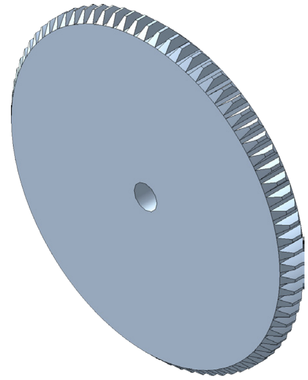
HAWT
Gear 80T



A. Toolbox New Part Spur Gear 80T.

Step 1. Click **Design Library** tab in the Task Pane, **Fig. 1**.

Step 2. Expand the **Toolbox** Toolbox
Expand **ANSI Metric** folder
ANSI Metric
Expand **Power Transmission** folder
Power Transmission
Click **Gears** folder Gears

Step 3. In the lower pane, **right click Spur Gear** and click **Create Part** from menu, **Fig. 2**.

Step 4. In the Component Property Manager set:
under Properties, **Fig. 3**
Module: .5
Number of Teeth: 80
Pressure Angle: 20
Face Width: 3.5
Hub Style: One Side
Hub Diameter: 6
Overall Length: 8.5
Nominal Shaft Diameter: 3
Keyway: None
click OK .

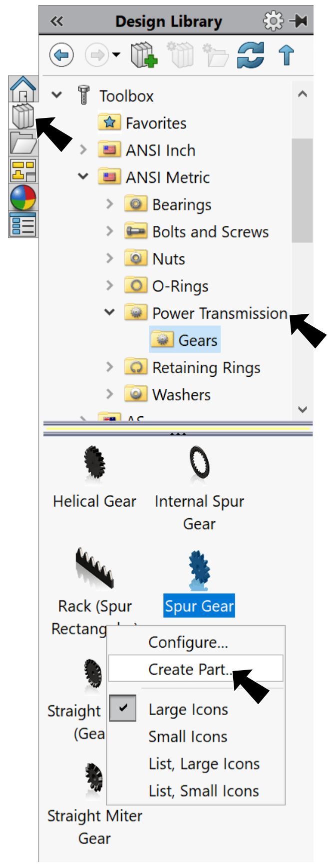


Fig. 1

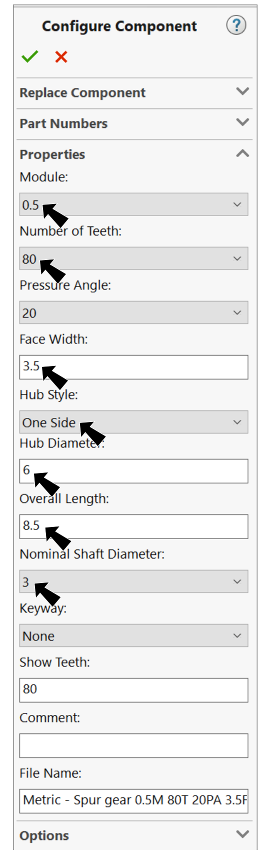


Fig. 2

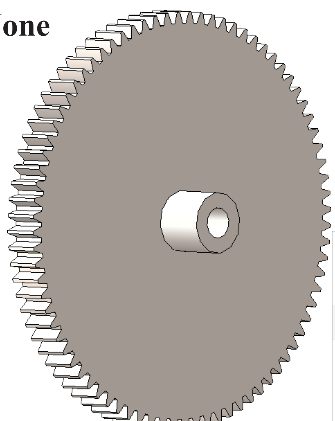


Fig. 3

B. Save as "GEAR 80T".

Step 1. Click File Menu > Save As.

Step 2. In the Save As dialog box:
key in **GEAR 80T** for file name.

Navigate to your **My Documents/ Tech Ed 22-23/Wind Turbine** folder
click **Save**, **Fig. 4**.

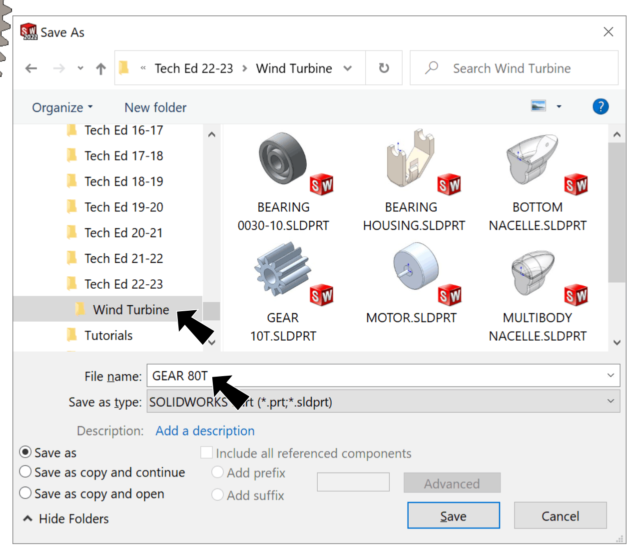


Fig. 4

C. Add Shaft Clearance.

Step 1. Click **Bore** feature in the Feature Manager and click **Edit Sketch** on the context toolbar, **Fig. 5**.

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

Step 3. Click **Offset Entities** on the Sketch toolbar.

Step 4. In the Offset Entities Property Manager set:
under Parameters, **Fig. 6**

Distance .21 (clearance of Shaft)
under Construction geometry
check **Base geometry**
click **circle**, **Fig. 7**
Yellow offset circle on outside -
base geometry (construction) on inside
click OK .

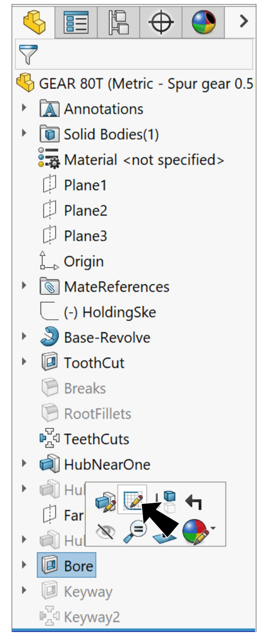


Fig. 5

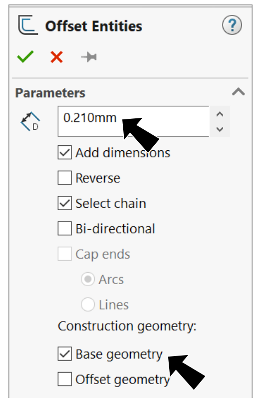


Fig. 6

Step 5. Click **Exit Sketch** on the Sketch toolbar.

Step 6. Save (**Ctrl-S**).

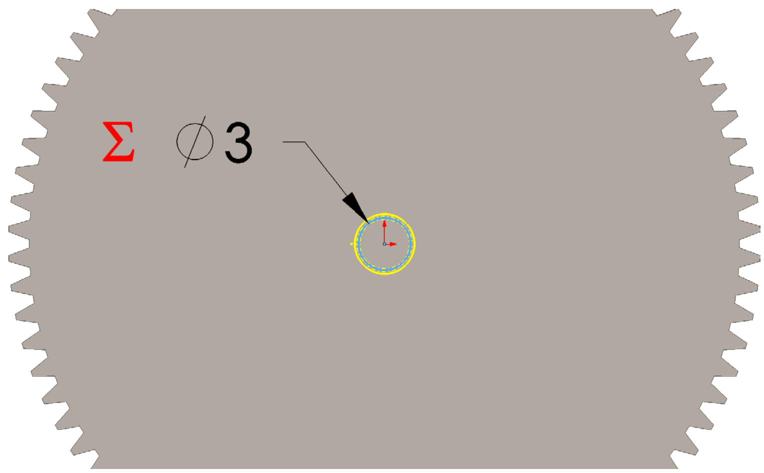


Fig. 7

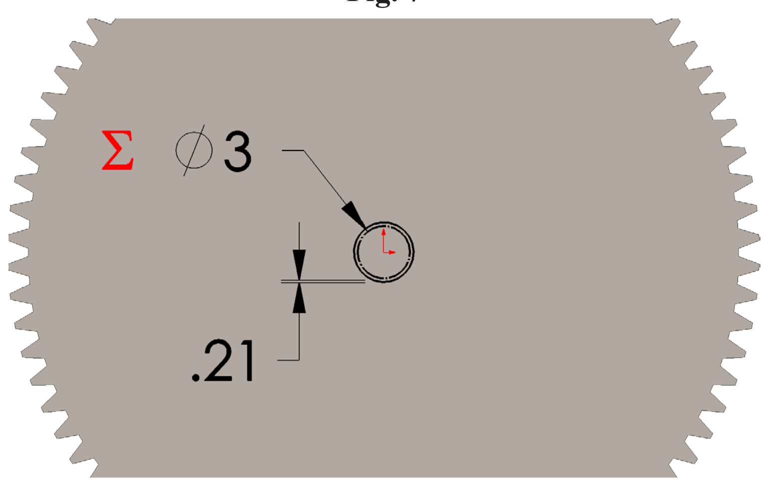


Fig. 8

D. Mate Reference.

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

Step 2. Expand **MateReferences** **folder** in the Feature Manager, **right click MateReference** and click **Edit Definition** from menu, **Fig. 9**.

Step 3. In the Mate Reference Manager:
under Primary Reference Entity, **Fig. 10**
click in the box and click a **cylindrical face**, **Fig. 11**
click OK .

Step 4. Rebuild . To Rebuild, click Rebuild on the Standard toolbar or **Ctrl-B**.

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

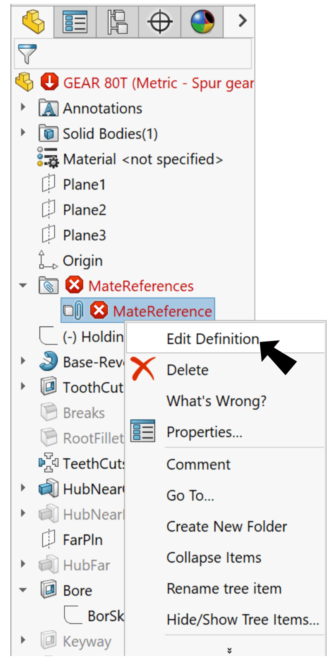


Fig. 9

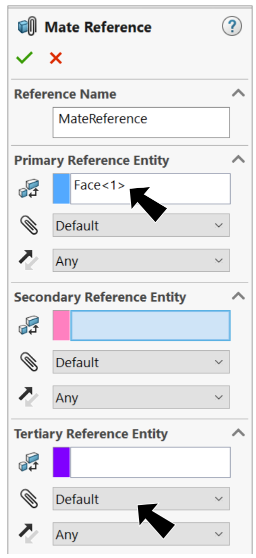


Fig. 10

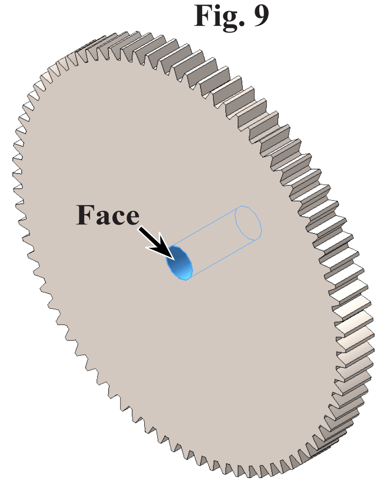


Fig. 11

E. Revolve Cut.

Step 1. Click **Plane1** in the Feature Manager and click **Sketch** on the context toolbar, **Fig. 12**.

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

Step 3. Zoon in to top of gear, **Fig. 13**.

Step 4. Click **Line** (**L**) on the Sketch toolbar.

Step 5. Starting at the **midpoint** **of top silhouette edge of Gear sketching across the silhouette edge,** sketch the **5 lines**, **Fig. 14**. Make the last line, the vertical line construction. To make construction, as you click the last endpoint of vertical line, click **Construction Geometry** on the context toolbar.

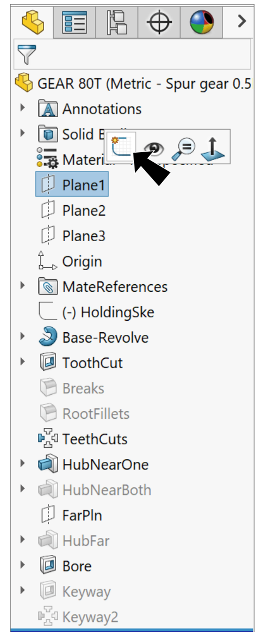


Fig. 12

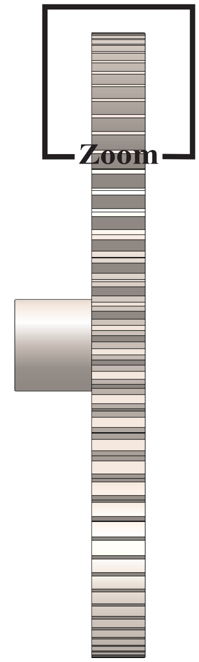


Fig. 13

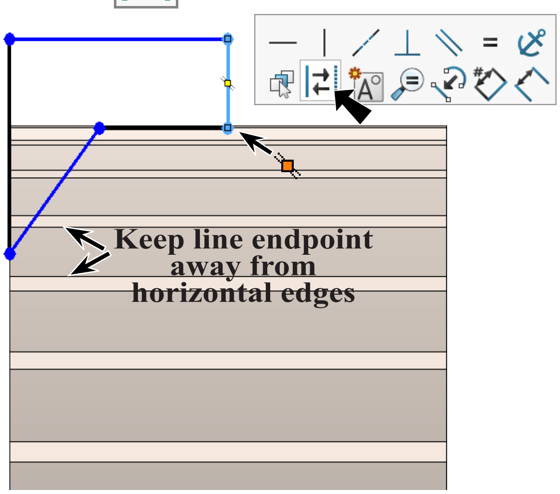


Fig. 14

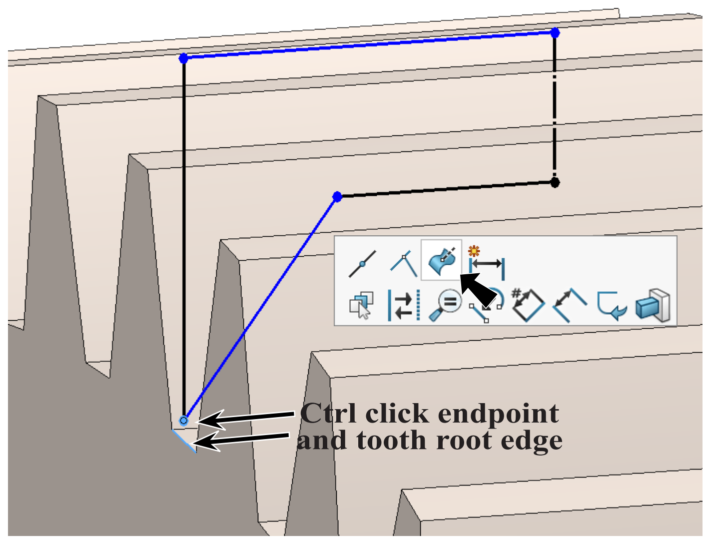


Fig. 15

Step 6. **Unselect Line tool**. To unselect, **right click graphics area and click Select** from menu.

Step 7. Rotate view to **view root of Gear**, **Fig. 15**. Use **Right Arrow key** **once and Down Arrow key** **once**.

Step 8. **Ctrl click bottom endpoint of vertical line and root circle edge of Gear** to select both. **Release Ctrl key** and click **Make Pierce** on the context toolbar, **Fig. 15**.

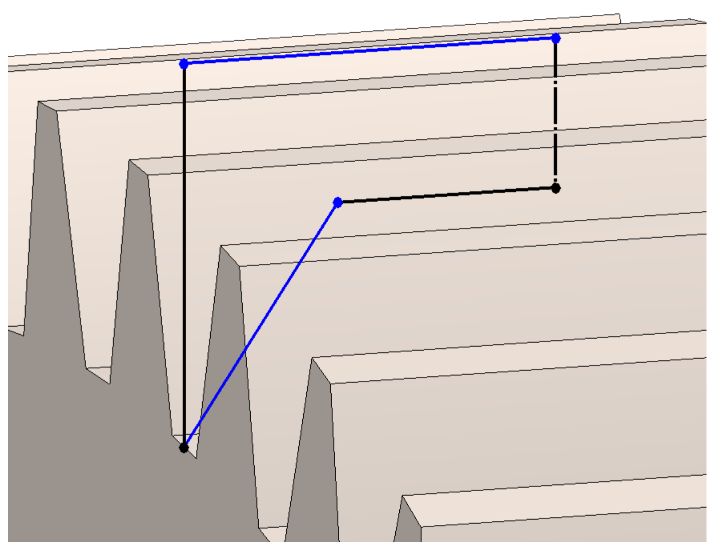


Fig. 16

Step 9. Use **Previous View** on the Standard Views toolbar. (**Ctrl-Shift-Z**) to return to previous zoomed in view.

Step 10. Drag a selection to select all geometry, **Fig. 17**.

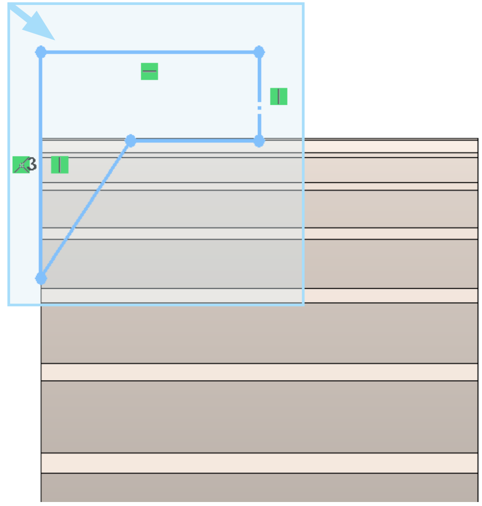


Fig. 17

Step 11. Click **Mirror Entities** Mirror Entities on the Sketch toolbar.

Step 12. Click **Smart Dimension** Smart Dimension (**S**) on the Sketch toolbar.

Step 13. Add dimensions, **Fig. 18**.

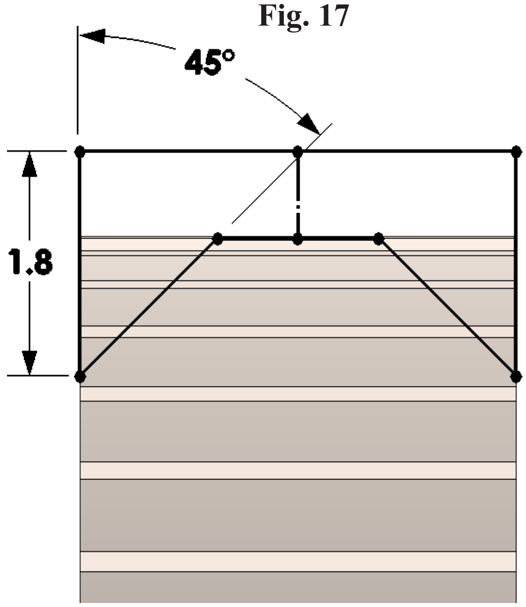


Fig. 18

Step 14. Click **Centerline** in the **Line flyout** on the Sketch toolbar.

Step 15. Sketch a **horizontal centerline** at **Origin** , **Fig. 19**.

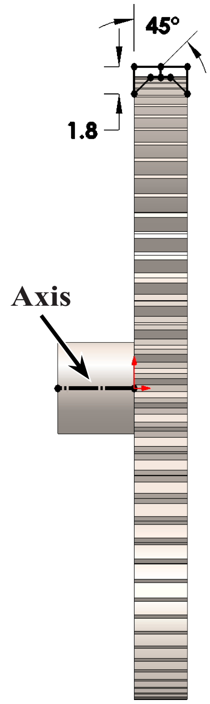


Fig. 19

Step 16. Click **Isometric** on the Standard Views toolbar. (**Ctrl-7**)

Step 17. Click **Features** Features on the Command Manager toolbar.

Step 18. Click **Revolved Boss/Base** Revolved Boss/Base on the Features toolbar.

Step 19. In the Revolve Property Manger set:

under Axis of Revolution , **Fig. 20**
click in the Axis of Revolution box

horizontal line at **Origin** is selected, **Fig. 21**

click OK .

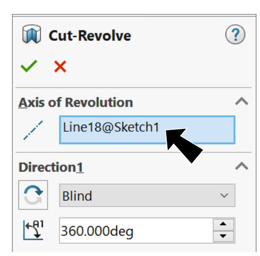


Fig. 20

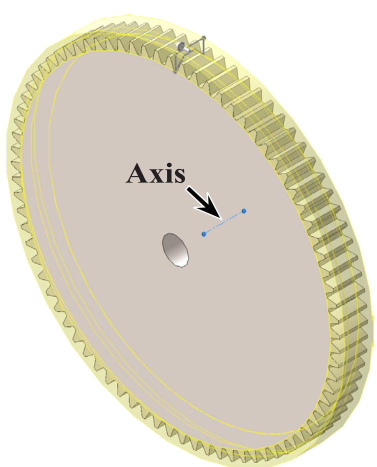


Fig. 21

Step 20. Save (**Ctrl-S**).

F. Appearance.

Step 1. Click part, click **Appearance Callout** on the context toolbar and click **GEAR 80T**, **Fig. 22**.

Step 2. In the Appearances Task pane, expand **Plastic**, click **High Gloss** and in the lower pane select **blue high gloss plastic**, **Fig. 23**.

Step 3. In the Appearances Property Manager set:
under Color, **Fig. 24**
set **RGB values**
R 182
G 203
B 227
click OK .

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

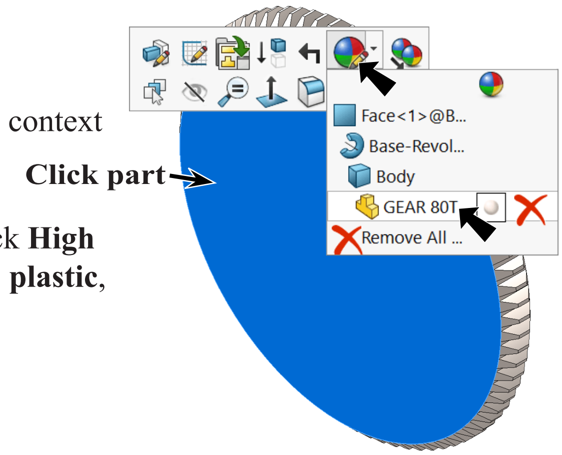


Fig. 22

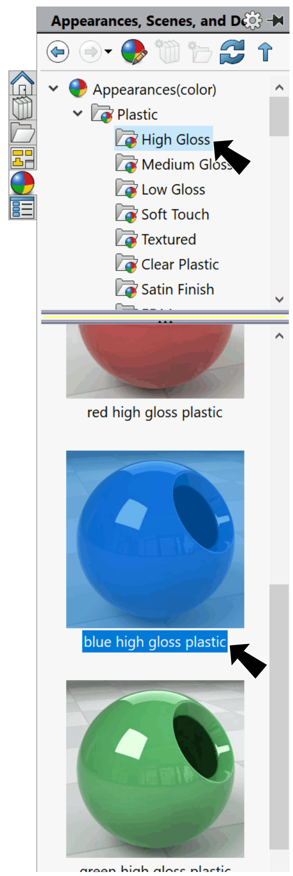


Fig. 23

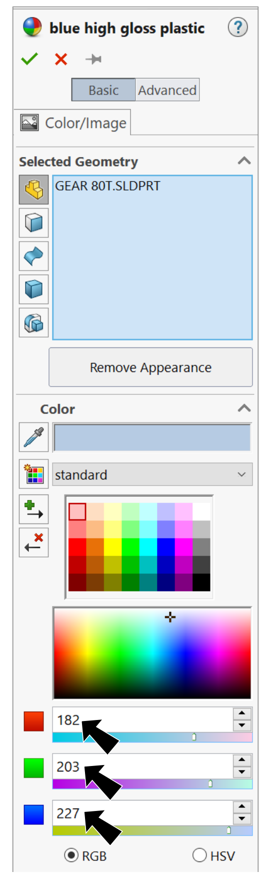


Fig. 24

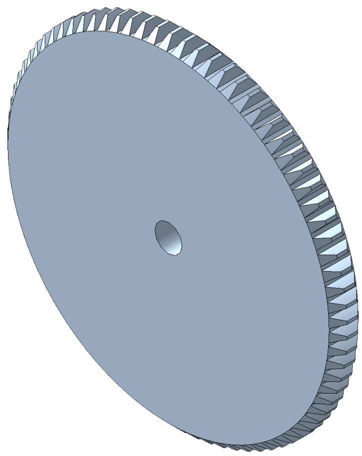


Fig. 25