Tutorial 02

Geometric figure
Geometric figure

Creation Time: 45 minutes
Level: Intermediate

Module: TypeEdit
Specifications

[Diagram with dimensions: 19 mm, 5 mm, 1 mm, 10 mm, 2 mm, 7 mm, 24 mm, 12 mm, 15 mm, 3 mm, R8 mm]
Objectives
This tutorial will take you through some of the basic uses of TypeEdit and you will learn how to:
- Set the size of the working area
- Create a letter
- Use Boolean operators
- Set the final work piece

Settings
- Size of the working area: Width = 30 mm /// Height = 30 mm
- Origin set at the bottom left side of the working area
- Set the top left control point of the geometric shape onto the origin

We will not add hatch patterns nor dimensions.

Note:
Make sure Editable objects checkbox is cleared in the Options in the General tab, since we will modify a rectangular shape in Point mode. The Options dialog box displays when you press F10.

Let's start!
1) **SET THE SIZE OF THE WORKING AREA**

In the **TypeEdit** tab click **Material definition** in the **Settings** Ribbon group.

Enter the values to set the size of the working area as shown in the screenshot below:

Click **Finish**.
2) **CREATE A LETTER**

We will create a capital « P » letter from closed geometric shapes using Boolean operators to ensure that “P” letter will be a closed shape. The reference point will be the bottom left control point. We will enter positive values only. Finally we will move the shape snapping the top left control point to the origin.

Show the Geometrical shapes toolbar by clicking the TypeEdit tab then clicking in the Mode Ribbon group.

Run the Rectangle tool by clicking.

Press F2. The Rectangle dialog box shows. Set the rectangle dimensions and position entering the following values:

Validate clicking.

After entering those values we will start creating the top part of « P » letter.
Show the **Point mode** toolbar clicking in the Quick Access Toolbar (QAT).

Click-select the 2 sizing handles on the right side of the rectangle with a selection rectangle. We will now create the top curved part of « P » letter setting the radius to 6 mm.

Click to run the **Rounded angle** tool.

Enter "6 mm" value in the dialog box:

Validate clicking **OK**.

We will now add thickness to the rectangle running the **Offset** tool available in the **Manipulate shapes** toolbar.
Select the shape then click the **TypeEdit** tab then click **Manipulate shapes** toolbar in the **Operation** Ribbon group.

Run the **Offset** tool clicking .

Enter the following values and set parameters as shown in the following dialog box:

- **Set Offset** to « 1 » mm
- **Click** Inside the contour
- **Select the Keep current curves** checkbox

Validate clicking .
We will now « open » the upper part of the shape.

Select both shapes then combine by clicking Combine in the Quick Access Toolbar (QAT).

We will now create a rectangle which will be used to remove a portion of the contour.

Click the TypeEdit tab then click in the Mode Ribbon group.

Run the Rectangle tool by clicking 

Press F2.

Enter the following values in the dialog box:

Validate clicking . Click Back to.
You get:

We will now remove a portion of the 2 shapes that we have just combined using the **Subtract** tool available in the **Manipulate shapes** toolbar in the **Operation** Ribbon group.

Select the combined contours **first then**, while holding the **Crl** pressed select the rectangle you have just created.

Click the **TypeEdit** tab then click **then click** **Subtract**.

You get a new shape that we will name « A » shape:

Finally, we will add a rectangle to create the descender of « P » letter (that is the part that extends below the baseline) then remove a portion from this part to make it thinner.
Click the **TypeEdit** tab then click **Geometrical shapes** in the **Mode** Ribbon group.

Run the **Rectangle** tool by clicking .

Press **F2**. We will now create a rectangle named « B » entering the values shown in the following dialog box:

![Rectangle tool dialog box](image)

Validate clicking .

We will now create another rectangle named « C ». Run the **Rectangle** tool by clicking then press **F2** and enter the values shown in the following dialog box:

![Rectangle tool dialog box](image)
Validate clicking .

Click **Selection tool** in the Quick Access Toolbar (QAT).

Note: You may as well run the **Snap up** mode pressing **F3** (and select the **Control point** mode clicking ) to position rectangles faster.

Close the **Snap up (F3)** dialog box clicking .

**Boolean operator:**
Select shapes **A** and **B** (the selection order is not important) then merge them running the **Join** tool (which is available in the **Manipulate shapes** toolbar) by clicking **Join**.

You get:

Click-select the merged shape that was merged from shapes **A** and **B**, then while holding down **Ctrl** key pressed click-select shape **C** (the selection order is important) then subtract shape **C** from the **A/B** merged shape running the **Subtract** tool which is available in the **Manipulate shapes** toolbar.
After deselecting the shape, you get:

3) **SET THE FINAL WORK PIECE**

We will now move the work piece dragging one specific sizing handle to a wanted location.

Three different methods can be used.

1: *Move the work piece to its current position* (relative displacement)

Select the shape then press **F2**.
The **Set position and dimension accurately (F2)** dialog box opens. 4 tabs are available:

<table>
<thead>
<tr>
<th>Position of points</th>
<th>Indicates the position of the mouse cursor when you pressed F2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scale</td>
<td>Scale according to 9 possible points</td>
</tr>
<tr>
<td>Rotate accurately</td>
<td>Rotate according to a <strong>Rotation angle</strong></td>
</tr>
<tr>
<td>Position accurately</td>
<td>Perform an absolute or relative displacement</td>
</tr>
</tbody>
</table>

**Note:**
Since you do not need to start dragging the work piece before pressing F2.

Click the **Position accurately** tab then click **Relative mode**.

Enter the values as shown in the dialog box below:

Y = -24 mm means that the shape will be moved downwards in the Y direction.
2: Move the work piece according to its bounding box (absolute displacement)

Select the shape then press F2.

Click the Position accurately tab then click Move to. Enter the following values:

Validate clicking .

The 9 radio buttons correspond to the sizing handles of the work piece. The radio button located in the middle corresponds to the center point of the work piece.

In our example we will drag the top left sizing handle to the origin entering the following coordinates: X=0, Y=0 and Z=0.

Validate clicking .

3: Move the work piece according to a specific point/sizing handle (absolute displacement)

This method is the most efficient one.

You can move the work piece according a specific point belonging to the geometric shape or not and also move the work piece to the wanted position.

In our example, the point to drag is a point belonging to the geometry (top left sizing handle).

Select the geometry.

Show the Transformation tools toolbar by clicking the TypeEdit tab then clicking Transformation tools in the Operation Ribbon group.
Run the **Move object** tool clicking .

In order to position the rectangles faster, run the **Snap up** mode pressing **F3** then select the **Control point** mode clicking : 

Drag the mouse cursor to the sizing handle which corresponds to the top left sizing handle of the shape. A small red circle shows around the sizing handle. Click the sizing handle.

Close the **Snap up (F3)** dialog box clicking .

Press **F2** then click the **Position of points** tab.
Enter the coordinates of the selected sizing handle (X=0, Y=0, Z=0) and make sure the **Relative coordinates** checkbox is cleared, as shown below:

Validate clicking .

You get:
Click the View tab then click Fill color in the Direction & color Ribbon group.

You get:

<table>
<thead>
<tr>
<th>CONCLUSION</th>
</tr>
</thead>
<tbody>
<tr>
<td>This tutorial taught you to:</td>
</tr>
<tr>
<td>• Set the size of the working area</td>
</tr>
<tr>
<td>• Create and position geometric shapes</td>
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<tr>
<td>• Create a curved line</td>
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<tr>
<td>• Use Boolean operators</td>
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<tr>
<td>• Move a geometric shape accurately according to a specific point</td>
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</tbody>
</table>