

# Column.Dwg

## Step # 1

This exercise is a continuation of the previous wire frame problem. All the necessary entities have been added to the wire frame drawing to prepare the model to be surfaced using the geometry-generated surfacing commands outlined in the next series of steps. A few other tasks need to be performed before surfacing. First, make a new layer, using a layer command ; call the layer Mesh with magenta color. Next, change two system variables, namely Surftab1 and Surftab2, from a value of 6 to a value of 15. These two variables control the density of the surfaces; a value of 15 will be adequate for this model.

Command: **Layer**

?/Make/Set/New/ON/OFF/Color/Ltype/Freeze/thaw/LOck/Unlock: **Make**

New current layer<0> **Mesh**

?/Make/Set/New/ON/OFF/Color/Ltype/Freeze/thaw/LOck/Unlock: **Color**

Color: **Magenta**

Layer(s) name for color 6<MESH>: *(Strike Enter to accept the default)*

?/Make/Set/New/ON/OFF/Color/Ltype/Freeze/thaw/LOck/Unlock: *(Strike Enter to exit this command)*

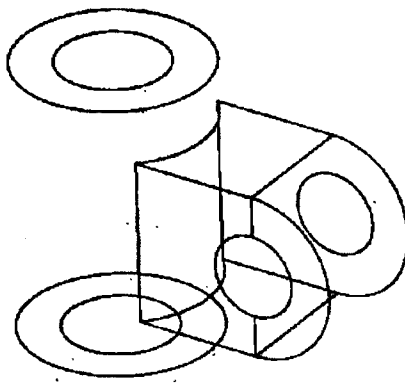
Observe the top of your screen to see that the new current layer is Mesh.

Command: **Surftab1**

New value for Surftab1<6>: **15**

Command: **Surftab2**

New value for Surftab2<6>: **15**



## Step # 2

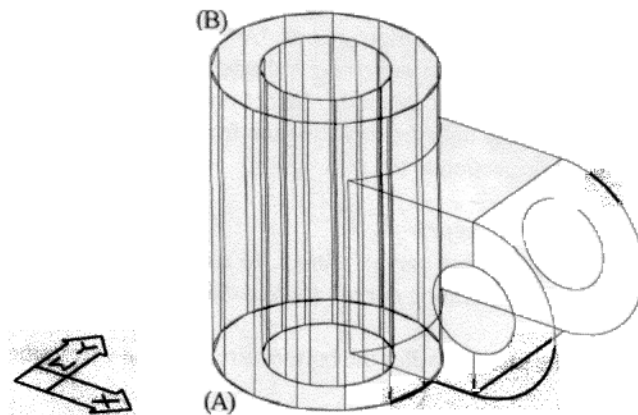
Begin the surfacing of the wire model of the column by using the Rulesurf command. This command will place surfaces in between the top and bottom circles to form the cylinder. Pick the outside edge of the large bottom circle at "A" for the first defining curve; pick the outside edge of the of the large top circle at "B" for the second defining curve. Repeat the procedure for the small circle.

### Command: Rulesurf

Select the first defining curve: *(Select the circle at "A")*

Select the second defining curve: *(Select the circle at "B")*

Notice that the surface is formed between the two large circles. Now repeat the above for the smaller circles.



## Step #3

As the surfacing segment of a wire frame gets more complex, selecting entities might be difficult. Use the Move command to reposition the mesh away from the wire frame. This is accomplished by entering a displacement to move the mesh patterns. Follow the steps below to see how it is accomplished.

Command: **Move**

Select objects: *(select both surface mesh patterns)*

Select objects: *(Strike Enter to continue)*

Base point or displacement: **0,10,0**

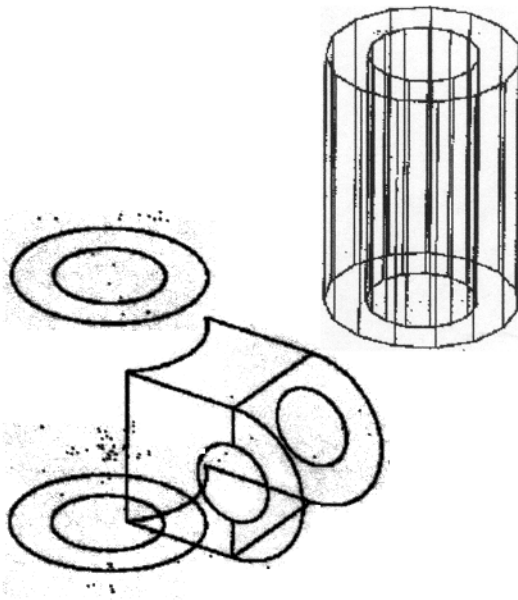
Second point of displacement: *(Strike Enter to execute this command)*

Notice that both move a distance away from the wire frame based on the move displacement coordinate value of 0,10,0. This same value will be used for moving other surface mesh patterns. Perform a Zoom-All to view the wire frame and mesh pattern.

Command **Zoom**

All/Center/Dynamic/Extents/Left/Previous/Window<Scale(x)>: **A**

Regenerating Drawing.



#### Step #4

Use the Rulesurf command to place ruled surfaces on wire frame at the right. Select points "A" and "B" as defining curves to surface the top of the cylinder. Select points "C" and "D" as defining curves to begin surfacing the front projection. Copy the front projection to the rear.

Command: **Rulesurf**

Select the first defining curve: *(Select the circle at "A")*

Select the second defining curve: *(Select the circle at "B")*

Follow the same steps for the bottom circles of the wire frame.

Command: **Rulesurf**

Select the first defining curve: *(Select the circle at "C")*

Select the second defining curve: *(Select the circle at "D")*

Command: **Copy**

Select objects: **L**

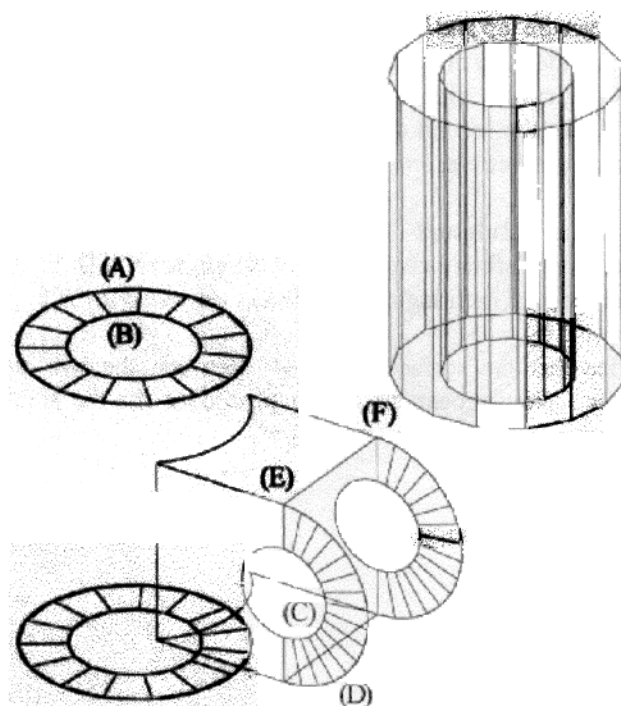
Select objects: *(Strike Enter to continue)*

<Base point or displacement>/Multiple: **Endp**

of *(Select the endpoint of line at "E")*

Second point of displacement: **Endp**

of *(Select the endpoint of line at "F")*



## Step #5

Move the four surface mesh patterns at a displacement of 0,10,0 using the Move command.

Command: **Move**

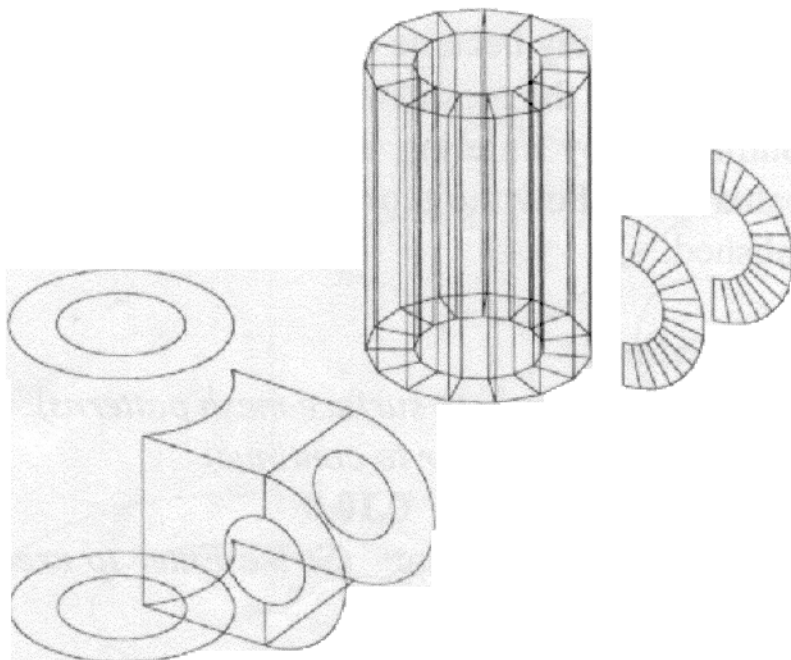
Select objects: *(select the four surface mesh patterns)*

Select objects: *(Strike Enter to continue)*

Base point or displacement: **0,10,0**

Second point of displacement: *(Strike Enter to execute this command)*

Command: **Redraw**



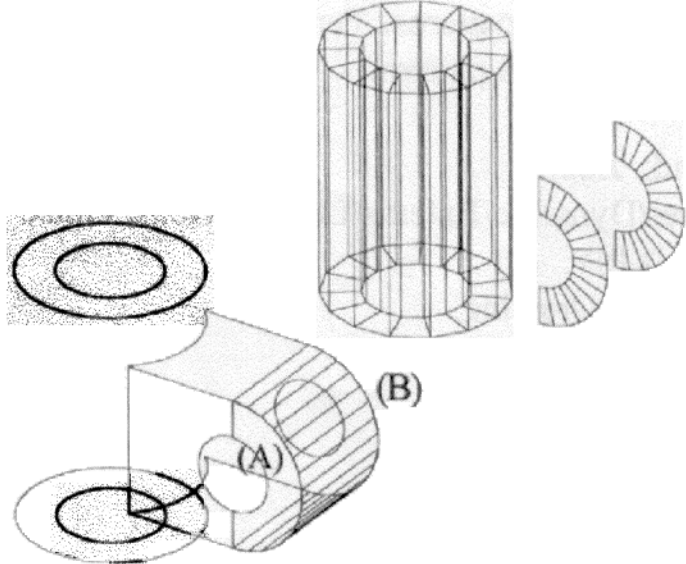
## Step#6

Continue using the Rulesurf command by surfacing the curved outer surface of the projection. Select points "A" and "B" as defining curves.

Command: **Rulesurf**

Select the first defining curve: *(Select the arc at "A")*

Select the second defining curve: *(Select the arc at "B")*



## Step #7

Move the last surface mesh pattern at a displacement of 0,10,0 using the Move command.

Command: **Move**

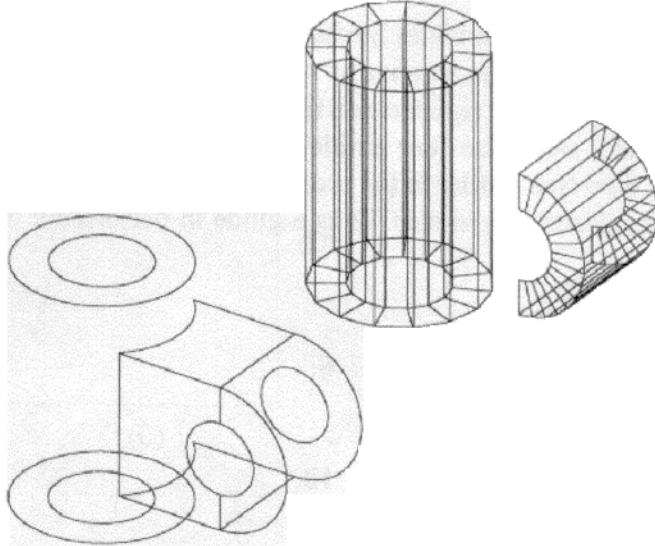
Select objects: **L**

Select objects: *(Strike Enter to continue)*

Base point or displacement: **0,10,0**

Second point of displacement: *(Strike Enter to execute this command)*

Command: **Redraw**



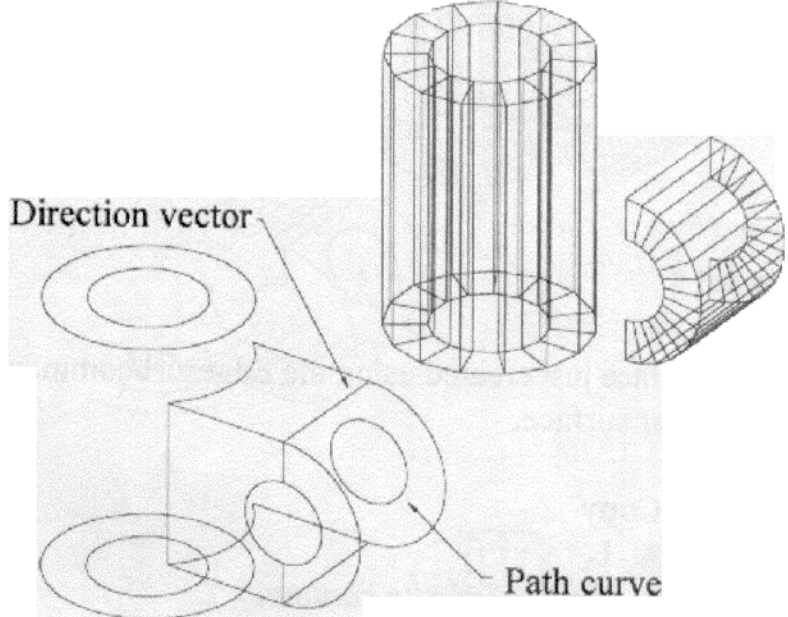
## Step #8

A cylinder in the projection needs to be created using the Tabsurf command. This command requires a path curve and a direction vector to form the desired mesh pattern. Select the full circle as a path curve; select the line at the right as a direction vector. A mesh pattern will form consisting of information in the path curve; length of the mesh is based on the direction vector.

**Command: Tabsurf**

Select the path curve: *(Select the full circle at the right)*

Select the second defining curve: *(Select the line at right)*



## Step #9

Move the last surface mesh pattern at a displacement of 0,10,0 using the Move command.

Command: **Move**

Select objects: **L**

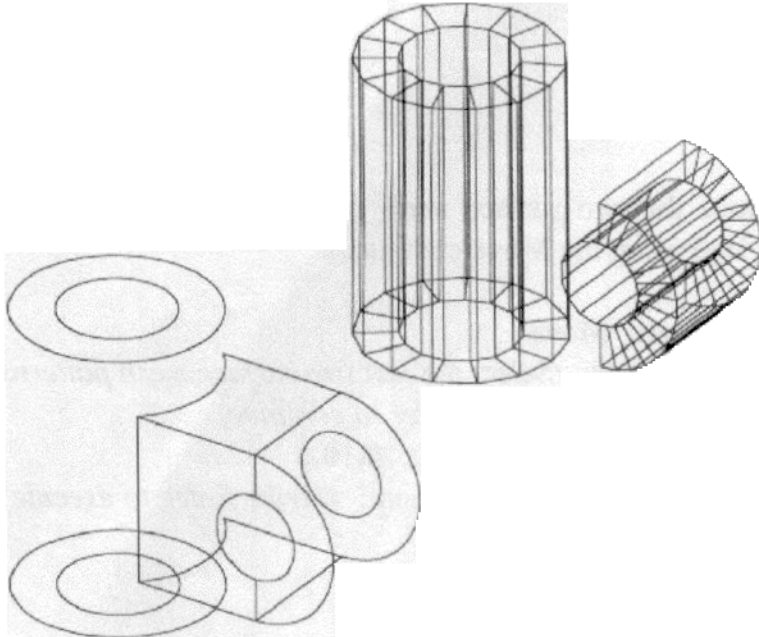
Select objects: *(Strike Enter to continue)*

Base point or displacement: **0,10,0**

Second point of displacement: *(Strike Enter to execute this command)*

Command: **Redraw**





## Step #10

Reset the system variables Surftab1 to 6 and Surftab2 to 10. This will reduce the amount of surface meshes created and help with computer generation time. Next, use Edgesurf command, select the four entities labeled at right, and create a surface similar to the second illustration at the right. Use the illustration in Step #12 to as a guide in performing this operation.

Command: **Surftab1**

New value for Surftab1<6>: **6**

Command: **Surftab2**

New value for Surftab2<6>: **10**

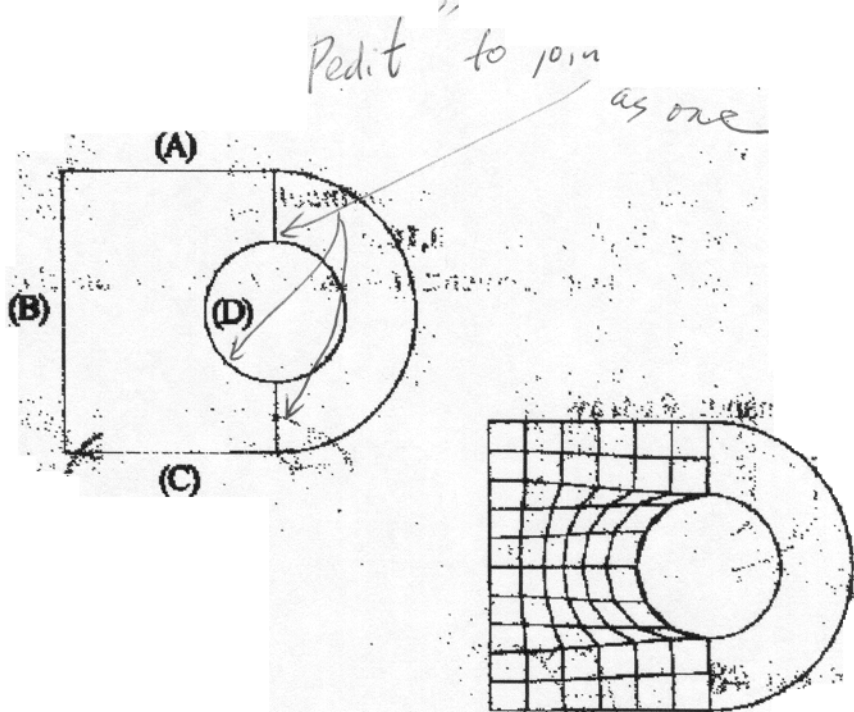
Command: **Edgesurf**

Select edge 1: *(Select the entity at "A")*

Select edge 2: *(Select the entity at "B")*

Select edge 3: *(Select the entity at "C")*

Select edge 4: *(Select the entity at "D")*



## Step #11

Copy the surface just created using the Edgesurf command to create the rear surface.

Command: **Copy**

Select objects: **L**

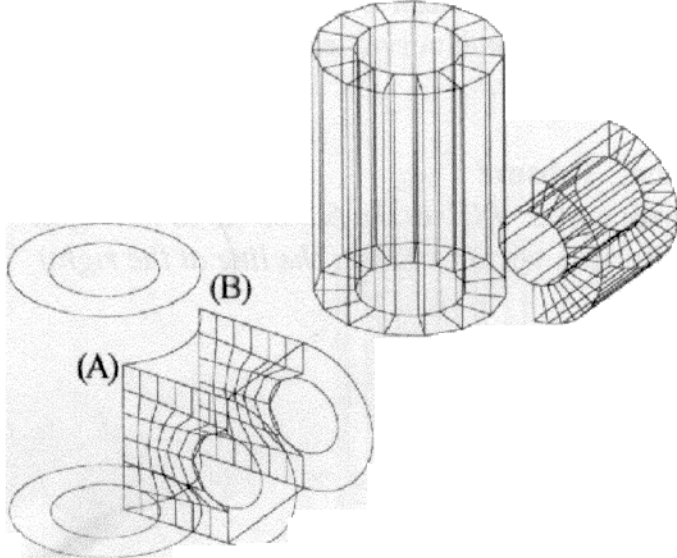
Select objects: *(Strike Enter to continue)*

<Base point or displacement>/Multiple: **Endp**

of *(Select the endpoint of line at "A")*

Second point of displacement: **Endp**

of *(Select the endpoint of line at "B")*



## Step #12

Move the last surface mesh pattern at a displacement of 0,10,0 using the Move command.

Command: **Move**

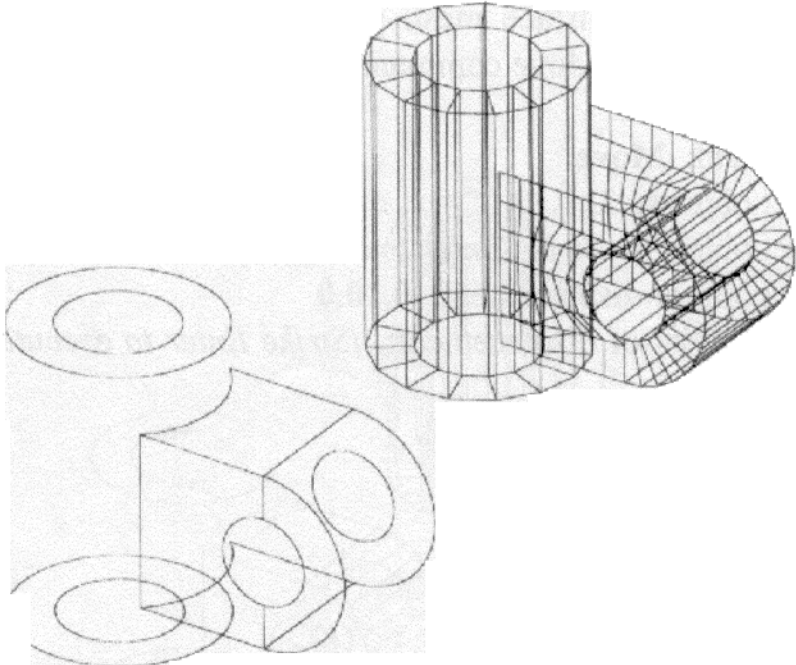
Select objects: **L**

Select objects: *(Strike Enter to continue)*

Base point or displacement: **0,10,0**

Second point of displacement: *(Strike Enter to execute this command)*

Command: **Redraw**



### Step #13

Use the Edgesurf command, select the four entities labeled at right, and create a surface similar to the second illustration at the right. Use the illustration in Step #15 to as a guide in performing this operation.

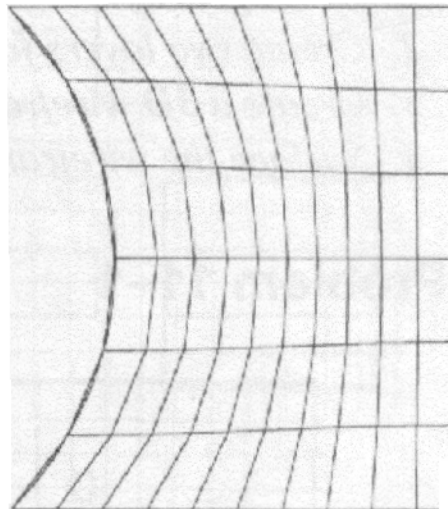
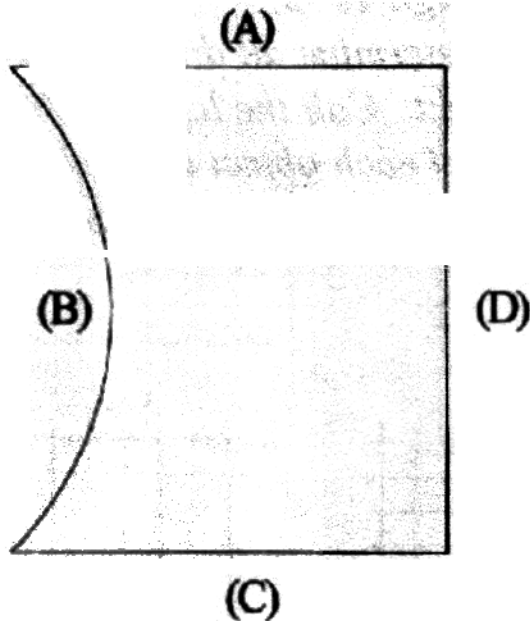
Command: **Edgesurf**

Select edge 1: *(Select the entity at "A")*

Select edge 2: *(Select the entity at "B")*

Select edge 3: *(Select the entity at "C")*

Select edge 4: *(Select the entity at "D")*



## Step #14

Copy the surface just created using the Edgesurf command to create the rear surface.

Command: **Copy**

Select objects: **L**

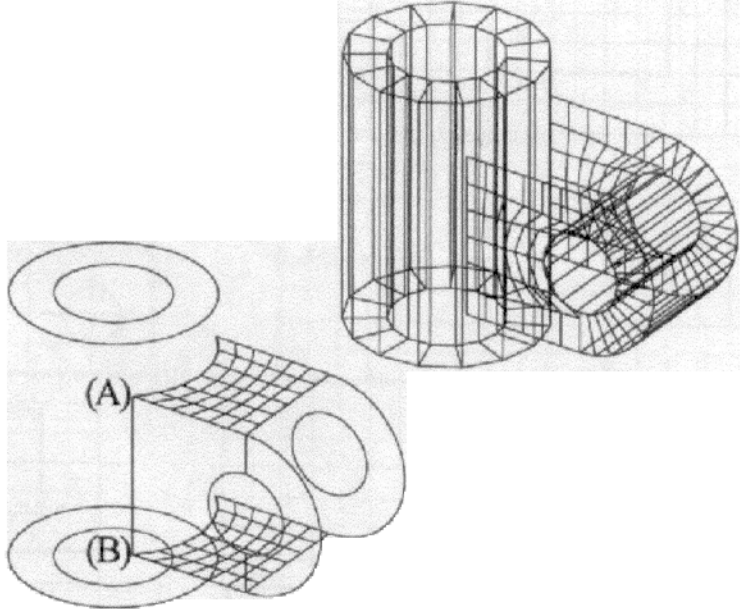
Select objects: *(Strike Enter to continue)*

<Base point or displacement>/Multiple: **Endp**

of *(Select the endpoint of line at "A")*

Second point of displacement: **Endp**

of *(Select the endpoint of line at "B")*



## Step #15

Move the last surface mesh pattern at a displacement of 0,10,0 using the Move command.

Command: **Move**

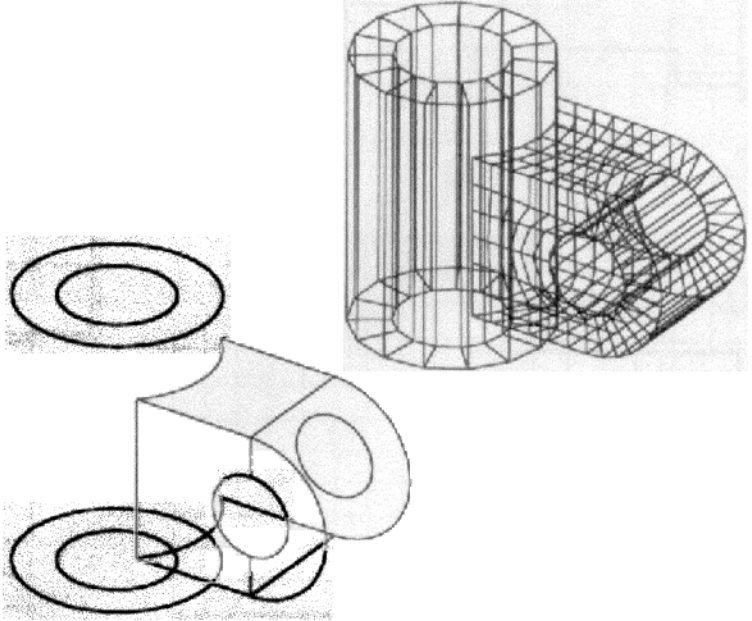
Select objects: **L**

Select objects: *(Strike Enter to continue)*

Base point or displacement: **0,10,0**

Second point of displacement: *(Strike Enter to execute this command)*

Command: **Redraw**



## Step #16

The figure at the right represents the Column that has been completely surfaced using the previous steps.

Command: **Hide**

Regenerating the drawing.

Removing hidden lines: **XXX**

