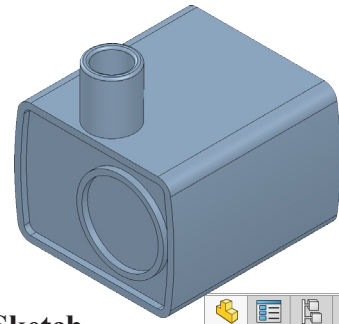




The Watermaster Pump



A. Extrude1.

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

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

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

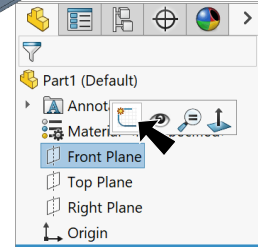




Fig. 1

Step 4. Sketch a center rectangle at the Origin , **Fig. 2**.

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

Step 6. Add dimensions 28 x 37, **Fig. 3**.

Step 7. Click **Centerline**  in the **Line flyout**  on the Sketch toolbar.

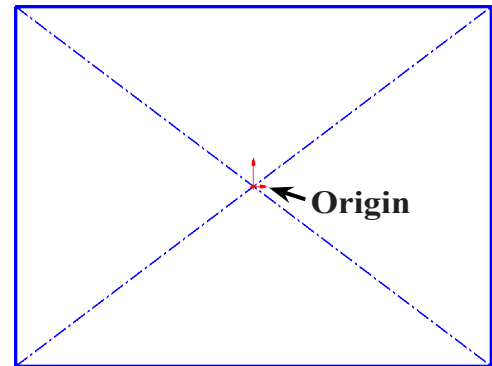



Fig. 2

Step 8. Sketch vertical centerline through Origin , **Fig. 4**.

Step 9. Click **3 Point Arc**  (S) in the **Arc flyout**  on the Sketch toolbar.

Step 10. Sketch arc with start and endpoints at horizontal lines and radius tangent  with left vertical line, **Fig. 5**.

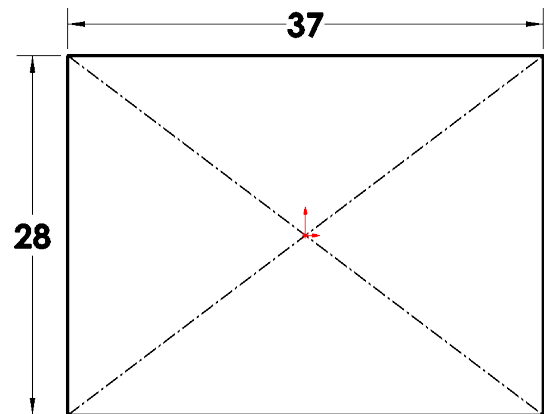


Fig. 3

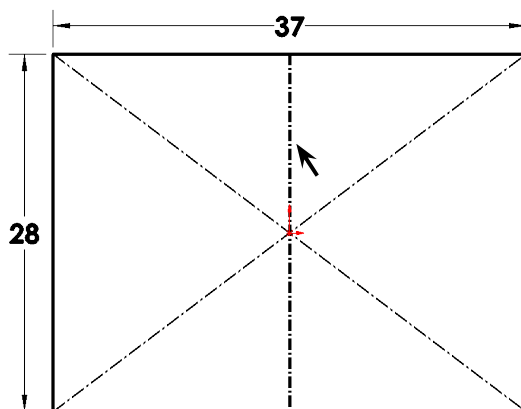


Fig. 4

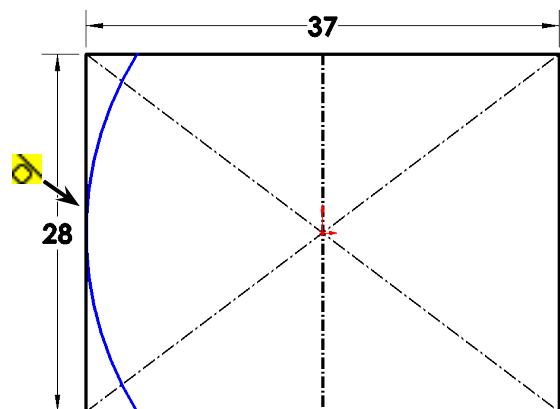



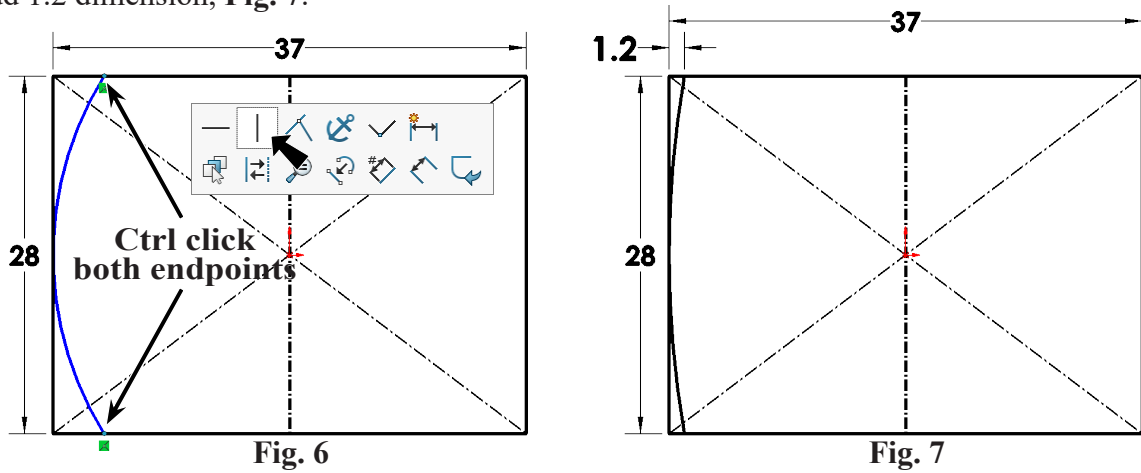
Fig. 5


Step 11. **Unselect Arc tool.** To unselect, **right click graphics area and click Select**  from menu.

Step 12. **Ctrl click endpoints of arc** to select both. Release Ctrl key and click **Make Vertical**  on the context toolbar, **Fig. 6.**

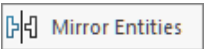
Step 13. Click **Smart Dimension**  (S) on the Sketch toolbar.

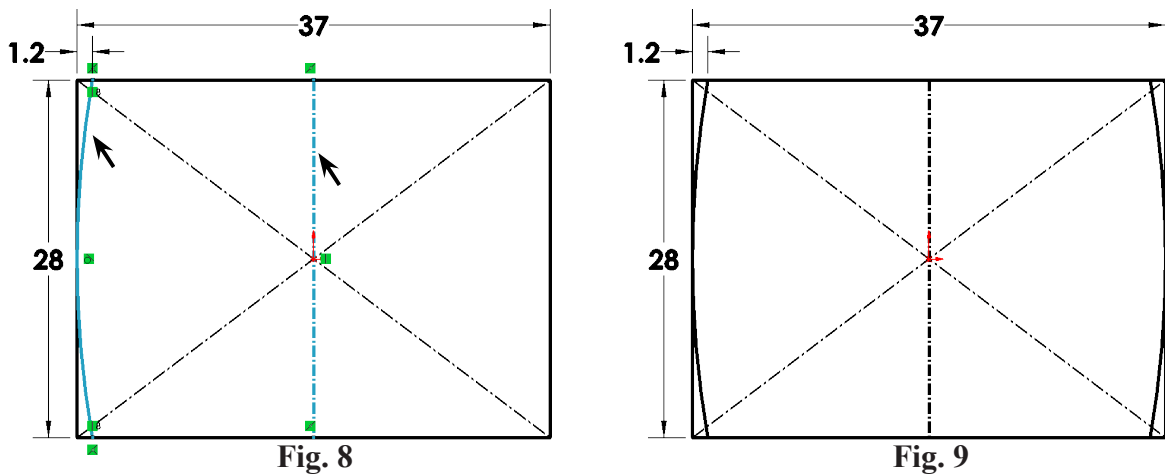
Step 14. Add 1.2 dimension, **Fig. 7.**




Step 15. **Unselect Smart Dimension.** To unselect, **right click graphics area and click Select**  from menu.

Step 16. **Ctrl arc and vertical centerline** to select both, **Fig. 8.**

Step 17. Click **Mirror Entities**  on the Sketch toolbar, **Fig. 9.**



Step 18. Click **Features**  on the Command Manager toolbar.

Step 19. Click **Extruded Boss/Base**  on the Features toolbar.

Step 20. In the Boss-Extrude Property Manager set:

under Direction 1, **Fig. 10**

End Condition **Mid Plane**

Depth  **38.6**

under Selected Contours

click the **contour**, **Fig. 11**

click OK .

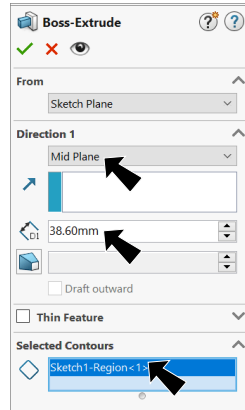


Fig. 10

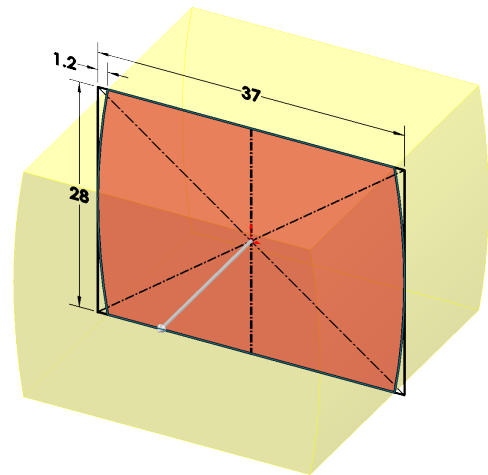



Fig. 11

B. Save as "PUMP".

Step 1. Click File Menu > Save As.

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


C. Extrude2.

Step 1. Click the **top face** and click **Sketch**  on the context toolbar, **Fig. 12**.

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

Step 3. Click **Circle**  on the Sketch toolbar.

Step 4. Sketch **two concentric circles below and to left of the**

Origin , **Fig. 13**.

Step 5. Click **Smart Di-**

mension

(S) on the Sketch toolbar.

Step 6. Add dimensions, **Fig. 14**.

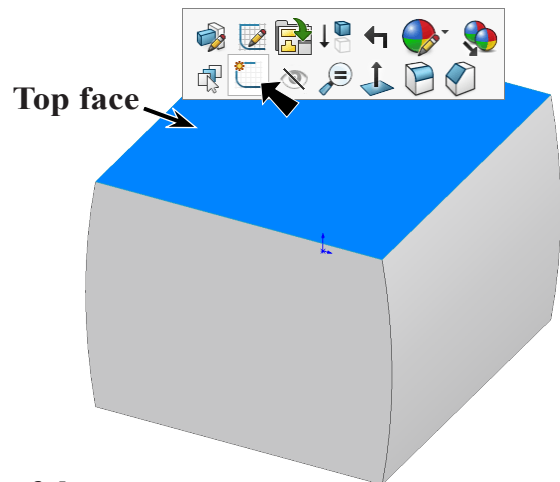


Fig. 12

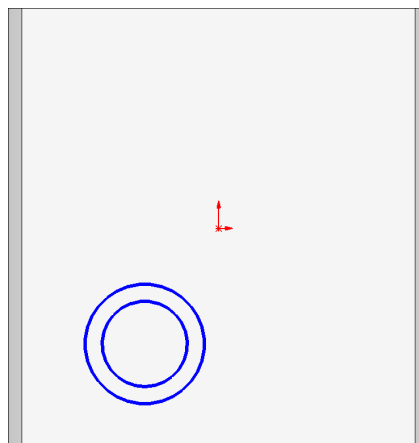


Fig. 13

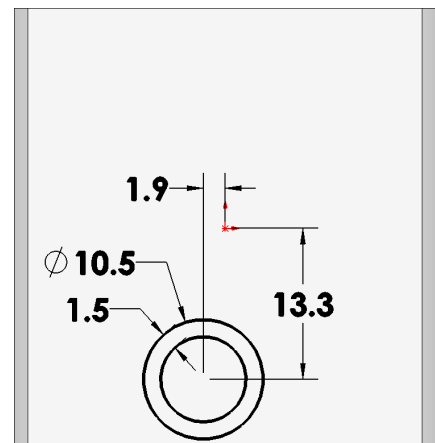




Fig. 14

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

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

Step 9. Click **Extruded Boss/Base**  on the Features toolbar.

Step 10. In the Boss-Extrude Property Manager set:

under Direction 1, **Fig. 15**

End Condition **Blind**

Depth  **12**

click OK .

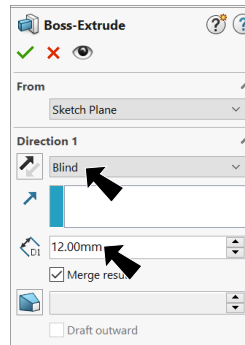


Fig. 15

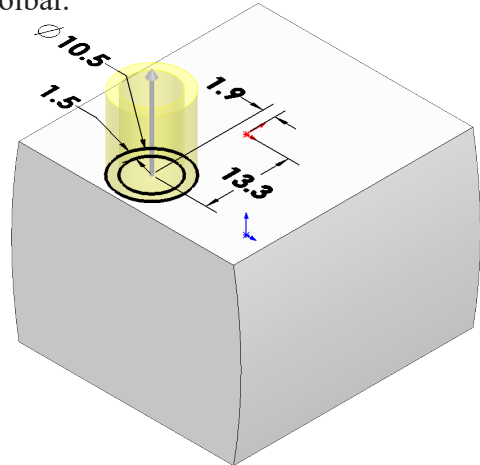


Fig. 16

Step 11. Save  (Ctrl-S).


D. Fillet Edges.

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

Step 2. In the Fillet Property Manager set:
select **FilletXpert**, **Fig. 17**

① **Radius**  **3**

click a **horizontal side edge of Extrude1**, **Fig. 18**

click **Connected to start face**  **3 Edges** on the Fillet pop-up

click **Apply**

② **Radius**  **.5**, **Fig. 19**

click **top face of Extrude2**, **Fig. 20**

click **OK** .

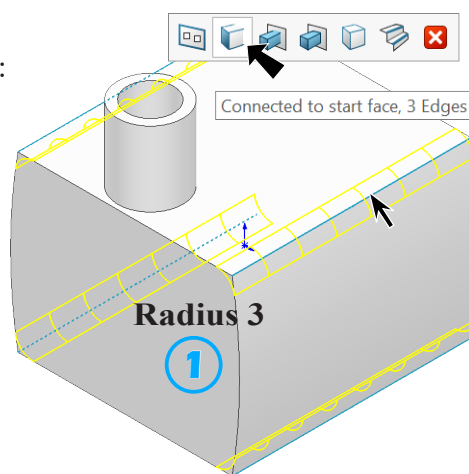


Fig. 18

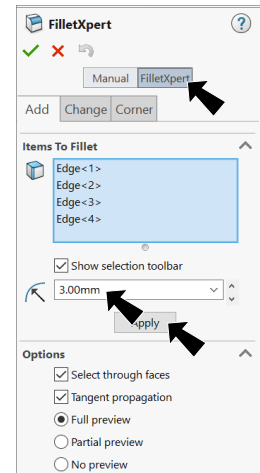


Fig. 17

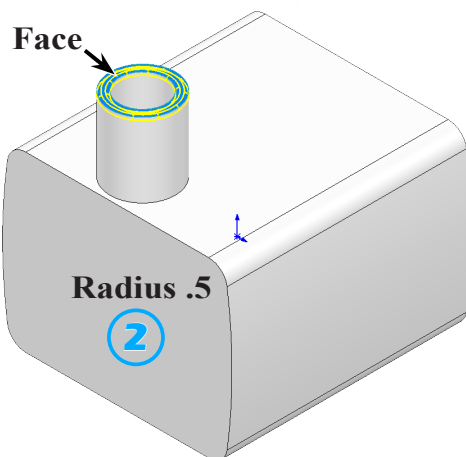


Fig. 20

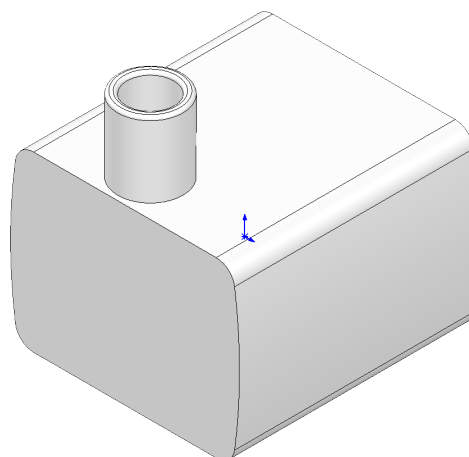


Fig. 21

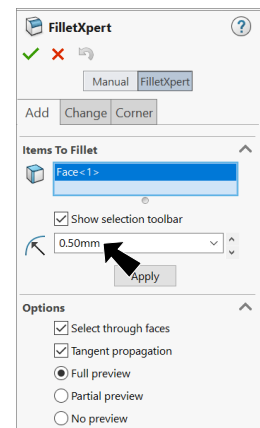

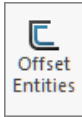


Fig. 19

E. Cut Extrude.

Step 1. Click the **front face** and click **Sketch**  on the context toolbar, **Fig. 22**.

Step 2. With the face still selected, click **Offset Entities**



on the Sketch toolbar.

Step 3. In the Offset Entities Property Manager set:
under Parameters, **Fig. 23**

Distance  **1.5**

check **Reverse**

uncheck **Bi-directional**

yellow offset on inside

click **OK** .

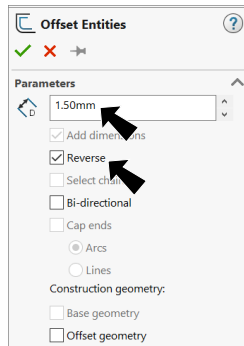



Fig. 23

Step 4. Click **Features**  on the Command Manager toolbar.

Step 5. Click **Extruded Cut**  on the Features toolbar.

Step 6. In the Cut-Extrude Property Manager set:

under Direction 1, **Fig. 25**
End Condition **Blind**

Depth  **1.3**

click **OK** .

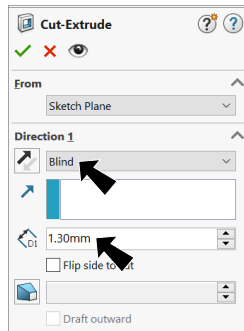


Fig. 25

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

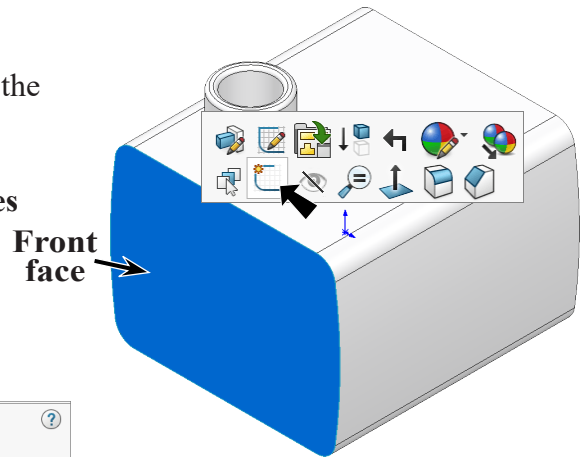


Fig. 22

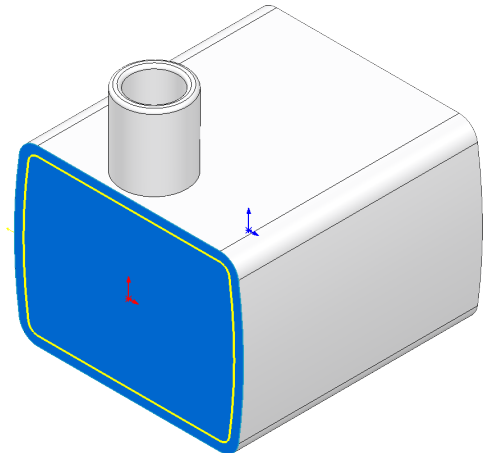


Fig. 24

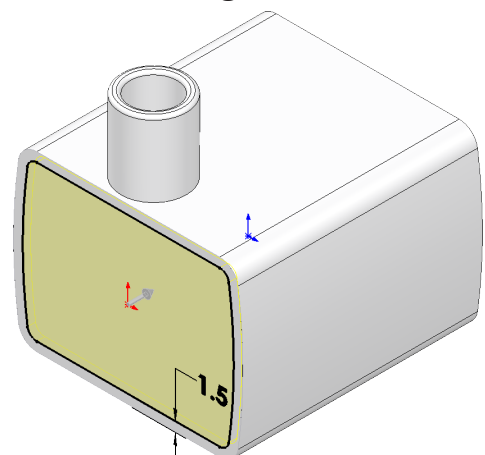


Fig. 26

F. Mirror Cut Extrude.

Step 1. **Ctrl click Front Plane**  and **Cut-Extrude1** feature to select plane and feature, **Fig. 27**.

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

Step 3. In the Mirror Property Manager click **OK** , **Fig. 28**.

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

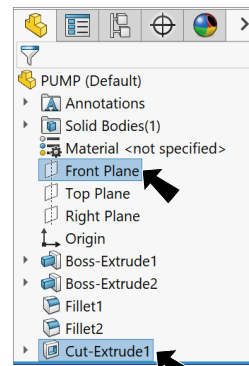


Fig. 27

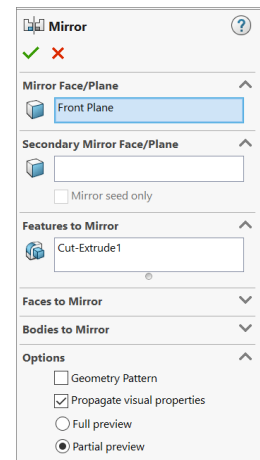


Fig. 28

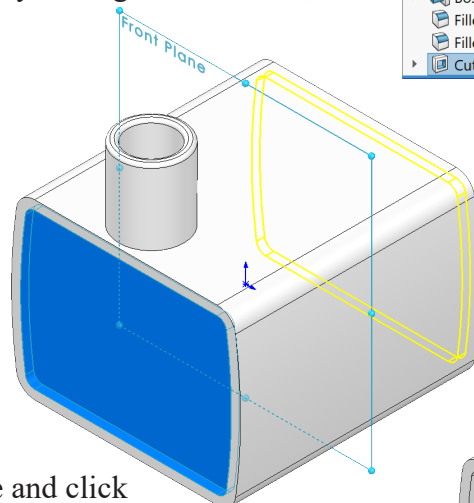



Fig. 29

G. Extrude3.

Step 1. Click the **front face** and click **Sketch**  on the context toolbar, **Fig. 30**.

Step 2. Click **Normal To**  on the Standard Views toolbar.

Step 3. Click **Circle**  on the Sketch toolbar.

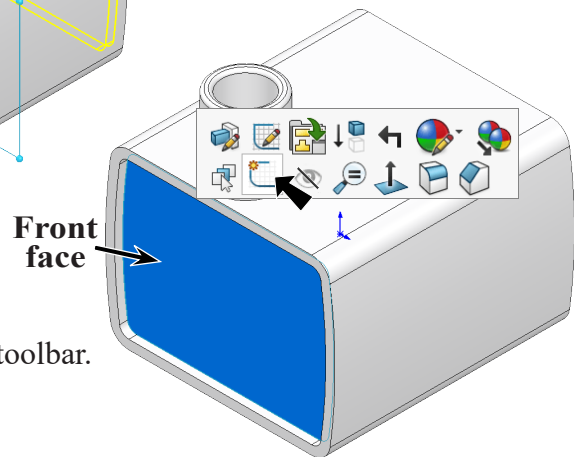





Fig. 30

Step 4. Sketch **two concentric circles to right of the Origin** , **Fig. 31**.

Step 5. **Unselect Smart Dimension**. To unselect, **right click graphics area and click Select**  from menu.

Step 6. **Ctrl click centerpoint of circles and Origin**

 to select both. Release Ctrl key and click **Make Horizontal**  on the context toolbar, **Fig. 32**.

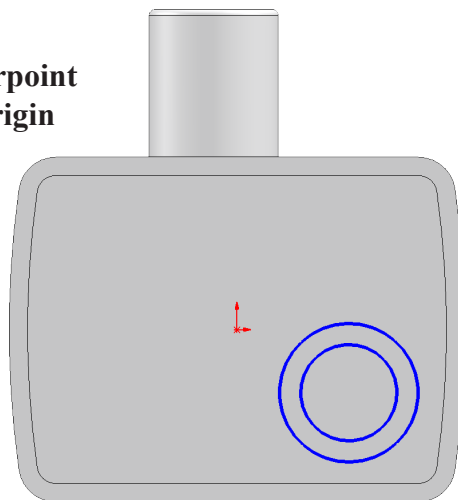


Fig. 31

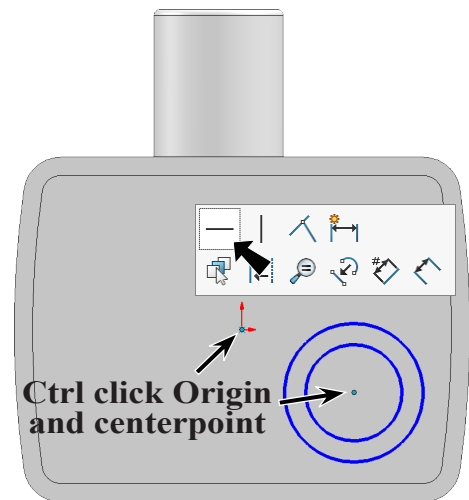




Fig. 32

Step 7. Click **Smart Dimension**  (S) on the Sketch toolbar.

Step 8. Add dimensions, **Fig. 33**.

Step 9. Click **Isometric**  on the Standard Views toolbar. (Ctrl-7)

Step 10. Click **Features**  on the Command Manager toolbar.

Step 11. Click **Extruded Boss/Base**  on the Features toolbar.

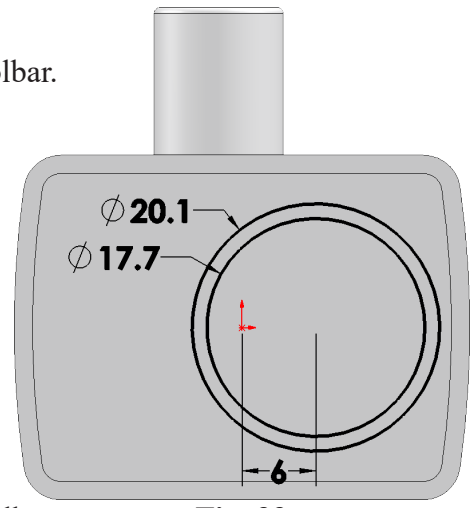




Fig. 33

Step 12. In the Boss-Extrude Property Manager set:
 under Direction 1, **Fig. 34**
 End Condition **Blind**
 Depth  1.3
 click OK .

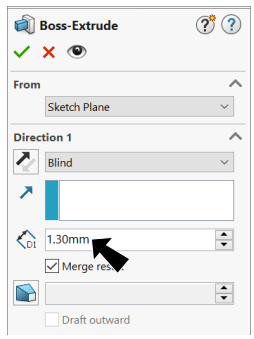


Fig. 34

Step 13. Save  (Ctrl-S).

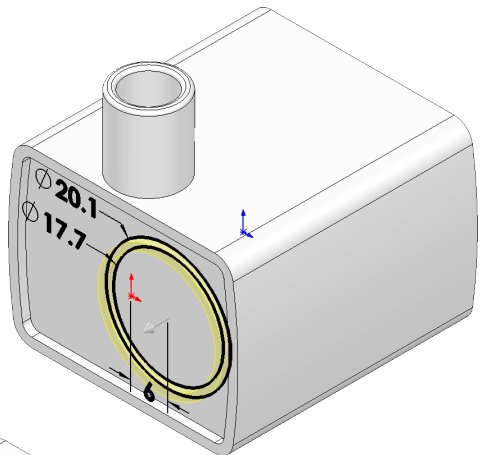




Fig. 35

H. Appearance: Dark Blue.

Step 1. Click part, click **Appearance**  on the context toolbar and click **PUMP**  **Fig. 36**.

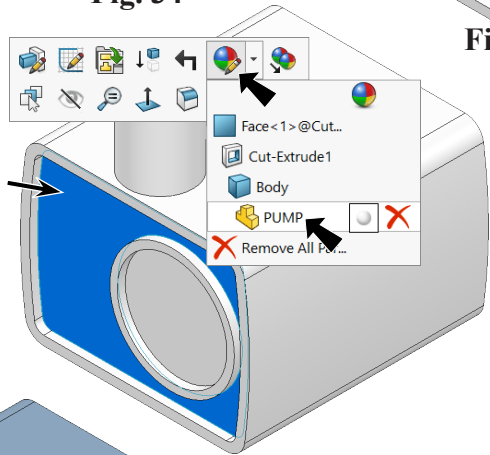



Fig. 36

Step 2. In Appearances Property Manager:
 under Color, **Fig. 37**
 set **RGB values** to:
R 136
G 160
B 184
 click OK .

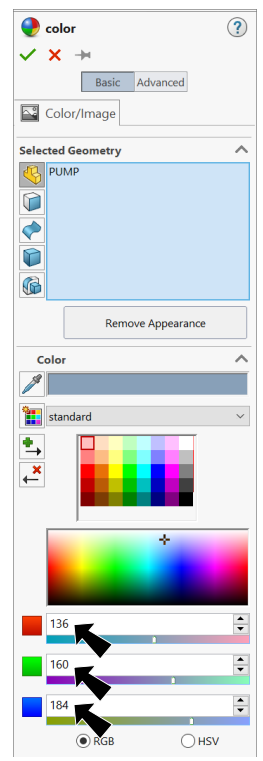



Fig. 37

Step 3. Save  (Ctrl-S).

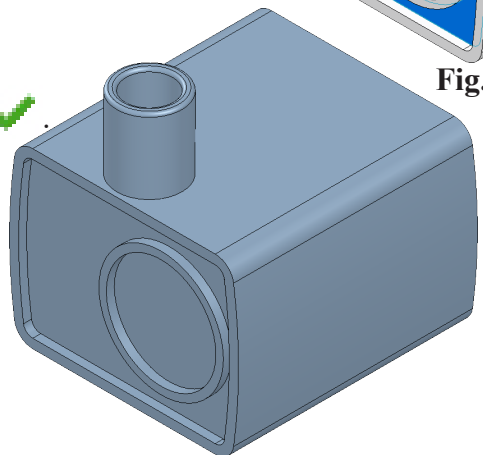


Fig. 38