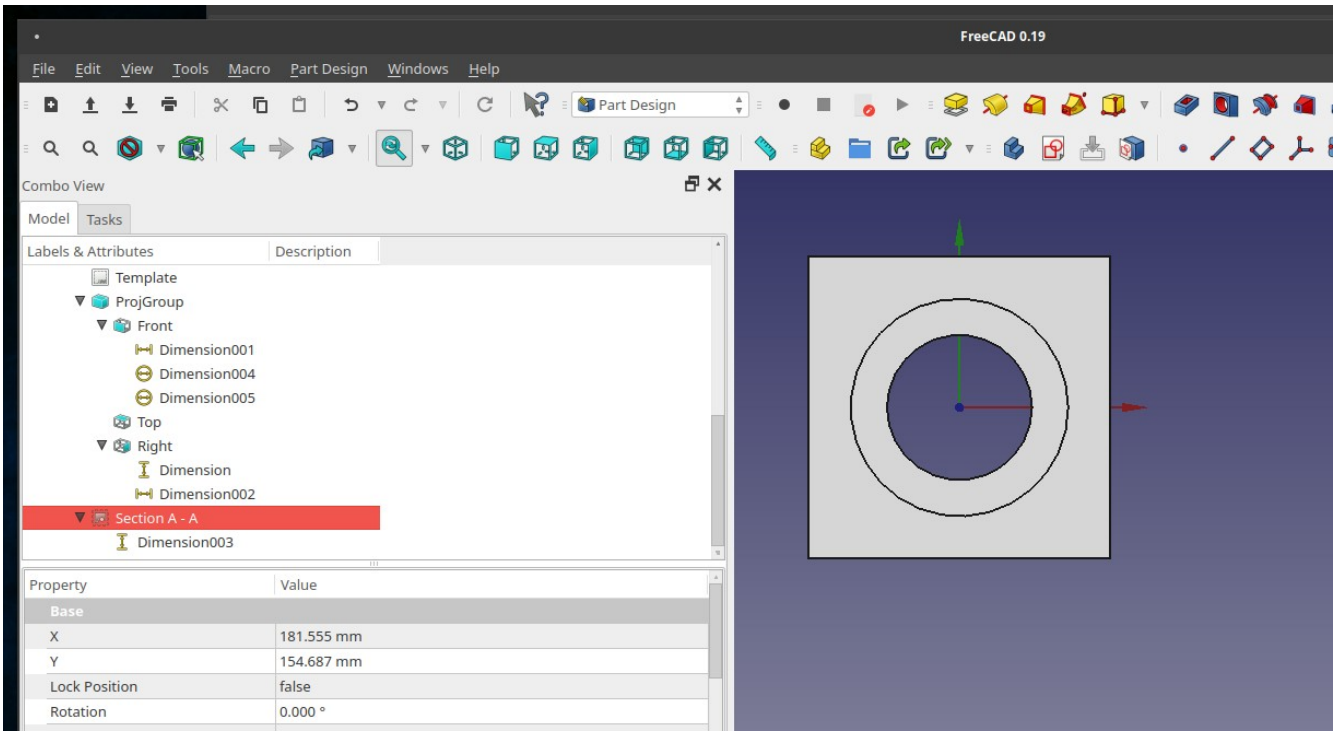
FreeCAD has a plethora of workbenches. The TechDraw workbench is used to create technical drawings.

Note: TechDraw workbench is a replacement for the Drawing workbench.

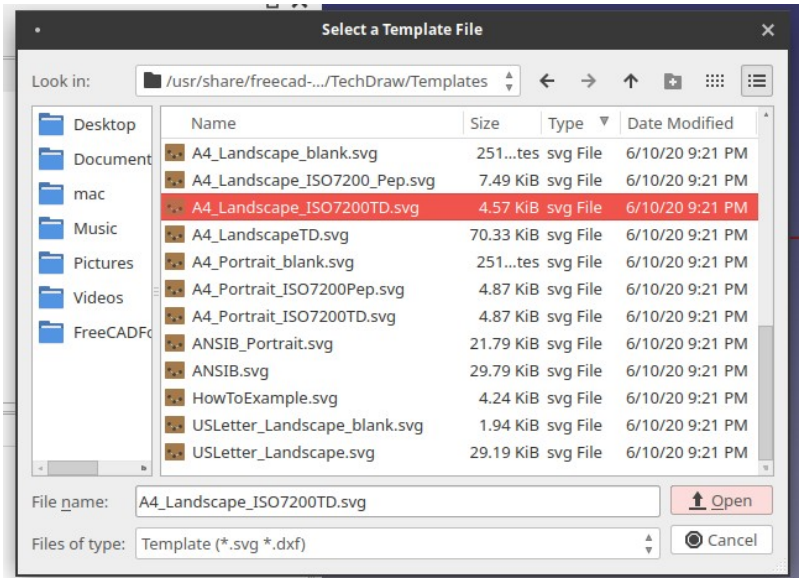
We will produce the following drawing:



To begin open the file created during the exercise in StartingToDesignWithFreeCAD and select the top view. We want it to look like this:

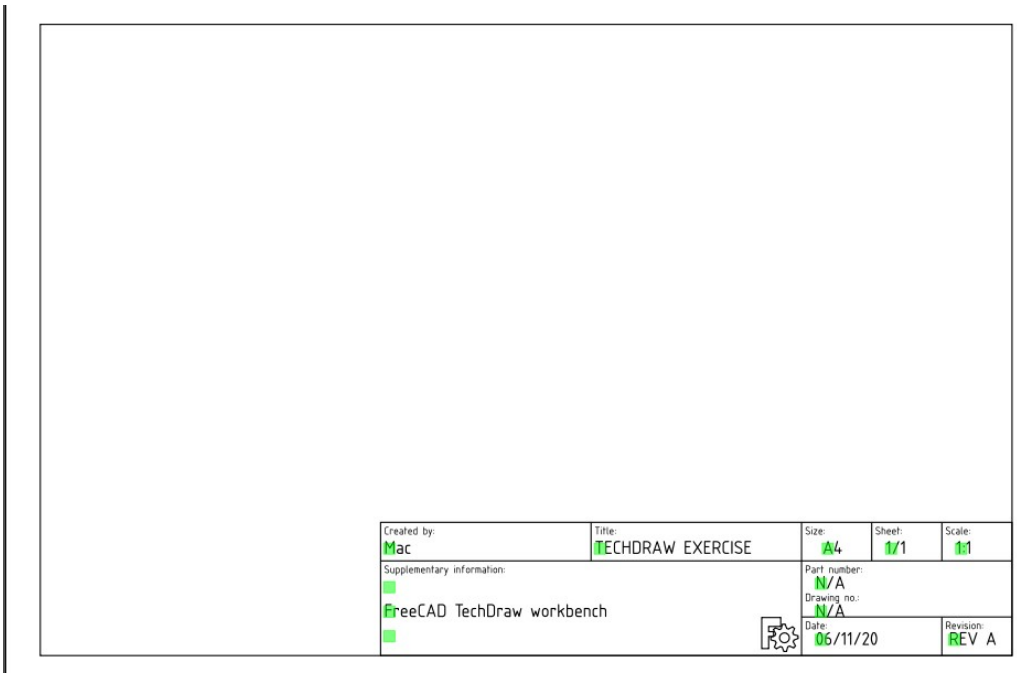


1. Now select the TechDraw workbench if not already selected.
2. Now we need to add a new Page object. With the TechDraw workbench selected the Insert Default Page icon  and the Insert Page Using Template icon  will be available. The rest of the TechDraw icons will be grayed out at this point since there is no Page for them to work with. Click the Insert Page Using Template icon and select the A4_Landscape_ISO7200TD.svg file as a page template.

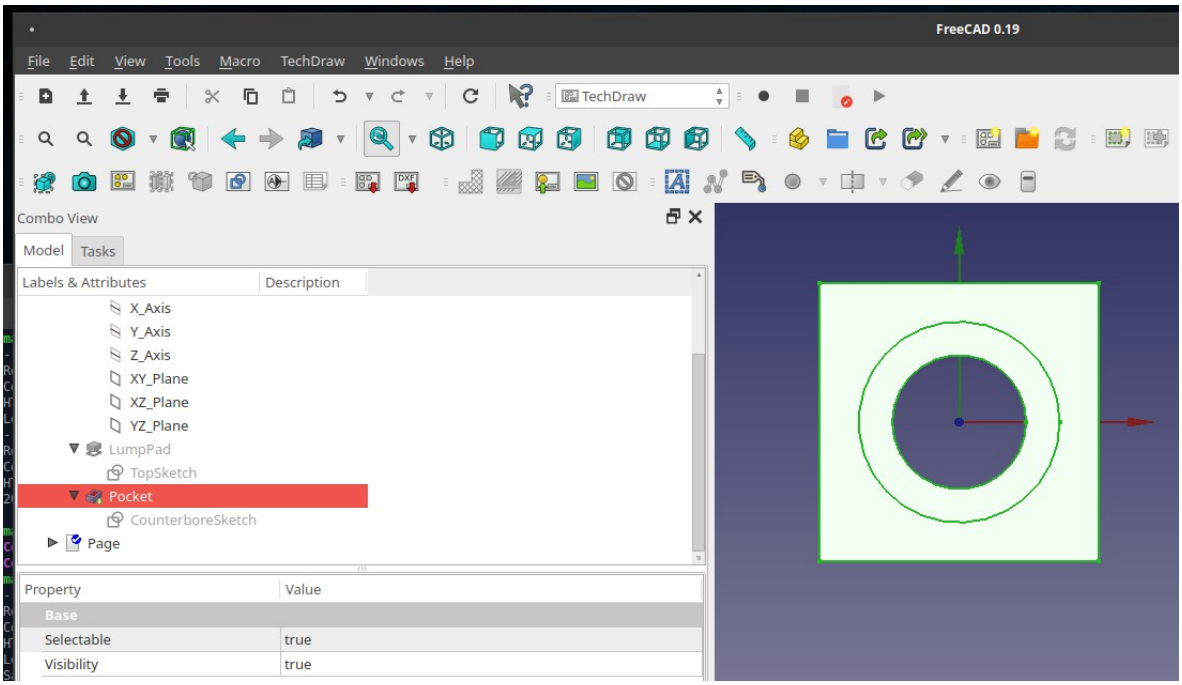


Note: There are many templates to choose from. They are all SVG files and can be opened in any SVG editor, for example Inkscape, and customized as you wish.

3. The template is shown in an addition tab in the 3D view window. To set the title block fields simply click on the green block and a dialog will be presented, enter the appropriate information for each field. It might look something like this:

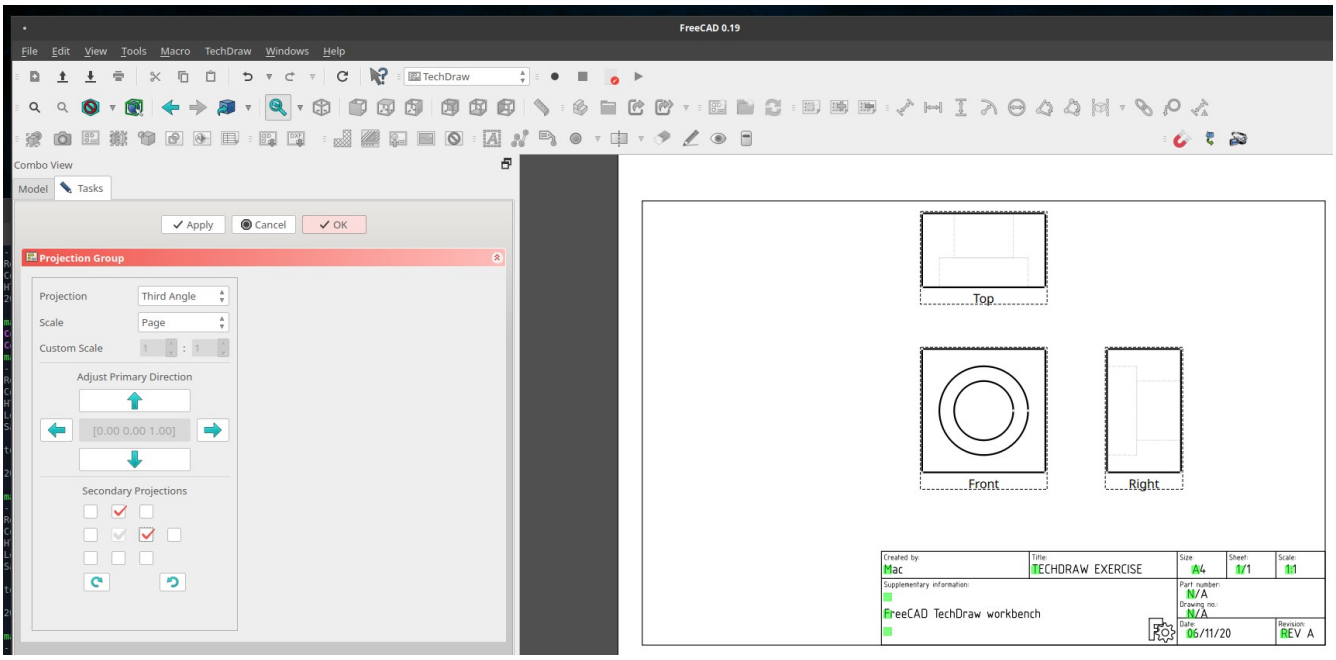


4. Now we want to produce the standard views of our counterbored block. Click into the other tab and confirm the top view is selected as shown here:



Note: the top view is shown in the 3d view and the Pocket is selected in the feature tree.

5. Other icons in the TechDraw worbench toolbar are now available. Click the Insert multiple linked views icon  . Now switch to the Page tab. In the Tasks window make sure Third Angle is selected, leave Scale set to Page, and in the Secondary Projections the check boxes are checked as shown:



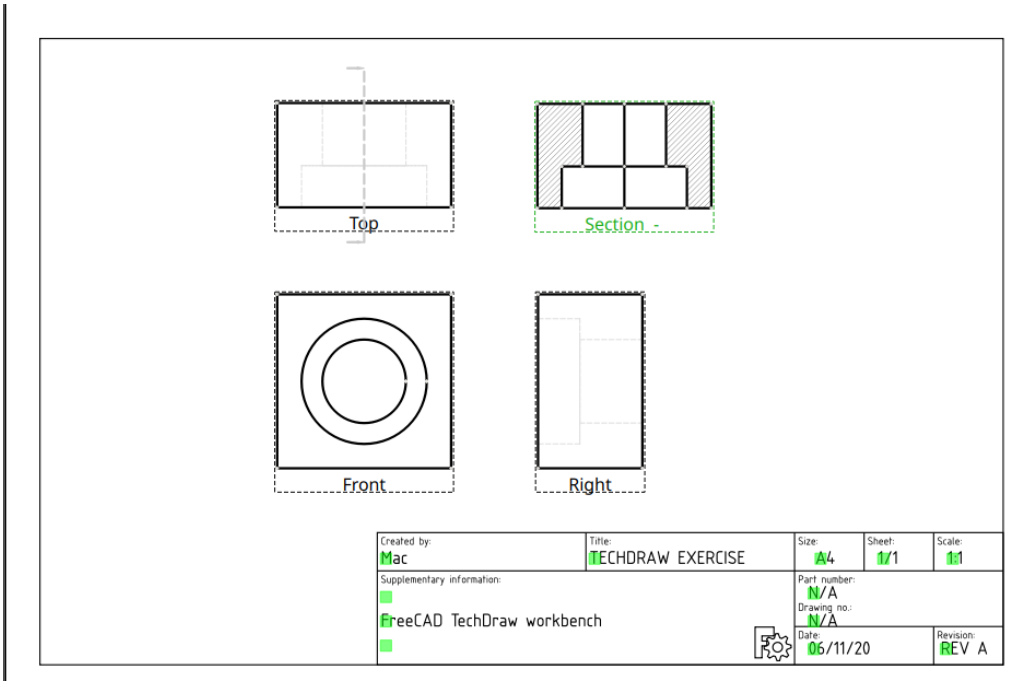
Note, as you select the check boxes the top and right side views will be added with hidden lines.

Note: If there are no hidden lines, got to Edit>Preferences>TechDraw in the HLR tab and check “Show Hard lines”. The next time view/s are added they will have hidden lines by default.

Note: The threes views you already added will need to have the “Hard Hidden” property set to true for each view in the Model tree ProjGroup. After changing the property to true hit the F5 key to force the view to update.

6. Click Ok.
7. Click on the dashed lines surrounding the Front view. They turn green and you can click and drag the views to an appropriate place on the drawing.
8. It is typical to dimension things like the depth of the counterbore in a section view. Select the dashed frame around the top view, then click the Insert section view icon  .
9. In the Combo View Tasks tab select the Looking right icon  and enter ‘A’ in the Identifier field. Then click OK.
10. Click the dashed frame around the new section view and move it as you see fit.
11. Select the Section in the feature tree. In the Properties table Base section set Keep Label to true.
    1. Note: The “Keep Label” property is in the View tab, not the Data tab.

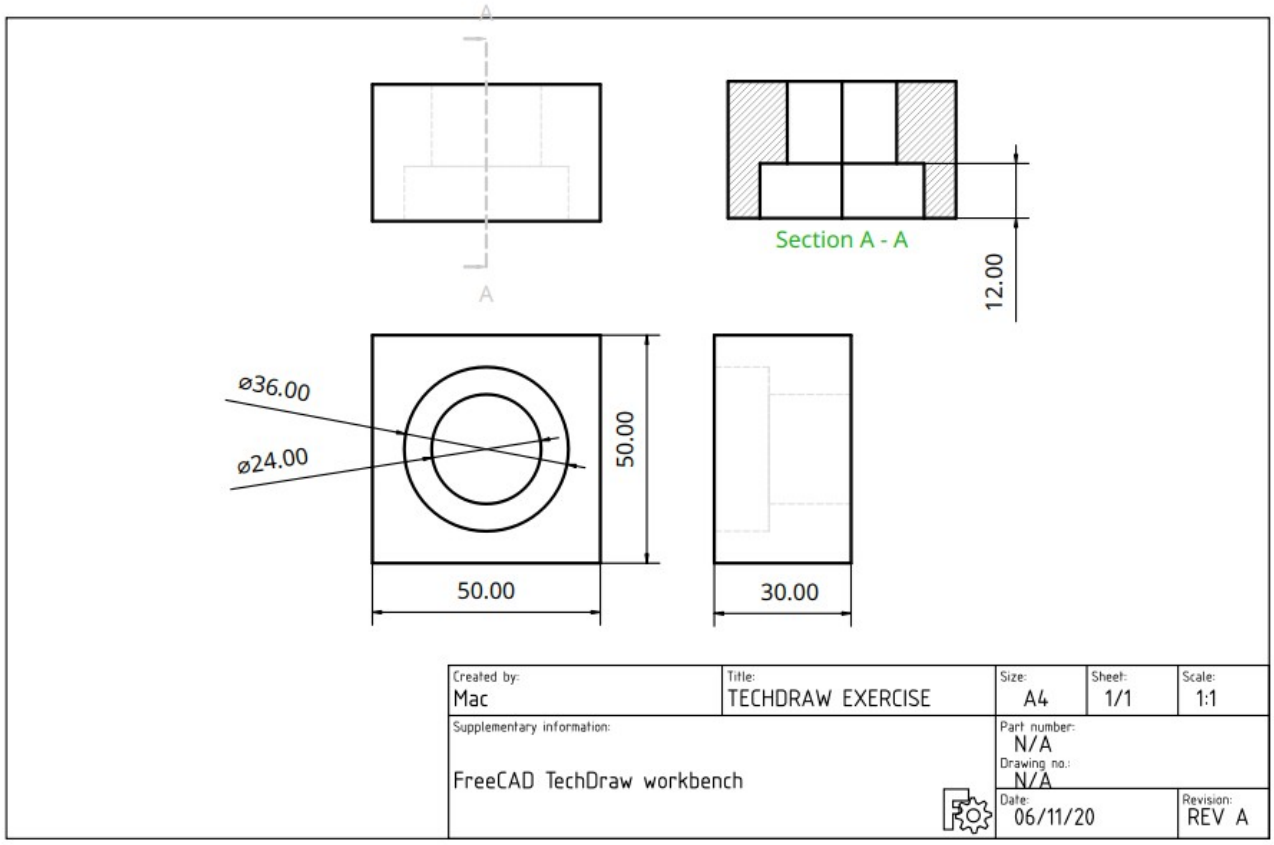
Note: Keep Label true will retain the label ‘Section A – A’ on the view when we want to hide the dashed frame lines around each view. To hide the frames, right-click somewhere on the drawing and select Toggle Frames.



Now we can dimension as needed.

12. Click on the circle of the front view and then click the diameter dimension icon  . Click and drag the dimension value to an appropriate location. Repeat for the second circle.
13. Click the bottom horizontal line of the front view and click the horizontal dimension icon  . Click and drag the dimension value to an appropriate location.
14. Click the bottom horizontal line of the right side view and click the horizontal dimension icon  . Click and drag the dimension value to an appropriate location.
15. Click the right vertical line of the front view and click the vertical dimension icon  . Click and drag the dimension value to an appropriate location.
16. Click the right vertical line of the counterbore in the Section A - A and click the vertical dimension icon  . Click and drag the dimension value to an appropriate location.

At this point our drawing provides all the information that would be needed to make the part from a block of material. It should look something like this:



Note: I don’t claim to be an expert on mechanical drawing standards or standard practice. Comments to make this drawing meet standards are gratefully accepted and will be integrated into this document.