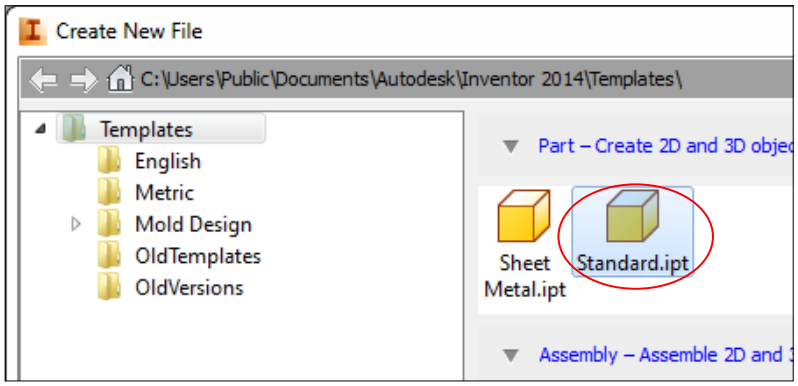
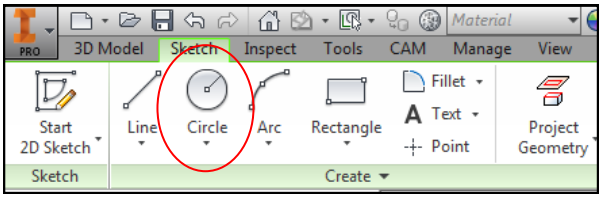
Fidget Spinner Exercise.

Step # 1. From the Create New File dialog box , select the *Standard.ipt T*emplate.





Step # 2. On the Sketch tab under the "**Create**" panel select the "**Circle**" command , and sketch 2 circles.

1 at **30 mm** in diameter and a second at **22 mm** in diameter.

Use the origin as a centre point.

See Figure 1.0

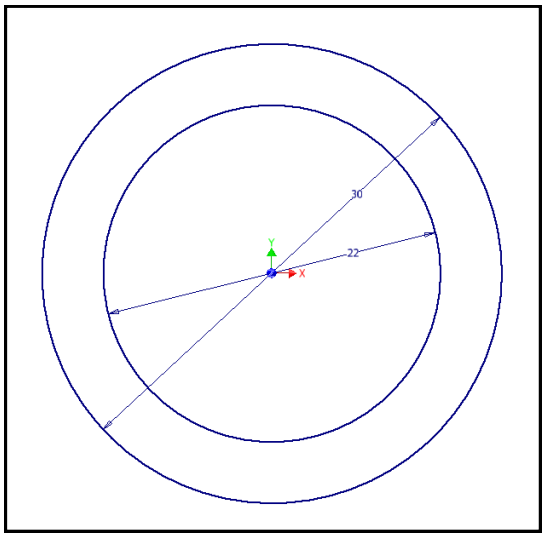
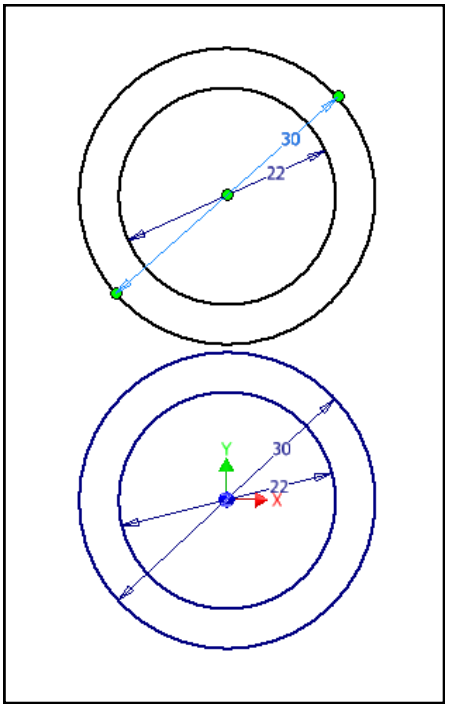


FIG 1.0



Step # 3. Continue on the current sketch. Select the "**Circle**" command.

Create the 2 concentric circles 1 at **22 mm** in diameter, and 1 at **30 mm** in diameter.

As shown in figure 2.0

FIG 2.0

Step # 4. On the "**Constrain**" Panel select the "**Vertical**" constraint. (See Figure 3.0)

First, select the centre of the original 2 circles. A dotted vertical line will appear. (See Figure 3.0 A)
Secondly, select the centre of the top 2 circles.
This will constrain the 2 sets of circles vertically.

To view the state of current constraints, press the "**F8**" key to view, and "**F9**" to hide.
A glyph will appear at the centre of the 2 circles indicating the "**Vertical**" constrained condition.

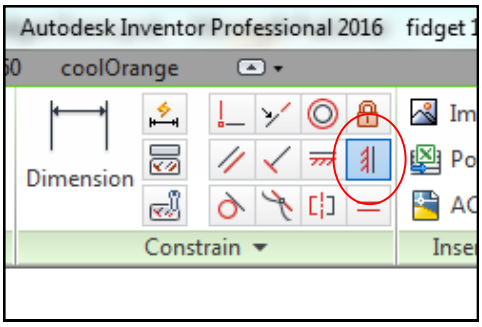


FIG 3.0

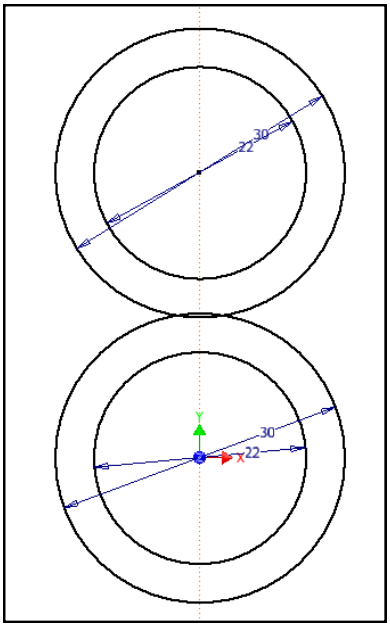
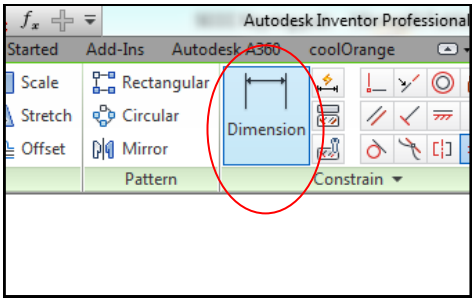


FIG 3.0 A



Step # 5. On the "**Constrain**" Panel select the "**Dimension**" command.

Create a horizontal dimension of **26mm** , as shown in Figure 4.0

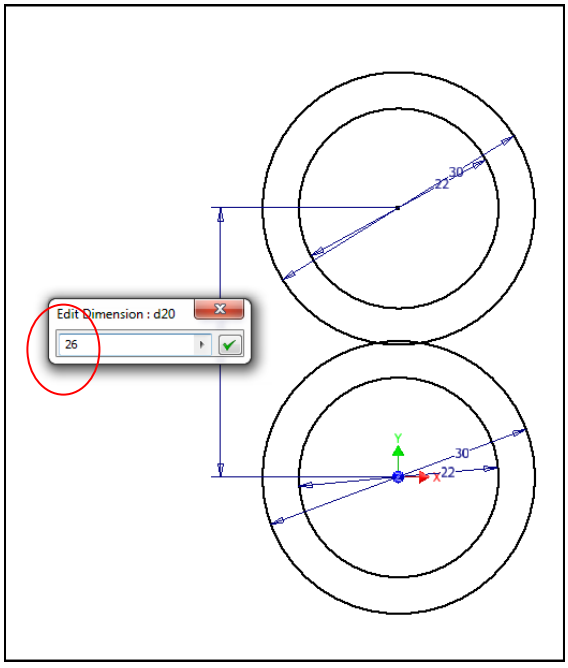


FIG 4.0

Step # 6. On the "**Pattern**" tab, select "**Circular**" command. (See Figure 5.0)
For "**Geometry**", select the 2 top circles as shown in Figure 5.0 A below.

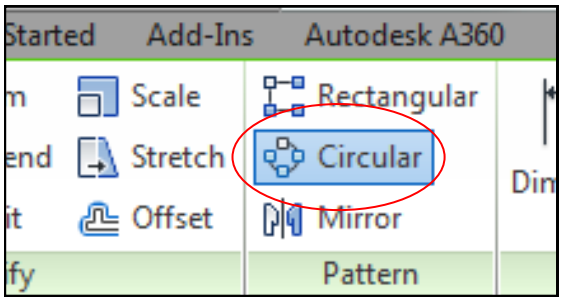


FIG 5.0

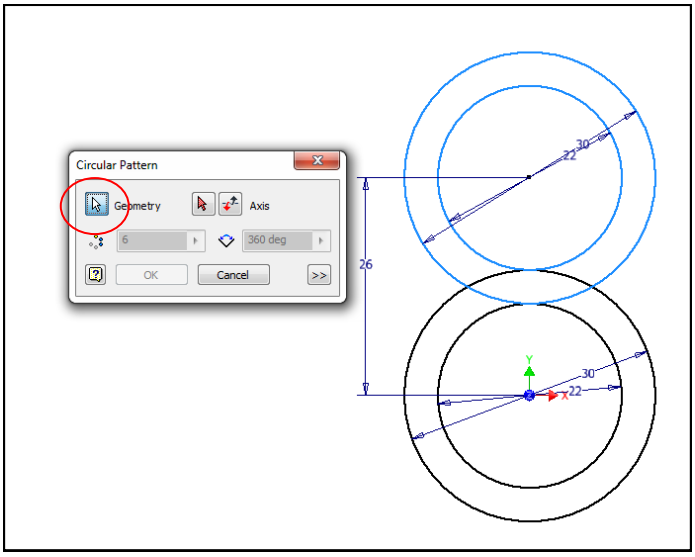
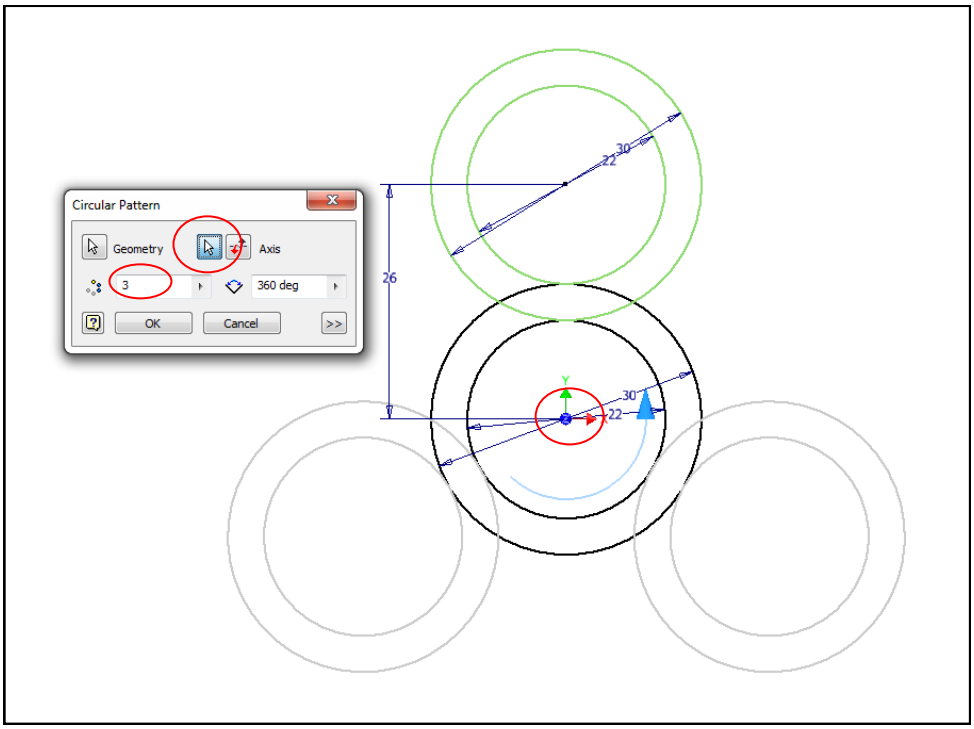


FIG 5.0 A



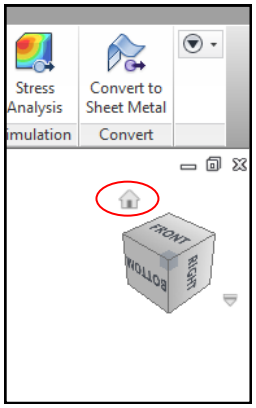
For "**Axis**", select the centre of bottom 2 circles as shown in Figure 5.0 B.

The pattern will default to "**6**" items. In this example we will choose "**3**".

"OK" the dialog box and finish the sketch.

FIG 5.0 B

After finishing the sketch, Inventor should display the geometry in an "**Isometric**" or 3D view.
If it does not, select the "**Home**" icon near the Navigation Cube , or press "**F6**"



Step # 7. On the "**Create**" panel, select the "**Extrude**" command.

See Figure 6.0

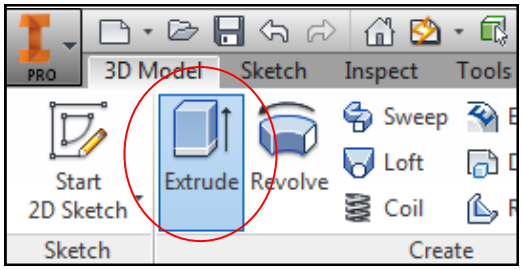


FIG 6.0

For "Profile" select the area between the 2 circles, in all 4 places.
Profile area is shown in "red" in Figure 7.0

Set the extrusion value to "**7 mm**"

"OK" the dialog box.

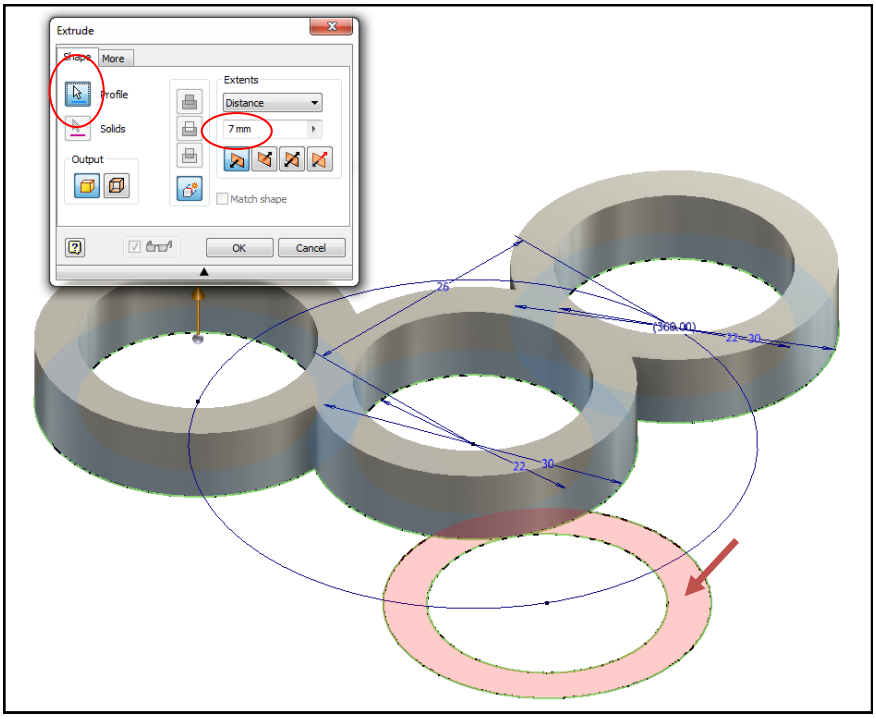
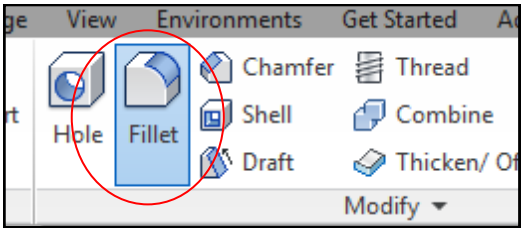


FIG 7.0

Step # 8.
Fillet the corners
On the "**Modify Panel**" select the "**Fillet**" command.



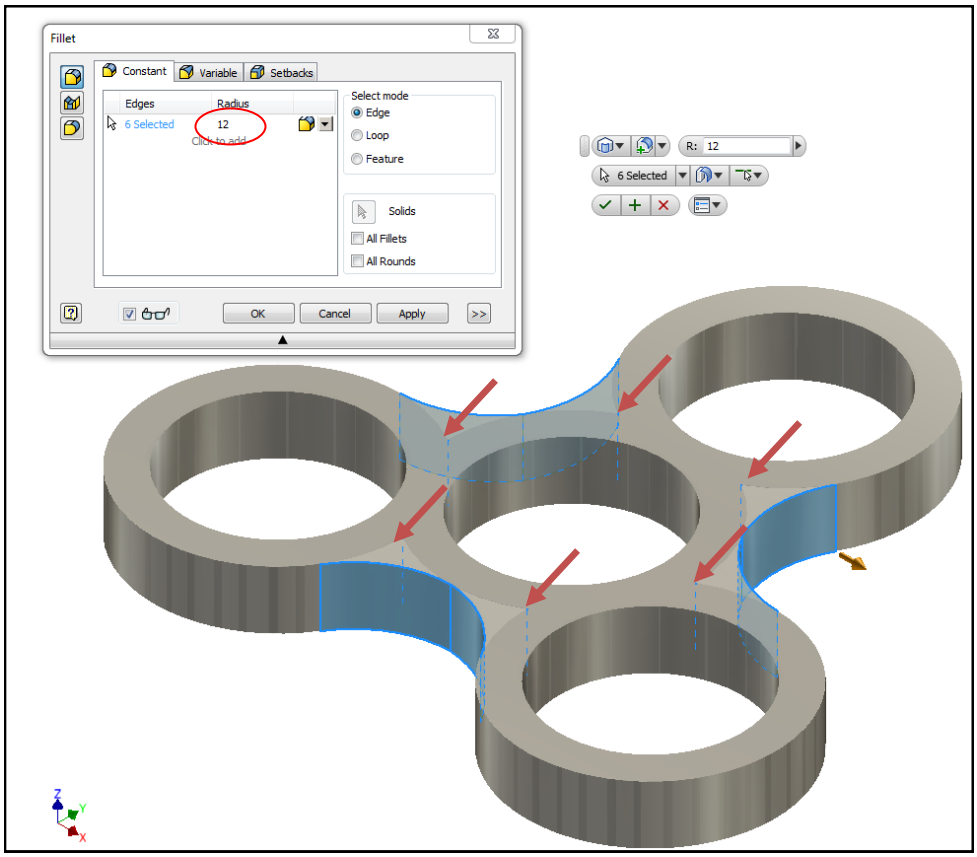


FIG 8.0

Set the fillet radius value to "**12 mm**".
Then select the 6 vertical edges, as shown in Figure 8.0.

Step # 9.

Fillet the outer edges

On the "**Modify Panel**" select the "**Fillet**" command.

Set the fillet radius value to "**3.5 mm**"

Ensure the "**Selection Mode**" is set to "**Loop**".

Select the upper and lower loops as shown in "red" in Figure 9.0

"OK" the dialog box.

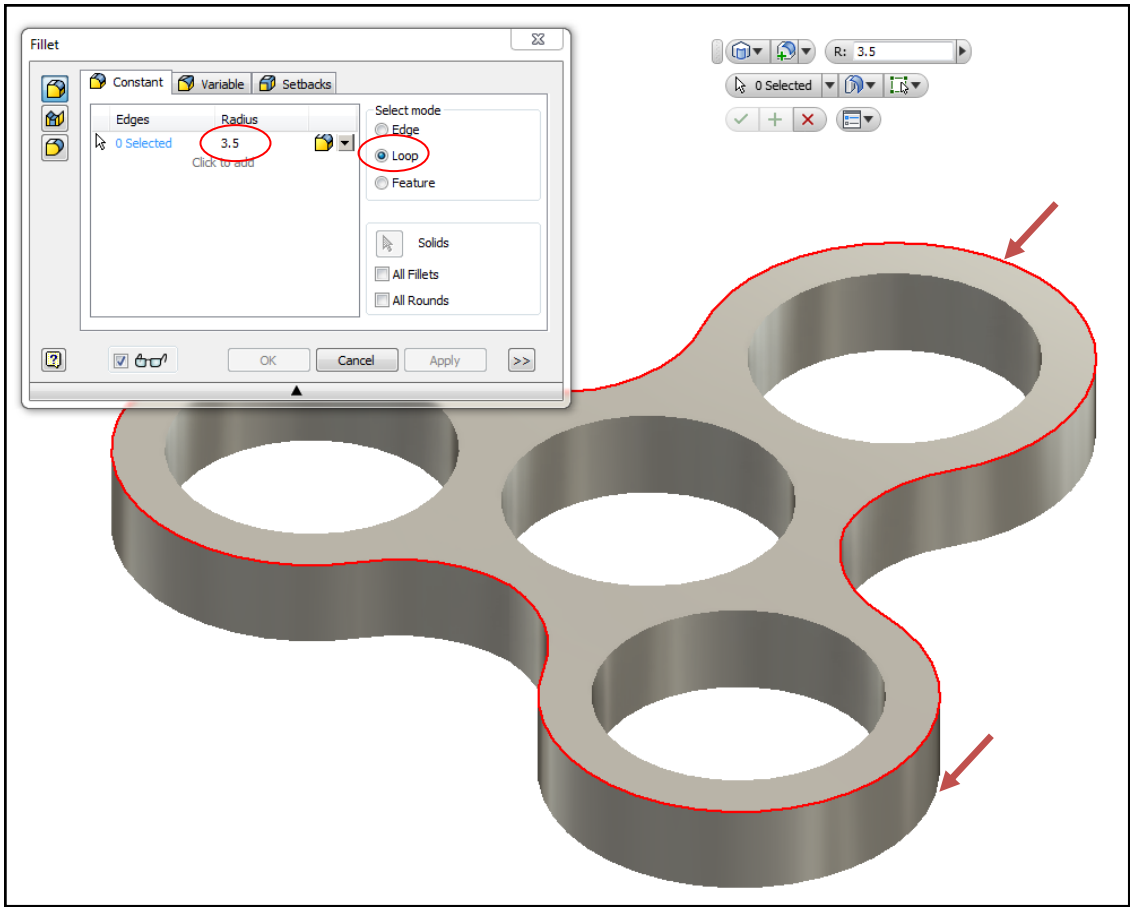
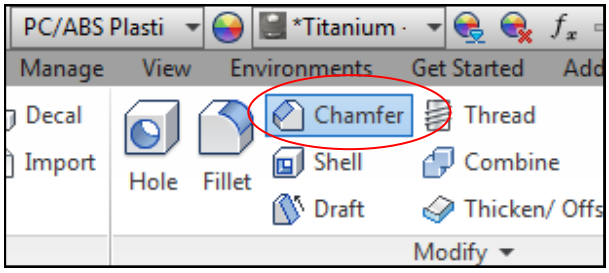


FIG 9.0

FIG 9.0 A

Finished fillet

Step # 10. Chamfer the weight and bearing locations.
On the "**Modify**" panel select the "**Chamfer**" command.
Set the chamfer distance to "**.25 mm**" Select the 8 edges as shown in Figure
"OK" the dialog box.



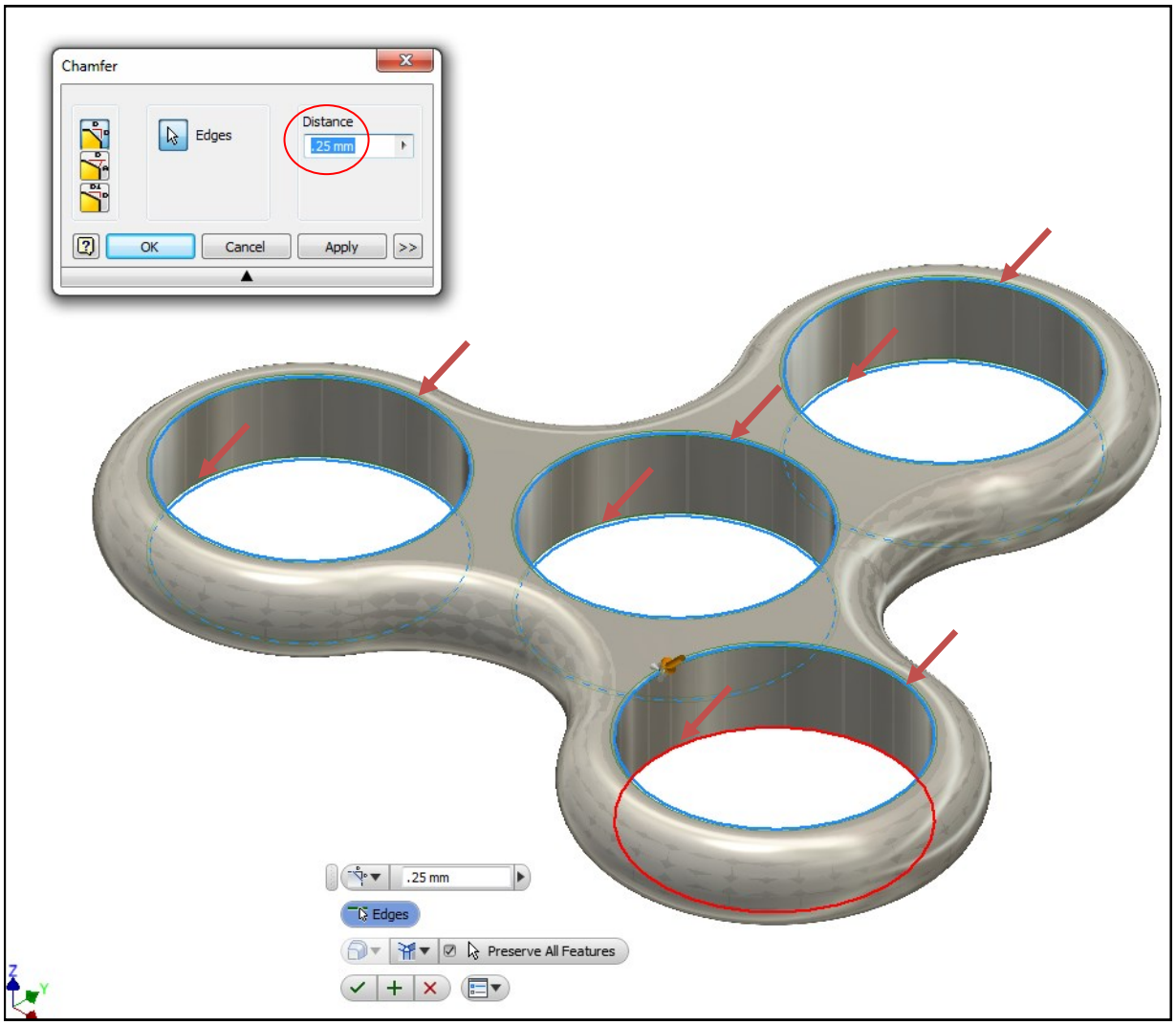


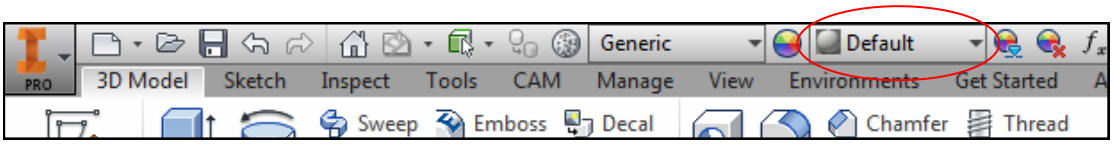
FIG 10.0

Step # 11. Apply surface finish.

On the "Quick Access Toolbar" click on the down arrow next to "**Default**". List of available surface finishes are displayed.

In this exercise "**Titanium-Polished**" was chosen. See Figure 11.0

Select a surface finish to complete your Fidget project.



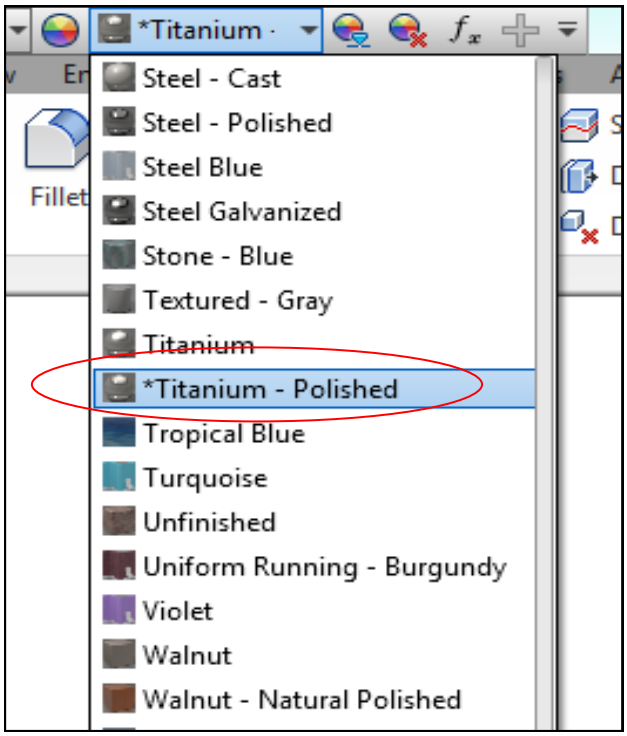


FIG 11.0

Figure 12.0
Assembly view of Fidget, complete with 22 mm weights and Bearing.

FIG 12.0