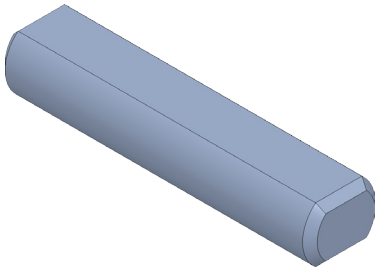
Chapter 2

E's Small Car

Driven Axle



A. Extrude.

Step 1. Click **New** on the Standard toolbar, click **Part Metric** and OK.

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

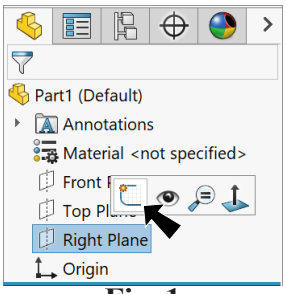


Fig. 1

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

Step 4. Sketch a circle starting at the Origin , **Fig. 2**.

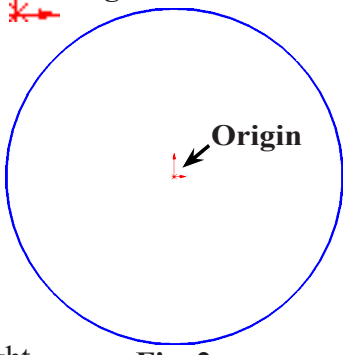


Fig. 2

Step 5. Click **Line** **(L)** on the Sketch toolbar.

Step 6. Sketch **two horizontal lines across circle**, **Fig. 3**.
Double click to terminate chain.

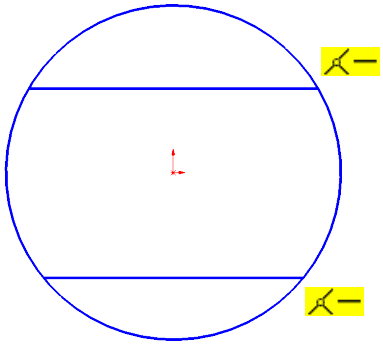


Fig. 3

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

Step 8. **Drag selection to left to select both lines** and click **Make Equal** on the context toolbar, **Fig. 4**.

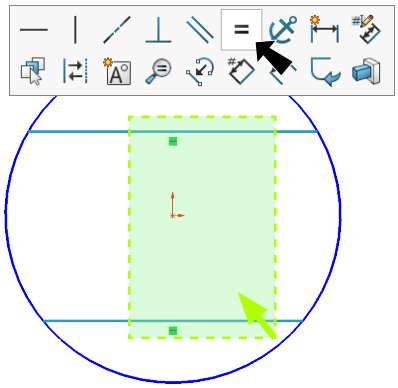


Fig. 4

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

Step 10. Add dimensions, **Fig. 5**.

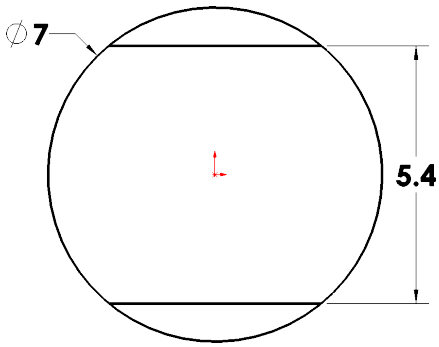


Fig. 5

Step 11. Click **Trim Entities** 

(S) on the Sketch toolbar.

Step 12. In the Trim Property Manger:

select **Trim to closest**  , **Fig. 6**

Trim the top and bottom arc segments, **Fig. 7**.

Click segments to trim.

Results shown in **Fig. 8**.

Click OK ✔ when done.

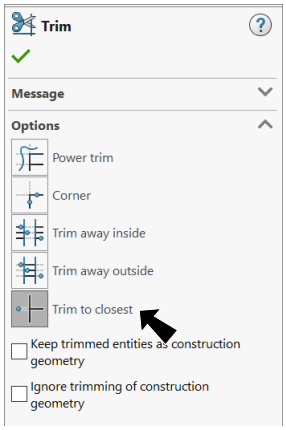


Fig. 6

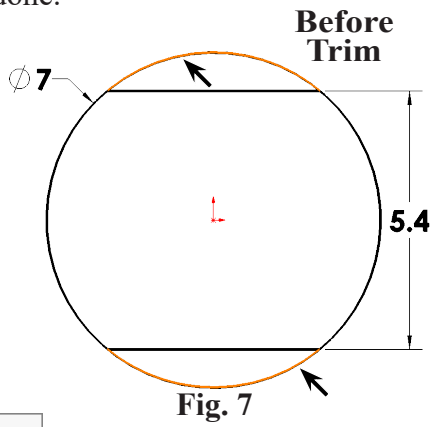


Fig. 7

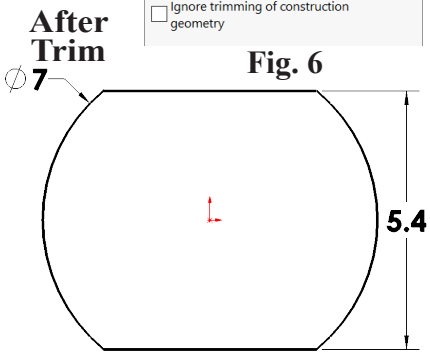


Fig. 8

Step 13. Click **Offset Entities** 

on the Sketch toolbar.

Step 14. In the Offset Entities Property Manager set:

under Parameters, **Fig. 9**

Distance  **.05 (clearance for Axle hole)**

check **Reverse**

check **Select Chain**

uncheck **Bi-directional**

under Construction geometry

check **Base geometry**

click **top line**, **Fig. 10**

yellow offset circle on inside -

base geometry (construction) on outside

click OK ✔ .

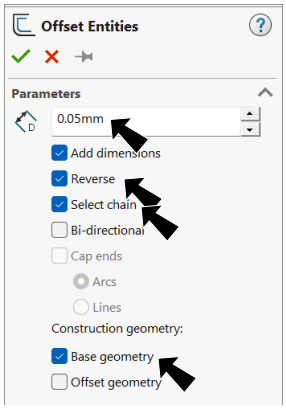


Fig. 9

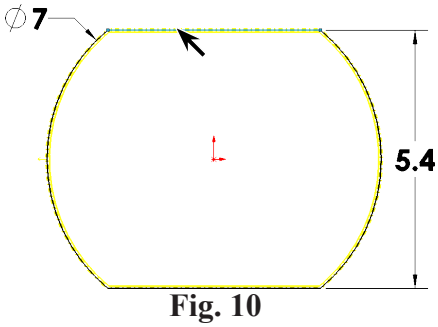


Fig. 10

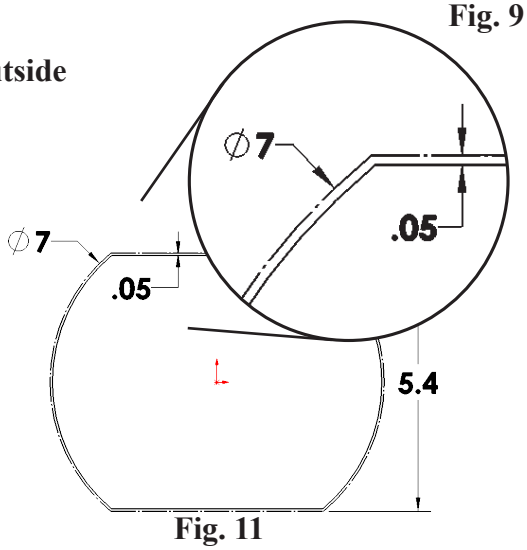
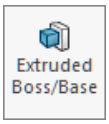


Fig. 11

Step 15. Click **Features**  on the Command Manager toolbar.

Step 16. Click **Extruded Boss/Base**  on the Features toolbar.

Step 17. In the Boss-Extrude Property Manager set:
under Direction 1, **Fig. 12**
End Condition **Blind**
Depth **29.75**
Reverse Direction 
click OK  .

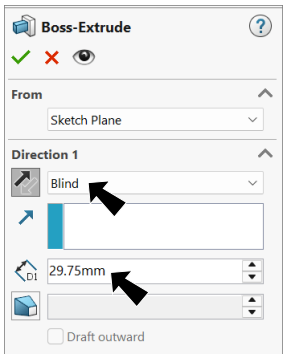


Fig. 12

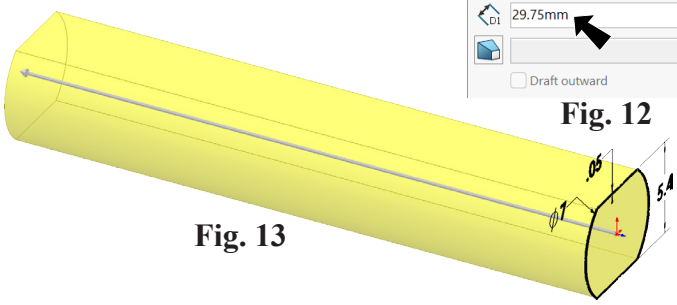


Fig. 13

B. Save as "DRIVEN AXLE".

Step 1. Click File Menu > Save As.

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

C. Chamfers.

Step 1. Click **Chamfer**  on the Features toolbar.

Step 2. In the Chamfer Property Manager set:
under Chamfer Type, **Fig. 14**
select **Angle Distance** 
drag a selection to right select all end edges and **drag another selection at other end to select end edges**, **Fig. 15**
under Chamfer Parameters
Distance  **.7**
Angle  **45°**
click OK  .

Step 3. Save  **(Ctrl-S)**.

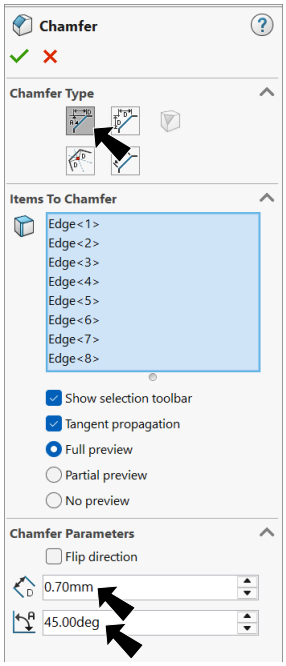


Fig. 14

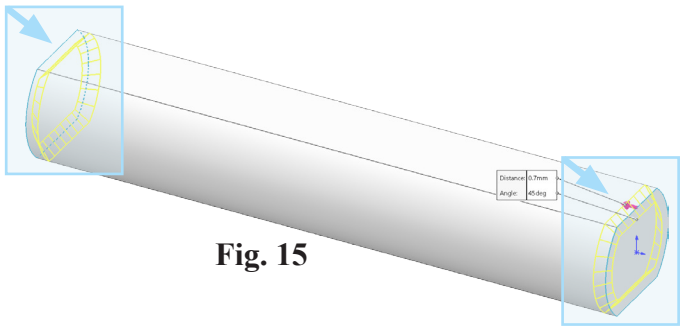
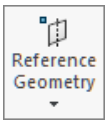


Fig. 15

D. Mate References.

Step 1. Click **Reference Geometry** 

on the Features toolbar and **Mate Reference** from the menu.

Step 2. In the Mate Reference Manager set:
under **Primary** Reference Entity
click **cylindrical face**, **Fig. 17**
click OK ✔ .

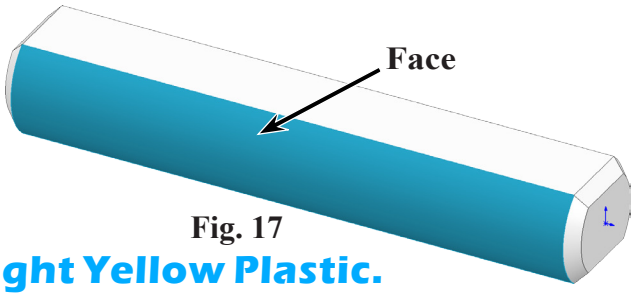


Fig. 17

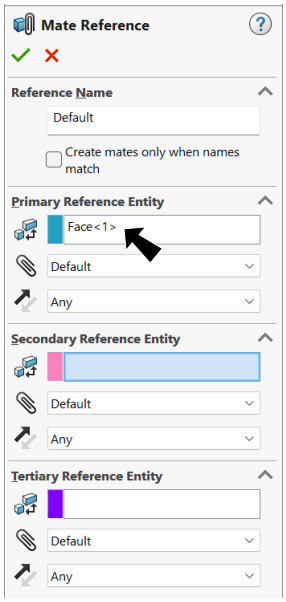


Fig. 16

E. Appearance: Light Yellow Plastic.

Step 1. Click part, click **Appearance Call-out**  on the context toolbar and click **DRIVEN AXLE**  , **Fig. 18**.

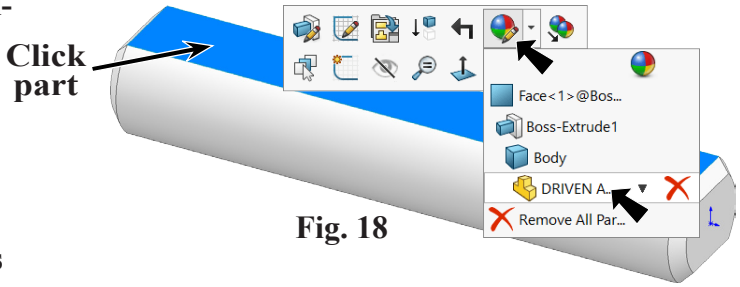


Fig. 18

Step 2. In the Appearances Task pane, expand **Plastic**, click **Medium Gloss** and in the lower pane select **blue medium gloss plastic**, **Fig. 19**.

Step 3. In the Appearances Property Manager:
under Color, **Fig. 20**
set **RGB values**
R 147
G 163
B 191
click OK ✔ .

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

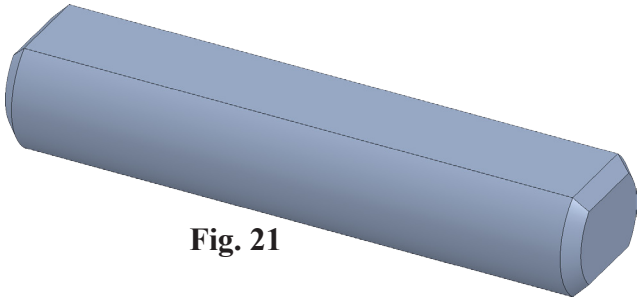


Fig. 21

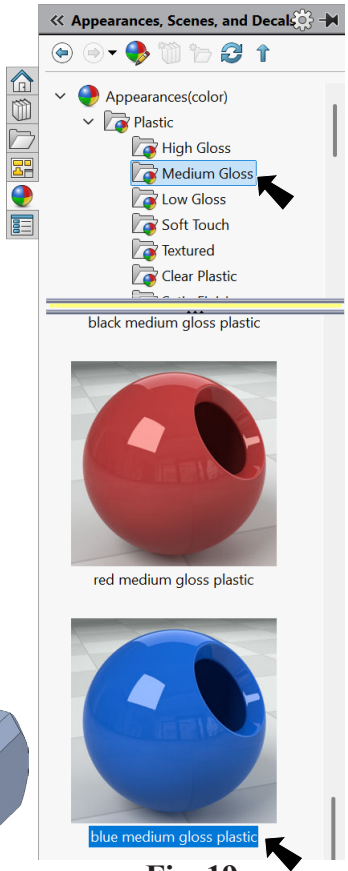


Fig. 19

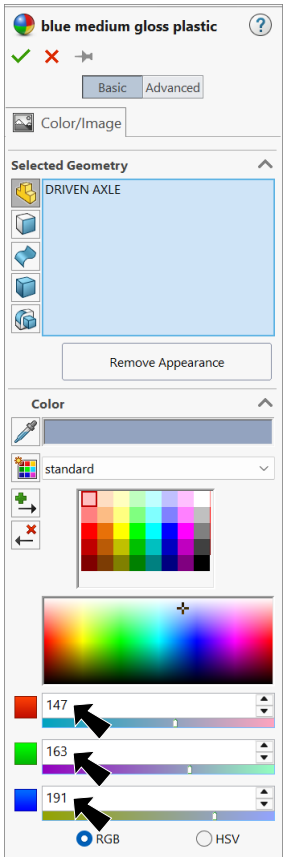


Fig. 20