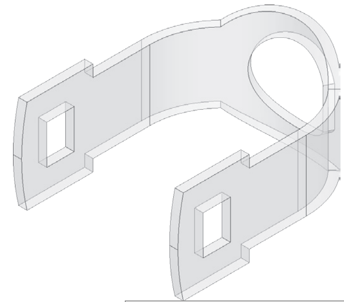
Chapter 18

Cluster Wheel Vehicle

Motor Strap



A. Extrude1.

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

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

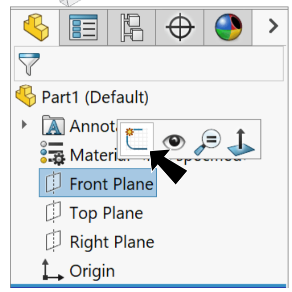


Fig. 1

Step 3. Click **Line** (**L**) on the Sketch toolbar.

Step 4. Sketch the **3 chained lines and horizontal and vertical thru Origin**, **Fig. 2**.

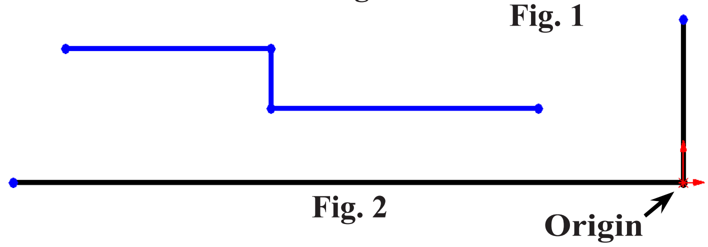


Fig. 2

Step 5. **Unselect Line tool**. To unselect, right click graphics area and click Select from menu.

Step 6. **Drag a selection to left across the centerlines** and click **Construction Geometry** on the context toolbar, **Fig. 3**.

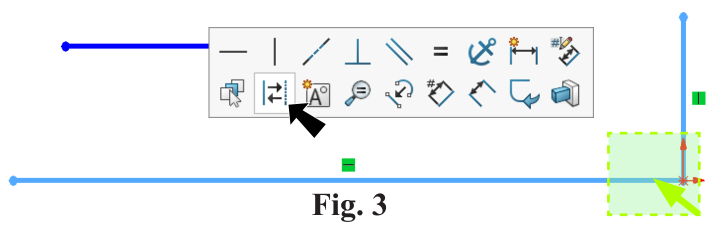


Fig. 3

Step 7. Click **3 Point Arc** (**S**) in the **Arc flyout** on the Sketch toolbar.

Step 8. Sketch the **two arcs**, **Fig. 4**.

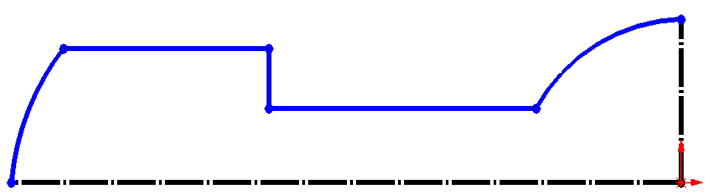


Fig. 4

Step 9. Click **Smart Dimension** (S) on the Sketch toolbar.

Step 10. Add dimensions, **Fig. 5**. Dimension arcs to the line on arc endpoints. Such as, the 30, dimension centerline - not its endpoints. Dimension 8.5 using line and not to endpoints.

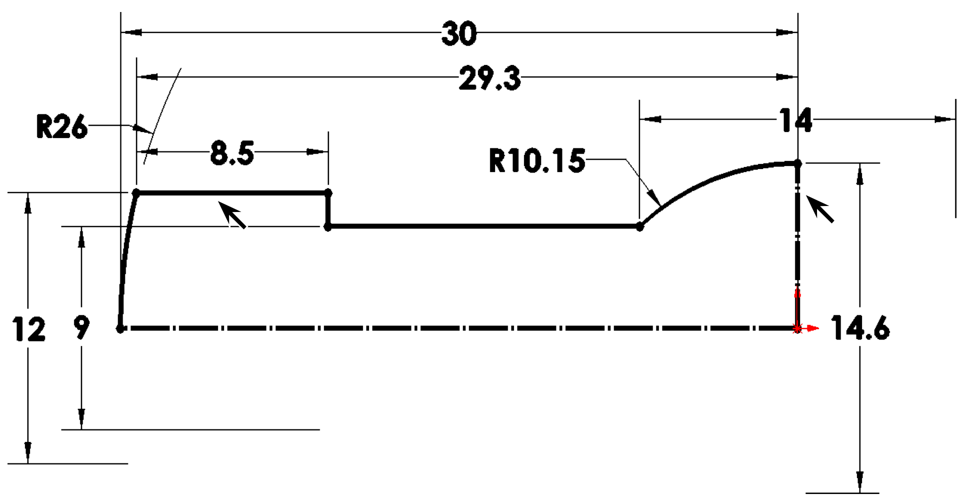


Fig. 5

Step 11. **Unselect Smart Dimension**. To unselect, right click graphics area and click Select from menu.

Step 12. Drag a selection to **left to select all geometry except horizontal centerline, Fig. 6**.

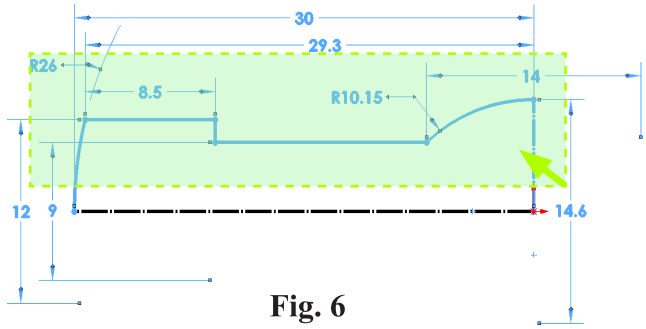


Fig. 6

Step 13. Click **Mirror Entities** Mirror Entities on the Sketch toolbar.

Step 14. Drag a selection to **right to select all geometry** and **Ctrl click vertical centerline to unselect, Fig. 7**.

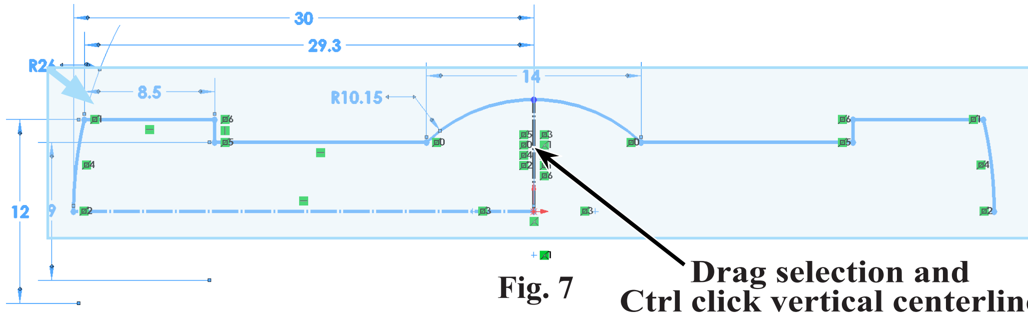


Fig. 7

Step 15. Click **Mirror Entities** Mirror Entities on the Sketch toolbar, **Fig. 8**.

Step 16. Click **Features** Features on the Command Manager toolbar.

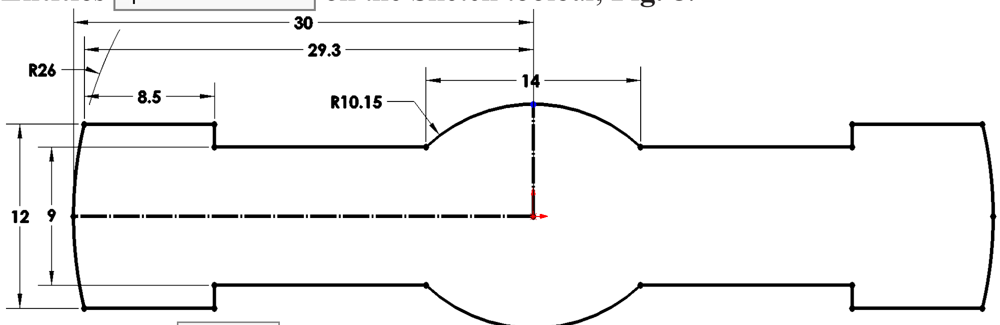


Fig. 8

Step 17. Click **Extruded Boss/Base** Extruded Boss/Base on the Features toolbar.

Step 18. In the Boss-Extrude Property Manager set:
under Direction 1, **Fig. 9**

Depth **1.1**

click OK .

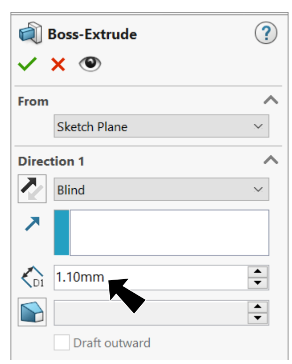


Fig. 9

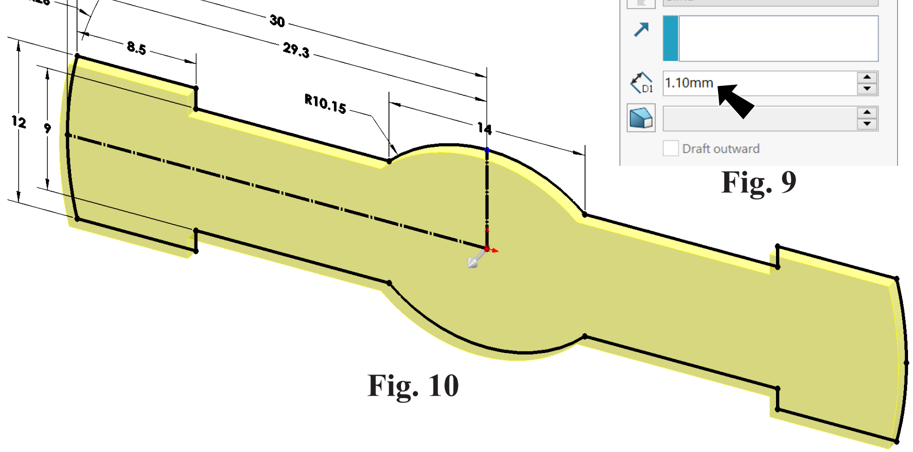


Fig. 10

B. Save as "MOTOR STRAP".

Step 1. Click File Menu > Save As.

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

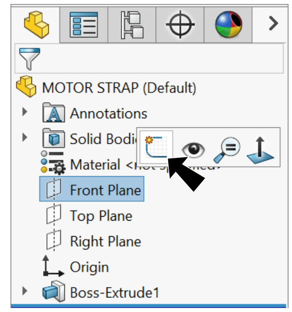


Fig. 11

C. Cut-Extrude1.

Step 1. Click **Front Plane** in the Feature Manager and click **Sketch** on the context toolbar, **Fig. 11**.

Step 2. Click **Normal To** on the Standard Views toolbar. (**Ctrl-8**)

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

Step 4. Sketch **vertical centerline from Origin**, **Fig. 12**.

Step 5. Click **Corner Rectangle** in the **Rectangle flyout** on the Sketch toolbar.

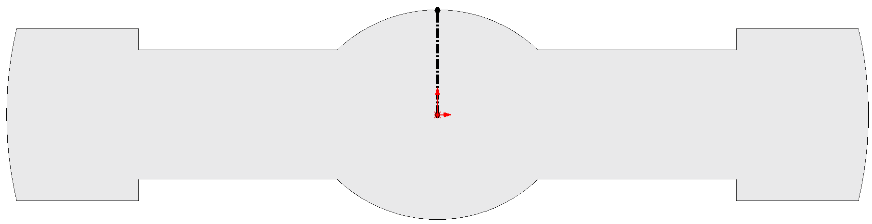


Fig. 12

Step 6. Sketch rectangle, **Fig. 13**.

Step 7. **Unselect Rectangle tool**. To unselect, right click graphics area and click Select from menu.

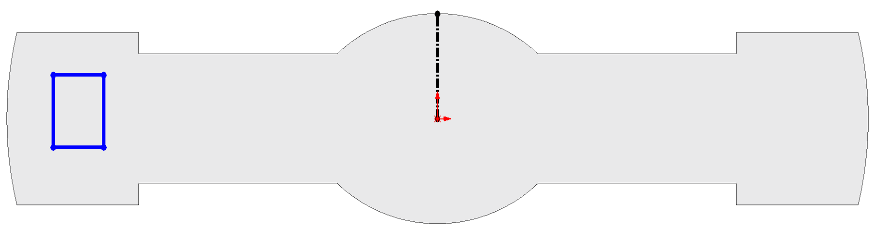


Fig. 13

Step 8. **Ctrl click midpoint of vertical rectangle line and Origin** to select both. Release Ctrl key and click **Make Horizontal** on the context toolbar, **Fig. 14**.

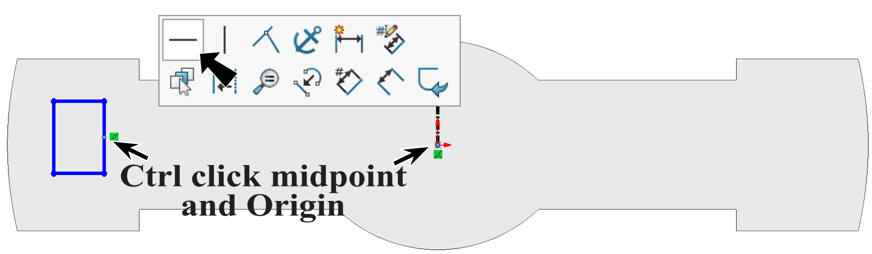


Fig. 14

Step 9. Click **Circle** (**S**) on the Sketch toolbar.

Step 10. Sketch circle at Origin, **Fig. 15**.

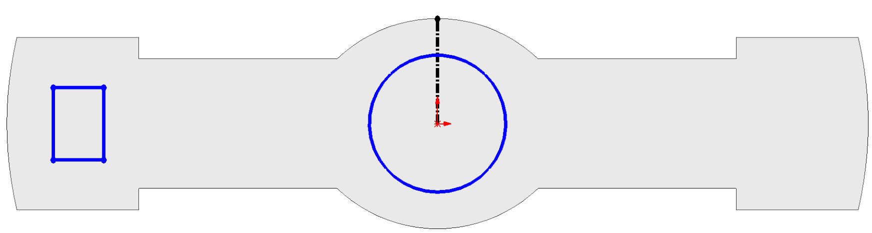
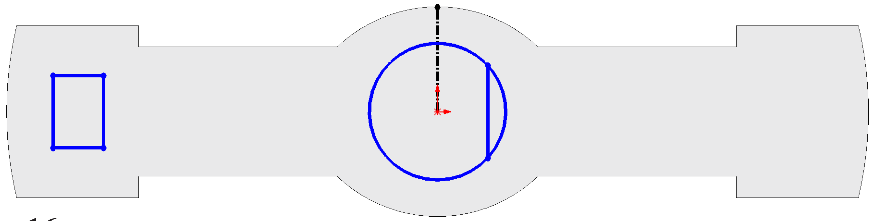


Fig. 15

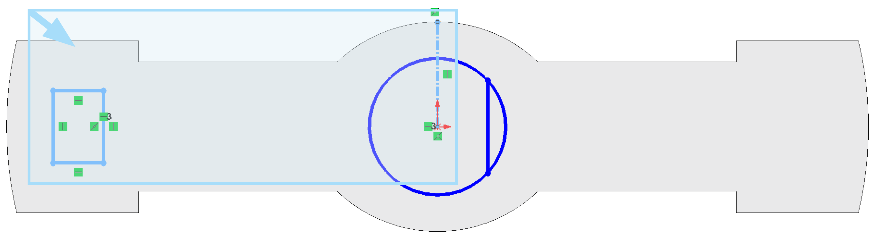
Step 11. Click **Line** (L) on the Sketch toolbar.



Step 12. Sketch **vertical chord right of Origin**, **Fig. 16**.

Fig. 16

Step 13. **Unselect Line tool**. To unselect, right click graphics area and click Select from menu.



Step 14. Drag a **selection to right to select all of rectangle and vertical centerline**, **Fig. 17**.

Fig. 17

Step 15. Click **Mirror Entities** Mirror Entities on the Sketch toolbar.

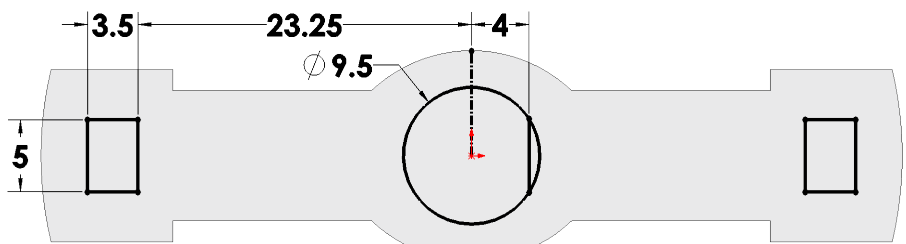


Fig. 18

Step 16. Click **Smart Dimension** Smart Dimension (S) on the Sketch toolbar.

Step 17. Add dimensions, **Fig. 18**.

Step 18. Click **Isometric** on the Standard Views toolbar. **(Ctrl-7**)

Step 19. Click **Features** Features on the Command Manager toolbar.

Step 20. Click **Extruded Cut** Extruded Cut on the Features toolbar.

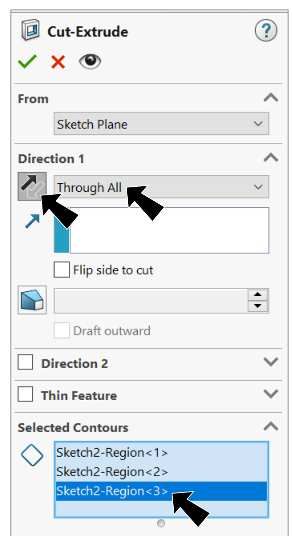


Fig. 19

Step 21. In the Cut-Extrude Property Manager set:
under Direction 1, **Fig. 19**
End Condition **Through All**
Reverse Direction
under Selected Contours
click the **3 contours**, **Fig. 20**
click OK .

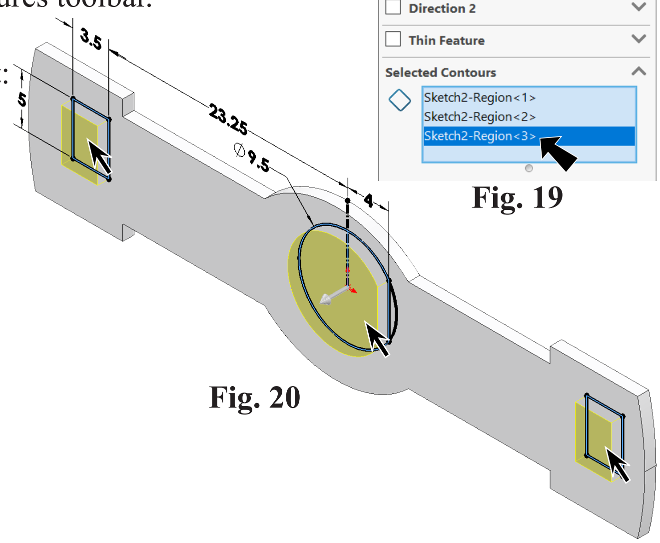


Fig. 20

Step 22. Save (**Ctrl-S**).

D. Flex.

Step 1. Click **Top** on the Standard Views toolbar. (**Ctrl-5**)

Step 2. Click Insert Menu > Features > Flex.

Step 3. In the Flex Property Manager:
under Flex Input, **Fig. 21**
click **body** in graphics area, **Fig. 22**
select **Bending**
Angle **-180º**
under Trim Plane 1
Distance **16.5**
under Trim Plane 2
Distance **16.5**
under Triad
X Rotation Origin **0**
Y Rotation Origin **0**
Z Rotation Origin **2**
click OK .

Step 4. Save (**Ctrl-S**).

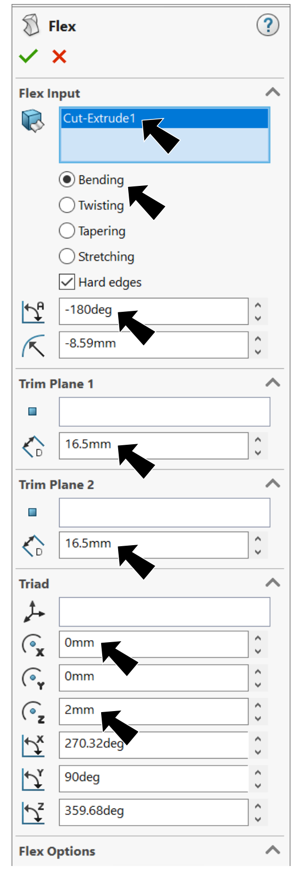


Fig. 21

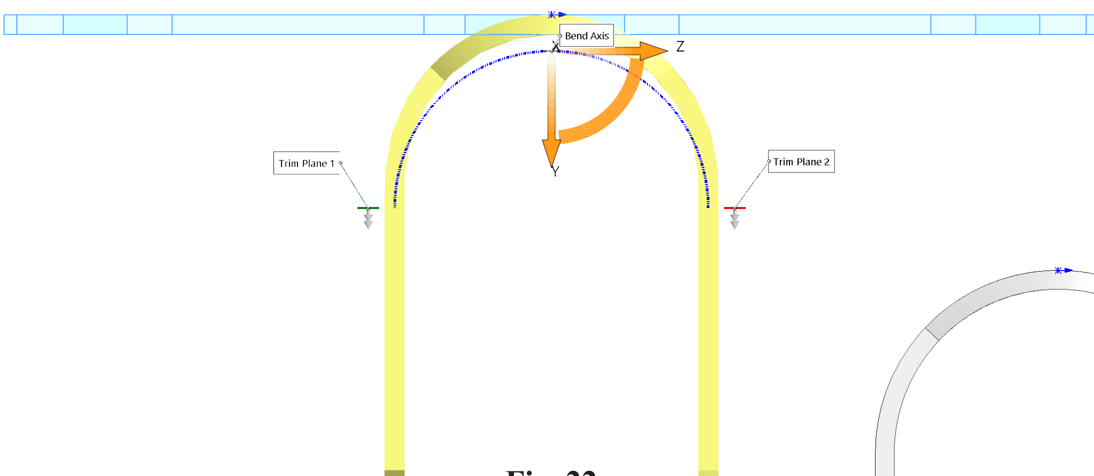


Fig. 22

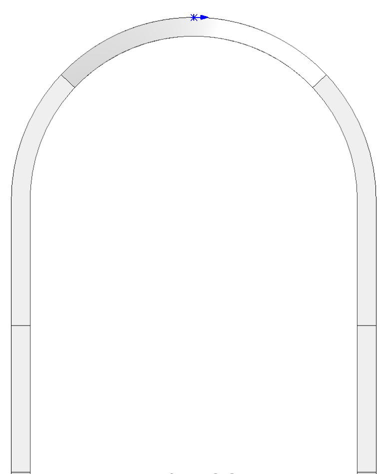


Fig. 23

E. Appearance.

Step 1. Click **Isometric** on the Standard Views toolbar. **(Ctrl-7)**

Step 2. Click the **Motor Strap** to select part, click **Appearances Callout** on the context toolbar and click **Motor S..**, **Fig. 24**.

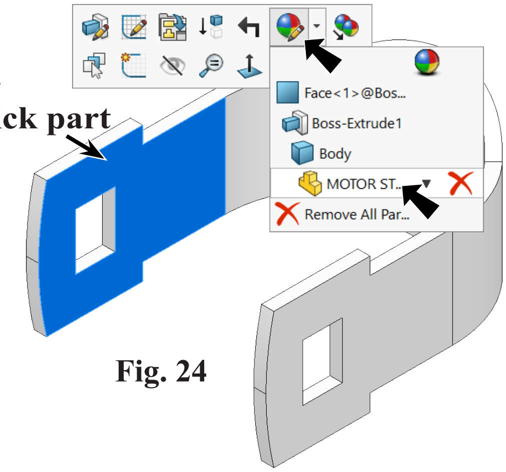


Fig. 24

Step 3. In the Appearances Task pane, expand **Plastic**, click **High Gloss** and in the lower pane select **white high gloss plastic**, **Fig. 25**.

Step 4. In the Appearances Property Manager, click **Advanced** button at top of Property Manager, **Fig. 26**
click **Illumination tab** Illumination
Transparency amount .5
click OK.

Step 5. Save **(Ctrl-S)**.

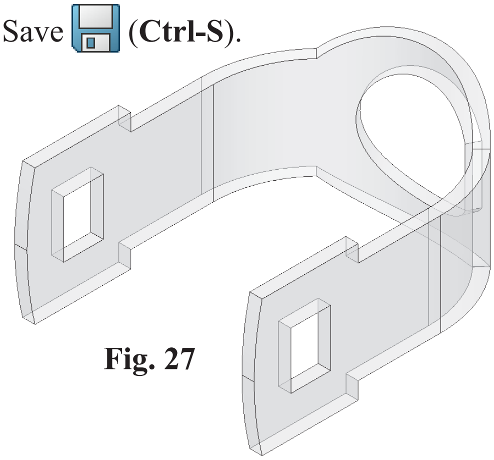


Fig. 27

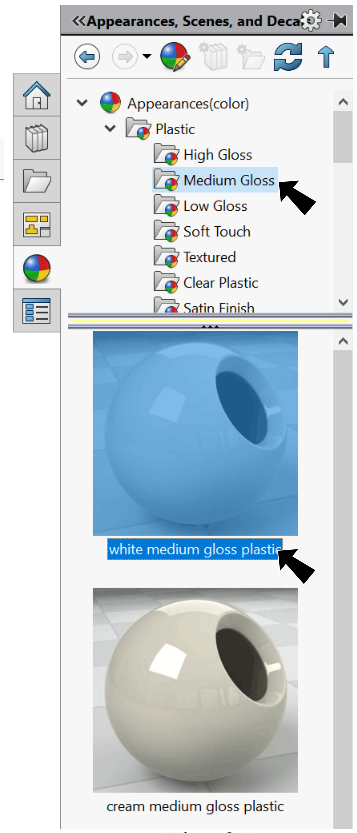


Fig. 25

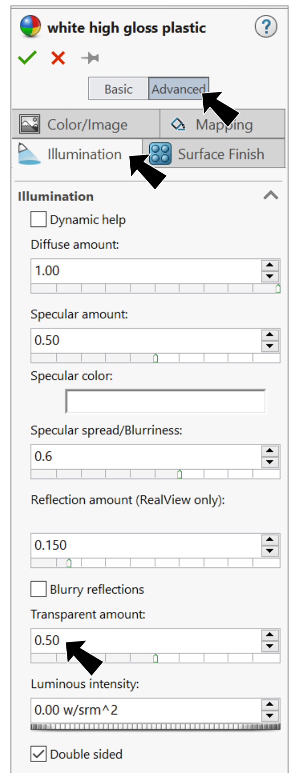


Fig. 26