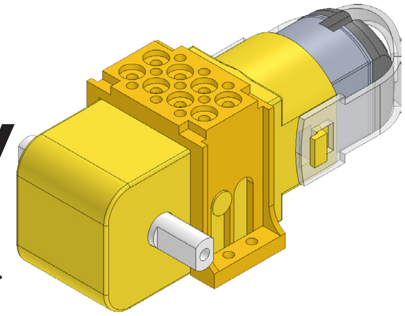
Cluster Wheel Vehicle
Motor Assembly



A. Insert Gearbox and Gearbox Shaft.

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

Step 2. Select your **GEARBOX** file and click Open from the Open dialog box.

Step 3. In the Begin Assembly Property Manager:

click **Keep Visible**, **Fig. 1**.

Click OK in the Property Manager, **Fig. 1**.

This will place Gearbox origin at the assembly origin and fix the position so Gearbox cannot move. This fixed component should have a **(f)** before its name in the Feature Manager (f) GEARBOX<1>.

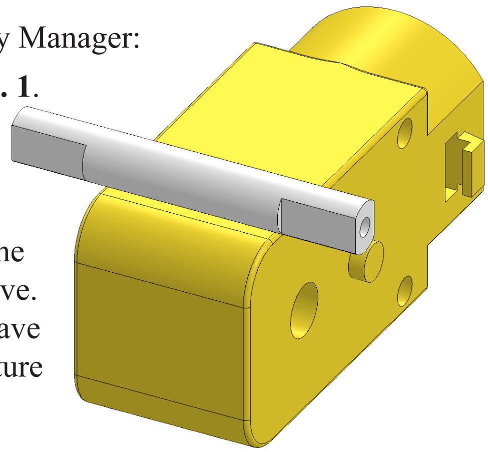


Fig. 2

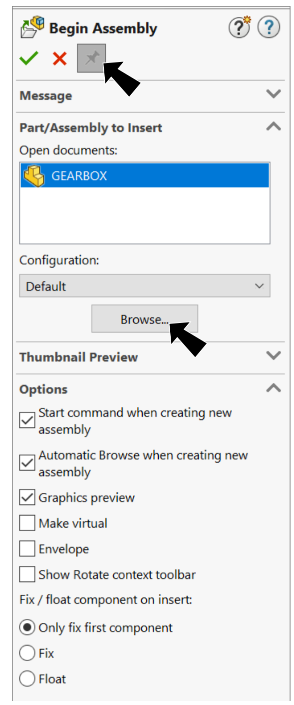


Fig. 1

Step 4. Click **Browse** in the Property Manager, **Fig. 1**.

Step 5. Select your **GEARBOX SHAFT** file and click Open.

Step 6. Click approximately where Gearbox Shaft is positioned in **Fig. 2**.

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

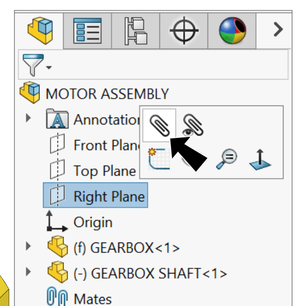


Fig. 3

B. Save as "MOTOR ASSEMBLY".

Step 1. Click File Menu > Save As.

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

C. Mate: Gearbox Shaft.

Step 1. Click **Right Plane** in the Feature Manager and **Mate** on the context toolbar, **Fig. 3**.

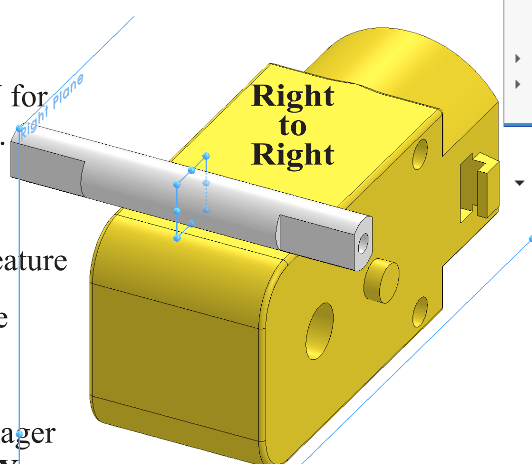


Fig. 5

Step 2. Expand the flyout Feature Manager design tree, expand **GEARBOX SHAFT** and click **Right Plane**, **Fig. 4**.

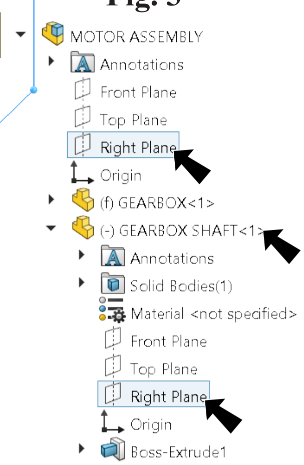


Fig. 4

Step 3. Click Add/Finish Mate to add a **Coincident** mate.

Step 4. Click **cylindrical face of shaft hole in Gearbox** and **cylindrical face of Gearbox Shaft**, **Fig. 6**.

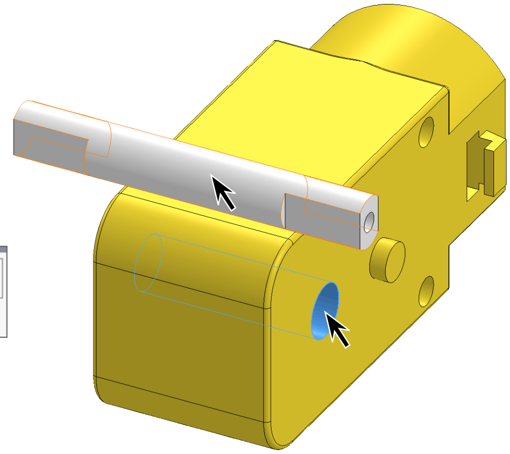


Fig. 6

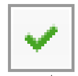
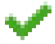
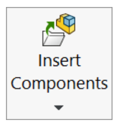
Step 5. Check **Lock Rotation** and Add/Finish Mate  in Mate pop-up toolbar to add a **Concentric** mate, **Fig. 7**.

Fig. 7

Step 6. Click OK  in the Property Manager.

D. Insert Motor and Motor Strap.

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

Step 2. Click **Insert Components** 

on the Assembly toolbar.

Step 3. **Ctrl click MOTOR and MOTOR STRAP** files and click Open from the Open dialog box.

Step 4. Place as positioned in **Fig. 8**.

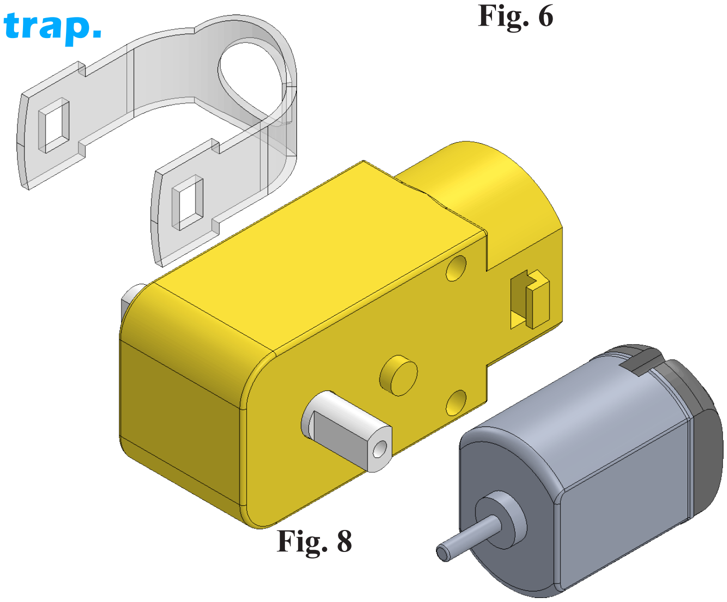
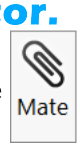


Fig. 8

E. Mate: Motor.

Step 1. Click **Mate** 

on the Assembly toolbar.

Step 2. Click **cylindrical face of Gearbox** and **cylindrical face of Motor**, **Fig. 9**.

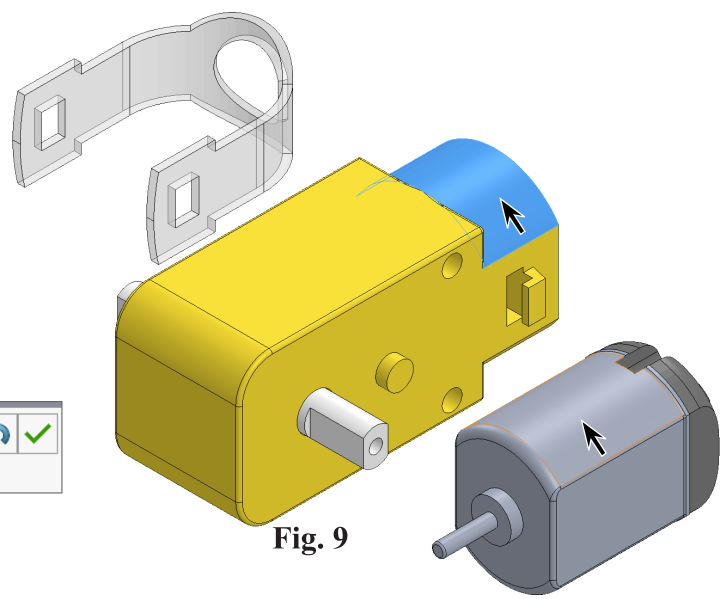


Fig. 9

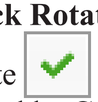
Step 3. Check **Lock Rotation** and Add/ Finish Mate  in Mate pop-up toolbar to add a **Concentric** mate, **Fig. 10**.

Fig. 10

Step 4. Expand the flyout Feature Manager design tree, click **Front Plane** and expand **Motor** and click **Front Plane**, **Fig. 11**.

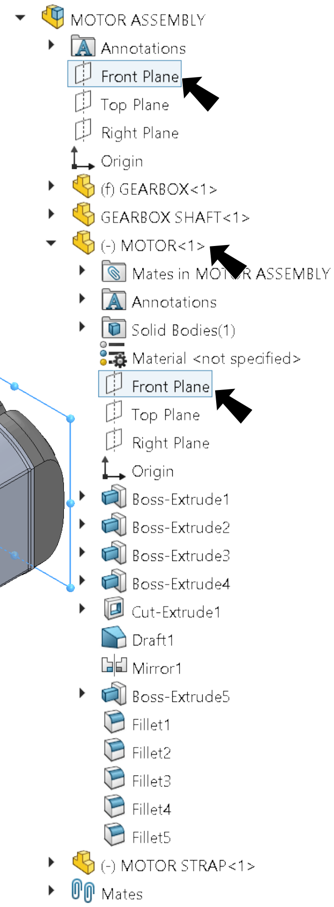


Fig. 11

Step 5. Click **Distance** in Mate pop-up, **Fig. 12**. Set **distance 25** and press ENTER. The Motor should positioned outside, **Fig. 13**. If positioned in opposite direction, click **Flip Dimension** in the Mate pop-up. Click Add/Finish Mate to add Distance mate.

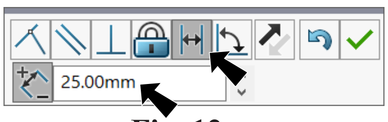


Fig. 12

Step 6. Click OK in the Property Manager.

Step 7. Save **(Ctrl-S)**.

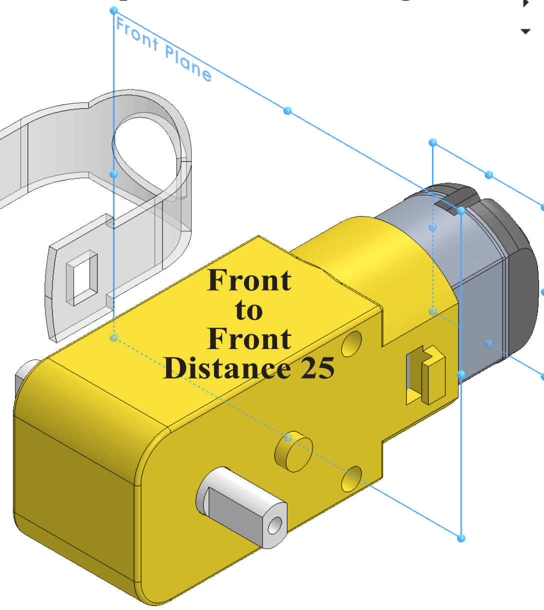


Fig. 13

F. Mate: Motor Strap.

Step 1. Click **Top Plane** in the Feature Manager and **Mate** on the context toolbar, **Fig. 14**.

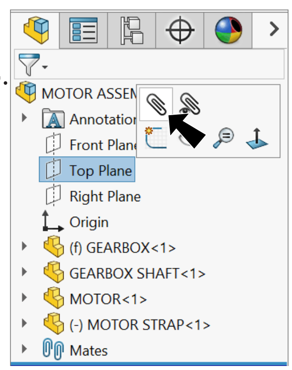


Fig. 14

Step 2. Expand the flyout Feature Manager design tree, expand **MOTOR STRAP** and click **Top Plane**, **Fig. 15**.

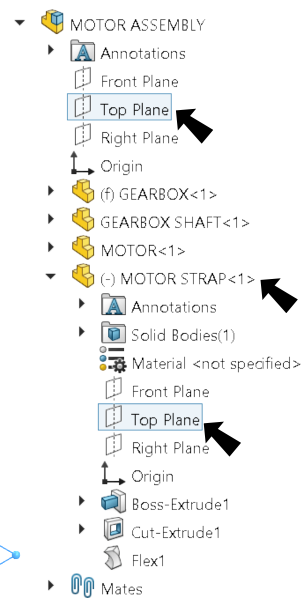


Fig. 15

Step 3. Click Add/Finish Mate to add a **Coincident** mate.

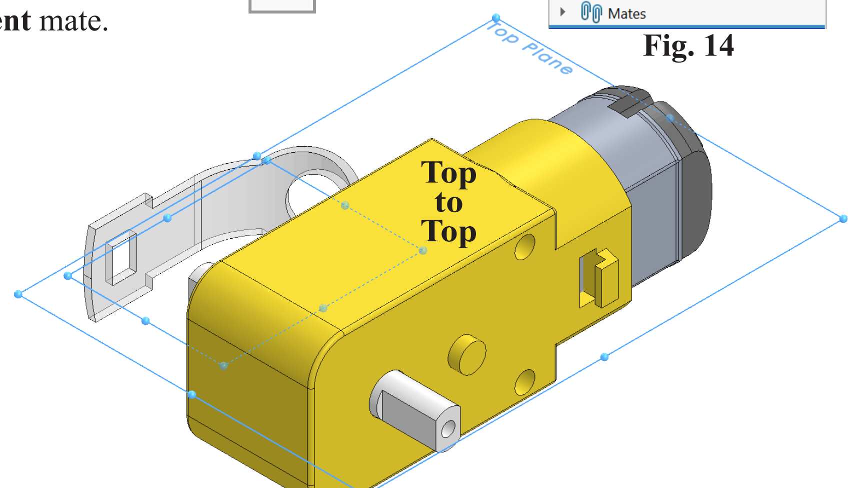


Fig. 16

Step 4. Click **Right Plane** in the flyout Feature Manager design tree, expand **MOTOR STRAP** and click **Right Plane**, **Fig. 17**.

Step 5. Click Add/Finish Mate to add a **Coincident** mate.

Step 6. Click **vertical face of Gearbox hook** and **left outside vertical edge of Motor Strap cutout**, **Fig. 19**.
Tip: Use **E key** to toggle **filter edges**. Toggle off filter when done.

Step 7. Click Add/Finish Mate to add **Tangent** mate.

Step 8. Click OK in the Property Manager.

Step 9. Save **(Ctrl-S)**.

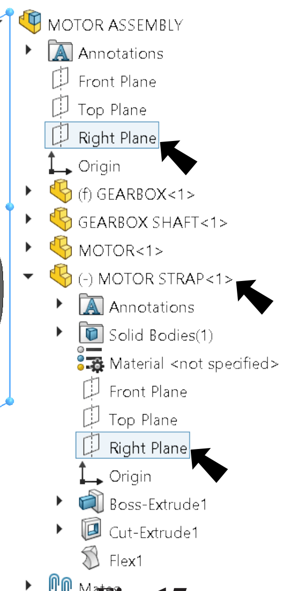


Fig. 17

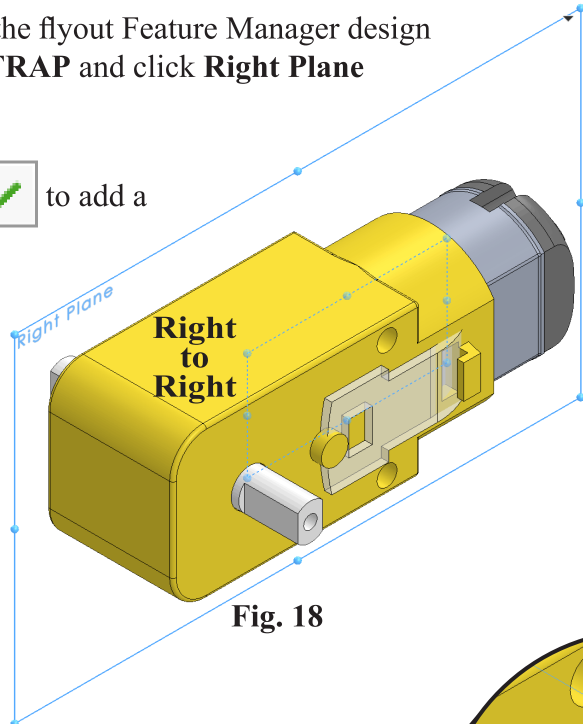


Fig. 18

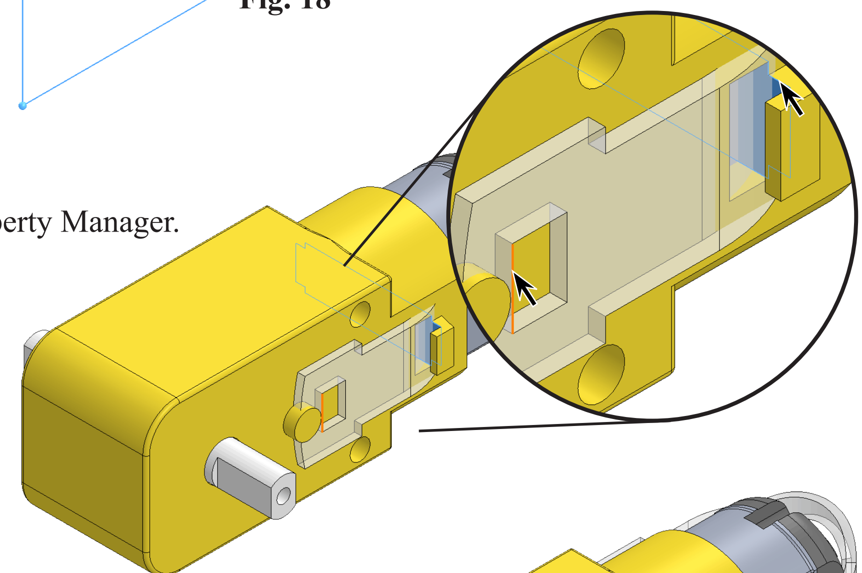


Fig. 19

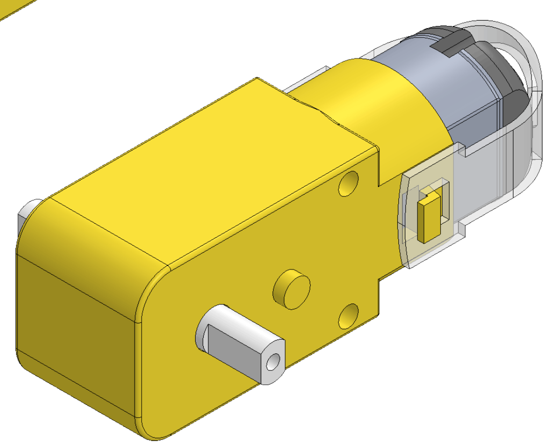
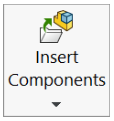


Fig. 20

G. Insert Motor Bracket.

Step 1. Click **Insert Components**



on the Assembly toolbar.

Step 2. Select your **MOTOR BRACKET** file and click Open from the Open dialog box.

Step 3. Place the Motor Bracket, **Fig. 21**.

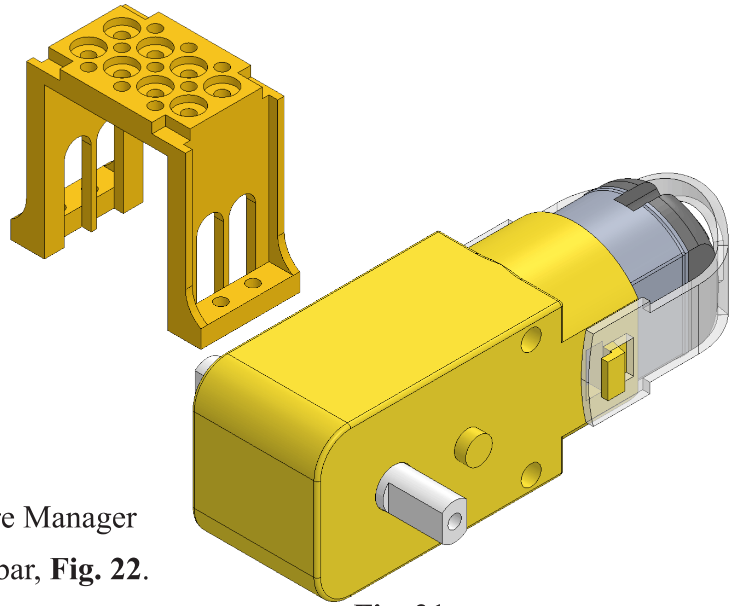


Fig. 21

H. Mate: Motor Bracket.

Step 1. Click **Right Plane** in the Feature Manager and **Mate** on the context toolbar, **Fig. 22**.

Step 2. Expand the flyout Feature Manager design tree, expand **MOTOR BRACKET** and click **Right Plane**, **Fig. 23**.

Step 3. Click Add/Finish Mate to add a **Co-incident** mate.

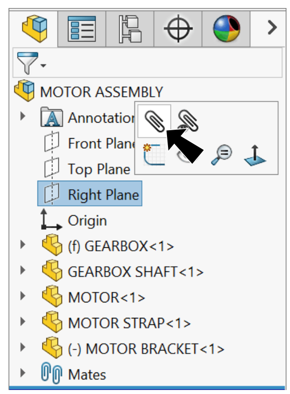


Fig. 22

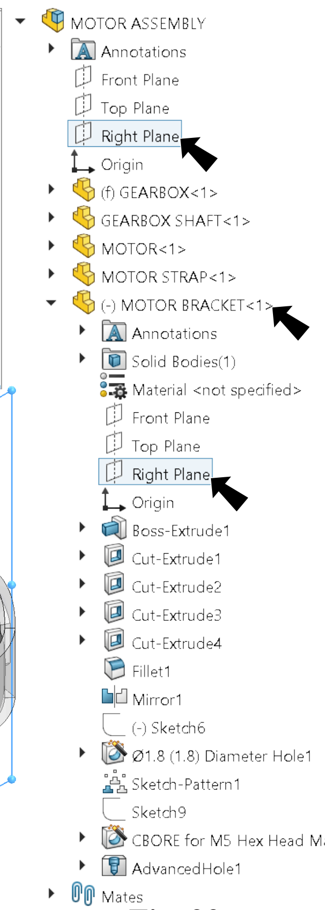


Fig. 23

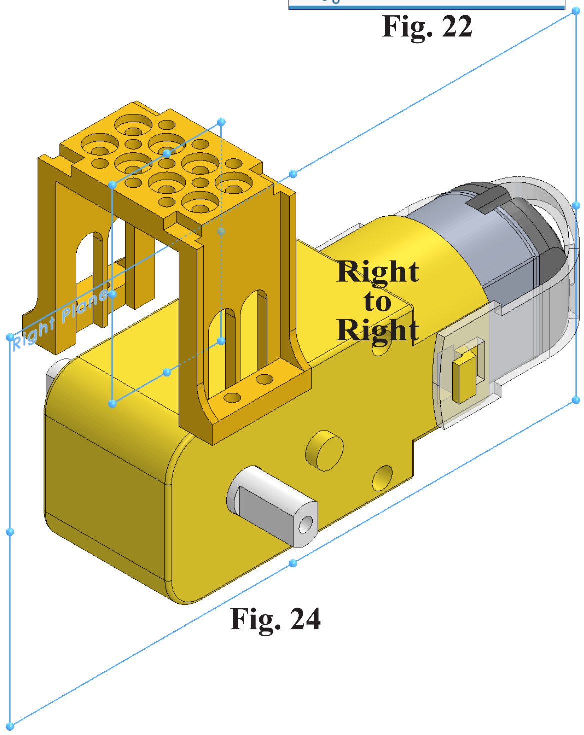


Fig. 24

Step 4. Rotate view to view bottom view, Use Up Arrow key .

Step 5. Click **bottom face of Gearbox** and **bottom face of Motor Bracket**, **Fig. 25**.

Step 6. Click Add/Finish Mate to add a **Coincident** mate.

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

Step 8. Click **cylindrical face of extrude on Gearbox** and **cylindrical face of first cut on Motor Bracket**, **Fig. 26**.

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

Step 10. Click OK in the Property Manager.

Step 11. Save **(Ctrl-S)**.

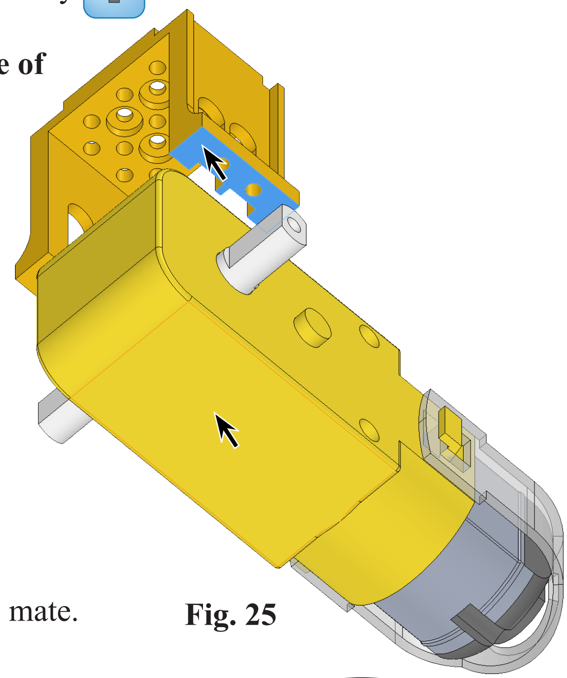


Fig. 25

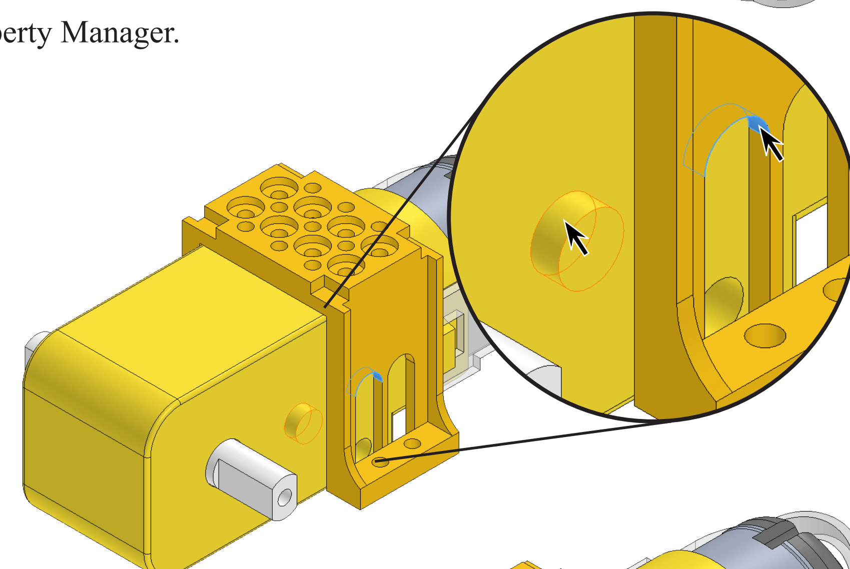


Fig. 26

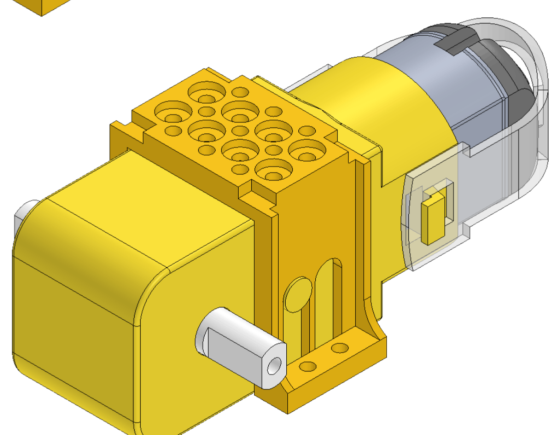


Fig. 27

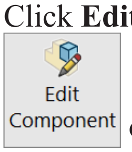
I. Indent Motor into Gearbox.

Step 1. Click **Gearbox** part in the graphics area and click **Edit Part** on the context toolbar, **Fig. 28**.

Step 2. Click Insert Menu > Features > Indent.

Step 3. In the Indent Property Manager:
under Selections, **Fig. 29**
Target body:
click **Gearbox**, **Fig. 30**
select **Keep selections**
Tool body region:
click **Motor**
check **Cut**
under Parameters
Clearance .05
click OK.

Step 4. Click **Edit Component**



on the Features toolbar to exit.

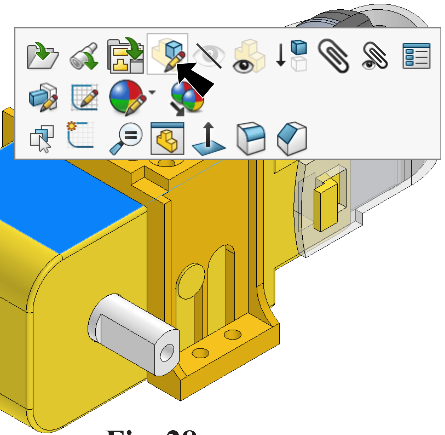


Fig. 28

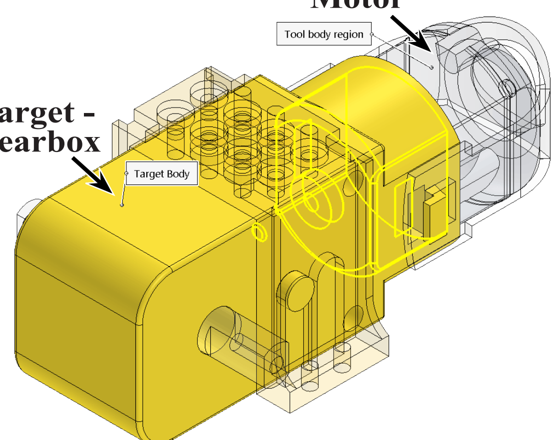


Fig. 30

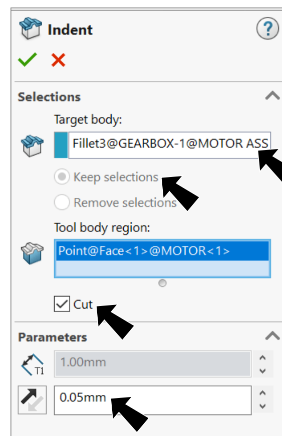


Fig. 29

Step 5. Save All (**Alt-F L**). File Menu > Save All.

J. Suppress Motor Bracket.

Step 1. **Suppress MOTOR BRACKET** part. To Suppress, click **Motor Bracket** in the Feature Manager and **Suppress** on the context toolbar, **Fig. 31**.

Step 2. Save (**Ctrl-S**).

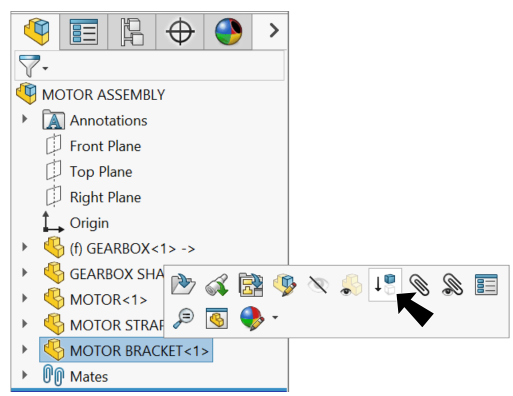


Fig. 31

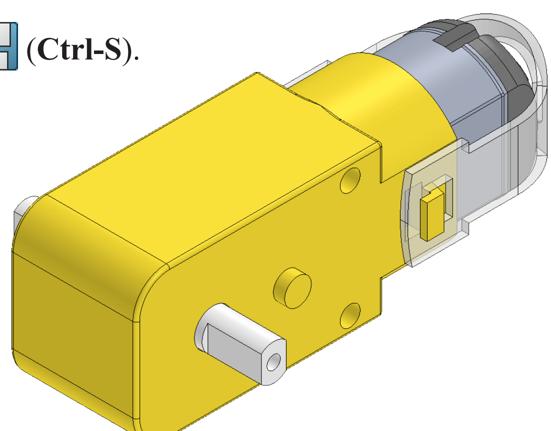


Fig. 32