

TurboCAD Pro 2015 – Mini Vise

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Special Note

All of the work presented within this tutorial is based on TurboCAD Pro 2015 with its default RedSDK drawing/render engine (64-Bit). It is not recommended trying this tutorial in previous versions of TurboCAD.

Table of Contents

Table of Contents.....	3
An Important Message about TurboCAD 2015.....	4
Introduction	5
Drawing Engine Selection.....	6
Workspace	8
Program Setup	10
Drawing Setup.....	13
Stationary Clamp Component	32
Moveable Jaw	72
Mini-Vise Track	83
Main Screw	88
Lower Clamp Structure	114
Clamp Screw.....	137
Clamping Surface	150
Materials Application	152
Named View.....	197
Render Scene Luminance 1.....	199
Render Scene Environment	203
Saving the First Rendered Image.....	207
Render Scene Global Illumination	209
Render Scene Luminance 2.....	212
Saving the Second Rendered Image	215

An Important Message about TurboCAD 2015

With the arrival of TurboCAD 2015 comes a significant change for TurboCAD. TurboCAD users will now find that the program no longer comes loaded with the LightWorks render engine that was part of the program since its early days. LightWorks has been fully replaced by RedSDK which began to be implemented back in version 18 and became the default drawing/render engine in version 20. Those that want to continue using LightWorks will need to purchase it as separate add-in from IMSI/Design. According to TurboCAD programmers, the change to RedSDK (or something else) was required to keep up with modern CAD editing capabilities.

What this means for Textual Creations TurboCAD tutorials is that no tutorial written before TurboCAD 2015 (i.e. V21.2 and previous) will be applicable in the new version of TurboCAD. The author intends to work strictly with the RedSDK drawing/render engine while writing new tutorials. Why? The author is fairly confident that most new users will not purchase the LightWorks add-in for it would appear to be another cost for which the value would be unknown. To lessen the issues of having two render engines installed the author has decided to forgo the installation of the LightWorks add-in and begin utilizing RedSDK solely from this point forward.

Introduction

To help introduce TurboCAD Pro 2015 and RedSDK the author has chosen a sweet little mechanical device as the basis for the tutorial.

Within the tutorial the reader will be lead through each keystroke to produce every component of the mini vise that is illustrated on the cover of the tutorial (with the exception of a simple e-clip and a machine screw which have been downloaded from a supplier and included with the tutorial download). The reader will also learn how to insert standard RedSDK lighting, will learn how to utilize RedSDK render scene luminance and establish a RedSDK render scene environment. Additionally, the reader will learn how to render their drawing and save it in a high resolution image format.

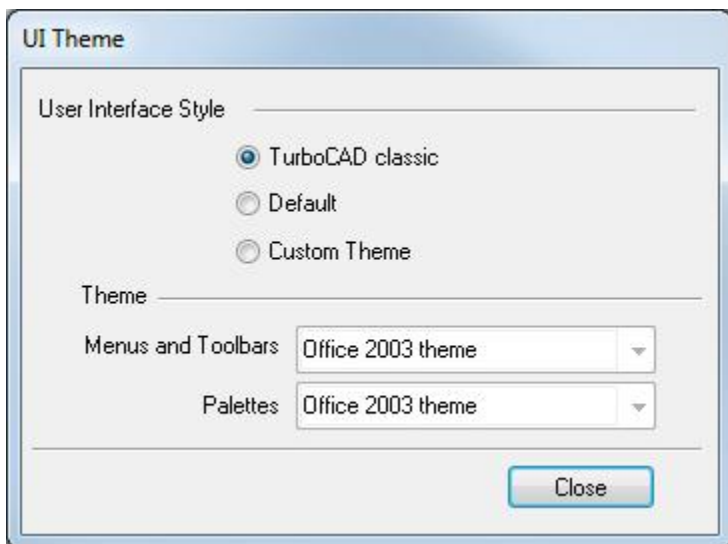
This tutorial is in no way intended to teach mechanical design or construction, but rather it is intended to teach the use of some of the tools that TurboCAD has to offer and to introduce the new user to a drawing methodology. The author feels confident that the techniques outlined within the tutorial can help lay the foundation for future successful TurboCAD drawing and illustration for even the newest user.

As with any technically advanced software, the user is generally faced with a steep learning curve. It is the hope of the author that the money and time spent working through a Textual Creation tutorial will help ease the learning and allow the reader to come away feeling confident that they made a wise decision.

This tutorial will assume that the reader has the Platinum edition of TurboCAD Pro 2015 (64-Bit) and is using the default RedSDK engine.

There are many ways to approach a project and it is likely that each person using the program would proceed in very different ways, so be open to alternative methods as experience builds.

This tutorial assumes that the beginner has studied the desktop to some degree and can locate most of the tools. Since there are endless desktop configurations that can be set up in TurboCAD the author has opted to illustrate the required tools with the TurboCAD Classic user interface with its Office 2003 theme and the default toolbars in their undocked format.



Please remember that any supplied images and files are for use within the tutorial only and may not be shared or sold to others.

Place all tutorial images in a permanent location on the hard drive.

Stationary Clamp Component

Creation of the mini-vise will begin with the stationary upper clamp.

Select the Box tool on the 3D Object toolbar.

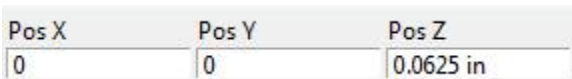


G SEKE snap the first point of the first box to a grid intersection in the drawing. Tab into the Inspector Bar and enter 3 in the Width field, .75 in the Length field and .125 in the Height field. Press Enter.



Press the Space Bar to exit the tool.

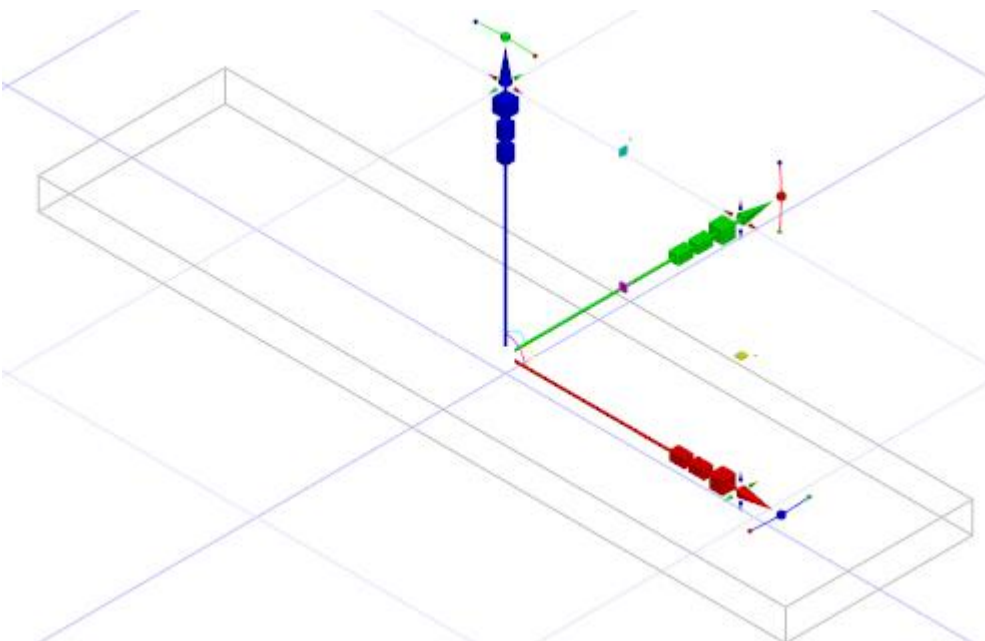
Select the box. Tab into the Inspector Bar and enter 0 in the X and Y Position fields. Press Enter to move it to the center of the drawing.



Select Zoom Extents at the top of the TurboCAD desktop.

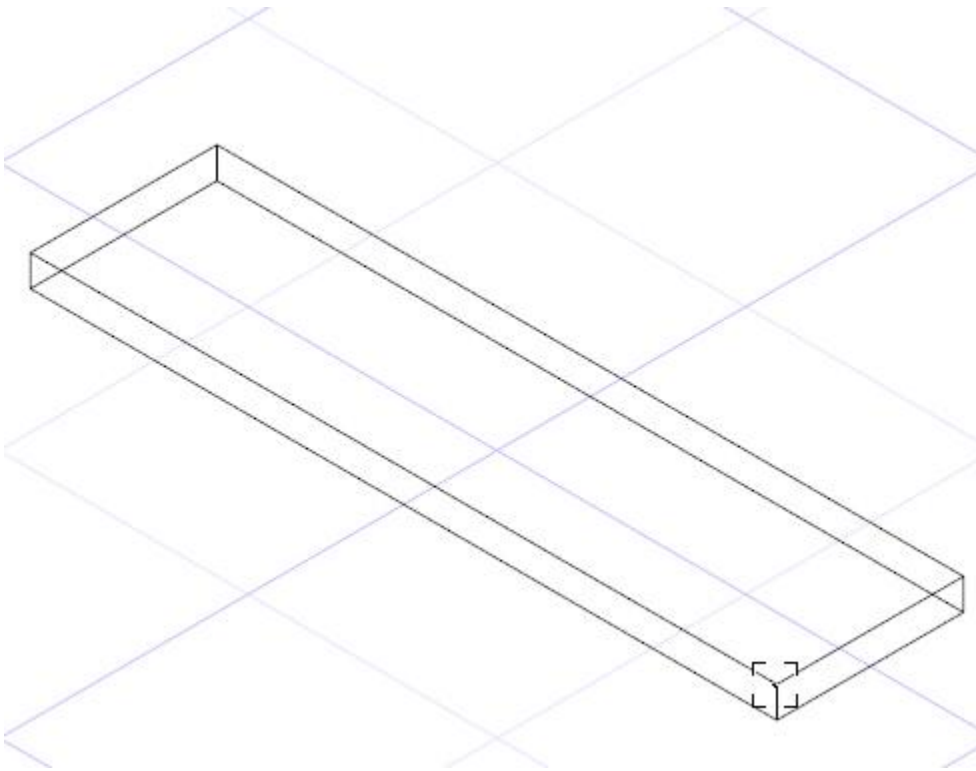


Zoom in and out as necessary from this point forward.



Select the **Box** tool on the 3D Object toolbar.

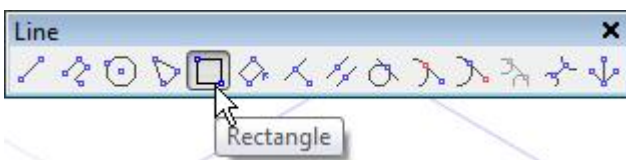
V SEKE snap the first point of the box to the upper right forward corner, as indicated in the picture below.



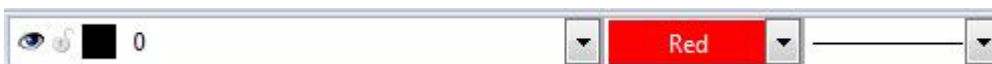
Tab into the Inspector Bar and enter **-.5** in the Width field, **.75** in the Length field and **.5** in the Height field. Press Enter.



Select the **Rectangle** tool from the Line toolbar.



Select **Red** from the color dropdown menu on the Property toolbar.



Select **Auto Workplane by Face** from the Workplane toolbar.

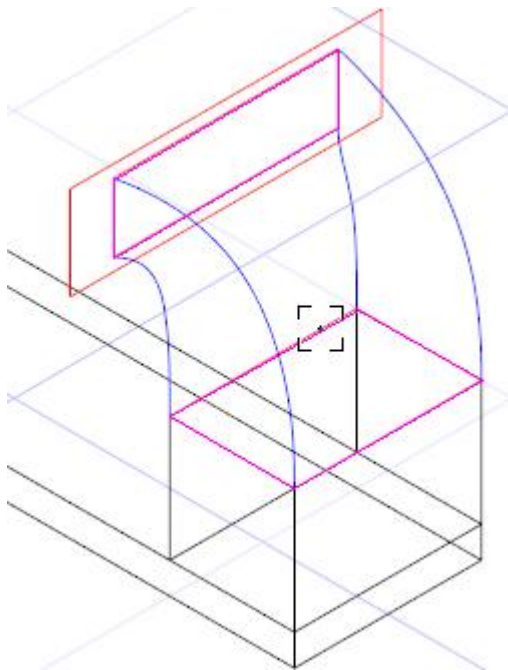


Using two **V SEKE** snaps place a rectangle across the top of the last box.

Select the Lofting tool from the 3D Object toolbar.



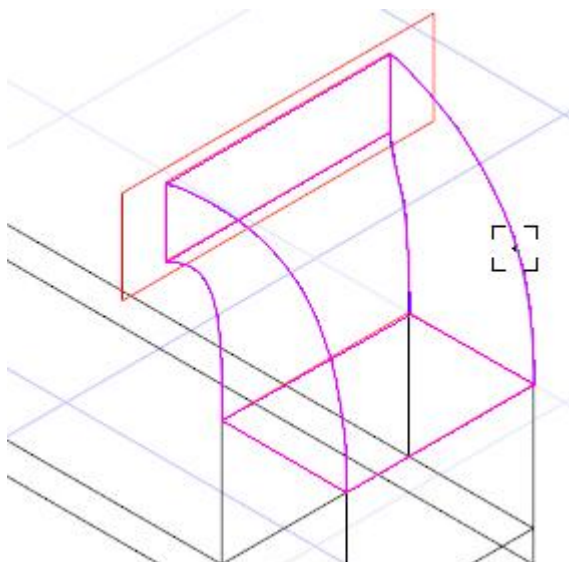
Select the smaller upper red rectangle and then the lower rectangle as the profiles to loft.



Engage Select Guide Lines.



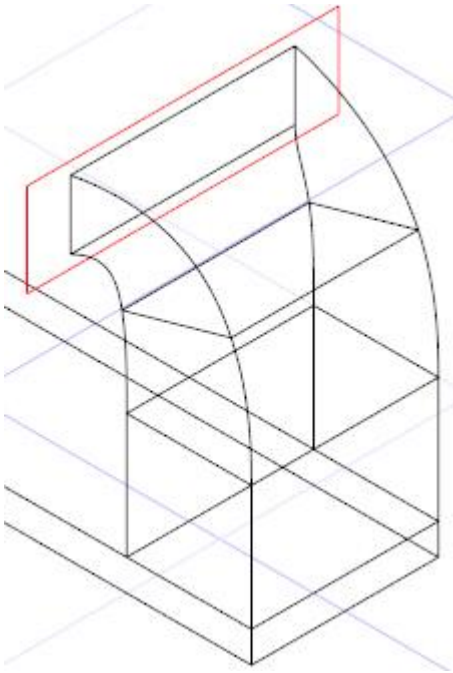
Select the four blue guide lines.



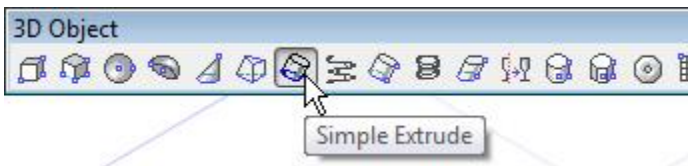
Select Finish.



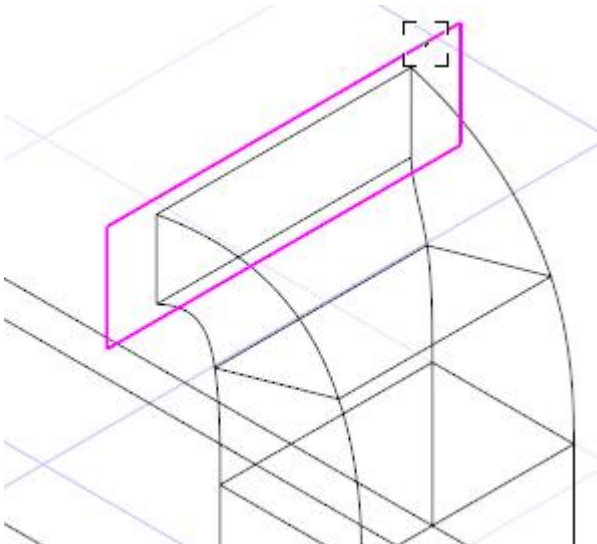
Like so.

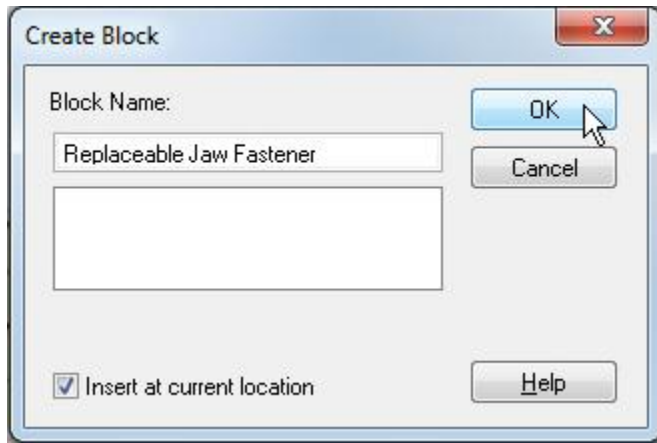


To help created the fixed jaw, select the Simple Extrude tool from the 3D Object toolbar.



Select the wide red profile as the object to extrude.

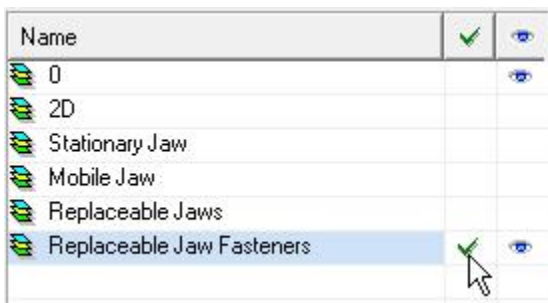




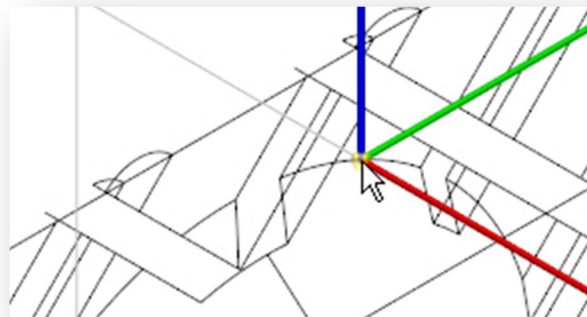
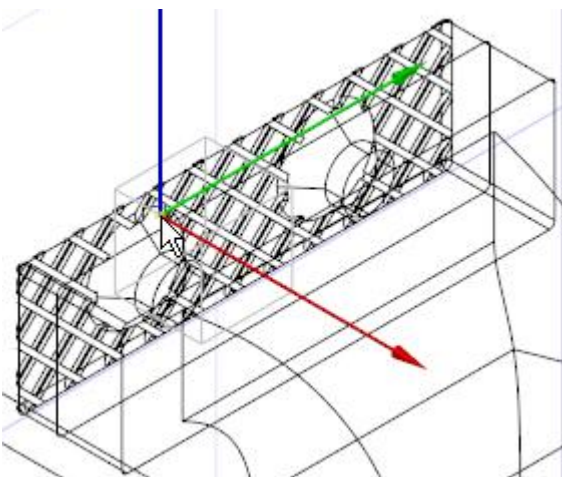
Turn on the Replaceable Jaw Fasteners layer.



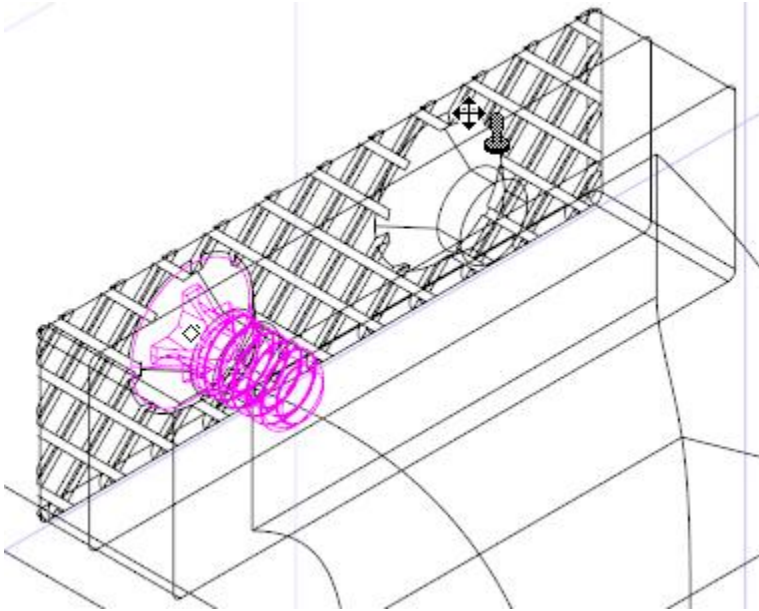
Assign the still selected screw to the Replaceable Jaw Fasteners layer.



Left mouse click on the reference point of the selection to pick it up. Move the cursor to the outside edge of the left hole, as indicated in the picture below, and C SEKE snap the selection in place. In progress below.



Right mouse click and select Rubber Stamp from the local menu. Move the cursor to the edge of the other hole and C SEKE snap to place a copy. In progress below.



Press Esc to exit the Rubber Stamp tool.

Press and hold the Shift key down. Select the other screw to add it to the current selection. Release the Shift key.

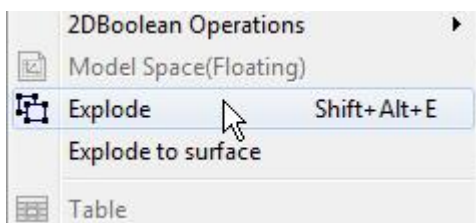
A copy will be created, exploded and then used as subtraction aid to create the threaded holes for these screws.

With the two screws still selected, select the Copy in Place tool one time.

Assign the selection to layer 0 for now.

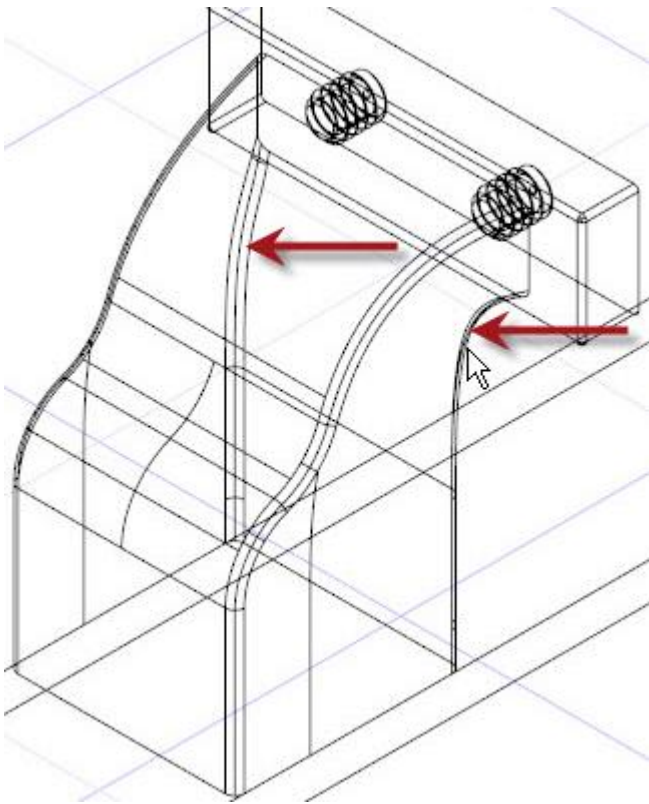


With the two screws still selected, select Explode from the Modify menu at the top of the TurboCAD desktop to break the block connection.



Turn off the Replaceable Jaw Fasteners layer.

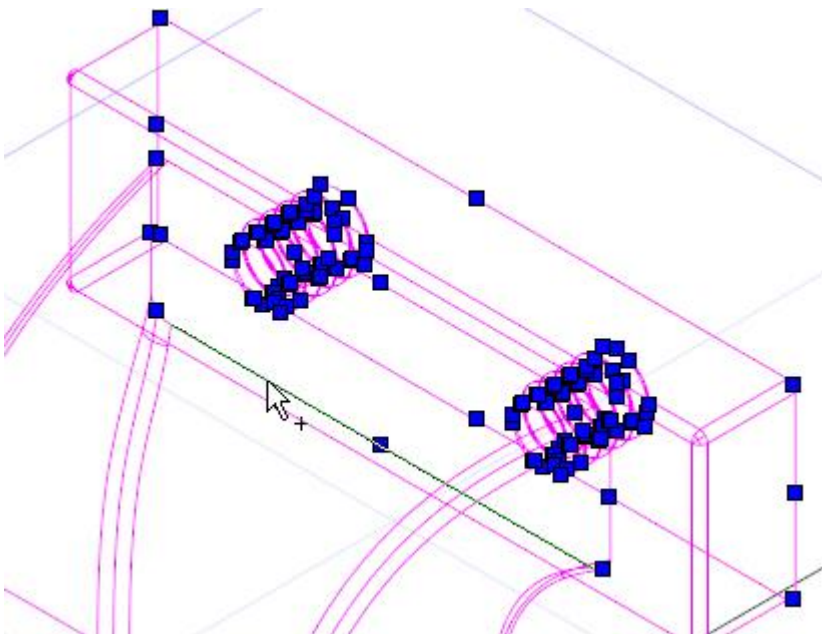
Repeat on the two outside comers on the inside.



Tab into the Inspector Bar and enter 1/64 in the Radius field. Press Enter.



Select the mobile jaw as the object to fillet. Double click the line, as indicated in the picture below, as the edge to fillet and to perform the operation. In progress below.



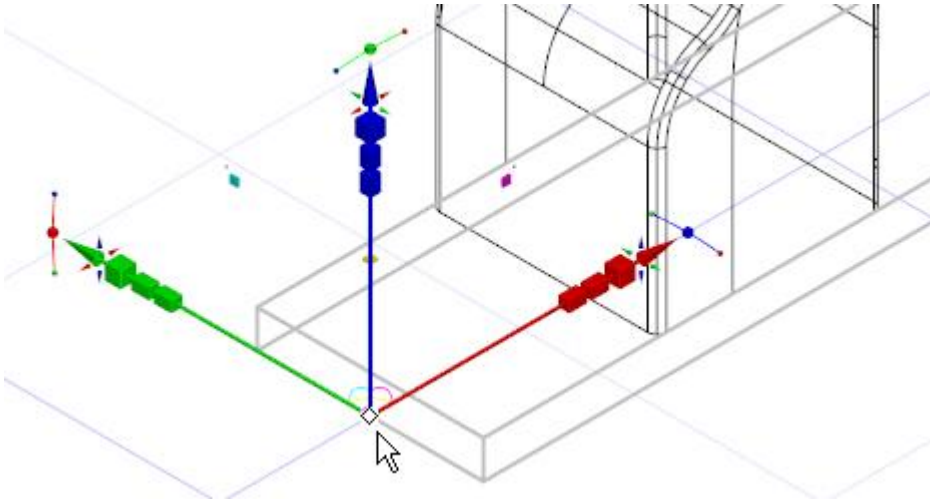
Press the Space Bar to exit the tool.

Mini-Vise Track

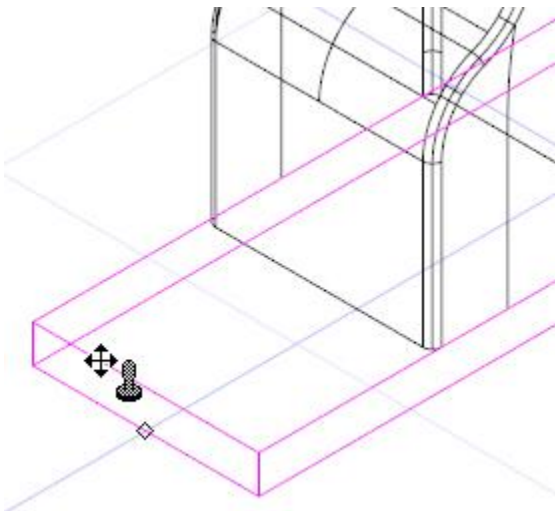
The track for the mobile jaw will now be created.

Select the lower box. Copies of it will be used to create the track.

Press D SEKE and relocate (M SEKE) the reference point to the lower end line, as indicated in the picture below.



Right mouse click and select Rubber Stamp from the local menu. Move the cursor to the top end line and M SEKE snap a copy in place. In progress below.



Press Esc to exit the Rubber Stamp tool.

Select the box that was just placed. Tab into the Inspector Bar and enter 1.5 in the Size X field, .25 in the Size Y field and .0625 in the Size Z field. Press Enter.

Size X	Size Y	Size Z
1.5	.25	.0625

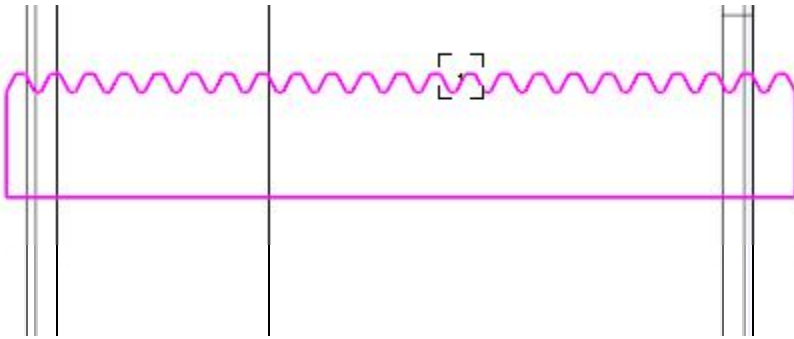
Right mouse click and select Rubber Stamp from the local menu. Move the cursor to the top end line of the selected object and M SEKE snap a copy in place. In progress below.

Select the Revolve tool from the 3D Object toolbar.

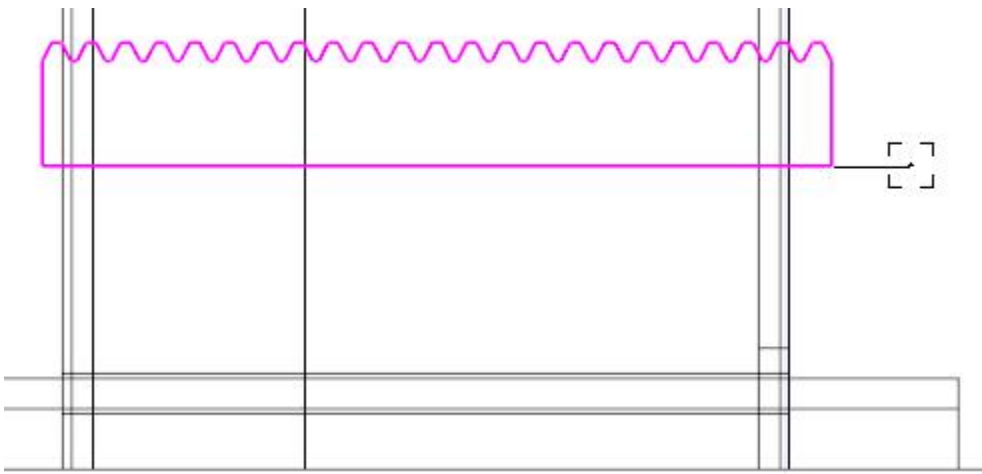
Ensure the Use Compound Profile option is selected.



Select the threaded profile as the object to revolve.



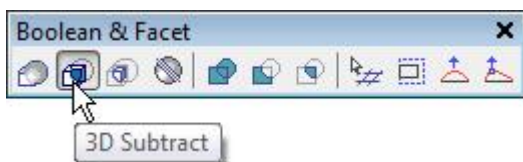
V SEKE snap the lower right corner of the profile to define the first point of the revolution axis. Press and hold the Shift key down. Move the cursor to the right a short distance and then left mouse click to define the second point of the revolution axis. Release the Shift key. In progress below.



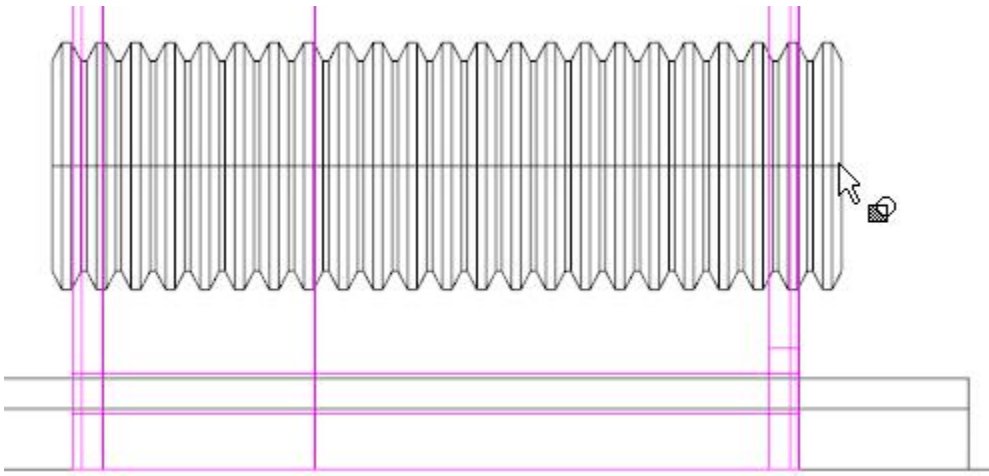
Press Ctrl + K to open the Select by Colors dialogue. Select Forest Green and Blue and then click OK.

Assign the selection to the 2D layer.

Select the 3D Subtract tool from the Boolean & Facet toolbar.

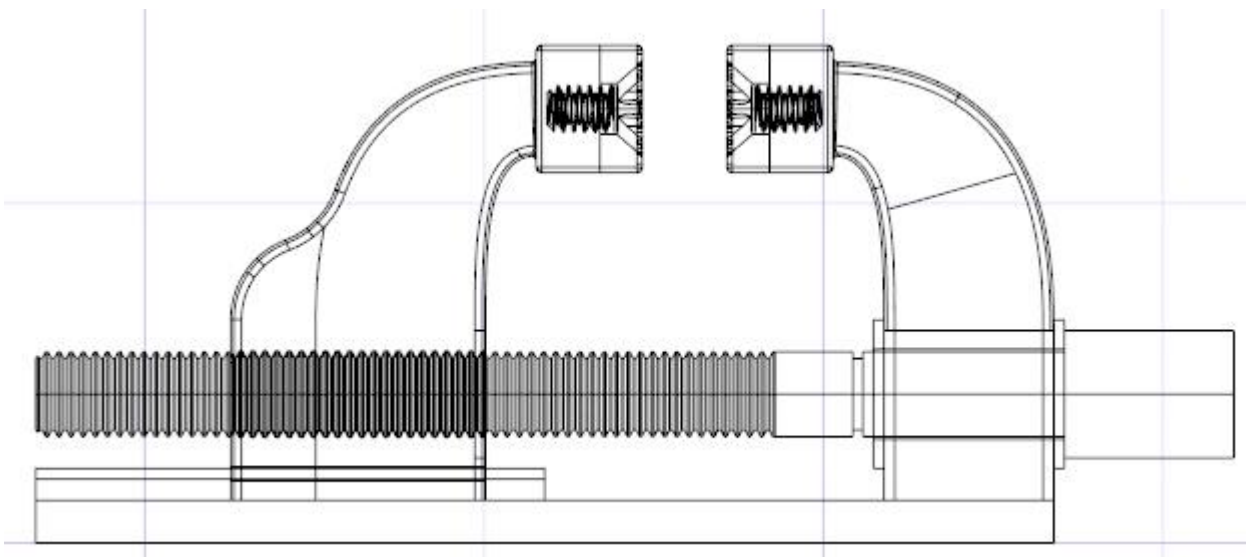


Select the mobile jaw as the object to subtract from and then select the threaded component as the object to subtract. In progress below.



Turn on all 3D layers.

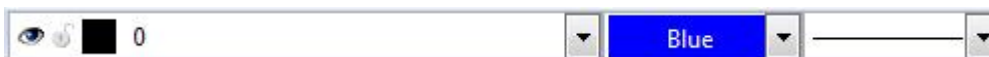
Name	✓	👁
0		👁
2D	✓	👁
Stationary Jaw		👁
Mobile Jaw		👁
Replaceable Jaws		👁
Replaceable Jaw Fasteners		👁
Main Screw		👁



While in the current view the location for the handle will be defined.

Select the Concentric Circles tool from the Circle/Ellipse toolbar.

Select Blue from the color dropdown menu on the Property toolbar.

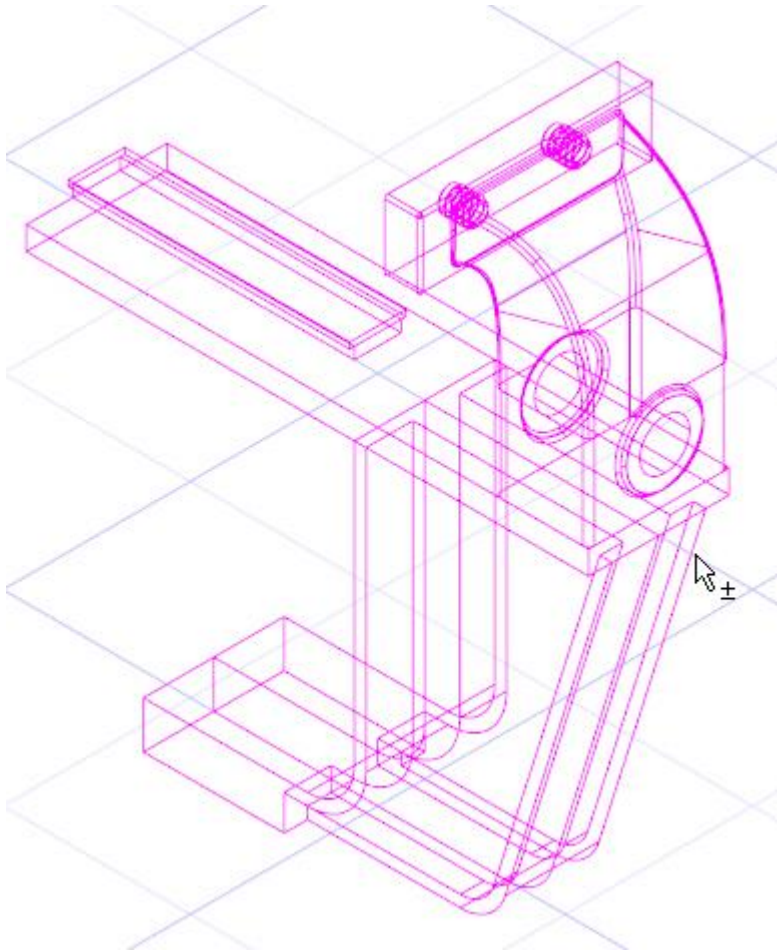


Place the cursor by the horizontal line, as indicated in the picture below, and M SEKE snap to place the first point of the first circle.

Turn on the Stationary Jaw layer.

Select the 3D Add tool from the Boolean & Facet toolbar.

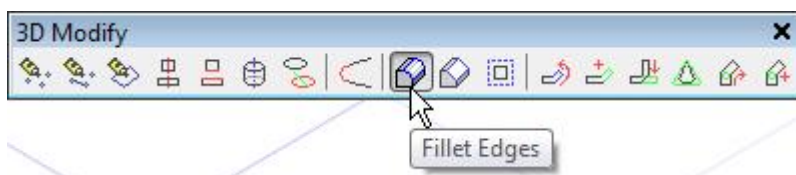
Press and hold the Shift key down. Select the six components as the objects to add. Release the Shift key. Select Finish. In progress below.



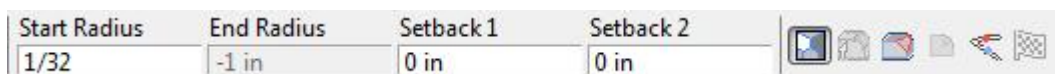
Press the Space Bar to exit the tool.

Select the object and assign it to the Stationary Jaw layer.

Select the Fillet Edges tool from the 3D Modify toolbar.

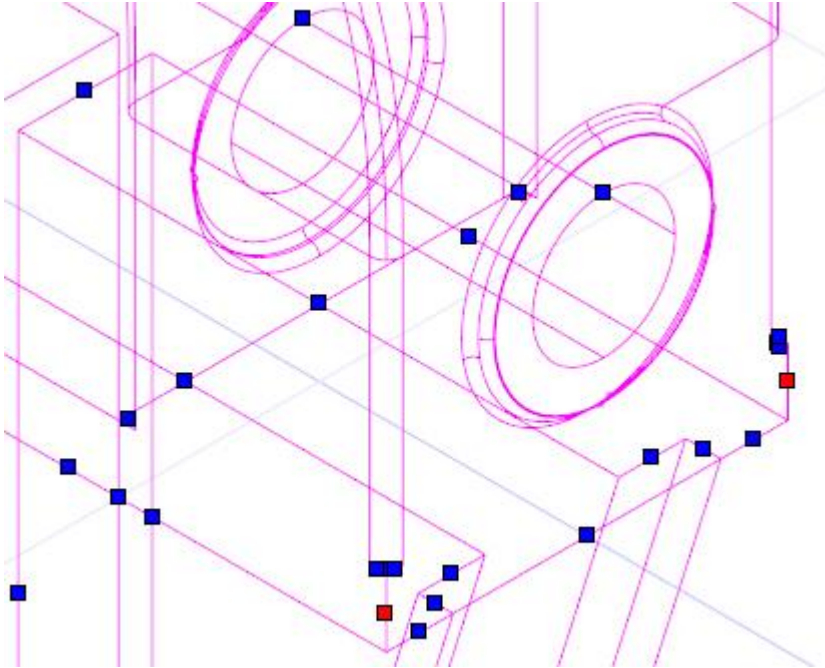


Tab into the Inspector Bar and enter 1/32 in the Start Radius field. Press Enter.



Select the stationary jaw as the object to fillet.

Select the two vertical lines, as indicated in the picture below, as the edges to fillet. Select Finish. In progress below.

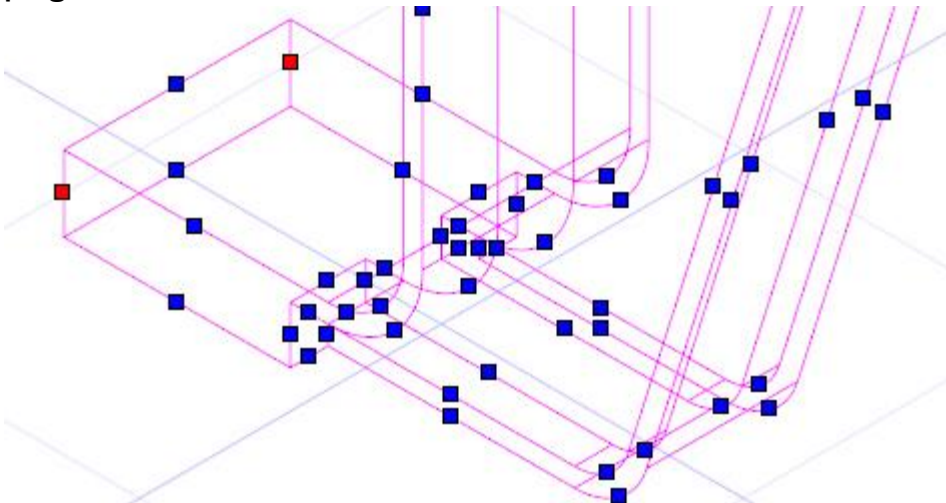


Tab into the Inspector Bar and enter .375 in the Start Radius field. Press Enter.



Select the stationary jaw as the object to fillet.

Select the two vertical lines, as indicated in the picture below, as the edges to fillet. Select Finish. In progress below.



Tab into the Inspector Bar and enter .125 in the Start Radius field. Press Enter.



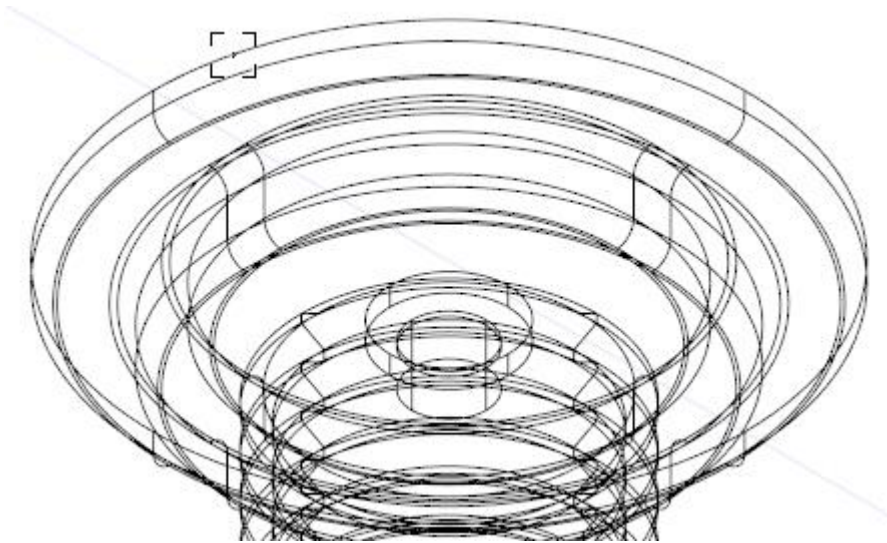
Select the stationary jaw as the object to fillet.

Clamping Surface

A simple surface will be created to clamp to.

Select the Box tool from the 3D Object toolbar.

C SEKE snap the upper circle of the clamp disk, as indicated in the picture below, to place the first point of the box.



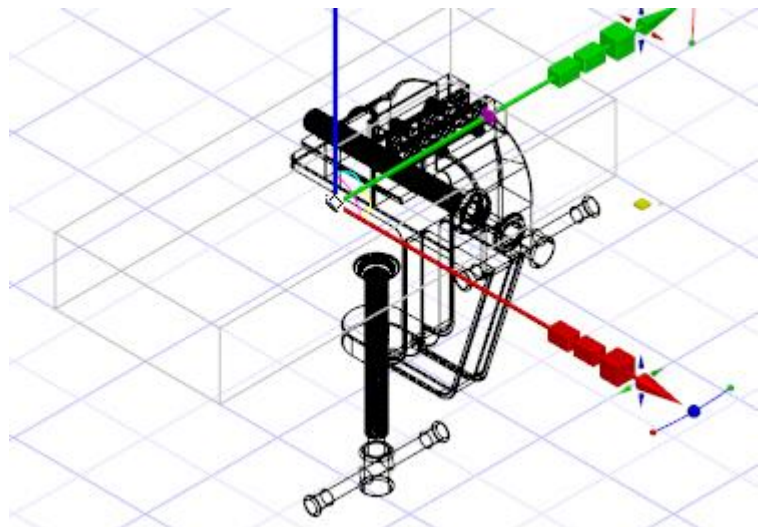
Tab into the Inspector Bar and enter -2.5 in the Width field, -6 in the Length field and 1 in the Height field. Press Enter.

Width	Length	Height
-2.5	-6	1

Press the Space Bar to exit the tool.

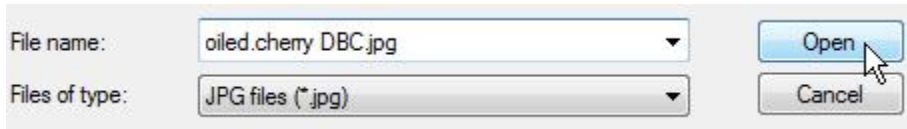
Select the box. Tab into the Inspector Bar and enter .625 in the Delta X field and 3 in the Delta Y field. Press Enter.

Delta X	Delta Y	Delta Z
.625	3	0 in

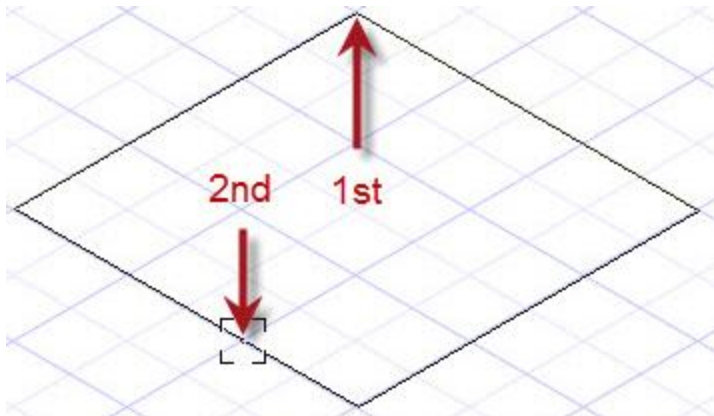


Create a new layer called Surface.

Locate the supplied file *oiled.cherry DBC.jpg* and click Open. This was a free texture found on the internet at one point. The author has sharpened it with Photoshop.

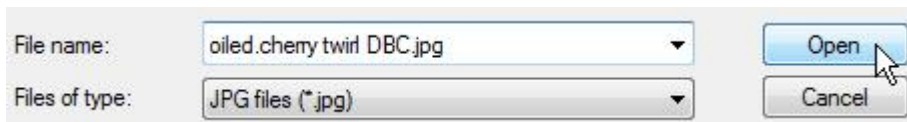


Using two G SEKE snaps, place the image in a clear area of the drawing. Make it about as long as the clamping surface.

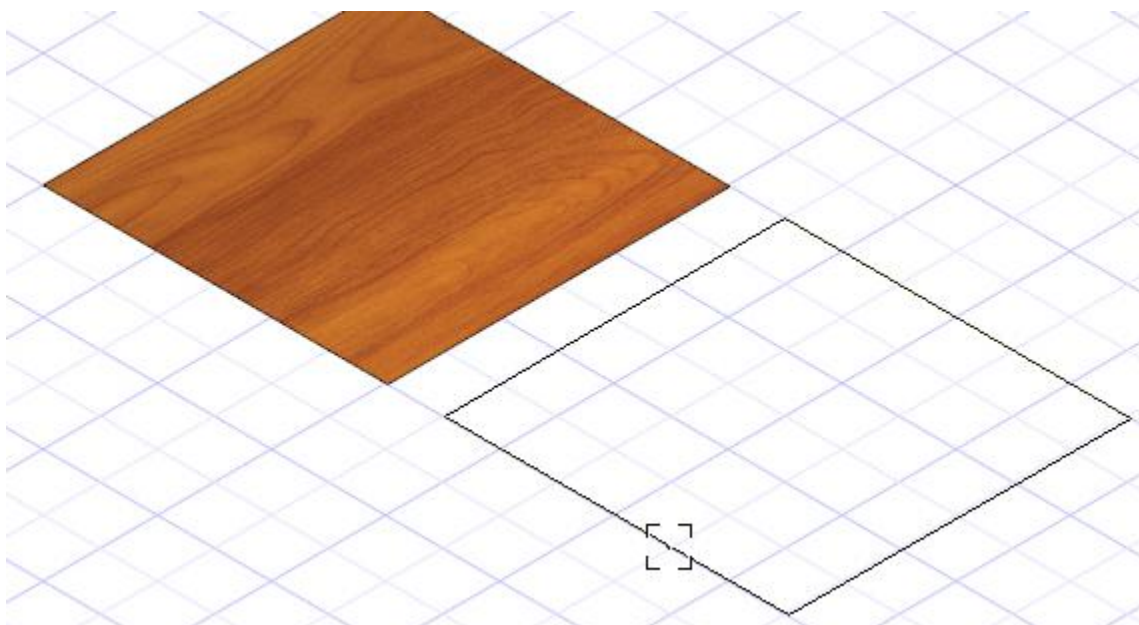


Select From File from the Image toolbar.

Locate the supplied file *oiled.cherry twirl DBC.jpg* and click Open. This was the same texture found on the internet at one point. The author has run a twirl filter on it with Photoshop.



Using two G SEKE snaps, place the image in a clear area of the drawing, as indicated in the picture below. In progress below.

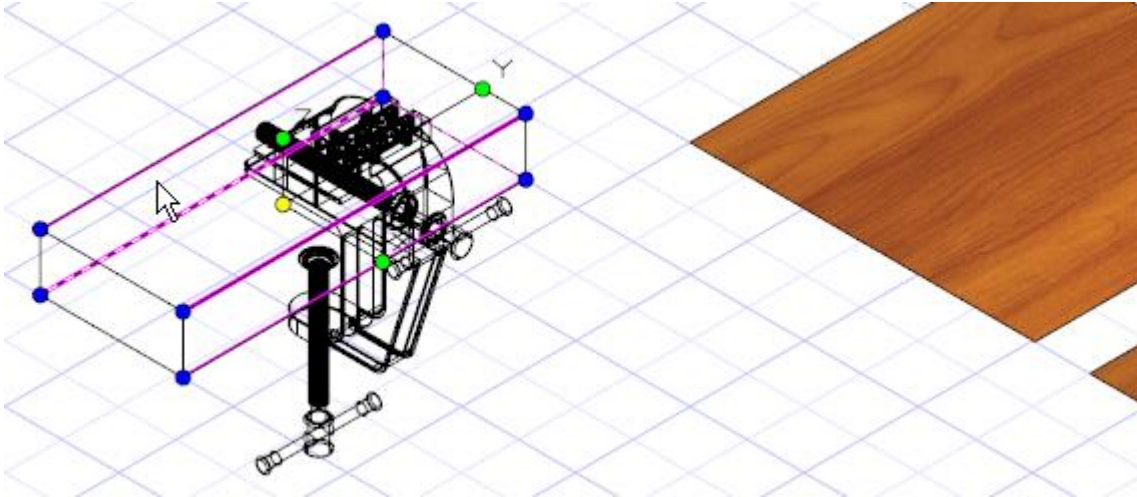


Press the Space Bar to engage the Select tool.

Two new UV wrapping materials will now be created.

Save the drawing now in case of crashes with the following steps.

Double click the clamping surface to open the Properties dialogue. In progress below.



Under the Material tab ensure RedSDK is selected under Renders. Select Brick from the Category dropdown menu and select the first material from the Material dropdown menu (Rough Realistic Brick?). Could be any material at this point, what is required at this point is to have the Edit button available. Select Edit.

