



### A. Sketch Circles.

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**.

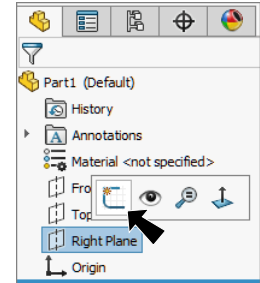


Fig. 1

Step 3. Click **Circle** (S) on the Sketch toolbar.

Step 4. Sketch **three circles** coincident at Origin , **Fig. 2**.

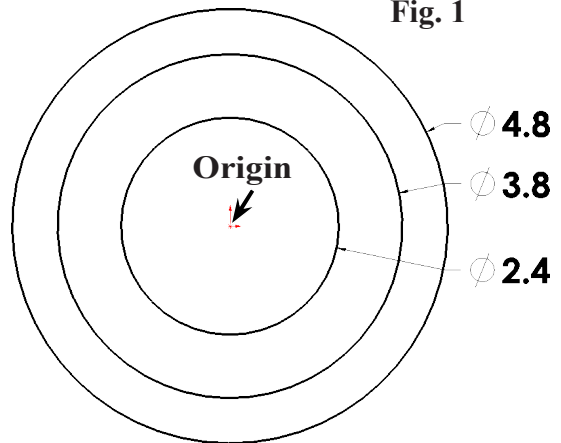


Fig. 2

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

Step 6. Dimension diameters, **Fig. 2**.

### B. Add Lines.

Step 1. Click **Line** (L) on the Sketch toolbar.

Step 2. Starting from the Origin sketch **two radii** out to the middle circle, keep **one horizontal** and the other **at angle**. Sketch a vertical radii to outer circle. Sketch a line at angle from endpoint of radii to outer circle, **Fig. 3**. To terminate chain, double click back on the line you have just sketched.

Step 3. Click **Smart Dimension** (S) on the Sketch toolbar.

Step 4. Dimension angles **70°** and **8°**, **Fig. 3**.

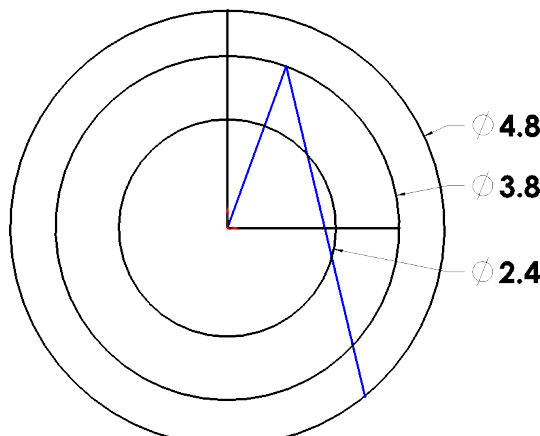


Fig. 3

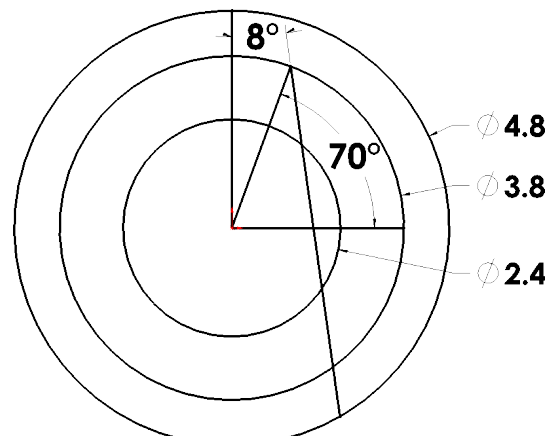


Fig. 4

### C. Save as "E CLIP".


Step 1. Click File Menu > Save As.

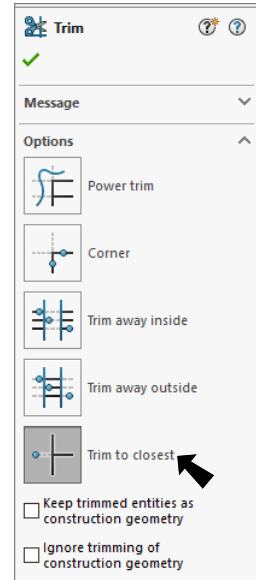
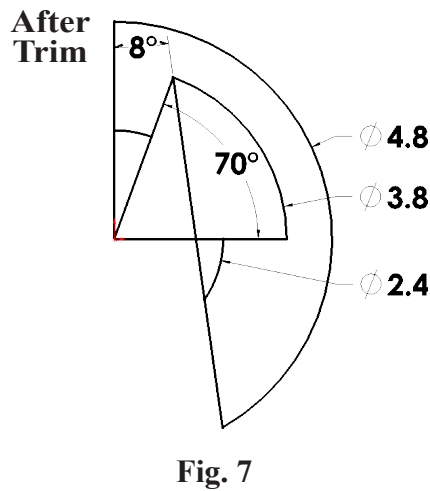
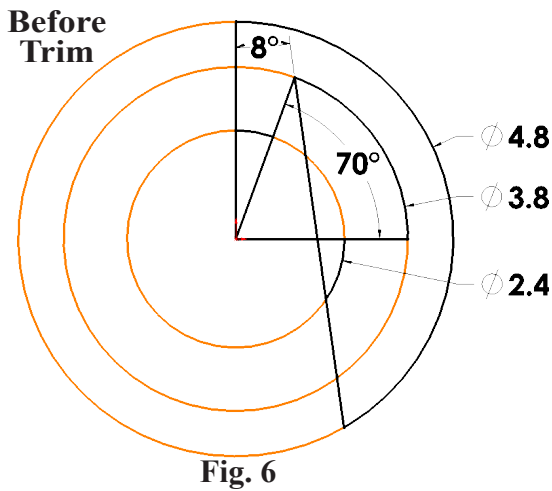
Step 2. Key-in E CLIP for the filename and press ENTER.

### D. Trim 1.

Step 1. Click **Trim Entities**  (S) on the Sketch toolbar.

Step 2. In the Trim Property Manger:

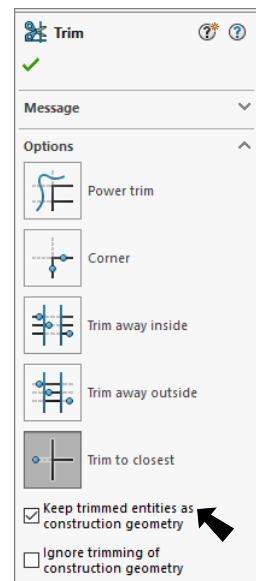
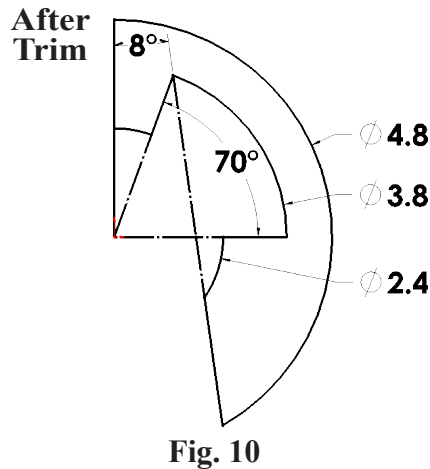
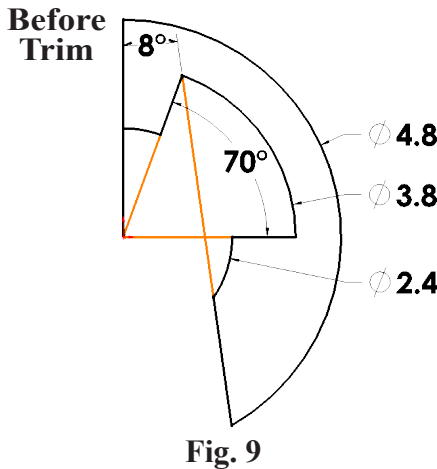
select **Trim to closest** , Fig. 5  
click arcs to trim, Fig. 6  
results shown in Fig. 7.



### E. Trim 2 Keep Construction Geometry.

Step 1. In the Trim Property Manger:



check **Keep trimmed entities as construction geometry**, Fig. 8  
click lines to convert to construction lines, Fig. 9  
results shown in Fig. 10.



## F. Sketch Fillets.


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

Step 2. In the Sketch Fillet Property Manager set:  
under Fillet Parameters, **Fig. 11**

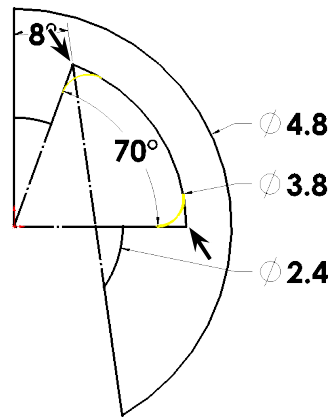
Radius  .3  
click **top two corners**, **Fig. 12**  
click OK 

Radius  .35, **Fig. 13**  
click **bottom corner**, **Fig. 14**  
click OK  twice.

## G. Vertical Centerline.

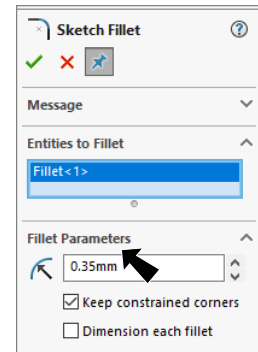
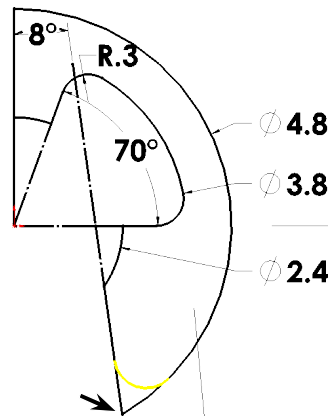
Step 1. Click **vertical radii** and click **Construction Geometry**  on the context toolbar, **Fig. 15**.

Step 2. Save. Use **Ctrl-S**.



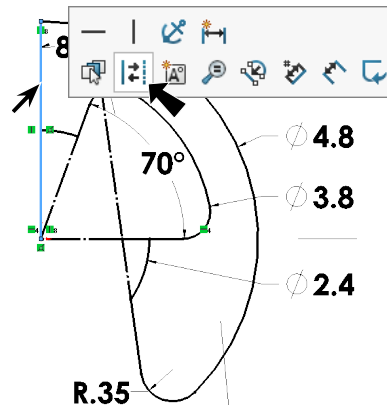
**Fig. 11**

**Fig. 12**



**Fig. 13**

**Fig. 14**



**R.35**  
**Fig. 15**

## H. Mirror.

Step 1. Right click an arc of the sketch and click **Select Chain** from the menu, Fig. 16.

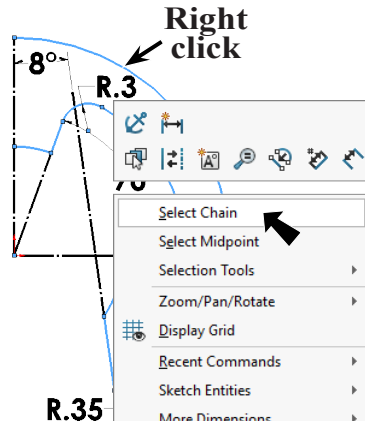


Fig. 16

Step 2. Ctrl-click vertical centerlines to add to selection, Fig. 17.

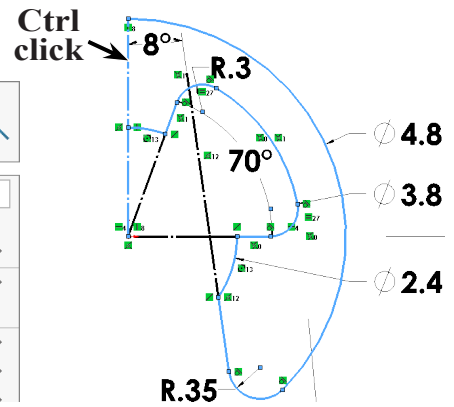



Fig. 17

Step 3. Click **Mirror Entities**  **Mirror Entities** on the Sketch toolbar, Fig. 18.

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

## J. Extrude.

Step 1. Click **Features**  on the Command Manager toolbar.

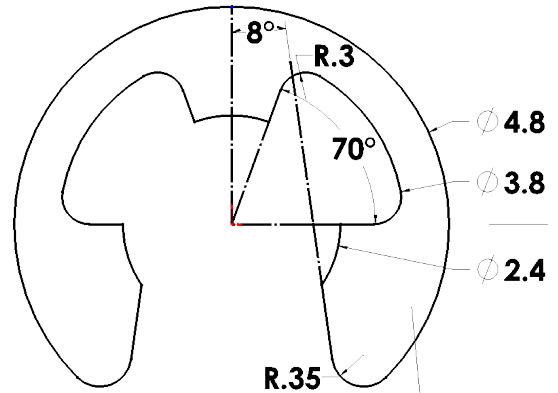


Fig. 18

Step 2. Click **Extruded Boss/Base**  on the Features toolbar.

Step 3. In the Property Manager set:  
under Direction 1, Fig. 19  
End Condition **Mid Plane**

**Depth**  **.25**  
click OK .

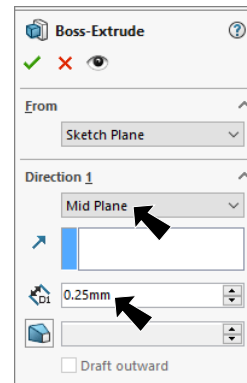


Fig. 19

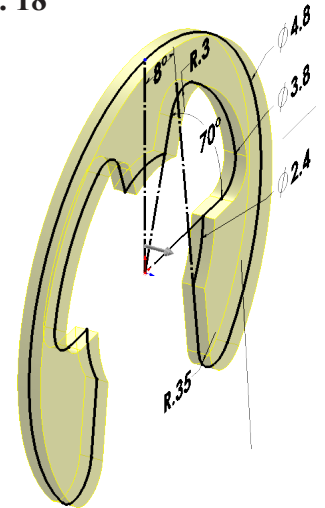



Fig. 20

## K. Mate Reference.

Step 1. Click a cylindrical face to select it, Fig. 21.

Step 2. Click **Reference Geometry**  on the Features toolbar and **Mate Reference** from the menu.

Step 3. In the Mate Reference Property Manager click **OK** , Fig. 22.

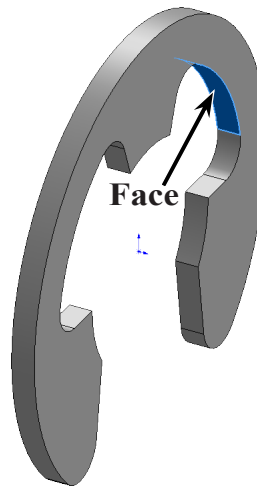


Fig. 21

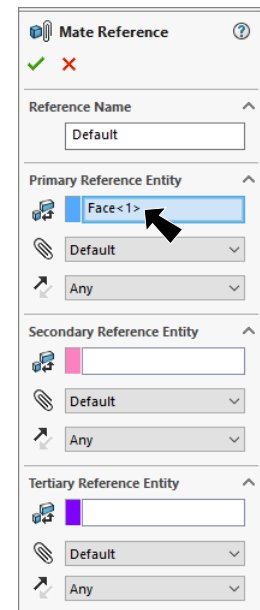


Fig. 22

## L. Material Stainless Steel.

Step 1. Right click **Material**  in the Feature Manager and click **Edit Material**.

Step 2. Expand **Steel** in the material tree and select **AISI 316 Stainless Steel Sheet**. Click **Apply** and **Close**.

Step 3. Save. Use **Ctrl-S**.

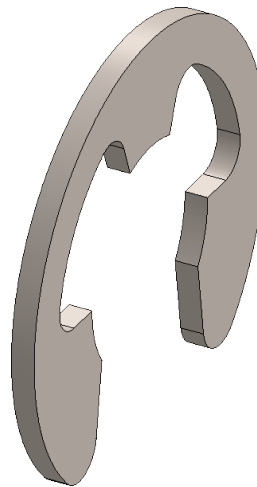


Fig. 22