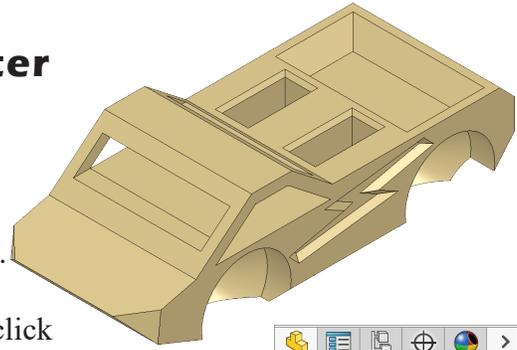


The Landmaster Body



A. Extrude1 Sketch1 Body.

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

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

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

Step 4. Sketch the **12 chained lines** starting at the **Origin** , **Fig. 2**.

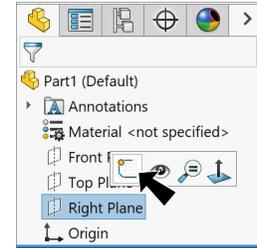
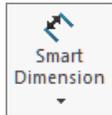


Fig. 1

Step 5. Click **Smart Dimension**



(S)  on the Sketch toolbar.

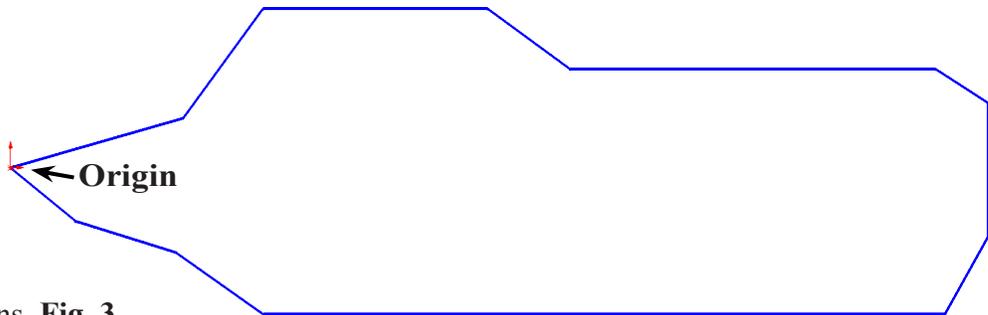


Fig. 2

Step 6. Add dimensions, **Fig. 3**.

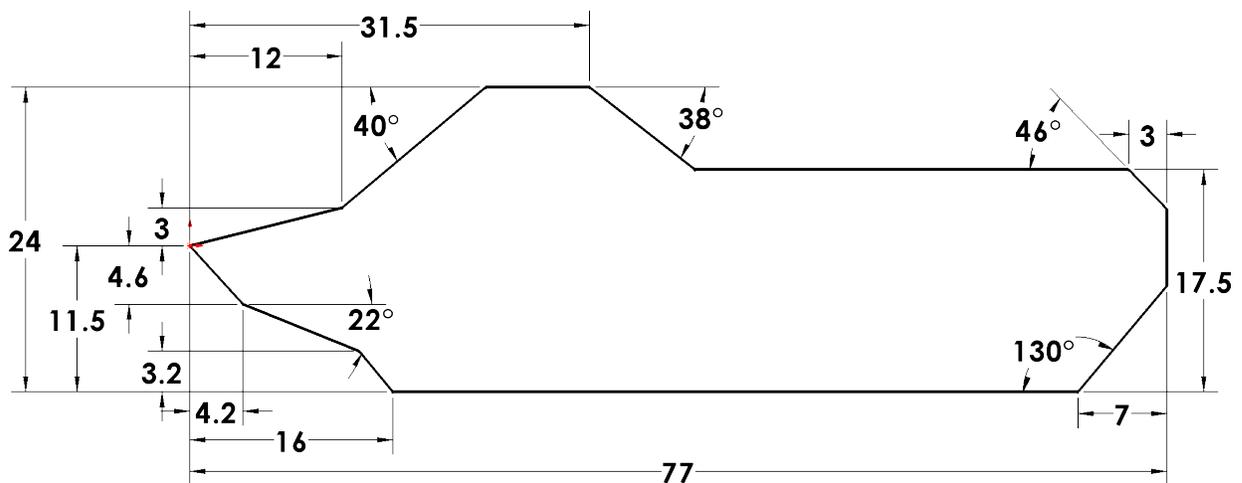


Fig. 3

Step 7. Click **Offset Entities**  on the Sketch toolbar.

Step 8. In the Offset Entities Property Manager set:
under Parameters, Fig. 4

Distance  **2.2**
uncheck **Reverse**
uncheck **Select chain**
click **3 lines of the cab**, Fig. 5

Yellow offset should be to inside
click **OK** .

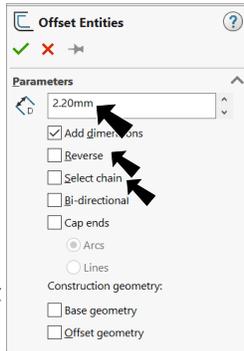


Fig. 4

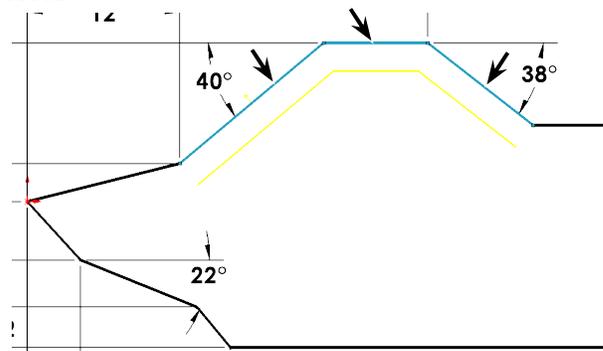


Fig. 5

Step 9. **Drag bottom endpoint of windshield offset line down**, Fig. 6.

Step 10. **Drag down bottom endpoint of rear wind offset line to align with first dragged endpoint**, Fig. 7.

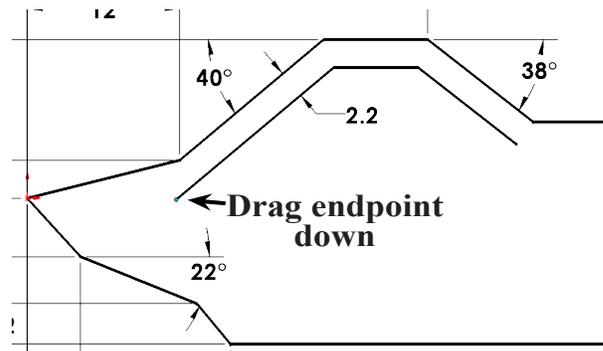


Fig. 6

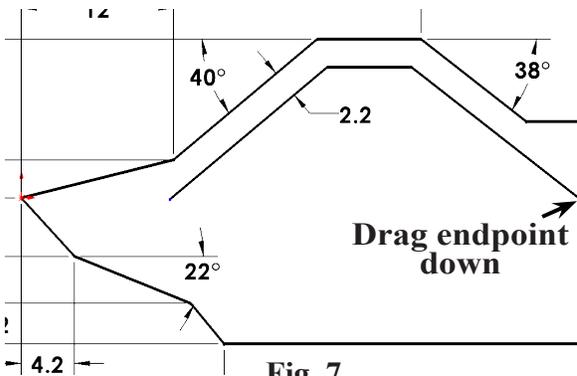


Fig. 7

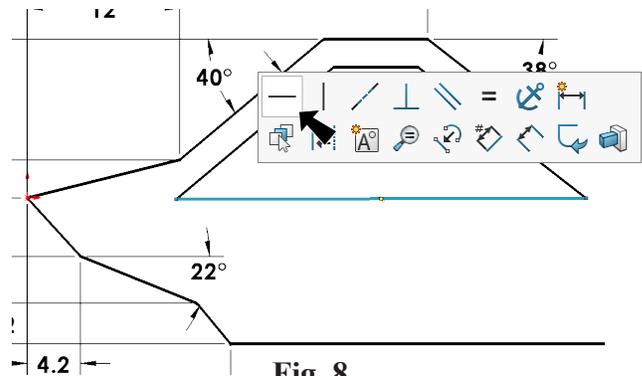


Fig. 8

Step 11. Click **Line**  (L) on the Sketch toolbar.

Step 12. Sketch a **line across endpoints** and **Make Horizontal**  on the context toolbar, Fig. 8.

Step 13. Click **Smart Dimension**  (S) on the Sketch toolbar.

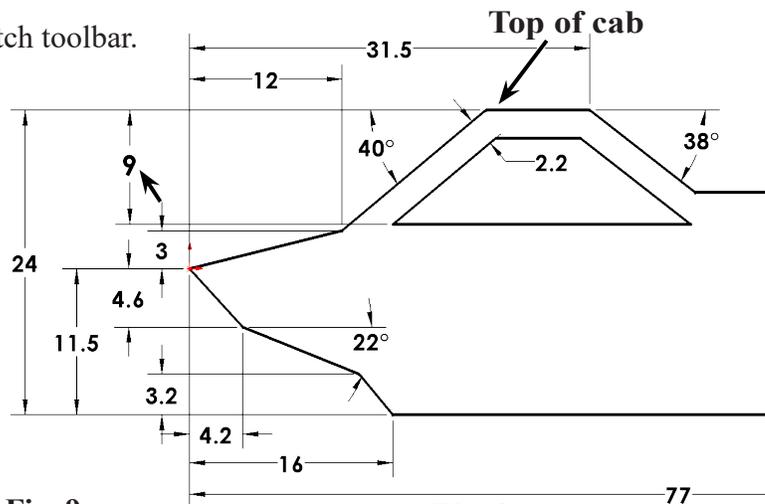
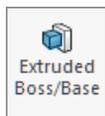


Fig. 9

Step 14. Add dimension 9 to top of cab, Fig. 9.

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. 10**
 End Condition **Mid Plane**

Depth  **30**
 click OK .

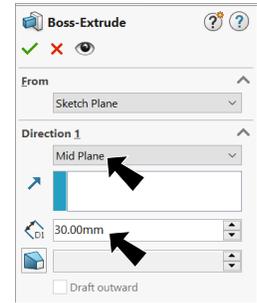
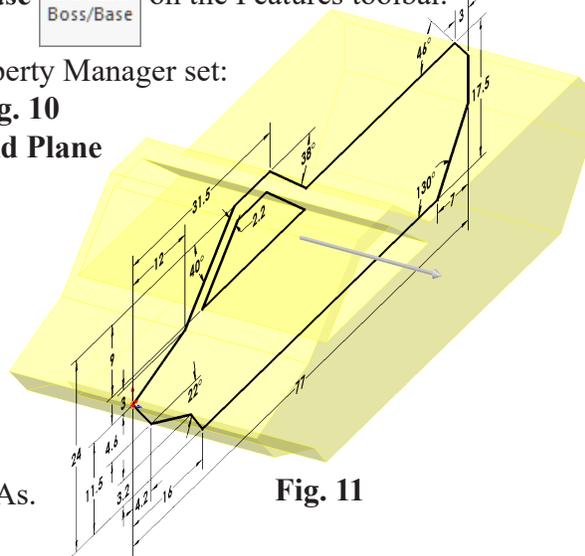


Fig. 10

B. Save as "BODY".

Step 1. Click File Menu > Save As.

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

Tip: Create a **Landmaster** folder in your My Document folder to save your Landmaster project files. At cudacounty we go a step further, and create a Tech Ed [school year] folder and in that folder we create the Landmaster folder.
 Documents\Tech Ed 22-23\Landmaster.

C. Chamfer 1.

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

Step 2. In the Chamfer Property Manager set:
 under Chamfer Type, **Fig. 12**

select **Angle Distance** 
 click **bottom edges**, **Fig. 13**
 under Chamfer Parameters

Distance  **3.2**
Angle  **45°**
 select **Full preview**
 click OK .

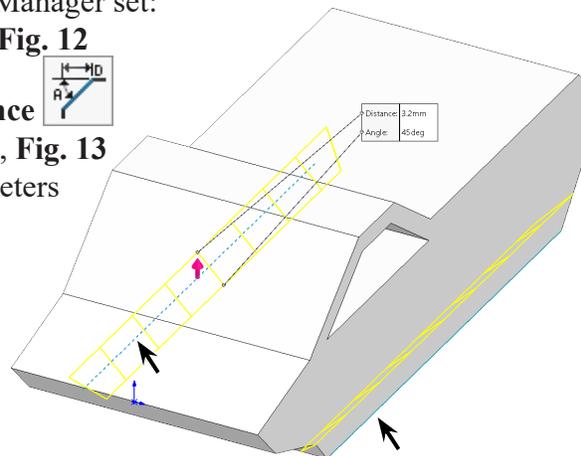


Fig. 13

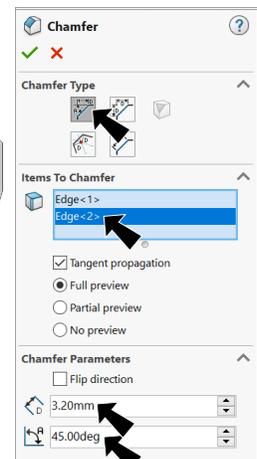


Fig. 12

D. Create Plane1.

Step 1. Click **Front Plane**  in the Feature Manager to display plane in graphics area, **Fig. 14**.

Step 2. In graphics area **Ctrl drag Front plane to right (rear)** and release, **Fig. 15**.

Step 3. In the Plane Property Manager set: under First Reference, **Fig. 16**

Distance  **22.3**

and press **ENTER**.

The new plane should be towards rear, **Fig. 15**.

Click **OK** .

Hold down Ctrl drag plane towards rear

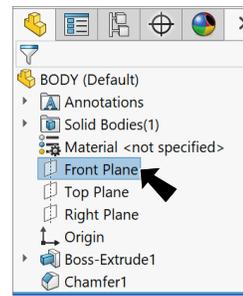


Fig. 14

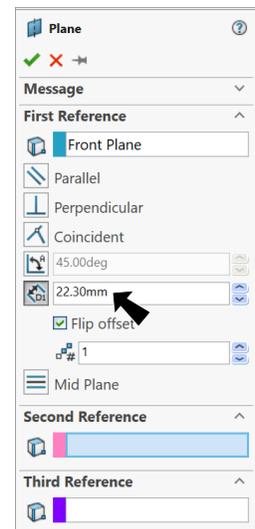


Fig. 16

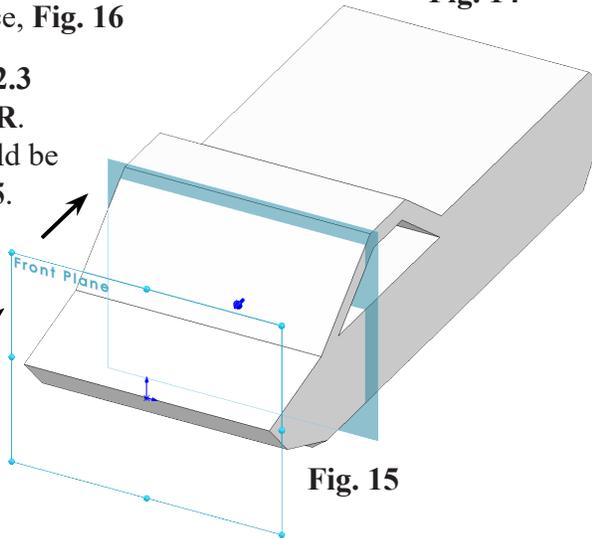


Fig. 15

E. Revolved Cut.

Step 1. **Hide Plane1** . To hide, click **Plane1**  in the Feature Manager and **Hide**  on the context toolbar, **Fig. 17**.

Step 2. Click **Plane1**  in the Feature Manager and click **Sketch**  on the context toolbar, **Fig. 18**.

Step 3. Click **Normal To**  on the Standard Views toolbar. (**Ctrl-8**)

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

Step 5. **Starting on the right edge of part sketch the 6 lines**, **Fig. 19**.

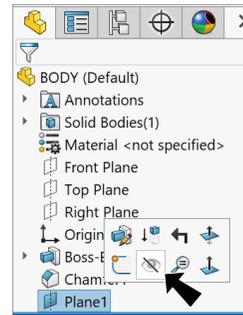


Fig. 17

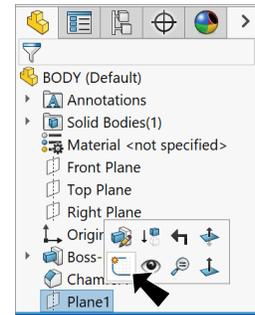


Fig. 18

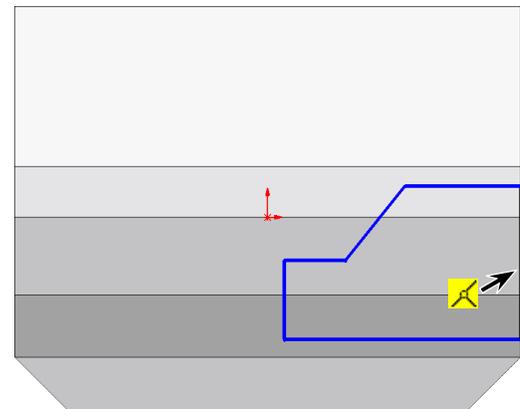


Fig. 19

Step 6. Click **Centerline**  in the **Line flyout**  on the Sketch toolbar.

Step 7. Sketch a **short horizontal centerline out from left endpoint of bottom horizontal line**, **Fig. 20**.

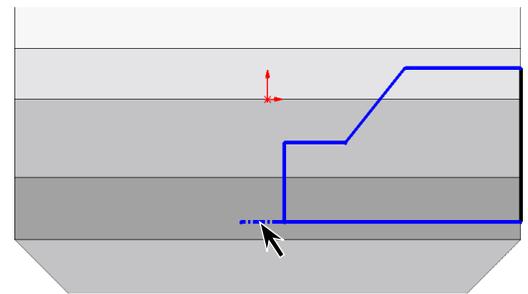


Fig. 20

Step 8. **Unselect Centerline tool**. To unselect, **right click graphics area and click Select**  from menu.

Step 9. **Ctrl click left vertical line and Origin**  to select both. Release Ctrl key and click **Make Coincident**  on the context toolbar, **Fig. 21**.

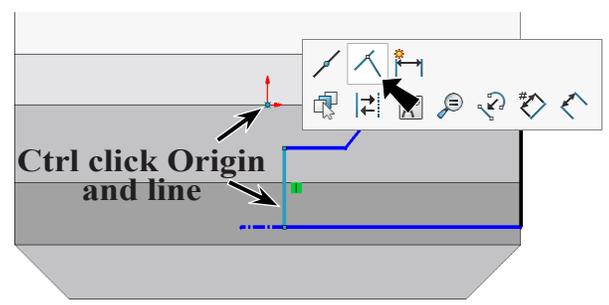
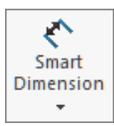


Fig. 21

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

Step 11. Add dimensions, **Fig. 22**. **Double distance the diameters**. To double distance dimension, click centerline and then top horizontal line, move the cursor below centerline and click. Key-in the diameter in the Modify box and press ENTER.

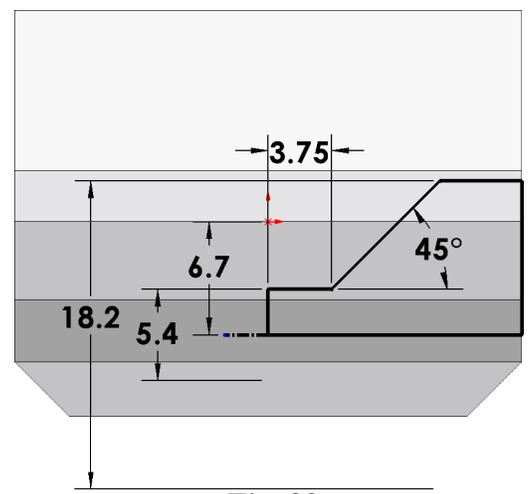


Fig. 22

Step 12. Click **Isometric**  on the Standard Views toolbar. (Ctrl-7)

Step 13. Click **Features**  on the Command Manager toolbar.

Step 14. Click **Revolved Cut**  on the Features toolbar.

Step 15. In the Cut-Revolve Property Manger set:
 under Axis of Revolution , **Fig. 23**
 construction line auto-selected
 click OK .

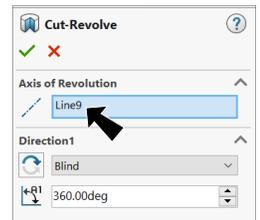


Fig. 23

Step 16. Save  (Ctrl-S).

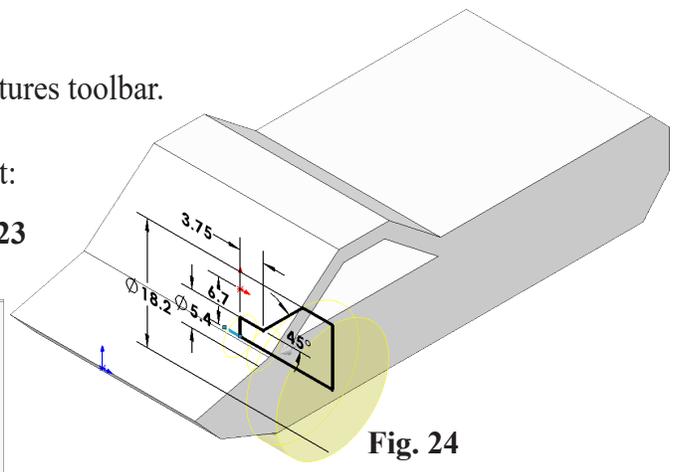


Fig. 24

F. Mirror1 Wheel Well.

Step 1. **Ctrl click Right Plane** and **Cut-Revolve1** feature to select plane and feature, **Fig. 25**.

Step 2. Click **Mirror** on the Features toolbar.

Step 3. In the Mirror Property Manager click **OK**, **Fig. 26**.

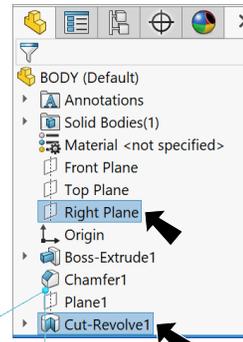


Fig. 25

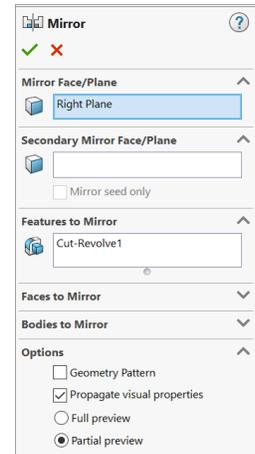


Fig. 26

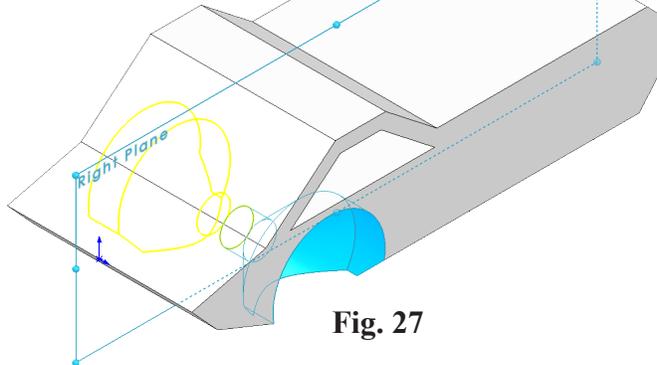


Fig. 27

G. Linear Pattern Axle Hole and Wheel Wells.

Step 1. **Ctrl click Front Plane**, **Cut-Revolve1** and **Mirror1** in the Feature Manager to select plane and features, **Fig. 28**.

Step 2. Click **Linear Pattern** on the Features toolbar.

Step 3. In the Linear Pattern Property Manager set: under Direction 1, **Fig. 29**

Front Plane was preselected

Spacing **41.5**

Reverse Direction

Number of Instances **2**

under Features and Face the two features were preselected click **OK**.

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

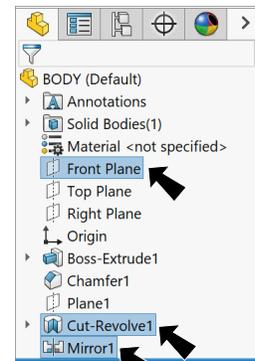


Fig. 28

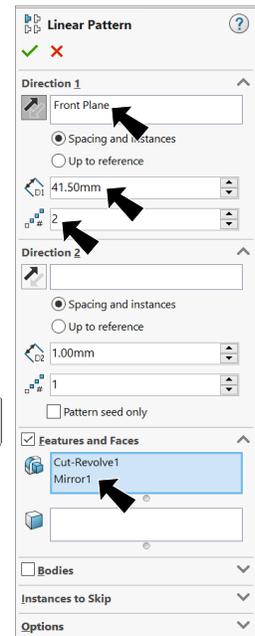


Fig. 29

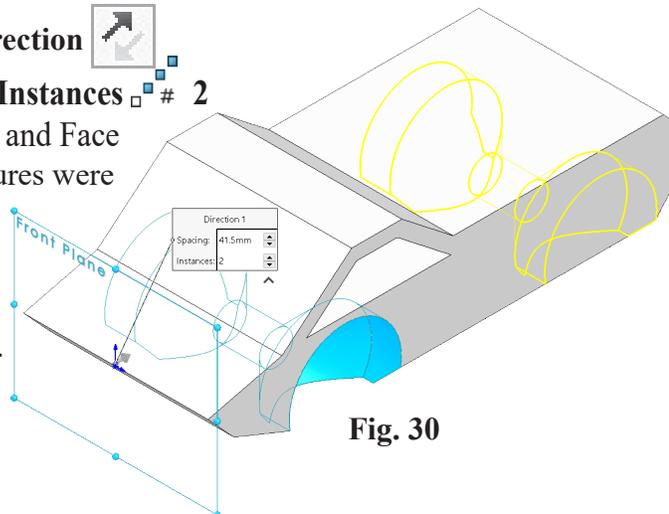


Fig. 30

H. Cut Extrude1 Sketch3 USB Drive Slot Bed.

Step 1. Click the **top face of bed** and click **Sketch** on context toolbar, **Fig. 31**.

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

Step 3. Click **Corner Rectangle** in the **Rectangle flyout** on the Sketch toolbar.

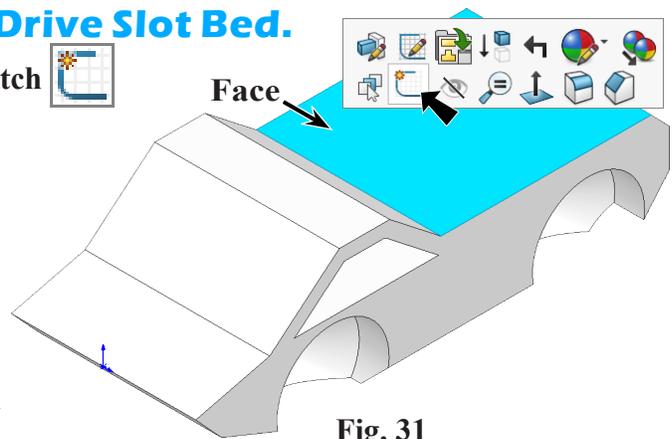


Fig. 31

Step 4. Sketch **corner rectangle** on the bed, **Fig. 32**.

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

Step 6. Add dimensions, **Fig. 32**.

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

Step 8. Click **Features** on the Command Manager toolbar.

Step 9. Click **Extruded Cut** on the Features toolbar.

Step 10. In the Cut-Extrude Property Manager set:
 under Direction 1, **Fig. 33**
 End Condition **Through All**
 click OK.

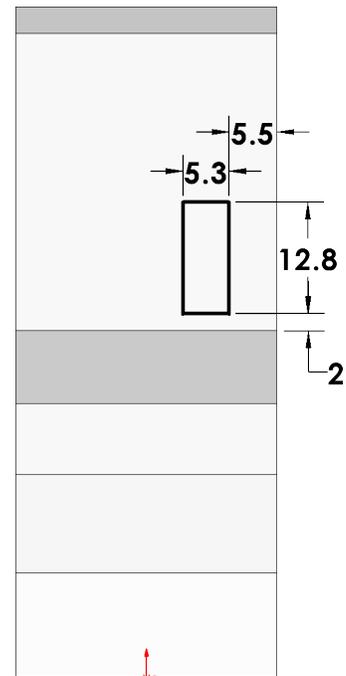


Fig. 32

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

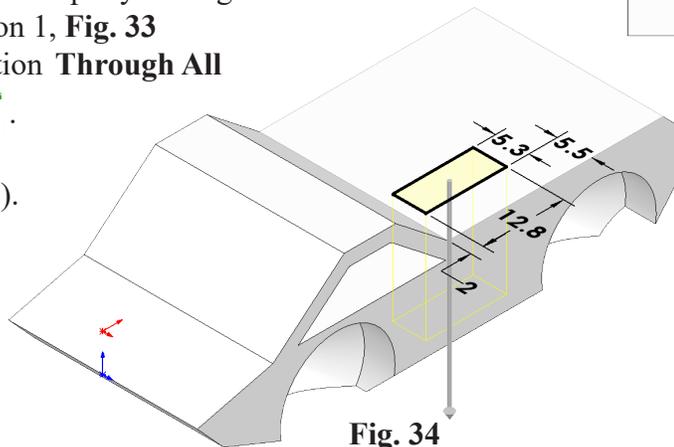


Fig. 34

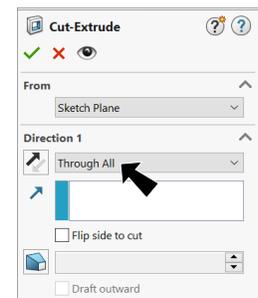


Fig. 33

I. Chamfer2.

Step 1. Click **Chamfer**  in the **Fillet flyout**  on the Features toolbar.

Step 2. In the Chamfer Property Manager set:

under Chamfer Type, **Fig. 35**

select **Angle Distance** 

under Chamfer Parameters

Distance  .7

Angle  45°

click **top edges of cut**, **Fig. 36**

click **OK** .

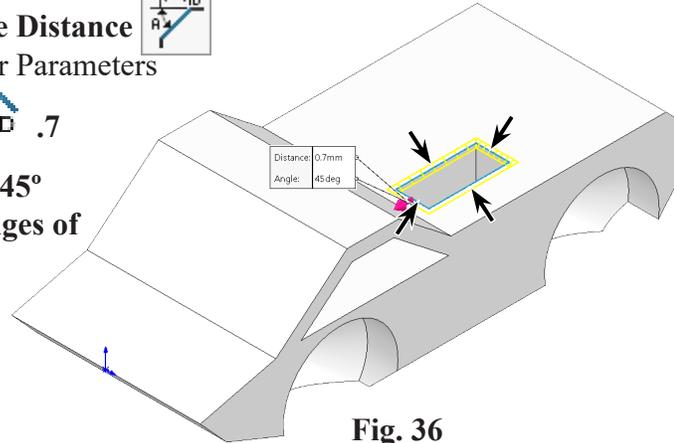


Fig. 36

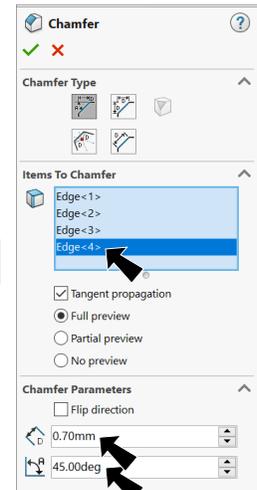


Fig. 35

J. Mirror2 USB Drive Slot.

Step 1. **Ctrl click** **Right Plane** , **Cut-Extrude1** and **Chamfer2** feature to select plane and features, **Fig. 37**.

Step 2. Click **Mirror**  on the Features toolbar.

Step 3. In the Mirror Property Manager click **OK** , **Fig. 38**.

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

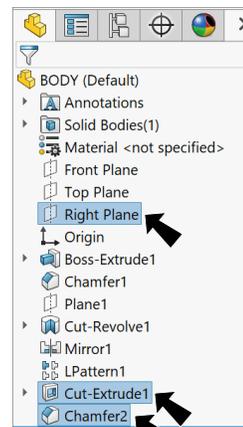


Fig. 37

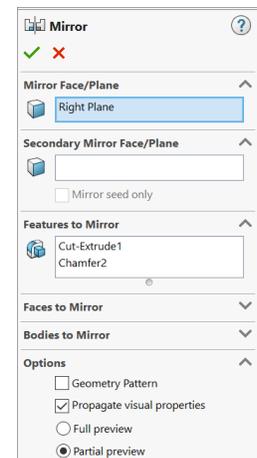


Fig. 38

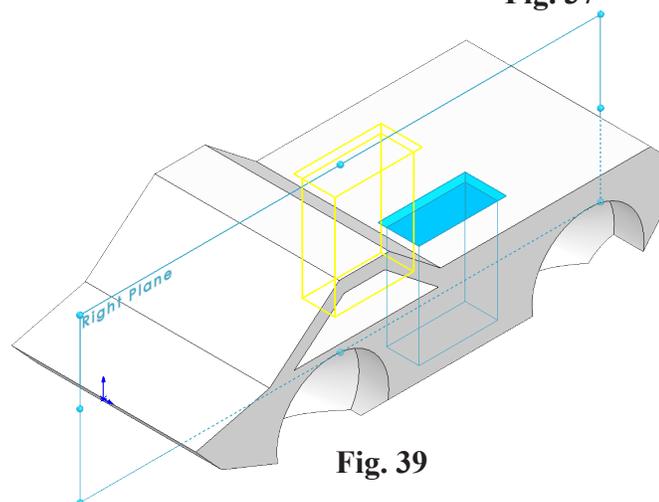


Fig. 39

K. Cut-Extrude2 Sketch4 Cut Bed.

Step 1. Click the **top face of bed** and click **Sketch** on the context toolbar, **Fig. 40**.

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

Step 3. Click **Corner Rectangle** in the **Rectangle flyout** on the Sketch toolbar.

Step 4. Sketch corner rectangle on the bed, **Fig. 41**.

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

Step 6. Add dimensions, **Fig. 41**.

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

Step 8. Click **Features** on the Command Manager toolbar.

Step 9. Click **Extruded Cut** on Features toolbar.

Step 10. In the Cut-Extrude Property Manager set:
under Direction 1, **Fig. 42**
End Condition **Blind**

Depth **3.5**

click **Draft** **45°**

click **OK**.

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

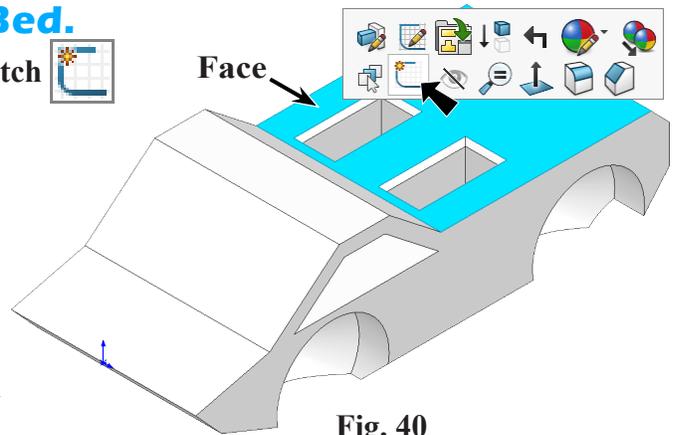


Fig. 40

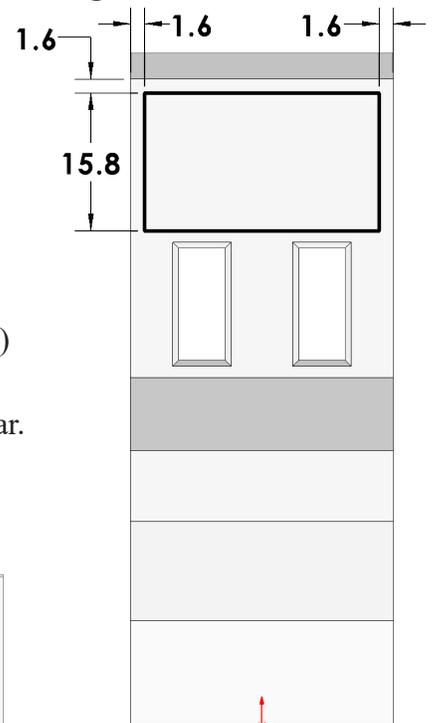


Fig. 41

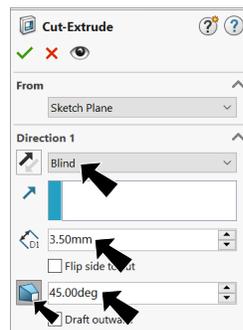


Fig. 42

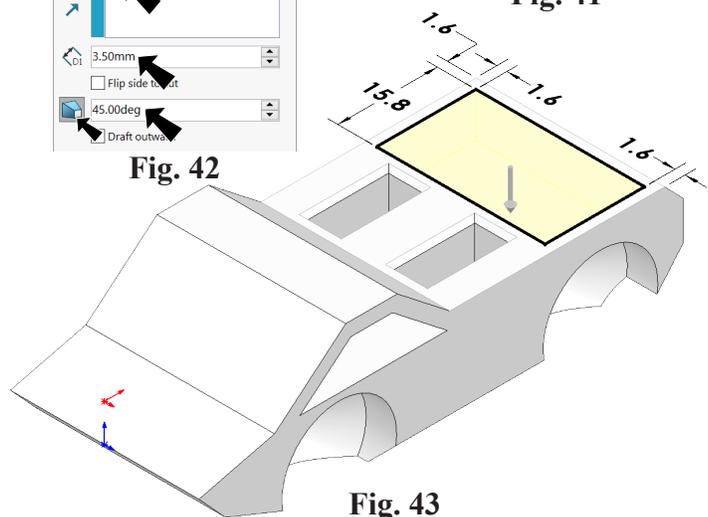


Fig. 43

L. Cut Extrude3 Sketch5 Rear Window.

Step 1. Click **Front Plane**  in the Feature Manager and click **Sketch** on the context toolbar, **Fig. 44**.

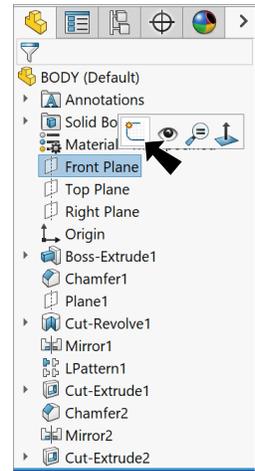


Fig. 44

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

Step 3. Click **Offset Entities**  on the Sketch toolbar.

Step 4. In the Offset Entities Property Manager set:
under Parameters, **Fig. 45**

Distance  **2**
check **Reverse**
uncheck **Bi-directional**
click **top and side edges of cab**, **Fig. 46**
Yellow offset circle on inside

Click **Keep Visible**  and **OK** . The Push Pin  on allows selection of another offset.

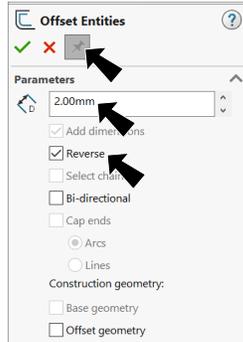


Fig. 45

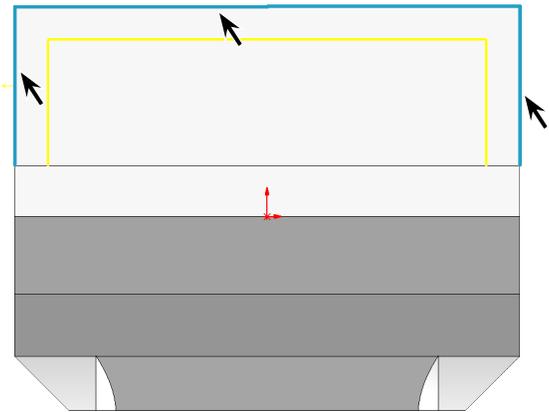


Fig. 46

Step 5. Still in Offset Entities Property Manager under Parameters, **Fig. 47**

Distance  **5**
check **Reverse**
click **top edge of cab**, **Fig. 48**
Yellow offset circle on inside
click **OK** .

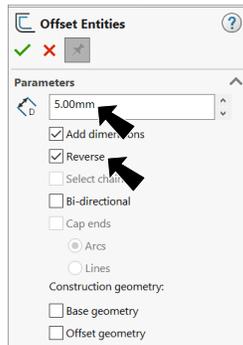


Fig. 47

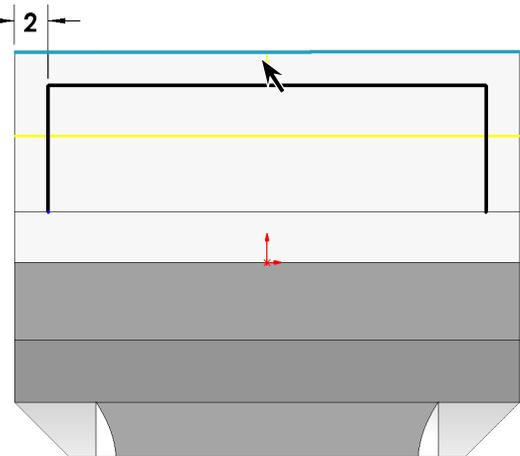


Fig. 48

Step 6. Still in Offset Entities Property Manager under Parameters, Fig. 49

Distance  7
 check Reverse
 click top edge of cab,
Fig. 50
 Yellow offset circle on
 inside
 click OK  twice.

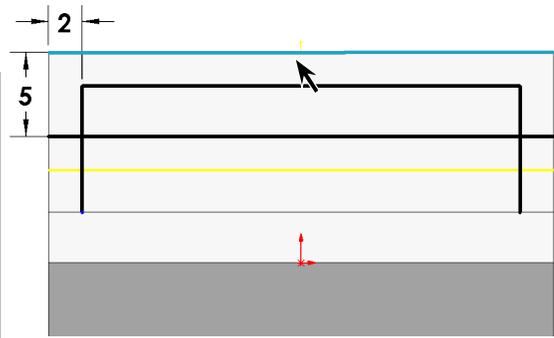
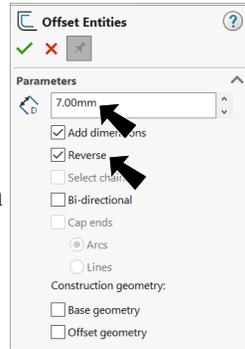


Fig. 50

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

Fig. 49

Step 8. Click **Features**  on the Command Manager toolbar.

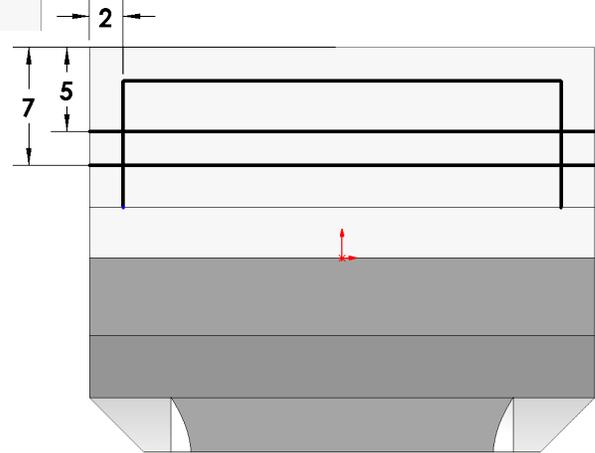


Fig. 51

Step 9. Click **Extruded Cut**  on the Features toolbar.

Step 10. In the Cut-Extrude Property Manager set:
 under Direction 1, Fig. 52

End Condition **Through All**
 uncheck **Thin Feature**
 under Selected Contours
 click the **top contour**, Fig. 53
 click OK .

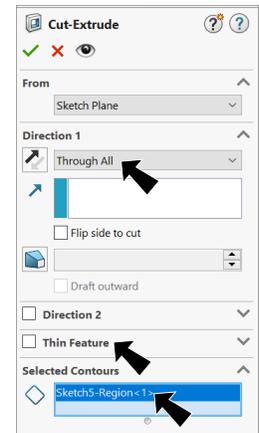


Fig. 52

Step 11. Save 
 (Ctrl-S).

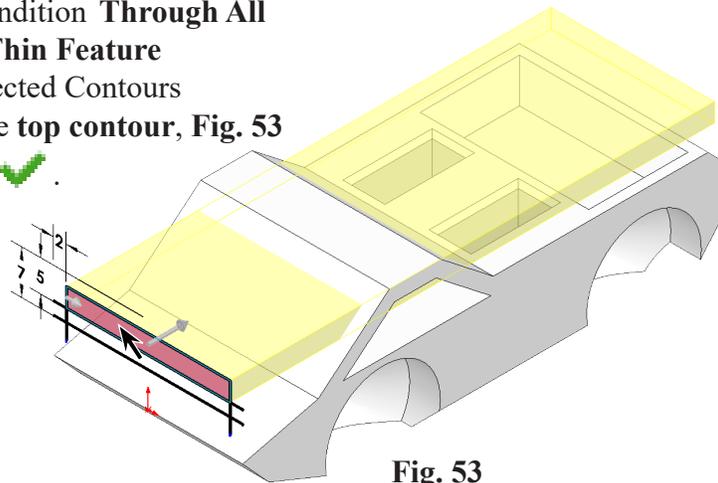


Fig. 53

M. Cut Extrude4 Sketch5 Windshield.

Step 1. Expand **Cut-Extrude3** in the Feature Manager and click **Sketch5** to select sketch, **Fig. 54**.

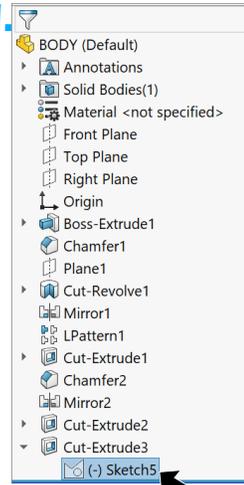
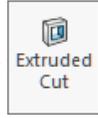


Fig. 54

Step 2. Click **Extruded Cut** on the Features toolbar.



Step 3. In the Cut-Extrude Property Manager set:
 under Direction 1, **Fig. 55**
 End Condition **Blind**

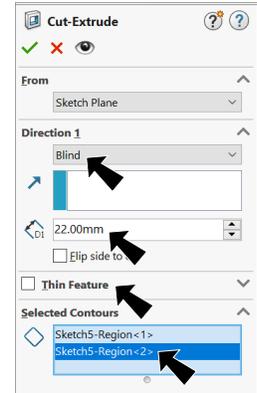


Fig. 55

Depth **22**

uncheck **Thin Feature**
 under Selected Contours

delete Sketch5 and then
 click **both contours, Fig. 56**
 to delete, select and Delete key.

click OK .

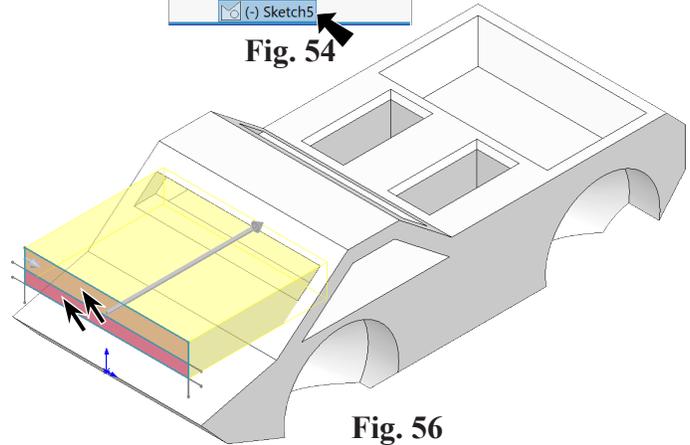


Fig. 56

Step 4. Save (Ctrl-S).

N. Lofted Cut Sketch6 Cut Front Quarter.

Step 1. Click the **side face** and click **Sketch** on the context toolbar, **Fig. 57**.



Step 2. Zoom in on **left front quarter panel, Fig. 57**.

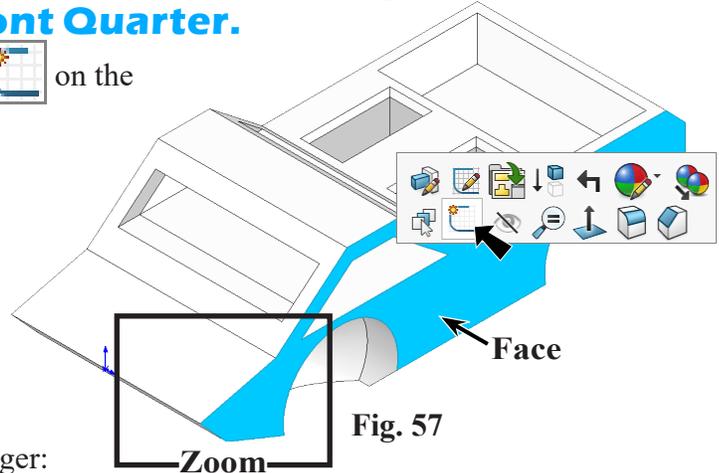


Fig. 57

Step 3. **Unselect the face** and click **Convert Entities** on the Sketch toolbar.



Step 4. In the Convert Entities Property Manager:
 under Entities to Convert, **Fig. 58**
 click **both edges at Origin, Fig. 59**
 click OK .

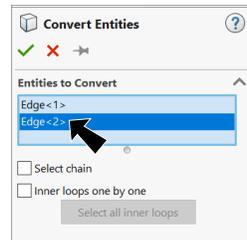


Fig. 58

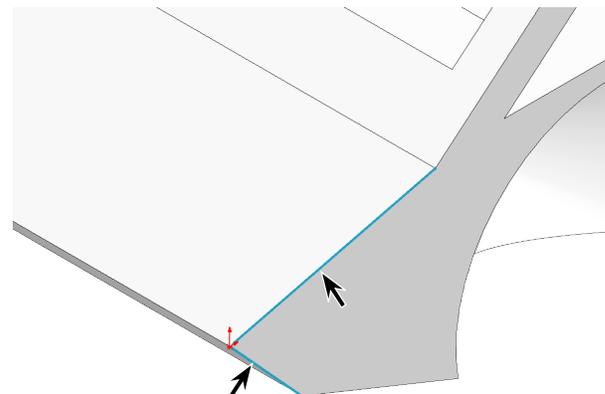


Fig. 59

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

Step 6. Sketch **line from bottom endpoint up to top line**, **Fig. 60**.

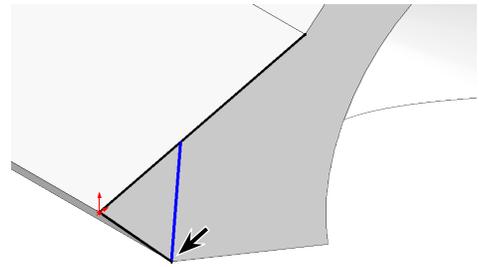


Fig. 60

Step 7. Click **Trim Entities**  (S) on the Sketch toolbar.

Step 8. In the Trim Property Manger:
select **Trim to closest** ,
Fig. 61
Trim segment outside line,
Fig. 62. Click segments to trim.
Results shown in **Fig. 63**.
Click OK  when done.

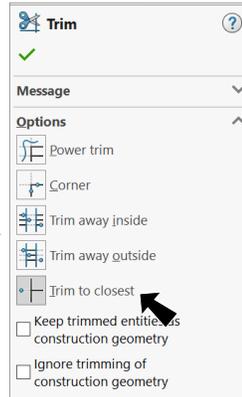


Fig. 61

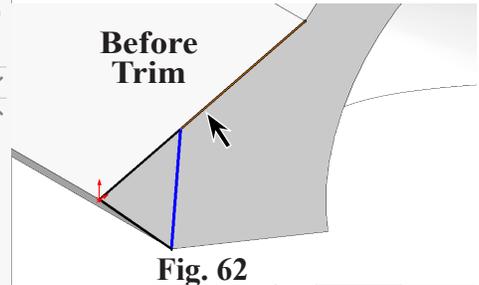


Fig. 62

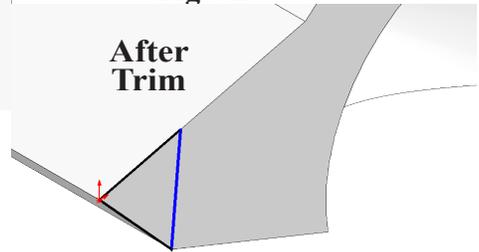


Fig. 63

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

Step 10. Dimension **trimmed line 5**, **Fig. 64**.

Step 11. Click **Exit Sketch**  on the Sketch toolbar.

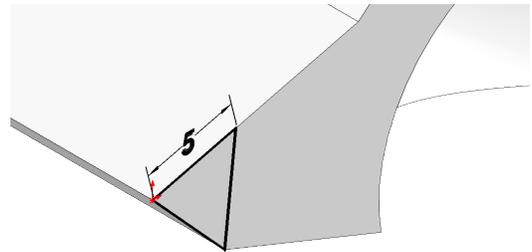


Fig. 64

O. Lofted Cut Sketch7.

Step 1. Click **top face of hood** and click **Sketch**  on the context toolbar, **Fig. 65**.

Step 2. Click **Centerline**  in the **Line flyout**  on the Sketch toolbar.

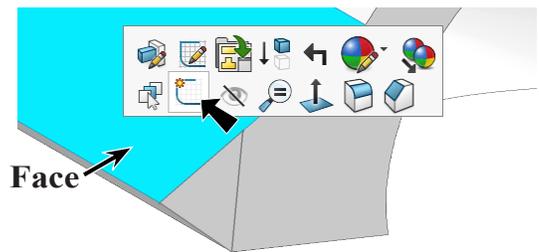


Fig. 65

Step 3. Sketch **centerline from front edge of hood to side edge coincident with line in Sketch6**, **Fig. 66**.

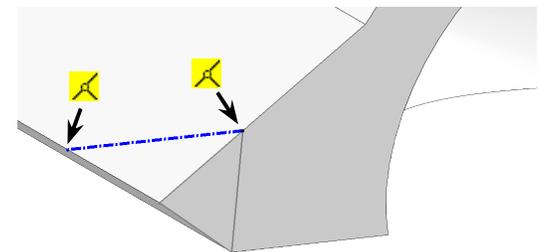


Fig. 66

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

Step 5. Sketch a **point forward endpoint of centerline**, **Fig. 67**.

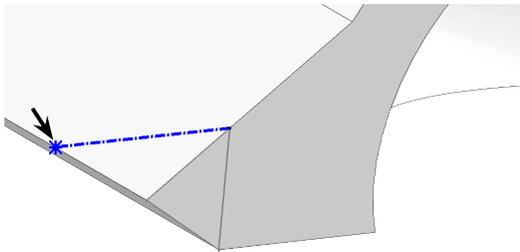


Fig. 67

Step 6. Click **Smart Dimension**  (S) on the Sketch toolbar.

Step 7. Dimension **angle 45°**, **Fig. 68**.

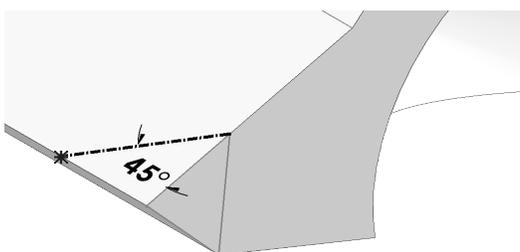


Fig. 68

Step 8. Click **Exit Sketch**  on the Sketch toolbar.

Step 9. Click **Features**  on the Command Manager toolbar.

Step 10. Click **Lofted Cut**  on the Features toolbar.

Step 11. In the Cut-Loft Property Manager set:
under Profiles, **Fig. 69**
Sketch6
Sketch7
click OK .

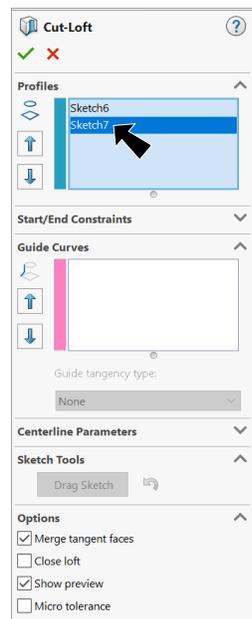


Fig. 69

Step 12. Save  (Ctrl-S).

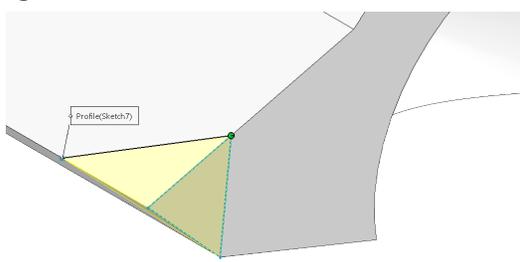


Fig. 70

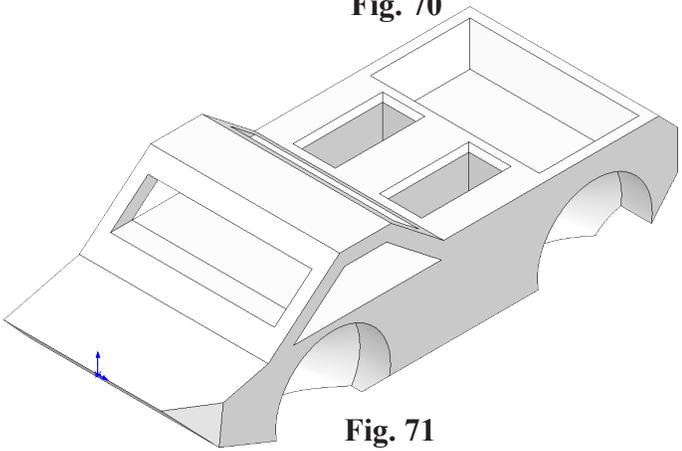


Fig. 71

P. Cut Extrude5 Sketch8 Lighting Bolt.

Step 1. Click the **side face** and click **Sketch**  on the context toolbar, **Fig. 72**.

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

Step 3. Click **Parallelogram**  in the **Rectangle flyout**  on the Sketch toolbar.

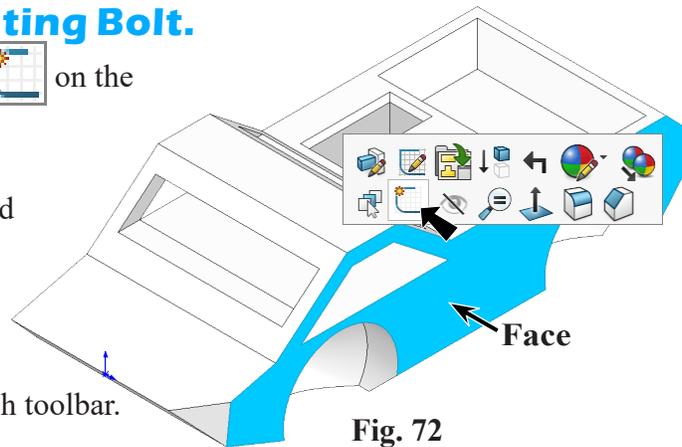


Fig. 72

Step 4. Sketch a **parallelogram between wheel wells**, **Fig. 73**.

Step 5. I'll hide the body for clarity. Unselect

Parallelogram 

tool then toggle Hide/Show bodies by moving the cursor over the component in graphics area and press **Tab** key to hide. **Shift - Tab** to show.

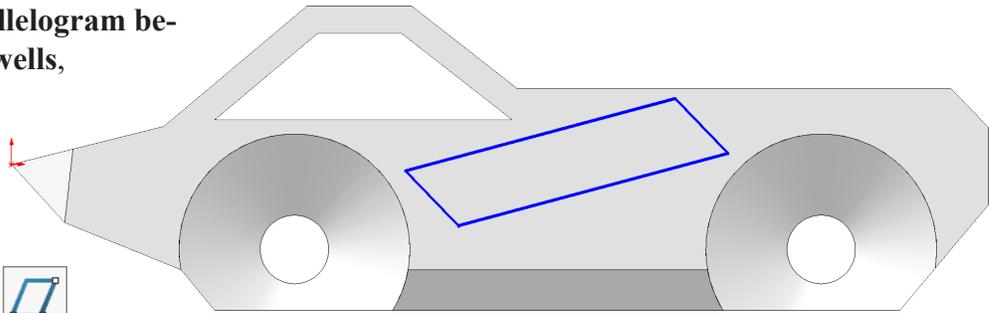


Fig. 73

Step 6. Click **Smart Dimension**  (S) on the Sketch toolbar.

Step 7. Add dimensions, **Fig. 74**.

To dimension angle to imaginary line, click line and end-point, then click the a **crosshair**

 and place dimension.

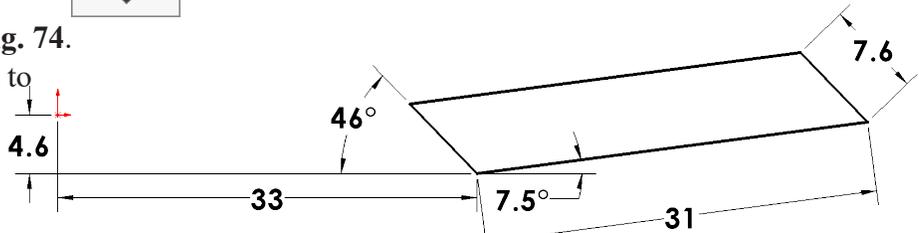


Fig. 74

Step 8. Click **Line**  (L) on the Sketch toolbar.

Step 9. Sketch the **4 lines**, **Fig. 75**.

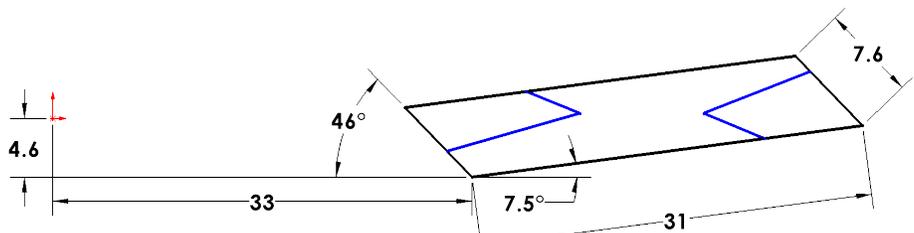


Fig. 75

Step 10. **Unselect Line tool.** To unselect, **right click graphics area** and click **Select** from menu.



Step 11. **Ctrl click both short lines** select both. Release Ctrl key and click **Make Parallel** on the context toolbar, **Fig. 76.**

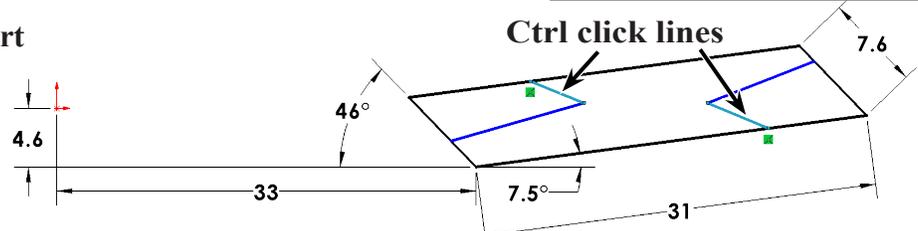


Fig. 76

Step 12. **Ctrl click both long lines** select both. Release Ctrl key and click **Make Parallel** on the context toolbar, **Fig. 77.**

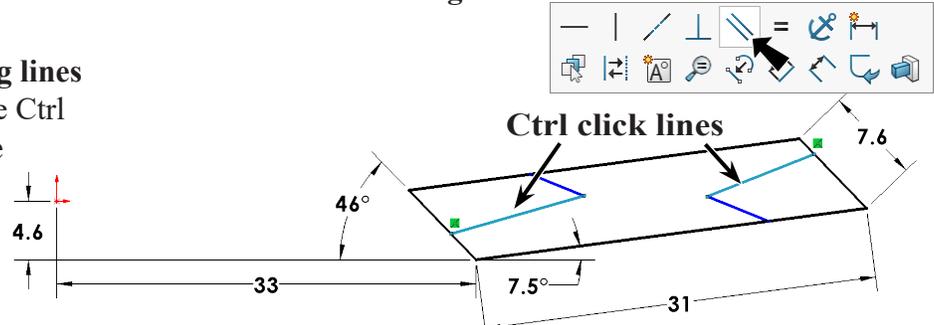


Fig. 77

Step 13. Click **Smart Dimension** on the Sketch toolbar.

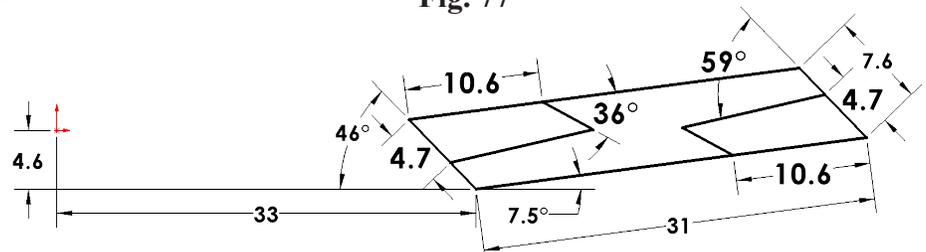
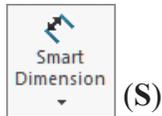


Fig. 78

Step 14. Add dimensions, **Fig. 78.**

Step 15. If necessary, show body, **Fig. 79.** Unselect Smart Dimension and **Shift - Tab** to show.

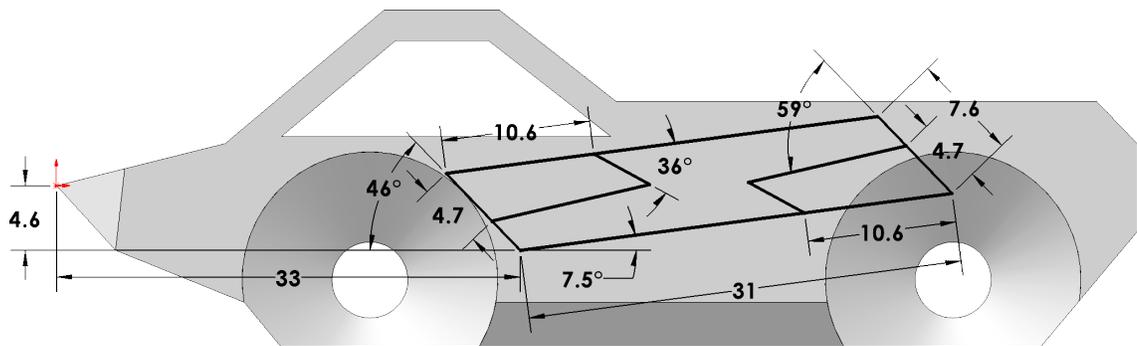
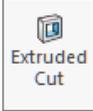


Fig. 79

Step 16. Click **Isometric**  on the Standard Views toolbar. (Ctrl-7)

Step 17. Click **Features**  on the Command Manager toolbar.

Step 18. Click **Extruded Cut**  on Features toolbar.

Step 19. In the Cut-Extrude Property Manager set:

under Direction 1, **Fig. 80**

End Condition **Blind**

Depth  1

click **Draft**  45°

under Selected Contours

click **contour**,

Fig. 81

click OK .

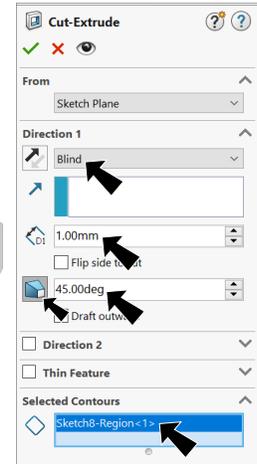
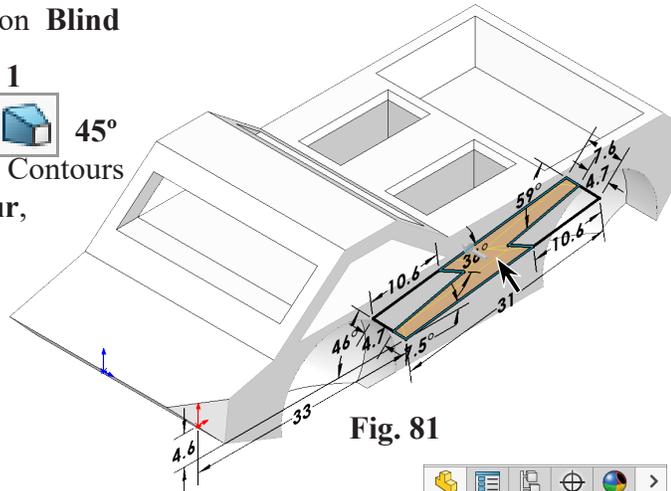


Fig. 80

Q. Mirror3.

Step 1. Ctrl click **Right Plane** , **Cut-Loft1** and **Cut-Extrude5** feature to select plane and features, **Fig. 82**.

Step 2. Click **Mirror**  on the Features toolbar.

Step 3. In the Mirror Property Manager click OK , **Fig. 83**.

Step 4. Save  (Ctrl-S).

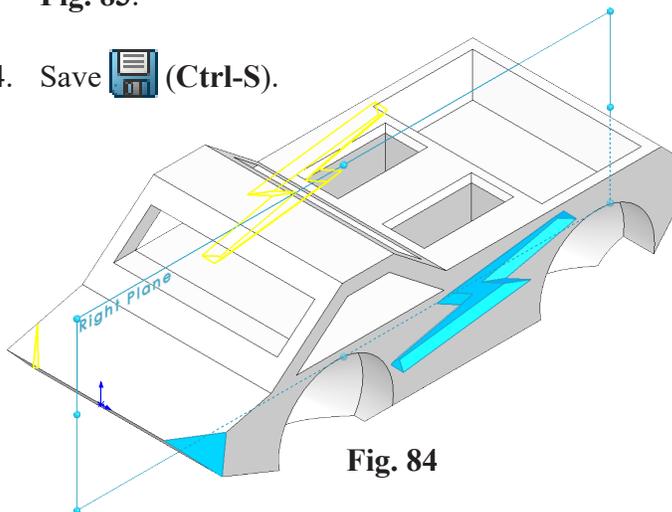


Fig. 84

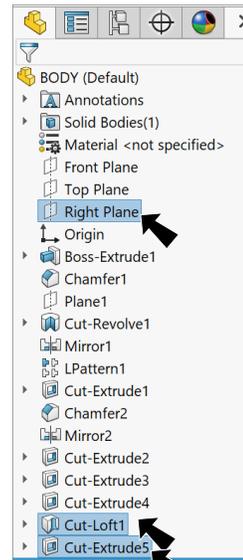


Fig. 82

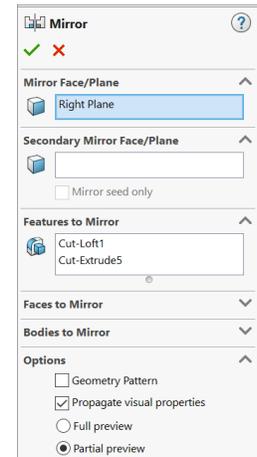


Fig. 83

R. Appearance: Safari Tan.

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

Callout  on the context toolbar and click **BODY** , Fig. 85.

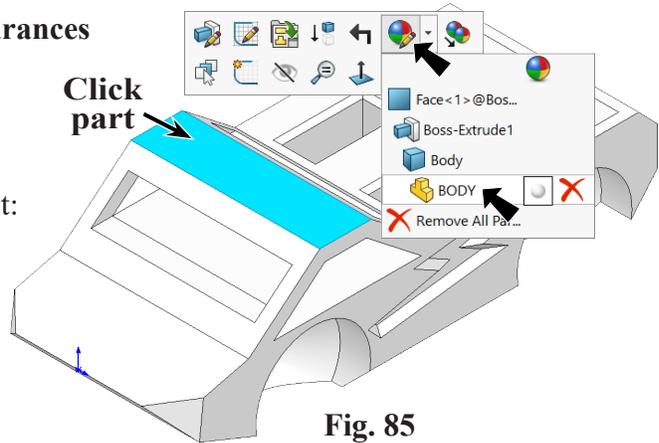


Fig. 85

Step 2. In the Appearances Property Manager set:

under Color, Fig. 86

set RGB values

R 204

G 184

B 131

click OK .

Step 3. Save  (Ctrl-S).

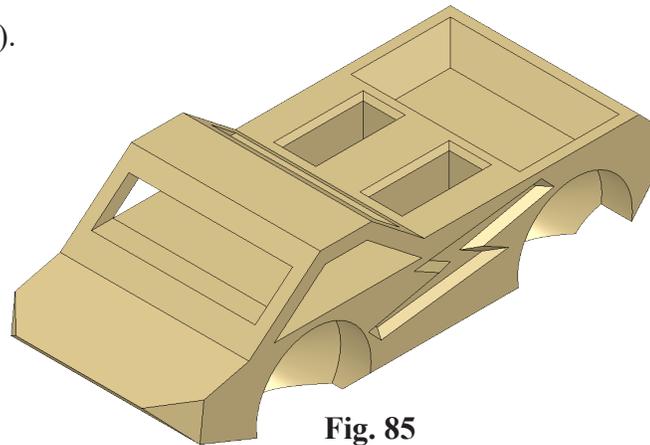


Fig. 85

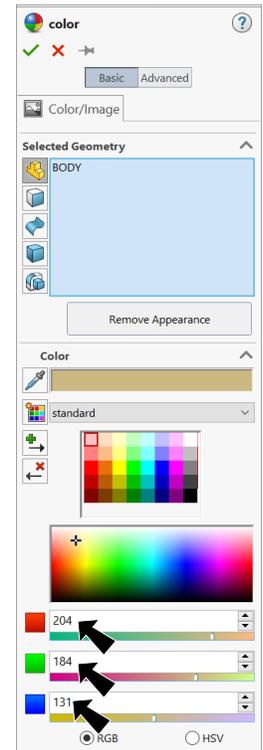


Fig. 86