CO2 Rail Car

SOLIDWORKS 19 to Mastercam 2020

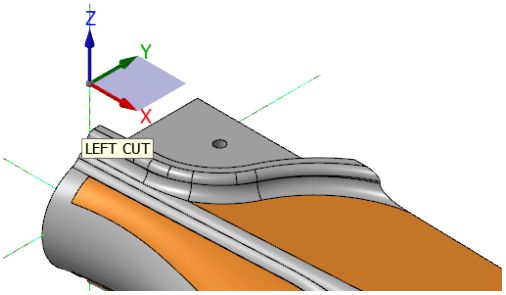
A. Open File in Mastercam 2020.

Step 1. If necessary, save your **Body** file in SOLIDWORKS.

Step 2. In Mastercam 2020, click File Menu > Open .

Step 3. In the Open dialog box set **Files of type** to **SOLIDWORKS Files**, select your **BODY RAIL** file and click Open, **Fig. 1**.

Step 4. Change to the Isometric View. **Right click** in the graphics window and click Isometric (WCS) (**Alt-7**).



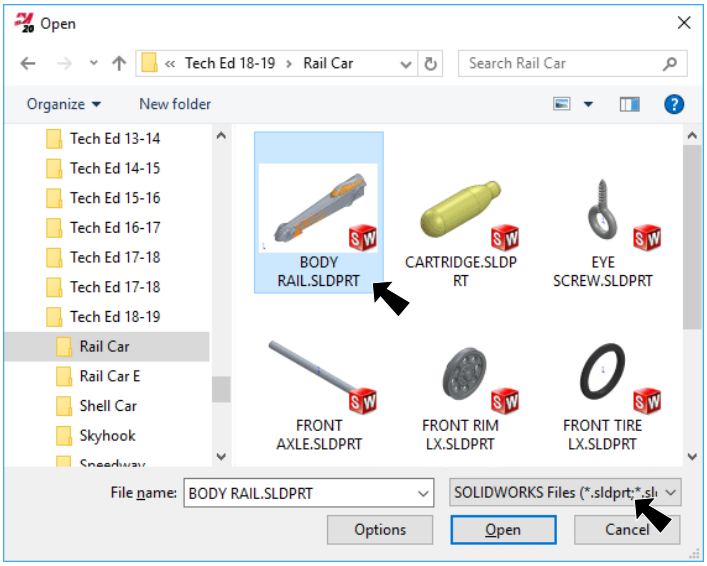


Fig. 1

B. Confirm Metric Units.

Step 1. In the bottom right corner of the display confirm units are **Metric**, **Fig. 2**.

C. Save Your File.

Step 1. **Save As** (**Ctrl-Shift-S**).

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

Tip: If SOLIDWORKS file **will not open** in Mastercam, save your SOLIDWORKS file as a Parasolid Binary (*.x_b), then open in Mastercam as Parasolid Binary file.

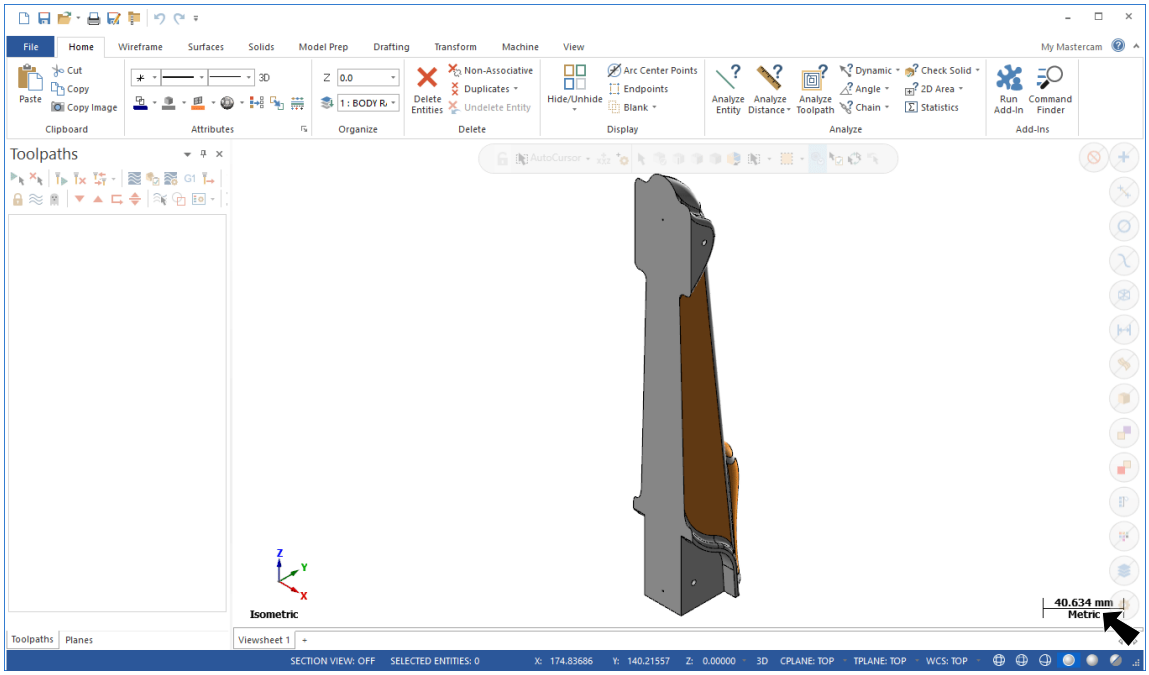


Fig. 2

D. Rotate Body Around Axes.

Step 1. Confirm **TOP CPLANE** in Status bar at bottom of the graphics window, **Fig 3**.

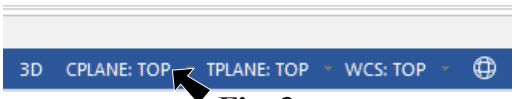
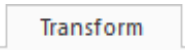
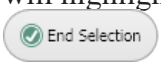


Fig. 3

Step 2. On the Transform tab 

click **Rotate** 

.

Step 3. Click the **solid body** to select it, **Fig 4**. The solid will highlight when selected. Click **End Selection** 

(ENTER).

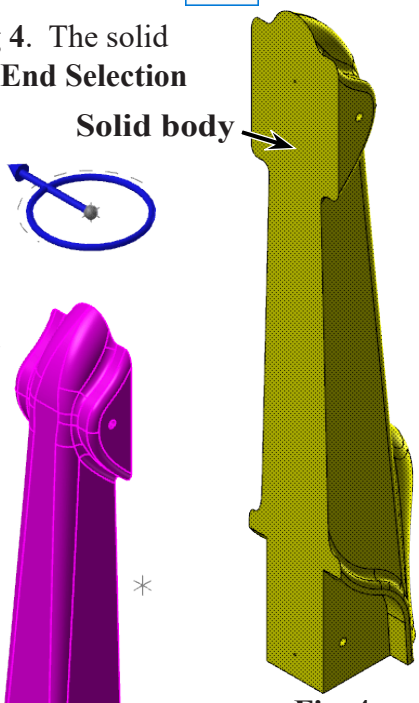


Fig. 4

Step 4. In the Rotate function panel:
under Method, **Fig. 5**
Select **Move**
Number 1
Angle 180 and press **Tab** key
Click **OK and Create New Operation** .

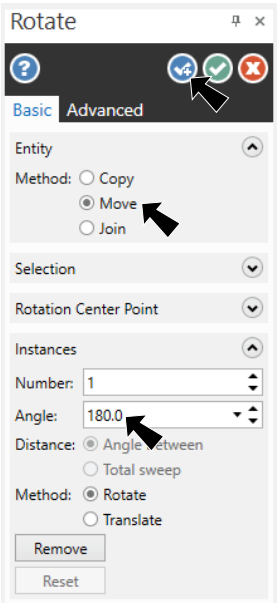
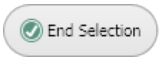


Fig. 5

Step 5. Click **CPLANE** in Status bar at bottom of the graphics window and click **Front** from the menu, **Fig 7**.

Step 6. Click the **solid body again** to select it and click **End Selection** 

(ENTER)

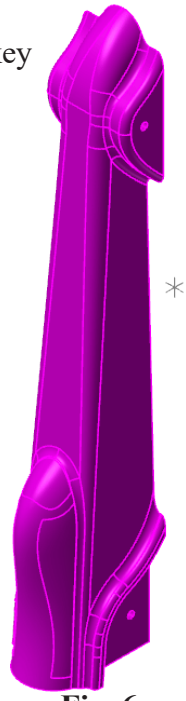


Fig. 6

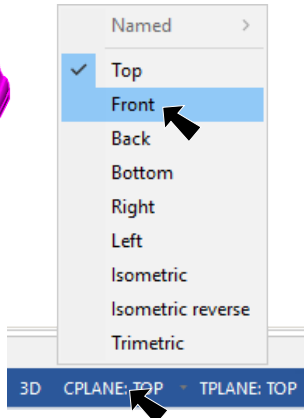


Fig. 7

Step 7. In the Rotate function panel:
under Method, **Fig. 8**
Select **Move**
Angle -90 and press **Tab**
Click OK .

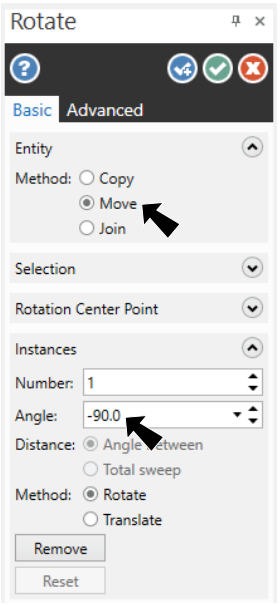


Fig. 8

Step 8. **Right click** the graphics window and click **Fit**  **(Alt-F1)**.

Step 9. **Right click** the graphics window and click **Clear Colors**  .

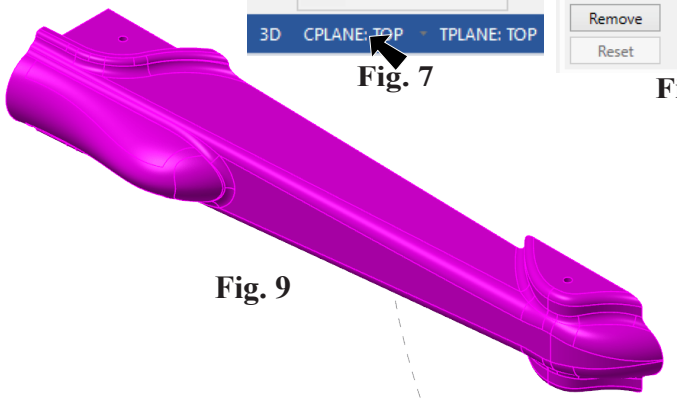


Fig. 9

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

E. Move to Origin.

Step 1. Use **Ctrl-T** to toggle **Translucency**.

Step 2. Display the Origin. Use **F9** to toggle axes, **Fig. 10**.

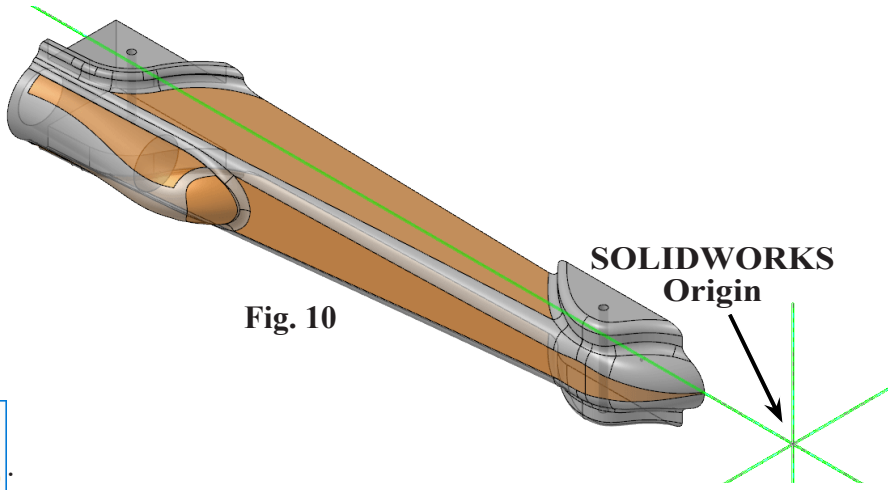
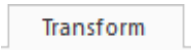


Fig. 10

Step 3. On the Transform tab 

click **Move to Origin** 

.

Fig. 11

Step 4. Press the **C key** on keyboard to configure Auto Cursor behavior of your cursor to snap to **Arc Center**, **Fig. 11**.

Fig. 12

Step 5. Click **arc of rear edge of cartridge hole** as point to translate from, **Fig. 12**. Be sure to select arc of hole.

Step 6. **Right click** the graphics window and click **Fit** 
(**Alt-F1**).

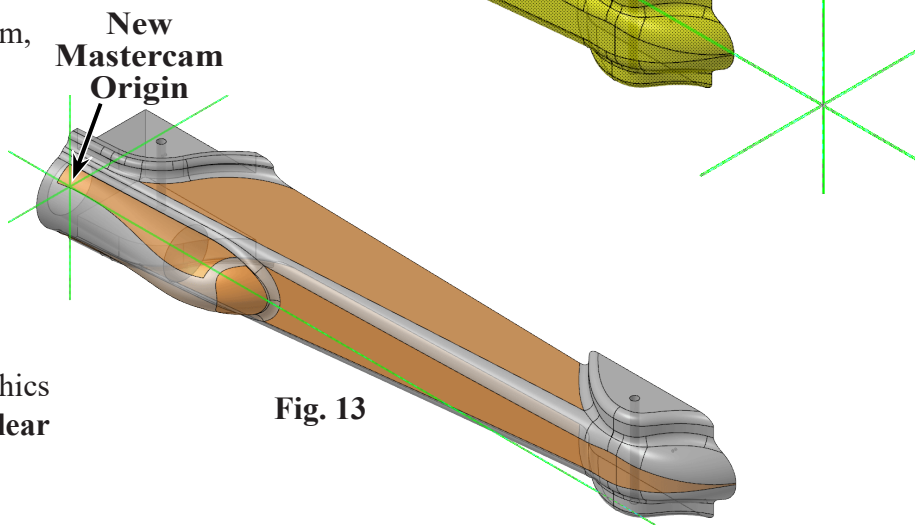


Fig. 13

Step 7. **Right click** the graphics window and click **Clear Colors** 
.

Step 8. Confirm **center of cartridge hole at rear of car** as new position of Origin, **Fig. 13**.

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

F. Confirm Origin.

Step 1. **Right click** in the graphics window and from the menu click GView > **Left (WCS)**.

Step 2. Confirm Origin is in **center of cartridge hole**, **Fig. 14**.

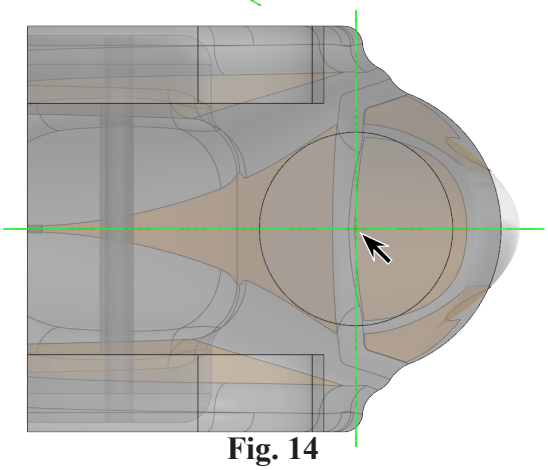


Fig. 14

F. Create Check Rectangle.

Step 1. Change to the Isometric View. **Right click** in the graphics window and click Isometric (WCS) (**Alt-7**).

Step 2. Use **Ctrl-T** to toggle **Translucency**.

Step 3. Toggle axes off. Use **F9**.

Step 4. Click **CPLANE** in Status bar at bottom of the graphics window and click **Right** from the menu, **Fig 15**.

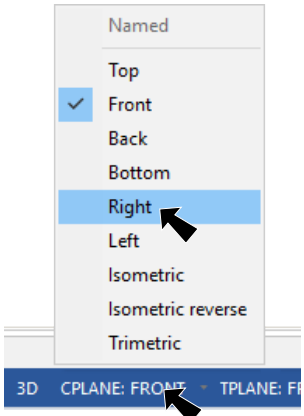


Fig. 15

Step 5. On the Wireframe tab Wireframe click Rectangle Rectangle.

Step 6. In the Rectangle function panel:

under Dimensions, **Fig. 16**

Width 40

Height 40

under Setting

Check **Anchor to center**

Click the **most forward vertex** of the Body **Fig. 17**.

Click OK .

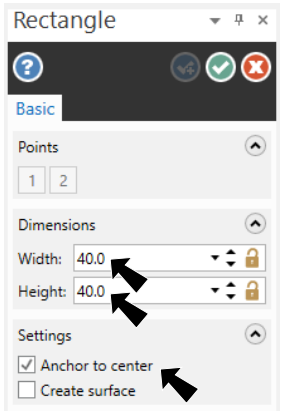


Fig. 16

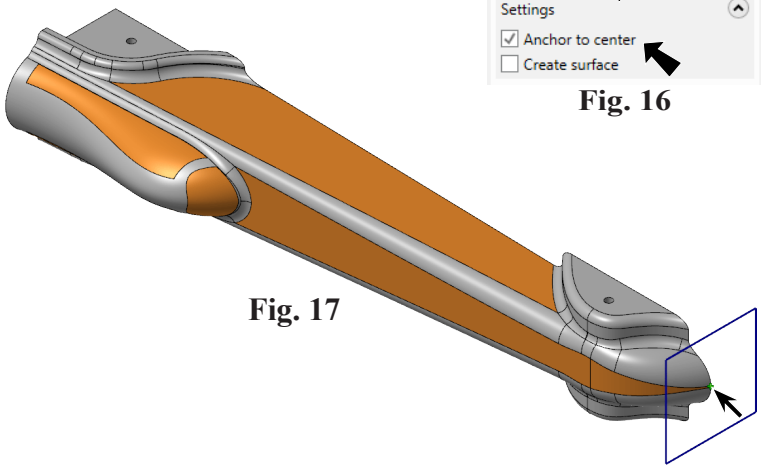
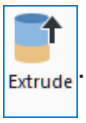


Fig. 17

G. Create Check Solid.

Step 1. On the Solids tab 

click **Extrude** 

.

Step 2. Click Chain  in Chaining dialog box, **Fig 18**.

Step 3. Click **rectangle** to chain, **Fig 19**.

Step 4. Click OK  in Chaining dialog box.

Step 5. In the Solid Extrude function panel:
under Operation, **Fig. 20**
Select **Create body**
under Distance
Distance 5 and press **Tab**
The direction arrow should **point to rear**, **Fig. 21**.
If arrow points in opposite direction, click **Reverse All**  , **Fig. 20**.
Click OK  .

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

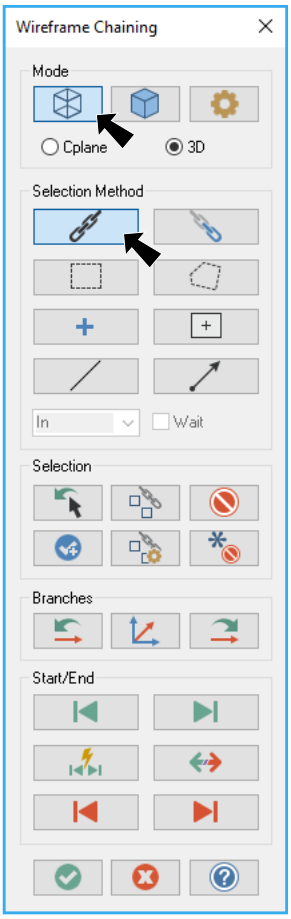


Fig. 18

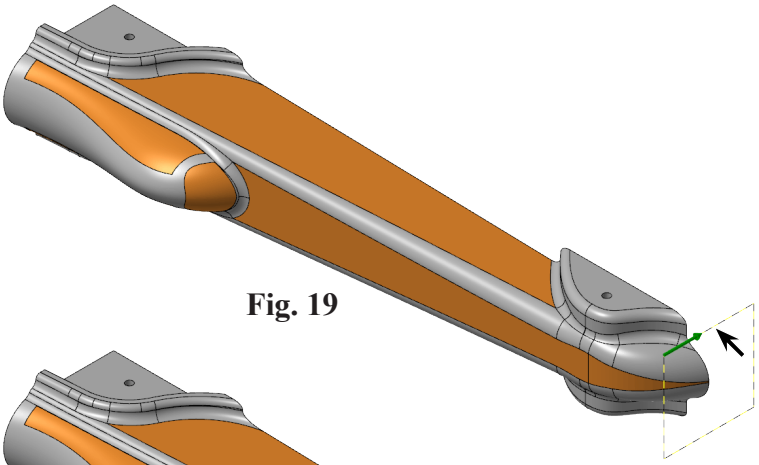


Fig. 19

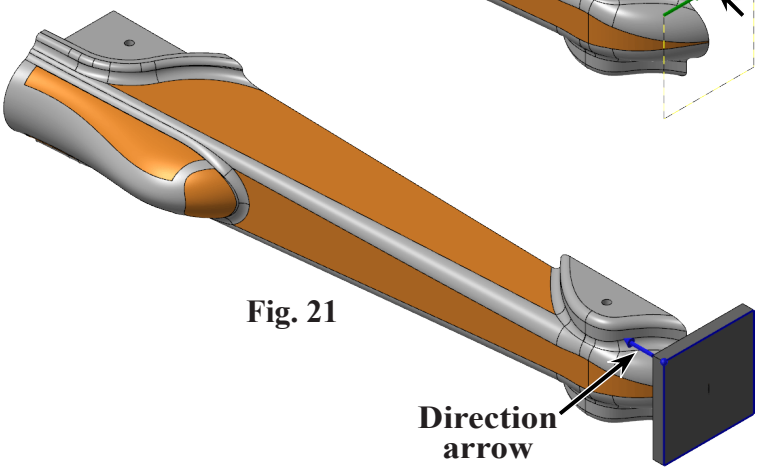


Fig. 21

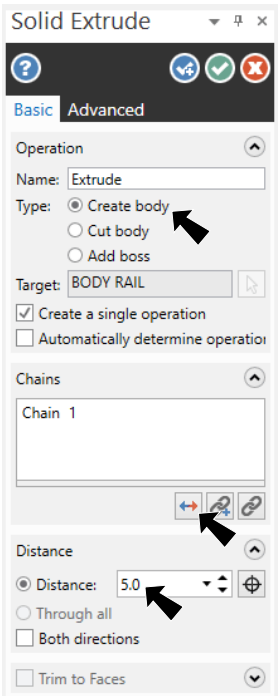


Fig. 20

H. Create WCS LEFT CUT Plane.

Step 1. Toggle axes on. Use **F9**.

Step 2. Display the **Planes Manager**. To display, click **Planes** tab Planes at the bottom of Ops Manager.

Step 3. In the Planes Manger:

Click **Create a new plane** drop down and select **Relative to WCS > Top**, **Fig. 22**.

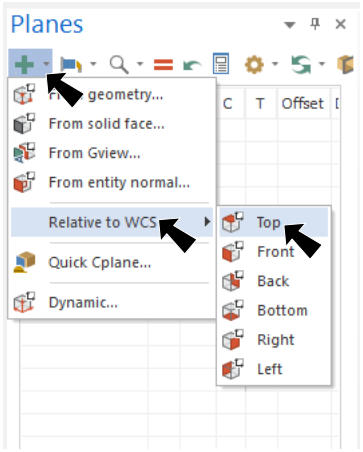


Fig. 22

Step 4. In the New Plane function panel:

Key-in **LEFT CUT** for name, **Fig. 23**
Origin X 0
Origin Y 0
Origin Z 34 and press **Tab**
Click OK .

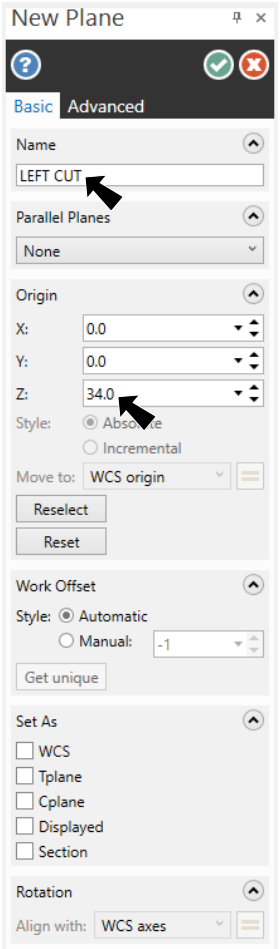


Fig. 23

Step 5. Back in the Planes Manager:

Click **Set All** , **Fig. 24**.

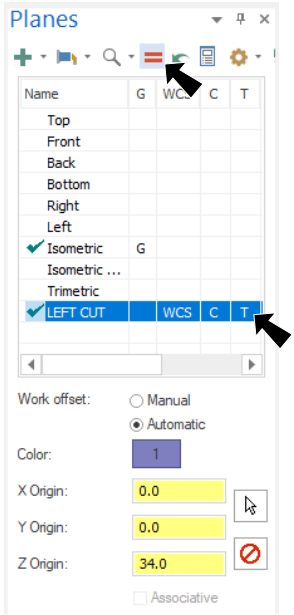


Fig. 24

Step 6. Confirm LEFT CUT Origin, **Fig. 25**.

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

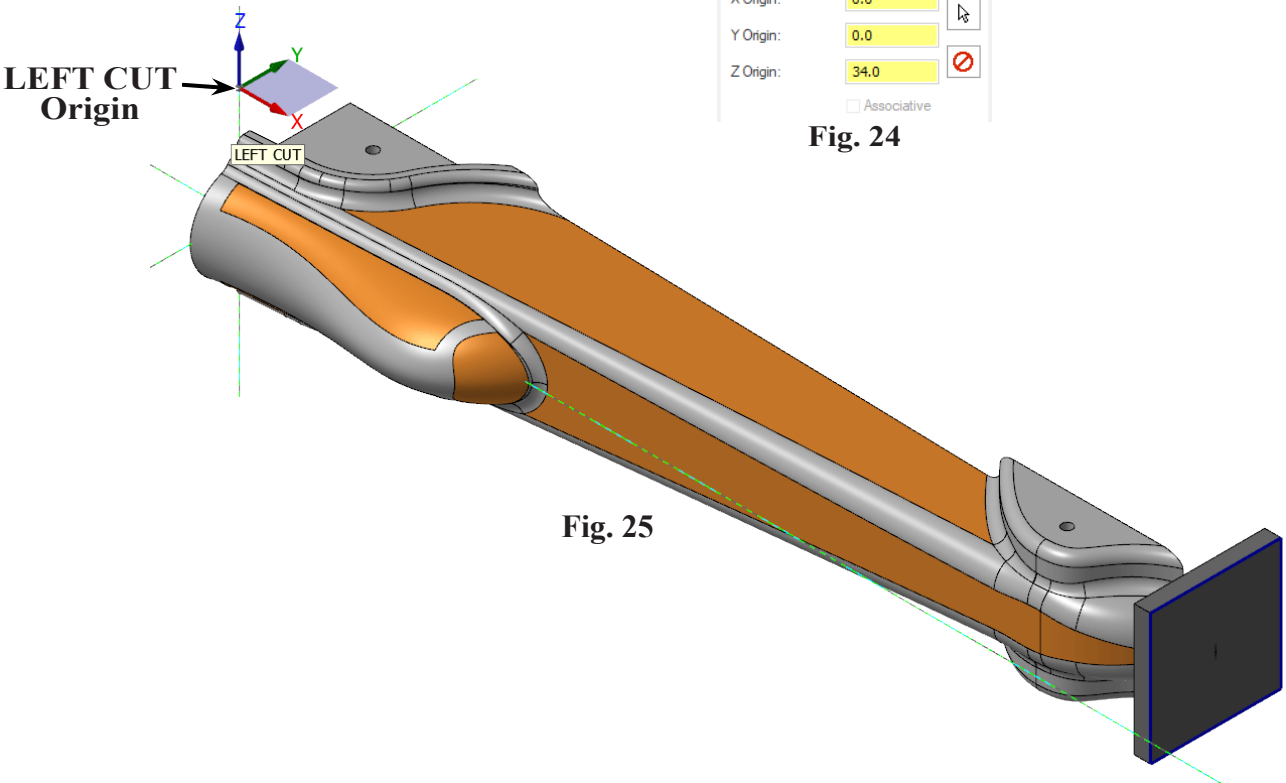


Fig. 25