



Whomp Rocket Rocket

A. Extrude1 Sketch1.

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 context toolbar, **Fig. 1**.

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



Step 4. Sketch two circles at **Origin** , **Fig. 2**.

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

Step 6. Dimension **diameters 13.2 and 11.6**, **Fig. 2**.

Step 7. Click **Features**  on the Command Manager toolbar.

Step 8. Click **Extruded Boss/Base**  on the Features toolbar.

Step 9. In the Boss-Extrude Property Manager set:
under Direction 1, **Fig. 3**
End Condition **Blind**
Depth  **78**
click OK .

B. Save as "ROCKET".

Step 1. Click File Menu > Save As.

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

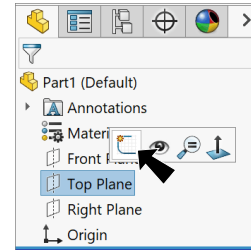


Fig. 1

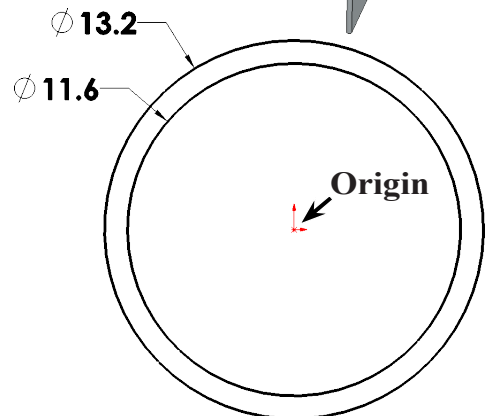
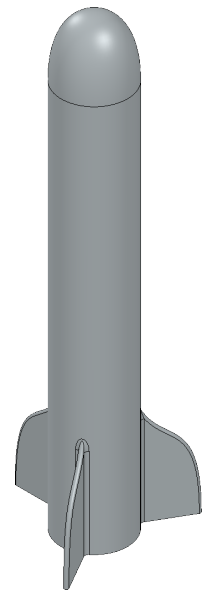


Fig. 2

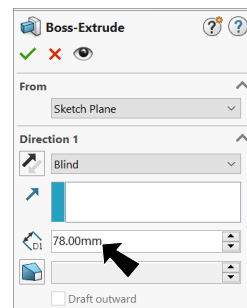


Fig. 3

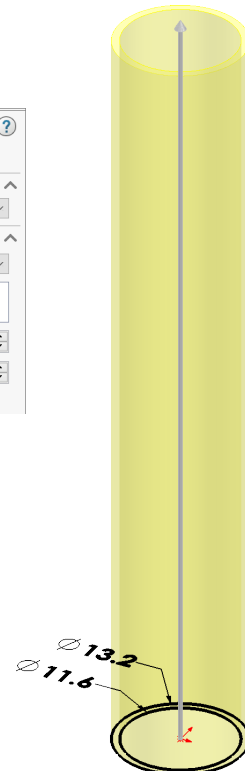




Fig. 4

C. Revolve Sketch2 Nose Cone.

Step 1. Click **Front Plane**  in the Feature Manager and click **Sketch**  on the context toolbar, **Fig. 5**.

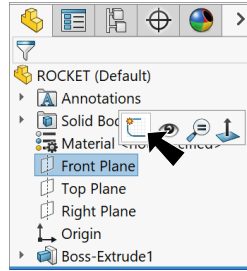



Fig. 5

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

Step 3. Zoom in on the nose cone area, **Fig. 6**.



Fig. 6

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

Step 5. Sketch **horizontal line across top edge of Extrude to midpoint and up with a vertical line**, **Fig. 7**.

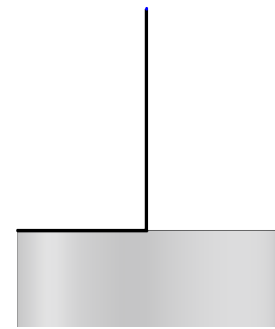


Fig. 7

Step 6. Click **Style Spline**  in the **Spline flyout**  on the Sketch toolbar.

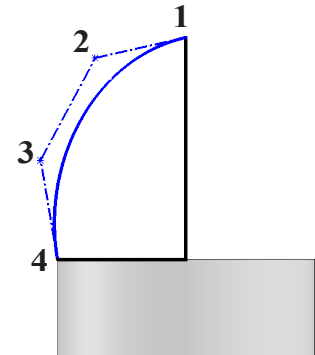



Fig. 8

Step 7. Sketch a **4 control vertex point Spline across line end-points**, **Fig. 8**. Press Escape to end spline.

Step 8. Click **top control polygon segment** and click **Make Horizontal**  on the context toolbar, **Fig. 9**.

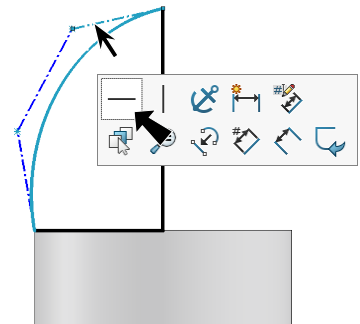



Fig. 9

Step 9. Click **bottom control polygon segment** and click **Make Vertical**  on the context toolbar, **Fig. 10**.

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

Step 11. Add dimensions, **Fig. 11**.

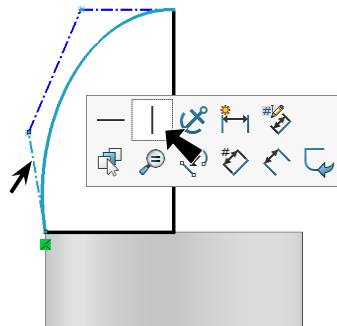


Fig. 10

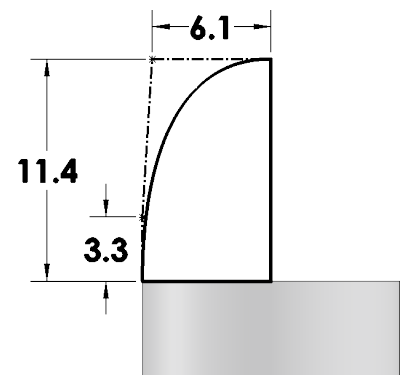




Fig. 11

Step 12. Click **Offset Entities**  on the Sketch toolbar.

Step 13. In the Offset Entities Property Manager set:
under Parameters, **Fig. 12**

Distance  **.8**
(thickness of Rocket tube)
check **Reverse**
uncheck **Select chain**
uncheck **Bi-directional**
click **spline**, **Fig. 13**
Yellow offset circle on inside
click **OK** .

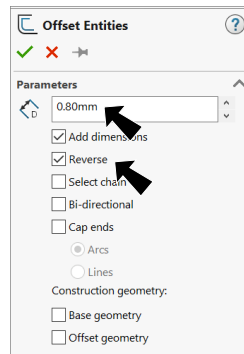


Fig. 12

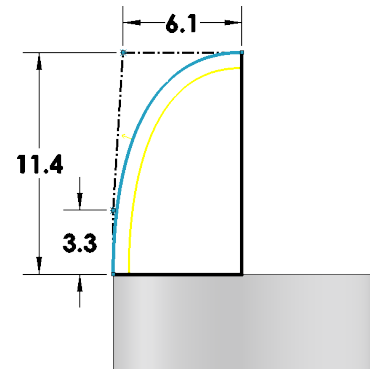



Fig. 13

Step 14. Click **Features**  on the Command Manager toolbar.

Step 15. Click **Revolved Boss/Base**  on the Features toolbar.

Step 16. In the Revolve Property Manger set:
uncheck **Thin Feature**, **Fig. 14**
under Selected Contours
click the **region**, **Fig. 15**
under Axis of Revolution
click in box
click **vertical line**
click **OK** .

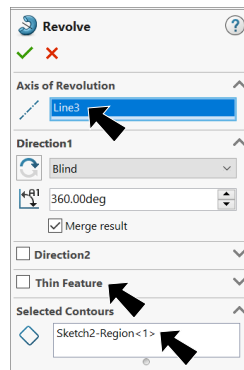


Fig. 14

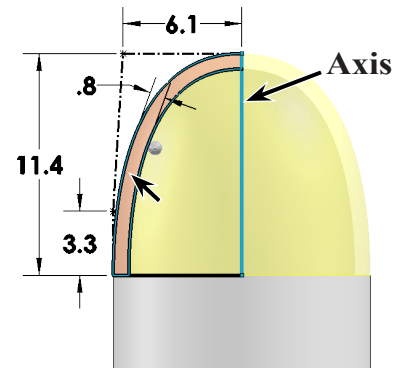


Fig. 15

Step 17. Save  (Ctrl-S).

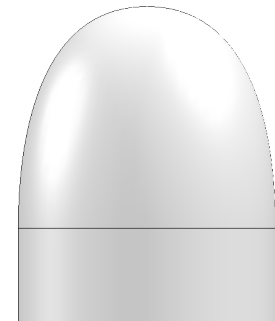




Fig. 16

D. Extrude2 Sketch3 Fin.

Step 1. Click **Front Plane**  in the Feature Manager and click **Sketch**  on the context toolbar, **Fig. 17**.

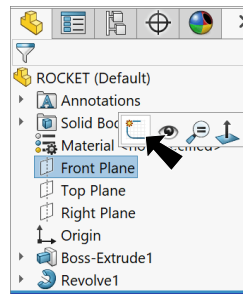



Fig. 17

Step 2. Pan view to view bottom of tube. To pan, use **Ctrl - Up Arrow key** .

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

Step 4. Sketch **vertical line down along left edge of tube to coincident with bottom edge and a horizontal line across to left**, **Fig. 18**.

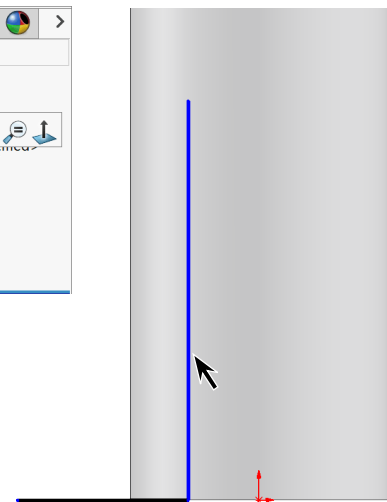





Fig. 18

Step 5. Click **Style Spline**  in the **Spline flyout**  on the Sketch toolbar.

Step 6. Sketch a **4 control vertex point Spline across line end-points**, **Fig. 19**. Press Escape to end spline.

Step 7. Click **bottom control polygon segment** and click **Make Vertical**  on the context toolbar, **Fig. 20**.

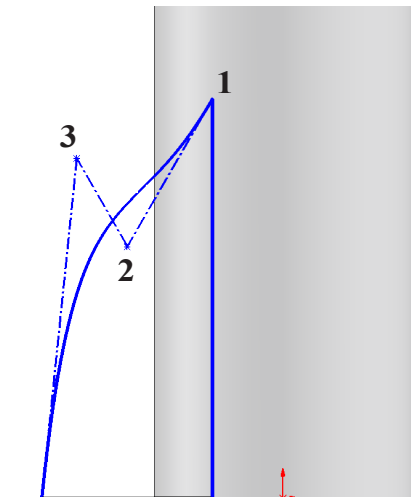


Fig. 19

Step 8. Click **Smart Dimension**  (S) on the Sketch toolbar.

Step 9. Add dimensions, **Fig. 21**.

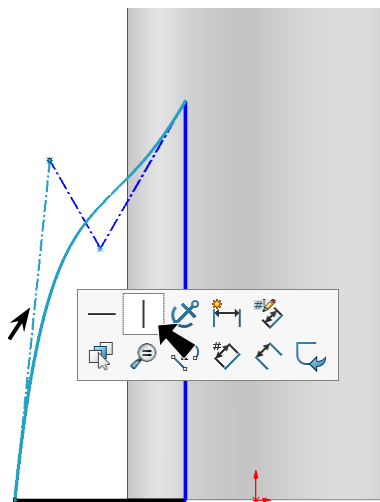


Fig. 20

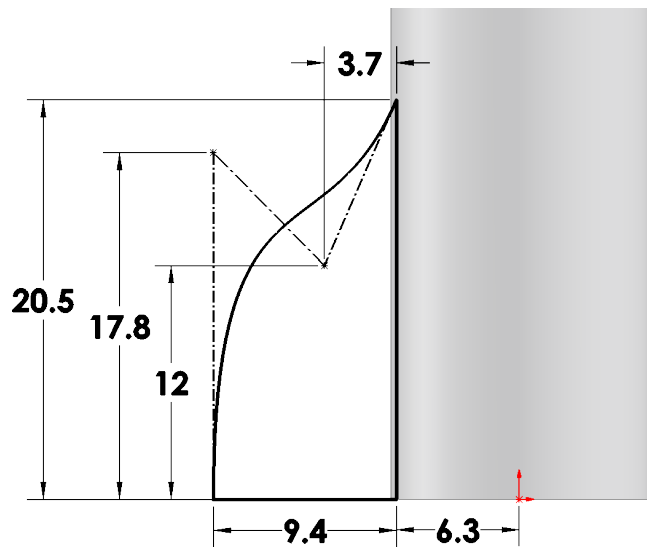

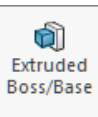




Fig. 21

Step 10. Click **Isometric**  on the Standard Views toolbar. (**Ctrl-7**)

Step 11. Click **Features**  on the Command Manager toolbar.

Step 12. Click **Extruded Boss/Base**  on the Features toolbar.

Step 13. In the Boss-Extrude Property Manager set:
under Direction 1, **Fig. 22**
End Condition **Mid Plane**
Depth  **.8**
click OK .

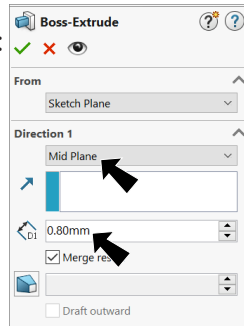


Fig. 22

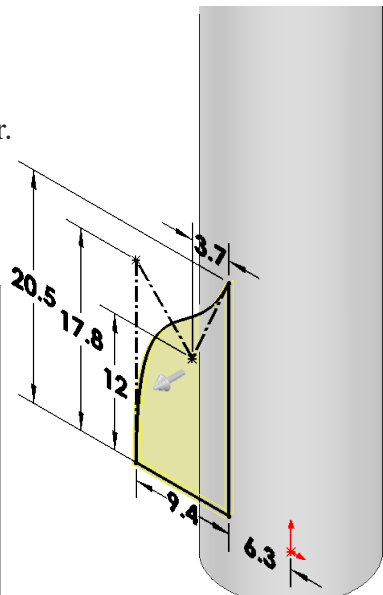
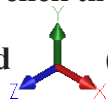


Fig. 23

Step 14. Rotate view to view Fin, **Fig. 24**. To rotate view, **Shift-Ctrl** click the **Y axis**

of the **Reference Triad**  (bottom left corner of graphics area).

Step 15. Save  (**Ctrl-S**).



Fig. 24

E. Fillet1 Full Round.

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

Step 2. In the Fillet Property Manager, select **Manual**, **Fig. 25** under Fillet Type

select **Full Round Fillet** 

click in **Side Face Set 1**  box

click **side face of Fin**, **Fig. 26**

Tip: Right click in graphics area to advance cursor to next selection in Property Manager or...

click in **Center Face Set**  box, **Fig. 25**

click **top face of Fin**, **Fig. 26**

click in **Side Face Set 2**  box, **Fig. 25**

Rotate view to back side of fin, **Fig. 27**. To rotate view, **Shift-Ctrl** click the **Y axis** of the

Reference Triad 

click **back side face**, **Fig. 27**

click **OK** .

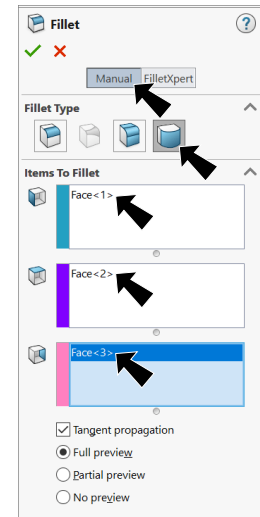


Fig. 25

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

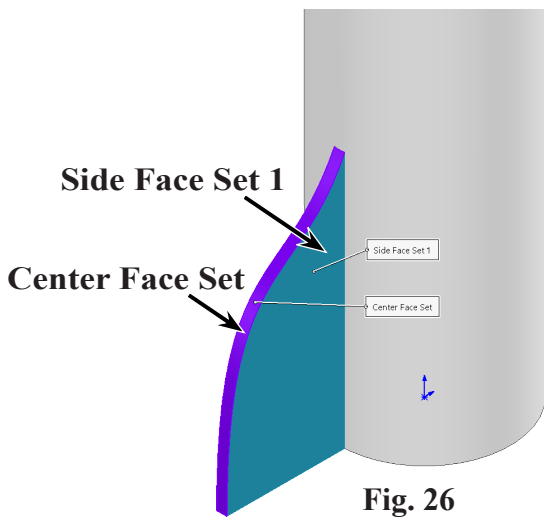


Fig. 26

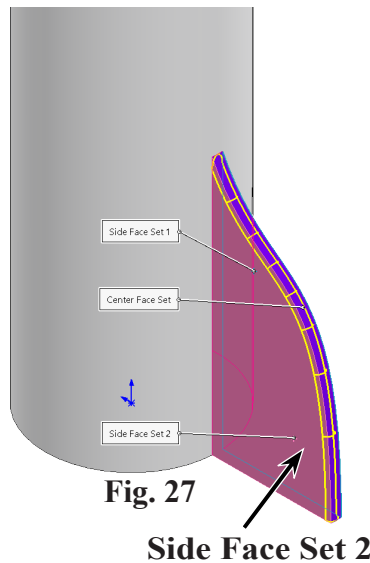


Fig. 27

Side Face Set 2

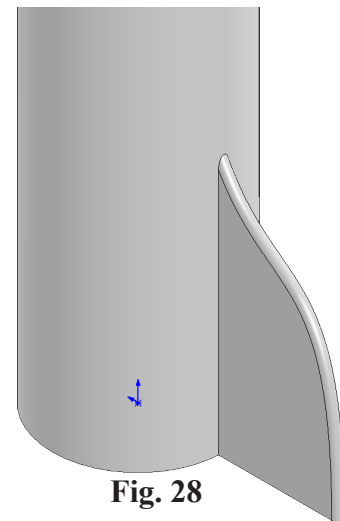


Fig. 28

F. Fillet2.

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

Step 2. In the Fillet Property Manager set:
select **FilletXpert**, **Fig. 29**

Radius  **.7**

click edge of Fin at tube, **Fig. 30**

click OK .

Step 3. Save  (Ctrl-S).

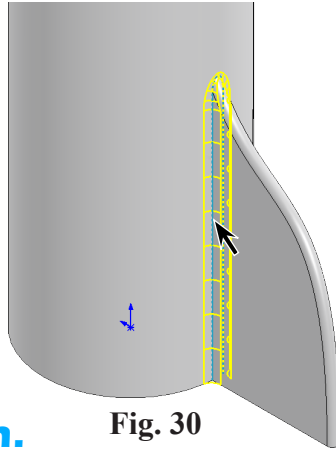


Fig. 30

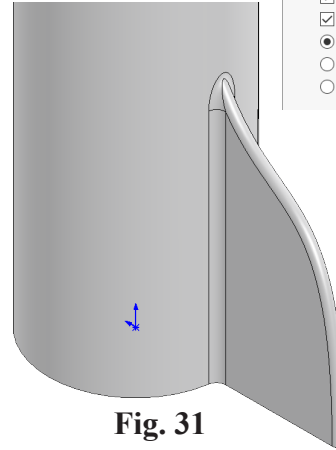


Fig. 31

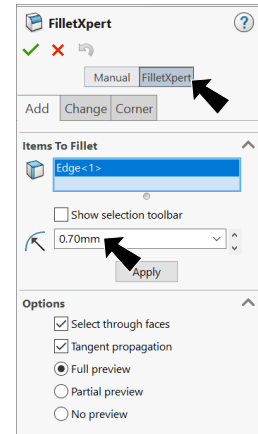


Fig. 29

G. Circular Pattern.

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

Step 2. **Ctrl click Boss-Extrude2 and both Fillets** features to select plane and feature, **Fig. 32**.

Step 3. Click **Circular Pattern**  in the

Linear Pattern flyout  on the Features toolbar.

Step 4. In the Circular Pattern Property Manager set:

under Direction 1, **Fig. 33**

click in **Pattern Axis** box

click **cylindrical face**, **Fig. 34**

select **Equal spacing**

Number of Instances  **3**

under Features and Faces

Features and plane were preselected

click OK .

Step 5. Save  (Ctrl-S).

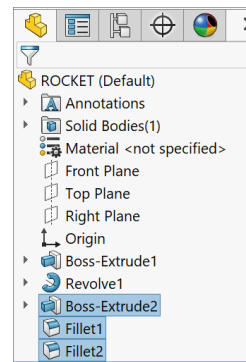


Fig. 32

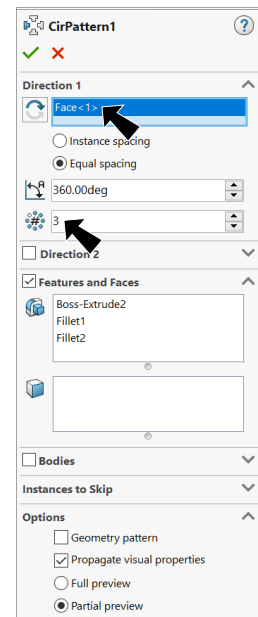


Fig. 33

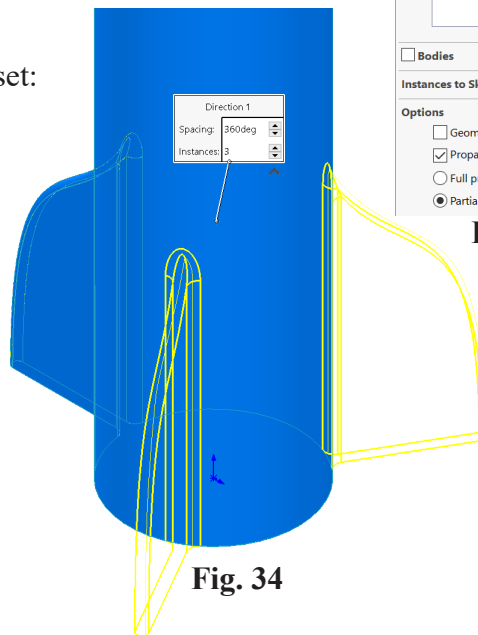


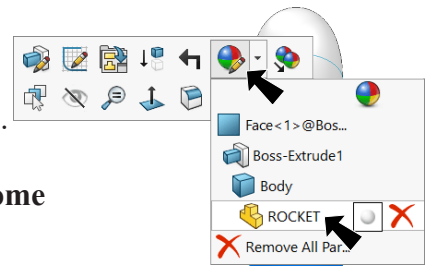
Fig. 34

H. Appearance: Chrome.

Step 1. Click the part to select part, click **Appearances Callout**



on the context toolbar and click **ROCKET** , Fig. 35.



Step 2. In the Appearances Task pane, expand **Metal** and click **Chrome** and in the lower pane select **chromium plate**, Fig. 36.

Step 3. In the Appearances Property Manager click OK .

Step 4. Save  (Ctrl-S).

Mates on next page.

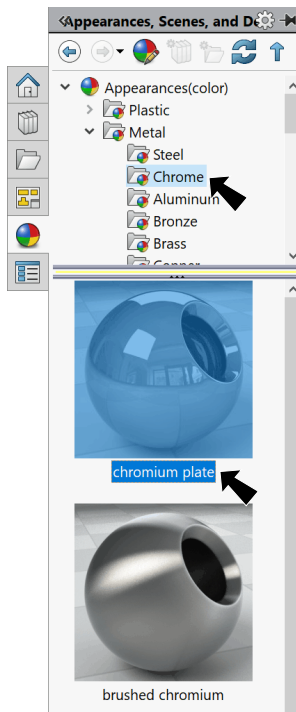


Fig. 36

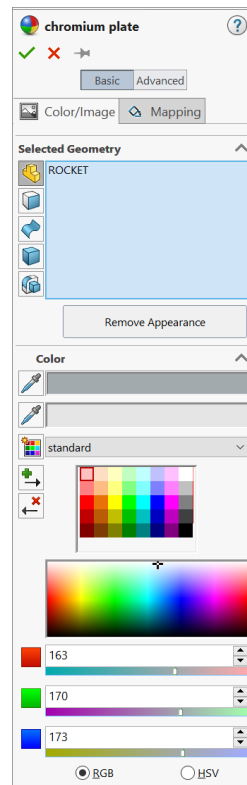


Fig. 37

Click part

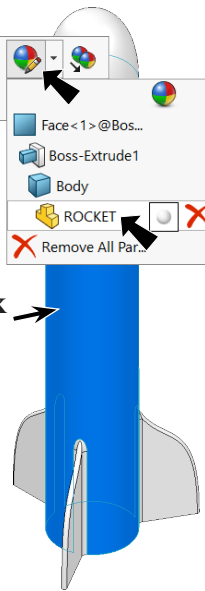


Fig. 35

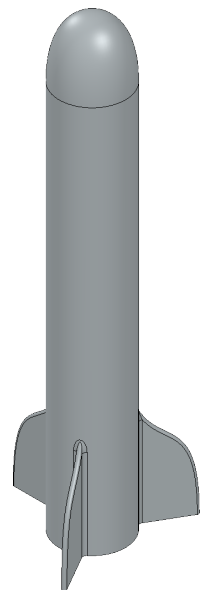


Fig. 38

i. Insert Rocket.

Step 1. **Open** your Whomp Assembly file.

Step 3. Click **Insert Components**  on the Assembly toolbar.

Step 4. Open **ROCKET** file.

Step 5. Click to place Rocket, **Fig. 39**.

Step 4. Save  (Ctrl-S).

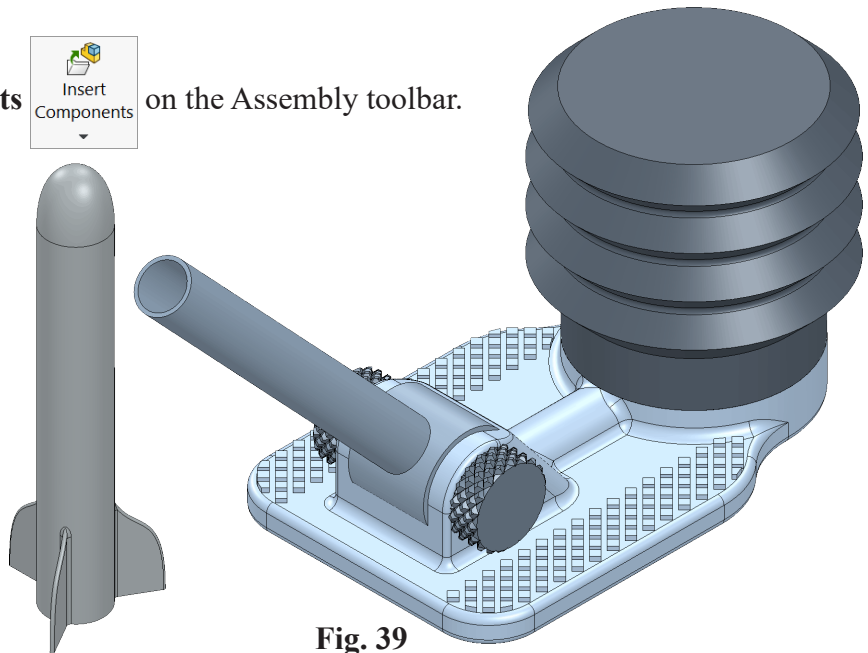




Fig. 39

J. Mate: Rocket.

Step 1. Click **Mate**  on the Assembly toolbar.

Step 2. Click a **cylindrical face Tube** and **cylindrical face of Rocket** **Fig. 40**.

Step 3. Check **Lock Rotation** and Add/Finish Mate  in Mate pop-up toolbar to add a **Concentric** mate, **Fig. 41**.

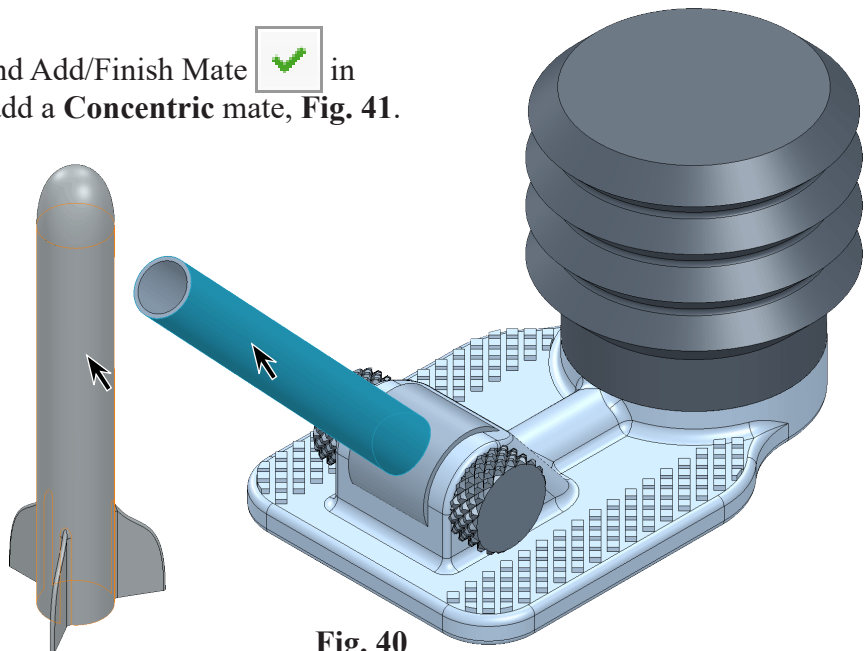


Fig. 40



Fig. 41


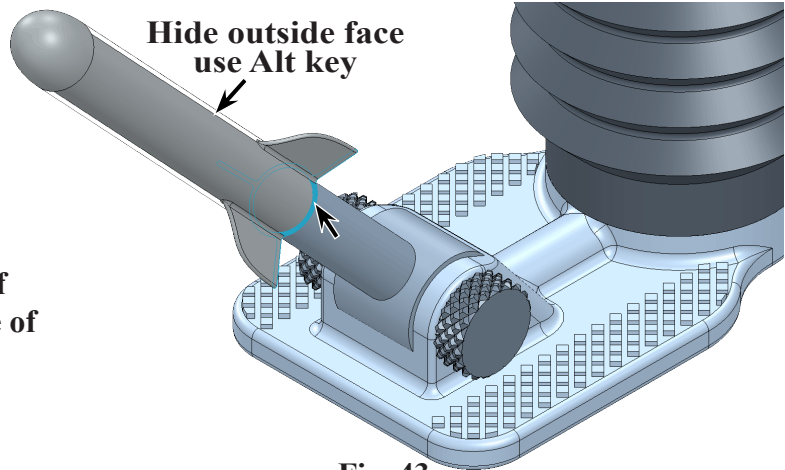
Step 4. **Tip:** Toggle filter Face with X key. Or use **Filter Faces**  on the **Selection Filter toolbar (F5)** at the bottom of the graphics area, **Fig. 42**.






Fig. 42

Step 5. **Hide cylindrical face of Rocket** and click bottom end face of Rocket, **Fig. 43**. To hide face, hover cursor over face and press **Alt** key.



Step 6. **Hide both cylindrical faces of Rocket** and click top end face of **Tube**, **Fig. 44**.

Step 7. Click **Distance**  in Mate pop-up, **Fig. 45**. Set **distance 78** and press **ENTER**. The nose cone of Rocket should align with top face of Tube, **Fig. 46**. If positioned in opposite direction, click **Flip Dimension**  in the Mate pop-up. Click **Add/Finish Mate**  to add Distance mate.

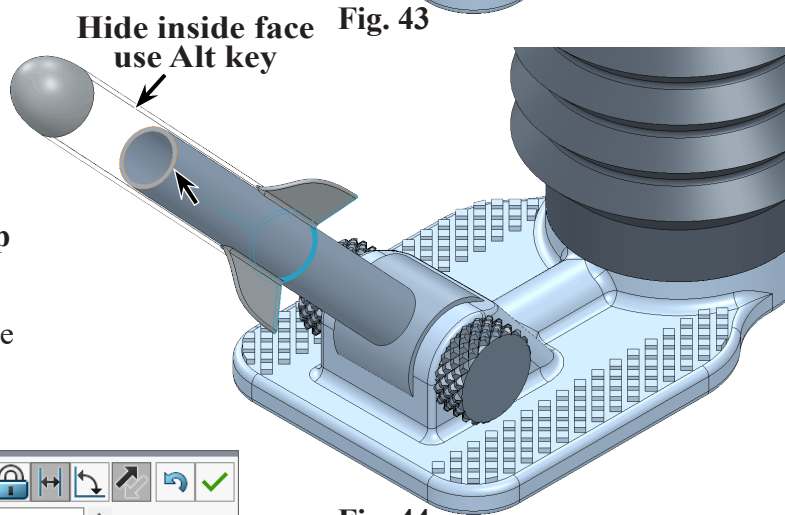



Fig. 44

Step 8. Click **OK**  in the Property Manager.

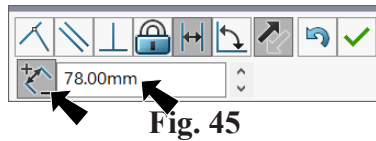



Fig. 45

Step 9. Toggle **off** filter Face with **X** key. Or use **Filter Faces**  on the **Selection Filter toolbar (F5)** at the bottom of the graphics area, **Fig. 47**.

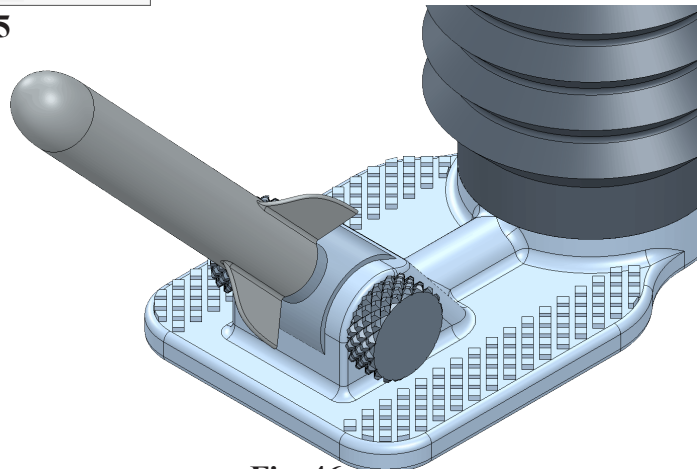


Fig. 46

Step 10. Save  (**Ctrl-S**).



Fig. 47