

Rocket 3D Print Assembly


A. Insert Can and Engine Hook.

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

Step 2. Click **Keep Visible**  in the Property Manager, **Fig. 1**.

Step 3. Click **Browse** in the Property Manager, **Fig. 1**.

Step 4. Select your **Can** file and click Open.

Step 5. Click OK  in the Property Manager. This will place Can origin at the assembly origin and fix the position so Can cannot move. This fixed component should have a **(f)** before its name in the Feature Manager.

Step 6. Click **Browse**, select **Engine Hook** and click Open. Position Engine Hook along side the Can, **Fig. 2**.

Step 7. Click OK  in the Property Manager when done.

B. Save as "ROCKET 3D PRINT ASSEMBLY".

Step 1. Click File Menu > Save As.

Step 2. Key-in **ROCKET 3D PRINT ASSEMBLY** for the filename and press ENTER.

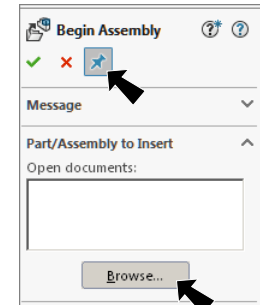
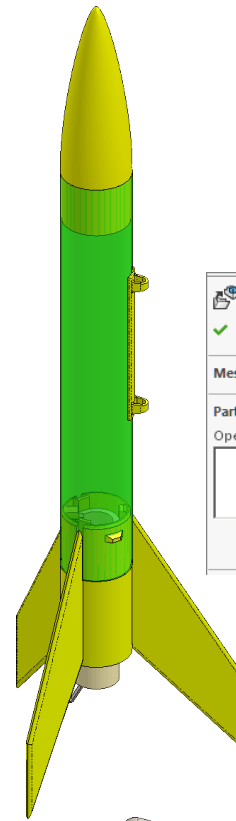


Fig. 1

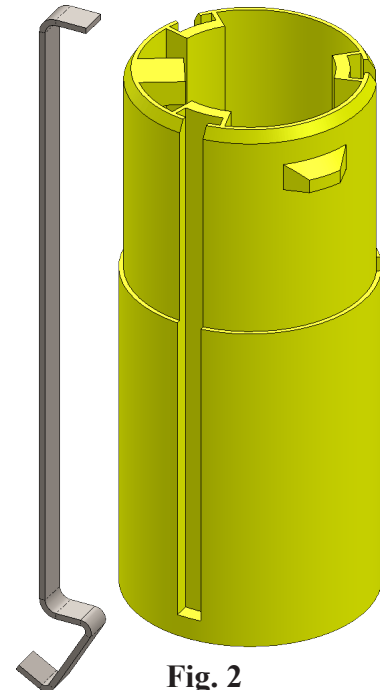
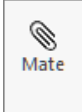




Fig. 2

C. Mate: Engine Hook.

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

Step 2. Expand the flyout Feature Manager design tree (click ) in the top left corner of the graphics area, expand **Can** and click **Plane1** , **Fig. 3**.

Step 3. Expand **Engine Hook** and click **Front Plane** , **Fig. 3**.

Step 4. Click Add/Finish Mate  to add **Coincident** mate.

Step 5. Rotate view to view **left side face of Engine Hook**, hold down middle mouse button (wheel) and drag to rotate view, **Fig. 5**.

Step 6. Click **left side face of Engine Hook**, **Fig. 5**.

Step 7. Rotate view to view **inside face of engine hook housing in Can**, hold down middle mouse button (wheel) and drag to rotate view, **Fig. 6**.

Step 8. Click **inside face of engine hook housing in Can**, **Fig. 6**.

Step 9. Click Add/Finish Mate  to add **Coincident** mate.

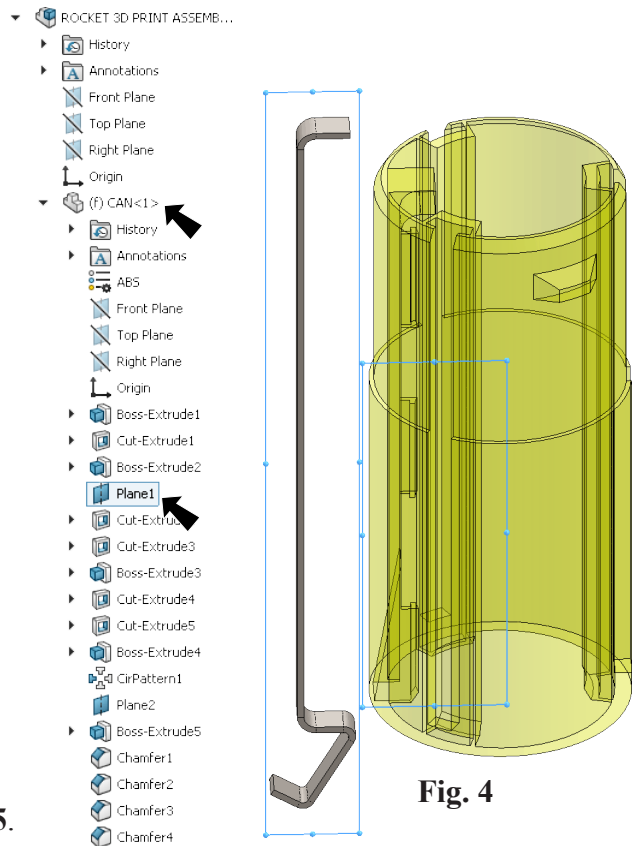


Fig. 4

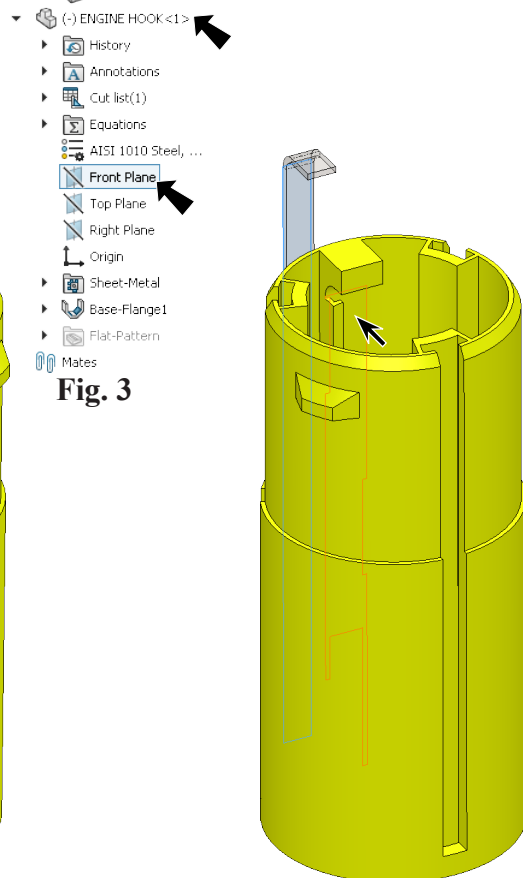


Fig. 3

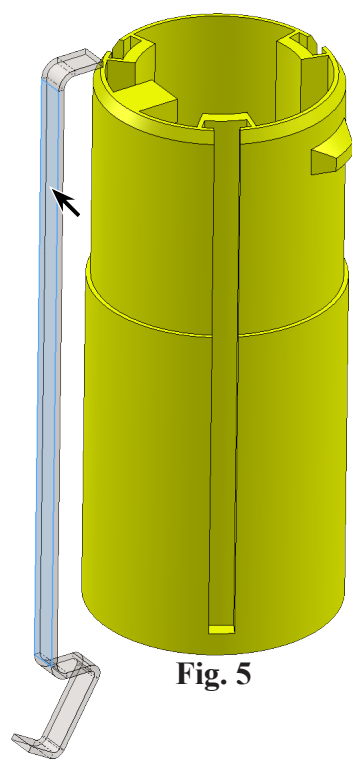


Fig. 5

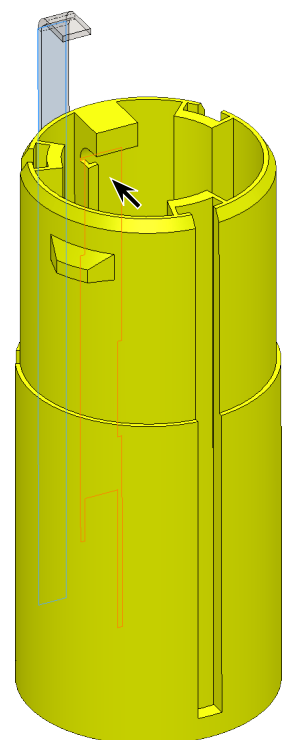


Fig. 6

Step 10. Click **top face of Engine Hook** and **bottom edge of hook stop in Can**, **Fig. 7**.

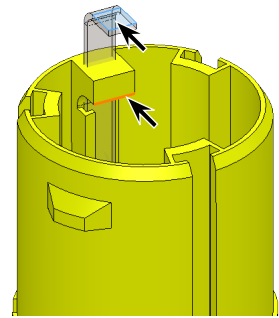


Fig. 7

Step 11. Click Add/Finish Mate  to add **Coincident** mate.

Step 12. Click OK  in the Property Manager when done.

Step 13. Save. Use **Ctrl-S**.

D. Insert Engine Assembly.

Step 1. Click **Insert Components**  on the Assembly toolbar.

Step 2. Click **Browse**, select **Engine Assembly** and click **Open**. Position Engine Hook along side Can, **Fig. 8**.

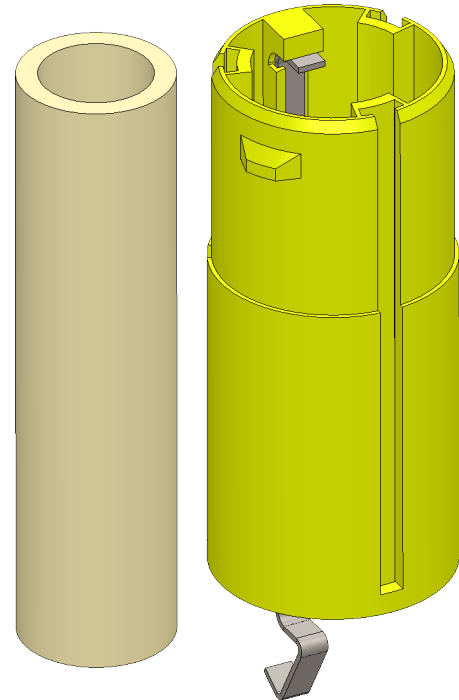



Fig. 8

E. Mate: Engine Assembly.

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

Step 2. Click **cylindrical face of Engine Casing** and **cylindrical face of Can**, **Fig. 9**.

Step 3. Click Add/Finish Mate  in Mate pop-up toolbar to add a **Concentric** mate.

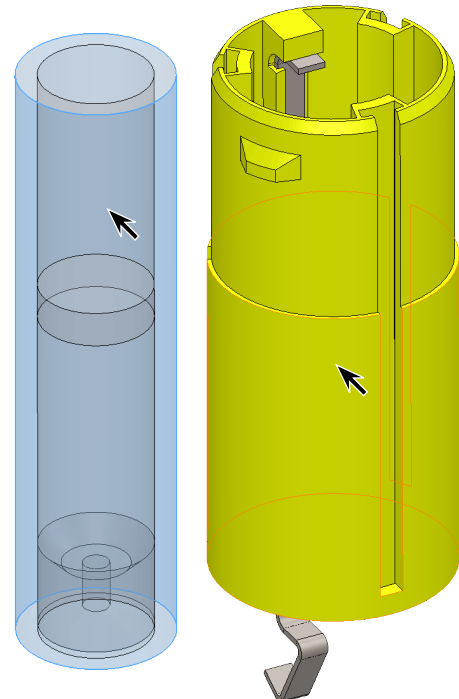





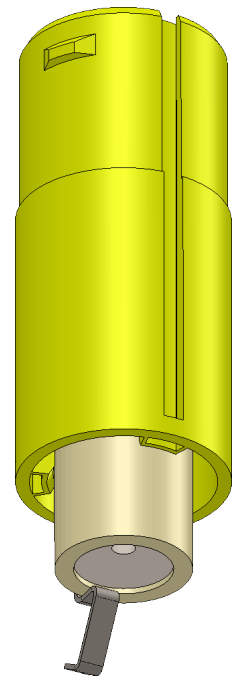
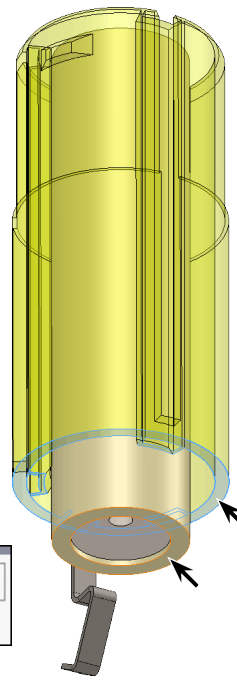
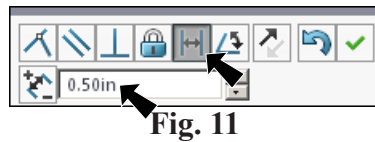
Fig. 9

Step 4. Use **up Arrow key** to rotate view to view **bottom face of Can**, **Fig. 10**.

Step 5. Click **bottom face of Can** and **bottom face of Engine Casing**, **Fig. 10**.

Step 6. Click **Distance**  in Mate pop-up, **Fig. 11**. Set **distance .5** and press ENTER. The Engine Casing should extend out bottom of Can **.5**, **Fig. 12**. If positioned in opposite direction, click **Flip Dimension**  in the Mate pop-up, **Fig. 11**. Click **Add/Finish Mate**  to add Distance mate.

Step 7. Click **OK**  in the Property Manager when done.



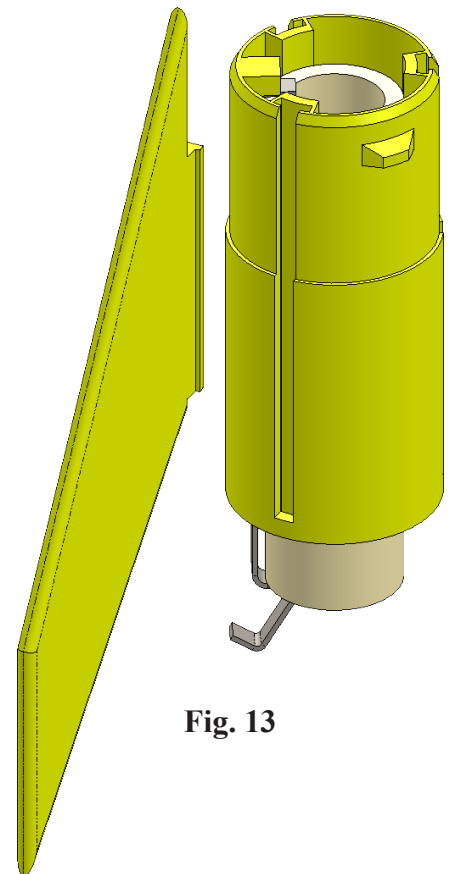
Step 8. Save. Use **Ctrl-S**.

F. Insert Fin.

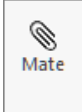
Step 1. Click **Trimetric**  on the Standard Views toolbar.


Step 2. Click **Insert Components**  on the Assembly toolbar.


Step 3. **Browse** and select **Fin** file, Open and place Fin along side assembly, **Fig. 13**.




G. Mate: Fin.

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

Step 2. Expand the flyout Feature Manager design tree in the top left corner of the graphics area and click **Right Plane** , Fig. 14.

Step 3. Expand **Fin** and click **Right Plane** , Fig. 14.

Step 4. Click Add/Finish Mate  to add **Coincident** mate.

Step 5. Click **bottom face fin slot in Can**, Fig. 16. **Tip:** If necessary grab Fin (don't click) and pull Fin out to view fin slot in Can.

Step 6. Rotate view to view **bottom face of "T" in Fin**, hold down middle mouse button (wheel) and drag to rotate view, Fig. 17.

Step 7. Click **top face of "T" in Fin**, Fig. 17.

Step 8. Click Add/Finish Mate  to add **Coincident** mate.



Fig. 14

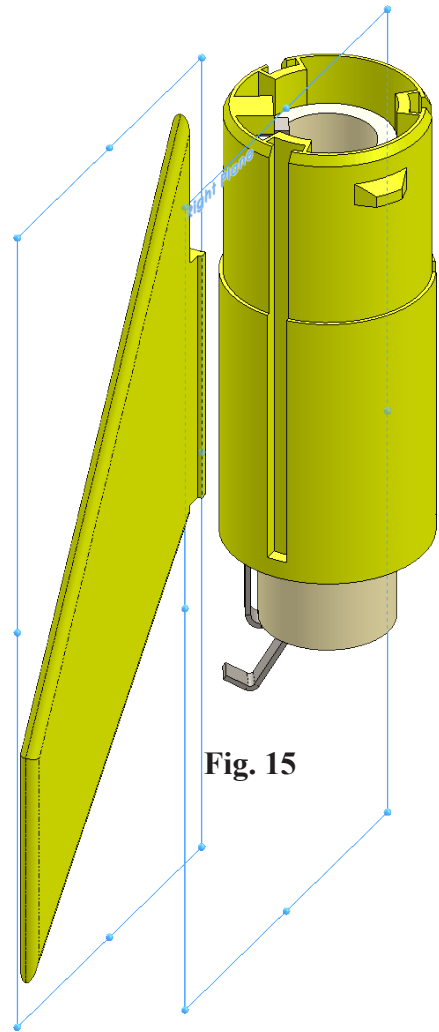


Fig. 15

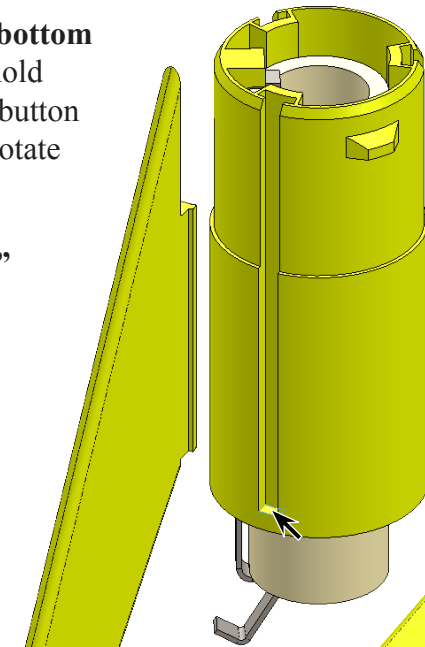


Fig. 16

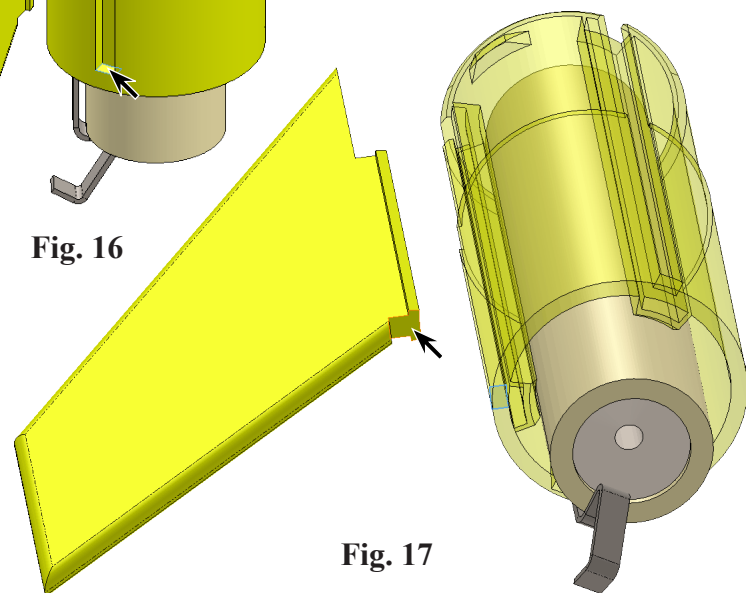






Fig. 17

Step 9. Click **Bottom**  on the Standard Views toolbar. (Ctrl-6)

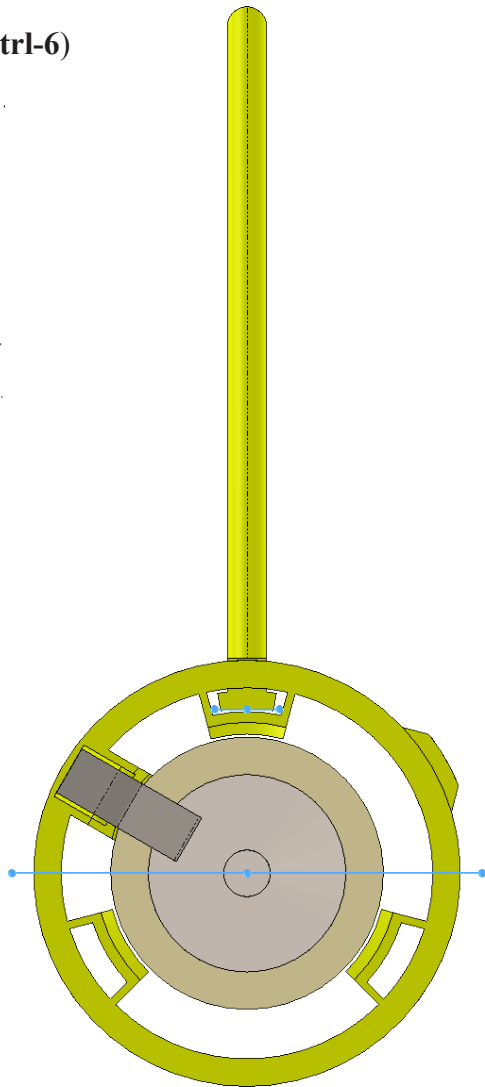
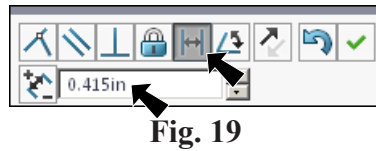
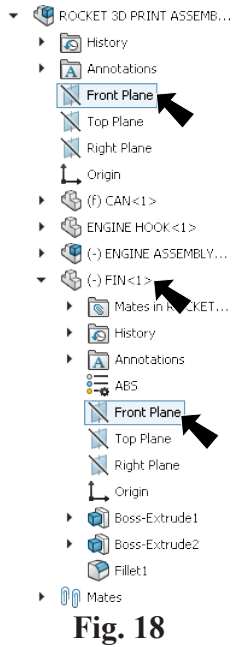
Step 10. Expand the flyout Feature Manager design tree and click **Front Plane** , **Fig. 18**.

Step 11. Expand **Fin** and click **Front Plane** , **Fig. 18**.

Step 12. Click **Distance**  in Mate pop-up, **Fig. 19**. Set **distance .415** and press ENTER. The Fin “T” should be centered in the fin housing in Can, **Fig. 20**. If positioned in opposite direction, click **Flip Dimension**  in the Mate pop-up, **Fig. 19**. Click Add/Finish Mate  to add Distance mate.

Step 13. Click OK  in the Property Manager when done.

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



H. Fin Circular Pattern.

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

Step 2. Click Insert Menu > Component Pattern > Circular Pattern.

Step 3. In the Circular Pattern Property Manager set:
 under Components to Pattern, **Fig. 21**
 click **Fin**, **Fig. 22**
 under Parameters,
 click in Pattern Axis box, **Fig. 21**
 click **cylindrical face of Can**,
Fig. 10

Angle  360

Number of Instances  3
 check **Equal spacing**

click OK .

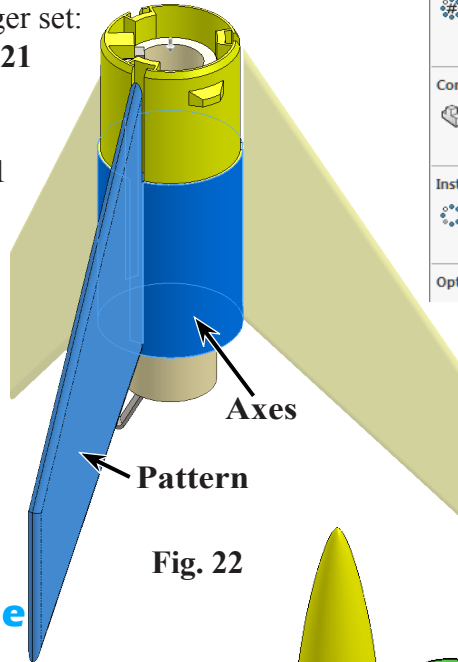


Fig. 22

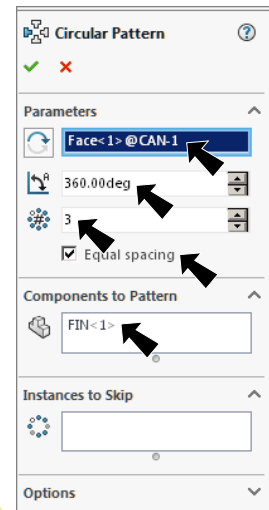


Fig. 21

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

I. Insert Body Tube, Nose Cone and Launch Lug.

Step 1. Click **Insert Components**  on the Assembly toolbar.

Step 2. Click **Browse** and **Ctrl click Body Tube, Nose Cone and Launch Lug** and click Open. Position parts as shown in **Fig. 23**.

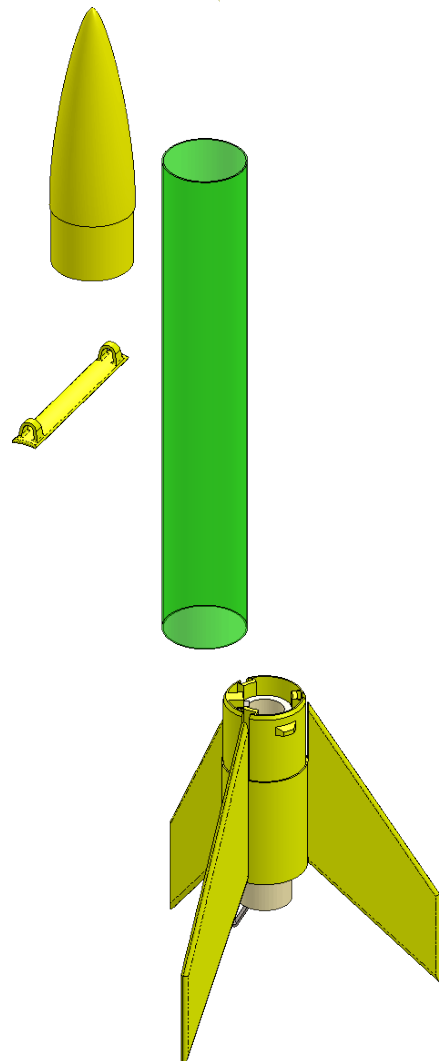
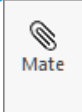



Fig. 23

J. Mate: Body Tube.

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

Step 2. Click **cylindrical face of Can** and **cylindrical face of Body Tube**, Fig. 24.

Step 3. Check **Lock Rotation** and Add/Finish Mate  in Mate pop-up toolbar to add a **Concentric** mate, Fig. 25.

Step 4. Click **top outside circular edge of Can boss** and **bottom outside circular edge Body Tube**, Fig. 26.

Step 5. Click Add/Finish Mate  to add **Coincident** mate, Fig. 27.

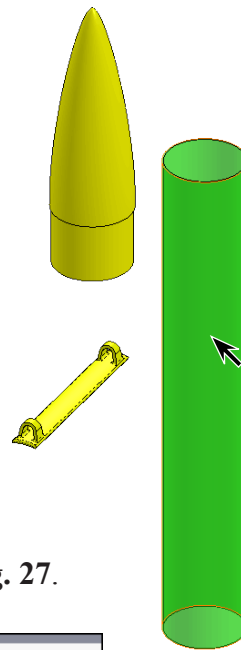


Fig. 25

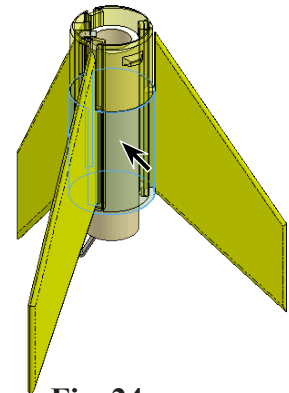
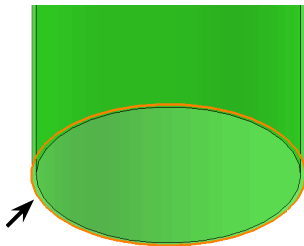


Fig. 24

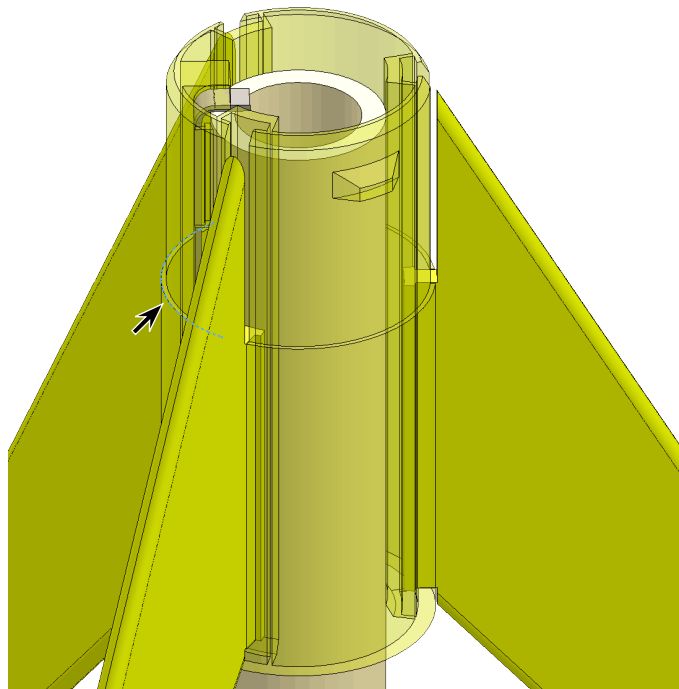


Fig. 26

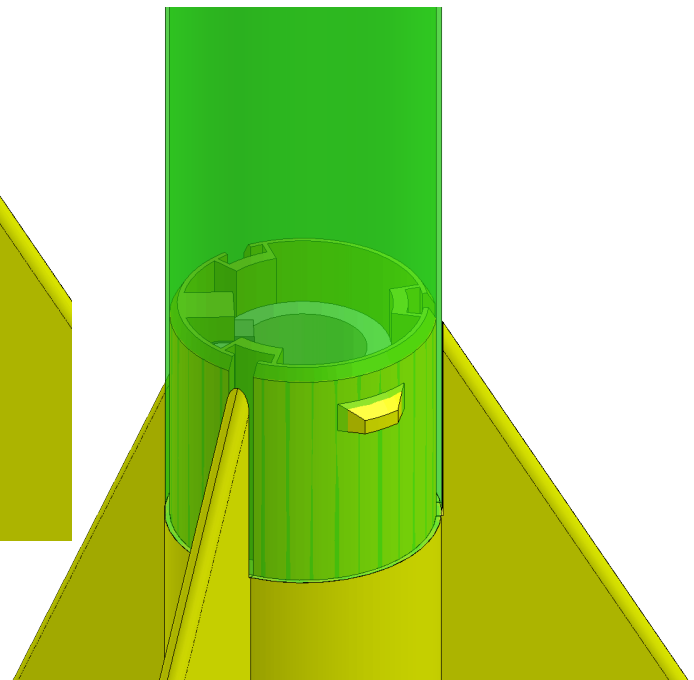


Fig. 27

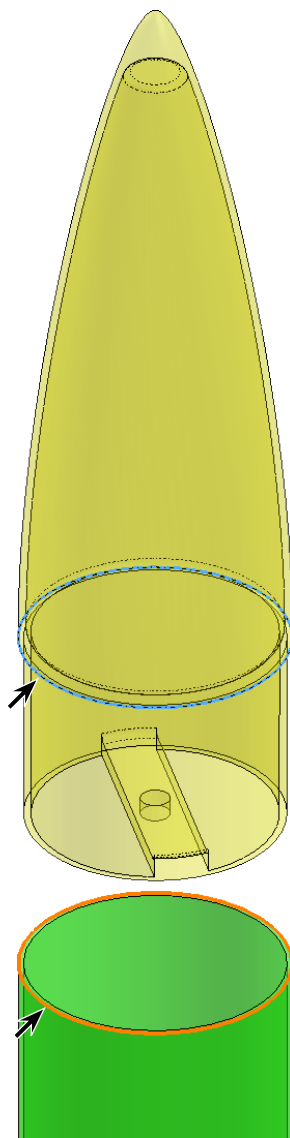
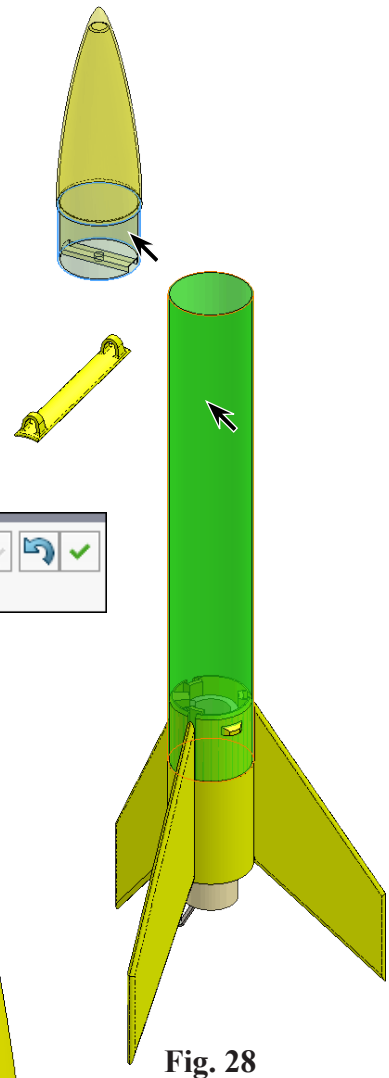
K. Mate: Nose Cone.

Step 1. Click **cylindrical face of Nose Cone** and **cylindrical face of Body Tube**, Fig. 28.

Step 2. Check **Lock Rotation** and Add/Finish Mate in Mate pop-up toolbar to add a **Concentric** mate, Fig. 29.


Step 3. Click **outside circular edge of Nose Cone boss** and **top outside circular edge Body Tube**, Fig. 30.


Step 4. Click Add/Finish Mate to add **Coincident** mate.





L. Mate: Launch Lug.

Step 1. Click **cylindrical face of Launch Lug** and **cylindrical face of Body Tube**, Fig. 32.

Step 2. Click **Add/Finish Mate**  in Mate pop-up toolbar to add a **Concentric** mate.

Step 3. Expand the flyout Feature Manager design tree and click **Right Plane** , Fig. 33.

Step 4. Expand **Launch Lug** and click **Right Plane** , Fig. 33.

Step 5. Click **Angle**  in Mate pop-up and set **angle 107** and press ENTER, Fig. 34. The **Launch Lug** should be positioned on **right side of Body Tube**, Fig. 35. If positioned in opposite direction, click **Flip Dimension**  in the Mate pop-up, Fig. 34.

Click **Add/Finish Mate**  to add the **Angle** mate.

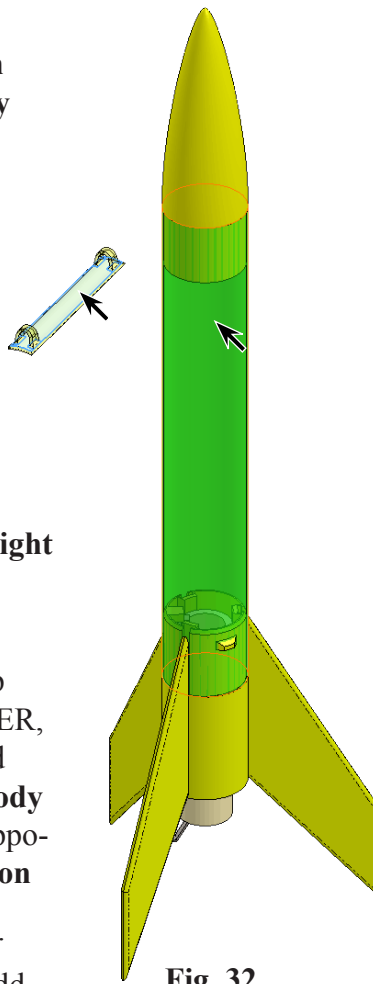


Fig. 32



Fig. 34

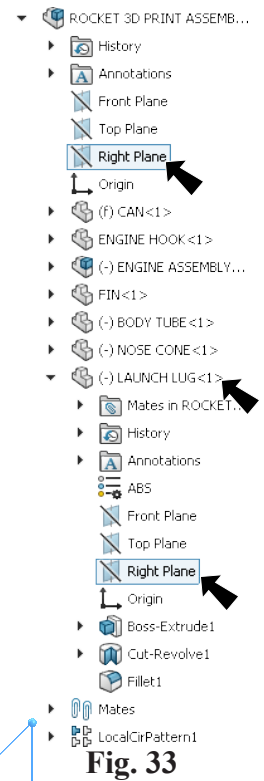


Fig. 33

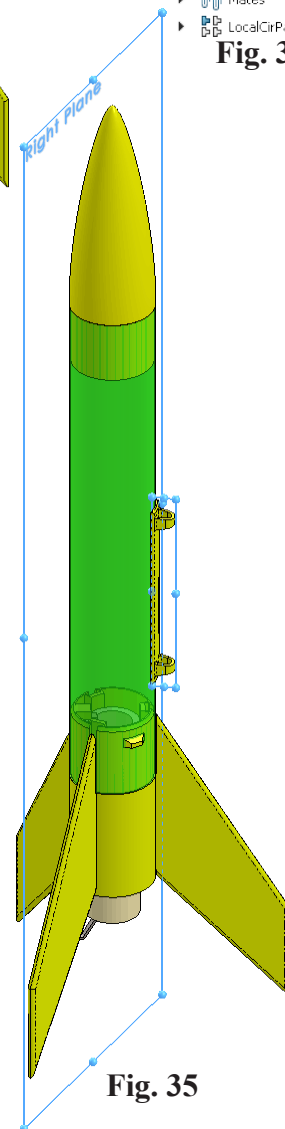


Fig. 35

Step 5. In the Feature Manager design tree click **Top Plane**, Fig. 36.

Step 6. Expand **Launch Lug** and click **Front Plane**, Fig. 36.

Step 7. Click **Distance** in Mate pop-up, Fig. 37. Set distance **5.4** and press ENTER. The Launch Lug should be above the Assembly Top Plane, Fig. 38. If positioned in opposite direction, click **Flip Dimension** in the Mate pop-up, Fig. 37. Click Add/Finish Mate to add Distance mate.

Step 8. Click OK in the Property Manager when done.

Step 9. Save. Use **Ctrl-S**.

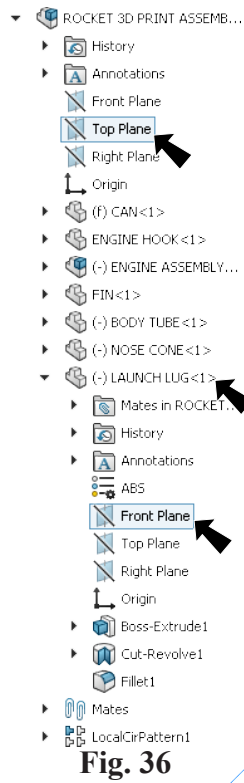


Fig. 36



Fig. 37

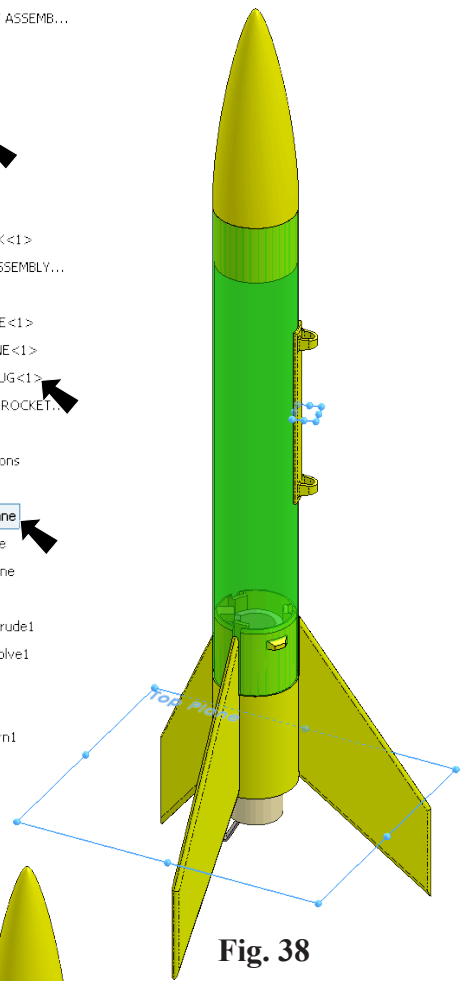


Fig. 38

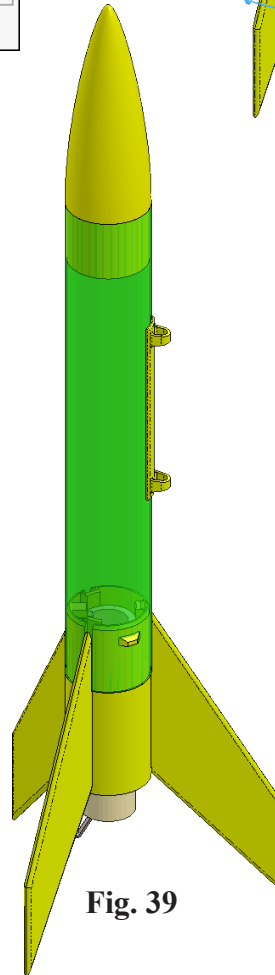


Fig. 39