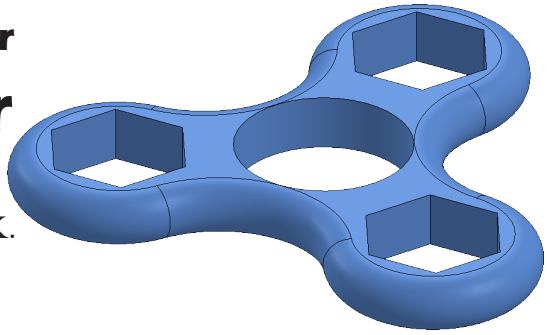
Chapter 1

Tri-Sprinner
Spinner



A. Circular Pattern.

Step 1. Click File Menu > New, click **Part Metric** and OK.

Step 2. Click **Top Plane** in the Feature Manager and click **Sketch** on the content toolbar, **Fig. 1**.

Step 3. Click **Centerline** in the **Line flyout** on the Sketch toolbar.

Step 4. Starting from the Origin sketch vertical centerline, **Fig. 2**.

Step 5. Click **Circle** (**S**) on the Sketch toolbar.

Step 6. Sketch **circle** at top endpoint of centerline and circle at Origin, **Fig. 3**.

Step 7. Click **Smart Dimension** (**S**) on the Sketch toolbar.

Step 8. Add dimension, **Fig. 3**.

Step 9. Click Zoom to Fit (**F**) on the View toolbar.

Step 10. Click **Polygon** (**S**) on the Sketch toolbar.

Step 11. Sketch a **6 side polygon** at top end-point of centerline, **Fig. 4**.

Step 12. **Right click graphics area and click Select** from menu to unselect Polygon tool.

Step 13. Click **line of polygon** to select and click **Make Horizontal** on the context toolbar, **Fig. 5**.

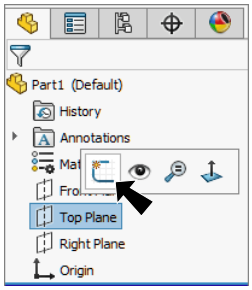


Fig. 1

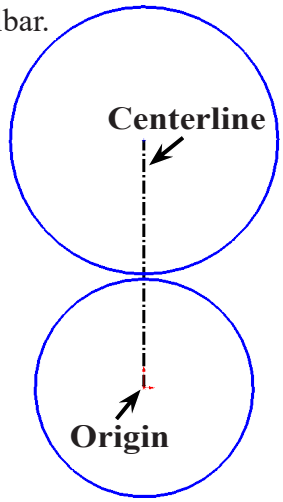


Fig. 2

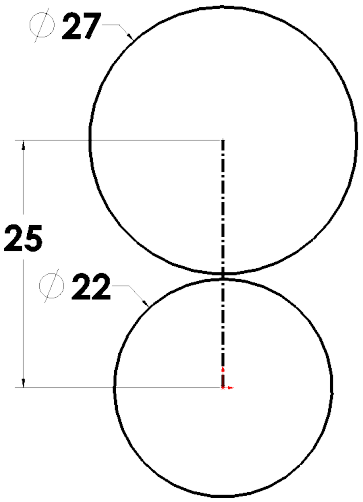


Fig. 3

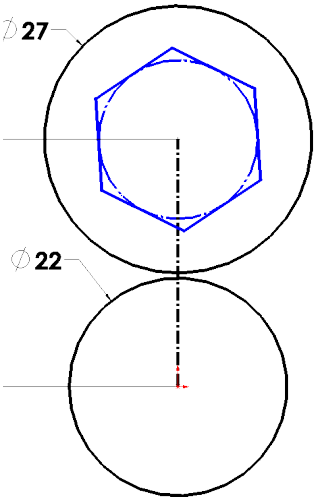


Fig. 4

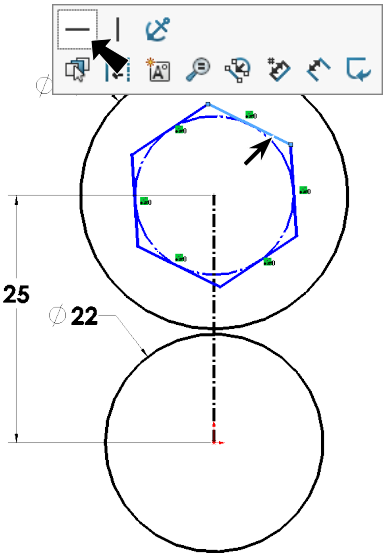


Fig. 5

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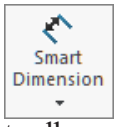
http://www.cudacountry.net email:cudacountry@hotmail.com

Step 14. Click **Smart Dimension** 

(**S**) on the Sketch toolbar.

Step 15. Add dimension **16**, **Fig. 6**.

Step 16. **Right click graphics area and click Select** from menu to unselect Smart Dimension.

Step 17. Drag a selection to select all geometry except circle at Origin, **Fig. 7**. **Tip:** Including centerline in circular sketch pattern will fully define sketch circular pattern.

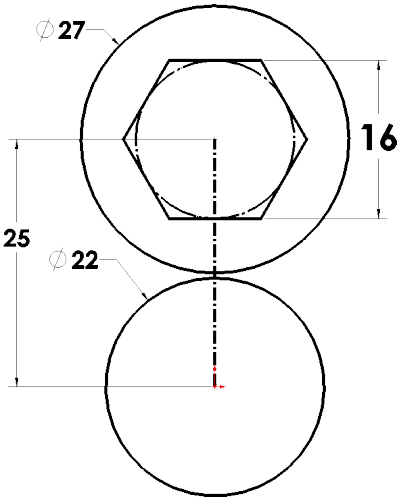


Fig. 6

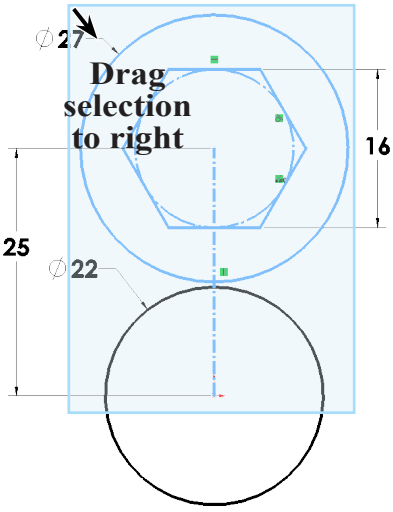
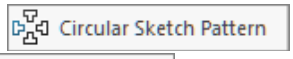
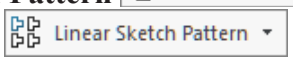


Fig. 7

Step 18. Click **Circular Sketch Pattern** 

in the **Liner Sketch Pattern flyout** 

on the Sketch toolbar.

Step 19. In the Circular Sketch Property Manager set:
under Parameters, **Fig. 8**
confirm center of pattern is **Point 1** (Origin)
Number of Instances **3**
check **Equal spacing**
under Entities to Pattern
confirm **polygon, top circle and centerline are selected**
click OK ✔ .

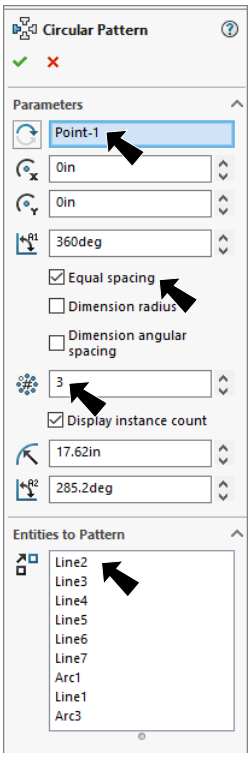


Fig. 8

Step 20. Click Zoom to Fit (**F**) on the View toolbar.

B. Save as "SPINNER".

Step 1. Click File Menu > Save As.

Step 2. Key-in **SPINNER** for the filename and press ENTER.

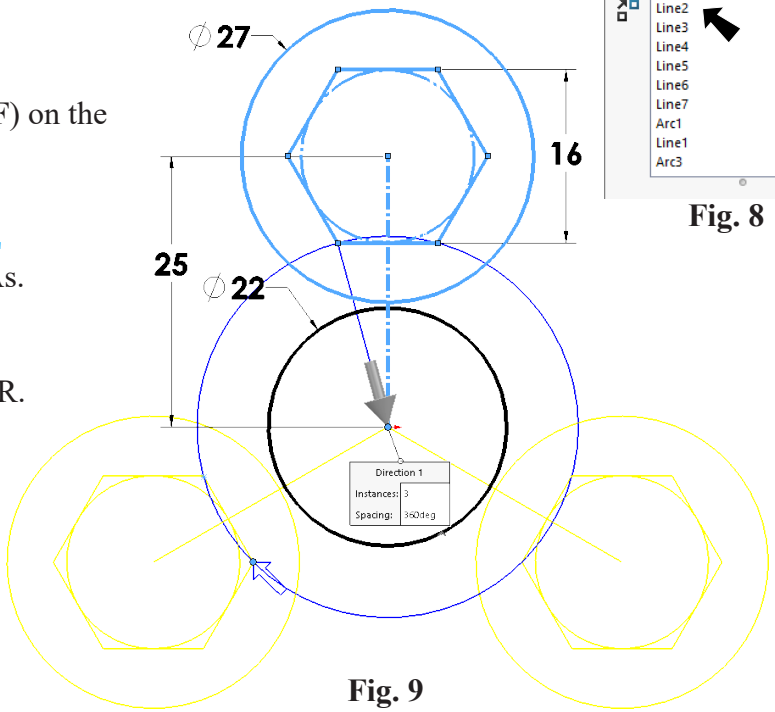


Fig. 9

C. 3 Point Arc.

Step 1. Click **3 Point Arc** (**S**) in the **Arc flyout** on the Sketch toolbar.

Step 2. Sketch **arc between outside circle and patterned circle**, **Fig. 10**.

Step 3. Click **Smart Dimension** (**S**) on the Sketch toolbar.

Step 4. Dimension radius **12.7**, **Fig. 11**.

Step 5. **Right click graphics area and click Select** from menu to un-select Smart Dimension.

Step 6. **Drag a "trend to left - more liberal" selection across** arc endpoint and circle to select both and click **Make Tangent** on the context toolbar, **Fig. 12**. Don't cross dimension lines.

Step 7. Repeat **Make Tangent** at the other arc endpoint, **Fig. 13**. Don't cross dimension lines.

Step 8. Click **Centerline** in the **Line flyout** on the Sketch toolbar.

Step 9. Sketch a centerline from Origin to center point of arc, **Fig. 14**.

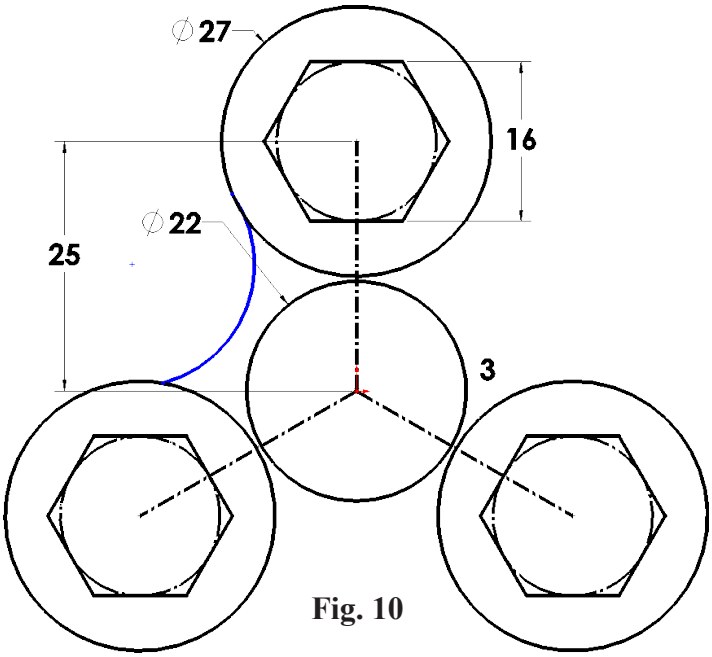


Fig. 10

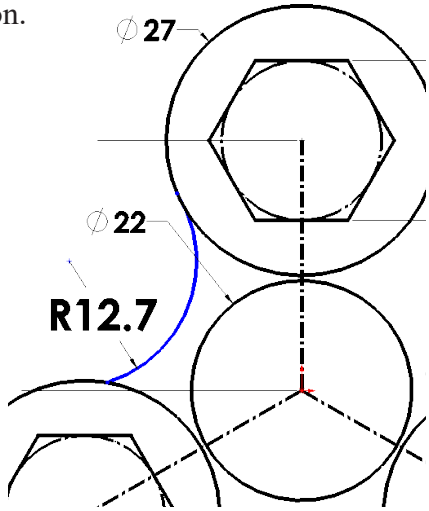


Fig. 11

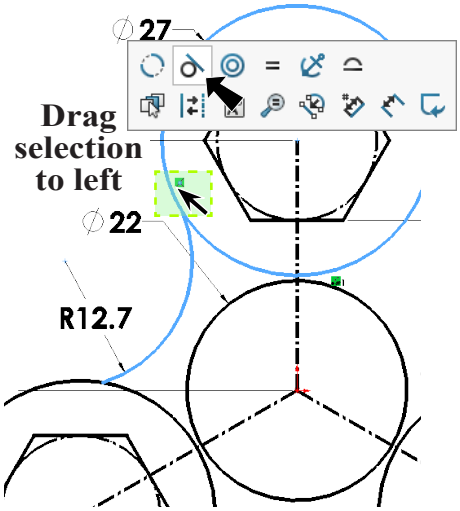


Fig. 12

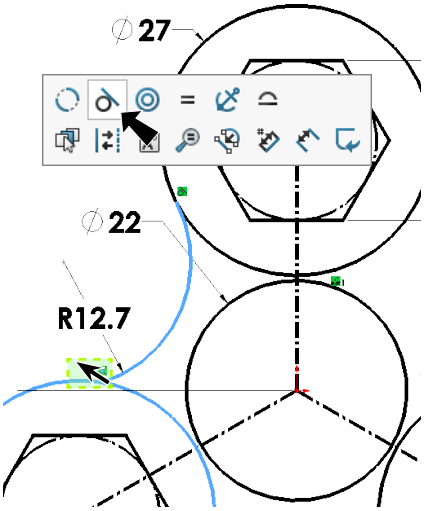


Fig. 13

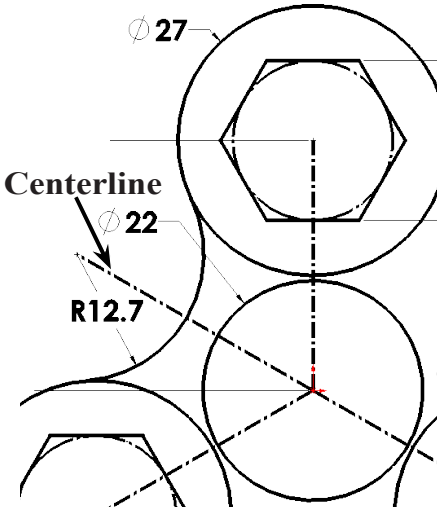


Fig. 14

Step 10. **Right click graphics area and click Select** from menu to un-select Centerline tool.

Step 11. **Drag a "trend to left - more liberal" selection across arc and centerline**, **Fig. 15**. **Tip:** Including centerline in the circular sketch pattern will fully define circular sketch pattern.

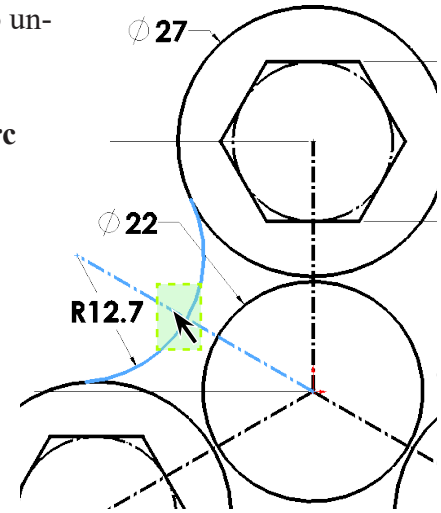


Fig. 15

Step 12. Click **Circular Sketch Pattern**

in the **Liner Sketch Pattern flyout**

on the Sketch toolbar.

Step 13. In the Circular Sketch Property Manager set:
under Parameters, **Fig. 16**
confirm center of pattern is Point 1 (Origin)
Number of Instances **3**
check **Equal spacing**
under Entities to Pattern
confirm **arc and centerline** are selected
click OK .

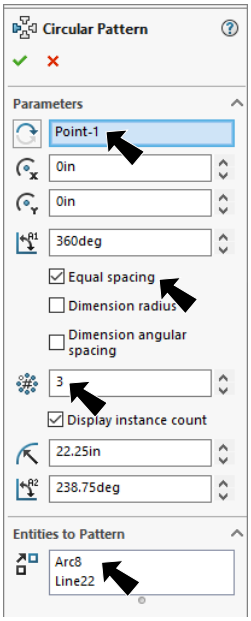


Fig. 16

Step 14. Save. Use **Ctrl-S**.

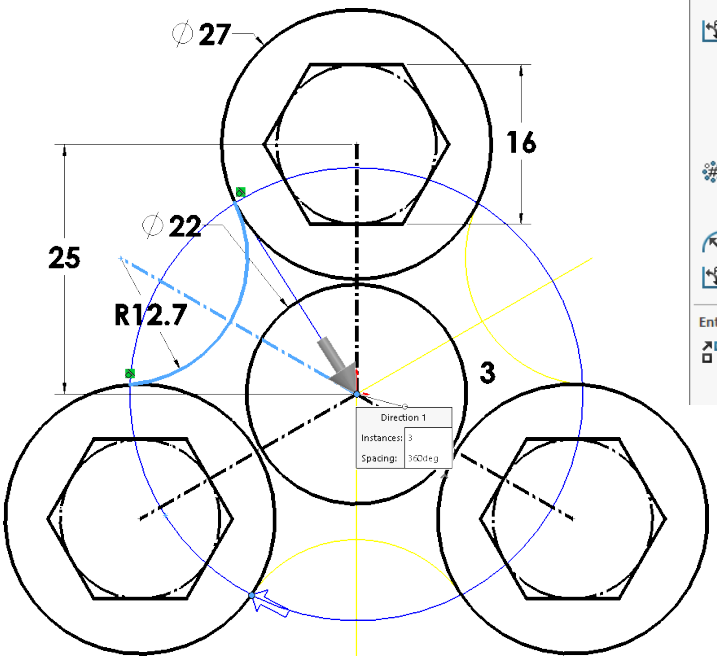


Fig. 17

D. Extrude Boss.

Step 1. Click **Features** Features on the Command Manager toolbar.

Step 2. Click **Extruded Boss/Base** Extruded Boss/Base on the Features toolbar.

Step 3. In the Boss-Extrude Property Manager set:

under Direction 1, **Fig. 18**

End Condition **Mid Plane**

Depth D1 **7**

under Selected Contours

click the **4 contours** (all but circle at origin), **Fig. 19**

click OK ✔ .

Step 4. Save. Use **Ctrl-S**.

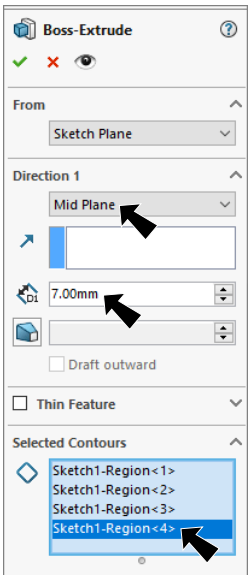


Fig. 18

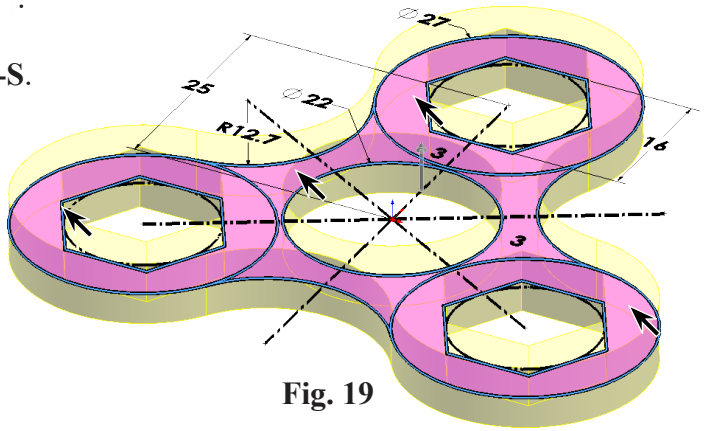


Fig. 19

E. Fillet Full Round.

Step 1. Click **Fillet**

on the Features toolbar.

Step 2. In the Fillet Property Manager,
select **Manual**, **Fig. 20**
under Fillet Type
select **Full Round Fillet**
click in **Side Face Set 1** box
click **top face**, **Fig. 21**

Tip: Before moving cursor, right click to move selection to next selection box.

click in **Center Face Set** box, **Fig. 20**
right click a side face and select **Select Tangency**, **Fig. 21** and , **Fig. 21**

click in **Side Face Set 2** box
rotate view to view **bottom face**, hold down middle mouse button (wheel) and drag to rotate view, **Fig. 23**
click **bottom face**, **Fig. 23**
click OK ✔ .

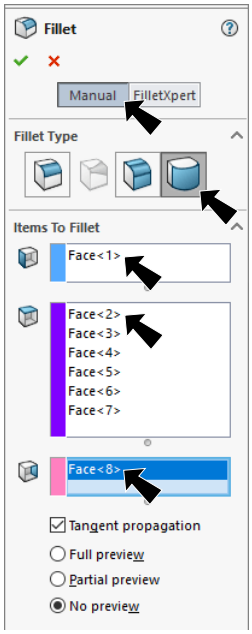


Fig. 20

Step 3. Save. Use **Ctrl-S**.

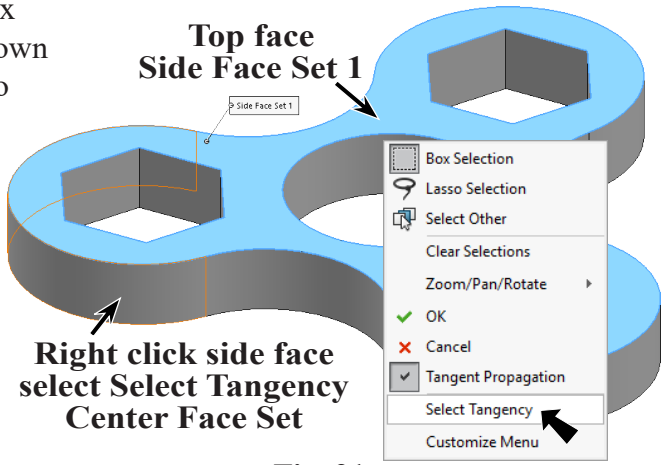


Fig. 21

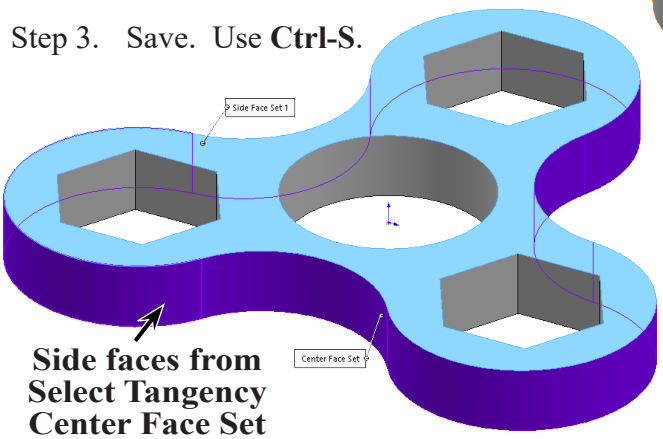


Fig. 22

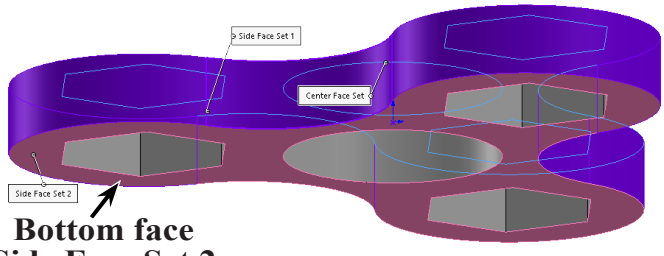


Fig. 23

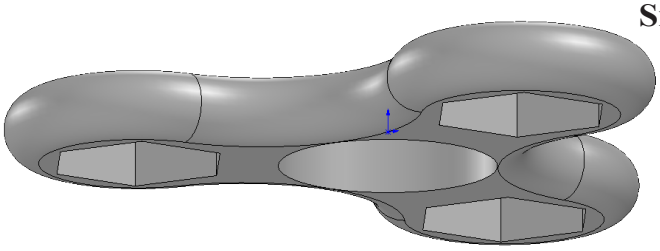


Fig. 24

F. Material ABS Plastic.

Step 1. **Right click Material** in the Feature Manager and click **Edit Material**, **Fig. 25**.

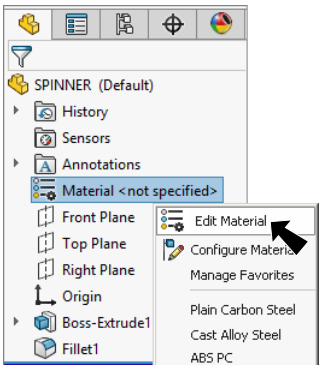


Fig. 25

Step 2. **Expand Plastics** in the material tree and select **ABS**. Click **Apply** and **Close**.

G. Appearance Color.

Step 1. Click **Trimetric** on the Standard Views toolbar.

Step 2. Click the part, click **Appearance Callout** on the context toolbar and click **SPINNER**, **Fig. 26**.

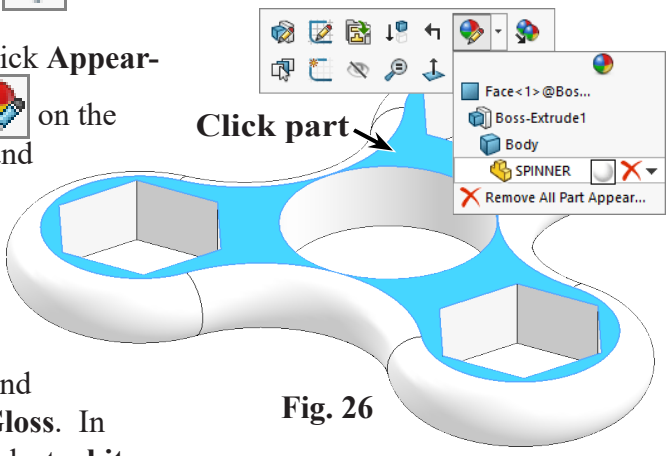


Fig. 26

Step 3. In the Appearances Task pane, expand **Plastic** and click **Medium Gloss**. In the lower pane select **white medium gloss platic**, **Fig. 27**.

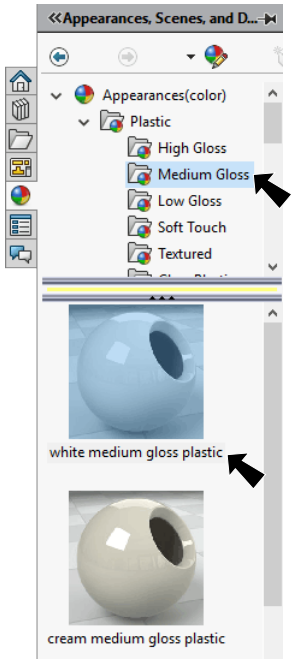


Fig. 27

Step 4. In the Appearances Property Manager, under Color, **Fig. 28**
set **RGB values**
R 111
G 167
B 255
click OK .

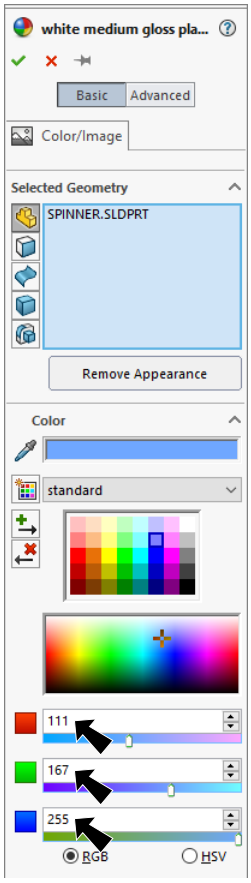


Fig. 28

Step 5. Save. Use **Ctrl-S**.

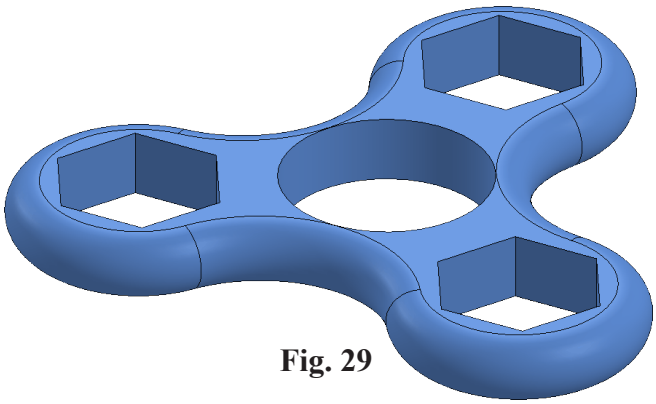


Fig. 29