Oblique Block

Preface

This section will take you through the process of drawing an oblique block.

Your entire part, in all views, should look like Figure 1.

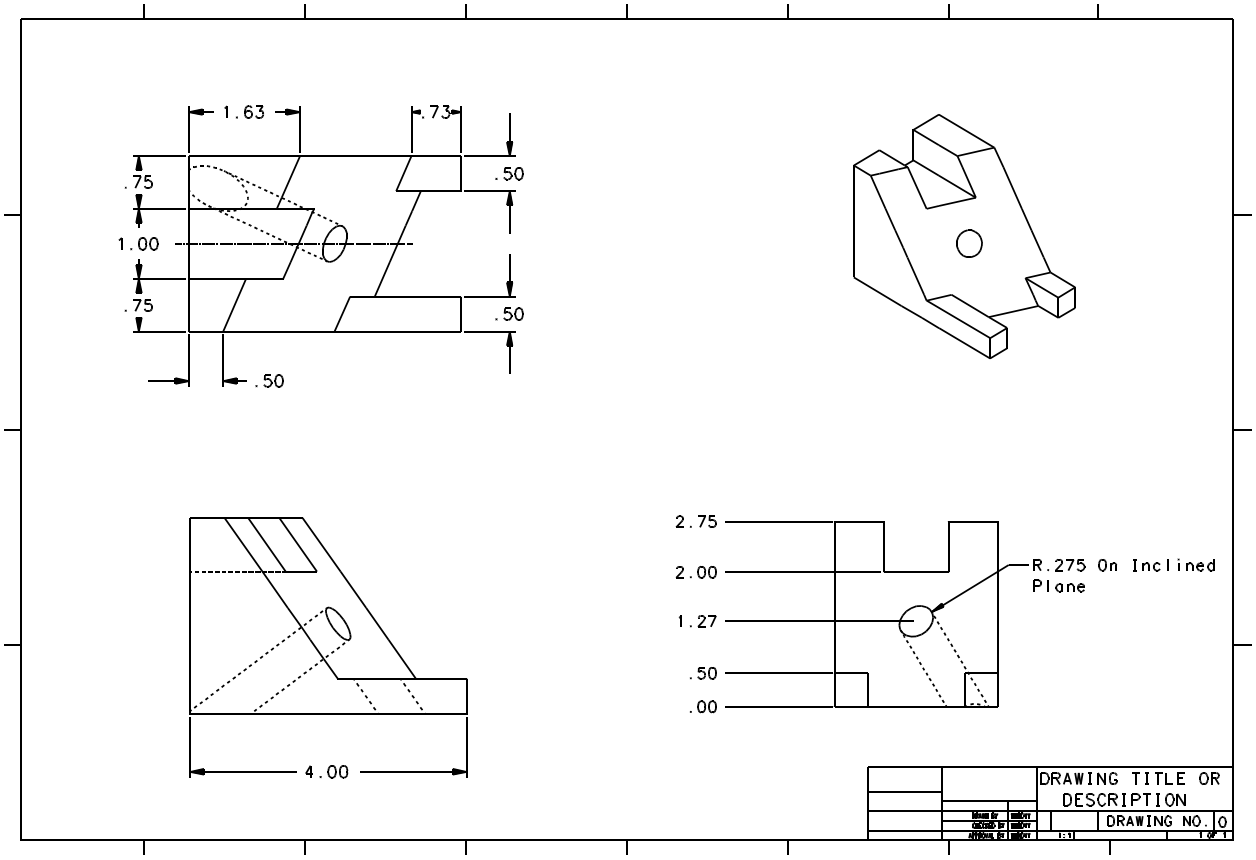


Figure 1

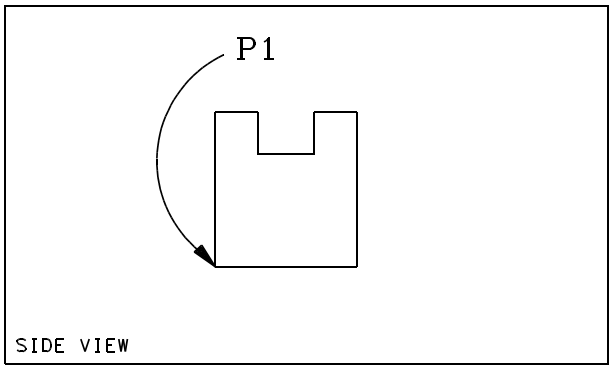


Figure 2

1. Load the drawing 3DSIZE.DWG.

2. Click on LINE: POINT-TO-POINT.

3. Click on point P1 in the side view for your starting point.

4. Type the following coordinates, pressing ENTER after each line:

   ↑2.75
   <Page Down>.75
   ↓.75
   <Page Down>1
   ↑.75
   <Page Down>.75
   ↓2.75

5. Click on point P1, the first point of the line, to close the polygon. (See Figure 2.)

6. Click on POINT: AT-SNAP-LOCATION.

7. Type the following coordinates, then press ENTER:

   ↑1.27, <Page Down>1.25

8. Click on LINE: POINT-TO-POINT, and set the -Connect ? modifier to “no”.

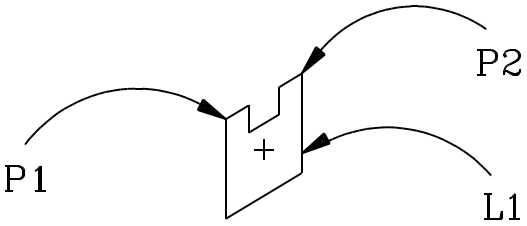


Figure 3

9. Click on point P1 in the isometric view.

10. Type→.50, then press ENTER.

11. Click on point P2 in the isometric view.

12. Type→1.63, then press ENTER.

13. Click on SNAP at the bottom of the LINE detail menu.

14. Click on MEASURE-FROM-END in the SNAP detail menu.

15. Set the modifiers as follows:

    -Distance ? to .5
    -In Effect ? to “one snap”

16. Click on PREVIOUS MENU at the bottom of the SNAP detail menu to return to the LINE menu.

17. Click anywhere below the midpoint of the line L1. (See Figure 3.)

18. Type 3.27, then press ENTER.

19. Click on WINDOW: ZOOM and zoom in on the isometric view.

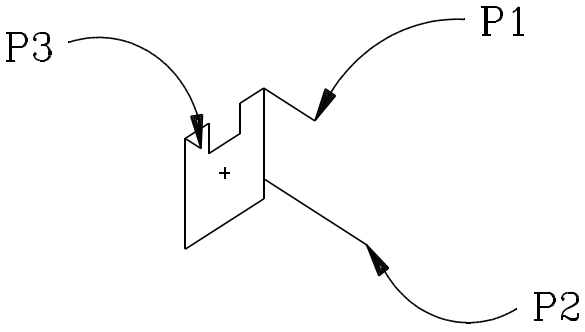


Figure 4

20. Click on CPL: PLACE-BY-3-POINTS.

21. Click on points P1, P2, and P3 in that order. (See Figure 4.)

22. Press F10 to zoom back out to the full view.

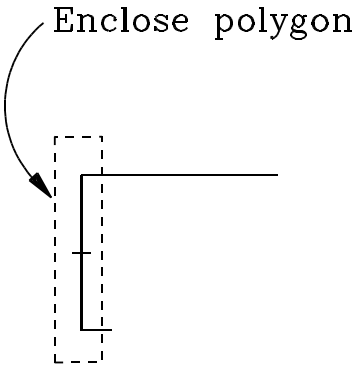


Figure 5

23. Click on ENCLOSE, and place the rubberband box around the polygon that you created in steps 3-5, and the point in step 7, in the top or front view. Do not select the lines that you just created. (Figure 5 shows the enclosed polygon in the top view).

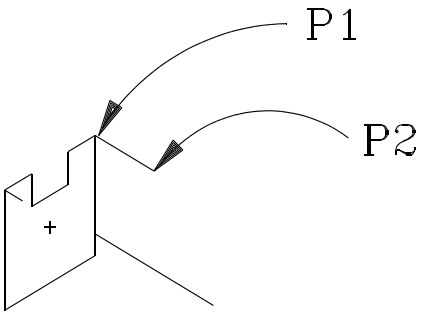


Figure 6

24. Click on PROJECT: ALONG-A-LINE.

25. Click on point P1, then P2, then P2 again.

26. Click on CLEAR.

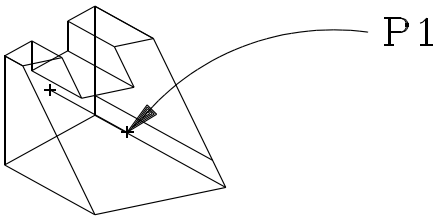


Figure 7

27. Click on CIRCLE: CENTER-RADIUS, and set the - Radius/Diameter ? modifier to .275.

28. Click on point P1 on the oblique plane. (See Figure 7.)

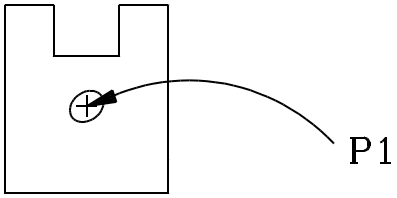


Figure 8

29. Click on ERASE.

30. Click on point P1 twice in the side view, to erase the two points.

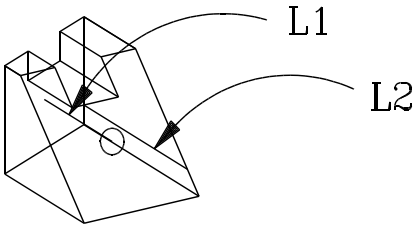


Figure 9

31. Click on L1 in any view (the line that connected the two points), and click on L2 in any view (the line that measures 3.27" and is offset 0.5 from the bottom, created in steps 17 and 18, on the side plane), to erase these lines.

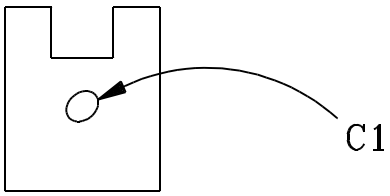


Figure 10

32. Click on LINE: AXIS-OF-CIRCLE, then click on C1 in any view.

33. Click on CPL: SAVE, then click on ALIGN-TO-VIEW and click on the top view.

34. Click on PROJECT: SEL ELEM (towards the bottom of the detail menu), then click on C1 in any view. (See Figure 10.)

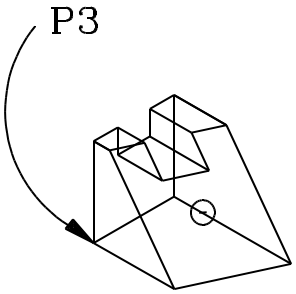


Figure 11

35. Click on ALONG-A-LINE.

36. Click on points P1, P2 (the start and end points of the line through the circle axis, Figure 12), and P3 (The lower left rear corner of the block in the isometric view, Figure 11).

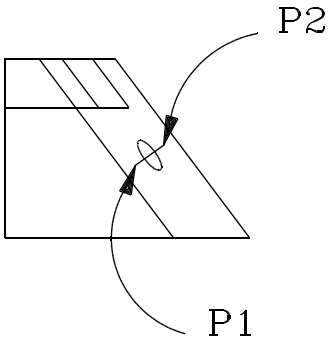


Figure 12

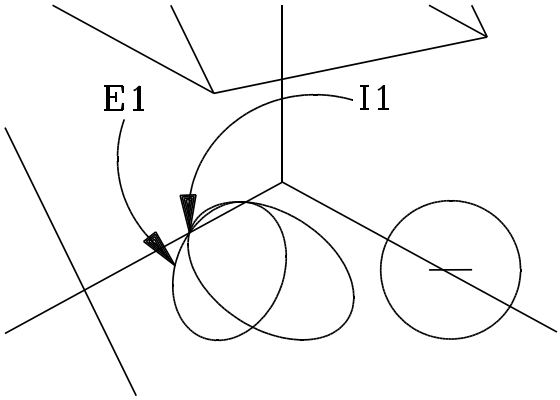
37. Click on CPL: ALIGN-TO-VIEW, then click on the side view.

38. Click on PROJECT: ALONG-A-LINE.

39. Click on points P1, P2, and P3 as shown in Figures 11 and 12.

40. Click on CLEAR.

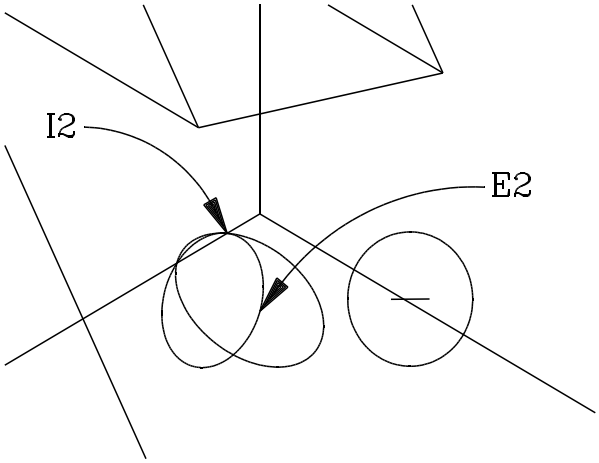
41. Click on WINDOW: ZOOM, then, in the isometric view, place the rubberband box around the two new ellipses to zoom in on them. (See Figure 13.)



42. Click on TRIM CUT: CUT-LINE-OR-CURVE.

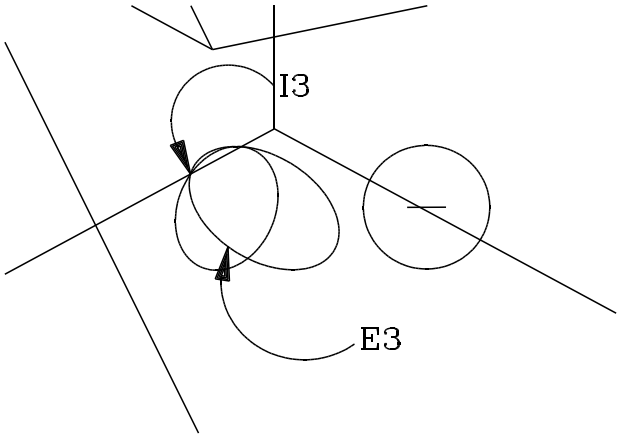
43. Click on E1 (the left side of one ellipse), then click on I1 (the intersection of the ellipse and the line). (See Figure 13.)

Figure 13



44. Click on E2 (the right side of the ellipse, then click on I2 (the other side of the intersection of the ellipse and the line). (See Figure 14.)

Figure 14



45. Click on E3, (the left side of the second ellipse), then click on I3 (the intersection of the second ellipse and the line). (See Figure 15.)

Figure 15

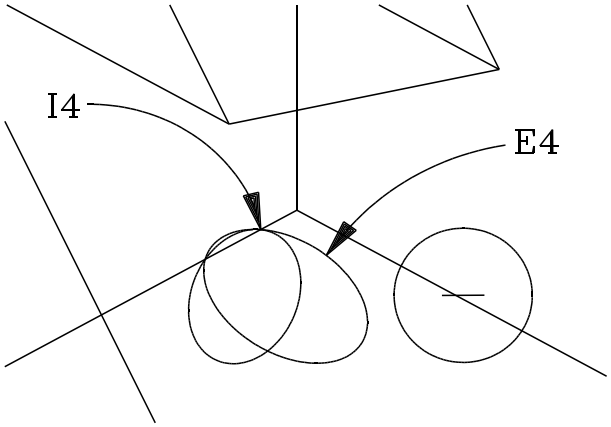


Figure 16

46. Click on E4 (the right side of the second ellipse), then click on I4 (the other side of the intersection of the second ellipse and the line). (See Figure 16.)

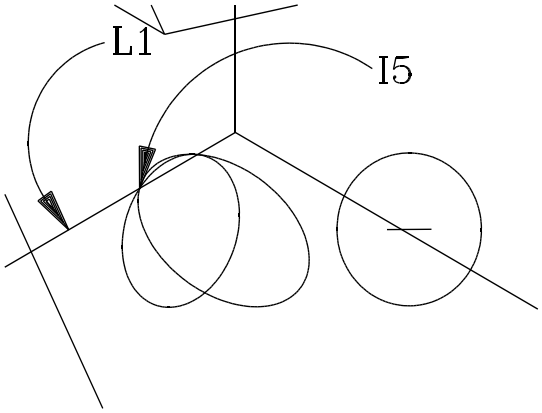


Figure 17

47. Click on L1 (the line), then click on I5 (the intersection of the line and the ellipse). (See Figure 17.)

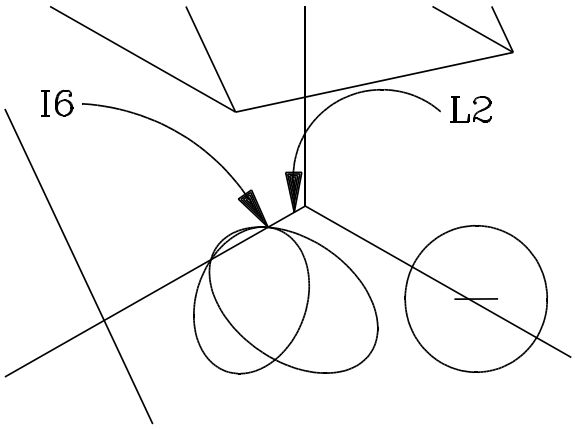


Figure 18

48. Click on L2 (the line), then click on I6 (the other intersection of the line and the ellipse). (See Figure 18.)

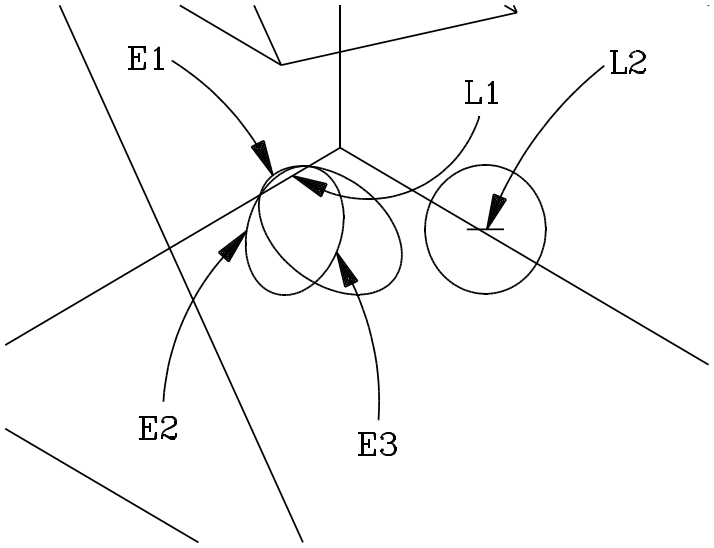


Figure 19

49. Click on SELECT, then click on L1, L2, E1, E2, and E3.

50. Click on ERASE.

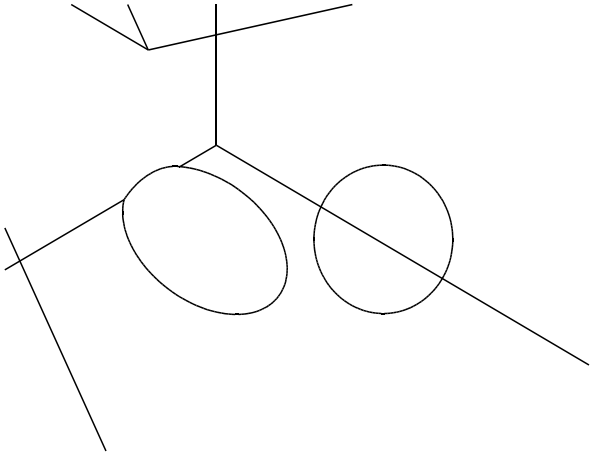


Figure 20

Figure 20 shows the result of steps 47 and 48.

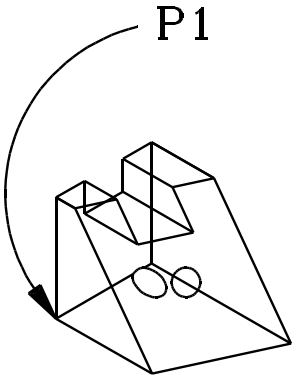


Figure 21

51. Click on WINDOW: PREVIOUS.

52. Click on LINE: POINT-TO-POINT, then click on point P1 in the isometric view. (See Figure 21.)

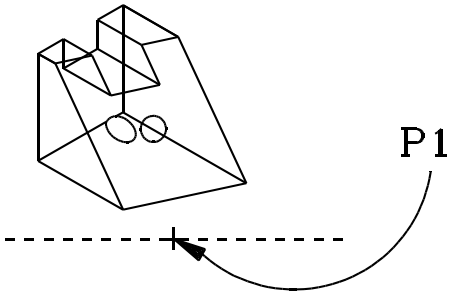


Figure 22

53. Click on POINT: AT-SNAP-LOCATION, typ →4, then press ENTER.

54. Click on RECTANGLE-RECTANGLE-IN-PLANE.

55. Click on SET DEPTH, then click on point P1. (See Figure 22.)

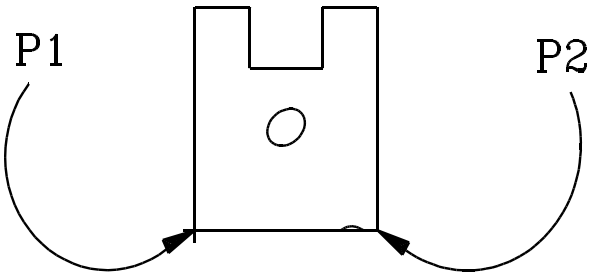


Figure 23

56. Click on point P1 (the lower left corner of the polygon) in the side view, typ ↑.5<Page Down>.5, then press ENTER.

57. Click on point P2 (the lower right corner of the polygon) in the side view, typ ↑.5<Page Up>.5, then press ENTER.

58. Set SET DEPTH to “free”.

59. Click on ERASE, then click on point P1, as shown in Figure 22.

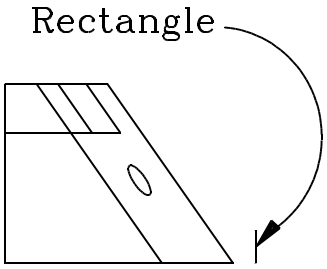


Figure 24

60. Click on ENCLOSE, then place the rubberband box around the rectangle in the front view.

61. Click on CPL: RECALL.

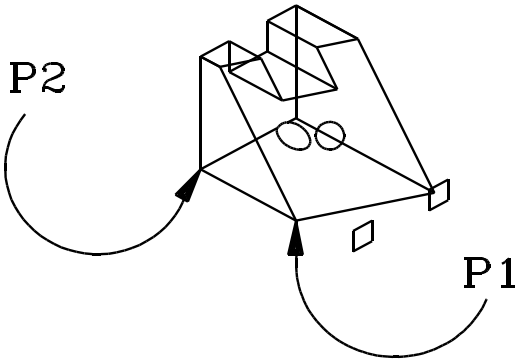


Figure 25

62. Click on PROJECT: ALONG-A-LINE.

63. Click on point P1, then P2, then P1 again. (See Figure 25.)

64. Click on CLEAR. (See Figure 26 for the results of the projection.)

65. Click on WINDOW: ZOOM.

66. Zoom in on the isometric view using the rubberband box.

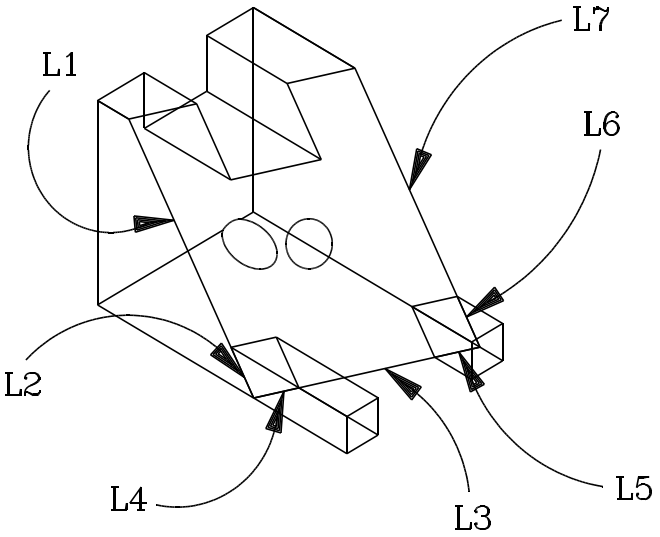


Figure 26

67. Click on SELECT, then click on lines L1-L7. This drawing has duplicate geometry, so you must click o **all** of the lines indicated to ensure that you select all of the necessary geometry.

68. Click on ERASE. (See Figure 27 for the results of the erase.)

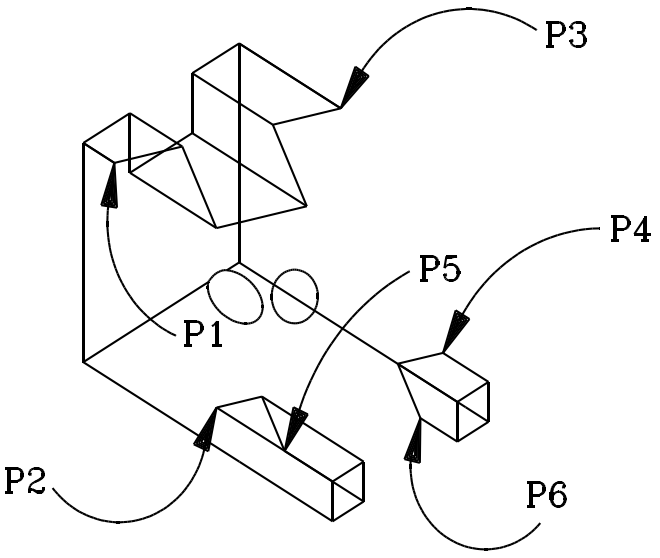


Figure 27

69. Click on LINE: POINT-TO-POINT.

70. Click on points P1 and P2 to place a line between them, points P3 and P4 to place a line between them, and points P5 and P6 to place a line between them.

71. Click on SELECT: ALL-EDITABLE-LEVELS.

72. Click on SURFACES: MAKE-TRUE-SURFACES.

73. Click on ERASE.

74. Click on WINDOW: PREVIOUS, or press F10.

75. Click on SHOW VIEW: MAKE-VIEW-HIDDEN, set the -Hidden Line Style ? modifier to “invisible”, and click on the isometric view.

76. Set the -Hidden Line Style ? modifier to “dashed”, then click on the front, side and top views.

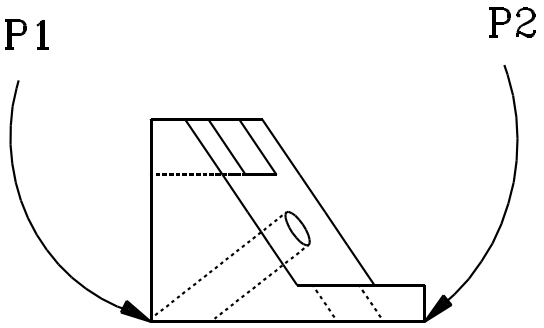


Figure 28

77. Click on LIN DIM (3D Page 2).

78. Set the modifiers as follows:

-Dimension Type ? to “horizontal”
-Centered ? to “yes”
-Arrow Position ? to “inside”
-Line Type ? to “broken”
-Extension Lines ? to”both”
-Text Alignment ? to “view-horizontal”
-Text Mode ? to “automatic”
-Plane ? to “view”

79. Click on points P1 and P2 in the front view for the 4.00 dimension.

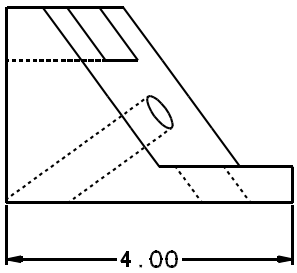


Figure 29

80. Click to place the dimension put down point.

Figure 29 shows the location of the 4.00 dimension.

81. Click on WINDOW at the bottom of the LIN DIM detail menu.

82. Click on ZOOM in the WINDOW detail menu, then use the rubberband box to zoom in on the top view.

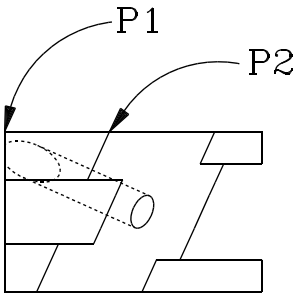


Figure 30

83. Click on PREVIOUS MENU at the bottom of the WINDOW detail menu to return to the LIN DIM detail menu.

84. Click on points P1 and P2 for the 1.63 dimension.

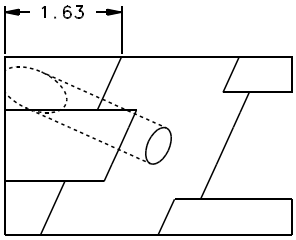


Figure 31

85. Click to place the dimension put down point.

Figure 31 shows the location of the 1.63 dimension.

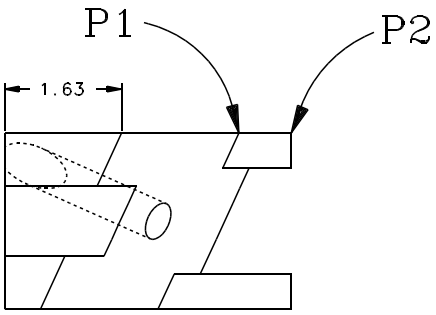


Figure 32

86. Click on points P1 and P2 for the .73 dimension.

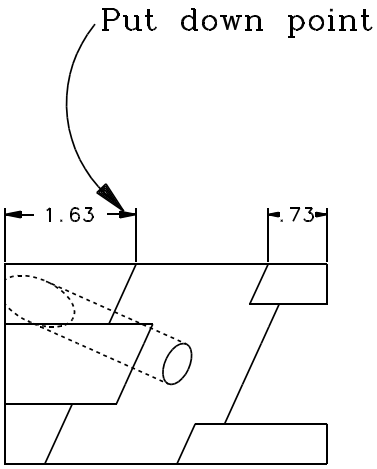


Figure 33

87. Click on the arrowhead of the 1.63 dimension to place the dimension put down point.

Figure 33 shows the location of the .73 dimension.

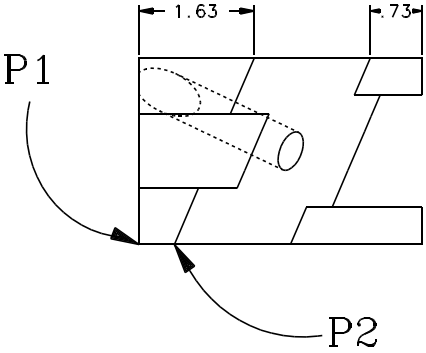


Figure 34

88. Set the modifiers as follows:

    -Centered ? to “no”
    -Arrow Position ? to “outside”

89. Click on points P1 and P2 for the .50 horizontal dimension.

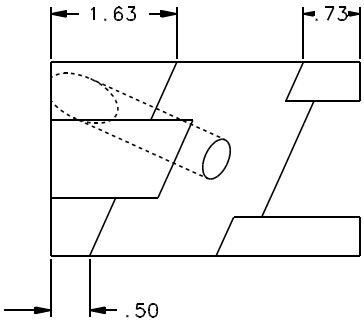


Figure 35

90. Click to place the dimension put down point.

Figure 35 shows the location of the .50 horizontal dimension.

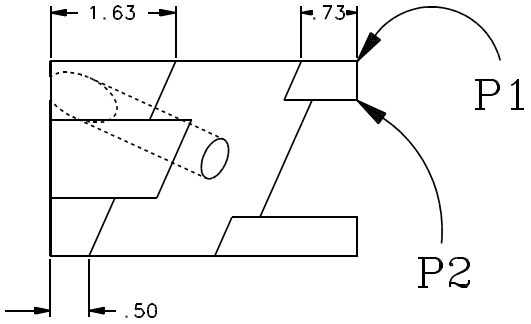


Figure 36

91. Set the modifiers as follows:

    -Dimension Type ? to “vertical”
    -Centered ? to “yes”

92. Click on points P1 and P2 for the first .50 vertical dimension.

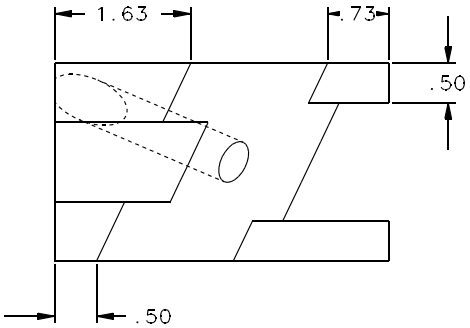


Figure 37

93. Click to place the dimension put down point.

Figure 37 shows the location of the first .50 vertical dimension.

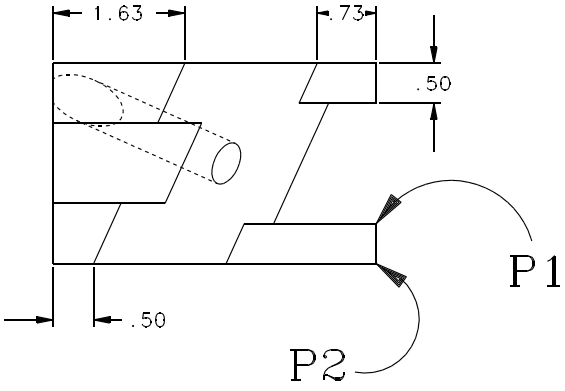


Figure 38

94. Click on points P1 and P2 for the second .50 vertical dimension.

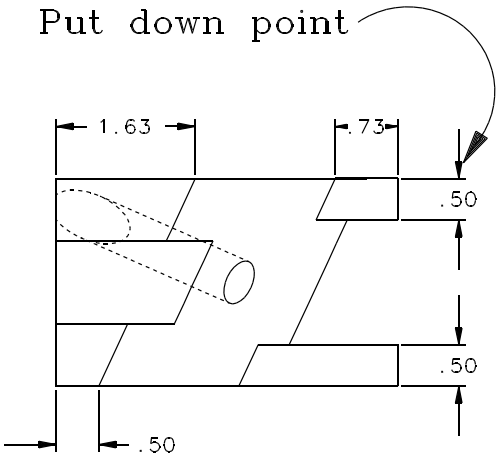


Figure 39

95. Click on the arrowhead of the first .50 dimension to place the dimension putdown point.

Figure 39 shows the location of the second .50 vertical dimension.

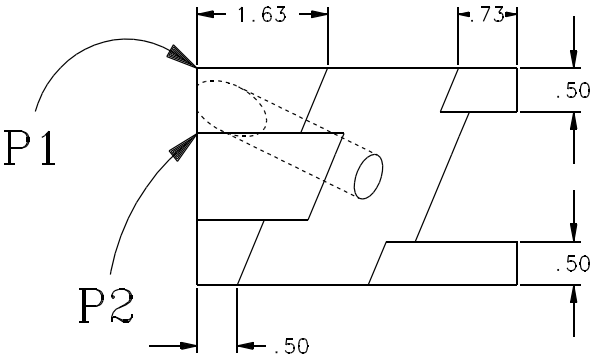


Figure 40

96. Set the -Arrow Position ? modifier to “inside”.

97. Click on points P1 and P2 for the top .75 vertical dimension.

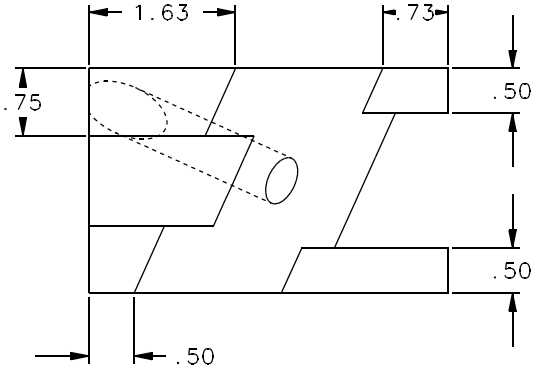


Figure 41

98. Click to place the dimension put down point.

Figure 41 shows the location of the top .75 vertical dimension.

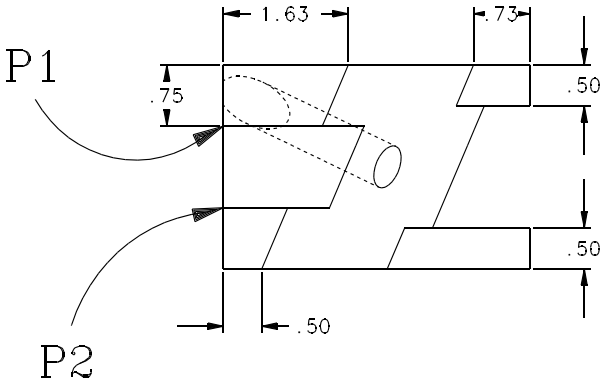


Figure 42

99. Set the -Extension Lines ? modifier to “2nd”.

100. Click on points P1 and P2 for the 1.00 dimension.

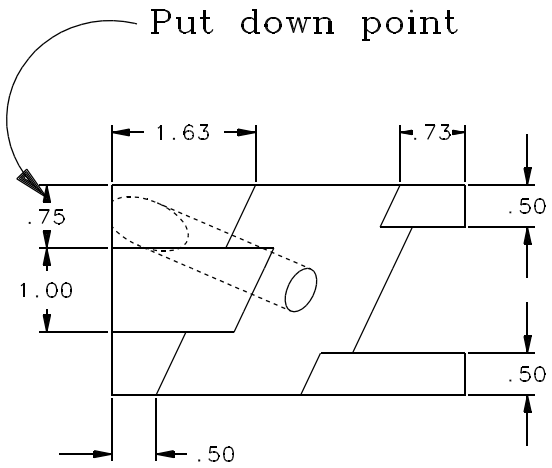


Figure 43

101. Click on the arrowhead of the .75 dimension to place the dimension put down point.

Figure 43 shows the location of the 1.00 dimension.

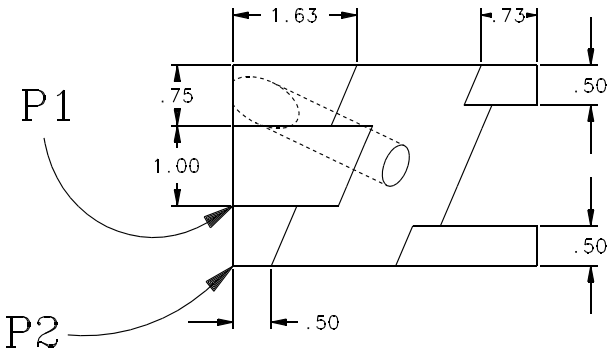


Figure 44

102. Click on points P1 and P2 for the second .75 dimension.

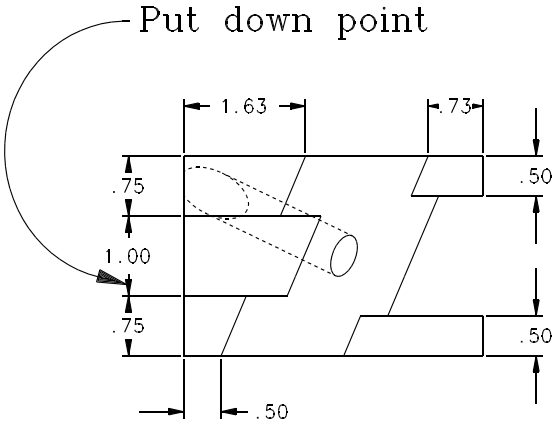


Figure 45

103. Click on the arrowhead of the 1.00 dimension to place the put down point.

Figure 45 shows the location of the second .75 dimension.

104. Click on WINDOW: PREVIOUS, or press F10.

105. Click on WINDOW: ZOOM, and use the rubberband box to zoom in on the side view.

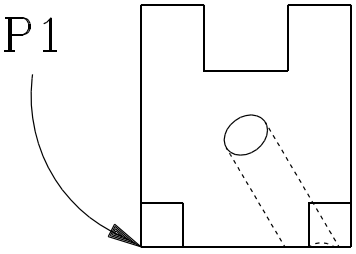


Figure 46

106. Click on BASE DIM: SET-DATUM-POINT.

107. Click on point P1 to set the datum point.

108. Set the -Output Type ? modifier to “extension”.

109. Click on point P1 for the .00 point.

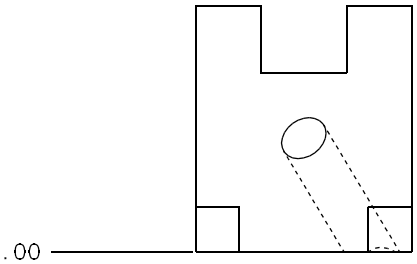


Figure 47

110. Click to place the put down point.

Figure 47 shows the location of the .00 dimension.

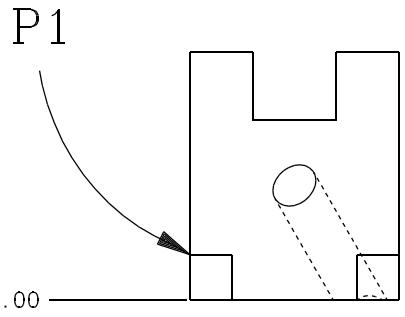


Figure 48

111. Click on point P1 for the .50 point.

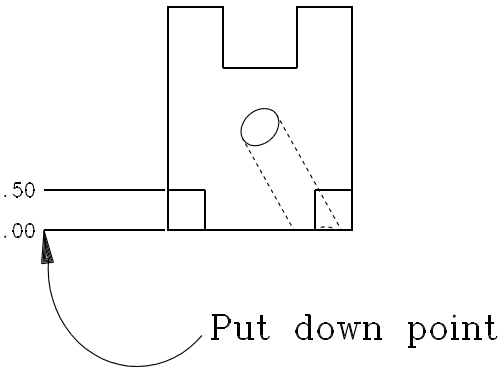


Figure 49

112. Click on the endpoint of the .00 extension line to place the dimension put down point.

Figure 49 shows the location of the .50 dimension.

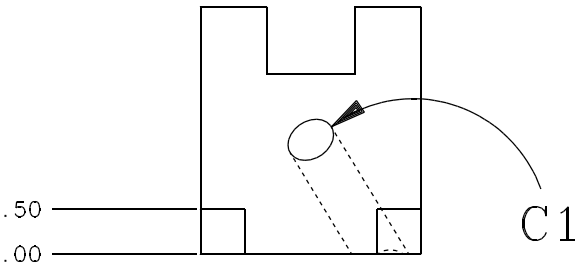
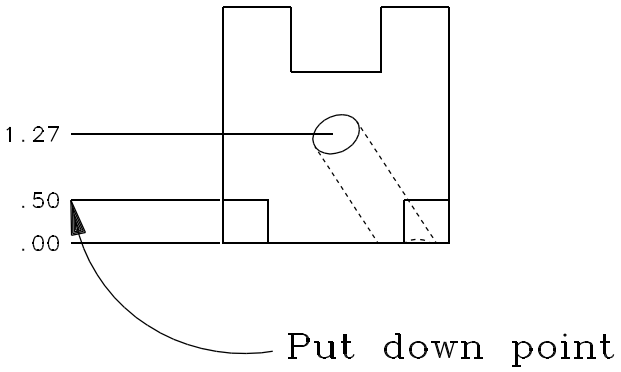


Figure 50

113. Type /c, then press ENTER.

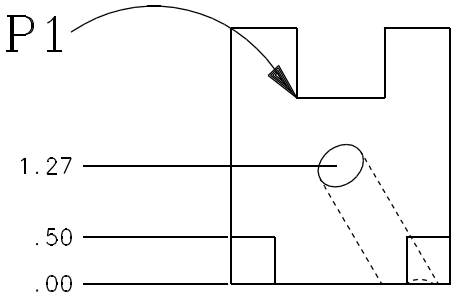
114. Click on C1.



115. Click on the endpoint of the .50 extension line to place the dimension put down point.

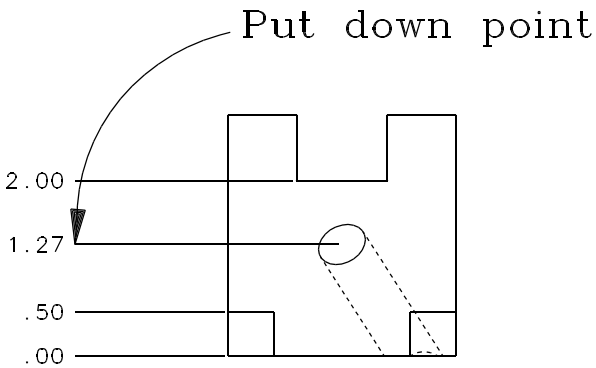
Figure 51 shows the location of the 1.27 dimension.

Figure 51



116. Click on point P1.

Figure 52



117. Click on the endpoint of the 1.27 extension line to place the dimension put down point.

Figure 53 shows the location of the 2.00 dimension.

Figure 53

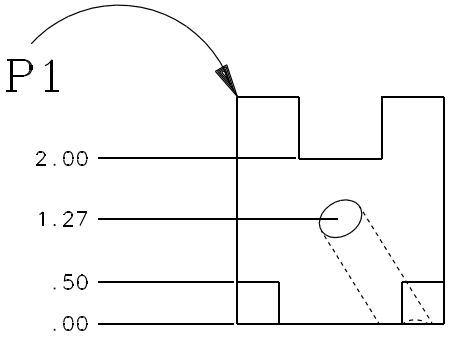


Figure 54

118. Click on point P1.

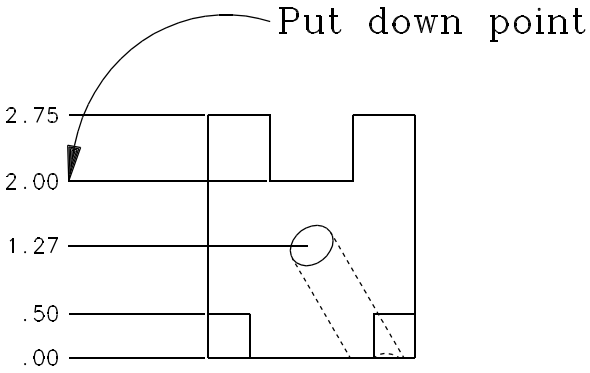


Figure 55

119. Click on the endpoint of the 2.00 extension line to place the dimension put down point.

Figure 55 shows the location of the 2.75 dimension.

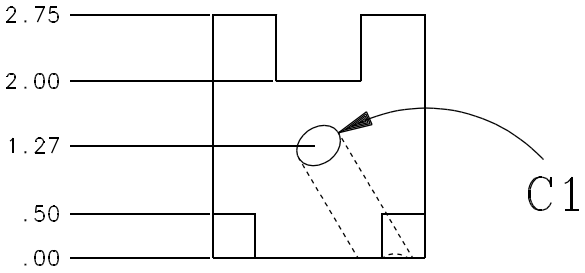


Figure 56

120. Click on RAD DIM (3D page 2).

121. Set the modifiers as follows:

-Dimension Type ? to “radial”
-Centered ? to “no”
-Arrow Position ? to “outside”
-Style ? to “R ⌀”
-#Auto Decimal Places ? to 3
-Plane ? to “arc”
-Auto Select ? to “yes”

122. Click on C1.

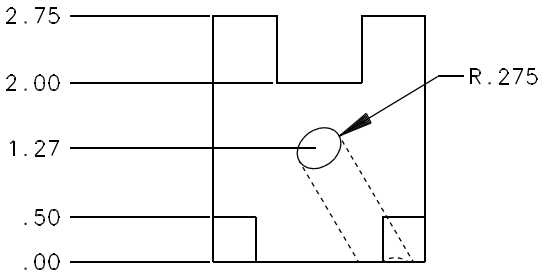


Figure 57

123. Click to place the dimension put down point.

Figure 57 shows the location of the R.275 dimension.

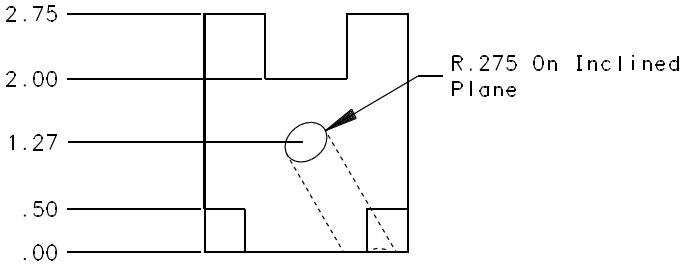


Figure 58

124. Click on MOD TEXT.

125. Add **On Inclined Plane** to the R.275 text string, then press F9 to exit the text screen.

126. Click on "y", then press ENTER to update the existing text. Figure 58 shows the new text string.

127. Click on CLEAR.

128. Click on WINDOW: PREVIOUS, or press F10 to show the full view.

129. Click on SHOW VIEW: DEACTIVATE-ALL-VIEWS, then click on the top view to activate that view.

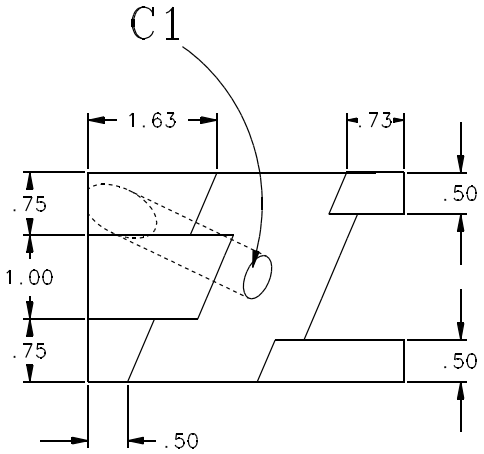


Figure 59

130. Click on LINE, type /c, then press ENTER.

131. Click on C1 in the top view.

132. Click on 1-PNT-CONSTRUCTION.

133. Set the modifiers as follows:

-Construction Size ? to “use length”
-Length ? to 3.5
-Attribute Name ? to “centerline”

134. Click on SNAP at the bottom of the LINE detail menu.

135. Click on Y+Z-HOLD, then click on PREVIOUS MENU at the bottom of the SNAP detail menu to return to the LINE detail menu.

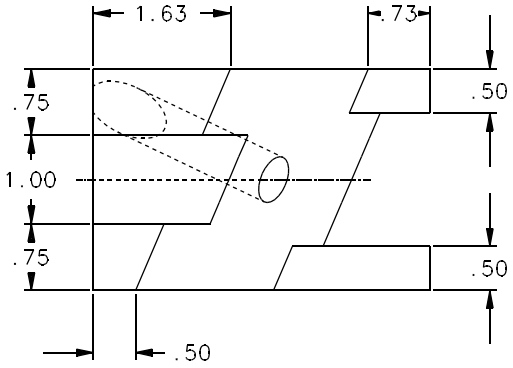


Figure 60

136. Click to place the put down point for the centerline. Make sure that the line goes through the part, as shown in Figure 60.

137. Click on EDIT VIEW: FORCE-NON-HIDABLE, then click on the top view.

138. Click on CLEAR.

139. Click on LEVELS.

140. Click on levels 252 and 254, click on INVISIBLE, then click on OK.

141. Press F3, type the name “Oblique”, then press ENTER to store the drawing.